

SHADOW - Hauptergebnis

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wöm

Voraussetzungen für Berechnung des Schattenwurfs

Beschattungsbereich der WEA

Schatten nur relevant, wo Rotorblatt mind. 20% der Sonne verdeckt

Siehe WEA-Tabelle

Minimale relevante Sonnenhöhe über Horizont	3 °
Tage zwischen Berechnungen	1 Tag(e)
Berechnungszeitsprung	1 Minuten

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,48	2,93	3,80	5,50	6,94	6,23	7,34	6,96	5,12	2,77	1,83	1,21

Betriebsstunden ermittelt aus WEA in Berechnung und Windverteilung:
TDO: Hechtsheim

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
341	516	722	703	501	537	716	1.102	1.381	928	473	327	8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Eine WEA wird nicht berücksichtigt, wenn sie von keinem Teil der Rezeptorfläche aus sichtbar ist. Die Sichtbarkeitsberechnung basiert auf den folgenden Annahmen:

Verwendete Höhenlinien: Höhenraster-Objekt (23)

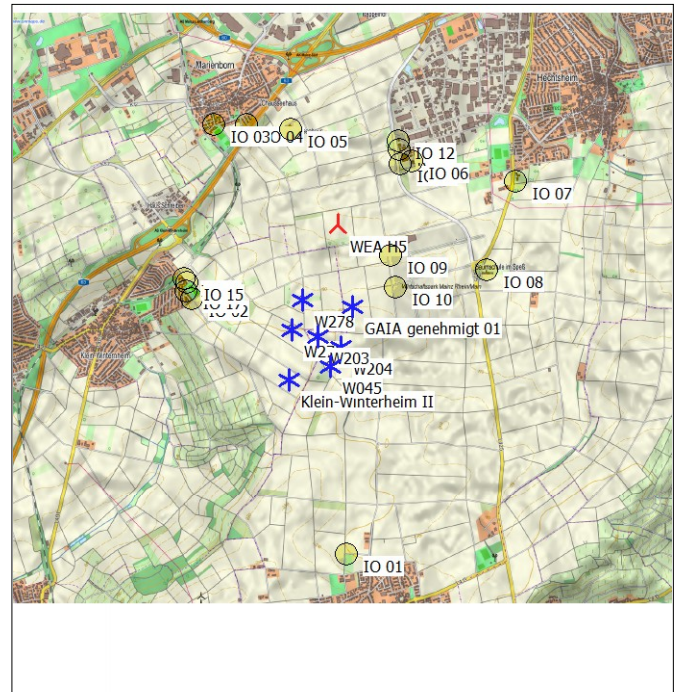
Hindernisse in Berechnung nicht verwendet

Augenhöhe: 1,5 m

Rasterauflösung: 10,0 m

Alle Koordinatenangaben in:

ETRS 89 Zone: 32



Maßstab 1:75.000

 Neue WEA

* Existierende WEA

* Existierende WEA Schattenrezeptor

WEA

	X(Ost)	Y(Nord)	Z	Beschreibung	WEA-Typ						Schattendaten	
					Aktuell	Hersteller	Typ	Nennleistung	Rotor-durchmesser	Nabenhöhe	Beschatt.-Bereich	U/min
			[m]					[kW]	[m]	[m]	[m]	[U/min]
GAIA genehmigt 01	445.871	5.532.456	192,2	ENERCON E-1...	Ja	ENERCON	E-141 EP4-4.200	4.200	141,0	159,0	1.833	0,0
Klein-Winterheim II	445.246	5.531.733	206,5	ENERCON E-1...	Ja	ENERCON	E-115-3.000	3.000	115,7	135,4	2.142	0,0
W045	445.659	5.531.871	190,2	ENERCON E-4...	Ja	ENERCON	E-40-600	600	44,0	65,0	836	34,5
W203	445.527	5.532.160	202,1	ENERCON E-8...	Ja	ENERCON	E-82-2.000	2.000	82,0	108,0	1.550	19,5
W204	445.759	5.532.062	194,0	ENERCON E-8...	Ja	ENERCON	E-82-2.000	2.000	82,0	108,0	1.550	19,5
W278	445.381	5.532.521	188,1	ENERCON E-8...	Ja	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
W279	445.272	5.532.227	202,4	ENERCON E-8...	Ja	ENERCON	E-82-2.000	2.000	82,0	108,3	1.550	19,5
WEA H5	445.732	5.533.267	166,7	GE WIND ENE...	Ja	GE WIND ENERGY	GE 5.3-158-5.300	5.300	158,0	161,0	1.816	0,0

Schattenrezeptor-Eingabe

Nr.	Name	X(Ost)	Y(Nord)	Z	Breite	Höhe	Höhe über Grund	Azimutwinkel (von Süd)	Neigung des Fensters	Ausrichtungsmodus
				[m]	[m]	[m]	[m]	[°]	[°]	
IO 01	Mainz-Ebersheim, Mögliches Wohnhaus	445.817	5.530.003	201,9	1,0	1,0	1,0	-180,0	90,0	"Gewächshaus-Modus"
IO 02	Klein-Winternheim, Steinritsch 10	444.283	5.532.531	201,0	1,0	1,0	1,0	-180,0	90,0	"Gewächshaus-Modus"
IO 03	Mainz-Marienborn, Klein-Winternheimer-Str. 19	444.504	5.534.256	161,0	1,0	1,0	1,0	-180,0	90,0	"Gewächshaus-Modus"
IO 04	Mainz-Marienborn, Altkönigstr. 70	444.831	5.534.260	170,0	1,0	1,0	1,0	-180,0	90,0	"Gewächshaus-Modus"
IO 05	Mainz-Marienborn, Hinter dem Chaussee-Haus	445.267	5.534.205	161,0	1,0	1,0	1,0	-180,0	90,0	"Gewächshaus-Modus"
IO 06	Mainz-Hechtsheim, Adam-Opel-Str. 5	446.466	5.533.896	155,6	1,0	1,0	1,0	-180,0	90,0	"Gewächshaus-Modus"
IO 07	Mainz-Hechtsheim, Am Weidezehnten	447.489	5.533.696	152,5	1,0	1,0	1,0	-180,0	90,0	"Gewächshaus-Modus"
IO 08	Mainz-Hechtsheim, Baumschule Fuchs	447.203	5.532.816	162,4	1,0	1,0	1,0	-180,0	90,0	"Gewächshaus-Modus"
IO 09	Mainz-Hechtsheim, Mögliches Wohnhaus	446.258	5.532.959	169,3	1,0	1,0	1,0	-180,0	90,0	"Gewächshaus-Modus"
IO 10	Mainz-Hechtsheim, mögliches Wohnhaus	446.300	5.532.645	184,1	1,0	1,0	1,0	0,0	90,0	"Gewächshaus-Modus"
IO 12	Mainz-Hechtsheim, Adam-Opel-Str. 6	446.328	5.534.098	161,3	1,0	1,0	1,0	0,0	90,0	"Gewächshaus-Modus"
IO 13	Mainz-Hechtsheim, Adam-Opel-Str. 10	446.349	5.533.864	155,9	1,0	1,0	1,0	0,0	90,0	"Gewächshaus-Modus"
IO 14	Mainz-Hechtsheim, Adam-Opel-Str. 8	446.341	5.534.006	158,7	1,0	1,0	1,0	0,0	90,0	"Gewächshaus-Modus"
IO 15	Klein-Winternheim, Hechtsheimer Berg 53	444.241	5.532.696	202,0	1,0	1,0	1,0	0,0	90,0	"Gewächshaus-Modus"
IO 17	Klein-Winternheim, Karthause 13	444.231	5.532.609	200,2	1,0	1,0	1,0	0,0	90,0	"Gewächshaus-Modus"
IO 18	Klein-Winternheim, Hechtsheimer Berg 57	444.206	5.532.736	201,8	1,0	1,0	1,0	0,0	90,0	"Gewächshaus-Modus"

SHADOW - Hauptergebnis

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wöm

Berechnungsergebnisse**Schattenrezeptor**

Nr.	Name	astron. max. mögl. Beschattungsdauer	met. wahrsch. Beschattungsdauer	
		Stunden/Jahr	Schattentage/a	Stunden/Jahr
		[Std/Jahr]	[Tage/Jahr]	[Std/Tag]
IO 01	Mainz-Ebersheim, Mögliches Wohnhaus	0:00	0	0:00
IO 02	Klein-Winternheim, Steinritsch 10	49:42	184	0:27
IO 03	Mainz-Marienborn, Klein-Winternheimer-Str. 19	14:42	48	0:24
IO 04	Mainz-Marienborn, Altkönigstr. 70	29:52	68	0:29
IO 05	Mainz-Marienborn, Hinter dem Chaussee-Haus	11:24	34	0:26
IO 06	Mainz-Hechtsheim, Adam-Opel-Str. 5	33:21	68	0:39
IO 07	Mainz-Hechtsheim, Am Weidezehnten	6:47	26	0:20
IO 08	Mainz-Hechtsheim, Baumschule Fuchs	21:49	70	0:25
IO 09	Mainz-Hechtsheim, Mögliches Wohnhaus	103:27	160	1:07
IO 10	Mainz-Hechtsheim, mögliches Wohnhaus	127:15	215	1:25
IO 12	Mainz-Hechtsheim, Adam-Opel-Str. 6	37:23	68	0:39
IO 13	Mainz-Hechtsheim, Adam-Opel-Str. 10	44:53	81	0:44
IO 14	Mainz-Hechtsheim, Adam-Opel-Str. 8	51:09	86	0:41
IO 15	Klein-Winternheim, Hechtsheimer Berg 53	42:20	162	0:24
IO 17	Klein-Winternheim, Karthause 13	38:05	139	0:23
IO 18	Klein-Winternheim, Hechtsheimer Berg 57	40:33	155	0:24

Gesamtmenge der max. mögl. Beschattung an Rezeptoren pro WEA

Nr.	Name	Maximal [Std/Jahr]	Erwartet [Std/Jahr]
GAIA genehmigt 01	ENERCON E-141 EP4 4200 141.0 !O! NH: 159,0 m (Ges:229,5 m) (175)	155:46	30:25
Klein-Winternheim II	ENERCON E-115 3000 115.7 !O! NH: 135,4 m (Ges:193,3 m) (181)	49:24	4:55
	W045 ENERCON E-40 600 44.0 !O! NH: 65,0 m (Ges:87,0 m) (176)	0:00	0:00
	W203 ENERCON E-82 2000 82.0 !O! NH: 108,0 m (Ges:149,0 m) (177)	35:43	4:57
	W204 ENERCON E-82 2000 82.0 !O! NH: 108,0 m (Ges:149,0 m) (178)	27:41	3:15
	W278 ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (179)	29:11	6:04
	W279 ENERCON E-82 2000 82.0 !O! NH: 108,3 m (Ges:149,3 m) (180)	27:50	4:18
WEA H5 GE WIND ENERGY GE 5.3-158 5300 158.0 !O! NH: 161,0 m (Ges:240,0 m) (721)		233:06	36:53

Summen in Rezeptortabelle und WEA-Tabelle können sich unterscheiden, da eine WEA gleichzeitig an zwei oder mehr Rezeptoren Beschattung verursachen kann und/oder ein Rezeptor gleichzeitig von zwei oder mehr WEA beschattet werden kann.

Projekt:

Mainz Hechtsheim II

Lizenzierter Anwender:

Juwi AG

Energie-Allee 1

DE-55286 Wörrstadt

Mirjam Wöhlke / mirjam.woehlke@juwi.de

Berechnet:

12.06.2018 08:40/3.1.633

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wöm Schattenrezeptor: IO 01 - Mainz-Ebersheim, Mögliches Wohnhaus
Voraussetzungen für Berechnung des Schattenwurfs Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe
341 516 722 703 501 537 716 1.102 1.381 928 473 327 8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1	08:26 16:36	08:02 17:21	07:13 18:08	07:06 19:58	06:06 20:45	05:24 21:27	05:22 21:40	05:56 21:11	06:41 20:13	07:26 19:08	07:15 17:06	08:03 16:29
2	08:26 16:37	08:01 17:22	07:11 18:10	07:04 20:00	06:04 20:46	05:24 21:28	05:23 21:40	05:57 21:10	06:43 20:11	07:28 19:06	07:17 17:04	08:04 16:29
3	08:26 16:38	07:59 17:24	07:09 18:12	07:02 20:01	06:02 20:48	05:23 21:29	05:24 21:39	05:59 21:08	06:44 20:09	07:29 19:04	07:19 17:03	08:05 16:28
4	08:26 16:39	07:58 17:26	07:07 18:13	07:00 20:03	06:01 20:49	05:22 21:30	05:24 21:39	06:00 21:06	06:46 20:07	07:31 19:02	07:20 17:01	08:07 16:28
5	08:25 16:40	07:56 17:27	07:04 18:15	06:58 20:04	05:59 20:51	05:22 21:31	05:25 21:38	06:01 21:05	06:47 20:05	07:32 18:59	07:22 16:59	08:08 16:27
6	08:25 16:41	07:55 17:29	07:02 18:17	06:56 20:06	05:57 20:52	05:21 21:31	05:26 21:38	06:03 21:03	06:49 20:03	07:34 18:57	07:24 16:58	08:09 16:27
7	08:25 16:43	07:53 17:31	07:00 18:18	06:54 20:07	05:56 20:54	05:21 21:32	05:27 21:38	06:04 21:02	06:50 20:01	07:35 18:55	07:25 16:56	08:10 16:27
8	08:24 16:44	07:52 17:33	06:58 18:20	06:51 20:09	05:54 20:55	05:20 21:33	05:27 21:37	06:06 21:00	06:52 19:58	07:37 18:53	07:27 16:55	08:11 16:27
9	08:24 16:45	07:50 17:34	06:56 18:21	06:49 20:10	05:52 20:57	05:20 21:34	05:28 21:36	06:07 20:58	06:53 19:56	07:38 18:51	07:29 16:53	08:13 16:26
10	08:24 16:46	07:48 17:36	06:54 18:23	06:47 20:12	05:51 20:58	05:19 21:35	05:29 21:36	06:09 20:56	06:55 19:54	07:40 18:49	07:30 16:52	08:14 16:26
11	08:23 16:48	07:47 17:38	06:52 18:25	06:45 20:14	05:49 21:00	05:19 21:35	05:30 21:35	06:10 20:55	06:56 19:52	07:41 18:47	07:32 16:50	08:15 16:26
12	08:23 16:49	07:45 17:40	06:50 18:26	06:43 20:15	05:48 21:01	05:19 21:36	05:31 21:34	06:12 20:53	06:58 19:50	07:43 18:45	07:34 16:49	08:16 16:26
13	08:22 16:50	07:43 17:41	06:48 18:28	06:41 20:17	05:46 21:03	05:19 21:37	05:32 21:34	06:13 20:51	06:59 19:47	07:45 18:43	07:35 16:48	08:17 16:26
14	08:21 16:52	07:41 17:43	06:45 18:30	06:39 20:18	05:45 21:04	05:18 21:37	05:33 21:33	06:14 20:49	07:00 19:45	07:46 18:40	07:37 16:46	08:18 16:26
15	08:21 16:53	07:40 17:45	06:43 18:31	06:37 20:20	05:43 21:05	05:18 21:38	05:34 21:32	06:16 20:47	07:02 19:43	07:48 18:38	07:39 16:45	08:18 16:26
16	08:20 16:55	07:38 17:46	06:41 18:33	06:35 20:21	05:42 21:07	05:18 21:38	05:35 21:31	06:17 20:45	07:03 19:41	07:49 18:36	07:40 16:44	08:19 16:26
17	08:19 16:56	07:36 17:48	06:39 18:34	06:33 20:23	05:40 21:08	05:18 21:39	05:37 21:30	06:19 20:44	07:05 19:39	07:51 18:34	07:42 16:42	08:20 16:26
18	08:18 16:58	07:34 17:50	06:37 18:36	06:31 20:25	05:39 21:10	05:18 21:39	05:38 21:29	06:20 20:42	07:06 19:37	07:53 18:32	07:43 16:41	08:21 16:27
19	08:17 16:59	07:32 17:52	06:35 18:38	06:29 20:26	05:38 21:11	05:18 21:39	05:39 21:28	06:22 20:40	07:08 19:34	07:54 18:30	07:45 16:40	08:21 16:27
20	08:16 17:01	07:30 17:53	06:32 18:39	06:27 20:28	05:37 21:12	05:18 21:40	05:40 21:27	06:23 20:38	07:09 19:32	07:56 18:28	07:47 16:39	08:22 16:27
21	08:15 17:02	07:29 17:55	06:30 18:41	06:25 20:29	05:35 21:14	05:18 21:40	05:41 21:26	06:25 20:36	07:11 19:30	07:57 18:26	07:48 16:38	08:23 16:28
22	08:14 17:04	07:27 17:57	06:28 18:42	06:23 20:31	05:34 21:15	05:19 21:40	05:42 21:25	06:26 20:34	07:12 19:28	07:59 18:24	07:50 16:37	08:23 16:28
23	08:13 17:06	07:25 17:58	06:26 18:44	06:21 20:32	05:33 21:16	05:19 21:40	05:44 21:23	06:28 20:32	07:14 19:26	08:01 18:23	07:51 16:36	08:24 16:29
24	08:12 17:07	07:23 18:00	06:24 18:45	06:19 20:34	05:32 21:17	05:19 21:40	05:45 21:22	06:29 20:30	07:15 19:23	08:02 18:21	07:53 16:35	08:24 16:29
25	08:11 17:09	07:21 18:02	06:22 18:47	06:17 20:35	05:31 21:19	05:19 21:40	05:46 21:21	06:31 20:28	07:17 19:21	08:04 17:19	07:54 16:34	08:25 16:30
26	08:10 17:11	07:19 18:03	06:19 18:49	06:15 20:37	05:30 21:20	05:20 21:40	05:48 21:20	06:32 20:26	07:18 19:19	08:06 17:17	07:56 16:33	08:25 16:31
27	08:09 17:12	07:17 18:05	06:17 18:50	06:13 20:38	05:29 21:21	05:20 21:40	05:49 21:18	06:34 20:24	07:20 19:17	08:07 17:15	07:57 16:32	08:25 16:31
28	08:08 17:14	07:15 18:07	06:15 18:52	06:11 20:40	05:28 21:22	05:21 21:40	05:50 21:17	06:35 20:22	07:21 19:15	08:09 17:13	07:59 16:32	08:25 16:32
29	08:06 17:16		07:13 19:53	06:09 20:42	05:27 21:23	05:21 21:40	05:52 21:16	06:37 20:20	07:23 19:12	08:11 17:11	08:00 16:31	08:26 16:33
30	08:05 17:17		07:11 19:55	06:08 20:43	05:26 21:24	05:22 21:40	05:53 21:14	06:38 20:18	07:24 19:10	08:12 17:10	08:01 16:30	08:26 16:34
31	08:04 17:19		07:09 19:56		05:25 21:26		05:54 21:13	06:40 20:15		07:14 17:08		08:26 16:35
Sonneneinstunden	267	282	368	412	477	488	492	448	380	334	273	254
astr.max.mögl.Beschattung												
Red.Sonneneinwahrsch.												
Reduktion Betriebsdauer												
Reduktion Windrichtung												
Gesamte Reduktion												
Met.wahrsch.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)	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)
	Minuten mit Schatten	

Projekt:

Mainz Hechtsheim II

Lizenzierter Anwender:

Juwi AG

Energie-Allee 1

DE-55286 Wörrstadt

Mirjam Wöhlke / mirjam.woehlke@juwi.de

Berechnet:

12.06.2018 08:40/3.1.633

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wömSchattenrezeptor: IO 02 - Klein-Winternheim, Steinritsch 10
Voraussetzungen für Berechnung des Schattenwurfs Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez

1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

341 516 722 703 501 537 716 1.102 1.381 928 473 327 8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Januar		Februar		März		April		Mai		Juni	
1	08:26	08:02	08:52 (Klein-Winternheim II)	07:13	16	07:35 (W204)	07:06	07:35 (W278)	06:06	05:24	05:57 (WEA HS)
2	16:36	17:21	09:11 (Klein-Winternheim II)	18:08	17	07:51 (W279)	07:36	07:51 (W279)	06:06	05:24	06:19 (WEA HS)
3	08:26	08:01	08:54 (Klein-Winternheim II)	07:11	18	07:34 (W203)	07:04	07:36 (W278)	06:04	05:24	05:58 (WEA HS)
4	16:38	17:22	09:11 (Klein-Winternheim II)	18:10	19	07:53 (W279)	07:00	07:56 (GAIA genehmigt 01)	06:06	05:24	06:19 (WEA HS)
5	08:26	07:59	08:55 (Klein-Winternheim II)	07:09	20	07:33 (W203)	07:02	07:37 (W278)	06:02	05:23	05:58 (WEA HS)
6	16:38	17:24	09:09 (Klein-Winternheim II)	18:12	21	07:54 (W279)	07:01	07:49 (W278)	06:04	05:23	06:19 (WEA HS)
7	08:26	07:58	08:56 (Klein-Winternheim II)	07:07	22	07:33 (W203)	07:00	07:39 (W278)	06:01	05:22	05:59 (WEA HS)
8	16:39	17:26	09:07 (Klein-Winternheim II)	18:13	23	07:54 (W279)	07:03	07:47 (W278)	06:01	05:22	06:18 (WEA HS)
9	08:26	07:56	09:01 (Klein-Winternheim II)	07:05	24	07:33 (W203)	06:58	07:47 (W278)	06:01	05:22	06:00 (WEA HS)
10	16:40	17:27	09:04 (Klein-Winternheim II)	18:15	25	07:54 (W279)	07:04	07:47 (W278)	06:01	05:22	06:18 (WEA HS)
11	08:25	07:55	09:05 (Klein-Winternheim II)	18:16	26	07:54 (W279)	07:05	07:47 (W278)	06:01	05:22	06:00 (WEA HS)
12	16:41	17:29	09:06 (Klein-Winternheim II)	18:17	27	07:54 (W279)	07:06	07:47 (W278)	06:01	05:22	06:03 (WEA HS)
13	08:25	07:53	09:07 (Klein-Winternheim II)	18:18	28	07:54 (W279)	07:07	07:47 (W278)	06:01	05:22	06:01 (WEA HS)
14	16:43	17:31	09:08 (Klein-Winternheim II)	18:19	29	07:54 (W279)	07:08	07:47 (W278)	06:01	05:22	06:18 (WEA HS)
15	08:25	07:52	09:09 (Klein-Winternheim II)	18:20	30	07:54 (W279)	07:09	07:47 (W278)	06:01	05:22	06:02 (WEA HS)
16	16:44	17:33	09:10 (Klein-Winternheim II)	18:21	31	07:54 (W279)	07:10	07:47 (W278)	06:01	05:22	06:18 (WEA HS)
17	08:24	07:50	09:11 (Klein-Winternheim II)	18:22	1	07:54 (W279)	07:11	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
18	16:45	17:34	09:12 (Klein-Winternheim II)	18:23	2	07:54 (W279)	07:12	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
19	08:24	07:48	09:13 (Klein-Winternheim II)	18:24	3	07:54 (W279)	07:13	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
20	16:46	17:36	09:14 (Klein-Winternheim II)	18:25	4	07:54 (W279)	07:14	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
21	08:23	07:47	09:15 (Klein-Winternheim II)	18:26	5	07:54 (W279)	07:15	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
22	16:48	17:38	09:16 (Klein-Winternheim II)	18:27	6	07:54 (W279)	07:16	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
23	08:23	07:45	09:17 (Klein-Winternheim II)	18:28	7	07:54 (W279)	07:17	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
24	16:49	17:40	09:18 (Klein-Winternheim II)	18:29	8	07:54 (W279)	07:18	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
25	08:22	07:43	09:19 (Klein-Winternheim II)	18:30	9	07:54 (W279)	07:19	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
26	16:50	17:41	09:20 (Klein-Winternheim II)	18:31	10	07:54 (W279)	07:20	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
27	08:22	07:42	09:21 (Klein-Winternheim II)	18:32	11	07:54 (W279)	07:21	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
28	16:52	17:43	09:22 (Klein-Winternheim II)	18:33	12	07:54 (W279)	07:22	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
29	08:21	08:55 (Klein-Winternheim II)	07:40	18:34	13	07:54 (W279)	07:23	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
30	16:53	09:00 (Klein-Winternheim II)	07:45	18:35	14	07:54 (W279)	07:24	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
31	08:20	08:53 (Klein-Winternheim II)	07:38	18:36	15	07:54 (W279)	07:25	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
1	16:55	09:03 (Klein-Winternheim II)	07:46	18:37	16	07:54 (W279)	07:26	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
2	08:19	08:52 (Klein-Winternheim II)	07:36	18:38	17	07:54 (W279)	07:27	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
3	16:56	09:04 (Klein-Winternheim II)	07:48	18:39	18	07:54 (W279)	07:28	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
4	08:18	08:51 (Klein-Winternheim II)	07:34	18:40	19	07:54 (W279)	07:29	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
5	16:58	09:06 (Klein-Winternheim II)	07:50	18:41	20	07:54 (W279)	07:30	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
6	08:18	08:50 (Klein-Winternheim II)	07:32	18:42	21	07:54 (W279)	07:31	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
7	16:59	09:07 (Klein-Winternheim II)	07:52	18:43	22	07:54 (W279)	07:32	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
8	08:17	08:50 (Klein-Winternheim II)	07:31	18:44	23	07:54 (W279)	07:33	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
9	17:01	09:08 (Klein-Winternheim II)	07:53	18:45	24	07:54 (W279)	07:34	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
10	08:16	08:50 (Klein-Winternheim II)	07:29	18:46	25	07:54 (W279)	07:35	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
11	17:02	09:09 (Klein-Winternheim II)	07:55	18:47	26	07:54 (W279)	07:36	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
12	08:15	08:50 (Klein-Winternheim II)	07:27	18:48	27	07:54 (W279)	07:37	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
13	17:04	09:10 (Klein-Winternheim II)	07:57	18:49	28	07:54 (W279)	07:38	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
14	08:14	08:49 (Klein-Winternheim II)	07:25	18:50	29	07:54 (W279)	07:39	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
15	17:06	09:11 (Klein-Winternheim II)	07:58	18:51	30	07:54 (W279)	07:40	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
16	08:12	08:49 (Klein-Winternheim II)	07:23	18:52	31	07:54 (W279)	07:41	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
17	17:07	09:12 (Klein-Winternheim II)	07:59	18:53	1	07:54 (W279)	07:42	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
18	08:11	08:49 (Klein-Winternheim II)	07:21	18:54	2	07:54 (W279)	07:43	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
19	17:09	09:13 (Klein-Winternheim II)	08:02	18:55	3	07:54 (W279)	07:44	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
20	08:10	08:50 (Klein-Winternheim II)	07:19	18:56	4	07:54 (W279)	07:45	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
21	17:11	09:14 (Klein-Winternheim II)	08:03	18:57	5	07:54 (W279)	07:46	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
22	08:09	08:49 (Klein-Winternheim II)	07:17	18:58	6	07:54 (W279)	07:47	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
23	17:12	09:15 (Klein-Winternheim II)	08:05	18:59	7	07:54 (W279)	07:48	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
24	08:08	08:50 (Klein-Winternheim II)	07:15	19:00	8	07:54 (W279)	07:49	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
25	17:14	09:16 (Klein-Winternheim II)	08:07	19:01	9	07:54 (W279)	07:50	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
26	08:06	08:50 (Klein-Winternheim II)	07:13	19:02	10	07:54 (W279)	07:51	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
27	17:16	09:17 (Klein-Winternheim II)	08:09	19:03	11	07:54 (W279)	07:52	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
28	08:05	08:51 (Klein-Winternheim II)	07:11	19:04	12	07:54 (W279)	07:53	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
29	17:17	09:18 (Klein-Winternheim II)	08:10	19:05	13	07:54 (W279)	07:54	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
30	08:04	08:52 (Klein-Winternheim II)	07:09	19:06	14	07:54 (W279)	07:55	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
31	17:19	09:19 (Klein-Winternheim II)	08:11	19:07	15	07:54 (W279)	07:56	07:47 (W278)	06:01	05:22	06:17 (WEA HS)
Sonnenscheinstunden		267	282	368	400	412	477	488	388	398	97
astr.max.mögl.Beschattung		311	94	0,32	0,40	0,45	0,45	0,45	0,45	0,45	0,45
Red.Sonnenscheinwahrsch.		0,17	0,29	0,94	0,94	0,94	0,94	0,94	0,94	0,94	0,94
Reduktion Betriebsdauer		0,94	0,94	0,61	0,64	0,71	0,71	0,71	0,71	0,71	0,71
Reduktion Windrichtung		0,54	0,55	0,18	0,23	0,29	0,29	0,29	0,29	0,29	0,29
Gesamte Reduktion		0,08	0,15	0,18	0,23	0,29	0,29	0,29	0,29	0,29	0,29
Met.wahrsch.Beschattung		26	14	71	15	15	95	97	97	97	97

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

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

Projekt:

Mainz Hechtsheim II

Lizenzierter Anwender:

Juwi AG

Energie-Allee 1

DE-55286 Wörrstadt

Mirjam Wöhlke / mirjam.woehlke@juwi.de

Berechnet:

12.06.2018 08:40/3.1.633

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wönSchattenrezeptor: IO 02 - Klein-Winternheim, Steinritsch 10
Voraussetzungen für Berechnung des Schattenwurfs Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
341	516	722	703	501	537	716	1.102	1.381	928	473	327	8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	July	August	September		Oktober		November		Dezember
1	05:22 21:40	06:08 (WEA H5) 06:21 (WEA H5)	05:56 21:11	06:41 20:13	07:26 19:08		07:16 17:06		08:03 16:29
2	05:23 21:40	06:08 (WEA H5) 06:22 (WEA H5)	05:57 21:10	06:43 20:11	07:28 19:06		07:17 17:04		08:04 16:29
3	05:24 21:39	06:07 (WEA H5) 06:22 (WEA H5)	05:59 21:08	06:44 20:09	07:29 19:04	08:16 (W279) 08:26 (W279)	07:19 17:03		08:06 16:28
4	05:24 21:39	06:07 (WEA H5) 06:23 (WEA H5)	06:00 21:07	06:46 20:07	07:31 19:02	08:15 (W279) 08:28 (W279)	07:21 17:01		08:07 16:28
5	05:25 21:39	06:07 (WEA H5) 06:24 (WEA H5)	06:01 21:05	06:47 20:05	07:32 18:59	08:13 (W279) 08:29 (W279)	07:22 17:00		08:08 16:27
6	05:26 21:38	06:06 (WEA H5) 06:24 (WEA H5)	06:03 21:03	06:49 20:03	07:34 18:57	08:12 (W279) 08:29 (W279)	07:24 16:58	08:30 (Klein-Winternheim II)	08:09 16:27
7	05:27 21:38	06:06 (WEA H5) 06:24 (WEA H5)	06:04 21:02	06:50 20:01	07:35 18:55	08:09 (W203) 08:29 (W279)	07:26 16:56	08:35 (Klein-Winternheim II)	08:11 16:27
8	05:27 21:37	06:06 (WEA H5) 06:25 (WEA H5)	06:06 21:00	06:52 19:59	07:33 (W278) 07:41 (W278)	08:09 (W203) 08:29 (W279)	07:27 16:55	08:38 (Klein-Winternheim II)	08:12 16:27
9	05:28 21:37	06:06 (WEA H5) 06:26 (WEA H5)	06:07 20:58	06:53 19:56	07:31 (W278) 07:43 (W278)	08:08 (W203) 08:29 (W279)	07:29 16:53	08:40 (Klein-Winternheim II)	08:13 16:26
10	05:29 21:36	06:06 (WEA H5) 06:27 (WEA H5)	06:09 20:57	06:55 19:54	07:29 (W278) 07:49 (GAIA genehmigt 01)	08:07 (W203) 08:28 (W279)	07:31 16:52	08:41 (Klein-Winternheim II)	08:14 16:26
11	05:30 21:35	06:06 (WEA H5) 06:27 (WEA H5)	06:10 20:55	06:56 19:52	07:27 (W278) 07:50 (GAIA genehmigt 01)	08:08 (W203) 08:27 (W279)	07:32 16:50	08:42 (Klein-Winternheim II)	08:15 16:26
12	05:31 21:34	06:06 (WEA H5) 06:28 (WEA H5)	06:12 20:53	06:58 19:50	07:27 (W278) 07:52 (GAIA genehmigt 01)	08:08 (W203) 08:26 (W279)	07:34 16:49	08:23 (Klein-Winternheim II)	08:16 16:26
13	05:32 21:34	06:06 (WEA H5) 06:28 (WEA H5)	06:13 20:51	06:59 19:48	07:26 (W278) 07:52 (GAIA genehmigt 01)	08:09 (W204) 08:24 (W279)	07:36 16:48	08:22 (Klein-Winternheim II)	08:17 16:26
14	05:33 21:33	06:06 (WEA H5) 06:29 (WEA H5)	06:14 20:49	07:01 19:45	07:26 (W278) 07:53 (GAIA genehmigt 01)	08:11 (W204) 08:21 (W204)	07:37 16:46	08:22 (Klein-Winternheim II)	08:18 16:26
15	05:34 21:32	06:05 (WEA H5) 06:29 (WEA H5)	06:16 20:48	07:02 19:43	07:26 (W278) 07:52 (GAIA genehmigt 01)	08:13 (W204) 08:21 (W204)	07:39 16:45	08:22 (Klein-Winternheim II)	08:19 16:26
16	05:35 21:31	06:05 (WEA H5) 06:29 (WEA H5)	06:17 20:46	07:04 19:41	07:28 (W278) 07:52 (GAIA genehmigt 01)	08:14 (W204) 08:19 (W204)	07:40 16:44	08:23 (Klein-Winternheim II)	08:19 16:26
17	05:37 21:30	06:05 (WEA H5) 06:29 (WEA H5)	06:19 20:44	07:05 19:39	07:29 (W278) 07:51 (GAIA genehmigt 01)	08:16 (W204) 08:18 (W204)	07:42 16:42	08:22 (Klein-Winternheim II)	08:20 16:26
18	05:38 21:29	06:06 (WEA H5) 06:29 (WEA H5)	06:20 20:42	07:07 19:37	07:31 (W278) 07:51 (GAIA genehmigt 01)	08:17 (W204) 08:21 (W204)	07:44 16:41	08:23 (Klein-Winternheim II)	08:21 16:27
19	05:39 21:28	06:07 (WEA H5) 06:29 (WEA H5)	06:22 20:40	07:08 19:34	07:32 (GAIA genehmigt 01) 07:50 (GAIA genehmigt 01)	08:18 (W204) 08:22 (W204)	07:45 16:40	08:24 (Klein-Winternheim II)	08:22 16:27
20	05:40 21:27	06:08 (WEA H5) 06:29 (WEA H5)	06:23 20:38	07:09 19:32	07:34 (GAIA genehmigt 01) 07:49 (GAIA genehmigt 01)	08:23 (W204) 08:25 (Klein-Winternheim II)	07:47 16:39	08:25 (Klein-Winternheim II)	08:22 16:27
21	05:41 21:26	06:09 (WEA H5) 06:29 (WEA H5)	06:25 20:36	07:11 19:30	07:35 (GAIA genehmigt 01) 07:46 (GAIA genehmigt 01)	08:26 (W204) 08:28 (Klein-Winternheim II)	07:48 16:38	08:25 (Klein-Winternheim II)	08:23 16:28
22	05:42 21:25	06:10 (WEA H5) 06:29 (WEA H5)	06:26 20:34	07:12 19:28	07:36 (GAIA genehmigt 01) 07:43 (GAIA genehmigt 01)	08:29 (W204) 08:31 (Klein-Winternheim II)	07:50 16:37	08:26 (Klein-Winternheim II)	08:23 16:28
23	05:44 21:24	06:12 (WEA H5) 06:29 (WEA H5)	06:28 20:32	07:14 19:26	08:01 18:23	08:32 (Klein-Winternheim II) 08:34 (Klein-Winternheim II)	07:51 16:36	08:27 (Klein-Winternheim II)	08:24 16:29
24	05:45 21:23	06:13 (WEA H5) 06:29 (WEA H5)	06:29 20:30	07:15 19:23	08:02 18:21	08:35 (Klein-Winternheim II) 08:37 (Klein-Winternheim II)	07:53 16:35	08:28 (Klein-Winternheim II)	08:24 16:29
25	05:46 21:21	06:14 (WEA H5) 06:28 (WEA H5)	06:31 20:28	07:17 19:21	08:04 18:19	08:38 (Klein-Winternheim II) 08:40 (Klein-Winternheim II)	07:54 16:34	08:30 (Klein-Winternheim II)	08:25 16:30
26	05:48 21:20	06:15 (WEA H5) 06:28 (WEA H5)	06:32 20:26	07:19 19:19	08:06 18:17	08:41 (Klein-Winternheim II) 08:43 (Klein-Winternheim II)	07:56 16:33	08:31 (Klein-Winternheim II)	08:25 16:31
27	05:49 21:18	06:16 (WEA H5) 06:27 (WEA H5)	06:34 20:24	07:20 19:17	08:07 18:15	08:44 (Klein-Winternheim II) 08:46 (Klein-Winternheim II)	07:57 16:32	08:34 (Klein-Winternheim II)	08:25 16:31
28	05:50 21:17	06:18 (WEA H5) 06:27 (WEA H5)	06:35 20:22	07:22 19:15	08:09 18:13	08:47 (Klein-Winternheim II) 08:49 (Klein-Winternheim II)	07:59 16:32	08:39 (Klein-Winternheim II)	08:26 16:32
29	05:52 21:16	06:19 (WEA H5) 06:26 (WEA H5)	06:37 20:20	07:23 19:12	08:11 18:11	08:50 (Klein-Winternheim II) 08:52 (Klein-Winternheim II)	08:00 16:31		08:26 16:33
30	05:53 21:14	06:20 (WEA H5) 06:24 (WEA H5)	06:38 20:18	07:25 19:10	08:12 18:10	08:53 (Klein-Winternheim II) 08:55 (Klein-Winternheim II)	08:02 16:30		08:26 16:34
31	05:54 21:13	06:22 (WEA H5) 06:23 (WEA H5)	06:40 20:16		08:14 18:08	08:56 (Klein-Winternheim II) 08:58 (Klein-Winternheim II)			08:26 16:35
Sonnenscheinstunden	492		448	380		334	273		254
astr.max.mögl.Beschattung	527			284		215	377		
Red.Sonnenscheinwahrsch.	0,46			0,40		0,26	0,20		
Reduktion Betriebsdauer	0,94			0,94		0,94	0,94		
Reduktion Windrichtung	0,71			0,64		0,57	0,54		
Gesamte Reduktion	0,30			0,23		0,13	0,10		
Met.wahrsch.Beschattung	158			67		29	37		

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) Schattenende (WEA mit letztem Schatten)

Projekt:

Mainz Hechtsheim II

Lizenzierter Anwender:

Juwi AG

Energie-Allee 1

DE-55286 Wörrstadt

Mirjam Wöhlke / mirjam.woehlke@juwi.de

Berechnet:

12.06.2018 08:40/3.1.633

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wöm Schattenrezeptor: IO 03 - Mainz-Marienborn, Klein-Winternheimer-Str. 19
Voraussetzungen für Berechnung des Schattenwurfs

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe
341 516 722 703 501 537 716 1.102 1.381 928 473 327 8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1 08:26	08:02	08:47 (WEA H5)	07:13	07:06	06:06	05:24	05:22	05:56	06:41	07:26	07:16	08:03
16:36	17:21	09:09 (WEA H5)	18:08	19:58	20:45	21:27	21:40	21:11	20:14	19:08	17:06	16:29
2 08:26	08:01	08:49 (WEA H5)	07:11	07:04	06:04	05:24	05:23	05:57	06:43	07:28	07:17	08:04
16:37	17:22	09:09 (WEA H5)	18:10	20:00	20:46	21:28	21:40	21:10	20:11	19:06	17:04	16:29
3 08:26	08:00	08:49 (WEA H5)	07:09	07:02	06:02	05:23	05:23	05:58	06:44	07:29	07:19	08:06
16:38	17:24	09:07 (WEA H5)	18:12	20:01	20:48	21:29	21:40	21:08	20:09	19:04	17:03	16:28
4 08:26	07:58	08:50 (WEA H5)	07:07	07:00	06:01	05:22	05:24	06:00	06:46	07:31	07:21	08:07
16:39	17:26	09:06 (WEA H5)	18:13	20:03	20:49	21:30	21:39	21:07	20:07	19:02	17:01	16:28
5 08:26	07:57	08:53 (WEA H5)	07:05	06:58	05:59	05:22	05:25	06:01	06:47	07:32	07:22	08:08
16:40	17:27	09:04 (WEA H5)	18:15	20:04	20:51	21:31	21:39	21:05	20:05	18:59	16:59	08:25 (WEA H5)
6 08:25	07:55	08:57 (WEA H5)	07:03	06:56	05:57	05:21	05:26	06:03	06:49	07:34	07:24	08:10
16:41	17:29	09:00 (WEA H5)	18:17	20:06	20:52	21:32	21:38	21:03	20:03	18:57	16:58	12 08:35 (WEA H5)
7 08:25	07:53		07:00	06:54	05:55	05:21	05:27	06:04	06:50	07:35	07:26	08:21 (WEA H5)
16:43	17:31		18:18	20:07	20:54	21:33	21:38	21:02	20:01	18:55	16:56	16 08:37 (WEA H5)
8 08:25	07:52		06:58	06:51	05:54	05:20	05:27	06:06	06:52	07:37	07:27	08:20 (WEA H5)
16:44	17:33		18:20	20:09	20:55	21:33	21:37	21:00	19:59	18:53	16:55	18 08:38 (WEA H5)
9 08:24	07:50		06:56	06:49	05:52	05:20	05:28	06:07	06:53	07:38	07:29	08:19 (WEA H5)
16:45	17:34		18:22	20:11	20:57	21:34	21:37	20:58	19:56	18:51	16:53	19 08:38 (WEA H5)
10 08:24	07:48		06:54	06:47	05:51	05:19	05:29	06:09	06:55	07:40	07:31	08:18 (WEA H5)
16:46	17:36		18:23	20:12	20:58	21:35	21:36	20:57	19:54	18:49	16:52	22 08:40 (WEA H5)
11 08:23	07:47		06:52	06:45	05:49	05:19	05:30	06:10	06:56	07:42	07:32	08:18 (WEA H5)
16:48	17:38		18:25	20:14	21:00	21:36	21:35	20:55	19:52	18:47	16:50	22 08:40 (WEA H5)
12 08:23	07:45		06:50	06:43	05:48	05:19	05:31	06:11	06:58	07:43	07:34	08:18 (WEA H5)
16:49	17:40		18:26	20:15	21:01	21:36	21:35	20:53	19:50	18:45	16:49	23 08:41 (WEA H5)
13 08:22	07:43		06:48	06:41	05:46	05:18	05:32	06:13	06:59	07:45	07:36	08:17 (WEA H5)
16:50	17:41		18:28	20:17	21:03	21:37	21:34	20:51	19:48	18:43	16:48	24 08:41 (WEA H5)
14 08:22	08:52 (WEA H5)	07:42	06:46	06:39	05:45	05:18	05:33	06:14	07:01	07:46	07:37	08:17 (WEA H5)
16:52	3 08:55 (WEA H5)	17:43	18:30	20:18	21:04	21:37	21:33	20:49	19:45	18:40	16:46	24 08:41 (WEA H5)
15 08:21	08:49 (WEA H5)	07:40	06:43	06:37	05:43	05:18	05:34	06:16	07:02	07:48	07:39	08:18 (WEA H5)
16:53	9 08:58 (WEA H5)	17:45	18:31	20:20	21:06	21:38	21:32	20:48	19:43	18:38	16:45	24 08:42 (WEA H5)
16 08:20	08:48 (WEA H5)	07:38	06:41	06:35	05:42	05:18	05:35	06:17	07:04	07:50	07:40	08:18 (WEA H5)
16:55	12 09:00 (WEA H5)	17:46	18:33	20:22	21:07	21:38	21:31	20:46	19:41	18:36	16:44	24 08:42 (WEA H5)
17 08:19	08:47 (WEA H5)	07:36	06:39	06:33	05:40	05:18	05:36	06:19	07:05	07:51	07:42	08:19 (WEA H5)
16:56	15 09:02 (WEA H5)	17:48	18:34	20:23	21:08	21:39	21:30	20:44	19:39	18:34	16:42	24 08:43 (WEA H5)
18 08:18	08:46 (WEA H5)	07:34	06:37	06:31	05:39	05:18	05:38	06:20	07:06	07:53	07:44	08:18 (WEA H5)
16:58	17 09:03 (WEA H5)	17:50	18:36	20:25	21:10	21:39	21:29	20:42	19:37	18:32	16:41	24 08:42 (WEA H5)
19 08:18	08:46 (WEA H5)	07:32	06:35	06:29	05:38	05:18	05:39	06:22	07:08	07:54	07:45	08:19 (WEA H5)
16:59	18 09:04 (WEA H5)	17:52	18:38	20:26	21:11	21:40	21:28	20:40	19:34	18:30	16:40	23 08:42 (WEA H5)
20 08:17	08:45 (WEA H5)	07:31	06:33	06:27	05:37	05:18	05:40	06:23	07:09	07:56	07:47	08:20 (WEA H5)
17:01	20 09:05 (WEA H5)	17:53	18:39	20:28	21:13	21:40	21:27	20:38	19:32	18:28	16:39	22 08:42 (WEA H5)
18 08:16	08:45 (WEA H5)	07:29	06:30	06:25	05:35	05:18	05:41	06:25	07:11	07:58	07:48	08:20 (WEA H5)
17:02	21 09:06 (WEA H5)	17:55	18:41	20:29	21:14	21:40	21:26	20:36	19:30	18:26	16:38	21 08:41 (WEA H5)
22 08:15	08:45 (WEA H5)	07:27	06:28	06:23	05:34	05:18	05:42	06:26	07:12	07:59	07:50	08:21 (WEA H5)
17:04	22 09:07 (WEA H5)	17:57	18:42	20:31	21:15	21:40	21:25	20:34	19:28	18:24	16:37	20 08:41 (WEA H5)
23 08:14	08:44 (WEA H5)	07:25	06:26	06:21	05:33	05:19	05:44	06:28	07:14	08:01	07:51	08:23 (WEA H5)
17:06	23 09:07 (WEA H5)	17:58	18:44	20:32	21:16	21:41	21:24	20:32	19:26	18:23	16:36	18 08:41 (WEA H5)
24 08:13	08:44 (WEA H5)	07:23	06:24	06:19	05:32	05:19	05:45	06:29	07:15	08:02	07:53	08:23 (WEA H5)
17:07	24 09:08 (WEA H5)	18:00	18:45	20:34	21:18	21:41	21:22	20:30	19:23	18:21	16:35	17 08:40 (WEA H5)
25 08:11	08:45 (WEA H5)	07:21	06:22	06:17	05:31	05:19	05:46	06:31	07:17	07:04	07:54	08:25 (WEA H5)
17:09	24 09:09 (WEA H5)	18:02	18:47	20:36	21:19	21:41	21:21	20:28	19:21	17:19	16:34	15 08:40 (WEA H5)
26 08:10	08:45 (WEA H5)	07:19	06:19	06:15	05:30	05:20	05:48	06:32	07:19	07:06	07:56	08:26 (WEA H5)
17:10	24 09:09 (WEA H5)	18:03	18:49	20:37	21:20	21:41	21:20	20:26	19:19	17:17	16:33	12 08:38 (WEA H5)
27 08:09	08:45 (WEA H5)	07:17	06:17	06:13	05:29	05:20	05:49	06:34	07:20	07:07	07:57	08:28 (WEA H5)
17:12	24 09:09 (WEA H5)	18:05	18:50	20:39	21:21	21:41	21:19	20:24	19:17	17:15	16:32	9 08:37 (WEA H5)
28 08:08	08:45 (WEA H5)	07:15	06:15	06:11	05:28	05:21	05:50	06:35	07:22	07:09	07:59	08:32 (WEA H5)
17:14	24 09:09 (WEA H5)	18:07	18:52	20:40	21:22	21:41	21:17	20:22	19:15	17:13	16:31	3 08:35 (WEA H5)
29 08:06	08:46 (WEA H5)		07:13	06:09	05:27	05:21	05:52	06:37	07:23	07:11	08:00	08:26
17:15	24 09:10 (WEA H5)		19:53	20:42	21:24	21:41	21:16	20:20	19:12	17:11	16:31	16:33
30 08:05	08:46 (WEA H5)		07:11	06:08	05:26	05:22	05:53	06:38	07:25	07:12	08:02	08:26
17:17	23 09:09 (WEA H5)		19:55	20:43	21:25	21:40	21:14	20:18	19:10	17:10	16:30	16:34
31 08:04	08:47 (WEA H5)		07:09		05:25		05:54	06:40		07:14		08:26
17:19	23 09:10 (WEA H5)		19:57		21:26		21:13	20:16		17:08		16:35
Sonnenscheinstunden	267	282	368	412	477	488	492	448	380	334	273	253
astr.max.mögl.Beschattung	350	90									442	
Red.Sonnenscheinwahrsch.	0,17	0,29									0,20	
Reduktion Betriebsdauer	0,94	0,94									0,94	
Reduktion Windrichtung	0,54	0,54									0,54	
Gesamte Reduktion	0,09	0,15									0,10	
Met.wahrsch.Beschattung	30	13									45	

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) Schattenende (WEA mit letztem Schatten)
	Minuten mit Schatten	

Projekt:

Mainz Hechtsheim II

Lizenzierter Anwender:

Juwi AG

Energie-Allee 1

DE-55286 Wörrstadt

Mirjam Wöhlke / mirjam.woehlke@juwi.de

Berechnet:

12.06.2018 08:40/3.1.633

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wönSchattenrezeptor: IO 04 - Mainz-Marienborn, Altkönigstr. 70
Voraussetzungen für Berechnung des Schattenwurfs

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe
341 516 722 703 501 537 716 1.102 1.381 928 473 327 8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1 08:26	09:07 (WEA H5)	08:02	07:13	07:06	06:06	05:24	05:22	05:56	06:41	07:26	07:16	08:03
2 16:36	09:36 (WEA H5)	17:21	18:08	19:58	20:45	21:27	21:40	21:11	20:13	19:08	17:06	16:29
3 08:26	09:08 (WEA H5)	08:01	07:11	07:04	06:04	05:24	05:23	05:57	06:43	07:28	07:17	08:04
4 16:37	09:37 (WEA H5)	17:22	18:10	20:00	20:46	21:28	21:40	21:10	20:11	19:06	17:04	16:29
5 08:26	09:09 (WEA H5)	07:59	07:09	07:02	06:02	05:23	05:23	05:58	06:44	07:29	07:19	08:06
6 16:38	09:38 (WEA H5)	17:24	18:12	20:01	20:48	21:29	21:40	21:08	20:09	19:04	17:03	16:28
7 08:26	09:08 (WEA H5)	07:58	07:07	07:00	06:01	05:22	05:24	06:00	06:46	07:31	07:21	08:07
8 16:39	09:37 (WEA H5)	17:26	18:13	20:03	20:49	21:30	21:39	21:07	20:07	19:02	17:01	16:28
9 08:26	09:09 (WEA H5)	07:56	07:05	06:58	05:59	05:22	05:25	06:01	06:47	07:32	07:22	08:08
10 16:40	09:38 (WEA H5)	17:27	18:15	20:04	20:51	21:31	21:39	21:05	20:05	18:59	16:59	16:27
11 08:25	09:10 (WEA H5)	07:55	07:02	06:56	05:57	05:21	05:26	06:03	06:49	07:34	07:24	08:09
12 16:41	09:39 (WEA H5)	17:29	18:17	20:06	20:52	21:32	21:38	21:03	20:03	18:57	16:58	16:27
13 08:25	09:10 (WEA H5)	07:53	07:00	06:54	05:55	05:21	05:26	06:04	06:50	07:35	07:26	08:11
14 16:42	09:39 (WEA H5)	17:31	18:18	20:07	20:54	21:33	21:38	21:02	20:01	18:55	16:56	16:27
15 08:25	09:11 (WEA H5)	07:52	06:58	06:51	05:54	05:20	05:27	06:06	06:52	07:37	07:27	08:12
16 16:44	09:40 (WEA H5)	17:33	18:20	20:09	20:55	21:33	21:37	21:00	19:58	18:53	16:55	16:26
17 08:24	09:11 (WEA H5)	07:50	06:56	06:49	05:52	05:20	05:28	06:07	06:53	07:38	07:29	08:13
18 16:45	09:40 (WEA H5)	17:34	18:21	20:11	20:57	21:34	21:37	20:58	19:56	18:51	16:53	16:26
19 08:24	09:12 (WEA H5)	07:48	06:54	06:47	05:51	05:19	05:29	06:09	06:55	07:40	07:31	08:14
20 16:46	09:41 (WEA H5)	17:36	18:23	20:12	20:58	21:35	21:36	20:57	19:54	18:49	16:52	16:26
21 08:23	09:12 (WEA H5)	07:47	06:52	06:45	05:49	05:19	05:30	06:10	06:56	07:42	07:32	08:15
22 16:48	09:41 (WEA H5)	17:38	18:25	20:14	21:00	21:36	21:35	20:55	19:52	18:47	16:50	16:26
23 08:23	09:12 (WEA H5)	07:45	06:50	06:43	05:48	05:19	05:31	06:11	06:58	07:43	07:34	08:16
24 16:49	09:41 (WEA H5)	17:39	18:26	20:15	21:01	21:36	21:35	20:53	19:50	18:45	16:49	16:26
25 08:22	09:13 (WEA H5)	07:43	06:48	06:41	05:46	05:18	05:32	06:13	06:59	07:45	07:36	08:17
26 16:50	09:42 (WEA H5)	17:41	18:28	20:17	21:03	21:37	21:34	20:51	19:48	18:43	16:47	16:26
27 08:22	09:14 (WEA H5)	07:42	06:46	06:39	05:45	05:18	05:33	06:14	07:01	07:46	07:37	08:18
28 16:52	09:41 (WEA H5)	17:43	18:30	20:18	21:04	21:37	21:33	20:49	19:45	18:40	16:46	16:26
29 08:21	09:14 (WEA H5)	07:40	06:43	06:37	05:43	05:18	05:34	06:16	07:02	07:48	07:39	08:19
30 16:53	09:41 (WEA H5)	17:45	18:31	20:20	21:06	21:38	21:32	20:48	19:43	18:38	16:45	16:26
31 08:20	09:15 (WEA H5)	07:38	06:41	06:35	05:42	05:18	05:35	06:17	07:03	07:50	07:40	08:19
32 16:55	09:41 (WEA H5)	17:46	18:33	20:22	21:07	21:38	21:31	20:46	19:41	18:36	16:44	16:26
33 08:19	09:16 (WEA H5)	07:36	06:39	06:33	05:40	05:18	05:36	06:19	07:05	07:51	07:42	08:20
34 16:56	09:41 (WEA H5)	17:48	18:34	20:23	21:08	21:39	21:30	20:44	19:39	18:34	16:42	16:26
35 08:18	09:16 (WEA H5)	07:34	06:37	06:31	05:39	05:18	05:38	06:20	07:06	07:53	07:44	08:21
36 16:58	09:41 (WEA H5)	17:50	18:36	20:25	21:10	21:39	21:29	20:42	19:37	18:32	16:41	16:26
37 08:18	09:17 (WEA H5)	07:32	06:35	06:29	05:38	05:18	05:39	06:22	07:08	07:54	07:45	08:22
38 16:59	09:41 (WEA H5)	17:51	18:38	20:26	21:11	21:40	21:28	20:40	19:34	18:30	16:40	16:26
39 08:17	09:19 (WEA H5)	07:31	06:33	06:27	05:36	05:18	05:40	06:23	07:09	07:56	07:47	08:22
40 17:01	09:40 (WEA H5)	17:53	18:39	20:28	21:12	21:40	21:27	20:38	19:32	18:28	16:39	16:27
41 08:16	09:20 (WEA H5)	07:29	06:30	06:25	05:35	05:18	05:41	06:25	07:11	07:58	07:48	08:23
42 17:02	09:40 (WEA H5)	17:55	18:41	20:29	21:14	21:40	21:26	20:36	19:30	18:26	16:38	16:28
43 08:15	09:21 (WEA H5)	07:27	06:28	06:23	05:34	05:18	05:42	06:26	07:12	07:59	07:50	08:23
44 17:04	09:39 (WEA H5)	17:57	18:42	20:31	21:15	21:40	21:25	20:34	19:28	18:24	16:37	16:28
45 08:14	09:22 (WEA H5)	07:25	06:26	06:21	05:33	05:19	05:44	06:28	07:14	08:01	07:51	08:24
46 17:06	09:37 (WEA H5)	17:58	18:44	20:32	21:16	21:41	21:24	20:32	19:26	18:23	16:36	16:29
47 08:13	09:25 (WEA H5)	07:23	06:24	06:19	05:32	05:19	05:45	06:29	07:15	08:02	07:53	08:24
48 17:07	09:35 (WEA H5)	18:00	18:45	20:34	21:18	21:41	21:22	20:30	19:23	18:21	16:35	16:29
49 08:11		07:21	06:22	06:17	05:31	05:19	05:46	06:31	07:17	07:04	07:54	08:25
50 17:09		18:02	18:47	20:36	21:19	21:41	21:21	20:28	19:21	17:19	16:34	16:30
51 08:10		07:19	06:19	06:15	05:30	05:20	05:48	06:32	07:18	07:06	07:56	08:25
52 17:10		18:03	18:49	20:37	21:20	21:41	21:20	20:26	19:19	17:17	16:33	16:31
53 08:09		07:17	06:17	06:13	05:29	05:20	05:49	06:34	07:20	07:07	07:57	08:25
54 17:12		18:05	18:50	20:39	21:21	21:41	21:18	20:24	19:17	17:15	16:32	16:31
55 08:08		07:15	06:15	06:11	05:28	05:20	05:50	06:35	07:22	07:09	07:59	08:26
56 17:14		18:07	18:52	20:40	21:22	21:41	21:17	20:22	19:15	17:13	16:31	16:32
57 08:06			07:13	06:09	05:27	05:21	05:52	06:37	07:23	07:11	08:00	08:26
58 17:15			19:53	20:42	21:24	21:40	21:16	20:20	19:12	17:11	16:31	16:33
59 08:05			07:11	06:08	05:26	05:22	05:53	06:38	07:25	07:12	08:02	08:26
60 17:17			19:55	20:43	21:25	21:40	21:14	20:18	19:10	17:10	16:30	16:34
61 08:04			07:09		05:25		05:54	06:40		07:14		08:26
62 17:19			19:56		21:26		21:13	20:16		17:08		16:35
Sonnenscheinstunden	267	282	368	412	477	488	492	448	380	334	273	253
astr.max.mögl.Beschattung	615										295	882
Red.Sonnenscheinwahrsch.	0,17										0,20	0,15
Reduktion Betriebsdauer	0,94										0,94	0,94
Reduktion Windrichtung	0,53										0,53	0,53
Gesamte Reduktion	0,09										0,10	0,07
Met.wahrsch.Beschattung	52										29	65

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) Schattenende (WEA mit letztem Schatten)
	Minuten mit Schatten	

Projekt:

Mainz Hechtsheim II

Lizenzierter Anwender:

Juwi AG

Energie-Allee 1

DE-55286 Wörrstadt

Mirjam Wöhlke / mirjam.woehlke@juwi.de

Berechnet:

12.06.2018 08:40/3.1.633

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wöm Schattenrezeptor: IO 05 - Mainz-Marienborn, Hinter dem Chaussee-Haus
Voraussetzungen für Berechnung des Schattenwurfs Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe
341 516 722 703 501 537 716 1.102 1.381 928 473 327 8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember	
1	08:26 16:36	10:19 (WEA H5) 10:39 (WEA H5)	08:02 17:21	07:13 18:08	07:06 19:58	06:06 20:45	05:24 21:27	05:22 21:40	05:56 21:11	06:41 20:13	07:26 19:08	07:16 17:06	08:03 16:29
2	08:26 16:37	10:20 (WEA H5) 10:39 (WEA H5)	08:01 17:22	07:11 18:10	07:04 20:00	06:04 20:46	05:24 21:28	05:23 21:40	05:57 21:10	06:43 20:11	07:28 19:06	07:17 17:04	08:04 16:29
3	08:26 16:38	10:21 (WEA H5) 10:39 (WEA H5)	07:59 17:24	07:09 18:12	07:02 20:01	06:02 20:48	05:23 21:29	05:23 21:39	05:58 21:08	06:44 20:09	07:29 19:04	07:19 17:03	08:06 16:28
4	08:26 16:39	10:22 (WEA H5) 10:38 (WEA H5)	07:58 17:26	07:07 18:13	07:00 20:03	06:00 20:49	05:22 21:30	05:24 21:39	06:00 21:07	06:46 20:07	07:31 19:02	07:21 17:01	08:07 16:28
5	08:26 16:40	10:24 (WEA H5) 10:37 (WEA H5)	07:56 17:27	07:05 18:15	06:58 20:04	05:59 20:51	05:22 21:31	05:25 21:39	06:01 21:05	06:47 20:05	07:32 18:59	07:22 16:59	08:08 16:27
6	08:25 16:41	10:26 (WEA H5) 10:36 (WEA H5)	07:55 17:29	07:02 18:17	06:56 20:06	05:57 20:52	05:21 21:32	05:26 21:38	06:03 21:03	06:49 20:03	07:34 18:57	07:24 16:58	08:09 16:27
7	08:25 16:42	10:29 (WEA H5) 10:33 (WEA H5)	07:53 17:31	07:00 18:18	06:54 20:07	05:55 20:54	05:20 21:32	05:26 21:38	06:04 21:02	06:50 20:01	07:35 18:55	07:26 16:56	08:11 16:27
8	08:25 16:44	10:33 (WEA H5) 17:33	07:52 18:20	06:58 20:09	06:51 20:55	05:54 20:52	05:20 21:33	05:27 21:37	06:06 21:00	06:52 19:58	07:37 18:53	07:27 16:55	08:12 16:26
9	08:24 16:45	10:37 (WEA H5) 17:34	07:50 18:21	06:56 20:11	06:49 20:57	05:52 20:54	05:20 21:34	05:28 21:37	06:07 20:58	06:53 19:56	07:38 18:51	07:29 16:53	08:13 16:26
10	08:24 16:46	10:38 (WEA H5) 17:34	07:48 18:21	06:54 20:11	06:47 20:57	05:51 20:54	05:19 21:34	05:29 21:37	06:09 20:58	06:55 19:56	07:40 18:51	07:31 16:53	08:14 16:26
11	08:23 16:48	10:39 (WEA H5) 17:35	07:47 18:22	06:52 20:12	06:45 20:58	05:49 20:58	05:19 21:35	05:30 21:36	06:10 20:57	06:56 19:54	07:42 18:49	07:32 16:52	08:15 16:26
12	08:23 16:49	10:40 (WEA H5) 17:36	07:45 18:23	06:50 20:13	06:43 20:59	05:48 20:59	05:19 21:36	05:31 21:35	06:11 20:55	06:58 19:52	07:43 18:47	07:34 16:50	08:16 16:26
13	08:22 16:50	10:41 (WEA H5) 17:37	07:43 18:24	06:48 20:14	06:41 21:01	05:46 21:01	05:18 21:36	05:32 21:35	06:13 20:53	06:59 19:50	07:45 18:45	07:35 16:49	08:17 16:26
14	08:22 16:51	10:42 (WEA H5) 17:38	07:42 18:25	06:45 20:15	06:39 21:02	05:45 21:02	05:18 21:37	05:33 21:34	06:14 20:51	07:00 19:48	07:46 18:42	07:37 16:47	08:18 16:26
15	08:21 16:52	10:43 (WEA H5) 17:39	07:40 18:26	06:43 20:16	06:37 21:03	05:43 21:03	05:18 21:38	05:34 21:33	06:16 20:49	07:02 19:45	07:48 18:40	07:39 16:46	08:19 16:26
16	08:20 16:53	10:44 (WEA H5) 17:40	07:38 18:27	06:35 20:17	06:30 21:04	05:42 21:04	05:18 21:39	05:35 21:33	06:17 20:46	07:03 19:41	07:49 18:36	07:40 16:44	08:19 16:26
17	08:19 16:54	10:45 (WEA H5) 17:41	07:36 18:28	06:33 20:18	06:27 21:05	05:40 21:05	05:18 21:40	05:36 21:34	06:19 20:44	07:05 19:39	07:51 18:34	07:42 16:42	08:20 16:26
18	08:18 16:55	10:46 (WEA H5) 17:42	07:34 18:29	06:31 20:19	06:25 21:06	05:39 21:06	05:18 21:41	05:38 21:35	06:20 20:44	07:06 19:39	07:53 18:34	07:44 16:42	08:21 16:26
19	08:18 16:56	10:47 (WEA H5) 17:43	07:32 18:30	06:29 20:20	06:23 21:07	05:38 21:07	05:18 21:42	05:39 21:36	06:22 20:44	07:08 19:37	07:54 18:32	07:45 16:41	08:22 16:27
20	08:17 17:01	10:48 (WEA H5) 17:44	07:31 18:31	06:27 20:21	06:21 21:08	05:36 21:08	05:18 21:43	05:40 21:37	06:23 20:44	07:09 19:37	07:56 18:32	07:47 16:41	08:22 16:27
21	08:16 17:02	10:49 (WEA H5) 17:45	07:30 18:32	06:25 20:22	06:19 21:09	05:35 21:09	05:18 21:44	05:41 21:38	06:25 20:44	07:11 19:37	07:58 18:32	07:48 16:41	08:23 16:27
22	08:15 17:03	10:50 (WEA H5) 17:46	07:29 18:33	06:23 20:23	06:17 21:10	05:34 21:10	05:18 21:45	05:42 21:39	06:26 20:44	07:12 19:37	07:59 18:32	07:50 16:41	08:23 16:27
23	08:14 17:04	10:51 (WEA H5) 17:47	07:27 18:34	06:21 20:24	06:15 21:11	05:33 21:11	05:19 21:46	05:44 21:38	06:28 20:44	07:14 19:37	08:01 18:32	07:51 16:41	08:24 16:27
24	08:12 17:05	10:52 (WEA H5) 17:48	07:25 18:35	06:19 20:25	06:13 21:12	05:32 21:12	05:19 21:47	05:45 21:39	06:29 20:44	07:15 19:37	08:02 18:32	07:53 16:41	08:24 16:27
25	08:11 17:06	10:53 (WEA H5) 17:49	07:23 18:36	06:17 20:26	06:11 21:13	05:31 21:13	05:19 21:48	05:46 21:40	06:31 20:44	07:17 19:37	08:04 18:32	07:54 16:41	08:25 16:27
26	08:10 17:07	10:54 (WEA H5) 17:50	07:21 18:37	06:15 20:27	06:09 21:14	05:30 21:14	05:20 21:49	05:47 21:40	06:32 20:44	07:18 19:37	08:06 18:32	07:56 16:41	08:25 16:27
27	08:09 17:08	10:55 (WEA H5) 17:51	07:20 18:38	06:13 20:28	06:07 21:15	05:29 21:15	05:20 21:50	05:49 21:41	06:34 20:44	07:20 19:37	08:08 18:32	07:57 16:41	08:25 16:27
28	08:08 17:09	10:56 (WEA H5) 17:52	07:19 18:39	06:11 20:29	06:05 21:16	05:28 21:16	05:20 21:51	05:50 21:42	06:35 20:44	07:21 19:37	08:09 18:32	07:58 16:41	08:26 16:27
29	08:06 17:10	10:57 (WEA H5) 17:53	07:17 18:40	06:09 20:30	06:03 21:17	05:27 21:17	05:21 21:52	05:51 21:43	06:37 20:44	07:23 19:37	08:11 18:32	08:00 16:41	08:26 16:27
30	08:05 17:11	10:58 (WEA H5) 17:54	07:15 18:41	06:07 20:31	06:01 21:18	05:26 21:18	05:22 21:53	05:53 21:44	06:38 20:44	07:25 19:37	08:12 18:32	08:02 16:41	08:26 16:27
31	08:04 17:12	10:59 (WEA H5) 17:55	07:13 18:42	06:05 20:32	05:59 21:19	05:25 21:19	05:24 21:54	05:54 21:45	06:40 20:44	07:26 19:37	08:13 18:32	08:03 16:41	08:26 16:27
Sonnenscheinstunden	267	282	368	412	477	488	492	448	380	334	273	253	584
astr.max.mögl.Beschattung	100												0,15
Red.Sonnenscheinwahrsch.	0,17												0,94
Reduktion Betriebsdauer	0,94												0,57
Reduktion Windrichtung	0,57												0,08
Gesamte Reduktion	0,09												46
Met.wahrsch.Beschattung	9												

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) Schattenende (WEA mit letztem Schatten)

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wömSchattenrezeptor: IO 06 - Mainz-Hechtsheim, Adam-Opel-Str. 5
 Voraussetzungen für Berechnung des Schattenwurfs Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
 1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe
 341 516 722 703 501 537 716 1.102 1.381 928 473 327 8.246
 Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:26	08:02	15:43 (WEA H5)	07:13	07:06	05:24
	16:36	17:20	16:21 (WEA H5)	18:08	19:58	21:27
2	08:26	08:01	15:43 (WEA H5)	07:11	07:04	05:23
	16:37	17:22	16:21 (WEA H5)	18:10	20:00	21:28
3	08:26	07:59	15:43 (WEA H5)	07:09	07:02	05:23
	16:38	17:24	16:22 (WEA H5)	18:12	20:01	21:29
4	08:26	07:58	15:43 (WEA H5)	07:07	07:00	05:22
	16:39	17:26	16:22 (WEA H5)	18:13	20:03	21:30
5	08:26	07:56	15:44 (WEA H5)	07:04	06:58	05:22
	16:40	17:27	16:22 (WEA H5)	18:15	20:04	21:31
6	08:25	07:55	15:44 (WEA H5)	07:02	06:56	05:21
	16:41	17:29	16:22 (WEA H5)	18:17	20:06	21:32
7	08:25	07:53	15:44 (WEA H5)	07:00	06:53	05:20
	16:42	17:31	16:21 (WEA H5)	18:18	20:07	21:32
8	08:25	07:52	15:45 (WEA H5)	06:58	06:51	05:20
	16:44	17:32	16:22 (WEA H5)	18:20	20:09	21:33
9	08:24	07:50	15:46 (WEA H5)	06:56	06:49	05:20
	16:45	17:34	16:21 (WEA H5)	18:21	20:11	21:34
10	08:24	07:48	15:46 (WEA H5)	06:54	06:47	05:19
	16:46	17:36	16:20 (WEA H5)	18:23	20:12	21:35
11	08:23	07:47	15:47 (WEA H5)	06:52	06:45	05:19
	16:48	17:38	16:19 (WEA H5)	18:25	20:14	21:35
12	08:23	07:45	15:49 (WEA H5)	06:50	06:43	05:19
	16:49	17:39	16:19 (WEA H5)	18:26	20:15	21:36
13	08:22	07:43	15:50 (WEA H5)	06:48	06:41	05:18
	16:50	17:41	16:18 (WEA H5)	18:28	20:17	21:37
14	08:21	07:41	15:52 (WEA H5)	06:45	06:39	05:18
	16:52	17:43	16:16 (WEA H5)	18:29	20:18	21:37
15	08:21	15:57 (WEA H5)	07:40	15:53 (WEA H5)	06:37	05:43
	16:53	15:59 (WEA H5)	17:45	16:14 (WEA H5)	18:31	20:20
16	08:20	15:52 (WEA H5)	07:38	15:56 (WEA H5)	06:41	05:42
	16:55	16:04 (WEA H5)	17:46	16:12 (WEA H5)	18:33	20:21
17	08:19	15:51 (WEA H5)	07:36	16:01 (WEA H5)	06:39	05:40
	16:56	16:06 (WEA H5)	17:48	16:07 (WEA H5)	18:34	20:23
18	08:18	15:49 (WEA H5)	07:34		06:37	05:39
	16:58	16:08 (WEA H5)	17:50		18:36	20:25
19	08:17	15:48 (WEA H5)	07:32		06:35	05:38
	16:59	16:10 (WEA H5)	17:51		18:37	20:26
20	08:17	15:47 (WEA H5)	07:30		06:32	05:36
	17:01	16:12 (WEA H5)	17:53		18:39	20:28
21	08:16	15:47 (WEA H5)	07:29		06:30	05:35
	17:02	16:13 (WEA H5)	17:55		18:41	20:29
22	08:15	15:46 (WEA H5)	07:27		06:28	05:34
	17:04	16:15 (WEA H5)	17:56		18:42	20:31
23	08:14	15:45 (WEA H5)	07:25		06:26	05:33
	17:05	16:15 (WEA H5)	17:58		18:44	20:32
24	08:12	15:45 (WEA H5)	07:23		06:24	05:32
	17:07	16:16 (WEA H5)	18:00		18:45	20:34
25	08:11	15:44 (WEA H5)	07:21		06:22	05:31
	17:09	16:17 (WEA H5)	18:02		18:47	20:35
26	08:10	15:44 (WEA H5)	07:19		06:19	05:30
	17:10	16:19 (WEA H5)	18:03		18:49	20:37
27	08:09	15:43 (WEA H5)	07:17		06:17	05:29
	17:12	16:19 (WEA H5)	18:05		18:50	20:39
28	08:08	15:44 (WEA H5)	07:15		06:15	05:28
	17:14	16:20 (WEA H5)	18:07		18:52	20:40
29	08:06	15:43 (WEA H5)			07:13	06:09
	17:15	16:20 (WEA H5)			19:53	20:42
30	08:05	15:43 (WEA H5)			07:11	06:08
	17:17	16:21 (WEA H5)			19:55	20:43
31	08:04	15:43 (WEA H5)			07:09	05:25
	17:19	16:21 (WEA H5)			19:56	21:26
Sonnenscheinstunden	267	282	368	412	477	488
astr.max.mögl.Beschattung	464	530				
Red.Sonnenscheinwahrsch.	0,17	0,29				
Reduktion Betriebsdauer	0,94	0,94				
Reduktion Windrichtung	0,72	0,72				
Gesamte Reduktion	0,12	0,20				
Met.wahrsch.Beschattung	54	105				

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: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wömSchattenrezeptor: IO 06 - Mainz-Hechtsheim, Adam-Opel-Str. 5
Voraussetzungen für Berechnung des Schattenwurfs

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
341	516	722	703	501	537	716	1.102	1.381	928	473	327	8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:22 21:40	05:56 21:11	06:41 20:13	07:26 19:08	07:16 17:06	15:16 (WEA H5) 15:50 (WEA H5)
2	05:23 21:40	05:57 21:10	06:43 20:11	07:28 19:06	34 17:04	15:15 (WEA H5) 15:51 (WEA H5)
3	05:23 21:39	05:58 21:08	06:44 20:09	07:29 19:04	36 17:19	15:14 (WEA H5) 15:51 (WEA H5)
4	05:24 21:39	06:00 21:07	06:46 20:07	07:31 19:01	37 17:03	15:14 (WEA H5) 15:51 (WEA H5)
5	05:25 21:39	06:01 21:05	06:47 20:05	07:32 18:59	37 17:01	15:14 (WEA H5) 15:52 (WEA H5)
6	05:26 21:38	06:03 21:03	06:49 20:03	07:34 18:57	38 16:59	15:14 (WEA H5) 15:52 (WEA H5)
7	05:26 21:38	06:04 21:02	06:50 20:01	07:35 18:55	38 16:58	15:14 (WEA H5) 15:53 (WEA H5)
8	05:27 21:37	06:06 21:00	06:52 19:58	07:37 18:53	39 16:56	15:13 (WEA H5) 15:52 (WEA H5)
9	05:28 21:37	06:07 20:58	06:53 19:56	07:38 18:51	39 16:55	15:13 (WEA H5) 15:52 (WEA H5)
10	05:29 21:36	06:08 20:56	06:54 19:54	07:40 18:49	39 16:53	15:14 (WEA H5) 15:52 (WEA H5)
11	05:30 21:35	06:10 20:55	06:56 19:52	07:41 18:47	38 16:52	15:14 (WEA H5) 15:52 (WEA H5)
12	05:31 21:34	06:11 20:53	06:57 19:50	07:43 18:45	38 16:50	15:15 (WEA H5) 15:53 (WEA H5)
13	05:32 21:34	06:13 20:51	06:59 19:47	07:45 18:42	38 16:49	15:15 (WEA H5) 15:52 (WEA H5)
14	05:33 21:33	06:14 20:49	07:00 19:45	07:46 18:40	37 16:47	15:15 (WEA H5) 15:52 (WEA H5)
15	05:34 21:32	06:16 20:47	07:02 19:43	07:48 18:38	37 16:46	15:16 (WEA H5) 15:52 (WEA H5)
16	05:35 21:31	06:17 20:46	07:03 19:41	07:49 18:36	36 16:45	15:17 (WEA H5) 15:51 (WEA H5)
17	05:36 21:30	06:19 20:44	07:05 19:39	07:51 18:34	34 16:43	15:17 (WEA H5) 15:51 (WEA H5)
18	05:37 21:29	06:20 20:42	07:06 19:36	07:53 18:32	33 16:42	15:18 (WEA H5) 15:50 (WEA H5)
19	05:39 21:28	06:22 20:40	07:08 19:34	07:54 18:30	32 16:41	15:20 (WEA H5) 15:50 (WEA H5)
20	05:40 21:27	06:23 20:38	07:09 19:32	07:56 18:28	30 16:40	15:21 (WEA H5) 15:50 (WEA H5)
21	05:41 21:26	06:25 20:36	07:11 19:30	07:57 18:26	29 16:39	15:22 (WEA H5) 15:50 (WEA H5)
22	05:42 21:25	06:26 20:34	07:12 19:28	07:59 18:24	26 16:38	15:23 (WEA H5) 15:48 (WEA H5)
23	05:44 21:24	06:28 20:32	07:14 19:25	08:01 18:22	25 16:37	15:25 (WEA H5) 15:47 (WEA H5)
24	05:45 21:22	06:29 20:30	07:15 19:23	08:02 18:21	22 16:36	15:26 (WEA H5) 15:45 (WEA H5)
25	05:46 21:21	06:31 20:28	07:17 19:21	08:04 17:19	19 16:35	15:29 (WEA H5) 15:44 (WEA H5)
26	05:47 21:20	06:32 20:26	07:18 19:19	08:06 17:17	15 16:34	15:30 (WEA H5) 15:42 (WEA H5)
27	05:49 21:18	06:34 20:24	07:20 19:17	08:07 17:15	12 16:33	15:35 (WEA H5) 15:39 (WEA H5)
28	05:50 21:17	06:35 20:22	07:21 19:15	08:09 17:13	4 16:32	15:39 (WEA H5) 15:37 (WEA H5)
29	05:51 21:16	06:37 20:20	07:23 19:12	08:11 17:11	25 16:31	15:46 (WEA H5) 15:48 (WEA H5)
30	05:53 21:14	06:38 20:18	07:24 19:10	08:12 17:10	29 16:30	15:47 (WEA H5) 15:48 (WEA H5)
31	05:54 21:13	06:40 20:15	07:26 19:08	08:14 17:08	31 16:30	15:49 (WEA H5) 15:49 (WEA H5)
Sonneneinstrahlung	492	448	380	334	273	253
astr.max.mögl.Beschattung				165	842	
Red.Sonneneinstrahlung				0,26	0,20	
Reduktion Betriebsdauer				0,94	0,94	
Reduktion Windrichtung				0,72	0,72	
Gesamte Reduktion				0,18	0,14	
Met.wahrsch.Beschattung				29	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)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Schattenende (WEA mit letztem Schatten)

Projekt:

Mainz Hechtsheim II

Lizenzierter Anwender:

Juwi AG

Energie-Allee 1

DE-55286 Wörrstadt

Mirjam Wöhlke / mirjam.woehlke@juwi.de

Berechnet:

12.06.2018 08:40/3.1.633

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wömSchattenrezeptor: IO 07 - Mainz-Hechtsheim, Am Weidezehnten
Voraussetzungen für Berechnung des Schattenwurfs Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe
341 516 722 703 501 537 716 1.102 1.381 928 473 327 8.246
Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

		Januar	Februar	März		April	Mai	Juni	Juli	August	September		Oktober		November	Dezember	
1	08:26	08:02	07:13			07:06	06:06	05:24	05:22	05:56	06:41		07:26		18:11 (WEA H5)	07:15	08:03
	16:36	17:20	18:08			19:58	20:45	21:27	21:40	21:11	20:13		19:08	15	18:26 (WEA H5)	17:06	16:29
2	08:26	08:01	07:11		17:38 (WEA H5)	07:04	06:04	05:23	05:23	05:57	06:43		07:27		18:09 (WEA H5)	07:17	08:04
	16:37	17:22	18:10	7	17:45 (WEA H5)	19:59	20:46	21:28	21:40	21:10	20:11		19:06	17	18:26 (WEA H5)	17:04	16:29
3	08:26	07:59	07:09		17:35 (WEA H5)	07:02	06:02	05:23	05:23	05:58	06:44		07:29		18:08 (WEA H5)	07:19	08:05
	16:38	17:24	18:12	12	17:47 (WEA H5)	20:01	20:48	21:29	21:39	21:08	20:09		19:04	19	18:27 (WEA H5)	17:03	16:28
4	08:26	07:58	07:07		17:33 (WEA H5)	07:00	06:00	05:22	05:24	06:00	06:46		07:31		18:08 (WEA H5)	07:20	08:07
	16:39	17:26	18:13	16	17:49 (WEA H5)	20:03	20:49	21:30	21:39	21:06	20:07		19:01	19	18:27 (WEA H5)	17:01	16:28
5	08:25	07:56	07:04		17:32 (WEA H5)	06:58	05:59	05:21	05:25	06:01	06:47		07:32		18:07 (WEA H5)	07:22	08:08
	16:40	17:27	18:15	18	17:50 (WEA H5)	20:04	20:51	21:31	21:39	21:05	20:05		18:59	20	18:27 (WEA H5)	16:59	16:27
6	08:25	07:55	07:02		17:31 (WEA H5)	06:56	05:57	05:21	05:26	06:03	06:48		07:34		18:07 (WEA H5)	07:24	08:09
	16:41	17:29	18:16	19	17:50 (WEA H5)	20:06	20:52	21:31	21:38	21:03	20:03		18:57	20	18:27 (WEA H5)	16:58	16:27
7	08:25	07:53	07:00		17:30 (WEA H5)	06:53	05:55	05:20	05:26	06:04	06:50		07:35		18:06 (WEA H5)	07:25	08:10
	16:42	17:31	18:18	20	17:50 (WEA H5)	20:07	20:54	21:32	21:38	21:02	20:00		18:55	20	18:26 (WEA H5)	16:56	16:27
8	08:25	07:52	06:58		17:30 (WEA H5)	06:51	05:54	05:20	05:27	06:06	06:51		07:37		18:07 (WEA H5)	07:27	08:12
	16:44	17:32	18:20	20	17:50 (WEA H5)	20:09	20:55	21:33	21:37	21:00	19:58		18:53	18	18:25 (WEA H5)	16:55	16:26
9	08:24	07:50	06:56		17:30 (WEA H5)	06:49	05:52	05:19	05:28	06:07	06:53		07:38		18:08 (WEA H5)	07:29	08:13
	16:45	17:34	18:21	20	17:50 (WEA H5)	20:10	20:57	21:34	21:36	20:58	19:56		18:51	16	18:24 (WEA H5)	16:53	16:26
10	08:24	07:48	06:54		17:30 (WEA H5)	06:47	05:50	05:19	05:29	06:08	06:54		07:40		18:08 (WEA H5)	07:30	08:14
	16:46	17:36	18:23	19	17:49 (WEA H5)	20:12	20:58	21:35	21:36	20:56	19:54		18:49	14	18:22 (WEA H5)	16:52	16:26
11	08:23	07:47	06:52		17:31 (WEA H5)	06:45	05:49	05:19	05:30	06:10	06:56		07:41		18:10 (WEA H5)	07:32	08:15
	16:48	17:38	18:25	17	17:48 (WEA H5)	20:14	21:00	21:35	21:35	20:55	19:52		18:47	10	18:20 (WEA H5)	16:50	16:26
12	08:23	07:45	06:50		17:31 (WEA H5)	06:43	05:47	05:19	05:31	06:11	06:57		07:43		18:07 (WEA H5)	07:34	08:16
	16:49	17:39	18:26	16	17:47 (WEA H5)	20:15	21:01	21:36	21:34	20:53	19:50		18:44		18:09	16:49	16:26
13	08:22	07:43	06:48		17:32 (WEA H5)	06:41	05:46	05:18	05:32	06:13	06:59		07:45		18:07	07:35	08:17
	16:50	17:41	18:28	13	17:45 (WEA H5)	20:17	21:03	21:37	21:34	20:51	19:47		18:42		18:07	16:47	16:26
14	08:21	07:41	06:45		17:35 (WEA H5)	06:39	05:44	05:18	05:33	06:14	07:00		07:46		18:07	07:37	08:18
	16:52	17:43	18:29	7	17:42 (WEA H5)	20:18	21:04	21:37	21:33	20:49	19:45		18:40		18:06	16:46	16:26
15	08:21	07:40	06:43		06:37	05:43	05:18	05:34	06:16	07:02			07:48		18:07	07:39	08:18
	16:53	17:45	18:31		20:20	21:05	21:38	21:32	20:47	19:43			18:38		18:06	16:45	16:26
16	08:20	07:38	06:41		06:35	05:42	05:18	05:35	06:17	07:03			07:49		18:07	07:40	08:19
	16:55	17:46	18:33		20:21	21:07	21:38	21:31	20:45	19:41			18:36		18:06	16:43	16:26
17	08:19	07:36	06:39		06:33	05:40	05:18	05:36	06:19	07:05			07:51		18:07	07:42	08:20
	16:56	17:48	18:34		20:23	21:08	21:39	21:30	20:44	19:39			18:34		18:06	16:42	16:26
18	08:18	07:34	06:37		06:31	05:39	05:18	05:37	06:20	07:06			07:53		18:07	07:43	08:21
	16:58	17:50	18:36		20:25	21:10	21:39	21:29	20:42	19:36			18:32		18:06	16:41	16:26
19	08:17	07:32	06:35		06:29	05:38	05:18	05:39	06:22	07:08			07:54		18:07	07:45	08:21
	16:59	17:51	18:37		20:26	21:11	21:39	21:28	20:40	19:34			18:30		18:06	16:40	16:27
20	08:16	07:30	06:32		06:27	05:36	05:18	05:40	06:23	07:09			07:56		18:07	07:47	08:22
	17:01	17:53	18:39		20:28	21:12	21:40	21:27	20:38	19:32			18:28		18:06	16:39	16:27
21	08:16	07:28	06:30		06:25	05:35	05:18	05:41	06:25	07:11			07:57		18:07	07:48	08:23
	17:02	17:55	18:41		20:29	21:14	21:40	21:26	20:36	19:30			18:26		18:06	16:38	16:28
22	08:15	07:27	06:28		06:23	05:34	05:18	05:42	06:26	07:12			07:59		18:07	07:50	08:23
	17:04	17:56	18:42		20:31	21:15	21:40	21:25	20:34	19:28			18:24		18:07	16:37	16:28
23	08:13	07:25	06:26		06:21	05:33	05:19	05:44	06:28	07:14			08:01		18:07	07:51	08:24
	17:05	17:58	18:44		20:32	21:16	21:40	21:23	20:32	19:25			18:22		18:07	16:36	16:29
24	08:12	07:23	06:24		06:19	05:32	05:19	05:45	06:29	07:15			08:02		18:07	07:53	08:24
	17:07	18:00	18:45		20:34	21:17	21:40	21:22	20:30	19:23			18:20		18:07	16:35	16:29
25	08:11	07:21	06:21		06:17	05:31	05:19	05:46	06:31	07:17			07:04		18:07	07:54	08:25
	17:09	18:02	18:47		20:35	21:19	21:41	21:21	20:28	19:21			17:19		18:07	16:34	16:30
26	08:10	07:19	06:19		06:15	05:30	05:19	05:47	06:32	07:18			07:06		18:07	07:56	08:25
	17:10	18:03	18:48		20:37	21:20	21:41	21:20	20:26	19:19			17:17		18:07	16:33	16:30
27	08:09	07:17	06:17		06:13	05:29	05:20	05:49	06:34	07:20			07:07		18:07	07:57	08:25
	17:12	18:05	18:50		20:38	21:21	21:41	21:18	20:24	19:17			17:15		18:07	16:32	16:31
28	08:08	07:15	06:15		06:11	05:28	05:20	05:50	06:35	07:21			07:09		18:07	07:59	08:25
	17:14	18:07	18:52		20:40	21:22	21:40	21:17	20:22	19:14			17:13		18:07	16:31	16:32
29	08:06		07:13		06:09	05:27	05:21	05:51	06:37	07:23			07:11		18:17 (WEA H5)	08:00	08:26
	17:15		19:53		20:42	21:23	21:40	21:16	20:20	19:12	4	18:21 (WEA H5)	17:11		18:21 (WEA H5)	16:31	16:33
30	08:05		07:11		06:07	05:26	05:21	05:53	06:38	07:24			07:12		18:13 (WEA H5)	08:01	08:26
	17:17		19:55		20:43	21:25	21:40	21:14	20:18	19:10	11	18:24 (WEA H5)	17:09		18:24 (WEA H5)	16:30	16:34
31	08:04		07:08			05:25		05:54	06:40				07:14			08:02	08:26
	17:19		19:56			21:26		21:13	20:15				17:08			16:35	16:35
Sonnenscheinstunden		267	282	368		412	477	488	492	448	380		334		273	253	
astr.max.mögl.Beschattung				204								15		188			
Red.Sonnenscheinwahrsch.				0,32								0,40		0,26			
Reduktion Betriebsdauer				0,94								0,94		0,94			
Reduktion Windrichtung				0,67								0,67		0,67			
Gesamte Reduktion				0,20								0,26		0,16			
Met.wahrsch.Beschattung				41								4		30			

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) Schattenende (WEA mit letztem Schatten)
	Minuten mit Schatten	

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wömSchattenrezeptor: IO 08 - Mainz-Hechtsheim, Baumschule Fuchs
Voraussetzungen für Berechnung des Schattenwurfs Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
341	516	722	703	501	537	716	1.102	1.381	928	473	327	8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März		April		Mai		Juni	
1	08:26 16:36	08:02 17:20	07:13 18:08		07:06 19:58		06:06 20:45		19:47 (WEA H5) 20:11 (WEA H5)	05:24 21:27
2	08:26 16:37	08:01 17:22	07:11 18:10		07:04 19:59		06:04 20:46	24	19:46 (WEA H5) 20:11 (WEA H5)	05:23 21:28
3	08:26 16:38	07:59 17:24	07:09 18:12	5	17:29 (GAIA genehmigt 01) 17:34 (GAIA genehmigt 01)	07:02 20:01	06:02 20:48	24	19:46 (WEA H5) 20:10 (WEA H5)	05:23 21:29
4	08:26 16:39	07:58 17:26	07:07 18:13	12	17:25 (GAIA genehmigt 01) 17:37 (GAIA genehmigt 01)	07:00 20:03	06:00 20:49	23	19:47 (WEA H5) 20:10 (WEA H5)	05:22 21:30
5	08:25 16:40	07:56 17:27	07:04 18:15	16	17:23 (GAIA genehmigt 01) 17:39 (GAIA genehmigt 01)	06:58 20:04	05:59 20:51	22	19:47 (WEA H5) 20:09 (WEA H5)	05:22 21:31
6	08:25 16:41	07:55 17:29	07:02 18:16	19	17:21 (GAIA genehmigt 01) 17:40 (GAIA genehmigt 01)	06:56 20:06	05:57 20:52	21	19:48 (WEA H5) 20:09 (WEA H5)	05:21 21:31
7	08:25 16:42	07:53 17:31	07:00 18:18	21	17:19 (GAIA genehmigt 01) 17:40 (GAIA genehmigt 01)	06:53 20:07	05:55 20:54	20	19:48 (WEA H5) 20:08 (WEA H5)	05:20 21:32
8	08:25 16:44	07:52 17:32	06:58 18:20	22	17:19 (GAIA genehmigt 01) 17:41 (GAIA genehmigt 01)	06:51 20:09	05:54 20:55	19	19:49 (WEA H5) 20:08 (WEA H5)	05:20 21:33
9	08:24 16:45	07:50 17:34	06:56 18:21	23	17:18 (GAIA genehmigt 01) 17:41 (GAIA genehmigt 01)	06:49 20:10	05:52 20:57	16	19:50 (WEA H5) 20:06 (WEA H5)	05:20 21:34
10	08:24 16:46	07:48 17:36	06:54 18:23	23	17:18 (GAIA genehmigt 01) 17:41 (GAIA genehmigt 01)	06:47 20:12	05:51 20:58	14	19:51 (WEA H5) 20:05 (WEA H5)	05:19 21:35
11	08:23 16:48	07:47 17:38	06:52 18:25	23	17:18 (GAIA genehmigt 01) 17:41 (GAIA genehmigt 01)	06:45 20:14	05:49 21:00	10	19:53 (WEA H5) 20:03 (WEA H5)	05:19 21:35
12	08:23 16:49	07:45 17:39	06:50 18:26	23	17:18 (GAIA genehmigt 01) 17:41 (GAIA genehmigt 01)	06:43 20:15	05:47 21:01	4	19:56 (WEA H5) 20:00 (WEA H5)	05:19 21:36
13	08:22 16:50	07:43 17:41	06:48 18:28	22	17:17 (GAIA genehmigt 01) 17:39 (GAIA genehmigt 01)	06:41 20:17	05:46 21:03			05:18 21:37
14	08:21 16:52	07:41 17:43	06:45 18:29	20	17:18 (GAIA genehmigt 01) 17:38 (GAIA genehmigt 01)	06:39 20:18	05:45 21:04			05:18 21:37
15	08:21 16:53	07:40 17:45	06:43 18:31	18	17:19 (GAIA genehmigt 01) 17:37 (GAIA genehmigt 01)	06:37 20:20	05:43 21:05			05:18 21:38
16	08:20 16:55	07:38 17:46	06:41 18:33	15	17:21 (GAIA genehmigt 01) 17:36 (GAIA genehmigt 01)	06:35 20:21	05:42 21:07			05:18 21:38
17	08:19 16:56	07:36 17:48	06:39 18:34	10	17:23 (GAIA genehmigt 01) 17:33 (GAIA genehmigt 01)	06:33 20:23	05:40 21:08			05:18 21:39
18	08:18 16:58	07:34 17:50	06:37 18:36			06:31 20:25	05:39 21:10			05:18 21:39
19	08:17 16:59	07:32 17:51	06:35 18:37			06:29 20:26	05:38 21:11			05:18 21:39
20	08:16 17:01	07:30 17:53	06:32 18:39			06:27 20:28	05:36 21:12			05:18 21:40
21	08:16 17:02	07:28 17:55	06:30 18:41			06:25 20:29	05:35 21:14			05:18 21:40
22	08:14 17:04	07:27 17:56	06:28 18:42			06:23 20:31	05:34 21:15			05:18 21:40
23	08:13 17:05	07:25 17:58	06:26 18:44			06:21 20:32	19:55 (WEA H5) 20:05 (WEA H5)	05:33 21:16		05:19 21:40
24	08:12 17:07	07:23 18:00	06:24 18:45			06:19 20:34	19:52 (WEA H5) 20:07 (WEA H5)	05:32 21:17		05:19 21:40
25	08:11 17:09	07:21 18:02	06:22 18:47			06:17 20:35	19:50 (WEA H5) 20:08 (WEA H5)	05:31 21:19		05:19 21:41
26	08:10 17:10	07:19 18:03	06:19 18:48			06:15 20:37	19:50 (WEA H5) 20:10 (WEA H5)	05:30 21:20		05:20 21:41
27	08:09 17:12	07:17 18:05	06:17 18:50			06:13 20:38	19:49 (WEA H5) 20:10 (WEA H5)	05:29 21:21		05:20 21:41
28	08:08 17:14	07:15 18:07	06:15 18:52			06:11 20:40	19:48 (WEA H5) 20:10 (WEA H5)	05:28 21:22		05:20 21:40
29	08:06 17:15		07:13 19:53			06:09 20:42	19:47 (WEA H5) 20:10 (WEA H5)	05:27 21:23		05:21 21:40
30	08:05 17:17		07:11 19:55			06:07 20:43	19:47 (WEA H5) 20:11 (WEA H5)	05:26 21:25		05:21 21:40
31	08:04 17:19		07:08 19:56				05:25 21:26			
Sonnenscheinstunden	267	282	368		412		477			488
astr.max.mögl.Beschattung			272		153		222			
Red.Sonnenscheinwahrsch.			0,32		0,40		0,45			
Reduktion Betriebsdauer			0,94		0,94		0,94			
Reduktion Windrichtung			0,67		0,57		0,57			
Gesamte Reduktion			0,21		0,22		0,25			
Met.wahrsch.Beschattung			56		34		55			

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) Schattenende (WEA mit letztem Schatten)

Projekt:

Mainz Hechtsheim II

Lizenzierter Anwender:

Juwi AG

Energie-Allee 1

DE-55286 Wörrstadt

Mirjam Wöhlke / mirjam.woehlke@juwi.de

Berechnet:

12.06.2018 08:40/3.1.633

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wömSchattenrezeptor: IO 08 - Mainz-Hechtsheim, Baumschule Fuchs
Voraussetzungen für Berechnung des Schattenwurfs Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe
341 516 722 703 501 537 716 1.102 1.381 928 473 327 8.246
Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember
1	05:22	05:56	20:05 (WEA H5)	06:41			07:26	17:57 (GAIA genehmigt 01)	07:15	08:03	
	21:40	21:11	7 20:12 (WEA H5)	20:13			19:08	22 18:19 (GAIA genehmigt 01)	17:06	16:29	
2	05:23	05:57	20:02 (WEA H5)	06:43			07:27	17:56 (GAIA genehmigt 01)	07:17	08:04	
	21:40	21:10	12 20:14 (WEA H5)	20:11			19:06	23 18:19 (GAIA genehmigt 01)	17:04	16:29	
3	05:23	05:58	20:00 (WEA H5)	06:44			07:29	17:56 (GAIA genehmigt 01)	07:19	08:05	
	21:39	21:08	15 20:15 (WEA H5)	20:09			19:04	23 18:19 (GAIA genehmigt 01)	17:03	16:28	
4	05:24	06:00	20:00 (WEA H5)	06:46			07:31	17:56 (GAIA genehmigt 01)	07:20	08:07	
	21:39	21:06	17 20:17 (WEA H5)	20:07			19:01	23 18:19 (GAIA genehmigt 01)	17:01	16:28	
5	05:25	06:01	19:58 (WEA H5)	06:47			07:32	17:55 (GAIA genehmigt 01)	07:22	08:08	
	21:39	21:05	20 20:18 (WEA H5)	20:05			18:59	23 18:18 (GAIA genehmigt 01)	16:59	16:27	
6	05:26	06:03	19:57 (WEA H5)	06:49			07:34	17:56 (GAIA genehmigt 01)	07:24	08:09	
	21:38	21:03	21 20:18 (WEA H5)	20:03			18:57	22 18:18 (GAIA genehmigt 01)	16:58	16:27	
7	05:26	06:04	19:57 (WEA H5)	06:50			07:35	17:56 (GAIA genehmigt 01)	07:25	08:10	
	21:38	21:02	22 20:19 (WEA H5)	20:01			18:55	20 18:16 (GAIA genehmigt 01)	16:56	16:27	
8	05:27	06:06	19:56 (WEA H5)	06:51			07:37	17:57 (GAIA genehmigt 01)	07:27	08:12	
	21:37	21:00	23 20:19 (WEA H5)	19:58			18:53	18 18:15 (GAIA genehmigt 01)	16:55	16:26	
9	05:28	06:07	19:56 (WEA H5)	06:53			07:38	17:59 (GAIA genehmigt 01)	07:29	08:13	
	21:36	20:58	24 20:20 (WEA H5)	19:56			18:51	14 18:13 (GAIA genehmigt 01)	16:53	16:26	
10	05:29	06:08	19:55 (WEA H5)	06:54			07:40	18:00 (GAIA genehmigt 01)	07:30	08:14	
	21:36	20:56	25 20:20 (WEA H5)	19:54			18:49	10 18:10 (GAIA genehmigt 01)	16:52	16:26	
11	05:30	06:10	19:55 (WEA H5)	06:56			07:41		07:32	08:15	
	21:35	20:55	24 20:19 (WEA H5)	19:52			18:47		16:50	16:26	
12	05:31	06:11	19:55 (WEA H5)	06:57			07:43		07:34	08:16	
	21:34	20:53	25 20:20 (WEA H5)	19:50			18:44		16:49	16:26	
13	05:32	06:13	19:55 (WEA H5)	06:59			07:45		07:35	08:17	
	21:34	20:51	24 20:19 (WEA H5)	19:47			18:42		16:47	16:26	
14	05:33	06:14	19:55 (WEA H5)	07:00			07:46		07:37	08:18	
	21:33	20:49	23 20:18 (WEA H5)	19:45			18:40		16:46	16:26	
15	05:34	06:16	19:56 (WEA H5)	07:02			07:48		07:39	08:18	
	21:32	20:47	22 20:18 (WEA H5)	19:43			18:38		16:45	16:26	
16	05:35	06:17	19:56 (WEA H5)	07:03			07:49		07:40	08:19	
	21:31	20:45	21 20:17 (WEA H5)	19:41			18:36		16:43	16:26	
17	05:36	06:19	19:57 (WEA H5)	07:05			07:51		07:42	08:20	
	21:30	20:44	19 20:16 (WEA H5)	19:39			18:34		16:42	16:26	
18	05:37	06:20	19:57 (WEA H5)	07:06			07:53		07:43	08:21	
	21:29	20:42	17 20:14 (WEA H5)	19:36			18:32		16:41	16:27	
19	05:39	06:22	19:59 (WEA H5)	07:08			07:54		07:45	08:21	
	21:28	20:40	14 20:13 (WEA H5)	19:34			18:30		16:40	16:27	
20	05:40	06:23	20:01 (WEA H5)	07:09			07:56		07:47	08:22	
	21:27	20:38	9 20:10 (WEA H5)	19:32			18:28		16:39	16:27	
21	05:41	06:25		07:11			07:57		07:48	08:23	
	21:26	20:36		19:30			18:26		16:38	16:28	
22	05:42	06:26		07:12			07:59		07:50	08:23	
	21:25	20:34		19:28			18:24		16:37	16:28	
23	05:44	06:28		07:14			08:01		07:51	08:24	
	21:23	20:32		19:25			18:22		16:36	16:29	
24	05:45	06:29		07:15			08:02		07:53	08:24	
	21:22	20:30		19:23			18:21		16:35	16:29	
25	05:46	06:31		07:17			07:04		07:54	08:25	
	21:21	20:28		19:21			17:19		16:34	16:30	
26	05:47	06:32		07:18		18:06 (GAIA genehmigt 01)	07:06		07:56	08:25	
	21:20	20:26		19:19	7	18:13 (GAIA genehmigt 01)	17:17		16:33	16:30	
27	05:49	06:34		07:20		18:03 (GAIA genehmigt 01)	07:07		07:57	08:25	
	21:18	20:24		19:17	14	18:17 (GAIA genehmigt 01)	17:15		16:32	16:31	
28	05:50	06:35		07:21		18:00 (GAIA genehmigt 01)	07:09		07:59	08:25	
	21:17	20:22		19:14	17	18:17 (GAIA genehmigt 01)	17:13		16:31	16:32	
29	05:51	06:37		07:23		17:59 (GAIA genehmigt 01)	07:11		08:00	08:26	
	21:16	20:20		19:12	20	18:19 (GAIA genehmigt 01)	17:11		16:31	16:33	
30	05:53	06:38		07:24		17:57 (GAIA genehmigt 01)	07:12		08:01	08:26	
	21:14	20:18		19:10	22	18:19 (GAIA genehmigt 01)	17:10		16:30	16:34	
31	05:54	06:40					07:14			08:26	
	21:13	20:15					17:08			16:35	
Sonnenscheinstunden	492	448		380			334		273	254	
astr.max.mögl.Beschattung			384		80		198				
Red.Sonnenscheinwahrsch.			0,48		0,40		0,26				
Reduktion Betriebsdauer			0,94		0,94		0,94				
Reduktion Windrichtung			0,57		0,67		0,67				
Gesamte Reduktion			0,26		0,26		0,16				
Met.wahrsch.Beschattung			101		21		33				

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) Schattenende (WEA mit letztem Schatten)
	Minuten mit Schatten	

Projekt:

Mainz Hechtsheim II

Lizenzierter Anwender:

Juwi AG

Energie-Allee 1

DE-55286 Wörrstadt

Mirjam Wöhlke / mirjam.woehlke@juwi.de

Berechnet:

12.06.2018 08:40/3.1.633

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneI01116AB_wömSchattenrezeptor: IO 09 - Mainz-Hechtsheim, Mögliches Wohnhaus
Voraussetzungen für Berechnung des Schattenwurfs Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
341	516	722	703	501	537	716	1.102	1.381	928	473	327	8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März		April	Mai	Juni			
1	08:26	15:17 (Klein-Winterheim II)	08:02	14:43 (GAIA genehmigt 01)	07:13	07:06	06:06	05:24						
	16:36	24 15:41 (W203)	17:20	67 16:32 (W279)	18:08	19:58	20:45	21:27						
2	08:26	15:18 (Klein-Winterheim II)	08:01	14:42 (GAIA genehmigt 01)	07:11	07:04	06:04	05:24						
	16:37	24 15:42 (W203)	17:22	67 16:31 (W279)	18:10	20:00	20:46	21:28						
3	08:26	15:19 (Klein-Winterheim II)	07:59	14:43 (GAIA genehmigt 01)	07:09	07:02	06:02	05:23						
	16:38	23 15:42 (W203)	17:24	66 16:32 (W279)	18:12	20:01	20:48	21:29						
4	08:26	15:20 (Klein-Winterheim II)	07:58	14:43 (GAIA genehmigt 01)	07:07	07:00	06:00	05:22						
	16:39	22 15:42 (W203)	17:26	63 16:30 (W279)	18:13	20:03	20:49	21:30						
5	08:25	14:56 (GAIA genehmigt 01)	07:56	14:44 (GAIA genehmigt 01)	07:04	06:58	05:59	05:22						
	16:40	28 15:43 (W203)	17:27	61 16:30 (W279)	18:15	20:04	20:51	21:31						
6	08:25	14:54 (GAIA genehmigt 01)	07:55	14:44 (GAIA genehmigt 01)	07:02	06:56	05:57	05:21						
	16:41	32 15:44 (W203)	17:29	55 16:27 (W279)	18:17	20:06	20:52	21:32						
7	08:25	14:52 (GAIA genehmigt 01)	07:53	14:44 (GAIA genehmigt 01)	07:00	06:53	05:55	05:20						
	16:42	35 15:44 (W203)	17:31	50 15:34 (GAIA genehmigt 01)	18:18	20:07	20:54	21:32						
8	08:25	14:52 (GAIA genehmigt 01)	07:52	14:45 (GAIA genehmigt 01)	06:58	06:51	05:54	05:20				20:17 (WEA H5)		
	16:44	38 15:45 (W203)	17:33	49 15:34 (GAIA genehmigt 01)	18:20	20:09	20:55	21:33	8			20:25 (WEA H5)		
9	08:24	14:50 (GAIA genehmigt 01)	07:50	14:46 (GAIA genehmigt 01)	06:56	06:49	05:52	05:20				20:14 (WEA H5)		
	16:45	41 15:45 (W203)	17:34	48 15:34 (GAIA genehmigt 01)	18:21	20:11	20:57	21:34	13			20:27 (WEA H5)		
10	08:24	14:49 (GAIA genehmigt 01)	07:48	14:46 (GAIA genehmigt 01)	06:54	06:47	05:51	05:19				20:13 (WEA H5)		
	16:46	43 15:45 (W203)	17:36	47 15:33 (GAIA genehmigt 01)	18:23	20:12	20:58	21:35	16			20:29 (WEA H5)		
11	08:23	14:49 (GAIA genehmigt 01)	07:47	14:47 (GAIA genehmigt 01)	06:52	06:45	05:49	05:19				20:12 (WEA H5)		
	16:48	46 15:46 (W203)	17:38	45 15:32 (GAIA genehmigt 01)	18:25	20:14	21:00	21:35	18			20:30 (WEA H5)		
12	08:23	14:48 (GAIA genehmigt 01)	07:45	14:48 (GAIA genehmigt 01)	06:50	06:43	05:48	05:19				20:11 (WEA H5)		
	16:49	48 15:46 (W203)	17:39	45 15:33 (GAIA genehmigt 01)	18:26	20:15	21:01	21:36	20			20:31 (WEA H5)		
13	08:22	14:47 (GAIA genehmigt 01)	07:43	14:49 (GAIA genehmigt 01)	06:48	06:41	05:46	05:18				20:10 (WEA H5)		
	16:50	49 15:46 (W203)	17:41	51 17:02 (W278)	18:28	20:17	21:03	21:37	22			20:32 (WEA H5)		
14	08:21	14:47 (GAIA genehmigt 01)	07:41	14:50 (GAIA genehmigt 01)	06:45	06:39	05:45	05:18				20:10 (WEA H5)		
	16:52	50 15:46 (W203)	17:43	53 17:04 (W278)	18:30	20:18	21:04	21:37	23			20:33 (WEA H5)		
15	08:21	14:47 (GAIA genehmigt 01)	07:40	14:51 (GAIA genehmigt 01)	06:43	06:37	05:43	05:18				20:10 (WEA H5)		
	16:53	50 15:46 (W203)	17:45	53 17:05 (W278)	18:31	20:20	21:05	21:38	24			20:34 (WEA H5)		
16	08:20	14:46 (GAIA genehmigt 01)	07:38	14:53 (GAIA genehmigt 01)	06:41	06:35	05:42	05:18				20:09 (WEA H5)		
	16:55	51 15:46 (W203)	17:46	52 17:06 (W278)	18:33	20:21	21:07	21:38	25			20:34 (WEA H5)		
17	08:19	14:45 (GAIA genehmigt 01)	07:36	14:54 (GAIA genehmigt 01)	06:39	06:33	05:40	05:18				20:09 (WEA H5)		
	16:56	52 15:46 (W203)	17:48	50 17:06 (W278)	18:34	20:23	21:08	21:39	26			20:35 (WEA H5)		
18	08:18	14:45 (GAIA genehmigt 01)	07:34	14:57 (GAIA genehmigt 01)	06:37	06:31	05:39	05:18				20:09 (WEA H5)		
	16:58	51 15:45 (W203)	17:50	47 17:07 (W278)	18:36	20:25	21:10	21:39	26			20:35 (WEA H5)		
19	08:17	14:45 (GAIA genehmigt 01)	07:32	15:00 (GAIA genehmigt 01)	06:35	06:29	05:38	05:18				20:09 (WEA H5)		
	16:59	50 15:44 (W203)	17:51	41 17:07 (W278)	18:37	20:26	21:11	21:39	27			20:36 (WEA H5)		
20	08:17	14:44 (GAIA genehmigt 01)	07:30	15:04 (GAIA genehmigt 01)	06:32	06:27	05:36	05:18				20:09 (WEA H5)		
	17:01	49 15:43 (W203)	17:53	33 17:07 (W278)	18:39	20:28	21:12	21:40	27			20:36 (WEA H5)		
21	08:16	14:44 (GAIA genehmigt 01)	07:29	16:47 (W278)	06:30	06:25	05:35	05:18				20:10 (WEA H5)		
	17:02	44 15:28 (GAIA genehmigt 01)	17:55	19 17:06 (W278)	18:41	20:29	21:14	21:40	27			20:37 (WEA H5)		
22	08:15	14:44 (GAIA genehmigt 01)	07:27	16:48 (W278)	06:28	06:23	05:34	05:18				20:10 (WEA H5)		
	17:04	45 15:29 (GAIA genehmigt 01)	17:57	18 17:06 (W278)	18:42	20:31	21:15	21:40	27			20:37 (WEA H5)		
23	08:13	14:43 (GAIA genehmigt 01)	07:25	16:48 (W278)	06:26	06:21	05:33	05:19				20:10 (WEA H5)		
	17:06	46 15:29 (GAIA genehmigt 01)	17:58	17 17:05 (W278)	18:44	20:32	21:16	21:40	27			20:37 (WEA H5)		
24	08:12	14:43 (GAIA genehmigt 01)	07:23	16:50 (W278)	06:24	06:19	05:32	05:19				20:10 (WEA H5)		
	17:07	53 16:25 (W279)	18:00	13 17:03 (W278)	18:45	20:34	21:18	21:40	26			20:36 (WEA H5)		
25	08:11	14:43 (GAIA genehmigt 01)	07:21	16:51 (W278)	06:22	06:17	05:31	05:19				20:11 (WEA H5)		
	17:09	58 16:28 (W279)	18:02	10 17:01 (W278)	18:47	20:35	21:19	21:41	26			20:37 (WEA H5)		
26	08:10	14:43 (GAIA genehmigt 01)	07:19		06:19	06:15	05:30	05:20				20:11 (WEA H5)		
	17:10	61 16:29 (W279)	18:03		18:49	20:37	21:20	21:41	26			20:37 (WEA H5)		
27	08:09	14:42 (GAIA genehmigt 01)	07:17		06:17	06:13	05:29	05:20				20:13 (WEA H5)		
	17:12	64 16:30 (W279)	18:05		18:50	20:39	21:21	21:41	24			20:37 (WEA H5)		
28	08:08	14:43 (GAIA genehmigt 01)	07:15		06:15	06:11	05:28	05:20				20:13 (WEA H5)		
	17:14	64 16:31 (W279)	18:07		18:52	20:40	21:22	21:40	23			20:36 (WEA H5)		
29	08:06	14:42 (GAIA genehmigt 01)			07:13	06:09	05:27	05:21				20:14 (WEA H5)		
	17:15	66 16:31 (W279)			19:53	20:42	21:23	21:40	22			20:36 (WEA H5)		
30	08:05	14:43 (GAIA genehmigt 01)			07:11	06:08	05:26	05:22				20:15 (WEA H5)		
	17:17	66 16:32 (W279)			19:55	20:43	21:25	21:40	20			20:35 (WEA H5)		
31	08:04	14:42 (GAIA genehmigt 01)			07:09		05:25							
	17:19	67 16:31 (W279)			19:56		21:26							
Sonnenscheinstunden	267		282			368	412	477	488					
astr. max.mögl.Beschattung	1440		1120									523		
Red.Sonnenscheinwahrsch.	0,17		0,29									0,38		
Reduktion Betriebsdauer	0,94		0,94									0,94		
Reduktion Windrichtung	0,73		0,72									0,56		
Gesamte Reduktion	0,12		0,20									0,21		
Met.wahrsch.Beschattung	172		226									108		

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) Schattenende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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Projekt:

Mainz Hechtsheim II

Lizenzierter Anwender:

Juwi AG

Energie-Allee 1

DE-55286 Wörrstadt

Mirjam Wöhlke / mirjam.woehlke@juwi.de

Berechnet:

12.06.2018 08:40/3.1.633

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wömSchattenrezeptor: IO 12 - Mainz-Hechtsheim, Adam-Opel-Str. 6
Voraussetzungen für Berechnung des Schattenwurfs

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
1,48	2,93	3,80	5,50	6,94	6,23	7,34	6,96	5,12	2,77	1,83	1,21

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
341	516	722	703	501	537	716	1.102	1.381	928	473	327	8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember
1 08:26	14:43 (WEA H5)	08:02	07:13	07:06	06:06	05:24	05:22	05:56	06:41	07:26	07:16	08:03
16:36	15:21 (WEA H5)	17:20	18:08	19:58	20:45	21:27	21:40	21:11	20:13	19:08	17:06	16:29
2 08:26	14:44 (WEA H5)	08:01	07:11	07:04	06:04	05:23	05:23	05:57	06:43	07:28	07:17	08:04
16:37	15:22 (WEA H5)	17:22	18:10	20:00	20:46	21:28	21:40	21:10	20:11	19:06	17:04	16:29
3 08:26	14:45 (WEA H5)	07:59	07:09	07:02	06:02	05:23	05:23	05:58	06:44	07:29	07:19	08:06
16:38	15:22 (WEA H5)	17:24	18:12	20:01	20:48	21:29	21:39	21:08	20:09	19:04	17:03	16:28
4 08:26	14:44 (WEA H5)	07:58	07:07	07:00	06:00	05:22	05:24	06:00	06:46	07:31	07:21	08:07
16:39	15:22 (WEA H5)	17:26	18:13	20:03	20:49	21:30	21:39	21:07	20:07	19:01	17:01	16:28
5 08:26	14:45 (WEA H5)	07:56	07:04	06:58	05:59	05:22	05:25	06:01	06:47	07:32	07:22	08:08
16:40	15:23 (WEA H5)	17:27	18:15	20:04	20:51	21:31	21:39	21:05	20:05	18:59	16:59	16:27
6 08:25	14:46 (WEA H5)	07:55	07:02	06:56	05:57	05:21	05:26	06:03	06:49	07:34	07:24	08:09
16:41	15:23 (WEA H5)	17:29	18:17	20:06	20:52	21:32	21:38	21:03	20:03	18:57	16:58	16:27
7 08:25	14:46 (WEA H5)	07:53	07:00	06:53	05:55	05:20	05:26	06:04	06:50	07:35	07:26	08:10
16:42	15:23 (WEA H5)	17:31	18:18	20:07	20:54	21:32	21:38	21:02	20:01	18:55	16:56	16:27
8 08:25	14:47 (WEA H5)	07:52	06:58	06:51	05:54	05:20	05:27	06:06	06:52	07:37	07:27	08:12
16:44	15:24 (WEA H5)	17:32	18:20	20:09	20:55	21:33	21:37	21:00	19:58	18:53	16:55	16:26
9 08:24	14:47 (WEA H5)	07:50	06:56	06:49	05:52	05:20	05:28	06:07	06:53	07:38	07:29	08:13
16:45	15:24 (WEA H5)	17:34	18:21	20:11	20:57	21:34	21:37	20:58	19:56	18:51	16:53	16:26
10 08:24	14:49 (WEA H5)	07:48	06:54	06:47	05:51	05:19	05:29	06:08	06:54	07:40	07:31	08:14
16:46	15:24 (WEA H5)	17:36	18:23	20:12	20:58	21:35	21:36	20:56	19:54	18:49	16:52	16:26
11 08:23	14:49 (WEA H5)	07:47	06:52	06:45	05:49	05:19	05:30	06:10	06:56	07:42	07:32	08:15
16:48	15:24 (WEA H5)	17:38	18:25	20:14	21:00	21:35	21:35	20:55	19:52	18:47	16:50	16:26
12 08:23	14:49 (WEA H5)	07:45	06:50	06:43	05:47	05:19	05:31	06:11	06:57	07:43	07:34	08:16
16:49	15:24 (WEA H5)	17:39	18:26	20:15	21:01	21:36	21:34	20:53	19:50	18:45	16:49	16:26
13 08:22	14:50 (WEA H5)	07:43	06:48	06:41	05:46	05:18	05:32	06:13	06:59	07:45	07:35	08:17
16:50	15:24 (WEA H5)	17:41	18:28	20:17	21:03	21:37	21:34	20:51	19:47	18:42	16:47	16:26
14 08:21	14:52 (WEA H5)	07:41	06:45	06:39	05:45	05:18	05:33	06:14	07:00	07:46	07:37	08:18
16:52	15:25 (WEA H5)	17:43	18:30	20:18	21:04	21:37	21:33	20:49	19:45	18:40	16:46	16:26
15 08:21	14:52 (WEA H5)	07:40	06:43	06:37	05:43	05:18	05:34	06:16	07:02	07:48	07:39	08:19
16:53	15:24 (WEA H5)	17:45	18:31	20:20	21:06	21:38	21:32	20:47	19:43	18:38	16:45	16:26
16 08:20	14:53 (WEA H5)	07:38	06:41	06:35	05:42	05:18	05:35	06:17	07:03	07:49	07:40	08:19
16:55	15:24 (WEA H5)	17:46	18:33	20:21	21:07	21:38	21:31	20:46	19:41	18:36	16:43	16:26
17 08:19	14:54 (WEA H5)	07:36	06:39	06:33	05:40	05:18	05:36	06:19	07:05	07:51	07:42	08:20
16:56	15:24 (WEA H5)	17:48	18:34	20:23	21:08	21:39	21:30	20:44	19:39	18:34	16:42	16:26
18 08:18	14:55 (WEA H5)	07:34	06:37	06:31	05:39	05:18	05:37	06:20	07:06	07:53	07:44	08:21
16:58	15:23 (WEA H5)	17:50	18:36	20:25	21:10	21:39	21:29	20:42	19:37	18:32	16:41	16:27
19 08:17	14:57 (WEA H5)	07:32	06:35	06:29	05:38	05:18	05:39	06:22	07:08	07:54	07:45	08:22
16:59	15:23 (WEA H5)	17:51	18:37	20:26	21:11	21:39	21:28	20:40	19:34	18:30	16:40	16:27
20 08:17	14:58 (WEA H5)	07:30	06:32	06:27	05:36	05:18	05:40	06:23	07:09	07:56	07:47	08:22
17:01	15:22 (WEA H5)	17:53	18:39	20:28	21:12	21:40	21:27	20:38	19:32	18:28	16:39	16:27
18 08:16	15:00 (WEA H5)	07:29	06:30	06:25	05:35	05:18	05:41	06:25	07:11	07:57	07:48	08:23
17:02	15:21 (WEA H5)	17:55	18:41	20:29	21:14	21:40	21:26	20:36	19:30	18:26	16:38	16:28
22 08:15	15:02 (WEA H5)	07:27	06:28	06:23	05:34	05:18	05:42	06:26	07:12	07:59	07:50	08:23
17:04	15:20 (WEA H5)	17:57	18:42	20:31	21:15	21:40	21:25	20:34	19:28	18:24	16:37	16:28
23 08:14	15:04 (WEA H5)	07:25	06:26	06:21	05:33	05:19	05:44	06:28	07:14	08:01	07:51	08:24
17:05	15:18 (WEA H5)	17:58	18:44	20:32	21:16	21:40	21:24	20:32	19:25	18:22	16:36	16:29
24 08:12	15:08 (WEA H5)	07:23	06:24	06:19	05:32	05:19	05:45	06:29	07:15	08:02	07:53	08:24
17:07	15:15 (WEA H5)	18:00	18:45	20:34	21:18	21:41	21:22	20:30	19:23	18:21	16:35	16:29
25 08:11	07:21	06:22	06:17	05:31	05:19	05:46	06:31	07:17	07:04	07:54	14:32 (WEA H5)	08:25
17:09	18:02	18:47	20:35	21:19	21:41	21:21	21:28	19:21	17:19	16:34	15:02 (WEA H5)	16:30
26 08:10	07:19	06:19	06:15	05:30	05:20	05:47	06:32	07:18	07:06	07:56	14:31 (WEA H5)	08:25
17:10	18:03	18:49	20:37	21:20	21:41	21:20	20:26	19:19	17:17	16:33	15:02 (WEA H5)	16:30
27 08:09	07:17	06:17	06:13	05:29	05:20	05:49	06:34	07:20	07:07	07:57	14:31 (WEA H5)	08:25
17:12	18:05	18:50	20:39	21:21	21:41	21:18	20:24	19:17	17:15	16:32	15:03 (WEA H5)	16:31
28 08:08	07:15	06:15	06:11	05:28	05:20	05:50	06:35	07:21	07:09	07:59	14:31 (WEA H5)	08:26
17:14	18:07	18:52	20:40	21:22	21:41	21:17	20:22	19:15	17:13	16:31	15:04 (WEA H5)	16:32
29 08:06	07:13	06:09	05:27	05:21	05:51	06:37	07:23	07:11	08:00	08:00	14:31 (WEA H5)	08:26
17:15	19:53	20:42	21:24	21:40	21:16	20:20	19:12	17:11	16:31	16:31	15:05 (WEA H5)	16:33
30 08:05	07:11	06:08	05:26	05:21	05:53	06:38	07:24	07:12	08:02	08:02	14:31 (WEA H5)	08:26
17:17	19:55	20:43	21:25	21:40	21:14	20:18	19:10	17:10	16:30	16:30	15:05 (WEA H5)	16:34
31 08:04	07:09	05:25	05:25	05:25	05:54	06:40	07:14	07:14	08:02	08:02	14:31 (WEA H5)	08:26
17:19	19:56	21:26	21:26	21:26	21:13	20:16	17:08	17:08	16:35	16:35	15:21 (WEA H5)	16:35
Sonnenscheinstunden	267	282	368	412	477	488	492	448	380	334	273	253
astr.max.mögl.Beschattung	740										332	1171
Red.Sonnenscheinwahrsch.	0,17										0,20	0,15
Reduktion Betriebsdauer	0,94										0,94	0,94
Reduktion Windrichtung	0,73										0,73	0,73
Gesamte Reduktion	0,12										0,14	0,10
Met.wahrsch.Beschattung	87										46	119

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: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wömSchattenrezeptor: IO 13 - Mainz-Hechtsheim, Adam-Opel-Str. 10
Voraussetzungen für Berechnung des Schattenwurfs Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
341	516	722	703	501	537	716	1.102	1.381	928	473	327	8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:26 16:36	08:02 17:20	15:26 (WEA H5) 17:13	07:13 18:08	07:06 19:58	05:24 21:27
2	08:26 16:37	08:01 17:22	15:25 (WEA H5) 17:11	07:11 18:10	07:04 20:00	05:23 21:28
3	08:26 16:38	07:59 17:24	15:26 (WEA H5) 17:09	07:09 18:12	07:02 20:01	05:23 21:29
4	08:26 16:39	07:58 17:26	15:26 (WEA H5) 17:07	07:07 18:13	07:00 20:03	05:22 21:30
5	08:26 16:40	07:56 17:27	15:27 (WEA H5) 17:04	07:04 18:15	06:58 20:04	05:22 21:31
6	08:25 16:41	07:55 17:29	15:27 (WEA H5) 17:02	07:02 18:17	06:56 20:06	05:21 21:32
7	08:25 16:42	07:53 17:31	15:28 (WEA H5) 17:00	07:00 18:18	06:53 20:07	05:20 21:32
8	08:25 16:44	15:36 (WEA H5) 17:33	15:29 (WEA H5) 17:33	06:58 18:20	06:51 20:09	05:20 21:33
9	08:24 16:45	15:34 (WEA H5) 17:34	15:30 (WEA H5) 17:34	06:56 18:21	06:49 20:11	05:20 21:34
10	08:24 16:46	15:33 (WEA H5) 17:36	15:30 (WEA H5) 17:36	06:54 18:23	06:47 20:12	05:19 21:35
11	08:23 16:48	15:32 (WEA H5) 17:38	15:31 (WEA H5) 17:38	06:52 18:25	06:45 20:14	05:19 21:35
12	08:23 16:49	15:30 (WEA H5) 17:39	15:33 (WEA H5) 17:39	06:50 18:26	06:43 20:15	05:19 21:36
13	08:22 16:50	15:29 (WEA H5) 17:41	15:35 (WEA H5) 17:41	06:48 18:28	06:41 20:17	05:18 21:37
14	08:21 16:52	15:30 (WEA H5) 17:43	15:37 (WEA H5) 17:43	06:45 18:30	06:39 20:18	05:18 21:37
15	08:21 16:53	15:29 (WEA H5) 17:45	15:39 (WEA H5) 17:45	06:43 18:31	06:37 20:20	05:18 21:38
16	08:20 16:55	15:28 (WEA H5) 17:46	15:42 (WEA H5) 18:33	06:41 18:33	06:35 20:21	05:18 21:38
17	08:19 16:56	15:28 (WEA H5) 17:48	15:56 (WEA H5) 18:39	06:39 18:34	06:33 20:23	05:18 21:39
18	08:18 16:58	15:27 (WEA H5) 17:50	15:59 (WEA H5) 18:41	06:37 18:36	06:31 20:25	05:18 21:39
19	08:17 16:59	15:27 (WEA H5) 17:51	15:57 (WEA H5) 18:42	06:35 18:37	06:29 20:26	05:18 21:39
20	08:17 17:01	15:27 (WEA H5) 17:53	15:56 (WEA H5) 18:43	06:32 18:39	06:27 20:28	05:18 21:40
21	08:16 17:02	15:26 (WEA H5) 17:55	15:54 (WEA H5) 18:44	06:30 18:41	06:25 20:29	05:18 21:40
22	08:15 17:04	15:26 (WEA H5) 17:57	15:53 (WEA H5) 18:45	06:28 18:42	06:23 20:31	05:18 21:40
23	08:14 17:05	15:25 (WEA H5) 17:58	15:52 (WEA H5) 18:46	06:26 18:44	06:21 20:32	05:19 21:40
24	08:12 17:07	15:25 (WEA H5) 18:00	15:51 (WEA H5) 18:47	06:24 18:45	06:19 20:34	05:19 21:41
25	08:11 17:09	15:25 (WEA H5) 18:02	15:50 (WEA H5) 18:48	06:22 18:47	06:17 20:35	05:19 21:41
26	08:10 17:10	15:26 (WEA H5) 18:03	15:49 (WEA H5) 18:49	06:19 18:49	06:15 20:37	05:20 21:41
27	08:09 17:12	15:25 (WEA H5) 18:05	15:48 (WEA H5) 18:50	06:17 18:50	06:13 20:39	05:20 21:41
28	08:08 17:14	15:25 (WEA H5) 18:07	15:47 (WEA H5) 18:51	06:15 18:52	06:11 20:40	05:20 21:41
29	08:06 17:15	15:25 (WEA H5) 18:08	15:46 (WEA H5) 18:53	07:13 19:53	06:09 20:42	05:21 21:40
30	08:05 17:17	15:25 (WEA H5) 18:09	15:45 (WEA H5) 18:55	07:11 19:55	06:08 20:43	05:21 21:40
31	08:04 17:19	15:25 (WEA H5) 18:08	15:44 (WEA H5) 19:56	07:09 19:56	05:25 21:26	21:40
Sonnenscheinstunden	267	282	368	412	477	488
astr.max.mögl.Beschattung	774	565				
Red.Sonnenscheinwahrsch.	0,17	0,29				
Reduktion Betriebsdauer	0,94	0,94				
Reduktion Windrichtung	0,72	0,72				
Gesamte Reduktion	0,12	0,20				
Met.wahrsch.Beschattung	90	112				

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) Schattenende (WEA mit letztem Schatten)

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wömSchattenrezeptor: IO 13 - Mainz-Hechtsheim, Adam-Opel-Str. 10
Voraussetzungen für Berechnung des Schattenwurfs

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe

341 516 722 703 501 537 716 1.102 1.381 928 473 327 8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:22 21:40	05:56 21:11	06:41 20:13	07:26 19:08	07:16 17:06	15:00 (WEA H5) 16:29
2	05:23 21:40	05:57 21:10	06:43 20:11	07:28 19:06	36 17:04	15:36 (WEA H5) 16:29
3	05:23 21:39	05:58 21:08	06:44 20:09	07:29 19:04	38 17:19	15:37 (WEA H5) 16:29
4	05:24 21:39	06:00 21:07	06:46 20:07	07:31 19:01	39 17:03	14:58 (WEA H5) 16:28
5	05:25 21:39	06:01 21:05	06:47 20:05	07:32 18:59	41 17:01	15:37 (WEA H5) 16:28
6	05:26 21:38	06:03 21:03	06:49 20:03	07:34 18:57	42 17:22	14:57 (WEA H5) 16:27
7	05:26 21:38	06:04 21:02	06:50 20:01	07:35 18:55	42 16:59	15:39 (WEA H5) 16:27
8	05:27 21:37	06:06 21:00	06:52 19:58	07:37 18:53	43 17:24	14:57 (WEA H5) 16:26
9	05:28 21:37	06:07 20:58	06:53 19:56	07:38 18:51	43 16:58	15:39 (WEA H5) 16:26
10	05:29 21:36	06:08 20:56	06:54 19:54	07:40 18:49	44 16:53	14:56 (WEA H5) 16:26
11	05:30 21:35	06:10 20:55	06:56 19:52	07:41 18:47	44 16:30	15:40 (WEA H5) 16:26
12	05:31 21:34	06:11 20:53	06:57 19:50	07:43 18:45	44 16:52	14:57 (WEA H5) 16:26
13	05:32 21:34	06:13 20:51	06:59 19:47	07:45 18:42	44 16:49	15:41 (WEA H5) 16:26
14	05:33 21:33	06:14 20:49	07:00 19:45	07:46 18:40	43 16:46	14:57 (WEA H5) 16:26
15	05:34 21:32	06:16 20:47	07:02 19:43	07:48 18:38	43 16:39	15:40 (WEA H5) 16:26
16	05:35 21:31	06:17 20:46	07:03 19:41	07:49 18:36	42 16:45	14:59 (WEA H5) 16:26
17	05:36 21:30	06:19 20:44	07:05 19:39	07:51 18:34	41 16:43	15:40 (WEA H5) 16:26
18	05:37 21:29	06:20 20:42	07:06 19:37	07:53 18:32	41 16:42	14:58 (WEA H5) 16:26
19	05:39 21:28	06:22 20:40	07:08 19:34	07:54 18:30	40 16:41	15:39 (WEA H5) 16:27
20	05:40 21:27	06:23 20:38	07:09 19:32	07:56 18:28	40 16:40	15:00 (WEA H5) 16:27
21	05:41 21:26	06:25 20:36	07:11 19:30	07:57 18:26	39 16:39	15:01 (WEA H5) 16:27
22	05:42 21:25	06:26 20:34	07:12 19:28	07:59 18:24	38 16:38	15:01 (WEA H5) 16:28
23	05:44 21:24	06:28 20:32	07:14 19:25	08:01 18:22	36 16:37	15:03 (WEA H5) 16:28
24	05:45 21:22	06:29 20:30	07:15 19:23	08:02 18:21	34 16:36	15:39 (WEA H5) 16:29
25	05:46 21:21	06:31 20:28	07:17 19:21	08:04 17:19	33 16:35	15:04 (WEA H5) 16:29
26	05:47 21:20	06:32 20:26	07:18 19:19	08:06 17:17	31 16:34	15:38 (WEA H5) 16:30
27	05:49 21:18	06:34 20:24	07:20 19:17	08:07 17:15	30 16:33	15:06 (WEA H5) 16:30
28	05:50 21:17	06:35 20:22	07:21 19:15	08:09 17:13	28 16:32	15:36 (WEA H5) 16:31
29	05:51 21:16	06:37 20:20	07:23 19:12	08:11 17:11	26 16:31	15:09 (WEA H5) 16:32
30	05:53 21:14	06:38 20:18	07:24 19:10	08:12 17:10	26 16:31	15:35 (WEA H5) 16:32
31	05:54 21:13	06:40 20:16	07:26 19:08	08:14 17:08	22 16:30	15:10 (WEA H5) 16:33
Sonneneinstrahlung	492	448	380	334	273	253
astr.max.mögl.Beschattung				165	1131	58
Red.Sonneneinstrahlung				0,26	0,20	0,15
Reduktion Betriebsdauer				0,94	0,94	0,94
Reduktion Windrichtung				0,72	0,72	0,72
Gesamte Reduktion				0,17	0,14	0,10
Met.wahrsch.Beschattung				29	154	6

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)

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wömSchattenrezeptor: IO 14 - Mainz-Hechtsheim, Adam-Opel-Str. 8
Voraussetzungen für Berechnung des Schattenwurfs

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
341	516	722	703	501	537	716	1.102	1.381	928	473	327	8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:26 16:36 37	14:57 (WEA H5) 08:02 15:34 (WEA H5) 17:20 14:57 (WEA H5) 08:01	15:17 (WEA H5) 07:13 15:36 (WEA H5) 18:08 15:20 (WEA H5) 07:11	07:06 19:58 07:04	06:06 20:45 20:04	05:24 21:27 05:23
2	08:26 16:37 38	15:35 (WEA H5) 17:22 14:58 (WEA H5) 07:59 15:36 (WEA H5) 17:24	15:32 (WEA H5) 18:10 07:09 18:12	20:00 07:02 20:01	20:46 06:02 20:48	21:28 05:23 21:29
3	08:26 16:38 38	14:57 (WEA H5) 07:58 15:36 (WEA H5) 17:26 14:58 (WEA H5) 07:56	07:07 18:13 07:04	07:00 20:03 06:58	06:00 20:49 20:51	05:22 21:30 21:31
4	08:26 16:40 39	15:37 (WEA H5) 17:27 14:59 (WEA H5) 07:55 15:38 (WEA H5) 17:29	18:15 07:02 18:17	20:04 06:56 20:06	20:51 05:57 20:52	21:31 05:21 21:32
5	08:25 16:41 39	15:38 (WEA H5) 17:29 14:59 (WEA H5) 07:53 15:38 (WEA H5) 17:31	20:06 06:53 18:18	20:52 05:55 20:07	21:32 05:20 20:54	21:32 05:19 05:20
6	08:25 16:42 39	15:38 (WEA H5) 17:31 14:59 (WEA H5) 07:52 15:39 (WEA H5) 17:32	06:58 18:20 06:56	06:51 20:09 06:49	05:54 20:55 05:52	05:20 21:33 05:20
7	08:24 16:44 40	14:59 (WEA H5) 07:50 15:39 (WEA H5) 17:34 15:00 (WEA H5) 07:48	18:21 06:54 18:23	20:11 06:47 20:12	20:57 05:51 20:58	21:34 05:19 21:35
8	08:24 16:46 40	15:40 (WEA H5) 17:36 15:00 (WEA H5) 07:47 15:40 (WEA H5) 17:38	18:23 06:52 18:25	20:12 06:45 20:14	20:58 05:49 21:00	21:35 05:19 21:35
9	08:23 16:48 40	15:40 (WEA H5) 17:38 15:00 (WEA H5) 07:45 15:40 (WEA H5) 17:39	06:50 18:26 06:48	06:43 20:15 06:41	05:47 21:01 05:46	05:19 21:36 05:18
10	08:23 16:49 40	15:40 (WEA H5) 17:39 15:00 (WEA H5) 07:43 15:40 (WEA H5) 17:41	06:48 18:28 06:45	06:41 20:17 06:39	05:46 21:03 05:45	05:18 21:37 05:18
11	08:21 16:52 41	15:01 (WEA H5) 07:41 15:42 (WEA H5) 17:43 15:02 (WEA H5) 07:40	18:30 06:43 18:31	20:18 06:37 20:20	21:04 05:43 21:06	21:37 05:18 21:38
12	08:21 16:53 40	15:42 (WEA H5) 17:45 15:02 (WEA H5) 07:38 15:42 (WEA H5) 17:46	18:31 06:41 18:33	21:06 05:42 20:21	21:38 05:18 21:07	21:38 05:18 21:38
13	08:20 16:55 40	15:02 (WEA H5) 07:38 15:42 (WEA H5) 17:46 15:02 (WEA H5) 07:36	06:41 18:33 06:39	05:42 20:21 06:33	21:07 05:18 05:40	21:38 05:18 05:18
14	08:19 16:56 40	15:02 (WEA H5) 07:36 15:42 (WEA H5) 17:48 15:03 (WEA H5) 07:34	06:39 18:34 06:37	06:33 20:23 06:31	05:40 21:08 05:39	05:18 21:39 05:18
15	08:18 16:58 39	15:03 (WEA H5) 07:34 15:42 (WEA H5) 17:50 15:03 (WEA H5) 07:32	06:37 18:36 06:35	06:31 20:25 06:29	05:39 21:10 05:38	05:18 21:39 05:18
16	08:17 16:59 40	15:03 (WEA H5) 07:32 15:43 (WEA H5) 17:51 15:04 (WEA H5) 07:30	06:35 18:37 06:32	06:29 20:26 06:27	05:38 21:11 05:36	05:18 21:39 05:18
17	08:17 17:01 39	15:04 (WEA H5) 07:30 15:43 (WEA H5) 17:53 15:05 (WEA H5) 07:29	06:32 18:39 06:30	06:27 20:28 06:25	05:36 21:12 05:35	05:18 21:40 05:18
18	08:16 17:02 38	15:05 (WEA H5) 07:29 15:43 (WEA H5) 17:55 15:05 (WEA H5) 07:27	06:30 18:41 06:28	06:25 20:29 06:23	05:35 21:14 05:34	05:18 21:40 05:18
19	08:15 17:04 38	15:05 (WEA H5) 07:27 15:43 (WEA H5) 17:57 15:05 (WEA H5) 07:25	06:28 18:42 06:26	06:23 20:31 06:21	05:34 21:15 05:33	05:18 21:40 05:19
20	08:14 17:05 37	15:06 (WEA H5) 07:23 15:42 (WEA H5) 18:00 15:07 (WEA H5) 07:21	06:24 18:44 06:22	06:19 20:32 06:17	05:32 21:16 05:31	05:19 21:40 05:19
21	08:12 17:07 36	15:06 (WEA H5) 07:23 15:42 (WEA H5) 18:00 15:07 (WEA H5) 07:21	06:24 18:45 06:22	06:19 20:34 06:17	05:32 21:18 05:31	05:19 21:41 05:19
22	08:11 17:09 35	15:07 (WEA H5) 07:21 15:42 (WEA H5) 18:02 15:09 (WEA H5) 07:19	06:22 18:47 06:19	06:17 20:35 06:15	05:31 21:19 05:30	05:19 21:41 05:20
23	08:10 17:10 33	15:09 (WEA H5) 07:19 15:42 (WEA H5) 18:03 15:09 (WEA H5) 07:17	06:19 18:49 06:17	06:15 20:37 06:13	05:30 21:20 05:29	05:20 21:41 05:20
24	08:09 17:12 32	15:09 (WEA H5) 07:17 15:41 (WEA H5) 18:05 15:11 (WEA H5) 07:15	06:17 18:50 06:15	06:13 20:39 06:11	05:29 21:21 05:28	05:20 21:41 05:20
25	08:08 17:14 30	15:11 (WEA H5) 07:15 15:41 (WEA H5) 18:07 15:11 (WEA H5) 07:15	06:15 18:52 07:13	06:11 20:40 06:09	05:28 21:22 05:27	05:20 21:41 05:21
26	08:06 17:15 28	15:11 (WEA H5) 07:15 15:39 (WEA H5) 18:07 15:13 (WEA H5) 07:15	07:13 19:53 07:11	06:09 20:42 06:08	05:27 21:24 05:26	05:21 21:40 05:21
27	08:05 17:17 26	15:13 (WEA H5) 07:15 15:39 (WEA H5) 18:07 15:15 (WEA H5) 07:15	07:11 19:55 07:09	06:08 20:43 07:09	05:26 21:25 05:25	05:21 21:40 05:21
28	08:04 17:19 22	15:15 (WEA H5) 07:15 15:37 (WEA H5) 18:07 15:15 (WEA H5) 07:15	07:09 19:56 07:09	06:08 20:43 07:09	05:25 21:26 05:25	05:21 21:40 05:21
Sonneneinstunden	267	282	368	412	477	488
astr.max.mögl.Beschattung	1143	31				
Red.Sonneneinstunden	0,17	0,29				
Reduktion Betriebsdauer	0,94	0,94				
Reduktion Windrichtung	0,73	0,73				
Gesamte Reduktion	0,12	0,20				
Met.wahrsch.Beschattung	134	6				

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) Schattenende (WEA mit letztem Schatten)

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wömSchattenrezeptor: IO 14 - Mainz-Hechtsheim, Adam-Opel-Str. 8
 Voraussetzungen für Berechnung des Schattenwurfs

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
 1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe
 341 516 722 703 501 537 716 1.102 1.381 928 473 327 8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli	August	September	Oktober	November	Dezember
1	05:22 21:40	05:56 21:11	06:41 20:13	07:26 19:08	07:16 17:06	08:03 16:29
2	05:23 21:40	05:57 21:10	06:43 20:11	07:28 19:06	07:17 17:04	08:04 16:29
3	05:23 21:39	05:58 21:08	06:44 20:09	07:29 19:04	07:19 17:03	08:06 16:28
4	05:24 21:39	06:00 21:07	06:46 20:07	07:31 19:01	07:21 17:01	08:07 16:28
5	05:25 21:39	06:01 21:05	06:47 20:05	07:32 18:59	07:22 16:59	08:08 16:27
6	05:26 21:38	06:03 21:03	06:49 20:03	07:34 18:57	07:24 16:58	08:09 16:27
7	05:26 21:38	06:04 21:02	06:50 20:01	07:35 18:55	07:26 16:56	08:10 16:27
8	05:27 21:37	06:06 21:00	06:52 19:58	07:37 18:53	07:27 16:55	08:12 16:26
9	05:28 21:37	06:07 20:58	06:53 19:56	07:38 18:51	07:29 16:53	08:13 16:26
10	05:29 21:36	06:08 20:56	06:54 19:54	07:40 18:49	07:31 16:52	08:14 16:26
11	05:30 21:35	06:10 20:55	06:56 19:52	07:42 18:47	07:32 16:50	08:15 16:26
12	05:31 21:34	06:11 20:53	06:57 19:50	07:43 18:45	07:34 16:49	08:16 16:26
13	05:32 21:34	06:13 20:51	06:59 19:47	07:45 18:42	07:35 16:47	08:17 16:26
14	05:33 21:33	06:14 20:49	07:00 19:45	07:46 18:40	07:37 16:46	08:18 16:26
15	05:34 21:32	06:16 20:47	07:02 19:43	07:48 18:38	07:39 16:45	08:19 16:26
16	05:35 21:31	06:17 20:46	07:03 19:41	07:49 18:36	07:40 16:43	08:19 16:26
17	05:36 21:30	06:19 20:44	07:05 19:39	07:51 18:34	07:42 16:42	08:20 16:26
18	05:37 21:29	06:20 20:42	07:06 19:37	07:53 18:32	07:44 16:41	08:21 16:27
19	05:39 21:28	06:22 20:40	07:08 19:34	07:54 18:30	07:45 16:40	08:22 16:27
20	05:40 21:27	06:23 20:38	07:09 19:32	07:56 18:28	07:47 16:39	08:22 16:27
21	05:41 21:26	06:25 20:36	07:11 19:30	07:57 18:26	07:48 16:38	08:23 16:28
22	05:42 21:25	06:26 20:34	07:12 19:28	07:59 18:24	07:50 16:37	08:23 16:28
23	05:44 21:24	06:28 20:32	07:14 19:25	08:01 18:22	07:51 16:36	08:24 16:29
24	05:45 21:22	06:29 20:30	07:15 19:23	08:02 18:21	07:53 16:35	08:24 16:29
25	05:46 21:21	06:31 20:28	07:17 19:21	08:04 18:19	07:54 16:34	08:25 16:30
26	05:47 21:20	06:32 20:26	07:18 19:19	08:06 18:17	07:56 16:33	08:25 16:30
27	05:49 21:18	06:34 20:24	07:20 19:17	08:07 18:15	07:57 16:32	08:25 16:31
28	05:50 21:17	06:35 20:22	07:21 19:15	08:09 18:13	07:59 16:31	08:26 16:32
29	05:51 21:16	06:37 20:20	07:23 19:12	08:11 18:11	08:00 16:31	08:26 16:33
30	05:53 21:14	06:38 20:18	07:24 19:10	08:12 18:10	08:02 16:30	08:26 16:34
31	05:54 21:13	06:40 20:16		08:14 17:08		08:26 16:35
Sonnenscheinstunden	492	448	380	334	273	253
astr.max.mögl.Beschattung					748	1147
Red.Sonnenscheinwahrsch.					0,20	0,15
Reduktion Betriebsdauer					0,94	0,94
Reduktion Windrichtung					0,73	0,73
Gesamte Reduktion					0,14	0,10
Met.wahrsch.Beschattung					103	116

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

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

Projekt:

Mainz Hechtsheim II

Lizenzierter Anwender:

Juwi AG

Energie-Allee 1

DE-55286 Wörrstadt

Mirjam Wöhlke / mirjam.woehlke@juwi.de

Berechnet:

12.06.2018 08:40/3.1.633

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneI01116AB_wömSchattenrezeptor: IO 15 - Klein-Winternheim, Hechtsheimer Berg 53
Voraussetzungen für Berechnung des Schattenwurfs Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
341	516	722	703	501	537	716	1.102	1.381	928	473	327	8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni	
1	08:26	08:58 (Klein-Winterheim II) 08:02	07:13	07:06	06:06	06:29 (WEA H5) 05:24	
2	16:36	14 09:12 (Klein-Winterheim II) 17:21	18:08	19:58	20:45	7 06:36 (WEA H5) 21:27	
3	08:26	08:58 (Klein-Winterheim II) 08:01	07:11	07:04	06:04	06:27 (WEA H5) 05:24	
4	16:37	15 09:13 (Klein-Winterheim II) 17:22	18:10	20:00	20:46	10 06:37 (WEA H5) 21:28	
5	08:26	08:58 (Klein-Winterheim II) 07:59	07:09	07:02	06:02	06:26 (WEA H5) 05:23	
6	16:38	16 09:14 (Klein-Winterheim II) 17:24	18:12	20:01	20:48	12 06:38 (WEA H5) 21:29	
7	08:26	08:58 (Klein-Winterheim II) 07:58	07:07	07:00	06:01	06:24 (WEA H5) 05:22	
8	16:39	16 09:14 (Klein-Winterheim II) 17:26	18:13	20:03	20:49	14 06:38 (WEA H5) 21:30	
9	08:26	08:58 (Klein-Winterheim II) 07:56	07:05	06:58	05:59	06:22 (WEA H5) 05:22	
10	16:40	17 09:15 (Klein-Winterheim II) 17:27	18:15	20:04	20:51	16 06:38 (WEA H5) 21:31	
11	08:25	08:59 (Klein-Winterheim II) 07:55	07:03	06:56	05:57	06:21 (WEA H5) 05:21	
12	16:41	17 09:16 (Klein-Winterheim II) 17:29	18:17	20:06	20:52	18 06:39 (WEA H5) 21:32	
13	08:25	08:58 (Klein-Winterheim II) 07:53	07:00	06:54	05:56	06:19 (WEA H5) 05:21	
14	16:43	18 09:16 (Klein-Winterheim II) 17:31	18:18	20:07	20:54	20 06:39 (WEA H5) 21:32	
15	08:25	08:59 (Klein-Winterheim II) 07:52	06:58	06:51	05:54	06:18 (WEA H5) 05:20	
16	16:44	19 09:18 (Klein-Winterheim II) 17:33	18:20	20:09	20:55	21 06:39 (WEA H5) 21:33	
17	08:24	08:59 (Klein-Winterheim II) 07:50	06:56	06:49	05:52	06:16 (WEA H5) 05:20	
18	16:45	19 09:18 (Klein-Winterheim II) 17:34	18:22	20:11	20:57	23 06:39 (WEA H5) 21:34	
19	08:24	08:59 (Klein-Winterheim II) 07:48	06:54	06:47	05:51	06:15 (WEA H5) 05:19	
20	16:46	20 09:19 (Klein-Winterheim II) 17:36	18:23	20:12	20:58	24 06:39 (WEA H5) 21:35	
21	08:23	08:59 (Klein-Winterheim II) 07:47	06:52	07:14 (W278) 06:45	05:49	06:15 (WEA H5) 05:19	
22	16:48	20 09:19 (Klein-Winterheim II) 17:38	18:25	1 07:15 (W278) 20:14	21:00	23 06:38 (WEA H5) 21:36	
23	08:23	08:59 (Klein-Winterheim II) 07:45	06:50	07:12 (W278) 06:43	05:48	06:16 (WEA H5) 05:19	
24	16:49	20 09:19 (Klein-Winterheim II) 17:40	18:26	7 07:19 (W278) 20:15	21:01	22 06:38 (WEA H5) 21:36	
25	08:22	08:59 (Klein-Winterheim II) 07:43	06:48	07:10 (W278) 06:41	05:46	06:17 (WEA H5) 05:18	
26	16:50	21 09:20 (Klein-Winterheim II) 17:41	18:28	11 07:21 (GAIA genehmigt 01) 20:17	21:03	21 06:38 (WEA H5) 21:37	
27	08:22	09:00 (Klein-Winterheim II) 07:42	06:46	07:07 (W278) 06:39	05:45	06:16 (WEA H5) 05:18	
28	16:52	21 09:21 (Klein-Winterheim II) 17:43	18:30	14 07:21 (GAIA genehmigt 01) 20:18	21:04	21 06:37 (WEA H5) 21:37	
29	08:21	09:01 (Klein-Winterheim II) 07:40	08:06 (W279) 06:43	07:05 (W278) 06:37	05:43	06:17 (WEA H5) 05:18	
30	16:53	20 09:21 (Klein-Winterheim II) 17:45	6 08:12 (W279) 18:31	17 07:22 (GAIA genehmigt 01) 20:20	21:06	19 06:36 (WEA H5) 21:38	
31	08:20	09:01 (Klein-Winterheim II) 07:38	08:03 (W279) 06:41	07:03 (GAIA genehmigt 01) 06:35	05:42	06:18 (WEA H5) 05:18	
32	16:55	20 09:21 (Klein-Winterheim II) 17:46	12 08:15 (W279) 18:33	19 07:22 (GAIA genehmigt 01) 20:22	21:07	18 06:36 (WEA H5) 21:38	
33	08:19	09:01 (Klein-Winterheim II) 07:36	07:59 (W203) 06:39	07:03 (GAIA genehmigt 01) 06:33	05:40	06:19 (WEA H5) 05:18	
34	16:56	20 09:21 (Klein-Winterheim II) 17:48	17 08:16 (W279) 18:34	20 07:23 (GAIA genehmigt 01) 20:23	21:08	15 06:34 (WEA H5) 21:39	
35	08:18	09:02 (Klein-Winterheim II) 07:34	07:57 (W203) 06:37	07:03 (GAIA genehmigt 01) 06:31	05:39	06:20 (WEA H5) 05:18	
36	16:58	19 09:21 (Klein-Winterheim II) 17:50	19 08:16 (W279) 18:36	20 07:23 (GAIA genehmigt 01) 20:25	21:10	13 06:33 (WEA H5) 21:39	
37	08:18	09:03 (Klein-Winterheim II) 07:32	07:55 (W203) 06:35	07:02 (GAIA genehmigt 01) 06:29	05:38	06:22 (WEA H5) 05:18	
38	16:59	18 09:21 (Klein-Winterheim II) 17:52	22 08:17 (W279) 18:38	19 07:21 (GAIA genehmigt 01) 20:26	21:11	10 06:32 (WEA H5) 21:40	
39	08:17	09:03 (Klein-Winterheim II) 07:31	07:53 (W203) 06:33	07:02 (GAIA genehmigt 01) 06:27	05:37	06:26 (WEA H5) 05:18	
40	17:01	18 09:21 (Klein-Winterheim II) 17:53	24 08:17 (W279) 18:39	19 07:21 (GAIA genehmigt 01) 20:28	21:12	2 06:28 (WEA H5) 21:40	
41	08:16	09:04 (Klein-Winterheim II) 07:29	07:54 (W203) 06:30	07:03 (GAIA genehmigt 01) 06:25	05:35	05:18	
42	17:02	17 09:21 (Klein-Winterheim II) 17:55	24 08:18 (W279) 18:41	17 07:20 (GAIA genehmigt 01) 20:29	21:14	21:40	
43	08:15	09:06 (Klein-Winterheim II) 07:27	07:54 (W203) 06:28	07:04 (GAIA genehmigt 01) 06:23	05:34	05:19	
44	17:04	15 09:21 (Klein-Winterheim II) 17:57	23 08:17 (W279) 18:42	14 07:18 (GAIA genehmigt 01) 20:31	21:15	21:40	
45	08:14	09:06 (Klein-Winterheim II) 07:25	07:54 (W203) 06:26	07:06 (GAIA genehmigt 01) 06:21	05:33	05:19	
46	17:06	13 09:19 (Klein-Winterheim II) 17:58	23 08:17 (W279) 18:44	10 07:16 (GAIA genehmigt 01) 20:32	21:16	21:40	
47	08:12	09:08 (Klein-Winterheim II) 07:23	07:55 (W203) 06:24	06:19	05:32	05:19	
48	17:07	10 09:18 (Klein-Winterheim II) 18:00	21 08:16 (W279) 18:46	20:34	21:18	21:41	
49	08:11	09:11 (Klein-Winterheim II) 07:21	07:55 (W203) 06:22	06:17	05:31	05:19	
50	17:09	6 09:17 (Klein-Winterheim II) 18:02	18 08:13 (W279) 18:47	20:36	21:19	21:41	
51	08:10	07:19	08:06 (W279) 06:20	06:15	05:30	05:20	
52	17:11	18:03	3 08:09 (W279) 18:49	20:37	21:20	21:41	
53	08:09	07:17	06:17	06:13	05:29	05:20	
54	17:12	18:05	18:50	20:39	21:21	21:41	
55	08:08	07:15	06:15	06:11	05:28	05:21	
56	17:14	18:07	18:52	20:40	21:22	21:41	
57	08:06		07:13	06:09	05:27	05:21	
58	17:16		19:53	20:42	21:24	21:40	
59	08:05		07:11	06:08	05:26	05:22	
60	17:17		19:55	20:43	4 06:31 (WEA H5) 21:25	21:40	
61	08:04		07:09		06:35 (WEA H5) 21:25		
62	17:19		19:57		21:26		
63	Sonnenscheinstunden	267	282	368	412	477	488
64	astr.max.mögl.Beschattung	429	212	188	4	329	
65	Red.Sonnenscheinwahrsch.	0,17	0,29	0,32	0,40	0,45	
66	Reduktion Betriebsdauer	0,94	0,94	0,94	0,94	0,94	
67	Reduktion Windrichtung	0,52	0,57	0,61	0,70	0,70	
68	Gesamte Reduktion	0,08	0,15	0,17	0,25	0,28	
69	Met.wahrsch.Beschattung	34	32	33	1	93	

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) Schattenende (WEA mit letztem Schatten)
	Minuten mit Schatten	

Mainz Hechtsheim II

Juwi AG
Energie-Allee 1
DE-55286 Wörrstadt

Berechnet:

12.06.2018 08:40/3.1.633

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wömSchattenrezeptor: IO 15 - Klein-Winternheim, Hechtsheimer Berg 53
 Voraussetzungen für Berechnung des Schattenwurfs: Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISHEIM]
 Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISHEIM]

Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez

1.48 2.93 3.80 5.50 6.94 6.23 7.34 6.96 5.12 2.77 1.83 1.21

Betriebsdauer je Sektor

[illegible]

341 516 722 703 501 537 716 1.102 1.381 928 473 327 8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Juli		August		September		Oktober		November		Dezember							
1	05:22		05:56		06:26 (WEA H5)	06:41		07:26		07:50 (W278)	07:16		08:03		08:41 (Klein-Winterheim II)			
	21:40		21:11	23	06:49 (WEA H5)	20:13		19:08	9	07:59 (W278)	17:06		16:29	20	09:01 (Klein-Winterheim II)			
2	05:23		05:57		06:25 (WEA H5)	06:43		07:28		07:52 (W278)	07:17		08:04		08:41 (Klein-Winterheim II)			
	21:40		21:10	24	06:49 (WEA H5)	20:11		19:06	4	07:56 (W278)	17:04		16:29	20	09:01 (Klein-Winterheim II)			
3	05:24		05:59		06:26 (WEA H5)	06:44		07:29		07:29	07:17		08:06		08:43 (Klein-Winterheim II)			
	21:39		21:08	23	06:49 (WEA H5)	20:09		19:04			17:03		16:28	19	09:02 (Klein-Winterheim II)			
4	05:24		06:00		06:27 (WEA H5)	06:46		07:31			07:21		08:07		08:43 (Klein-Winterheim II)			
	21:39		21:07	22	06:49 (WEA H5)	20:07		19:02			17:01		16:28	19	09:02 (Klein-Winterheim II)			
5	05:25		06:01		06:28 (WEA H5)	06:47		07:32			07:22		08:08		08:43 (Klein-Winterheim II)			
	21:39		21:05	21	06:49 (WEA H5)	20:05		18:59			17:00		16:27	18	09:01 (Klein-Winterheim II)			
6	05:26		06:03		06:30 (WEA H5)	06:49		07:34		07:24	07:09		08:09		08:43 (Klein-Winterheim II)			
	21:38		21:03	19	06:49 (WEA H5)	20:03		18:57			16:58		16:27	17	09:02 (Klein-Winterheim II)			
7	05:27		06:04		06:31 (WEA H5)	06:50		07:35			07:26		08:11		08:45 (Klein-Winterheim II)			
	21:38		21:02	17	06:48 (WEA H5)	20:01		18:55			16:56		16:27	17	09:02 (Klein-Winterheim II)			
8	05:27		06:06		06:32 (WEA H5)	06:52		07:37			07:27		08:12		08:46 (Klein-Winterheim II)			
	21:37		21:00	16	06:48 (WEA H5)	19:59		18:53			16:55		16:27	16	09:02 (Klein-Winterheim II)			
9	05:28		06:07		06:34 (WEA H5)	06:53		07:38			07:29		08:13		08:46 (Klein-Winterheim II)			
	21:37		20:58	14	06:48 (WEA H5)	19:50		18:53			16:51		16:26	16	09:02 (Klein-Winterheim II)			
10	05:29		06:09		06:35 (WEA H5)	06:55		07:40			07:31		08:14		08:47 (Klein-Winterheim II)			
	21:36		20:57	11	06:46 (WEA H5)	19:54		18:49			16:52		16:26	15	09:02 (Klein-Winterheim II)			
11	05:30		06:10		06:36 (WEA H5)	06:56		07:42			07:32		08:15		08:48 (Klein-Winterheim II)			
	21:35		20:55	9	06:45 (WEA H5)	19:52		18:47			16:50		16:26	14	09:02 (Klein-Winterheim II)			
12	05:31		06:12		06:38 (WEA H5)	06:58		07:43			07:34		08:16		08:49 (Klein-Winterheim II)			
	21:35		20:53	6	06:44 (WEA H5)	19:50		18:45			16:49		16:25	13	09:03 (Klein-Winterheim II)			
13	05:32		06:13		06:39 (WEA H5)	06:59		07:45			07:36		08:17		08:50 (Klein-Winterheim II)			
	21:34		20:51	3	06:42 (WEA H5)	19:48		18:43			16:48		16:26	12	09:02 (Klein-Winterheim II)			
14	05:33		06:14			07:01		07:46			07:37		08:18		08:51 (Klein-Winterheim II)			
	21:33		20:49			19:45		18:41			16:46		16:26	11	09:02 (Klein-Winterheim II)			
15	05:34		06:16			07:02		07:48			07:39		08:19		08:51 (Klein-Winterheim II)			
	21:32		20:48			19:43		18:38			16:45		16:26	12	09:03 (Klein-Winterheim II)			
16	05:35		06:17			07:04		07:50		08:30 (W203)	07:40		08:19		08:52 (Klein-Winterheim II)			
	21:31		20:46			19:41		18:36	11	08:43 (W279)	16:44		16:26	11	09:03 (Klein-Winterheim II)			
17	05:37		06:19			07:05		07:51		08:27 (W203)	07:42		08:44 (Klein-Winterheim II)		08:53 (Klein-Winterheim II)			
	21:30		20:44			19:39		18:34	19	08:56 (W279)	16:42	6	08:44 (Klein-Winterheim II)		08:56 (Klein-Winterheim II)			
18	05:38		06:20			07:07		07:53		08:26 (W203)	07:44		08:42 (Klein-Winterheim II)		08:54 (Klein-Winterheim II)			
	21:29		20:42			19:31		18:32	21	08:47 (W279)	16:41	10	08:52 (Klein-Winterheim II)		08:53 (Klein-Winterheim II)			
19	05:39		06:22			07:08		07:54		08:24 (W203)	07:45		08:41 (Klein-Winterheim II)		08:55 (Klein-Winterheim II)			
	21:28		20:40			19:34		18:30	23	08:47 (W279)	16:40	13	08:54 (Klein-Winterheim II)		08:57 (Klein-Winterheim II)			
20	05:40		06:23			07:09		07:56		08:24 (W203)	07:47		08:41 (Klein-Winterheim II)		08:56 (Klein-Winterheim II)			
	21:27		20:38			19:32	9	08:02 (GAIA genehmigt 01)		08:48 (W279)	16:39	15	08:56 (Klein-Winterheim II)		08:59 (Klein-Winterheim II)			
21	05:41		06:25			07:11		07:50 (GAIA genehmigt 01)		08:24 (W203)	07:48		08:39 (Klein-Winterheim II)		08:56 (Klein-Winterheim II)			
	21:26		20:36			19:30	13	08:03 (GAIA genehmigt 01)		08:48 (W279)	16:38	17	08:56 (Klein-Winterheim II)		08:58 (Klein-Winterheim II)			
22	05:42		06:26			07:12		07:48 (GAIA genehmigt 01)		08:24 (W203)	07:50		08:39 (Klein-Winterheim II)		08:57 (Klein-Winterheim II)			
	21:25		20:34			19:28	16	08:04 (GAIA genehmigt 01)		08:27 (W279)	16:37	18	08:57 (Klein-Winterheim II)		08:59 (Klein-Winterheim II)			
23	05:44		06:28			07:14		07:47 (GAIA genehmigt 01)		08:26 (W203)	07:51		08:40 (Klein-Winterheim II)		08:57 (Klein-Winterheim II)			
	21:24		20:32			19:26	18	08:05 (GAIA genehmigt 01)		08:26 (W279)	16:36	19	08:59 (Klein-Winterheim II)		08:59 (Klein-Winterheim II)			
24	05:45		06:34 (WEA H5)		06:29		07:15	07:46 (GAIA genehmigt 01)		08:28 (W203)	07:53		08:39 (Klein-Winterheim II)		08:57 (Klein-Winterheim II)			
	21:22	7	06:41 (WEA H5)		20:31		19:23	19	08:05 (GAIA genehmigt 01)	18:21	19	08:47 (W279)	16:35	8	09:00 (Klein-Winterheim II)			
25	05:46		06:32 (WEA H5)		06:31		07:17		07:46 (GAIA genehmigt 01)	07:04	07:54		08:39 (Klein-Winterheim II)		08:58 (Klein-Winterheim II)			
	21:21	11	06:43 (WEA H5)		20:28		19:21	19	08:05 (GAIA genehmigt 01)	17:19	16	07:44 (W279)	16:34	20	08:59 (Klein-Winterheim II)			
26	05:48		06:30 (WEA H5)		06:32		07:19		07:45 (GAIA genehmigt 01)	07:06	07:33 (W279)		08:39 (Klein-Winterheim II)		08:58 (Klein-Winterheim II)			
	21:20	14	06:44 (WEA H5)		20:26		19:19	19	08:04 (GAIA genehmigt 01)	17:17	11	07:44 (W279)	16:33	20	08:59 (Klein-Winterheim II)			
27	05:49		06:29 (WEA H5)		06:34		07:20		07:45 (GAIA genehmigt 01)	07:07	07:36 (W279)		08:40 (Klein-Winterheim II)		08:57 (Klein-Winterheim II)			
	21:18	16	06:45 (WEA H5)		20:24		19:17		08:04 (GAIA genehmigt 01)	17:15	5	07:41 (W279)		20	09:00 (Klein-Winterheim II)			
28	05:50		06:29 (WEA H5)		06:35		07:22		07:45 (W278)	07:09	07:59		08:40 (Klein-Winterheim II)		08:57 (Klein-Winterheim II)			
	21:17	18	06:47 (WEA H5)		20:22		19:15	18	08:03 (GAIA genehmigt 01)	17:13		16:32	21	09:01 (Klein-Winterheim II)	16:32	11	09:08 (Klein-Winterheim II)	
29	05:52		06:28 (WEA H5)		06:37		07:23		07:47 (W278)	07:11		08:00	08:40 (Klein-Winterheim II)		08:57 (Klein-Winterheim II)			
	21:16	19	06:47 (WEA H5)		20:20		19:12	15	08:02 (GAIA genehmigt 01)	17:11		16:31	21	09:01 (Klein-Winterheim II)	16:33	12	09:09 (Klein-Winterheim II)	
30	05:53		06:27 (WEA H5)		06:38		07:25		07:49 (W278)	07:12		08:02	08:40 (Klein-Winterheim II)		08:58 (Klein-Winterheim II)			
	21:14	21	06:48 (WEA H5)		20:18		19:10	12	08:01 (W278)	17:10		16:30	21	09:01 (Klein-Winterheim II)	16:34	12	09:10 (Klein-Winterheim II)	
31	05:54		06:27 (WEA H5)		06:40					07:14			08:26					
	21:13	22	06:49 (WEA H5)		20:16					17:08			08:26			16:35	13	09:11 (Klein-Winterheim II)
Sonneneinstrahlung	492		448			380		334			273				254			
astr.max.mögl.Beschattung	128		208		177		230		241		394							
Red.Sonneneinstrahlung	0,46		0,48		0,40		0,26		0,20		0,15							
Reduktion Betriebsdauer	0,94		0,94		0,94		0,94		0,94		0,94							
Reduktion Windrichtung	0,70		0,70		0,61		0,57		0,52		0,52							
Gesamte Reduktion	0,29		0,30		0,22		0,13		0,09		0,07							
Met.wahrsch.Beschattung	37		63		39		30		23		27							

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)
1			
2			
3			
4			
5			
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24			
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26			
27			
28			
29			
30			
31			

Projekt:

Mainz Hechtsheim II

Lizenzierter Anwender:

Juwi AG

Energie-Allee 1

DE-55286 Wörrstadt

Mirjam Wöhlke / mirjam.woehlke@juwi.de

Berechnet:

12.06.2018 08:40/3.1.633

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wönSchattenrezeptor: IO 17 - Klein-Winternheim, Karthause 13
Voraussetzungen für Berechnung des Schattenwurfs Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
341	516	722	703	501	537	716	1.102	1.381	928	473	327	8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar	Februar	März	April	Mai	Juni
1	08:26 16:36	08:02 17:21	09:02 (Klein-Winternheim II) 18:08	07:42 (W203) 18:08	06:06 19:58	05:24 21:27
2	08:26 16:37	08:01 17:22	09:08 (Klein-Winternheim II) 18:10	07:42 (W203) 18:02	06:04 20:00	05:24 21:28
3	08:26 16:38	07:59 17:24	18:09 18:12	07:44 (W203) 18:01	06:02 20:01	05:23 21:29
4	08:26 16:39	07:58 17:26	18:07 18:13	07:48 (W203) 18:00	06:01 20:03	05:22 21:30
5	08:26 16:40	07:56 17:27	18:05 18:15	07:50 (W203) 18:04	05:59 20:04	05:22 21:31
6	08:25 16:41	07:55 17:29	18:15 18:17	07:57 (W203) 20:06	05:57 20:52	05:21 21:32
7	08:25 16:43	07:53 17:31	18:17 18:18	06:54 20:07	05:56 20:54	05:21 21:32
8	08:25 16:44	07:52 17:33	18:18 18:20	06:51 20:09	05:54 20:55	05:20 21:33
9	08:24 16:45	07:50 17:34	18:19 18:22	06:49 20:11	05:52 20:57	05:20 21:34
10	08:24 16:46	07:48 17:36	18:20 18:23	06:47 20:12	05:51 20:58	05:19 21:35
11	08:23 16:48	07:47 17:38	18:21 18:25	06:45 20:14	05:49 21:00	05:19 21:35
12	08:23 16:49	08:54 (Klein-Winternheim II) 17:40	18:26 18:26	06:43 20:15	05:48 21:01	05:19 21:36
13	08:22 16:50	08:53 (Klein-Winternheim II) 17:41	18:27 18:28	06:41 20:17	05:46 21:03	05:18 21:37
14	08:22 16:52	08:53 (Klein-Winternheim II) 17:43	18:28 18:30	06:39 20:18	05:45 21:04	05:18 21:37
15	08:21 16:53	08:53 (Klein-Winternheim II) 17:45	18:29 18:31	06:37 20:20	05:43 21:06	05:18 21:38
16	08:20 16:55	08:52 (Klein-Winternheim II) 17:46	18:30 18:33	06:35 20:22	05:42 21:07	05:18 21:38
17	08:19 16:56	08:52 (Klein-Winternheim II) 17:48	18:31 18:34	06:33 20:23	05:40 21:08	05:18 21:39
18	08:18 16:58	08:52 (Klein-Winternheim II) 17:50	18:32 18:36	06:31 20:25	05:39 21:10	05:18 21:39
19	08:18 16:59	08:52 (Klein-Winternheim II) 17:52	18:33 18:38	06:29 20:26	05:38 21:11	05:18 21:40
20	08:17 17:01	08:52 (Klein-Winternheim II) 17:53	18:34 18:39	06:27 20:27	05:37 21:12	05:18 21:40
21	08:16 17:02	08:52 (Klein-Winternheim II) 17:55	18:35 18:41	06:25 20:29	05:35 21:14	05:18 21:40
22	08:15 17:04	08:53 (Klein-Winternheim II) 17:57	18:36 18:42	06:23 20:31	05:34 21:15	05:19 21:40
23	08:14 17:06	08:52 (Klein-Winternheim II) 17:58	18:37 18:44	06:21 20:32	05:33 21:16	05:19 21:40
24	08:12 17:07	08:53 (Klein-Winternheim II) 18:00	18:38 18:46	06:19 20:34	05:32 21:18	05:19 21:41
25	08:11 17:09	08:53 (Klein-Winternheim II) 18:02	18:39 18:47	06:17 20:36	05:31 21:19	05:19 21:41
26	08:10 17:11	08:54 (Klein-Winternheim II) 18:03	18:40 18:49	06:15 20:37	05:30 21:20	05:20 21:41
27	08:09 17:12	08:54 (Klein-Winternheim II) 18:05	18:41 18:50	06:13 20:39	05:29 21:21	05:20 21:41
28	08:08 17:14	08:55 (Klein-Winternheim II) 18:07	18:42 18:52	06:11 20:40	05:28 21:22	05:21 21:41
29	08:06 17:16	08:56 (Klein-Winternheim II) 18:09	18:43 18:53	06:09 20:42	05:27 21:24	05:21 21:40
30	08:05 17:17	08:57 (Klein-Winternheim II) 18:10	18:44 18:55	06:08 20:43	05:26 21:25	05:22 21:40
31	08:04 17:19	09:00 (Klein-Winternheim II) 18:11	18:45 18:57	06:06 20:44	05:25 21:26	05:22 21:40
Sonnenscheinstunden	267	282	368	412	477	488
astr.max.mögl.Beschattung	360		288		372	
Red.Sonnenscheinwahrsch.	0,17	0,29	0,32		0,45	
Reduktion Betriebsdauer	0,94	0,94	0,94		0,94	
Reduktion Windrichtung	0,53	0,57	0,61		0,71	
Gesamte Reduktion	0,08	0,15	0,18		0,29	
Met.wahrsch.Beschattung	30	18	51		107	

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)	Schattenende (WEA mit letztem Schatten)

Projekt:

Mainz Hechtsheim II

Lizenzierter Anwender:

Juwi AG

Energie-Allee 1

DE-55286 Wörrstadt

Mirjam Wöhlke / mirjam.woehlke@juwi.de

Berechnet:

12.06.2018 08:40/3.1.633

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wön Schattenrezeptor: IO 17 - Klein-Winternheim, Karthause 13
Voraussetzungen für Berechnung des Schattenwurfs Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
341	516	722	703	501	537	716	1.102	1.381	928	473	327	8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

		Juli		August		September		Oktober		November		Dezember	
1	05:22		05:56	06:23 (WEA H5)	06:41			07:26		07:16		08:03	08:37 (Klein-Winterheim II)
	21:40		21:11	17 06:40 (WEA H5)	20:13			19:08		17:06		16:29	8 08:45 (Klein-Winterheim II)
2	05:23		05:57	06:24 (WEA H5)	06:43			07:28		07:17		08:04	08:40 (Klein-Winterheim II)
	21:40		21:10	15 06:39 (WEA H5)	20:11			19:06		17:04		16:29	2 08:42 (Klein-Winterheim II)
3	05:24		05:59	06:25 (WEA H5)	06:44			07:29		07:19		08:05	
	21:39		21:08	13 06:39 (WEA H5)	20:09			19:04		17:03		16:28	
4	05:24		06:00	06:27 (WEA H5)	06:46			07:31		07:21		08:07	
	21:39		21:07	11 06:38 (WEA H5)	20:07			19:02		17:01		16:28	
5	05:25		06:01	06:28 (WEA H5)	06:47			07:32		07:22		08:08	
	21:39		21:05	8 06:36 (WEA H5)	20:05			18:59		17:00		16:27	
6	05:26		06:03	06:30 (WEA H5)	06:49			07:34		07:24		08:09	
	21:38		21:03	6 06:36 (WEA H5)	20:03			18:57		16:58		16:27	
7	05:27		06:04	06:31 (WEA H5)	06:50			07:35		07:26		08:11	
	21:38		21:02	3 06:34 (WEA H5)	20:01			18:55		16:56		16:27	
8	05:27		06:06		06:52			07:37		07:27		08:12	
	21:37		21:00		19:59			18:53		16:55		16:27	
9	05:28		06:07		06:53			07:38		07:29		08:13	
	21:37		20:58		19:56			18:51	10 08:24 (W279)	16:53		16:26	
10	05:29		06:09		06:55			07:40	08:19 (W203)	07:31	08:32 (Klein-Winterheim II)	08:14	
	21:36		20:57		19:54			18:49	16 08:35 (W279)	16:52	7 08:39 (Klein-Winterheim II)	16:26	
11	05:30		06:10		06:56			07:42	08:17 (W203)	07:32	08:30 (Klein-Winterheim II)	08:15	
	21:35		20:55		19:52			18:47	19 08:36 (W279)	16:50	12 08:42 (Klein-Winterheim II)	16:26	
12	05:31		06:12		06:58			07:43	20 08:16 (W203)	07:34	08:29 (Klein-Winterheim II)	08:16	
	21:35		20:53		19:50			18:45	19 08:36 (W279)	16:49	15 08:44 (Klein-Winterheim II)	16:26	
13	05:32		06:13		06:59			07:45	08:15 (W203)	07:36	08:28 (Klein-Winterheim II)	08:17	
	21:34		20:51		19:48			18:43	21 08:36 (W279)	16:48	16 08:44 (Klein-Winterheim II)	16:26	
14	05:33		06:14		07:01			07:46	08:14 (W203)	07:37	08:27 (Klein-Winterheim II)	08:18	
	21:33		20:49		19:45			18:41	22 08:36 (W279)	16:46	18 08:45 (Klein-Winterheim II)	16:26	
15	05:34	06:25 (WEA H5)	06:16		07:02	07:42 (W278)	07:40	08:15 (W203)	07:39	07:39	08:27 (Klein-Winterheim II)	08:19	
	21:32	5 06:30 (WEA H5)	20:48		19:43	13 07:55 (GAIA genehmigt 01)	07:50	08:36 (W279)	16:45	19 08:46 (Klein-Winterheim II)	16:26		
16	05:35	06:23 (WEA H5)	06:17		07:04	07:40 (W278)	07:50	08:14 (W203)	07:40	08:27 (Klein-Winterheim II)	08:19		
	21:31	9 06:32 (WEA H5)	20:46		19:41	17 07:57 (GAIA genehmigt 01)	07:51	08:36 (W279)	16:44	20 08:47 (Klein-Winterheim II)	16:26		
17	05:37	06:22 (WEA H5)	06:19		07:05	07:38 (W278)	07:51	08:15 (W203)	07:42	08:26 (Klein-Winterheim II)	08:20		
	21:30	12 06:34 (WEA H5)	20:40		19:39	19 07:57 (GAIA genehmigt 01)	07:53	08:18 (W203)	16:42	21 08:47 (Klein-Winterheim II)	16:26		
18	05:38	06:21 (WEA H5)	06:24		07:07	07:37 (W278)	07:53	08:18 (W203)	07:44	08:27 (Klein-Winterheim II)	08:21		
	21:29	14 06:35 (WEA H5)	20:42		19:37	21 07:58 (GAIA genehmigt 01)	07:54	08:33 (W279)	16:41	21 08:48 (Klein-Winterheim II)	16:27		
19	05:39	06:20 (WEA H5)	06:22		07:08	07:36 (W278)	07:54	08:20 (W203)	07:45	08:27 (Klein-Winterheim II)	08:22		
	21:28	16 06:36 (WEA H5)	20:40		19:34	22 07:58 (GAIA genehmigt 01)	07:56	08:30 (W279)	16:40	21 08:48 (Klein-Winterheim II)	16:27		
20	05:40	06:19 (WEA H5)	06:23		07:09	07:36 (W278)	07:56		07:47	08:28 (Klein-Winterheim II)	08:22		
	21:27	18 06:37 (WEA H5)	20:38		19:32	22 07:58 (GAIA genehmigt 01)	07:58	08:16 (W203)	16:39	21 08:49 (Klein-Winterheim II)	16:27		
21	05:41	06:18 (WEA H5)	06:25		07:11	07:35 (W278)	07:58	08:17 (W203)	16:38	08:27 (Klein-Winterheim II)	08:23		
	21:26	19 06:37 (WEA H5)	20:36		19:30	22 07:57 (GAIA genehmigt 01)	07:59	08:16 (W203)	16:37	21 08:48 (Klein-Winterheim II)	16:28		
22	05:42	06:18 (WEA H5)	06:26		07:12	07:36 (W278)	07:59	08:17 (W203)	16:36	08:28 (Klein-Winterheim II)	08:23		
	21:25	20 06:38 (WEA H5)	20:34		19:28	20 07:56 (GAIA genehmigt 01)	08:01	08:17 (W203)	16:35	20 08:48 (Klein-Winterheim II)	16:28		
23	05:44	06:18 (WEA H5)	06:28		07:14	07:38 (W278)	08:01	08:18 (W203)	16:34	08:29 (Klein-Winterheim II)	08:24		
	21:24	21 06:39 (WEA H5)	20:32		19:26	18 07:56 (GAIA genehmigt 01)	08:02	08:19 (W203)	16:33	20 08:49 (Klein-Winterheim II)	16:29		
24	05:45	06:18 (WEA H5)	06:29		07:15	07:39 (W278)	08:03	08:20 (W203)	16:32	08:29 (Klein-Winterheim II)	08:24		
	21:22	21 06:39 (WEA H5)	20:30		19:23	15 07:54 (GAIA genehmigt 01)	08:04	08:21 (W203)	16:31	19 08:48 (Klein-Winterheim II)	16:29		
25	05:46	06:17 (WEA H5)	06:31		07:17	07:41 (W278)	08:04	08:22 (W203)	16:30	08:30 (Klein-Winterheim II)	08:25		
	21:21	22 06:39 (WEA H5)	20:28		19:21	12 07:53 (GAIA genehmigt 01)	08:05	08:23 (W203)	16:29	18 08:48 (Klein-Winterheim II)	16:30		
26	05:48	06:17 (WEA H5)	06:32		07:19	07:42 (GAIA genehmigt 01)	08:06	08:24 (W203)	16:28	08:30 (Klein-Winterheim II)	08:25		
	21:20	22 06:39 (WEA H5)	20:26		19:19	8 07:50 (GAIA genehmigt 01)	08:07	08:25 (W203)	16:27	18 08:48 (Klein-Winterheim II)	16:31		
27	05:49	06:16 (WEA H5)	06:34		07:20		08:08	08:26 (W203)	16:26	08:32 (Klein-Winterheim II)	08:25		
	21:18	23 06:39 (WEA H5)	20:24		19:17		08:09	08:27 (W203)	16:25	16 08:48 (Klein-Winterheim II)	16:31		
28	05:50	06:18 (WEA H5)	06:35		07:22		08:10	08:28 (W203)	16:24	08:33 (Klein-Winterheim II)	08:26		
	21:17	22 06:40 (WEA H5)	20:22		19:15		08:11	08:29 (W203)	16:23	15 08:48 (Klein-Winterheim II)	16:32		
29	05:52	06:19 (WEA H5)	06:37		07:23		08:12	08:30 (W203)	16:22	08:34 (Klein-Winterheim II)	08:26		
	21:16	21 06:40 (WEA H5)	20:20		19:12		08:13	08:31 (W203)	16:21	13 08:47 (Klein-Winterheim II)	16:33		
30	05:53	06:20 (WEA H5)	06:38		07:25		08:14	08:32 (W203)	16:20	08:35 (Klein-Winterheim II)	08:26		
	21:14	20 06:40 (WEA H5)	20:18		19:10		08:15	08:33 (W203)	16:19	10 08:45 (Klein-Winterheim II)	16:34		
31	05:54	06:22 (WEA H5)	06:40				08:16	08:34 (W203)	16:18		08:26		
	21:13	18 06:40 (WEA H5)	20:16				08:17	08:35 (W203)	16:17		16:35		
Sonneneinstrahlung	492		448		380		334		273		254		
astr. max. mögl. Beschattung	303		73		209		191		361		10		
Red. Sonneneinstrahlung	0,46		0,48		0,40		0,26		0,20		0,15		
Reduktion Betriebsdauer	0,94		0,94		0,94		0,94		0,94		0,94		
Reduktion Windrichtung	0,71		0,62		0,62		0,57		0,53		0,53		
Gesamte Reduktion	0,29		0,31		0,23		0,13		0,10		0,07		
Met. wahrsch. Beschattung	89		22		48		25		35		1		

Projekt:

Mainz Hechtsheim II

Lizenzierter Anwender:

Juwi AG

Energie-Allee 1

DE-55286 Wörrstadt

Mirjam Wöhlke / mirjam.woehlke@juwi.de

Berechnet:

12.06.2018 08:40/3.1.633

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneI01116AB_wöm Schattenrezeptor: IO 18 - Klein-Winternheim, Hechtsheimer Berg 57
Voraussetzungen für Berechnung des Schattenwurfs Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N	NNO	ONO	O	OSO	SSO	S	SSW	WSW	W	WNW	NNW	Summe
341	516	722	703	501	537	716	1.102	1.381	928	473	327	8.246

Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

	Januar			Februar			März			April			Mai			Juni		
1	08:26		08:58 (Klein-Winterheim II)	08:02		07:13		07:06		06:06		06:29 (WEA H5)	05:24					
	16:36	15	09:13 (Klein-Winterheim II)	17:21		18:08		19:58		20:45	15	06:44 (WEA H5)	21:27					
2	08:26		08:58 (Klein-Winterheim II)	08:01		07:11		07:04		06:04		06:27 (WEA H5)	05:24					
	16:37	16	09:14 (Klein-Winterheim II)	17:22		18:10		20:00		20:46	17	06:44 (WEA H5)	21:28					
3	08:26		08:58 (Klein-Winterheim II)	07:59		07:09		07:02		06:02		06:26 (WEA H5)	05:23					
	16:38	17	09:15 (Klein-Winterheim II)	17:24		18:12		20:01		20:48	19	06:45 (WEA H5)	21:29					
4	08:26		08:58 (Klein-Winterheim II)	07:58		07:07		07:00		06:01		06:24 (WEA H5)	05:22					
	16:39	17	09:15 (Klein-Winterheim II)	17:26		18:13		20:03		20:49	21	06:45 (WEA H5)	21:30					
5	08:26		08:58 (Klein-Winterheim II)	07:56		07:05		06:58		05:59		06:22 (WEA H5)	05:22					
	16:40	18	09:16 (Klein-Winterheim II)	17:27		18:15		20:04		20:51	22	06:44 (WEA H5)	21:31					
6	08:25		08:59 (Klein-Winterheim II)	07:55		07:03		06:56		05:57		06:21 (WEA H5)	05:21					
	16:41	18	09:17 (Klein-Winterheim II)	17:29		18:17		20:06		20:52	23	06:44 (WEA H5)	21:32					
7	08:25		08:58 (Klein-Winterheim II)	07:53		07:00		06:54		05:56		06:21 (WEA H5)	05:21					
	16:43	19	09:17 (Klein-Winterheim II)	17:31		18:18		20:07		20:54	23	06:44 (WEA H5)	21:32					
8	08:25		08:59 (Klein-Winterheim II)	07:52		06:58		06:51		05:54		06:22 (WEA H5)	05:20					
	16:44	19	09:18 (Klein-Winterheim II)	17:33		18:20		20:09		20:55	22	06:44 (WEA H5)	21:33					
9	08:24		08:59 (Klein-Winterheim II)	07:50		06:56		06:49		05:52		06:22 (WEA H5)	05:20					
	16:45	19	09:18 (Klein-Winterheim II)	17:34		18:22	5	07:23 (W278)		20:11	21	06:43 (WEA H5)	21:34					
10	08:24		09:00 (Klein-Winterheim II)	07:48		06:54		07:16 (W278)		06:47		06:23 (WEA H5)	05:19					
	16:46	19	09:19 (Klein-Winterheim II)	17:36		18:23	9	07:25 (W278)		20:12	20:58	19	06:42 (WEA H5)	21:35				
11	08:23		09:00 (Klein-Winterheim II)	07:47		06:52		07:14 (W278)		06:45		06:23 (WEA H5)	05:19					
	16:48	19	09:19 (Klein-Winterheim II)	17:38		18:25	12	07:26 (W278)		20:14	21:00	18	06:41 (WEA H5)	21:36				
12	08:23		09:00 (Klein-Winterheim II)	07:45		06:50		07:12 (W278)		06:43		06:25 (WEA H5)	05:19					
	16:49	20	09:20 (Klein-Winterheim II)	17:40		18:26	14	07:26 (W278)		20:15	21:01	15	06:40 (WEA H5)	21:36				
13	08:22		09:00 (Klein-Winterheim II)	07:43	08:09 (W279)	06:48		07:10 (GAIA genehmigt 01)		06:41		06:26 (WEA H5)	05:18					
	16:50	20	09:20 (Klein-Winterheim II)	17:41	7 08:16 (W279)	18:28	17	07:27 (W278)		20:17	21:03	13	06:39 (WEA H5)	21:37				
14	08:22		09:01 (Klein-Winterheim II)	07:42	08:06 (W279)	06:46		07:07 (GAIA genehmigt 01)		06:39		06:28 (WEA H5)	05:18					
	16:52	20	09:21 (Klein-Winterheim II)	17:43	12 08:18 (W279)	18:30	19	07:26 (GAIA genehmigt 01)		20:18	21:04	9 06:37 (WEA H5)	21:37					
15	08:21		09:01 (Klein-Winterheim II)	07:40	08:03 (W203)	06:43		07:07 (GAIA genehmigt 01)		06:37			05:18					
	16:53	20	09:21 (Klein-Winterheim II)	17:45	16 08:19 (W279)	18:31	19	07:26 (GAIA genehmigt 01)		20:20	21:06		21:38					
16	08:20		09:02 (Klein-Winterheim II)	07:38	08:01 (W203)	06:41		07:07 (GAIA genehmigt 01)		06:35		05:42		05:18				
	16:55	19	09:21 (Klein-Winterheim II)	17:46	18 08:19 (W279)	18:33	19	07:26 (GAIA genehmigt 01)		20:22	21:07		21:38					
17	08:19		09:02 (Klein-Winterheim II)	07:36	07:59 (W203)	06:39		07:07 (GAIA genehmigt 01)		06:33		05:40		05:18				
	16:56	19	09:21 (Klein-Winterheim II)	17:48	21 08:20 (W279)	18:34	18	07:25 (GAIA genehmigt 01)		20:23	21:08		21:39					
18	08:18		09:03 (Klein-Winterheim II)	07:34	07:57 (W203)	06:37		07:07 (GAIA genehmigt 01)		06:31		05:39		05:18				
	16:58	18	09:21 (Klein-Winterheim II)	17:50	23 08:20 (W279)	18:36	18	07:25 (GAIA genehmigt 01)		20:25	21:10		21:39					
19	08:18		09:04 (Klein-Winterheim II)	07:32	07:56 (W203)	06:35		07:07 (GAIA genehmigt 01)		06:29		05:38		05:18				
	16:59	17	09:21 (Klein-Winterheim II)	17:52	24 08:20 (W279)	18:38	16	07:23 (GAIA genehmigt 01)		20:26	21:11		21:40					
20	08:17		09:05 (Klein-Winterheim II)	07:31	07:56 (W203)	06:33		07:08 (GAIA genehmigt 01)		06:27		05:37		05:18				
	17:01	16	09:21 (Klein-Winterheim II)	17:53	23 08:19 (W279)	18:39	13	07:21 (GAIA genehmigt 01)		20:28	21:12		21:40					
21	08:16		09:06 (Klein-Winterheim II)	07:29	07:57 (W203)	06:30		07:10 (GAIA genehmigt 01)		06:25		05:35		05:18				
	17:02	14	09:20 (Klein-Winterheim II)	17:55	22 08:19 (W279)	18:41	9	07:19 (GAIA genehmigt 01)		20:29	21:14		21:40					
22	08:15		09:08 (Klein-Winterheim II)	07:27	07:58 (W203)	06:28				06:23		05:34		05:19				
	17:04	11	09:19 (Klein-Winterheim II)	17:57	20 08:18 (W279)	18:42				20:31	21:15		21:40					
23	08:14		09:09 (Klein-Winterheim II)	07:25	07:59 (W203)	06:26				06:21		05:33		05:19				
	17:06	8	09:17 (Klein-Winterheim II)	17:58	16 08:16 (W279)	18:44				20:32		21:16		21:40				
24	08:13			07:23		06:24				06:19		05:32		05:19				
	17:07			18:00		18:46				20:34		21:18		21:41				
25	08:11			07:21		06:22				06:17		05:31		05:19				
	17:09			18:02		18:47				20:36		21:19		21:41				
26	08:10			07:19		06:20				06:15		05:30		05:20				
	17:11			18:03		18:49				20:37	2	06:40 (WEA H5)	21:20	21:41				
27	08:09			07:17		06:17				06:13		06:36 (WEA H5)	05:29	05:20				
	17:12			18:05		18:50				20:39	5	06:41 (WEA H5)	21:21	21:41				
28	08:08			07:15		06:15				06:11		06:34 (WEA H5)	05:28	05:21				
	17:14			18:07		18:52				20:40	8	06:42 (WEA H5)	21:22	21:41				
29	08:06					07:13				06:09		06:32 (WEA H5)	05:27	05:21				
	17:16					19:53				20:42	11	06:43 (WEA H5)	21:24	21:40				
30	08:05					07:11				06:08		06:31 (WEA H5)	05:26	05:22				
	17:17					19:55				20:43	13	06:44 (WEA H5)	21:25	21:40				
31	08:04					07:09						05:25						
	17:19					19:57						21:26						
Sonnenscheinstunden	267			282		368		412		477				488				
astr.max.mögl.Beschattung		398		202		188			39		257							
Red.Sonnenscheinwahrsch.		0,17		0,29		0,32			0,40		0,45							
Reduktion Betriebsdauer		0,94		0,94		0,94			0,94		0,94							
Reduktion Windrichtung		0,52		0,57		0,60			0,69		0,69							
Gesamte Reduktion		0,08		0,15		0,17			0,25		0,28							
Met.wahrsch.Beschattung		32		30		33			10		72							

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) Schattenende (WEA mit letztem Schatten)
	Minuten mit Schatten	

Projekt:

Mainz Hechtsheim II

Lizenzierter Anwender:

Juwi AG

Energie-Allee 1

DE-55286 Wörrstadt

Mirjam Wöhlke / mirjam.woehlke@juwi.de

Berechnet:

12.06.2018 08:40/3.1.633

SHADOW - Kalender

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneI01116AB_wönSchattenrezeptor: IO 18 - Klein-Winternheim, Hechtsheimer Berg 57
Voraussetzungen für Berechnung des Schattenwurfs Sonnenscheinwahrscheinlichkeit S (Mittlere tägliche Sonnenstunden) [GEISENHEIM]

Jan Feb Mär Apr Mai Jun Jul Aug Sep Okt Nov Dez
1,48 2,93 3,80 5,50 6,94 6,23 7,34 6,96 5,12 2,77 1,83 1,21

Betriebsdauer je Sektor

N NNO ONO O OSO SSO S SSW WSW W WNW NNW Summe
341 516 722 703 501 537 716 1.102 1.381 928 473 327 8.246
Startwindgeschwindigkeit: Startwindgeschw. aus Leistungskennlinie

Juli		August		September		Oktober		November		Dezember	
1	05:22	05:56	06:35 (WEA H5)	06:41		07:26	07:50 (W278)	07:16		08:03	08:42 (Klein-Winterheim II)
2	05:23	06:57	06:51 (WEA H5)	06:43		15	08:05 (W278)	17:06		16:29	09:01 (Klein-Winterheim II)
3	05:24	06:59	06:52 (WEA H5)	06:44		13	08:05 (W278)	17:04		16:29	09:01 (Klein-Winterheim II)
4	05:24	06:00	06:53 (WEA H5)	06:46		10	08:03 (W278)	17:03		16:28	09:02 (Klein-Winterheim II)
5	05:25	06:01	06:53 (WEA H5)	06:47		7	08:02 (W278)	17:01		16:28	09:02 (Klein-Winterheim II)
6	05:26	06:03	06:53 (WEA H5)	06:49		3	07:59 (W278)	17:00		16:27	09:02 (Klein-Winterheim II)
7	05:27	06:04	06:54 (WEA H5)	06:50				16:59		16:26	09:03 (Klein-Winterheim II)
8	05:27	06:06	06:54 (WEA H5)	06:52				16:58		16:25	09:03 (Klein-Winterheim II)
9	05:28	06:07	06:54 (WEA H5)	06:53				16:57		16:24	09:03 (Klein-Winterheim II)
10	05:29	06:09	06:54 (WEA H5)	06:55				16:56		16:23	09:03 (Klein-Winterheim II)
11	05:30	06:10	06:54 (WEA H5)	06:56				16:55		16:22	09:03 (Klein-Winterheim II)
12	05:31	06:12	06:54 (WEA H5)	06:58				16:54		16:21	09:03 (Klein-Winterheim II)
13	05:32	06:13	06:54 (WEA H5)	06:59				16:53		16:20	09:03 (Klein-Winterheim II)
14	05:33	06:14	06:54 (WEA H5)	07:01				16:52		16:19	09:03 (Klein-Winterheim II)
15	05:34	06:16	06:54 (WEA H5)	07:02				16:51		16:18	09:03 (Klein-Winterheim II)
16	05:35	06:17	06:54 (WEA H5)	07:04				16:50		16:17	09:03 (Klein-Winterheim II)
17	05:37	06:19	06:54 (WEA H5)	07:05				16:49		16:16	09:03 (Klein-Winterheim II)
18	05:38	06:20	06:54 (WEA H5)	07:07				16:48		16:15	09:03 (Klein-Winterheim II)
19	05:39	06:22	06:54 (WEA H5)	07:08				16:47		16:14	09:03 (Klein-Winterheim II)
20	05:40	06:23	06:54 (WEA H5)	07:09				16:46		16:13	09:03 (Klein-Winterheim II)
21	05:41	06:25	06:54 (WEA H5)	07:11				16:45		16:12	09:03 (Klein-Winterheim II)
22	05:42	06:26	06:54 (WEA H5)	07:12				16:44		16:11	09:03 (Klein-Winterheim II)
23	05:44	06:28	06:54 (WEA H5)	07:14				16:43		16:10	09:03 (Klein-Winterheim II)
24	05:45	06:29	06:54 (WEA H5)	07:16				16:42		16:09	09:03 (Klein-Winterheim II)
25	05:46	06:31	06:54 (WEA H5)	07:17				16:41		16:08	09:03 (Klein-Winterheim II)
26	05:48	06:32	06:54 (WEA H5)	07:19				16:40		16:07	09:03 (Klein-Winterheim II)
27	05:49	06:34	06:54 (WEA H5)	07:20				16:39		16:06	09:03 (Klein-Winterheim II)
28	05:50	06:35	06:54 (WEA H5)	07:22				16:38		16:05	09:03 (Klein-Winterheim II)
29	05:52	06:37	06:54 (WEA H5)	07:23				16:37		16:04	09:03 (Klein-Winterheim II)
30	05:53	06:38	06:54 (WEA H5)	07:25				16:36		16:03	09:03 (Klein-Winterheim II)
31	05:54	06:36	06:54 (WEA H5)	07:24				16:35		16:02	09:03 (Klein-Winterheim II)
Sonnenscheinstunden		492	448	380		334		273		254	
astr.max.mögl.Beschattung		30	273	145		258		202		441	
Red.Sonnenscheinwahrsch.		0,46	0,48	0,40		0,26		0,20		0,15	
Reduktion Betriebsdauer		0,94	0,94	0,94		0,94		0,94		0,94	
Reduktion Windrichtung		0,69	0,69	0,60		0,58		0,52		0,52	
Gesamte Reduktion		0,29	0,30	0,22		0,13		0,09		0,07	
Met.wahrsch.Beschattung		9	81	32		34		19		30	

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

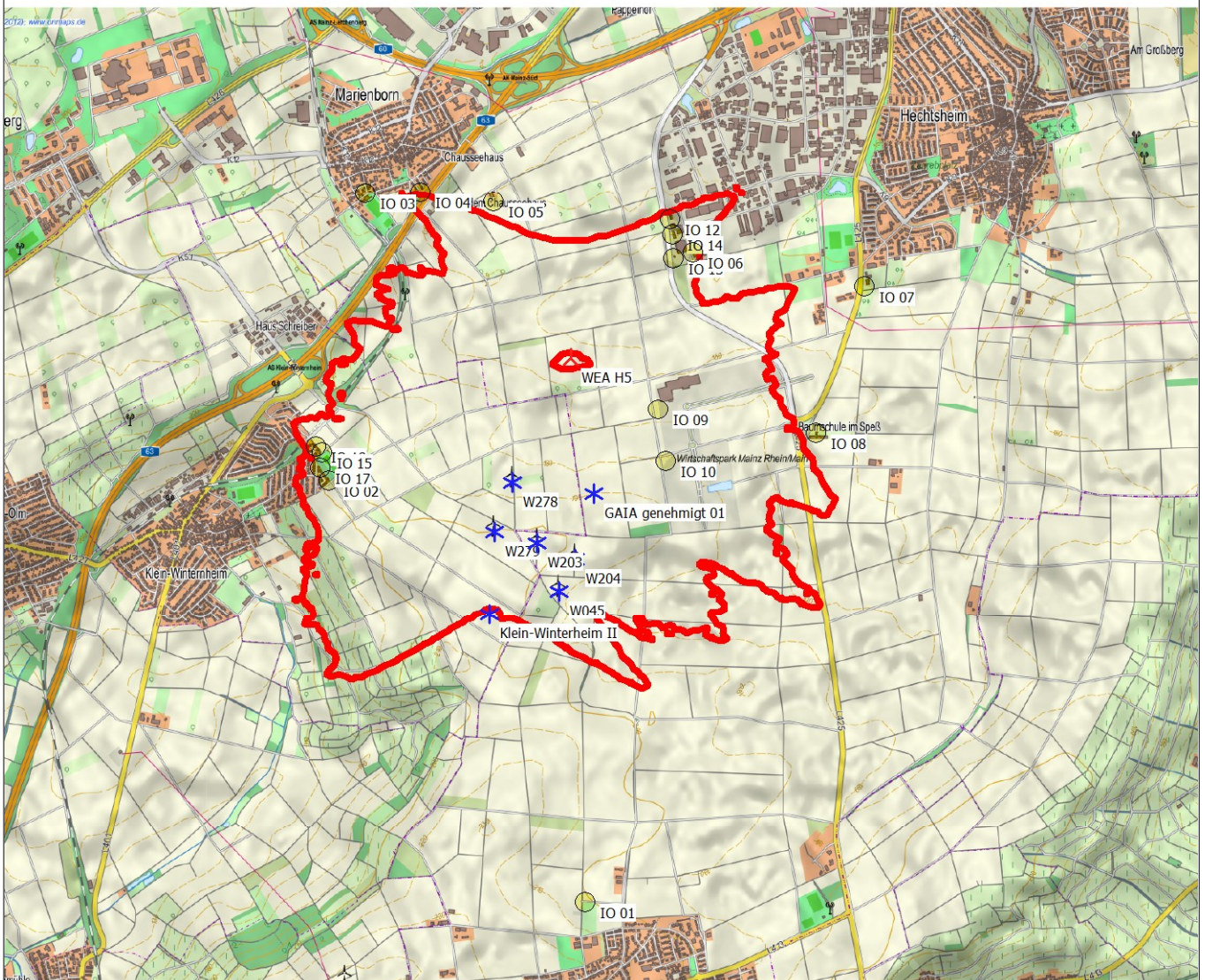
Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)
	Minuten mit Schatten	

SHADOW - Karte

Berechnung: 180612_Mainz-Hechtsheim II_GB_1xGE5.3_NH161_ohneIO1116AB_wöm

Stunden/Jahr,
Astron.max.mögl.

30 Stunden



0 500 1000 1500 2000 m

Karte: TK 25k , Maßstab 1:40.000, Mitte: ETRS 89 Zone: 32 Ost: 445.980 Nord: 5.532.816

Neue WEA

Existierende WEA

Schattenrezeptor

Höhe der Schattenkarte: Höhenraster-Objekt (23)