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**ENERGIA LEVANTE S.R.L.**



FILE TIPO R

## PROCEDURA DI VALUTAZIONE IMPATTO AMBIENTALE

### STUDIO IMPATTO AMBIENTALE

**IMPIANTO EOLICO "SAMBUCELLO" DI POTENZA 50 MW DA REALIZZARE NEL TERRITORIO DEI COMUNI DI MARCELLINARA, MAIDA E CARAFFA DI CATANZARO IN PROVNCIA DI CATANZARO**



Titolo Elaborato:

**STUDIO SUGLI EFFETTI DI SHADOW - FLICKERING**

Formato

Scala

**A4**

-

Codice Elaborato:

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## SOMMARIO

1	PREMESSA .....	2
2	INTRODUZIONE .....	4
2.1	Normativa di riferimento .....	4
3	METODO DI CALCOLO .....	5
3.1	Modello geometrico .....	6
3.1.1	WTG .....	6
3.1.2	RECETTORI D'OMBRA .....	7
4	RISULTATI .....	10
4.1	Worst Case.....	10
4.2	Real Case .....	11
5	VALUTAZIONE DEI RISULTATI .....	13
5.1	Recettore K10.....	13
5.2	Recettori AA27-AB28 .....	15
5.3	Recettore AC28.....	17
5.4	Recettore AD30.....	18
5.5	Recettore AE31 .....	20
5.6	Recettore AF32 .....	21
6	CONCLUSIONI .....	23

## INDICE DELLE FIGURE

Figura 1:	Inquadramento area parco su CTR ed ortofoto.....	2
Figura 2:	Inquadramento area parco 3d su ortofoto. ....	2
Figura 3:	Caratteristiche tecniche e dimensionali WTG .....	6
Figura 4:	Planimetria di ubicazione dei recettori individuati. ....	8
Figura 5:	Visualizzazione 3d dell'ubicazione delle WTG e dei recettori individuati. ....	8
Figura 6:	la mappa delle isolinee di ombreggiamento per la condizione worst case .....	11
Figura 7:	la mappa delle isolinee di ombreggiamento per la condizione "real case" .....	12
Figura 8:	Calendario ombra recettore K10 .....	14
Figura 9:	Calendario ombra recettori AA27-AB28.....	15
Figura 10:	Calendario ombra recettore AC28.....	17
Figura 11:	Calendario ombra recettore AD30. ....	19
Figura 12:	Calendario ombra recettore AE31.....	20
Figura 13:	Calendario ombra recettore AF32. ....	22

# 1 PREMESSA

La presente relazione, redatta su incarico della Società "Energia Levante S.r.l.", società di "SSE Renewables", ha l'obiettivo di rappresentare i risultati dell'analisi degli effetti di **Shadow Flickering**, con riferimento all'area di progetto del futuro parco eolico denominato "Sambucello" da realizzarsi nei territori comunali di Marcellinara, Maida e Caraffa di Catanzaro in provincia di Catanzaro.

Di seguito è riportato l'inquadramento territoriale dell'area di progetto e la configurazione proposta su ortofoto 3D.

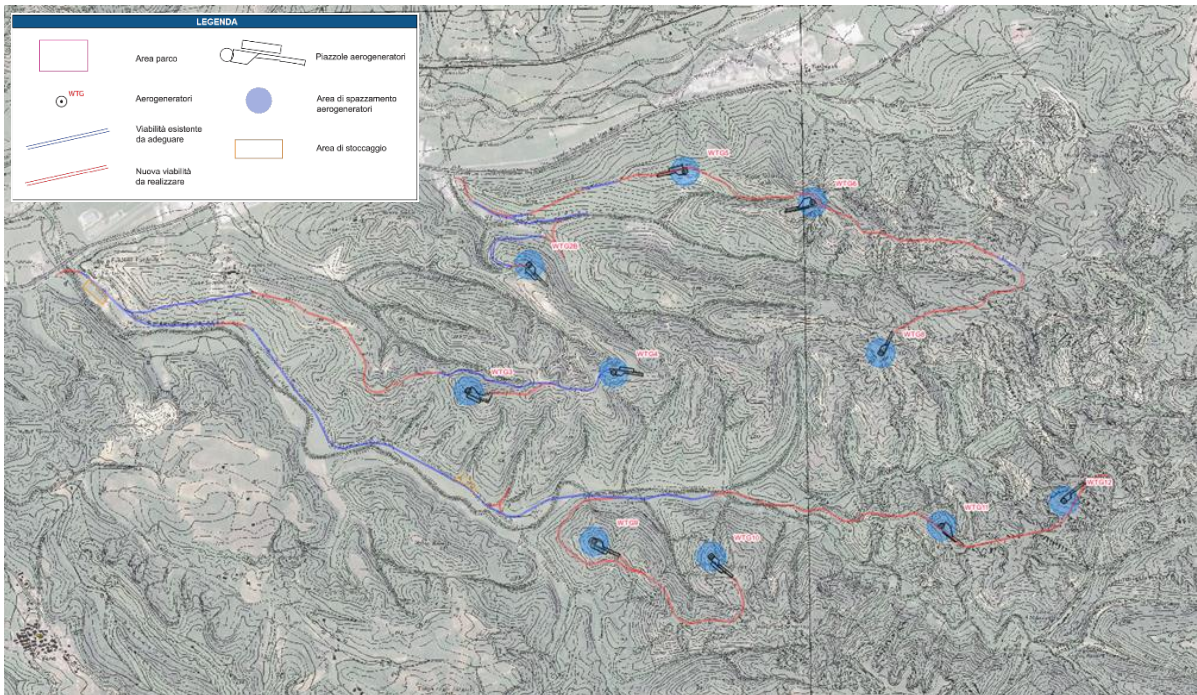


Figura 1: Inquadramento area parco su CTR ed ortofoto.

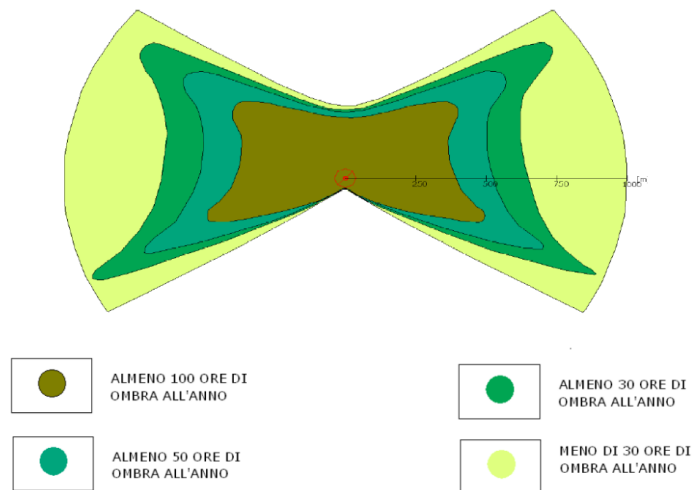


Figura 2: Inquadramento area parco 3d su ortofoto.



Le turbine eoliche, come altre strutture fortemente sviluppate in altezza, proiettano un'ombra sulle aree adiacenti in presenza della luce solare diretta. Per chi vive in tali zone prossime all'insediamento eolico può essere molto fastidioso il cosiddetto fenomeno del "flicker" che consiste in un effetto di lampeggiamento che si verifica quando le pale del rotore in movimento "tagliano" la luce solare in maniera intermittente. Una progettazione attenta a questa problematica permette di evitare questo spiacevole fenomeno semplicemente prevedendo il luogo di incidenza dell'ombra e disponendo le turbine in maniera tale che l'ombra sulle zone sensibili non superi un certo numero di ore all'anno. Il grafico in figura riporta l'evoluzione annuale dell'ombra di una turbina considerando il caso peggiore di pale sempre in rotazione intorno al mozzo, e orientate sempre ortogonalmente al sole durante la sua evoluzione giornaliera.

Come è evidente dal grafico e dalla legenda le ore annue di ombra sono sempre minori con l'aumentare della distanza dal pilone secondo una particolare geometria dettata dalla posizione geografica; da osservare che l'ombra arriva a proiettarsi anche sino ad una distanza di 1 km, anche se solo per pochi minuti all'anno.





## 2 INTRODUZIONE

Lo *Shadow-Flickering* è l'espressione comunemente impiegata in ambito specialistico per descrivere l'effetto stroboscopico delle ombre proiettate dalle pale rotanti degli aerogeneratori eolici quando sussistono le condizioni meteorologiche opportune; infatti la possibilità e la durata di tali effetti dipendono da una serie di condizioni ambientali, tra cui : la posizione del sole, l'ora del giorno, il giorno dell'anno, le condizioni atmosferiche ambientali e la posizione della turbina eolica rispetto ad un recettore sensibile.

L'analisi di *Shadow Flickering* ha l'obiettivo quindi di calcolare la frequenza e il periodo della giornata in cui un elemento (recettore d'ombra) posizionato nei pressi di un aerogeneratore, sarà interessato dalle ombre generate dal movimento delle eliche di uno o più turbine eoliche (WTG) in movimento.

L'impatto dell'ombra si verifica quando le eliche di una WTG interrompono i raggi del sole che altrimenti colpirebbero una posizione specifica (ad esempio una finestra in un insediamento adiacente).

Gli aerogeneratori proposti nel progetto, SIEMENS Gamesa SG 5.0 145, hanno una velocità di rotazione inferiore a 20 giri al minuto, equivalente ad una frequenza inferiore ad 1 Hz, molto inferiore a quelle incluse nell'intervallo che potrebbe provocare un senso di fastidio, e cioè tra i 2,5 Hz ed i 20 Hz (Verkuijlen and Westra, 1984). Perciò le frequenze di passaggio delle pale risulteranno ampiamente minori di quelle ritenute fastidiose per la maggioranza degli individui.

L'entità effettiva dell'impatto dell'ombra dipenderà fortemente dalla posizione geografica. Nelle aree con alti tassi di tempo nuvoloso, il problema ovviamente diminuirà e durante le potenziali ore di ombra in estate, la WTG potrebbe spesso essere ferma a causa della mancanza di vento o ancora, se la direzione del vento fa sì che il piano del rotore della WTG sia parallelo alla linea tra il Sole e il recettore, la WTG non produrrà impatti all'ombra. Inoltre, l'orografia del territorio potrebbe fare da naturale schermo all'effetto che una WTG potrebbe avere su un recettore.

Questo comportamento sito-specifico viene simulato adottando la metodologia "**Real Case**". In particolare, su base statistica, si può implementare la distribuzione reale del vento, secondo la frequenza lungo ognuna delle 12 direzioni della rosa dei venti. Si tiene conto allo stesso modo delle reali ore di insolazione del sito, secondo dati registrati da vicine stazioni meteorologiche.

Per definire i limiti spaziali a cui estendere lo studio, sulla base dell'esperienza pregressa in studi redatti in siti con caratteristiche simili a quello in oggetto, si definisce il valore pari a 1000 m dalla posizione della WTG, come la distanza massima entro cui investigare i recettori. Oltre tale limite spaziale si assume che l'ombra non raggiunga livelli sufficienti a causare un fastidio.

### 2.1 NORMATIVA DI RIFERIMENTO

L'effetto shadow-flickering è più pronunciato, alle latitudini settentrionali durante i mesi Invernali. In particolare, nel Nord Europa, il sole splende in un angolo obliquo per più ore del giorno e più giorni l'anno.

Alcuni paesi hanno adottato dei limiti relativi all'esposizione all'effetto in questione. Alcuni studi e le linee guida di vari paesi del Nord Europa e dell'Australia hanno proposto **30 ore di effetto shadow-flickering per anno** come soglia di impatto significativo, ovvero limite per cui l'effetto ombra è comunemente percepito come fastidioso.

L'Italia non si è ancora dotata di una normativa specifica relativa al fenomeno dello shadow-flickering, a differenza di altri paesi che hanno basato i propri regolamenti sulle linee guida tedesche

### 3 METODO DI CALCOLO

Nel modello sono state inserite le nuove WTG pianificate ed i recettori d'ombra ricadenti entro un raggio di 1000m. I ricettori sono stati modellati assegnando il comportamento "Greenhouse", il che implica un approccio cautelativo. Infatti, si è imposto che le eventuali aperture, nella simulazione, siano sempre perpendicolari alle WTG, massimizzando perciò l'impatto del fenomeno.

- Per il settaggio del modello sono state inputate le seguenti assunzioni:
- Distanza massima di influenza: nessuna;
- Calcola solo quando oltre il 20% del sole è coperto dalla pala;
- Altezza minima del sole sull'orizzonte 3°;
- Passo giornaliero del calcolo 1 giorni;
- Passo temporale del calcolo 1 minuti;

Per evitare di considerare l'ombreggiamento da WTG in realtà non direttamente visibili, prima del calcolo dell'ombra viene eseguito un calcolo delle Zone di Influenza Visiva derivante dalla topografia sito specifica. Quest'ultimo si basa sulle seguenti assunzioni:

- Utilizzo di modello del terreno di dettaglio per la costruzione della scena;
- Ostacoli non usati nel calcolo;
- Altezza dell'osservatore per la mappa: 1,5 m;
- Risoluzione del grigliato: 1,0 m;
- Influenza della topografia inclusa nel calcolo;

Il calcolo è stato dapprima eseguito nelle condizioni di "worst case" ovvero nella condizione più sfavorevole possibile, considerando che:

- il sole risplende per tutta la giornata dall'alba al tramonto (cioè si è sempre in assenza di copertura nuvolosa);
- il piano di rotazione delle pale è sempre perpendicolare alla linea che passa per il sole e per l'aerogeneratore (l'aerogeneratore "insegue" il sole);
- l'aerogeneratore è sempre operativo.

Allo stesso tempo, si è trascurata la presenza degli alberi e di altri ostacoli che bordano le strade "intercettando" l'ombra degli aerogeneratori riducendo il fastidio del flickering.

In seguito lo stesso calcolo è stato eseguito nell'ipotesi di "real case" su input statistici relativi alle ore di insolazione in sito, con dati provenienti dalla stazione meteorologica di Lamezia Terme.

Lamezia Terme Aeroporto	Mesi											
	Gen	Feb	Mar	Apr	Mag	Giu	Lug	Ago	Set	Ott	Nov	Dic
Eliofania assoluta (ore al giorno)	3,4	3,9	4,9	6,3	7,5	9,1	10,2	9,6	8,1	6,0	4,5	3,6

In riferimento alle ore di operatività dell'impianto, a vantaggio di sicurezza, si è considerato l'impianto sempre in funzione h24.

### 3.1 MODELLO GEOMETRICO

Il calcolo del potenziale impatto dell'ombra in un determinato recettore dell'ombra viene effettuato simulando sia il caso peggiore che il caso reale. La posizione del Sole rispetto al disco del rotore WTG e l'ombra risultante viene calcolata con incrementi di 1 minuto per un anno intero. Se l'ombra del disco del rotore (che nel calcolo è considerato solido) in qualsiasi momento lancia un riflesso d'ombra sulla finestra, definito come oggetto recettore d'ombra, questo passaggio verrà registrato come 1 minuto di potenziale impatto dell'ombra. Sono inserite nel modello geometrico le seguenti informazioni:

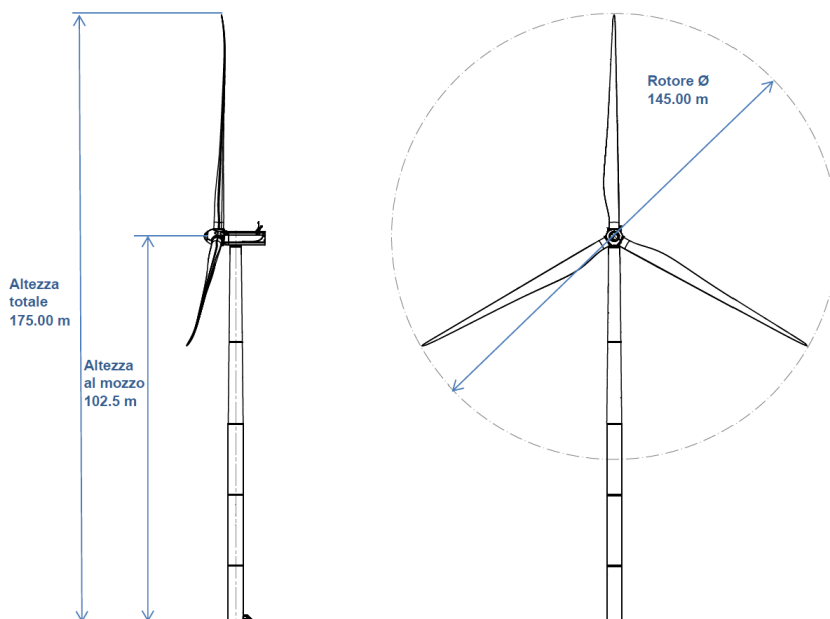
- Posizione delle WTG (coordinate x, y, z);
- Altezza dell'hub de diametro del rotore delle WTG;
- Posizione dei recettori d'ombra (coordinate x, y, z);
- Dimensione delle finestre, la posizione rispetto alla facciata e l'orientamento;
- La posizione geografica del sito;
- Un modello di simulazione, che contenga le informazioni relative all'orbita terrestre e alla rotazione rispetto al sole;

Si precisa, in relazione alle suddette informazioni, che nel modello in oggetto:

- le coordinate Z degli oggetti, sono state calcolate in automatico dal software, sulla base del modello digitale del terreno importato nella scena
- i recettori sono stati modellati come "Greenhouse", considerando che la finestra, posta ad un metro d'altezza dal suolo, abbia sempre una posizione perpendicolare rispetto alla sorgente d'ombra.

#### 3.1.1 WTG

Ai fini della valutazione dell'effetto di *Shadow Flickering*, è stato considerato un aerogeneratore tipo SIEMENS Gamesa SG 5.0-145 HH102.5.



#### Technical specifications

SG 5.0-132		SG 5.0-145
<b>General details</b>		
Rated power	5.0 MW	
IEC class	IA	IIB
Flexible power rating	4.0-5.0 MW	4.0-5.2 MW
Control	Pitch and variable speed	
Standard operating temperature	Range from -20°C to 45°C (with de-rating) <sup>(1)</sup>	
<b>Rotor</b>		
Diameter	132 m	145 m
Swept area	13,685 m <sup>2</sup>	16,513 m <sup>2</sup>
<b>Blades</b>		
Length	64.5 m	71 m
Airfoils	Siemens Gamesa	
Material	Fiberglass reinforced with epoxy resin	
<b>Tower</b>		
Type	Multiple technologies available	
Height	84 m and site-specific	91, 102.5, 127.5 m and site-specific
<b>Gearbox</b>		
Type	3 stages	
<b>Generator</b>		
Type	Doubly-fed induction machine	
Voltage	690 V AC	
Frequency	50 Hz/60 Hz	
Protection class	IP 54	
Power factor	0.9 CAP-0.9 IND throughout the power range <sup>(2)</sup>	

Figura 3: Caratteristiche tecniche e dimensionali WTG



Di seguito si riporta l'individuazione, in forma tabellare, della localizzazione geografica dei singoli aerogeneratori proposti.

## COORDINATE DELLE WTG

<b>WIND FARM:</b>	<b>Sambucello</b>	<b>ISSUED BY:</b>	<b>WIND RESOURCE DEPT.</b>
<b>Nº. TURBINE:</b>	<b>10</b>	<b>PROJECT SUPERVISOR.:</b>	<b>JC</b>
<b>TIPO TURBINE</b>	<b>SG5.0-145</b>	<b>REFERENCE:</b>	<b>CO-Sambucello-09</b>
<b>HUB HEIGHT (m):</b>	<b>102.5</b>	<b>DATE OF ISSUANCE:</b>	<b>5/24/2022</b>

### COORDINATE SYSTEM

<b>Proiezione</b>	UTM
<b>Datum</b>	WGS84
<b>Zona</b>	33

Energia Levante S.r.l.



No. (*)	Easting (m)	Northing (m)	Altitude (m)	Comune
2B	624524	4307273	199.70	Marcellinara (CZ)
3	624213	4306630	245.00	Marcellinara (CZ)
4	624957	4306723	263.53	Marcellinara (CZ)
5	625320	4307749	225.00	Marcellinara (CZ)
6	625974	4307593	295.95	Marcellinara (CZ)
8	626322	4306823	330.00	Marcellinara (CZ)
9	624856	4305860	243.00	Maida (CZ)
10	625456	4305784	274.00	Maida (CZ)
11	626633	4305939	300.18	Caraffa di Catanzaro (CZ)
12	627259	4306067	329.00	Caraffa di Catanzaro (CZ)

### 3.1.2 RECETTORI D'OMBRA

Non esiste una normativa nazionale, né regionale, che definisca con esattezza la corretta interpretazione da attribuire al termine recettore sensibile, con riferimento alla classificazione catastale degli stessi.

Per quanto previsto in altre norme locali, presenti sul territorio italiano (es. PIEAR - Piano di Indirizzo Energetico Ambientale Regionale della Regione Basilicata) si assumono come **recettori sensibili**, ai fini della valutazione, rispettivamente:

- **"abitazioni"**: i fabbricati o porzioni di fabbricati che risultino registrati al catasto Fabbricati alle categorie da A/1 a A/10 o al Catasto Terreni quali fabbricati adibiti ad abitazione e dunque provvisti dei requisiti di cui all'art. 9, comma 3 della legge 133/94 **"in ogni caso tali unità immobiliari devono risultare anagraficamente sede di residenza e conformi allo strumento vigente alla data di entrata in vigore della L.R. 19 gennaio 2010 n. 1 e s.m.i."**;
- **"edifici"**: i fabbricati o porzioni di fabbricati che risultino conformi allo strumento urbanistico vigente e registrati al catasto Fabbricati alle Categorie:
  - B/1 Collegi e convitti, educandati; ricoveri; orfanotrofi; ospizi; conventi; seminari; caserme;
  - B/2 Case di cura ed ospedali (senza fine di lucro);

- B/5 Scuole e laboratori scientifici;
- D/4 Case di cura ed ospedali (con fine di lucro);
- D/10 Fabbricati per funzioni produttive connesse alle attività agricole, nel caso in cui essi siano e risultino sede di residenza dell'imprenditore. Tali edifici debbano risultare effettivamente sede delle suddette attività.

Lo studio *desktop* non ha tenuto conto inizialmente della natura degli insediamenti presenti sul territorio, ma si è limitato alla mera individuazione dei recettori all'interno di un buffer di 1000 metri da ogni WTG, per i quali è stata riscontrata una corrispondenza all'interno del NCEU.

Agli stessi, come già citato in precedenza, è stato assegnato il modello di comportamento "Greenhouse".

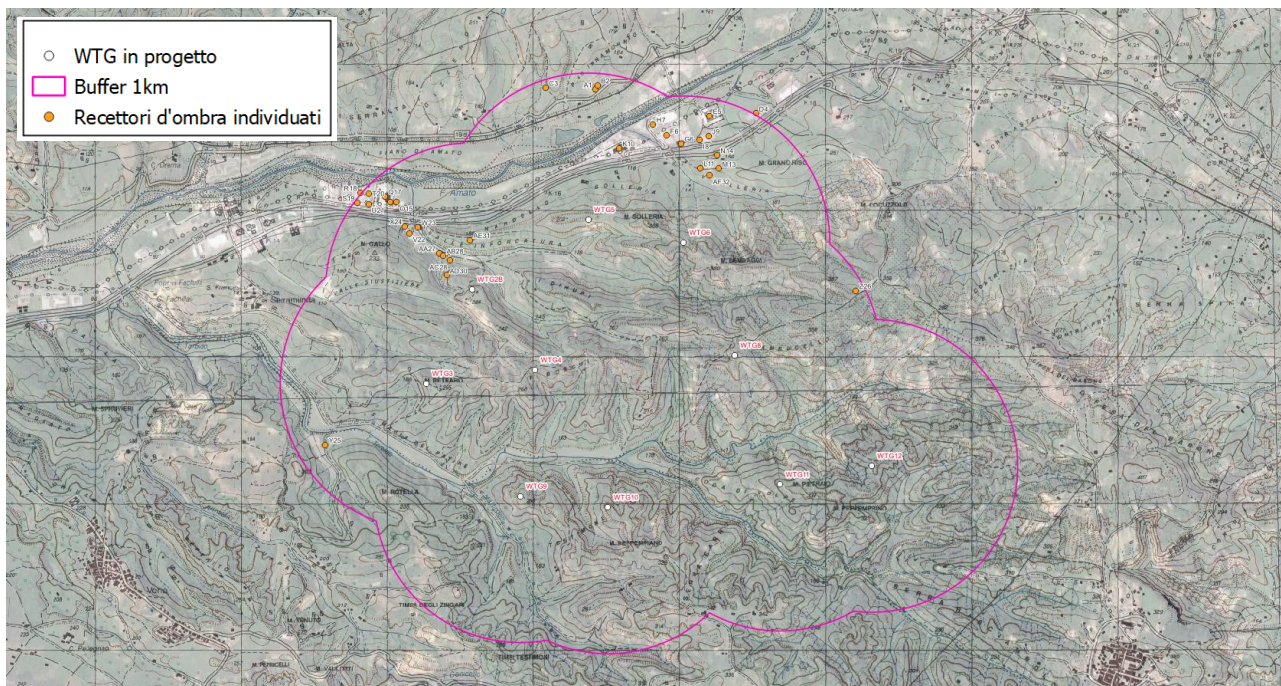


Figura 4: Planimetria di ubicazione dei recettori individuati.



Figura 5: Visualizzazione 3d dell'ubicazione delle WTG e dei recettori individuati.



L'elenco dei recettori e le relative coordinate sono indicate nella seguente tabella.

Proiezione	UTM
Datum	WGS84
Zona	33

ID RECETTORE	EST m	NORD m
A 1	625370.4	4308638
B 2	625388	4308668
C 3	625031.4	4308649
D 4	626467.7	4308475
E 5	626152.7	4308456
F 6	625857.4	4308323
G 6	625955	4308267
H 7	625764	4308398
I 8	626080.7	4308294
J 9	626145	4308319
K 10	625534.2	4308238
L 11	626087.5	4308102
M 13	626213.5	4308097
N 14	626201.7	4308190
O 15	624010.4	4307869
P 16	623966.1	4307867
Q 17	623931.7	4307906
R 18	623761.6	4307931
S 19	623743.4	4307863
T 20	623818.7	4307929
U 21	623817.1	4307856
V 22	624097.6	4307656
W 23	624154.6	4307698
X 24	624065	4307703
Y 25	623522.3	4306209
Z 26	627152.4	4307262
AA 27	624300.3	4307521
AB 28	624327.8	4307502
AC 28	624376.4	4307470
AD 30	624352.1	4307369
AE 31	624511.7	4307608
AF 32	626150.3	4308050

**Nel presente studio sono stati condotti degli approfondimenti specifici per i recettori ritenuti sensibili esposti al fenomeno di shadow flickering per una durata maggiore di 30 ore all'anno.**



## 4 RISULTATI

### 4.1 WORST CASE

È stata redatta l'analisi per i vari ricettori nella condizione *worst case*, i cui risultati analitici sono indicati nella seguente tabella dove sono riportati in verde i ricettori per cui non è presente il fenomeno di *Shadow Flickering*, in giallo i ricettori per i quali l'ombreggiamento risulta essere inferiore alle 50 ore all'anno, in arancio i ricettori per i quali l'ombreggiamento risulta essere inferiore alle 100 ore all'anno ed in rosso i ricettori per i quali l'ombreggiamento risulta essere superiore alle 100 ore all'anno.

Si provvederà a discutere dei ricettori e dei risultati in dettaglio nel paragrafo 5.

Recettore	Ore all'anno di ombra [h/year]	Giorni all'anno di ombra [days/year]	MAX ore al giorno di ombra [h/day]
A 1	0:00	0	0:00
B 2	0:00	0	0:00
C 3	0:00	0	0:00
D 4	17:12	52	0:26
E 5	35:34	74	0:33
F 6	63:09	80	1:03
G 6	57:01	104	0:56
H 7	15:35	38	0:31
I 8	37:27	71	0:49
J 9	28:36	64	0:34
K 10	98:15	70	1:51
L 11	78:41	130	0:59
M 13	77:03	129	0:58
N 14	40:40	98	0:35
O 15	46:04	92	0:43
P 16	50:56	99	0:43
Q 17	41:34	90	0:39
R 18	45:04	99	0:36
S 19	50:01	119	0:36
T 20	43:13	94	0:37
U 21	55:58	116	0:38
V 22	99:31	166	0:57
W 23	91:51	128	1:00
X 24	93:46	143	0:54
Y 25	19:36	78	0:22
Z 26	13:09	76	0:21
AA 27	164:43	209	1:26
AB 28	182:14	222	1:33
AC 28	228:23	262	1:46
AD 30	222:02	177	1:56
AE 31	140:58	171	1:34
AF 32	111:12	140	1:08

Sono stati inoltre elaborati e riportati in appendice: un calendario dell'ombra che riporta in maniera grafica giorno per giorno, per tutto l'anno, la durata giornaliera del fenomeno, l'orario di inizio e di fine del fenomeno ed un calendario dell'ombra per singola WTG grafico e tabellare.

Di seguito si riportano la mappa delle isolinee di ombreggiamento per la condizione *worst case* rappresentante le ore di ombreggiamento annuale.

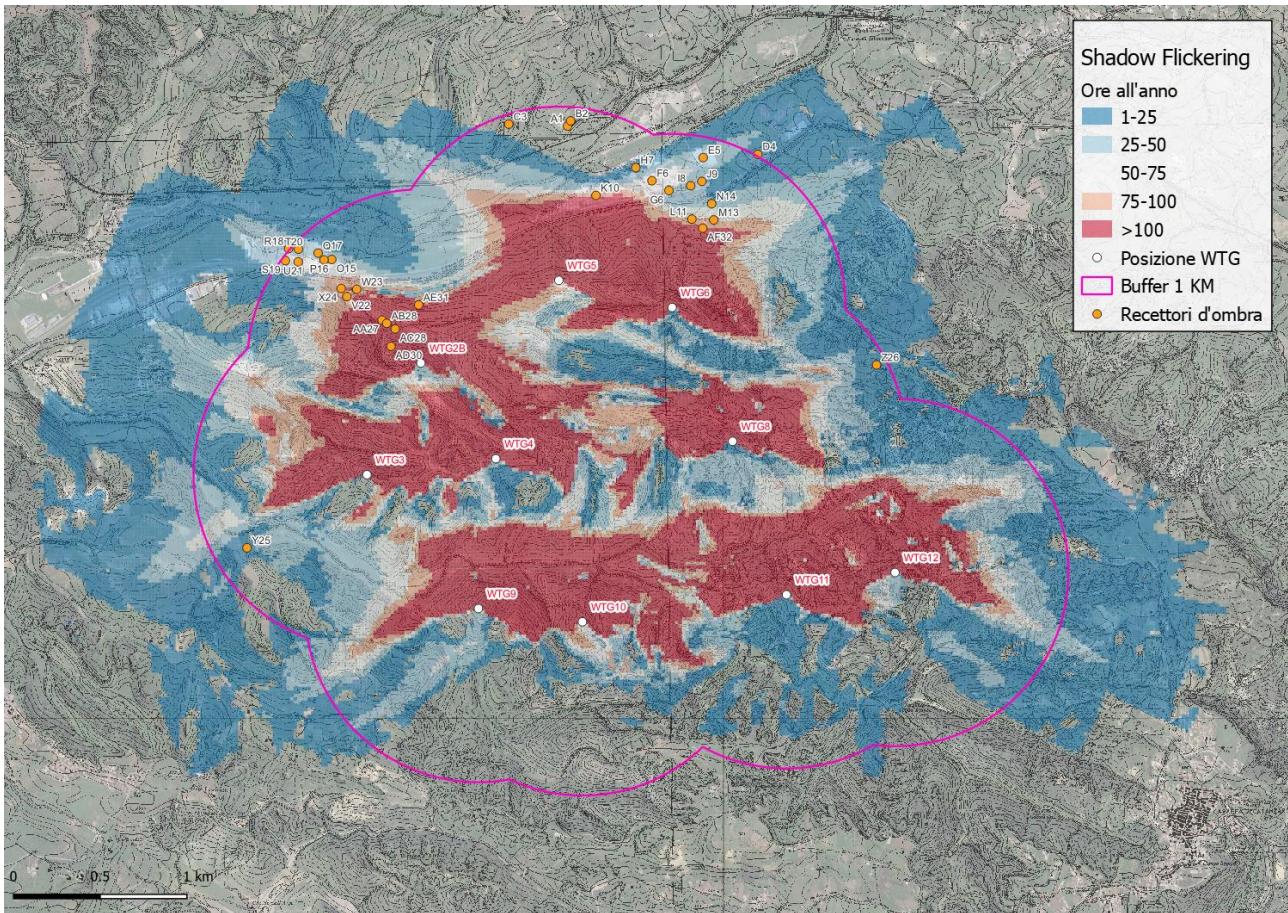


Figura 6: la mappa delle isolinee di ombreggiamento per la condizione worst case

#### 4.2 REAL CASE

È stata redatta l'analisi per i vari ricettori nella condizione *real case*, i cui risultati analitici sono indicati nella seguente tabella dove sono riportati in verde i ricettori per cui non è presente il fenomeno di Shadow Flickering, in giallo i ricettori per i quali l'ombreggiamento risulta essere inferiore alle 50 ore all'anno, in arancio i ricettori per i quali l'ombreggiamento risulta essere inferiore alle 100 ore all'anno ed in rosso i ricettori per i quali l'ombreggiamento risulta essere superiore alle 100 ore all'anno.

Ricettore	WORST CASE	REAL CASE
	Ore all'anno di ombra [h/year]	Ore all'anno di ombra [h/year]
A 1	0:00	0:00
B 2	0:00	0:00
C 3	0:00	0:00
D 4	17:12	3:39
E 5	35:34	8:45
F 6	63:09	17:01
G 6	57:01	13:57
H 7	15:35	4:48
I 8	37:27	8:38
J 9	28:36	6:30
K 10	98:15	32:41
L 11	78:41	24:31
M 13	77:03	22:54
N 14	40:40	10:45



O 15	46:04	11:30
P 16	50:56	12:34
Q 17	41:34	10:05
R 18	45:04	10:18
S 19	50:01	10:41
T 20	43:13	10:08
U 21	55:58	12:34
V 22	99:31	25:11
W 23	91:51	26:20
X 24	93:46	23:11
Y 25	19:36	3:45
Z 26	13:09	2:28
AA 27	164:43	49:10
AB 28	182:14	56:39
AC 28	228:23	77:05
AD 30	222:02	60:20
AE 31	140:58	46:02
AF 32	111:12	35:50

Si provvederà a discutere dei ricettori e dei risultati in dettaglio nel paragrafo 5.

Sono stati inoltre elaborati e riportati in appendice: un calendario dell'ombra che riporta in maniera grafica giorno per giorno, per tutto l'anno, la durata giornaliera del fenomeno, l'orario di inizio e di fine del fenomeno ed un calendario dell'ombra per singola WTG grafico e tabellare.

Di seguito si riportano la mappa delle isolinee di ombreggiamento per la condizione "real case" rappresentante le ore di ombreggiamento annuale.

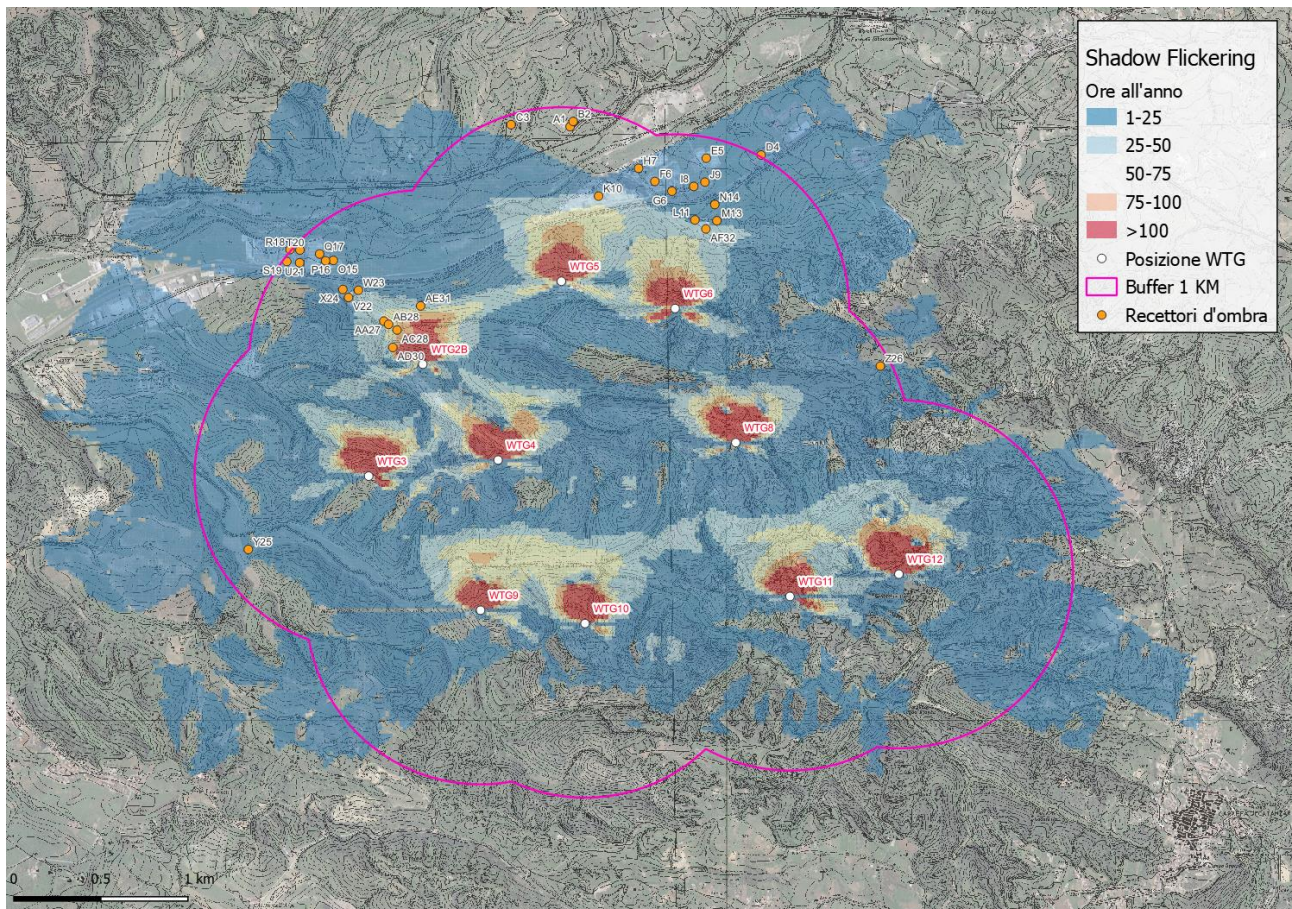


Figura 7: la mappa delle isolinee di ombreggiamento per la condizione "real case"



## VALUTAZIONE DEI RISULTATI

L'indagine condotta ha interessato un'ampia porzione di territorio, costituita da terreni prevalentemente agricoli, scarsamente antropizzata, e caratterizzata da maggior presenza di fabbricati diruti e in stato di abbandono, o costruzioni a stretto servizio dell'attività agricola adibite al ricovero di mezzi ed attrezzi agricoli con minore presenza di fabbricati adibiti ad uso abitativo. Di seguito verranno esposti e commentati i risultati di dettaglio eseguiti per i possibili recettori esposti al fenomeno di *shadow flickering* per una durata maggiore di 30 ore all'anno.

Sulla base dei risultati, è evidente la presenza di solo 7 recettori esposti al fenomeno di *shadow flickering* nelle condizioni *real case* per una durata maggiore di 30 ore all'anno su un totale di 32 analizzati.

Recettore	Ore all'anno di ombra [h/year]
K 10	32:41
AA 27	49:10
AB 28	56:39
AC 28	77:05
AD 30	60:20
AE 31	46:02
AF 32	35:50

Per questi recettori si è provveduto ad effettuare un'analisi di dettaglio sulla categoria catastale e sulla destinazione d'uso reale, al fine di verificarne la natura ed eventualmente, se applicabili, valutare le eventuali mitigazioni necessarie.

### 4.3 RECETTORE K10

Il recettore K10 dal calcolo effettuato in *real case* risulta esposto al fenomeno per 32,41 ore all'anno. Catastalmente esso risulta censito al NCEU del Comune di Marcellinara - Fabbricati al foglio 10 p.la 200 con categoria catastale **D01** - IMMOBILI A DESTINAZIONE SPECIALE - Gruppo D01 Opifici.

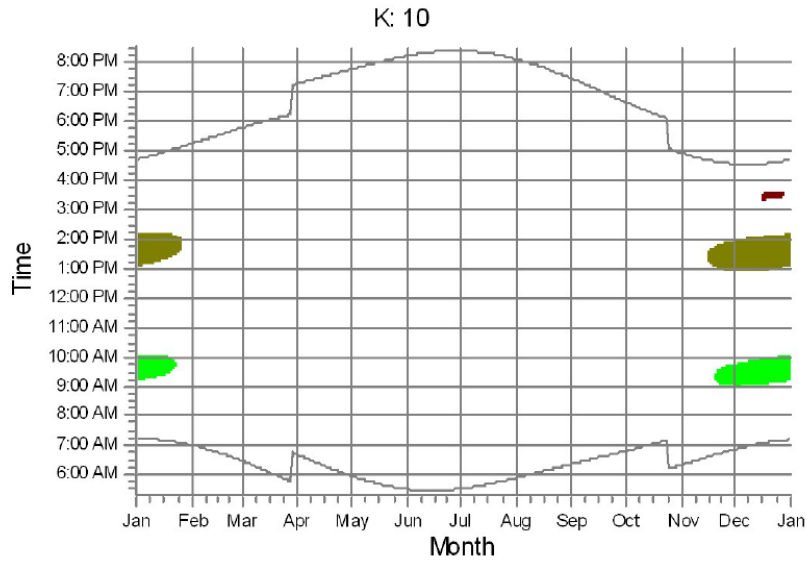
Considerata la categoria catastale del recettore K10, lo stesso quindi, non risulta sensibile al fenomeno dell'ormeggiamento.

#### Dati della ricerca

Catasto: **Fabbricati**  
 Comune di: **MARCELLINARA** Codice: **E925**  
 Foglio: **10** Particella: **200**  
 Immobili individuati: **5**

#### Elenco Immobili

	Foglio	Particella	Sub	Indirizzo	Zona cens	Categoria	Classe	Consistenza	Rendita	Partita	Altri Dati <sup>1</sup>
<input type="radio"/>	10	200								Soppressa	
<input type="radio"/>	10	200	1101							Soppressa	<a href="#">Sl</a>
<input type="radio"/>	10	200	1102							Soppressa	<a href="#">Sl</a>
<input type="radio"/>	10	200	1103							Soppressa	
<input checked="" type="radio"/>	10	200	2	CONTRADA GANGUZZA n. SN Piano S1-T - 1-2 - 3-4		D01			R.Euro:136800,00		<a href="#">Sl</a>



WTGs



Figura 8: Calendario ombra recettore K10

Recettore K10

LAT: 38.913885° LON: 16.446962° - SR WGS84



#### 4.4 RECETTORI AA27-AB28

I recettori AA27 e AB28, dal calcolo effettuato in *real case*, risultano esposti al fenomeno rispettivamente per 49.10 e 56.39 ore all'anno. Catastalmente essi risultano censiti al NCEU del Comune di Marcellinara - Fabbricati al foglio 17 p.la 97 con categoria catastale **C06** - Stalle, scuderie, rimesse, autorimesse.

Considerata la categoria catastale quindi, si può affermare che i recettori AA27 e AB28 non risultano sensibili al fenomeno dell'ombreggiamento.

##### Dati della ricerca

Catasto: **Fabbricati**  
Comune di: **MARCELLINARA** Codice: **E925**  
Foglio: **17** Particella: **97**  
Immobili individuati: **1**

##### Elenco Immobili

Foglio	Particella	Sub	Indirizzo	Zona cens	Categoria	Classe	Consistenza	Rendita	Partita	Altri Dati
17	97		CONTRADA INFORCATURA n. 6 Piano T		C06	03	400 m <sup>2</sup>	R.Euro:330.53		

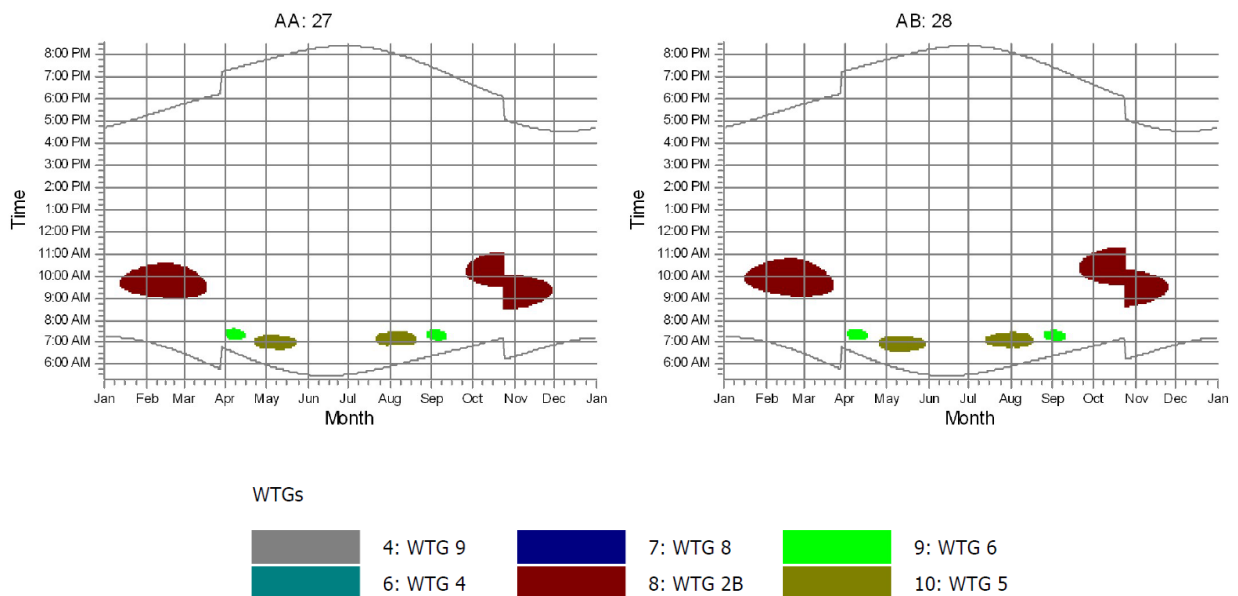


Figura 9: Calendario ombra recettori AA27-AB28.



**Recettore AA27**

*LAT: 38.907787° LON: 16.433581° - SR WGS84*



**Recettore AB28**

*LAT: 38.907605° LON: 16.433895° - SR WGS84*





### 4.5 RECETTORE AC28

Il recettore AC28 dal calcolo effettuato in *real case* risulta esposto al fenomeno per 77,05 ore all'anno. Catastalmente esso risulta censito al NCEU del Comune di Marcellinara - Fabbricati al foglio 17 p.lla 100 con categoria catastale **A04** – Abitazioni di tipo popolare.

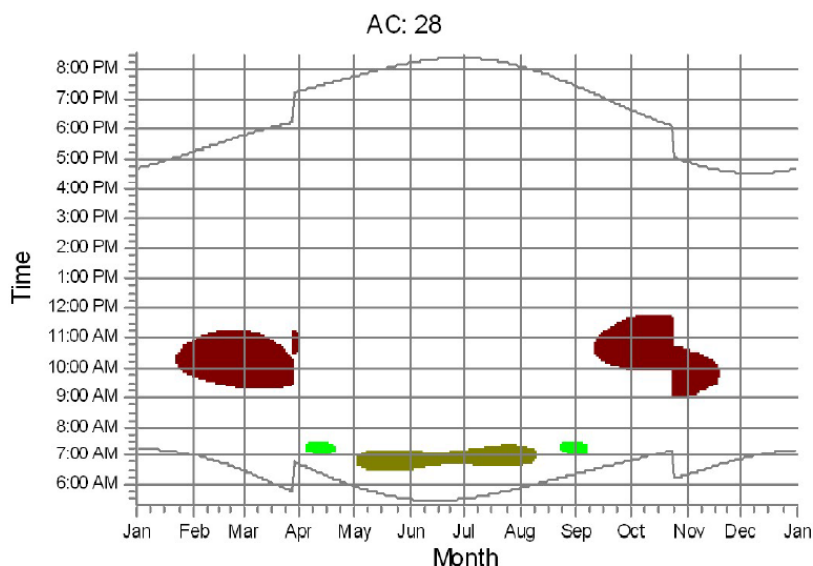
Come evidenziato dal rilievo fotografico l'immobile allo stato attuale risulta adibito a ricovero per gli animali, pertanto lo stesso non risulta abitato e quindi sensibile al fenomeno dell'ormeggiamento.

#### Dati della ricerca

Catasto: **Fabbricati**  
 Comune di: **MARCELLINARA** Codice: **E925**  
 Foglio: **17** Particella: **100**  
 Immobili individuati: **1**

#### Elenco Immobili

Foglio	Particella	Sub	Indirizzo	Zona cens	Categoria	Classe	Consistenza	Rendita	Partita	Altri Dati
17	100		CONTRADA INFORCATURA n. 6 Piano T		A04	02	4 vani	R.Euro:76,44		



WTGs

- 4: WTG 9
- 7: WTG 8
- 9: WTG 6
- 6: WTG 4
- 8: WTG 2B
- 10: WTG 5

Figura 10: Calendario ombra recettore AC28.

Recettore AC28

LAT: 38.907321° LON: 16.434453° - SR WGS84



#### 4.6 RECETTORE AD30

Il recettore AD30 dal calcolo effettuato in *real case* risulta esposto al fenomeno per 60,20 ore all'anno. Catastalmente esso risulta riportatati sulle planimetrie catastali ma non censito al NCEU - Fabbricati del Comune di Marcellinara.

Come evidenziato dal rilievo fotografico l'immobile allo stato attuale non risulta esistente quindi, ovviamente esso non può essere sensibile al fenomeno dell'ormeggiamento.

##### Dati della ricerca

Catasto: **Fabbricati**  
 Comune di: **MARCELLINARA** Codice: **E925**  
 Foglio: **17** Particella: **33**

##### Elenco Immobili

NESSUNA CORRISPONDENZA TROVATA



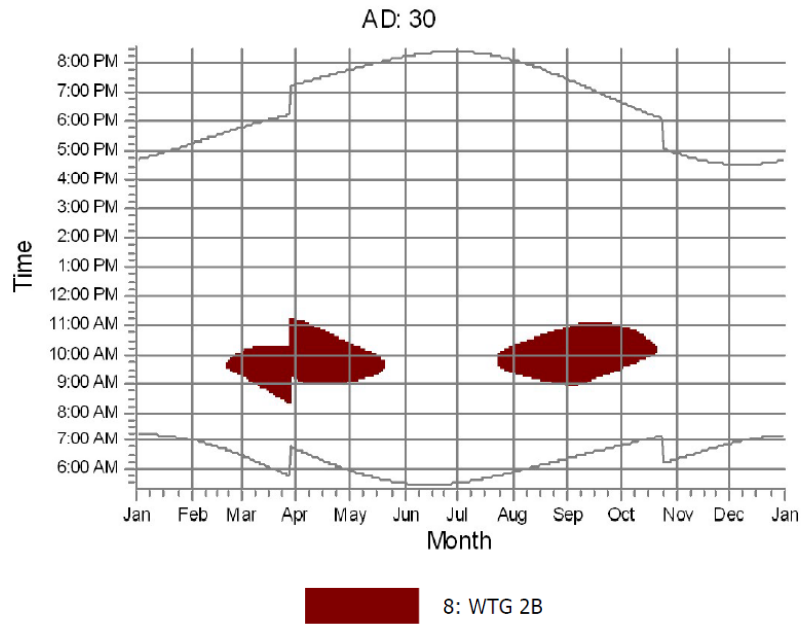
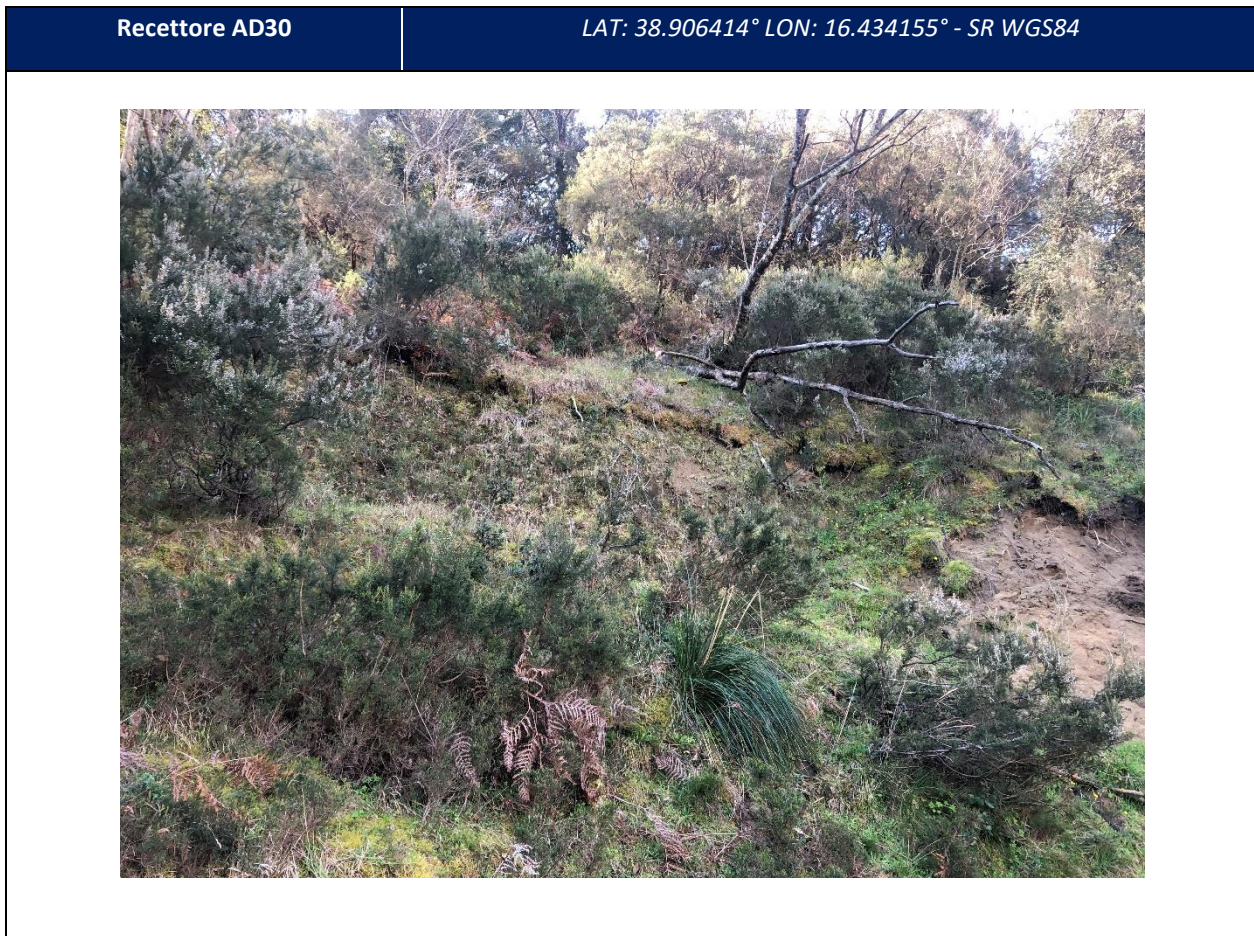


Figura 11: Calendario ombra recettore AD30.





#### 4.7 RECETTORE AE31

Il recettore AE31 dal calcolo effettuato in *real case* risulta esposto al fenomeno per 46,02 ore all'anno. Catastalmente esso risulta riportatati sulle planimetrie catastali ma non censito al NCEU - Fabbricati del Comune di Marcellinara.

Come evidenziato dal rilievo fotografico l'immobile allo stato attuale è da considerarsi un rudere quindi, ovviamente esso non può essere sensibile al fenomeno dell'ormeggiamento.

##### Dati della ricerca

Catasto: **Fabbricati**  
Comune di: **MARCELLINARA** Codice: **E925**  
Foglio: 17 Particella: 2

##### Elenco Immobili

NESSUNA CORRISPONDENZA TROVATA

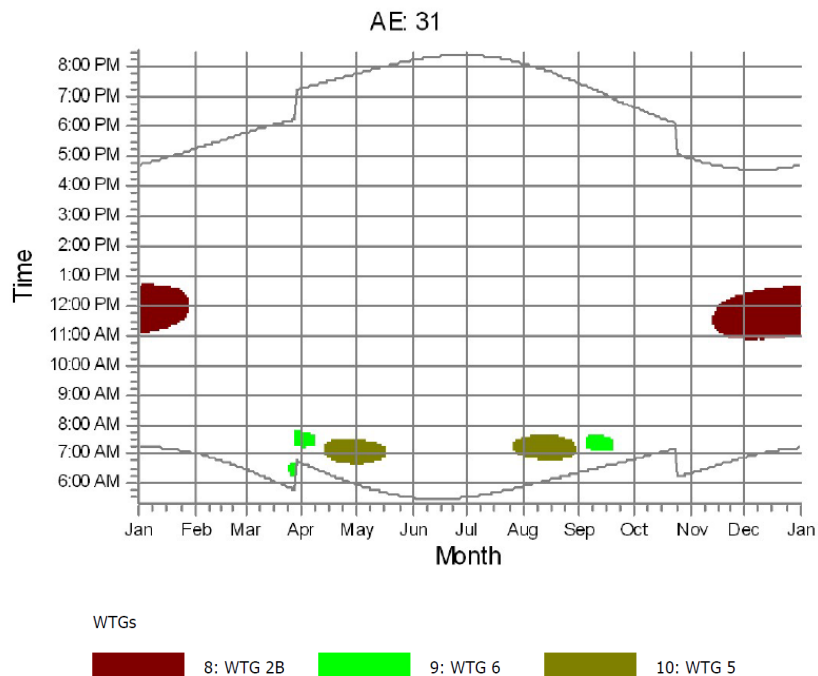


Figura 12: Calendario ombra recettore AE31.

**Recettore AE31** LAT: 38.908544° LON: 16.436031° - SR WGS84



#### 4.8 RECETTORE AF32

Il recettore AF32 dal calcolo effettuato in *real case* risulta esposto al fenomeno per 35,50 ore all'anno. Catastalmente esso risulta censito al NCEU del Comune di Marcellinara - Fabbricati al foglio 11 p.lla 127 con categoria catastale **C06** - Stalle, scuderie, rimesse, autorimesse.

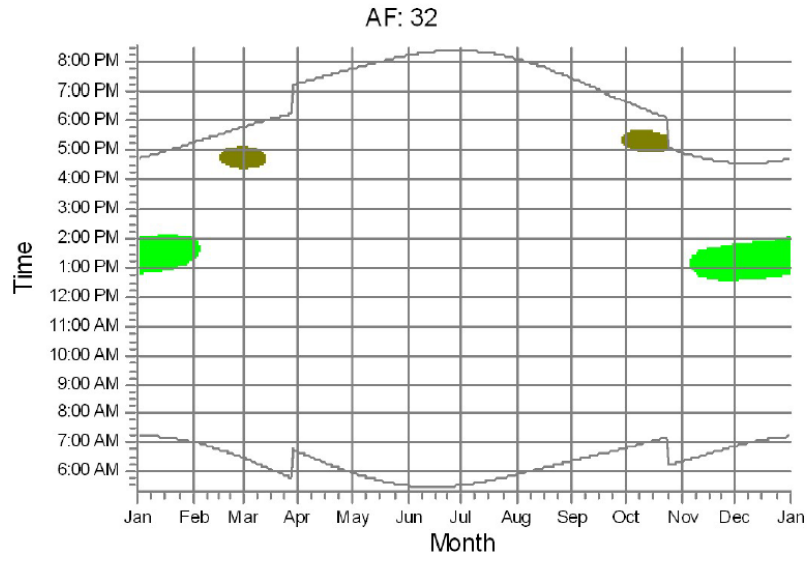
Considerata la categoria catastale quindi, si può affermare che il recettore AF32 non risulta sensibile al fenomeno dell'ombreggiamento.

##### Dati della ricerca

Catasto: **Fabbricati**  
 Comune di: **MARCELLINARA** Codice: **E925**  
 Foglio: 11 Particella: 127  
 Immobili individuati: 1

##### Elenco Immobili

	Foglio	Particella	Sub	Indirizzo	Zona cens	Categoria	Classe	Consistenza	Rendita	Partita	Altri Dati
<input checked="" type="radio"/>	11	127		CONTRADA GRANORISO Piano T		C06	02	350 m <sup>2</sup>	R.Euro 253,06		



WTGs



Figura 13: Calendario ombra recettore AF32.

Recettore AF32

LAT: 38.912325° LON: 16.454955° - SR WGS84





## 5 CONCLUSIONI

Le raccomandazioni generali riguardo al fenomeno indicano che lo *shadow flickering* non ecceda le 30 ore all'anno per ciascun recettore sensibile individuato.

Queste raccomandazioni sono state tratte da uno studio commissionato a PREDAC (Promotion of Renewable Energy and Development of Action at a european level - un'associazione per la promozione delle migliori pratiche in campo delle energie rinnovabili) dall'Unione Europea sulla base delle esperienze nel campo di Belgio, Danimarca, Francia, Olanda e Germania.

Nel presente studio è stato valutato l'effetto della fluttuazione d'ombra per tutte le abitazioni comprese entro un buffer di 1000 m da ciascun aerogeneratore.

Al fine di verificare la sussistenza del fenomeno dello *shadow- flickering* indotto dal parco eolico in progetto sono state effettuate una serie di simulazioni che hanno tenuto conto:

- del diagramma solare riferito alla latitudine di installazione del parco;
- della posizione degli aerogeneratori e dell'altezza complessiva della macchina, intesa quale somma tra l'altezza del mozzo e la lunghezza della pala;
- della posizione del sole e quindi della proiezione dell'ombra rispetto ai recettori;
- della posizione dei possibili recettori rientranti in un buffer di 1000 m da ogni aerogeneratore del parco.

Quale ipotesi cautelativa, per ogni recettore sono state considerate 4 finestre distribuite sui 4 punti cardinali (modalità "Greenhouse").

Dal momento che il fenomeno dello *shadow flickering* è prodotto dalla contemporanea presenza di sole libero da nubi (potenzialità di generare ombre) e funzionamento delle WTG (rotore permanentemente in moto) allo scopo di pervenire a valori più realistici, prossimi al caso reale (*REAL CASE*), si è tenuto conto dell'eliofania locale con dati provenienti dalla stazione meteorologica di Lamezia Terme.

Per quanto riguarda le ore annue di funzionamento delle WTG sempre quale ipotesi conservativa si è deciso di considerare le WTG sempre in funzione h24.

A tal proposito è importante sottolineare che anche il caso reale, calcolato tenendo conto dell'eliofania locale, è comunque un valore cautelativo in quanto nella stima non si è tenuto conto delle effettive ore di funzionamento dell'impianto, dell'effettiva presenza di finestre nei recettori individuati esposti al fenomeno, degli effetti mitigativi dovuti al piano di rotazione delle pale non sempre ortogonale alla direttrice sole-finestra e all'eventuale presenza di ostacoli e/o vegetazione interposti tra il sole e la finestra.

Sulla base dei risultati, è evidente la presenza di solo 7 recettori esposti al fenomeno di *shadow flickering* nelle condizioni *real case* per una durata maggiore di 30 ore all'anno su un totale di 32 analizzati.

Dall'analisi di dettaglio emerge inoltre che di questi 7 recettori **nessuno può essere considerato sensibile** in riferimento alle categorie catastali ed alla destinazione d'uso degli stessi.

## **ALLEGATO 1 - RISULTATI *WORST CASE***

## SHADOW - Main Result

### Assumptions for shadow calculations

Maximum distance for influence  
Calculate only when more than 20 % of sun is covered by the blade  
Please look in WTG table

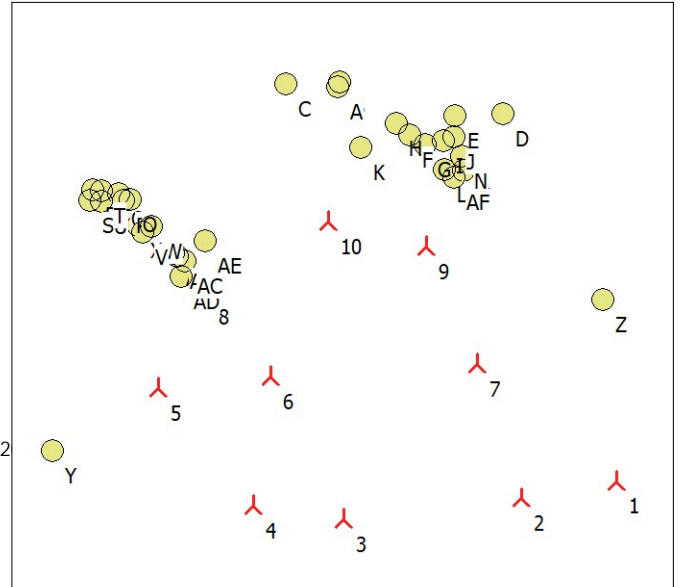
Minimum sun height over horizon for influence 3 °  
Day step for calculation 1 days  
Time step for calculation 1 minutes  
The calculated times are "worst case" given by the following assumptions:  
The sun is shining all the day, from sunrise to sunset  
The rotor plane is always perpendicular to the line from the WTG to the sun  
The WTG is always operating

A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:  
Height contours used: Height Contours: CONTOURLINE\_WP\_Sambucello\_2\_2  
Obstacles used in calculation  
Eye height for map: 1.5 m  
Grid resolution: 1.0 m  
Topographic shadow included in calculation

All coordinates are in  
UTM (north)-WGS84 Zone: 33

### WTGs

	Easting	Northing	Z	Row data/Description	WTG type		Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.					Calculation distance [m]	RPM [RPM]
1	627,259	4,306,067	322.2	WTG 12	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
2	626,633	4,305,939	306.7	WTG 11	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
3	625,456	4,305,784	270.2	WTG 10	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
4	624,856	4,305,860	250.0	WTG 9	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
5	624,213	4,306,630	226.5	WTG 3	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
6	624,957	4,306,723	250.0	WTG 4	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
7	626,322	4,306,823	314.5	WTG 8	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
8	624,524	4,307,273	202.7	WTG 2B	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
9	625,974	4,307,593	284.3	WTG 6	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
10	625,320	4,307,749	230.0	WTG 5	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8



Scale 1:50,000  
New WTG Shadow receptor

### Shadow receptor-Input

No.	Name	Easting	Northing	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
				[m]	[m]	[m]	[m]	[°]		[m]
A	1	625,370	4,308,638	139.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
B	2	625,388	4,308,668	141.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
C	3	625,031	4,308,649	142.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
D	4	626,468	4,308,475	155.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
E	5	626,153	4,308,456	136.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
F	6	625,857	4,308,323	127.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
G	6	625,955	4,308,267	133.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
H	7	625,764	4,308,398	123.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
I	8	626,081	4,308,294	137.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
J	9	626,145	4,308,319	139.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
K	10	625,534	4,308,238	120.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
L	11	626,087	4,308,102	158.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
M	13	626,214	4,308,097	175.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
N	14	626,202	4,308,190	155.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
O	15	624,010	4,307,869	100.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
P	16	623,966	4,307,867	100.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
Q	17	623,932	4,307,906	100.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
R	18	623,762	4,307,931	100.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
S	19	623,743	4,307,863	100.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
T	20	623,819	4,307,929	100.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0

To be continued on next page...



Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

## SHADOW - Main Result

...continued from previous page

No.	Name	Easting	Northing	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
				[m]	[m]	[m]	[m]	[°]		[m]
U 21		623,817	4,307,856	100.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
V 22		624,098	4,307,656	110.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
W 23		624,155	4,307,698	110.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
X 24		624,065	4,307,703	110.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
Y 25		623,522	4,306,209	115.5	1.0	1.0	1.0	90.0	"Green house mode"	2.0
Z 26		627,152	4,307,262	378.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
AA 27		624,300	4,307,521	110.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
AB 28		624,328	4,307,502	111.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
AC 28		624,376	4,307,470	115.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
AD 30		624,352	4,307,369	148.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
AE 31		624,512	4,307,608	160.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
AF 32		626,150	4,308,050	158.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0

## Calculation Results

Shadow receptor

Shadow, worst case

No.	Name	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
A 1		0:00	0	0:00
B 2		0:00	0	0:00
C 3		0:00	0	0:00
D 4		17:12	52	0:26
E 5		35:34	74	0:33
F 6		63:09	80	1:03
G 6		57:01	104	0:56
H 7		15:35	38	0:31
I 8		37:27	71	0:49
J 9		28:36	64	0:34
K 10		98:15	70	1:51
L 11		78:41	130	0:59
M 13		77:03	129	0:58
N 14		40:40	98	0:35
O 15		46:04	92	0:43
P 16		50:56	99	0:43
Q 17		41:34	90	0:39
R 18		45:04	99	0:36
S 19		50:01	119	0:36
T 20		43:13	94	0:37
U 21		55:58	116	0:38
V 22		99:31	166	0:57
W 23		91:51	128	1:00
X 24		93:46	143	0:54
Y 25		19:36	78	0:22
Z 26		13:09	76	0:21
AA 27		164:43	209	1:26
AB 28		182:14	222	1:33
AC 28		228:23	262	1:46
AD 30		222:02	177	1:56
AE 31		140:58	171	1:34
AF 32		111:12	140	1:08

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Worst case [h/year]
1	WTG 12	0:00
2	WTG 11	0:00
3	WTG 10	0:00
4	WTG 9	3:23
5	WTG 3	0:00
6	WTG 4	16:13
7	WTG 8	12:19

To be continued on next page...

Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

## SHADOW - Main Result

...continued from previous page

No.	Name	Worst case [h/year]
8	WTG 2B	660:32
9	WTG 6	183:07
10	WTG 5	356:28

Total times in Receptor wise and WTG wise tables can differ, as a WTG can lead to flicker at 2 or more receptors simultaneously and/or receptors may receive flicker from 2 or more WTGs simultaneously.

## **ALLEGATO 2 - CALENDARIO *WORST CASE***



## SHADOW - Calendar

Shadow receptor: A - 1

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 17:15	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:14	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33
2	07:14 16:44	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	06:54 16:33
3	07:14 16:44	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	06:55 16:33
4	07:14 16:45	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:30 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33
5	07:14 16:46	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	06:57 16:33
6	07:14 16:47	06:57 17:21	06:23 17:52	06:35 19:22	05:53 19:51	05:30 20:17	05:34 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33
7	07:14 16:48	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:18	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	06:59 16:32
8	07:14 16:49	06:55 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:32
9	07:14 16:50	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	05:37 20:23	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:32
10	07:14 16:51	06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33
11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:03 16:33
12	07:13 16:53	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:55	06:33 19:09	06:58 18:22	06:33 16:44	07:03 16:33
13	07:13 16:54	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33
14	07:13 16:55	06:49 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:42	07:05 16:33
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16	07:12 16:57	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:01	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	07:06 16:34
17	07:12 16:58	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	07:07 16:34
18	07:11 16:59	06:44 17:35	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:23	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	07:08 16:34
19	07:11 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35
20	07:10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 16:35
21	07:10 17:02	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	07:09 16:36
22	07:09 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:24	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	07:10 16:36
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31	07:03 17:14		06:43 19:16		05:32 20:13		05:54 20:08	06:22 19:28		06:20 16:57		07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Total, worst case												

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: B - 2

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 17:15	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:14	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33
2	07:14 16:44	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	06:54 16:33
3	07:14 16:44	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	06:55 16:33
4	07:14 16:45	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:30 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33
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19	07:11 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35
20	07:10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 16:35
21	07:10 17:02	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	07:09 16:36
22	07:09 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:24	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	07:10 16:36
23	07:09 17:05	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	07:10 16:37
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28	07:05 17:10	06:30 17:45	05:47 18:14	06:02 19:43	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	07:12 16:40
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31	07:03 17:14		06:43 19:16		05:32 20:13		05:54 20:08	06:22 19:28		06:20 16:57		07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Total, worst case												

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: C - 3

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 17:15	06:29 17:47	06:41 19:17	05:58 19:46	05:32 20:14	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33
2	07:14 16:44	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	06:54 16:33
3	07:14 16:44	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	06:55 16:33
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22	07:09 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:24	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	07:10 16:36
23	07:09 17:05	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	07:10 16:37
24	07:08 17:06	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	07:11 16:37
25	07:07 17:07	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:35	07:11 16:38
26	07:07 17:08	06:33 17:43	05:50 18:12	06:04 19:42	05:35 20:09	05:31 20:24	05:50 20:12	06:17 19:36	06:45 18:47	06:14 17:03	06:48 16:35	07:12 16:38
27	07:06 17:09	06:32 17:44	05:49 18:13	06:03 19:43	05:34 20:10	05:31 20:24	05:50 20:12	06:18 19:34	06:46 18:45	06:16 17:01	06:49 16:35	07:12 16:39
28	07:05 17:10	06:30 17:45	05:47 18:14	06:02 19:44	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	07:12 16:40
29	07:04 17:12		06:46 19:15	06:01 19:44	05:33 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	07:13 16:40
30	07:04 17:13		06:44 19:16	05:59 19:45	05:33 20:12	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	07:13 16:41
31	07:03 17:14		06:43 19:16		05:32 20:13		05:54 20:08	06:22 19:28		06:20 16:57		07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Total, worst case												

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: D - 4

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:13 16:43	07:02 17:15	16:10 (10) 17:46	06:29 19:17	06:41 19:46	05:58 20:14	05:32 20:24	05:32 20:07	05:55 19:27	06:23 18:39	06:50 16:55	06:21 16:33	15:55 (10) 15:58 (10)
2	07:14 16:44	07:01 17:16	16:11 (10) 16:30 (10)	06:27 17:47	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	16:33
3	07:14 16:44	07:00 17:17	16:12 (10) 16:29 (10)	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	16:33
4	07:14 16:45	06:59 17:18	16:14 (10) 16:28 (10)	06:24 17:50	06:36 19:20	05:54 19:49	05:30 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	06:24 16:52	16:33
5	07:14 16:46	06:58 17:20	16:16 (10) 16:26 (10)	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	16:33
6	07:14 16:47	06:57 17:21	16:17 (10) 17:52	06:21 19:22	06:33 19:51	05:52 20:17	05:30 20:23	05:35 20:02	05:59 19:19	06:27 18:31	06:54 16:50	06:26 15:46 (10)	16:33
7	07:14 16:48	06:56 17:22	16:18 (10) 17:53	06:20 19:23	06:32 19:52	05:51 20:17	05:30 20:23	06:00 20:00	06:28 19:17	06:55 18:30	06:27 16:49	15:59 (10)	16:32
8	07:14 16:49	06:55 17:23	16:19 (10) 17:54	06:18 19:24	06:30 19:53	05:50 20:18	05:29 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	15:43 (10)	16:32
9	07:14 16:50	06:54 17:24	16:20 (10) 17:55	06:17 19:25	06:29 19:54	05:49 20:19	05:29 20:22	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	15:41 (10)	16:32
10	07:13 16:51	06:53 17:25	16:21 (10) 17:56	06:15 19:26	06:27 19:55	05:48 20:19	05:29 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	15:40 (10)	16:32
11	07:13 16:52	16:13 (10) 16:15 (10)	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	15:40 (10)	16:33
12	07:13 16:53	16:11 (10) 16:19 (10)	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	06:05 19:55	06:32 19:09	07:00 18:22	06:33 16:44	15:40 (10)	16:33
13	07:13 16:54	16:09 (10) 16:21 (10)	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	15:40 (10)	16:33
14	07:13 16:55	16:08 (10) 16:23 (10)	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:42	15:39 (10)	16:33
15	07:12 16:56	16:08 (10) 16:24 (10)	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	15:39 (10)	16:33
16	07:12 16:57	16:07 (10) 16:25 (10)	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	15:39 (10)	16:34
17	07:12 16:58	16:07 (10) 16:27 (10)	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	15:39 (10)	16:34
18	07:11 16:59	16:06 (10) 16:27 (10)	06:44 17:34	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:22	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	15:40 (10)	16:34
19	07:11 17:00	16:06 (10) 16:29 (10)	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	15:40 (10)	16:35
20	07:10 17:01	16:06 (10) 16:29 (10)	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	15:41 (10)	16:35
21	07:10 17:02	16:06 (10) 16:30 (10)	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:37	15:41 (10)	16:35
22	07:09 17:04	16:06 (10) 16:30 (10)	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:24	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	15:42 (10)	16:36
23	07:09 17:05	16:05 (10) 16:31 (10)	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24	06:15 19:40	06:42 18:52	07:11 18:06	06:45 16:36	15:42 (10)	16:36
24	07:08 17:06	16:06 (10) 16:32 (10)	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	15:44 (10)	16:37
25	07:07 17:07	16:06 (10) 16:32 (10)	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	06:16 19:37	06:44 18:49	07:13 17:04	06:47 16:35	15:45 (10)	16:38
26	07:07 17:08	16:06 (10) 16:32 (10)	06:33 17:43	05:50 18:12	06:04 19:42	05:35 20:09	05:31 20:24	06:17 19:36	06:45 18:47	07:14 17:03	06:48 16:35	15:46 (10)	16:38
27	07:06 17:09	16:06 (10) 16:32 (10)	06:31 17:44	05:49 18:13	06:03 19:42	05:34 20:10	05:31 20:24	06:18 19:34	06:46 18:45	07:15 17:01	06:49 16:35	15:47 (10)	16:39
28	07:05 17:10	16:07 (10) 16:33 (10)	06:30 17:45	05:47 18:14	06:02 19:43	05:33 20:11	05:31 20:24	06:19 19:33	06:47 18:44	07:16 17:00	06:50 16:34	15:48 (10)	16:40
29	07:04 17:12	16:08 (10) 16:32 (10)	06:29 17:46	05:46 19:14	06:01 19:44	05:33 20:11	05:32 20:24	06:20 19:31	06:48 18:42	07:17 16:59	06:51 16:34	15:50 (10)	16:40
30	07:04 17:13	16:08 (10) 16:32 (10)	06:28 17:47	05:45 19:15	06:00 19:45	05:32 20:12	05:32 20:24	06:21 20:09	06:49 18:41	07:18 16:58	06:52 16:34	15:52 (10)	16:41
31	07:03 17:14	16:09 (10) 16:32 (10)	06:27 17:48	05:44 19:16	06:00 19:46	05:32 20:13	05:33 20:24	06:22 19:28	06:50 18:40	07:19 16:56	06:53 16:34	15:53 (10)	16:42
Potential sun hours	303	300	300	370	396	443	445	453	424	374	347	303	294
Total, worst case	433	81	370	396	443	445	453	424	374	347	303	294	3

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: E - 5

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:13 16:43	15:21 (10) 15:53 (10)	07:02 17:15	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:14	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33	15:07 (10) 15:40 (10)
2	07:14 16:44	15:22 (10) 15:54 (10)	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	06:54 16:33	15:08 (10) 15:40 (10)
3	07:14 16:44	15:22 (10) 15:54 (10)	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	06:55 16:33	15:08 (10) 15:40 (10)
4	07:14 16:45	15:22 (10) 15:55 (10)	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:30 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	06:24 16:52	06:56 16:33	15:08 (10) 15:41 (10)
5	07:14 16:46	15:23 (10) 15:55 (10)	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	06:57 16:32	15:09 (10) 15:41 (10)
6	07:14 16:47	15:23 (10) 15:56 (10)	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:32	15:09 (10) 15:42 (10)
7	07:14 16:48	15:24 (10) 15:56 (10)	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30	06:27 16:49	06:59 16:32	15:10 (10) 15:42 (10)
8	07:14 16:49	15:24 (10) 15:57 (10)	06:55 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:32	15:10 (10) 15:43 (10)
9	07:14 16:50	15:24 (10) 15:58 (10)	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:32	15:10 (10) 15:42 (10)
10	07:13 16:51	15:25 (10) 15:57 (10)	06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:32	15:11 (10) 15:43 (10)
11	07:13 16:52	15:25 (10) 15:58 (10)	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:03 16:33	15:11 (10) 15:43 (10)
12	07:13 16:53	15:26 (10) 15:58 (10)	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:55	06:32 19:09	07:00 18:22	06:33 16:44	07:03 16:33	15:12 (10) 15:44 (10)
13	07:13 16:54	15:26 (10) 15:58 (10)	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33	15:13 (10) 15:44 (10)
14	07:13 16:55	15:27 (10) 15:58 (10)	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:42	07:05 16:33	15:13 (10) 15:44 (10)
15	07:12 16:56	15:28 (10) 15:59 (10)	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	7 15:16 (10) 16:33	07:06 15:14 (10) 15:45 (10)
16	07:12 16:57	15:28 (10) 15:58 (10)	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	13 15:26 (10) 16:34	07:06 15:14 (10) 15:45 (10)
17	07:12 16:58	15:29 (10) 15:59 (10)	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	17 15:29 (10) 16:34	07:07 15:15 (10) 15:45 (10)
18	07:11 16:59	15:29 (10) 15:58 (10)	06:44 17:35	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:22	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	20 15:30 (10) 16:34	07:08 15:16 (10) 15:46 (10)
19	07:11 17:00	15:31 (10) 15:59 (10)	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	23 15:32 (10) 16:35	07:08 15:16 (10) 15:47 (10)
20	07:10 17:01	15:31 (10) 15:58 (10)	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	25 15:33 (10) 16:35	07:09 15:17 (10) 15:47 (10)
21	07:10 17:02	15:33 (10) 15:58 (10)	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:37	25 15:33 (10) 16:36	07:09 15:17 (10) 15:48 (10)
22	07:09 17:04	15:33 (10) 15:58 (10)	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:24	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	27 15:34 (10) 16:36	07:10 15:17 (10) 15:48 (10)
23	07:09 17:05	15:34 (10) 15:57 (10)	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	28 15:35 (10) 16:37	07:11 15:18 (10) 15:48 (10)
24	07:08 17:06	15:36 (10) 15:56 (10)	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	29 15:36 (10) 16:37	07:12 15:18 (10) 15:49 (10)
25	07:07 17:07	15:38 (10) 15:55 (10)	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:35	30 15:37 (10) 16:38	07:11 15:19 (10) 15:49 (10)
26	07:07 17:08	15:40 (10) 15:53 (10)	06:33 17:43	05:50 18:12	06:04 19:42	05:35 20:09	05:31 20:24	05:49 20:12	06:17 19:36	06:45 18:47	06:14 17:03	06:48 16:35	30 15:37 (10) 16:38	07:12 15:19 (10) 15:50 (10)
27	07:06 17:09	15:43 (10) 15:50 (10)	06:31 17:44	05:49 18:13	06:03 19:42	05:34 20:10	05:31 20:24	05:50 20:12	06:18 19:34	06:46 18:45	06:15 17:01	06:49 16:35	31 15:38 (10) 16:39	07:12 15:19 (10) 15:50 (10)
28	07:05 17:10		06:30 17:45	05:47 18:14	06:02 19:43	05:33 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	31 15:38 (10) 16:40	07:12 15:20 (10) 15:51 (10)
29	07:04 17:12			06:46 19:15	06:01 19:44	05:33 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	32 15:39 (10) 16:40	07:13 15:21 (10) 15:51 (10)
30	07:04 17:13			06:44 19:15	05:59 19:45	05:32 20:12	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	32 15:39 (10) 16:41	07:13 15:21 (10) 15:52 (10)
31	07:03 17:14			06:43 19:16		05:32 20:13		05:54 20:08	06:22 19:28		06:20 16:56			07:13 16:42 15:53 (10)
Potential sun hours	303		300	370	396	443	445	453	424	374	347	303	294	
Total, worst case	756										400		978	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: F - 6

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December			
1	07:13 16:43	14:42 (10) 16:03 (8)	07:02 17:15	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:14	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33	14:28 (10) 15:48 (8)	
2	07:14 16:44	14:42 (10) 16:04 (8)	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	06:54 16:33	14:29 (10) 15:49 (8)	
3	07:14 16:44	14:42 (10) 16:05 (8)	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	06:55 16:33	14:29 (10) 15:51 (8)	
4	07:14 16:45	14:43 (10) 16:06 (8)	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:30 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33	14:29 (10) 15:52 (8)	
5	07:14 16:46	14:43 (10) 16:07 (8)	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	06:57 16:33	14:30 (10) 15:52 (8)	
6	07:14 16:47	14:44 (10) 16:07 (8)	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:32	14:30 (10) 15:53 (8)	
7	07:14 16:48	14:45 (10) 16:07 (8)	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:27 16:49	06:59 16:32	14:30 (10) 15:54 (8)	
8	07:14 16:49	14:45 (10) 16:08 (8)	06:55 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:32	14:31 (10) 15:54 (8)	
9	07:14 16:50	14:45 (10) 16:07 (8)	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:32	14:32 (10) 15:54 (8)	
10	07:14 16:51	14:46 (10) 16:06 (8)	06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33	14:31 (10) 15:53 (8)	
11	07:13 16:52	14:46 (10) 16:06 (8)	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:02 16:33	14:32 (10) 15:53 (8)	
12	07:13 16:53	14:47 (10) 16:06 (8)	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:55	06:32 19:09	07:00 18:22	06:33 16:44	8 14:43 (10) 16:33	07:03 16:33	14:32 (10) 15:53 (8)
13	07:13 16:54	14:47 (10) 16:03 (8)	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	16 14:45 (10) 16:33	07:04 16:33	14:33 (10) 15:53 (8)
14	07:13 16:55	14:48 (10) 15:31 (10)	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:42	21 14:47 (10) 16:33	07:05 16:33	14:33 (10) 15:53 (8)
15	07:12 16:56	14:49 (10) 15:31 (10)	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	24 14:49 (10) 16:33	07:06 16:33	14:34 (10) 15:53 (8)
16	07:12 16:57	14:49 (10) 15:31 (10)	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	27 15:00 (10) 16:34	07:06 16:34	14:34 (10) 15:53 (8)
17	07:12 16:58	14:50 (10) 15:31 (10)	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	29 15:02 (10) 16:34	07:07 16:34	14:34 (10) 15:53 (8)
18	07:11 16:59	14:51 (10) 15:31 (10)	06:44 17:35	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:23	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	31 15:03 (10) 16:34	07:08 16:34	14:35 (10) 15:54 (8)
19	07:11 17:00	14:52 (10) 15:31 (10)	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	33 15:04 (10) 16:35	07:08 16:35	14:36 (10) 15:54 (8)
20	07:10 17:01	14:53 (10) 15:30 (10)	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	35 15:05 (10) 16:35	07:09 16:35	14:37 (10) 15:54 (8)
21	07:10 17:02	14:54 (10) 15:31 (10)	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	37 15:06 (10) 16:36	07:10 16:36	14:37 (10) 15:55 (8)
22	07:09 17:04	14:55 (10) 15:30 (10)	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:24	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	37 15:06 (10) 16:36	07:10 16:36	14:37 (10) 15:55 (8)
23	07:09 17:05	14:56 (10) 15:29 (10)	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	39 15:07 (10) 16:37	07:11 16:37	14:37 (10) 15:55 (8)
24	07:08 17:06	14:58 (10) 15:29 (10)	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	40 15:09 (10) 16:37	07:11 16:37	14:38 (10) 15:56 (8)
25	07:07 17:07	14:59 (10) 15:28 (10)	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:35	40 15:09 (10) 16:38	07:11 16:38	14:38 (10) 15:56 (8)
26	07:07 17:08	15:00 (10) 15:27 (10)	06:33 17:43	05:50 18:12	06:04 19:42	05:35 20:09	05:31 20:24	05:49 20:12	06:17 19:36	06:45 18:47	06:14 17:03	06:48 16:35	42 15:10 (10) 16:38	07:12 16:38	14:39 (10) 15:58 (8)
27	07:06 17:09	15:02 (10) 15:26 (10)	06:32 17:44	05:49 18:13	06:03 19:43	05:34 20:10	05:31 20:24	05:50 20:12	06:18 19:34	06:46 18:45	06:16 17:01	06:49 16:35	42 15:10 (10) 16:39	07:12 16:39	14:39 (10) 15:58 (8)
28	07:05 17:10	15:05 (10) 15:25 (10)	06:30 17:45	05:47 18:14	06:02 19:43	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	43 15:11 (10) 16:40	07:12 16:40	14:40 (10) 15:59 (8)
29	07:04 17:12	15:07 (10) 15:22 (10)	06:29 17:45	06:46 19:15	06:01 19:44	05:33 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	47 15:44 (8) 16:40	07:13 16:40	14:40 (10) 15:59 (8)
30	07:04 17:13	15:12 (10) 15:18 (10)	06:28 17:45	06:44 19:15	05:59 19:45	05:32 20:12	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	53 15:47 (8) 16:41	07:13 16:41	14:41 (10) 16:01 (8)
31	07:03 17:14	15:18 (10)	06:27 17:45	06:43 19:16	05:58 19:45	05:31 20:13	05:31 20:24	05:54 20:08	06:22 19:28	06:50 18:41	06:20 16:56	06:53 16:34	53 15:47 (8) 16:42	07:13 16:42	14:41 (10) 16:02 (8)
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294	1843		
Total, worst case	1302										644				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: G - 6

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:13 16:43	15:21 (10) 07:02	15:22 (10) 06:29	06:29 16:01 (10)	06:41 19:17	05:32 19:46
2	07:14 16:44	15:20 (10) 07:01	15:23 (10) 06:27	06:27 16:01 (10)	06:39 19:18	05:31 19:47
3	07:14 16:44	15:20 (10) 07:00	15:24 (10) 06:26	06:26 16:00 (10)	06:38 19:19	05:31 19:48
4	07:14 16:45	15:20 (10) 06:59	15:25 (10) 06:24	06:24 16:00 (10)	06:36 19:20	05:30 19:49
5	07:14 16:46	15:20 (10) 06:58	15:26 (10) 06:23	06:23 15:59 (10)	06:35 19:21	05:30 19:50
6	07:14 16:47	15:20 (10) 06:57	15:27 (10) 06:21	06:21 15:58 (10)	06:33 19:22	05:30 19:51
7	07:14 16:48	15:20 (10) 06:56	15:29 (10) 06:20	06:20 15:57 (10)	06:32 19:23	05:30 19:52
8	07:14 16:49	15:20 (10) 06:55	15:30 (10) 06:18	06:18 15:56 (10)	06:30 19:24	05:29 19:53
9	07:14 16:50	15:19 (10) 06:54	15:32 (10) 06:17	06:17 15:54 (10)	06:29 19:25	05:29 19:54
10	07:13 16:51	15:19 (10) 06:53	15:35 (10) 06:15	06:15 15:52 (10)	06:27 19:26	05:29 19:55
11	07:13 16:52	15:19 (10) 06:52	15:39 (10) 06:14	06:14 15:49 (10)	06:26 19:27	05:29 19:56
12	07:13 16:53	15:19 (10) 06:51	15:42 (10) 06:12	06:12 17:58	06:24 19:28	05:29 19:57
13	07:13 16:54	15:18 (10) 06:50	15:45 (10) 06:11	06:11 17:59	06:23 19:29	05:29 19:58
14	07:13 16:55	15:19 (10) 06:48	15:48 (10) 06:09	06:09 18:00	06:21 19:30	05:29 19:59
15	07:12 16:56	15:19 (10) 06:47	15:51 (10) 06:08	06:08 18:01	06:20 19:31	05:29 20:00
16	07:12 16:57	15:18 (10) 06:46	15:54 (10) 06:06	06:06 18:02	06:18 19:32	05:29 20:00
17	07:12 16:58	15:19 (10) 06:45	15:57 (10) 06:05	06:05 18:03	06:17 19:33	05:29 20:01
18	07:11 16:59	15:18 (10) 06:44	15:59 (10) 06:03	06:03 18:04	06:15 19:34	05:29 20:02
19	07:11 17:00	15:19 (10) 06:42	16:01 (10) 06:01	06:01 18:05	06:14 19:35	05:29 20:03
20	07:10 17:01	15:18 (10) 06:41	16:03 (10) 06:00	06:00 18:06	06:13 19:36	05:29 20:04
21	07:10 17:02	15:19 (10) 06:40	16:05 (10) 05:58	05:58 18:07	06:11 19:37	05:29 20:05
22	07:09 17:04	15:19 (10) 06:38	16:07 (10) 05:57	05:57 18:08	06:10 19:38	05:29 20:06
23	07:09 17:05	15:19 (10) 06:37	16:09 (10) 05:55	05:55 18:09	06:08 19:39	05:30 20:07
24	07:08 17:06	15:20 (10) 06:36	16:11 (10) 05:54	05:54 18:10	06:07 19:40	05:30 20:07
25	07:07 17:07	15:19 (10) 06:34	16:13 (10) 05:52	05:52 18:11	06:06 19:41	05:30 20:08
26	07:07 17:08	15:19 (10) 06:33	16:15 (10) 05:50	05:50 18:12	06:04 19:42	05:31 20:09
27	07:06 17:09	15:20 (10) 06:32	16:17 (10) 05:49	05:49 18:13	06:03 19:42	05:31 20:10
28	07:05 17:10	15:21 (10) 06:30	16:19 (10) 05:47	05:47 18:14	06:02 19:43	05:31 20:11
29	07:04 17:12	15:21 (10) 06:29	16:21 (10) 05:46	05:46 19:15	06:01 19:44	05:32 20:11
30	07:04 17:13	15:21 (10) 06:28	16:23 (10) 05:44	05:44 19:15	05:59 19:45	05:32 20:12
31	07:03 17:14	15:22 (10) 06:27	16:25 (10) 05:43	05:43 19:16	05:58 20:13	05:32 20:13
Potential sun hours	303	300	370	396	443	445
Total, worst case	1230	315				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: G - 6

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October		November		December			
1	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39		06:21 16:55	19	15:04 (10) 15:23 (10)	06:53 16:33	38	15:01 (10) 15:49 (8)
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37		06:22 16:54	23	15:02 (10) 15:25 (10)	06:54 16:33	36	15:02 (10) 15:48 (8)
3	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36		06:23 16:53	26	15:00 (10) 15:26 (10)	06:55 16:33	34	15:03 (10) 15:48 (8)
4	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34		06:24 16:52	29	14:58 (10) 15:27 (10)	06:56 16:33	32	15:04 (10) 15:47 (8)
5	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33		06:25 16:51	31	14:57 (10) 15:28 (10)	06:57 16:33	30	15:05 (10) 15:47 (8)
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31		06:26 16:50	33	14:56 (10) 15:29 (10)	06:58 16:32	28	15:06 (10) 15:47 (8)
7	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30		06:27 16:49	35	14:56 (10) 15:31 (10)	06:59 16:32	26	15:07 (10) 15:33 (10)
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28		06:29 16:48	36	14:55 (10) 15:31 (10)	07:00 16:32	25	15:08 (10) 15:33 (10)
9	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27		06:30 16:47	38	14:54 (10) 15:32 (10)	07:01 16:32	24	15:08 (10) 15:32 (10)
10	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25		06:31 16:46	39	14:53 (10) 15:32 (10)	07:02 16:33	23	15:09 (10) 15:32 (10)
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24		06:32 16:45	39	14:53 (10) 15:32 (10)	07:02 16:33	21	15:11 (10) 15:32 (10)
12	05:39 20:21	06:05 19:55	06:32 19:09	07:00 18:22		06:33 16:44	41	14:53 (10) 15:34 (10)	07:03 16:33	20	15:12 (10) 15:32 (10)
13	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21		06:34 16:43	41	14:53 (10) 15:34 (10)	07:04 16:33	19	15:13 (10) 15:32 (10)
14	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19		06:35 16:42	41	14:53 (10) 15:34 (10)	07:05 16:33	19	15:13 (10) 15:32 (10)
15	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18		06:36 16:42	41	14:53 (10) 15:34 (10)	07:06 16:33	17	15:15 (10) 15:32 (10)
16	05:42 20:19	06:08 19:48	06:36 19:03	07:04 18:16		06:37 16:41	42	14:52 (10) 15:34 (10)	07:06 16:34	16	15:16 (10) 15:32 (10)
17	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15		06:39 16:40	42	14:53 (10) 15:35 (10)	07:07 16:34	16	15:16 (10) 15:32 (10)
18	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13		06:40 16:39	42	14:53 (10) 15:35 (10)	07:08 16:34	15	15:17 (10) 15:32 (10)
19	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12		06:41 16:39	47	14:54 (10) 15:54 (8)	07:08 16:35	14	15:19 (10) 15:33 (10)
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11		06:42 16:38	51	14:54 (10) 15:56 (8)	07:09 16:35	13	15:19 (10) 15:32 (10)
21	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09		06:43 16:38	53	14:54 (10) 15:57 (8)	07:09 16:36	13	15:20 (10) 15:33 (10)
22	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08		06:44 16:37	56	14:54 (10) 15:59 (8)	07:10 16:36	13	15:20 (10) 15:33 (10)
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07		06:45 16:36	56	14:55 (10) 15:59 (8)	07:10 16:37	13	15:20 (10) 15:33 (10)
24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05		06:46 16:36	53	14:56 (10) 15:58 (8)	07:11 16:37	13	15:21 (10) 15:34 (10)
25	05:49 20:13	06:16 19:37	06:44 18:49	07:13 17:04		06:47 16:35	51	14:57 (10) 15:57 (8)	07:11 16:38	15	15:20 (10) 15:35 (10)
26	05:49 20:12	06:17 19:36	06:45 18:47	07:14 17:03		06:48 16:35	48	14:57 (10) 15:53 (8)	07:12 16:38	15	15:21 (10) 15:36 (10)
27	05:50 20:12	06:18 19:34	06:46 18:45	07:16 17:01		06:49 16:35	46	14:58 (10) 15:52 (8)	07:12 16:39	16	15:21 (10) 15:37 (10)
28	05:51 20:11	06:19 19:33	06:47 18:44	07:17 17:00		06:50 16:34	44	14:59 (10) 15:51 (8)	07:12 16:40	17	15:21 (10) 15:38 (10)
29	05:52 20:10	06:20 19:31	06:48 18:42	07:18 16:59		06:51 16:34	43	14:59 (10) 15:50 (8)	07:13 16:40	18	15:20 (10) 15:38 (10)
30	05:53 20:09	06:21 19:30	06:49 18:41	07:19 16:58		06:52 16:34	40	15:00 (10) 15:50 (8)	07:13 16:41	19	15:21 (10) 15:40 (10)
31	05:54 20:08	06:22 19:28		06:20 16:56	12	15:07 (10) 15:19 (10)			07:13 16:42	20	15:21 (10) 15:41 (10)
Potential sun hours	453	424	374	347			303		294		638
Total, worst case					12		1226				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: H - 7

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:13 16:43	26 14:20 (10) 14:46 (10)	07:02 17:15	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:14	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33	
2	07:14 16:44	25 14:21 (10) 14:46 (10)	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	06:54 16:33	
3	07:14 16:44	24 14:22 (10) 14:46 (10)	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	06:55 16:33	14:17 (10) 14:23 (10)
4	07:14 16:45	23 14:23 (10) 14:46 (10)	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:30 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33	14:14 (10) 14:27 (10)
5	07:14 16:46	21 14:24 (10) 14:45 (10)	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	06:57 16:33	14:13 (10) 14:29 (10)
6	07:14 16:47	19 14:26 (10) 14:45 (10)	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:32	14:12 (10) 14:31 (10)
7	07:14 16:48	16 14:28 (10) 14:44 (10)	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:27 16:49	06:59 16:32	14:12 (10) 14:32 (10)
8	07:14 16:49	13 14:30 (10) 14:43 (10)	06:55 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:32	14:11 (10) 14:33 (10)
9	07:14 16:50	7 14:33 (10) 14:40 (10)	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	07:01 16:47	07:02 16:32	14:11 (10) 14:35 (10)
10	07:14 16:51	06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	07:02 16:46	07:03 16:33	07:04 16:33	14:10 (10) 14:35 (10)
11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	07:03 16:45	07:04 16:33	07:05 16:33	14:10 (10) 14:36 (10)
12	07:13 16:53	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:55	06:32 19:09	07:00 18:22	07:04 16:44	07:05 16:33	07:06 16:33	14:10 (10) 14:37 (10)
13	07:13 16:54	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	07:04 16:43	07:05 16:33	07:06 16:33	14:10 (10) 14:38 (10)
14	07:13 16:55	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	07:05 16:42	07:06 16:33	07:07 16:33	14:10 (10) 14:38 (10)
15	07:12 16:56	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	07:06 16:42	07:07 16:33	07:08 16:33	14:10 (10) 14:39 (10)
16	07:12 16:57	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	07:06 16:41	07:07 16:34	07:08 16:34	14:10 (10) 14:40 (10)
17	07:12 16:58	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	07:06 16:40	07:07 16:34	07:08 16:34	14:10 (10) 14:40 (10)
18	07:11 16:59	06:44 17:35	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:23	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	07:06 16:39	07:07 16:34	07:08 16:34	14:11 (10) 14:41 (10)
19	07:11 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	07:07 16:39	07:08 16:35	07:09 16:35	14:11 (10) 14:42 (10)
20	07:10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	07:08 16:38	07:09 16:35	07:10 16:35	14:11 (10) 14:42 (10)
21	07:10 17:02	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	07:09 16:38	07:10 16:36	07:11 16:36	14:12 (10) 14:43 (10)
22	07:09 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:24	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	07:10 16:37	07:11 16:36	07:12 16:36	14:12 (10) 14:43 (10)
23	07:09 17:05	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	07:11 16:36	07:12 16:37	07:13 16:37	14:13 (10) 14:44 (10)
24	07:08 17:06	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	07:12 16:36	07:13 16:37	07:14 16:37	14:13 (10) 14:44 (10)
25	07:07 17:07	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	07:13 17:04	07:13 16:35	07:14 16:38	07:15 16:38	14:14 (10) 14:44 (10)
26	07:07 17:08	06:33 17:43	05:50 18:12	06:04 19:42	05:35 20:09	05:31 20:24	05:49 20:12	06:17 19:36	06:45 18:47	07:14 17:03	07:14 16:35	07:15 16:38	07:16 16:38	14:15 (10) 14:45 (10)
27	07:06 17:09	06:32 17:44	05:49 18:13	06:03 19:43	05:34 20:10	05:31 20:24	05:50 20:12	06:18 19:34	06:46 18:45	07:15 17:01	07:15 16:35	07:16 16:39	07:17 16:39	14:15 (10) 14:45 (10)
28	07:05 17:10	06:30 17:45	05:47 18:14	06:02 19:43	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	07:16 17:00	07:16 16:34	07:17 16:40	07:18 16:40	14:16 (10) 14:45 (10)
29	07:04 17:12	06:29 17:44	05:46 18:15	06:01 19:44	05:33 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	07:17 16:59	07:17 16:34	07:18 16:40	07:19 16:40	14:16 (10) 14:45 (10)
30	07:04 17:13	06:28 17:45	05:45 18:16	06:00 19:45	05:32 20:12	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	07:18 16:58	07:18 16:34	07:19 16:41	07:20 16:41	14:18 (10) 14:46 (10)
31	07:03 17:14	06:27 17:46	05:44 18:17	05:59 19:46	05:31 20:13	05:33 20:25	05:54 20:08	06:22 19:28	06:50 18:41	07:19 16:56	07:19 16:42	07:20 16:42	07:21 16:42	14:19 (10) 14:46 (10)
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294	761	
Total, worst case	174													

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: I - 8

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:13 16:43	07:02 17:15	15:40 (10)	06:29 17:46	06:41 19:17	05:58 19:46
2	07:14 16:44	07:01 17:16	36 16:16 (10)	06:27 17:48	06:39 19:18	05:57 19:47
3	07:14 16:44	07:00 17:17	36 16:16 (10)	06:26 17:49	06:38 19:19	05:56 19:48
4	07:14 16:45	06:59 17:19	33 16:15 (10)	06:24 17:50	06:36 19:20	05:55 19:49
5	07:14 16:46	06:58 17:20	33 16:15 (10)	06:23 17:51	06:35 19:21	05:53 19:50
6	07:14 16:47	06:57 17:21	31 16:14 (10)	06:21 17:52	06:33 19:22	05:52 19:51
7	07:14 16:48	06:56 17:22	29 16:13 (10)	06:20 17:53	06:32 19:23	05:51 19:52
8	07:14 16:49	06:55 17:23	26 16:12 (10)	06:18 17:54	06:30 19:24	05:50 19:53
9	07:14 16:50	15:46 (10) 17:24	06:54 24 16:11 (10)	06:17 17:55	06:29 19:25	05:49 19:54
10	07:13 16:51	15:45 (10) 17:25	06:53 21 16:10 (10)	06:15 17:56	06:27 19:26	05:48 19:55
11	07:13 16:52	15:44 (10) 17:27	06:52 16 16:08 (10)	06:14 17:57	06:26 19:27	05:47 19:56
12	07:13 16:53	15:43 (10) 17:28	06:51 10 16:05 (10)	06:12 17:58	06:24 19:28	05:46 19:57
13	07:13 16:54	15:42 (10) 17:29	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58
14	07:13 16:55	15:41 (10) 17:30	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59
15	07:12 16:56	15:41 (10) 17:31	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00
16	07:12 16:57	15:40 (10) 17:32	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00
17	07:12 16:58	15:40 (10) 17:33	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01
18	07:11 16:59	15:39 (10) 17:35	06:44 17:35	06:03 18:04	06:15 19:34	05:40 20:02
19	07:11 17:00	15:40 (10) 17:36	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03
20	07:10 17:01	15:39 (10) 17:37	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04
21	07:10 17:02	15:39 (10) 17:38	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05
22	07:09 17:04	15:39 (10) 17:39	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06
23	07:09 17:05	15:38 (10) 17:40	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07
24	07:08 17:06	15:39 (10) 17:41	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07
25	07:07 17:07	15:39 (10) 17:42	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08
26	07:07 17:08	15:38 (10) 17:43	06:33 17:43	05:50 18:12	06:04 19:42	05:35 20:09
27	07:06 17:09	16:14 (10) 17:44	17:43	18:12	19:42	20:09
27	07:06 17:09	15:38 (10) 17:44	06:31 17:44	05:49 18:13	06:03 19:42	05:34 20:10
28	07:05 17:10	16:15 (10) 17:45	17:44	18:13	19:42	20:10
28	07:05 17:10	15:39 (10) 17:45	06:30 17:45	05:47 18:14	06:02 19:43	05:34 20:11
29	07:04 17:12	16:16 (10) 17:45	17:45	18:14	19:43	20:11
29	07:04 17:12	15:39 (10) 17:45	06:29 17:45	05:46 18:15	06:01 19:44	05:33 20:11
30	07:04 17:13	16:16 (10) 17:45	17:45	18:15	19:44	20:11
30	07:04 17:13	15:39 (10) 17:45	06:28 17:45	05:44 18:15	05:59 19:45	05:32 20:12
31	07:03 17:14	15:40 (10) 17:45	17:45	18:15	19:45	20:12
31	07:03 17:14	16:16 (10) 17:45	17:45	18:15	19:45	20:12
Potential sun hours	303	300	370	396	443	445
Total, worst case	792	329				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: I - 8

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December	
1	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	15:19 (10) 15:40 (10)	06:53 16:33
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	15:17 (10) 15:41 (10)	06:54 16:33
3	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	15:15 (10) 15:42 (10)	06:55 16:33
4	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	06:24 16:52	15:14 (10) 15:43 (10)	06:56 16:33
5	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	15:13 (10) 15:44 (10)	06:57 16:33
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	15:12 (10) 15:44 (10)	06:58 16:32
7	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30	06:27 16:49	15:12 (10) 15:46 (10)	06:59 16:32
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	15:12 (10) 15:46 (10)	07:00 16:32
9	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	15:11 (10) 15:46 (10)	07:01 16:32
10	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	15:11 (10) 15:47 (10)	07:02 16:33
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	15:10 (10) 15:47 (10)	07:02 16:33
12	05:39 20:21	06:05 19:55	06:33 19:09	07:00 18:22	06:33 16:44	15:11 (10) 15:48 (10)	07:03 16:33
13	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	15:11 (10) 15:48 (10)	07:04 16:33
14	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:42	15:11 (10) 15:48 (10)	07:05 16:33
15	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	15:11 (10) 15:48 (10)	07:06 16:33
16	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	15:11 (10) 15:47 (10)	07:06 16:34
17	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	15:13 (10) 16:00 (8)	07:07 16:34
18	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	15:13 (10) 16:02 (8)	07:08 16:34
19	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	15:13 (10) 16:04 (8)	07:08 16:35
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	15:14 (10) 16:02 (8)	07:09 16:35
21	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:37	15:14 (10) 16:01 (8)	07:09 16:36
22	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	15:15 (10) 16:00 (8)	07:10 16:36
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	15:16 (10) 15:59 (8)	07:10 16:37
24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	15:17 (10) 15:59 (8)	07:11 16:37
25	05:49 20:13	06:16 19:37	06:44 18:49	07:13 17:04	06:47 16:35	15:18 (10) 15:58 (8)	07:11 16:38
26	05:49 20:12	06:17 19:36	06:45 18:47	07:14 17:03	06:48 16:35	15:19 (10) 15:57 (8)	07:12 16:38
27	05:50 20:12	06:18 19:34	06:46 18:45	07:15 17:01	06:49 16:35	15:20 (10) 15:56 (8)	07:12 16:39
28	05:51 20:11	06:19 19:33	06:47 18:44	07:16 17:00	06:50 16:34	15:21 (10) 15:55 (8)	07:12 16:40
29	05:52 20:10	06:20 19:31	06:48 18:42	07:18 16:59	06:51 16:34	15:23 (10) 15:54 (8)	07:13 16:40
30	05:53 20:09	06:21 19:30	06:49 18:41	07:19 16:58	06:52 16:34	15:24 (10) 15:54 (8)	07:13 16:41
31	05:54 20:08	06:22 19:28		07:20 16:56			07:13 16:42
Potential sun hours	453	424	374	347	303	294	44
Total, worst case				28	1054		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: J - 9

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	
1	07:13 16:43	07:02 17:15	15:46 (10) 16:20 (10)	06:29 17:46	06:41 19:17	05:32 19:46	
2	07:14 16:44	07:01 17:16	15:47 (10) 16:20 (10)	06:27 17:48	06:39 19:18	05:31 19:47	
3	07:14 16:44	07:00 17:17	15:47 (10) 16:20 (10)	06:26 17:49	06:38 19:19	05:31 19:48	
4	07:14 16:45	06:59 17:19	15:48 (10) 16:19 (10)	06:24 17:50	06:36 19:20	05:30 19:49	
5	07:14 16:46	06:58 17:20	15:49 (10) 16:19 (10)	06:23 17:51	06:35 19:21	05:30 19:50	
6	07:14 16:47	06:57 17:21	15:50 (10) 16:18 (10)	06:21 17:52	06:33 19:22	05:30 19:51	
7	07:14 16:48	06:56 17:22	15:51 (10) 16:17 (10)	06:20 17:53	06:32 19:23	05:30 19:52	
8	07:14 16:49	06:55 17:23	15:53 (10) 16:16 (10)	06:18 17:54	06:30 19:24	05:29 19:53	
9	07:14 16:50	06:54 17:24	15:54 (10) 16:15 (10)	06:17 17:55	06:29 19:25	05:29 19:54	
10	07:13 16:51	06:53 17:25	15:56 (10) 16:13 (10)	06:15 17:56	06:27 19:26	05:29 19:55	
11	07:13 16:52	15:53 (10) 16:02 (10)	06:52 17:27	16:00 (10) 16:11 (10)	06:14 17:57	06:26 19:27	05:29 19:56
12	07:13 16:53	9 16:02 (10) 15:51 (10)	06:51 17:28	16:11 (10)	06:12 17:58	06:24 19:28	05:29 19:57
13	07:13 16:54	13 16:04 (10) 15:50 (10)	06:50 17:29	18:00	06:11 17:59	06:23 19:29	05:29 19:58
14	07:13 16:55	16 16:06 (10) 15:49 (10)	06:48 17:30	18:01	06:09 19:30	06:21 19:59	05:29 20:00
15	07:12 16:56	19 16:08 (10) 15:49 (10)	06:47 17:31	18:02	06:08 19:31	06:20 20:00	05:29 20:01
16	07:12 16:57	20 16:09 (10) 15:47 (10)	06:46 17:32	18:03	06:18 19:32	05:43 20:00	05:29 20:01
17	07:12 16:58	23 16:10 (10) 15:47 (10)	06:45 17:33	18:04	06:17 19:33	05:41 20:01	05:29 20:02
18	07:11 16:59	25 16:12 (10) 15:46 (10)	06:44 17:35	18:05	06:15 19:34	05:40 20:02	05:29 20:03
19	07:11 17:00	26 16:12 (10) 15:47 (10)	06:42 17:36	18:06	06:14 19:35	05:40 20:03	05:29 20:04
20	07:10 17:01	27 16:14 (10) 15:46 (10)	06:41 17:37	18:07	06:13 19:36	05:39 20:04	05:29 20:05
21	07:10 17:02	29 16:15 (10) 15:46 (10)	06:40 17:38	18:08	06:11 19:37	05:38 20:05	05:29 20:06
22	07:09 17:04	30 16:16 (10) 15:46 (10)	06:38 17:39	18:09	06:10 19:38	05:37 20:06	05:29 20:07
23	07:09 17:05	32 16:17 (10) 15:45 (10)	06:37 17:40	18:10	06:08 19:39	05:37 20:07	05:30 20:08
24	07:08 17:06	32 16:18 (10) 15:46 (10)	06:36 17:41	18:11	06:07 19:40	05:36 20:07	05:30 20:09
25	07:07 17:07	33 16:18 (10) 15:45 (10)	06:34 17:42	18:12	06:06 19:41	05:35 20:08	05:30 20:10
26	07:07 17:08	34 16:19 (10) 15:45 (10)	06:33 17:43	18:13	06:04 19:42	05:35 20:09	05:31 20:11
27	07:06 17:09	34 16:19 (10) 15:45 (10)	06:31 17:44	18:14	06:03 19:43	05:34 20:10	05:31 20:11
28	07:05 17:10	34 16:20 (10) 15:46 (10)	06:30 17:45	18:15	06:02 19:44	05:34 20:11	05:31 20:12
29	07:04 17:12	34 16:20 (10) 15:46 (10)	06:29 17:46	18:16	06:01 19:45	05:33 20:12	05:32 20:13
30	07:04 17:13	34 16:20 (10) 15:46 (10)	06:28 17:47	18:17	06:00 19:46	05:32 20:13	05:32 20:14
31	07:03 17:14	34 16:20 (10) 15:46 (10)	06:27 17:48	18:18	05:59 19:47	05:32 20:14	05:32 20:15
Potential sun hours	303	300	370	396	443	445	
Total, worst case	568	287					

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: J - 9

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	15:26 (10) 15:44 (10)
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	15:24 (10) 15:45 (10)
3	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	15:22 (10) 15:46 (10)
4	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	06:24 16:52	15:21 (10) 15:47 (10)
5	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	15:20 (10) 15:48 (10)
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	15:19 (10) 15:49 (10)
7	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30	06:27 16:49	15:19 (10) 15:50 (10)
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	15:18 (10) 15:50 (10)
9	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	15:18 (10) 15:51 (10)
10	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	15:17 (10) 15:51 (10)
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	15:17 (10) 15:51 (10)
12	05:39 20:21	06:05 19:55	06:33 19:09	07:00 18:22	06:33 16:44	15:18 (10) 15:52 (10)
13	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	15:18 (10) 15:52 (10)
14	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:42	15:18 (10) 15:52 (10)
15	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	15:18 (10) 15:52 (10)
16	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	15:18 (10) 15:52 (10)
17	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	15:19 (10) 15:52 (10)
18	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	15:20 (10) 15:52 (10)
19	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	15:20 (10) 15:52 (10)
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	15:21 (10) 15:51 (10)
21	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:37	15:21 (10) 15:51 (10)
22	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	15:22 (10) 15:51 (10)
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	15:23 (10) 15:50 (10)
24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	15:24 (10) 15:51 (10)
25	05:49 20:13	06:16 19:37	06:44 18:49	07:13 17:04	06:47 16:35	15:25 (10) 15:50 (10)
26	05:49 20:12	06:17 19:36	06:45 18:47	07:14 17:03	06:48 16:35	15:26 (10) 15:49 (10)
27	05:50 20:12	06:18 19:34	06:46 18:45	07:15 17:01	06:49 16:35	15:28 (10) 15:49 (10)
28	05:51 20:11	06:19 19:33	06:47 18:44	07:16 17:00	06:50 16:34	15:29 (10) 15:48 (10)
29	05:52 20:10	06:20 19:31	06:48 18:42	07:18 16:59	06:51 16:34	15:30 (10) 15:47 (10)
30	05:53 20:09	06:21 19:30	06:49 18:41	07:19 16:58	06:52 16:34	15:32 (10) 15:46 (10)
31	05:54 20:08	06:22 19:28		06:20 16:56	15:28 (10) 15:40 (10)	07:13 16:42
Potential sun hours	453	424	374	347	303	294
Total, worst case				12	840	9

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: K - 10

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December											
1	07:13	09:16 (9)	07:02	06:29	06:41	05:58	05:32	05:33	05:55	06:23	06:50	06:21	06:53	09:05 (9)									
	16:43	101	14:08 (10)	17:15	17:46	19:17	19:46	20:14	20:24	20:07	19:27	18:39	16:55	16:33	89	13:52 (10)							
2	07:14	09:16 (9)	07:01	06:27	06:39	05:57	05:31	05:33	05:56	06:24	06:51	06:22	06:54	09:04 (9)									
	16:44	101	14:08 (10)	17:16	17:48	19:18	19:47	20:14	20:24	20:06	19:25	18:37	16:54	16:33	92	13:53 (10)							
3	07:14	09:17 (9)	07:00	06:26	06:38	05:56	05:31	05:33	05:56	06:24	06:52	06:23	06:55	09:04 (9)									
	16:44	100	14:09 (10)	17:17	17:49	19:19	19:48	20:15	20:24	20:05	19:24	18:36	16:53	16:33	93	13:53 (10)							
4	07:14	09:18 (9)	06:59	06:24	06:36	05:55	05:30	05:34	05:57	06:25	06:53	06:24	06:56	09:05 (9)									
	16:45	98	14:09 (10)	17:19	17:50	19:20	19:49	20:16	20:24	20:04	19:22	18:34	16:52	16:33	94	13:54 (10)							
5	07:14	09:18 (9)	06:58	06:23	06:35	05:53	05:30	05:35	05:58	06:26	06:53	06:25	06:57	09:05 (9)									
	16:46	99	14:09 (10)	17:20	17:51	19:21	19:50	20:16	20:24	20:03	19:20	18:33	16:51	16:33	96	13:55 (10)							
6	07:14	09:19 (9)	06:57	06:21	06:33	05:52	05:30	05:35	05:59	06:27	06:54	06:26	06:58	09:05 (9)									
	16:47	98	14:10 (10)	17:21	17:52	19:22	19:51	20:17	20:23	20:02	19:19	18:31	16:50	16:33	98	13:56 (10)							
7	07:14	09:20 (9)	06:56	06:20	06:32	05:51	05:30	05:36	06:00	06:28	06:55	06:27	06:59	09:05 (9)									
	16:48	96	14:10 (10)	17:22	17:53	19:23	19:52	20:17	20:23	20:01	19:17	18:30	16:49	16:32	98	13:56 (10)							
8	07:14	09:21 (9)	06:55	06:18	06:30	05:50	05:29	05:36	06:01	06:29	06:56	06:29	07:00	09:06 (9)									
	16:49	94	14:10 (10)	17:23	17:54	19:24	19:53	20:18	20:23	19:59	19:16	18:28	16:48	16:32	98	13:57 (10)							
9	07:14	09:20 (9)	06:54	06:17	06:29	05:49	05:29	05:37	06:02	06:30	06:57	06:30	07:01	09:06 (9)									
	16:50	93	14:09 (10)	17:24	17:55	19:25	19:54	20:19	20:23	19:58	19:14	18:27	16:47	16:32	100	13:58 (10)							
10	07:14	09:21 (9)	06:53	06:15	06:27	05:48	05:29	05:37	06:03	06:31	06:58	06:31	07:02	09:05 (9)									
	16:51	92	14:10 (10)	17:25	17:56	19:26	19:55	20:19	20:22	19:57	19:13	18:25	16:46	16:33	102	13:58 (10)							
11	07:13	09:22 (9)	06:52	06:14	06:26	05:47	05:29	05:38	06:04	06:32	06:59	06:32	07:02	09:06 (9)									
	16:52	91	14:10 (10)	17:27	17:57	19:27	19:56	20:20	20:22	19:56	19:11	18:24	16:45	16:33	101	13:58 (10)							
12	07:13	09:24 (9)	06:51	06:12	06:24	05:46	05:29	05:39	06:05	06:32	07:00	06:33	07:03	09:07 (9)									
	16:53	87	14:10 (10)	17:28	17:58	19:28	19:57	20:20	20:21	19:55	19:09	18:22	16:44	16:33	102	13:59 (10)							
13	07:13	09:24 (9)	06:50	06:11	06:23	05:45	05:29	05:39	06:05	06:33	07:01	06:34	07:04	09:07 (9)									
	16:54	85	14:09 (10)	17:29	17:59	19:29	19:58	20:21	20:21	19:53	19:08	18:21	16:43	16:33	102	14:00 (10)							
14	07:13	09:25 (9)	06:48	06:09	06:21	05:44	05:29	05:40	06:06	06:34	07:02	06:35	07:05	09:07 (9)									
	16:55	83	14:10 (10)	17:30	18:00	19:30	19:59	20:21	20:20	19:52	19:06	18:19	16:42	16:33	103	14:00 (10)							
15	07:12	09:27 (9)	06:47	06:08	06:20	05:43	05:29	05:41	06:07	06:35	07:03	06:36	07:06	09:07 (9)									
	16:56	80	14:10 (10)	17:31	18:01	19:31	20:00	20:21	20:20	19:51	19:05	18:18	16:42	16:33	104	14:01 (10)							
16	07:12	09:27 (9)	06:46	06:06	06:18	05:42	05:29	05:42	06:08	06:36	07:04	06:37	07:06	09:08 (9)									
	16:57	76	14:09 (10)	17:32	18:02	19:32	20:01	20:22	20:19	19:49	19:03	18:16	16:41	16:34	103	14:01 (10)							
17	07:12	09:29 (9)	06:45	06:05	06:17	05:41	05:29	05:42	06:09	06:37	07:05	06:39	07:07	09:08 (9)									
	16:58	72	14:09 (10)	17:33	18:03	19:33	20:01	20:22	20:19	19:48	19:01	18:15	16:40	16	13:16 (10)	07:07	107	15:28 (8)					
18	07:11	09:30 (9)	06:44	06:03	06:15	05:40	05:29	05:43	06:10	06:38	07:06	06:40	07:08	09:09 (9)									
	16:59	68	14:08 (10)	17:35	18:04	19:34	20:02	20:23	20:18	19:47	19:00	18:13	16:39	23	13:35 (10)	16:34	109	15:30 (8)					
19	07:11	09:32 (9)	06:42	06:01	06:14	05:40	05:29	05:44	06:11	06:39	07:07	06:41	07:08	09:10 (9)									
	17:00	63	14:08 (10)	17:36	18:05	19:35	20:03	20:23	20:18	19:45	18:58	18:12	16:39	28	13:38 (10)	16:35	110	15:31 (8)					
20	07:10	09:33 (9)	06:41	06:00	06:13	05:39	05:29	05:45	06:12	06:40	07:08	06:42	07:09	09:10 (9)									
	17:01	58	14:07 (10)	17:37	18:06	19:36	20:04	20:23	20:17	19:44	18:57	18:11	16:38	36	13:40 (10)	16:35	110	15:31 (8)					
21	07:10	09:37 (9)	06:40	05:58	06:11	05:38	05:29	05:45	06:13	06:41	07:09	06:43	07:09	09:11 (9)									
	17:02	48	14:06 (10)	17:38	18:07	19:37	20:05	20:23	20:16	19:43	18:55	18:09	16:38	48	13:41 (10)	16:36	111	15:33 (8)					
22	07:09	09:42 (9)	06:38	05:57	06:10	05:37	05:29	05:46	06:14	06:41	07:10	06:44	07:10	09:11 (9)									
	17:04	36	14:05 (10)	17:39	18:08	19:38	20:06	20:24	20:16	19:41	18:53	18:08	16:37	57	13:43 (10)	16:36	111	15:33 (8)					
23	07:09	13:35 (10)	06:37	05:55	06:08	05:37	05:30	05:47	06:15	06:42	07:11	06:45	07:10	09:12 (9)									
	17:05	28	14:03 (10)	17:40	18:09	19:39	20:07	20:24	20:15	19:40	18:52	18:07	16:36	63	13:44 (10)	16:37	111	15:33 (8)					
24	07:08	13:38 (10)	06:36	05:54	06:07	05:36	05:30	05:48	06:15	06:43	07:12	06:46	07:11	09:12 (9)									
	17:06	23	14:01 (10)	17:41	18:10	19:40	20:07	20:24	20:14	19:38	18:50	18:05	16:36	68	13:46 (10)	16:37	110	15:33 (8)					
25	07:07	13:42 (10)	06:34	05:52	06:06	05:35	05:30	05:49	06:16	06:44	07:13	06:47	07:11	09:12 (9)									
	17:07	16	13:58 (10)	17:42	18:11	19:41	20:08	20:24	20:13	19:37	18:49	17:04	16:35	72	13:47 (10)	16:38	110	15:33 (8)					
26	07:07		06:33	05:50	06:04	05:35	05:31	05:50	06:17	06:45	07:14	06:48	07:12	09:13 (9)									
	17:08		17:43	18:12	19:42	20:09	20:24	20:12	19:36	18:47	17:03	16:35	76	13:48 (10)	16:38	109	15:34 (8)						
27	07:06		06:32	05:49	06:03	05:34	05:31	05:50	06:18	06:46	07:15	06:49	07:12	09:13 (9)									
	17:09		17:44	18:13	19:43	20:10	20:24	20:12	19:34	18:45	17:01	16:35	80	13:49 (10)	16:39	104	15:32 (8)						
28	07:05		06:30	05:47	06:02	05:34	05:31	05:51	06:19	06:47	07:16	06:50	07:12	09:13 (9)									
	17:10		17:45	18:14	19:43	20:11	20:24	20:11	19:33	18:44	17:00	16:34	83	13:50 (10)	16:40	103	14:06 (10)						
29	07:04		06:46	06:01	06:13	05:33	05:32	05:52	06:20	06:48	07:17	06:51	07:13	09:14 (9)									
	17:12		19:15	19:44	20:11	20:24	20:10	19:31	18:42	16:59	16:34	85	13:50 (10)	16:40	103	14:07 (10)							
30	07:04		06:44	05:59	06:11	05:32	05:32	05:53	06:21	06:49	07:18	06:52	07:13	09:15 (9)									
	17:13		19:16	19:45	20:12	20:24	20:09	19:30	18:41	16:58	16:34	87	13:51 (10)	16:41	102	14:08 (10)							
31	07:03		06:43	06:04	06:16	05:32	05:32	05:54	06:22	06:50	07:19	06:50	07:13	09:15 (9)									
	17:14		19:16	19:45	20:12	20:24	20:09	19:30	18:41	16:58	16:34	87	13:51 (10)	16:41	102	14:08 (10)							
Potential sun hours	303		300		396		443		445		453		424		374		347		303		822		3187
Total, worst case	1886		370		396		443		445		453		424		374		347		303		822		3187

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

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

## SHADOW - Calendar

Shadow receptor: L - 11

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	
1	07:13 16:43 57	12:24 (9) 13:21 (9) 17:15	07:02 17:15 1	16:31 (8) 16:32 (8) 17:46	06:29 17:46 31	16:14 (10) 16:45 (10) 19:17	05:58 19:46 20:14
2	07:14 16:44 56	12:25 (9) 13:21 (9) 17:16	07:01 17:16 2	16:32 (8) 16:34 (8) 17:48	06:27 17:48 28	16:16 (10) 16:44 (10) 19:18	05:57 19:47 20:14
3	07:14 16:44 55	12:26 (9) 13:21 (9) 17:17	07:00 17:17 4	16:32 (8) 16:36 (8) 17:49	06:26 17:49 25	16:17 (10) 16:42 (10) 19:19	05:56 19:48 20:15
4	07:14 16:45 55	12:27 (9) 13:22 (9) 17:19	06:59 17:19 5	16:33 (8) 16:38 (8) 17:50	06:24 17:50 22	16:19 (10) 16:41 (10) 19:20	05:55 19:49 20:16
5	07:14 16:46 55	12:27 (9) 13:22 (9) 17:20	06:58 17:20 6	16:34 (8) 16:40 (8) 17:51	06:23 17:51 15	16:22 (10) 16:37 (10) 19:21	05:53 19:50 20:16
6	07:14 16:47 54	12:28 (9) 13:22 (9) 17:21	06:57 17:21 6	16:36 (8) 16:42 (8) 17:52	06:21 17:52 5	16:27 (10) 16:32 (10) 19:22	05:52 19:51 20:17
7	07:14 16:48 53	12:29 (9) 13:22 (9) 17:22	06:56 17:22 6	16:38 (8) 16:44 (8) 17:53	06:20 17:53	06:32 19:23	05:51 19:52 20:17
8	07:14 16:49 51	12:31 (9) 13:22 (9) 17:23	06:55 17:23 13	16:24 (10) 16:37 (10) 17:54	06:18 17:54	06:30 19:24	05:50 19:53 20:18
9	07:14 16:50 50	12:31 (9) 13:21 (9) 17:24	06:54 17:24 19	16:21 (10) 16:40 (10) 17:55	06:17 17:55	06:29 19:25	05:49 19:54 20:19
10	07:13 16:51 49	12:32 (9) 13:21 (9) 17:25	06:53 17:25 23	16:19 (10) 16:42 (10) 17:56	06:15 17:56	06:27 19:26	05:48 19:55 20:19
11	07:13 16:52 47	12:34 (9) 13:21 (9) 17:27	06:52 17:27 26	16:18 (10) 16:44 (10) 17:57	06:14 17:57	06:26 19:27	05:47 19:56 20:20
12	07:13 16:53 46	12:35 (9) 13:21 (9) 17:28	06:51 17:28 30	16:16 (10) 16:46 (10) 17:58	06:12 17:58	06:24 19:28	05:46 19:57 20:20
13	07:13 16:54 44	12:36 (9) 13:20 (9) 17:29	06:50 17:29 31	16:15 (10) 16:46 (10) 17:59	06:11 17:59	06:23 19:29	05:45 19:58 20:21
14	07:13 16:55 42	12:38 (9) 13:20 (9) 17:30	06:48 17:30 33	16:14 (10) 16:47 (10) 18:00	06:09 18:00	06:21 19:30	05:44 19:59 20:21
15	07:12 16:56 40	12:40 (9) 13:20 (9) 17:31	06:47 17:31 35	16:13 (10) 16:48 (10) 18:01	06:08 18:01	06:20 19:31	05:43 20:00 20:21
16	07:12 16:57 37	12:41 (9) 13:18 (9) 17:32	06:46 17:32 36	16:13 (10) 16:49 (10) 18:02	06:06 18:02	06:18 19:32	05:42 20:00 20:22
17	07:12 16:58 35	12:43 (9) 13:18 (9) 17:33	06:45 17:33 37	16:12 (10) 16:49 (10) 18:03	06:05 18:03	06:17 19:33	05:41 20:01 20:22
18	07:11 16:59 31	12:45 (9) 13:16 (9) 17:35	06:44 17:35 39	16:11 (10) 16:50 (10) 18:04	06:03 18:04	06:15 19:34	05:40 20:02 20:22
19	07:11 17:00 27	12:48 (9) 13:15 (9) 17:36	06:42 17:36 39	16:11 (10) 16:50 (10) 18:05	06:01 18:05	06:14 19:35	05:40 20:03 20:23
20	07:10 17:01 21	12:51 (9) 13:12 (9) 17:37	06:41 17:37 39	16:12 (10) 16:51 (10) 18:06	06:00 18:06	06:13 19:36	05:39 20:04 20:23
21	07:10 17:02 12	12:57 (9) 13:09 (9) 17:38	06:40 17:38 39	16:11 (10) 16:50 (10) 18:07	05:58 18:07	06:11 19:37	05:38 20:05 20:23
22	07:09 17:04	06:38 17:39	06:38 17:39 39	16:11 (10) 16:50 (10) 18:08	05:57 18:08	06:10 19:38	05:37 20:06 20:24
23	07:09 17:05	06:37 17:40	06:37 17:40 38	16:12 (10) 16:50 (10) 18:09	05:55 18:09	06:08 19:39	05:37 20:07 20:24
24	07:08 17:06	06:36 17:41	06:36 17:41 38	16:11 (10) 16:49 (10) 18:10	05:54 18:10	06:07 19:40	05:36 20:07 20:24
25	07:07 17:07	06:34 17:42	06:34 17:42 37	16:12 (10) 16:49 (10) 18:11	05:52 18:11	06:06 19:41	05:35 20:08 20:24
26	07:07 17:08	06:33 17:43	06:33 17:43 36	16:12 (10) 16:48 (10) 18:12	05:50 18:12	06:04 19:42	05:35 20:09 20:24
27	07:06 17:09	06:31 17:44	06:31 17:44 35	16:13 (10) 16:48 (10) 18:13	05:49 18:13	06:03 19:42	05:34 20:10 20:24
28	07:05 17:10	06:30 17:45	06:30 17:45 33	16:13 (10) 16:46 (10) 18:14	05:47 18:14	06:02 19:43	05:34 20:11 20:24
29	07:04 17:12			06:46 19:15		06:01 19:44	05:33 20:11 20:24
30	07:04 17:13			06:44 19:15		05:59 19:45	05:32 20:12 20:24
31	07:03 17:14			06:43 19:16		05:32 20:13	
Potential sun hours	303	300	370	396	443	445	
Total, worst case	917	725	126				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: L - 11

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December			
1	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	15:49 (10) 16:12 (10)	06:53 16:33	47	12:16 (9) 13:03 (9)
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	15:51 (10) 16:10 (10)	06:54 16:33	49	12:15 (9) 13:04 (9)
3	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	15:54 (10) 16:06 (10)	06:55 16:33	50	12:15 (9) 13:05 (9)
4	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	06:24 16:52	16:08 (8) 16:16 (8)	06:56 16:33	51	12:15 (9) 13:06 (9)
5	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	16:05 (8) 16:12 (8)	06:57 16:33	52	12:15 (9) 13:07 (9)
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	16:04 (8) 16:10 (8)	06:58 16:32	53	12:15 (9) 13:08 (9)
7	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30	06:27 16:49	16:04 (8) 16:09 (8)	06:59 16:32	54	12:15 (9) 13:09 (9)
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	16:59 (10) 17:11 (10)	06:29 16:48	16:03 (8) 16:32	55	12:15 (9) 13:10 (9)
9	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	16:55 (10) 17:14 (10)	06:30 16:47	16:02 (8) 16:32	55	12:14 (9) 13:09 (9)
10	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	16:53 (10) 17:16 (10)	06:31 16:46	16:02 (8) 16:33	56	12:14 (9) 13:10 (9)
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	16:51 (10) 17:17 (10)	06:32 16:45	07:02 16:33	57	12:14 (9) 13:11 (9)
12	05:39 20:21	06:05 19:55	06:33 19:09	07:00 18:22	16:49 (10) 17:19 (10)	06:33 16:44	07:03 16:33	57	12:15 (9) 13:12 (9)
13	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	16:47 (10) 17:19 (10)	06:34 16:43	07:04 16:33	58	12:15 (9) 13:13 (9)
14	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	16:46 (10) 17:20 (10)	06:35 16:42	07:05 16:33	58	12:15 (9) 13:13 (9)
15	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	16:45 (10) 17:20 (10)	06:36 16:42	07:06 16:33	59	12:15 (9) 13:14 (9)
16	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	16:44 (10) 17:21 (10)	06:37 16:41	07:06 16:34	58	12:16 (9) 13:14 (9)
17	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	16:43 (10) 17:21 (10)	06:39 16:40	07:07 16:34	58	12:16 (9) 13:14 (9)
18	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	16:43 (10) 17:21 (10)	06:40 16:39	07:08 16:34	58	12:17 (9) 13:15 (9)
19	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	16:42 (10) 17:21 (10)	06:41 16:39	07:08 16:35	59	12:17 (9) 13:16 (9)
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	16:42 (10) 17:21 (10)	06:42 16:38	07:09 16:35	59	12:17 (9) 13:16 (9)
21	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	16:41 (10) 17:21 (10)	06:43 16:37	12:32 (9) 12:44 (9)	07:09 16:36	12:18 (9) 13:17 (9)
22	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	16:41 (10) 17:20 (10)	06:44 16:37	12:27 (9) 12:48 (9)	07:10 16:36	12:18 (9) 13:17 (9)
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	16:41 (10) 17:20 (10)	06:45 16:36	12:24 (9) 12:51 (9)	07:10 16:37	12:18 (9) 13:17 (9)
24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	16:42 (10) 17:20 (10)	06:46 16:36	12:23 (9) 12:54 (9)	07:11 16:37	12:19 (9) 13:18 (9)
25	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	15:42 (10) 16:20 (10)	06:47 16:35	12:21 (9) 12:56 (9)	07:11 16:38	12:20 (9) 13:18 (9)
26	05:49 20:12	06:17 19:36	06:45 18:47	06:14 17:03	15:43 (10) 16:19 (10)	06:48 16:35	12:20 (9) 12:57 (9)	07:12 16:38	12:21 (9) 13:19 (9)
27	05:50 20:12	06:18 19:34	06:46 18:45	06:15 17:01	15:43 (10) 16:18 (10)	06:49 16:35	12:19 (9) 12:59 (9)	07:12 16:39	12:21 (9) 13:19 (9)
28	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	15:44 (10) 16:17 (10)	06:50 16:34	12:18 (9) 13:00 (9)	07:12 16:40	12:21 (9) 13:20 (9)
29	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	15:45 (10) 16:16 (10)	06:51 16:34	12:17 (9) 13:01 (9)	07:13 16:40	12:22 (9) 13:20 (9)
30	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	15:45 (10) 16:14 (10)	06:52 16:34	12:16 (9) 13:02 (9)	07:13 16:41	12:23 (9) 13:21 (9)
31	05:54 20:08	06:22 19:28	06:50 18:40	06:20 16:56	15:47 (10) 16:13 (10)	06:53 16:33	07:14 16:42	58 57	12:24 (9) 13:21 (9)
Potential sun hours	453	424	374	347	303	294	1745		
Total, worst case				786	422				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: M - 13

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June			
1	07:13 16:43	13:19 (9) 14:15 (9)	07:02 17:15	06:29 17:46	16:31 (10) 17:01 (10)	06:41 19:17	05:58 19:46	05:32 20:14	
2	07:14 16:44	13:20 (9) 14:15 (9)	07:01 17:16	06:27 17:48	16:32 (10) 17:01 (10)	06:39 19:18	05:57 19:47	05:31 20:14	
3	07:14 16:44	13:20 (9) 14:16 (9)	07:00 17:17	16:40 (8) 16:41 (8)	06:26 17:49	16:32 (10) 16:59 (10)	06:38 19:19	05:56 19:48	05:31 20:15
4	07:14 16:45	13:21 (9) 14:16 (9)	06:59 17:19	16:40 (8) 16:45 (8)	06:24 17:50	16:34 (10) 16:58 (10)	06:36 19:20	05:55 19:49	05:30 20:16
5	07:14 16:46	13:22 (9) 14:16 (9)	06:58 17:20	16:41 (8) 16:47 (8)	06:23 17:51	16:36 (10) 16:55 (10)	06:35 19:21	05:53 19:50	05:30 20:16
6	07:14 16:47	13:23 (9) 14:16 (9)	06:57 17:21	16:41 (8) 16:49 (8)	06:21 17:52	16:39 (10) 16:53 (10)	06:33 19:22	05:52 19:51	05:30 20:17
7	07:14 16:48	13:24 (9) 14:17 (9)	06:56 17:22	16:42 (8) 16:51 (8)	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17	
8	07:14 16:49	13:25 (9) 14:17 (9)	06:55 17:23	16:44 (8) 16:53 (8)	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	
9	07:14 16:50	13:25 (9) 14:16 (9)	06:54 17:24	16:46 (8) 16:54 (8)	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	
10	07:13 16:51	13:26 (9) 14:16 (9)	06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 19:55	05:29 20:19	
11	07:13 16:52	13:27 (9) 14:17 (9)	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:29 20:20	
12	07:13 16:53	13:28 (9) 14:17 (9)	06:51 17:28	16:42 (10) 16:53 (10)	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	
13	07:13 16:54	13:29 (9) 14:16 (9)	06:50 17:29	16:38 (10) 16:55 (10)	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	
14	07:13 16:55	13:30 (9) 14:16 (9)	06:48 17:30	16:36 (10) 16:57 (10)	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	
15	07:12 16:56	13:32 (9) 14:16 (9)	06:47 17:31	16:35 (10) 16:59 (10)	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	
16	07:12 16:57	13:33 (9) 14:15 (9)	06:46 17:32	16:34 (10) 17:01 (10)	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	
17	07:12 16:58	13:35 (9) 14:15 (9)	06:45 17:33	16:32 (10) 17:01 (10)	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	
18	07:11 16:59	13:36 (9) 14:14 (9)	06:44 17:35	16:31 (10) 17:02 (10)	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:22	
19	07:11 17:00	13:38 (9) 14:14 (9)	06:42 17:36	16:31 (10) 17:03 (10)	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	
20	07:10 17:01	13:40 (9) 14:12 (9)	06:41 17:37	16:31 (10) 17:04 (10)	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	
21	07:10 17:02	13:42 (9) 14:12 (9)	06:40 17:38	16:30 (10) 17:04 (10)	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	
22	07:09 17:04	13:45 (9) 14:10 (9)	06:38 17:39	16:30 (10) 17:04 (10)	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:24	
23	07:09 17:05	13:48 (9) 14:07 (9)	06:37 17:40	16:30 (10) 17:05 (10)	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24	
24	07:08 17:06	13:53 (9) 14:04 (9)	06:36 17:41	16:29 (10) 17:04 (10)	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	
25	07:07 17:07	06:34 17:42	06:34 17:42	16:29 (10) 17:04 (10)	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	
26	07:07 17:08	06:33 17:43	06:33 17:43	16:29 (10) 17:03 (10)	05:50 18:12	06:04 19:42	05:35 20:09	05:31 20:24	
27	07:06 17:09	06:31 17:44	06:31 17:44	16:30 (10) 17:03 (10)	05:49 18:13	06:03 19:42	05:34 20:10	05:31 20:24	
28	07:05 17:10	06:30 17:45	06:30 17:45	16:30 (10) 17:02 (10)	05:47 18:14	06:02 19:43	05:34 20:11	05:31 20:24	
29	07:04 17:12			06:46 19:15	06:01 19:44	05:33 20:11	05:32 20:11	05:32 20:24	
30	07:04 17:13			06:44 19:15	05:59 19:45	05:32 20:12	05:32 20:12	05:32 20:24	
31	07:03 17:14			06:43 19:16		05:32 20:13			
Potential sun hours	303	300	370	396	443	445			
Total, worst case	1044	543	143						

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: M - 13

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December		
1	05:32	05:55	06:23	06:50	06:21	06:53	13:09 (9)	
	20:24	20:07	19:27	18:39	16:55	16:33	50 13:59 (9)	
2	05:33	05:56	06:24	06:51	06:22	16:15 (8)	06:54 13:09 (9)	
	20:24	20:06	19:25	18:37	16:54	9 16:24 (8)	16:33 50 13:59 (9)	
3	05:33	05:56	06:24	06:52	06:23	16:13 (8)	06:55 13:09 (9)	
	20:24	20:05	19:24	18:36	16:53	10 16:23 (8)	16:33 51 14:00 (9)	
4	05:34	05:57	06:25	06:52	06:24	16:12 (8)	06:56 13:09 (9)	
	20:24	20:04	19:22	18:34	16:52	9 16:21 (8)	16:33 52 14:01 (9)	
5	05:34	05:58	06:26	06:53	06:25	16:11 (8)	06:57 13:09 (9)	
	20:24	20:03	19:20	18:33	16:51	8 16:19 (8)	16:33 53 14:02 (9)	
6	05:35	05:59	06:27	06:54	06:26	16:10 (8)	06:58 13:09 (9)	
	20:23	20:02	19:19	18:31	16:50	7 16:17 (8)	16:32 53 14:02 (9)	
7	05:36	06:00	06:28	06:55	17:16 (10)	06:27	16:11 (8)	06:59 13:09 (9)
	20:23	20:00	19:17	18:30	10 17:26 (10)	16:49	5 16:16 (8)	16:32 54 14:03 (9)
8	05:36	06:01	06:29	06:56	17:12 (10)	06:29	16:11 (8)	07:00 13:09 (9)
	20:23	19:59	19:16	18:28	17 17:29 (10)	16:48	1 16:12 (8)	16:32 55 14:04 (9)
9	05:37	06:02	06:30	06:57	17:10 (10)	06:30		07:01 13:08 (9)
	20:22	19:58	19:14	18:27	21 17:31 (10)	16:47		16:32 56 14:04 (9)
10	05:37	06:03	06:31	06:58	17:08 (10)	06:31		07:02 13:09 (9)
	20:22	19:57	19:13	18:25	25 17:33 (10)	16:46		16:33 55 14:04 (9)
11	05:38	06:04	06:32	06:59	17:06 (10)	06:32		07:02 13:09 (9)
	20:22	19:56	19:11	18:24	28 17:34 (10)	16:45		16:33 56 14:05 (9)
12	05:39	06:05	06:32	07:00	17:05 (10)	06:33		07:03 13:10 (9)
	20:21	19:55	19:09	18:22	29 17:34 (10)	16:44		16:33 56 14:06 (9)
13	05:39	06:05	06:33	07:01	17:04 (10)	06:34		07:04 13:10 (9)
	20:21	19:53	19:08	18:21	31 17:35 (10)	16:43		16:33 57 14:07 (9)
14	05:40	06:06	06:34	07:02	17:03 (10)	06:35		07:05 13:10 (9)
	20:20	19:52	19:06	18:19	32 17:35 (10)	16:42		16:33 57 14:07 (9)
15	05:41	06:07	06:35	07:03	17:02 (10)	06:36		07:05 13:10 (9)
	20:20	19:51	19:05	18:18	34 17:36 (10)	16:42		16:33 58 14:08 (9)
16	05:42	06:08	06:36	07:04	17:01 (10)	06:37		07:06 13:11 (9)
	20:19	19:49	19:03	18:16	35 17:36 (10)	16:41		16:34 57 14:08 (9)
17	05:42	06:09	06:37	07:05	17:01 (10)	06:39		07:07 13:11 (9)
	20:19	19:48	19:01	18:15	35 17:36 (10)	16:40		16:34 57 14:08 (9)
18	05:43	06:10	06:38	07:06	17:01 (10)	06:40	13:27 (9)	07:08 13:12 (9)
	20:18	19:47	19:00	18:13	34 17:35 (10)	16:39	11 13:38 (9)	16:34 57 14:09 (9)
19	05:44	06:11	06:39	07:07	17:00 (10)	06:41	13:23 (9)	07:08 13:12 (9)
	20:18	19:45	18:58	18:12	35 17:35 (10)	16:39	19 13:42 (9)	16:35 58 14:10 (9)
20	05:45	06:12	06:40	07:08	17:00 (10)	06:42	13:20 (9)	07:09 13:12 (9)
	20:17	19:44	18:57	18:11	35 17:35 (10)	16:38	25 13:45 (9)	16:35 58 14:10 (9)
21	05:45	06:13	06:41	07:09	17:00 (10)	06:43	13:17 (9)	07:09 13:13 (9)
	20:16	19:43	18:55	18:09	34 17:34 (10)	16:37	30 13:47 (9)	16:36 58 14:11 (9)
22	05:46	06:14	06:41	07:10	17:00 (10)	06:44	13:16 (9)	07:10 13:13 (9)
	20:16	19:41	18:53	18:08	33 17:33 (10)	16:37	32 13:48 (9)	16:36 58 14:11 (9)
23	05:47	06:15	06:42	07:11	17:01 (10)	06:45	13:14 (9)	07:10 13:13 (9)
	20:15	19:40	18:52	18:07	32 17:33 (10)	16:36	36 13:50 (9)	16:37 58 14:11 (9)
24	05:48	06:15	06:43	07:12	17:01 (10)	06:46	13:14 (9)	07:11 13:14 (9)
	20:14	19:38	18:50	18:05	31 17:32 (10)	16:36	38 13:52 (9)	16:37 58 14:12 (9)
25	05:49	06:16	06:44	07:13	16:03 (10)	06:47	13:13 (9)	07:11 13:14 (9)
	20:13	19:37	18:49	17:04	28 16:31 (10)	16:35	40 13:53 (9)	16:38 58 14:12 (9)
26	05:49	06:17	06:45	07:14	16:04 (10)	06:48	13:12 (9)	07:12 13:16 (9)
	20:12	19:36	18:47	17:03	26 16:30 (10)	16:35	42 13:54 (9)	16:38 57 14:13 (9)
27	05:50	06:18	06:46	07:15	16:05 (10)	06:49	13:11 (9)	07:12 13:16 (9)
	20:12	19:34	18:45	17:01	24 16:29 (10)	16:35	44 13:55 (9)	16:39 57 14:13 (9)
28	05:51	06:19	06:47	07:16	16:06 (10)	06:50	13:10 (9)	07:12 13:16 (9)
	20:11	19:33	18:44	17:00	21 16:27 (10)	16:34	46 13:56 (9)	16:40 57 14:13 (9)
29	05:52	06:20	06:48	07:17	16:08 (10)	06:51	13:10 (9)	07:13 13:17 (9)
	20:10	19:31	18:42	16:59	16 16:24 (10)	16:34	47 13:57 (9)	16:40 57 14:14 (9)
30	05:53	06:21	06:49	07:18	16:12 (10)	06:52	13:10 (9)	07:13 13:18 (9)
	20:09	19:30	18:41	16:58	8 16:20 (10)	16:34	48 13:58 (9)	16:41 57 14:15 (9)
31	05:54	06:22		06:20				07:13 13:18 (9)
	20:08	19:28		16:56				16:42 57 14:15 (9)
Potential sun hours	453	424	374	347	303	294	1732	
Total, worst case				654	507			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: N - 14

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June		
1	07:13 16:43	13:17 (9) 13:46 (9)	07:02 17:15	16:32 (8) 16:43 (8)	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:14
2	07:14 16:44	13:19 (9) 13:46 (9)	07:01 17:16	16:24 (10) 16:44 (8)	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14
3	07:14 16:44	13:20 (9) 13:45 (9)	07:00 17:17	16:21 (10) 16:46 (8)	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15
4	07:14 16:45	13:21 (9) 13:45 (9)	06:59 17:19	16:19 (10) 16:44 (8)	06:24 17:50	06:36 19:20	05:55 19:49	05:30 20:16
5	07:14 16:46	13:23 (9) 13:44 (9)	06:58 17:20	16:18 (10) 16:40 (10)	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16
6	07:14 16:47	13:25 (9) 13:43 (9)	06:57 17:21	16:16 (10) 16:42 (10)	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17
7	07:14 16:48	13:28 (9) 13:42 (9)	06:56 17:22	16:16 (10) 16:43 (10)	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17
8	07:14 16:49	13:31 (9) 13:40 (9)	06:55 17:23	16:15 (10) 16:44 (10)	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18
9	07:14 16:50		06:54 17:24	16:14 (10) 16:45 (10)	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19
10	07:13 16:51		06:53 17:25	16:14 (10) 16:46 (10)	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19
11	07:13 16:52		06:52 17:27	16:14 (10) 16:46 (10)	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20
12	07:13 16:53		06:51 17:28	16:14 (10) 16:47 (10)	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20
13	07:13 16:54		06:50 17:29	16:13 (10) 16:46 (10)	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21
14	07:13 16:55		06:48 17:30	16:13 (10) 16:47 (10)	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21
15	07:12 16:56		06:47 17:31	16:13 (10) 16:47 (10)	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21
16	07:12 16:57		06:46 17:32	16:13 (10) 16:47 (10)	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22
17	07:12 16:58		06:45 17:33	16:13 (10) 16:46 (10)	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22
18	07:11 16:59		06:44 17:35	16:14 (10) 16:46 (10)	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:22
19	07:11 17:00		06:42 17:36	16:14 (10) 16:46 (10)	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23
20	07:10 17:01		06:41 17:37	16:15 (10) 16:45 (10)	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23
21	07:10 17:02		06:40 17:38	16:15 (10) 16:44 (10)	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23
22	07:09 17:04		06:38 17:39	16:17 (10) 16:43 (10)	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:24
23	07:09 17:05		06:37 17:40	16:19 (10) 16:42 (10)	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24
24	07:08 17:06		06:36 17:41	16:20 (10) 16:39 (10)	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24
25	07:07 17:07		06:34 17:42	16:22 (10) 16:37 (10)	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24
26	07:07 17:08		06:33 17:43	16:26 (10) 16:32 (10)	05:50 18:12	06:04 19:42	05:35 20:09	05:31 20:24
27	07:06 17:09	16:29 (8) 16:31 (8)	06:31 17:44		05:49 18:13	06:03 19:42	05:34 20:10	05:31 20:24
28	07:05 17:10	16:30 (8) 16:34 (8)	06:30 17:45		05:47 18:14	06:02 19:43	05:34 20:11	05:31 20:24
29	07:04 17:12	16:30 (8) 16:35 (8)			06:46 19:15	06:01 19:44	05:33 20:11	05:32 20:24
30	07:04 17:13	16:31 (8) 16:37 (8)			06:44 19:15	05:59 19:45	05:32 20:12	05:32 20:24
31	07:03 17:14	16:31 (8) 16:39 (8)			06:43 19:16		05:32 20:13	
Potential sun hours	303		300		370	396	443	445
Total, worst case	192		693					

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: N - 14

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December		
1	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	15:44 (10) 16:15 (10)	06:53 16:33	
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	15:44 (10) 16:15 (10)	06:54 16:33	
3	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	15:45 (10) 16:14 (10)	06:55 16:33	
4	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	06:24 16:52	15:46 (10) 16:13 (10)	06:56 16:33	7 13:16 (9)
5	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	15:46 (10) 16:12 (10)	06:57 16:33	14 13:27 (9)
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	15:48 (10) 16:10 (10)	06:58 16:32	18 13:11 (9) 13:29 (9)
7	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30	06:27 16:49	15:50 (10) 16:15 (8)	06:59 16:32	21 13:10 (9) 13:31 (9)
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	15:52 (10) 16:17 (8)	07:00 16:32	24 13:09 (9) 13:33 (9)
9	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	15:55 (10) 16:15 (8)	07:01 16:32	25 13:08 (9) 13:33 (9)
10	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	16:03 (8) 16:14 (8)	07:02 16:33	27 13:08 (9) 13:35 (9)
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	16:02 (8) 16:10 (8)	07:02 16:33	28 13:08 (9) 13:36 (9)
12	05:39 20:21	06:05 19:55	06:33 19:09	07:00 18:22	06:33 16:44	16:03 (8) 16:09 (8)	07:03 16:33	30 13:07 (9) 13:37 (9)
13	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	16:02 (8) 16:07 (8)	07:04 16:33	30 13:08 (9) 13:38 (9)
14	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:42	16:02 (8) 16:06 (8)	07:05 16:33	31 13:07 (9) 13:38 (9)
15	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	16:02 (8) 16:04 (8)	07:05 16:33	32 13:07 (9) 13:39 (9)
16	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	16:04 (8) 16:07 (8)	07:06 16:34	33 13:08 (9) 13:41 (9)
17	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	16:05 (8) 16:08 (8)	07:07 16:34	34 13:07 (9) 13:41 (9)
18	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	16:09 (8) 16:39	07:08 16:34	34 13:08 (9) 13:42 (9)
19	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	16:10 (8) 16:39	07:08 16:35	34 13:09 (9) 13:43 (9)
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	16:11 (8) 16:38	07:09 16:35	35 13:08 (9) 13:43 (9)
21	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:37	16:12 (8) 16:37	07:09 16:36	35 13:09 (9) 13:44 (9)
22	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	16:13 (8) 16:37	07:10 16:36	35 13:09 (9) 13:44 (9)
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	16:14 (8) 16:36	07:10 16:37	35 13:09 (9) 13:44 (9)
24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	16:15 (8) 16:36	07:11 16:37	35 13:10 (9) 13:45 (9)
25	05:49 20:13	06:16 19:37	06:44 18:49	07:13 17:04	06:47 16:35	16:16 (8) 16:35	07:11 16:38	35 13:11 (9) 13:45 (9)
26	05:49 20:12	06:17 19:36	06:45 18:47	07:14 17:03	06:48 16:35	16:17 (8) 16:35	07:12 16:38	34 13:12 (9) 13:46 (9)
27	05:50 20:12	06:18 19:34	06:46 18:45	07:15 17:01	06:49 16:35	16:18 (8) 16:35	07:12 16:39	34 13:12 (9) 13:46 (9)
28	05:51 20:11	06:19 19:33	06:47 18:44	07:16 17:00	06:50 16:34	16:19 (8) 16:34	07:12 16:40	33 13:13 (9) 13:46 (9)
29	05:52 20:10	06:20 19:31	06:48 18:42	07:17 16:59	06:51 16:34	16:20 (8) 16:34	07:13 16:40	31 13:14 (9) 13:45 (9)
30	05:53 20:09	06:21 19:30	06:49 18:41	07:18 16:58	06:52 16:34	16:21 (8) 16:34	07:13 16:41	31 13:15 (9) 13:46 (9)
31	05:54 20:08	06:22 19:28	06:50 18:40	07:19 16:57	06:53 16:34	16:22 (8) 16:34	07:13 16:42	30 13:16 (9) 13:46 (9)
Potential sun hours	453	424	374	347	303	294	824	
Total, worst case				460	271			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: O - 15

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:13 16:43	08:43 (8) 09:24 (8)	07:02 17:15	06:29 17:47		
2	07:14 16:44	08:44 (8) 09:24 (8)	07:01 17:16	06:27 17:48		
3	07:14 16:44	08:44 (8) 09:25 (8)	07:00 17:17	06:26 17:49		
4	07:14 16:45	08:45 (8) 09:25 (8)	06:59 17:19	06:24 17:50		
5	07:14 16:46	08:46 (8) 09:25 (8)	06:58 17:20	06:23 17:51		
6	07:14 16:47	08:46 (8) 09:25 (8)	06:57 17:21	06:21 17:52		
7	07:14 16:48	08:47 (8) 09:25 (8)	06:56 17:22	06:20 17:53		
8	07:14 16:49	08:48 (8) 09:25 (8)	06:55 17:23	06:18 17:54		
9	07:14 16:50	08:49 (8) 09:26 (8)	06:54 17:24	06:17 17:55		
10	07:14 16:51	08:49 (8) 09:25 (8)	06:53 17:26	06:15 17:56		
11	07:13 16:52	08:50 (8) 09:25 (8)	06:52 17:27	06:14 17:57		
12	07:13 16:53	08:51 (8) 09:25 (8)	06:51 17:28	06:12 17:58		
13	07:13 16:54	08:52 (8) 09:24 (8)	06:50 17:29	06:11 17:59		
14	07:13 16:55	08:53 (8) 09:24 (8)	06:49 17:30	06:09 18:00		
15	07:12 16:56	08:55 (8) 09:23 (8)	06:47 17:31	06:08 18:01		
16	07:12 16:57	08:56 (8) 09:22 (8)	06:46 17:32	06:06 18:02		
17	07:12 16:58	08:57 (8) 09:22 (8)	06:45 17:34	06:05 18:03	06:45 (10) 06:54 (10)	
18	07:11 16:59	08:59 (8) 09:20 (8)	06:44 17:35	06:03 18:04	06:41 (10) 06:56 (10)	
19	07:11 17:00	09:01 (8) 09:19 (8)	06:42 17:36	06:02 18:05	06:40 (10) 06:58 (10)	
20	07:10 17:01	09:04 (8) 09:16 (8)	06:41 17:37	06:00 18:06	06:38 (10) 06:59 (10)	
21	07:10 17:03		06:40 17:38	05:58 18:07	06:36 (10) 06:59 (10)	
22	07:09 17:04		06:38 17:39	05:57 18:08	06:36 (10) 07:00 (10)	
23	07:09 17:05		06:37 17:40	05:55 18:09	06:35 (10) 06:59 (10)	
24	07:08 17:06		06:36 17:41	05:54 18:10	06:35 (10) 07:00 (10)	
25	07:07 17:07		06:34 17:42	05:52 18:11	06:34 (10) 06:59 (10)	
26	07:07 17:08		06:33 17:43	05:50 18:12	06:34 (10) 06:58 (10)	
27	07:06 17:09		06:32 17:44	05:49 18:13	06:34 (10) 06:58 (10)	
28	07:05 17:10		06:30 17:45	05:47 18:14	06:34 (10) 06:56 (10)	
29	07:04 17:12			06:46 19:15	07:36 (10) 07:56 (10)	
30	07:04 17:13			06:44 19:16	07:36 (10) 07:53 (10)	
31	07:03 17:14			06:43 19:17	07:38 (10) 07:52 (10)	
Potential sun hours	303					
Total, worst case	650	300	370	305	396	445

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: O - 15

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September		October	November		December
1	05:33 20:24	05:55 20:07	06:23 19:27		06:50 18:39	06:21 16:55		06:53 16:33 35 08:32 (8) 09:07 (8)
2	05:33 20:24	05:56 20:06	06:24 19:25		06:51 18:38	06:22 16:54		06:54 16:33 36 08:32 (8) 09:08 (8)
3	05:34 20:24	05:57 20:05	06:25 19:24		06:52 18:36	06:23 16:53		06:55 16:33 37 08:32 (8) 09:09 (8)
4	05:34 20:24	05:57 20:04	06:25 19:22		06:53 18:34	06:24 16:52		06:56 16:33 37 08:32 (8) 09:09 (8)
5	05:35 20:24	05:58 20:03	06:26 19:21		06:54 18:33	06:25 16:51		06:57 16:33 38 08:32 (8) 09:10 (8)
6	05:35 20:23	05:59 20:02	06:27 19:19		06:54 18:31	06:26 16:50		06:58 16:33 39 08:32 (8) 09:11 (8)
7	05:36 20:23	06:00 20:01	06:28 19:17		06:55 18:30	06:28 16:49		06:59 16:33 39 08:33 (8) 09:12 (8)
8	05:36 20:23	06:01 19:59	06:29 19:16		06:56 18:28	06:29 16:48		07:00 16:33 40 08:33 (8) 09:13 (8)
9	05:37 20:23	06:02 19:58	06:30 19:14		06:57 18:27	06:30 16:47		07:01 16:33 41 08:33 (8) 09:14 (8)
10	05:38 20:22	06:03 19:57	06:31 19:13		06:58 18:25	06:31 16:46		07:02 16:33 40 08:33 (8) 09:13 (8)
11	05:38 20:22	06:04 19:56	06:32 19:11	5	07:34 (10) 07:39 (10)	06:59 18:24	06:32 16:45	07:03 16:33 41 08:33 (8) 09:14 (8)
12	05:39 20:21	06:05 19:55	06:33 19:10	13	07:30 (10) 07:43 (10)	07:00 18:22	06:33 16:44	07:03 16:33 41 08:34 (8) 09:15 (8)
13	05:40 20:21	06:06 19:53	06:33 19:08	16	07:28 (10) 07:44 (10)	07:01 18:21	06:34 16:43	07:04 16:33 42 08:34 (8) 09:16 (8)
14	05:40 20:21	06:06 19:52	06:34 19:06	20	07:26 (10) 07:46 (10)	07:02 18:19	06:35 16:43	07:05 16:33 42 08:34 (8) 09:16 (8)
15	05:41 20:20	06:07 19:51	06:35 19:05	21	07:25 (10) 07:46 (10)	07:03 18:18	06:36 16:42	07:06 16:33 42 08:35 (8) 09:17 (8)
16	05:42 20:19	06:08 19:50	06:36 19:03	23	07:24 (10) 07:47 (10)	07:04 18:16	06:38 16:41	07:06 16:34 43 08:35 (8) 09:18 (8)
17	05:42 20:19	06:09 19:48	06:37 19:01	24	07:23 (10) 07:47 (10)	07:05 18:15	06:39 16:40	07:07 16:34 42 08:35 (8) 09:17 (8)
18	05:43 20:18	06:10 19:47	06:38 19:00	24	07:22 (10) 07:46 (10)	07:06 18:13	06:40 16:40	07:08 16:34 42 08:36 (8) 09:18 (8)
19	05:44 20:18	06:11 19:46	06:39 18:58	25	07:21 (10) 07:46 (10)	07:07 18:12	06:41 16:39	07:08 16:35 42 08:37 (8) 09:19 (8)
20	05:45 20:17	06:12 19:44	06:40 18:57	25	07:21 (10) 07:46 (10)	07:08 18:11	06:42 16:38	07:09 16:35 42 08:37 (8) 09:19 (8)
21	05:45 20:16	06:13 19:43	06:41 18:55	24	07:21 (10) 07:45 (10)	07:09 18:09	06:43 16:38	07:09 16:36 42 08:38 (8) 09:20 (8)
22	05:46 20:16	06:14 19:41	06:42 18:53	24	07:21 (10) 07:45 (10)	07:10 18:08	06:44 16:37	07:10 08:40 (8) 07:10 42 08:38 (8) 09:20 (8)
23	05:47 20:15	06:15 19:40	06:42 18:52	22	07:22 (10) 07:44 (10)	07:11 18:07	06:45 16:36	07:10 08:37 (8) 07:10 42 08:39 (8) 09:21 (8)
24	05:48 20:14	06:16 19:39	06:43 18:50	19	07:23 (10) 07:42 (10)	07:12 18:05	06:46 16:36	07:11 08:37 (8) 07:11 42 08:39 (8) 09:21 (8)
25	05:49 20:13	06:16 19:37	06:44 18:49	16	07:24 (10) 07:40 (10)	06:13 17:04	06:47 16:35	07:11 08:36 (8) 07:11 42 08:39 (8) 09:21 (8)
26	05:50 20:12	06:17 19:36	06:45 18:47	12	07:26 (10) 07:38 (10)	06:15 17:03	06:48 16:35	07:12 08:35 (8) 07:12 42 08:40 (8) 09:22 (8)
27	05:50 20:12	06:18 19:34	06:46 18:45		06:16 17:01	06:49 16:35	26 09:01 (8) 16:38 42 08:40 (8) 09:22 (8)	
28	05:51 20:11	06:19 19:33	06:47 18:44		06:17 17:00	06:50 16:34	28 09:02 (8) 16:39 43 08:40 (8) 09:23 (8)	
29	05:52 20:10	06:20 19:31	06:48 18:42		06:18 16:59	06:51 16:34	31 09:04 (8) 16:40 43 08:41 (8) 09:23 (8)	
30	05:53 20:09	06:21 19:30	06:49 18:41		06:19 16:58	06:52 16:34	32 09:05 (8) 16:40 42 08:42 (8) 09:24 (8)	
31	05:54 20:08	06:22 19:28			06:20 16:57		33 09:06 (8) 16:41 42 08:43 (8) 09:24 (8)	
Potential sun hours	453	424	374		347	303		294 1264
Total, worst case			313			225		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: P - 16

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	
1	07:13 16:43	08:33 (8) 09:15 (8)	07:02 17:15	06:29 17:47	06:41 19:18	07:41 (10) 19:46	05:58 20:14
2	07:14 16:44	08:33 (8) 09:15 (8)	07:01 17:16	06:27 17:48	06:40 19:18	07:44 (10) 19:47	05:57 20:14
3	07:14 16:44	08:34 (8) 09:16 (8)	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15
4	07:14 16:45	08:34 (8) 09:16 (8)	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:31 20:16
5	07:14 16:46	08:35 (8) 09:16 (8)	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16
6	07:14 16:47	08:36 (8) 09:17 (8)	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17
7	07:14 16:48	08:36 (8) 09:17 (8)	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:18
8	07:14 16:49	08:37 (8) 09:17 (8)	06:55 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18
9	07:14 16:50	08:38 (8) 09:17 (8)	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19
10	07:14 16:51	08:38 (8) 09:17 (8)	06:53 17:26	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19
11	07:13 16:52	08:39 (8) 09:17 (8)	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20
12	07:13 16:53	08:40 (8) 09:17 (8)	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20
13	07:13 16:54	08:40 (8) 09:16 (8)	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21
14	07:13 16:55	08:41 (8) 09:17 (8)	06:49 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21
15	07:12 16:56	08:42 (8) 09:17 (8)	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:22
16	07:12 16:57	08:43 (8) 09:16 (8)	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:01	05:29 20:22
17	07:12 16:58	08:44 (8) 09:16 (8)	06:45 17:34	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22
18	07:11 16:59	08:45 (8) 09:15 (8)	06:44 17:35	06:03 18:04	06:16 19:34	05:41 20:02	05:29 20:23
19	07:11 17:00	08:46 (8) 09:15 (8)	06:42 17:36	06:02 18:05	06:14 19:35	05:40 20:03	05:29 20:23
20	07:10 17:01	08:47 (8) 09:13 (8)	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23
21	07:10 17:03	08:50 (8) 09:13 (8)	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23
22	07:09 17:04	08:51 (8) 09:11 (8)	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:30 20:24
23	07:09 17:05	08:53 (8) 09:09 (8)	06:37 17:40	05:55 18:09	06:09 19:39	05:37 20:07	05:30 20:24
24	07:08 17:06	08:57 (8) 09:06 (8)	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24
25	07:07 17:07		06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24
26	07:07 17:08		06:33 17:43	05:50 18:12	06:05 19:42	05:35 20:09	05:31 20:24
27	07:06 17:09		06:32 17:44	05:49 18:13	06:03 19:43	05:34 20:10	05:31 20:24
28	07:05 17:10		06:30 17:46	05:47 18:14	06:02 19:44	05:34 20:11	05:31 20:24
29	07:04 17:12			06:46 19:15	06:01 19:45	05:33 20:11	05:32 20:24
30	07:04 17:13			06:44 19:16	05:59 19:45	05:33 20:12	05:32 20:24
31	07:03 17:14			06:43 19:17		05:32 20:13	
Potential sun hours	303	300	370	396	3	443	445
Total, worst case	809		289		3		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: P - 16

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December		
1	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33	38	08:21 (8) 08:59 (8)
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:38	06:22 16:54	06:54 16:33	39	08:21 (8) 09:00 (8)
3	05:34 20:24	05:57 20:05	06:25 19:24	06:52 18:36	06:23 16:53	06:55 16:33	39	08:21 (8) 09:00 (8)
4	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33	40	08:21 (8) 09:01 (8)
5	05:35 20:24	05:58 20:03	06:26 19:21	06:54 18:33	06:25 16:51	06:57 16:33	41	08:21 (8) 09:02 (8)
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33	41	08:22 (8) 09:03 (8)
7	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	06:59 16:33	41	08:22 (8) 09:03 (8)
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:33	42	08:22 (8) 09:04 (8)
9	05:37 20:23	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:33	42	08:23 (8) 09:05 (8)
10	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33	42	08:22 (8) 09:04 (8)
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:03 16:33	42	08:23 (8) 09:05 (8)
12	05:39 20:21	06:05 19:55	06:33 19:10	07:29 (10) 07:40 (10)	07:00 18:22	06:33 16:44	42	08:24 (8) 09:06 (8)
13	05:40 20:21	06:06 19:53	06:33 19:08	07:26 (10) 07:42 (10)	07:01 18:21	06:34 16:43	43	08:24 (8) 09:07 (8)
14	05:40 20:21	06:06 19:52	06:34 19:06	07:25 (10) 07:43 (10)	07:02 18:19	06:35 16:43	42	08:24 (8) 09:06 (8)
15	05:41 20:20	06:07 19:51	06:35 19:05	07:23 (10) 07:44 (10)	07:03 18:18	06:36 16:42	42	08:25 (8) 09:07 (8)
16	05:42 20:19	06:08 19:50	06:36 19:03	07:23 (10) 07:45 (10)	07:04 18:16	06:38 16:41	43	08:25 (8) 09:08 (8)
17	05:42 20:19	06:09 19:48	06:37 19:01	07:22 (10) 07:45 (10)	07:05 18:15	06:39 16:40	43	08:25 (8) 09:08 (8)
18	05:43 20:18	06:10 19:47	06:38 19:00	07:20 (10) 07:44 (10)	07:06 18:13	06:40 16:40	9	08:31 (8) 08:40 (8)
19	05:44 20:18	06:11 19:46	06:39 18:58	07:20 (10) 07:44 (10)	07:07 18:12	06:41 16:39	16	08:28 (8) 08:44 (8)
20	05:45 20:17	06:12 19:44	06:40 18:57	07:20 (10) 07:44 (10)	07:08 18:11	06:42 16:38	20	08:26 (8) 08:46 (8)
21	05:45 20:16	06:13 19:43	06:41 18:55	07:20 (10) 07:43 (10)	07:09 18:09	06:43 16:38	23	08:25 (8) 08:48 (8)
22	05:46 20:16	06:14 19:41	06:42 18:53	07:20 (10) 07:42 (10)	07:10 18:08	06:44 16:37	26	08:23 (8) 08:49 (8)
23	05:47 20:15	06:15 19:40	06:42 18:52	07:21 (10) 07:41 (10)	07:11 18:07	06:45 16:36	28	08:24 (8) 08:52 (8)
24	05:48 20:14	06:16 19:39	06:43 18:50	07:22 (10) 07:40 (10)	07:12 18:05	06:46 16:36	30	08:23 (8) 08:53 (8)
25	05:49 20:13	06:16 19:37	06:44 18:49	07:23 (10) 07:38 (10)	06:13 17:04	06:47 16:35	32	08:22 (8) 08:54 (8)
26	05:50 20:12	06:17 19:36	06:45 18:47	07:25 (10) 07:35 (10)	06:15 17:03	06:48 16:35	33	08:22 (8) 08:55 (8)
27	05:50 20:12	06:18 19:34	06:46 18:45	07:03 17:01	06:16 16:35	06:49 16:35	35	08:21 (8) 08:56 (8)
28	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	06:50 16:34	36	08:21 (8) 08:57 (8)
29	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	06:51 16:34	36	08:21 (8) 08:57 (8)
30	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	06:52 16:34	37	08:21 (8) 08:58 (8)
31	05:54 20:08	06:22 19:28		06:20 16:57		06:20 16:42		07:13 07:13
Potential sun hours	453	424	374	347	303	294	1303	
Total, worst case			291		361			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: Q - 17

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March		April	May	June
1	07:13	08:33 (8)	07:02	06:29	06:41	05:58	05:32
	16:43	09:11 (8)	17:15	17:47	19:18	19:46	20:14
2	07:14	08:34 (8)	07:01	06:27	06:40	05:57	05:31
	16:44	09:11 (8)	17:16	17:48	19:18	19:47	20:14
3	07:14	08:34 (8)	07:00	06:26	06:38	05:56	05:31
	16:44	09:12 (8)	17:17	17:49	19:19	19:48	20:15
4	07:14	08:35 (8)	06:59	06:24	06:36	05:55	05:31
	16:45	09:12 (8)	17:19	17:50	19:20	19:49	20:16
5	07:14	08:36 (8)	06:58	06:23	06:35	05:53	05:30
	16:46	09:12 (8)	17:20	17:51	19:21	19:50	20:16
6	07:14	08:37 (8)	06:57	06:21	06:33	05:52	05:30
	16:47	09:12 (8)	17:21	17:52	19:22	19:51	20:17
7	07:14	08:37 (8)	06:56	06:20	06:32	05:51	05:30
	16:48	09:12 (8)	17:22	17:53	19:23	19:52	20:18
8	07:14	08:38 (8)	06:55	06:18	06:30	05:50	05:29
	16:49	09:13 (8)	17:23	17:54	19:24	19:53	20:18
9	07:14	08:39 (8)	06:54	06:17	06:29	05:49	05:29
	16:50	09:13 (8)	17:24	17:55	19:25	19:54	20:19
10	07:14	08:39 (8)	06:53	06:15	06:27	05:48	05:29
	16:51	09:12 (8)	17:26	17:56	19:26	19:55	20:19
11	07:13	08:40 (8)	06:52	06:14	06:26	05:47	05:29
	16:52	09:12 (8)	17:27	17:57	19:27	19:56	20:20
12	07:13	08:42 (8)	06:51	06:12	06:24	05:46	05:29
	16:53	09:12 (8)	17:28	17:58	19:28	19:57	20:20
13	07:13	08:42 (8)	06:50	06:11	06:23	05:45	05:29
	16:54	09:11 (8)	17:29	17:59	19:29	19:58	20:21
14	07:13	08:44 (8)	06:49	06:09	06:47 (10)	05:44	05:29
	16:55	09:11 (8)	17:30	18:00	8 06:55 (10)	19:30	20:21
15	07:12	08:45 (8)	06:47	06:08	06:44 (10)	05:43	05:29
	16:56	09:10 (8)	17:31	18:01	14 06:58 (10)	19:31	20:22
16	07:12	08:46 (8)	06:46	06:06	06:42 (10)	05:42	05:29
	16:57	09:09 (8)	17:32	18:02	17 06:59 (10)	19:32	20:22
17	07:12	08:48 (8)	06:45	06:05	06:41 (10)	05:41	05:29
	16:58	09:08 (8)	17:34	18:03	20 07:01 (10)	19:33	20:22
18	07:11	08:49 (8)	06:44	06:03	06:39 (10)	05:41	05:29
	16:59	09:07 (8)	17:35	18:04	22 07:01 (10)	19:34	20:23
19	07:11	08:52 (8)	06:42	06:02	06:39 (10)	05:40	05:29
	17:00	09:05 (8)	17:36	18:05	23 07:02 (10)	19:35	20:23
20	07:10	08:56 (8)	06:41	06:00	06:38 (10)	05:39	05:29
	17:01	09:01 (8)	17:37	18:06	23 07:01 (10)	19:36	20:23
21	07:10		06:40	05:58	06:37 (10)	05:38	05:29
	17:03		17:38	18:07	24 07:01 (10)	19:37	20:23
22	07:09		06:38	05:57	06:37 (10)	05:37	05:30
	17:04		17:39	18:08	24 07:01 (10)	19:38	20:24
23	07:09		06:37	05:55	06:37 (10)	05:37	05:30
	17:05		17:40	18:09	23 07:00 (10)	19:39	20:24
24	07:08		06:36	05:54	06:38 (10)	05:36	05:30
	17:06		17:41	18:10	21 06:59 (10)	19:40	20:24
25	07:07		06:34	05:52	06:38 (10)	05:35	05:30
	17:07		17:42	18:11	20 06:58 (10)	19:41	20:24
26	07:07		06:33	05:50	06:38 (10)	05:35	05:31
	17:08		17:43	18:12	18 06:56 (10)	19:42	20:24
27	07:06		06:32	05:49	06:40 (10)	05:34	05:31
	17:09		17:44	18:13	14 06:54 (10)	19:43	20:24
28	07:05		06:30	05:47	06:42 (10)	05:34	05:31
	17:11		17:46	18:14	9 06:51 (10)	19:44	20:24
29	07:05			06:46		06:01	05:33
	17:12			19:15		19:45	20:24
30	07:04			06:44		05:59	05:33
	17:13			19:16		19:45	20:24
31	07:03			06:43			05:32
	17:14			19:17			20:13
Potential sun hours	303	300	370		396	443	445
Total, worst case	580		280				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: Q - 17

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December		
1	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:54 16:33	31	08:23 (8) 08:54 (8)
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:38	06:22 16:54	06:54 16:33	33	08:22 (8) 08:55 (8)
3	05:34 20:24	05:57 20:05	06:25 19:24	06:52 18:36	06:23 16:53	06:55 16:33	34	08:22 (8) 08:56 (8)
4	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33	35	08:22 (8) 08:57 (8)
5	05:35 20:24	05:58 20:03	06:26 19:21	06:54 18:33	06:25 16:51	06:57 16:33	35	08:22 (8) 08:57 (8)
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33	35	08:23 (8) 08:58 (8)
7	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	06:59 16:33	36	08:23 (8) 08:59 (8)
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:33	37	08:23 (8) 09:00 (8)
9	05:37 20:23	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:33	37	08:24 (8) 09:01 (8)
10	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33	37	08:23 (8) 09:00 (8)
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:03 16:33	38	08:23 (8) 09:01 (8)
12	05:39 20:21	06:05 19:55	06:33 19:10	07:00 18:22	06:33 16:44	07:03 16:33	38	08:24 (8) 09:02 (8)
13	05:40 20:21	06:06 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33	38	08:25 (8) 09:03 (8)
14	05:40 20:21	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:43	07:05 16:33	39	08:24 (8) 09:03 (8)
15	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	07:06 16:33	39	08:25 (8) 09:04 (8)
16	05:42 20:19	06:08 19:50	06:36 19:03	07:04 18:16	06:38 16:41	07:07 16:34	38	08:26 (8) 09:04 (8)
17	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	07:07 16:34	39	08:25 (8) 09:04 (8)
18	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:40	07:08 16:34	39	08:26 (8) 09:05 (8)
19	05:44 20:18	06:11 19:46	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35	39	08:27 (8) 09:06 (8)
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 16:35	39	08:27 (8) 09:06 (8)
21	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	07:09 16:36	39	08:28 (8) 09:07 (8)
22	05:46 20:16	06:14 19:41	06:42 18:53	07:10 18:08	06:44 16:37	07:10 08:32 (8)	39	08:28 (8) 09:07 (8)
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	07:10 08:29 (8)	39	08:29 (8) 09:08 (8)
24	05:48 20:14	06:16 19:39	06:43 18:50	07:12 18:05	06:46 16:36	07:11 08:27 (8)	39	08:29 (8) 09:08 (8)
25	05:49 20:13	06:16 19:37	06:44 18:49	07:13 17:04	06:47 16:35	07:11 08:26 (8)	39	08:29 (8) 09:08 (8)
26	05:50 20:12	06:17 19:36	06:45 18:47	07:14 17:03	06:48 16:35	07:12 08:46 (8)	39	09:08 (8) 09:09 (8)
27	05:50 20:12	06:18 19:34	06:46 18:45	07:15 17:01	06:49 16:35	07:12 08:24 (8)	39	08:30 (8) 09:09 (8)
28	05:51 20:11	06:19 19:33	06:47 18:44	07:16 17:00	06:50 16:34	07:12 08:24 (8)	39	08:31 (8) 09:10 (8)
29	05:52 20:10	06:20 19:31	06:48 18:42	07:17 16:59	06:51 16:34	07:13 08:23 (8)	39	08:31 (8) 09:10 (8)
30	05:53 20:09	06:21 19:30	06:49 18:41	07:18 16:58	06:52 16:34	07:13 08:23 (8)	39	08:32 (8) 09:11 (8)
31	05:54 20:08	06:22 19:28		07:19 16:57		07:13 16:42	38	08:33 (8) 09:11 (8)
Potential sun hours	453	424	374	347	303	294		
Total, worst case			280		190		1164	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: R - 18

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:13	08:10 (8)	07:02	06:29	06:41	05:58
	16:43	08:45 (8)	17:15	17:47	19:18	19:46
2	07:14	08:10 (8)	07:01	06:27	06:40	05:57
	16:44	08:45 (8)	17:16	17:48	19:18	19:47
3	07:14	08:10 (8)	07:00	06:26	06:38	05:56
	16:44	08:45 (8)	17:17	17:49	19:19	19:48
4	07:14	08:11 (8)	06:59	06:24	06:36	05:55
	16:45	08:46 (8)	17:19	17:50	19:20	19:49
5	07:14	08:11 (8)	06:58	06:23	06:35	05:53
	16:46	08:46 (8)	17:20	17:51	19:21	19:50
6	07:14	08:12 (8)	06:57	06:21	06:33	05:52
	16:47	08:47 (8)	17:21	17:52	19:22	19:51
7	07:14	08:12 (8)	06:56	06:20	06:32	05:51
	16:48	08:47 (8)	17:22	17:53	19:23	19:52
8	07:14	08:13 (8)	06:55	06:18	06:30	05:50
	16:49	08:48 (8)	17:23	17:54	19:24	19:53
9	07:14	08:14 (8)	06:54	06:17	06:29	05:49
	16:50	08:48 (8)	17:24	17:55	19:25	19:54
10	07:14	08:13 (8)	06:53	06:15	06:27	05:48
	16:51	08:48 (8)	17:26	17:56	19:26	19:55
11	07:13	08:14 (8)	06:52	06:14	06:26	05:47
	16:52	08:48 (8)	17:27	17:57	19:27	19:56
12	07:13	08:15 (8)	06:51	06:12	06:24	05:46
	16:53	08:49 (8)	17:28	17:58	19:28	19:57
13	07:13	08:15 (8)	06:50	06:11	06:23	05:45
	16:54	08:48 (8)	17:29	17:59	19:29	19:58
14	07:13	08:16 (8)	06:49	06:09	06:21	05:44
	16:55	08:49 (8)	17:30	18:00	19:30	19:59
15	07:12	08:17 (8)	06:47	06:08	06:20	05:43
	16:56	08:49 (8)	17:31	18:01	19:31	20:00
16	07:12	08:17 (8)	06:46	06:06	06:39 (10)	06:18
	16:57	08:49 (8)	17:32	18:02	19:32	20:01
17	07:12	08:18 (8)	06:45	06:05	06:38 (10)	06:17
	16:58	08:49 (8)	17:34	18:03	19:33	20:01
18	07:11	08:18 (8)	06:44	06:03	06:37 (10)	06:16
	16:59	08:48 (8)	17:35	18:04	19:34	20:02
19	07:11	08:20 (8)	06:42	06:02	06:37 (10)	06:14
	17:00	08:49 (8)	17:36	18:05	19:35	20:03
20	07:10	08:20 (8)	06:41	06:00	06:37 (10)	06:13
	17:01	08:48 (8)	17:37	18:06	19:36	20:04
21	07:10	08:22 (8)	06:40	05:58	06:36 (10)	06:11
	17:03	08:48 (8)	17:38	18:07	19:37	20:05
22	07:09	08:23 (8)	06:38	05:57	06:37 (10)	06:10
	17:04	08:47 (8)	17:39	18:08	19:38	20:06
23	07:09	08:24 (8)	06:37	05:55	06:37 (10)	06:09
	17:05	08:45 (8)	17:40	18:09	19:39	20:07
24	07:08	08:26 (8)	06:36	05:54	06:39 (10)	06:07
	17:06	08:45 (8)	17:41	18:10	19:40	20:08
25	07:07	08:27 (8)	06:34	05:52	06:41 (10)	06:06
	17:07	08:43 (8)	17:42	18:11	19:41	20:08
26	07:07	08:30 (8)	06:33	05:51	06:05	05:35
	17:08	08:41 (8)	17:43	18:12	19:42	20:09
27	07:06		06:32	05:49	06:03	05:34
	17:09		17:44	18:13	19:43	20:10
28	07:05		06:30	05:47	06:02	05:34
	17:11		17:46	18:14	19:44	20:11
29	07:05			06:46	06:01	05:33
	17:12			19:15	19:45	20:11
30	07:04			06:44	05:59	05:33
	17:13			19:16	19:45	20:12
31	07:03			06:43		05:32
	17:14			19:17		20:13
Potential sun hours	303	300	370	396	443	445
Total, worst case	782		220			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: R - 18

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December			
1	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	07:27 (10) 07:30 (10)	06:21 16:55	06:54 16:33	07:56 (8) 08:30 (8)	
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:38	06:22 16:54	06:54 16:33	07:56 (8) 08:31 (8)	35	
3	05:34 20:24	05:57 20:05	06:25 19:24	06:52 18:36	06:23 16:53	06:55 16:33	07:57 (8) 08:31 (8)	34	
4	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33	07:57 (8) 08:32 (8)	35	
5	05:35 20:24	05:58 20:03	06:26 19:21	06:54 18:33	06:25 16:51	06:57 16:33	07:57 (8) 08:32 (8)	35	
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33	07:58 (8) 08:33 (8)	35	
7	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	06:59 16:33	07:58 (8) 08:33 (8)	35	
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:33	07:59 (8) 08:34 (8)	35	
9	05:37 20:23	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:33	07:59 (8) 08:35 (8)	36	
10	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33	07:59 (8) 08:34 (8)	35	
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:03 16:33	08:00 (8) 08:35 (8)	35	
12	05:39 20:21	06:05 19:55	06:33 19:10	07:00 18:22	06:33 16:44	07:03 16:33	08:00 (8) 08:35 (8)	35	
13	05:40 20:21	06:06 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33	08:01 (8) 08:36 (8)	35	
14	05:40 20:21	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:43	07:05 16:33	08:01 (8) 08:36 (8)	35	
15	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	07:06 16:33	08:02 (8) 08:36 (8)	34	
16	05:42 20:19	06:08 19:50	06:36 19:03	07:04 18:16	06:38 16:41	08:03 (8) 08:14 (8)	07:06 16:34	08:03 (8) 08:37 (8)	34
17	05:42 20:19	06:09 19:48	06:37 19:02	07:05 18:15	06:39 16:40	08:01 (8) 08:17 (8)	07:07 16:34	08:02 (8) 08:37 (8)	35
18	05:43 20:18	06:10 19:47	06:38 19:00	07:29 (10) 07:36 (10)	07:06 18:13	08:00 (8) 08:19 (8)	07:08 16:34	08:03 (8) 08:38 (8)	35
19	05:44 20:18	06:11 19:46	06:39 18:58	07:26 (10) 07:39 (10)	07:07 18:12	07:59 (8) 08:20 (8)	07:08 16:35	08:04 (8) 08:39 (8)	35
20	05:45 20:17	06:12 19:44	06:40 18:57	07:24 (10) 07:40 (10)	07:08 18:11	07:58 (8) 08:22 (8)	07:09 16:35	08:04 (8) 08:39 (8)	35
21	05:46 20:16	06:13 19:43	06:41 18:55	07:23 (10) 07:41 (10)	07:09 18:09	07:57 (8) 08:23 (8)	07:09 16:36	08:05 (8) 08:40 (8)	35
22	05:46 20:16	06:14 19:41	06:42 18:53	07:22 (10) 07:41 (10)	07:10 18:08	07:56 (8) 08:24 (8)	07:10 16:36	08:05 (8) 08:40 (8)	35
23	05:47 20:15	06:15 19:40	06:42 18:52	07:21 (10) 07:42 (10)	07:11 18:07	07:57 (8) 08:26 (8)	07:10 16:37	08:06 (8) 08:41 (8)	35
24	05:48 20:14	06:16 19:39	06:43 18:50	07:21 (10) 07:42 (10)	07:12 18:05	07:56 (8) 08:26 (8)	07:11 16:37	08:06 (8) 08:41 (8)	35
25	05:49 20:13	06:16 19:37	06:44 18:49	07:20 (10) 07:41 (10)	06:13 17:04	07:56 (8) 08:27 (8)	07:11 16:38	08:06 (8) 08:41 (8)	35
26	05:50 20:13	06:17 19:36	06:45 18:47	07:20 (10) 07:41 (10)	06:15 17:03	07:56 (8) 08:28 (8)	07:12 16:38	08:07 (8) 08:42 (8)	35
27	05:50 20:12	06:18 19:34	06:46 18:45	07:20 (10) 07:39 (10)	06:16 17:01	07:56 (8) 08:28 (8)	07:12 16:39	08:08 (8) 08:42 (8)	34
28	05:51 20:11	06:19 19:33	06:47 18:44	07:20 (10) 07:38 (10)	06:17 17:00	07:56 (8) 08:29 (8)	07:12 16:40	08:08 (8) 08:42 (8)	34
29	05:52 20:10	06:20 19:31	06:48 18:42	07:21 (10) 07:36 (10)	06:18 16:59	07:56 (8) 08:29 (8)	07:13 16:40	08:08 (8) 08:43 (8)	35
30	05:53 20:09	06:21 19:30	06:49 18:41	07:23 (10) 07:34 (10)	06:19 16:58	07:56 (8) 08:30 (8)	07:13 16:41	08:09 (8) 08:44 (8)	35
31	05:54 20:08	06:22 19:28		06:20 16:57			07:13 16:42	08:09 (8) 08:44 (8)	35
Potential sun hours	453	424	374	347	303	294	1080		
Total, worst case			220	3	399				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: S - 19

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June		
1	07:13 16:43	08:04 (8) 08:28 (8)	07:02 17:15	08:13 (8) 08:38 (8)	06:29 17:47	06:41 19:18	05:58 19:46	05:32 20:14
2	07:14 16:44	08:04 (8) 08:29 (8)	07:01 17:16	08:14 (8) 08:37 (8)	06:27 17:48	06:40 19:18	05:57 19:47	05:31 20:14
3	07:14 16:44	08:04 (8) 08:30 (8)	07:00 17:17	08:16 (8) 08:35 (8)	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15
4	07:14 16:45	08:04 (8) 08:31 (8)	06:59 17:19	08:18 (8) 08:33 (8)	06:24 17:50	06:36 19:20	05:55 19:49	05:31 20:16
5	07:14 16:46	08:04 (8) 08:31 (8)	06:58 17:20	08:21 (8) 08:30 (8)	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16
6	07:14 16:47	08:04 (8) 08:32 (8)	06:57 17:21		06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17
7	07:14 16:48	08:04 (8) 08:33 (8)	06:56 17:22		06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:18
8	07:14 16:49	08:04 (8) 08:34 (8)	06:55 17:23		06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18
9	07:14 16:50	08:05 (8) 08:35 (8)	06:54 17:24		06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19
10	07:14 16:51	08:04 (8) 08:35 (8)	06:53 17:26		06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19
11	07:13 16:52	08:04 (8) 08:36 (8)	06:52 17:27		06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20
12	07:13 16:53	08:05 (8) 08:37 (8)	06:51 17:28		06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20
13	07:13 16:54	08:04 (8) 08:37 (8)	06:50 17:29		06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21
14	07:13 16:55	08:04 (8) 08:38 (8)	06:49 17:30		06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21
15	07:12 16:56	08:05 (8) 08:39 (8)	06:47 17:31		06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:22
16	07:12 16:57	08:04 (8) 08:39 (8)	06:46 17:32		06:06 18:02	06:18 19:32	05:42 20:01	05:29 20:22
17	07:12 16:58	08:05 (8) 08:40 (8)	06:45 17:34		06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22
18	07:11 16:59	08:05 (8) 08:40 (8)	06:44 17:35		06:03 18:04	06:36 (10) 06:46 (10)	06:16 20:02	05:29 20:23
19	07:11 17:00	08:05 (8) 08:41 (8)	06:42 17:36		06:02 18:05	06:34 (10) 06:48 (10)	06:14 19:35	05:29 20:23
20	07:10 17:01	08:05 (8) 08:41 (8)	06:41 17:37		06:00 18:06	06:32 (10) 06:49 (10)	06:13 19:36	05:29 20:23
21	07:10 17:03	08:06 (8) 08:42 (8)	06:40 17:38		05:58 18:07	06:30 (10) 06:49 (10)	06:11 19:37	05:29 20:23
22	07:09 17:04	08:06 (8) 08:41 (8)	06:38 17:39		05:57 18:08	06:30 (10) 06:50 (10)	06:10 19:38	05:30 20:24
23	07:09 17:05	08:06 (8) 08:41 (8)	06:37 17:40		05:55 18:09	06:29 (10) 06:50 (10)	06:09 19:39	05:30 20:24
24	07:08 17:06	08:07 (8) 08:42 (8)	06:36 17:41		05:54 18:10	06:29 (10) 06:50 (10)	06:07 19:40	05:30 20:24
25	07:07 17:07	08:07 (8) 08:42 (8)	06:34 17:42		05:52 18:11	06:28 (10) 06:49 (10)	06:06 19:41	05:30 20:24
26	07:07 17:08	08:08 (8) 08:41 (8)	06:33 17:43		05:51 18:12	06:28 (10) 06:48 (10)	06:05 19:42	05:31 20:24
27	07:06 17:09	08:09 (8) 08:42 (8)	06:32 17:44		05:49 18:13	06:29 (10) 06:47 (10)	06:03 19:43	05:31 20:24
28	07:05 17:11	08:09 (8) 08:41 (8)	06:30 17:46		05:47 18:14	06:29 (10) 06:46 (10)	06:02 19:44	05:31 20:24
29	07:05 17:12	08:10 (8) 08:41 (8)			06:46 19:15	07:31 (10) 07:44 (10)	06:01 19:45	05:32 20:24
30	07:04 17:13	08:11 (8) 08:40 (8)			06:44 19:16	07:33 (10) 07:41 (10)	05:59 19:45	05:32 20:24
31	07:03 17:14	08:12 (8) 08:39 (8)			06:43 19:17		05:32 20:13	
Potential sun hours	303	300	370	396	443	445		
Total, worst case	980	91	219					

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: S - 19

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December		
1	05:33	05:55	06:23	06:50	06:21	06:54		07:46 (8)
	20:24	20:07	19:27	18:39	16:55	16:33	32	08:18 (8)
2	05:33	05:56	06:24	06:51	06:22	06:54		07:47 (8)
	20:24	20:06	19:25	18:38	16:54	16:33	31	08:18 (8)
3	05:34	05:57	06:25	06:52	06:23	06:55		07:48 (8)
	20:24	20:05	19:24	18:36	16:53	16:33	30	08:18 (8)
4	05:34	05:57	06:25	06:53	06:24	06:56		07:48 (8)
	20:24	20:04	19:22	18:34	16:52	16:33	30	08:18 (8)
5	05:35	05:58	06:26	06:54	06:25	06:57		07:49 (8)
	20:24	20:03	19:21	18:33	16:51	16:33	29	08:18 (8)
6	05:35	05:59	06:27	06:54	06:26	07:52 (8)		07:50 (8)
	20:23	20:02	19:19	18:31	16:50	16:33	28	08:18 (8)
7	05:36	06:00	06:28	06:55	06:28	07:48 (8)		07:51 (8)
	20:23	20:01	19:17	18:30	16:49	16:33	27	08:18 (8)
8	05:36	06:01	06:29	06:56	06:29	07:46 (8)		07:52 (8)
	20:23	19:59	19:16	18:28	16:48	16:33	27	08:19 (8)
9	05:37	06:02	06:30	06:57	06:30	07:45 (8)		07:53 (8)
	20:23	19:58	19:14	18:27	16:47	16:33	26	08:19 (8)
10	05:38	06:03	06:31	06:58	06:31	07:44 (8)		07:53 (8)
	20:22	19:57	19:13	18:25	16:46	16:33	25	08:18 (8)
11	05:38	06:04	06:32	06:59	06:32	07:44 (8)		07:54 (8)
	20:22	19:56	19:11	18:24	16:45	16:33	24	08:18 (8)
12	05:39	06:05	06:33	07:00	06:33	07:43 (8)		07:55 (8)
	20:21	19:55	19:10	18:22	16:44	16:33	23	08:18 (8)
13	05:40	06:06	06:33	07:25 (10)	07:01	07:42 (8)		07:56 (8)
	20:21	19:53	19:08	18:21	16:43	16:33	23	08:19 (8)
14	05:40	06:06	06:34	07:22 (10)	07:02	07:41 (8)		07:56 (8)
	20:21	19:52	19:06	18:19	16:43	16:33	22	08:18 (8)
15	05:41	06:07	06:35	07:20 (10)	07:03	07:41 (8)		07:57 (8)
	20:20	19:51	19:05	18:18	16:42	16:33	22	08:19 (8)
16	05:42	06:08	06:36	07:18 (10)	07:04	07:41 (8)		07:58 (8)
	20:19	19:50	19:03	18:16	16:41	16:34	21	08:19 (8)
17	05:42	06:09	06:37	07:18 (10)	07:05	07:41 (8)		07:58 (8)
	20:19	19:48	19:02	18:15	16:40	16:34	21	08:19 (8)
18	05:43	06:10	06:38	07:16 (10)	07:06	07:41 (8)		08:00 (8)
	20:18	19:47	19:00	18:13	16:40	16:34	19	08:19 (8)
19	05:44	06:11	06:39	07:15 (10)	07:07	07:41 (8)		08:01 (8)
	20:18	19:46	18:58	18:12	16:39	16:35	19	08:20 (8)
20	05:45	06:12	06:40	07:15 (10)	07:08	07:41 (8)		08:01 (8)
	20:17	19:44	18:57	18:11	16:38	16:35	19	08:20 (8)
21	05:46	06:13	06:41	07:15 (10)	07:09	07:41 (8)		08:02 (8)
	20:16	19:43	18:55	18:09	16:38	16:36	19	08:21 (8)
22	05:46	06:14	06:42	07:15 (10)	07:10	07:41 (8)		08:02 (8)
	20:16	19:41	18:53	18:08	16:37	16:36	19	08:21 (8)
23	05:47	06:15	06:42	07:16 (10)	07:11	07:42 (8)		08:03 (8)
	20:15	19:40	18:52	18:07	16:36	16:37	19	08:22 (8)
24	05:48	06:16	06:43	07:17 (10)	07:12	07:43 (8)		08:03 (8)
	20:14	19:39	18:50	18:05	16:36	16:37	19	08:22 (8)
25	05:49	06:16	06:44	07:19 (10)	06:13	07:43 (8)		08:03 (8)
	20:13	19:37	18:49	17:04	16:36	16:38	19	08:22 (8)
26	05:50	06:17	06:45	07:22 (10)	06:15	07:43 (8)		08:03 (8)
	20:12	19:36	18:47	17:03	16:35	16:38	21	08:24 (8)
27	05:50	06:18	06:46	06:16	06:49	07:44 (8)		08:03 (8)
	20:12	19:34	18:45	17:01	16:35	16:39	21	08:24 (8)
28	05:51	06:19	06:47	06:17	06:50	07:44 (8)		08:03 (8)
	20:11	19:33	18:44	17:00	16:34	16:40	21	08:24 (8)
29	05:52	06:20	06:48	06:18	06:51	07:45 (8)		08:03 (8)
	20:10	19:31	18:42	16:59	16:34	16:40	22	08:25 (8)
30	05:53	06:21	06:49	06:19	06:53	07:46 (8)		08:04 (8)
	20:09	19:30	18:41	16:58	16:34	16:41	23	08:27 (8)
31	05:54	06:22		06:20		07:13		08:04 (8)
	20:08	19:28		16:57		16:42	23	08:27 (8)
Potential sun hours	453	424	374	347	303	294		724
Total, worst case			222		765			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: T - 20

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March		April	May	June
1	07:13	08:17 (8)	07:02	06:29	06:41	05:58	05:32
	16:43	08:54 (8)	17:15	17:47	19:18	19:46	20:14
2	07:14	08:18 (8)	07:01	06:27	06:40	05:57	05:31
	16:44	08:54 (8)	17:16	17:48	19:18	19:47	20:14
3	07:14	08:18 (8)	07:00	06:26	06:38	05:56	05:31
	16:44	08:54 (8)	17:17	17:49	19:19	19:48	20:15
4	07:14	08:19 (8)	06:59	06:24	06:36	05:55	05:31
	16:45	08:55 (8)	17:19	17:50	19:20	19:49	20:16
5	07:14	08:19 (8)	06:58	06:23	06:35	05:53	05:30
	16:46	08:55 (8)	17:20	17:51	19:21	19:50	20:16
6	07:14	08:20 (8)	06:57	06:21	06:33	05:52	05:30
	16:47	08:55 (8)	17:21	17:52	19:22	19:51	20:17
7	07:14	08:20 (8)	06:56	06:20	06:32	05:51	05:30
	16:48	08:56 (8)	17:22	17:53	19:23	19:52	20:18
8	07:14	08:21 (8)	06:55	06:18	06:30	05:50	05:29
	16:49	08:56 (8)	17:23	17:54	19:24	19:53	20:18
9	07:14	08:22 (8)	06:54	06:17	06:29	05:49	05:29
	16:50	08:57 (8)	17:24	17:55	19:25	19:54	20:19
10	07:14	08:22 (8)	06:53	06:15	06:27	05:48	05:29
	16:51	08:56 (8)	17:26	17:56	19:26	19:55	20:19
11	07:13	08:23 (8)	06:52	06:14	06:26	05:47	05:29
	16:52	08:56 (8)	17:27	17:57	19:27	19:56	20:20
12	07:13	08:24 (8)	06:51	06:12	06:24	05:46	05:29
	16:53	08:57 (8)	17:28	17:58	19:28	19:57	20:20
13	07:13	08:24 (8)	06:50	06:11	06:23	05:45	05:29
	16:54	08:56 (8)	17:29	17:59	19:29	19:58	20:21
14	07:13	08:25 (8)	06:49	06:09	06:21	05:44	05:29
	16:55	08:56 (8)	17:30	18:00	19:30	19:59	20:21
15	07:12	08:26 (8)	06:47	06:08	06:20	05:43	05:29
	16:56	08:56 (8)	17:31	18:01	19:31	20:00	20:22
16	07:12	08:26 (8)	06:46	06:06	06:20	05:42	05:29
	16:57	08:55 (8)	17:32	18:02	19:32	20:01	20:22
17	07:12	08:28 (8)	06:45	06:05	06:19	05:41	05:29
	16:58	08:56 (8)	17:34	18:03	19:33	20:01	20:22
18	07:11	08:28 (8)	06:44	06:03	06:18	05:41	05:29
	16:59	08:55 (8)	17:35	18:04	19:34	20:02	20:23
19	07:11	08:30 (8)	06:42	06:02	06:17	05:40	05:29
	17:00	08:54 (8)	17:36	18:05	19:35	20:03	20:23
20	07:10	08:31 (8)	06:41	06:00	06:16	05:39	05:29
	17:01	08:53 (8)	17:37	18:06	19:36	20:04	20:23
21	07:10	08:33 (8)	06:40	05:58	06:15	05:38	05:29
	17:03	08:53 (8)	17:38	18:07	19:37	20:05	20:23
22	07:09	08:35 (8)	06:38	05:57	06:14	05:37	05:30
	17:04	08:51 (8)	17:39	18:08	19:38	20:06	20:24
23	07:09	08:37 (8)	06:37	05:55	06:13	05:37	05:30
	17:05	08:48 (8)	17:40	18:09	19:39	20:07	20:24
24	07:08		06:36	05:54	06:12	05:36	05:30
	17:06		17:41	18:10	19:40	20:07	20:24
25	07:07		06:34	05:52	06:11	05:35	05:30
	17:07		17:42	18:11	19:41	20:08	20:24
26	07:07		06:33	05:51	06:10	05:35	05:31
	17:08		17:43	18:12	19:42	20:09	20:24
27	07:06		06:32	05:49	06:09	05:34	05:31
	17:09		17:44	18:13	19:43	20:10	20:24
28	07:05		06:30	05:47	06:08	05:34	05:31
	17:11		17:46	18:14	19:44	20:11	20:24
29	07:05			06:46	06:07	05:33	05:32
	17:12			19:15	19:45	20:11	20:24
30	07:04			06:44	05:59	05:33	05:32
	17:13			19:16	19:45	20:12	20:24
31	07:03			06:43		05:32	
	17:14			19:17		20:13	
Potential sun hours	303	300	370		396	443	445
Total, worst case	692		235				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: T - 20

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December		
1	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	07:28 (10) 07:32 (10)	06:21 16:55	06:54 16:33	08:05 (8) 08:38 (8)
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:38	06:22 16:54	06:54 16:33	08:05 (8) 08:39 (8)	
3	05:34 20:24	05:57 20:05	06:25 19:24	06:52 18:36	06:23 16:53	06:55 16:33	08:05 (8) 08:40 (8)	
4	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33	08:05 (8) 08:40 (8)	
5	05:35 20:24	05:58 20:03	06:26 19:21	06:54 18:33	06:25 16:51	06:57 16:33	08:05 (8) 08:41 (8)	
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33	08:06 (8) 08:41 (8)	
7	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	06:59 16:33	08:06 (8) 08:42 (8)	
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:33	08:07 (8) 08:43 (8)	
9	05:37 20:23	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:33	08:07 (8) 08:43 (8)	
10	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33	08:07 (8) 08:43 (8)	
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:03 16:33	08:07 (8) 08:44 (8)	
12	05:39 20:21	06:05 19:55	06:33 19:10	07:00 18:22	06:33 16:44	07:03 16:33	08:08 (8) 08:44 (8)	
13	05:40 20:21	06:06 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33	08:09 (8) 08:45 (8)	
14	05:40 20:21	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:43	07:05 16:33	08:08 (8) 08:45 (8)	
15	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	07:06 16:33	08:09 (8) 08:46 (8)	
16	05:42 20:19	06:08 19:50	06:36 19:03	07:04 18:16	06:38 16:41	07:06 16:34	08:10 (8) 08:47 (8)	
17	05:42 20:19	06:09 19:48	06:37 19:02	07:05 18:15	06:39 16:40	07:07 16:34	08:10 (8) 08:46 (8)	
18	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:40	07:08 16:34	08:10 (8) 08:47 (8)	
19	05:44 20:18	06:11 19:46	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35	08:11 (8) 08:48 (8)	
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 16:35	08:11 (8) 08:48 (8)	
21	05:46 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	07:09 16:36	08:12 (8) 08:49 (8)	
22	05:46 20:16	06:14 19:41	06:42 18:53	07:10 18:08	06:44 16:37	07:10 16:36	08:12 (8) 08:49 (8)	
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	07:10 16:37	08:13 (8) 08:50 (8)	
24	05:48 20:14	06:16 19:39	06:43 18:50	07:12 18:05	06:46 16:36	07:11 16:37	08:13 (8) 08:50 (8)	
25	05:49 20:13	06:16 19:37	06:44 18:49	07:13 17:04	06:47 16:36	07:11 16:38	08:13 (8) 08:50 (8)	
26	05:50 20:12	06:17 19:36	06:45 18:47	07:14 17:03	06:48 16:35	07:12 16:38	08:14 (8) 08:51 (8)	
27	05:50 20:12	06:18 19:34	06:46 18:45	07:15 17:01	06:49 16:35	07:12 16:39	08:15 (8) 08:51 (8)	
28	05:51 20:11	06:19 19:33	06:47 18:44	07:16 17:00	06:50 16:34	07:12 16:40	08:15 (8) 08:52 (8)	
29	05:52 20:10	06:20 19:31	06:48 18:42	07:17 16:59	06:51 16:34	07:13 16:40	08:15 (8) 08:52 (8)	
30	05:53 20:09	06:21 19:30	06:49 18:41	07:18 16:58	06:53 16:34	07:13 16:41	08:16 (8) 08:53 (8)	
31	05:54 20:08	06:22 19:28		06:20 16:57		07:13 16:42	08:17 (8) 08:53 (8)	
Potential sun hours	453	424	374	347	303	294		
Total, worst case			234	4	304	1124		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: U - 21

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June			
1	07:13	08:09 (8)	07:02	08:25 (8)	06:29	06:41	05:58	05:32	
	16:43	34 08:43 (8)	17:15	20 08:45 (8)	17:47	19:18	19:46	20:14	
2	07:14	08:09 (8)	07:01	08:28 (8)	06:27	06:40	05:57	05:31	
	16:44	34 08:43 (8)	17:16	14 08:42 (8)	17:48	19:18	19:47	20:14	
3	07:14	08:10 (8)	07:00	08:32 (8)	06:26	06:38	05:56	05:31	
	16:44	34 08:44 (8)	17:17	6 08:38 (8)	17:49	19:19	19:48	20:15	
4	07:14	08:10 (8)	06:59		06:24	06:36	05:55	05:31	
	16:45	34 08:44 (8)	17:19		17:50	19:20	19:49	20:16	
5	07:14	08:10 (8)	06:58		06:23	06:35	05:53	05:30	
	16:46	35 08:45 (8)	17:20		17:51	19:21	19:50	20:16	
6	07:14	08:10 (8)	06:57		06:21	06:33	05:52	05:30	
	16:47	36 08:46 (8)	17:21		17:52	19:22	19:51	20:17	
7	07:14	08:11 (8)	06:56		06:20	06:32	05:51	05:30	
	16:48	36 08:47 (8)	17:22		17:53	19:23	19:52	20:18	
8	07:14	08:11 (8)	06:55		06:18	06:30	05:50	05:29	
	16:49	36 08:47 (8)	17:23		17:54	19:24	19:53	20:18	
9	07:14	08:11 (8)	06:54		06:17	06:29	05:49	05:29	
	16:50	37 08:48 (8)	17:24		17:55	19:25	19:54	20:19	
10	07:14	08:11 (8)	06:53		06:15	06:27	05:48	05:29	
	16:51	37 08:48 (8)	17:26		17:56	19:26	19:55	20:19	
11	07:13	08:11 (8)	06:52		06:14	06:26	05:47	05:29	
	16:52	38 08:49 (8)	17:27		17:57	19:27	19:56	20:20	
12	07:13	08:12 (8)	06:51		06:12	06:24	05:46	05:29	
	16:53	37 08:49 (8)	17:28		17:58	19:28	19:57	20:20	
13	07:13	08:11 (8)	06:50		06:11	06:23	05:45	05:29	
	16:54	38 08:49 (8)	17:29		17:59	19:29	19:58	20:21	
14	07:13	08:12 (8)	06:49		06:09	06:21	05:44	05:29	
	16:55	38 08:50 (8)	17:30		18:00	19:30	19:59	20:21	
15	07:12	08:13 (8)	06:47		06:08	06:20	05:43	05:29	
	16:56	38 08:51 (8)	17:31		18:01	19:31	20:00	20:22	
16	07:12	08:13 (8)	06:46		06:06	06:18	05:42	05:29	
	16:57	37 08:50 (8)	17:32		18:02	19:32	20:01	20:22	
17	07:12	08:13 (8)	06:45		06:05	06:17	05:41	05:29	
	16:58	38 08:51 (8)	17:34		18:03	19:33	20:01	20:22	
18	07:11	08:13 (8)	06:44		06:03	06:39 (10)	06:16	05:29	
	16:59	38 08:51 (8)	17:35		18:04	6 06:45 (10)	19:34	20:02	20:23
19	07:11	08:14 (8)	06:42		06:02	06:36 (10)	06:14	05:40	05:29
	17:00	38 08:52 (8)	17:36		18:05	13 06:49 (10)	19:35	20:03	20:23
20	07:10	08:14 (8)	06:41		06:00	06:33 (10)	06:13	05:39	05:29
	17:01	37 08:51 (8)	17:37		18:06	17 06:50 (10)	19:36	20:04	20:23
21	07:10	08:15 (8)	06:40		05:58	06:31 (10)	06:11	05:38	05:29
	17:03	37 08:52 (8)	17:38		18:07	19 06:50 (10)	19:37	20:05	20:23
22	07:09	08:15 (8)	06:38		05:57	06:31 (10)	06:10	05:37	05:30
	17:04	37 08:52 (8)	17:39		18:08	20 06:51 (10)	19:38	20:06	20:24
23	07:09	08:16 (8)	06:37		05:55	06:30 (10)	06:09	05:37	05:30
	17:05	35 08:51 (8)	17:40		18:09	21 06:51 (10)	19:39	20:07	20:24
24	07:08	08:17 (8)	06:36		05:54	06:30 (10)	06:07	05:36	05:30
	17:06	35 08:52 (8)	17:41		18:10	21 06:51 (10)	19:40	20:07	20:24
25	07:07	08:17 (8)	06:34		05:52	06:29 (10)	06:06	05:35	05:30
	17:07	34 08:51 (8)	17:42		18:11	22 06:51 (10)	19:41	20:08	20:24
26	07:07	08:18 (8)	06:33		05:51	06:28 (10)	06:05	05:35	05:31
	17:08	32 08:50 (8)	17:43		18:12	22 06:50 (10)	19:42	20:09	20:24
27	07:06	08:19 (8)	06:32		05:49	06:29 (10)	06:03	05:34	05:31
	17:09	32 08:51 (8)	17:44		18:13	21 06:50 (10)	19:43	20:10	20:24
28	07:05	08:20 (8)	06:30		05:47	06:29 (10)	06:02	05:34	05:31
	17:11	30 08:50 (8)	17:46		18:14	19 06:48 (10)	19:44	20:11	20:24
29	07:05	08:21 (8)			06:46	07:30 (10)	06:01	05:33	05:32
	17:12	28 08:49 (8)			19:15	17 07:47 (10)	19:45	20:11	20:24
30	07:04	08:22 (8)			06:44	07:31 (10)	05:59	05:33	05:32
	17:13	26 08:48 (8)			19:16	14 07:45 (10)	19:45	20:12	20:24
31	07:03	08:24 (8)			06:43	07:34 (10)		05:32	
	17:14	22 08:46 (8)			19:17	9 07:43 (10)		20:13	
Potential sun hours	303		300		370		396		445
Total, worst case	1078		40		241				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: U - 21

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December		
1	05:33	05:55	06:23	06:50	06:21	06:54	07:53 (8)	
	20:24	20:07	19:27	18:39	16:55	16:33	38 08:31 (8)	
2	05:33	05:56	06:24	06:51	06:22	06:54	07:54 (8)	
	20:24	20:06	19:25	18:38	16:54	16:33	37 08:31 (8)	
3	05:34	05:57	06:25	06:52	06:23	06:55	07:54 (8)	
	20:24	20:05	19:24	18:36	16:53	16:33	37 08:31 (8)	
4	05:34	05:57	06:25	06:53	06:24	06:56	07:55 (8)	
	20:24	20:04	19:22	18:34	16:52	16:33	36 08:31 (8)	
5	05:35	05:58	06:26	06:54	06:25	06:57	07:56 (8)	
	20:24	20:03	19:21	18:33	16:51	16:33	36 08:32 (8)	
6	05:35	05:59	06:27	06:54	06:26	06:58	07:56 (8)	
	20:23	20:02	19:19	18:31	16:50	16:33	36 08:32 (8)	
7	05:36	06:00	06:28	06:55	06:28	06:59	07:57 (8)	
	20:23	20:01	19:17	18:30	16:49	16:33	35 08:32 (8)	
8	05:36	06:01	06:29	06:56	06:29	08:02 (8)	07:00 07:58 (8)	
	20:23	19:59	19:16	18:28	16:48	8 08:10 (8)	16:33 35 08:33 (8)	
9	05:37	06:02	06:30	06:57	06:30	07:59 (8)	07:01 07:59 (8)	
	20:23	19:58	19:14	18:27	16:47	14 08:13 (8)	16:33 34 08:33 (8)	
10	05:38	06:03	06:31	06:58	06:31	07:56 (8)	07:02 07:58 (8)	
	20:22	19:57	19:13	18:25	16:46	20 08:16 (8)	16:33 34 08:32 (8)	
11	05:38	06:04	06:32	06:59	06:32	07:56 (8)	07:03 07:59 (8)	
	20:22	19:56	19:11	18:24	16:45	22 08:18 (8)	16:33 34 08:33 (8)	
12	05:39	06:05	06:33	07:25 (10)	07:00	06:33	07:54 (8)	07:03 08:00 (8)
	20:21	19:55	19:10	8 07:33 (10)	18:22	16:44	26 08:20 (8)	16:33 33 08:33 (8)
13	05:40	06:06	06:33	07:23 (10)	07:01	06:34	07:53 (8)	07:04 08:01 (8)
	20:21	19:53	19:08	13 07:36 (10)	18:21	16:43	28 08:21 (8)	16:33 33 08:34 (8)
14	05:40	06:06	06:34	07:21 (10)	07:02	06:35	07:52 (8)	07:05 08:01 (8)
	20:21	19:52	19:06	16 07:37 (10)	18:19	16:43	30 08:22 (8)	16:33 32 08:33 (8)
15	05:41	06:07	06:35	07:19 (10)	07:03	06:36	07:51 (8)	07:06 08:02 (8)
	20:20	19:51	19:05	19 07:38 (10)	18:18	16:42	32 08:23 (8)	16:33 32 08:34 (8)
16	05:42	06:08	06:36	07:18 (10)	07:04	06:38	07:51 (8)	07:06 08:03 (8)
	20:19	19:50	19:03	21 07:39 (10)	18:16	16:41	32 08:23 (8)	16:34 32 08:35 (8)
17	05:42	06:09	06:37	07:18 (10)	07:05	06:39	07:51 (8)	07:07 08:03 (8)
	20:19	19:48	19:02	21 07:39 (10)	18:15	16:40	34 08:25 (8)	16:34 31 08:34 (8)
18	05:43	06:10	06:38	07:16 (10)	07:06	06:40	07:51 (8)	07:08 08:04 (8)
	20:18	19:47	19:00	22 07:38 (10)	18:13	16:40	35 08:26 (8)	16:34 31 08:35 (8)
19	05:44	06:11	06:39	07:16 (10)	07:07	06:41	07:51 (8)	07:08 08:05 (8)
	20:18	19:46	18:58	22 07:38 (10)	18:12	16:39	35 08:26 (8)	16:35 31 08:36 (8)
20	05:45	06:12	06:40	07:16 (10)	07:08	06:42	07:50 (8)	07:09 08:05 (8)
	20:17	19:44	18:57	21 07:37 (10)	18:11	16:38	37 08:27 (8)	16:35 31 08:36 (8)
21	05:46	06:13	06:41	07:16 (10)	07:09	06:43	07:50 (8)	07:09 08:05 (8)
	20:16	19:43	18:55	21 07:37 (10)	18:09	16:38	37 08:27 (8)	16:36 32 08:37 (8)
22	05:46	06:14	06:42	07:17 (10)	07:10	06:44	07:50 (8)	07:10 08:05 (8)
	20:16	19:41	18:53	19 07:36 (10)	18:08	16:37	37 08:27 (8)	16:36 32 08:37 (8)
23	05:47	06:15	06:42	07:17 (10)	07:11	06:45	07:51 (8)	07:10 08:06 (8)
	20:15	19:40	18:52	17 07:34 (10)	18:07	16:36	38 08:29 (8)	16:37 32 08:38 (8)
24	05:48	06:16	06:43	07:19 (10)	07:12	06:46	07:51 (8)	07:11 08:07 (8)
	20:14	19:39	18:50	14 07:33 (10)	18:05	16:36	38 08:29 (8)	16:37 31 08:38 (8)
25	05:49	06:16	06:44	07:21 (10)	06:13	06:47	07:51 (8)	07:11 08:07 (8)
	20:13	19:37	18:49	9 07:30 (10)	17:04	16:36	38 08:29 (8)	16:38 31 08:38 (8)
26	05:50	06:17	06:45	07:16 (10)	06:15	06:48	07:52 (8)	07:12 08:08 (8)
	20:12	19:36	18:47	17 07:31 (10)	17:03	16:35	37 08:29 (8)	16:38 31 08:39 (8)
27	05:50	06:18	06:46	07:16 (10)	06:16	06:49	07:52 (8)	07:12 08:08 (8)
	20:12	19:34	18:45	17 07:31 (10)	17:01	16:35	38 08:30 (8)	16:39 31 08:39 (8)
28	05:51	06:19	06:47	07:17 (10)	06:17	06:50	07:52 (8)	07:12 08:08 (8)
	20:11	19:33	18:44	17 07:31 (10)	17:00	16:34	38 08:30 (8)	16:40 32 08:40 (8)
29	05:52	06:20	06:48	07:17 (10)	06:18	06:51	07:53 (8)	07:13 08:08 (8)
	20:10	19:31	18:42	16 07:30 (10)	16:59	16:34	37 08:30 (8)	16:40 32 08:40 (8)
30	05:53	06:21	06:49	07:17 (10)	06:19	06:53	07:53 (8)	07:13 08:09 (8)
	20:09	19:30	18:41	15 07:29 (10)	16:58	16:34	37 08:30 (8)	16:41 33 08:42 (8)
31	05:54	06:22	06:50	07:18 (10)	06:20	06:54	07:54 (8)	07:14 08:09 (8)
	20:08	19:28	18:40	14 07:28 (10)	16:57	16:33	36 08:29 (8)	16:42 33 08:42 (8)
Potential sun hours	453	424	374	347	303	294	1028	
Total, worst case			243		728		1028	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: V - 22

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January		February		March		April		May		June	
1	07:13		08:33 (8)	07:02	08:31 (8)	06:29	06:41		07:37 (9)	05:58	05:32	
	16:43	34	09:07 (8)	17:15	09:28 (8)	17:47	19:17	1	07:38 (9)	19:46	20:14	
2	07:14		08:33 (8)	07:01	08:31 (8)	06:27	06:40			05:57	05:31	
	16:44	35	09:08 (8)	17:16	09:28 (8)	17:48	19:18			19:47	20:14	
3	07:14		08:33 (8)	07:00	08:31 (8)	06:26	06:38			05:56	05:31	
	16:44	36	09:09 (8)	17:17	09:27 (8)	17:49	19:19			19:48	20:15	
4	07:14		08:33 (8)	06:59	08:32 (8)	06:24	06:36			05:55	05:31	
	16:45	37	09:10 (8)	17:19	09:27 (8)	17:50	19:20			19:49	20:16	
5	07:14		08:33 (8)	06:58	08:32 (8)	06:23	06:35			05:53	05:30	
	16:46	38	09:11 (8)	17:20	09:27 (8)	17:51	19:21			19:50	20:16	
6	07:14		08:32 (8)	06:57	08:32 (8)	06:21	06:33			05:52	05:30	
	16:47	40	09:12 (8)	17:21	09:26 (8)	17:52	19:22			19:51	20:17	
7	07:14		08:32 (8)	06:56	08:33 (8)	06:20	06:32		07:25 (10)	05:51	05:30	
	16:48	41	09:13 (8)	17:22	09:26 (8)	17:53	19:23	5	07:30 (10)	19:52	20:18	
8	07:14		08:32 (8)	06:55	08:34 (8)	06:18	06:30		07:22 (10)	05:50	05:29	
	16:49	42	09:14 (8)	17:23	09:26 (8)	17:54	19:24	8	07:30 (10)	19:53	20:18	
9	07:14		08:32 (8)	06:54	08:34 (8)	06:17	06:29		07:21 (10)	05:49	05:29	
	16:50	43	09:15 (8)	17:24	09:25 (8)	17:55	19:25	11	07:32 (10)	19:54	20:19	
10	07:14		08:32 (8)	06:53	08:35 (8)	06:15	06:27		07:20 (10)	05:48	05:29	
	16:51	44	09:16 (8)	17:26	09:24 (8)	17:56	19:26	11	07:31 (10)	19:55	20:19	
11	07:13		08:32 (8)	06:52	08:36 (8)	06:14	06:26		07:07 (10)	05:47	05:29	
	16:52	45	09:17 (8)	17:27	09:23 (8)	17:57	19:27	18	07:32 (10)	19:56	20:20	
12	07:13		08:32 (8)	06:51	08:37 (8)	06:12	06:24		07:05 (10)	05:46	05:29	
	16:53	46	09:18 (8)	17:28	09:22 (8)	17:58	19:28	26	07:31 (10)	19:57	20:20	
13	07:13		08:31 (8)	06:50	08:38 (8)	06:11	06:23		07:05 (10)	05:45	05:29	
	16:54	47	09:18 (8)	17:29	09:21 (8)	17:59	19:29	27	07:32 (10)	19:58	20:21	
14	07:13		08:31 (8)	06:49	08:39 (8)	06:09	06:21		07:04 (10)	05:44	05:29	
	16:55	48	09:19 (8)	17:30	09:19 (8)	18:00	19:30	27	07:31 (10)	19:59	20:21	
15	07:12		08:31 (8)	06:47	08:40 (8)	06:08	06:20		07:04 (10)	05:43	05:29	
	16:56	50	09:21 (8)	17:31	09:18 (8)	18:01	19:31	27	07:31 (10)	20:00	20:22	
16	07:12		08:31 (8)	06:46	08:42 (8)	06:06	06:18		07:04 (10)	05:42	05:29	
	16:57	50	09:21 (8)	17:32	09:16 (8)	18:02	19:32	25	07:29 (10)	20:01	20:22	
17	07:12		08:31 (8)	06:45	08:44 (8)	06:05	06:17		07:05 (10)	05:41	05:29	
	16:58	51	09:22 (8)	17:34	09:14 (8)	18:03	19:33	24	07:29 (10)	20:01	20:22	
18	07:11		08:30 (8)	06:44	08:45 (8)	06:03	06:16		07:05 (10)	05:41	05:29	
	16:59	52	09:22 (8)	17:35	09:11 (8)	18:04	19:34	23	07:28 (10)	20:02	20:23	
19	07:11		08:31 (8)	06:42	08:49 (8)	06:02	06:14		07:06 (10)	05:40	05:29	
	17:00	52	09:23 (8)	17:36	09:08 (8)	18:05	19:35	20	07:26 (10)	20:03	20:23	
20	07:10		08:30 (8)	06:41	08:55 (8)	06:00	06:13		07:07 (10)	05:39	05:29	
	17:01	54	09:24 (8)	17:37	09:02 (8)	18:06	19:36	18	07:25 (10)	20:04	20:23	
21	07:10		08:31 (8)	06:40		05:58	06:11		07:08 (10)	05:38	05:29	
	17:03	54	09:25 (8)	17:38		18:07	19:37	15	07:23 (10)	20:05	20:23	
22	07:09		08:30 (8)	06:38		05:57	06:10		07:11 (10)	05:37	05:30	
	17:04	55	09:25 (8)	17:39		18:08	19:38	9	07:20 (10)	20:06	20:24	
23	07:09		08:30 (8)	06:37		05:55	06:09			05:37	05:30	
	17:05	55	09:25 (8)	17:40		18:09	19:39			20:07	20:24	
24	07:08		08:31 (8)	06:36		05:54	06:07			05:36	05:30	
	17:06	55	09:26 (8)	17:41		18:10	19:40			20:07	20:24	
25	07:07		08:30 (8)	06:34		05:52	06:06			05:35	05:30	
	17:07	57	09:27 (8)	17:42		18:11	19:41			20:08	20:24	
26	07:07		08:30 (8)	06:33		05:50	06:05			05:35	05:31	
	17:08	57	09:27 (8)	17:43		18:12	19:42			20:09	20:24	
27	07:06		08:31 (8)	06:32		05:49	06:41 (9)	06:03		05:34	05:31	
	17:09	57	09:28 (8)	17:44		18:13	1	06:42 (9)		20:10	20:24	
28	07:05		08:31 (8)	06:30		05:47	06:40 (9)	06:02		05:34	05:31	
	17:10	57	09:28 (8)	17:45		18:14	1	06:41 (9)		20:11	20:24	
29	07:04		08:31 (8)			06:46	07:39 (9)	06:01		05:33	05:32	
	17:12	57	09:28 (8)			19:15	2	07:41 (9)		20:11	20:24	
30	07:04		08:31 (8)			06:44	07:38 (9)	05:59		05:33	05:32	
	17:13	57	09:28 (8)			19:16	2	07:40 (9)		20:12	20:24	
31	07:03		08:31 (8)			06:43	07:38 (9)			05:32		
	17:14	57	09:28 (8)			19:17	2	07:40 (9)		20:13		
Potential sun hours	303		300		370		396		443		445	
Total, worst case	1503		868		8		295					

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: V - 22

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December			
1	05:33 20:24	05:55 20:07	06:23 19:27	07:06 (10) 07:31 (10)	06:50 18:39	06:21 16:55	08:05 (8) 08:54 (8)	06:53 16:33	08:14 (8) 08:59 (8)
2	05:33 20:24	05:56 20:06	06:24 19:25	07:19 (10) 07:30 (10)	06:51 18:38	06:22 16:54	08:04 (8) 08:55 (8)	06:54 16:33	08:15 (8) 08:59 (8)
3	05:34 20:24	05:57 20:05	06:25 19:24	07:19 (10) 07:30 (10)	06:52 18:36	06:23 16:53	08:03 (8) 08:55 (8)	06:55 16:33	08:15 (8) 08:58 (8)
4	05:34 20:24	05:57 20:04	06:25 19:22	07:19 (10) 07:28 (10)	06:53 18:34	06:24 16:52	08:03 (8) 08:56 (8)	06:56 16:33	08:16 (8) 08:58 (8)
5	05:35 20:24	05:58 20:03	06:26 19:21	07:21 (10) 07:26 (10)	06:54 18:33	06:25 16:51	08:02 (8) 08:56 (8)	06:57 16:33	08:17 (8) 08:58 (8)
6	05:35 20:23	05:59 20:02	06:27 19:19		06:54 18:31	06:26 16:50	08:03 (8) 08:58 (8)	06:58 16:33	08:18 (8) 08:58 (8)
7	05:36 20:23	06:00 20:01	06:28 19:17		06:55 18:30	06:28 16:49	08:02 (8) 08:58 (8)	06:59 16:33	08:20 (8) 08:58 (8)
8	05:36 20:23	06:01 19:59	06:29 19:16		06:56 18:28	06:29 16:48	08:02 (8) 08:58 (8)	07:00 16:33	08:21 (8) 08:58 (8)
9	05:37 20:23	06:02 19:58	06:30 19:14		06:57 18:27	06:30 16:47	08:02 (8) 08:59 (8)	07:01 16:33	08:22 (8) 08:58 (8)
10	05:38 20:22	06:03 19:57	06:31 19:13		06:58 18:25	06:31 16:46	08:02 (8) 08:59 (8)	07:02 16:33	08:22 (8) 08:57 (8)
11	05:38 20:22	06:04 19:56	06:32 19:11	07:29 (9) 07:30 (9)	06:59 18:24	06:32 16:45	08:02 (8) 08:59 (8)	07:03 16:33	08:23 (8) 08:57 (8)
12	05:39 20:21	06:05 19:55	06:33 19:09	07:29 (9) 07:31 (9)	07:00 18:22	06:33 16:44	08:03 (8) 09:00 (8)	07:03 16:33	08:24 (8) 08:58 (8)
13	05:40 20:21	06:06 19:53	06:33 19:08	07:29 (9) 07:31 (9)	07:01 18:21	06:34 16:43	08:03 (8) 09:00 (8)	07:04 16:33	08:25 (8) 08:58 (8)
14	05:40 20:21	06:06 19:52	06:34 19:06	07:29 (9) 07:31 (9)	07:02 18:19	06:35 16:43	08:03 (8) 09:00 (8)	07:05 16:33	08:25 (8) 08:57 (8)
15	05:41 20:20	06:07 19:51	06:35 19:05	07:30 (9) 07:31 (9)	07:03 18:18	06:36 16:42	08:03 (8) 09:00 (8)	07:06 16:33	08:27 (8) 08:57 (8)
16	05:42 20:19	06:08 19:50	06:36 19:03	07:30 (9) 07:31 (9)	07:04 18:16	06:38 16:41	08:03 (8) 09:00 (8)	07:06 16:34	08:28 (8) 08:58 (8)
17	05:42 20:19	06:09 19:48	06:37 19:01		07:05 18:15	06:39 16:40	08:04 (8) 09:01 (8)	07:07 16:34	08:28 (8) 08:57 (8)
18	05:43 20:18	06:10 19:47	06:38 19:00		07:06 18:13	06:40 16:40	08:05 (8) 09:00 (8)	07:08 16:34	08:29 (8) 08:58 (8)
19	05:44 20:18	06:11 19:46	06:39 18:58		07:07 18:12	06:41 16:39	08:05 (8) 09:00 (8)	07:08 16:35	08:30 (8) 08:59 (8)
20	05:45 20:17	06:12 19:44	06:40 18:57		07:08 18:11	06:42 16:38	08:05 (8) 09:00 (8)	07:09 16:35	08:30 (8) 08:59 (8)
21	05:45 20:16	06:13 19:43	06:41 18:55	07:15 (10) 07:25 (10)	07:09 18:09	06:43 16:38	08:06 (8) 09:00 (8)	07:09 16:36	08:31 (8) 08:59 (8)
22	05:46 20:16	06:14 19:41	06:42 18:53	07:12 (10) 07:28 (10)	07:10 18:08	06:44 16:37	08:06 (8) 09:00 (8)	07:10 16:36	08:31 (8) 08:59 (8)
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 (10) 07:29 (10)	07:11 18:07	06:45 16:36	08:07 (8) 09:00 (8)	07:10 16:37	08:32 (8) 09:01 (8)
24	05:48 20:14	06:16 19:39	06:43 18:50	07:09 (10) 07:30 (10)	07:12 18:05	06:46 16:36	08:08 (8) 09:00 (8)	07:11 16:37	08:32 (8) 09:01 (8)
25	05:49 20:13	06:16 19:37	06:44 18:49	07:08 (10) 07:31 (10)	06:13 17:04	06:47 16:35	08:09 (8) 09:00 (8)	07:11 16:38	08:32 (8) 09:01 (8)
26	05:50 20:12	06:17 19:36	06:45 18:47	07:07 (10) 07:32 (10)	06:15 17:03	06:48 16:35	08:10 (8) 09:00 (8)	07:12 16:38	08:33 (8) 09:02 (8)
27	05:50 20:12	06:18 19:34	06:46 18:45	07:07 (10) 07:32 (10)	06:16 17:01	06:49 16:35	08:10 (8) 09:00 (8)	07:12 16:39	08:33 (8) 09:03 (8)
28	05:51 20:11	06:19 19:33	06:47 18:44	07:05 (10) 07:32 (10)	06:17 17:00	06:50 16:34	08:11 (8) 08:59 (8)	07:12 16:40	08:33 (8) 09:03 (8)
29	05:52 20:10	06:20 19:31	06:48 18:42	07:05 (10) 07:32 (10)	06:18 16:59	06:51 16:34	08:12 (8) 08:59 (8)	07:13 16:40	08:32 (8) 09:04 (8)
30	05:53 20:09	06:21 19:30	06:49 18:41	07:05 (10) 07:32 (10)	06:19 16:58	06:52 16:34	08:06 (8) 08:51 (8)	07:13 16:41	08:33 (8) 09:06 (8)
31	05:54 20:08	06:22 19:28	06:49 18:41	07:05 (10) 07:31 (10)	06:20 16:57	06:53 16:34	08:06 (8) 08:53 (8)	07:13 16:42	08:33 (8) 09:06 (8)
Potential sun hours	453	424	374		347	303		294	
Total, worst case		245	63	340	1609	1040			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: W - 23

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June			
1	07:13 16:43	08:45 (8) 09:43 (8)	07:02 17:15	08:59 (8) 09:46 (8)	06:29 17:47	06:41 19:17	05:58 19:46	05:32 20:14	
2	07:14 16:44	08:45 (8) 09:43 (8)	07:01 17:16	09:00 (8) 09:44 (8)	06:27 17:48	06:40 19:18	05:57 19:47	05:31 20:14	
3	07:14 16:44	08:46 (8) 09:44 (8)	07:00 17:17	09:01 (8) 09:43 (8)	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	
4	07:14 16:45	08:46 (8) 09:44 (8)	06:59 17:19	09:02 (8) 09:42 (8)	06:24 17:50	06:36 19:20	05:55 19:49	05:31 20:16	
5	07:14 16:46	08:46 (8) 09:45 (8)	06:58 17:20	09:04 (8) 09:40 (8)	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	
6	07:14 16:47	08:47 (8) 09:45 (8)	06:57 17:21	09:05 (8) 09:38 (8)	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	
7	07:14 16:48	08:47 (8) 09:46 (8)	06:56 17:22	09:07 (8) 09:36 (8)	06:20 17:53	06:32 19:23	07:39 (10) 07:40 (10)	05:51 19:52	05:30 20:18
8	07:14 16:49	08:48 (8) 09:47 (8)	06:55 17:23	09:10 (8) 09:34 (8)	06:18 17:54	06:30 19:24	07:37 (10) 07:39 (10)	05:50 19:53	05:29 20:18
9	07:14 16:50	08:48 (8) 09:47 (8)	06:54 17:24	09:13 (8) 09:30 (8)	06:17 17:55	06:29 19:25	07:36 (10) 07:40 (10)	05:49 19:54	05:29 20:19
10	07:14 16:51	08:48 (8) 09:47 (8)	06:53 17:26		06:15 17:56	06:27 19:26	07:34 (10) 07:39 (10)	05:48 19:55	05:29 20:19
11	07:13 16:52	08:48 (8) 09:48 (8)	06:52 17:27		06:14 17:57	06:26 19:27	07:33 (10) 07:39 (10)	05:47 19:56	05:29 20:20
12	07:13 16:53	08:49 (8) 09:48 (8)	06:51 17:28		06:12 17:58	06:24 19:28	07:30 (10) 07:38 (10)	05:46 19:57	05:29 20:20
13	07:13 16:54	08:48 (8) 09:48 (8)	06:50 17:29		06:11 17:59	06:23 19:29	07:29 (10) 07:38 (10)	05:45 19:58	05:29 20:21
14	07:13 16:55	08:49 (8) 09:49 (8)	06:49 17:30		06:09 18:00	06:21 19:30	07:27 (10) 07:36 (10)	05:44 19:59	05:29 20:21
15	07:12 16:56	08:50 (8) 09:49 (8)	06:47 17:31		06:08 18:01	06:20 19:31	07:26 (10) 07:36 (10)	05:43 20:00	05:29 20:21
16	07:12 16:57	08:50 (8) 09:49 (8)	06:46 17:32		06:06 18:02	06:18 19:32	07:24 (10) 07:34 (10)	05:42 20:01	05:29 20:22
17	07:12 16:58	08:50 (8) 09:50 (8)	06:45 17:33		06:05 18:03	06:17 19:33	07:23 (10) 07:33 (10)	05:41 20:01	05:29 20:22
18	07:11 16:59	08:50 (8) 09:49 (8)	06:44 17:35		06:03 18:04	06:15 19:34	07:22 (10) 07:31 (10)	05:41 20:02	05:29 20:23
19	07:11 17:00	08:51 (8) 09:50 (8)	06:42 17:36		06:01 18:05	06:14 19:35	07:19 (10) 07:28 (10)	05:40 20:03	05:29 20:23
20	07:10 17:01	08:51 (8) 09:50 (8)	06:41 17:37		06:00 18:06	06:13 19:36		05:39 20:04	05:29 20:23
21	07:10 17:03	08:52 (8) 09:50 (8)	06:40 17:38		05:58 18:07	06:11 19:37		05:38 20:05	05:29 20:23
22	07:09 17:04	08:52 (8) 09:50 (8)	06:38 17:39		05:57 18:08	06:10 19:38		05:37 20:06	05:30 20:24
23	07:09 17:05	08:52 (8) 09:50 (8)	06:37 17:40		05:55 18:09	06:09 19:39		05:37 20:07	05:30 20:24
24	07:08 17:06	08:54 (8) 09:50 (8)	06:36 17:41		05:54 18:10	06:07 19:40		05:36 20:07	05:30 20:24
25	07:07 17:07	08:54 (8) 09:50 (8)	06:34 17:42		05:52 18:11	06:06 19:41		05:35 20:08	05:30 20:24
26	07:07 17:08	08:54 (8) 09:49 (8)	06:33 17:43		05:50 18:12	06:05 19:42		05:35 20:09	05:31 20:24
27	07:06 17:09	08:56 (8) 09:49 (8)	06:32 17:44		05:49 18:13	06:03 19:43		05:34 20:10	05:31 20:24
28	07:05 17:10	08:56 (8) 09:49 (8)	06:30 17:45		05:47 18:14	06:02 19:44		05:34 20:11	05:31 20:24
29	07:04 17:12	08:57 (8) 09:48 (8)			06:46 19:15	06:01 19:45		05:33 20:11	05:32 20:24
30	07:04 17:13	08:57 (8) 09:47 (8)			06:44 19:16	05:59 19:45		05:33 20:12	05:32 20:24
31	07:03 17:14	08:58 (8) 09:46 (8)			06:43 19:17			05:32 20:13	
Potential sun hours	303		300		370	396		443	445
Total, worst case	1775		312			92			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: W - 23

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:33 20:24	05:55 20:07	06:23 19:27	07:32 (10) 06:50	18:39 06:21	08:48 (8) 06:53
2	05:33 20:24	05:56 20:06	06:24 19:25	07:33 (10) 07:38 (10)	06:51 18:38	08:42 (8) 09:01 (8)
3	05:34 20:24	05:57 20:05	06:25 19:24	07:34 (10) 07:38 (10)	06:52 18:36	08:39 (8) 09:04 (8)
4	05:34 20:24	05:57 20:04	06:25 19:22	07:34 (10) 07:36 (10)	06:53 18:34	08:37 (8) 09:13 (8)
5	05:35 20:24	05:58 20:03	06:26 19:21	07:35 (10) 07:36 (10)	06:54 18:33	08:35 (8) 09:09 (8)
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	08:34 (8) 09:11 (8)
7	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	08:33 (8) 09:13 (8)
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	08:32 (8) 09:14 (8)
9	05:37 20:23	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	08:31 (8) 09:15 (8)
10	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	08:30 (8) 09:17 (8)
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	08:29 (8) 09:17 (8)
12	05:39 20:21	06:05 19:55	06:33 19:09	07:00 18:22	06:33 16:44	08:28 (8) 09:19 (8)
13	05:40 20:21	06:06 19:53	06:33 19:08	07:01 18:21	06:34 16:43	08:28 (8) 09:20 (8)
14	05:40 20:21	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:43	08:28 (8) 09:21 (8)
15	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	08:27 (8) 09:21 (8)
16	05:42 20:19	06:08 19:50	06:36 19:03	07:04 18:16	06:38 16:41	08:27 (8) 16:34
17	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	08:28 (8) 16:34
18	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:40	08:28 (8) 09:24 (8)
19	05:44 20:18	06:11 19:46	06:39 18:58	07:07 18:12	06:41 16:39	08:27 (8) 16:35
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	08:27 (8) 16:35
21	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	08:27 (8) 09:25 (8)
22	05:46 20:16	06:14 19:41	06:42 18:53	07:10 18:08	06:44 16:37	08:27 (8) 16:36
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	08:27 (8) 16:37
24	05:48 20:14	06:16 19:39	06:43 18:50	07:12 18:05	06:46 16:36	08:26 (8) 09:27 (8)
25	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:35	08:28 (8) 09:28 (8)
26	05:50 20:12	06:17 19:36	06:45 18:47	06:15 17:03	06:48 16:35	08:29 (8) 16:38
27	05:50 20:12	06:18 19:34	06:46 18:45	06:16 17:01	06:49 16:35	08:29 (8) 16:39
28	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	08:29 (8) 16:40
29	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	08:29 (8) 16:40
30	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	08:30 (8) 09:29 (8)
31	05:54 20:08	06:22 19:28	06:49 18:41	06:20 16:57		07:13 16:42
Potential sun hours	453	424	374	347	303	294
Total, worst case		75	18		1457	1782

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: X - 24

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January		February		March		April		May		June	
1	07:13	08:28 (8)	07:02	08:34 (8)	06:29	06:41	07:19 (10)	05:58	05:32			
	16:43	44	09:12 (8)	17:15	49	09:23 (8)	17:47	19:17	15	07:34 (10)	19:46	20:14
2	07:14	08:28 (8)	07:01	08:35 (8)	06:27	06:40	07:16 (10)	05:57	05:31			
	16:44	45	09:13 (8)	17:16	47	09:22 (8)	17:48	19:18	19	07:35 (10)	19:47	20:14
3	07:14	08:28 (8)	07:00	08:36 (8)	06:26	06:38	07:15 (10)	05:56	05:31			
	16:44	45	09:13 (8)	17:17	46	09:22 (8)	17:49	19:19	22	07:37 (10)	19:48	20:15
4	07:14	08:28 (8)	06:59	08:36 (8)	06:24	06:36	07:13 (10)	05:55	05:31			
	16:45	46	09:14 (8)	17:19	45	09:21 (8)	17:50	19:20	24	07:37 (10)	19:49	20:16
5	07:14	08:28 (8)	06:58	08:37 (8)	06:23	06:35	07:13 (10)	05:53	05:30			
	16:46	47	09:15 (8)	17:20	43	09:20 (8)	17:51	19:21	25	07:38 (10)	19:50	20:16
6	07:14	08:28 (8)	06:57	08:38 (8)	06:21	06:33	07:12 (10)	05:52	05:30			
	16:47	47	09:15 (8)	17:21	41	09:19 (8)	17:52	19:22	25	07:37 (10)	19:51	20:17
7	07:14	08:29 (8)	06:56	08:40 (8)	06:20	06:32	07:12 (10)	05:51	05:30			
	16:48	47	09:16 (8)	17:22	38	09:18 (8)	17:53	19:23	26	07:38 (10)	19:52	20:18
8	07:14	08:29 (8)	06:55	08:41 (8)	06:18	06:30	07:11 (10)	05:50	05:29			
	16:49	48	09:17 (8)	17:23	36	09:17 (8)	17:54	19:24	26	07:37 (10)	19:53	20:18
9	07:14	08:29 (8)	06:54	08:42 (8)	06:17	06:29	07:11 (10)	05:49	05:29			
	16:50	49	09:18 (8)	17:24	33	09:15 (8)	17:55	19:25	26	07:37 (10)	19:54	20:19
10	07:14	08:29 (8)	06:53	08:44 (8)	06:15	06:27	07:10 (10)	05:48	05:29			
	16:51	49	09:18 (8)	17:26	30	09:14 (8)	17:56	19:26	26	07:36 (10)	19:55	20:19
11	07:13	08:29 (8)	06:52	08:47 (8)	06:14	06:26	07:11 (10)	05:47	05:29			
	16:52	50	09:19 (8)	17:27	24	09:11 (8)	17:57	19:27	25	07:36 (10)	19:56	20:20
12	07:13	08:29 (8)	06:51	08:50 (8)	06:12	06:24	07:11 (10)	05:46	05:29			
	16:53	51	09:20 (8)	17:28	18	09:08 (8)	17:58	19:28	23	07:34 (10)	19:57	20:20
13	07:13	08:29 (8)	06:50	08:54 (8)	06:11	06:23	07:12 (10)	05:45	05:29			
	16:54	51	09:20 (8)	17:29	10	09:04 (8)	17:59	19:29	22	07:34 (10)	19:58	20:21
14	07:13	08:29 (8)	06:49		06:09	06:21	07:12 (10)	05:44	05:29			
	16:55	52	09:21 (8)	17:30		18:00		19:30	20	07:32 (10)	19:59	20:21
15	07:12	08:30 (8)	06:47		06:08	06:20	07:14 (10)	05:43	05:29			
	16:56	51	09:21 (8)	17:31		18:01		19:31	16	07:30 (10)	20:00	20:22
16	07:12	08:29 (8)	06:46		06:06	06:18	07:15 (10)	05:42	05:29			
	16:57	52	09:21 (8)	17:32		18:02		19:32	12	07:27 (10)	20:01	20:22
17	07:12	08:30 (8)	06:45		06:05	06:17		05:41	05:29			
	16:58	52	09:22 (8)	17:34		18:03		19:33		20:01	20:22	
18	07:11	08:30 (8)	06:44		06:03	06:16		05:41	05:29			
	16:59	52	09:22 (8)	17:35		18:04		19:34		20:02	20:23	
19	07:11	08:30 (8)	06:42		06:02	06:14		05:40	05:29			
	17:00	53	09:23 (8)	17:36		18:05		19:35		20:03	20:23	
20	07:10	08:30 (8)	06:41		06:00	06:13		05:39	05:29			
	17:01	53	09:23 (8)	17:37		18:06		19:36		20:04	20:23	
21	07:10	08:31 (8)	06:40		05:58	06:11		05:38	05:29			
	17:03	53	09:24 (8)	17:38		18:07		19:37		20:05	20:23	
22	07:09	08:31 (8)	06:38		05:57	06:10		05:37	05:30			
	17:04	53	09:24 (8)	17:39		18:08		19:38		20:06	20:24	
23	07:09	08:31 (8)	06:37		05:55	06:09		05:37	05:30			
	17:05	53	09:24 (8)	17:40		18:09		19:39		20:07	20:24	
24	07:08	08:31 (8)	06:36		05:54	06:07		05:36	05:30			
	17:06	54	09:25 (8)	17:41		18:10		19:40		20:07	20:24	
25	07:07	08:31 (8)	06:34		05:52	06:06		05:35	05:30			
	17:07	54	09:25 (8)	17:42		18:11		19:41		20:08	20:24	
26	07:07	08:32 (8)	06:33		05:50	06:05		05:35	05:31			
	17:08	52	09:24 (8)	17:43		18:12		19:42		20:09	20:24	
27	07:06	08:33 (8)	06:32		05:49	06:03		05:34	05:31			
	17:09	52	09:25 (8)	17:44		18:13		19:43		20:10	20:24	
28	07:05	08:33 (8)	06:30		05:47	06:02		05:34	05:31			
	17:10	52	09:25 (8)	17:45		18:14		19:44		20:11	20:24	
29	07:04	08:33 (8)			06:46	06:01		05:33	05:32			
	17:12	51	09:24 (8)		19:15	19:45		20:11	20:24			
30	07:04	08:34 (8)			06:44	05:59		05:33	05:32			
	17:13	50	09:24 (8)		19:16	19:45		20:12	20:24			
31	07:03	08:34 (8)			06:43	07:22 (10)		05:32				
	17:14	50	09:24 (8)		19:17	10	07:32 (10)	20:13				
Potential sun hours	303		300		370		396	352		443	445	
Total, worst case	1558		460		10							

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: X - 24

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December			
1	05:33 20:24	05:55 20:07	06:23 19:27	07:10 (10) 07:35 (10)	06:50 18:39	06:21 16:55	08:14 (8) 08:44 (8)	06:53 16:33	08:11 (8) 09:01 (8)
2	05:33 20:24	05:56 20:06	06:24 19:25	07:09 (10) 07:35 (10)	06:51 18:38	06:22 16:54	08:12 (8) 08:45 (8)	06:54 16:33	08:12 (8) 09:01 (8)
3	05:34 20:24	05:57 20:05	06:25 19:24	07:09 (10) 07:35 (10)	06:52 18:36	06:23 16:53	08:11 (8) 08:47 (8)	06:55 16:33	08:12 (8) 09:01 (8)
4	05:34 20:24	05:57 20:04	06:25 19:22	07:08 (10) 07:34 (10)	06:53 18:34	06:24 16:52	08:09 (8) 08:48 (8)	06:56 16:33	08:13 (8) 09:01 (8)
5	05:35 20:24	05:58 20:03	06:26 19:21	07:08 (10) 07:34 (10)	06:54 18:33	06:25 16:51	08:08 (8) 08:49 (8)	06:57 16:33	08:14 (8) 09:01 (8)
6	05:35 20:23	05:59 20:02	06:27 19:19	07:08 (10) 07:33 (10)	06:54 18:31	06:26 16:50	08:08 (8) 08:51 (8)	06:58 16:33	08:14 (8) 09:02 (8)
7	05:36 20:23	06:00 20:01	06:28 19:17	07:08 (10) 07:33 (10)	06:55 18:30	06:28 16:49	08:07 (8) 08:52 (8)	06:59 16:33	08:15 (8) 09:02 (8)
8	05:36 20:23	06:01 19:59	06:29 19:16	07:08 (10) 07:32 (10)	06:56 18:28	06:29 16:48	08:07 (8) 08:53 (8)	07:00 16:33	08:16 (8) 09:02 (8)
9	05:37 20:23	06:02 19:58	06:30 19:14	07:09 (10) 07:31 (10)	06:57 18:27	06:30 16:47	08:06 (8) 08:53 (8)	07:01 16:33	08:17 (8) 09:02 (8)
10	05:38 20:22	06:03 19:57	06:31 19:13	07:10 (10) 07:29 (10)	06:58 18:25	06:31 16:46	08:05 (8) 08:54 (8)	07:02 16:33	08:17 (8) 09:02 (8)
11	05:38 20:22	06:04 19:56	06:32 19:11	07:11 (10) 07:26 (10)	06:59 18:24	06:32 16:45	08:05 (8) 08:55 (8)	07:03 16:33	08:18 (8) 09:02 (8)
12	05:39 20:21	06:05 19:55	06:33 19:10	07:13 (10) 07:24 (10)	07:00 18:22	06:33 16:44	08:05 (8) 08:56 (8)	07:03 16:33	08:19 (8) 09:02 (8)
13	05:40 20:21	06:06 19:53	06:33 19:08		07:01 18:21	06:34 16:43	08:05 (8) 08:56 (8)	07:04 16:33	08:19 (8) 09:03 (8)
14	05:40 20:21	06:06 19:52	06:34 19:06		07:02 18:19	06:35 16:43	08:05 (8) 08:57 (8)	07:05 16:33	08:19 (8) 09:02 (8)
15	05:41 20:20	06:07 19:51	06:35 19:05		07:03 18:18	06:36 16:42	08:05 (8) 08:57 (8)	07:06 16:33	08:20 (8) 09:03 (8)
16	05:42 20:19	06:08 19:50	06:36 19:03		07:04 18:16	06:38 16:41	08:05 (8) 08:57 (8)	07:06 16:34	08:21 (8) 09:04 (8)
17	05:42 20:19	06:09 19:48	06:37 19:01		07:05 18:15	06:39 16:40	08:05 (8) 08:58 (8)	07:07 16:34	08:21 (8) 09:03 (8)
18	05:43 20:18	06:10 19:47	06:38 19:00		07:06 18:13	06:40 16:40	08:05 (8) 08:59 (8)	07:08 16:34	08:22 (8) 09:04 (8)
19	05:44 20:18	06:11 19:46	06:39 18:58		07:07 18:12	06:41 16:39	08:06 (8) 08:59 (8)	07:08 16:35	08:23 (8) 09:05 (8)
20	05:45 20:17	06:12 19:44	06:40 18:57		07:08 18:11	06:42 16:38	08:06 (8) 08:59 (8)	07:09 16:35	08:23 (8) 09:05 (8)
21	05:45 20:16	06:13 19:43	06:41 18:55		07:09 18:09	06:43 16:38	08:06 (8) 08:59 (8)	07:09 16:36	08:24 (8) 09:06 (8)
22	05:46 20:16	06:14 19:41	06:42 18:53		07:10 18:08	06:44 16:37	08:06 (8) 08:59 (8)	07:10 16:36	08:24 (8) 09:06 (8)
23	05:47 20:15	06:15 19:40	06:42 18:52		07:11 18:07	06:45 16:36	08:06 (8) 08:59 (8)	07:10 16:37	08:25 (8) 09:07 (8)
24	05:48 20:14	06:16 19:39	06:43 18:50		07:12 18:05	06:46 16:36	08:08 (8) 09:00 (8)	07:11 16:37	08:25 (8) 09:07 (8)
25	05:49 20:13	06:16 19:37	06:44 18:49		07:13 (10) 17:04	06:47 16:35	08:08 (8) 09:00 (8)	07:11 16:38	08:25 (8) 09:07 (8)
26	05:50 20:12	06:17 19:36	06:45 18:47	07:22 (10)	17:03	06:48 16:35	08:08 (8) 09:00 (8)	07:12 16:38	08:26 (8) 09:08 (8)
27	05:50 20:12	06:18 19:34	06:46 18:45	07:18 (10)	17:03	06:49 16:35	08:09 (8) 09:01 (8)	07:12 16:39	08:26 (8) 09:09 (8)
28	05:51 20:11	06:19 19:33	06:47 18:44	07:15 (10)	17:00	06:50 16:34	08:09 (8) 09:01 (8)	07:12 16:40	08:26 (8) 09:09 (8)
29	05:52 20:10	06:20 19:31	06:48 18:42	07:13 (10)	16:59	06:51 16:34	08:10 (8) 09:01 (8)	07:13 16:40	08:26 (8) 09:09 (8)
30	05:53 20:09	06:21 19:30	06:49 18:41	07:12 (10)	16:58	06:52 16:34	08:18 (8) 09:01 (8)	07:13 16:41	08:27 (8) 09:11 (8)
31	05:54 20:08	06:22 19:28	06:49 18:41	07:11 (10)	16:58	06:52 16:34	08:16 (8) 09:01 (8)	07:13 16:42	08:28 (8) 09:11 (8)
Potential sun hours	453	424	374	270	347	303	1451	294	1370
Total, worst case			97		58				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: Y - 25

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June		
1	07:13 16:43	07:02 17:15	06:29 17:47	06:41 19:18	05:58 19:46	05:32 20:14	16	06:23 (6) 06:39 (6)
2	07:14 16:44	07:01 17:16	06:27 17:48	06:40 19:18	05:57 19:47	05:31 20:14	15	06:24 (6) 06:39 (6)
3	07:14 16:45	07:00 17:18	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	14	06:25 (6) 06:39 (6)
4	07:14 16:45	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:31 20:16	12	06:25 (6) 06:37 (6)
5	07:14 16:46	06:58 17:20	06:23 17:51	07:24 (4) 07:27 (4)	06:35 19:21	05:54 19:50	10	06:27 (6) 06:37 (6)
6	07:14 16:47	06:57 17:21	06:21 17:52	07:21 (4) 07:27 (4)	06:33 19:22	05:52 19:51	8	06:28 (6) 06:36 (6)
7	07:14 16:48	06:56 17:22	06:20 17:53	07:18 (4) 07:27 (4)	06:32 19:23	05:51 19:52	5	06:30 (6) 06:35 (6)
8	07:14 16:49	06:55 17:23	06:18 17:54	07:15 (4) 07:26 (4)	06:30 19:24	05:50 19:53		
9	07:14 16:50	06:54 17:24	06:17 17:55	07:10 (4) 07:25 (4)	06:29 19:25	05:49 19:54		
10	07:14 16:51	06:53 17:26	06:15 17:56	07:05 (4) 07:24 (4)	06:27 19:26	05:48 19:55	9	06:26 (6) 06:35 (6)
11	07:13 16:52	06:52 17:27	06:14 17:57	07:05 (4) 07:22 (4)	06:26 19:27	05:47 19:56	11	06:25 (6) 06:36 (6)
12	07:13 16:53	06:51 17:28	06:12 17:58	07:07 (4) 07:21 (4)	06:24 19:28	05:46 19:57	14	06:24 (6) 06:38 (6)
13	07:13 16:54	06:50 17:29	06:11 17:59	07:09 (4) 07:17 (4)	06:23 19:29	05:45 19:58	16	06:23 (6) 06:39 (6)
14	07:13 16:55	06:49 17:30	06:09 18:00	06:21 19:30	05:44 19:59	06:24 (6) 06:40 (6)	16	06:24 (6) 06:40 (6)
15	07:12 16:56	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	06:23 (6) 06:41 (6)	18	06:23 (6) 06:41 (6)
16	07:12 16:57	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:01	06:22 (6) 06:41 (6)	19	06:22 (6) 06:41 (6)
17	07:12 16:58	06:45 17:34	06:05 18:03	06:17 19:33	05:41 20:01	06:22 (6) 06:41 (6)	19	06:22 (6) 06:41 (6)
18	07:11 16:59	06:44 17:35	06:03 18:04	06:16 19:34	05:41 20:02	06:21 (6) 06:41 (6)	20	06:21 (6) 06:41 (6)
19	07:11 17:00	06:42 17:36	06:02 18:05	06:14 19:35	05:40 20:03	06:21 (6) 06:41 (6)	20	06:21 (6) 06:41 (6)
20	07:10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	06:22 (6) 06:42 (6)	20	06:22 (6) 06:42 (6)
21	07:10 17:03	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	06:21 (6) 06:42 (6)	21	06:21 (6) 06:42 (6)
22	07:09 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	06:20 (6) 06:41 (6)	21	06:20 (6) 06:41 (6)
23	07:09 17:05	06:37 17:40	05:55 18:09	06:09 19:39	05:37 20:07	06:20 (6) 06:42 (6)	22	06:20 (6) 06:42 (6)
24	07:08 17:06	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	06:20 (6) 06:41 (6)	21	06:20 (6) 06:41 (6)
25	07:07 17:07	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	06:21 (6) 06:42 (6)	21	06:21 (6) 06:42 (6)
26	07:07 17:08	06:33 17:43	05:51 18:12	06:05 19:42	05:35 20:09	06:20 (6) 06:41 (6)	21	06:20 (6) 06:41 (6)
27	07:06 17:09	06:32 17:44	05:49 18:13	06:03 19:43	05:34 20:10	06:20 (6) 06:40 (6)	20	06:20 (6) 06:40 (6)
28	07:05 17:11	06:30 17:46	05:47 18:14	06:02 19:44	05:34 20:11	06:21 (6) 06:41 (6)	20	06:21 (6) 06:41 (6)
29	07:04 17:12		06:46 19:15	06:01 19:45	05:33 20:11	06:22 (6) 06:41 (6)	19	06:22 (6) 06:41 (6)
30	07:04 17:13		06:44 19:16	05:59 19:45	05:33 20:12	06:22 (6) 06:40 (6)	18	06:22 (6) 06:40 (6)
31	07:03 17:14		06:43 19:17		05:32 20:13	06:23 (6) 06:40 (6)	17	06:23 (6) 06:40 (6)
Potential sun hours	303	300	370	396	443	445		
Total, worst case			102		403		80	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: Y - 25

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:33 20:24	05:55 20:07	06:35 (6) 19:27	06:23 18:39	07:47 (4) 16:55	06:21 16:33
2	05:33 20:24	05:56 20:06	06:35 (6) 19:25	06:24 18:38	07:44 (4) 16:54	06:22 16:33
3	05:34 20:24	05:57 20:05	06:37 (6) 19:24	06:25 18:36	07:43 (4) 16:53	06:23 16:33
4	05:34 20:24	05:57 20:04	06:37 (6) 19:22	06:25 18:34	07:43 (4) 16:52	06:23 16:33
5	05:35 20:24	06:36 (6) 20:03	05:58 19:21	06:26 18:33	07:49 (4) 16:51	06:25 16:33
6	05:35 20:23	06:35 (6) 20:02	05:59 19:19	06:27 18:31	07:53 (4) 16:50	06:26 16:33
7	05:36 20:23	06:33 (6) 20:01	06:00 19:17	06:28 18:30	07:55 (4) 16:49	06:28 16:33
8	05:36 20:23	06:33 (6) 19:59	06:01 19:16	06:29 18:28	07:58 (4) 16:48	06:29 16:33
9	05:37 20:23	06:33 (6) 19:58	06:02 19:14	06:30 18:27	08:01 (4) 16:47	06:30 16:33
10	05:38 20:22	06:32 (6) 19:57	06:03 19:13	06:31 18:25	08:02 (4) 16:46	06:31 16:33
11	05:38 20:22	06:31 (6) 19:56	06:04 19:11	06:32 18:24	08:03 (4) 16:45	06:32 16:33
12	05:39 20:21	06:31 (6) 19:55	06:05 19:10	06:33 18:22	08:04 (4) 16:44	06:33 16:33
13	05:40 20:21	06:30 (6) 19:53	06:06 19:08	06:33 18:21	08:05 (4) 16:43	06:34 16:33
14	05:40 20:20	06:30 (6) 19:52	06:07 19:06	06:34 18:19	08:06 (4) 16:43	06:35 16:33
15	05:41 20:20	06:30 (6) 19:51	06:07 19:05	06:35 18:18	08:07 (4) 16:42	06:36 16:34
16	05:42 20:19	06:29 (6) 19:50	06:08 19:03	06:36 18:16	08:08 (4) 16:41	06:38 16:34
17	05:42 20:19	06:30 (6) 19:48	06:09 19:02	06:37 18:15	08:09 (4) 16:40	06:39 16:34
18	05:43 20:18	06:30 (6) 19:47	06:10 19:00	06:38 18:14	08:10 (4) 16:40	06:40 16:34
19	05:44 20:18	06:30 (6) 19:46	06:11 18:58	06:39 18:12	08:11 (4) 16:39	06:41 16:35
20	05:45 20:17	06:30 (6) 19:44	06:12 18:57	06:40 18:11	08:12 (4) 16:38	06:42 16:35
21	05:46 20:16	06:30 (6) 19:43	06:13 18:55	06:41 18:09	08:13 (4) 16:38	06:43 16:36
22	05:46 20:16	06:31 (6) 19:41	06:14 18:53	06:42 18:08	08:14 (4) 16:37	06:44 16:36
23	05:47 20:15	06:32 (6) 19:40	06:15 18:52	06:42 18:07	08:15 (4) 16:37	06:45 16:37
24	05:48 20:14	06:32 (6) 19:39	06:16 18:50	06:43 18:05	08:16 (4) 16:36	06:46 16:37
25	05:49 20:13	06:32 (6) 19:37	06:16 18:49	06:44 17:04	08:17 (4) 16:36	06:47 16:38
26	05:50 20:12	06:32 (6) 19:36	06:17 18:47	06:45 17:03	08:18 (4) 16:35	06:48 16:38
27	05:51 20:12	06:32 (6) 19:34	06:18 18:45	06:46 17:01	08:19 (4) 16:35	06:49 16:39
28	05:51 20:11	06:33 (6) 19:33	06:19 18:44	06:47 17:00	08:20 (4) 16:34	06:50 16:40
29	05:52 20:10	06:34 (6) 19:31	06:20 18:42	06:48 16:59	08:21 (4) 16:34	06:51 16:40
30	05:53 20:09	06:34 (6) 19:30	06:21 18:41	06:49 16:58	08:22 (4) 16:34	06:52 16:41
31	05:54 20:08	06:34 (6) 19:28	06:22 18:40	06:50 16:57	08:23 (4) 16:34	06:53 16:42
Potential sun hours	453	424	374	347	303	294
Total, worst case	459	31	1	100		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: Z - 26

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:13 16:43	07:02 17:15	16:32 (7)	06:29 17:46	06:41 19:17	05:58 19:46
2	07:13 16:44	07:01 17:16	20 16:33 (7)	06:27 17:47	06:39 19:18	3 19:21 (9) 19:24 (9)
3	07:14 16:44	07:00 17:17	20 16:53 (7)	06:26 17:49	06:38 19:19	3 19:22 (9) 19:25 (9)
4	07:14 16:45	06:59 17:18	20 16:34 (7)	06:24 17:50	06:36 19:20	4 19:22 (9) 19:27 (9)
5	07:14 16:46	06:58 17:20	21 16:36 (7)	06:23 17:51	06:35 19:21	2 19:26 (9) 19:28 (9)
6	07:14 16:47	06:57 17:21	20 16:38 (7)	06:21 17:52	06:33 19:22	05:52 19:51
7	07:14 16:48	06:56 17:22	19 16:40 (7)	06:20 17:53	06:32 19:23	05:51 19:52
8	07:14 16:49	06:55 17:23	13 16:43 (7)	06:18 17:54	06:30 19:24	05:50 19:53
9	07:14 16:50	06:54 17:24		06:17 17:55	06:29 19:25	05:49 19:54
10	07:13 16:51	06:53 17:25		06:15 17:56	06:27 19:26	05:48 19:55
11	07:13 16:52	06:52 17:27		06:14 17:57	06:26 19:27	05:47 19:56
12	07:13 16:53	16:28 (7) 16:29 (7)	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57
13	07:13 16:54	16:27 (7) 16:29 (7)	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58
14	07:13 16:55	16:27 (7) 16:30 (7)	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59
15	07:12 16:56	16:28 (7) 16:32 (7)	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00
16	07:12 16:57	16:27 (7) 16:32 (7)	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00
17	07:11 16:58	16:28 (7) 16:34 (7)	06:45 17:33	06:04 18:03	06:17 19:33	05:41 20:01
18	07:11 16:59	16:27 (7) 16:35 (7)	06:44 17:34	06:03 18:04	06:15 19:34	05:40 20:02
19	07:11 17:00	16:28 (7) 16:36 (7)	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03
20	07:10 17:01	16:27 (7) 16:37 (7)	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04
21	07:10 17:02	10 16:30 (7) 16:39 (7)	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05
22	07:09 17:04	16:28 (7) 16:40 (7)	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06
23	07:08 17:05	12 16:28 (7) 16:41 (7)	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:06
24	07:08 17:06	13 16:29 (7) 16:42 (7)	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07
25	07:07 17:07	16:29 (7) 16:43 (7)	06:34 17:42	05:52 18:11	06:06 19:40	05:35 20:08
26	07:07 17:08	14 16:29 (7) 16:44 (7)	06:33 17:43	05:50 18:12	06:04 19:41	19:19 (9) 20:09
27	07:06 17:09	15 16:29 (7) 16:45 (7)	06:31 17:44	05:49 18:13	06:03 19:42	1 19:19 (9) 2 19:21 (9)
28	07:05 17:10	16 16:30 (7) 16:47 (7)	06:30 17:45	05:47 18:13	06:02 19:43	19:19 (9) 2 19:21 (9)
29	07:04 17:12	17 16:30 (7) 16:48 (7)		06:46 19:14	06:01 19:44	2 19:21 (9) 3 19:22 (9)
30	07:04 17:13	18 16:31 (7) 16:50 (7)		06:44 19:15	05:59 19:45	3 19:20 (9) 3 19:23 (9)
31	07:03 17:14	19 16:31 (7) 16:51 (7)		06:43 19:16		05:32 20:12
Potential sun hours	303	300	370	396	443	445
Total, worst case	215	153		11	15	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: Z - 26

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December	
1	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33	
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	16:18 (7) 16:33	
3	05:33 20:24	05:56 20:05	06:24 19:23	06:51 18:36	06:23 16:53	16:12 (7) 16:33	
4	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	06:24 16:52	16:10 (7) 16:33	
5	05:34 20:23	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	16:08 (7) 16:33	
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	16:06 (7) 16:32	
7	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30	06:27 16:49	16:06 (7) 16:32	
8	05:36 20:23	06:01 19:59	19:35 (9) 19:37 (9)	06:29 19:16	06:56 18:28	06:29 16:48	16:05 (7) 16:32
9	05:37 20:22	06:02 19:58	19:33 (9) 19:36 (9)	06:30 19:14	06:57 18:27	06:30 16:47	16:04 (7) 16:32
10	05:37 20:22	06:03 19:57	19:32 (9) 19:31 (9)	06:31 19:13	06:58 18:25	06:31 16:46	16:03 (7) 16:32
11	05:38 20:22	06:04 19:56	19:30 (9) 19:34 (9)	06:32 19:11	06:59 18:24	06:32 16:45	16:02 (7) 16:33
12	05:39 20:21	06:05 19:54	19:29 (9) 19:32 (9)	06:32 19:09	07:00 18:22	06:33 16:44	16:03 (7) 16:33
13	05:39 20:21	06:05 19:53	19:28 (9) 19:31 (9)	06:33 19:08	07:01 18:21	06:34 16:43	16:02 (7) 16:33
14	05:40 20:20	06:06 19:52	19:27 (9) 19:30 (9)	06:34 19:06	07:02 18:19	06:35 16:42	16:02 (7) 16:33
15	05:41 20:20	06:07 19:51	19:27 (9) 19:29 (9)	06:35 19:05	07:03 18:18	06:36 16:42	16:02 (7) 16:33
16	05:42 20:19	06:08 19:49	19:26 (9) 19:27 (9)	06:36 19:03	07:04 18:16	06:37 16:41	16:02 (7) 16:34
17	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:38 16:40	16:02 (7) 16:34	
18	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	16:03 (7) 16:34	
19	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	16:03 (7) 16:35	
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	16:03 (7) 16:35	
21	05:45 20:16	06:13 19:43	06:40 18:55	07:09 18:09	06:43 16:37	16:03 (7) 16:36	
22	05:46 20:15	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	16:03 (7) 16:36	
23	05:47 20:15	06:14 19:40	06:42 18:52	07:11 18:06	06:45 16:36	16:04 (7) 16:36	
24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	16:04 (7) 16:37	
25	05:49 20:13	06:16 19:37	06:44 18:48	06:13 17:04	06:47 16:35	16:06 (7) 16:38	
26	05:49 20:12	06:17 19:35	06:45 18:47	06:14 17:03	06:48 16:35	16:06 (7) 16:38	
27	05:50 20:11	06:18 19:34	06:46 18:45	06:15 17:01	06:49 16:35	16:07 (7) 16:39	
28	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	16:07 (7) 16:40	
29	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	16:08 (7) 16:40	
30	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	16:09 (7) 16:41	
31	05:54 20:08	06:22 19:28		06:20 16:56		07:13 16:42	
Potential sun hours	453	424	374	347	303	294	
Total, worst case		24			371		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: AA - 27

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:13 16:43	07:02 17:15	09:10 (8) 10:22 (8)	06:29 17:47	09:03 (8) 10:20 (8)	06:41 19:17
2	07:14 16:44	07:01 17:16	09:10 (8) 10:23 (8)	06:27 17:48	09:04 (8) 10:19 (8)	06:40 19:18
3	07:14 16:44	07:00 17:17	09:09 (8) 10:24 (8)	06:26 17:49	09:04 (8) 10:17 (8)	06:38 19:19
4	07:14 16:45	06:59 17:19	09:08 (8) 10:24 (8)	06:24 17:50	09:05 (8) 10:16 (8)	06:36 19:20
5	07:14 16:46	06:58 17:20	09:08 (8) 10:25 (8)	06:23 17:51	09:05 (8) 10:14 (8)	06:35 19:21
6	07:14 16:47	06:57 17:21	09:07 (8) 10:26 (8)	06:21 17:52	09:06 (8) 10:12 (8)	06:33 19:22
7	07:14 16:48	06:56 17:22	09:07 (8) 10:27 (8)	06:20 17:53	09:06 (8) 10:10 (8)	06:32 19:23
8	07:14 16:49	06:55 17:23	09:06 (8) 10:27 (8)	06:18 17:54	09:07 (8) 10:08 (8)	06:30 19:24
9	07:14 16:50	06:54 17:24	09:06 (8) 10:28 (8)	06:17 17:55	09:08 (8) 10:05 (8)	06:29 19:25
10	07:14 16:51	06:53 17:26	09:06 (8) 10:28 (8)	06:15 17:56	09:09 (8) 10:03 (8)	06:27 19:26
11	07:13 16:52	06:52 17:27	09:05 (8) 10:29 (8)	06:14 17:57	09:10 (8) 10:00 (8)	06:26 19:27
12	07:13 16:53	06:51 17:28	09:05 (8) 10:29 (8)	06:12 17:58	09:12 (8) 09:57 (8)	06:24 19:28
13	07:13 16:54	06:50 17:29	09:05 (8) 10:30 (8)	06:11 17:59	09:13 (8) 09:54 (8)	06:23 19:29
14	07:13 16:55	09:36 (8) 09:46 (8)	06:49 17:30	09:04 (8) 10:29 (8)	06:09 18:00	06:21 19:30
15	07:12 16:56	09:32 (8) 09:52 (8)	06:47 17:31	09:04 (8) 10:29 (8)	06:08 18:01	06:20 19:31
16	07:12 16:57	09:29 (8) 09:55 (8)	06:46 17:32	09:04 (8) 10:30 (8)	06:06 18:02	06:18 19:32
17	07:12 16:58	09:27 (8) 09:58 (8)	06:45 17:33	09:04 (8) 10:30 (8)	06:05 18:03	06:17 19:33
18	07:11 16:59	09:25 (8) 10:00 (8)	06:44 17:35	09:03 (8) 10:29 (8)	06:03 18:04	06:15 19:34
19	07:11 17:00	09:24 (8) 10:03 (8)	06:42 17:36	09:03 (8) 10:29 (8)	06:01 18:05	06:14 19:35
20	07:10 17:01	09:22 (8) 10:04 (8)	06:41 17:37	09:03 (8) 10:29 (8)	06:00 18:06	06:13 19:36
21	07:10 17:03	09:21 (8) 10:07 (8)	06:40 17:38	09:02 (8) 10:28 (8)	05:58 18:07	06:11 19:37
22	07:09 17:04	09:20 (8) 10:08 (8)	06:38 17:39	09:03 (8) 10:27 (8)	05:57 18:08	06:10 19:38
23	07:09 17:05	09:18 (8) 10:10 (8)	06:37 17:40	09:03 (8) 10:27 (8)	05:55 18:09	06:09 19:39
24	07:08 17:06	09:18 (8) 10:12 (8)	06:36 17:41	09:02 (8) 10:26 (8)	05:54 18:10	06:07 19:40
25	07:07 17:07	09:16 (8) 10:13 (8)	06:34 17:42	09:03 (8) 10:25 (8)	05:52 18:11	06:06 19:41
26	07:07 17:08	09:15 (8) 10:14 (8)	06:33 17:43	09:02 (8) 10:24 (8)	05:50 18:12	06:05 19:42
27	07:06 17:09	09:15 (8) 10:17 (8)	06:32 17:44	09:03 (8) 10:23 (8)	05:49 18:13	06:03 19:43
28	07:05 17:10	09:14 (8) 10:18 (8)	06:30 17:45	09:03 (8) 10:22 (8)	05:47 18:14	06:02 19:44
29	07:04 17:12	09:13 (8) 10:19 (8)		06:46 19:15	06:01 19:44	06:48 (10) 07:13 (10)
30	07:04 17:13	09:12 (8) 10:20 (8)		06:44 19:16	05:59 19:45	06:48 (10) 07:14 (10)
31	07:03 17:14	09:11 (8) 10:21 (8)		06:43 19:17		05:32 20:12
Potential sun hours	303			370	396	443
Total, worst case	849	300	2291	886	349	538
						445

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: AA - 27

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:33 20:24	05:55 20:07	06:55 (10) 06:23	07:11 (9) 06:50	09:51 (8) 06:21	08:35 (8) 06:53
2	05:33 20:24	05:56 20:06	06:55 (10) 06:24	07:10 (9) 06:51	09:49 (8) 06:22	08:36 (8) 06:54
3	05:34 20:24	05:57 20:05	06:56 (10) 06:25	07:10 (9) 06:52	09:47 (8) 06:23	08:36 (8) 06:55
4	05:34 20:24	05:57 20:04	06:56 (10) 06:25	07:08 (9) 06:53	09:46 (8) 06:24	08:37 (8) 06:56
5	05:35 20:24	05:58 20:03	06:55 (10) 06:26	07:08 (9) 06:54	09:44 (8) 06:25	08:37 (8) 06:57
6	05:35 20:23	05:59 20:02	06:55 (10) 06:27	07:08 (9) 06:54	09:43 (8) 06:26	08:39 (8) 06:58
7	05:36 20:23	06:00 20:01	06:56 (10) 06:28	07:08 (9) 06:55	09:42 (8) 06:28	08:39 (8) 06:59
8	05:36 20:23	06:01 19:59	06:56 (10) 06:29	07:09 (9) 06:56	09:41 (8) 06:29	08:40 (8) 07:00
9	05:37 20:23	06:02 19:58	06:56 (10) 06:30	07:10 (9) 06:57	09:40 (8) 06:30	08:41 (8) 07:01
10	05:38 20:22	06:03 19:57	06:56 (10) 06:31	07:11 (9) 06:58	09:39 (8) 06:31	08:41 (8) 07:02
11	05:38 20:22	06:04 19:56	06:56 (10) 06:32	07:11 (9) 06:59	09:38 (8) 06:32	08:42 (8) 07:03
12	05:39 20:21	06:05 19:55	06:57 (10) 06:33	07:00 06:58	09:37 (8) 06:33	08:44 (8) 07:03
13	05:40 20:21	06:06 19:53	06:56 (10) 06:33	07:01 06:59	09:36 (8) 06:34	08:45 (8) 07:04
14	05:40 20:20	06:06 19:52	06:56 (10) 06:34	07:02 06:59	09:36 (8) 06:35	08:46 (8) 07:05
15	05:41 20:20	06:07 19:51	06:56 (10) 06:35	07:03 06:58	09:35 (8) 06:36	08:47 (8) 07:06
16	05:42 20:19	06:08 19:50	06:56 (10) 06:36	07:04 06:57	09:35 (8) 06:38	08:48 (8) 07:06
17	05:42 20:19	06:09 19:48	06:57 (10) 06:37	07:05 06:56	09:34 (8) 06:39	08:51 (8) 07:07
18	05:43 20:18	06:10 19:47	06:59 (10) 06:38	07:06 06:55	09:34 (8) 06:40	08:52 (8) 07:08
19	05:44 20:18	06:11 19:46	07:03 (10) 06:39	07:07 06:54	09:33 (8) 06:41	08:53 (8) 07:08
20	05:45 20:17	06:12 19:44	07:11 (10) 06:40	07:08 06:53	09:33 (8) 06:42	08:55 (8) 07:09
21	05:45 20:16	06:13 19:43	06:41 06:41	07:09 06:52	09:33 (8) 06:43	08:56 (8) 07:09
22	05:46 20:16	07:04 (10) 06:14	06:42 06:42	07:10 06:51	09:33 (8) 06:44	08:58 (8) 07:10
23	05:47 20:15	07:13 (10) 06:15	06:43 06:43	07:11 06:50	09:33 (8) 06:45	09:00 (8) 07:10
24	05:48 20:14	07:02 (10) 06:16	06:44 06:44	07:12 06:49	09:33 (8) 06:46	09:03 (8) 07:11
25	05:49 20:13	07:15 (10) 06:17	06:45 06:45	07:13 06:48	09:33 (8) 06:47	09:05 (8) 07:11
26	05:50 20:12	07:00 (10) 06:18	06:46 06:46	07:14 06:47	09:33 (8) 06:48	09:08 (8) 07:12
27	05:50 20:12	07:19 (10) 06:19	06:47 06:47	07:15 06:48	09:33 (8) 06:49	09:11 (8) 07:12
28	05:51 20:11	07:20 (10) 06:20	06:48 06:48	07:16 06:49	09:33 (8) 06:50	09:14 (8) 07:12
29	05:52 20:10	07:21 (10) 06:21	06:49 06:49	07:17 06:50	09:33 (8) 06:51	09:16 (8) 07:12
30	05:53 20:09	07:22 (10) 06:22	06:50 06:50	07:18 06:51	09:33 (8) 06:52	09:18 (8) 07:13
31	05:54 20:08	07:23 (10) 06:23	06:51 06:51	07:19 06:52	09:33 (8) 06:53	09:20 (8) 07:13
Potential sun hours	453	424	374	347	303	294
Total, worst case	208	512	284	2342	1624	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: AB - 28

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:13 16:43	07:02 17:15	09:21 (8) 10:30 (8)	06:29 17:47	09:08 (8) 10:37 (8)	06:41 19:17
2	07:14 16:44	07:01 17:16	09:20 (8) 10:32 (8)	06:27 17:48	09:09 (8) 10:36 (8)	06:40 19:18
3	07:14 16:44	07:00 17:17	09:19 (8) 10:33 (8)	06:26 17:49	09:08 (8) 10:34 (8)	06:38 19:19
4	07:14 16:45	06:59 17:19	09:19 (8) 10:34 (8)	06:24 17:50	09:09 (8) 10:34 (8)	06:36 19:20
5	07:14 16:46	06:58 17:20	09:18 (8) 10:35 (8)	06:23 17:51	09:09 (8) 10:32 (8)	06:35 19:21
6	07:14 16:47	06:57 17:21	09:17 (8) 10:36 (8)	06:21 17:52	09:09 (8) 10:30 (8)	06:33 19:22
7	07:14 16:48	06:56 17:22	09:16 (8) 10:37 (8)	06:20 17:53	09:09 (8) 10:28 (8)	06:32 19:23
8	07:14 16:49	06:55 17:23	09:16 (8) 10:38 (8)	06:18 17:54	09:10 (8) 10:27 (8)	06:30 19:24
9	07:14 16:50	06:54 17:24	09:15 (8) 10:39 (8)	06:17 17:55	09:10 (8) 10:25 (8)	06:29 19:25
10	07:14 16:51	06:53 17:26	09:15 (8) 10:39 (8)	06:15 17:56	09:11 (8) 10:23 (8)	06:27 19:26
11	07:13 16:52	06:52 17:27	09:14 (8) 10:40 (8)	06:14 17:57	09:11 (8) 10:20 (8)	06:26 19:27
12	07:13 16:53	06:51 17:28	09:14 (8) 10:41 (8)	06:12 17:58	09:12 (8) 10:19 (8)	06:24 19:28
13	07:13 16:54	06:50 17:29	09:13 (8) 10:41 (8)	06:11 17:59	09:12 (8) 10:16 (8)	06:23 19:29
14	07:13 16:55	06:49 17:30	09:12 (8) 10:41 (8)	06:09 18:00	09:13 (8) 10:12 (8)	06:21 19:30
15	07:12 16:56	06:47 17:31	09:12 (8) 10:42 (8)	06:08 18:01	09:14 (8) 10:10 (8)	06:20 19:31
16	07:12 16:57	06:46 17:32	09:12 (8) 10:42 (8)	06:06 18:02	09:15 (8) 10:07 (8)	06:18 19:32
17	07:12 16:58	06:45 17:33	09:11 (8) 10:42 (8)	06:05 18:03	09:17 (8) 10:04 (8)	06:17 19:33
18	07:11 16:59	09:47 (8) 09:57 (8)	06:44 17:35	09:10 (8) 18:04	06:15 18:00	06:15 19:34
19	07:11 17:00	09:43 (8) 10:03 (8)	06:42 17:36	09:10 (8) 18:05	06:14 19:35	06:14 19:35
20	07:10 17:01	20 09:39 (8) 28 10:07 (8)	06:41 17:37	09:10 (8) 18:06	06:13 19:36	06:13 19:36
21	07:10 17:03	09:37 (8) 33 10:10 (8)	06:40 17:38	09:09 (8) 18:07	05:58 19:37	06:11 19:37
22	07:09 17:04	09:35 (8) 38 10:13 (8)	06:38 17:39	09:09 (8) 18:08	05:57 19:38	06:10 19:38
23	07:09 17:05	09:33 (8) 42 10:15 (8)	06:37 17:40	09:10 (8) 18:09	05:55 19:39	06:09 19:39
24	07:08 17:06	09:32 (8) 46 10:18 (8)	06:36 17:41	09:09 (8) 18:10	05:54 19:40	06:07 19:40
25	07:07 17:07	09:30 (8) 49 10:19 (8)	06:34 17:42	09:09 (8) 18:11	05:52 19:41	06:06 19:41
26	07:07 17:08	09:28 (8) 53 10:21 (8)	06:33 17:43	09:08 (8) 18:12	05:50 19:42	06:05 19:42
27	07:06 17:09	09:28 (8) 56 10:24 (8)	06:32 17:44	09:09 (8) 18:13	05:49 19:43	06:03 19:43
28	07:05 17:10	09:26 (8) 59 10:25 (8)	06:30 17:45	09:09 (8) 18:14	05:47 19:44	06:02 19:44
29	07:04 17:12	09:25 (8) 62 10:27 (8)	06:29 17:46	09:09 (8) 18:15	05:46 19:45	06:01 19:45
30	07:04 17:13	09:24 (8) 64 10:28 (8)	06:28 17:47	09:09 (8) 18:16	05:45 19:46	06:00 19:46
31	07:03 17:14	09:22 (8) 67 10:29 (8)	06:27 17:48	09:09 (8) 18:17	05:44 19:47	05:59 19:47
Potential sun hours	303	300	370	396	443	445
Total, worst case	627	2403	1356	275	775	445

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: AB - 28

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December					
1	05:33 20:24	05:55 20:07	06:49 (10) 07:23 (10)	06:23 19:27	07:09 (9) 07:28 (9)	06:50 18:39	09:51 (8) 10:56 (8)	06:21 16:55	84	08:45 (8) 10:09 (8)	06:53 16:33
2	05:33 20:24	05:56 20:06	06:50 (10) 07:23 (10)	06:24 19:25	07:08 (9) 07:28 (9)	06:51 18:37	09:50 (8) 10:58 (8)	06:22 16:54	83	08:45 (8) 10:08 (8)	06:54 16:33
3	05:34 20:24	05:57 20:05	06:50 (10) 07:23 (10)	06:25 19:24	07:08 (9) 07:28 (9)	06:52 18:36	09:49 (8) 11:00 (8)	06:23 16:53	81	08:46 (8) 10:07 (8)	06:55 16:33
4	05:34 20:24	05:57 20:04	06:50 (10) 07:23 (10)	06:25 19:22	07:07 (9) 07:27 (9)	06:53 18:34	09:48 (8) 11:01 (8)	06:24 16:52	80	08:46 (8) 10:06 (8)	06:56 16:33
5	05:35 20:24	05:58 20:03	06:49 (10) 07:22 (10)	06:26 19:21	07:07 (9) 07:26 (9)	06:54 18:33	09:47 (8) 11:03 (8)	06:25 16:51	79	08:47 (8) 10:06 (8)	06:57 16:33
6	05:35 20:23	05:59 20:02	06:49 (10) 07:22 (10)	06:27 19:19	07:08 (9) 07:25 (9)	06:54 18:31	09:46 (8) 11:04 (8)	06:26 16:50	77	08:49 (8) 10:06 (8)	06:58 16:33
7	05:36 20:23	06:00 20:01	06:50 (10) 07:21 (10)	06:28 19:17	07:08 (9) 07:24 (9)	06:55 18:30	09:45 (8) 11:05 (8)	06:28 16:49	75	08:50 (8) 10:05 (8)	06:59 16:33
8	05:36 20:23	06:01 19:59	06:50 (10) 07:21 (10)	06:29 19:16	07:10 (9) 07:22 (9)	06:56 18:28	09:44 (8) 11:07 (8)	06:29 16:48	74	08:50 (8) 10:04 (8)	07:00 16:33
9	05:37 20:23	06:02 19:58	06:51 (10) 07:20 (10)	06:30 19:14	07:12 (9) 07:19 (9)	06:57 18:27	09:44 (8) 11:08 (8)	06:30 16:47	71	08:51 (8) 10:02 (8)	07:01 16:33
10	05:38 20:22	06:03 19:57	06:52 (10) 07:20 (10)	06:31 19:13		06:58 18:25	09:43 (8) 11:08 (8)	06:31 16:46	69	08:52 (8) 10:01 (8)	07:02 16:33
11	05:38 20:22	06:04 19:56	06:53 (10) 07:19 (10)	06:32 19:11		06:59 18:24	09:43 (8) 11:09 (8)	06:32 16:45	67	08:53 (8) 10:00 (8)	07:03 16:33
12	05:39 20:21	06:05 19:55	06:54 (10) 07:18 (10)	06:33 19:09		07:00 18:22	09:42 (8) 11:10 (8)	06:33 16:44	64	08:56 (8) 10:00 (8)	07:03 16:33
13	05:40 20:21	06:06 19:53	06:54 (10) 07:15 (10)	06:33 19:08		07:01 18:21	09:42 (8) 11:11 (8)	06:34 16:43	61	08:57 (8) 09:58 (8)	07:04 16:33
14	05:40 20:20	07:04 (10) 07:06 (10)	06:56 (10) 07:14 (10)	06:34 19:06		07:02 18:19	09:41 (8) 11:11 (8)	06:35 16:43	59	08:58 (8) 09:57 (8)	07:05 16:33
15	05:41 20:20	07:01 (10) 07:10 (10)	06:58 (10) 07:11 (10)	06:35 19:05		07:03 18:18	09:41 (8) 11:11 (8)	06:36 16:42	56	09:00 (8) 09:56 (8)	07:06 16:33
16	05:42 20:19	06:58 (10) 07:11 (10)	06:08 19:50	07:03 (10) 07:06 (10)	06:36 19:03		07:04 18:16	06:38 16:41	53	09:01 (8) 09:54 (8)	07:06 16:34
17	05:42 20:19	06:57 (10) 07:13 (10)	06:09 19:48		06:37 19:01		07:05 18:15	06:39 16:40	49	09:04 (8) 09:53 (8)	07:07 16:34
18	05:43 20:18	06:56 (10) 07:15 (10)	06:10 19:47		06:38 19:00		07:06 18:13	06:40 16:40	46	09:06 (8) 09:52 (8)	07:08 16:34
19	05:44 20:18	06:55 (10) 07:15 (10)	06:11 19:46		06:39 18:58		07:07 18:12	06:41 16:39	42	09:08 (8) 09:50 (8)	07:08 16:35
20	05:45 20:17	06:54 (10) 07:16 (10)	06:12 19:44		06:40 18:57		07:08 18:11	06:42 16:38	38	09:10 (8) 09:48 (8)	07:09 16:35
21	05:45 20:16	06:54 (10) 07:17 (10)	06:13 19:43		06:41 18:55		07:09 18:09	06:43 16:38	33	09:12 (8) 09:45 (8)	07:09 16:36
22	05:46 20:16	06:53 (10) 07:18 (10)	06:14 19:41		06:42 18:53	10:13 (8)	07:10 18:08	06:44 16:37	28	09:15 (8) 09:43 (8)	07:10 16:36
23	05:47 20:15	06:53 (10) 07:19 (10)	06:15 19:40		06:42 18:52	10:08 (8)	07:11 18:07	06:45 16:36	20	09:19 (8) 09:39 (8)	07:10 16:37
24	05:48 20:14	06:52 (10) 07:19 (10)	06:16 19:39		06:43 18:50	10:05 (8)	07:12 18:05	06:46 16:36	10	09:25 (8) 09:35 (8)	07:11 16:37
25	05:49 20:13	06:51 (10) 07:20 (10)	06:16 19:37		06:44 18:49	10:39 (8)	07:12 18:02	06:47 16:35			07:11 16:38
26	05:50 20:12	06:51 (10) 07:21 (10)	06:17 19:36		06:45 18:47	10:52 (8)	07:13 17:04	06:48 16:35	91	08:41 (8) 10:12 (8)	07:12 16:38
27	05:50 20:12	06:51 (10) 07:21 (10)	06:18 19:34		06:46 18:45	10:44 (8)	07:13 17:01	06:49 16:35	89	08:42 (8) 10:11 (8)	07:12 16:39
28	05:51 20:11	06:51 (10) 07:22 (10)	06:19 19:33	6	07:17 (9) 07:23 (9)	09:55 (8) 10:47 (8)	06:17 17:01	06:50 16:35			07:12 16:39
29	05:52 20:10	06:50 (10) 07:21 (10)	06:20 19:31	11	07:13 (9) 07:24 (9)	09:55 (8) 10:50 (8)	06:17 17:00	06:50 16:34	89	08:42 (8) 10:11 (8)	07:13 16:40
30	05:53 20:09	06:49 (10) 07:22 (10)	06:21 19:30	15	07:11 (9) 07:27 (9)	09:54 (8) 10:54 (8)	06:18 16:58	06:51 16:34	88	08:42 (8) 10:10 (8)	07:13 16:40
31	05:54 20:08	06:49 (10) 07:22 (10)	06:22 19:28	17	07:09 (9) 07:28 (9)	09:52 (8) 10:54 (8)	06:19 16:58	06:52 16:34	86	08:43 (8) 10:09 (8)	07:13 16:41
Potential sun hours	453		424		374		347		303		294
Total, worst case	419		491		537		2652		1399		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: AC - 28

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June		
1	07:13	07:02	09:46 (8) 06:29	09:22 (8) 06:41	05:58	05:32 06:36 (10)		
	16:43	17:15	61 10:47 (8) 17:47	106 11:08 (8) 19:17	19:46	29 20:14 07:05 (10)		
2	07:14	07:01	09:45 (8) 06:27	09:23 (8) 06:40	05:57	05:31 06:37 (10)		
	16:44	17:16	63 10:48 (8) 17:48	105 11:08 (8) 19:18	19:47	28 20:14 07:05 (10)		
3	07:14	07:00	09:43 (8) 06:26	09:22 (8) 06:38	05:56	06:49 (10) 05:31 06:38 (10)		
	16:44	17:17	67 10:50 (8) 17:49	105 11:07 (8) 19:19	19:48	3 20:15 27 07:05 (10)		
4	07:14	06:59	09:42 (8) 06:24	09:22 (8) 06:36	05:55	06:44 (10) 05:31 06:38 (10)		
	16:45	17:19	70 10:52 (8) 17:50	105 11:07 (8) 19:20	19:49	13 20:16 27 07:05 (10)		
5	07:14	06:58	09:40 (8) 06:23	09:21 (8) 06:35	05:53	06:42 (10) 05:30 06:39 (10)		
	16:46	17:20	73 10:53 (8) 17:51	104 11:05 (8) 19:21	19:50	17 20:16 26 07:05 (10)		
6	07:14	06:57	09:39 (8) 06:21	09:21 (8) 06:33	05:52	07:13 (9) 05:52 06:40 (10) 05:30 06:40 (10)		
	16:47	17:21	76 10:55 (8) 17:52	104 11:05 (8) 19:22	9 07:22 (9) 19:51	21 07:01 (10) 20:17 24 07:04 (10)		
7	07:14	06:56	09:38 (8) 06:20	09:21 (8) 06:32	05:51	07:12 (9) 05:51 06:38 (10) 05:30 06:40 (10)		
	16:48	17:22	78 10:56 (8) 17:53	103 11:04 (8) 19:23	13 07:25 (9) 19:52	24 07:02 (10) 20:18 24 07:04 (10)		
8	07:14	06:55	09:37 (8) 06:18	09:21 (8) 06:30	05:50	07:09 (9) 05:50 06:37 (10) 05:29 06:40 (10)		
	16:49	17:23	81 10:58 (8) 17:54	102 11:03 (8) 19:24	16 07:25 (9) 19:53	26 07:03 (10) 20:18 23 07:03 (10)		
9	07:14	06:54	09:36 (8) 06:17	09:20 (8) 06:29	05:49	07:08 (9) 05:49 06:36 (10) 05:29 06:41 (10)		
	16:50	17:24	83 10:59 (8) 17:55	101 11:01 (8) 19:25	19 07:27 (9) 19:54	28 07:04 (10) 20:19 22 07:03 (10)		
10	07:14	06:53	09:35 (8) 06:15	09:21 (8) 06:27	05:48	07:07 (9) 05:48 06:35 (10) 05:29 06:42 (10)		
	16:51	17:26	86 11:01 (8) 17:56	99 11:00 (8) 19:26	19 07:26 (9) 19:55	30 07:05 (10) 20:19 21 07:03 (10)		
11	07:13	06:52	09:34 (8) 06:14	09:20 (8) 06:26	05:47	07:06 (9) 05:47 06:35 (10) 05:29 06:42 (10)		
	16:52	17:27	88 11:02 (8) 17:57	98 10:58 (8) 19:27	21 07:27 (9) 19:56	31 07:06 (10) 20:20 21 07:03 (10)		
12	07:13	06:51	09:34 (8) 06:12	09:21 (8) 06:24	05:46	07:05 (9) 05:46 06:34 (10) 05:29 06:43 (10)		
	16:53	17:28	89 11:03 (8) 17:58	96 10:57 (8) 19:28	21 07:26 (9) 19:57	32 07:06 (10) 20:20 20 07:03 (10)		
13	07:13	06:50	09:33 (8) 06:11	09:21 (8) 06:23	05:45	07:06 (9) 05:45 06:33 (10) 05:29 06:43 (10)		
	16:54	17:29	91 11:04 (8) 17:59	94 10:55 (8) 19:29	20 07:26 (9) 19:58	33 07:06 (10) 20:21 20 07:03 (10)		
14	07:13	06:49	09:31 (8) 06:09	09:20 (8) 06:21	05:44	07:05 (9) 05:44 06:33 (10) 05:29 06:44 (10)		
	16:55	17:30	93 11:04 (8) 18:00	93 10:53 (8) 19:30	20 07:25 (9) 19:59	33 07:06 (10) 20:21 19 07:03 (10)		
15	07:12	06:47	09:31 (8) 06:08	09:21 (8) 06:20	05:43	07:06 (9) 05:43 06:34 (10) 05:29 06:45 (10)		
	16:56	17:31	94 11:05 (8) 18:01	90 10:51 (8) 19:31	19 07:25 (9) 20:00	33 07:07 (10) 20:21 17 07:02 (10)		
16	07:12	06:46	09:30 (8) 06:06	09:21 (8) 06:18	05:42	07:06 (9) 05:42 06:33 (10) 05:29 06:45 (10)		
	16:57	17:32	96 11:06 (8) 18:02	87 10:48 (8) 19:32	17 07:23 (9) 20:01	34 07:07 (10) 20:22 17 07:02 (10)		
17	07:12	06:45	09:30 (8) 06:05	09:21 (8) 06:17	05:41	07:07 (9) 05:41 06:33 (10) 05:29 06:45 (10)		
	16:58	17:33	97 11:07 (8) 18:03	85 10:46 (8) 19:33	15 07:22 (9) 20:01	34 07:07 (10) 20:22 17 07:02 (10)		
18	07:11	06:44	09:28 (8) 06:03	09:21 (8) 06:15	05:41	07:09 (9) 05:41 06:32 (10) 05:29 06:46 (10)		
	16:59	17:35	99 11:07 (8) 18:04	83 10:44 (8) 19:34	12 07:21 (9) 20:02	35 07:07 (10) 20:23 16 07:02 (10)		
19	07:11	06:42	09:28 (8) 06:01	09:22 (8) 06:14	05:40	07:11 (9) 05:40 06:32 (10) 05:29 06:46 (10)		
	17:00	17:36	100 11:08 (8) 18:05	79 10:41 (8) 19:35	6 07:17 (9) 20:03	35 07:07 (10) 20:23 16 07:02 (10)		
20	07:10	06:41	09:27 (8) 06:00	09:22 (8) 06:13	05:39	07:08 (9) 05:39 06:33 (10) 05:29 06:47 (10)		
	17:01	17:37	101 11:08 (8) 18:06	76 10:38 (8) 19:36	20:04	35 07:08 (10) 20:23 16 07:03 (10)		
21	07:10	06:40	09:26 (8) 05:58	09:22 (8) 06:11	05:38	07:07 (9) 05:38 06:33 (10) 05:29 06:47 (10)		
	17:03	17:38	102 11:08 (8) 18:07	73 10:35 (8) 19:37	20:05	34 07:07 (10) 20:23 16 07:03 (10)		
22	07:09	06:38	09:26 (8) 05:57	09:23 (8) 06:10	05:37	06:33 (10) 05:30 06:47 (10)		
	17:04	17:39	103 11:09 (8) 18:08	69 10:32 (8) 19:38	20:06	34 07:07 (10) 20:24 16 07:03 (10)		
23	07:09	06:37	09:26 (8) 05:55	09:24 (8) 06:09	05:37	06:33 (10) 05:30 06:47 (10)		
	17:05	17:40	103 11:09 (8) 18:09	65 10:29 (8) 19:39	20:07	35 07:08 (10) 20:24 16 07:03 (10)		
24	07:08	10:10 (8) 06:36	09:25 (8) 05:54	09:25 (8) 06:07	05:36	06:33 (10) 05:30 06:48 (10)		
	17:06	10:20 (8) 17:41	104 11:09 (8) 18:10	61 10:26 (8) 19:40	20:07	34 07:07 (10) 20:24 16 07:04 (10)		
25	07:07	10:03 (8) 06:34	09:24 (8) 05:52	09:26 (8) 06:06	05:35	06:34 (10) 05:30 06:47 (10)		
	17:07	24 10:27 (8) 17:42	105 11:09 (8) 18:11	56 10:22 (8) 19:41	20:08	34 07:08 (10) 20:24 17 07:04 (10)		
26	07:07	09:59 (8) 06:33	09:23 (8) 05:50	09:26 (8) 06:05	05:35	06:34 (10) 05:31 06:47 (10)		
	17:08	32 10:31 (8) 17:43	105 11:08 (8) 18:12	52 10:18 (8) 19:42	20:09	33 07:07 (10) 20:24 17 07:04 (10)		
27	07:06	09:57 (8) 06:32	09:23 (8) 05:49	09:28 (8) 06:03	05:34	06:34 (10) 05:31 06:48 (10)		
	17:09	38 10:35 (8) 17:44	106 11:09 (8) 18:13	47 10:15 (8) 19:43	20:10	32 07:06 (10) 20:24 17 07:05 (10)		
28	07:05	09:54 (8) 06:30	09:23 (8) 05:47	09:29 (8) 06:02	05:34	06:35 (10) 05:31 06:47 (10)		
	17:10	44 10:38 (8) 17:45	106 11:09 (8) 18:14	42 10:11 (8) 19:44	20:11	32 07:07 (10) 20:24 19 07:06 (10)		
29	07:04	09:52 (8) 06:46	06:46	10:32 (8) 06:01	05:33	06:35 (10) 05:32 06:47 (10)		
	17:12	48 10:40 (8) 19:15	35 11:07 (8) 19:44	10:34 (8) 05:59	20:11	31 07:06 (10) 20:24 19 07:06 (10)		
30	07:04	09:50 (8) 06:44	06:44	10:34 (8) 05:59	05:33	06:36 (10) 05:32 06:47 (10)		
	17:13	53 10:43 (8) 19:16	28 11:02 (8) 19:45	10:38 (8) 05:52	20:12	30 07:06 (10) 20:24 20 07:07 (10)		
31	07:03	09:48 (8) 06:43	06:43	10:38 (8) 05:52	05:32	06:36 (10) 05:32 06:47 (10)		
	17:14	57 10:45 (8) 19:17	18 10:56 (8) 19:17	20:13	30 07:06 (10) 20:24 20 07:07 (10)			
Potential sun hours	303	306	300	370	396	443	445	603
Total, worst case			2520	2461	227	856		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: AC - 28

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December					
1	05:33 20:24	06:47 (10) 07:07 (10)	05:55 20:07	06:45 (10) 07:16 (10)	06:23 19:27	07:05 (9) 07:26 (9)	06:50 18:39	10:00 (8) 11:35 (8)	06:21 16:55	09:05 (8) 10:30 (8)	06:53 16:33
2	05:33 20:24	06:47 (10) 07:08 (10)	05:56 20:06	06:46 (10) 07:16 (10)	06:24 19:25	07:06 (9) 07:25 (9)	06:51 18:37	09:59 (8) 11:36 (8)	06:22 16:54	09:06 (8) 10:29 (8)	06:54 16:33
3	05:34 20:24	06:46 (10) 07:08 (10)	05:57 20:05	06:46 (10) 07:15 (10)	06:25 19:24	07:06 (9) 07:25 (9)	06:52 18:36	09:59 (8) 11:37 (8)	06:23 16:53	09:07 (8) 10:27 (8)	06:55 16:33
4	05:34 20:24	06:46 (10) 07:09 (10)	05:57 20:04	06:47 (10) 07:15 (10)	06:25 19:22	07:06 (9) 07:22 (9)	06:53 18:34	09:58 (8) 11:38 (8)	06:24 16:52	09:08 (8) 10:26 (8)	06:56 16:33
5	05:35 20:24	06:46 (10) 07:09 (10)	05:58 20:03	06:47 (10) 07:13 (10)	06:26 19:21	07:08 (9) 07:21 (9)	06:54 18:33	09:58 (8) 11:39 (8)	06:25 16:51	09:09 (8) 10:25 (8)	06:57 16:33
6	05:35 20:23	06:46 (10) 07:10 (10)	05:59 20:02	06:48 (10) 07:12 (10)	06:27 19:19	07:09 (9) 07:19 (9)	06:54 18:31	09:57 (8) 11:40 (8)	06:26 16:50	09:12 (8) 10:24 (8)	06:58 16:33
7	05:36 20:23	06:45 (10) 07:11 (10)	06:00 20:01	06:50 (10) 07:10 (10)	06:28 19:17	06:55 18:30	06:55 18:30	09:57 (8) 11:40 (8)	06:28 16:49	09:13 (8) 10:23 (8)	06:59 16:33
8	05:36 20:23	06:45 (10) 07:12 (10)	06:01 19:59	06:52 (10) 07:08 (10)	06:29 19:16	06:56 18:28	06:56 18:28	09:57 (8) 11:41 (8)	06:29 16:48	09:14 (8) 10:21 (8)	07:00 16:33
9	05:37 20:23	06:45 (10) 07:13 (10)	06:02 19:58	06:55 (10) 07:06 (10)	06:30 19:14	06:57 18:27	06:57 18:27	09:56 (8) 11:41 (8)	06:30 16:47	09:16 (8) 10:19 (8)	07:01 16:33
10	05:38 20:22	06:45 (10) 07:12 (10)	06:03 19:57	06:56 (10) 07:13 (10)	06:31 19:13	06:58 18:25	06:58 18:25	09:56 (8) 11:41 (8)	06:31 16:46	09:17 (8) 10:17 (8)	07:02 16:33
11	05:38 20:22	06:45 (10) 07:13 (10)	06:04 19:56	06:57 (10) 07:14 (10)	06:32 19:11	06:59 18:24	06:59 18:24	09:56 (8) 11:42 (8)	06:32 16:45	09:19 (8) 10:15 (8)	07:03 16:33
12	05:39 20:21	06:44 (10) 07:13 (10)	06:05 19:55	06:58 (10) 07:14 (10)	06:33 19:09	07:00 10:30 (8)	07:00 10:30 (8)	09:56 (8) 11:42 (8)	06:33 16:44	09:22 (8) 10:14 (8)	07:03 16:33
13	05:40 20:21	06:44 (10) 07:14 (10)	06:06 19:53	06:59 (10) 07:15 (10)	06:34 19:06	07:01 10:26 (8)	07:01 10:26 (8)	09:56 (8) 11:42 (8)	06:34 16:43	09:24 (8) 10:12 (8)	07:04 16:33
14	05:40 20:20	06:44 (10) 07:15 (10)	06:06 19:52	06:59 (10) 07:16 (10)	06:34 19:06	07:02 10:22 (8)	07:02 10:22 (8)	09:56 (8) 11:41 (8)	06:35 16:43	09:27 (8) 10:10 (8)	07:05 16:33
15	05:41 20:20	06:44 (10) 07:16 (10)	06:07 19:51	06:59 (10) 07:17 (10)	06:35 19:05	07:03 11:00 (8)	07:03 11:00 (8)	09:56 (8) 11:41 (8)	06:36 16:42	09:29 (8) 10:07 (8)	07:06 16:33
16	05:42 20:19	06:43 (10) 07:15 (10)	06:08 19:50	06:59 (10) 07:18 (10)	06:36 19:03	07:04 10:18 (8)	07:04 10:18 (8)	09:56 (8) 11:41 (8)	06:38 16:41	09:32 (8) 10:04 (8)	07:06 16:34
17	05:42 20:19	06:43 (10) 07:16 (10)	06:09 19:48	06:59 (10) 07:19 (10)	06:37 19:01	07:05 11:07 (8)	07:05 11:07 (8)	09:56 (8) 11:41 (8)	06:39 16:40	09:37 (8) 10:01 (8)	07:07 16:34
18	05:43 20:18	06:44 (10) 07:17 (10)	06:10 19:47	06:59 (10) 07:20 (10)	06:38 19:00	07:06 10:13 (8)	07:06 10:13 (8)	09:56 (8) 11:40 (8)	06:40 16:40	09:44 (8) 09:54 (8)	07:08 16:34
19	05:44 20:18	06:43 (10) 07:16 (10)	06:11 19:46	06:59 (10) 07:21 (10)	06:39 18:58	07:07 10:12 (8)	07:07 10:12 (8)	09:56 (8) 11:40 (8)	06:41 16:39	07:08 10:07 (8)	07:08 16:35
20	05:45 20:17	06:43 (10) 07:17 (10)	06:12 19:44	06:59 (10) 07:22 (10)	06:40 18:57	07:08 11:14 (8)	07:08 11:14 (8)	09:57 (8) 11:39 (8)	06:42 16:38	07:09 10:07 (8)	07:09 16:35
21	05:45 20:16	06:43 (10) 07:17 (10)	06:13 19:43	06:59 (10) 07:23 (10)	06:41 18:55	07:09 10:09 (8)	07:09 10:09 (8)	09:57 (8) 11:38 (8)	06:43 16:38	07:09 10:07 (8)	07:09 16:36
22	05:46 20:16	06:43 (10) 07:18 (10)	06:14 19:41	06:59 (10) 07:24 (10)	06:42 18:53	07:10 11:19 (8)	07:10 11:19 (8)	09:57 (8) 11:38 (8)	06:44 16:37	07:10 10:07 (8)	07:10 16:36
23	05:47 20:15	06:43 (10) 07:18 (10)	06:15 19:40	06:59 (10) 07:25 (10)	06:42 18:52	07:11 11:22 (8)	07:11 11:22 (8)	09:58 (8) 11:37 (8)	06:45 16:36	07:10 10:07 (8)	07:10 16:37
24	05:48 20:14	06:43 (10) 07:17 (10)	06:16 19:39	06:59 (10) 07:26 (10)	06:43 18:50	07:12 10:06 (8)	07:12 10:06 (8)	09:59 (8) 11:37 (8)	06:46 16:36	07:11 10:07 (8)	07:11 16:37
25	05:49 20:13	06:43 (10) 07:18 (10)	06:16 19:37	06:59 (10) 07:27 (10)	06:44 18:49	07:13 10:05 (8)	07:13 10:05 (8)	09:00 (8) 10:36 (8)	06:47 16:35	07:11 10:07 (8)	07:11 16:38
26	05:50 20:12	06:43 (10) 07:18 (10)	06:17 19:36	06:59 (10) 07:28 (10)	06:45 18:47	07:14 10:03 (8)	07:14 10:03 (8)	09:00 (8) 10:36 (8)	06:48 16:35	07:12 10:07 (8)	07:12 16:38
27	05:50 20:12	06:43 (10) 07:18 (10)	06:18 19:34	06:59 (10) 07:29 (10)	06:46 18:45	07:15 10:02 (8)	07:15 10:02 (8)	09:01 (8) 10:35 (8)	06:49 16:35	07:12 10:07 (8)	07:12 16:39
28	05:51 20:11	06:44 (10) 07:18 (10)	06:19 19:33	06:59 (10) 07:30 (10)	06:47 18:44	07:16 10:01 (8)	07:16 10:01 (8)	09:01 (8) 10:34 (8)	06:50 16:34	07:12 10:07 (8)	07:12 16:40
29	05:52 20:10	06:43 (10) 07:17 (10)	06:20 19:31	06:59 (10) 07:26 (10)	06:48 18:42	07:17 11:32 (8)	07:17 11:32 (8)	09:02 (8) 10:33 (8)	06:51 16:34	07:13 10:07 (8)	07:13 16:40
30	05:53 20:09	06:44 (10) 07:17 (10)	06:21 19:30	06:59 (10) 07:26 (10)	06:49 18:41	07:18 10:00 (8)	07:18 10:00 (8)	09:03 (8) 10:31 (8)	06:52 16:34	07:13 10:07 (8)	07:13 16:41
31	05:54 20:08	06:44 (10) 07:17 (10)	06:22 19:28	06:59 (10) 07:26 (10)	06:50 18:41	07:19 11:34 (8)	07:19 11:34 (8)	09:04 (8) 10:31 (8)	06:53 16:34	07:13 10:07 (8)	07:13 16:42
Potential sun hours	453		424		374		347		303		294
Total, worst case	933		347		1310		3103		1037		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: AD - 30

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:13 16:43	07:02 17:15	06:29 17:47	09:20 (8) 09:59 (8)	06:41 19:17	09:13 (8) 11:05 (8)
2	07:14 16:44	07:01 17:16	06:27 17:48	09:18 (8) 10:02 (8)	06:40 19:18	09:10 (8) 11:03 (8)
3	07:14 16:44	07:00 17:17	06:26 17:49	09:16 (8) 10:03 (8)	06:38 19:19	09:09 (8) 11:03 (8)
4	07:14 16:45	06:59 17:19	06:24 17:50	09:14 (8) 10:05 (8)	06:36 19:20	09:06 (8) 11:01 (8)
5	07:14 16:46	06:58 17:20	06:23 17:51	09:12 (8) 10:05 (8)	06:35 19:21	09:05 (8) 11:00 (8)
6	07:14 16:47	06:57 17:21	06:21 17:52	09:10 (8) 10:07 (8)	06:33 19:22	09:02 (8) 10:58 (8)
7	07:14 16:48	06:56 17:22	06:20 17:53	09:07 (8) 10:08 (8)	06:32 19:23	09:01 (8) 10:57 (8)
8	07:14 16:49	06:55 17:23	06:18 17:54	09:06 (8) 10:09 (8)	06:30 19:24	09:00 (8) 10:55 (8)
9	07:14 16:50	06:54 17:24	06:17 17:55	09:03 (8) 10:10 (8)	06:29 19:25	09:01 (8) 10:54 (8)
10	07:14 16:51	06:53 17:26	06:15 17:56	09:02 (8) 10:11 (8)	06:27 19:26	09:00 (8) 10:52 (8)
11	07:13 16:52	06:52 17:27	06:14 17:57	08:59 (8) 10:11 (8)	06:26 19:27	09:00 (8) 10:51 (8)
12	07:13 16:53	06:51 17:28	06:12 17:58	08:57 (8) 10:12 (8)	06:24 19:28	09:00 (8) 10:49 (8)
13	07:13 16:54	06:50 17:29	06:11 17:59	08:55 (8) 10:12 (8)	06:23 19:29	09:00 (8) 10:48 (8)
14	07:13 16:55	06:49 17:30	06:09 18:00	08:52 (8) 10:12 (8)	06:21 19:30	09:00 (8) 10:45 (8)
15	07:12 16:56	06:47 17:31	06:08 18:01	08:51 (8) 10:13 (8)	06:20 19:31	09:00 (8) 10:44 (8)
16	07:12 16:57	06:46 17:32	06:06 18:02	08:48 (8) 10:13 (8)	06:18 19:32	09:00 (8) 10:42 (8)
17	07:12 16:58	06:45 17:33	06:05 18:03	08:46 (8) 10:14 (8)	06:17 19:33	09:00 (8) 10:41 (8)
18	07:11 16:59	06:44 17:35	06:03 18:04	08:44 (8) 10:13 (8)	06:15 19:34	09:01 (8) 10:39 (8)
19	07:11 17:00	06:42 17:36	06:01 18:05	08:42 (8) 10:14 (8)	06:14 19:35	09:01 (8) 10:37 (8)
20	07:10 17:01	06:41 17:37	06:00 18:06	08:40 (8) 10:13 (8)	06:13 19:36	09:01 (8) 10:36 (8)
21	07:10 17:03	06:40 17:38	05:58 18:07	08:37 (8) 10:13 (8)	06:11 19:37	09:01 (8) 10:34 (8)
22	07:09 17:04	06:38 17:39	05:57 18:08	08:35 (8) 10:13 (8)	06:10 19:38	09:01 (8) 10:32 (8)
23	07:09 17:05	06:37 17:40	05:55 18:09	08:33 (8) 10:12 (8)	06:09 19:39	09:02 (8) 10:31 (8)
24	07:08 17:06	06:36 17:41	05:54 18:10	08:31 (8) 10:12 (8)	06:07 19:40	09:02 (8) 10:29 (8)
25	07:07 17:07	06:34 17:42	05:52 18:11	08:28 (8) 10:11 (8)	06:06 19:41	09:02 (8) 10:27 (8)
26	07:07 17:08	06:33 17:43	05:50 18:12	08:26 (8) 10:10 (8)	06:05 19:42	09:03 (8) 10:26 (8)
27	07:06 17:09	06:32 17:44	05:49 18:13	08:24 (8) 10:10 (8)	06:03 19:43	09:04 (8) 10:25 (8)
28	07:05 17:10	06:30 17:45	05:47 18:14	08:22 (8) 10:09 (8)	06:02 19:44	09:04 (8) 10:22 (8)
29	07:04 17:12		05:46 19:15	09:20 (8) 11:08 (8)	06:01 19:44	09:04 (8) 10:21 (8)
30	07:04 17:13		05:44 19:16	09:17 (8) 11:07 (8)	05:59 19:45	09:05 (8) 10:20 (8)
31	07:03 17:14		05:43 19:17	09:16 (8) 11:06 (8)		05:32 20:13
Potential sun hours	303	300	370	396	443	445
Total, worst case		154	2526	3009	932	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: AD - 30

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December			
1	05:33 20:24	05:55 20:07	09:26 (8) 19:27	06:23 19:27	08:59 (8) 18:39	06:50 18:39	09:35 (8) 16:55	06:21 16:55	06:53 16:33
2	05:33 20:24	05:56 20:06	09:25 (8) 19:25	06:24 19:25	08:59 (8) 18:37	06:51 18:37	09:37 (8) 16:54	06:22 16:54	06:54 16:33
3	05:34 20:24	05:57 20:05	09:24 (8) 19:24	06:25 19:24	08:59 (8) 18:36	06:52 18:36	09:38 (8) 16:53	06:23 16:53	06:55 16:33
4	05:34 20:24	05:57 20:04	09:23 (8) 19:22	06:25 19:22	08:57 (8) 18:34	06:53 18:34	09:40 (8) 16:52	06:24 16:52	06:56 16:33
5	05:35 20:24	05:58 20:03	09:21 (8) 19:21	06:26 19:21	08:57 (8) 18:33	06:54 18:33	09:42 (8) 16:51	06:25 16:51	06:57 16:33
6	05:35 20:23	05:59 20:02	09:20 (8) 19:19	06:27 19:19	08:58 (8) 18:31	06:54 18:31	09:43 (8) 16:50	06:26 16:50	06:58 16:33
7	05:36 20:23	06:00 20:01	09:19 (8) 19:17	06:28 19:17	09:00 (8) 18:30	06:55 18:30	09:45 (8) 16:49	06:28 16:49	06:59 16:33
8	05:36 20:23	06:01 19:59	09:18 (8) 19:16	06:29 19:16	09:01 (8) 18:28	06:56 18:28	09:46 (8) 16:48	06:29 16:48	07:00 16:33
9	05:37 20:23	06:02 19:58	09:17 (8) 19:14	06:30 19:14	09:03 (8) 18:27	06:57 18:27	09:48 (8) 16:47	06:30 16:47	07:01 16:33
10	05:38 20:22	06:03 19:57	09:16 (8) 19:13	06:31 19:13	09:03 (8) 18:25	06:58 18:25	09:49 (8) 16:46	06:31 16:46	07:02 16:33
11	05:38 20:22	06:04 19:56	09:15 (8) 19:11	06:32 19:11	09:05 (8) 18:24	06:59 18:24	09:51 (8) 16:45	06:32 16:45	07:03 16:33
12	05:39 20:21	06:05 19:55	09:15 (8) 19:09	06:33 19:09	09:07 (8) 18:22	07:00 18:22	09:53 (8) 16:44	06:33 16:44	07:03 16:33
13	05:40 20:21	06:06 19:53	09:13 (8) 19:08	06:33 19:08	09:08 (8) 18:21	07:01 18:21	09:54 (8) 16:43	06:34 16:43	07:04 16:33
14	05:40 20:20	06:06 19:52	09:12 (8) 19:06	06:34 19:06	09:10 (8) 18:19	07:02 18:19	09:56 (8) 16:43	06:35 16:43	07:05 16:33
15	05:41 20:20	06:07 19:51	09:11 (8) 19:05	06:35 19:05	09:11 (8) 18:18	07:03 18:18	09:57 (8) 16:42	06:36 16:42	07:06 16:33
16	05:42 20:19	06:08 19:50	09:11 (8) 19:03	06:36 19:03	09:13 (8) 18:16	07:04 18:16	09:59 (8) 16:41	06:38 16:41	07:06 16:34
17	05:42 20:19	06:09 19:48	09:10 (8) 19:01	06:37 19:01	09:15 (8) 18:15	07:05 18:15	10:01 (8) 16:40	06:39 16:40	07:07 16:34
18	05:43 20:18	06:10 19:47	09:09 (8) 19:00	06:38 19:00	09:15 (8) 18:13	07:06 18:13	10:02 (8) 16:40	06:40 16:40	07:08 16:34
19	05:44 20:18	06:11 19:46	09:08 (8) 18:58	06:39 18:58	09:17 (8) 18:12	07:07 18:12	10:04 (8) 16:39	06:41 16:39	07:08 16:35
20	05:45 20:17	06:12 19:44	09:07 (8) 18:57	06:40 18:57	09:19 (8) 18:11	07:08 18:11	10:05 (8) 16:38	06:42 16:38	07:09 16:35
21	05:45 20:16	06:13 19:43	09:06 (8) 18:55	06:41 18:55	09:20 (8) 18:09	07:09 18:09	10:10 (8) 16:38	06:43 16:38	07:09 16:36
22	05:46 20:16	06:14 19:41	09:06 (8) 18:53	06:42 18:53	09:22 (8) 18:08	07:10 18:08	10:12 (8) 16:37	06:44 16:37	07:10 16:36
23	05:47 20:15	06:15 19:40	09:05 (8) 18:52	06:42 18:52	09:23 (8) 18:07	07:11 18:07	10:14 (8) 16:36	06:45 16:36	07:10 16:37
24	05:48 20:14	09:40 (8) 09:55 (8)	06:16 19:39	06:43 18:50	09:25 (8) 18:05	07:12 18:05	10:16 (8) 16:36	06:46 16:36	07:11 16:37
25	05:49 20:13	09:38 (8) 09:58 (8)	06:16 19:37	06:44 18:49	09:27 (8) 18:04	06:13 17:04	10:18 (8) 16:35	06:47 16:35	07:11 16:38
26	05:50 20:12	09:36 (8) 10:01 (8)	06:17 19:36	06:45 18:47	09:27 (8) 17:03	06:15 17:03	10:20 (8) 16:35	06:48 16:35	07:12 16:38
27	05:50 20:12	09:34 (8) 10:03 (8)	06:18 19:34	06:46 18:45	09:29 (8) 17:01	06:16 17:01	10:22 (8) 16:35	06:49 16:35	07:12 16:39
28	05:51 20:11	09:32 (8) 10:05 (8)	06:19 19:33	06:47 18:44	09:30 (8) 17:00	06:17 17:00	10:24 (8) 16:34	06:50 16:34	07:12 16:40
29	05:52 20:10	09:30 (8) 10:06 (8)	06:20 19:31	06:48 18:42	09:32 (8) 16:59	06:18 16:59	10:26 (8) 16:34	06:51 16:34	07:13 16:40
30	05:53 20:09	09:29 (8) 10:08 (8)	06:21 19:30	06:49 18:41	09:34 (8) 16:58	06:19 16:58	10:28 (8) 16:34	06:52 16:34	07:13 16:41
31	05:54 20:08	09:27 (8) 10:10 (8)	06:22 19:28	06:50 10:49 (8)	10:52 (8)	06:20 16:57	16:34	06:53 16:42	07:13 16:42
Potential sun hours	453	424	374	3089	893	303	294		
Total, worst case	240	2479	3089	893	303	294			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: AE - 31

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:13 16:43	11:06 (8) 12:37 (8)	07:02 17:15	06:29 17:47	06:41 19:17	07:18 (9) 19:46
2	07:14 16:44	11:06 (8) 12:37 (8)	07:01 17:16	06:27 17:48	06:40 19:18	07:17 (9) 19:47
3	07:14 16:44	11:07 (8) 12:37 (8)	07:00 17:17	06:26 17:49	06:38 19:19	07:18 (9) 19:48
4	07:14 16:45	11:08 (8) 12:38 (8)	06:59 17:19	06:24 17:50	06:36 19:20	07:18 (9) 19:49
5	07:14 16:46	11:08 (8) 12:38 (8)	06:58 17:20	06:23 17:51	06:35 19:21	07:19 (9) 19:50
6	07:14 16:47	11:09 (8) 12:38 (8)	06:57 17:21	06:21 17:52	06:33 19:22	07:20 (9) 19:51
7	07:14 16:48	11:10 (8) 12:38 (8)	06:56 17:22	06:20 17:53	06:32 19:23	07:22 (9) 19:52
8	07:14 16:49	11:11 (8) 12:38 (8)	06:55 17:23	06:18 17:54	06:30 19:24	07:22 (9) 19:53
9	07:14 16:50	11:12 (8) 12:38 (8)	06:54 17:24	06:17 17:55	06:29 19:25	07:23 (9) 19:54
10	07:14 16:51	11:12 (8) 12:37 (8)	06:53 17:26	06:15 17:56	06:27 19:26	07:23 (9) 19:55
11	07:13 16:52	11:14 (8) 12:37 (8)	06:52 17:27	06:14 17:57	06:26 19:27	07:24 (9) 19:56
12	07:13 16:53	11:15 (8) 12:37 (8)	06:51 17:28	06:12 17:58	06:24 19:28	07:24 (9) 19:57
13	07:13 16:54	11:15 (8) 12:36 (8)	06:50 17:29	06:11 17:59	06:23 19:29	07:25 (9) 19:58
14	07:13 16:55	11:17 (8) 12:36 (8)	06:49 17:30	06:09 18:00	06:21 19:30	07:26 (10) 19:59
15	07:12 16:56	11:18 (8) 12:36 (8)	06:47 17:31	06:08 18:01	06:20 19:31	07:27 (10) 20:00
16	07:12 16:57	11:19 (8) 12:35 (8)	06:46 17:32	06:06 18:02	06:18 19:32	07:28 (10) 20:01
17	07:12 16:58	11:21 (8) 12:35 (8)	06:45 17:33	06:05 18:03	06:17 19:33	07:29 (10) 20:01
18	07:11 16:59	11:22 (8) 12:33 (8)	06:44 17:35	06:03 18:04	06:15 19:34	07:30 (10) 20:02
19	07:11 17:00	11:24 (8) 12:33 (8)	06:42 17:36	06:01 18:05	06:14 19:35	07:31 (10) 20:03
20	07:10 17:01	11:25 (8) 12:31 (8)	06:41 17:37	06:00 18:06	06:13 19:36	07:32 (10) 20:04
21	07:10 17:03	11:28 (8) 12:31 (8)	06:40 17:38	05:58 18:07	06:11 19:37	07:33 (10) 20:05
22	07:09 17:04	11:29 (8) 12:29 (8)	06:38 17:39	05:57 18:08	06:10 19:38	07:34 (10) 20:06
23	07:09 17:05	11:31 (8) 12:26 (8)	06:37 17:40	05:55 18:09	06:09 19:39	07:35 (10) 20:07
24	07:08 17:06	11:35 (8) 12:25 (8)	06:36 17:41	05:54 18:10	06:07 19:40	07:36 (10) 20:07
25	07:07 17:07	11:37 (8) 12:22 (8)	06:34 17:42	05:52 18:11	06:06 19:41	07:37 (10) 20:08
26	07:07 17:08	11:41 (8) 12:18 (8)	06:33 17:43	05:50 18:12	06:05 19:42	07:38 (10) 20:09
27	07:06 17:09	11:47 (8) 12:14 (8)	06:32 17:44	05:49 18:13	06:03 19:43	07:39 (10) 20:10
28	07:05 17:10	11:58 (8) 12:03 (8)	06:30 17:45	05:47 18:14	06:02 19:44	07:40 (10) 20:11
29	07:04 17:12			06:46 19:15	07:20 (9) 19:44	06:45 (10) 20:11
30	07:04 17:13			06:44 19:16	07:19 (9) 19:45	06:45 (10) 20:12
31	07:03 17:14			06:43 19:17	07:19 (9) 07:41 (9)	05:32 20:13
Potential sun hours	303	300	370	396	443	445
Total, worst case	1988		127	686	486	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: AE - 31

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December		
1	05:33	05:55	07:01 (10)	06:23	06:50	06:21	06:53	10:56 (8)
	20:24	20:07	27 07:28 (10)	19:27	18:39	16:55	16:33	83 12:19 (8)
2	05:33	05:56	07:00 (10)	06:24	06:51	06:22	06:54	10:55 (8)
	20:24	20:06	29 07:29 (10)	19:25	18:37	16:54	16:33	85 12:20 (8)
3	05:34	05:57	06:59 (10)	06:25	06:52	06:23	06:55	10:55 (8)
	20:24	20:05	31 07:30 (10)	19:24	18:36	16:53	16:33	86 12:21 (8)
4	05:34	05:57	06:58 (10)	06:25	06:53	06:24	06:56	10:55 (8)
	20:24	20:04	33 07:31 (10)	19:22	18:34	16:52	16:33	87 12:22 (8)
5	05:35	05:58	06:57 (10)	06:26	07:18 (9)	06:54	06:57	10:55 (8)
	20:24	20:03	34 07:31 (10)	19:21	11 07:29 (9)	18:33	16:51	88 12:23 (8)
6	05:35	05:59	06:56 (10)	06:27	07:16 (9)	06:54	06:58	10:55 (8)
	20:23	20:02	36 07:32 (10)	19:19	15 07:31 (9)	18:31	16:50	89 12:24 (8)
7	05:36	06:00	06:56 (10)	06:28	07:14 (9)	06:55	06:59	10:55 (8)
	20:23	20:01	36 07:32 (10)	19:17	18 07:32 (9)	18:30	16:49	90 12:25 (8)
8	05:36	06:01	06:55 (10)	06:29	07:13 (9)	06:56	06:29	10:56 (8)
	20:23	19:59	38 07:33 (10)	19:16	20 07:33 (9)	18:28	16:48	90 12:26 (8)
9	05:37	06:02	06:55 (10)	06:30	07:12 (9)	06:57	06:30	10:56 (8)
	20:23	19:58	38 07:33 (10)	19:14	21 07:33 (9)	18:27	16:47	90 12:26 (8)
10	05:38	06:03	06:54 (10)	06:31	07:11 (9)	06:58	06:31	10:55 (8)
	20:22	19:57	40 07:34 (10)	19:13	22 07:33 (9)	18:25	16:46	91 12:26 (8)
11	05:38	06:04	06:54 (10)	06:32	07:10 (9)	06:59	06:32	10:56 (8)
	20:22	19:56	40 07:34 (10)	19:11	23 07:33 (9)	18:24	16:45	91 12:27 (8)
12	05:39	06:05	06:54 (10)	06:33	07:10 (9)	07:00	06:33	10:56 (8)
	20:21	19:55	40 07:34 (10)	19:09	22 07:32 (9)	18:22	16:44	92 12:28 (8)
13	05:40	06:06	06:53 (10)	06:33	07:10 (9)	07:01	06:34	10:57 (8)
	20:21	19:53	40 07:33 (10)	19:08	22 07:32 (9)	18:21	16:43	92 12:29 (8)
14	05:40	06:06	06:53 (10)	06:34	07:10 (9)	07:02	06:35	11:28 (8)
	20:20	19:52	41 07:34 (10)	19:06	21 07:31 (9)	18:19	16:43	8 11:36 (8)
15	05:41	06:07	06:53 (10)	06:35	07:10 (9)	07:03	06:36	11:19 (8)
	20:20	19:51	40 07:33 (10)	19:05	20 07:30 (9)	18:18	16:42	27 11:46 (8)
16	05:42	06:08	06:53 (10)	06:36	07:11 (9)	07:04	06:38	11:14 (8)
	20:19	19:50	40 07:33 (10)	19:03	18 07:29 (9)	18:16	16:41	37 11:51 (8)
17	05:42	06:09	06:53 (10)	06:37	07:12 (9)	07:05	06:39	11:11 (8)
	20:19	19:48	40 07:33 (10)	19:01	16 07:28 (9)	18:15	16:40	45 11:56 (8)
18	05:43	06:10	06:53 (10)	06:38	07:13 (9)	07:06	06:40	11:08 (8)
	20:18	19:47	40 07:33 (10)	19:00	11 07:24 (9)	18:13	16:40	51 11:59 (8)
19	05:44	06:11	06:54 (10)	06:39	07:07	06:41	11:06 (8)	07:08
	20:18	19:45	38 07:32 (10)	18:58	18:12	16:39	55 12:01 (8)	16:35
20	05:45	06:12	06:53 (10)	06:40	07:08	06:42	11:04 (8)	07:09
	20:17	19:44	38 07:31 (10)	18:57	18:11	16:38	60 12:04 (8)	16:35
21	05:45	06:13	06:53 (10)	06:41	07:09	06:43	11:03 (8)	07:09
	20:16	19:43	37 07:30 (10)	18:55	18:09	16:38	63 12:06 (8)	16:36
22	05:46	06:14	06:54 (10)	06:41	07:10	06:44	11:01 (8)	07:10
	20:16	19:41	35 07:29 (10)	18:53	18:08	16:37	66 12:07 (8)	16:36
23	05:47	06:15	06:55 (10)	06:42	07:11	06:45	11:00 (8)	07:10
	20:15	19:40	33 07:28 (10)	18:52	18:07	16:36	69 12:09 (8)	16:37
24	05:48	06:16	06:56 (10)	06:43	07:12	06:46	11:00 (8)	07:11
	20:14	19:39	31 07:27 (10)	18:50	18:05	16:36	71 12:11 (8)	16:37
25	05:49	06:16	06:57 (10)	06:44	06:13	06:47	10:59 (8)	07:11
	20:13	19:37	29 07:26 (10)	18:49	17:04	16:35	74 12:13 (8)	16:38
26	05:50	06:17	06:59 (10)	06:45	06:14	06:48	10:58 (8)	07:12
	20:12	19:36	25 07:24 (10)	18:47	17:03	16:35	76 12:14 (8)	16:38
27	05:50	06:18	07:00 (10)	06:46	06:16	06:49	10:57 (8)	07:12
	20:12	7 07:18 (10)	19:34	22 07:22 (10)	18:45	17:01	16:35	78 12:15 (8)
28	05:51	07:08 (10)	06:19	07:02 (10)	06:47	06:17	06:50	10:57 (8)
	20:11	13 07:21 (10)	19:33	16 07:18 (10)	18:44	17:00	16:34	79 12:16 (8)
29	05:52	07:05 (10)	06:20	07:08 (10)	06:48	06:18	06:51	10:56 (8)
	20:10	18 07:23 (10)	19:31	4 07:12 (10)	18:42	16:59	16:34	81 12:17 (8)
30	05:53	07:03 (10)	06:21	06:49	06:19	06:52	10:56 (8)	07:13
	20:09	22 07:25 (10)	19:30	18:41	16:58	16:34	82 12:18 (8)	16:41
31	05:54	07:02 (10)	06:22		06:20		07:13	11:05 (8)
	20:08	24 07:26 (10)	19:28		16:57		16:42	92 12:37 (8)
Potential sun hours	453	424	374	347	303	294		
Total, worst case	84	971	260	1022	2834			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: AF - 32

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January		February		March		April		May		June	
1	07:13	12:50 (9)	07:02	13:20 (9)	06:29	16:25 (10)	06:41	05:58	05:32			
	16:43	67	13:57 (9)	17:15	34	13:54 (9)	17:46	38	17:03 (10)	19:17	19:46	20:14
2	07:14	12:50 (9)	07:01	13:23 (9)	06:27	16:26 (10)	06:39	05:57	05:31			
	16:44	67	13:57 (9)	17:16	28	13:51 (9)	17:48	37	17:03 (10)	19:18	19:47	20:14
3	07:14	12:51 (9)	07:00	13:27 (9)	06:26	16:25 (10)	06:38	05:56	05:31			
	16:44	67	13:58 (9)	17:17	21	13:48 (9)	17:49	37	17:02 (10)	19:19	19:48	20:15
4	07:14	12:51 (9)	06:59	13:34 (9)	06:24	16:26 (10)	06:36	05:55	05:30			
	16:45	67	13:58 (9)	17:19	8	13:42 (9)	17:50	36	17:02 (10)	19:20	19:49	20:16
5	07:14	12:52 (9)	06:58		06:23	16:26 (10)	06:35	05:53	05:30			
	16:46	67	13:59 (9)	17:20		17:51	35	17:01 (10)	19:21	19:50	20:16	
6	07:14	12:53 (9)	06:57		06:21	16:27 (10)	06:33	05:52	05:30			
	16:47	66	13:59 (9)	17:21		17:52	34	17:01 (10)	19:22	19:51	20:17	
7	07:14	12:53 (9)	06:56		06:20	16:27 (10)	06:32	05:51	05:30			
	16:48	67	14:00 (9)	17:22		17:53	32	16:59 (10)	19:23	19:52	20:17	
8	07:14	12:54 (9)	06:55		06:18	16:28 (10)	06:30	05:50	05:29			
	16:49	66	14:00 (9)	17:23		17:54	31	16:59 (10)	19:24	19:53	20:18	
9	07:14	12:54 (9)	06:54		06:17	16:28 (10)	06:29	05:49	05:29			
	16:50	66	14:00 (9)	17:24		17:55	29	16:57 (10)	19:25	19:54	20:19	
10	07:13	12:54 (9)	06:53		06:15	16:30 (10)	06:27	05:48	05:29			
	16:51	66	14:00 (9)	17:25		17:56	26	16:56 (10)	19:26	19:55	20:19	
11	07:13	12:55 (9)	06:52		06:14	16:31 (10)	06:26	05:47	05:29			
	16:52	66	14:01 (9)	17:27		17:57	22	16:53 (10)	19:27	19:56	20:20	
12	07:13	12:56 (9)	06:51		06:12	16:33 (10)	06:24	05:46	05:29			
	16:53	65	14:01 (9)	17:28		17:58	17	16:50 (10)	19:28	19:57	20:20	
13	07:13	12:56 (9)	06:50		06:11	16:37 (10)	06:23	05:45	05:29			
	16:54	65	14:01 (9)	17:29		17:59	10	16:47 (10)	19:29	19:58	20:21	
14	07:13	12:57 (9)	06:48		06:09		06:21	05:44	05:29			
	16:55	65	14:02 (9)	17:30		18:00		19:30	19:59	20:21		
15	07:12	12:58 (9)	06:47		06:08		06:20	05:43	05:29			
	16:56	64	14:02 (9)	17:31		18:01		19:31	20:00	20:21		
16	07:12	12:58 (9)	06:46		06:06		06:18	05:42	05:29			
	16:57	64	14:02 (9)	17:32		18:02		19:32	20:00	20:22		
17	07:12	12:59 (9)	06:45	16:43 (10)	06:05		06:17	05:41	05:29			
	16:58	63	14:02 (9)	17:33	4	16:47 (10)	18:03	19:33	20:01	20:22		
18	07:11	13:00 (9)	06:44		06:03		06:15	05:40	05:29			
	16:59	62	14:02 (9)	17:35	15	16:52 (10)	18:04	19:34	20:02	20:22		
19	07:11	13:01 (9)	06:42		06:01		06:14	05:40	05:29			
	17:00	61	14:02 (9)	17:36	20	16:55 (10)	18:05	19:35	20:03	20:23		
20	07:10	13:01 (9)	06:41		06:00		06:13	05:39	05:29			
	17:01	61	14:02 (9)	17:37	25	16:58 (10)	18:06	19:36	20:04	20:23		
21	07:10	13:03 (9)	06:40		05:58		06:11	05:38	05:29			
	17:02	59	14:02 (9)	17:38	27	16:58 (10)	18:07	19:37	20:05	20:23		
22	07:09	13:04 (9)	06:38		05:57		06:10	05:37	05:29			
	17:04	58	14:02 (9)	17:39	30	17:00 (10)	18:08	19:38	20:06	20:24		
23	07:09	13:04 (9)	06:37		05:55		06:08	05:37	05:30			
	17:05	57	14:01 (9)	17:40	32	17:01 (10)	18:09	19:39	20:07	20:24		
24	07:08	13:06 (9)	06:36		05:54		06:07	05:36	05:30			
	17:06	55	14:01 (9)	17:41	33	17:01 (10)	18:10	19:40	20:07	20:24		
25	07:07	13:07 (9)	06:34		05:52		06:06	05:35	05:30			
	17:07	54	14:01 (9)	17:42	35	17:02 (10)	18:11	19:41	20:08	20:24		
26	07:07	13:08 (9)	06:33		05:50		06:04	05:35	05:31			
	17:08	52	14:00 (9)	17:43	36	17:02 (10)	18:12	19:42	20:09	20:24		
27	07:06	13:10 (9)	06:31		05:49		06:03	05:34	05:31			
	17:09	49	13:59 (9)	17:44	37	17:03 (10)	18:13	19:42	20:10	20:24		
28	07:05	13:12 (9)	06:30		05:47		06:02	05:34	05:31			
	17:10	47	13:59 (9)	17:45	37	17:02 (10)	18:14	19:43	20:11	20:24		
29	07:04	13:14 (9)			06:46		06:01	05:33	05:32			
	17:12	44	13:58 (9)			19:15		19:44	20:11	20:24		
30	07:04	13:16 (9)			06:44		05:59	05:32	05:32			
	17:13	41	13:57 (9)			19:15		19:45	20:12	20:24		
31	07:03	13:18 (9)			06:43			05:32				
	17:14	37	13:55 (9)		19:16			20:13				
Potential sun hours	303		300		370		396	443	445			
Total, worst case	1855		422		384							

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: AF - 32

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

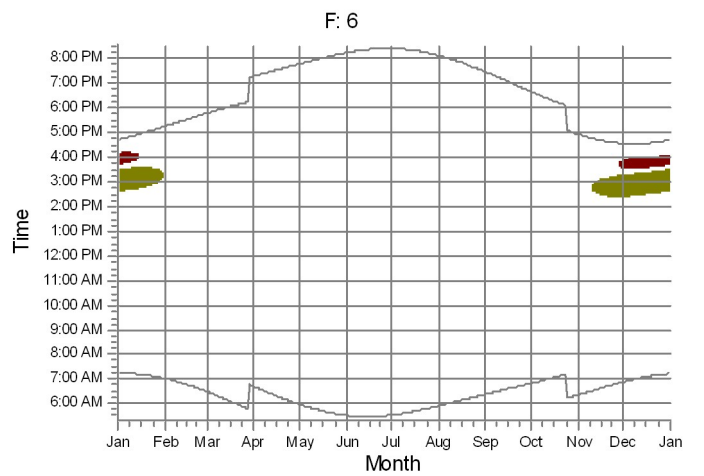
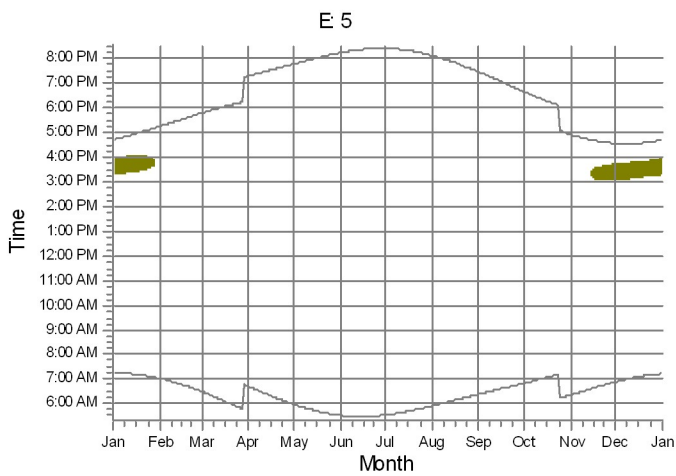
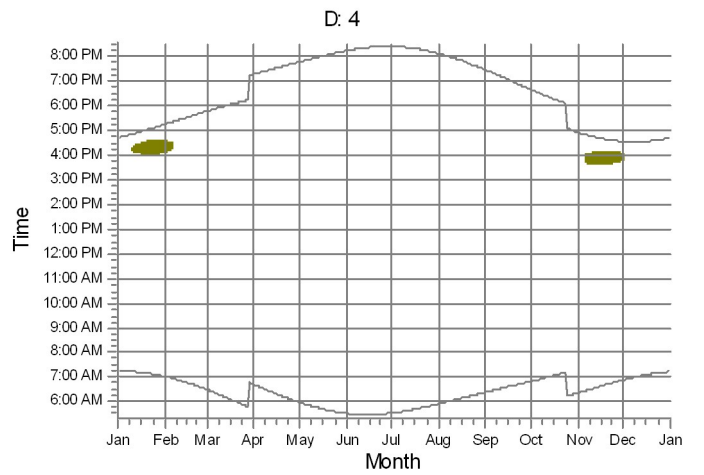
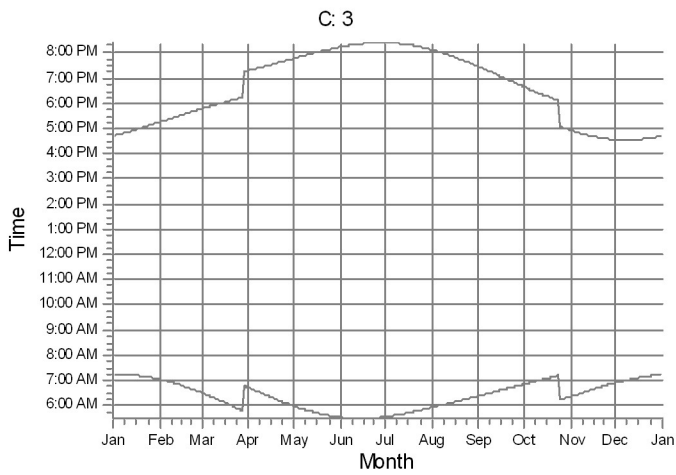
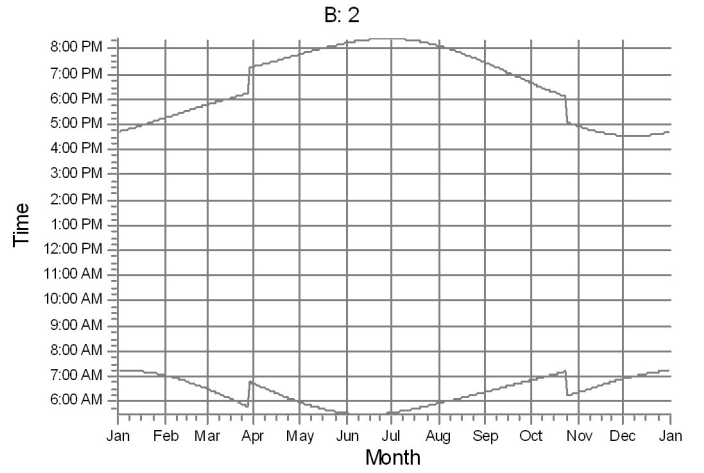
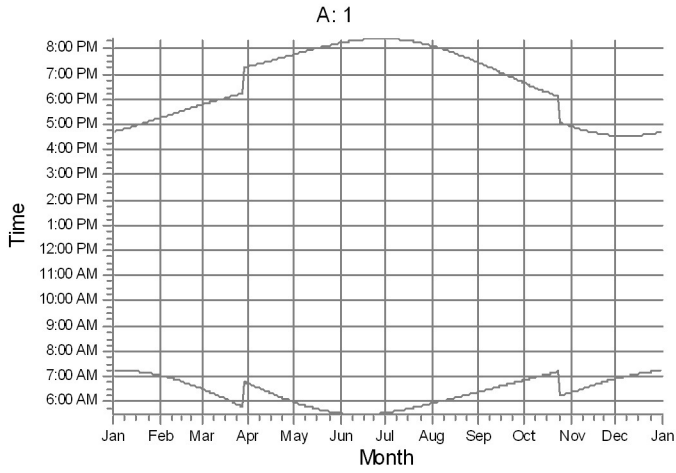
- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December			
1	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39	17:14 (10) 17:29 (10)	06:21 16:55	06:53 16:33	12:37 (9) 13:43 (9)	
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	17:11 (10) 17:31 (10)	06:22 16:54	06:54 16:33	12:37 (9) 13:43 (9)	
3	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	17:08 (10) 17:33 (10)	06:23 16:53	06:55 16:33	12:38 (9) 13:44 (9)	
4	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	17:07 (10) 17:34 (10)	06:24 16:52	06:56 16:33	12:38 (9) 13:44 (9)	
5	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33	17:05 (10) 17:35 (10)	06:25 16:51	06:57 16:33	12:38 (9) 13:45 (9)	
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	17:04 (10) 17:36 (10)	06:26 16:50	06:58 16:32	12:39 (9) 13:45 (9)	
7	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30	17:03 (10) 17:36 (10)	06:27 16:49	13:04 (9) 16:32	06:59 16:32	12:39 (9) 13:46 (9)
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	17:02 (10) 17:36 (10)	06:29 16:48	12:58 (9) 13:20 (9)	07:00 16:32	12:39 (9) 13:46 (9)
9	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	17:01 (10) 17:37 (10)	06:30 16:47	12:54 (9) 13:22 (9)	07:01 16:32	12:39 (9) 13:46 (9)
10	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	17:00 (10) 17:37 (10)	06:31 16:46	12:51 (9) 13:25 (9)	07:02 16:33	12:40 (9) 13:47 (9)
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	17:00 (10) 17:37 (10)	06:32 16:45	12:48 (9) 13:26 (9)	07:02 16:33	12:40 (9) 13:47 (9)
12	05:39 20:21	06:05 19:55	06:32 19:09	07:00 18:22	16:59 (10) 17:36 (10)	06:33 16:44	12:47 (9) 13:29 (9)	07:03 16:33	12:41 (9) 13:48 (9)
13	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	16:59 (10) 17:36 (10)	06:34 16:43	12:46 (9) 13:30 (9)	07:04 16:33	12:41 (9) 13:48 (9)
14	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	16:59 (10) 17:36 (10)	06:35 16:42	12:44 (9) 13:31 (9)	07:05 16:33	12:41 (9) 13:48 (9)
15	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	16:59 (10) 17:35 (10)	06:36 16:42	12:43 (9) 13:32 (9)	07:05 16:33	12:42 (9) 13:49 (9)
16	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	16:59 (10) 17:34 (10)	06:37 16:41	12:41 (9) 13:33 (9)	07:06 16:34	12:43 (9) 13:50 (9)
17	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	16:59 (10) 17:34 (10)	06:39 16:40	12:40 (9) 13:34 (9)	07:07 16:34	12:42 (9) 13:50 (9)
18	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	17:00 (10) 17:33 (10)	06:40 16:39	12:40 (9) 13:35 (9)	07:08 16:34	12:43 (9) 13:50 (9)
19	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	17:00 (10) 17:31 (10)	06:41 16:39	12:39 (9) 13:36 (9)	07:08 16:35	12:44 (9) 13:51 (9)
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	17:01 (10) 17:30 (10)	06:42 16:38	12:39 (9) 13:37 (9)	07:09 16:35	12:44 (9) 13:51 (9)
21	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	17:02 (10) 17:28 (10)	06:43 16:37	12:38 (9) 13:37 (9)	07:09 16:36	12:45 (9) 13:52 (9)
22	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	17:04 (10) 17:27 (10)	06:44 16:37	12:38 (9) 13:38 (9)	07:10 16:36	12:45 (9) 13:52 (9)
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	17:05 (10) 17:24 (10)	06:45 16:36	12:37 (9) 13:38 (9)	07:10 16:37	12:45 (9) 13:52 (9)
24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	17:08 (10) 17:21 (10)	06:46 16:36	12:38 (9) 13:40 (9)	07:11 16:37	12:46 (9) 13:53 (9)
25	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04		06:47 16:35	12:37 (9) 13:40 (9)	07:11 16:38	12:46 (9) 13:53 (9)
26	05:49 20:12	06:17 19:36	06:45 18:47	06:14 17:03		06:48 16:35	12:37 (9) 13:41 (9)	07:12 16:38	12:47 (9) 13:54 (9)
27	05:50 20:12	06:18 19:34	06:46 18:45	06:15 17:01		06:49 16:35	12:37 (9) 13:41 (9)	07:12 16:39	12:48 (9) 13:55 (9)
28	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00		06:50 16:34	12:37 (9) 13:42 (9)	07:12 16:40	12:48 (9) 13:55 (9)
29	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59		06:51 16:34	12:37 (9) 13:42 (9)	07:13 16:40	12:48 (9) 13:55 (9)
30	05:53 20:09	06:21 19:30	06:49 18:41	17:20 (10) 16:58	06:19 16:58	06:52 16:34	12:37 (9) 13:42 (9)	07:13 16:41	12:49 (9) 13:56 (9)
31	05:54 20:08	06:22 19:28		3 17:23 (10) 06:20	06:20 16:56		07:13 16:42	12:50 (9) 13:57 (9)	
Potential sun hours	453	424	374	347	303	294			
Total, worst case			3	717	1218	2073			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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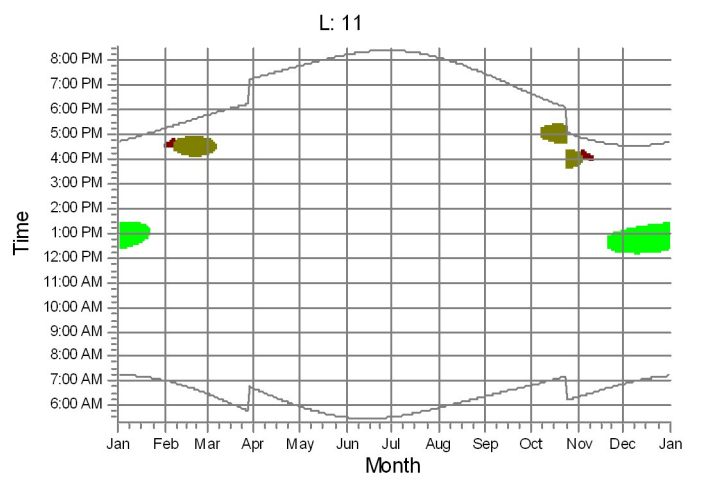
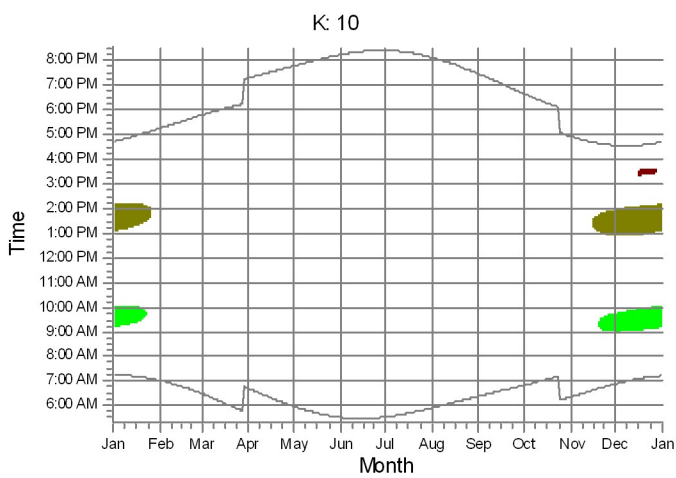
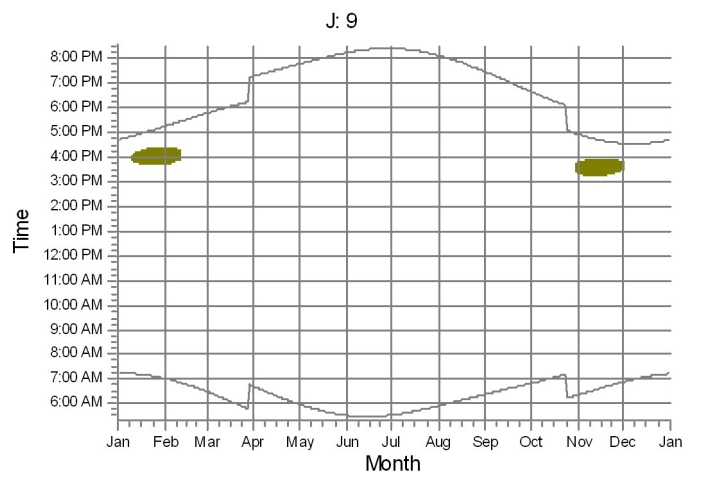
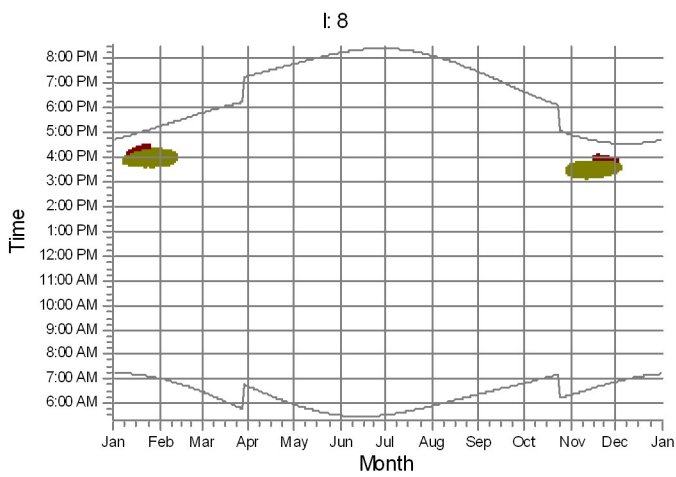
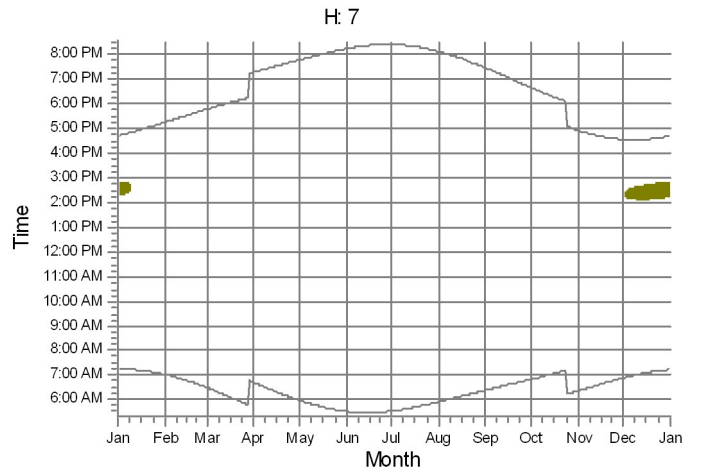
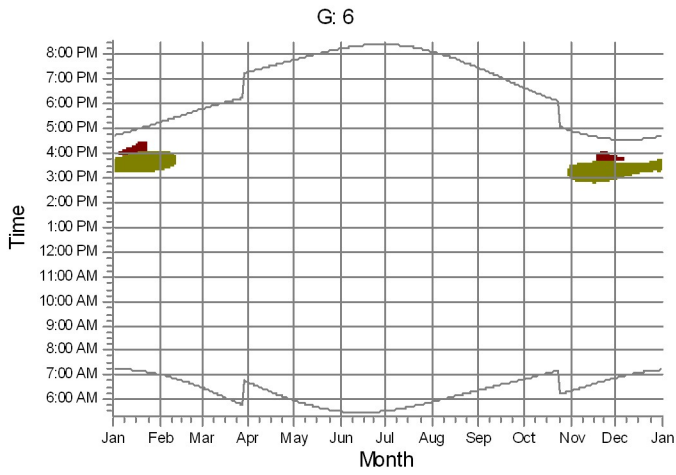
### SHADOW - Calendar, graphical



WTGs

8: WTG 2B      10: WTG 5

### SHADOW - Calendar, graphical

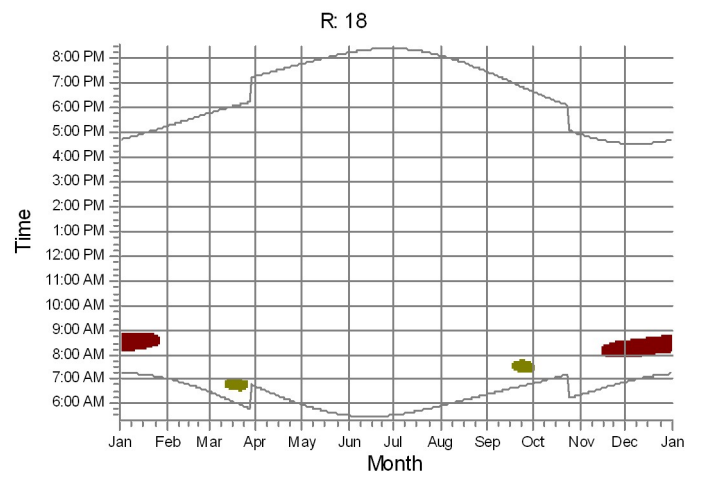
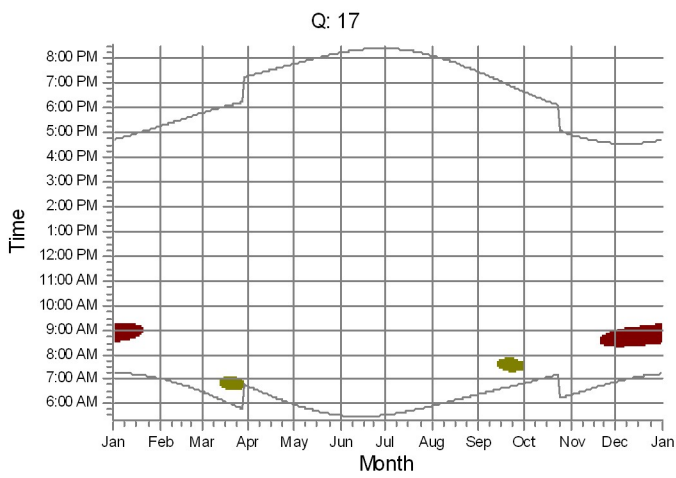
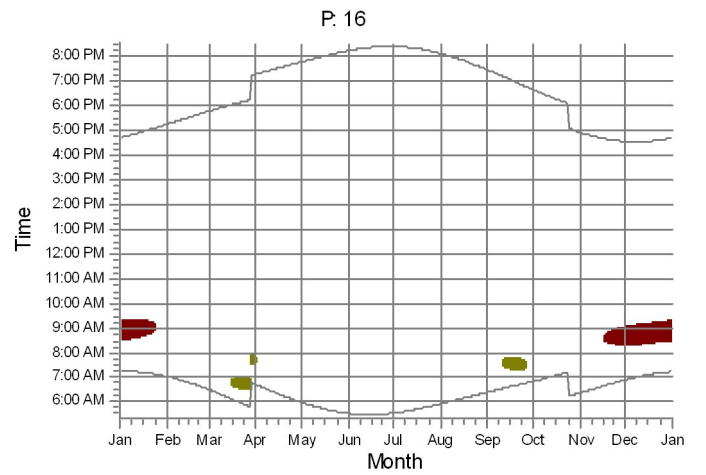
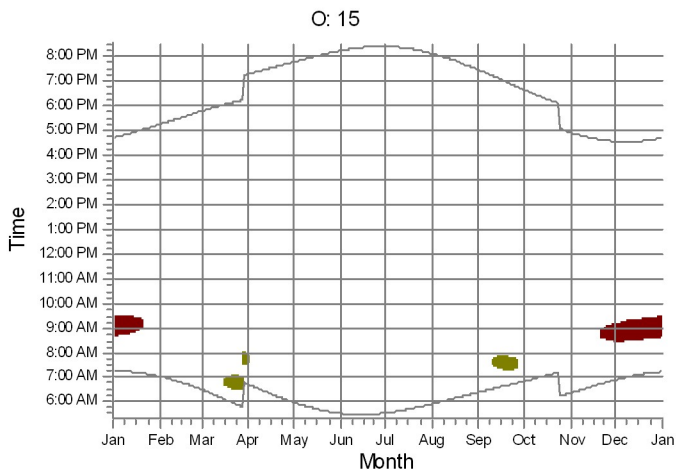
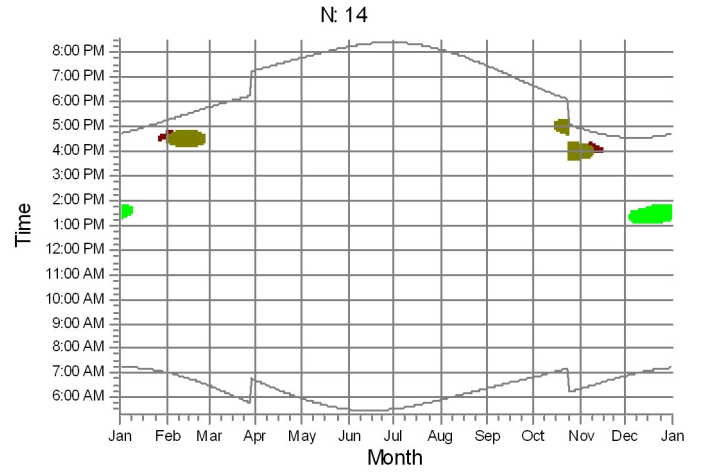
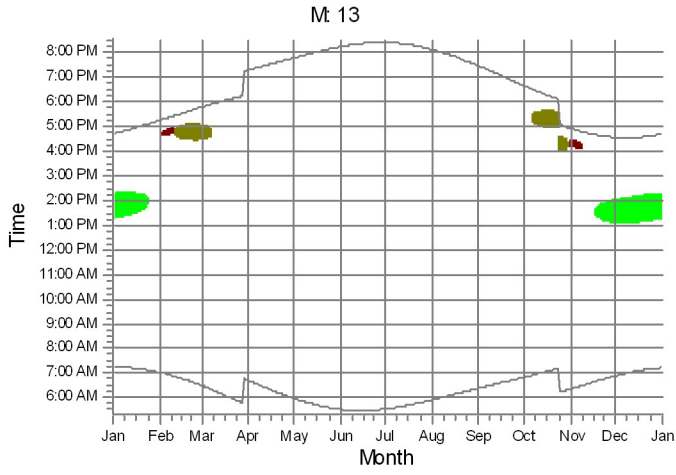


WTGs

- 8: WTG 2B
- 9: WTG 6
- 10: WTG 5



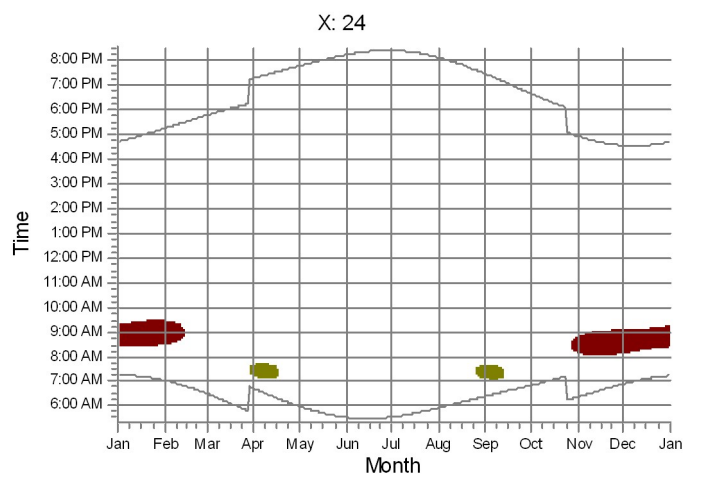
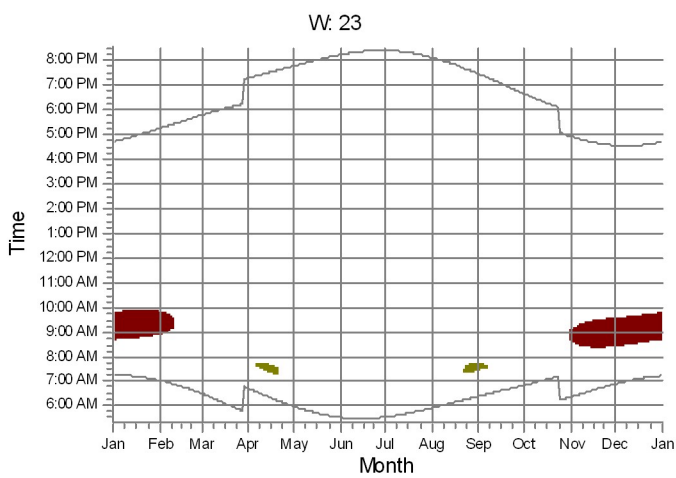
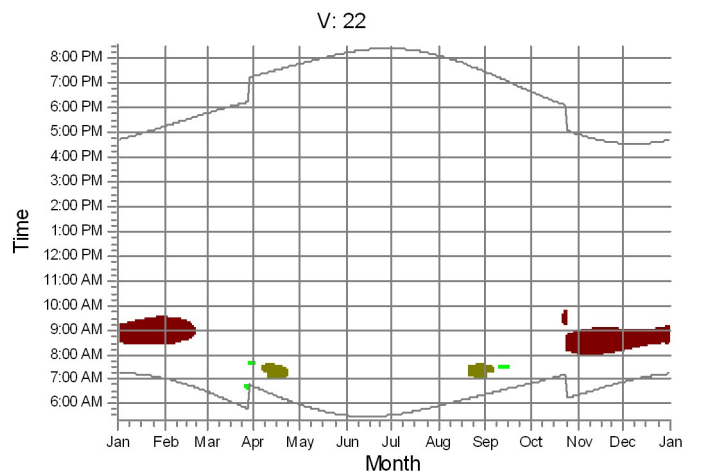
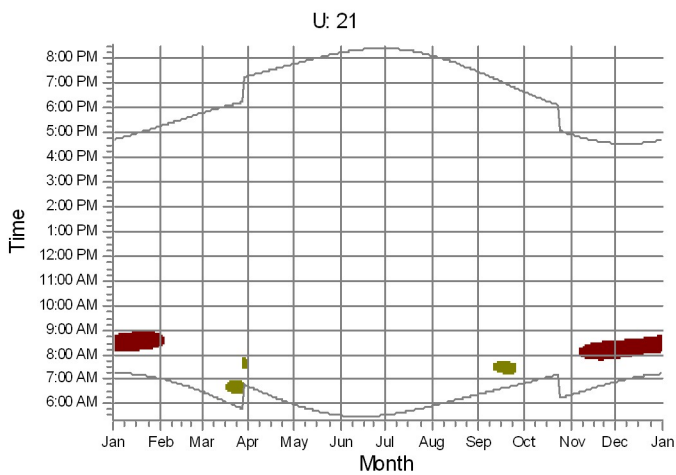
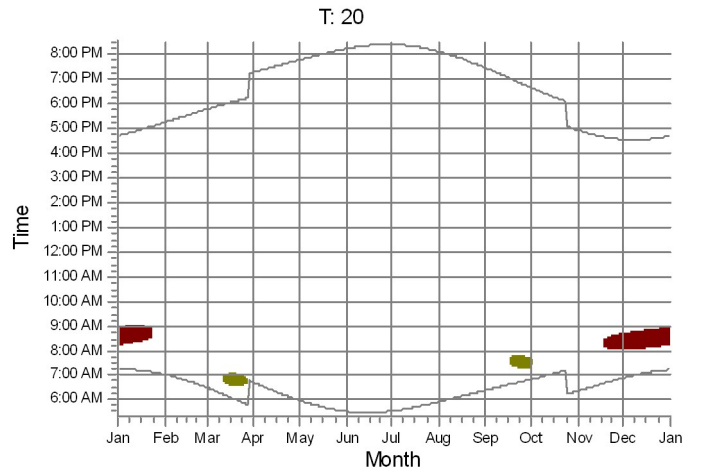
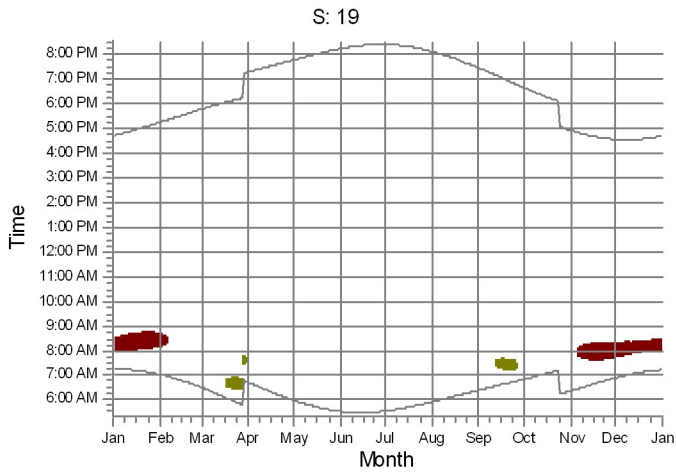
### SHADOW - Calendar, graphical



WTGs



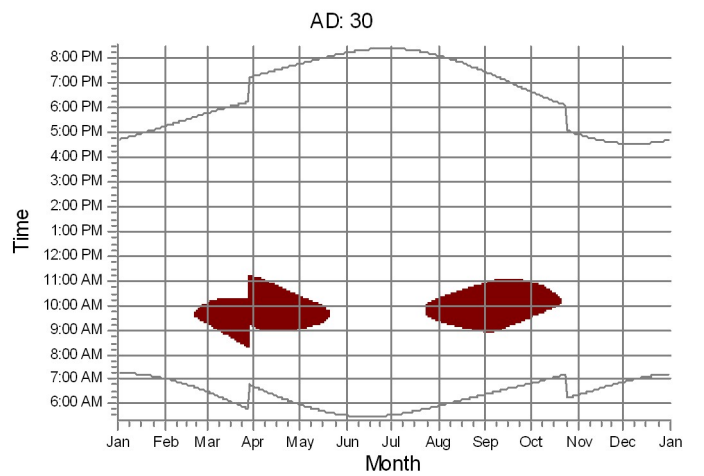
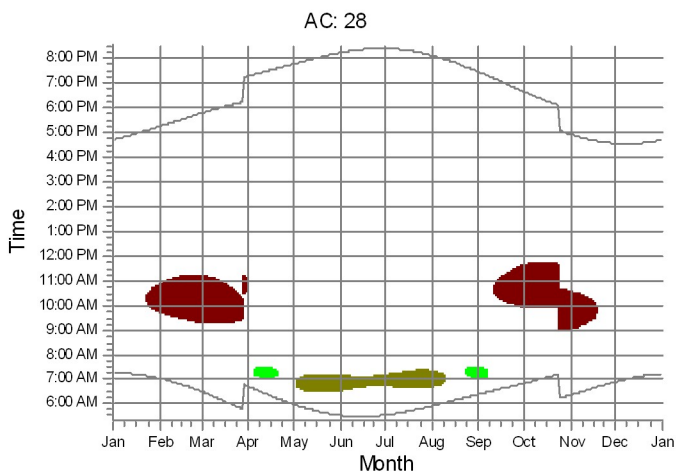
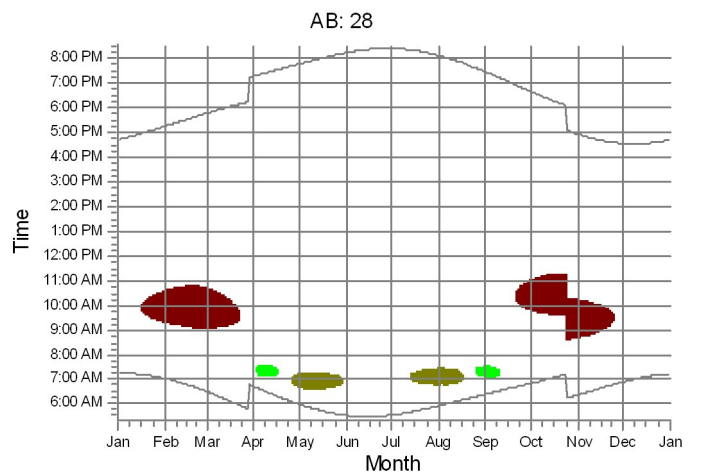
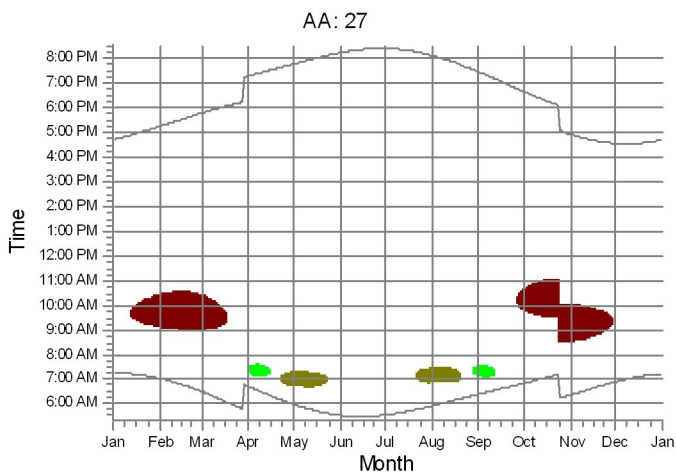
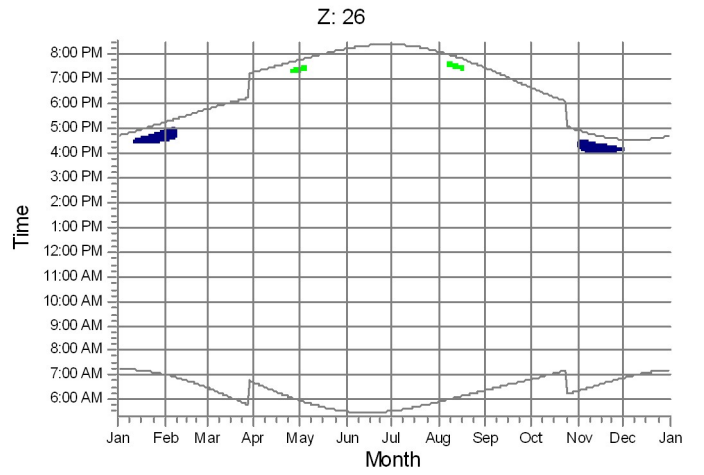
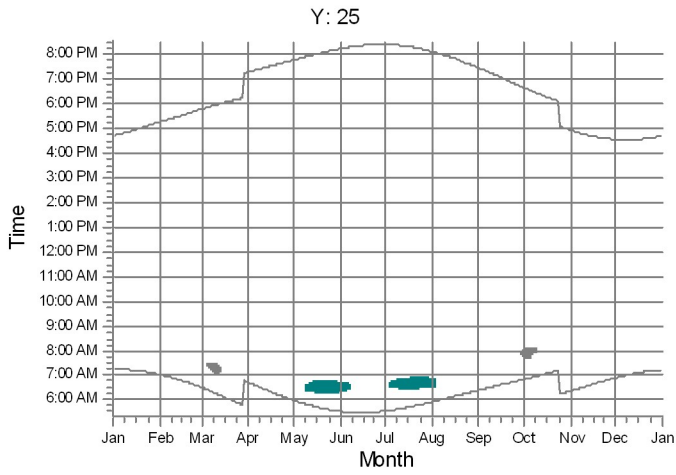
### SHADOW - Calendar, graphical



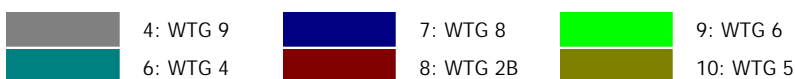
WTGs

- 8: WTG 2B
- 9: WTG 6
- 10: WTG 5

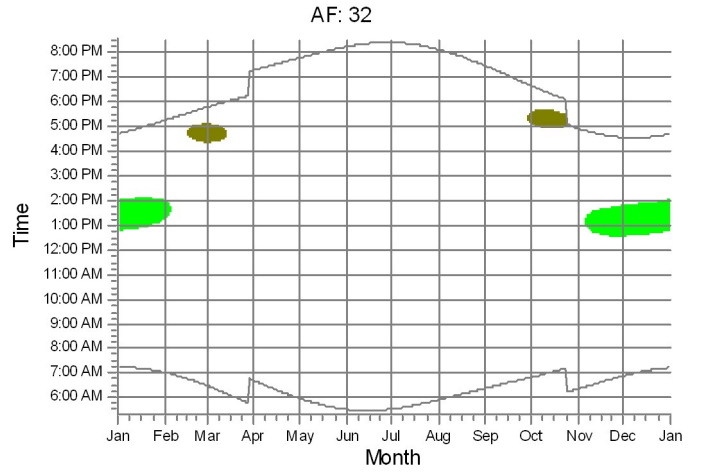
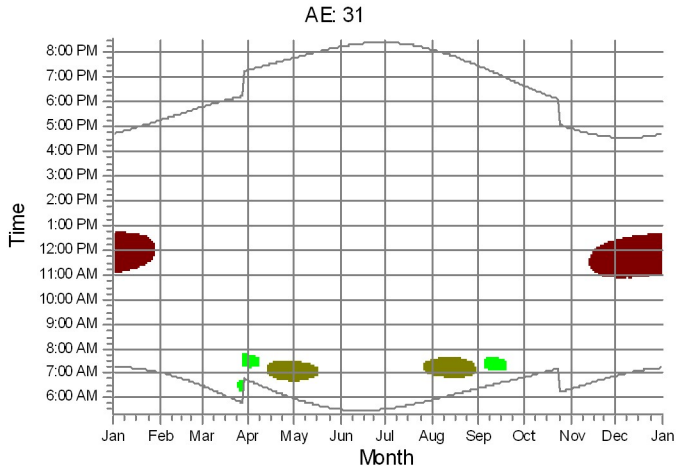
## SHADOW - Calendar, graphical



WTGs



### SHADOW - Calendar, graphical



WTGs

- 8: WTG 2B
- 9: WTG 6
- 10: WTG 5

## **ALLEGATO 3 - CALENDARIO WTG *WORST CASE***



## SHADOW - Calendar per WTG

WTG: 1 - WTG 12

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 17:15	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:13	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33
2	07:13 16:44	07:01 17:16	06:27 17:47	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	06:54 16:33
3	07:14 16:44	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:23	06:51 18:36	06:23 16:53	06:55 16:33
4	07:14 16:45	06:59 17:19	06:24 17:50	06:36 19:20	05:54 19:49	05:30 20:15	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	06:24 16:52	06:56 16:33
5	07:14 16:46	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:34 20:23	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	06:57 16:33
6	07:14 16:47	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:32
7	07:14 16:48	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30	06:27 16:49	06:59 16:32
8	07:14 16:49	06:55 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:28 16:48	07:00 16:32
9	07:14 16:50	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:18	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:32
10	07:13 16:51	06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33
11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:02 16:33
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13	07:13 16:54	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33
14	07:12 16:55	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:42	07:05 16:33
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16	07:12 16:57	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	07:06 16:34
17	07:11 16:58	06:45 17:33	06:04 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:38 16:40	07:07 16:34
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19	07:11 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:17	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35
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21	07:10 17:02	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:40 18:55	07:09 18:09	06:43 16:37	07:09 16:36
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31	07:03 17:14		06:43 19:16		05:32 20:13		05:54 20:08	06:22 19:28		06:20 16:56		07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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## SHADOW - Calendar per WTG

WTG: 2 - WTG 11

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 17:15	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:13	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33
2	07:13 16:44	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	06:54 16:33
3	07:14 16:44	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	06:55 16:33
4	07:14 16:45	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:30 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	06:24 16:52	06:56 16:33
5	07:14 16:46	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:35 20:23	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	06:57 16:33
6	07:14 16:47	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33
7	07:14 16:48	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30	06:27 16:49	06:59 16:32
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11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:02 16:33
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13	07:13 16:54	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:20	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33
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15	07:12 16:56	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	07:05 16:33
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17	07:11 16:58	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:38 16:40	07:07 16:34
18	07:11 16:59	06:44 17:35	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:22	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	07:07 16:34
19	07:11 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35
20	07:10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 16:35
21	07:10 17:02	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	07:09 16:36
22	07:09 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:23	05:46 20:15	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	07:10 16:36
23	07:08 17:05	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:06	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	07:10 16:37
24	07:08 17:06	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	07:11 16:37
25	07:07 17:07	06:34 17:42	05:52 18:11	06:06 19:40	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:35	07:11 16:38
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28	07:05 17:10	06:30 17:45	05:47 18:14	06:02 19:43	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	07:12 16:40
29	07:04 17:12		06:46 19:14	06:01 19:44	05:33 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	07:13 16:40
30	07:04 17:13		06:44 19:15	05:59 19:45	05:33 20:12	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	07:13 16:41
31	07:03 17:14		06:43 19:16		05:32 20:13		05:54 20:08	06:22 19:28		06:20 16:56		07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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## SHADOW - Calendar per WTG

WTG: 3 - WTG 10

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 17:15	06:29 17:47	06:41 19:17	05:58 19:46	05:32 20:14	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33
2	07:14 16:44	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	06:54 16:33
3	07:14 16:44	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:34 20:24	05:57 20:05	06:24 19:24	06:52 18:36	06:23 16:53	06:55 16:33
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19	07:11 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35
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23	07:09 17:05	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	07:10 16:37
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31	07:03 17:14		06:43 19:16		05:32 20:13		05:54 20:08	06:22 19:28		06:20 16:57		07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 4 - WTG 9

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 17:15	06:29 17:47	06:41 19:17	05:58 19:46	05:32 20:14	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	07:47-07:58/11 06:21	06:53 16:33
2	07:14 16:44	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	07:44-08:00/16 06:22	06:54 16:33
3	07:14 16:44	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:34 20:24	05:57 20:05	06:25 19:24	06:52 18:36	07:43-08:01/18 06:23	06:55 16:33
4	07:14 16:45	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:31 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	07:45-08:02/17 06:24	06:56 16:33
5	07:14 16:46	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:35 20:24	05:58 20:03	06:26 19:20	06:53 18:33	07:49-08:03/14 06:25	06:57 16:33
6	07:14 16:47	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	07:53-08:03/10 06:26	06:58 16:33
7	07:14 16:48	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	07:55-08:03/8 06:27	06:59 16:33
8	07:14 16:49	06:55 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	07:58-08:03/5 06:29	07:00 16:33
9	07:14 16:50	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	08:01-08:02/1 06:30	07:01 16:33
10	07:13 16:51	06:53 17:26	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33
11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	07:05-07:22/17 06:32	07:02 16:33
12	07:13 16:53	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:55	06:33 19:09	07:00 18:22	07:07-07:21/14 06:33	07:03 16:33
13	07:13 16:54	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:40 20:21	06:06 19:53	06:33 19:08	07:01 18:21	07:09-07:17/8 06:34	07:04 16:33
14	07:13 16:55	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	07:04 16:43	07:05 16:33
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16	07:12 16:57	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	07:06 16:41	07:06 16:34
17	07:12 16:58	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	07:07 16:40	07:07 16:34
18	07:11 16:59	06:44 17:35	06:03 18:04	06:15 19:34	05:41 20:02	05:29 20:22	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	07:08 16:40	07:08 16:34
19	07:11 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	07:09 16:39	07:08 16:35
20	07:10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	07:09 16:42	07:09 16:35
21	07:10 17:03	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:46 20:16	06:13 19:43	06:41 18:55	07:09 18:09	07:09 16:43	07:09 16:36
22	07:09 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:30 20:24	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	07:10 16:44	07:10 16:36
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28	07:05 17:10	06:30 17:45	05:47 18:14	06:02 19:43	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	07:16 16:58	07:16 16:50	07:12 16:40
29	07:04 17:12	06:29 17:45	05:46 18:15	06:01 19:44	05:33 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	07:17 16:59	07:17 16:51	07:13 16:40
30	07:04 17:13	06:28 17:44	05:45 18:14	05:59 19:43	05:33 20:10	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	07:18 16:58	07:18 16:52	07:13 16:41
31	07:03 17:14	06:27 17:43	05:44 18:13	05:58 19:42	05:33 20:09	05:32 20:24	05:54 20:08	06:22 19:28	06:48 18:40	07:19 16:57	07:19 16:53	07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Sum of minutes with flicker	0	0	102	0	0	0	0	0	1	100	0	0

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

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
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## SHADOW - Calendar per WTG

WTG: 5 - WTG 3

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 17:15	06:29 17:47	06:41 19:17	05:58 19:46	05:32 20:14	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33
2	07:14 16:44	07:01 17:16	06:27 17:48	06:40 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:38	06:22 16:54	06:54 16:33
3	07:14 16:44	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:34 20:24	05:57 20:05	06:25 19:24	06:52 18:36	06:23 16:53	06:55 16:33
4	07:14 16:45	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:31 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33
5	07:14 16:46	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:35 20:24	05:58 20:03	06:26 19:21	06:54 18:33	06:25 16:51	06:57 16:33
6	07:14 16:47	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33
7	07:14 16:48	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:18	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	06:59 16:33
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11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:03 16:33
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13	07:13 16:54	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:40 20:21	06:06 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33
14	07:13 16:55	06:49 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:43	07:05 16:33
15	07:12 16:56	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	07:06 16:33
16	07:12 16:57	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:01	05:29 20:22	05:42 20:19	06:08 19:50	06:36 19:03	07:04 18:16	06:38 16:41	07:06 16:34
17	07:12 16:58	06:45 17:34	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	07:07 16:34
18	07:11 16:59	06:44 17:35	06:03 18:04	06:16 19:34	05:41 20:02	05:29 20:23	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:40	07:08 16:34
19	07:11 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35
20	07:10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 16:35
21	07:10 17:03	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:46 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	07:09 16:36
22	07:09 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:30 20:24	05:46 20:16	06:14 19:41	06:42 18:53	07:10 18:08	06:44 16:37	07:10 16:36
23	07:09 17:05	06:37 17:40	05:55 18:09	06:09 19:39	05:37 20:07	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	07:10 16:37
24	07:08 17:06	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:16 19:39	06:43 18:50	07:12 18:05	06:46 16:36	07:11 16:37
25	07:07 17:07	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:36	07:11 16:38
26	07:07 17:08	06:33 17:43	05:50 18:12	06:05 19:42	05:35 20:09	05:31 20:24	05:50 20:12	06:17 19:36	06:45 18:47	06:15 17:03	06:48 16:35	07:12 16:38
27	07:06 17:09	06:32 17:44	05:49 18:13	06:03 19:43	05:34 20:10	05:31 20:24	05:50 20:12	06:18 19:34	06:46 18:45	06:16 17:01	06:49 16:35	07:12 16:39
28	07:05 17:11	06:30 17:46	05:47 18:14	06:02 19:44	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	07:12 16:40
29	07:04 17:12		06:46 19:15	06:01 19:44	05:33 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	07:13 16:40
30	07:04 17:13		06:44 19:16	05:59 19:45	05:33 20:12	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	07:13 16:41
31	07:03 17:14		06:43 19:17		05:32 20:13		05:54 20:08	06:22 19:28		06:20 16:57		07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 6 - WTG 4

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:13 16:43	07:02 17:15	06:29 17:47	06:41 19:17	05:58 19:46	05:32 20:14	06:23-06:39/16 20:24	05:33 20:07	05:55 20:07	06:35-06:48/13 19:27	06:23 18:39	06:50 16:55	06:21 16:33	
2	07:14 16:44	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	06:24-06:39/15 20:24	05:33 20:06	05:56 20:06	06:35-06:46/11 19:25	06:24 18:37	06:51 16:54	06:22 16:33	
3	07:14 16:44	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	06:25-06:39/14 20:24	05:34 20:05	05:57 20:05	06:37-06:44/7 19:24	06:25 18:36	06:52 16:53	06:23 16:33	
4	07:14 16:45	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:31 20:16	06:25-06:37/12 20:24	05:34 20:04	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33	
5	07:14 16:46	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	06:27-06:37/10 20:24	05:35 20:03	06:36-06:39/3 20:03	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	06:57 16:33
6	07:14 16:47	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	06:28-06:36/8 20:23	05:35 20:02	06:35-06:42/7 20:02	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33
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11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	06:25-06:36/11 20:20	05:29 20:22	05:38 20:02	06:31-06:47/16 19:56	06:04 19:11	06:32 18:24	06:59 16:45	06:32 16:33	07:02 16:33
12	07:13 16:53	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	06:24-06:38/14 20:20	05:29 20:20	05:39 20:01	06:31-06:48/17 19:55	06:05 19:09	06:33 18:22	07:00 16:44	06:33 16:33	07:03 16:33
13	07:13 16:54	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	06:23-06:39/16 20:21	05:29 20:21	05:40 20:01	06:30-06:48/18 19:53	06:06 19:08	06:33 18:21	07:01 16:43	06:34 16:33	07:04 16:33
14	07:13 16:55	06:49 17:30	06:09 18:00	06:21 19:30	05:44 19:59	06:24-06:40/16 20:21	05:29 20:21	05:40 20:02	06:30-06:49/19 19:52	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:43	07:05 16:33
15	07:12 16:56	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	06:23-06:41/18 20:21	05:29 20:21	05:41 20:02	06:30-06:50/20 19:51	06:07 19:51	06:35 18:18	07:03 16:42	06:36 16:33	07:06 16:33
16	07:12 16:57	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:01	06:22-06:41/19 20:22	05:29 20:22	05:42 20:01	06:29-06:50/21 19:49	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	07:06 16:34
17	07:12 16:58	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	06:22-06:41/19 20:22	05:29 20:22	05:42 20:01	06:30-06:50/20 19:48	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	07:07 16:34
18	07:11 16:59	06:44 17:35	06:03 18:04	06:15 19:34	05:41 20:02	06:21-06:41/20 20:22	05:29 20:22	05:43 20:01	06:30-06:51/21 19:47	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:40	07:08 16:34
19	07:11 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	06:21-06:41/20 20:23	05:29 20:23	05:44 20:01	06:30-06:52/22 19:45	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35
20	07:10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	06:22-06:42/20 20:23	05:29 20:23	05:45 20:01	06:30-06:51/21 19:44	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 16:35
21	07:10 17:03	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	06:21-06:42/21 20:23	05:29 20:23	05:45 20:01	06:30-06:52/22 19:43	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	07:09 16:36
22	07:09 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	06:20-06:41/21 20:24	05:30 20:24	05:46 20:01	06:31-06:52/21 19:41	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	07:10 16:36
23	07:09 17:05	06:37 17:40	05:55 18:09	06:09 19:39	05:37 20:07	06:20-06:42/22 20:24	05:30 20:24	05:47 20:01	06:32-06:52/20 19:40	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	07:10 16:37
24	07:08 17:06	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	06:20-06:41/21 20:24	05:30 20:24	05:48 20:01	06:32-06:51/19 19:38	06:16 19:38	06:43 18:50	07:12 18:05	06:46 16:36	07:11 16:37
25	07:07 17:07	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	06:21-06:42/21 20:24	05:30 20:24	05:49 20:01	06:32-06:52/20 19:37	06:16 19:37	06:44 18:49	07:13 17:03	06:47 16:35	07:11 16:38
26	07:07 17:08	06:33 17:43	05:50 18:12	06:05 19:42	05:35 20:09	06:20-06:41/21 20:24	05:31 20:24	05:50 20:01	06:32-06:52/20 19:36	06:17 19:36	06:45 18:47	07:14 17:03	06:48 16:35	07:12 16:38
27	07:06 17:09	06:32 17:44	05:49 18:13	06:03 19:43	05:34 20:10	06:20-06:40/20 20:24	05:31 20:24	05:50 20:01	06:32-06:52/20 19:34	06:18 19:34	06:46 18:45	07:15 17:01	06:49 16:35	07:12 16:39
28	07:05 17:10	06:30 17:45	05:47 18:14	06:02 19:43	05:34 20:11	06:21-06:41/20 20:24	05:31 20:24	05:51 20:01	06:33-06:51/18 19:33	06:19 19:33	06:47 18:44	07:16 17:00	06:50 16:34	07:12 16:40
29	07:04 17:12	06:29 17:46	05:46 18:15	06:01 19:44	05:33 20:11	06:22-06:41/19 20:24	05:32 20:24	05:52 20:01	06:34-06:51/17 19:31	06:20 19:31	06:48 18:42	07:17 16:59	06:51 16:34	07:13 16:40
30	07:04 17:13	06:28 17:47	05:44 18:16	05:59 19:45	05:33 20:12	06:22-06:40/18 20:24	05:32 20:24	05:53 20:01	06:34-06:50/16 19:30	06:21 19:30	06:49 18:41	07:18 16:58	06:52 16:34	07:13 16:41
31	07:03 17:14	06:27 17:48	05:43 18:17	05:58 19:46	05:32 20:13	06:23-06:40/17 20:24	05:32 20:24	05:54 20:01	06:34-06:49/15 19:28	06:22 19:28	06:50 18:40	07:19 16:57	06:53 16:34	07:13 16:42
Potential sun hours	303	300	370	396	443	445	445	453	424	374	347	303	294	
Sum of minutes with flicker	0	0	0	0	403	80	459	31	0	0	0	0	0	

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 7 - WTG 8

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 16:32-16:52/20 17:15	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:14	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33
2	07:13 16:44	07:01 16:33-16:53/20 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:18-16:22/4	06:54 16:33
3	07:14 16:44	07:00 16:34-16:54/20 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:12-16:27/15	06:55 16:33
4	07:14 16:45	06:59 16:35-16:55/20 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:30 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	06:24 16:10-16:29/19	06:56 16:33
5	07:14 16:46	06:58 16:36-16:57/21 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:35 20:23	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:08-16:28/20	06:57 16:33
6	07:14 16:47	06:57 16:38-16:58/20 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:06-16:26/20	06:58 16:33
7	07:14 16:48	06:56 16:40-16:59/19 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30	06:27 16:06-16:26/20	06:59 16:32
8	07:14 16:49	06:55 16:43-16:56/13 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:05-16:25/20	07:00 16:32
9	07:14 16:50	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:04-16:24/20	07:01 16:32
10	07:13 16:51	06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:03-16:23/20	07:02 16:33
11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:02-16:21/19	07:02 16:33
12	07:13 16:28-16:29/1 16:53	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:55	06:32 19:09	07:00 18:22	06:33 16:03-16:21/18	07:03 16:33
13	07:13 16:27-16:29/2 16:54	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:02-16:20/18	07:04 16:33
14	07:13 16:27-16:30/3 16:55	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:02-16:19/17	07:05 16:33
15	07:12 16:28-16:32/4 16:56	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:02-16:18/16	07:05 16:33
16	07:12 16:27-16:32/5 16:57	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:02-16:17/15	07:06 16:34
17	07:12 16:28-16:34/6 16:58	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:02-16:16/14	07:07 16:34
18	07:11 16:27-16:35/8 16:59	06:44 17:35	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:22	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:03-16:16/13	07:07 16:34
19	07:11 16:28-16:36/8 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:03-16:16/13	07:08 16:35
20	07:10 16:27-16:37/10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:03-16:15/12	07:09 16:35
21	07:10 16:28-16:39/11 17:02	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:03-16:14/11	07:09 16:36
22	07:09 16:28-16:40/12 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:23	05:46 20:15	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:03-16:13/10	07:10 16:36
23	07:09 16:28-16:41/13 17:05	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:04-16:12/8	07:10 16:37
24	07:08 16:29-16:42/13 17:06	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:04-16:12/8	07:11 16:37
25	07:07 16:29-16:43/14 17:07	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	07:13 17:04	06:47 16:06-16:12/6	07:11 16:38
26	07:07 16:29-16:44/15 17:08	06:33 17:43	05:50 18:12	06:04 19:41	05:35 20:09	05:31 20:24	05:50 20:12	06:17 19:36	06:45 18:47	07:14 17:03	06:48 16:06-16:11/5	07:12 16:38
27	07:06 16:29-16:45/16 17:09	06:31 17:44	05:49 18:13	06:03 19:42	05:34 20:10	05:31 20:24	05:50 20:12	06:18 19:34	06:46 18:45	07:15 17:01	06:49 16:07-16:11/4	07:12 16:39
28	07:05 16:30-16:47/17 17:10	06:30 17:45	05:47 18:14	06:02 19:43	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	07:16 17:00	06:50 16:07-16:10/3	07:12 16:40
29	07:04 16:30-16:48/18 17:12	06:29 17:44	06:46 18:14	06:01 19:43	05:33 20:11	05:32 20:24	05:52 20:11	06:20 19:33	06:48 18:44	07:17 17:00	06:51 16:08-16:10/2	07:13 16:40
30	07:04 16:31-16:50/19 17:13	06:28 17:43	06:44 18:14	05:59 19:44	05:33 20:11	05:32 20:24	05:53 20:10	06:21 19:31	06:49 18:42	07:18 16:59	06:52 16:09-16:10/1	07:13 16:41
31	07:03 16:31-16:51/20 17:14	06:27 17:42	06:43 18:15	06:00 19:45	05:32 20:12	05:31 20:24	05:54 20:09	06:22 19:30	06:47 18:41	07:19 16:58	06:53 16:34	07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Sum of minutes with flicker	215	153	0	0	0	0	0	0	0	0	371	0

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 8 - WTG 2B

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:13 11:06-12:37/91 15:46-16:03/17 16:43 08:04-09:43/99	07:02 08:13-10:47/154 17:15 16:31-16:43/12	06:29 09:03-11:08/125 17:47	06:41 09:13-11:05/112 19:17	05:58 09:06-10:18/72 19:46	05:32 09:06-10:18/72 20:14
2	07:14 11:06-12:37/91 15:47-16:04/17 16:44 08:04-09:43/99	07:01 08:14-10:48/154 17:16 16:32-16:44/12	06:27 09:04-11:08/124 17:48	06:40 09:10-11:03/113 19:18	05:57 09:07-10:17/70 19:47	05:31 09:07-10:17/70 20:14
3	07:14 11:07-12:37/90 15:47-16:05/18 16:44 08:04-09:44/100	07:00 08:16-10:50/154 17:17 16:32-16:46/14	06:26 09:04-11:07/123 17:49	06:38 09:09-11:03/114 19:19	05:56 09:07-10:14/67 19:48	05:31 09:07-10:14/67 20:15
4	07:14 11:08-12:38/90 15:48-16:06/18 16:45 08:04-09:44/100	06:59 08:18-10:52/154 17:19 16:33-16:45/12	06:24 09:05-11:07/122 17:50	06:36 09:06-11:01/115 19:20	05:55 09:08-10:13/65 19:49	05:31 09:08-10:13/65 20:16
5	07:14 11:08-12:38/90 15:49-16:07/18 16:46 08:04-09:45/101	06:58 08:32-10:53/141 16:41-16:47/6 17:20 08:21-08:30/9 16:34-16:40/6	06:23 09:05-11:05/120 17:51	06:35 09:05-11:00/115 19:21	05:53 09:09-10:12/63 19:50	05:30 09:09-10:12/63 20:16
6	07:14 11:09-12:38/89 15:50-16:07/17 16:47 08:04-09:45/101	06:57 08:32-10:55/143 17:21 16:36-16:49/13	06:21 09:06-11:05/119 17:52	06:33 09:02-10:58/116 19:22	05:52 09:10-10:10/60 19:51	05:30 09:10-10:10/60 20:17
7	07:14 11:10-12:38/88 15:51-16:07/16 16:48 08:04-09:46/102	06:56 08:33-10:56/143 17:22 16:38-16:51/13	06:20 09:06-11:04/118 17:53	06:32 09:01-10:57/116 19:23	05:51 09:11-10:09/58 19:52	05:30 09:11-10:09/58 20:18
8	07:14 11:11-12:38/87 15:52-16:08/16 16:49 08:04-09:47/103	06:55 08:34-10:58/144 17:23 16:44-16:53/9	06:18 09:06-11:03/117 17:54	06:30 09:00-10:55/115 19:24	05:50 09:12-10:07/55 19:53	05:29 09:12-10:07/55 20:18
9	07:14 11:12-12:38/86 15:52-16:07/15 16:50 08:05-09:47/102	06:54 08:34-10:59/145 17:24 16:46-16:54/8	06:17 09:03-11:01/118 17:55	06:29 09:01-10:54/113 19:25	05:49 09:13-10:06/53 19:54	05:29 09:13-10:06/53 20:19
10	07:14 11:12-12:37/85 15:53-16:06/13 16:51 08:04-09:47/103	06:53 08:35-11:01/146 17:26	06:15 09:02-11:00/118 17:56	06:27 09:00-10:52/112 19:26	05:48 09:14-10:04/50 19:55	05:29 09:14-10:04/50 20:19
11	07:13 11:14-12:37/83 16:09-16:11/2 16:52 08:04-09:48/104 15:55-16:07/12	06:52 08:36-11:02/146 17:27	06:14 08:59-10:58/119 17:57	06:26 09:00-10:51/111 19:27	05:47 09:15-10:02/47 19:56	05:29 09:15-10:02/47 20:20
12	07:13 11:15-12:37/82 16:10-16:13/3 16:53 08:05-09:48/103 15:57-16:08/11	06:51 08:37-11:03/146 17:28	06:12 08:57-10:57/120 17:58	06:24 09:00-10:49/109 19:28	05:46 09:16-10:01/45 19:57	05:29 09:16-10:01/45 20:20
13	07:13 11:15-12:36/81 15:58-16:13/15 16:54 08:04-09:48/104	06:50 08:38-11:04/146 17:29	06:11 08:55-10:55/120 17:59	06:23 09:00-10:48/108 19:29	05:45 09:17-09:59/42 19:58	05:29 09:17-09:59/42 20:21
14	07:13 11:17-12:36/79 16:03-16:15/12 16:55 08:04-09:49/105	06:49 08:39-11:04/145 17:30	06:09 08:52-10:53/121 18:00	06:21 09:00-10:45/105 19:30	05:44 09:18-09:57/39 19:59	05:29 09:18-09:57/39 20:21
15	07:12 11:18-12:36/78 16:04-16:17/13 16:56 08:05-09:52/107	06:47 08:40-11:05/145 17:31	06:08 08:51-10:51/120 18:01	06:20 09:00-10:44/104 19:31	05:43 09:21-09:56/35 20:00	05:29 09:21-09:56/35 20:21
16	07:12 11:19-12:35/76 16:04-16:18/14 16:57 08:04-09:55/111	06:46 08:42-11:06/144 17:32	06:06 08:48-10:48/120 18:02	06:18 09:00-10:42/102 19:32	05:42 09:22-09:54/32 20:01	05:29 09:22-09:54/32 20:22
17	07:12 11:21-12:35/74 16:05-16:20/15 16:58 08:05-09:58/113	06:45 08:44-11:07/143 17:33	06:05 08:46-10:46/120 18:03	06:17 09:00-10:41/101 19:33	05:41 09:24-09:52/28 20:01	05:29 09:24-09:52/28 20:22
18	07:11 11:22-12:33/71 16:06-16:21/15 16:59 08:05-10:00/115	06:44 08:45-11:07/142 17:35	06:03 08:44-10:44/120 18:04	06:15 09:01-10:39/98 19:34	05:41 09:26-09:49/23 20:02	05:29 09:26-09:49/23 20:23
19	07:11 11:24-12:33/69 16:07-16:23/16 17:00 08:05-10:03/118	06:42 08:49-11:08/139 17:36	06:01 08:42-10:41/119 18:05	06:14 09:01-10:37/96 19:35	05:40 09:28-09:46/18 20:03	05:29 09:28-09:46/18 20:23
20	07:10 11:25-12:31/66 16:08-16:24/16 17:01 08:05-10:07/122	06:41 09:03-11:08/125 17:37 08:55-09:02/7	06:00 08:40-10:38/118 18:06	06:13 09:01-10:36/95 19:36	05:39 09:33-09:43/10 20:04	05:29 09:33-09:43/10 20:23
21	07:10 11:28-12:31/63 16:10-16:26/16 17:03 08:06-10:10/124	06:40 09:02-11:08/126 17:38	05:58 08:37-10:35/118 18:07	06:11 09:01-10:34/93 19:37	05:38 09:34-09:43/9 20:05	05:29 09:34-09:43/9 20:23
22	07:09 11:29-12:29/60 16:11-16:27/16 17:04 08:06-10:13/127	06:38 09:03-11:09/126 17:39	05:57 08:35-10:32/117 18:08	06:10 09:01-10:32/91 19:38	05:37 09:35-09:44/8 20:06	05:30 09:35-09:44/8 20:24
23	07:09 11:31-12:26/55 16:13-16:29/16 17:05 08:06-10:15/129	06:37 09:03-11:09/126 17:40	05:55 08:33-10:29/116 18:09	06:09 09:02-10:31/89 19:39	05:37 09:36-09:45/7 20:07	05:30 09:36-09:45/7 20:24
24	07:08 11:35-12:25/50 16:17-16:28/11 17:06 08:07-10:20/133	06:36 09:02-11:09/127 17:41	05:54 08:31-10:26/115 18:10	06:07 09:02-10:29/87 19:40	05:36 09:37-09:46/6 20:07	05:30 09:37-09:46/6 20:24
25	07:07 11:37-12:22/45 16:19-16:26/7 17:07 08:07-10:27/140	06:34 09:03-11:09/126 17:42	05:52 08:28-10:22/114 18:11	06:06 09:02-10:27/85 19:41	05:35 09:38-09:47/5 20:08	05:30 09:38-09:47/5 20:24
26	07:07 11:41-12:18/37 17:08 08:08-10:31/143	06:33 09:02-11:08/126 17:43	05:50 08:26-10:18/112 18:12	06:05 09:03-10:26/83 19:42	05:35 09:39-09:48/4 20:09	05:31 09:39-09:48/4 20:24
27	07:06 11:47-12:14/27 16:29-16:31/2 17:09 08:09-10:35/146	06:32 09:03-11:09/126 17:44	05:49 08:24-10:15/111 18:13	06:03 09:04-10:25/81 19:43	05:34 09:40-09:49/3 20:10	05:31 09:40-09:49/3 20:24
28	07:05 11:58-12:03/5 16:30-16:34/4 17:10 08:09-10:38/149	06:30 09:03-11:09/126 17:45	05:47 08:22-10:11/109 18:14	06:02 09:04-10:22/78 19:44	05:34 09:41-09:50/2 20:11	05:31 09:41-09:50/2 20:24
29	07:04 08:10-10:40/150 17:12 16:30-16:35/5		06:46 09:20-11:08/108 19:15	06:01 09:04-10:21/77 19:44	05:33 09:42-09:51/1 20:11	05:32 09:42-09:51/1 20:24
30	07:04 08:11-10:43/152 17:13 16:31-16:37/6		06:44 09:17-11:07/110 19:16	05:59 09:05-10:20/75 19:45	05:33 09:43-09:52/0 20:12	05:32 09:43-09:52/0 20:24
31	07:03 08:12-10:45/153 17:14 16:31-16:39/8		06:43 09:16-11:06/110 19:17		05:32 09:44-09:53/0 20:13	
Potential sun hours	303	300	370	396	443	445
Sum of minutes with flicker	6046	4029	3641	3009	932	0

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 8 - WTG 2B

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December	
1	05:33 20:24	05:55 09:26-10:12/46 20:07	06:23 08:59-10:50/111 19:27	06:50 09:35-11:35/120 18:39	06:21 08:05-10:30/145 16:55	06:53 10:56-12:19/83 15:51-15:53/2 16:33 07:46-09:30/104 15:37-15:49/12	
2	05:33 20:24	05:56 09:25-10:14/49 20:06	06:24 08:59-10:51/112 19:25	06:51 09:37-11:36/119 18:37	06:22 08:04-10:29/145 16:54 16:15-16:24/9	06:54 10:55-12:20/85 15:52-15:53/1 16:33 07:47-09:30/103 15:36-15:49/13	
3	05:34 20:24	05:57 09:24-10:15/51 20:05	06:25 08:59-10:52/113 19:24	06:52 09:38-11:37/119 18:36	06:23 08:03-10:27/144 16:53 16:13-16:23/10	06:55 10:55-12:21/86 15:36-15:51/15 16:33 07:48-09:30/102	
4	05:34 20:24	05:57 09:23-10:17/54 20:04	06:25 08:57-10:52/115 19:22	06:53 09:40-11:38/118 18:34	06:24 08:03-10:26/143 16:52 16:08-16:21/13	06:56 10:55-12:22/87 15:36-15:52/16 16:33 07:48-09:31/103	
5	05:35 20:24	05:58 09:21-10:17/56 20:03	06:26 08:57-10:53/116 19:21	06:54 09:42-11:39/117 18:33	06:25 08:02-10:25/143 16:51 16:05-16:19/14	06:57 10:55-12:23/88 15:36-15:52/16 16:33 07:49-09:31/102	
6	05:38 20:23	05:59 09:20-10:19/59 20:02	06:27 08:58-10:54/116 19:19	06:54 09:43-11:40/117 18:31	06:26 08:03-10:24/141 16:04-16:17/13 16:50 07:52-08:02/10	06:58 10:55-12:24/89 15:36-15:53/17 16:33 07:50-09:31/101	
7	05:36 20:23	06:00 09:19-10:20/61 20:01	06:28 09:00-10:55/115 19:17	06:55 09:42-11:40/118 18:30	06:28 07:48-10:23/155 16:49 16:04-16:16/12	06:59 10:55-12:25/90 15:36-15:54/18 16:33 07:51-09:32/101	
8	05:36 20:23	06:01 09:18-10:22/64 19:59	06:29 09:01-10:56/115 19:16	06:56 09:41-11:41/120 18:28	06:29 07:46-10:21/155 16:48 16:03-16:17/14	07:00 10:56-12:26/90 15:36-15:54/18 16:33 07:52-09:32/100	
9	05:37 20:23	06:02 09:17-10:23/66 19:58	06:30 09:03-10:57/114 19:14	06:57 09:40-11:41/121 18:27	06:30 07:45-10:19/154 16:47 16:02-16:15/13	07:01 10:56-12:26/90 15:36-15:54/18 16:33 07:53-09:33/100	
10	05:38 20:22	06:03 09:16-10:25/69 19:57	06:31 09:03-10:56/113 19:13	06:58 09:39-11:41/122 18:25	06:31 07:44-10:17/153 16:02-16:11/9 16:46 16:12-16:14/2	07:02 10:55-12:26/91 15:36-15:53/17 16:33 07:53-09:32/99	
11	05:38 20:22	06:04 09:15-10:26/71 19:56	06:32 09:05-10:57/112 19:11	06:59 09:38-11:42/124 18:24	06:32 07:44-10:15/151 16:45 16:02-16:10/8	07:03 10:56-12:27/91 15:36-15:53/17 16:33 07:54-09:33/99	
12	05:39 20:21	06:05 09:15-10:27/72 19:55	06:33 09:07-10:57/110 19:09	07:00 09:37-11:42/125 18:22	06:33 07:43-10:14/151 16:44 16:03-16:09/6	07:03 10:56-12:28/92 15:37-15:53/16 16:33 07:55-09:33/98	
13	05:40 20:21	06:06 09:13-10:28/75 19:53	06:33 09:08-10:58/110 19:08	07:01 09:36-11:42/126 18:21	06:34 07:42-10:12/150 16:43 16:02-16:07/5	07:04 10:57-12:29/92 15:37-15:53/16 16:33 07:56-09:34/98	
14	05:40 20:20	06:06 09:12-10:29/77 19:52	06:34 09:10-10:58/108 19:06	07:02 09:36-11:41/125 18:19	06:35 11:28-11:36/8 16:02-16:06/4 16:43 07:41-10:10/149	07:05 10:56-12:29/93 15:37-15:53/16 16:33 07:56-09:34/98	
15	05:41 20:20	06:07 09:11-10:30/79 19:51	06:35 09:11-11:00/109 19:05	07:03 09:35-11:41/126 18:18	06:36 11:19-11:46/27 16:02-16:04/2 16:42 07:41-10:07/146	07:06 10:57-12:30/93 15:38-15:53/15 16:33 07:57-09:34/97	
16	05:42 20:19	06:08 09:11-10:32/81 19:50	06:36 09:13-11:04/111 19:03	07:04 09:35-11:41/126 18:16	06:37 11:14-11:51/37 16:41 07:41-10:04/143	07:06 10:57-12:31/94 15:38-15:53/15 16:34 07:58-09:35/97	
17	05:42 20:19	06:09 09:10-10:33/83 19:48	06:37 09:15-11:07/112 19:01	07:05 09:34-11:41/127 18:15	06:39 11:11-11:56/45 15:53-16:00/7 16:40 07:41-10:01/140	07:07 10:57-12:31/94 15:24-15:28/4 16:34 07:58-09:35/97 15:38-15:53/15	
18	05:43 20:18	06:10 09:09-10:34/85 19:47	06:38 09:15-11:09/114 19:00	07:06 09:34-11:40/126 18:13	06:40 11:08-11:59/51 15:51-16:02/11 16:40 07:41-09:54/133	07:08 10:58-12:32/94 15:25-15:30/5 16:34 08:00-09:36/96 15:39-15:54/15	
19	05:44 20:18	06:11 09:08-10:36/88 19:45	06:39 09:17-11:12/115 18:58	07:07 09:33-11:40/127 18:12	06:41 11:06-12:01/55 15:48-16:04/16 16:39 07:41-09:50/129	07:08 10:59-12:33/94 15:25-15:31/6 16:35 08:01-09:37/96 15:40-15:54/14	
20	05:45 20:17	06:12 09:07-10:36/89 19:44	06:40 09:19-11:14/115 18:57	07:08 09:33-11:39/126 18:11	06:42 11:04-12:04/60 15:46-16:02/16 16:38 07:41-09:48/127	07:09 10:59-12:32/93 15:25-15:31/6 16:35 08:01-09:36/95 15:40-15:54/14	
21	05:45 20:16	06:13 09:06-10:37/91 19:43	06:41 09:20-11:17/117 18:55	07:09 09:33-11:38/125 18:09	06:43 11:03-12:06/63 15:45-16:01/16 16:38 07:41-09:45/124	07:09 11:00-12:33/93 15:25-15:33/8 16:36 08:02-09:37/95 15:41-15:55/14	
22	05:46 20:16	06:14 09:06-10:39/93 19:41	06:41 09:22-11:19/117 18:53	07:10 09:22-11:38/136 18:08	06:44 11:01-12:07/66 15:44-16:00/16 16:37 07:41-09:43/122	07:10 11:00-12:33/93 15:25-15:33/8 16:36 08:02-09:37/95 15:41-15:55/14	
23	05:47 20:15	06:15 09:05-10:40/95 19:40	06:42 09:23-11:22/119 18:52	07:11 09:17-11:37/140 18:07	06:45 11:00-12:09/69 15:43-15:59/16 16:36 07:42-09:39/117	07:10 11:01-12:34/93 15:26-15:33/7 16:37 08:03-09:38/95 15:41-15:55/14	
24	05:48 20:14	06:16 09:04-10:41/97 19:39	06:43 09:25-11:24/119 18:50	07:12 09:15-11:37/142 18:05	06:46 11:00-12:11/71 15:44-15:59/15 16:36 07:43-09:38/115	07:11 11:01-12:34/93 15:27-15:33/6 16:37 08:03-09:38/95 15:42-15:56/14	
25	05:49 20:13	06:16 09:04-10:43/99 19:37	06:44 09:27-11:26/119 18:49	06:13 08:13-10:36/143 17:04	06:47 10:59-12:13/74 15:43-15:58/15 16:35 07:43-09:36/113	07:11 11:01-12:35/94 15:27-15:33/6 16:38 08:03-09:39/96 15:42-15:56/14	
26	05:50 20:12	06:17 09:03-10:44/101 19:36	06:45 09:27-11:27/120 18:47	06:14 08:11-10:36/145 17:03	06:48 10:58-12:14/76 15:43-15:57/14 16:35 07:43-09:34/111	07:12 11:02-12:36/94 15:29-15:34/5 16:38 08:03-09:40/97 15:43-15:58/15	
27	05:50 20:12	06:18 09:03-10:45/102 19:34	06:46 09:29-11:29/120 18:45	06:16 08:10-10:35/145 17:01	06:49 10:57-12:15/78 15:43-15:56/13 16:35 07:44-09:31/107	07:12 11:02-12:36/94 15:31-15:32/1 16:39 08:03-09:40/97 15:43-15:58/15	
28	05:51 20:11	06:19 09:01-10:45/104 19:33	06:47 09:30-11:31/121 18:44	06:17 08:08-10:34/146 17:00	06:50 10:57-12:16/79 15:43-15:55/12 16:34 07:44-09:29/105	07:12 11:03-12:36/93 15:44-15:59/15 16:40 08:03-09:40/97	
29	05:52 20:10	06:20 09:01-10:46/105 19:31	06:48 09:32-11:32/120 18:42	06:18 08:07-10:33/146 16:59	06:51 10:56-12:17/81 15:40-15:54/14 16:34 07:45-09:29/104	07:13 11:03-12:36/93 15:44-15:59/15 16:40 08:03-09:41/98	
30	05:53 20:09	06:21 09:00-10:48/108 19:30	06:49 09:34-11:34/120 18:41	06:19 08:06-10:31/145 16:58	06:52 10:56-12:18/82 15:51-15:54/3 16:58	07:13 11:04-12:37/93 15:45-16:01/16 16:41 08:04-09:42/98	
31	05:54 20:08	06:22 09:00-10:49/109 19:28		06:20 08:06-10:31/145 16:57	16:34 07:46-09:29/103 15:38-15:50/12	07:13 11:05-12:37/92 15:46-16:02/16 16:42 08:04-09:42/98	
	Potential sun hours Sum of minutes with flicker	453 240	424 2479	374 3448	347 4007	303 5380	294 6421

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

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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## SHADOW - Calendar per WTG

WTG: 9 - WTG 6

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:13 12:24-14:15/111 16:43 09:16-09:58/42	07:02 13:20-13:54/34 17:15	06:29 17:46	06:41 07:18-07:40/22 19:17	05:58 19:21-19:24/3 19:46	05:32 20:14
2	07:14 12:25-14:15/110 16:44 09:16-09:58/42	07:01 13:23-13:51/28 17:16	06:27 17:48	06:39 07:17-07:39/22 19:18	05:57 19:22-19:25/3 19:47	05:31 20:14
3	07:14 12:26-14:16/110 16:44 09:17-09:58/41	07:00 13:27-13:48/21 17:17	06:26 17:49	06:38 07:16-07:39/23 19:19	05:56 19:22-19:26/4 19:48	05:31 20:15
4	07:14 12:27-14:16/109 16:45 09:18-09:58/40	06:59 13:34-13:42/8 17:19	06:24 17:50	06:36 07:14-07:38/24 19:20	05:55 19:24-19:27/3 19:49	05:30 20:16
5	07:14 12:27-14:16/109 16:46 09:18-09:59/41	06:58 17:20	06:23 17:51	06:35 07:13-07:37/24 19:21	05:53 19:26-19:28/2 19:50	05:30 20:16
6	07:14 12:28-14:16/108 16:47 09:19-09:59/40	06:57 17:21	06:21 17:52	06:33 07:12-07:35/23 19:22	05:52 19:51	05:30 20:17
7	07:14 12:29-14:17/108 16:48 09:20-09:59/39	06:56 17:22	06:20 17:53	06:32 07:11-07:33/22 19:23	05:51 19:52	05:30 20:17
8	07:14 12:31-14:17/106 16:49 09:21-09:59/38	06:55 17:23	06:18 17:54	06:30 07:09-07:31/22 19:24	05:50 19:53	05:29 20:18
9	07:14 12:31-14:16/105 16:50 09:20-09:58/38	06:54 17:24	06:17 17:55	06:29 07:08-07:31/23 19:25	05:49 19:54	05:29 20:19
10	07:13 12:32-14:16/104 16:51 09:21-09:58/37	06:53 17:25	06:15 17:56	06:27 07:07-07:30/23 19:26	05:48 19:55	05:29 20:19
11	07:13 12:34-14:17/103 16:52 09:22-09:59/37	06:52 17:27	06:14 17:57	06:26 07:06-07:29/23 19:27	05:47 19:56	05:29 20:20
12	07:13 12:35-14:17/102 16:53 09:24-09:59/35	06:51 17:28	06:12 17:58	06:24 07:05-07:28/23 19:28	05:46 19:57	05:29 20:20
13	07:13 12:36-14:16/100 16:54 09:24-09:58/34	06:50 17:29	06:11 17:59	06:23 07:06-07:27/21 19:29	05:45 19:58	05:29 20:21
14	07:13 12:38-14:16/98 16:55 09:25-09:58/33	06:48 17:30	06:09 18:00	06:21 07:05-07:25/20 19:30	05:44 19:59	05:29 20:21
15	07:12 12:40-14:16/96 16:56 09:27-09:58/31	06:47 17:31	06:08 18:01	06:20 07:06-07:25/19 19:31	05:43 20:00	05:29 20:21
16	07:12 12:41-14:15/94 16:57 09:27-09:56/29	06:46 17:32	06:06 18:02	06:18 07:06-07:23/17 19:32	05:42 20:00	05:29 20:22
17	07:12 12:43-14:15/92 16:58 09:29-09:56/27	06:45 17:33	06:05 18:03	06:17 07:07-07:22/15 19:33	05:41 20:01	05:29 20:22
18	07:11 12:45-14:14/89 16:59 09:30-09:55/25	06:44 17:35	06:03 18:04	06:15 07:09-07:21/12 19:34	05:40 20:02	05:29 20:22
19	07:11 12:48-14:14/86 17:00 09:32-09:54/22	06:42 17:36	06:01 18:05	06:14 07:11-07:17/6 19:35	05:40 20:03	05:29 20:23
20	07:10 12:51-14:12/81 17:01 09:33-09:52/19	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23
21	07:10 12:57-14:12/75 17:02 09:37-09:50/13	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23
22	07:09 13:04-14:10/66 17:04 09:42-09:45/3	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:24
23	07:09 13:04-14:07/63 17:05	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24
24	07:08 13:06-14:04/58 17:06	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24
25	07:07 13:07-14:01/54 17:07	06:34 17:42	05:52 06:27-06:36/9 18:11	06:06 19:41	05:35 20:08	05:30 20:24
26	07:07 13:08-14:00/52 17:08	06:33 17:43	05:50 06:23-06:38/15 18:12	06:04 19:19-19:20/1 19:42	05:35 20:09	05:31 20:24
27	07:06 13:10-13:59/49 17:09	06:31 17:44	05:49 06:22-06:40/18 18:13	06:03 19:19-19:21/2 19:42	05:34 20:10	05:31 20:24
28	07:05 13:12-13:59/47 17:10	06:30 17:45	05:47 06:20-06:41/21 18:14	06:02 19:19-19:21/2 19:43	05:34 20:11	05:31 20:24
29	07:04 13:14-13:58/44 17:12		06:46 07:20-07:41/21 19:15	06:01 19:19-19:22/3 19:44	05:33 20:11	05:32 20:24
30	07:04 13:16-13:57/41 17:13		06:44 07:19-07:41/22 19:15	05:59 19:20-19:23/3 19:45	05:32 20:12	05:32 20:24
31	07:03 13:18-13:55/37 17:14		06:43 07:19-07:41/22 19:16		05:32 20:13	
Potential sun hours	303	300	370	396	443	445
Sum of minutes with flicker	3313	91	129	395	15	0

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

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

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 9 - WTG 6

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:33 20:24	05:55 20:07	06:23 07:05-07:28/23 19:27	06:50 18:39	06:21 16:55	06:53 12:16-13:59/103 16:33 09:05-09:41/36
2	05:33 20:24	05:56 20:06	06:24 07:06-07:29/23 19:25	06:51 18:37	06:22 16:54	06:54 12:15-13:59/104 16:33 09:04-09:41/37
3	05:33 20:24	05:56 20:05	06:24 07:06-07:29/23 19:24	06:52 18:36	06:23 16:53	06:55 12:15-14:00/105 16:33 09:04-09:42/38
4	05:34 20:24	05:57 20:04	06:25 07:06-07:28/22 19:22	06:52 18:34	06:24 16:52	06:56 12:15-14:01/106 16:33 09:05-09:43/38
5	05:35 20:24	05:58 20:03	06:26 07:07-07:29/22 19:20	06:53 18:33	06:25 16:51	06:57 12:15-14:02/107 16:33 09:05-09:44/39
6	05:35 20:23	05:59 20:02	06:27 07:08-07:31/23 19:19	06:54 18:31	06:26 16:50	06:58 12:15-14:02/107 16:33 09:05-09:45/40
7	05:36 20:23	06:00 20:00	06:28 07:08-07:32/24 19:17	06:55 18:30	06:27 13:04-13:14/10 16:49	06:59 12:15-14:03/108 16:32 09:05-09:46/41
8	05:36 20:23	06:01 19:35-19:37/2 19:59	06:29 07:09-07:33/24 19:16	06:56 18:28	06:29 12:58-13:20/22 16:48	07:00 12:15-14:04/109 16:32 09:06-09:46/40
9	05:37 20:22	06:02 19:33-19:36/3 19:58	06:30 07:10-07:33/23 19:14	06:57 18:27	06:30 12:54-13:22/28 16:47	07:01 12:14-14:04/110 16:32 09:06-09:47/41
10	05:37 20:22	06:03 19:32-19:35/3 19:57	06:31 07:11-07:33/22 19:13	06:58 18:25	06:31 12:51-13:25/34 16:46	07:02 12:14-14:04/110 16:33 09:05-09:47/42
11	05:38 20:22	06:04 19:30-19:34/4 19:56	06:32 07:10-07:33/23 19:11	06:59 18:24	06:32 12:48-13:26/38 16:45	07:02 12:14-14:05/111 16:33 09:06-09:48/42
12	05:39 20:21	06:05 19:29-19:32/3 19:55	06:32 07:10-07:32/22 19:09	07:00 18:22	06:33 12:47-13:29/42 16:44	07:03 12:15-14:06/111 16:33 09:07-09:49/42
13	05:39 20:21	06:05 19:28-19:31/3 19:53	06:33 07:10-07:32/22 19:08	07:01 18:21	06:34 12:46-13:30/44 16:43	07:04 12:15-14:07/112 16:33 09:07-09:49/42
14	05:40 20:20	06:06 19:27-19:30/3 19:52	06:34 07:10-07:31/21 19:06	07:02 18:19	06:35 12:44-13:31/47 16:42	07:05 12:15-14:07/112 16:33 09:07-09:49/42
15	05:41 20:20	06:07 19:27-19:29/2 19:51	06:35 07:10-07:31/21 19:05	07:03 18:18	06:36 12:43-13:32/49 16:42	07:05 12:15-14:08/113 16:33 09:07-09:50/43
16	05:42 20:19	06:08 19:26-19:27/1 19:49	06:36 07:11-07:29/18 19:03	07:04 18:16	06:37 12:41-13:33/52 16:41	07:06 12:16-14:08/112 16:34 09:08-09:51/43
17	05:42 20:19	06:09 19:48	06:37 07:12-07:28/16 19:01	07:05 18:15	06:39 12:40-13:34/54 16:40	07:07 12:16-14:08/112 16:34 09:08-09:51/43
18	05:43 20:18	06:10 19:47	06:38 07:13-07:24/11 19:00	07:06 18:13	06:40 12:40-13:38/58 16:39	07:08 12:17-14:09/112 16:34 09:09-09:52/43
19	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 12:39-13:42/63 16:39	07:08 12:17-14:10/113 16:35 09:10-09:53/43
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 12:39-13:45/66 16:38 09:17-09:20/3	07:09 12:17-14:10/113 16:35 09:10-09:53/43
21	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 12:32-13:47/75 16:38 09:12-09:25/13	07:09 12:18-14:11/113 16:36 09:11-09:53/42
22	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 12:27-13:48/81 16:37 09:10-09:28/18	07:10 12:18-14:11/113 16:36 09:11-09:53/42
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 12:24-13:50/86 16:36 09:08-09:30/22	07:10 12:18-14:11/113 16:37 09:12-09:55/43
24	05:48 20:14	06:15 07:14-07:21/7 19:38	06:43 18:50	07:12 18:05	06:46 12:23-13:52/89 16:36 09:08-09:33/25	07:11 12:19-14:12/113 16:37 09:12-09:55/43
25	05:49 20:13	06:16 07:11-07:24/13 19:37	06:44 18:49	07:13 17:04	06:47 12:21-13:53/92 16:35 09:07-09:34/27	07:11 12:20-14:12/112 16:38 09:12-09:55/43
26	05:50 20:12	06:17 07:10-07:25/15 19:36	06:45 18:47	07:14 17:03	06:48 12:20-13:54/94 16:35 09:06-09:35/29	07:12 12:21-14:13/112 16:38 09:13-09:56/43
27	05:50 20:12	06:18 07:09-07:26/17 19:34	06:46 18:45	07:15 17:01	06:49 12:19-13:55/96 16:35 09:06-09:37/31	07:12 12:21-14:13/112 16:39 09:13-09:56/43
28	05:51 20:11	06:19 07:07-07:26/19 19:33	06:47 18:44	07:16 17:00	06:50 12:18-13:56/98 16:34 09:05-09:38/33	07:12 12:21-14:13/112 16:40 09:13-09:56/43
29	05:52 20:10	06:20 07:06-07:26/20 19:31	06:48 18:42	07:17 16:59	06:51 12:17-13:57/100 16:34 09:05-09:39/34	07:13 12:22-14:14/112 16:40 09:14-09:56/42
30	05:53 20:09	06:21 07:06-07:27/21 19:30	06:49 18:41	07:18 16:58	06:52 12:16-13:58/102 16:34 09:05-09:40/35	07:13 12:23-14:15/112 16:41 09:15-09:57/42
31	05:54 20:08	06:22 07:05-07:28/23 19:28		06:20 16:56		07:13 12:24-14:15/111 16:42 09:15-09:57/42
Potential sun hours	453	424	374	347	303	294
Sum of minutes with flicker	0	159	384	0	1790	4711

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

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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## SHADOW - Calendar per WTG

WTG: 10 - WTG 5

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:13 13:09-14:08/59 16:43 14:20-15:53/93	07:02 15:22-16:31/69 17:15	06:29 16:14-17:03/49 17:47	06:41 07:19-07:34/15 19:17 07:41-07:48/7	05:58 06:45-07:26/41 19:46	05:32 06:36-07:05/29 20:14
2	07:14 13:09-14:08/59 16:44 14:21-15:54/93	07:01 15:23-16:33/70 17:16	06:27 16:16-17:03/47 17:48	06:39 07:16-07:35/19 19:18	05:57 06:44-07:25/41 19:47	05:31 06:37-07:05/28 20:14
3	07:14 13:10-14:09/59 16:44 14:22-15:54/92	07:00 15:24-16:37/73 17:17	06:26 16:17-17:02/45 17:49	06:38 07:15-07:37/22 19:19	05:56 06:42-07:24/42 19:48	05:31 06:38-07:05/27 20:15
4	07:14 13:11-14:09/58 16:45 14:23-15:55/92	06:59 15:25-16:39/74 17:19	06:24 16:19-17:02/43 17:50	06:36 07:13-07:37/24 19:20	05:55 06:41-07:24/43 19:49	05:30 06:38-07:05/27 20:16
5	07:14 13:11-14:09/58 16:46 14:24-15:55/91	06:58 15:26-16:40/74 17:20	06:23 16:22-17:01/39 17:51	06:35 07:13-07:38/25 19:21	05:53 06:40-07:23/43 19:50	05:30 06:39-07:05/26 20:16
6	07:14 13:12-14:10/58 16:47 14:26-15:56/90	06:57 15:27-16:42/75 17:21	06:21 16:27-17:01/34 17:52	06:33 07:12-07:37/25 19:22	05:52 06:40-07:22/42 19:51	05:30 06:40-07:04/24 20:17
7	07:14 13:13-14:10/57 14:45-15:56/71 16:48 14:28-14:44/16	06:56 15:29-16:43/74 17:22	06:20 16:27-16:59/32 17:53	06:32 07:12-07:38/26 19:23 07:39-07:40/1	05:51 06:38-07:22/44 19:52	05:30 06:40-07:04/24 20:17
8	07:14 13:14-14:10/56 14:45-15:57/72 16:49 14:30-14:43/13	06:55 15:30-16:44/74 17:23	06:18 16:28-16:59/31 17:54	06:30 07:11-07:39/28 19:24	05:50 06:37-07:21/44 19:53	05:29 06:40-07:03/23 20:18
9	07:14 13:14-14:09/55 14:33-14:40/7 16:50 14:45-15:56/71	06:54 15:32-16:45/73 17:24	06:17 16:28-16:57/29 17:55	06:29 07:11-07:40/29 19:25	05:49 06:36-07:20/44 19:54	05:29 06:41-07:03/22 20:19
10	07:14 13:15-14:10/55 16:51 14:46-15:58/72	06:53 16:14-16:46/32 17:26 15:35-16:13/38	06:15 16:30-16:56/26 17:56	06:27 07:10-07:39/29 19:26	05:48 06:35-07:19/44 19:55	05:29 06:42-07:03/21 20:19
11	07:13 13:16-14:10/54 16:13-16:15/2 16:52 14:46-16:02/76	06:52 16:14-16:46/32 15:39-15:49/10 17:27 15:52-16:11/19	06:14 16:31-16:53/22 17:57	06:26 07:07-07:39/32 19:27	05:47 06:35-07:18/43 19:56	05:29 06:42-07:03/21 20:20
12	07:13 13:18-14:10/52 16:11-16:19/8 16:53 14:47-16:04/77	06:51 16:14-16:53/39 17:28 15:55-16:05/10	06:12 16:33-16:50/17 17:58	06:24 07:05-07:38/33 19:28	05:46 06:34-07:17/43 19:57	05:29 06:43-07:03/20 20:20
13	07:13 13:18-14:09/51 16:09-16:21/12 16:54 14:47-16:06/79	06:50 16:13-16:55/42 17:29	06:11 16:37-16:47/10 17:59 06:44-06:55/11	06:23 07:05-07:38/33 19:29	05:45 06:33-07:15/42 19:58	05:29 06:43-07:03/20 20:21
14	07:13 13:20-14:10/50 16:55 14:48-16:23/95	06:48 16:13-16:57/44 17:30	06:09 06:41-06:57/16 18:00	06:21 07:04-07:36/32 19:30	05:44 06:33-07:13/40 19:59	05:29 06:44-07:03/19 20:21
15	07:12 13:21-14:10/49 16:56 14:49-16:24/95	06:47 16:13-16:59/46 17:31	06:08 06:40-06:59/19 18:01	06:20 07:01-07:36/35 19:31	05:43 06:34-07:12/38 20:00	05:29 06:45-07:02/17 20:21
16	07:12 13:22-14:09/47 16:57 14:49-16:25/96	06:46 16:13-17:01/48 17:32	06:06 06:39-06:59/20 18:02	06:18 06:57-07:34/37 19:32	05:42 06:33-07:11/38 20:01	05:29 06:45-07:02/17 20:22
17	07:12 13:24-14:09/45 16:58 14:50-16:27/97	06:45 16:12-17:01/49 17:33	06:05 06:38-07:01/23 18:03	06:17 06:55-07:33/38 19:33	05:41 06:33-07:11/38 20:01	05:29 06:45-07:02/17 20:22
18	07:11 13:25-14:08/43 16:59 14:51-16:27/96	06:44 16:11-17:02/51 17:35	06:04 06:36-07:01/25 18:04	06:15 06:54-07:31/37 19:34	05:40 06:32-07:10/38 20:02	05:29 06:46-07:02/16 20:23
19	07:11 13:27-14:08/41 17:00 14:52-16:29/97	06:42 16:11-17:03/52 17:36	06:01 06:34-07:02/28 18:05	06:14 06:52-07:28/36 19:35	05:40 06:32-07:09/37 20:03	05:29 06:46-07:02/16 20:23
20	07:10 13:28-14:07/39 17:01 14:53-16:29/96	06:41 16:12-17:04/52 17:37	06:00 06:32-07:01/29 18:06	06:13 06:51-07:25/34 19:36	05:39 06:33-07:09/36 20:04	05:29 06:47-07:03/16 20:23
21	07:10 13:31-14:06/35 17:02 14:54-16:30/96	06:40 16:11-17:04/53 17:38	05:58 06:30-07:01/31 18:07	06:11 06:49-07:25/36 19:37	05:38 06:33-07:08/35 20:05	05:29 06:47-07:03/16 20:23
22	07:09 13:32-14:05/33 17:04 14:55-16:30/95	06:38 16:11-17:04/53 17:39	05:57 06:30-07:01/31 18:08	06:10 06:49-07:25/36 19:38	05:37 06:33-07:07/34 20:06	05:30 06:47-07:03/16 20:24
23	07:09 13:35-14:03/28 17:05 14:56-16:31/95	06:37 16:12-17:05/53 17:40	05:55 06:29-07:00/31 18:09	06:08 06:48-07:26/38 19:39	05:37 06:33-07:08/35 20:07	05:30 06:47-07:03/16 20:24
24	07:08 13:38-14:01/23 17:06 14:58-16:32/94	06:36 16:11-17:04/53 17:41	05:54 06:29-07:00/31 18:10	06:07 06:47-07:26/39 19:40	05:36 06:33-07:07/34 20:07	05:30 06:48-07:04/16 20:24
25	07:07 13:42-13:58/16 17:07 14:59-16:32/93	06:34 16:12-17:04/52 17:42	05:52 06:28-06:59/31 18:11	06:06 06:46-07:26/40 19:41	05:35 06:34-07:08/34 20:08	05:30 06:47-07:04/17 20:24
26	07:07 15:00-16:32/92 17:08	06:33 16:12-17:03/51 17:43	05:50 06:28-06:58/30 18:12	06:04 06:46-07:26/40 19:42	05:35 06:34-07:07/33 20:09	05:31 06:47-07:04/17 20:24
27	07:06 15:02-16:32/90 17:09	06:32 16:13-17:03/50 17:44	05:49 06:29-06:58/29 18:13	06:03 06:46-07:27/41 19:43	05:34 06:34-07:06/32 20:10	05:31 06:48-07:05/17 20:24
28	07:05 15:05-16:33/88 17:10	06:30 16:13-17:02/49 17:45	05:47 06:29-06:56/27 18:14	06:02 06:45-07:26/41 19:43	05:34 06:35-07:07/32 20:11	05:31 06:47-07:06/19 20:24
29	07:04 15:07-16:32/85 17:12		06:46 07:30-07:56/26 19:15	06:01 06:45-07:26/41 19:44	05:33 06:35-07:06/31 20:11	05:32 06:47-07:06/19 20:24
30	07:04 15:21-16:32/71 17:13 15:12-15:18/6		06:44 07:31-07:53/22 19:16	05:59 06:45-07:26/41 19:45	05:33 06:36-07:06/30 20:12	05:32 06:47-07:07/20 20:24
31	07:03 15:22-16:32/70 17:14		06:43 07:22-07:32/10 19:16 07:34-07:52/18		05:32 06:36-07:06/30 20:13	
Potential sun hours	303	300	370	396	443	445
Sum of minutes with flicker	3954	1634	912	990	1181	603

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

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

WP\_Sambucello\_REV01

Calculated:

6/12/2023 9:36 PM/3.2.744

## SHADOW - Calendar per WTG

WTG: 10 - WTG 5

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

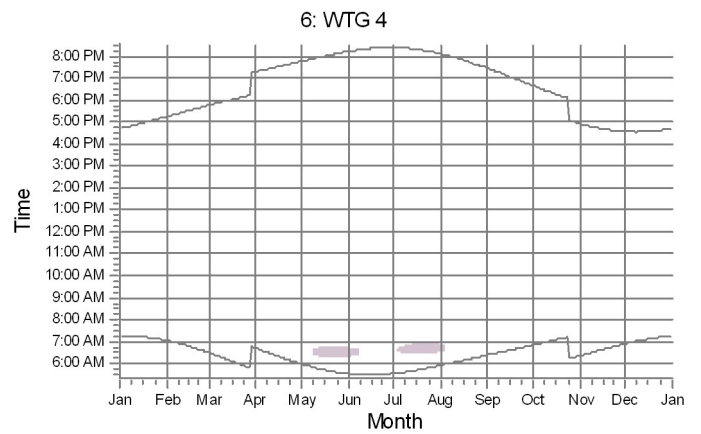
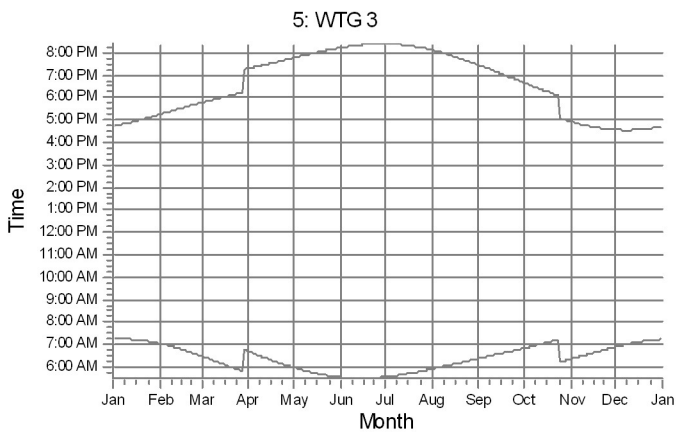
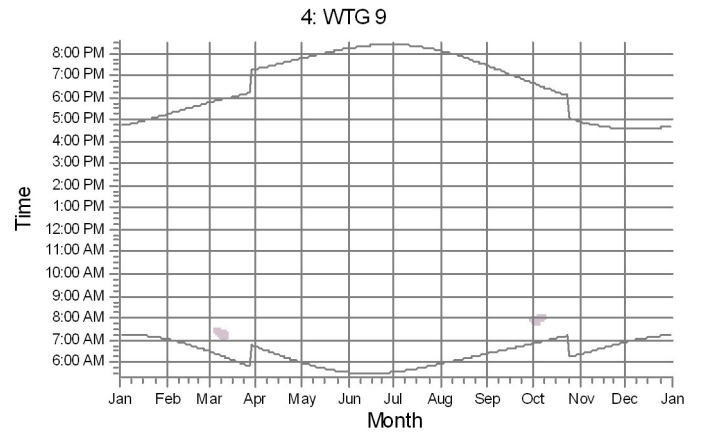
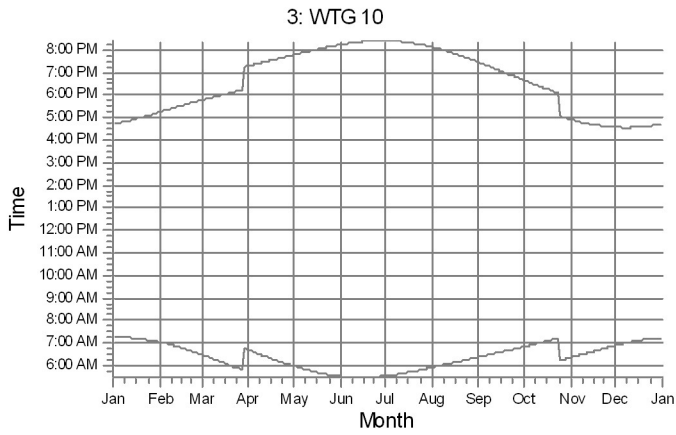
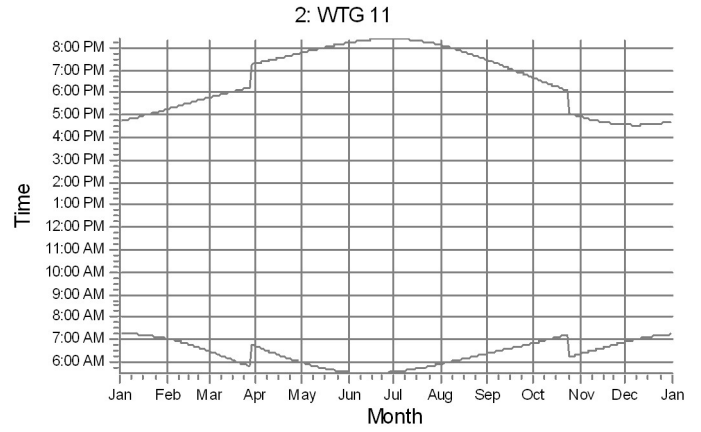
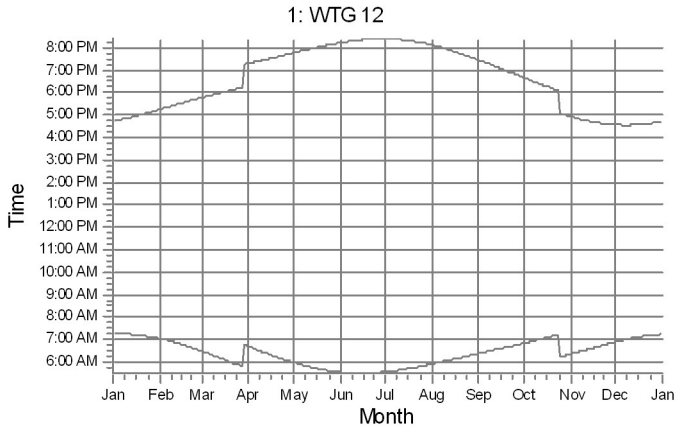
- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December	
1	05:33 06:47-07:07/20 20:24	05:55 06:45-07:28/43 20:07	06:23 07:06-07:38/32 19:27	06:50 17:14-17:29/15 18:39 07:27-07:32/5	06:21 15:04-16:15/71 16:55	06:53 12:59-13:52/53 15:55-15:58/3 16:33 14:28-15:44/76	
2	05:33 06:47-07:08/21 20:24	05:56 06:46-07:29/43 20:06	06:24 07:09-07:38/29 19:25	06:51 17:11-17:31/20 18:37	06:22 15:02-16:15/73 16:54	06:54 12:58-13:53/55 16:33 14:29-15:41/72	
3	05:33 06:46-07:08/22 20:24	05:56 06:46-07:30/44 20:05	06:24 07:09-07:38/29 19:24	06:52 17:08-17:33/25 18:36	06:23 15:00-16:14/74 16:53	06:55 12:58-13:53/55 14:17-14:23/6 16:33 14:29-15:40/71	
4	05:34 06:46-07:09/23 20:24	05:57 06:47-07:31/44 20:04	06:25 07:08-07:36/28 19:22	06:53 17:07-17:34/27 18:34	06:24 14:58-16:13/75 16:52	06:56 12:58-13:54/56 14:14-14:27/13 16:33 14:29-15:41/72	
5	05:35 06:46-07:09/23 20:24	05:58 06:47-07:31/44 20:03	06:26 07:08-07:34/26 19:20	06:53 17:05-17:35/30 18:33	06:25 14:57-16:12/75 16:51	06:57 12:58-13:55/57 14:30-15:41/71 16:33 14:13-14:29/16	
6	05:35 06:46-07:10/24 20:23	05:59 06:48-07:32/44 20:02	06:27 07:08-07:33/25 19:19	06:54 17:04-17:36/32 18:31	06:26 14:56-16:10/74 16:50	06:58 12:58-13:56/58 16:33 14:12-15:42/90	
7	05:36 06:45-07:11/26 20:23	06:00 06:50-07:32/42 20:01	06:28 07:08-07:33/25 19:17	06:55 17:03-17:36/33 18:30	06:27 14:56-16:09/73 16:49	06:59 12:59-13:56/57 16:32 14:12-15:42/90	
8	05:36 06:45-07:12/27 20:23	06:01 06:50-07:33/43 19:59	06:29 07:08-07:32/24 19:16	06:56 16:59-17:36/37 18:28	06:29 14:55-16:07/72 16:48	07:00 12:59-13:57/58 16:32 14:11-15:43/92	
9	05:37 06:45-07:13/28 20:23	06:02 06:51-07:33/42 19:58	06:30 07:09-07:31/22 19:14	06:57 16:55-17:37/42 18:27	06:30 14:54-16:04/70 16:47	07:01 12:59-13:58/59 16:32 14:11-15:42/91	
10	05:37 06:45-07:12/27 20:22	06:03 06:52-07:34/42 19:57	06:31 07:10-07:29/19 19:13	06:58 16:53-17:37/44 18:25	06:31 14:53-16:02/69 16:46	07:02 12:58-13:58/60 16:33 14:10-15:43/93	
11	05:38 06:45-07:13/28 20:22	06:04 06:53-07:34/41 19:56	06:32 07:11-07:26/15 19:11	06:59 16:51-17:37/46 18:24	06:32 14:53-16:03/70 16:45	07:02 12:59-13:58/59 16:33 14:10-15:43/93	
12	05:39 06:44-07:13/29 20:21	06:05 06:54-07:34/40 19:55	06:33 07:13-07:24/11 19:09	07:00 16:49-17:36/47 18:22	06:33 14:53-16:04/71 16:44	07:03 12:59-13:59/60 16:33 14:10-15:44/94	
13	05:39 06:44-07:14/30 20:21	06:06 06:53-07:33/40 19:53	06:33 07:23-07:44/21 19:08	07:01 16:47-17:36/49 18:21	06:34 14:39-16:04/85 16:43	07:04 13:00-14:00/60 16:33 14:10-15:44/94	
14	05:40 06:44-07:15/31 20:20	06:06 06:53-07:34/41 19:52	06:34 07:21-07:46/25 19:06	07:02 16:46-17:36/50 18:19	06:35 14:36-16:05/89 16:42	07:05 12:59-14:00/61 16:33 14:10-15:44/94	
15	05:41 06:44-07:16/32 20:20	06:07 06:53-07:33/40 19:51	06:35 07:19-07:46/27 19:05	07:03 16:45-17:36/51 18:18	06:36 14:35-16:05/90 16:42	07:06 13:00-14:01/61 16:33 14:10-15:45/95	
16	05:42 06:43-07:15/32 20:19	06:08 06:53-07:33/40 19:49	06:36 07:18-07:47/29 19:03	07:04 16:44-17:36/52 18:16	06:37 14:33-16:05/92 16:41	07:06 13:01-14:01/60 16:34 14:10-15:45/95	
17	05:42 06:43-07:16/33 20:19	06:09 06:53-07:33/40 19:48	06:37 07:18-07:47/29 19:01	07:05 16:43-17:36/53 18:15	06:39 13:16-13:32/16 16:40	07:07 13:01-14:01/60 16:34 14:10-15:45/95	
18	05:43 06:44-07:17/33 20:18	06:10 06:53-07:33/40 19:47	06:38 07:16-07:46/30 19:00	07:06 16:43-17:35/52 18:13	06:40 13:12-13:35/23 16:39	07:08 13:01-14:02/61 16:34 14:11-15:46/95	
19	05:44 06:43-07:16/33 20:18	06:11 06:54-07:32/38 19:45	06:39 07:15-07:46/31 18:58	07:07 16:42-17:35/53 18:12	06:41 13:10-13:38/28 16:39	07:08 13:02-14:03/61 16:35 14:12-15:47/95	
20	05:45 06:43-07:17/34 20:17	06:12 06:53-07:31/38 19:44	06:40 07:15-07:46/31 18:57	07:08 16:42-17:35/53 18:11	06:42 13:07-13:40/33 16:38	07:09 13:02-14:03/61 16:35 14:11-15:47/96	
21	05:45 06:43-07:17/34 20:16	06:13 06:53-07:30/37 19:43	06:41 07:15-07:46/31 18:55	07:09 16:41-17:34/53 18:09	06:43 13:06-13:41/35 16:38	07:09 13:03-14:04/61 16:36 14:12-15:48/96	
22	05:46 06:43-07:18/35 20:16	06:14 06:54-07:29/35 19:41	06:41 07:15-07:46/31 18:53	07:10 16:41-17:33/52 18:08	06:44 13:04-13:43/39 16:37	07:10 13:03-14:04/61 16:36 14:12-15:48/96	
23	05:47 06:43-07:19/36 20:15	06:15 06:55-07:29/34 19:40	06:42 07:16-07:46/30 18:52	07:11 16:41-17:33/52 18:07	06:45 13:03-13:44/41 16:36	07:10 13:04-14:05/61 16:37 14:13-15:48/95	
24	05:48 06:43-07:19/36 20:14	06:15 06:56-07:32/36 19:38	06:43 07:17-07:45/28 18:50	07:12 16:42-17:32/50 18:05	06:46 13:03-13:46/43 16:36	07:11 13:04-14:05/61 16:37 14:13-15:49/96	
25	05:49 06:43-07:20/37 20:13	06:16 06:57-07:34/37 19:37	06:44 07:19-07:44/25 18:49	06:13 15:42-16:31/49 17:04	06:47 13:02-13:47/45 16:35	07:11 13:04-14:05/61 16:38 14:14-15:49/95	
26	05:50 06:43-07:21/38 20:12	06:17 06:59-07:36/37 19:36	06:45 07:20-07:43/23 18:47	06:14 15:43-16:30/47 17:03	06:48 13:01-13:48/47 16:35	07:12 13:05-14:06/61 16:38 14:15-15:50/95	
27	05:50 06:43-07:21/38 20:12	06:18 07:00-07:37/37 19:34	06:46 07:20-07:41/21 18:45	06:16 15:43-16:29/46 17:01	06:49 13:00-13:49/49 16:35	07:12 13:06-14:06/60 16:39 14:15-15:50/95	
28	05:51 06:44-07:22/38 20:11	06:19 07:02-07:36/34 19:33	06:47 07:20-07:40/20 18:44	06:17 15:42-16:27/45 17:00	06:50 13:00-13:50/50 16:34	07:12 13:06-14:06/60 16:40 14:16-15:51/95	
29	05:52 06:43-07:23/40 20:10	06:20 07:05-07:37/32 19:31	06:48 07:21-07:38/17 18:42	06:18 15:42-16:24/42 16:59	06:51 12:59-13:50/51 15:50-16:02/12 16:34	07:13 13:06-14:07/61 16:40 14:16-15:51/95	
30	05:53 06:44-07:25/41 20:09	06:21 07:05-07:38/33 19:30	06:49 17:20-17:23/3 18:41	06:19 15:42-16:20/38 16:58	06:52 12:59-13:51/52 15:52-16:00/8 16:34	07:13 13:08-14:08/60 16:41 14:18-15:52/94	
31	05:54 06:44-07:26/42 20:08	06:22 07:05-07:38/33 19:28		06:20 15:43-16:15/32 15:07-15:19/12 16:57		07:13 13:08-14:08/60 16:42 14:19-15:53/94	
	Potential sun hours Sum of minutes with flicker	453 971	424 1214	374 774	347 1365	303 3103	294 4687

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

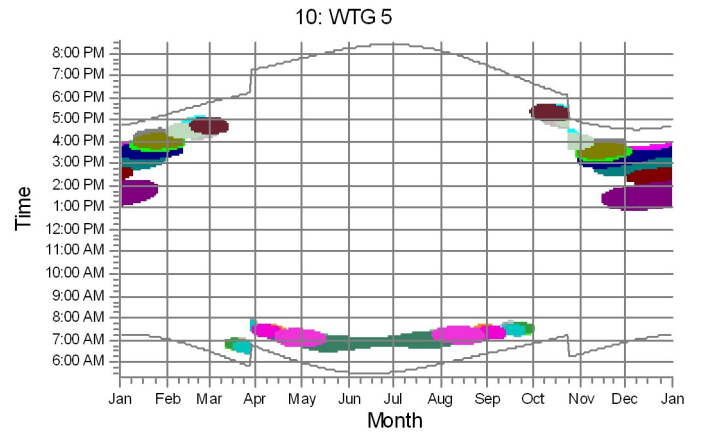
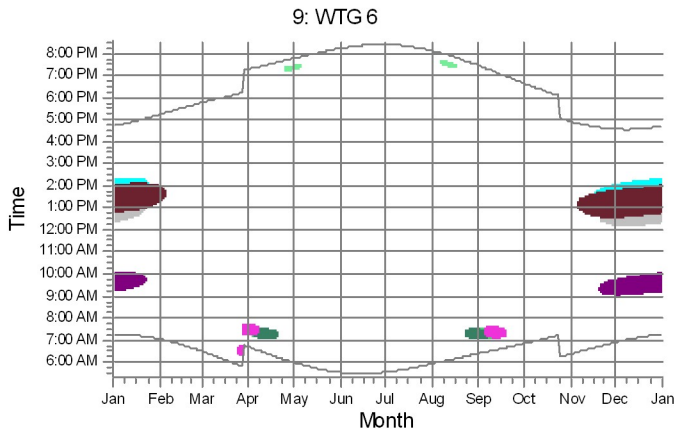
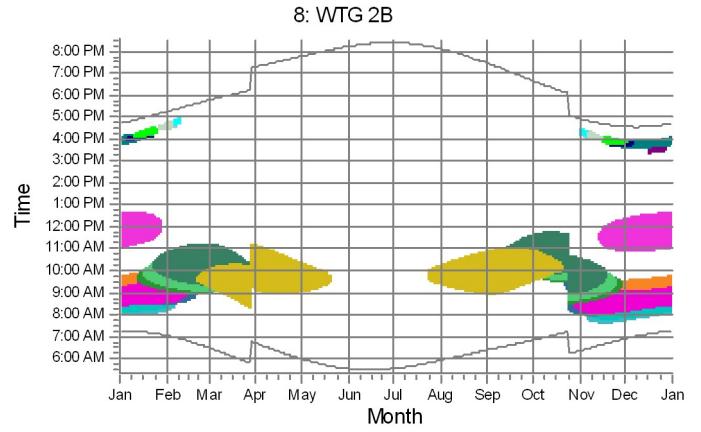
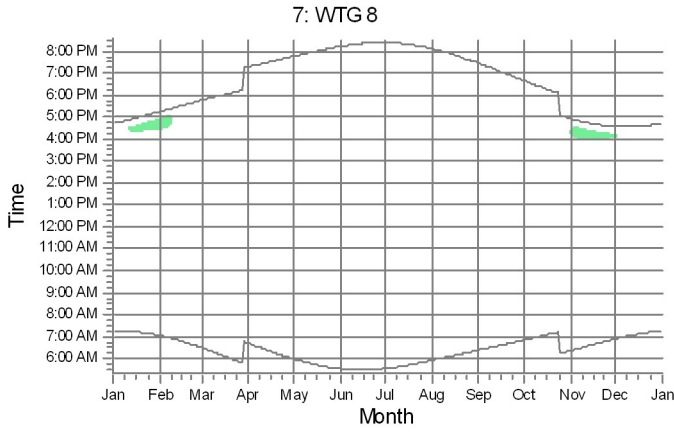
Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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### SHADOW - Calendar per WTG, graphical































Shadow receptors  
Y: 25

### SHADOW - Calendar per WTG, graphical



Shadow receptors

 D: 4	 I: 8	 N: 14	 S: 19	 X: 24	 AD: 30
 E: 5	 J: 9	 O: 15	 T: 20	 Z: 26	 AE: 31
 F: 6	 K: 10	 P: 16	 U: 21	 AA: 27	 AF: 32
 G: 6	 L: 11	 Q: 17	 V: 22	 AB: 28	
 H: 7	 M: 13	 R: 18	 W: 23	 AC: 28	



## **ALLEGATO 4 - SHADOW MAP *WORST CASE***

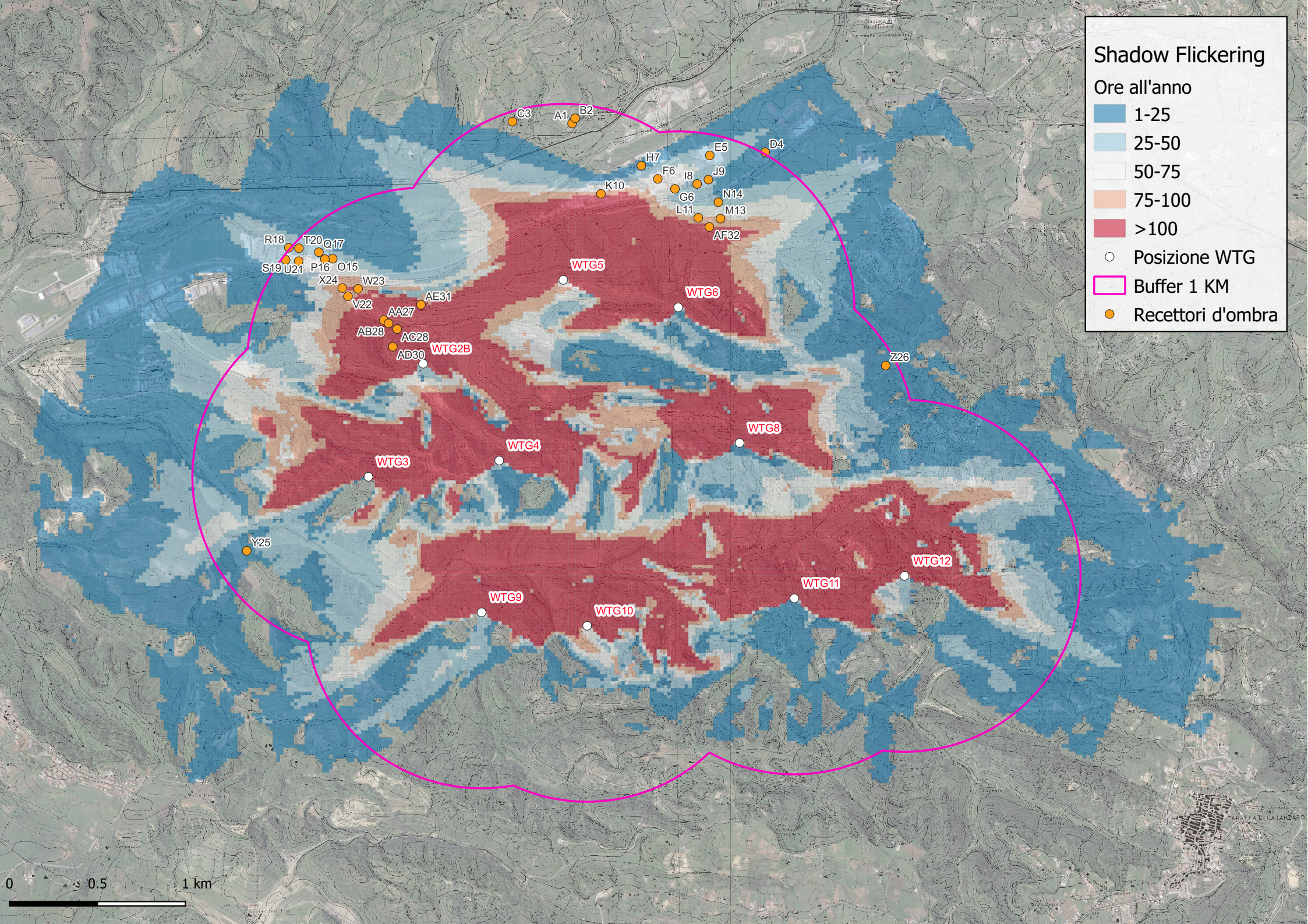


### Shadow Flickering

Ore all'anno

- 1-25
- 25-50
- 50-75
- 75-100
- >100

- Posizione WTG
- Buffer 1 KM
- Recettori d'ombra





## **ALLEGATO 5 - RISULTATI *REAL CASE***

## SHADOW - Main Result

### Assumptions for shadow calculations

Maximum distance for influence  
 Calculate only when more than 20 % of sun is covered by the blade  
 Please look in WTG table

Minimum sun height over horizon for influence 3 °  
 Day step for calculation 1 days  
 Time step for calculation 1 minutes

Sunshine probability S (Average daily sunshine hours) []  
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 3.40 3.90 4.90 6.30 7.50 9.10 10.20 9.60 8.10 6.00 4.50 3.60

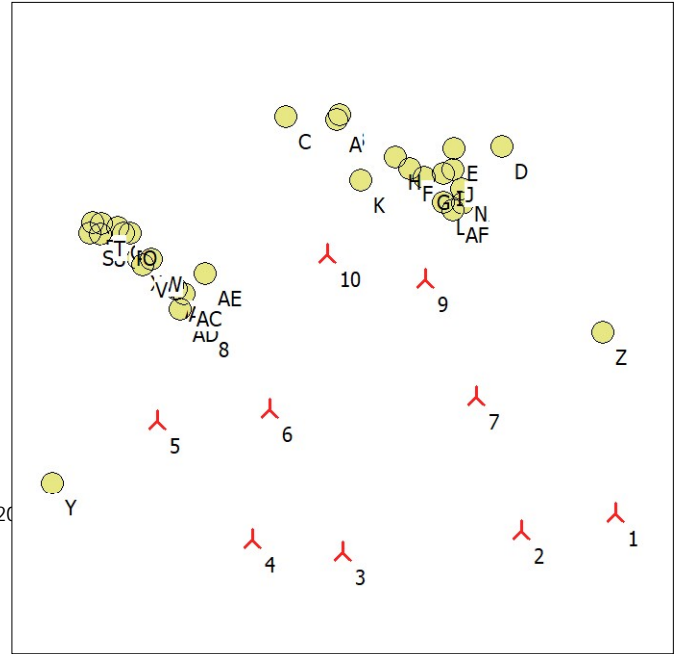
Operational time  
 0 Sum  
 8,760 8,760

A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:  
 Height contours used: Height Contours: CONTOURLINE\_WP\_Sambucello\_2-20  
 Obstacles used in calculation  
 Eye height for map: 1.5 m  
 Grid resolution: 1.0 m  
 Topographic shadow included in calculation

All coordinates are in  
 UTM (north)-WGS84 Zone: 33

### WTGs

WTG	Easting	Northing	Z	Row data/Description	WTG type		Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.					Calculation distance [m]	RPM [RPM]
1	627,259	4,306,067	322.2	WTG 12	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
2	626,633	4,305,939	306.7	WTG 11	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
3	625,456	4,305,784	270.2	WTG 10	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
4	624,856	4,305,860	250.0	WTG 9	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
5	624,213	4,306,630	226.5	WTG 3	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
6	624,957	4,306,723	250.0	WTG 4	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
7	626,322	4,306,823	314.5	WTG 8	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
8	624,524	4,307,273	202.7	WTG 2B	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
9	625,974	4,307,593	284.3	WTG 6	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8
10	625,320	4,307,749	230.0	WTG 5	Yes	Siemens Gamesa	SG 5.0-145 MkII-5,000	5,000	145.0	102.5	1,919	10.8



Scale 1:50,000  
 ▲ New WTG      ● Shadow receptor

### Shadow receptor-Input

No.	Name	Easting	Northing	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
				[m]	[m]	[m]	[m]	[°]	[m]	
A	1	625,370	4,308,638	139.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
B	2	625,388	4,308,668	141.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
C	3	625,031	4,308,649	142.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
D	4	626,468	4,308,475	155.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
E	5	626,153	4,308,456	136.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
F	6	625,857	4,308,323	127.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
G	6	625,955	4,308,267	133.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
H	7	625,764	4,308,398	123.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
I	8	626,081	4,308,294	137.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
J	9	626,145	4,308,319	139.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
K	10	625,534	4,308,238	120.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
L	11	626,087	4,308,102	158.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
M	13	626,214	4,308,097	175.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
N	14	626,202	4,308,190	155.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
O	15	624,010	4,307,869	100.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
P	16	623,966	4,307,867	100.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
Q	17	623,932	4,307,906	100.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

## SHADOW - Main Result

...continued from previous page

No.	Name	Easting	Northing	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
				[m]	[m]	[m]	[m]	[°]		[m]
R 18		623,762	4,307,931	100.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
S 19		623,743	4,307,863	100.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
T 20		623,819	4,307,929	100.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
U 21		623,817	4,307,856	100.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
V 22		624,098	4,307,656	110.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
W 23		624,155	4,307,698	110.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
X 24		624,065	4,307,703	110.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
Y 25		623,522	4,306,209	115.5	1.0	1.0	1.0	90.0	"Green house mode"	2.0
Z 26		627,152	4,307,262	378.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
AA 27		624,300	4,307,521	110.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
AB 28		624,328	4,307,502	111.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
AC 28		624,376	4,307,470	115.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
AD 30		624,352	4,307,369	148.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
AE 31		624,512	4,307,608	160.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
AF 32		626,150	4,308,050	158.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0

## Calculation Results

Shadow receptor

No.	Name	Shadow, worst case		Shadow, expected values	
		Shadow hours per year [h/year]	Shadow days [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
A 1		0:00	0	0:00	0:00
B 2		0:00	0	0:00	0:00
C 3		0:00	0	0:00	0:00
D 4		17:12	52	0:26	3:39
E 5		35:34	74	0:33	8:45
F 6		63:09	80	1:03	17:01
G 6		57:01	104	0:56	13:57
H 7		15:35	38	0:31	4:48
I 8		37:27	71	0:49	8:38
J 9		28:36	64	0:34	6:30
K 10		98:15	70	1:51	32:41
L 11		78:41	130	0:59	24:31
M 13		77:03	129	0:58	22:54
N 14		40:40	98	0:35	10:45
O 15		46:04	92	0:43	11:30
P 16		50:56	99	0:43	12:34
Q 17		41:34	90	0:39	10:05
R 18		45:04	99	0:36	10:18
S 19		50:01	119	0:36	10:41
T 20		43:13	94	0:37	10:08
U 21		55:58	116	0:38	12:34
V 22		99:31	166	0:57	25:11
W 23		91:51	128	1:00	26:20
X 24		93:46	143	0:54	23:11
Y 25		19:36	78	0:22	3:45
Z 26		13:09	76	0:21	2:28
AA 27		164:43	209	1:26	49:10
AB 28		182:14	222	1:33	56:39
AC 28		228:23	262	1:46	77:05
AD 30		222:02	177	1:56	60:20
AE 31		140:58	171	1:34	46:02
AF 32		111:12	140	1:08	35:50

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Worst case [h/year]	Expected [h/year]
1	WTG 12	0:00	0:00
2	WTG 11	0:00	0:00
3	WTG 10	0:00	0:00
4	WTG 9	3:23	0:24

To be continued on next page...



Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

## SHADOW - Main Result

...continued from previous page

No.	Name	Worst case [h/year]	Expected [h/year]
5	WTG 3	0:00	0:00
6	WTG 4	16:13	3:23
7	WTG 8	12:19	2:18
8	WTG 2B	660:32	203:19
9	WTG 6	183:07	57:49
10	WTG 5	356:28	77:31

Total times in Receptor wise and WTG wise tables can differ, as a WTG can lead to flicker at 2 or more receptors simultaneously and/or receptors may receive flicker from 2 or more WTGs simultaneously.

## **ALLEGATO 6 - CALENDARIO *REAL CASE***

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: A - 1

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 17:15	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:14	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33
2	07:14 16:44	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	06:54 16:33
3	07:14 16:44	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	06:55 16:33
4	07:14 16:45	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:30 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33
5	07:14 16:46	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	06:57 16:33
6	07:14 16:47	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33
7	07:14 16:48	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:18	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	06:59 16:32
8	07:14 16:49	06:55 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:32
9	07:14 16:50	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	05:37 20:23	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:32
10	07:14 16:51	06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33
11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:03 16:33
12	07:13 16:53	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:55	06:33 19:09	07:00 18:22	06:33 16:44	07:03 16:33
13	07:13 16:54	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33
14	07:13 16:55	06:49 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:42	07:05 16:33
15	07:12 16:56	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	07:06 16:33
16	07:12 16:57	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:01	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	07:06 16:34
17	07:12 16:58	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	07:07 16:34
18	07:11 16:59	06:44 17:35	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:23	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	07:08 16:34
19	07:11 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35
20	07:10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 16:35
21	07:10 17:02	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	07:09 16:36
22	07:09 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:24	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	07:10 16:36
23	07:09 17:05	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	07:10 16:37
24	07:08 17:06	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	07:11 16:37
25	07:07 17:07	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:35	07:11 16:38
26	07:07 17:08	06:33 17:43	05:50 18:12	06:04 19:42	05:35 20:09	05:31 20:24	05:50 20:12	06:17 19:36	06:45 18:47	06:14 17:03	06:48 16:35	07:12 16:38
27	07:06 17:09	06:32 17:44	05:49 18:13	06:03 19:43	05:34 20:10	05:31 20:24	05:50 20:12	06:18 19:34	06:46 18:45	06:16 17:01	06:49 16:35	07:12 16:39
28	07:05 17:10	06:30 17:45	05:47 18:14	06:02 19:43	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	07:12 16:40
29	07:04 17:12		06:46 19:15	06:01 19:44	05:33 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	07:13 16:40
30	07:04 17:13		06:44 19:16	05:59 19:45	05:32 20:12	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	07:13 16:41
31	07:03 17:14		06:43 19:16		05:32 20:13		05:54 20:08	06:22 19:28		06:20 16:57		07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: B - 2

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13	07:02	06:29	06:41	05:58	05:32	05:33	05:55	06:23	06:50	06:21	06:53
	16:43	17:15	17:46	19:17	19:46	20:14	20:24	20:07	19:27	18:39	16:55	16:33
2	07:14	07:01	06:27	06:39	05:57	05:31	05:33	05:56	06:24	06:51	06:22	06:54
	16:44	17:16	17:48	19:18	19:47	20:14	20:24	20:06	19:25	18:37	16:54	16:33
3	07:14	07:00	06:26	06:38	05:56	05:31	05:33	05:56	06:24	06:52	06:23	06:55
	16:44	17:17	17:49	19:19	19:48	20:15	20:24	20:05	19:24	18:36	16:53	16:33
4	07:14	06:59	06:24	06:36	05:55	05:30	05:34	05:57	06:25	06:53	06:24	06:56
	16:45	17:19	17:50	19:20	19:49	20:16	20:24	20:04	19:22	18:34	16:52	16:33
5	07:14	06:58	06:23	06:35	05:53	05:30	05:34	05:58	06:26	06:53	06:25	06:57
	16:46	17:20	17:51	19:21	19:50	20:16	20:24	20:03	19:20	18:33	16:51	16:33
6	07:14	06:57	06:21	06:33	05:52	05:30	05:35	05:59	06:27	06:54	06:26	06:58
	16:47	17:21	17:52	19:22	19:51	20:17	20:23	20:02	19:19	18:31	16:50	16:33
7	07:14	06:56	06:20	06:32	05:51	05:30	05:36	06:00	06:28	06:55	06:28	06:59
	16:48	17:22	17:53	19:23	19:52	20:18	20:23	20:01	19:17	18:30	16:49	16:32
8	07:14	06:55	06:18	06:30	05:50	05:29	05:36	06:01	06:29	06:56	06:29	07:00
	16:49	17:23	17:54	19:24	19:53	20:18	20:23	19:59	19:16	18:28	16:48	16:32
9	07:14	06:54	06:17	06:29	05:49	05:29	05:37	06:02	06:30	06:57	06:30	07:01
	16:50	17:24	17:55	19:25	19:54	20:19	20:23	19:58	19:14	18:27	16:47	16:32
10	07:14	06:53	06:15	06:27	05:48	05:29	05:37	06:03	06:31	06:58	06:31	07:02
	16:51	17:25	17:56	19:26	19:55	20:19	20:22	19:57	19:13	18:25	16:46	16:33
11	07:13	06:52	06:14	06:26	05:47	05:29	05:38	06:04	06:32	06:59	06:32	07:03
	16:52	17:27	17:57	19:27	19:56	20:20	20:22	19:56	19:11	18:24	16:45	16:33
12	07:13	06:51	06:12	06:24	05:46	05:29	05:39	06:05	06:33	07:00	06:33	07:03
	16:53	17:28	17:58	19:28	19:57	20:20	20:21	19:55	19:09	18:22	16:44	16:33
13	07:13	06:50	06:11	06:23	05:45	05:29	05:39	06:05	06:33	07:01	06:34	07:04
	16:54	17:29	17:59	19:29	19:58	20:21	20:21	19:53	19:08	18:21	16:43	16:33
14	07:13	06:49	06:09	06:21	05:44	05:29	05:40	06:06	06:34	07:02	06:35	07:05
	16:55	17:30	18:00	19:30	19:59	20:21	20:20	19:52	19:06	18:19	16:42	16:33
15	07:12	06:47	06:08	06:20	05:43	05:29	05:41	06:07	06:35	07:03	06:36	07:06
	16:56	17:31	18:01	19:31	20:00	20:21	20:20	19:51	19:05	18:18	16:42	16:33
16	07:12	06:46	06:06	06:18	05:42	05:29	05:42	06:08	06:36	07:04	06:37	07:06
	16:57	17:32	18:02	19:32	20:01	20:22	20:19	19:49	19:03	18:16	16:41	16:34
17	07:12	06:45	06:05	06:17	05:41	05:29	05:42	06:09	06:37	07:05	06:39	07:07
	16:58	17:33	18:03	19:33	20:01	20:22	20:19	19:48	19:01	18:15	16:40	16:34
18	07:11	06:44	06:03	06:15	05:40	05:29	05:43	06:10	06:38	07:06	06:40	07:08
	16:59	17:35	18:04	19:34	20:02	20:23	20:18	19:47	19:00	18:13	16:39	16:34
19	07:11	06:42	06:01	06:14	05:40	05:29	05:44	06:11	06:39	07:07	06:41	07:08
	17:00	17:36	18:05	19:35	20:03	20:23	20:18	19:45	18:58	18:12	16:39	16:35
20	07:10	06:41	06:00	06:13	05:39	05:29	05:45	06:12	06:40	07:08	06:42	07:09
	17:01	17:37	18:06	19:36	20:04	20:23	20:17	19:44	18:57	18:11	16:38	16:35
21	07:10	06:40	05:58	06:11	05:38	05:29	05:45	06:13	06:41	07:09	06:43	07:09
	17:02	17:38	18:07	19:37	20:05	20:23	20:16	19:43	18:55	18:09	16:38	16:36
22	07:09	06:38	05:57	06:10	05:37	05:29	05:46	06:14	06:41	07:10	06:44	07:10
	17:04	17:39	18:08	19:38	20:06	20:24	20:16	19:41	18:53	18:08	16:37	16:36
23	07:09	06:37	05:55	06:08	05:37	05:30	05:47	06:15	06:42	07:11	06:45	07:10
	17:05	17:40	18:09	19:39	20:07	20:24	20:15	19:40	18:52	18:07	16:36	16:37
24	07:08	06:36	05:54	06:07	05:36	05:30	05:48	06:15	06:43	07:12	06:46	07:11
	17:06	17:41	18:10	19:40	20:07	20:24	20:14	19:38	18:50	18:05	16:36	16:37
25	07:07	06:34	05:52	06:06	05:35	05:30	05:49	06:16	06:44	06:13	06:47	07:11
	17:07	17:42	18:11	19:41	20:08	20:24	20:13	19:37	18:49	17:04	16:35	16:38
26	07:07	06:33	05:50	06:04	05:35	05:31	05:50	06:17	06:45	06:14	06:48	07:12
	17:08	17:43	18:12	19:42	20:09	20:24	20:12	19:36	18:47	17:03	16:35	16:38
27	07:06	06:32	05:49	06:03	05:34	05:31	05:50	06:18	06:46	06:16	06:49	07:12
	17:09	17:44	18:13	19:43	20:10	20:24	20:12	19:34	18:45	17:01	16:35	16:39
28	07:05	06:30	05:47	06:02	05:34	05:31	05:51	06:19	06:47	06:17	06:50	07:12
	17:10	17:45	18:14	19:43	20:11	20:24	20:11	19:33	18:44	17:00	16:34	16:40
29	07:04		06:46	06:01	05:33	05:32	05:52	06:20	06:48	06:18	06:51	07:13
	17:12		19:15	19:44	20:11	20:24	20:10	19:31	18:42	16:59	16:34	16:40
30	07:04		06:44	05:59	05:32	05:32	05:53	06:21	06:49	06:19	06:52	07:13
	17:13		19:16	19:45	20:12	20:24	20:09	19:30	18:41	16:58	16:34	16:41
31	07:03		06:43		05:32		05:54	06:22		06:20		07:13
	17:14		19:16		20:13		20:08	19:28		16:57		16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: C - 3

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13	07:02	06:29	06:41	05:58	05:32	05:33	05:55	06:23	06:50	06:21	06:53
	16:43	17:15	17:47	19:17	19:46	20:14	20:24	20:07	19:27	18:39	16:55	16:33
2	07:14	07:01	06:27	06:39	05:57	05:31	05:33	05:56	06:24	06:51	06:22	06:54
	16:44	17:16	17:48	19:18	19:47	20:14	20:24	20:06	19:25	18:37	16:54	16:33
3	07:14	07:00	06:26	06:38	05:56	05:31	05:33	05:56	06:24	06:52	06:23	06:55
	16:44	17:17	17:49	19:19	19:48	20:15	20:24	20:05	19:24	18:36	16:53	16:33
4	07:14	06:59	06:24	06:36	05:55	05:30	05:34	05:57	06:25	06:53	06:24	06:56
	16:45	17:19	17:50	19:20	19:49	20:16	20:24	20:04	19:22	18:34	16:52	16:33
5	07:14	06:58	06:23	06:35	05:53	05:30	05:35	05:58	06:26	06:53	06:25	06:57
	16:46	17:20	17:51	19:21	19:50	20:16	20:24	20:03	19:21	18:33	16:51	16:33
6	07:14	06:57	06:21	06:33	05:52	05:30	05:35	05:59	06:27	06:54	06:26	06:58
	16:47	17:21	17:52	19:22	19:51	20:17	20:23	20:02	19:19	18:31	16:50	16:33
7	07:14	06:56	06:20	06:32	05:51	05:30	05:36	06:00	06:28	06:55	06:28	06:59
	16:48	17:22	17:53	19:23	19:52	20:18	20:23	20:01	19:17	18:30	16:49	16:32
8	07:14	06:55	06:18	06:30	05:50	05:29	05:36	06:01	06:29	06:56	06:29	07:00
	16:49	17:23	17:54	19:24	19:53	20:18	20:23	19:59	19:16	18:28	16:48	16:32
9	07:14	06:54	06:17	06:29	05:49	05:29	05:37	06:02	06:30	06:57	06:30	07:01
	16:50	17:24	17:55	19:25	19:54	20:19	20:23	19:58	19:14	18:27	16:47	16:32
10	07:14	06:53	06:15	06:27	05:48	05:29	05:37	06:03	06:31	06:58	06:31	07:02
	16:51	17:26	17:56	19:26	19:55	20:19	20:22	19:57	19:13	18:25	16:46	16:33
11	07:13	06:52	06:14	06:26	05:47	05:29	05:38	06:04	06:32	06:59	06:32	07:03
	16:52	17:27	17:57	19:27	19:56	20:20	20:22	19:56	19:11	18:24	16:45	16:33
12	07:13	06:51	06:12	06:24	05:46	05:29	05:39	06:05	06:33	07:00	06:33	07:03
	16:53	17:28	17:58	19:28	19:57	20:20	20:21	19:55	19:09	18:22	16:44	16:33
13	07:13	06:50	06:11	06:23	05:45	05:29	05:39	06:05	06:33	07:01	06:34	07:04
	16:54	17:29	17:59	19:29	19:58	20:21	20:21	19:53	19:08	18:21	16:43	16:33
14	07:13	06:49	06:09	06:21	05:44	05:29	05:40	06:06	06:34	07:02	06:35	07:05
	16:55	17:30	18:00	19:30	19:59	20:21	20:20	19:52	19:06	18:19	16:42	16:33
15	07:12	06:47	06:08	06:20	05:43	05:29	05:41	06:07	06:35	07:03	06:36	07:06
	16:56	17:31	18:01	19:31	20:00	20:21	20:20	19:51	19:05	18:18	16:42	16:33
16	07:12	06:46	06:06	06:18	05:42	05:29	05:42	06:08	06:36	07:04	06:38	07:06
	16:57	17:32	18:02	19:32	20:01	20:22	20:19	19:50	19:03	18:16	16:41	16:34
17	07:12	06:45	06:05	06:17	05:41	05:29	05:42	06:09	06:37	07:05	06:39	07:07
	16:58	17:33	18:03	19:33	20:01	20:22	20:19	19:48	19:01	18:15	16:40	16:34
18	07:11	06:44	06:03	06:15	05:40	05:29	05:43	06:10	06:38	07:06	06:40	07:08
	16:59	17:35	18:04	19:34	20:02	20:23	20:18	19:47	19:00	18:13	16:39	16:34
19	07:11	06:42	06:01	06:14	05:40	05:29	05:44	06:11	06:39	07:07	06:41	07:08
	17:00	17:36	18:05	19:35	20:03	20:23	20:18	19:45	18:58	18:12	16:39	16:35
20	07:10	06:41	06:00	06:13	05:39	05:29	05:45	06:12	06:40	07:08	06:42	07:09
	17:01	17:37	18:06	19:36	20:04	20:23	20:17	19:44	18:57	18:11	16:38	16:35
21	07:10	06:40	05:58	06:11	05:38	05:29	05:45	06:13	06:41	07:09	06:43	07:09
	17:02	17:38	18:07	19:37	20:05	20:23	20:16	19:43	18:55	18:09	16:38	16:36
22	07:09	06:38	05:57	06:10	05:37	05:29	05:46	06:14	06:41	07:10	06:44	07:10
	17:04	17:39	18:08	19:38	20:06	20:24	20:16	19:41	18:53	18:08	16:37	16:36
23	07:09	06:37	05:55	06:08	05:37	05:30	05:47	06:15	06:42	07:11	06:45	07:10
	17:05	17:40	18:09	19:39	20:07	20:24	20:15	19:40	18:52	18:07	16:36	16:37
24	07:08	06:36	05:54	06:07	05:36	05:30	05:48	06:15	06:43	07:12	06:46	07:11
	17:06	17:41	18:10	19:40	20:07	20:24	20:14	19:38	18:50	18:05	16:36	16:37
25	07:07	06:34	05:52	06:06	05:35	05:30	05:49	06:16	06:44	06:13	06:47	07:11
	17:07	17:42	18:11	19:41	20:08	20:24	20:13	19:37	18:49	17:04	16:35	16:38
26	07:07	06:33	05:50	06:04	05:35	05:31	05:50	06:17	06:45	06:14	06:48	07:12
	17:08	17:43	18:12	19:42	20:09	20:24	20:12	19:36	18:47	17:03	16:35	16:38
27	07:06	06:32	05:49	06:03	05:34	05:31	05:50	06:18	06:46	06:16	06:49	07:12
	17:09	17:44	18:13	19:43	20:10	20:24	20:12	19:34	18:45	17:01	16:35	16:39
28	07:05	06:30	05:47	06:02	05:34	05:31	05:51	06:19	06:47	06:17	06:50	07:12
	17:10	17:45	18:14	19:44	20:11	20:24	20:11	19:33	18:44	17:00	16:34	16:40
29	07:04		06:46	06:01	05:33	05:32	05:52	06:20	06:48	06:18	06:51	07:13
	17:12		19:15	19:44	20:11	20:24	20:10	19:31	18:42	16:59	16:34	16:40
30	07:04		06:44	05:59	05:33	05:32	05:53	06:21	06:49	06:19	06:52	07:13
	17:13		19:16	19:45	20:12	20:24	20:09	19:30	18:41	16:58	16:34	16:41
31	07:03		06:43		05:32		05:54	06:22		06:20		07:13
	17:14		19:16		20:13		20:08	19:28		16:57		16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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



Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: D - 4

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:13	07:02	16:10 (10)	06:29	06:41	05:58	05:32	05:32	05:55	06:23	06:50	06:21	06:53	15:55 (10)
	16:43	17:15	21 16:31 (10)	17:46	19:17	19:46	20:14	20:24	20:07	19:27	18:39	16:55	16:33	3 15:58 (10)
2	07:14	07:01	16:11 (10)	06:27	06:39	05:57	05:31	05:33	05:56	06:24	06:51	06:22	06:54	
	16:44	17:16	19 16:30 (10)	17:47	19:18	19:47	20:14	20:24	20:06	19:25	18:37	16:54	16:33	
3	07:14	07:00	16:12 (10)	06:26	06:38	05:56	05:31	05:33	05:56	06:24	06:52	06:23	06:55	
	16:44	17:17	17 16:29 (10)	17:49	19:19	19:48	20:15	20:24	20:05	19:24	18:36	16:53	16:33	
4	07:14	06:59	16:14 (10)	06:24	06:36	05:54	05:30	05:34	05:57	06:25	06:52	06:24	06:56	
	16:45	17:18	14 16:28 (10)	17:50	19:20	19:49	20:16	20:24	20:04	19:22	18:34	16:52	16:33	
5	07:14	06:58	16:16 (10)	06:23	06:35	05:53	05:30	05:34	05:58	06:26	06:53	06:25	06:57	
	16:46	17:20	10 16:26 (10)	17:51	19:21	19:50	20:16	20:24	20:03	19:20	18:33	16:51	16:33	
6	07:14	06:57		06:21	06:33	05:52	05:30	05:35	05:59	06:27	06:54	06:26	06:58	
	16:47	17:21		17:52	19:22	19:51	20:17	20:23	20:02	19:19	18:31	16:50	10 15:56 (10)	16:32
7	07:14	06:56		06:20	06:32	05:51	05:30	05:36	06:00	06:28	06:55	06:27	15:44 (10)	06:59
	16:48	17:22		17:53	19:23	19:52	20:17	20:23	20:00	19:17	18:30	16:49	15 15:59 (10)	16:32
8	07:14	06:55		06:18	06:30	05:50	05:29	05:36	06:01	06:29	06:56	06:29	15:43 (10)	07:00
	16:49	17:23		17:54	19:24	19:53	20:18	20:23	19:59	19:16	18:28	16:48	17 16:00 (10)	16:32
9	07:14	06:54		06:17	06:29	05:49	05:29	05:37	06:02	06:30	06:57	06:30	15:41 (10)	07:01
	16:50	17:24		17:55	19:25	19:54	20:19	20:22	19:58	19:14	18:27	16:47	20 16:01 (10)	16:32
10	07:13	06:53		06:15	06:27	05:48	05:29	05:37	06:03	06:31	06:58	06:31	15:40 (10)	07:02
	16:51	17:25		17:56	19:26	19:55	20:19	20:22	19:57	19:13	18:25	16:46	22 16:02 (10)	16:32
11	07:13	16:13 (10)	06:52	06:14	06:26	05:47	05:29	05:38	06:04	06:32	06:59	06:32	15:40 (10)	07:02
	16:52	2 16:15 (10)	17:27	17:57	19:27	19:56	20:20	20:22	19:56	19:11	18:24	16:45	23 16:03 (10)	16:33
12	07:13	16:11 (10)	06:51	06:12	06:24	05:46	05:29	05:39	06:05	06:32	07:00	06:33	15:40 (10)	07:03
	16:53	8 16:19 (10)	17:28	17:58	19:28	19:57	20:20	20:21	19:55	19:09	18:22	16:44	24 16:04 (10)	16:33
13	07:13	16:09 (10)	06:50	06:11	06:23	05:45	05:29	05:39	06:05	06:33	07:01	06:34	15:40 (10)	07:04
	16:54	12 16:21 (10)	17:29	17:59	19:29	19:58	20:21	20:21	19:53	19:08	18:21	16:43	24 16:04 (10)	16:33
14	07:13	16:08 (10)	06:48	06:09	06:21	05:44	05:29	05:40	06:06	06:34	07:02	06:35	15:39 (10)	07:05
	16:55	15 16:23 (10)	17:30	18:00	19:30	19:59	20:21	20:20	19:52	19:06	18:19	16:42	26 16:05 (10)	16:33
15	07:12	16:08 (10)	06:47	06:08	06:20	05:43	05:29	05:41	06:07	06:35	07:03	06:36	15:39 (10)	07:05
	16:56	16 16:24 (10)	17:31	18:01	19:31	20:00	20:21	20:20	19:51	19:05	18:18	16:42	26 16:05 (10)	16:33
16	07:12	16:07 (10)	06:46	06:06	06:18	05:42	05:29	05:42	06:08	06:36	07:04	06:37	15:39 (10)	07:06
	16:57	18 16:25 (10)	17:32	18:02	19:32	20:00	20:22	20:19	19:49	19:03	18:16	16:41	26 16:05 (10)	16:34
17	07:12	16:07 (10)	06:45	06:05	06:17	05:41	05:29	05:42	06:09	06:37	07:05	06:39	15:39 (10)	07:07
	16:58	20 16:27 (10)	17:33	18:03	19:33	20:01	20:22	20:19	19:48	19:01	18:15	16:40	26 16:05 (10)	16:34
18	07:11	16:06 (10)	06:44	06:03	06:15	05:40	05:29	05:43	06:10	06:38	07:06	06:40	15:40 (10)	07:08
	16:59	21 16:27 (10)	17:34	18:04	19:34	20:02	20:22	20:18	19:47	19:00	18:13	16:39	26 16:06 (10)	16:34
19	07:11	16:06 (10)	06:42	06:01	06:14	05:40	05:29	05:44	06:11	06:39	07:07	06:41	15:40 (10)	07:08
	17:00	23 16:29 (10)	17:36	18:05	19:35	20:03	20:23	20:18	19:45	18:58	18:12	16:39	26 16:06 (10)	16:35
20	07:10	16:06 (10)	06:41	06:00	06:13	05:39	05:29	05:45	06:12	06:40	07:08	06:42	15:41 (10)	07:09
	17:01	23 16:29 (10)	17:37	18:06	19:36	20:04	20:23	20:17	19:44	18:57	18:11	16:38	24 16:05 (10)	16:35
21	07:10	16:06 (10)	06:40	05:58	06:11	05:38	05:29	05:45	06:13	06:41	07:09	06:43	15:41 (10)	07:09
	17:02	24 16:30 (10)	17:38	18:07	19:37	20:05	20:23	20:16	19:43	18:55	18:09	16:37	24 16:05 (10)	16:35
22	07:09	16:06 (10)	06:38	05:57	06:10	05:37	05:29	05:46	06:14	06:41	07:10	06:44	15:42 (10)	07:10
	17:04	24 16:30 (10)	17:39	18:08	19:38	20:06	20:24	20:16	19:41	18:53	18:08	16:37	23 16:05 (10)	16:36
23	07:09	16:05 (10)	06:37	05:55	06:08	05:37	05:30	05:47	06:15	06:42	07:11	06:45	15:42 (10)	07:10
	17:05	26 16:31 (10)	17:40	18:09	19:39	20:07	20:24	20:15	19:40	18:52	18:06	16:36	23 16:05 (10)	16:36
24	07:08	16:06 (10)	06:36	05:54	06:07	05:36	05:30	05:48	06:15	06:43	07:12	06:46	15:44 (10)	07:11
	17:06	26 16:32 (10)	17:41	18:10	19:40	20:07	20:24	20:14	19:38	18:50	18:05	16:36	21 16:05 (10)	16:37
25	07:07	16:06 (10)	06:34	05:52	06:06	05:35	05:30	05:49	06:16	06:44	06:13	06:47	15:45 (10)	07:11
	17:07	26 16:32 (10)	17:42	18:11	19:41	20:08	20:24	20:13	19:37	18:49	17:04	16:35	20 16:05 (10)	16:38
26	07:07	16:06 (10)	06:33	05:50	06:04	05:35	05:31	05:49	06:17	06:45	06:14	06:48	15:46 (10)	07:12
	17:08	26 16:32 (10)	17:43	18:12	19:42	20:09	20:24	20:12	19:36	18:47	17:03	16:35	18 16:04 (10)	16:38
27	07:06	16:06 (10)	06:31	05:49	06:03	05:34	05:31	05:50	06:18	06:46	06:15	06:49	15:47 (10)	07:12
	17:09	26 16:32 (10)	17:44	18:13	19:42	20:10	20:24	20:12	19:34	18:45	17:01	16:35	16 16:03 (10)	16:39
28	07:05	16:07 (10)	06:30	05:47	06:02	05:33	05:31	05:51	06:19	06:47	06:17	06:50	15:48 (10)	07:12
	17:10	26 16:33 (10)	17:45	18:14	19:43	20:11	20:24	20:11	19:33	18:44	17:00	16:34	15 16:03 (10)	16:40
29	07:04	16:08 (10)		06:46	06:01	05:33	05:32	05:52	06:20	06:48	06:18	06:51	15:50 (10)	07:13
	17:12	24 16:32 (10)		19:14	19:44	20:11	20:24	20:10	19:31	18:42	16:59	16:34	12 16:02 (10)	16:40
30	07:04	16:08 (10)		06:44	05:59	05:32	05:32	05:53	06:21	06:49	06:19	06:52	15:52 (10)	07:13
	17:13	24 16:32 (10)		19:15	19:45	20:12	20:24	20:09	19:30	18:41	16:58	16:34	8 16:00 (10)	16:41
31	07:03	16:09 (10)		06:43		05:32		05:54	06:22		06:20		07:13	
	17:14	23 16:32 (10)		19:16		20:13		20:08	19:28		16:56		16:42	
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294		
Total, worst case	433	81									515			3
Sun reduction	0.35	0.36									0.45			0.38
Oper. time red.	1.00	1.00									1.00			1.00
Wind dir. red.	0.53	0.53									0.53			0.53
Total reduction	0.19	0.19									0.24			0.20
Total, real	80	16									123			1

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: E - 5

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:13 16:43	15:21 (10) 15:53 (10)	07:02 17:15	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:14	05:32 20:24	05:55 20:07	06:23 19:27	06:50 16:55	06:53 16:33	15:07 (10) 15:40 (10)
2	07:14 16:44	15:22 (10) 15:54 (10)	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 16:54	06:22 16:33	15:08 (10) 15:40 (10)
3	07:14 16:44	15:22 (10) 15:54 (10)	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:24	06:52 16:53	06:23 16:33	15:08 (10) 15:40 (10)
4	07:14 16:45	15:22 (10) 15:55 (10)	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:30 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:52 16:52	06:24 16:33	15:08 (10) 15:41 (10)
5	07:14 16:46	15:23 (10) 15:55 (10)	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:34 20:24	05:58 20:03	06:26 19:20	06:53 16:51	06:25 16:33	15:09 (10) 15:41 (10)
6	07:14 16:47	15:23 (10) 15:56 (10)	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 16:50	06:26 16:32	15:09 (10) 15:42 (10)
7	07:14 16:48	15:24 (10) 15:56 (10)	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17	05:36 20:23	06:00 20:00	06:28 19:17	06:55 16:49	06:27 16:32	15:10 (10) 15:42 (10)
8	07:14 16:49	15:24 (10) 15:57 (10)	06:55 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 16:48	06:29 16:32	15:10 (10) 15:43 (10)
9	07:14 16:50	15:24 (10) 15:56 (10)	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	05:37 20:22	06:02 19:58	06:30 19:14	06:57 16:47	06:30 16:32	15:10 (10) 15:42 (10)
10	07:13 16:51	15:25 (10) 15:57 (10)	06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:37 20:22	06:03 19:57	06:31 19:13	06:58 16:46	06:31 16:32	15:11 (10) 15:43 (10)
11	07:13 16:52	15:25 (10) 15:58 (10)	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 16:45	06:32 16:33	15:11 (10) 15:43 (10)
12	07:13 16:53	15:26 (10) 15:58 (10)	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:55	06:33 19:09	07:01 18:22	06:34 16:44	15:12 (10) 15:44 (10)
13	07:13 16:54	15:26 (10) 15:58 (10)	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	15:13 (10) 15:44 (10)
14	07:13 16:55	15:27 (10) 15:58 (10)	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:42	15:13 (10) 15:44 (10)
15	07:12 16:56	15:28 (10) 15:59 (10)	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	15:14 (10) 15:45 (10)
16	07:12 16:57	15:28 (10) 15:58 (10)	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	15:14 (10) 15:45 (10)
17	07:12 16:58	15:29 (10) 15:59 (10)	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	15:14 (10) 15:45 (10)
18	07:11 16:59	15:29 (10) 15:58 (10)	06:44 17:35	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:22	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	15:15 (10) 15:46 (10)
19	07:11 17:00	15:31 (10) 15:59 (10)	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	15:16 (10) 15:47 (10)
20	07:10 17:01	15:31 (10) 15:58 (10)	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	15:16 (10) 15:47 (10)
21	07:10 17:02	15:33 (10) 15:58 (10)	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:37	15:17 (10) 15:48 (10)
22	07:09 17:04	15:33 (10) 15:58 (10)	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:24	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	15:17 (10) 15:48 (10)
23	07:09 17:05	15:34 (10) 15:57 (10)	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	15:18 (10) 15:48 (10)
24	07:08 17:06	15:36 (10) 15:56 (10)	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	15:18 (10) 15:49 (10)
25	07:07 17:07	15:38 (10) 15:55 (10)	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:35	15:19 (10) 15:49 (10)
26	07:07 17:08	15:40 (10) 15:53 (10)	06:33 17:43	05:50 18:12	06:04 19:42	05:35 20:09	05:31 20:24	05:49 20:12	06:17 19:36	06:45 18:47	06:14 17:03	06:48 16:35	15:19 (10) 15:50 (10)
27	07:06 17:09	15:43 (10) 15:50 (10)	06:31 17:44	05:49 18:13	06:03 19:42	05:34 20:10	05:31 20:24	05:50 20:12	06:18 19:34	06:46 18:45	06:15 17:01	06:49 16:35	15:19 (10) 15:50 (10)
28	07:05 17:10	15:50 (10)	06:30 17:45	05:47 18:14	06:02 19:43	05:33 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	15:20 (10) 16:40
29	07:04 17:12		06:46 19:15	06:01 19:44	05:33 19:44	05:32 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	15:20 (10) 16:40
30	07:04 17:13		06:44 19:15	05:59 19:45	05:32 19:45	05:32 20:12	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	15:21 (10) 16:41
31	07:03 17:14		06:43 19:16	05:47 19:16	05:32 20:13	05:32 20:13	05:32 20:13	05:54 20:08	06:22 19:28	06:49 18:56	06:19 16:56	06:52 16:34	15:21 (10) 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294	978
Total, worst case		756									400		0.38
Sun reduction		0.35									0.45		1.00
Oper. time red.		1.00									1.00		0.65
Wind dir. red.		0.65									0.65		0.25
Total reduction		0.23									0.29		0.25
Total, real		170									115		240

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: F - 6

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:13 16:43	14:42 (10) 16:03 (8)	07:02 17:15	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:14	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	14:28 (10) 15:48 (8)
2	07:14 16:44	14:42 (10) 16:04 (8)	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	14:29 (10) 15:49 (8)
3	07:14 16:44	14:42 (10) 16:05 (8)	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	14:29 (10) 15:51 (8)
4	07:14 16:45	14:43 (10) 16:06 (8)	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:30 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	14:29 (10) 15:52 (8)
5	07:14 16:46	14:43 (10) 16:07 (8)	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	14:30 (10) 15:52 (8)
6	07:14 16:47	14:44 (10) 16:07 (8)	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	14:30 (10) 15:53 (8)
7	07:14 16:48	14:45 (10) 16:07 (8)	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:27 16:49	14:30 (10) 15:54 (8)
8	07:14 16:49	14:45 (10) 16:08 (8)	06:55 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	14:31 (10) 15:54 (8)
9	07:14 16:50	14:45 (10) 16:07 (8)	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	14:32 (10) 15:54 (8)
10	07:14 16:51	14:46 (10) 16:06 (8)	06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	14:31 (10) 15:53 (8)
11	07:13 16:52	14:46 (10) 16:06 (8)	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	14:32 (10) 15:53 (8)
12	07:13 16:53	14:47 (10) 16:06 (8)	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:55	06:32 19:09	07:00 18:22	06:33 16:44	14:32 (10) 15:53 (8)
13	07:13 16:54	14:47 (10) 16:03 (8)	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	14:33 (10) 15:53 (8)
14	07:13 16:55	14:48 (10) 15:31 (10)	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:42	14:33 (10) 15:53 (8)
15	07:12 16:56	14:49 (10) 15:31 (10)	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	14:34 (10) 15:53 (8)
16	07:12 16:57	14:49 (10) 15:31 (10)	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	14:34 (10) 15:53 (8)
17	07:12 16:58	14:50 (10) 15:31 (10)	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	14:34 (10) 15:53 (8)
18	07:11 16:59	14:51 (10) 15:31 (10)	06:44 17:35	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:23	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	14:35 (10) 15:54 (8)
19	07:11 17:00	14:52 (10) 15:31 (10)	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	14:35 (10) 15:54 (8)
20	07:10 17:01	14:53 (10) 15:31 (10)	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	14:36 (10) 15:54 (8)
21	07:10 17:02	14:54 (10) 15:31 (10)	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	14:37 (10) 15:55 (8)
22	07:09 17:04	14:55 (10) 15:30 (10)	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:24	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	14:37 (10) 15:55 (8)
23	07:09 17:05	14:56 (10) 15:29 (10)	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	14:37 (10) 15:55 (8)
24	07:08 17:06	14:58 (10) 15:29 (10)	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	14:38 (10) 15:56 (8)
25	07:07 17:07	14:59 (10) 15:28 (10)	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:35	14:39 (10) 15:56 (8)
26	07:07 17:08	15:00 (10) 15:27 (10)	06:33 17:43	05:50 18:12	06:04 19:42	05:35 20:09	05:31 20:24	05:49 20:12	06:17 19:36	06:45 18:47	06:14 17:03	06:48 16:35	14:39 (10) 15:58 (8)
27	07:06 17:09	15:02 (10) 15:26 (10)	06:32 17:44	05:49 18:13	06:03 19:43	05:34 20:10	05:31 20:24	05:50 20:12	06:18 19:34	06:46 18:45	06:16 17:01	06:49 16:35	14:39 (10) 15:58 (8)
28	07:05 17:10	15:05 (10) 15:25 (10)	06:30 17:45	05:47 18:14	06:02 19:43	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	14:40 (10) 15:59 (8)
29	07:04 17:12	15:07 (10) 15:22 (10)	06:29 17:46	06:46 19:15	06:01 19:44	05:33 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	14:41 (10) 15:59 (8)
30	07:04 17:13	15:12 (10) 15:18 (10)	06:44 17:45	06:44 19:15	05:59 19:45	05:32 20:12	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	14:42 (10) 16:01 (8)
31	07:03 17:14	15:18 (10)	06:43 19:16	06:43 19:16	05:32 20:13	05:32 20:13	05:32 20:13	05:54 20:08	06:22 19:28	06:20 16:56	06:20 16:56	06:20 16:56	14:41 (10) 16:02 (8)
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294	1843
Total, worst case	1302										644		0.38
Sun reduction	0.35										0.45		1.00
Oper. time red.	1.00										1.00		0.70
Wind dir. red.	0.71										0.73		0.27
Total reduction	0.25										0.32		0.27
Total, real	323										209		490

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: G - 6

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13 16:43	15:21 (10) 15:42 (10)	07:02 17:15	15:22 (10) 16:01 (10)	06:29 17:46	06:41 19:17
2	07:14 16:44	15:20 (10) 15:43 (10)	07:01 17:16	15:23 (10) 16:01 (10)	06:27 17:48	06:39 19:18
3	07:14 16:44	15:20 (10) 15:44 (10)	07:00 17:17	15:24 (10) 16:00 (10)	06:26 17:49	06:38 19:19
4	07:14 16:45	15:20 (10) 15:45 (10)	06:59 17:19	15:25 (10) 16:00 (10)	06:24 17:50	06:36 19:20
5	07:14 16:46	15:20 (10) 15:46 (10)	06:58 17:20	15:26 (10) 15:59 (10)	06:23 17:51	06:35 19:21
6	07:14 16:47	15:20 (10) 16:01 (8)	06:57 17:21	15:27 (10) 15:58 (10)	06:21 17:52	06:33 19:22
7	07:14 16:48	15:20 (10) 16:02 (8)	06:56 17:22	15:29 (10) 15:57 (10)	06:20 17:53	06:32 19:23
8	07:14 16:49	15:20 (10) 16:03 (8)	06:55 17:23	15:30 (10) 15:56 (10)	06:18 17:54	06:30 19:24
9	07:14 16:50	15:19 (10) 16:04 (8)	06:54 17:24	15:32 (10) 15:54 (10)	06:17 17:55	06:29 19:25
10	07:13 16:51	15:19 (10) 16:05 (8)	06:53 17:25	15:35 (10) 15:52 (10)	06:15 17:56	06:27 19:26
11	07:13 16:52	15:19 (10) 16:07 (8)	06:52 17:27	15:39 (10) 15:49 (10)	06:14 17:57	06:26 19:27
12	07:13 16:53	15:19 (10) 16:08 (8)	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57
13	07:13 16:54	15:18 (10) 16:09 (8)	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58
14	07:13 16:55	15:19 (10) 16:11 (8)	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59
15	07:12 16:56	15:19 (10) 16:13 (8)	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00
16	07:12 16:57	15:18 (10) 16:14 (8)	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00
17	07:12 16:58	15:19 (10) 16:19 (8)	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01
18	07:11 16:59	15:18 (10) 16:20 (8)	06:44 17:35	06:03 18:04	06:15 19:34	05:40 20:02
19	07:11 17:00	15:19 (10) 16:22 (8)	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03
20	07:10 17:01	15:18 (10) 16:23 (8)	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04
21	07:10 17:02	15:19 (10) 16:23 (8)	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05
22	07:09 17:04	15:19 (10) 16:21 (8)	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06
23	07:09 17:05	15:19 (10) 16:19 (8)	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07
24	07:08 17:06	15:20 (10) 16:01 (10)	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07
25	07:07 17:07	15:19 (10) 16:01 (10)	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08
26	07:07 17:08	15:19 (10) 16:01 (10)	06:33 17:43	05:50 18:12	06:04 19:42	05:35 20:09
27	07:06 17:09	15:20 (10) 16:01 (10)	06:32 17:44	05:49 18:13	06:03 19:42	05:34 20:10
28	07:05 17:10	15:21 (10) 16:02 (10)	06:30 17:45	05:47 18:14	06:02 19:43	05:34 20:11
29	07:04 17:12	15:21 (10) 16:02 (10)		06:46 19:15	06:01 19:44	05:33 20:11
30	07:04 17:13	15:21 (10) 16:02 (10)		06:44 19:15	05:59 19:45	05:32 20:12
31	07:03 17:14	15:22 (10) 16:01 (10)		06:43 19:16		05:32 20:13
Potential sun hours	303	300		370	396	443
Total, worst case	1230		315			
Sun reduction	0.35		0.36			
Oper. time red.	1.00		1.00			
Wind dir. red.	0.62		0.63			
Total reduction	0.22		0.23			
Total, real	267		72			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: G - 6

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December
1	05:32	05:55	06:23	06:50	06:21	06:53
	20:24	20:07	19:27	18:39	16:55	15:01 (10)
2	05:33	05:56	06:24	06:51	16:55	15:23 (10)
	20:24	20:06	19:25	18:37	19	16:33 38
3	05:33	05:56	06:24	06:52	06:22	15:02 (10)
	20:24	20:05	19:24	18:36	16:54	16:33 36
4	05:34	05:57	06:25	06:52	06:23	15:00 (10)
	20:24	20:04	19:22	18:34	16:53	16:33 34
5	05:34	05:58	06:26	06:53	06:24	14:58 (10)
	20:24	20:03	19:20	18:33	16:52	16:33 32
6	05:35	05:59	06:27	06:54	06:25	14:57 (10)
	20:23	20:02	19:19	18:31	16:51	16:33 30
7	05:36	06:00	06:28	06:55	06:26	14:56 (10)
	20:23	20:00	19:17	18:30	16:50	16:32 28
8	05:36	06:01	06:29	06:56	06:27	14:56 (10)
	20:23	19:59	19:16	18:28	16:49	16:32 26
9	05:37	06:02	06:30	06:57	06:29	14:55 (10)
	20:22	19:58	19:14	18:27	16:48	16:32 25
10	05:37	06:03	06:31	06:58	06:30	14:54 (10)
	20:22	19:57	19:13	18:25	16:47	16:32 24
11	05:38	06:04	06:32	06:59	06:31	14:53 (10)
	20:22	19:56	19:11	18:24	16:46	16:33 23
12	05:39	06:05	06:32	07:00	06:32	14:53 (10)
	20:21	19:55	19:09	18:22	16:45	16:33 21
13	05:39	06:05	06:33	07:01	06:33	14:53 (10)
	20:21	19:53	19:08	18:21	16:44	16:33 20
14	05:40	06:06	06:34	07:02	06:34	14:53 (10)
	20:20	19:52	19:06	18:19	16:43	16:33 19
15	05:41	06:07	06:35	07:03	06:35	14:53 (10)
	20:20	19:51	19:05	18:18	16:42	16:33 17
16	05:42	06:08	06:36	07:04	06:36	14:53 (10)
	20:19	19:49	19:03	18:16	16:41	16:33 16
17	05:42	06:09	06:37	07:05	06:37	14:53 (10)
	20:19	19:48	19:01	18:15	16:40	16:33 15
18	05:43	06:10	06:38	07:06	06:38	14:53 (10)
	20:18	19:47	19:00	18:13	16:39	16:34 15
19	05:44	06:11	06:39	07:07	06:41	14:54 (10)
	20:18	19:45	18:58	18:12	16:39	16:35 14
20	05:45	06:12	06:40	07:08	06:42	14:54 (10)
	20:17	19:44	18:57	18:11	16:38	16:35 13
21	05:45	06:13	06:41	07:09	06:43	14:54 (10)
	20:16	19:43	18:55	18:09	16:38	16:35 13
22	05:46	06:14	06:41	07:10	06:44	14:54 (10)
	20:16	19:41	18:53	18:08	16:37	16:36 13
23	05:47	06:15	06:42	07:11	06:45	14:55 (10)
	20:15	19:40	18:52	18:07	16:36	16:37 13
24	05:48	06:15	06:43	07:12	06:46	14:56 (10)
	20:14	19:38	18:50	18:05	16:36	16:37 13
25	05:49	06:16	06:44	06:13	06:47	14:57 (10)
	20:13	19:37	18:49	17:04	16:35	16:38 15
26	05:49	06:17	06:45	06:14	06:48	14:57 (10)
	20:12	19:36	18:47	17:03	16:35	16:38 15
27	05:50	06:18	06:46	06:16	06:49	14:58 (10)
	20:12	19:34	18:45	17:01	16:35	16:39 16
28	05:51	06:19	06:47	06:17	06:50	14:59 (10)
	20:11	19:33	18:44	17:00	16:34	16:40 17
29	05:52	06:20	06:48	06:18	06:51	14:59 (10)
	20:10	19:31	18:42	16:59	16:34	16:40 18
30	05:53	06:21	06:49	06:19	06:52	15:00 (10)
	20:09	19:30	18:41	16:58	16:34	16:41 19
31	05:54	06:22		06:20	15:07 (10)	07:13
	20:08	19:28		16:56	15:19 (10)	16:42 20
Potential sun hours	453	424	374	347	303	294
Total, worst case				12	1226	638
Sun reduction				0.54	0.45	0.38
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.63	0.63	0.63
Total reduction				0.34	0.28	0.24
Total, real				4	342	152

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

## SHADOW - Calendar

Shadow receptor: H - 7

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:13 16:43	26 14:20 (10) 14:46 (10)	07:02 17:15	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:14	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33	
2	07:14 16:44	25 14:21 (10) 14:46 (10)	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	06:54 16:33	
3	07:14 16:44	24 14:22 (10) 14:46 (10)	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	06:55 16:33	14:17 (10)
4	07:14 16:45	23 14:23 (10) 14:46 (10)	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:30 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33	13 14:27 (10)
5	07:14 16:46	21 14:24 (10) 14:45 (10)	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	06:57 16:33	16 14:29 (10)
6	07:14 16:47	19 14:26 (10) 14:45 (10)	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:32	19 14:31 (10)
7	07:14 16:48	16 14:28 (10) 14:44 (10)	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:27 16:49	06:59 16:32	20 14:32 (10)
8	07:14 16:49	13 14:30 (10) 14:43 (10)	06:55 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:32	22 14:33 (10)
9	07:14 16:50	7 14:33 (10) 14:40 (10)	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:32	24 14:35 (10)
10	07:14 16:51		06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33	25 14:35 (10)
11	07:13 16:52		06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:02 16:33	26 14:36 (10)
12	07:13 16:53		06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:55	06:32 19:09	07:00 18:22	06:33 16:44	07:03 16:33	27 14:37 (10)
13	07:13 16:54		06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33	28 14:38 (10)
14	07:13 16:55		06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:42	07:05 16:33	28 14:38 (10)
15	07:12 16:56		06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	07:06 16:33	29 14:39 (10)
16	07:12 16:57		06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	07:06 16:34	30 14:40 (10)
17	07:12 16:58		06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	07:07 16:34	30 14:40 (10)
18	07:11 16:59		06:44 17:35	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:23	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	07:08 16:34	30 14:41 (10)
19	07:11 17:00		06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35	30 14:42 (10)
20	07:10 17:01		06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 16:35	31 14:42 (10)
21	07:10 17:02		06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	07:09 16:36	31 14:43 (10)
22	07:09 17:04		06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:24	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	07:10 16:36	31 14:43 (10)
23	07:09 17:05		06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	07:10 16:37	31 14:44 (10)
24	07:08 17:06		06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	07:11 16:37	31 14:44 (10)
25	07:07 17:07		06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:35	07:11 16:38	30 14:44 (10)
26	07:07 17:08		06:33 17:43	05:50 18:12	06:04 19:42	05:35 20:09	05:31 20:24	05:49 20:12	06:17 19:36	06:45 18:47	06:14 17:03	06:48 16:35	07:12 16:38	30 14:45 (10)
27	07:06 17:09		06:32 17:44	05:49 18:13	06:03 19:43	05:34 20:10	05:31 20:24	05:50 20:12	06:18 19:34	06:46 18:45	06:16 17:01	06:49 16:35	07:12 16:39	30 14:45 (10)
28	07:05 17:10		06:30 17:45	05:47 18:14	06:02 19:43	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	07:12 16:40	29 14:45 (10)
29	07:04 17:12		06:29 19:15	05:46 19:44	06:01 20:11	05:33 20:24	05:32 20:10	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	07:13 16:40	29 14:45 (10)
30	07:04 17:13		06:28 19:15	05:45 19:45	06:00 20:12	05:32 20:24	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	07:13 16:41	28 14:46 (10)
31	07:03 17:14		06:27 19:16	05:44 19:46	05:59 20:13	05:32 20:13	05:32 20:08	05:54 20:08	06:22 19:28	06:50 16:56	06:20 16:34	06:53 16:42	07:13 16:42	27 14:46 (10)
Potential sun hours	303		300	370	396	443	445	453	424	374	347	303	294	761
Total, worst case		174												0.38
Sun reduction		0.35												1.00
Oper. time red.		1.00												0.83
Wind dir. red.		0.83												0.31
Total reduction		0.29												0.31
Total, real		50												238

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: I - 8

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13   16:43	07:02   17:15	15:40 (10)   16:16 (10)	06:29   17:46	06:41   19:17	05:58   19:46
2	07:14   16:44	07:01   17:16	15:40 (10)   16:16 (10)	06:27   17:48	06:39   19:18	05:57   19:47
3	07:14   16:44	07:00   17:17	15:41 (10)   16:15 (10)	06:26   17:49	06:38   19:19	05:56   19:48
4	07:14   16:45	06:59   17:19	15:42 (10)   16:15 (10)	06:24   17:50	06:36   19:20	05:55   19:49
5	07:14   16:46	06:58   17:20	15:42 (10)   16:15 (10)	06:23   17:51	06:35   19:21	05:53   19:50
6	07:14   16:47	06:57   17:21	15:43 (10)   16:14 (10)	06:21   17:52	06:33   19:22	05:52   19:51
7	07:14   16:48	06:56   17:22	15:44 (10)   16:13 (10)	06:20   17:53	06:32   19:23	05:51   19:52
8	07:14   16:49	06:55   17:23	15:46 (10)   16:12 (10)	06:18   17:54	06:30   19:24	05:50   19:53
9	07:14   16:50	15:46 (10)   16:54	15:47 (10)   17:24	06:17   17:55	06:29   19:25	05:49   19:54
10	07:13   16:51	15:45 (10)   16:58 (10)	15:49 (10)   17:25	06:15   17:56	06:27   19:26	05:48   19:55
11	07:13   16:52	15:44 (10)   16:11 (8)	15:52 (10)   17:27	06:14   17:57	06:26   19:27	05:47   19:56
12	07:13   16:53	15:43 (10)   16:13 (8)	15:55 (10)   17:28	06:12   17:58	06:24   19:28	05:46   19:57
13	07:13   16:54	15:42 (10)   16:13 (8)	16:05 (10)   17:29	06:11   17:59	06:23   19:29	05:45   19:58
14	07:13   16:55	15:41 (10)   16:15 (8)	17:30	06:09   18:00	06:21   19:30	05:44   19:59
15	07:12   16:56	15:41 (10)   16:17 (8)	17:31	06:08   18:01	06:20   19:31	05:43   20:00
16	07:12   16:57	15:40 (10)   16:18 (8)	17:32	06:06   18:02	06:18   19:32	05:42   20:01
17	07:12   16:58	15:40 (10)   16:20 (8)	17:33	06:05   18:03	06:17   19:33	05:41   20:02
18	07:11   16:59	15:39 (10)   16:21 (8)	17:35	06:03   18:04	06:15   19:34	05:40   20:03
19	07:11   17:00	15:40 (10)   16:23 (8)	17:36	06:01   18:05	06:14   19:35	05:40   20:04
20	07:10   17:01	15:39 (10)   16:24 (8)	17:37	06:00   18:06	06:13   19:36	05:39   20:05
21	07:10   17:02	15:39 (10)   16:26 (8)	17:38	05:58   18:07	06:11   19:37	05:38   20:06
22	07:09   17:04	15:39 (10)   16:27 (8)	17:39	05:57   18:08	06:10   19:38	05:37   20:07
23	07:09   17:05	15:38 (10)   16:29 (8)	17:40	05:55   18:09	06:08   19:39	05:37   20:08
24	07:08   17:06	15:39 (10)   16:28 (8)	17:41	05:54   18:10	06:07   19:40	05:36   20:09
25	07:07   17:07	15:39 (10)   16:26 (8)	17:42	05:52   18:11	06:06   19:41	05:35   20:10
26	07:07   17:08	15:38 (10)   16:14 (10)	17:43	05:50   18:12	06:04   19:42	05:35   20:11
27	07:06   17:09	15:38 (10)   16:15 (10)	17:44	05:49   18:13	06:03   19:43	05:34   20:12
28	07:05   17:10	15:39 (10)   16:16 (10)	17:45	05:47   18:14	06:02   19:44	05:34   20:13
29	07:04   17:12	15:39 (10)   16:16 (10)		05:46   19:15	06:01   19:45	05:33   20:14
30	07:04   17:13	15:39 (10)   16:16 (10)		06:44   19:15	05:59   19:45	05:32   20:14
31	07:03   17:14	15:40 (10)   16:16 (10)		06:43   19:16		05:32   20:13
Potential sun hours	303	300		370	396	443
Total, worst case	792	329				
Sun reduction	0.35	0.36				
Oper. time red.	1.00	1.00				
Wind dir. red.	0.58	0.58				
Total reduction	0.20	0.21				
Total, real	159	70				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: I - 8

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December
1	05:32	05:55	06:23	06:50	06:21	15:19 (10)
	20:24	20:07	19:27	18:39	16:55	21 15:40 (10)
2	05:33	05:56	06:24	06:51	06:22	15:17 (10)
	20:24	20:06	19:25	18:37	16:54	24 15:41 (10)
3	05:33	05:56	06:24	06:52	06:23	15:15 (10)
	20:24	20:05	19:24	18:36	16:53	27 15:42 (10)
4	05:34	05:57	06:25	06:52	06:24	15:14 (10)
	20:24	20:04	19:22	18:34	16:52	29 15:43 (10)
5	05:34	05:58	06:26	06:53	06:25	15:13 (10)
	20:24	20:03	19:20	18:33	16:51	31 15:44 (10)
6	05:35	05:59	06:27	06:54	06:26	15:12 (10)
	20:23	20:02	19:19	18:31	16:50	32 15:44 (10)
7	05:36	06:00	06:28	06:55	06:27	15:12 (10)
	20:23	20:00	19:17	18:30	16:49	34 15:46 (10)
8	05:36	06:01	06:29	06:56	06:29	15:12 (10)
	20:23	19:59	19:16	18:28	16:48	34 15:46 (10)
9	05:37	06:02	06:30	06:57	06:30	15:11 (10)
	20:22	19:58	19:14	18:27	16:47	35 15:46 (10)
10	05:37	06:03	06:31	06:58	06:31	15:11 (10)
	20:22	19:57	19:13	18:25	16:46	36 15:47 (10)
11	05:38	06:04	06:32	06:59	06:32	15:10 (10)
	20:22	19:56	19:11	18:24	16:45	37 15:47 (10)
12	05:39	06:05	06:32	07:00	06:33	15:11 (10)
	20:21	19:55	19:09	18:22	16:44	37 15:48 (10)
13	05:39	06:05	06:33	07:01	06:34	15:11 (10)
	20:21	19:53	19:08	18:21	16:43	37 15:48 (10)
14	05:40	06:06	06:34	07:02	06:35	15:11 (10)
	20:20	19:52	19:06	18:19	16:42	37 15:48 (10)
15	05:41	06:07	06:35	07:03	06:36	15:11 (10)
	20:20	19:51	19:05	18:18	16:42	37 15:48 (10)
16	05:42	06:08	06:36	07:04	06:37	15:11 (10)
	20:19	19:49	19:03	18:16	16:41	36 15:47 (10)
17	05:42	06:09	06:37	07:05	06:39	15:13 (10)
	20:19	19:48	19:01	18:15	16:40	42 16:00 (8)
18	05:43	06:10	06:38	07:06	06:40	15:13 (10)
	20:18	19:47	19:00	18:13	16:39	46 16:02 (8)
19	05:44	06:11	06:39	07:07	06:41	15:13 (10)
	20:18	19:45	18:58	18:12	16:39	49 16:04 (8)
20	05:45	06:12	06:40	07:08	06:42	15:14 (10)
	20:17	19:44	18:57	18:11	16:38	46 16:02 (8)
21	05:45	06:13	06:41	07:09	06:43	15:14 (10)
	20:16	19:43	18:55	18:09	16:37	45 16:01 (8)
22	05:46	06:14	06:41	07:10	06:44	15:15 (10)
	20:16	19:41	18:53	18:08	16:37	43 16:00 (8)
23	05:47	06:15	06:42	07:11	06:45	15:16 (10)
	20:15	19:40	18:52	18:07	16:36	41 15:59 (8)
24	05:48	06:15	06:43	07:12	06:46	15:17 (10)
	20:14	19:38	18:50	18:05	16:36	40 15:59 (8)
25	05:49	06:16	06:44	06:13	06:47	15:18 (10)
	20:13	19:37	18:49	17:04	16:35	37 15:58 (8)
26	05:49	06:17	06:45	06:14	06:48	15:19 (10)
	20:12	19:36	18:47	17:03	16:35	35 15:57 (8)
27	05:50	06:18	06:46	06:15	06:49	15:20 (10)
	20:12	19:34	18:45	17:01	16:35	31 15:56 (8)
28	05:51	06:19	06:47	06:17	06:50	15:21 (10)
	20:11	19:33	18:44	17:00	16:34	28 15:55 (8)
29	05:52	06:20	06:48	06:18	06:51	15:23 (10)
	20:10	19:31	18:42	16:59	16:34	25 15:54 (8)
30	05:53	06:21	06:49	06:19	15:23 (10)	06:52
	20:09	19:30	18:41	16:58	11 15:34 (10)	16:34
31	05:54	06:22		06:20	15:20 (10)	06:51
	20:08	19:28		16:56	17 15:37 (10)	16:42
Potential sun hours	453	424	374	347	303	294
Total, worst case				28	1054	44
Sun reduction				0.54	0.45	0.38
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.58	0.58	0.58
Total reduction				0.31	0.26	0.22
Total, real				9	272	10

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: J - 9  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time  
0 Sum  
8,760 8,760

	January	February	March	April	May	June
1	07:13 16:43	07:02 17:15	15:46 (10) 16:20 (10)	06:29 17:46	06:41 19:17	05:58 19:46
2	07:14 16:44	07:01 17:16	15:47 (10) 16:20 (10)	06:27 17:48	06:39 19:18	05:57 19:47
3	07:14 16:44	07:00 17:17	15:47 (10) 16:20 (10)	06:26 17:49	06:38 19:19	05:56 19:48
4	07:14 16:45	06:59 17:19	15:48 (10) 16:19 (10)	06:24 17:50	06:36 19:20	05:55 19:49
5	07:14 16:46	06:58 17:20	15:49 (10) 16:19 (10)	06:23 17:51	06:35 19:21	05:53 19:50
6	07:14 16:47	06:57 17:21	15:50 (10) 16:18 (10)	06:21 17:52	06:33 19:22	05:52 19:51
7	07:14 16:48	06:56 17:22	15:51 (10) 16:17 (10)	06:20 17:53	06:32 19:23	05:51 19:52
8	07:14 16:49	06:55 17:23	15:53 (10) 16:16 (10)	06:18 17:54	06:30 19:24	05:50 19:53
9	07:14 16:50	06:54 17:24	15:54 (10) 16:15 (10)	06:17 17:55	06:29 19:25	05:49 19:54
10	07:13 16:51	06:53 17:25	15:56 (10) 16:13 (10)	06:15 17:56	06:27 19:26	05:48 19:55
11	07:13 16:52	15:53 (10) 16:02 (10)	06:52 17:27	16:00 (10) 16:11 (10)	06:14 17:57	06:26 19:27
12	07:13 16:53	9 16:02 (10) 15:51 (10)	06:51 17:28	16:11 (10)	17:57 19:28	19:56 19:57
13	07:13 16:54	13 16:04 (10) 15:50 (10)	06:50 17:29	17:58 18:01	19:28 19:31	19:57 20:00
14	07:13 16:55	16 16:06 (10) 15:49 (10)	06:49 17:30	18:00 18:02	19:29 19:32	19:58 20:00
15	07:12 16:56	19 16:08 (10) 15:49 (10)	06:48 17:31	18:01 18:03	19:30 19:33	19:59 20:01
16	07:12 16:57	20 16:09 (10) 15:47 (10)	06:47 17:32	18:01 18:02	20:00 19:32	20:21 20:00
17	07:12 16:58	23 16:10 (10) 15:47 (10)	06:46 17:33	18:02 18:03	20:00 19:33	20:22 20:01
18	07:12 16:59	25 16:12 (10) 15:46 (10)	06:45 17:34	18:03 18:04	20:01 19:34	20:22 20:02
19	07:11 17:00	26 16:12 (10) 15:47 (10)	06:44 17:35	18:04 18:05	20:02 19:35	20:22 20:03
20	07:10 17:01	27 16:14 (10) 15:46 (10)	06:43 17:36	18:05 18:06	20:03 19:36	20:23 20:04
21	07:10 17:02	29 16:15 (10) 15:46 (10)	06:42 17:37	18:06 18:07	20:04 19:37	20:23 20:05
22	07:09 17:03	30 16:16 (10) 15:46 (10)	06:41 17:38	18:07 18:08	20:05 19:38	20:23 20:06
23	07:09 17:05	30 16:16 (10) 15:45 (10)	06:40 17:39	18:08 18:09	20:06 19:39	20:24 20:07
24	07:08 17:06	32 16:17 (10) 15:46 (10)	06:39 17:40	18:09 18:10	20:07 19:40	20:24 20:07
25	07:07 17:07	32 16:18 (10) 15:45 (10)	06:38 17:41	18:10 18:11	20:07 19:41	20:24 20:08
26	07:07 17:08	33 16:18 (10) 15:45 (10)	06:37 17:42	18:11 18:12	20:08 19:42	20:24 20:09
27	07:06 17:09	34 16:19 (10) 15:45 (10)	06:36 17:43	18:12 18:13	20:09 19:42	20:24 20:10
28	07:05 17:10	34 16:20 (10) 15:46 (10)	06:35 17:44	18:13 18:14	20:10 19:43	20:24 20:11
29	07:04 17:11	34 16:20 (10) 15:46 (10)	06:34 17:45	18:14 18:15	20:11 19:44	20:24 20:11
30	07:04 17:12	34 16:20 (10) 15:46 (10)	06:33 17:46	18:15 18:16	20:11 19:45	20:24 20:12
31	07:03 17:13	34 16:20 (10) 15:46 (10)	06:32 17:47	18:16 18:17	20:12 19:46	20:24 20:13
Potential sun hours	303	300		370	396	443
Total, worst case	568	287				
Sun reduction	0.35	0.36				
Oper. time red.	1.00	1.00				
Wind dir. red.	0.57	0.57				
Total reduction	0.20	0.21				
Total, real	112	59				

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: J - 9

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December
1	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	15:26 (10) 15:44 (10)
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	15:24 (10) 15:45 (10)
3	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	15:22 (10) 15:46 (10)
4	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	06:24 16:52	15:21 (10) 15:47 (10)
5	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	15:20 (10) 15:48 (10)
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	15:19 (10) 15:49 (10)
7	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30	06:27 16:49	15:19 (10) 15:50 (10)
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	15:18 (10) 15:50 (10)
9	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	15:18 (10) 15:51 (10)
10	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	15:17 (10) 15:51 (10)
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	15:17 (10) 15:51 (10)
12	05:39 20:21	06:05 19:55	06:32 19:09	07:00 18:22	06:33 16:44	15:18 (10) 15:52 (10)
13	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	15:18 (10) 15:52 (10)
14	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:42	15:18 (10) 15:52 (10)
15	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	15:18 (10) 15:52 (10)
16	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	15:18 (10) 15:52 (10)
17	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	15:19 (10) 15:52 (10)
18	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	15:20 (10) 15:52 (10)
19	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	15:20 (10) 15:52 (10)
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	15:21 (10) 15:51 (10)
21	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:37	15:21 (10) 15:51 (10)
22	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	15:22 (10) 15:51 (10)
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	15:23 (10) 15:50 (10)
24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	15:24 (10) 15:51 (10)
25	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:35	15:25 (10) 15:50 (10)
26	05:49 20:12	06:17 19:36	06:45 18:47	06:14 17:03	06:48 16:35	15:26 (10) 15:49 (10)
27	05:50 20:12	06:18 19:34	06:46 18:45	06:15 17:01	06:49 16:35	15:28 (10) 15:49 (10)
28	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	15:29 (10) 15:48 (10)
29	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	15:30 (10) 15:47 (10)
30	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	15:32 (10) 15:46 (10)
31	05:54 20:08	06:22 19:28		06:20 16:56	15:28 (10) 15:40 (10)	07:13 16:42
Potential sun hours	453	424	374	347	303	294
Total, worst case				12	840	9
Sun reduction				0.54	0.45	0.38
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.57	0.57	0.57
Total reduction				0.30	0.25	0.22
Total, real				4	213	2

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: K - 10

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	July	August	September	October	November	December				
1	07:13	09:16 (9)	07:02	06:29	06:41	05:58	05:32	05:33	05:55	06:23	06:50	06:21	06:53	09:05 (9)		
	16:43	101	14:08 (10)	17:15	17:46	19:17	19:46	20:14	20:24	19:27	18:39	16:55	16:33	89	13:52 (10)	
2	07:14	09:16 (9)	07:01	06:27	06:39	05:57	05:31	05:33	05:56	06:24	06:51	06:22	16:33	92	13:53 (10)	
	16:44	101	14:08 (10)	17:16	17:48	19:18	19:47	20:14	20:24	19:25	18:37	16:54	16:33	92	13:53 (10)	
3	07:14	09:17 (9)	07:00	06:26	06:38	05:56	05:31	05:33	05:56	06:24	06:52	06:23	16:33	92	13:53 (10)	
	16:44	100	14:09 (10)	17:17	17:49	19:19	19:48	20:15	20:24	19:24	18:36	16:53	16:33	93	13:53 (10)	
4	07:14	09:18 (9)	06:59	06:24	06:36	05:55	05:30	05:34	05:57	06:25	06:53	06:24	16:33	93	13:53 (10)	
	16:45	98	14:09 (10)	17:19	17:50	19:20	19:49	20:16	20:24	19:22	18:34	16:52	16:33	94	13:54 (10)	
5	07:14	09:18 (9)	06:58	06:23	06:35	05:53	05:30	05:35	05:58	06:26	06:53	06:25	16:33	94	13:54 (10)	
	16:46	99	14:09 (10)	17:20	17:51	19:21	19:50	20:16	20:24	19:20	18:33	16:51	16:33	96	13:55 (10)	
6	07:14	09:19 (9)	06:57	06:21	06:33	05:52	05:30	05:35	05:59	06:27	06:54	06:26	16:33	96	13:55 (10)	
	16:47	98	14:10 (10)	17:21	17:52	19:22	19:51	20:17	20:23	19:19	18:31	16:50	16:33	98	13:56 (10)	
7	07:14	09:20 (9)	06:56	06:20	06:32	05:51	05:30	05:36	06:00	06:28	06:55	06:27	16:33	98	13:56 (10)	
	16:48	96	14:10 (10)	17:22	17:53	19:23	19:52	20:17	20:23	19:17	18:30	16:49	16:32	98	13:56 (10)	
8	07:14	09:21 (9)	06:55	06:18	06:30	05:50	05:29	05:36	06:01	06:29	06:56	06:29	16:32	98	13:57 (10)	
	16:49	94	14:10 (10)	17:23	17:54	19:24	19:53	20:18	20:23	19:59	19:16	18:28	16:32	98	13:57 (10)	
9	07:14	09:20 (9)	06:54	06:17	06:29	05:49	05:29	05:37	06:02	06:30	06:57	06:30	16:32	100	13:58 (10)	
	16:50	93	14:09 (10)	17:24	17:55	19:25	19:54	20:19	20:23	19:58	19:14	18:27	16:32	100	13:58 (10)	
10	07:14	09:21 (9)	06:53	06:15	06:27	05:48	05:29	05:37	06:03	06:31	06:58	06:31	16:32	102	13:58 (10)	
	16:51	92	14:10 (10)	17:25	17:56	19:26	19:55	20:19	20:22	19:57	19:13	18:25	16:32	102	13:58 (10)	
11	07:13	09:22 (9)	06:52	06:14	06:26	05:47	05:29	05:38	06:04	06:32	06:59	06:32	16:32	101	13:58 (10)	
	16:52	91	14:10 (10)	17:27	17:57	19:27	19:56	20:20	20:22	19:56	19:11	18:24	16:32	101	13:58 (10)	
12	07:13	09:24 (9)	06:51	06:12	06:24	05:46	05:29	05:39	06:05	06:32	07:00	06:33	16:32	102	13:59 (10)	
	16:53	87	14:10 (10)	17:28	17:58	19:28	19:57	20:20	20:21	19:55	19:09	18:22	16:32	102	13:59 (10)	
13	07:13	09:24 (9)	06:50	06:11	06:23	05:45	05:29	05:39	06:05	06:33	07:01	06:34	16:32	102	14:00 (10)	
	16:54	85	14:09 (10)	17:29	17:59	19:29	19:58	20:21	20:21	19:53	19:08	18:21	16:32	102	14:00 (10)	
14	07:13	09:25 (9)	06:48	06:09	06:21	05:44	05:29	05:40	06:06	06:34	07:02	06:35	16:32	103	14:00 (10)	
	16:55	83	14:10 (10)	17:30	18:00	19:30	19:59	20:21	20:20	19:52	19:06	18:19	16:32	103	14:00 (10)	
15	07:12	09:27 (9)	06:47	06:08	06:20	05:43	05:29	05:41	06:07	06:35	07:03	06:36	16:32	104	14:01 (10)	
	16:56	80	14:10 (10)	17:31	18:01	19:31	20:00	20:21	20:20	19:51	19:05	18:18	16:32	104	14:01 (10)	
16	07:12	09:27 (9)	06:46	06:06	06:18	05:42	05:29	05:42	06:08	06:36	07:04	06:37	16:32	103	14:01 (10)	
	16:57	76	14:09 (10)	17:32	18:02	19:32	20:01	20:22	20:19	19:49	19:03	18:16	16:32	103	14:01 (10)	
17	07:12	09:29 (9)	06:45	06:05	06:17	05:41	05:29	05:42	06:09	06:37	07:05	06:39	16:32	107	14:02 (10)	
	16:58	72	14:09 (10)	17:33	18:03	19:33	20:01	20:22	20:19	19:48	19:01	18:15	16:40	16	13:16 (10)	
18	07:11	09:30 (9)	06:44	06:03	06:15	05:40	05:29	05:43	06:10	06:38	07:06	06:40	16:32	107	14:02 (10)	
	16:59	68	14:08 (10)	17:35	18:04	19:34	20:02	20:23	20:18	19:47	19:00	18:13	16:39	23	13:35 (10)	
19	07:11	09:32 (9)	06:42	06:01	06:14	05:40	05:29	05:44	06:11	06:39	07:07	06:41	16:32	109	15:30 (8)	
	17:00	63	14:08 (10)	17:36	18:05	19:35	20:03	20:23	20:18	19:45	18:58	18:12	16:39	28	13:38 (10)	
20	07:10	09:33 (9)	06:41	06:00	06:13	05:39	05:29	05:45	06:12	06:40	07:08	06:42	16:32	110	15:31 (8)	
	17:01	58	14:07 (10)	17:37	18:06	19:36	20:04	20:23	20:17	19:44	18:57	18:11	16:38	36	13:40 (10)	
21	07:10	09:37 (9)	06:40	05:58	06:11	05:38	05:29	05:45	06:13	06:41	07:09	06:43	16:32	110	15:31 (8)	
	17:02	48	14:06 (10)	17:38	18:07	19:37	20:05	20:23	20:16	19:43	18:55	18:09	16:38	48	13:41 (10)	
22	07:09	09:42 (9)	06:38	05:57	06:10	05:37	05:29	05:46	06:14	06:41	07:10	06:44	16:32	111	15:33 (8)	
	17:04	36	14:05 (10)	17:39	18:08	19:38	20:06	20:24	20:16	19:41	18:53	18:08	16:37	57	13:43 (10)	
23	07:09	13:35 (10)	06:37	05:55	06:08	05:37	05:30	05:47	06:15	06:42	07:11	06:45	16:32	111	15:33 (8)	
	17:05	28	14:03 (10)	17:40	18:09	19:39	20:07	20:24	20:15	19:40	18:52	18:07	16:36	63	13:44 (10)	
24	07:08	13:38 (10)	06:36	05:54	06:07	05:36	05:30	05:48	06:15	06:43	07:12	06:46	16:32	111	15:33 (8)	
	17:06	23	14:01 (10)	17:41	18:10	19:40	20:07	20:24	20:14	19:38	18:50	18:05	16:36	68	13:46 (10)	
25	07:07	13:42 (10)	06:34	05:52	06:06	05:35	05:30	05:49	06:16	06:44	06:13	06:47	16:32	110	15:33 (8)	
	17:07	16	13:58 (10)	17:42	18:11	19:41	20:08	20:24	20:13	19:37	18:49	17:04	16:35	72	13:47 (10)	
26	07:07	06:33	05:50	06:04	05:35	05:31	05:50	06:17	06:45	06:14	06:48	06:14	16:32	110	15:33 (8)	
	17:08	17:43	18:12	19:42	20:09	20:24	20:12	19:36	18:47	17:03	16:35	76	13:48 (10)	16:38	109	15:34 (8)
27	07:06	06:32	05:49	06:03	05:34	05:31	05:50	06:18	06:46	06:16	06:49	09:06 (9)	16:32	109	15:34 (8)	
	17:09	17:44	18:13	19:43	20:10	20:24	20:12	19:34	18:45	17:01	16:35	80	13:49 (10)	16:39	104	15:32 (8)
28	07:05	06:30	05:47	06:02	05:34	05:31	05:51	06:19	06:47	06:17	06:50	09:05 (9)	16:32	103	14:06 (10)	
	17:10	17:45	18:14	19:43	20:11	20:24	20:11	19:33	18:44	17:00	16:34	83	13:50 (10)	16:40	103	14:06 (10)
29	07:04	06:46	06:01	05:33	05:32	05:32	05:52	06:20	06:48	06:18	06:51	09:05 (9)	16:32	103	14:07 (10)	
	17:12	19:15	19:44	20:11	20:24	20:10	19:31	18:42	16:59	16:34	85	13:50 (10)	16:40	103	14:07 (10)	
30	07:04	06:44	05:59	05:32	05:32	05:32	05:53	06:21	06:49	06:19	06:52	09:05 (9)	16:32	103	14:07 (10)	
	17:13	19:16	19:45	20:12	20:24	20:09	19:30	18:41	16:58	16:34	87	13:51 (10)	16:41	102	14:08 (10)	
31	07:03	06:43	06:02	05:32	05:32	05:54	06:22	06:50	06:20	06:20	06:20	06:20	16:32	102	14:08 (10)	
	17:14	19:16	19:45	20:12	20:24	20:08	19:28	18:41	16:57	16:34	87	13:51 (10)	16:42	102	14:08 (10)	
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294	3187			
Total, worst case	1886												822		3187	
Sun reduction	0.35												0.45		0.38	
Oper. time red.	1.00												1.00		1.00	
Wind dir. red.	0.88												0.89		0.88	
Total reduction	0.31												0.40		0.33	
Total, real	579												325		1058	

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: L - 11

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13 16:43	12:24 (9) 13:21 (9)	07:02 17:15	16:31 (8) 17:46	06:29 17:46	31
2	07:14 16:44	12:25 (9) 13:21 (9)	07:01 17:16	16:32 (8) 17:48	06:27 17:48	28
3	07:14 16:44	12:26 (9) 13:21 (9)	07:00 17:17	16:32 (8) 17:49	06:26 17:49	25
4	07:14 16:45	12:27 (9) 13:22 (9)	06:59 17:19	16:33 (8) 17:50	06:24 17:50	22
5	07:14 16:46	12:27 (9) 13:22 (9)	06:58 17:20	16:34 (8) 17:51	06:23 17:51	15
6	07:14 16:47	12:28 (9) 13:22 (9)	06:57 17:21	16:36 (8) 17:52	06:21 17:52	5
7	07:14 16:48	12:29 (9) 13:22 (9)	06:56 17:22	16:38 (8) 17:53	06:20 17:53	
8	07:14 16:49	12:31 (9) 13:22 (9)	06:55 17:23	16:24 (10) 17:54	06:18 17:54	
9	07:14 16:50	12:31 (9) 13:21 (9)	06:54 17:24	16:21 (10) 17:55	06:17 17:55	
10	07:13 16:51	12:32 (9) 13:21 (9)	06:53 17:25	16:19 (10) 17:56	06:15 17:56	
11	07:13 16:52	12:34 (9) 13:21 (9)	06:52 17:27	16:18 (10) 17:57	06:14 17:57	
12	07:13 16:53	12:35 (9) 13:21 (9)	06:51 17:28	16:16 (10) 17:58	06:12 17:58	
13	07:13 16:54	12:36 (9) 13:20 (9)	06:50 17:29	16:15 (10) 17:59	06:11 17:59	
14	07:13 16:55	12:38 (9) 13:20 (9)	06:48 17:30	16:14 (10) 18:00	06:09 18:00	
15	07:12 16:56	12:40 (9) 13:20 (9)	06:47 17:31	16:13 (10) 18:01	06:08 18:01	
16	07:12 16:57	12:41 (9) 13:18 (9)	06:46 17:32	16:13 (10) 18:02	06:06 18:02	
17	07:12 16:58	12:43 (9) 13:18 (9)	06:45 17:33	16:12 (10) 18:03	06:05 18:03	
18	07:11 16:59	12:45 (9) 13:16 (9)	06:44 17:35	16:11 (10) 18:04	06:03 18:04	
19	07:11 17:00	12:48 (9) 13:15 (9)	06:42 17:36	16:11 (10) 18:05	06:01 18:05	
20	07:10 17:01	12:51 (9) 13:12 (9)	06:41 17:37	16:12 (10) 18:06	06:00 18:06	
21	07:10 17:02	12:57 (9) 13:09 (9)	06:40 17:38	16:11 (10) 18:07	05:58 18:07	
22	07:09 17:04		06:38 17:39	16:11 (10) 18:08	05:57 18:08	
23	07:09 17:05		06:37 17:40	16:12 (10) 18:09	05:55 18:09	
24	07:08 17:06		06:36 17:41	16:11 (10) 18:10	05:54 18:10	
25	07:07 17:07		06:34 17:42	16:12 (10) 18:11	05:52 18:11	
26	07:07 17:08		06:33 17:43	16:12 (10) 18:12	05:50 18:12	
27	07:06 17:09		06:31 17:44	16:13 (10) 18:13	05:49 18:13	
28	07:05 17:10		06:30 17:45	16:13 (10) 18:14	05:47 18:14	
29	07:04 17:12			16:46 (10) 19:15	18:14 19:15	
30	07:04 17:13			06:44 19:15	18:14 19:15	
31	07:03 17:14			06:43 19:16	18:14 19:16	
Potential sun hours	303	300	370	396	443	445
Total, worst case	917	725	126			
Sun reduction	0.35	0.36	0.41			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.98	0.42	0.42			
Total reduction	0.35	0.16	0.18			
Total, real	321	114	22			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: L - 11

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December
1	05:32	05:55	06:23	06:50	06:21	06:53
	20:24	20:07	19:27	18:39	16:55	15:49 (10)
2	05:33	05:56	06:24	06:51	06:22	06:54
	20:24	20:06	19:25	18:37	16:54	15:51 (10)
3	05:33	05:56	06:24	06:52	06:23	06:55
	20:24	20:05	19:24	18:36	16:53	15:54 (10)
4	05:34	05:57	06:25	06:52	06:24	06:56
	20:24	20:04	19:22	18:34	16:52	16:08 (8)
5	05:34	05:58	06:26	06:53	06:25	06:57
	20:24	20:03	19:20	18:33	16:51	16:05 (8)
6	05:35	05:59	06:27	06:54	06:26	06:58
	20:23	20:02	19:19	18:31	16:50	16:04 (8)
7	05:36	06:00	06:28	06:55	06:27	06:59
	20:23	20:00	19:17	18:30	16:49	16:09 (8)
8	05:36	06:01	06:29	06:56	06:29	07:00
	20:23	19:59	19:16	18:28	16:48	16:03 (8)
9	05:37	06:02	06:30	06:57	06:30	07:01
	20:22	19:58	19:14	18:27	16:47	16:02 (8)
10	05:37	06:03	06:31	06:58	06:31	07:02
	20:22	19:57	19:13	18:25	16:46	16:03 (8)
11	05:38	06:04	06:32	06:59	06:32	07:02
	20:22	19:56	19:11	18:24	16:45	16:33
12	05:39	06:05	06:32	07:00	06:33	07:03
	20:21	19:55	19:09	18:22	16:44	16:33
13	05:39	06:05	06:33	07:01	06:34	07:04
	20:21	19:53	19:08	18:21	16:43	16:33
14	05:40	06:06	06:34	07:02	06:35	07:05
	20:20	19:52	19:06	18:19	16:42	16:33
15	05:41	06:07	06:35	07:03	06:36	07:06
	20:20	19:51	19:05	18:18	16:42	16:33
16	05:42	06:08	06:36	07:04	06:37	07:06
	20:19	19:49	19:03	18:16	16:41	16:34
17	05:42	06:09	06:37	07:05	06:39	07:07
	20:19	19:48	19:01	18:15	16:40	16:34
18	05:43	06:10	06:38	07:06	06:40	07:08
	20:18	19:47	19:00	18:13	16:39	16:34
19	05:44	06:11	06:39	07:07	06:41	07:08
	20:18	19:45	18:58	18:12	16:39	16:35
20	05:45	06:12	06:40	07:08	06:42	07:09
	20:17	19:44	18:57	18:11	16:38	16:35
21	05:45	06:13	06:41	07:09	06:43	07:09
	20:16	19:43	18:55	18:09	16:37	12:32 (9)
22	05:46	06:14	06:41	07:10	06:44	07:10
	20:16	19:41	18:53	18:08	16:37	12:44 (9)
23	05:47	06:15	06:42	07:11	06:45	07:10
	20:15	19:40	18:52	18:07	16:36	12:27 (9)
24	05:48	06:15	06:43	07:12	06:46	07:11
	20:14	19:38	18:50	18:05	16:36	12:23 (9)
25	05:49	06:16	06:44	06:13	06:47	07:11
	20:13	19:37	18:49	17:04	16:35	12:54 (9)
26	05:49	06:17	06:45	06:14	06:48	07:11
	20:12	19:36	18:47	17:03	16:35	12:21 (9)
27	05:50	06:18	06:46	06:15	06:49	07:12
	20:12	19:34	18:45	17:01	16:35	12:59 (9)
28	05:51	06:19	06:47	06:17	06:50	07:12
	20:11	19:33	18:44	17:00	16:34	12:18 (9)
29	05:52	06:20	06:48	06:18	06:51	07:13
	20:10	19:31	18:42	16:59	16:34	13:00 (9)
30	05:53	06:21	06:49	06:19	06:52	07:13
	20:09	19:30	18:41	16:58	16:34	12:17 (9)
31	05:54	06:22	06:20	06:20	06:53	07:13
	20:08	19:28	16:56	16:13 (10)	16:42	12:24 (9)
Potential sun hours	453	424	374	347	303	294
Total, worst case				786	422	1745
Sun reduction				0.54	0.45	0.38
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.42	0.86	0.98
Total reduction				0.23	0.40	0.38
Total, real				181	168	666

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: M - 13

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	
1	07:13 16:43	13:19 (9) 14:15 (9)	07:02 17:15	06:29 17:46	16:31 (10) 17:01 (10)	06:41 19:17	05:58 20:14
2	07:14 16:44	13:20 (9) 14:15 (9)	07:01 17:16	06:27 17:48	16:32 (10) 17:01 (10)	06:39 19:18	05:57 20:14
3	07:14 16:44	13:20 (9) 14:16 (9)	07:00 17:17	16:40 (8) 17:49	16:32 (10) 16:59 (10)	06:38 19:19	05:56 20:15
4	07:14 16:45	13:21 (9) 14:16 (9)	06:59 17:19	16:40 (8) 17:50	16:34 (10) 16:58 (10)	06:36 19:20	05:55 20:16
5	07:14 16:46	13:22 (9) 14:16 (9)	06:58 17:20	16:41 (8) 17:51	16:36 (10) 16:55 (10)	06:35 19:21	05:53 20:16
6	07:14 16:47	13:23 (9) 14:16 (9)	06:57 17:21	16:41 (8) 17:52	16:39 (10) 16:53 (10)	06:33 19:22	05:52 20:17
7	07:14 16:48	13:24 (9) 14:17 (9)	06:56 17:22	16:42 (8) 17:53	06:32 19:23	05:51 19:52	05:30 20:17
8	07:14 16:49	13:25 (9) 14:17 (9)	06:55 17:23	16:44 (8) 17:54	06:30 19:24	05:50 19:53	05:29 20:18
9	07:14 16:50	13:25 (9) 14:16 (9)	06:54 17:24	16:46 (8) 17:55	06:29 19:25	05:49 19:54	05:29 20:19
10	07:13 16:51	13:26 (9) 14:16 (9)	06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19
11	07:13 16:52	13:27 (9) 14:17 (9)	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20
12	07:13 16:53	13:28 (9) 14:17 (9)	06:51 17:28	16:42 (10) 16:53 (10)	06:12 17:58	06:24 19:28	05:46 20:20
13	07:13 16:54	13:29 (9) 14:16 (9)	06:50 17:29	16:38 (10) 16:55 (10)	06:11 17:59	06:23 19:29	05:45 20:21
14	07:13 16:55	13:30 (9) 14:16 (9)	06:48 17:30	16:36 (10) 16:57 (10)	06:09 18:00	06:21 19:30	05:44 20:21
15	07:12 16:56	13:32 (9) 14:16 (9)	06:47 17:31	16:35 (10) 16:59 (10)	06:08 18:01	06:20 19:31	05:43 20:21
16	07:12 16:57	13:33 (9) 14:15 (9)	06:46 17:32	16:34 (10) 17:01 (10)	06:06 18:02	06:18 19:32	05:42 20:22
17	07:12 16:58	13:35 (9) 14:15 (9)	06:45 17:33	16:32 (10) 17:01 (10)	06:05 18:03	06:17 19:33	05:41 20:22
18	07:11 16:59	13:36 (9) 14:14 (9)	06:44 17:35	16:31 (10) 17:02 (10)	06:03 18:04	06:15 19:34	05:40 20:22
19	07:11 17:00	13:38 (9) 14:14 (9)	06:42 17:36	16:31 (10) 17:03 (10)	06:01 18:05	06:14 19:35	05:40 20:23
20	07:10 17:01	13:40 (9) 14:12 (9)	06:41 17:37	16:31 (10) 17:04 (10)	06:00 18:06	06:13 19:36	05:39 20:23
21	07:10 17:02	13:42 (9) 14:12 (9)	06:40 17:38	16:30 (10) 17:04 (10)	05:58 18:07	06:11 19:37	05:38 20:23
22	07:09 17:04	13:45 (9) 14:10 (9)	06:38 17:39	16:30 (10) 17:04 (10)	05:57 18:08	06:10 19:38	05:37 20:24
23	07:09 17:05	13:48 (9) 14:07 (9)	06:37 17:40	16:30 (10) 17:05 (10)	05:55 18:09	06:08 19:39	05:37 20:24
24	07:08 17:06	13:53 (9) 14:04 (9)	06:36 17:41	16:29 (10) 17:04 (10)	05:54 18:10	06:07 19:40	05:36 20:24
25	07:07 17:07	06:34 17:42	05:52 18:11	16:29 (10) 17:04 (10)	05:52 18:11	06:06 19:41	05:35 20:24
26	07:07 17:08	06:33 17:43	05:50 18:12	16:29 (10) 17:03 (10)	05:50 18:12	06:04 19:42	05:35 20:24
27	07:06 17:09	06:31 17:44	05:49 18:13	16:30 (10) 17:03 (10)	05:49 18:13	06:03 19:42	05:34 20:24
28	07:05 17:10	06:30 17:45	05:47 18:14	16:30 (10) 17:02 (10)	05:47 18:14	06:02 19:43	05:34 20:24
29	07:04 17:12		05:46 19:15	06:46 19:15	06:01 19:44	05:33 20:11	05:32 20:24
30	07:04 17:13		06:44 19:15	06:44 19:15	05:59 19:45	05:32 20:12	05:32 20:24
31	07:03 17:14		06:43 19:16	06:43 19:16		05:32 20:13	
Potential sun hours	303	300	370	396	443	445	
Total, worst case	1044	543	143				
Sun reduction	0.35	0.36	0.41				
Oper. time red.	1.00	1.00	1.00				
Wind dir. red.	0.90	0.37	0.36				
Total reduction	0.32	0.14	0.15				
Total, real	337	75	22				

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: M - 13

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December
1	05:32	05:55	06:23	06:50	06:21	06:53
	20:24	20:07	19:27	18:39	16:55	16:33
2	05:33	05:56	06:24	06:51	06:22	06:54
	20:24	20:06	19:25	18:37	16:54	16:15 (8)
3	05:33	05:56	06:24	06:52	06:23	06:55
	20:24	20:05	19:24	18:36	16:53	16:13 (8)
4	05:34	05:57	06:25	06:52	06:24	06:56
	20:24	20:04	19:22	18:34	16:52	16:12 (8)
5	05:34	05:58	06:26	06:53	06:25	06:57
	20:24	20:03	19:20	18:33	16:51	16:11 (8)
6	05:35	05:59	06:27	06:54	06:26	06:58
	20:23	20:02	19:19	18:31	16:50	16:10 (8)
7	05:36	06:00	06:28	06:55	06:27	06:59
	20:23	20:00	19:17	18:30	16:49	16:11 (8)
8	05:36	06:01	06:29	06:56	06:29	07:00
	20:23	19:59	19:16	18:28	16:48	16:16 (8)
9	05:37	06:02	06:30	06:57	06:30	07:01
	20:22	19:58	19:14	18:27	16:47	16:12 (8)
10	05:37	06:03	06:31	06:58	06:31	07:02
	20:22	19:57	19:13	18:25	16:46	16:33
11	05:38	06:04	06:32	06:59	06:32	07:02
	20:22	19:56	19:11	18:24	16:45	16:33
12	05:39	06:05	06:32	07:00	06:33	07:03
	20:21	19:55	19:09	18:22	16:44	16:33
13	05:39	06:05	06:33	07:01	06:34	07:04
	20:21	19:53	19:08	18:21	16:43	16:33
14	05:40	06:06	06:34	07:02	06:35	07:05
	20:20	19:52	19:06	18:19	16:42	16:33
15	05:41	06:07	06:35	07:03	06:36	07:05
	20:20	19:51	19:05	18:18	16:42	16:33
16	05:42	06:08	06:36	07:04	06:37	07:06
	20:19	19:49	19:03	18:16	16:41	16:34
17	05:42	06:09	06:37	07:05	06:39	07:07
	20:19	19:48	19:01	18:15	16:40	16:34
18	05:43	06:10	06:38	07:06	06:40	07:08
	20:18	19:47	19:00	18:13	16:39	13:27 (9)
19	05:44	06:11	06:39	07:07	06:41	07:08
	20:18	19:45	18:58	18:12	16:39	13:38 (9)
20	05:45	06:12	06:40	07:08	06:42	07:09
	20:17	19:44	18:57	18:11	16:38	13:42 (9)
21	05:45	06:13	06:41	07:09	06:43	07:09
	20:16	19:43	18:55	18:09	16:37	13:45 (9)
22	05:46	06:14	06:41	07:10	06:44	07:10
	20:16	19:41	18:53	18:08	16:37	13:17 (9)
23	05:47	06:15	06:42	07:11	06:45	07:10
	20:15	19:40	18:52	18:07	16:36	13:48 (9)
24	05:48	06:15	06:43	07:12	06:46	07:11
	20:14	19:38	18:50	18:05	16:36	13:50 (9)
25	05:49	06:16	06:44	06:13	06:47	07:11
	20:13	19:37	18:49	17:04	16:35	13:14 (9)
26	05:49	06:17	06:45	06:14	06:48	07:12
	20:12	19:36	18:47	17:03	16:35	13:52 (9)
27	05:50	06:18	06:46	06:15	06:49	07:12
	20:12	19:34	18:45	17:01	16:35	13:13 (9)
28	05:51	06:19	06:47	06:17	06:50	07:12
	20:11	19:33	18:44	17:00	16:34	13:10 (9)
29	05:52	06:20	06:48	06:18	06:51	07:13
	20:10	19:31	18:42	16:59	16:34	13:56 (9)
30	05:53	06:21	06:49	06:19	06:52	07:13
	20:09	19:30	18:41	16:58	16:34	13:10 (9)
31	05:54	06:22	06:20	06:20	06:53	07:13
	20:08	19:28	16:56	16:56	16:42	13:11 (9)
Potential sun hours	453	424	374	347	303	294
Total, worst case				654	507	1732
Sun reduction				0.54	0.45	0.38
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.36	0.86	0.90
Total reduction				0.20	0.39	0.35
Total, real				131	200	610

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: N - 14

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	
1	07:13   16:43	13:17 (9)   07:02	16:32 (8)   06:29	06:41	05:58	05:32	
	29	13:46 (9)   17:15	16:43 (8)   17:46	19:17	19:46	20:14	
2	07:14   16:44	13:19 (9)   07:01	16:24 (10)   06:27	06:39	05:57	05:31	
	27	13:46 (9)   17:16	16:44 (8)   17:48	19:18	19:47	20:14	
3	07:14   16:44	13:20 (9)   07:00	16:21 (10)   06:26	06:38	05:56	05:31	
	25	13:45 (9)   17:17	16:46 (8)   17:49	19:19	19:48	20:15	
4	07:14   16:45	13:21 (9)   06:59	16:19 (10)   06:24	06:36	05:55	05:30	
	24	13:45 (9)   17:19	16:44 (8)   17:50	19:20	19:49	20:16	
5	07:14   16:46	13:23 (9)   06:58	16:18 (10)   06:23	06:35	05:53	05:30	
	21	13:44 (9)   17:20	16:40 (10)   17:51	19:21	19:50	20:16	
6	07:14   16:47	13:25 (9)   06:57	16:16 (10)   06:21	06:33	05:52	05:30	
	18	13:43 (9)   17:21	16:42 (10)   17:52	19:22	19:51	20:17	
7	07:14   16:48	13:28 (9)   06:56	16:16 (10)   06:20	06:32	05:51	05:30	
	14	13:42 (9)   17:22	16:43 (10)   17:53	19:23	19:52	20:17	
8	07:14   16:49	13:31 (9)   06:55	16:15 (10)   06:18	06:30	05:50	05:29	
	9	13:40 (9)   17:23	16:44 (10)   17:54	19:24	19:53	20:18	
9	07:14   16:50	06:54	16:14 (10)   06:17	06:29	05:49	05:29	
	16:50	17:24	16:45 (10)   17:55	19:25	19:54	20:19	
10	07:13   16:51	06:53	16:14 (10)   06:15	06:27	05:48	05:29	
	16:51	17:25	16:46 (10)   17:56	19:26	19:55	20:19	
11	07:13   16:52	06:52	16:14 (10)   06:14	06:26	05:47	05:29	
	16:52	17:27	16:46 (10)   17:57	19:27	19:56	20:20	
12	07:13   16:53	06:51	16:14 (10)   06:12	06:24	05:46	05:29	
	16:53	17:28	16:47 (10)   17:58	19:28	19:57	20:20	
13	07:13   16:54	06:50	16:13 (10)   06:11	06:23	05:45	05:29	
	16:54	17:29	16:46 (10)   17:59	19:29	19:58	20:21	
14	07:13   16:55	06:48	16:13 (10)   06:09	06:21	05:44	05:29	
	16:55	17:30	16:47 (10)   18:00	19:30	19:59	20:21	
15	07:12   16:56	06:47	16:13 (10)   06:08	06:20	05:43	05:29	
	16:56	17:31	16:47 (10)   18:01	19:31	20:00	20:21	
16	07:12   16:57	06:46	16:13 (10)   06:06	06:18	05:42	05:29	
	16:57	17:32	16:47 (10)   18:02	19:32	20:00	20:22	
17	07:12   16:58	06:45	16:13 (10)   06:05	06:17	05:41	05:29	
	16:58	17:33	16:46 (10)   18:03	19:33	20:01	20:22	
18	07:11   16:59	06:44	16:14 (10)   06:03	06:15	05:40	05:29	
	16:59	17:35	16:46 (10)   18:04	19:34	20:02	20:22	
19	07:11   17:00	06:42	16:14 (10)   06:01	06:14	05:40	05:29	
	17:00	17:36	16:46 (10)   18:05	19:35	20:03	20:23	
20	07:10   17:01	06:41	16:15 (10)   06:00	06:13	05:39	05:29	
	17:01	17:37	16:45 (10)   18:06	19:36	20:04	20:23	
21	07:10   17:02	06:40	16:15 (10)   05:58	06:11	05:38	05:29	
	17:02	17:38	16:44 (10)   18:07	19:37	20:05	20:23	
22	07:09   17:04	06:38	16:17 (10)   05:57	06:10	05:37	05:29	
	17:04	17:39	16:43 (10)   18:08	19:38	20:06	20:24	
23	07:09   17:05	06:37	16:19 (10)   05:55	06:08	05:37	05:30	
	17:05	17:40	16:42 (10)   18:09	19:39	20:07	20:24	
24	07:08   17:06	06:36	16:20 (10)   05:54	06:07	05:36	05:30	
	17:06	17:41	16:39 (10)   18:10	19:40	20:07	20:24	
25	07:07   17:07	06:34	16:22 (10)   05:52	06:06	05:35	05:30	
	17:07	17:42	16:37 (10)   18:11	19:41	20:08	20:24	
26	07:07   17:08	06:33	16:26 (10)   05:50	06:04	05:35	05:31	
	17:08	17:43	16:32 (10)   18:12	19:42	20:09	20:24	
27	07:06   17:09	16:29 (8)   06:31	05:49	06:03	05:34	05:31	
	17:09	2	16:31 (8)   17:44	18:13	19:42	20:10	20:24
28	07:05   17:10	16:30 (8)   06:30	05:47	06:02	05:34	05:31	
	17:10	4	16:34 (8)   17:45	18:14	19:43	20:11	20:24
29	07:04   17:12	16:30 (8)   06:29	05:46	06:01	05:33	05:32	
	17:12	5	16:35 (8)   17:46	19:15	19:44	20:11	20:24
30	07:04   17:13	16:31 (8)   06:28	05:45	05:59	05:32	05:32	
	17:13	6	16:37 (8)   17:47	19:16	19:45	20:12	20:24
31	07:03   17:14	16:31 (8)   06:27	05:43	05:58	05:32	05:31	
	17:14	8	16:39 (8)   17:48	19:17	20:13	20:24	
Potential sun hours	303	300	370	396	443	445	
Total, worst case	192	693					
Sun reduction	0.35	0.36					
Oper. time red.	1.00	1.00					
Wind dir. red.	0.88	0.45					
Total reduction	0.31	0.17					
Total, real	60	116					

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

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

## SHADOW - Calendar

Shadow receptor: N - 14  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3.40 3.90 4.90 6.30 7.50 9.10 10.20 9.60 8.10 6.00 4.50 3.60

Operational time  
0 Sum  
8,760 8,760

	July	August	September	October	November	December
1	05:32	05:55	06:23	06:50	06:21	15:44 (10) 06:53
	20:24	20:07	19:27	18:39	16:55	31 16:15 (10) 16:33
2	05:33	05:56	06:24	06:51	06:22	15:44 (10) 06:54
	20:24	20:06	19:25	18:37	16:54	31 16:15 (10) 16:33
3	05:33	05:56	06:24	06:52	06:23	15:45 (10) 06:55
	20:24	20:05	19:24	18:36	16:53	29 16:14 (10) 16:33
4	05:34	05:57	06:25	06:52	06:24	15:46 (10) 06:56
	20:24	20:04	19:22	18:34	16:52	27 16:13 (10) 16:33
						7 13:23 (9)
5	05:34	05:58	06:26	06:53	06:25	15:46 (10) 06:57
	20:24	20:03	19:20	18:33	16:51	26 16:12 (10) 16:33
						14 13:27 (9)
6	05:35	05:59	06:27	06:54	06:26	15:48 (10) 06:58
	20:23	20:02	19:19	18:31	16:50	22 16:10 (10) 16:32
						18 13:29 (9)
7	05:36	06:00	06:28	06:55	06:27	15:50 (10) 06:59
	20:23	20:00	19:17	18:30	16:49	25 16:15 (8) 16:32
						21 13:31 (9)
8	05:36	06:01	06:29	06:56	06:29	15:52 (10) 07:00
	20:23	19:59	19:16	18:28	16:48	25 16:17 (8) 16:32
						24 13:33 (9)
9	05:37	06:02	06:30	06:57	06:30	15:55 (10) 07:01
	20:22	19:58	19:14	18:27	16:47	20 16:15 (8) 16:32
						25 13:33 (9)
10	05:37	06:03	06:31	06:58	06:31	16:03 (8) 07:02
	20:22	19:57	19:13	18:25	16:46	10 16:14 (8) 16:33
						27 13:35 (9)
11	05:38	06:04	06:32	06:59	06:32	16:02 (8) 07:02
	20:22	19:56	19:11	18:24	16:45	8 16:10 (8) 16:33
						28 13:36 (9)
12	05:39	06:05	06:32	07:00	06:33	16:03 (8) 07:03
	20:21	19:55	19:09	18:22	16:44	6 16:09 (8) 16:33
						30 13:37 (9)
13	05:39	06:05	06:33	07:01	06:34	16:02 (8) 07:04
	20:21	19:53	19:08	18:21	16:43	5 16:07 (8) 16:33
						30 13:38 (9)
14	05:40	06:06	06:34	07:02	06:35	16:02 (8) 07:05
	20:20	19:52	19:06	18:19	16:42	4 16:06 (8) 16:33
						31 13:38 (9)
15	05:41	06:07	06:35	07:03	06:36	16:02 (8) 07:05
	20:20	19:51	19:05	18:18	16:42	2 16:04 (8) 16:33
						32 13:39 (9)
16	05:42	06:08	06:36	07:04	16:57 (10) 06:37	07:06
	20:19	19:49	19:03	18:16	10 17:07 (10) 16:41	16:34
						33 13:41 (9)
17	05:42	06:09	06:37	07:05	16:53 (10) 06:39	07:07
	20:19	19:48	19:01	18:15	17 17:10 (10) 16:40	16:34
						34 13:41 (9)
18	05:43	06:10	06:38	07:06	16:51 (10) 06:40	07:08
	20:18	19:47	19:00	18:13	21 17:12 (10) 16:39	16:34
						34 13:42 (9)
19	05:44	06:11	06:39	07:07	16:49 (10) 06:41	07:08
	20:18	19:45	18:58	18:12	24 17:13 (10) 16:39	16:35
						34 13:43 (9)
20	05:45	06:12	06:40	07:08	16:47 (10) 06:42	07:09
	20:17	19:44	18:57	18:11	27 17:14 (10) 16:38	16:35
						35 13:43 (9)
21	05:45	06:13	06:41	07:09	16:46 (10) 06:43	07:09
	20:16	19:43	18:55	18:09	29 17:15 (10) 16:37	16:36
						35 13:44 (9)
22	05:46	06:14	06:41	07:10	16:45 (10) 06:44	07:10
	20:16	19:41	18:53	18:08	30 17:15 (10) 16:37	16:36
						35 13:44 (9)
23	05:47	06:15	06:42	07:11	16:44 (10) 06:45	07:10
	20:15	19:40	18:52	18:07	32 17:16 (10) 16:36	16:37
						35 13:44 (9)
24	05:48	06:15	06:43	07:12	16:43 (10) 06:46	07:11
	20:14	19:38	18:50	18:05	33 17:16 (10) 16:36	16:37
						35 13:45 (9)
25	05:49	06:16	06:44	06:13	15:43 (10) 06:47	07:11
	20:13	19:37	18:49	17:04	34 16:17 (10) 16:35	16:38
						34 13:45 (9)
26	05:49	06:17	06:45	06:14	15:43 (10) 06:48	07:12
	20:12	19:36	18:47	17:03	34 16:17 (10) 16:35	16:38
						34 13:46 (9)
27	05:50	06:18	06:46	06:15	15:43 (10) 06:49	07:12
	20:12	19:34	18:45	17:01	34 16:17 (10) 16:35	16:39
						34 13:46 (9)
28	05:51	06:19	06:47	06:17	15:42 (10) 06:50	07:12
	20:11	19:33	18:44	17:00	35 16:17 (10) 16:34	16:40
						33 13:46 (9)
29	05:52	06:20	06:48	06:18	15:42 (10) 06:51	07:13
	20:10	19:31	18:42	16:59	34 16:16 (10) 16:34	16:40
						31 13:45 (9)
30	05:53	06:21	06:49	06:19	15:42 (10) 06:52	07:13
	20:09	19:30	18:41	16:58	34 16:16 (10) 16:34	16:41
						31 13:46 (9)
31	05:54	06:22	06:50	06:20	15:43 (10) 06:53	07:13
	20:08	19:28	18:39	16:56	32 16:15 (10) 16:42	16:42
						30 13:46 (9)
Potential sun hours	453	424	374	347	303	294
Total, worst case				460	271	824
Sun reduction				0.54	0.45	0.38
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.45	0.46	0.93
Total reduction				0.25	0.21	0.36
Total, real				113	56	300

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: O - 15

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13 16:43	08:43 (8) 09:24 (8)	07:02 17:15	06:29 17:47		05:32 20:14
2	07:14 16:44	08:44 (8) 09:24 (8)	07:01 17:16	06:27 17:48	07:41 (10) 07:48 (10)	05:31 20:14
3	07:14 16:44	08:44 (8) 09:25 (8)	07:00 17:17	06:26 17:49		05:31 20:15
4	07:14 16:45	08:45 (8) 09:25 (8)	06:59 17:19	06:24 17:50		05:31 20:16
5	07:14 16:46	08:46 (8) 09:25 (8)	06:58 17:20	06:23 17:51		05:30 20:16
6	07:14 16:47	08:46 (8) 09:25 (8)	06:57 17:21	06:21 17:52		05:30 20:17
7	07:14 16:48	08:47 (8) 09:25 (8)	06:56 17:22	06:20 17:53		05:30 20:18
8	07:14 16:49	08:48 (8) 09:25 (8)	06:55 17:23	06:18 17:54		05:29 20:18
9	07:14 16:50	08:49 (8) 09:26 (8)	06:54 17:24	06:17 17:55		05:29 20:19
10	07:14 16:51	08:49 (8) 09:25 (8)	06:53 17:26	06:15 17:56		05:29 20:19
11	07:13 16:52	08:50 (8) 09:25 (8)	06:52 17:27	06:14 17:57		05:29 20:20
12	07:13 16:53	08:51 (8) 09:25 (8)	06:51 17:28	06:12 17:58		05:29 20:20
13	07:13 16:54	08:52 (8) 09:24 (8)	06:50 17:29	06:11 17:59		05:29 20:21
14	07:13 16:55	08:53 (8) 09:24 (8)	06:49 17:30	06:09 18:00		05:29 20:21
15	07:12 16:56	08:55 (8) 09:23 (8)	06:47 17:31	06:08 18:01		05:29 20:22
16	07:12 16:57	08:56 (8) 09:22 (8)	06:46 17:32	06:06 18:02		05:29 20:22
17	07:12 16:58	08:57 (8) 09:22 (8)	06:45 17:34	06:05 18:03	06:45 (10) 06:54 (10)	05:41 20:22
18	07:11 16:59	08:59 (8) 09:20 (8)	06:44 17:35	06:03 18:04	06:41 (10) 06:56 (10)	05:41 20:23
19	07:11 17:00	09:01 (8) 09:19 (8)	06:42 17:36	06:02 18:05	06:40 (10) 06:58 (10)	05:40 20:23
20	07:10 17:01	09:04 (8) 09:16 (8)	06:41 17:37	06:00 18:06	06:38 (10) 06:59 (10)	05:39 20:23
21	07:10 17:03		06:40 17:38	05:58 18:07	06:36 (10) 06:59 (10)	05:38 20:23
22	07:09 17:04		06:38 17:39	05:57 18:08	06:36 (10) 07:00 (10)	05:37 20:24
23	07:09 17:05		06:37 17:40	05:55 18:09	06:35 (10) 06:59 (10)	05:37 20:24
24	07:08 17:06		06:36 17:41	05:54 18:10	06:35 (10) 07:00 (10)	05:36 20:24
25	07:07 17:07		06:34 17:42	05:52 18:11	06:34 (10) 06:59 (10)	05:35 20:24
26	07:07 17:08		06:33 17:43	05:50 18:12	06:34 (10) 06:58 (10)	05:35 20:24
27	07:06 17:09		06:32 17:44	05:49 18:13	06:34 (10) 06:58 (10)	05:34 20:24
28	07:05 17:10		06:30 17:45	05:47 18:14	06:34 (10) 06:56 (10)	05:34 20:24
29	07:04 17:12		06:46 19:15	07:36 (10) 19:45	06:01 19:45	05:33 20:24
30	07:04 17:13		06:44 19:16	07:36 (10) 19:45	05:59 19:45	05:33 20:24
31	07:03 17:14		06:43 19:17	07:38 (10) 19:45	05:59 19:45	05:32 20:24
Potential sun hours	303	300	370	396	443	445
Total, worst case	650		305		7	
Sun reduction	0.35		0.41		0.48	
Oper. time red.	1.00		1.00		1.00	
Wind dir. red.	0.76		0.09		0.09	
Total reduction	0.28		0.04		0.05	
Total, real	184		12		0	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: O - 15

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

O	Sum
8,760	8,760

	July	August	September	October	November	December
1	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33 35
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:38	06:22 16:54	06:54 16:33 36
3	05:34 20:24	05:57 20:05	06:25 19:24	06:52 18:36	06:23 16:53	06:55 16:33 37
4	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33 37
5	05:35 20:24	05:58 20:03	06:26 19:21	06:54 18:33	06:25 16:51	06:57 16:33 38
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33 39
7	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	06:59 16:33 39
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:33 40
9	05:37 20:23	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:33 41
10	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33 40
11	05:38 20:22	06:04 19:56	06:32 19:11	07:34 (10) 07:39 (10)	06:59 18:24	07:03 16:33 41
12	05:39 20:21	06:05 19:55	06:33 19:10	07:30 (10) 07:43 (10)	07:00 18:22	06:33 16:44
13	05:40 20:21	06:06 19:53	06:33 19:08	07:28 (10) 07:44 (10)	07:01 18:21	06:34 16:43
14	05:40 20:21	06:06 19:52	06:34 19:06	07:26 (10) 07:46 (10)	07:02 18:19	06:35 16:43
15	05:41 20:20	06:07 19:51	06:35 19:05	07:25 (10) 07:46 (10)	07:03 18:18	06:36 16:42
16	05:42 20:19	06:08 19:50	06:36 19:03	07:24 (10) 07:47 (10)	07:04 18:16	06:38 16:41
17	05:42 20:19	06:09 19:48	06:37 19:01	07:23 (10) 07:47 (10)	07:05 18:15	06:39 16:40
18	05:43 20:18	06:10 19:47	06:38 19:00	07:22 (10) 07:46 (10)	07:06 18:13	06:40 16:40
19	05:44 20:18	06:11 19:46	06:39 18:58	07:21 (10) 07:46 (10)	07:07 18:12	06:41 16:39
20	05:45 20:17	06:12 19:44	06:40 18:57	07:21 (10) 07:46 (10)	07:08 18:11	06:42 16:38
21	05:45 20:16	06:13 19:43	06:41 18:55	07:21 (10) 07:45 (10)	07:09 18:09	06:43 16:38
22	05:46 20:16	06:14 19:41	06:42 18:53	07:21 (10) 07:45 (10)	07:10 18:08	06:44 16:37
23	05:47 20:15	06:15 19:40	06:42 18:52	07:22 (10) 07:44 (10)	07:11 18:07	06:45 16:36
24	05:48 20:14	06:16 19:39	06:43 18:50	07:23 (10) 07:42 (10)	07:12 18:05	06:46 16:36
25	05:49 20:13	06:16 19:37	06:44 18:49	07:24 (10) 07:40 (10)	06:13 17:04	06:47 16:35
26	05:50 20:12	06:17 19:36	06:45 18:47	07:26 (10) 07:38 (10)	06:15 17:03	06:48 16:35
27	05:50 20:12	06:18 19:34	06:46 18:45	06:16 17:01	06:49 16:35	08:34 (8) 09:02 (8)
28	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	08:33 (8) 09:04 (8)
29	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	08:33 (8) 09:05 (8)
30	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	08:33 (8) 09:06 (8)
31	05:54 20:08	06:22 19:28		06:20 16:57		07:13 16:42
Potential sun hours	453	424	374	347	303	294
Total, worst case			313		225	1264
Sun reduction			0.65		0.45	0.38
Oper. time red.			1.00		1.00	1.00
Wind dir. red.			0.09		0.76	0.76
Total reduction			0.06		0.36	0.31
Total, real			20		82	391

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: P - 16

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13   16:43   42	08:33 (8)   09:15 (8)   17:02   17:15   17:47	07:02   07:15   06:29	06:41   19:18	07:41 (10)   07:44 (10)   3	05:58   19:46   20:14
2	07:14   16:44   42	08:33 (8)   09:15 (8)   17:16   17:48	07:01   07:16   06:28	06:40   19:18	05:57   19:47	05:31   20:14
3	07:14   16:44   42	08:34 (8)   09:16 (8)   17:17   17:49	07:00   07:17   06:26	06:38   19:19	05:56   19:48	05:31   20:15
4	07:14   16:45   42	08:34 (8)   09:16 (8)   17:19   17:50	06:59   07:20   06:24	06:36   19:20	05:55   19:49	05:31   20:16
5	07:14   16:46   41	08:35 (8)   09:16 (8)   17:20   17:51	06:23   07:21   06:18	06:35   19:21	05:53   19:50	05:30   20:16
6	07:14   16:47   41	08:36 (8)   09:17 (8)   17:21   17:52	06:21   07:22   06:17	06:33   19:22	05:52   19:51	05:30   20:17
7	07:14   16:48   41	08:36 (8)   09:17 (8)   17:22   17:53	06:20   07:23   06:16	06:32   19:23	05:51   19:52	05:30   20:18
8	07:14   16:49   40	08:37 (8)   09:17 (8)   17:23   17:54	06:18   07:24   06:15	06:30   19:24	05:50   19:53	05:29   20:18
9	07:14   16:50   39	08:38 (8)   09:17 (8)   17:24   17:55	06:17   07:25   06:14	06:29   19:25	05:49   19:54	05:29   20:19
10	07:14   16:51   39	08:38 (8)   09:17 (8)   17:26   17:56	06:15   07:26   06:13	06:27   19:26	05:48   19:55	05:29   20:19
11	07:13   16:52   38	08:39 (8)   09:17 (8)   17:27   17:57	06:14   07:27   06:12	06:26   19:27	05:47   19:56	05:29   20:20
12	07:13   16:53   37	08:40 (8)   09:17 (8)   17:28   17:58	06:12   07:28   06:11	06:24   19:28	05:46   19:57	05:29   20:20
13	07:13   16:54   36	08:40 (8)   09:16 (8)   17:29   17:59	06:11   07:29   06:10	06:23   19:29	05:45   19:58	05:29   20:21
14	07:13   16:55   36	08:41 (8)   09:17 (8)   17:30   18:00	06:09   07:30   06:08	06:21   19:30	05:44   19:59	05:29   20:21
15	07:12   16:56   35	08:42 (8)   09:17 (8)   17:31   18:01	06:08   07:31   06:07	06:20   19:31	05:43   20:00	05:29   20:22
16	07:12   16:57   33	08:43 (8)   09:16 (8)   17:32   18:02	06:06   07:32   06:05	06:18   19:32	05:42   20:01	05:29   20:22
17	07:12   16:58   32	08:44 (8)   09:16 (8)   17:34   18:03	06:05   07:34   06:04	06:17   19:33	05:41   20:01	05:29   20:22
18	07:11   16:59   30	08:45 (8)   09:15 (8)   17:35   18:04	06:03   07:35   06:02	06:16   19:34	05:41   20:02	05:29   20:23
19	07:11   17:00   29	08:46 (8)   09:15 (8)   17:36   18:05	06:02   07:36   06:01	06:14   19:35	05:40   20:03	05:29   20:23
20	07:10   17:01   26	08:47 (8)   09:13 (8)   17:37   18:06	06:00   07:37   06:00	06:13   19:36	05:39   20:04	05:29   20:23
21	07:10   17:03   23	08:50 (8)   09:13 (8)   17:38   18:07	05:58   07:38   06:00	06:11   19:37	05:38   20:05	05:29   20:23
22	07:09   17:04   20	08:51 (8)   09:11 (8)   17:39   18:08	05:57   07:39   06:00	06:10   19:38	05:37   20:06	05:30   20:24
23	07:09   17:05   16	08:53 (8)   09:09 (8)   17:40   18:09	05:55   07:40   06:00	06:09   19:39	05:37   20:07	05:30   20:24
24	07:08   17:06   9	08:57 (8)   09:06 (8)   17:41   18:10	05:54   07:41   06:00	06:07   19:40	05:36   20:07	05:30   20:24
25	07:07   17:07   7	09:06 (8)   17:42   18:11	05:52   07:42   06:00	06:06   19:41	05:35   20:08	05:30   20:24
26	07:07   17:08   7	06:33   17:43   18:12	05:50   07:43   06:00	06:05   19:42	05:35   20:09	05:31   20:24
27	07:06   17:09   7	06:32   17:44   18:13	05:49   07:44   06:00	06:03   19:43	05:34   20:10	05:31   20:24
28	07:05   17:10   7	06:30   17:46   18:14	05:47   07:45   06:00	06:02   19:44	05:34   20:11	05:31   20:24
29	07:04   17:12   7	06:46   19:15   07:53 (10)	06:46   07:53 (10)	06:01   19:45	05:33   20:11	05:32   20:24
30	07:04   17:13   7	06:44   19:16   07:35 (10)	06:44   07:35 (10)	05:59   19:45	05:33   20:12	05:32   20:24
31	07:03   17:14   7	06:43   19:17   07:37 (10)	06:43   07:37 (10)	05:59   19:45	05:32   20:12	05:32   20:24
Potential sun hours	303	300	370	396	443	445
Total, worst case	809		289		3	
Sun reduction	0.35		0.41		0.48	
Oper. time red.	1.00		1.00		1.00	
Wind dir. red.	0.73		0.09		0.09	
Total reduction	0.27		0.04		0.04	
Total, real	218		11		0	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: P - 16

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December
1	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:38	06:22 16:54	06:54 16:33
3	05:34 20:24	05:57 20:05	06:25 19:24	06:52 18:36	06:23 16:53	06:55 16:33
4	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33
5	05:35 20:24	05:58 20:03	06:26 19:21	06:54 18:33	06:25 16:51	06:57 16:33
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33
7	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	06:59 16:33
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:33
9	05:37 20:23	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:33
10	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:03 16:33
12	05:39 20:21	06:05 19:55	06:33 19:10	07:00 18:22	06:33 16:44	07:03 16:33
13	05:40 20:21	06:06 19:53	06:33 19:08	07:29 (10) 07:42 (10)	07:00 18:21	06:33 16:43
14	05:40 20:21	06:06 19:52	06:34 19:06	07:26 (10) 07:43 (10)	07:01 18:19	06:34 16:43
15	05:41 20:20	06:07 19:51	06:35 19:05	07:23 (10) 07:44 (10)	07:03 18:18	06:36 16:42
16	05:42 20:19	06:08 19:50	06:36 19:03	07:23 (10) 07:45 (10)	07:04 18:16	06:38 16:41
17	05:42 20:19	06:09 19:48	06:37 19:01	07:22 (10) 07:45 (10)	07:05 18:15	06:39 16:40
18	05:43 20:18	06:10 19:47	06:38 19:00	07:20 (10) 07:44 (10)	07:06 18:13	06:40 16:40
19	05:44 20:18	06:11 19:46	06:39 18:58	07:20 (10) 07:44 (10)	07:07 18:12	06:41 16:39
20	05:45 20:17	06:12 19:44	06:40 18:57	07:20 (10) 07:44 (10)	07:08 18:11	06:42 16:38
21	05:45 20:16	06:13 19:43	06:41 18:55	07:20 (10) 07:43 (10)	07:09 18:09	06:43 16:38
22	05:46 20:16	06:14 19:41	06:42 18:53	07:20 (10) 07:42 (10)	07:10 18:08	06:44 16:37
23	05:47 20:15	06:15 19:40	06:42 18:52	07:21 (10) 07:41 (10)	07:11 18:07	06:45 16:36
24	05:48 20:14	06:16 19:39	06:43 18:50	07:22 (10) 07:40 (10)	07:12 18:05	06:46 16:36
25	05:49 20:13	06:16 19:37	06:44 18:49	07:23 (10) 07:38 (10)	06:13 17:04	06:47 16:35
26	05:50 20:12	06:17 19:36	06:45 18:47	07:25 (10) 07:35 (10)	06:15 17:03	06:48 16:35
27	05:50 20:12	06:18 19:34	06:46 18:45	06:16 17:01	06:49 16:35	08:21 (8) 16:39
28	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	08:21 (8) 16:40
29	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	08:21 (8) 16:40
30	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	08:21 (8) 16:41
31	05:54 20:08	06:22 19:28		06:20 16:57		07:13 16:42
Potential sun hours	453	424	374	347	303	294
Total, worst case			291		361	1303
Sun reduction			0.65		0.45	0.38
Oper. time red.			1.00		1.00	1.00
Wind dir. red.			0.09		0.73	0.73
Total reduction			0.06		0.35	0.29
Total, real			17		125	383

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: Q - 17

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13   16:43   38	08:33 (8)   07:02   06:29	09:11 (8)   17:15   17:47	06:41   05:58   05:32	19:18   19:46   20:14	
2	07:14   16:44   37	08:34 (8)   07:01   06:27	09:11 (8)   17:16   17:48	06:40   05:57   05:31	19:18   19:47   20:14	
3	07:14   16:44   38	08:34 (8)   07:00   06:26	09:12 (8)   17:17   17:49	06:38   05:56   05:31	19:19   19:48   20:15	
4	07:14   16:45   37	08:35 (8)   06:59   06:24	09:12 (8)   17:19   17:50	06:36   05:55   05:31	19:20   19:49   20:16	
5	07:14   16:46   36	08:36 (8)   06:58   06:23	09:12 (8)   17:20   17:51	06:35   05:53   05:30	19:21   19:50   20:16	
6	07:14   16:47   35	08:37 (8)   06:57   06:21	09:12 (8)   17:21   17:52	06:33   05:52   05:30	19:22   19:51   20:17	
7	07:14   16:48   35	08:37 (8)   06:56   06:20	09:12 (8)   17:22   17:53	06:32   05:51   05:30	19:23   19:52   20:18	
8	07:14   16:49   35	08:38 (8)   06:55   06:18	09:13 (8)   17:23   17:54	06:30   05:50   05:29	19:24   19:53   20:18	
9	07:14   16:50   34	08:39 (8)   06:54   06:17	09:13 (8)   17:24   17:55	06:29   05:49   05:29	19:25   19:54   20:19	
10	07:14   16:51   33	08:39 (8)   06:53   06:15	09:13 (8)   17:25   17:56	06:27   05:48   05:29	19:26   19:55   20:19	
11	07:13   16:52   32	08:40 (8)   06:52   06:14	09:12 (8)   17:27   17:57	06:26   05:47   05:29	19:27   19:56   20:20	
12	07:13   16:53   30	08:42 (8)   06:51   06:12	09:12 (8)   17:28   17:58	06:24   05:46   05:29	19:28   19:57   20:20	
13	07:13   16:54   29	08:42 (8)   06:50   06:11	09:11 (8)   17:29   17:59	06:23   05:45   05:29	19:29   19:58   20:21	
14	07:13   16:55   27	08:44 (8)   06:49   06:09	09:11 (8)   17:30   18:00	06:21   05:44   05:29	19:30   19:59   20:21	8 06:47 (10)
15	07:12   16:56   25	08:45 (8)   06:47   06:08	09:10 (8)   17:31   18:01	06:20   05:43   05:29	19:31   20:00   20:22	14 06:55 (10)
16	07:12   16:57   23	08:46 (8)   06:46   06:06	09:09 (8)   17:32   18:02	06:18   05:42   05:29	19:32   20:01   20:22	17 06:44 (10)
17	07:12   16:58   20	08:48 (8)   06:45   06:05	09:08 (8)   17:34   18:03	06:17   05:41   05:29	19:33   20:01   20:22	20 06:58 (10)
18	07:11   16:59   18	08:49 (8)   06:44   06:03	09:07 (8)   17:35   18:04	06:16   05:41   05:29	19:34   20:02   20:23	22 06:42 (10)
19	07:11   17:00   13	08:52 (8)   06:42   06:02	09:05 (8)   17:36   18:05	06:14   05:40   05:29	19:35   20:03   20:23	23 06:59 (10)
20	07:10   17:01   5	08:56 (8)   06:41   06:00	09:04 (8)   17:37   18:06	06:13   05:39   05:29	19:36   20:04   20:23	24 07:02 (10)
21	07:10   17:03   5	09:01 (8)   06:40   05:58	09:03 (8)   17:38   18:07	06:11   05:38   05:29	19:37   20:05   20:23	25 06:39 (10)
22	07:09   17:04   5	09:06 (8)   06:39   05:57	09:02 (8)   17:39   18:08	06:10   05:37   05:30	19:38   20:06   20:24	26 06:37 (10)
23	07:09   17:05   5	09:11 (8)   06:37   05:55	09:01 (8)   17:40   18:09	06:09   05:37   05:30	19:39   20:07   20:24	27 06:37 (10)
24	07:08   17:06   5	09:16 (8)   06:36   05:54	08:59 (8)   17:41   18:10	06:07   05:36   05:30	19:40   20:07   20:24	28 07:00 (10)
25	07:07   17:07   5	09:21 (8)   06:34   05:52	08:58 (8)   17:42   18:11	06:06   05:35   05:30	19:41   20:08   20:24	29 06:38 (10)
26	07:07   17:08   5	09:26 (8)   06:33   05:50	08:57 (8)   17:43   18:12	06:05   05:35   05:31	19:42   20:09   20:24	30 06:38 (10)
27	07:06   17:09   5	09:31 (8)   06:32   05:49	08:56 (8)   17:44   18:13	06:03   05:34   05:31	19:43   20:10   20:24	31 06:56 (10)
28	07:05   17:11   5	09:36 (8)   06:30   05:47	08:55 (8)   17:45   18:14	06:02   05:34   05:31	19:44   20:11   20:24	9 06:40 (10)
29	07:05   17:12   5	09:41 (8)   06:29   05:46	08:54 (8)   17:46   18:15	06:01   05:33   05:32	19:45   20:11   20:24	14 06:54 (10)
30	07:04   17:13   5	09:46 (8)   06:28   05:44	08:53 (8)   17:47   18:16	05:59   05:33   05:32	19:46   20:12   20:24	23 06:42 (10)
31	07:03   17:14   5	09:51 (8)   06:27   05:43	08:52 (8)   17:48   18:17	05:57   05:32   05:32	19:47   20:13   20:24	9 06:51 (10)
Potential sun hours	303	300	370	396	443	445
Total, worst case	580			280		
Sun reduction	0.35			0.41		
Oper. time red.	1.00			1.00		
Wind dir. red.	0.73			0.11		
Total reduction	0.27			0.05		
Total, real	158			14		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Shadow receptor: Q - 17  
Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
3.40 3.90 4.90 6.30 7.50 9.10 10.20 9.60 8.10 6.00 4.50 3.60

Operational time  
0 Sum  
8,760 8,760

	July	August	September	October	November	December	
1	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:54 16:33 31 08:23 (8) 08:54 (8)	
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:38	06:22 16:54	06:54 16:33 33 08:22 (8) 08:55 (8)	
3	05:34 20:24	05:57 20:05	06:25 19:24	06:52 18:36	06:23 16:53	06:55 16:33 34 08:22 (8) 08:56 (8)	
4	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33 35 08:22 (8) 08:57 (8)	
5	05:35 20:24	05:58 20:03	06:26 19:21	06:54 18:33	06:25 16:51	06:57 16:33 35 08:22 (8) 08:57 (8)	
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33 35 08:23 (8) 08:58 (8)	
7	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	06:59 16:33 36 08:23 (8) 08:59 (8)	
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:33 37 08:23 (8) 09:00 (8)	
9	05:37 20:23	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:33 37 08:24 (8) 09:01 (8)	
10	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33 37 08:23 (8) 09:00 (8)	
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:03 16:33 38 08:23 (8) 09:01 (8)	
12	05:39 20:21	06:05 19:55	06:33 19:10	07:00 18:22	06:33 16:44	07:03 16:33 38 08:24 (8) 09:02 (8)	
13	05:40 20:21	06:06 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33 38 08:25 (8) 09:03 (8)	
14	05:40 20:21	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:43	07:05 16:33 39 08:24 (8) 09:03 (8)	
15	05:41 20:20	06:07 19:51	06:35 19:05	07:33 (10) 07:40 (10)	07:03 18:18	06:36 16:42	07:06 16:33 39 08:25 (8) 09:04 (8)
16	05:42 20:19	06:08 19:50	06:36 19:03	07:30 (10) 07:43 (10)	07:04 18:16	06:38 16:41	07:06 16:34 38 08:26 (8) 09:04 (8)
17	05:42 20:19	06:09 19:48	06:37 19:01	07:28 (10) 07:45 (10)	07:05 18:15	06:39 16:40	07:07 16:34 39 08:25 (8) 09:04 (8)
18	05:43 20:18	06:10 19:47	06:38 19:00	07:25 (10) 07:45 (10)	07:06 18:13	06:40 16:40	07:08 16:34 39 08:26 (8) 09:05 (8)
19	05:44 20:18	06:11 19:46	06:39 18:58	07:24 (10) 07:45 (10)	07:07 18:12	06:41 16:39	07:08 16:35 39 08:27 (8) 09:06 (8)
20	05:45 20:17	06:12 19:44	06:40 18:57	07:23 (10) 07:46 (10)	07:08 18:11	06:42 16:38	07:09 16:35 39 08:27 (8) 09:06 (8)
21	05:45 20:16	06:13 19:43	06:41 18:55	07:23 (10) 07:46 (10)	07:09 18:09	06:43 16:38	07:09 16:36 39 08:28 (8) 09:07 (8)
22	05:46 20:16	06:14 19:41	06:42 18:53	07:22 (10) 07:46 (10)	07:10 18:08	06:44 16:37	08:32 (8) 08:37 (8) 07:10 16:36 39 08:28 (8) 09:07 (8)
23	05:47 20:15	06:15 19:40	06:42 18:52	07:22 (10) 07:46 (10)	07:11 18:07	06:45 16:36	08:29 (8) 08:42 (8) 07:10 16:37 39 08:29 (8) 09:08 (8)
24	05:48 20:14	06:16 19:39	06:43 18:50	07:22 (10) 07:45 (10)	07:12 18:05	06:46 16:36	08:27 (8) 08:45 (8) 07:11 16:37 39 08:29 (8) 09:08 (8)
25	05:49 20:13	06:16 19:37	06:44 18:49	07:23 (10) 07:44 (10)	06:13 17:04	06:47 16:35	08:26 (8) 08:46 (8) 07:11 16:38 39 08:29 (8) 09:08 (8)
26	05:50 20:12	06:17 19:36	06:45 18:47	07:23 (10) 07:43 (10)	06:15 17:03	06:48 16:35	08:25 (8) 08:48 (8) 07:12 16:38 39 08:30 (8) 09:09 (8)
27	05:50 20:12	06:18 19:34	06:46 18:45	07:23 (10) 07:41 (10)	06:16 17:01	06:49 16:35	08:24 (8) 08:49 (8) 07:12 16:39 39 08:30 (8) 09:09 (8)
28	05:51 20:11	06:19 19:33	06:47 18:44	07:24 (10) 07:39 (10)	06:17 17:00	06:50 16:34	08:24 (8) 08:51 (8) 07:12 16:40 39 08:31 (8) 09:10 (8)
29	05:52 20:10	06:20 19:31	06:48 18:42	07:26 (10) 07:37 (10)	06:18 16:59	06:51 16:34	08:23 (8) 08:52 (8) 07:13 16:40 39 08:31 (8) 09:10 (8)
30	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:53 16:34	06:53 16:34	08:23 (8) 08:53 (8) 07:13 16:41 39 08:32 (8) 09:11 (8)
31	05:54 20:08	06:22 19:28		06:20 16:57			07:13 16:42 38 08:33 (8) 09:11 (8)
Potential sun hours	453	424	374	347	303	294	
Total, worst case			280		190	1164	
Sun reduction			0.65		0.45	0.38	
Oper. time red.			1.00		1.00	1.00	
Wind dir. red.			0.11		0.73	0.73	
Total reduction			0.08		0.35	0.30	
Total, real			22		66	346	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: R - 18

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13   16:43   35	08:10 (8)   07:02   06:29	08:45 (8)   17:15   17:47	06:41   05:58   05:32	19:18   19:46   20:14	
2	07:14   16:44   35	08:10 (8)   07:01   06:27	08:45 (8)   17:16   17:48	06:40   05:57   05:31	19:18   19:47   20:14	
3	07:14   16:44   35	08:10 (8)   07:00   06:26	08:45 (8)   17:17   17:49	06:38   05:56   05:31	19:19   19:48   20:15	
4	07:14   16:45   35	08:11 (8)   06:59   06:24	08:45 (8)   17:17   17:49	06:36   05:55   05:31	19:19   19:48   20:15	
5	07:14   16:46   35	08:11 (8)   06:58   06:23	08:46 (8)   17:20   17:51	19:20   19:49   20:16	06:35   05:53   05:30	
6	07:14   16:47   35	08:12 (8)   06:57   06:21	08:46 (8)   17:20   17:51	19:21   19:50   20:16	06:33   05:52   05:30	
7	07:14   16:48   35	08:12 (8)   06:56   06:20	08:47 (8)   17:21   17:52	19:22   19:51   20:17	06:32   05:51   05:30	
8	07:14   16:49   35	08:13 (8)   06:55   06:18	08:47 (8)   17:22   17:53	19:23   19:52   20:18	06:30   05:50   05:29	
9	07:14   16:50   34	08:13 (8)   06:54   06:17	08:48 (8)   17:23   17:54	19:24   19:53   20:18	06:29   05:49   05:29	
10	07:14   16:51   35	08:14 (8)   06:54   06:17	08:48 (8)   17:24   17:55	19:25   19:54   20:19	06:27   05:48   05:29	
11	07:13   16:52   34	08:14 (8)   06:53   06:15	08:48 (8)   17:24   17:55	19:26   19:55   20:19	06:26   05:47   05:29	
12	07:13   16:53   34	08:15 (8)   06:52   06:14	08:48 (8)   17:25   17:56	19:27   19:56   20:20	06:25   05:46   05:29	
13	07:13   16:54   33	08:15 (8)   06:51   06:12	08:49 (8)   17:26   17:57	19:28   19:57   20:20	06:24   05:45   05:29	
14	07:13   16:55   33	08:16 (8)   06:50   06:11	08:49 (8)   17:27   17:58	19:29   19:58   20:21	06:23   05:44   05:29	
15	07:12   16:56   32	08:17 (8)   06:49   06:10	08:49 (8)   17:28   17:59	19:30   19:59   20:21	06:22   05:43   05:29	
16	07:12   16:57   32	08:18 (8)   06:48   06:09	08:49 (8)   17:29   18:00	19:31   20:00   20:22	06:21   05:42   05:29	
17	07:12   16:58   31	08:18 (8)   06:47   06:08	08:49 (8)   17:30   18:01	19:32   20:01   20:22	06:20   05:41   05:29	
18	07:11   16:59   30	08:18 (8)   06:46   06:07	08:49 (8)   17:31   18:02	19:33   20:02   20:23	06:19   05:40   05:29	
19	07:11   17:00   29	08:18 (8)   06:45   06:06	08:49 (8)   17:32   18:03	19:34   20:03   20:23	06:18   05:39   05:29	
20	07:10   17:01   28	08:20 (8)   06:44   06:05	08:49 (8)   17:33   18:04	19:35   20:04   20:23	06:17   05:38   05:29	
21	07:10   17:02   27	08:20 (8)   06:43   06:04	08:49 (8)   17:34   18:05	19:36   20:05   20:23	06:16   05:37   05:30	
22	07:09   17:03   26	08:21 (8)   06:42   06:03	08:49 (8)   17:35   18:06	19:37   20:06   20:24	06:15   05:36   05:30	
23	07:09   17:04   25	08:21 (8)   06:41   06:02	08:49 (8)   17:36   18:07	19:38   20:07   20:24	06:14   05:35   05:30	
24	07:08   17:05   24	08:22 (8)   06:40   06:01	08:49 (8)   17:37   18:08	19:39   20:08   20:24	06:13   05:34   05:30	
25	07:07   17:06   23	08:23 (8)   06:39   06:00	08:49 (8)   17:38   18:09	19:40   20:09   20:24	06:12   05:33   05:30	
26	07:07   17:07   22	08:24 (8)   06:38   05:59	08:49 (8)   17:39   18:10	19:41   20:10   20:24	06:11   05:32   05:30	
27	07:06   17:08   21	08:24 (8)   06:37   05:58	08:49 (8)   17:40   18:11	19:42   20:11   20:24	06:10   05:31   05:30	
28	07:05   17:09   20	08:25 (8)   06:36   05:57	08:49 (8)   17:41   18:12	19:43   20:12   20:24	06:09   05:30   05:30	
29	07:05   17:10   19	08:26 (8)   06:35   05:56	08:49 (8)   17:42   18:13	19:44   20:13   20:24	06:08   05:29   05:30	
30	07:04   17:11   18	08:27 (8)   06:34   05:55	08:49 (8)   17:43   18:14	19:45   20:14   20:24	06:07   05:28   05:30	
31	07:03   17:12   17	08:28 (8)   06:33   05:54	08:49 (8)   17:44   18:15	19:46   20:15   20:24	06:06   05:27   05:30	
Potential sun hours	303	300	370	396	443	445
Total, worst case	782			220		
Sun reduction	0.35			0.41		
Oper. time red.	1.00			1.00		
Wind dir. red.	0.65			0.12		
Total reduction	0.24			0.05		
Total, real	187			11		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: R - 18

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December
1	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	07:27 (10) 07:30 (10)	06:21 16:55
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:38	06:22 16:54	06:54 16:33 35
3	05:34 20:24	05:57 20:05	06:25 19:24	06:52 18:36	06:23 16:53	06:55 16:33 34
4	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33 35
5	05:35 20:24	05:58 20:03	06:26 19:21	06:54 18:33	06:25 16:51	06:57 16:33 35
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33 35
7	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	06:59 16:33 35
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:33 35
9	05:37 20:23	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:33 36
10	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33 35
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:03 16:33 35
12	05:39 20:21	06:05 19:55	06:33 19:10	07:00 18:22	06:33 16:44	07:03 16:33 35
13	05:40 20:21	06:06 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33 35
14	05:40 20:21	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:43	07:05 16:33 35
15	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	07:06 16:33 34
16	05:42 20:19	06:08 19:50	06:36 19:03	07:04 18:16	06:38 16:41	07:06 11 08:14 (8) 16:34 34
17	05:42 20:19	06:09 19:48	06:37 19:02	07:05 18:15	06:39 16:40	07:07 16:34 35
18	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:40	07:08 16:34 35
19	05:44 20:18	06:11 19:46	06:39 18:58	07:07 18:12	06:41 16:39	07:08 21 08:20 (8) 16:35 35
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 24 08:22 (8) 16:35 35
21	05:46 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	07:09 26 08:23 (8) 16:36 35
22	05:46 20:16	06:14 19:41	06:42 18:53	07:10 18:08	06:44 16:37	07:10 28 08:24 (8) 16:36 35
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	07:10 29 08:26 (8) 16:37 35
24	05:48 20:14	06:16 19:39	06:43 18:50	07:12 18:05	06:46 16:36	07:11 30 08:26 (8) 16:37 35
25	05:49 20:13	06:16 19:37	06:44 18:49	07:13 18:04	06:47 16:36	07:11 31 08:27 (8) 16:38 35
26	05:50 20:13	06:17 19:36	06:45 18:47	07:14 18:03	06:48 16:35	07:12 32 08:28 (8) 16:38 35
27	05:50 20:12	06:18 19:34	06:46 18:45	07:15 18:02	06:49 16:35	07:12 32 08:28 (8) 16:39 34
28	05:51 20:11	06:19 19:33	06:47 18:44	07:16 18:01	06:50 16:34	07:12 33 08:29 (8) 16:40 34
29	05:52 20:10	06:20 19:31	06:48 18:42	07:17 17:59	06:51 16:34	07:13 33 08:29 (8) 16:40 35
30	05:53 20:09	06:21 19:30	06:49 18:41	07:18 17:58	06:52 16:34	07:13 34 08:30 (8) 16:41 35
31	05:54 20:08	06:22 19:28		06:20 16:57		07:13 16:42 35
Potential sun hours	453	424	374	347	303	294
Total, worst case			220	3	399	1080
Sun reduction			0.65	0.54	0.45	0.38
Oper. time red.			1.00	1.00	1.00	1.00
Wind dir. red.			0.12	0.12	0.65	0.65
Total reduction			0.08	0.07	0.31	0.26
Total, real			17	0	122	281

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: S - 19

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June			
1	07:13	08:04 (8)	07:02	08:13 (8)	06:29	06:41	05:58	05:32	
	16:43	08:28 (8)	17:15	08:38 (8)	17:47	19:18	19:46	20:14	
2	07:14	08:04 (8)	07:01	08:14 (8)	06:27	06:40	05:57	05:31	
	16:44	08:29 (8)	17:16	08:37 (8)	17:48	19:18	19:47	20:14	
3	07:14	08:04 (8)	07:00	08:16 (8)	06:26	06:38	05:56	05:31	
	16:44	08:30 (8)	17:17	08:35 (8)	17:49	19:19	19:48	20:15	
4	07:14	08:04 (8)	06:59	08:18 (8)	06:24	06:36	05:55	05:31	
	16:45	08:31 (8)	17:19	08:33 (8)	17:50	19:20	19:49	20:16	
5	07:14	08:04 (8)	06:58	08:21 (8)	06:23	06:35	05:53	05:30	
	16:46	08:31 (8)	17:20	08:30 (8)	17:51	19:21	19:50	20:16	
6	07:14	08:04 (8)	06:57		06:21	06:33	05:52	05:30	
	16:47	08:32 (8)	17:21		17:52	19:22	19:51	20:17	
7	07:14	08:04 (8)	06:56		06:20	06:32	05:51	05:30	
	16:48	08:33 (8)	17:22		17:53	19:23	19:52	20:18	
8	07:14	08:04 (8)	06:55		06:18	06:30	05:50	05:29	
	16:49	08:34 (8)	17:23		17:54	19:24	19:53	20:18	
9	07:14	08:05 (8)	06:54		06:17	06:29	05:49	05:29	
	16:50	08:35 (8)	17:24		17:55	19:25	19:54	20:19	
10	07:14	08:04 (8)	06:53		06:15	06:27	05:48	05:29	
	16:51	08:35 (8)	17:26		17:56	19:26	19:55	20:19	
11	07:13	08:04 (8)	06:52		06:14	06:26	05:47	05:29	
	16:52	08:36 (8)	17:27		17:57	19:27	19:56	20:20	
12	07:13	08:05 (8)	06:51		06:12	06:24	05:46	05:29	
	16:53	08:37 (8)	17:28		17:58	19:28	19:57	20:20	
13	07:13	08:04 (8)	06:50		06:11	06:23	05:45	05:29	
	16:54	08:37 (8)	17:29		17:59	19:29	19:58	20:21	
14	07:13	08:04 (8)	06:49		06:09	06:21	05:44	05:29	
	16:55	08:38 (8)	17:30		18:00	19:30	19:59	20:21	
15	07:12	08:05 (8)	06:47		06:08	06:20	05:43	05:29	
	16:56	08:39 (8)	17:31		18:01	19:31	20:00	20:22	
16	07:12	08:04 (8)	06:46		06:06	06:18	05:42	05:29	
	16:57	08:39 (8)	17:32		18:02	19:32	20:01	20:22	
17	07:12	08:05 (8)	06:45		06:05	06:17	05:41	05:29	
	16:58	08:40 (8)	17:34		18:03	19:33	20:01	20:22	
18	07:11	08:05 (8)	06:44		06:03	06:16	05:41	05:29	
	16:59	08:40 (8)	17:35		18:04	19:34	20:02	20:23	
19	07:11	08:05 (8)	06:42		06:02	06:34 (10)	06:14	05:40	05:29
	17:00	08:41 (8)	17:36		18:05	14 06:48 (10)	19:35	20:03	20:23
20	07:10	08:05 (8)	06:41		06:00	06:32 (10)	06:13	05:39	05:29
	17:01	08:41 (8)	17:37		18:06	17 06:49 (10)	19:36	20:04	20:23
21	07:10	08:06 (8)	06:40		05:58	06:30 (10)	06:11	05:38	05:29
	17:03	08:42 (8)	17:38		18:07	19 06:49 (10)	19:37	20:05	20:23
22	07:09	08:06 (8)	06:38		05:57	06:30 (10)	06:10	05:37	05:30
	17:04	08:41 (8)	17:39		18:08	20 06:50 (10)	19:38	20:06	20:24
23	07:09	08:06 (8)	06:37		05:55	06:29 (10)	06:09	05:37	05:30
	17:05	08:41 (8)	17:40		18:09	21 06:50 (10)	19:39	20:07	20:24
24	07:08	08:07 (8)	06:36		05:54	06:29 (10)	06:07	05:36	05:30
	17:06	08:42 (8)	17:41		18:10	21 06:50 (10)	19:40	20:08	20:24
25	07:07	08:07 (8)	06:34		05:52	06:28 (10)	06:06	05:35	05:30
	17:07	08:42 (8)	17:42		18:11	21 06:49 (10)	19:41	20:08	20:24
26	07:07	08:08 (8)	06:33		05:51	06:28 (10)	06:05	05:35	05:31
	17:08	08:41 (8)	17:43		18:12	20 06:48 (10)	19:42	20:09	20:24
27	07:06	08:09 (8)	06:32		05:49	06:29 (10)	06:03	05:34	05:31
	17:09	08:42 (8)	17:44		18:13	18 06:47 (10)	19:43	20:10	20:24
28	07:05	08:09 (8)	06:30		05:47	06:29 (10)	06:02	05:34	05:31
	17:11	08:41 (8)	17:46		18:14	17 06:46 (10)	19:44	20:11	20:24
29	07:05	08:10 (8)			06:46	07:31 (10)	06:01	05:33	05:32
	17:12	08:41 (8)			19:15	13 07:44 (10)	19:45	20:11	20:24
30	07:04	08:11 (8)			06:44	07:33 (10)	05:59	05:33	05:32
	17:13	08:40 (8)			19:16	8 07:41 (10)	19:45	20:12	20:24
31	07:03	08:12 (8)			06:43		05:32		
	17:14	08:39 (8)			19:17		20:13		
Potential sun hours	303	300	370		396		443	445	
Total, worst case	980	91	219						
Sun reduction	0.35	0.36	0.41						
Oper. time red.	1.00	1.00	1.00						
Wind dir. red.	0.60	0.60	0.07						
Total reduction	0.22	0.23	0.03						
Total, real	215	21	7						

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: S - 19

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December	
1	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:54 16:33	07:46 (8) 08:18 (8)
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:38	06:22 16:54	06:54 16:33	07:47 (8) 08:18 (8)
3	05:34 20:24	05:57 20:05	06:25 19:24	06:52 18:36	06:23 16:53	06:55 16:33	07:48 (8) 08:18 (8)
4	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33	07:48 (8) 08:18 (8)
5	05:35 20:24	05:58 20:03	06:26 19:21	06:54 18:33	06:25 16:51	06:57 16:33	07:49 (8) 08:18 (8)
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	07:52 (8) 16:33	07:50 (8) 08:18 (8)
7	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	07:48 (8) 16:33	06:59 08:18 (8)
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:46 (8) 08:06 (8)	07:00 16:33
9	05:37 20:23	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:45 (8) 08:08 (8)	07:01 16:33
10	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:44 (8) 08:09 (8)	07:02 16:33
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:44 (8) 08:11 (8)	07:03 16:33
12	05:39 20:21	06:05 19:55	06:33 19:10	07:00 18:22	06:33 16:44	07:43 (8) 08:12 (8)	07:03 16:33
13	05:40 20:21	06:06 19:53	06:33 19:08	07:25 (10) 07:32 (10)	07:01 18:21	06:34 16:43	07:04 16:33
14	05:40 20:21	06:06 19:52	06:34 19:06	07:22 (10) 07:34 (10)	07:02 18:19	06:35 16:43	07:05 16:33
15	05:41 20:20	06:07 19:51	06:35 19:05	07:20 (10) 07:36 (10)	07:03 18:18	06:36 16:42	07:06 16:33
16	05:42 20:19	06:08 19:50	06:36 19:03	07:18 (10) 07:36 (10)	07:04 18:16	06:38 16:41	07:06 16:34
17	05:42 20:19	06:09 19:48	06:37 19:02	07:18 (10) 07:37 (10)	07:05 18:15	06:39 16:40	07:07 16:34
18	05:43 20:18	06:10 19:47	06:38 19:00	07:16 (10) 07:36 (10)	07:06 18:13	06:40 16:40	07:08 16:34
19	05:44 20:18	06:11 19:46	06:39 18:58	07:15 (10) 07:36 (10)	07:07 18:12	06:41 16:39	07:08 16:35
20	05:45 20:17	06:12 19:44	06:40 18:57	07:15 (10) 07:36 (10)	07:08 18:11	06:42 16:38	07:09 16:35
21	05:46 20:16	06:13 19:43	06:41 18:55	07:15 (10) 07:35 (10)	07:09 18:09	06:43 16:38	07:09 16:36
22	05:46 20:16	06:14 19:41	06:42 18:53	07:15 (10) 07:35 (10)	07:10 18:08	06:44 16:37	07:10 16:36
23	05:47 20:15	06:15 19:40	06:42 18:52	07:16 (10) 07:34 (10)	07:11 18:07	06:45 16:36	07:10 16:37
24	05:48 20:14	06:16 19:39	06:43 18:50	07:17 (10) 07:32 (10)	07:12 18:05	06:46 16:36	07:11 16:37
25	05:49 20:13	06:16 19:37	06:44 18:49	07:19 (10) 07:30 (10)	06:13 17:04	06:47 16:36	07:11 16:38
26	05:50 20:12	06:17 19:36	06:45 18:47	07:22 (10) 07:26 (10)	06:15 17:03	06:48 16:35	07:12 16:38
27	05:50 20:12	06:18 19:34	06:46 18:45	06:16 17:01	06:49 16:35	07:44 (8) 08:18 (8)	07:12 16:39
28	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	07:44 (8) 08:18 (8)	07:12 16:40
29	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	07:45 (8) 08:18 (8)	07:13 16:40
30	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:53 16:34	07:46 (8) 08:18 (8)	07:13 16:41
31	05:54 20:08	06:22 19:28		06:20 16:57		07:13 16:42	08:04 (8) 08:27 (8)
Potential sun hours	453	424	374	347	303	294	
Total, worst case			222		765		724
Sun reduction			0.65		0.45		0.38
Oper. time red.			1.00		1.00		1.00
Wind dir. red.			0.07		0.60		0.60
Total reduction			0.05		0.28		0.24
Total, real			11		215		173

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: T - 20

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13   16:43   37	08:17 (8)   07:02   06:29	08:54 (8)   17:15   17:47	06:41   05:58   05:32	19:18   19:46   20:14	
2	07:14   16:44   36	08:18 (8)   07:01   06:27	08:54 (8)   17:16   17:48	06:40   05:57   05:31	19:18   19:47   20:14	
3	07:14   16:44   36	08:18 (8)   07:00   06:26	08:18 (8)   17:17   17:49	06:38   05:56   05:31	19:19   19:48   20:15	
4	07:14   16:45   36	08:19 (8)   06:59   06:24	08:19 (8)   17:17   17:50	06:36   05:55   05:31	19:19   19:48   20:15	
5	07:14   16:46   36	08:19 (8)   06:58   06:23	08:19 (8)   17:20   17:51	19:20   19:49   20:16	06:35   05:53   05:30	
6	07:14   16:47   35	08:20 (8)   06:57   06:21	08:20 (8)   17:21   17:52	19:21   19:50   20:16	06:33   05:52   05:30	
7	07:14   16:48   36	08:20 (8)   06:56   06:20	08:21 (8)   17:22   17:53	19:22   19:51   20:17	06:32   05:51   05:30	
8	07:14   16:49   35	08:21 (8)   06:55   06:18	08:22 (8)   17:23   17:54	19:23   19:52   20:18	06:30   05:50   05:29	
9	07:14   16:50   35	08:22 (8)   06:54   06:17	08:23 (8)   17:24   17:55	19:24   19:53   20:18	06:29   05:49   05:29	
10	07:14   16:51   34	08:22 (8)   06:53   06:15	08:24 (8)   17:24   17:55	19:25   19:54   20:19	06:27   05:48   05:29	
11	07:13   16:52   33	08:23 (8)   06:52   06:14	08:25 (8)   17:25   17:56	19:26   19:55   20:19	06:26   05:47   05:29	
12	07:13   16:53   33	08:24 (8)   06:51   06:12	08:26 (8)   17:26   17:56	19:27   19:56   20:20	06:26   05:47   05:29	
13	07:13   16:54   32	08:24 (8)   06:50   06:11	08:27 (8)   17:27   17:57	19:28   19:57   20:20	06:23   05:45   05:29	
14	07:13   16:55   31	08:25 (8)   06:49   06:09	08:28 (8)   17:29   17:59	9 06:46 (10)   06:23   05:45   05:29	19:29   19:58   20:21	
15	07:12   16:56   30	08:25 (8)   06:49   06:09	08:29 (8)   17:30   18:00	14 06:55 (10)   06:23   05:45   05:29	19:30   19:59   20:21	
16	07:12   16:57   29	08:26 (8)   06:47   06:08	08:30 (8)   17:31   18:01	18 06:57 (10)   06:21   05:44   05:29	19:31   20:00   20:22	
17	07:12   16:58   28	08:26 (8)   06:46   06:06	08:31 (8)   17:32   18:02	19 06:59 (10)   06:20   05:43   05:29	19:32   20:01   20:22	
18	07:11   16:59   27	08:28 (8)   06:44   06:03	08:32 (8)   17:33   18:03	21 06:59 (10)   06:18   05:42   05:29	19:33   20:02   20:23	
19	07:11   17:00   24	08:28 (8)   06:44   06:03	08:33 (8)   17:34   18:04	22 06:59 (10)   06:17   05:41   05:29	19:34   20:03   20:23	
20	07:10   17:01   22	08:30 (8)   06:42   06:02	08:34 (8)   17:35   18:05	22 07:00 (10)   06:16   05:41   05:29	19:35   20:04   20:23	
21	07:10   17:03   20	08:31 (8)   06:41   06:00	08:35 (8)   17:36   18:06	21 06:59 (10)   06:14   05:40   05:29	19:36   20:05   20:23	
22	07:09   17:04   16	08:33 (8)   06:40   05:58	08:36 (8)   17:37   18:07	21 06:58 (10)   06:13   05:39   05:29	19:37   20:06   20:24	
23	07:09   17:05   11	08:35 (8)   06:38   05:57	08:37 (8)   17:38   18:08	20 06:58 (10)   06:12   05:38   05:29	19:38   20:07   20:24	
24	07:08   17:06   11	08:37 (8)   06:37   05:55	08:38 (8)   17:39   18:09	20 06:58 (10)   06:11   05:38   05:29	19:39   20:08   20:24	
25	07:08   17:07   11	08:40 (8)   06:36   05:54	08:39 (8)   17:40   18:10	18 06:56 (10)   06:10   05:37   05:30	19:40   20:09   20:24	
26	07:07   17:08   11	08:41 (8)   06:35   05:53	08:40 (8)   17:41   18:11	15 06:55 (10)   06:09   05:36   05:30	19:41   20:10   20:24	
27	07:06   17:09   11	08:42 (8)   06:34   05:52	08:41 (8)   17:42   18:12	11 06:52 (10)   06:08   05:35   05:31	19:42   20:11   20:24	
28	07:05   17:10   11	08:43 (8)   06:33   05:51	08:42 (8)   17:43   18:13	4 06:48 (10)   06:07   05:34   05:31	19:43   20:12   20:24	
29	07:05   17:11   11	08:44 (8)   06:32   05:49	08:43 (8)   17:44   18:14	06:06   05:33   05:32	19:44   20:13   20:24	
30	07:04   17:12   11	08:45 (8)   06:31   05:48	08:44 (8)   17:45   18:15	06:05   05:32   05:31	19:45   20:14   20:24	
31	07:03   17:13   11	08:46 (8)   06:30   05:47	08:45 (8)   17:46   18:16	06:04   05:31   05:30	19:46   20:15   20:24	
Potential sun hours	303	300	370	396	443	445
Total, worst case	692			235		
Sun reduction	0.35			0.41		
Oper. time red.	1.00			1.00		
Wind dir. red.	0.68			0.12		
Total reduction	0.25			0.05		
Total, real	173			12		

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: T - 20

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December	
1	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	07:28 (10) 07:32 (10)	06:21 16:55	08:05 (8) 08:38 (8)
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:38	06:22 16:54	06:54 16:33	08:05 (8) 08:39 (8)
3	05:34 20:24	05:57 20:05	06:25 19:24	06:52 18:36	06:23 16:53	06:55 16:33	08:05 (8) 08:40 (8)
4	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33	08:05 (8) 08:40 (8)
5	05:35 20:24	05:58 20:03	06:26 19:21	06:54 18:33	06:25 16:51	06:57 16:33	08:05 (8) 08:41 (8)
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33	08:06 (8) 08:41 (8)
7	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	06:59 16:33	08:06 (8) 08:42 (8)
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:33	08:07 (8) 08:43 (8)
9	05:37 20:23	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:33	08:07 (8) 08:43 (8)
10	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33	08:07 (8) 08:43 (8)
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:03 16:33	08:07 (8) 08:44 (8)
12	05:39 20:21	06:05 19:55	06:33 19:10	07:00 18:22	06:33 16:44	07:03 16:33	08:08 (8) 08:44 (8)
13	05:40 20:21	06:06 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33	08:09 (8) 08:45 (8)
14	05:40 20:21	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:43	07:05 16:33	08:08 (8) 08:45 (8)
15	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	07:06 16:33	08:09 (8) 08:46 (8)
16	05:42 20:19	06:08 19:50	06:36 19:03	07:04 18:16	06:38 16:41	07:06 16:34	08:10 (8) 08:47 (8)
17	05:42 20:19	06:09 19:48	06:37 19:02	07:05 18:15	06:39 16:40	07:07 16:34	08:10 (8) 08:46 (8)
18	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:40	07:08 16:34	08:10 (8) 08:47 (8)
19	05:44 20:18	06:11 19:46	06:39 18:58	07:07 18:12	06:41 16:39	07:08 08:12 (8)	08:11 (8) 08:48 (8)
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 08:26 (8)	08:11 (8) 08:48 (8)
21	05:46 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	07:09 08:08 (8)	08:12 (8) 08:49 (8)
22	05:46 20:16	06:14 19:41	06:42 18:53	07:10 18:08	06:44 16:37	07:10 08:29 (8)	08:12 (8) 08:49 (8)
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	07:10 08:07 (8)	08:13 (8) 08:50 (8)
24	05:48 20:14	06:16 19:39	06:43 18:50	07:12 18:05	06:46 16:36	07:11 08:31 (8)	08:13 (8) 08:50 (8)
25	05:49 20:13	06:16 19:37	06:44 18:49	07:13 17:04	06:47 16:36	07:11 08:06 (8)	08:13 (8) 08:50 (8)
26	05:50 20:12	06:17 19:36	06:45 18:47	07:14 17:03	06:48 16:35	07:12 08:05 (8)	08:14 (8) 08:51 (8)
27	05:50 20:12	06:18 19:34	06:46 18:45	07:15 17:01	06:49 16:35	07:12 08:05 (8)	08:15 (8) 08:51 (8)
28	05:51 20:11	06:19 19:33	06:47 18:44	07:16 17:00	06:50 16:34	07:12 08:05 (8)	08:15 (8) 08:52 (8)
29	05:52 20:10	06:20 19:31	06:48 18:42	07:17 16:59	06:51 16:34	07:13 08:05 (8)	08:15 (8) 08:52 (8)
30	05:53 20:09	06:21 19:30	06:49 18:41	07:18 16:58	06:53 16:34	07:13 08:05 (8)	08:16 (8) 08:53 (8)
31	05:54 20:08	06:22 19:28		06:20 16:57		07:13 16:42	08:17 (8) 08:53 (8)
Potential sun hours	453	424	374	347	303	294	
Total, worst case			234		4		1124
Sun reduction			0.65		0.54		0.38
Oper. time red.			1.00		1.00		1.00
Wind dir. red.			0.12		0.12		0.68
Total reduction			0.08		0.07		0.27
Total, real			19		0		307

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: U - 21

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June		
1	07:13	08:09 (8)	07:02	08:25 (8)	06:29	06:41	05:58	05:32
	16:43	08:43 (8)	17:15	20 08:45 (8)	17:47	19:18	19:46	20:14
2	07:14	08:09 (8)	07:01	08:28 (8)	06:27	06:40	05:57	05:31
	16:44	08:43 (8)	17:16	14 08:42 (8)	17:48	19:18	19:47	20:14
3	07:14	08:10 (8)	07:00	08:32 (8)	06:26	06:38	05:56	05:31
	16:44	08:44 (8)	17:17	6 08:38 (8)	17:49	19:19	19:48	20:15
4	07:14	08:10 (8)	06:59	06:24	06:24	06:36	05:55	05:31
	16:45	08:44 (8)	17:19	17:50	19:20	19:49	20:16	20:16
5	07:14	08:10 (8)	06:58	06:23	06:35	05:53	05:30	05:30
	16:46	08:45 (8)	17:20	17:51	19:21	19:50	20:16	20:16
6	07:14	08:10 (8)	06:57	06:21	06:33	05:52	05:30	05:30
	16:47	08:46 (8)	17:21	17:52	19:22	19:51	20:17	20:17
7	07:14	08:11 (8)	06:56	06:20	06:32	05:51	05:30	05:30
	16:48	08:47 (8)	17:22	17:53	19:23	19:52	20:18	20:18
8	07:14	08:11 (8)	06:55	06:18	06:30	05:50	05:29	05:29
	16:49	08:47 (8)	17:23	17:54	19:24	19:53	20:18	20:18
9	07:14	08:11 (8)	06:54	06:17	06:29	05:49	05:29	05:29
	16:50	08:48 (8)	17:24	17:55	19:25	19:54	20:19	20:19
10	07:14	08:11 (8)	06:53	06:15	06:27	05:48	05:29	05:29
	16:51	08:48 (8)	17:26	17:56	19:26	19:55	20:19	20:19
11	07:13	08:11 (8)	06:52	06:14	06:26	05:47	05:29	05:29
	16:52	08:49 (8)	17:27	17:57	19:27	19:56	20:20	20:20
12	07:13	08:12 (8)	06:51	06:12	06:24	05:46	05:29	05:29
	16:53	08:49 (8)	17:28	17:58	19:28	19:57	20:20	20:20
13	07:13	08:11 (8)	06:50	06:11	06:23	05:45	05:29	05:29
	16:54	08:49 (8)	17:29	17:59	19:29	19:58	20:21	20:21
14	07:13	08:12 (8)	06:49	06:09	06:21	05:44	05:29	05:29
	16:55	08:50 (8)	17:30	18:00	19:30	19:59	20:21	20:21
15	07:12	08:13 (8)	06:47	06:08	06:20	05:43	05:29	05:29
	16:56	08:51 (8)	17:31	18:01	19:31	20:00	20:22	20:22
16	07:12	08:13 (8)	06:46	06:06	06:18	05:42	05:29	05:29
	16:57	08:50 (8)	17:32	18:02	19:32	20:01	20:22	20:22
17	07:12	08:13 (8)	06:45	06:05	06:17	05:41	05:29	05:29
	16:58	08:51 (8)	17:34	18:03	19:33	20:01	20:22	20:22
18	07:11	08:13 (8)	06:44	06:03	06:39 (10)	06:16	05:41	05:29
	16:59	08:51 (8)	17:35	18:04	6 06:45 (10)	19:34	20:02	20:23
19	07:11	08:14 (8)	06:42	06:02	06:36 (10)	06:14	05:40	05:29
	17:00	08:52 (8)	17:36	18:05	13 06:49 (10)	19:35	20:03	20:23
20	07:10	08:14 (8)	06:41	06:00	06:33 (10)	06:13	05:39	05:29
	17:01	08:51 (8)	17:37	18:06	17 06:50 (10)	19:36	20:04	20:23
21	07:10	08:15 (8)	06:40	05:58	06:31 (10)	06:11	05:38	05:29
	17:03	08:52 (8)	17:38	18:07	19 06:50 (10)	19:37	20:05	20:23
22	07:09	08:15 (8)	06:38	05:57	06:31 (10)	06:10	05:37	05:30
	17:04	08:52 (8)	17:39	18:08	20 06:51 (10)	19:38	20:06	20:24
23	07:09	08:16 (8)	06:37	05:55	06:30 (10)	06:09	05:37	05:30
	17:05	08:51 (8)	17:40	18:09	21 06:51 (10)	19:39	20:07	20:24
24	07:08	08:17 (8)	06:36	05:54	06:30 (10)	06:07	05:36	05:30
	17:06	08:52 (8)	17:41	18:10	21 06:51 (10)	19:40	20:07	20:24
25	07:07	08:17 (8)	06:34	05:52	06:29 (10)	06:06	05:35	05:30
	17:07	08:51 (8)	17:42	18:11	22 06:51 (10)	19:41	20:08	20:24
26	07:07	08:18 (8)	06:33	05:51	06:28 (10)	06:05	05:35	05:31
	17:08	08:50 (8)	17:43	18:12	22 06:50 (10)	19:42	20:09	20:24
27	07:06	08:19 (8)	06:32	05:49	06:29 (10)	06:03	05:34	05:31
	17:09	08:51 (8)	17:44	18:13	21 06:50 (10)	19:43	20:10	20:24
28	07:05	08:20 (8)	06:30	05:47	06:29 (10)	06:02	05:34	05:31
	17:11	08:50 (8)	17:46	18:14	19 06:48 (10)	19:44	20:11	20:24
29	07:05	08:21 (8)		06:46	07:30 (10)	06:01	05:33	05:32
	17:12	08:49 (8)		19:15	17 07:47 (10)	19:45	20:11	20:24
30	07:04	08:22 (8)		06:44	07:31 (10)	05:59	05:33	05:32
	17:13	08:48 (8)		19:16	14 07:45 (10)	19:45	20:12	20:24
31	07:03	08:24 (8)		06:43	07:34 (10)		05:32	
	17:14	08:46 (8)		19:17	9 07:43 (10)		20:13	
Potential sun hours	303	300	370		396	443	445	
Total, worst case	1078		40		241			
Sun reduction	0.35		0.36		0.41			
Oper. time red.	1.00		1.00		1.00			
Wind dir. red.	0.64		0.64		0.07			
Total reduction	0.23		0.24		0.03			
Total, real	250		10		7			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: U - 21

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December		
1	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:54 16:33	07:53 (8) 08:31 (8)	
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:38	06:22 16:54	06:54 16:33	07:54 (8) 08:31 (8)	
3	05:34 20:24	05:57 20:05	06:25 19:24	06:52 18:36	06:23 16:53	06:55 16:33	07:54 (8) 08:31 (8)	
4	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33	07:55 (8) 08:31 (8)	
5	05:35 20:24	05:58 20:03	06:26 19:21	06:54 18:33	06:25 16:51	06:57 16:33	07:56 (8) 08:32 (8)	
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33	07:56 (8) 08:32 (8)	
7	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	06:59 16:33	07:57 (8) 08:32 (8)	
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	08:02 (8) 08:10 (8)	07:00 16:33	07:58 (8) 08:33 (8)
9	05:37 20:23	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:59 (8) 08:13 (8)	07:01 16:33	07:59 (8) 08:33 (8)
10	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:56 (8) 08:16 (8)	07:02 16:33	07:58 (8) 08:32 (8)
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:56 (8) 08:18 (8)	07:03 16:33	07:59 (8) 08:33 (8)
12	05:39 20:21	06:05 19:55	06:33 19:10	07:25 (10) 07:33 (10)	07:00 18:22	07:54 (8) 08:20 (8)	07:03 16:33	08:00 (8) 08:33 (8)
13	05:40 20:21	06:06 19:53	06:33 19:08	07:23 (10) 07:36 (10)	07:01 18:21	07:53 (8) 08:21 (8)	07:04 16:33	08:01 (8) 08:34 (8)
14	05:40 20:21	06:06 19:52	06:34 19:06	07:21 (10) 07:37 (10)	07:02 18:19	07:52 (8) 08:22 (8)	07:05 16:33	08:01 (8) 08:33 (8)
15	05:41 20:20	06:07 19:51	06:35 19:05	07:19 (10) 07:38 (10)	07:03 18:18	07:51 (8) 08:23 (8)	07:06 16:33	08:02 (8) 08:34 (8)
16	05:42 20:19	06:08 19:50	06:36 19:03	07:18 (10) 07:39 (10)	07:04 18:16	07:51 (8) 08:23 (8)	07:06 16:34	08:03 (8) 08:35 (8)
17	05:42 20:19	06:09 19:48	06:37 19:02	07:18 (10) 07:39 (10)	07:05 18:15	07:51 (8) 08:25 (8)	07:07 16:34	08:03 (8) 08:34 (8)
18	05:43 20:18	06:10 19:47	06:38 19:00	07:16 (10) 07:38 (10)	07:06 18:13	07:51 (8) 08:26 (8)	07:08 16:34	08:04 (8) 08:35 (8)
19	05:44 20:18	06:11 19:46	06:39 18:58	07:16 (10) 07:38 (10)	07:07 18:12	07:51 (8) 08:26 (8)	07:08 16:35	08:05 (8) 08:36 (8)
20	05:45 20:17	06:12 19:44	06:40 18:57	07:16 (10) 07:37 (10)	07:08 18:11	07:50 (8) 08:27 (8)	07:09 16:35	08:05 (8) 08:36 (8)
21	05:46 20:16	06:13 19:43	06:41 18:55	07:16 (10) 07:37 (10)	07:09 18:09	07:50 (8) 08:27 (8)	07:09 16:36	08:05 (8) 08:37 (8)
22	05:46 20:16	06:14 19:41	06:42 18:53	07:17 (10) 07:36 (10)	07:10 18:08	07:50 (8) 08:27 (8)	07:10 16:36	08:05 (8) 08:37 (8)
23	05:47 20:15	06:15 19:40	06:42 18:52	07:17 (10) 07:34 (10)	07:11 18:07	07:51 (8) 08:29 (8)	07:10 16:37	08:06 (8) 08:38 (8)
24	05:48 20:14	06:16 19:39	06:43 18:50	07:19 (10) 07:33 (10)	07:12 18:05	06:46 16:36	07:11 16:37	08:07 (8) 08:38 (8)
25	05:49 20:13	06:16 19:37	06:44 18:49	07:21 (10) 07:30 (10)	06:13 17:04	06:47 16:36	07:11 16:38	08:07 (8) 08:38 (8)
26	05:50 20:12	06:17 19:36	06:45 18:47	06:15 17:03	06:48 16:35	07:52 (8) 08:29 (8)	07:12 16:38	08:08 (8) 08:39 (8)
27	05:50 20:12	06:18 19:34	06:46 18:45	06:16 17:01	06:49 16:35	07:52 (8) 08:30 (8)	07:12 16:39	08:08 (8) 08:39 (8)
28	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	07:52 (8) 08:30 (8)	07:12 16:40	08:08 (8) 08:40 (8)
29	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	07:53 (8) 08:30 (8)	07:13 16:40	08:08 (8) 08:40 (8)
30	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:53 16:34	07:53 (8) 08:30 (8)	07:13 16:41	08:09 (8) 08:42 (8)
31	05:54 20:08	06:22 19:28		06:20 16:57			07:13 16:42	08:09 (8) 08:42 (8)
Potential sun hours	453	424	374	347	303	294		
Total, worst case			243		728		1028	
Sun reduction			0.65		0.45		0.38	
Oper. time red.			1.00		1.00		1.00	
Wind dir. red.			0.07		0.64		0.64	
Total reduction			0.05		0.30		0.25	
Total, real			12		216		260	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: V - 22

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13	08:33 (8)	07:02	08:31 (8)	06:29	06:41
	16:43	09:07 (8)	17:15	09:28 (8)	17:47	19:17
2	07:14	08:33 (8)	07:01	08:31 (8)	06:27	06:40
	16:44	09:08 (8)	17:16	09:28 (8)	17:48	19:18
3	07:14	08:33 (8)	07:00	08:31 (8)	06:26	06:38
	16:44	09:09 (8)	17:17	09:27 (8)	17:49	19:19
4	07:14	08:33 (8)	06:59	08:32 (8)	06:24	06:36
	16:45	09:10 (8)	17:19	09:27 (8)	17:50	19:20
5	07:14	08:33 (8)	06:58	08:32 (8)	06:23	06:35
	16:46	09:11 (8)	17:20	09:27 (8)	17:51	19:21
6	07:14	08:32 (8)	06:57	08:32 (8)	06:21	06:33
	16:47	09:12 (8)	17:21	09:26 (8)	17:52	19:22
7	07:14	08:32 (8)	06:56	08:33 (8)	06:20	06:32
	16:48	09:13 (8)	17:22	09:26 (8)	17:53	19:23
8	07:14	08:32 (8)	06:55	08:34 (8)	06:18	06:30
	16:49	09:14 (8)	17:23	09:26 (8)	17:54	19:24
9	07:14	08:32 (8)	06:54	08:34 (8)	06:17	06:29
	16:50	09:15 (8)	17:24	09:25 (8)	17:55	19:25
10	07:14	08:32 (8)	06:53	08:35 (8)	06:15	06:27
	16:51	09:16 (8)	17:26	09:24 (8)	17:56	19:26
11	07:13	08:32 (8)	06:52	08:36 (8)	06:14	06:26
	16:52	09:17 (8)	17:27	09:23 (8)	17:57	19:27
12	07:13	08:32 (8)	06:51	08:37 (8)	06:12	06:24
	16:53	09:18 (8)	17:28	09:22 (8)	17:58	19:28
13	07:13	08:31 (8)	06:50	08:38 (8)	06:11	06:23
	16:54	09:18 (8)	17:29	09:21 (8)	17:59	19:29
14	07:13	08:31 (8)	06:49	08:39 (8)	06:09	06:21
	16:55	09:19 (8)	17:30	09:19 (8)	18:00	19:30
15	07:12	08:31 (8)	06:47	08:40 (8)	06:08	06:20
	16:56	09:21 (8)	17:31	09:18 (8)	18:01	19:31
16	07:12	08:31 (8)	06:46	08:42 (8)	06:06	06:18
	16:57	09:21 (8)	17:32	09:16 (8)	18:02	19:32
17	07:12	08:31 (8)	06:45	08:44 (8)	06:05	06:17
	16:58	09:22 (8)	17:34	09:14 (8)	18:03	19:33
18	07:11	08:30 (8)	06:44	08:45 (8)	06:03	06:16
	16:59	09:22 (8)	17:35	09:11 (8)	18:04	19:34
19	07:11	08:31 (8)	06:42	08:49 (8)	06:02	06:14
	17:00	09:23 (8)	17:36	09:08 (8)	18:05	19:35
20	07:10	08:30 (8)	06:41	08:55 (8)	06:00	06:13
	17:01	09:24 (8)	17:37	09:02 (8)	18:06	19:36
21	07:10	08:31 (8)	06:40		05:58	06:11
	17:03	09:25 (8)	17:38		18:07	19:37
22	07:09	08:30 (8)	06:38		05:57	06:10
	17:04	09:25 (8)	17:39		18:08	19:38
23	07:09	08:30 (8)	06:37		05:55	06:09
	17:05	09:25 (8)	17:40		18:09	19:39
24	07:08	08:31 (8)	06:36		05:54	06:07
	17:06	09:26 (8)	17:41		18:10	19:40
25	07:07	08:30 (8)	06:34		05:52	06:06
	17:07	09:27 (8)	17:42		18:11	19:41
26	07:07	08:30 (8)	06:33		05:50	06:05
	17:08	09:27 (8)	17:43		18:12	19:42
27	07:06	08:31 (8)	06:32		05:49	06:03
	17:09	09:28 (8)	17:44		18:13	19:43
28	07:05	08:31 (8)	06:30		05:47	06:02
	17:10	09:28 (8)	17:45		18:14	19:44
29	07:04	08:31 (8)			06:46	07:39 (9)
	17:12	09:28 (8)			19:15	20:11
30	07:04	08:31 (8)			06:44	07:38 (9)
	17:13	09:28 (8)			19:16	20:12
31	07:03	08:31 (8)			06:43	07:38 (9)
	17:14	09:28 (8)			19:17	20:13
Potential sun hours	303	300	370		396	443
Total, worst case	1503	868	8		295	
Sun reduction	0.35	0.36	0.41		0.48	
Oper. time red.	1.00	1.00	1.00		1.00	
Wind dir. red.	0.67	0.67	0.03		0.08	
Total reduction	0.24	0.25	0.01		0.04	
Total, real	364	220	0		11	

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: V - 22

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December	
1	05:33 20:24	05:55 20:07	06:23 19:27	07:06 (10) 18:39	06:50 16:55	08:05 (8) 16:33	08:14 (8) 08:59 (8)
2	05:33 20:24	05:56 20:06	06:24 19:25	07:19 (10) 18:38	06:51 16:54	08:04 (8) 16:33	08:15 (8) 08:59 (8)
3	05:34 20:24	05:57 20:05	06:25 19:24	07:19 (10) 18:36	06:52 16:53	08:03 (8) 16:33	08:15 (8) 08:58 (8)
4	05:34 20:24	05:57 20:04	06:25 19:22	07:19 (10) 18:34	06:53 16:52	08:03 (8) 16:33	08:16 (8) 08:58 (8)
5	05:35 20:24	05:58 20:03	06:26 19:21	07:21 (10) 18:33	06:54 16:51	08:02 (8) 16:33	08:17 (8) 08:58 (8)
6	05:35 20:23	05:59 20:02	06:27 19:19	07:26 (10) 18:31	06:54 16:50	08:03 (8) 16:33	08:18 (8) 08:58 (8)
7	05:36 20:23	06:00 20:01	06:28 19:17	07:29 (9) 18:30	06:55 16:49	08:02 (8) 16:33	08:20 (8) 08:58 (8)
8	05:36 20:23	06:01 19:59	06:29 19:16	07:29 (9) 18:28	06:56 16:48	08:02 (8) 16:33	08:21 (8) 08:58 (8)
9	05:37 20:23	06:02 19:58	06:30 19:14	07:30 (9) 18:27	06:57 16:47	08:02 (8) 16:33	08:22 (8) 08:58 (8)
10	05:38 20:22	06:03 19:57	06:31 19:13	07:30 (9) 18:25	06:58 16:46	08:02 (8) 16:33	08:22 (8) 08:57 (8)
11	05:38 20:22	06:04 19:56	06:32 19:11	07:29 (9) 18:24	06:59 16:45	08:02 (8) 16:33	08:23 (8) 08:57 (8)
12	05:39 20:21	06:05 19:55	06:33 19:09	07:29 (9) 18:22	07:00 16:44	08:03 (8) 16:33	08:24 (8) 08:58 (8)
13	05:40 20:21	06:06 19:53	06:33 19:08	07:29 (9) 18:21	07:01 16:43	08:03 (8) 16:33	08:25 (8) 08:58 (8)
14	05:40 20:21	06:06 19:52	06:34 19:06	07:29 (9) 18:19	07:02 16:43	08:03 (8) 16:33	08:25 (8) 08:57 (8)
15	05:41 20:20	06:07 19:51	06:35 19:05	07:30 (9) 18:18	07:03 16:42	08:03 (8) 16:33	08:27 (8) 08:57 (8)
16	05:42 20:19	06:08 19:50	06:36 19:03	07:30 (9) 18:16	07:04 16:41	08:03 (8) 16:34	08:28 (8) 08:58 (8)
17	05:42 20:19	06:09 19:48	06:37 19:01	07:31 (9) 18:15	07:05 16:40	08:04 (8) 16:34	08:28 (8) 08:57 (8)
18	05:43 20:18	06:10 19:47	06:38 19:00	07:31 (9) 18:13	07:06 16:40	08:05 (8) 16:34	08:29 (8) 08:58 (8)
19	05:44 20:18	06:11 19:46	06:39 18:58	07:31 (9) 18:12	07:07 16:39	08:05 (8) 16:35	08:30 (8) 08:59 (8)
20	05:45 20:17	06:12 19:44	06:40 18:57	07:30 (9) 18:11	07:08 16:38	08:05 (8) 16:35	08:30 (8) 08:59 (8)
21	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	07:09 16:38	09:00 (8) 16:36	08:31 (8) 08:59 (8)
22	05:46 20:16	06:14 19:41	06:42 18:53	07:12 (10) 18:08	06:44 16:37	08:06 (8) 16:36	08:31 (8) 08:59 (8)
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 (10) 18:07	06:45 16:36	08:07 (8) 16:37	08:32 (8) 09:01 (8)
24	05:48 20:14	06:16 19:39	06:43 18:50	07:09 (10) 18:05	06:46 16:36	08:08 (8) 16:37	08:32 (8) 09:01 (8)
25	05:49 20:13	06:16 19:37	06:44 18:49	07:30 (10) 18:04	06:47 16:35	08:09 (8) 16:38	08:32 (8) 09:01 (8)
26	05:50 20:12	06:17 19:36	06:45 18:47	07:07 (10) 18:03	06:48 16:35	08:10 (8) 16:38	08:33 (8) 09:02 (8)
27	05:50 20:12	06:18 19:34	06:46 18:45	07:07 (10) 18:02	06:49 16:35	08:10 (8) 16:39	08:33 (8) 09:03 (8)
28	05:51 20:11	06:19 19:33	06:47 18:44	07:05 (10) 18:01	06:47 16:34	08:11 (8) 16:40	08:33 (8) 09:03 (8)
29	05:52 20:10	06:20 19:31	06:48 18:42	07:05 (10) 18:00	06:51 16:34	08:12 (8) 16:40	08:32 (8) 09:04 (8)
30	05:53 20:09	06:21 19:30	06:49 18:41	07:05 (10) 17:59	06:52 16:34	08:13 (8) 16:41	08:33 (8) 09:06 (8)
31	05:54 20:08	06:22 19:28	06:50 18:40	07:05 (10) 17:58	06:53 16:34	08:13 (8) 16:42	08:33 (8) 09:06 (8)
Potential sun hours	453	424	374	347	303	294	
Total, worst case		245	63	340	1609	1040	
Sun reduction		0.70	0.65	0.54	0.45	0.38	
Oper. time red.		1.00	1.00	1.00	1.00	1.00	
Wind dir. red.		0.08	0.07	0.67	0.67	0.67	
Total reduction		0.06	0.05	0.37	0.31	0.26	
Total, real		14	3	127	499	274	

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: W - 23

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13	08:45 (8)	07:02	08:59 (8)	06:29	06:41
	16:43	09:43 (8)	17:15	09:46 (8)	17:47	19:17
2	07:14	08:45 (8)	07:01	09:00 (8)	06:27	06:40
	16:44	09:43 (8)	17:16	09:44 (8)	17:48	19:18
3	07:14	08:46 (8)	07:00	09:01 (8)	06:26	06:38
	16:44	09:44 (8)	17:17	09:43 (8)	17:49	19:19
4	07:14	08:46 (8)	06:59	09:02 (8)	06:24	06:36
	16:45	09:44 (8)	17:19	09:42 (8)	17:50	19:20
5	07:14	08:46 (8)	06:58	09:04 (8)	06:23	06:35
	16:46	09:45 (8)	17:20	09:40 (8)	17:51	19:21
6	07:14	08:47 (8)	06:57	09:05 (8)	06:21	06:33
	16:47	09:45 (8)	17:21	09:38 (8)	17:52	19:22
7	07:14	08:47 (8)	06:56	09:07 (8)	06:20	06:32
	16:48	09:46 (8)	17:22	09:36 (8)	17:53	19:23
8	07:14	08:48 (8)	06:55	09:10 (8)	06:18	06:30
	16:49	09:47 (8)	17:23	09:34 (8)	17:54	19:24
9	07:14	08:48 (8)	06:54	09:13 (8)	06:17	06:29
	16:50	09:47 (8)	17:24	09:30 (8)	17:55	19:25
10	07:14	08:48 (8)	06:53	06:15	06:27	07:34 (10)
	16:51	09:47 (8)	17:26	17:56	19:26	07:39 (10)
11	07:13	08:48 (8)	06:52	06:14	06:26	07:33 (10)
	16:52	09:48 (8)	17:27	17:57	19:27	07:39 (10)
12	07:13	08:49 (8)	06:51	06:12	06:24	07:30 (10)
	16:53	09:48 (8)	17:28	17:58	19:28	07:38 (10)
13	07:13	08:48 (8)	06:50	06:11	06:23	07:29 (10)
	16:54	09:48 (8)	17:29	17:59	19:29	07:38 (10)
14	07:13	08:49 (8)	06:49	06:09	06:21	07:27 (10)
	16:55	09:49 (8)	17:30	18:00	19:30	07:36 (10)
15	07:12	08:50 (8)	06:47	06:08	06:20	07:26 (10)
	16:56	09:49 (8)	17:31	18:01	19:31	07:36 (10)
16	07:12	08:50 (8)	06:46	06:06	06:18	07:24 (10)
	16:57	09:49 (8)	17:32	18:02	19:32	07:34 (10)
17	07:12	08:50 (8)	06:45	06:05	06:17	07:23 (10)
	16:58	09:50 (8)	17:33	18:03	19:33	07:33 (10)
18	07:11	08:50 (8)	06:44	06:03	06:15	07:22 (10)
	16:59	09:49 (8)	17:35	18:04	19:34	07:31 (10)
19	07:11	08:51 (8)	06:42	06:01	06:14	07:19 (10)
	17:00	09:50 (8)	17:36	18:05	19:35	07:28 (10)
20	07:10	08:51 (8)	06:41	06:00	06:13	05:39
	17:01	09:50 (8)	17:37	18:06	19:36	20:04
21	07:10	08:52 (8)	06:40	05:58	06:11	05:38
	17:03	09:50 (8)	17:38	18:07	19:37	20:05
22	07:09	08:52 (8)	06:38	05:57	06:10	05:37
	17:04	09:50 (8)	17:39	18:08	19:38	20:06
23	07:09	08:52 (8)	06:37	05:55	06:09	05:37
	17:05	09:50 (8)	17:40	18:09	19:39	20:07
24	07:08	08:54 (8)	06:36	05:54	06:07	05:36
	17:06	09:50 (8)	17:41	18:10	19:40	20:07
25	07:07	08:54 (8)	06:34	05:52	06:06	05:35
	17:07	09:50 (8)	17:42	18:11	19:41	20:08
26	07:07	08:54 (8)	06:33	05:50	06:05	05:35
	17:08	09:49 (8)	17:43	18:12	19:42	20:09
27	07:06	08:56 (8)	06:32	05:49	06:03	05:34
	17:09	09:49 (8)	17:44	18:13	19:43	20:10
28	07:05	08:56 (8)	06:30	05:47	06:02	05:34
	17:10	09:49 (8)	17:45	18:14	19:44	20:11
29	07:04	08:57 (8)		06:46	06:01	05:33
	17:12	09:48 (8)		19:15	19:45	20:11
30	07:04	08:57 (8)		06:44	05:59	05:33
	17:13	09:47 (8)		19:16	19:45	20:12
31	07:03	08:58 (8)		06:43		05:32
	17:14	09:46 (8)		19:17		20:13
Potential sun hours	303	300	370	396	443	445
Total, worst case	1775	312			92	
Sun reduction	0.35	0.36			0.48	
Oper. time red.	1.00	1.00			1.00	
Wind dir. red.	0.75	0.75			0.04	
Total reduction	0.27	0.28			0.02	
Total, real	473	87			2	

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: W - 23

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December			
1	05:33	05:55	06:23	07:32 (10)	06:50	06:21	08:48 (8)	06:53	08:30 (8)
	20:24	20:07	19:27	6 07:38 (10)	18:39	16:55	7 08:55 (8)	16:33	60 09:30 (8)
2	05:33	05:56	06:24	07:33 (10)	06:51	06:22	08:42 (8)	06:54	08:31 (8)
	20:24	20:06	19:25	5 07:38 (10)	18:38	16:54	19 09:01 (8)	16:33	59 09:30 (8)
3	05:34	05:57	06:25	07:34 (10)	06:52	06:23	08:39 (8)	06:55	08:31 (8)
	20:24	20:05	19:24	4 07:38 (10)	18:36	16:53	25 09:04 (8)	16:33	59 09:30 (8)
4	05:34	05:57	06:25	07:34 (10)	06:53	06:24	08:37 (8)	06:56	08:32 (8)
	20:24	20:04	19:22	2 07:36 (10)	18:34	16:52	30 09:07 (8)	16:33	59 09:31 (8)
5	05:35	05:58	06:26	07:35 (10)	06:54	06:25	08:35 (8)	06:57	08:32 (8)
	20:24	20:03	19:21	1 07:36 (10)	18:33	16:51	34 09:09 (8)	16:33	59 09:31 (8)
6	05:35	05:59	06:27	07:36 (10)	06:54	06:26	08:34 (8)	06:58	08:33 (8)
	20:23	20:02	19:19	06:28	18:31	16:50	37 09:11 (8)	16:33	58 09:31 (8)
7	05:36	06:00	06:28	06:28	06:55	06:28	08:33 (8)	06:59	08:33 (8)
	20:23	20:01	19:17	06:30	18:30	16:49	40 09:13 (8)	16:33	59 09:32 (8)
8	05:36	06:01	06:29	06:29	06:56	06:29	08:32 (8)	07:00	08:34 (8)
	20:23	19:59	19:16	06:31	18:28	16:48	42 09:14 (8)	16:33	58 09:32 (8)
9	05:37	06:02	06:30	06:30	06:57	06:30	08:31 (8)	07:01	08:35 (8)
	20:23	19:58	19:14	06:33	18:27	16:47	44 09:15 (8)	16:33	58 09:33 (8)
10	05:38	06:03	06:31	06:31	06:58	06:31	08:30 (8)	07:02	08:34 (8)
	20:22	19:57	19:13	06:32	18:25	16:46	47 09:17 (8)	16:33	58 09:32 (8)
11	05:38	06:04	06:32	06:32	06:59	06:32	08:29 (8)	07:03	08:35 (8)
	20:22	19:56	19:11	06:33	18:24	16:45	48 09:17 (8)	16:33	58 09:33 (8)
12	05:39	06:05	06:33	06:33	07:00	06:33	08:29 (8)	07:03	08:36 (8)
	20:21	19:55	19:09	06:35	18:22	16:44	50 09:19 (8)	16:33	57 09:33 (8)
13	05:40	06:06	06:33	06:33	07:01	06:34	08:28 (8)	07:04	08:37 (8)
	20:21	19:53	19:08	06:35	18:21	16:43	52 09:20 (8)	16:33	57 09:34 (8)
14	05:40	06:06	06:34	06:34	07:02	06:35	08:28 (8)	07:05	08:36 (8)
	20:21	19:52	19:06	06:35	18:19	16:43	53 09:21 (8)	16:33	58 09:34 (8)
15	05:41	06:07	06:35	06:35	07:03	06:36	08:27 (8)	07:06	08:37 (8)
	20:20	19:51	19:05	06:36	18:18	16:42	54 09:21 (8)	16:33	57 09:34 (8)
16	05:42	06:08	06:36	06:36	07:04	06:38	08:27 (8)	07:06	08:38 (8)
	20:19	19:50	19:03	06:37	18:16	16:41	55 09:22 (8)	16:34	57 09:35 (8)
17	05:42	06:09	06:37	06:37	07:05	06:39	08:28 (8)	07:07	08:38 (8)
	20:19	19:48	19:01	06:38	18:15	16:40	56 09:24 (8)	16:34	57 09:35 (8)
18	05:43	06:10	06:38	06:38	07:06	06:40	08:28 (8)	07:08	08:39 (8)
	20:18	19:47	19:00	06:39	18:13	16:40	56 09:24 (8)	16:34	57 09:36 (8)
19	05:44	06:11	06:39	06:39	07:07	06:41	08:27 (8)	07:08	08:40 (8)
	20:18	19:46	18:58	06:40	18:12	16:39	58 09:25 (8)	16:35	57 09:37 (8)
20	05:45	06:12	06:40	06:40	07:08	06:42	08:27 (8)	07:09	08:40 (8)
	20:17	19:44	18:57	06:41	18:11	16:38	58 09:25 (8)	16:35	56 09:36 (8)
21	05:45	06:13	06:41	06:41	07:09	06:43	08:27 (8)	07:09	08:41 (8)
	20:16	19:43	18:55	06:42	18:09	16:38	58 09:25 (8)	16:36	56 09:37 (8)
22	05:46	06:14	06:42	06:42	07:10	06:44	08:27 (8)	07:10	08:41 (8)
	20:16	19:41	18:53	06:42	18:08	16:37	59 09:26 (8)	16:36	56 09:37 (8)
23	05:47	06:15	07:25 (10)	06:42	07:11	06:45	08:27 (8)	07:10	08:42 (8)
	20:15	19:40	2 07:27 (10)	06:43	18:07	16:36	59 09:26 (8)	16:37	56 09:38 (8)
24	05:48	06:16	07:23 (10)	06:43	07:12	06:46	08:28 (8)	07:11	08:42 (8)
	20:14	19:39	9 07:32 (10)	06:44	18:05	16:36	59 09:27 (8)	16:37	56 09:38 (8)
25	05:49	06:16	07:25 (10)	06:44	06:13	06:47	08:28 (8)	07:11	08:42 (8)
	20:13	19:37	9 07:34 (10)	06:45	17:04	16:35	60 09:28 (8)	16:38	57 09:39 (8)
26	05:50	06:17	07:26 (10)	06:45	06:15	06:48	08:29 (8)	07:12	08:43 (8)
	20:12	19:36	10 07:36 (10)	06:46	17:03	16:35	59 09:28 (8)	16:38	57 09:40 (8)
27	05:50	06:18	07:27 (10)	06:46	06:16	06:49	08:29 (8)	07:12	08:43 (8)
	20:12	19:34	10 07:37 (10)	06:47	17:01	16:35	59 09:28 (8)	16:39	57 09:40 (8)
28	05:51	06:19	07:27 (10)	06:47	06:17	06:50	08:29 (8)	07:12	08:43 (8)
	20:11	19:33	9 07:36 (10)	06:48	17:00	16:34	60 09:29 (8)	16:40	57 09:40 (8)
29	05:52	06:20	07:28 (10)	06:48	06:18	06:51	08:29 (8)	07:13	08:43 (8)
	20:10	19:31	9 07:37 (10)	06:49	16:59	16:34	60 09:29 (8)	16:40	58 09:41 (8)
30	05:53	06:21	07:29 (10)	06:49	06:19	06:52	08:30 (8)	07:13	08:45 (8)
	20:09	19:30	9 07:38 (10)	06:49	16:58	16:34	59 09:29 (8)	16:41	57 09:42 (8)
31	05:54	06:22	07:30 (10)	06:49	06:20			07:13	08:45 (8)
	20:08	19:28	8 07:38 (10)	06:49	16:57			16:42	57 09:42 (8)
Potential sun hours	453	424	374	347	303			294	
Total, worst case		75	18			1457		1782	
Sun reduction		0.70	0.65			0.45		0.38	
Oper. time red.		1.00	1.00			1.00		1.00	
Wind dir. red.		0.04	0.04			0.75		0.75	
Total reduction		0.03	0.03			0.34		0.29	
Total, real		2	1			498		518	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Shadow receptor: X - 24

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June			
1	07:13	08:28 (8)	07:02	08:34 (8)	06:29	06:41	07:19 (10)	05:58	05:32
	16:43	09:12 (8)	17:15	09:23 (8)	17:47	19:17	07:34 (10)	19:46	20:14
2	07:14	08:28 (8)	07:01	08:35 (8)	06:27	06:40	07:16 (10)	05:57	05:31
	16:44	09:13 (8)	17:16	09:22 (8)	17:48	19:18	07:35 (10)	19:47	20:14
3	07:14	08:28 (8)	07:00	08:36 (8)	06:26	06:38	07:15 (10)	05:56	05:31
	16:44	09:13 (8)	17:17	09:22 (8)	17:49	19:19	07:37 (10)	19:48	20:15
4	07:14	08:28 (8)	06:59	08:36 (8)	06:24	06:36	07:13 (10)	05:55	05:31
	16:45	09:14 (8)	17:19	09:21 (8)	17:50	19:20	07:37 (10)	19:49	20:16
5	07:14	08:28 (8)	06:58	08:37 (8)	06:23	06:35	07:13 (10)	05:53	05:30
	16:46	09:15 (8)	17:20	09:20 (8)	17:51	19:21	07:38 (10)	19:50	20:16
6	07:14	08:28 (8)	06:57	08:38 (8)	06:21	06:33	07:12 (10)	05:52	05:30
	16:47	09:15 (8)	17:21	09:19 (8)	17:52	19:22	07:37 (10)	19:51	20:17
7	07:14	08:29 (8)	06:56	08:40 (8)	06:20	06:32	07:12 (10)	05:51	05:30
	16:48	09:16 (8)	17:22	09:18 (8)	17:53	19:23	07:38 (10)	19:52	20:18
8	07:14	08:29 (8)	06:55	08:41 (8)	06:18	06:30	07:11 (10)	05:50	05:29
	16:49	09:17 (8)	17:23	09:17 (8)	17:54	19:24	07:37 (10)	19:53	20:18
9	07:14	08:29 (8)	06:54	08:42 (8)	06:17	06:29	07:11 (10)	05:49	05:29
	16:50	09:18 (8)	17:24	09:15 (8)	17:55	19:25	07:37 (10)	19:54	20:19
10	07:14	08:29 (8)	06:53	08:44 (8)	06:15	06:27	07:10 (10)	05:48	05:29
	16:51	09:18 (8)	17:26	09:14 (8)	17:56	19:26	07:36 (10)	19:55	20:19
11	07:13	08:29 (8)	06:52	08:47 (8)	06:14	06:26	07:11 (10)	05:47	05:29
	16:52	09:19 (8)	17:27	09:11 (8)	17:57	19:27	07:36 (10)	19:56	20:20
12	07:13	08:29 (8)	06:51	08:50 (8)	06:12	06:24	07:11 (10)	05:46	05:29
	16:53	09:20 (8)	17:28	09:08 (8)	17:58	19:28	07:34 (10)	19:57	20:20
13	07:13	08:29 (8)	06:50	08:54 (8)	06:11	06:23	07:12 (10)	05:45	05:29
	16:54	09:20 (8)	17:29	09:04 (8)	17:59	19:29	07:34 (10)	19:58	20:21
14	07:13	08:29 (8)	06:49		06:09	06:21	07:12 (10)	05:44	05:29
	16:55	09:21 (8)	17:30		18:00	19:30	07:32 (10)	19:59	20:21
15	07:12	08:30 (8)	06:47		06:08	06:20	07:14 (10)	05:43	05:29
	16:56	09:21 (8)	17:31		18:01	19:31	07:30 (10)	20:00	20:22
16	07:12	08:29 (8)	06:46		06:06	06:18	07:15 (10)	05:42	05:29
	16:57	09:21 (8)	17:32		18:02	19:32	07:27 (10)	20:01	20:22
17	07:12	08:30 (8)	06:45		06:05	06:17		05:41	05:29
	16:58	09:22 (8)	17:34		18:03	19:33		20:01	20:22
18	07:11	08:30 (8)	06:44		06:03	06:16		05:41	05:29
	16:59	09:22 (8)	17:35		18:04	19:34		20:02	20:23
19	07:11	08:30 (8)	06:42		06:02	06:14		05:40	05:29
	17:00	09:23 (8)	17:36		18:05	19:35		20:03	20:23
20	07:10	08:30 (8)	06:41		06:00	06:13		05:39	05:29
	17:01	09:23 (8)	17:37		18:06	19:36		20:04	20:23
21	07:10	08:31 (8)	06:40		05:58	06:11		05:38	05:29
	17:03	09:24 (8)	17:38		18:07	19:37		20:05	20:23
22	07:09	08:31 (8)	06:38		05:57	06:10		05:37	05:30
	17:04	09:24 (8)	17:39		18:08	19:38		20:06	20:24
23	07:09	08:31 (8)	06:37		05:55	06:09		05:37	05:30
	17:05	09:24 (8)	17:40		18:09	19:39		20:07	20:24
24	07:08	08:31 (8)	06:36		05:54	06:07		05:36	05:30
	17:06	09:25 (8)	17:41		18:10	19:40		20:07	20:24
25	07:07	08:31 (8)	06:34		05:52	06:06		05:35	05:30
	17:07	09:25 (8)	17:42		18:11	19:41		20:08	20:24
26	07:07	08:32 (8)	06:33		05:50	06:05		05:35	05:31
	17:08	09:24 (8)	17:43		18:12	19:42		20:09	20:24
27	07:06	08:33 (8)	06:32		05:49	06:03		05:34	05:31
	17:09	09:25 (8)	17:44		18:13	19:43		20:10	20:24
28	07:05	08:33 (8)	06:30		05:47	06:02		05:34	05:31
	17:10	09:25 (8)	17:45		18:14	19:44		20:11	20:24
29	07:04	08:33 (8)			06:46	06:01		05:33	05:32
	17:12	09:24 (8)			19:15	19:45		20:11	20:24
30	07:04	08:34 (8)			06:44	05:59		05:33	05:32
	17:13	09:24 (8)			19:16	19:45		20:12	20:24
31	07:03	08:34 (8)			06:43			05:32	
	17:14	09:24 (8)			19:17	07:22 (10)		20:13	
					10	07:32 (10)			
Potential sun hours	303	300	370		396		443		445
Total, worst case	1558	460	10		352				
Sun reduction	0.35	0.36	0.41		0.48				
Oper. time red.	1.00	1.00	1.00		1.00				
Wind dir. red.	0.68	0.68	0.04		0.04				
Total reduction	0.25	0.26	0.02		0.02				
Total, real	391	121	0		7				

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

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



Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: X - 24

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December	
1	05:33 20:24	05:55 20:07	06:23 19:27	07:10 (10) 18:39	06:50 16:55	08:14 (8) 16:33	08:11 (8) 09:01 (8)
2	05:33 20:24	05:56 20:06	06:24 19:25	07:09 (10) 18:38	06:51 16:54	08:12 (8) 16:33	08:12 (8) 09:01 (8)
3	05:34 20:24	05:57 20:05	06:25 19:24	07:09 (10) 18:36	06:52 16:53	08:11 (8) 16:33	06:55 09:01 (8)
4	05:34 20:24	05:57 20:04	06:25 19:22	07:08 (10) 18:34	06:53 16:52	08:09 (8) 16:33	06:56 09:01 (8)
5	05:35 20:24	05:58 20:03	06:26 19:21	07:08 (10) 18:33	06:54 16:51	08:08 (8) 16:33	06:57 09:01 (8)
6	05:35 20:23	05:59 20:02	06:27 19:19	07:08 (10) 18:31	06:54 16:50	08:08 (8) 16:33	06:58 09:02 (8)
7	05:36 20:23	06:00 20:01	06:28 19:17	07:08 (10) 18:30	06:55 16:49	08:07 (8) 16:33	06:59 09:02 (8)
8	05:36 20:23	06:01 19:59	06:29 19:16	07:08 (10) 18:28	06:56 16:48	08:07 (8) 16:33	07:00 09:02 (8)
9	05:37 20:23	06:02 19:58	06:30 19:14	07:09 (10) 18:27	06:57 16:47	08:06 (8) 16:33	07:01 09:02 (8)
10	05:38 20:22	06:03 19:57	06:31 19:13	07:10 (10) 18:25	06:58 16:46	08:05 (8) 16:33	07:02 09:02 (8)
11	05:38 20:22	06:04 19:56	06:32 19:11	07:11 (10) 18:24	06:59 16:45	08:05 (8) 16:33	07:03 09:02 (8)
12	05:39 20:21	06:05 19:55	06:33 19:10	07:13 (10) 18:22	07:00 16:44	08:05 (8) 16:33	07:03 09:02 (8)
13	05:40 20:21	06:06 19:53	06:33 19:08	07:24 (10) 18:21	18:22 16:43	08:56 (8) 16:33	07:04 09:03 (8)
14	05:40 20:21	06:06 19:52	06:34 19:06	07:02 18:19	07:02 16:43	08:05 (8) 16:33	07:05 09:02 (8)
15	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	08:05 (8) 16:33	07:06 09:03 (8)
16	05:42 20:19	06:08 19:50	06:36 19:03	07:04 18:16	06:38 16:41	08:05 (8) 16:34	07:06 09:04 (8)
17	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	08:05 (8) 16:34	07:07 09:03 (8)
18	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:40	08:05 (8) 16:34	07:08 09:04 (8)
19	05:44 20:18	06:11 19:46	06:39 18:58	07:07 18:12	06:41 16:39	08:06 (8) 16:35	07:08 09:05 (8)
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	08:06 (8) 16:35	07:09 09:05 (8)
21	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	08:06 (8) 16:36	07:09 09:06 (8)
22	05:46 20:16	06:14 19:41	06:42 18:53	07:10 18:08	06:44 16:37	08:06 (8) 16:36	07:10 09:06 (8)
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	08:06 (8) 16:37	07:10 09:07 (8)
24	05:48 20:14	06:16 19:39	06:43 18:50	07:12 18:05	06:46 16:36	08:08 (8) 16:37	07:11 09:07 (8)
25	05:49 20:13	06:16 19:37	06:44 18:49	07:13 (10) 18:49	06:47 17:04	09:00 (8) 16:38	07:11 09:07 (8)
26	05:50 20:12	06:17 19:36	06:45 18:47	07:14 (10) 18:47	06:48 17:03	08:08 (8) 16:38	07:12 09:08 (8)
27	05:50 20:12	06:18 19:34	06:46 18:45	07:18 (10) 18:45	06:49 17:01	08:09 (8) 16:39	07:12 09:09 (8)
28	05:51 20:11	06:19 19:33	06:47 18:44	07:15 (10) 18:44	06:47 17:00	08:09 (8) 16:40	07:12 09:09 (8)
29	05:52 20:10	06:20 19:31	06:48 18:42	07:13 (10) 18:42	06:18 16:59	08:22 (8) 16:34	07:13 16:40
30	05:53 20:09	06:21 19:30	06:49 18:41	07:12 (10) 18:41	06:19 16:58	08:18 (8) 16:34	07:13 16:41
31	05:54 20:08	06:22 19:28	06:50 18:40	07:11 (10) 18:40	06:20 16:57	08:16 (8) 16:34	07:13 16:42
Potential sun hours	453	424	374	347	303	294	
Total, worst case		97	270	58	1451	1370	
Sun reduction		0.70	0.65	0.54	0.45	0.38	
Oper. time red.		1.00	1.00	1.00	1.00	1.00	
Wind dir. red.		0.04	0.04	0.68	0.68	0.68	
Total reduction		0.03	0.03	0.39	0.32	0.27	
Total, real		3	7	22	467	375	

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: Y - 25

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March		April	May		June	
1	07:13	07:02	06:29		06:41	05:58		05:32	06:23 (6)
	16:43	17:15	17:47		19:18	19:46		20:14	06:39 (6)
2	07:14	07:01	06:27		06:40	05:57		05:31	06:24 (6)
	16:44	17:16	17:48		19:18	19:47		20:14	06:39 (6)
3	07:14	07:00	06:26		06:38	05:56		05:31	06:25 (6)
	16:45	17:18	17:49		19:19	19:48		20:15	06:39 (6)
4	07:14	06:59	06:24		06:36	05:55		05:31	06:25 (6)
	16:45	17:19	17:50		19:20	19:49		20:16	06:37 (6)
5	07:14	06:58	06:23	07:24 (4)	06:35	05:54		05:30	06:27 (6)
	16:46	17:20	17:51	3	07:27 (4)	19:21	19:50	20:16	06:37 (6)
6	07:14	06:57	06:21	07:21 (4)	06:33	05:52		05:30	06:28 (6)
	16:47	17:21	17:52	6	07:27 (4)	19:22	19:51	20:17	06:36 (6)
7	07:14	06:56	06:20	07:18 (4)	06:32	05:51		05:30	06:30 (6)
	16:48	17:22	17:53	9	07:27 (4)	19:23	19:52	20:18	06:35 (6)
8	07:14	06:55	06:18	07:15 (4)	06:30	05:50		05:30	
	16:49	17:23	17:54	11	07:26 (4)	19:24	19:53	20:18	
9	07:14	06:54	06:17	07:10 (4)	06:29	05:49		05:29	
	16:50	17:24	17:55	15	07:25 (4)	19:25	19:54	20:19	
10	07:14	06:53	06:15	07:05 (4)	06:27	05:48	06:26 (6)	05:29	
	16:51	17:26	17:56	19	07:24 (4)	19:26	19:55	9 06:35 (6)	20:19
11	07:13	06:52	06:14	07:05 (4)	06:26	05:47	06:25 (6)	05:29	
	16:52	17:27	17:57	17	07:22 (4)	19:27	19:56	11 06:36 (6)	20:20
12	07:13	06:51	06:12	07:07 (4)	06:24	05:46	06:24 (6)	05:29	
	16:53	17:28	17:58	14	07:21 (4)	19:28	19:57	14 06:38 (6)	20:20
13	07:13	06:50	06:11	07:09 (4)	06:23	05:45	06:23 (6)	05:29	
	16:54	17:29	17:59	8	07:17 (4)	19:29	19:58	16 06:39 (6)	20:21
14	07:13	06:49	06:09		06:21	05:44	06:24 (6)	05:29	
	16:55	17:30	18:00		19:30	19:59	16 06:40 (6)	20:21	
15	07:12	06:47	06:08		06:20	05:43	06:23 (6)	05:29	
	16:56	17:31	18:01		19:31	20:00	18 06:41 (6)	20:21	
16	07:12	06:46	06:06		06:18	05:42	06:22 (6)	05:29	
	16:57	17:32	18:02		19:32	20:01	19 06:41 (6)	20:22	
17	07:12	06:45	06:05		06:17	05:41	06:22 (6)	05:29	
	16:58	17:34	18:03		19:33	20:01	19 06:41 (6)	20:22	
18	07:11	06:44	06:03		06:16	05:41	06:21 (6)	05:29	
	16:59	17:35	18:04		19:34	20:02	20 06:41 (6)	20:23	
19	07:11	06:42	06:02		06:14	05:40	06:21 (6)	05:29	
	17:00	17:36	18:05		19:35	20:03	20 06:41 (6)	20:23	
20	07:10	06:41	06:00		06:13	05:39	06:22 (6)	05:29	
	17:01	17:37	18:06		19:36	20:04	20 06:42 (6)	20:23	
21	07:10	06:40	05:58		06:11	05:38	06:21 (6)	05:29	
	17:03	17:38	18:07		19:37	20:05	21 06:42 (6)	20:23	
22	07:09	06:38	05:57		06:10	05:37	06:20 (6)	05:30	
	17:04	17:39	18:08		19:38	20:06	21 06:41 (6)	20:24	
23	07:09	06:37	05:55		06:09	05:37	06:20 (6)	05:30	
	17:05	17:40	18:09		19:39	20:07	22 06:42 (6)	20:24	
24	07:08	06:36	05:54		06:07	05:36	06:20 (6)	05:30	
	17:06	17:41	18:10		19:40	20:07	21 06:41 (6)	20:24	
25	07:07	06:34	05:52		06:06	05:35	06:21 (6)	05:30	
	17:07	17:42	18:11		19:41	20:08	21 06:42 (6)	20:24	
26	07:07	06:33	05:51		06:05	05:35	06:20 (6)	05:31	
	17:08	17:43	18:12		19:42	20:09	21 06:41 (6)	20:24	
27	07:06	06:32	05:49		06:03	05:34	06:20 (6)	05:31	
	17:09	17:44	18:13		19:43	20:10	20 06:40 (6)	20:24	
28	07:05	06:30	05:47		06:02	05:34	06:21 (6)	05:31	
	17:11	17:46	18:14		19:44	20:11	20 06:41 (6)	20:24	
29	07:04		06:46		06:01	05:33	06:22 (6)	05:32	
	17:12		19:15		19:45	20:11	19 06:41 (6)	20:24	
30	07:04		06:44		05:59	05:33	06:22 (6)	05:32	
	17:13		19:16		19:45	20:12	18 06:40 (6)	20:24	
31	07:03		06:43			05:32	06:23 (6)		
	17:14		19:17			20:13	17 06:40 (6)		
Potential sun hours	303	300	370		396	443		445	
Total, worst case			102			403		80	
Sun reduction			0.41			0.53		0.61	
Oper. time red.			1.00			1.00		1.00	
Wind dir. red.			0.25			0.34		0.34	
Total reduction			0.10			0.18		0.20	
Total, real			11			71		16	

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: Y - 25

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December		
1	05:33	05:55	06:35 (6)	06:23	06:50	07:47 (4)	06:21	06:53
	20:24	20:07	13 06:48 (6)	19:27	18:39	11 07:58 (4)	16:55	16:33
2	05:33	05:56	06:35 (6)	06:24	06:51	07:44 (4)	06:22	06:54
	20:24	20:06	11 06:46 (6)	19:25	18:38	16 08:00 (4)	16:54	16:33
3	05:34	05:57	06:37 (6)	06:25	06:52	07:43 (4)	06:23	06:55
	20:24	20:05	7 06:44 (6)	19:24	18:36	18 08:01 (4)	16:53	16:33
4	05:34	05:57		06:25	06:53	07:45 (4)	06:24	06:56
	20:24	20:04		19:22	18:34	17 08:02 (4)	16:52	16:33
5	05:35	06:36 (6)	05:58	06:26	06:54	07:49 (4)	06:25	06:57
	20:24	3 06:39 (6)	20:03	19:21	18:33	14 08:03 (4)	16:51	16:33
6	05:35	06:35 (6)	05:59	06:27	06:54	07:53 (4)	06:26	06:58
	20:23	7 06:42 (6)	20:02	19:19	18:31	10 08:03 (4)	16:50	16:33
7	05:36	06:33 (6)	06:00	06:28	06:55	07:55 (4)	06:28	06:59
	20:23	9 06:42 (6)	20:01	19:17	18:30	8 08:03 (4)	16:49	16:33
8	05:36	06:33 (6)	06:01	06:29	06:56	07:58 (4)	06:29	07:00
	20:23	11 06:44 (6)	19:59	19:16	18:28	5 08:03 (4)	16:48	16:33
9	05:37	06:33 (6)	06:02	06:30	06:57	08:01 (4)	06:30	07:01
	20:23	12 06:45 (6)	19:58	19:14	18:27	1 08:02 (4)	16:47	16:33
10	05:38	06:32 (6)	06:03	06:31	06:58		06:31	07:02
	20:22	14 06:46 (6)	19:57	19:13	18:25		16:46	16:33
11	05:38	06:31 (6)	06:04	06:32	06:59		06:32	07:03
	20:22	16 06:47 (6)	19:56	19:11	18:24		16:45	16:33
12	05:39	06:31 (6)	06:05	06:33	07:00		06:33	07:03
	20:21	17 06:48 (6)	19:55	19:10	18:22		16:44	16:33
13	05:40	06:30 (6)	06:06	06:33	07:01		06:34	07:04
	20:21	18 06:48 (6)	19:53	19:08	18:21		16:43	16:33
14	05:40	06:30 (6)	06:07	06:34	07:02		06:35	07:05
	20:20	19 06:49 (6)	19:52	19:06	18:19		16:43	16:33
15	05:41	06:30 (6)	06:07	06:35	07:03		06:36	07:06
	20:20	20 06:50 (6)	19:51	19:05	18:18		16:42	16:34
16	05:42	06:29 (6)	06:08	06:36	07:04		06:38	07:06
	20:19	21 06:50 (6)	19:50	19:03	18:16		16:41	16:34
17	05:42	06:30 (6)	06:09	06:37	07:05		06:39	07:07
	20:19	20 06:50 (6)	19:48	19:02	18:15		16:40	16:34
18	05:43	06:30 (6)	06:10	06:38	07:06		06:40	07:08
	20:18	21 06:51 (6)	19:47	19:00	18:14		16:40	16:34
19	05:44	06:30 (6)	06:11	06:39	07:07		06:41	07:08
	20:18	22 06:52 (6)	19:46	18:58	18:12		16:39	16:35
20	05:45	06:30 (6)	06:12	06:40	07:08		06:42	07:09
	20:17	21 06:51 (6)	19:44	18:57	18:11		16:38	16:35
21	05:46	06:30 (6)	06:13	06:41	07:09		06:43	07:09
	20:16	22 06:52 (6)	19:43	18:55	18:09		16:38	16:36
22	05:46	06:31 (6)	06:14	06:42	07:10		06:44	07:10
	20:16	21 06:52 (6)	19:41	18:53	18:08		16:37	16:36
23	05:47	06:32 (6)	06:15	06:42	07:11		06:45	07:10
	20:15	20 06:52 (6)	19:40	18:52	18:07		16:37	16:37
24	05:48	06:32 (6)	06:16	06:43	07:12		06:46	07:11
	20:14	19 06:51 (6)	19:39	18:50	18:05		16:36	16:37
25	05:49	06:32 (6)	06:16	06:44	06:13		06:47	07:11
	20:13	20 06:52 (6)	19:37	18:49	17:04		16:36	16:38
26	05:50	06:32 (6)	06:17	06:45	06:15		06:48	07:12
	20:12	20 06:52 (6)	19:36	18:47	17:03		16:35	16:38
27	05:51	06:32 (6)	06:18	06:46	06:16		06:49	07:12
	20:12	20 06:52 (6)	19:34	18:45	17:01		16:35	16:39
28	05:51	06:33 (6)	06:19	06:47	06:17		06:50	07:12
	20:11	18 06:51 (6)	19:33	18:44	17:00		16:34	16:40
29	05:52	06:34 (6)	06:20	06:48	06:18		06:51	07:13
	20:10	17 06:51 (6)	19:31	18:42	16:59		16:34	16:40
30	05:53	06:34 (6)	06:21	06:49	07:52 (4)		06:52	07:13
	20:09	16 06:50 (6)	19:30	18:41	1 07:53 (4)		16:34	16:41
31	05:54	06:34 (6)	06:22	06:20	06:20			07:13
	20:08	15 06:49 (6)	19:28	16:57	16:57			16:42
Potential sun hours	453	424	374	347	303	294		
Total, worst case	459	31	1	100				
Sun reduction	0.70	0.70	0.65	0.54				
Oper. time red.	1.00	1.00	1.00	1.00				
Wind dir. red.	0.34	0.34	0.25	0.25				
Total reduction	0.23	0.23	0.16	0.13				
Total, real	107	7	0	13				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: Z - 26

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13 16:43	07:02 17:15	16:32 (7) 16:52 (7)	06:29 17:46	06:41 19:17	05:58 19:46
2	07:13 16:44	07:01 17:16	16:33 (7) 16:53 (7)	06:27 17:47	06:39 19:18	05:57 19:47
3	07:14 16:44	07:00 17:17	16:34 (7) 16:54 (7)	06:26 17:49	06:38 19:19	05:56 19:48
4	07:14 16:45	06:59 17:18	16:35 (7) 16:55 (7)	06:24 17:50	06:36 19:20	05:54 19:49
5	07:14 16:46	06:58 17:20	16:36 (7) 16:57 (7)	06:23 17:51	06:35 19:21	05:53 19:50
6	07:14 16:47	06:57 17:21	16:38 (7) 16:58 (7)	06:21 17:52	06:33 19:22	05:52 19:51
7	07:14 16:48	06:56 17:22	16:40 (7) 16:59 (7)	06:20 17:53	06:32 19:23	05:51 19:52
8	07:14 16:49	06:55 17:23	16:43 (7) 16:56 (7)	06:18 17:54	06:30 19:24	05:50 19:53
9	07:14 16:50	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 19:54
10	07:13 16:51	06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 19:55
11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20
12	07:13 16:53	16:28 (7) 16:29 (7)	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57
13	07:13 16:54	16:27 (7) 16:29 (7)	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58
14	07:13 16:55	16:27 (7) 16:30 (7)	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59
15	07:12 16:56	16:28 (7) 16:32 (7)	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00
16	07:12 16:57	16:27 (7) 16:32 (7)	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00
17	07:11 16:58	16:28 (7) 16:34 (7)	06:45 17:33	06:04 18:03	06:17 19:33	05:41 20:01
18	07:11 16:59	16:27 (7) 16:35 (7)	06:44 17:34	06:03 18:04	06:15 19:34	05:40 20:02
19	07:11 17:00	16:28 (7) 16:36 (7)	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03
20	07:10 17:01	16:37 (7) 16:27 (7)	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04
21	07:10 17:02	16:28 (7) 16:39 (7)	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05
22	07:09 17:04	16:28 (7) 16:40 (7)	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06
23	07:08 17:05	16:28 (7) 16:41 (7)	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:06
24	07:08 17:06	16:44 (7) 16:42 (7)	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07
25	07:07 17:07	16:29 (7) 16:43 (7)	06:34 17:42	05:52 18:11	06:06 19:40	05:35 20:08
26	07:07 17:08	16:29 (7) 16:44 (7)	06:33 17:43	05:50 18:12	06:04 19:41	05:35 19:19 (9)
27	07:06 17:09	16:29 (7) 16:45 (7)	06:31 17:44	05:49 18:13	06:03 19:42	05:34 19:21 (9)
28	07:05 17:10	16:30 (7) 16:47 (7)	06:30 17:45	05:47 18:13	06:02 19:43	05:33 19:21 (9)
29	07:04 17:12	16:30 (7) 16:48 (7)	06:29 17:46	05:46 19:14	06:01 19:44	05:33 19:22 (9)
30	07:04 17:13	16:31 (7) 16:50 (7)	06:28 19:15	06:44 19:45	05:59 19:45	05:32 19:20 (9)
31	07:03 17:14	16:31 (7) 16:51 (7)	06:43 19:16	06:43 19:16	05:32 20:13	05:32 20:13
Potential sun hours	303	300	370	396	443	445
Total, worst case	215	153			11	15
Sun reduction	0.35	0.36			0.48	0.53
Oper. time red.	1.00	1.00			1.00	1.00
Wind dir. red.	0.47	0.47			0.27	0.27
Total reduction	0.16	0.17			0.13	0.14
Total, real	35	26			1	2

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

## SHADOW - Calendar

Shadow receptor: Z - 26

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December
1	05:32	05:55	06:23	06:50	06:21	06:53
	20:24	20:07	19:27	18:39	16:55	16:33
2	05:33	05:56	06:24	06:51	06:22	16:18 (7)
	20:24	20:06	19:25	18:37	16:54	16:22 (7)
3	05:33	05:56	06:24	06:51	06:23	16:12 (7)
	20:24	20:05	19:23	18:36	16:53	16:27 (7)
4	05:34	05:57	06:25	06:52	06:24	16:10 (7)
	20:24	20:04	19:22	18:34	16:52	16:29 (7)
5	05:34	05:58	06:26	06:53	06:25	16:08 (7)
	20:23	20:03	19:20	18:33	16:51	16:28 (7)
6	05:35	05:59	06:27	06:54	06:26	16:06 (7)
	20:23	20:02	19:19	18:31	16:50	16:26 (7)
7	05:36	06:00	06:28	06:55	06:27	16:06 (7)
	20:23	20:00	19:17	18:30	16:49	16:26 (7)
8	05:36	06:01	19:35 (9)	06:29	06:56	06:29
	20:23	19:59	19:37 (9)	19:16	18:28	16:48
9	05:37	06:02	19:33 (9)	06:30	06:57	06:30
	20:22	19:58	19:36 (9)	19:14	18:27	16:47
10	05:37	06:03	19:32 (9)	06:31	06:58	06:31
	20:22	19:57	19:35 (9)	19:13	18:25	16:46
11	05:38	06:04	19:30 (9)	06:32	06:59	06:32
	20:22	19:56	19:34 (9)	19:11	18:24	16:45
12	05:39	06:05	19:29 (9)	06:32	07:00	06:33
	20:21	19:54	19:32 (9)	19:09	18:22	16:44
13	05:39	06:05	19:28 (9)	06:33	07:01	06:34
	20:21	19:53	19:31 (9)	19:08	18:21	16:43
14	05:40	06:06	19:27 (9)	06:34	07:02	06:35
	20:20	19:52	19:30 (9)	19:06	18:19	16:42
15	05:41	06:07	19:27 (9)	06:35	07:03	06:36
	20:20	19:51	19:29 (9)	19:05	18:18	16:42
16	05:42	06:08	19:26 (9)	06:36	07:04	06:37
	20:19	19:49	19:27 (9)	19:03	18:16	16:41
17	05:42	06:09	06:37	07:05	06:38	16:02 (7)
	20:19	19:48	19:01	18:15	16:40	16:16 (7)
18	05:43	06:10	06:38	07:06	06:40	16:03 (7)
	20:18	19:47	19:00	18:13	16:39	16:16 (7)
19	05:44	06:11	06:39	07:07	06:41	16:03 (7)
	20:18	19:45	18:58	18:12	16:39	16:16 (7)
20	05:45	06:12	06:40	07:08	06:42	16:03 (7)
	20:17	19:44	18:57	18:11	16:38	16:15 (7)
21	05:45	06:13	06:40	07:09	06:43	16:03 (7)
	20:16	19:43	18:55	18:09	16:37	16:14 (7)
22	05:46	06:14	06:41	07:10	06:44	16:03 (7)
	20:15	19:41	18:53	18:08	16:37	16:13 (7)
23	05:47	06:14	06:42	07:11	06:45	16:04 (7)
	20:15	19:40	18:52	18:06	16:36	16:12 (7)
24	05:48	06:15	06:43	07:12	06:46	16:04 (7)
	20:14	19:38	18:50	18:05	16:36	16:12 (7)
25	05:49	06:16	06:44	06:13	06:47	16:06 (7)
	20:13	19:37	18:48	17:04	16:35	16:12 (7)
26	05:49	06:17	06:45	06:14	06:48	16:06 (7)
	20:12	19:35	18:47	17:03	16:35	16:11 (7)
27	05:50	06:18	06:46	06:15	06:49	16:07 (7)
	20:11	19:34	18:45	17:01	16:35	16:11 (7)
28	05:51	06:19	06:47	06:17	06:50	16:07 (7)
	20:11	19:33	18:44	17:00	16:34	16:10 (7)
29	05:52	06:20	06:48	06:18	06:51	16:08 (7)
	20:10	19:31	18:42	16:59	16:34	16:10 (7)
30	05:53	06:21	06:49	06:19	06:52	16:09 (7)
	20:09	19:30	18:41	16:58	16:34	16:10 (7)
31	05:54	06:22	06:50	06:20	06:53	16:07 (7)
	20:08	19:28	18:40	16:56	16:33	16:42
Potential sun hours	453	424	374	347	303	294
Total, worst case		24			371	
Sun reduction		0.70			0.45	
Oper. time red.		1.00			1.00	
Wind dir. red.		0.27			0.47	
Total reduction		0.19			0.21	
Total, real		5			78	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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### SHADOW - Calendar

Shadow receptor: AA - 27

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time	
0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13 16:43	07:02 17:15	09:10 (8) 10:22 (8)	06:29 17:47	09:03 (8) 10:20 (8)	06:41 19:17
2	07:14 16:44	07:01 17:16	09:10 (8) 10:23 (8)	06:27 17:48	09:04 (8) 10:19 (8)	06:40 19:18
3	07:14 16:44	07:00 17:17	09:09 (8) 10:24 (8)	06:26 17:49	09:04 (8) 10:17 (8)	06:38 19:19
4	07:14 16:45	06:59 17:19	09:08 (8) 10:24 (8)	06:24 17:50	09:05 (8) 10:16 (8)	06:36 19:20
5	07:14 16:46	06:58 17:20	09:08 (8) 10:25 (8)	06:23 17:51	09:05 (8) 10:14 (8)	06:35 19:21
6	07:14 16:47	06:57 17:21	09:07 (8) 10:26 (8)	06:21 17:52	09:06 (8) 10:12 (8)	06:33 19:22
7	07:14 16:48	06:56 17:22	09:07 (8) 10:27 (8)	06:20 17:53	09:06 (8) 10:10 (8)	06:32 19:23
8	07:14 16:49	06:55 17:23	09:06 (8) 10:27 (8)	06:18 17:54	09:07 (8) 10:08 (8)	06:30 19:24
9	07:14 16:50	06:54 17:24	09:06 (8) 10:28 (8)	06:17 17:55	09:08 (8) 10:05 (8)	06:29 19:25
10	07:14 16:51	06:53 17:26	09:06 (8) 10:28 (8)	06:15 17:56	09:09 (8) 10:03 (8)	06:27 19:26
11	07:13 16:52	06:52 17:27	09:05 (8) 10:29 (8)	06:14 17:57	09:10 (8) 10:00 (8)	06:26 19:27
12	07:13 16:53	06:51 17:28	09:05 (8) 10:29 (8)	06:12 17:58	09:12 (8) 09:57 (8)	06:24 19:28
13	07:13 16:54	06:50 17:29	09:05 (8) 10:30 (8)	06:11 17:59	09:13 (8) 09:54 (8)	06:23 19:29
14	07:13 16:55	09:36 (8) 06:49	06:49 09:04 (8)	06:09 18:00	06:21 09:14 (8)	06:21 19:30
15	07:12 16:56	09:32 (8) 06:47	06:47 09:04 (8)	06:08 18:01	06:20 09:18 (8)	06:20 19:31
16	07:12 16:57	09:52 (8) 06:46	06:46 09:04 (8)	06:06 18:02	06:18 09:21 (8)	06:18 19:32
17	07:12 16:58	09:27 (8) 06:45	06:45 09:04 (8)	06:05 18:03	06:17 19:33	06:17 19:33
18	07:11 16:59	10:00 (8) 06:44	06:44 09:03 (8)	06:03 18:04	06:15 19:34	06:15 19:34
19	07:11 17:00	09:24 (8) 10:03 (8)	06:42 17:36	06:01 18:05	06:14 19:35	06:14 19:35
20	07:10 17:01	09:22 (8) 10:04 (8)	06:41 17:37	06:00 18:06	06:13 19:36	06:13 19:36
21	07:10 17:03	09:21 (8) 10:07 (8)	06:40 17:38	05:58 18:07	06:11 19:37	06:11 19:37
22	07:09 17:04	09:20 (8) 10:08 (8)	06:38 17:39	05:57 18:08	06:10 19:38	06:10 19:38
23	07:09 17:05	09:18 (8) 10:10 (8)	06:37 17:40	05:55 18:09	06:09 19:39	06:09 19:39
24	07:08 17:06	09:18 (8) 10:12 (8)	06:36 17:41	05:54 18:10	06:07 19:40	06:07 19:40
25	07:07 17:07	09:16 (8) 10:13 (8)	06:34 17:42	05:52 18:11	06:06 19:41	06:06 19:41
26	07:07 17:08	09:15 (8) 10:14 (8)	06:33 17:43	05:50 18:12	06:05 19:42	06:05 19:42
27	07:06 17:09	09:15 (8) 10:17 (8)	06:32 17:44	05:49 18:13	06:03 19:43	06:03 19:43
28	07:05 17:10	09:14 (8) 10:18 (8)	06:30 17:45	05:47 18:14	06:02 19:44	06:02 19:44
29	07:04 17:12	09:13 (8) 10:19 (8)	06:29 17:46	05:46 18:15	06:01 19:45	06:01 19:45
30	07:04 17:13	09:12 (8) 10:20 (8)	06:28 17:47	05:45 18:16	05:59 19:46	05:59 19:46
31	07:03 17:14	09:11 (8) 10:21 (8)	06:27 17:48	05:44 18:17	05:58 19:47	05:58 19:47
Potential sun hours	303	300	370	396	443	445
Total, worst case	849	2291	886	349	538	538
Sun reduction	0.35	0.36	0.41	0.48	0.53	0.53
Oper. time red.	1.00	1.00	1.00	1.00	1.00	1.00
Wind dir. red.	0.74	0.74	0.74	0.12	0.22	0.22
Total reduction	0.27	0.28	0.32	0.06	0.12	0.12
Total, real	229	647	282	20	65	65

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

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



Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: AA - 27

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December								
1	05:33	05:55	06:55 (10)	06:23	07:11 (9)	06:50	09:51 (8)	06:21	08:35 (8)	06:53				
	20:24	20:07	07:23 (10)	19:27	17	07:28 (9)	18:39	44	10:35 (8)	16:55	83	09:58 (8)	16:33	
2	05:33	05:56	06:55 (10)	06:24	07:10 (9)	06:51	09:49 (8)	06:22	08:36 (8)	06:54				
	20:24	20:06	07:24 (10)	19:25	19	07:29 (9)	18:38	48	10:37 (8)	16:54	82	09:58 (8)	16:33	
3	05:34	05:57	06:56 (10)	06:25	07:10 (9)	06:52	09:47 (8)	06:23	08:36 (8)	06:55				
	20:24	20:05	07:24 (10)	19:24	19	07:29 (9)	18:36	53	10:40 (8)	16:53	81	09:57 (8)	16:33	
4	05:34	05:57	06:56 (10)	06:25	07:08 (9)	06:53	09:46 (8)	06:24	08:37 (8)	06:56				
	20:24	20:04	07:25 (10)	19:22	20	07:28 (9)	18:34	56	10:42 (8)	16:52	79	09:56 (8)	16:33	
5	05:35	05:58	06:55 (10)	06:26	07:08 (9)	06:54	09:44 (8)	06:25	08:37 (8)	06:57				
	20:24	20:03	07:24 (10)	19:21	20	07:28 (9)	18:33	60	10:44 (8)	16:51	79	09:56 (8)	16:33	
6	05:35	05:59	06:55 (10)	06:27	07:08 (9)	06:54	09:43 (8)	06:26	08:39 (8)	06:58				
	20:23	20:02	07:24 (10)	19:19	19	07:27 (9)	18:31	63	10:46 (8)	16:50	77	09:56 (8)	16:33	
7	05:36	06:00	06:56 (10)	06:28	07:08 (9)	06:55	09:42 (8)	06:28	08:39 (8)	06:59				
	20:23	20:01	07:24 (10)	19:17	19	07:27 (9)	18:30	65	10:47 (8)	16:49	76	09:55 (8)	16:33	
8	05:36	06:01	06:56 (10)	06:29	07:09 (9)	06:56	09:41 (8)	06:29	08:40 (8)	07:00				
	20:23	19:59	07:24 (10)	19:16	17	07:26 (9)	18:28	68	10:49 (8)	16:48	74	09:54 (8)	16:33	
9	05:37	06:02	06:56 (10)	06:30	07:10 (9)	06:57	09:40 (8)	06:30	08:41 (8)	07:01				
	20:23	19:58	07:24 (10)	19:14	14	07:24 (9)	18:27	70	10:50 (8)	16:47	72	09:53 (8)	16:33	
10	05:38	06:03	06:56 (10)	06:31	07:11 (9)	06:58	09:39 (8)	06:31	08:41 (8)	07:02				
	20:22	19:57	07:24 (10)	19:13	10	07:21 (9)	18:25	72	10:51 (8)	16:46	72	09:53 (8)	16:33	
11	05:38	06:04	06:56 (10)	06:32	06:59	09:38 (8)	06:32	08:42 (8)	07:03					
	20:22	19:56	07:24 (10)	19:11	18:24	74	10:52 (8)	16:45	70	09:52 (8)	16:33			
12	05:39	06:05	06:57 (10)	06:33	07:00	09:37 (8)	06:33	08:44 (8)	07:03					
	20:21	19:55	07:23 (10)	19:09	18:22	76	10:53 (8)	16:44	68	09:52 (8)	16:33			
13	05:40	06:06	06:56 (10)	06:33	07:01	09:36 (8)	06:34	08:45 (8)	07:04					
	20:21	19:53	07:22 (10)	19:08	18:21	78	10:54 (8)	16:43	66	09:51 (8)	16:33			
14	05:40	06:06	06:56 (10)	06:34	07:02	09:36 (8)	06:35	08:46 (8)	07:05					
	20:20	19:52	07:21 (10)	19:06	18:19	79	10:55 (8)	16:43	64	09:50 (8)	16:33			
15	05:41	06:07	06:56 (10)	06:35	07:03	09:35 (8)	06:36	08:47 (8)	07:06					
	20:20	19:51	07:20 (10)	19:05	18:18	81	10:56 (8)	16:42	62	09:49 (8)	16:33			
16	05:42	06:08	06:56 (10)	06:36	07:04	09:35 (8)	06:38	08:48 (8)	07:06					
	20:19	19:50	07:18 (10)	19:03	18:16	82	10:57 (8)	16:41	59	09:47 (8)	16:34			
17	05:42	06:09	06:57 (10)	06:37	07:05	09:34 (8)	06:39	08:51 (8)	07:07					
	20:19	19:48	07:17 (10)	19:01	18:15	83	10:57 (8)	16:40	56	09:47 (8)	16:34			
18	05:43	06:10	06:59 (10)	06:38	07:06	09:34 (8)	06:40	08:52 (8)	07:08					
	20:18	19:47	07:15 (10)	19:00	18:13	83	10:57 (8)	16:40	54	09:46 (8)	16:34			
19	05:44	06:11	07:03 (10)	06:39	07:07	09:33 (8)	06:41	08:53 (8)	07:08					
	20:18	19:46	07:11 (10)	18:58	18:12	85	10:58 (8)	16:39	52	09:45 (8)	16:35			
20	05:45	06:12	06:40	06:40	07:08	09:33 (8)	06:42	08:55 (8)	07:09					
	20:17	19:44	18:57	18:11	85	10:58 (8)	16:38	48	09:43 (8)	16:35				
21	05:45	06:13	06:41	06:41	07:09	09:33 (8)	06:43	08:56 (8)	07:09					
	20:16	19:43	18:55	18:09	85	10:58 (8)	16:38	46	09:42 (8)	16:36				
22	05:46	07:04 (10)	06:14	06:42	07:10	09:33 (8)	06:44	08:58 (8)	07:10					
	20:16	9	07:13 (10)	19:41	18:53	18:08	85	10:58 (8)	16:37	42	09:40 (8)	16:36		
23	05:47	07:02 (10)	06:15	06:42	07:11	09:33 (8)	06:45	09:00 (8)	07:10					
	20:15	13	07:15 (10)	19:40	18:52	18:07	86	10:59 (8)	16:36	39	09:39 (8)	16:37		
24	05:48	07:00 (10)	06:16	06:43	07:12	09:33 (8)	06:46	09:03 (8)	07:11					
	20:14	16	07:16 (10)	19:39	18:50	18:05	86	10:59 (8)	16:36	35	09:38 (8)	16:37		
25	05:49	06:59 (10)	06:16	06:44	06:13	08:33 (8)	06:47	09:05 (8)	07:11					
	20:13	19	07:18 (10)	19:37	18:49	17:04	86	09:59 (8)	16:35	31	09:36 (8)	16:38		
26	05:50	06:58 (10)	06:17	06:45	06:15	08:33 (8)	06:48	09:08 (8)	07:12					
	20:12	21	07:19 (10)	19:36	18:47	17:03	86	09:59 (8)	16:35	26	09:34 (8)	16:38		
27	05:50	06:57 (10)	06:18	06:46	10:05 (8)	06:16	08:33 (8)	06:49	09:11 (8)	07:12				
	20:12	23	07:20 (10)	19:34	18:45	13	10:18 (8)	17:01	86	09:59 (8)	16:35	20	09:31 (8)	16:39
28	05:51	06:56 (10)	06:19	06:47	06:17	08:34 (8)	06:50	09:16 (8)	07:12					
	20:11	25	07:21 (10)	19:33	18:44	25	10:24 (8)	17:00	85	09:59 (8)	16:34	11	09:27 (8)	16:40
29	05:52	06:55 (10)	06:20	06:48	09:56 (8)	06:18	08:34 (8)	06:51	07:13					
	20:10	26	07:21 (10)	19:31	6	07:23 (9)	18:42	33	10:29 (8)	16:59	84	09:58 (8)	16:34	
30	05:53	06:54 (10)	06:21	06:49	09:53 (8)	06:19	08:34 (8)	06:52	07:13					
	20:09	28	07:22 (10)	19:30	12	07:26 (9)	18:41	39	10:32 (8)	16:58	84	09:58 (8)	16:34	
31	05:54	06:55 (10)	06:22	07:12 (9)	06:20	08:35 (8)	06:53	07:13						
	20:08	28	07:23 (10)	19:28	15	07:27 (9)	16:57	84	09:59 (8)	16:42				
Potential sun hours	453	424	374	347	303	294								
Total, worst case	208	512	284	2342	1624									
Sun reduction	0.70	0.70	0.65	0.54	0.45									
Oper. time red.	1.00	1.00	1.00	1.00	1.00									
Wind dir. red.	0.22	0.21	0.31	0.74	0.74									
Total reduction	0.16	0.15	0.21	0.42	0.35									
Total, real	33	78	61	973	562									

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

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

### SHADOW - Calendar

Shadow receptor: AB - 28

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	
1	07:13 16:43	07:02 17:15	09:21 (8) 10:30 (8)	06:29 17:47	09:08 (8) 10:37 (8)	06:41 19:17	
2	07:14 16:44	07:01 17:16	09:20 (8) 10:32 (8)	06:27 17:48	09:09 (8) 10:36 (8)	06:40 19:18	
3	07:14 16:44	07:00 17:17	09:19 (8) 10:33 (8)	06:26 17:49	09:08 (8) 10:34 (8)	06:38 19:19	
4	07:14 16:45	06:59 17:19	09:19 (8) 10:34 (8)	06:24 17:50	09:09 (8) 10:34 (8)	06:36 19:20	
5	07:14 16:46	06:58 17:20	09:18 (8) 10:35 (8)	06:23 17:51	09:09 (8) 10:32 (8)	06:35 19:21	
6	07:14 16:47	06:57 17:21	09:17 (8) 10:36 (8)	06:21 17:52	09:09 (8) 10:30 (8)	06:33 19:22	
7	07:14 16:48	06:56 17:22	09:16 (8) 10:37 (8)	06:20 17:53	09:09 (8) 10:28 (8)	06:32 19:23	
8	07:14 16:49	06:55 17:23	09:16 (8) 10:38 (8)	06:18 17:54	09:10 (8) 10:27 (8)	06:30 19:24	
9	07:14 16:50	06:54 17:24	09:15 (8) 10:39 (8)	06:17 17:55	09:10 (8) 10:25 (8)	06:29 19:25	
10	07:14 16:51	06:53 17:26	09:15 (8) 10:39 (8)	06:15 17:56	09:11 (8) 10:23 (8)	06:27 19:26	
11	07:13 16:52	06:52 17:27	09:14 (8) 10:40 (8)	06:14 17:57	09:11 (8) 10:20 (8)	06:26 19:27	
12	07:13 16:53	06:51 17:28	09:14 (8) 10:41 (8)	06:12 17:58	09:12 (8) 10:19 (8)	06:24 19:28	
13	07:13 16:54	06:50 17:29	09:13 (8) 10:41 (8)	06:11 17:59	09:12 (8) 10:16 (8)	06:23 19:29	
14	07:13 16:55	06:49 17:30	09:12 (8) 10:41 (8)	06:09 18:00	09:13 (8) 10:12 (8)	06:21 19:30	
15	07:12 16:56	06:47 17:31	09:12 (8) 10:42 (8)	06:08 18:01	09:14 (8) 10:10 (8)	06:20 19:31	
16	07:12 16:57	06:46 17:32	09:12 (8) 10:42 (8)	06:06 18:02	09:15 (8) 10:07 (8)	06:18 19:32	
17	07:12 16:58	06:45 17:33	09:11 (8) 10:42 (8)	06:05 18:03	09:17 (8) 10:04 (8)	06:17 19:33	
18	07:11 16:59	09:47 (8) 06:44	09:10 (8) 10:42 (8)	06:03 18:04	09:18 (8) 10:00 (8)	06:15 19:34	
19	07:11 17:00	09:43 (8) 10:03 (8)	09:10 (8) 10:42 (8)	06:01 18:05	09:20 (8) 09:57 (8)	06:14 19:35	
20	07:10 17:01	09:39 (8) 10:07 (8)	09:10 (8) 10:42 (8)	06:00 18:06	09:23 (8) 09:52 (8)	06:13 19:36	
21	07:10 17:03	09:37 (8) 10:10 (8)	09:09 (8) 10:41 (8)	05:58 18:07	09:26 (8) 09:46 (8)	06:11 19:37	
22	07:09 17:04	09:35 (8) 10:13 (8)	09:09 (8) 10:42 (8)	05:57 18:08	06:10 19:38	06:10 20:06	
23	07:09 17:05	09:33 (8) 10:15 (8)	09:10 (8) 10:42 (8)	05:55 18:09	06:09 19:39	05:37 20:07	
24	07:08 17:06	09:32 (8) 10:18 (8)	09:09 (8) 10:40 (8)	05:54 18:10	06:07 19:40	05:36 20:07	
25	07:07 17:07	09:30 (8) 10:19 (8)	09:09 (8) 10:40 (8)	05:52 18:11	06:06 19:41	05:35 20:08	
26	07:07 17:08	09:28 (8) 10:21 (8)	09:08 (8) 10:39 (8)	05:50 18:12	06:05 19:42	05:35 20:09	
27	07:06 17:09	09:28 (8) 10:24 (8)	09:09 (8) 10:39 (8)	05:49 18:13	06:03 19:43	05:34 20:10	
28	07:05 17:10	09:26 (8) 10:25 (8)	09:09 (8) 10:38 (8)	05:47 18:14	06:02 19:44	05:34 20:11	
29	07:04 17:12	09:25 (8) 10:27 (8)		06:46 19:15	06:01 19:44	05:33 20:11	
30	07:04 17:13	09:24 (8) 10:28 (8)		06:44 19:16	05:59 19:45	05:33 20:12	
31	07:03 17:14	09:22 (8) 10:29 (8)		06:43 19:17		05:32 20:13	
Potential sun hours	303	300	370		396	443	445
Total, worst case	627	2403		1356	275		775
Sun reduction	0.35	0.36		0.41	0.48		0.53
Oper. time red.	1.00	1.00		1.00	1.00		1.00
Wind dir. red.	0.76	0.76		0.76	0.10		0.24
Total reduction	0.28	0.29		0.33	0.05		0.13
Total, real	173	693		441	13		103

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

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: AB - 28

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December					
1	05:33 20:24	05:55 20:07	06:49 (10) 19:27	06:23 19:27	07:09 (9) 18:39	06:50 18:39	09:51 (8) 16:55	06:21 16:55	84 10:09 (8)	08:45 (8) 16:33	06:53 16:33
2	05:33 20:24	05:56 20:06	06:50 (10) 19:25	06:24 19:25	07:08 (9) 18:37	06:51 18:37	09:50 (8) 16:54	06:22 16:54	83 10:08 (8)	08:45 (8) 16:33	06:54 16:33
3	05:34 20:24	05:57 20:05	06:50 (10) 19:24	06:25 19:24	07:08 (9) 18:36	06:52 18:36	09:49 (8) 16:53	06:23 16:53	81 10:07 (8)	08:46 (8) 16:33	06:55 16:33
4	05:34 20:24	05:57 20:04	06:50 (10) 19:22	06:25 19:22	07:07 (9) 18:34	06:53 18:34	09:48 (8) 16:52	06:24 16:52	80 10:06 (8)	08:46 (8) 16:33	06:56 16:33
5	05:35 20:24	05:58 20:03	06:49 (10) 19:21	06:26 19:21	07:07 (9) 18:33	06:54 18:33	09:47 (8) 16:51	06:25 16:51	79 10:06 (8)	08:47 (8) 16:33	06:57 16:33
6	05:35 20:23	05:59 20:02	06:49 (10) 19:19	06:27 19:19	07:08 (9) 18:31	06:54 18:31	09:46 (8) 16:50	06:26 16:50	77 10:06 (8)	08:49 (8) 16:33	06:58 16:33
7	05:36 20:23	06:00 20:01	06:50 (10) 19:17	06:28 19:17	07:08 (9) 18:30	06:55 18:30	09:45 (8) 16:49	06:28 16:49	75 10:05 (8)	08:50 (8) 16:33	06:59 16:33
8	05:36 20:23	06:01 19:59	06:50 (10) 19:16	06:29 19:16	07:10 (9) 18:28	06:56 18:28	09:44 (8) 16:48	06:29 16:48	74 10:04 (8)	08:50 (8) 16:33	07:00 16:33
9	05:37 20:23	06:02 19:58	06:51 (10) 19:14	06:30 19:14	07:12 (9) 18:27	06:57 18:27	09:44 (8) 16:47	06:30 16:47	71 10:02 (8)	08:51 (8) 16:33	07:01 16:33
10	05:38 20:22	06:03 19:57	06:52 (10) 19:13	06:31 19:13	07:19 (9) 18:25	06:58 18:25	09:43 (8) 16:46	06:31 16:46	69 10:01 (8)	08:52 (8) 16:33	07:02 16:33
11	05:38 20:22	06:04 19:56	06:53 (10) 19:11	06:32 19:11	07:20 (9) 18:24	06:59 18:24	09:43 (8) 16:45	06:32 16:45	67 10:00 (8)	08:53 (8) 16:33	07:03 16:33
12	05:39 20:21	06:05 19:55	06:54 (10) 19:09	06:33 19:09	07:00 18:22	07:00 18:22	09:42 (8) 16:44	06:33 16:44	64 10:00 (8)	08:56 (8) 16:33	07:03 16:33
13	05:40 20:21	06:06 19:53	06:54 (10) 19:08	06:33 19:08	07:01 18:21	07:01 18:21	09:42 (8) 16:43	06:34 16:43	61 09:58 (8)	08:57 (8) 16:33	07:04 16:33
14	05:40 20:20	07:04 (10) 19:52	06:06 19:52	06:56 (10) 19:06	06:34 19:06	07:02 18:19	09:41 (8) 16:43	06:35 16:43	59 09:57 (8)	08:58 (8) 16:33	07:05 16:33
15	05:41 20:20	07:01 (10) 19:51	06:07 19:51	06:58 (10) 19:05	06:35 19:05	07:03 18:18	09:41 (8) 16:42	06:36 16:42	56 09:56 (8)	09:00 (8) 16:33	07:06 16:33
16	05:42 20:19	07:10 (10) 19:50	06:08 19:50	07:03 (10) 19:03	06:36 19:03	07:04 18:16	09:41 (8) 16:41	06:38 16:41	53 09:54 (8)	09:01 (8) 16:34	07:06 16:34
17	05:42 20:19	07:11 (10) 19:49	06:09 19:49	07:06 (10) 19:01	06:37 19:01	07:05 18:15	09:40 (8) 16:40	06:39 16:40	49 09:53 (8)	09:04 (8) 16:34	07:07 16:34
18	05:43 20:18	07:15 (10) 19:47	06:10 19:47	07:11 (10) 19:00	06:38 19:00	07:06 18:13	09:40 (8) 16:40	06:40 16:40	46 09:52 (8)	09:06 (8) 16:34	07:08 16:34
19	05:44 20:18	07:15 (10) 19:46	06:11 19:46	07:12 (10) 18:58	06:39 18:58	07:07 18:12	09:40 (8) 16:39	06:41 16:39	42 09:50 (8)	09:08 (8) 16:35	07:08 16:35
20	05:45 20:17	07:15 (10) 19:44	06:12 19:44	07:13 (10) 18:57	06:40 18:57	07:08 18:11	09:40 (8) 16:38	06:42 16:38	38 09:48 (8)	09:10 (8) 16:35	07:09 16:35
21	05:45 20:16	07:16 (10) 19:43	06:13 19:43	07:14 (10) 18:55	06:41 18:55	07:09 18:09	09:40 (8) 16:38	06:43 16:38	33 09:45 (8)	09:12 (8) 16:36	07:09 16:36
22	05:46 20:16	07:18 (10) 19:41	06:14 19:41	07:15 (10) 18:53	06:42 18:53	10:13 (8) 18:08	09:40 (8) 16:37	06:44 16:37	28 09:43 (8)	09:15 (8) 16:36	07:10 16:36
23	05:47 20:15	07:18 (10) 19:40	06:15 19:40	07:16 (10) 18:52	06:42 18:52	10:08 (8) 18:07	09:40 (8) 16:36	06:45 16:36	20 09:39 (8)	09:19 (8) 16:37	07:10 16:37
24	05:48 20:14	07:19 (10) 19:39	06:16 19:39	07:17 (10) 18:50	06:43 18:50	10:05 (8) 18:05	09:41 (8) 16:36	06:46 16:36	10 09:35 (8)	09:25 (8) 16:37	07:11 16:37
25	05:49 20:13	07:19 (10) 19:37	06:16 19:37	07:18 (10) 18:49	06:44 18:49	10:39 (8) 17:04	09:41 (8) 16:35	06:47 16:35	91 10:12 (8)	09:35 (8) 16:38	07:11 16:38
26	05:50 20:12	07:20 (10) 19:36	06:17 19:36	07:19 (10) 18:47	06:45 18:47	10:42 (8) 17:03	09:41 (8) 16:35	06:48 16:35	91 10:12 (8)	09:40 (8) 16:38	07:12 16:38
27	05:50 20:12	07:21 (10) 19:34	06:18 19:34	07:20 (10) 18:45	06:46 18:45	10:44 (8) 17:01	09:42 (8) 16:35	06:49 16:35	89 10:11 (8)	09:42 (8) 16:39	07:12 16:39
28	05:51 20:11	07:21 (10) 19:33	06:19 19:33	07:21 (10) 18:44	06:47 18:44	10:47 (8) 17:00	09:42 (8) 16:34	06:50 16:34	89 10:11 (8)	09:43 (8) 16:40	07:12 16:40
29	05:52 20:10	07:22 (10) 19:31	06:20 19:31	07:22 (10) 18:42	06:48 18:42	10:50 (8) 16:59	09:43 (8) 16:34	06:51 16:34	88 10:10 (8)	09:44 (8) 16:41	07:13 16:41
30	05:53 20:09	07:22 (10) 19:30	06:21 19:30	07:23 (10) 18:41	06:49 18:41	10:52 (8) 16:58	09:44 (8) 16:34	06:52 16:34	86 10:09 (8)	09:45 (8) 16:42	07:13 16:42
31	05:54 20:08	07:22 (10) 19:28	06:22 19:28	07:24 (10) 18:40	06:50 18:40	10:54 (8) 16:57	09:45 (8) 16:34	06:53 16:34	86 10:10 (8)	09:46 (8) 16:43	07:13 16:43
Potential sun hours	453	424	374	347	303	294					
Total, worst case	419	491	537	2652	1399						
Sun reduction	0.70	0.70	0.65	0.54	0.45						
Oper. time red.	1.00	1.00	1.00	1.00	1.00						
Wind dir. red.	0.24	0.22	0.56	0.76	0.76						
Total reduction	0.18	0.16	0.38	0.42	0.35						
Total, real	74	78	205	1125	494						

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

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



Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: AC - 28

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December					
1	05:33	06:47 (10)	05:55	06:23	07:05 (9)	06:50	10:00 (8)	06:21	09:05 (8)	06:53	
	20:24	07:07 (10)	20:07	31 07:16 (10)	19:27	21 07:26 (9)	18:39	95 11:35 (8)	16:55	85 10:30 (8)	16:33
2	05:33	06:47 (10)	05:56	06:46 (10)	06:24	07:06 (9)	06:51	09:59 (8)	06:22	09:06 (8)	06:54
	20:24	07:08 (10)	20:06	30 07:16 (10)	19:25	19 07:25 (9)	18:37	97 11:36 (8)	16:54	83 10:29 (8)	16:33
3	05:34	06:46 (10)	05:57	06:46 (10)	06:25	07:06 (9)	06:52	09:59 (8)	06:23	09:07 (8)	06:55
	20:24	07:08 (10)	20:05	29 07:15 (10)	19:24	19 07:25 (9)	18:36	98 11:37 (8)	16:53	80 10:27 (8)	16:33
4	05:34	06:46 (10)	05:57	06:47 (10)	06:25	07:06 (9)	06:53	09:58 (8)	06:24	09:08 (8)	06:56
	20:24	07:09 (10)	20:04	28 07:15 (10)	19:22	16 07:22 (9)	18:34	100 11:38 (8)	16:52	78 10:26 (8)	16:33
5	05:35	06:46 (10)	05:58	06:47 (10)	06:26	07:08 (9)	06:54	09:58 (8)	06:25	09:09 (8)	06:57
	20:24	07:09 (10)	20:03	26 07:13 (10)	19:21	13 07:21 (9)	18:33	101 11:39 (8)	16:51	76 10:25 (8)	16:33
6	05:35	06:46 (10)	05:59	06:48 (10)	06:27	07:09 (9)	06:54	09:57 (8)	06:26	09:12 (8)	06:58
	20:23	07:10 (10)	20:02	24 07:12 (10)	19:19	10 07:19 (9)	18:31	103 11:40 (8)	16:50	72 10:24 (8)	16:33
7	05:36	06:45 (10)	06:00	06:50 (10)	06:28		06:55	09:57 (8)	06:28	09:13 (8)	06:59
	20:23	07:11 (10)	20:01	20 07:10 (10)	19:17		18:30	103 11:40 (8)	16:49	70 10:23 (8)	16:33
8	05:36	06:45 (10)	06:01	06:52 (10)	06:29		06:56	09:57 (8)	06:29	09:14 (8)	07:00
	20:23	07:12 (10)	19:59	16 07:08 (10)	19:16		18:28	104 11:41 (8)	16:48	67 10:21 (8)	16:33
9	05:37	06:45 (10)	06:02	06:55 (10)	06:30		06:57	09:56 (8)	06:30	09:16 (8)	07:01
	20:23	07:13 (10)	19:58	11 07:06 (10)	19:14		18:27	105 11:41 (8)	16:47	63 10:19 (8)	16:33
10	05:38	06:45 (10)	06:03		06:31		06:58	09:56 (8)	06:31	09:17 (8)	07:02
	20:22	07:12 (10)	19:57		19:13		18:25	105 11:41 (8)	16:46	60 10:17 (8)	16:33
11	05:38	06:45 (10)	06:04		06:32		06:59	09:56 (8)	06:32	09:19 (8)	07:03
	20:22	07:13 (10)	19:56		19:11		18:24	106 11:42 (8)	16:45	56 10:15 (8)	16:33
12	05:39	06:44 (10)	06:05		06:33	10:30 (8)	07:00	09:56 (8)	06:33	09:22 (8)	07:03
	20:21	07:13 (10)	19:55		19:09	16 10:46 (8)	18:22	106 11:42 (8)	16:44	52 10:14 (8)	16:33
13	05:40	06:44 (10)	06:06		06:33	10:26 (8)	07:01	09:56 (8)	06:34	09:24 (8)	07:04
	20:21	07:14 (10)	19:53		19:08	26 10:52 (8)	18:21	106 11:42 (8)	16:43	48 10:12 (8)	16:33
14	05:40	06:44 (10)	06:06		06:34	10:22 (8)	07:02	09:56 (8)	06:35	09:27 (8)	07:05
	20:20	07:15 (10)	19:52		19:06	34 10:56 (8)	18:19	105 11:41 (8)	16:43	43 10:10 (8)	16:33
15	05:41	06:44 (10)	06:07		06:35	10:20 (8)	07:03	09:56 (8)	06:36	09:29 (8)	07:06
	20:20	07:16 (10)	19:51		19:05	40 11:00 (8)	18:18	105 11:41 (8)	16:42	38 10:07 (8)	16:33
16	05:42	06:43 (10)	06:08		06:36	10:18 (8)	07:04	09:56 (8)	06:38	09:32 (8)	07:06
	20:19	07:15 (10)	19:50		19:03	46 11:04 (8)	18:16	105 11:41 (8)	16:41	32 10:04 (8)	16:34
17	05:42	06:43 (10)	06:09		06:37	10:16 (8)	07:05	09:56 (8)	06:39	09:37 (8)	07:07
	20:19	07:16 (10)	19:48		19:01	51 11:07 (8)	18:15	105 11:41 (8)	16:40	24 10:01 (8)	16:34
18	05:43	06:44 (10)	06:10		06:38	10:13 (8)	07:06	09:56 (8)	06:40	09:44 (8)	07:08
	20:18	07:17 (10)	19:47		19:00	56 11:09 (8)	18:13	104 11:40 (8)	16:40	10 09:54 (8)	16:34
19	05:44	06:43 (10)	06:11		06:39	10:12 (8)	07:07	09:56 (8)	06:41		07:08
	20:18	07:16 (10)	19:46		18:58	60 11:12 (8)	18:12	104 11:40 (8)	16:39		16:35
20	05:45	06:43 (10)	06:12		06:40	10:10 (8)	07:08	09:57 (8)	06:42		07:09
	20:17	07:17 (10)	19:44		18:57	64 11:14 (8)	18:11	102 11:39 (8)	16:38		16:35
21	05:45	06:43 (10)	06:13		06:41	10:09 (8)	07:09	09:57 (8)	06:43		07:09
	20:16	07:17 (10)	19:43		18:55	68 11:17 (8)	18:09	101 11:38 (8)	16:38		16:36
22	05:46	06:43 (10)	06:14		06:42	10:08 (8)	07:10	09:57 (8)	06:44		07:10
	20:16	07:18 (10)	19:41		18:53	71 11:19 (8)	18:08	101 11:38 (8)	16:37		16:36
23	05:47	06:43 (10)	06:15		06:42	10:07 (8)	07:11	09:58 (8)	06:45		07:10
	20:15	07:18 (10)	19:40		18:52	75 11:22 (8)	18:07	99 11:37 (8)	16:36		16:37
24	05:48	06:43 (10)	06:16		06:43	10:06 (8)	07:12	09:59 (8)	06:46		07:11
	20:14	07:17 (10)	19:39	7 07:21 (9)	18:50	78 11:24 (8)	18:05	98 11:37 (8)	16:36		16:37
25	05:49	06:43 (10)	06:16		06:44	10:05 (8)	06:13	09:00 (8)	06:47		07:11
	20:13	07:18 (10)	19:37	13 07:24 (9)	18:49	81 11:26 (8)	17:04	96 10:36 (8)	16:35		16:38
26	05:50	06:43 (10)	06:17		06:45	10:03 (8)	06:15	09:00 (8)	06:48		07:12
	20:12	07:18 (10)	19:36	15 07:25 (9)	18:47	84 11:27 (8)	17:03	96 10:36 (8)	16:35		16:38
27	05:50	06:43 (10)	06:18		06:46	10:02 (8)	06:16	09:01 (8)	06:49		07:12
	20:12	07:18 (10)	19:34	17 07:26 (9)	18:45	87 11:29 (8)	17:01	94 10:35 (8)	16:35		16:39
28	05:51	06:44 (10)	06:19		06:47	10:01 (8)	06:17	09:01 (8)	06:50		07:12
	20:11	07:18 (10)	19:33	19 07:26 (9)	18:44	90 11:31 (8)	17:00	93 10:34 (8)	16:34		16:40
29	05:52	06:43 (10)	06:20		06:48	10:01 (8)	06:18	09:02 (8)	06:51		07:13
	20:10	07:17 (10)	19:31	20 07:26 (9)	18:42	91 11:32 (8)	16:59	91 10:33 (8)	16:34		16:40
30	05:53	06:44 (10)	06:21		06:49	10:00 (8)	06:19	09:03 (8)	06:52		07:13
	20:09	07:17 (10)	19:30	20 07:26 (9)	18:41	94 11:34 (8)	16:58	88 10:31 (8)	16:34		16:41
31	05:54	06:44 (10)	06:22		07:05 (9)		06:20	09:04 (8)			07:13
	20:08	07:17 (10)	19:28	21 07:26 (9)			16:57	87 10:31 (8)			16:42
Potential sun hours	453	424		374		347		303			294
Total, worst case	933		347		1310		3103		1037		
Sun reduction	0.70		0.70		0.65		0.54		0.45		
Oper. time red.	1.00		1.00		1.00		1.00		1.00		
Wind dir. red.	0.28		0.21		0.75		0.80		0.80		
Total reduction	0.21		0.15		0.51		0.45		0.37		
Total, real	193		52		662		1385		386		

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: AD - 30

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June			
1	07:13 16:43	07:02 17:15	06:29 17:47	09:20 (8) 17:47	06:41 19:17	09:13 (8) 11:05 (8)	05:58 19:46	09:06 (8) 10:18 (8)	05:32 20:14
2	07:14 16:44	07:01 17:16	06:27 17:48	09:18 (8) 10:02 (8)	06:40 19:18	09:10 (8) 11:03 (8)	05:57 19:47	09:07 (8) 10:17 (8)	05:31 20:14
3	07:14 16:44	07:00 17:17	06:26 17:49	09:16 (8) 10:03 (8)	06:38 19:19	09:09 (8) 11:03 (8)	05:56 19:48	09:07 (8) 10:14 (8)	05:31 20:15
4	07:14 16:45	06:59 17:19	06:24 17:50	09:14 (8) 10:05 (8)	06:36 19:20	09:06 (8) 11:01 (8)	05:55 19:49	09:08 (8) 10:13 (8)	05:31 20:16
5	07:14 16:46	06:58 17:20	06:23 17:51	09:12 (8) 10:05 (8)	06:35 19:21	09:05 (8) 11:00 (8)	05:53 19:50	09:09 (8) 10:12 (8)	05:30 20:16
6	07:14 16:47	06:57 17:21	06:21 17:52	09:10 (8) 10:07 (8)	06:33 19:22	09:02 (8) 10:58 (8)	05:52 19:51	09:10 (8) 10:10 (8)	05:30 20:17
7	07:14 16:48	06:56 17:22	06:20 17:53	09:07 (8) 10:08 (8)	06:32 19:23	09:01 (8) 10:57 (8)	05:51 19:52	09:11 (8) 10:09 (8)	05:30 20:18
8	07:14 16:49	06:55 17:23	06:18 17:54	09:06 (8) 10:09 (8)	06:30 19:24	09:00 (8) 10:55 (8)	05:50 19:53	09:12 (8) 10:07 (8)	05:29 20:18
9	07:14 16:50	06:54 17:24	06:17 17:55	09:03 (8) 10:10 (8)	06:29 19:25	09:01 (8) 10:54 (8)	05:49 19:54	09:13 (8) 10:06 (8)	05:29 20:19
10	07:14 16:51	06:53 17:26	06:15 17:56	09:02 (8) 10:11 (8)	06:27 19:26	09:00 (8) 10:52 (8)	05:48 19:55	09:14 (8) 10:04 (8)	05:29 20:19
11	07:13 16:52	06:52 17:27	06:14 17:57	08:59 (8) 10:11 (8)	06:26 19:27	09:00 (8) 10:51 (8)	05:47 19:56	09:15 (8) 10:02 (8)	05:29 20:20
12	07:13 16:53	06:51 17:28	06:12 17:58	08:57 (8) 10:12 (8)	06:24 19:28	09:00 (8) 10:49 (8)	05:46 19:57	09:16 (8) 10:01 (8)	05:29 20:20
13	07:13 16:54	06:50 17:29	06:11 17:59	08:55 (8) 10:12 (8)	06:23 19:29	09:00 (8) 10:48 (8)	05:45 19:58	09:17 (8) 09:59 (8)	05:29 20:21
14	07:13 16:55	06:49 17:30	06:09 18:00	08:52 (8) 10:12 (8)	06:21 19:30	09:00 (8) 10:45 (8)	05:44 19:59	09:18 (8) 09:57 (8)	05:29 20:21
15	07:12 16:56	06:47 17:31	06:08 18:01	08:51 (8) 10:13 (8)	06:20 19:31	09:00 (8) 10:44 (8)	05:43 20:00	09:21 (8) 09:56 (8)	05:29 20:21
16	07:12 16:57	06:46 17:32	06:06 18:02	08:48 (8) 10:13 (8)	06:18 19:32	09:00 (8) 10:42 (8)	05:42 20:01	09:22 (8) 09:54 (8)	05:29 20:22
17	07:12 16:58	06:45 17:33	06:05 18:03	08:46 (8) 10:14 (8)	06:17 19:33	09:00 (8) 10:41 (8)	05:41 20:01	09:24 (8) 09:52 (8)	05:29 20:22
18	07:11 16:59	06:44 17:35	06:03 18:04	08:44 (8) 10:13 (8)	06:15 19:34	09:01 (8) 10:39 (8)	05:41 20:02	09:26 (8) 09:49 (8)	05:29 20:23
19	07:11 17:00	06:42 17:36	06:01 18:05	08:42 (8) 10:14 (8)	06:14 19:35	09:01 (8) 10:37 (8)	05:40 20:03	09:28 (8) 09:46 (8)	05:29 20:23
20	07:10 17:01	06:41 17:37	06:00 18:06	08:40 (8) 10:13 (8)	06:13 19:36	09:01 (8) 10:36 (8)	05:39 20:04	09:33 (8) 09:43 (8)	05:29 20:23
21	07:10 17:03	06:40 17:38	05:58 18:07	08:37 (8) 10:13 (8)	06:11 19:37	09:01 (8) 10:34 (8)	05:38 20:05		05:29 20:23
22	07:09 17:04	06:38 17:39	09:34 (8) 09:41 (8)	05:57 18:08	08:35 (8) 10:13 (8)	06:10 19:38	09:01 (8) 10:32 (8)	05:37 20:06	05:30 20:24
23	07:09 17:05	06:37 17:40	09:33 (8) 09:45 (8)	05:55 18:09	08:33 (8) 10:12 (8)	06:09 19:39	09:02 (8) 10:31 (8)	05:37 20:07	05:30 20:24
24	07:08 17:06	06:36 17:41	09:30 (8) 09:48 (8)	05:54 18:10	08:31 (8) 10:12 (8)	06:07 19:40	09:02 (8) 10:29 (8)	05:36 20:07	05:30 20:24
25	07:07 17:07	06:34 17:42	09:28 (8) 09:51 (8)	05:52 18:11	08:28 (8) 10:11 (8)	06:06 19:41	09:02 (8) 10:27 (8)	05:35 20:08	05:30 20:24
26	07:07 17:08	06:33 17:43	09:26 (8) 09:53 (8)	05:50 18:12	08:26 (8) 10:10 (8)	06:05 19:42	09:03 (8) 10:26 (8)	05:35 20:09	05:31 20:24
27	07:06 17:09	06:32 17:44	09:24 (8) 09:56 (8)	05:49 18:13	08:24 (8) 10:10 (8)	06:03 19:43	09:04 (8) 10:25 (8)	05:34 20:10	05:31 20:24
28	07:05 17:10	06:30 17:45	09:23 (8) 09:58 (8)	05:47 18:14	08:22 (8) 10:09 (8)	06:02 19:44	09:04 (8) 10:22 (8)	05:34 20:11	05:31 20:24
29	07:04 17:12		06:46 19:15	09:20 (8) 11:08 (8)	06:01 19:44	09:04 (8) 10:21 (8)	05:33 20:11		05:32 20:24
30	07:04 17:13		06:44 19:16	09:17 (8) 11:07 (8)	05:59 19:45	09:05 (8) 10:20 (8)	05:33 20:12		05:32 20:24
31	07:03 17:14		06:43 19:17	09:16 (8) 11:06 (8)			05:32 20:13		
Potential sun hours	303	300	370	396	443			445	
Total, worst case		154	2526	3009	932				
Sun reduction		0.36	0.41	0.48	0.53				
Oper. time red.		1.00	1.00	1.00	1.00				
Wind dir. red.		0.49	0.49	0.49	0.49				
Total reduction		0.18	0.20	0.23	0.26				
Total, real		27	507	701	239				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: AD - 30

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December			
1	05:33	05:55	09:26 (8)	06:23	08:59 (8)	06:50	09:35 (8)	06:21	06:53
	20:24	20:07	10:12 (8)	19:27	10:50 (8)	18:39	10:51 (8)	16:55	16:33
2	05:33	05:56	09:25 (8)	06:24	08:59 (8)	06:51	09:37 (8)	06:22	06:54
	20:24	20:06	10:14 (8)	19:25	10:51 (8)	18:37	10:50 (8)	16:54	16:33
3	05:34	05:57	09:24 (8)	06:25	08:59 (8)	06:52	09:38 (8)	06:23	06:55
	20:24	20:05	10:15 (8)	19:24	10:52 (8)	18:36	10:49 (8)	16:53	16:33
4	05:34	05:57	09:23 (8)	06:25	08:57 (8)	06:53	09:40 (8)	06:24	06:56
	20:24	20:04	10:17 (8)	19:22	10:52 (8)	18:34	10:48 (8)	16:52	16:33
5	05:35	05:58	09:21 (8)	06:26	08:57 (8)	06:54	09:42 (8)	06:25	06:57
	20:24	20:03	10:17 (8)	19:21	10:53 (8)	18:33	10:46 (8)	16:51	16:33
6	05:35	05:59	09:20 (8)	06:27	08:58 (8)	06:54	09:43 (8)	06:26	06:58
	20:23	20:02	10:19 (8)	19:19	10:54 (8)	18:31	10:45 (8)	16:50	16:33
7	05:36	06:00	09:19 (8)	06:28	09:00 (8)	06:55	09:45 (8)	06:28	06:59
	20:23	20:01	10:20 (8)	19:17	10:55 (8)	18:30	10:43 (8)	16:49	16:33
8	05:36	06:01	09:18 (8)	06:29	09:01 (8)	06:56	09:46 (8)	06:29	07:00
	20:23	19:59	10:22 (8)	19:16	10:56 (8)	18:28	10:42 (8)	16:48	16:33
9	05:37	06:02	09:17 (8)	06:30	09:03 (8)	06:57	09:48 (8)	06:30	07:01
	20:23	19:58	10:23 (8)	19:14	10:57 (8)	18:27	10:40 (8)	16:47	16:33
10	05:38	06:03	09:16 (8)	06:31	09:03 (8)	06:58	09:49 (8)	06:31	07:02
	20:22	19:57	10:25 (8)	19:13	10:56 (8)	18:25	10:38 (8)	16:46	16:33
11	05:38	06:04	09:15 (8)	06:32	09:05 (8)	06:59	09:51 (8)	06:32	07:03
	20:22	19:56	10:26 (8)	19:11	10:57 (8)	18:24	10:36 (8)	16:45	16:33
12	05:39	06:05	09:15 (8)	06:33	09:07 (8)	07:00	09:53 (8)	06:33	07:03
	20:21	19:55	10:27 (8)	19:09	10:57 (8)	18:22	10:34 (8)	16:44	16:33
13	05:40	06:06	09:13 (8)	06:33	09:08 (8)	07:01	09:54 (8)	06:34	07:04
	20:21	19:53	10:28 (8)	19:08	10:58 (8)	18:21	10:32 (8)	16:43	16:33
14	05:40	06:06	09:12 (8)	06:34	09:10 (8)	07:02	09:56 (8)	06:35	07:05
	20:20	19:52	10:29 (8)	19:06	10:58 (8)	18:19	10:30 (8)	16:43	16:33
15	05:41	06:07	09:11 (8)	06:35	09:11 (8)	07:03	09:57 (8)	06:36	07:06
	20:20	19:51	10:30 (8)	19:05	10:59 (8)	18:18	10:27 (8)	16:42	16:33
16	05:42	06:08	09:11 (8)	06:36	09:13 (8)	07:04	09:59 (8)	06:38	07:06
	20:19	19:50	10:32 (8)	19:03	10:59 (8)	18:16	10:24 (8)	16:41	16:34
17	05:42	06:09	09:10 (8)	06:37	09:15 (8)	07:05	10:01 (8)	06:39	07:07
	20:19	19:48	10:33 (8)	19:01	10:59 (8)	18:15	10:21 (8)	16:40	16:34
18	05:43	06:10	09:09 (8)	06:38	09:15 (8)	07:06	10:02 (8)	06:40	07:08
	20:18	19:47	10:34 (8)	19:00	10:58 (8)	18:13	10:18 (8)	16:40	16:34
19	05:44	06:11	09:08 (8)	06:39	09:17 (8)	07:07	10:04 (8)	06:41	07:08
	20:18	19:46	10:36 (8)	18:58	10:58 (8)	18:12	10:14 (8)	16:39	16:35
20	05:45	06:12	09:07 (8)	06:40	09:19 (8)	07:08	10:05 (8)	06:42	07:09
	20:17	19:44	10:36 (8)	18:57	10:58 (8)	18:11	10:10 (8)	16:38	16:35
21	05:45	06:13	09:06 (8)	06:41	09:20 (8)	07:09		06:43	07:09
	20:16	19:43	10:37 (8)	18:55	10:58 (8)	18:09		16:38	16:36
22	05:46	06:14	09:06 (8)	06:42	09:22 (8)	07:10		06:44	07:10
	20:16	19:41	10:39 (8)	18:53	10:58 (8)	18:08		16:37	16:36
23	05:47	06:15	09:05 (8)	06:42	09:23 (8)	07:11		06:45	07:10
	20:15	19:40	10:40 (8)	18:52	10:58 (8)	18:07		16:36	16:37
24	05:48	09:40 (8)	06:16	06:43	09:25 (8)	07:12		06:46	07:11
	20:14	19:39	10:41 (8)	18:50	10:57 (8)	18:05		16:36	16:37
25	05:49	09:38 (8)	06:16	06:44	09:27 (8)	06:13		06:47	07:11
	20:13	19:37	10:43 (8)	18:49	10:57 (8)	17:04		16:35	16:38
26	05:50	09:36 (8)	06:17	06:45	09:27 (8)	06:15		06:48	07:12
	20:12	19:36	10:44 (8)	18:47	10:55 (8)	17:03		16:35	16:38
27	05:50	09:34 (8)	06:18	06:46	09:29 (8)	06:16		06:49	07:12
	20:12	19:34	10:45 (8)	18:45	10:55 (8)	17:01		16:35	16:39
28	05:51	09:32 (8)	06:19	06:47	09:30 (8)	06:17		06:50	07:12
	20:11	19:33	10:45 (8)	18:44	10:54 (8)	17:00		16:34	16:40
29	05:52	09:30 (8)	06:20	06:48	09:32 (8)	06:18		06:51	07:13
	20:10	19:31	10:46 (8)	18:42	10:53 (8)	16:59		16:34	16:40
30	05:53	09:29 (8)	06:21	06:49	09:34 (8)	06:19		06:52	07:13
	20:09	19:30	10:48 (8)	18:41	10:52 (8)	16:58		16:34	16:41
31	05:54	09:27 (8)	06:22	06:50					07:13
	20:08	19:28	10:49 (8)		16:57			16:42	
Potential sun hours	453	424	374	347	303	294			
Total, worst case	240	2479	3089	893					
Sun reduction	0.70	0.70	0.65	0.54					
Oper. time red.	1.00	1.00	1.00	1.00					
Wind dir. red.	0.49	0.49	0.49	0.49					
Total reduction	0.34	0.34	0.32	0.26					
Total, real	82	850	980	234					

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

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

### SHADOW - Calendar

Shadow receptor: AE - 31

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June			
1	07:13 16:43	11:06 (8) 12:37 (8)	07:02 17:15	06:29 17:47	06:41 19:17	07:18 (9) 19:46	05:58 41	06:45 (10) 07:26 (10)	05:32 20:14
2	07:14 16:44	11:06 (8) 12:37 (8)	07:01 17:16	06:27 17:48	06:40 19:18	07:17 (9) 07:39 (9)	05:57 19:47	06:46 (10) 07:25 (10)	05:31 20:14
3	07:14 16:44	11:07 (8) 12:37 (8)	07:00 17:17	06:26 17:49	06:38 19:19	07:18 (9) 07:39 (9)	05:56 19:48	06:45 (10) 07:24 (10)	05:31 20:15
4	07:14 16:45	11:08 (8) 12:38 (8)	06:59 17:19	06:24 17:50	06:36 19:20	07:18 (9) 07:38 (9)	05:55 19:49	06:45 (10) 07:24 (10)	05:31 20:16
5	07:14 16:46	11:08 (8) 12:38 (8)	06:58 17:20	06:23 17:51	06:35 19:21	07:19 (9) 07:37 (9)	05:53 19:50	06:46 (10) 07:23 (10)	05:30 20:16
6	07:14 16:47	11:09 (8) 12:38 (8)	06:57 17:21	06:21 17:52	06:33 19:22	07:20 (9) 07:35 (9)	05:52 19:51	06:46 (10) 07:22 (10)	05:30 20:17
7	07:14 16:48	11:10 (8) 12:38 (8)	06:56 17:22	06:20 17:53	06:32 19:23	07:22 (9) 07:33 (9)	05:51 19:52	06:47 (10) 07:22 (10)	05:30 20:18
8	07:14 16:49	11:11 (8) 12:38 (8)	06:55 17:23	06:18 17:54	06:30 19:24	07:33 (9)	05:50 19:53	06:47 (10) 07:21 (10)	05:29 20:18
9	07:14 16:50	11:12 (8) 12:38 (8)	06:54 17:24	06:17 17:55	06:29 19:25		05:49 19:54	06:48 (10) 07:20 (10)	05:29 20:19
10	07:14 16:51	11:12 (8) 12:37 (8)	06:53 17:26	06:15 17:56	06:27 19:26		05:48 19:55	06:49 (10) 07:19 (10)	05:29 20:19
11	07:13 16:52	11:14 (8) 12:37 (8)	06:52 17:27	06:14 17:57	06:26 19:27		05:47 19:56	06:50 (10) 07:18 (10)	05:29 20:20
12	07:13 16:53	11:15 (8) 12:37 (8)	06:51 17:28	06:12 17:58	06:24 19:28		05:46 19:57	06:51 (10) 07:17 (10)	05:29 20:20
13	07:13 16:54	11:15 (8) 12:36 (8)	06:50 17:29	06:11 17:59	06:23 19:29		05:45 19:58	06:52 (10) 07:15 (10)	05:29 20:21
14	07:13 16:55	11:17 (8) 12:36 (8)	06:49 17:30	06:09 18:00	06:21 19:30	07:06 (10)	05:44 19:59	06:53 (10) 07:13 (10)	05:29 20:21
15	07:12 16:56	11:18 (8) 12:36 (8)	06:47 17:31	06:08 18:01	06:20 19:31	07:01 (10)	05:43 20:00	06:56 (10) 07:12 (10)	05:29 20:21
16	07:12 16:57	11:19 (8) 12:35 (8)	06:46 17:32	06:06 18:02	06:18 19:32	07:17 (10)	05:42 20:01	06:59 (10) 07:10 (10)	05:29 20:22
17	07:12 16:58	11:21 (8) 12:35 (8)	06:45 17:33	06:05 18:03	06:17 19:33	07:12 (10)	05:41 20:01	07:13 (10)	05:29 20:22
18	07:11 16:59	11:22 (8) 12:33 (8)	06:44 17:35	06:03 18:04	06:15 19:34	07:01 (10)	05:41 20:02	07:13 (10)	05:29 20:23
19	07:11 17:00	11:24 (8) 12:33 (8)	06:42 17:36	06:01 18:05	06:14 19:35	07:23 (10)	05:40 20:03	07:13 (10)	05:29 20:23
20	07:10 17:01	11:25 (8) 12:31 (8)	06:41 17:37	06:00 18:06	06:13 19:36	06:51 (10)	05:39 20:04	07:13 (10)	05:29 20:23
21	07:10 17:03	11:28 (8) 12:31 (8)	06:40 17:38	05:58 18:07	06:11 19:37	06:49 (10)	05:38 20:05	07:13 (10)	05:29 20:23
22	07:09 17:04	11:29 (8) 12:29 (8)	06:38 17:39	05:57 18:08	06:10 19:38	06:49 (10)	05:37 20:06	07:13 (10)	05:30 20:24
23	07:09 17:05	11:31 (8) 12:26 (8)	06:37 17:40	05:55 18:09	06:09 19:39	06:48 (10)	05:37 20:07	07:13 (10)	05:30 20:24
24	07:08 17:06	11:35 (8) 12:25 (8)	06:36 17:41	05:54 18:10	06:07 19:40	06:47 (10)	05:36 20:07	07:13 (10)	05:30 20:24
25	07:07 17:07	11:37 (8) 12:22 (8)	06:34 17:42	05:52 18:11	06:06 19:41	07:26 (10)	05:35 20:08	07:13 (10)	05:30 20:24
26	07:07 17:08	11:41 (8) 12:18 (8)	06:33 17:43	05:50 18:12	06:23 (9) 19:42	06:46 (10)	05:35 20:09	07:13 (10)	05:31 20:24
27	07:06 17:09	11:47 (8) 12:14 (8)	06:32 17:44	05:49 18:13	06:22 (9) 19:43	06:46 (10)	05:34 20:10	07:13 (10)	05:31 20:24
28	07:05 17:10	11:58 (8) 12:03 (8)	06:30 17:45	05:47 18:14	06:20 (9) 19:44	06:45 (10)	05:34 20:11	07:13 (10)	05:31 20:24
29	07:04 17:12		06:46 19:15	07:20 (9) 21	06:01 19:44	06:45 (10)	05:33 20:11	07:13 (10)	05:32 20:24
30	07:04 17:13		06:44 19:16	07:19 (9) 22	05:59 19:45	06:45 (10)	05:33 20:12	07:13 (10)	05:32 20:24
31	07:03 17:14		06:43 19:17	07:19 (9) 22	05:59 20:13	06:45 (10)	05:33 20:13	07:13 (10)	05:32 20:24
Potential sun hours	303	300	370	396	443			445	
Total, worst case	1988			127	686		486		
Sun reduction	0.35			0.41	0.48		0.53		
Oper. time red.	1.00			1.00	1.00		1.00		
Wind dir. red.	1.00			0.01	0.14		0.17		
Total reduction	0.39			0.00	0.08		0.10		
Total, real	782			1	53		50		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: AE - 31

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December								
1	05:33	05:55	07:01 (10)	06:23	06:50	06:21	06:53	10:56 (8)						
	20:24	20:07	07:28 (10)	19:27	18:39	16:55	16:33	83	12:19 (8)					
2	05:33	05:56	07:00 (10)	06:24	06:51	06:22	06:54	10:55 (8)						
	20:24	20:06	07:29 (10)	19:25	18:37	16:54	16:33	85	12:20 (8)					
3	05:34	05:57	06:59 (10)	06:25	06:52	06:23	06:55	10:55 (8)						
	20:24	20:05	07:30 (10)	19:24	18:36	16:53	16:33	86	12:21 (8)					
4	05:34	05:57	06:58 (10)	06:25	06:53	06:24	06:56	10:55 (8)						
	20:24	20:04	07:31 (10)	19:22	18:34	16:52	16:33	87	12:22 (8)					
5	05:35	05:58	06:57 (10)	06:26	07:18 (9)	06:54	06:57	10:55 (8)						
	20:24	20:03	07:31 (10)	19:21	11	07:29 (9)	18:33	16:51	16:33	88	12:23 (8)			
6	05:35	05:59	06:56 (10)	06:27	07:16 (9)	06:54	06:26	06:58	10:55 (8)					
	20:23	20:02	07:32 (10)	19:19	15	07:31 (9)	18:31	16:50	16:33	89	12:24 (8)			
7	05:36	06:00	06:56 (10)	06:28	07:14 (9)	06:55	06:28	06:59	10:55 (8)					
	20:23	20:01	07:32 (10)	19:17	18	07:32 (9)	18:30	16:49	16:33	90	12:25 (8)			
8	05:36	06:01	06:55 (10)	06:29	07:13 (9)	06:56	06:29	07:00	10:56 (8)					
	20:23	19:59	07:33 (10)	19:16	20	07:33 (9)	18:28	16:48	16:33	90	12:26 (8)			
9	05:37	06:02	06:55 (10)	06:30	07:12 (9)	06:57	06:30	07:01	10:56 (8)					
	20:23	19:58	07:33 (10)	19:14	21	07:33 (9)	18:27	16:47	16:33	90	12:26 (8)			
10	05:38	06:03	06:54 (10)	06:31	07:11 (9)	06:58	06:31	07:02	10:55 (8)					
	20:22	19:57	07:34 (10)	19:13	22	07:33 (9)	18:25	16:46	16:33	91	12:26 (8)			
11	05:38	06:04	06:54 (10)	06:32	07:10 (9)	06:59	06:32	07:03	10:56 (8)					
	20:22	19:56	07:34 (10)	19:11	23	07:33 (9)	18:24	16:45	16:33	91	12:27 (8)			
12	05:39	06:05	06:54 (10)	06:33	07:10 (9)	07:00	06:33	07:03	10:56 (8)					
	20:21	19:55	07:34 (10)	19:09	22	07:32 (9)	18:22	16:44	16:33	92	12:28 (8)			
13	05:40	06:06	06:53 (10)	06:33	07:10 (9)	07:01	06:34	07:04	10:57 (8)					
	20:21	19:53	07:33 (10)	19:08	22	07:32 (9)	18:21	16:43	16:33	92	12:29 (8)			
14	05:40	06:06	06:53 (10)	06:34	07:10 (9)	07:02	06:35	07:05	10:56 (8)					
	20:20	19:52	07:34 (10)	19:06	21	07:31 (9)	18:19	16:43	8	11:28 (8)	07:05	16:33	93	12:29 (8)
15	05:41	06:07	06:53 (10)	06:35	07:10 (9)	07:03	06:36	07:06	10:57 (8)					
	20:20	19:51	07:33 (10)	19:05	20	07:30 (9)	18:18	16:42	27	11:46 (8)	16:33	93	12:30 (8)	
16	05:42	06:08	06:53 (10)	06:36	07:11 (9)	07:04	06:38	07:06	10:57 (8)					
	20:19	19:50	07:33 (10)	19:03	18	07:29 (9)	18:16	16:41	37	11:51 (8)	16:34	94	12:31 (8)	
17	05:42	06:09	06:53 (10)	06:37	07:12 (9)	07:05	06:39	07:07	10:57 (8)					
	20:19	19:48	07:33 (10)	19:01	16	07:28 (9)	18:15	16:40	45	11:56 (8)	16:34	94	12:31 (8)	
18	05:43	06:10	06:53 (10)	06:38	07:13 (9)	07:06	06:40	07:08	10:58 (8)					
	20:18	19:47	07:33 (10)	19:00	11	07:24 (9)	18:13	16:40	51	11:59 (8)	16:34	94	12:32 (8)	
19	05:44	06:11	06:54 (10)	06:39	07:07	06:41	11:06 (8)	07:08	10:59 (8)					
	20:18	19:45	07:32 (10)	18:58	18:12	16:39	55	12:01 (8)	16:35	94	12:33 (8)			
20	05:45	06:12	06:53 (10)	06:40	07:08	06:42	11:04 (8)	07:09	10:59 (8)					
	20:17	19:44	07:31 (10)	18:57	18:11	16:38	60	12:04 (8)	16:35	93	12:32 (8)			
21	05:45	06:13	06:53 (10)	06:41	07:09	06:43	11:03 (8)	07:09	11:00 (8)					
	20:16	19:43	07:30 (10)	18:55	18:09	16:38	63	12:06 (8)	16:36	93	12:33 (8)			
22	05:46	06:14	06:54 (10)	06:41	07:10	06:44	11:01 (8)	07:10	11:00 (8)					
	20:16	19:41	07:29 (10)	18:53	18:08	16:37	66	12:07 (8)	16:36	93	12:33 (8)			
23	05:47	06:15	06:55 (10)	06:42	07:11	06:45	11:00 (8)	07:10	11:01 (8)					
	20:15	19:40	07:28 (10)	18:52	18:07	16:36	69	12:09 (8)	16:37	93	12:34 (8)			
24	05:48	06:16	06:56 (10)	06:43	07:12	06:46	11:00 (8)	07:11	11:01 (8)					
	20:14	19:39	07:27 (10)	18:50	18:05	16:36	71	12:11 (8)	16:37	93	12:34 (8)			
25	05:49	06:16	06:57 (10)	06:44	06:13	06:47	10:59 (8)	07:11	11:01 (8)					
	20:13	19:37	07:26 (10)	18:49	17:04	16:35	74	12:13 (8)	16:38	94	12:35 (8)			
26	05:50	06:17	06:59 (10)	06:45	06:14	06:48	10:58 (8)	07:12	11:02 (8)					
	20:12	19:36	07:24 (10)	18:47	17:03	16:35	76	12:14 (8)	16:38	94	12:36 (8)			
27	05:50	07:11 (10)	06:18	07:00 (10)	06:46	06:16	06:49	10:57 (8)	07:12	11:02 (8)				
	20:12	7	07:18 (10)	19:34	22	07:22 (10)	18:45	17:01	16:35	78	12:15 (8)	16:39	94	12:36 (8)
28	05:51	07:08 (10)	06:19	07:02 (10)	06:47	06:17	06:50	10:57 (8)	07:12	11:03 (8)				
	20:11	13	07:21 (10)	19:33	16	07:18 (10)	18:44	17:00	16:34	79	12:16 (8)	16:40	93	12:36 (8)
29	05:52	07:05 (10)	06:20	07:08 (10)	06:48	06:18	06:51	10:56 (8)	07:13	11:03 (8)				
	20:10	18	07:23 (10)	19:31	4	07:12 (10)	18:42	16:59	16:34	81	12:17 (8)	16:40	93	12:36 (8)
30	05:53	07:03 (10)	06:21	06:49	06:19	06:52	10:56 (8)	07:13	11:04 (8)					
	20:09	22	07:25 (10)	19:30	18:41	16:58	16:34	82	12:18 (8)	16:41	93	12:37 (8)		
31	05:54	07:02 (10)	06:22		06:20			07:13	11:05 (8)					
	20:08	24	07:26 (10)	19:28	16:57			16:42	92	12:37 (8)				
Potential sun hours	453		424		374		347		303		294			
Total, worst case	84		971		260			1022			2834			
Sun reduction	0.70		0.70		0.65			0.45			0.38			
Oper. time red.	1.00		1.00		1.00			1.00			1.00			
Wind dir. red.	0.17		0.17		0.01			1.00			1.00			
Total reduction	0.14		0.14		0.01			0.50			0.43			
Total, real	11		133		2			516			1216			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: AF - 32

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13   16:43   67	12:50 (9)   07:02   17:15   34	13:20 (9)   06:29   17:46   38	16:25 (10)   06:41   19:17   38	05:58   19:46   20:14	05:32   20:14
2	07:14   16:44   67	12:50 (9)   07:01   17:16   28	13:23 (9)   06:27   17:48   37	16:26 (10)   06:39   19:18   37	05:57   19:47   20:14	05:31   20:14
3	07:14   16:44   67	12:51 (9)   07:00   17:17   21	13:27 (9)   06:26   17:49   37	16:25 (10)   06:38   19:19   37	05:56   19:48   20:15	05:31   20:15
4	07:14   16:45   67	12:51 (9)   06:59   17:19   8	13:34 (9)   06:24   17:50   36	16:26 (10)   06:36   19:20   36	05:55   19:49   20:16	05:30   20:16
5	07:14   16:46   67	12:52 (9)   06:58   17:20   6	13:38 (9)   06:23   17:51   35	16:26 (10)   06:35   19:21   35	05:53   19:50   20:16	05:30   20:16
6	07:14   16:47   66	12:53 (9)   06:57   17:21   7	13:42 (9)   06:21   17:52   34	16:27 (10)   06:33   19:22   34	05:52   19:51   20:17	05:30   20:17
7	07:14   16:48   67	12:53 (9)   06:56   17:22   8	13:46 (9)   06:20   17:53   32	16:27 (10)   06:32   19:23   32	05:51   19:52   20:17	05:30   20:17
8	07:14   16:49   66	14:00 (9)   06:55   17:23   9	13:50 (9)   06:18   17:54   31	16:28 (10)   06:30   19:24   31	05:50   19:53   20:18	05:29   20:18
9	07:14   16:50   66	12:54 (9)   06:54   17:24   10	13:54 (9)   06:17   17:55   29	16:28 (10)   06:29   19:25   29	05:49   19:54   20:19	05:29   20:19
10	07:13   16:51   66	12:54 (9)   06:53   17:25   11	13:58 (9)   06:15   17:56   26	16:30 (10)   06:27   19:26   26	05:48   19:55   20:19	05:29   20:19
11	07:13   16:52   66	12:55 (9)   06:52   17:27   12	14:02 (9)   06:14   17:57   22	16:31 (10)   06:26   19:27   22	05:47   19:56   20:20	05:29   20:20
12	07:13   16:53   65	14:01 (9)   06:51   17:28   13	14:06 (9)   06:12   17:58   17	16:33 (10)   06:24   19:28   17	05:46   19:57   20:20	05:29   20:20
13	07:13   16:54   65	12:56 (9)   06:50   17:29   14	14:10 (9)   06:11   17:59   10	16:37 (10)   06:23   19:29   10	05:45   19:58   20:21	05:29   20:21
14	07:13   16:55   65	14:01 (9)   06:48   17:30   15	14:14 (9)   06:09   18:00   9	16:41 (10)   06:21   19:30   9	05:44   19:59   20:21	05:29   20:21
15	07:12   16:56   64	12:58 (9)   06:47   17:31   16	14:18 (9)   06:08   18:01   8	16:45 (10)   06:20   19:31   8	05:43   20:00   20:21	05:29   20:21
16	07:12   16:57   64	14:02 (9)   06:46   17:32   17	14:22 (9)   06:06   18:02   7	16:49 (10)   06:18   19:32   7	05:42   20:01   20:22	05:29   20:22
17	07:12   16:58   63	12:59 (9)   06:45   17:33   4	16:43 (10)   06:05   18:03   4	16:53 (10)   06:17   19:33   4	05:41   20:02   20:22	05:29   20:22
18	07:11   16:59   62	14:02 (9)   06:44   17:35   15	16:47 (10)   06:03   18:04   15	16:57 (10)   06:15   19:34   15	05:40   20:03   20:22	05:29   20:22
19	07:11   17:00   61	13:01 (9)   06:42   17:36   20	16:51 (10)   06:01   18:05   20	17:01 (10)   06:14   19:35   20	05:40   20:04   20:23	05:29   20:23
20	07:10   17:01   61	14:02 (9)   06:41   17:37   25	16:55 (10)   06:00   18:06   25	17:05 (10)   06:13   19:36   25	05:39   20:05   20:23	05:29   20:23
21	07:10   17:02   59	13:02 (9)   06:40   17:38   27	16:59 (10)   05:58   18:07   27	17:09 (10)   06:11   19:37   27	05:38   20:06   20:23	05:29   20:23
22	07:09   17:04   58	14:02 (9)   06:38   17:39   30	17:03 (10)   05:57   18:08   30	17:13 (10)   06:10   19:38   30	05:37   20:07   20:24	05:29   20:24
23	07:09   17:05   57	13:04 (9)   06:37   17:40   32	17:07 (10)   05:55   18:09   32	17:17 (10)   06:08   19:39   32	05:36   20:08   20:24	05:30   20:24
24	07:08   17:06   55	13:06 (9)   06:36   17:41   33	17:11 (10)   05:54   18:10   33	17:21 (10)   06:07   19:40   33	05:35   20:09   20:24	05:30   20:24
25	07:07   17:07   54	14:01 (9)   06:34   17:42   35	17:15 (10)   05:52   18:11   35	17:25 (10)   06:06   19:41   35	05:34   20:10   20:24	05:30   20:24
26	07:07   17:08   52	13:08 (9)   06:33   17:43   36	17:19 (10)   05:50   18:12   36	17:29 (10)   06:04   19:42   36	05:33   20:11   20:24	05:31   20:24
27	07:06   17:09   49	14:00 (9)   06:31   17:44   37	17:23 (10)   05:49   18:13   37	17:33 (10)   06:03   19:43   37	05:32   20:12   20:24	05:31   20:24
28	07:05   17:10   47	13:10 (9)   06:30   17:45   37	17:27 (10)   05:47   18:14   37	17:37 (10)   06:02   19:44   37	05:31   20:13   20:24	05:31   20:24
29	07:04   17:12   44	13:12 (9)   06:29   17:46   37	17:31 (10)   05:46   18:15   37	17:41 (10)   06:01   19:45   37	05:30   20:14   20:24	05:32   20:24
30	07:04   17:13   41	13:14 (9)   06:28   17:47   37	17:35 (10)   05:44   18:16   37	17:45 (10)   06:00   19:46   37	05:29   20:15   20:24	05:32   20:24
31	07:03   17:14   37	13:16 (9)   06:27   17:48   37	17:39 (10)   05:43   18:17   37	17:49 (10)   06:00   19:47   37	05:28   20:16   20:24	05:32   20:24
Potential sun hours	303	300	370	396	443	445
Total, worst case	1855	422	384			
Sun reduction	0.35	0.36	0.41			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.93	0.47	0.34			
Total reduction	0.33	0.17	0.14			
Total, real	617	74	55			

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar

Shadow receptor: AF - 32

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December	
1	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39	17:14 (10) 17:29 (10)	06:21 16:55	12:37 (9) 13:43 (9)
2	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	17:11 (10) 17:31 (10)	06:22 16:54	12:37 (9) 13:43 (9)
3	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	17:08 (10) 17:33 (10)	06:23 16:53	12:38 (9) 13:44 (9)
4	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	17:07 (10) 17:34 (10)	06:24 16:52	12:38 (9) 13:44 (9)
5	05:34 20:24	05:58 20:03	06:26 19:20	06:53 18:33	17:05 (10) 17:35 (10)	06:25 16:51	12:38 (9) 13:45 (9)
6	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	17:04 (10) 17:36 (10)	06:26 16:50	12:39 (9) 13:45 (9)
7	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30	17:03 (10) 17:36 (10)	06:27 16:49	12:39 (9) 13:46 (9)
8	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	17:02 (10) 17:36 (10)	06:29 16:48	12:39 (9) 13:46 (9)
9	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	17:01 (10) 17:37 (10)	06:30 16:47	12:39 (9) 13:46 (9)
10	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	17:00 (10) 17:37 (10)	06:31 16:46	12:40 (9) 13:47 (9)
11	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	17:00 (10) 17:37 (10)	06:32 16:45	12:40 (9) 13:47 (9)
12	05:39 20:21	06:05 19:55	06:32 19:09	07:00 18:22	16:59 (10) 17:36 (10)	06:33 16:44	12:41 (9) 13:48 (9)
13	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	16:59 (10) 17:36 (10)	06:34 16:43	12:41 (9) 13:48 (9)
14	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	16:59 (10) 17:36 (10)	06:35 16:42	12:41 (9) 13:48 (9)
15	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	16:59 (10) 17:35 (10)	06:36 16:42	12:42 (9) 13:49 (9)
16	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	16:59 (10) 17:34 (10)	06:37 16:41	12:43 (9) 13:50 (9)
17	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	16:59 (10) 17:34 (10)	06:39 16:40	12:43 (9) 13:50 (9)
18	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	17:00 (10) 17:33 (10)	06:40 16:39	12:43 (9) 13:50 (9)
19	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	17:00 (10) 17:31 (10)	06:41 16:39	12:44 (9) 13:51 (9)
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	17:01 (10) 17:30 (10)	06:42 16:38	12:44 (9) 13:51 (9)
21	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	17:02 (10) 17:28 (10)	06:43 16:37	12:45 (9) 13:52 (9)
22	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	17:04 (10) 17:27 (10)	06:44 16:37	12:45 (9) 13:52 (9)
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	17:05 (10) 17:24 (10)	06:45 16:36	12:45 (9) 13:52 (9)
24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	17:08 (10) 17:21 (10)	06:46 16:36	12:46 (9) 13:53 (9)
25	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	16:35	06:47 16:35	12:46 (9) 13:53 (9)
26	05:49 20:12	06:17 19:36	06:45 18:47	06:14 17:03	06:48 16:35	06:49 16:35	12:47 (9) 13:54 (9)
27	05:50 20:12	06:18 19:34	06:46 18:45	06:15 17:01	06:49 16:35	06:50 16:34	12:48 (9) 13:55 (9)
28	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	06:51 16:34	12:48 (9) 13:55 (9)
29	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	06:52 16:34	12:48 (9) 13:55 (9)
30	05:53 20:09	06:21 19:30	06:49 18:41	17:20 (10) 17:23 (10)	06:19 16:58	06:52 16:34	12:49 (9) 13:56 (9)
31	05:54 20:08	06:22 19:28		06:20 16:56		06:53 16:42	12:50 (9) 13:57 (9)
Potential sun hours	453	424	374	347	303	294	
Total, worst case			3	717		1218	2073
Sun reduction			0.65	0.54		0.45	0.38
Oper. time red.			1.00	1.00		1.00	1.00
Wind dir. red.			0.34	0.34		0.93	0.93
Total reduction			0.23	0.19		0.43	0.36
Total, real			1	134		519	751

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## **ALLEGATO 7 - CALENDARIO WTG *REAL CASE***



Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 1 - WTG 12

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 17:15	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:13	05:32 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33
2	07:13 16:44	07:01 17:16	06:27 17:47	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	06:54 16:33
3	07:14 16:44	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:23	06:51 18:36	06:23 16:53	06:55 16:33
4	07:14 16:45	06:59 17:19	06:24 17:50	06:36 19:20	05:54 19:49	05:30 20:15	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	06:24 16:52	06:56 16:33
5	07:14 16:46	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:34 20:23	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	06:57 16:33
6	07:14 16:47	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:32
7	07:14 16:48	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30	06:27 16:49	06:59 16:32
8	07:14 16:49	06:55 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:28 16:48	07:00 16:32
9	07:14 16:50	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:18	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:32
10	07:13 16:51	06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33
11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:02 16:33
12	07:13 16:53	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:54	06:32 19:09	07:00 18:22	06:33 16:44	07:03 16:33
13	07:13 16:54	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:20	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33
14	07:12 16:55	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:42	07:05 16:33
15	07:12 16:56	06:47 17:31	06:08 18:01	06:20 19:31	05:43 19:59	05:29 20:21	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	07:05 16:33
16	07:12 16:57	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	07:06 16:34
17	07:11 16:58	06:45 17:33	06:04 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:38 16:40	07:07 16:34
18	07:11 16:59	06:43 17:34	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:22	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	07:07 16:34
19	07:11 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:17	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35
20	07:10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 16:35
21	07:10 17:02	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:40 18:55	07:09 18:09	06:43 16:37	07:09 16:36
22	07:09 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:23	05:46 20:15	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	07:10 16:36
23	07:08 17:05	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:06	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:06	06:45 16:36	07:10 16:37
24	07:08 17:06	06:36 17:41	05:53 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	07:11 16:37
25	07:07 17:07	06:34 17:42	05:52 18:11	06:06 19:40	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:48	06:13 17:04	06:47 16:35	07:11 16:38
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28	07:05 17:10	06:30 17:45	05:47 18:13	06:02 19:43	05:34 20:10	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:16 17:00	06:50 16:34	07:12 16:40
29	07:04 17:12		06:46 19:14	06:01 19:44	05:33 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	07:12 16:40
30	07:04 17:13		06:44 19:15	05:59 19:45	05:32 20:12	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	07:13 16:41
31	07:03 17:14		06:43 19:16		05:32 20:13		05:54 20:08	06:22 19:28		06:20 16:56		07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 2 - WTG 11

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 17:15	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:13	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33
2	07:13 16:44	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	06:54 16:33
3	07:14 16:44	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:53	06:55 16:33
4	07:14 16:45	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:30 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	06:24 16:52	06:56 16:33
5	07:14 16:46	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:35 20:23	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:51	06:57 16:33
6	07:14 16:47	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33
7	07:14 16:48	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30	06:27 16:49	06:59 16:32
8	07:14 16:49	06:55 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:32
9	07:14 16:50	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:32
10	07:13 16:51	06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33
11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:02 16:33
12	07:13 16:53	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:54	06:32 19:09	07:00 18:22	06:33 16:44	07:03 16:33
13	07:13 16:54	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:20	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33
14	07:13 16:55	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:42	07:05 16:33
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16	07:12 16:57	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	07:06 16:34
17	07:11 16:58	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:38 16:40	07:07 16:34
18	07:11 16:59	06:44 17:35	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:22	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:39	07:07 16:34
19	07:11 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35
20	07:10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 16:35
21	07:10 17:02	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	07:09 16:36
22	07:09 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:23	05:46 20:15	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	07:10 16:36
23	07:08 17:05	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:06	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	07:10 16:37
24	07:08 17:06	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	07:11 16:37
25	07:07 17:07	06:34 17:42	05:52 18:11	06:06 19:40	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:35	07:11 16:38
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27	07:06 17:09	06:31 17:44	05:49 18:13	06:03 19:42	05:34 20:10	05:31 20:24	05:50 20:11	06:18 19:34	06:46 18:45	06:15 17:01	06:49 16:35	07:12 16:39
28	07:05 17:10	06:30 17:45	05:47 18:14	06:02 19:43	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	07:12 16:40
29	07:04 17:12		06:46 19:14	06:01 19:44	05:33 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	07:13 16:40
30	07:04 17:13		06:44 19:15	05:59 19:45	05:33 20:12	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	07:13 16:41
31	07:03 17:14		06:43 19:16		05:32 20:13		05:54 20:08	06:22 19:28		06:20 16:56		07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 3 - WTG 10

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 17:15	06:29 17:47	06:41 19:17	05:58 19:46	05:32 20:14	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33
2	07:14 16:44	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:54	06:54 16:33
3	07:14 16:44	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:34 20:24	05:57 20:05	06:24 19:24	06:52 18:36	06:23 16:53	06:55 16:33
4	07:14 16:45	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:31 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33
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6	07:14 16:47	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33
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9	07:14 16:50	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:33
10	07:13 16:51	06:53 17:26	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33
11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:02 16:33
12	07:13 16:53	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:55	06:33 19:09	07:00 18:22	06:33 16:44	07:03 16:33
13	07:13 16:54	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:40 20:21	06:06 19:53	06:34 19:08	07:01 18:21	06:34 16:43	07:04 16:33
14	07:13 16:55	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:43	07:05 16:33
15	07:12 16:56	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	07:05 16:33
16	07:12 16:57	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	07:06 16:34
17	07:12 16:58	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	07:07 16:34
18	07:11 16:59	06:44 17:35	06:03 18:04	06:15 19:34	05:41 20:02	05:29 20:22	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:40	07:07 16:34
19	07:11 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35
20	07:10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 16:35
21	07:10 17:03	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	07:09 16:36
22	07:09 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:30 20:23	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	07:10 16:36
23	07:09 17:05	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	07:10 16:37
24	07:08 17:06	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:36	07:11 16:37
25	07:07 17:07	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:35	07:11 16:38
26	07:07 17:08	06:33 17:43	05:50 18:12	06:04 19:42	05:35 20:09	05:31 20:24	05:50 20:12	06:17 19:36	06:45 18:47	06:14 17:03	06:48 16:35	07:12 16:38
27	07:06 17:09	06:32 17:44	05:49 18:13	06:03 19:42	05:34 20:10	05:31 20:24	05:50 20:12	06:18 19:34	06:46 18:45	06:15 17:01	06:49 16:35	07:12 16:39
28	07:05 17:10	06:30 17:45	05:47 18:14	06:02 19:43	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	07:12 16:40
29	07:04 17:12		06:46 19:15	06:01 19:44	05:33 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	07:13 16:40
30	07:04 17:13		06:44 19:15	05:59 19:45	05:33 20:12	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	07:13 16:41
31	07:03 17:14		06:43 19:16		05:32 20:13		05:54 20:08	06:22 19:28		06:20 16:57		07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 4 - WTG 9

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 17:15	06:29 17:47	06:41 19:17	05:58 19:46	05:32 20:14	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	07:47-07:58/11 16:55	06:21 16:33
2	07:14 16:44	07:01 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	07:44-08:00/16 16:54	06:22 16:33
3	07:14 16:44	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:34 20:24	05:57 20:05	06:25 19:24	06:52 18:36	07:43-08:01/18 16:53	06:23 16:33
4	07:14 16:45	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:31 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	07:45-08:02/17 16:52	06:24 16:33
5	07:14 16:46	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:35 20:24	05:58 20:03	06:26 19:20	06:53 18:33	07:49-08:03/14 16:51	06:25 16:33
6	07:14 16:47	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	07:53-08:03/10 16:50	06:26 16:33
7	07:14 16:48	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	07:55-08:03/8 16:49	06:27 16:33
8	07:14 16:49	06:55 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	07:58-08:03/5 16:48	06:29 16:33
9	07:14 16:50	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	08:01-08:02/1 16:47	06:30 16:33
10	07:13 16:51	06:53 17:26	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33
11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:02 16:33
12	07:13 16:53	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:55	06:33 19:09	07:00 18:22	06:33 16:44	07:03 16:33
13	07:13 16:54	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:40 20:21	06:06 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33
14	07:13 16:55	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:43	07:05 16:33
15	07:12 16:56	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	07:05 16:33
16	07:12 16:57	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:41	07:06 16:34
17	07:12 16:58	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	07:07 16:34
18	07:11 16:59	06:44 17:35	06:03 18:04	06:15 19:34	05:41 20:02	05:29 20:22	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:40	07:08 16:34
19	07:11 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35
20	07:10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 16:35
21	07:10 17:03	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:46 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	07:09 16:36
22	07:09 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:30 20:24	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:37	07:10 16:36
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24	07:08 17:06	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:16 19:38	06:43 18:50	07:12 18:05	06:46 16:36	07:11 16:37
25	07:07 17:07	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:36	07:11 16:38
26	07:07 17:08	06:33 17:43	05:50 18:12	06:05 19:42	05:35 20:09	05:31 20:24	05:50 20:12	06:17 19:36	06:45 18:47	06:14 17:03	06:48 16:35	07:12 16:38
27	07:06 17:09	06:32 17:44	05:49 18:13	06:03 19:43	05:34 20:10	05:31 20:24	05:50 20:12	06:18 19:34	06:46 18:45	06:16 17:01	06:49 16:35	07:12 16:39
28	07:05 17:10	06:30 17:45	05:47 18:14	06:02 19:42	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	07:12 16:40
29	07:04 17:12		06:46 19:15	06:01 19:44	05:33 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	07:13 16:40
30	07:04 17:13		06:44 19:16	05:59 19:45	05:33 20:12	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	07:13 16:41
31	07:03 17:14		06:43 19:16		05:32 20:13		05:54 20:08	06:22 19:28		06:20 16:57		07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Sum of minutes with flicker	0	0	102	0	0	0	0	0	1	100	0	0

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 5 - WTG 3

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 17:15	06:29 17:47	06:41 19:17	05:58 19:46	05:32 20:14	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33
2	07:14 16:44	07:01 17:16	06:27 17:48	06:40 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:38	06:22 16:54	06:54 16:33
3	07:14 16:44	07:00 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:34 20:24	05:57 20:05	06:25 19:24	06:52 18:36	06:23 16:53	06:55 16:33
4	07:14 16:45	06:59 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:31 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:53 18:34	06:24 16:52	06:56 16:33
5	07:14 16:46	06:58 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:35 20:24	05:58 20:03	06:26 19:21	06:54 18:33	06:25 16:51	06:57 16:33
6	07:14 16:47	06:57 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:50	06:58 16:33
7	07:14 16:48	06:56 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:18	05:36 20:23	06:00 20:01	06:28 19:17	06:55 18:30	06:28 16:49	06:59 16:33
8	07:14 16:49	06:55 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:48	07:00 16:33
9	07:14 16:50	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	05:37 20:23	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:47	07:01 16:33
10	07:14 16:51	06:53 17:26	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:38 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:46	07:02 16:33
11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:45	07:03 16:33
12	07:13 16:53	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:55	06:33 19:09	07:00 18:22	06:33 16:44	07:03 16:33
13	07:13 16:54	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:40 20:21	06:06 19:53	06:33 19:08	07:01 18:21	06:34 16:43	07:04 16:33
14	07:13 16:55	06:49 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:43	07:05 16:33
15	07:12 16:56	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:42	07:06 16:33
16	07:12 16:57	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:01	05:29 20:22	05:42 20:19	06:08 19:50	06:36 19:03	07:04 18:16	06:38 16:41	07:06 16:34
17	07:12 16:58	06:45 17:34	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:40	07:07 16:34
18	07:11 16:59	06:44 17:35	06:03 18:04	06:16 19:34	05:41 20:02	05:29 20:23	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:40	07:08 16:34
19	07:11 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:39	07:08 16:35
20	07:10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:38	07:09 16:35
21	07:10 17:03	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:46 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:38	07:09 16:36
22	07:09 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:30 20:24	05:46 20:16	06:14 19:41	06:42 18:53	07:10 18:08	06:44 16:37	07:10 16:36
23	07:09 17:05	06:37 17:40	05:55 18:09	06:09 19:39	05:37 20:07	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:36	07:10 16:37
24	07:08 17:06	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:16 19:39	06:43 18:50	07:12 18:05	06:46 16:36	07:11 16:37
25	07:07 17:07	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:36	07:11 16:38
26	07:07 17:08	06:33 17:43	05:50 18:12	06:05 19:42	05:35 20:09	05:31 20:24	05:50 20:12	06:17 19:36	06:45 18:47	06:15 17:03	06:48 16:35	07:12 16:38
27	07:06 17:09	06:32 17:44	05:49 18:13	06:03 19:43	05:34 20:10	05:31 20:24	05:50 20:12	06:18 19:34	06:46 18:45	06:16 17:01	06:49 16:35	07:12 16:39
28	07:05 17:11	06:30 17:46	05:47 18:14	06:02 19:44	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:34	07:12 16:40
29	07:04 17:12		06:46 19:15	06:01 19:44	05:33 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:34	07:13 16:40
30	07:04 17:13		06:44 19:16	05:59 19:45	05:33 20:12	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:34	07:13 16:41
31	07:03 17:14		06:43 19:17		05:32 20:13		05:54 20:08	06:22 19:28		06:20 16:57		07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 6 - WTG 4

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:13	07:02	06:29	06:41	05:58	05:32	06:23-06:39/16	05:33	05:55	06:35-06:48/13	06:23	06:50	06:21	06:53
	16:43	17:15	17:47	19:17	19:46	20:14		20:24	20:07		19:27	18:39	16:55	16:33
2	07:14	07:01	06:27	06:39	05:57	05:31	06:24-06:39/15	05:33	05:56	06:35-06:46/11	06:24	06:51	06:22	06:54
	16:44	17:16	17:48	19:18	19:47	20:14		20:24	20:06		19:25	18:37	16:54	16:33
3	07:14	07:00	06:26	06:38	05:56	05:31	06:25-06:39/14	05:34	05:57	06:37-06:44/7	06:25	06:52	06:23	06:55
	16:44	17:17	17:49	19:19	19:48	20:15		20:24	20:05		19:24	18:36	16:53	16:33
4	07:14	06:59	06:24	06:36	05:55	05:31	06:25-06:37/12	05:34	05:57		06:25	06:53	06:24	06:56
	16:45	17:19	17:50	19:20	19:49	20:16		20:24	20:04		19:22	18:34	16:52	16:33
5	07:14	06:58	06:23	06:35	05:53	05:30	06:27-06:37/10	05:35	06:36-06:39/3	05:58	06:26	06:53	06:25	06:57
	16:46	17:20	17:51	19:21	19:50	20:16		20:24	20:03		19:20	18:33	16:51	16:33
6	07:14	06:57	06:21	06:33	05:52	05:30	06:28-06:36/8	05:35	06:35-06:42/7	05:59	06:27	06:54	06:26	06:58
	16:47	17:21	17:52	19:22	19:51	20:17		20:23	20:02		19:19	18:31	16:50	16:33
7	07:14	06:56	06:20	06:32	05:51	05:30	06:30-06:35/5	05:36	06:33-06:42/9	06:00	06:28	06:55	06:27	06:59
	16:48	17:22	17:53	19:23	19:52	20:17		20:23	20:01		19:17	18:30	16:49	16:33
8	07:14	06:55	06:18	06:30	05:50	05:29		05:36	06:33-06:44/11	06:01	06:29	06:56	06:29	07:00
	16:49	17:23	17:54	19:24	19:53	20:18		20:23	20:00		19:16	18:28	16:48	16:33
9	07:14	06:54	06:17	06:29	05:49	05:29		05:37	06:33-06:45/12	06:02	06:30	06:57	06:30	07:01
	16:50	17:24	17:55	19:25	19:54	20:19		20:22	20:00		19:14	18:27	16:47	16:33
10	07:14	06:53	06:15	06:27	05:48	06:26-06:35/9	05:29	05:38	06:32-06:46/14	06:03	06:31	06:58	06:31	07:02
	16:51	17:26	17:56	19:26	19:55	20:19		20:22	20:00		19:13	18:25	16:46	16:33
11	07:13	06:52	06:14	06:26	05:47	06:25-06:36/11	05:29	05:38	06:31-06:47/16	06:04	06:32	06:59	06:32	07:02
	16:52	17:27	17:57	19:27	19:56	20:20		20:22	20:00		19:11	18:24	16:45	16:33
12	07:13	06:51	06:12	06:24	05:46	06:24-06:38/14	05:29	05:39	06:31-06:48/17	06:05	06:33	07:00	06:33	07:03
	16:53	17:28	17:58	19:28	19:57	20:20		20:21	20:00		19:09	18:22	16:44	16:33
13	07:13	06:50	06:11	06:23	05:45	06:23-06:39/16	05:29	05:40	06:30-06:48/18	06:06	06:33	07:01	06:34	07:04
	16:54	17:29	17:59	19:29	19:58	20:21		20:21	20:00		19:08	18:21	16:43	16:33
14	07:13	06:49	06:09	06:21	05:44	06:24-06:40/16	05:29	05:40	06:30-06:49/19	06:06	06:34	07:02	06:35	07:05
	16:55	17:30	18:00	19:30	19:59	20:21		20:20	20:00		19:06	18:19	16:43	16:33
15	07:12	06:47	06:08	06:20	05:43	06:23-06:41/18	05:29	05:41	06:30-06:50/20	06:07	06:35	07:03	06:36	07:06
	16:56	17:31	18:01	19:31	20:00	20:21		20:20	20:00		19:05	18:18	16:42	16:33
16	07:12	06:46	06:06	06:18	05:42	06:22-06:41/19	05:29	05:42	06:29-06:50/21	06:08	06:36	07:04	06:37	07:06
	16:57	17:32	18:02	19:32	20:01	20:22		20:19	20:00		19:03	18:16	16:41	16:34
17	07:12	06:45	06:05	06:17	05:41	06:22-06:41/19	05:29	05:42	06:30-06:50/20	06:09	06:37	07:05	06:39	07:07
	16:58	17:33	18:03	19:33	20:01	20:22		20:19	20:00		19:01	18:15	16:40	16:34
18	07:11	06:44	06:03	06:15	05:41	06:21-06:41/20	05:29	05:43	06:30-06:51/21	06:10	06:38	07:06	06:40	07:08
	16:59	17:35	18:04	19:34	20:02	20:22		20:18	20:00		19:00	18:13	16:40	16:34
19	07:11	06:42	06:01	06:14	05:40	06:21-06:41/20	05:29	05:44	06:30-06:52/22	06:11	06:39	07:07	06:41	07:08
	17:00	17:36	18:05	19:35	20:03	20:23		20:18	20:00		18:58	18:12	16:39	16:35
20	07:10	06:41	06:00	06:13	05:39	06:22-06:42/20	05:29	05:45	06:30-06:51/21	06:12	06:40	07:08	06:42	07:09
	17:01	17:37	18:06	19:36	20:04	20:23		20:17	20:00		18:57	18:11	16:38	16:35
21	07:10	06:40	05:58	06:11	05:38	06:21-06:42/21	05:29	05:45	06:30-06:52/22	06:13	06:41	07:09	06:43	07:09
	17:03	17:38	18:07	19:37	20:05	20:23		20:16	20:00		18:55	18:09	16:38	16:36
22	07:09	06:38	05:57	06:10	05:37	06:20-06:41/21	05:30	05:46	06:31-06:52/21	06:14	06:41	07:10	06:44	07:10
	17:04	17:39	18:08	19:38	20:06	20:24		20:16	20:00		18:53	18:08	16:37	16:36
23	07:09	06:37	05:55	06:09	05:37	06:20-06:42/22	05:30	05:47	06:32-06:52/20	06:15	06:42	07:11	06:45	07:10
	17:05	17:40	18:09	19:39	20:07	20:24		20:15	20:00		18:52	18:07	16:36	16:37
24	07:08	06:36	05:54	06:07	05:36	06:20-06:41/21	05:30	05:48	06:32-06:51/19	06:16	06:43	07:12	06:46	07:11
	17:06	17:41	18:10	19:40	20:07	20:24		20:14	19:38		18:50	18:05	16:36	16:37
25	07:07	06:34	05:52	06:06	05:35	06:21-06:42/21	05:30	05:49	06:32-06:52/20	06:16	06:44	06:13	06:47	07:11
	17:07	17:42	18:11	19:41	20:08	20:24		20:13	19:37		18:49	17:04	16:35	16:38
26	07:07	06:33	05:50	06:05	05:35	06:20-06:41/21	05:31	05:50	06:32-06:52/20	06:17	06:45	06:14	06:48	07:12
	17:08	17:43	18:12	19:42	20:09	20:24		20:12	19:36		18:47	17:03	16:35	16:38
27	07:06	06:32	05:49	06:03	05:34	06:20-06:40/20	05:31	05:50	06:32-06:52/20	06:18	06:46	06:16	06:49	07:12
	17:09	17:44	18:13	19:43	20:10	20:24		20:12	19:34		18:45	17:01	16:35	16:39
28	07:05	06:30	05:47	06:02	05:34	06:21-06:41/20	05:31	05:51	06:33-06:51/18	06:19	06:47	06:17	06:50	07:12
	17:10	17:45	18:14	19:43	20:11	20:24		20:11	19:33		18:44	17:00	16:34	16:40
29	07:04		06:46	06:01	05:33	06:22-06:41/19	05:32	05:52	06:34-06:51/17	06:20	06:48	06:18	06:51	07:13
	17:12		19:15	19:44	20:11	20:24		20:10	19:31		18:42	16:59	16:34	16:40
30	07:04		06:44	05:59	05:33	06:22-06:40/18	05:32	05:53	06:34-06:50/16	06:21	06:49	06:19	06:52	07:13
	17:13		19:16	19:45	20:12	20:24		20:09	19:30		18:41	16:58	16:34	16:41
31	07:03		06:43		05:32	06:23-06:40/17		05:54	06:34-06:49/15	06:22		06:20		07:13
	17:14		19:16		20:13			20:08				16:57		16:42
Potential sun hours	303	300	370	396	443	445	453	424	31	374	347	303	294	0
Sum of minutes with flicker	0	0	0	0	403	80	459	31	0	0	0	0	0	0

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

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



Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 7 - WTG 8

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:13 16:43	07:02 16:32-16:52/20 17:15	06:29 17:46	06:41 19:17	05:58 19:46	05:32 20:14	05:33 20:24	05:55 20:07	06:23 19:27	06:50 18:39	06:21 16:55	06:53 16:33
2	07:13 16:44	07:01 16:33-16:53/20 17:16	06:27 17:48	06:39 19:18	05:57 19:47	05:31 20:14	05:33 20:24	05:56 20:06	06:24 19:25	06:51 18:37	06:22 16:18-16:22/4 16:54	06:54 16:33
3	07:14 16:44	07:00 16:34-16:54/20 17:17	06:26 17:49	06:38 19:19	05:56 19:48	05:31 20:15	05:33 20:24	05:56 20:05	06:24 19:24	06:52 18:36	06:23 16:12-16:27/15 16:53	06:55 16:33
4	07:14 16:45	06:59 16:35-16:55/20 17:19	06:24 17:50	06:36 19:20	05:55 19:49	05:30 20:16	05:34 20:24	05:57 20:04	06:25 19:22	06:52 18:34	06:24 16:10-16:29/19 16:52	06:56 16:33
5	07:14 16:46	06:58 16:36-16:57/21 17:20	06:23 17:51	06:35 19:21	05:53 19:50	05:30 20:16	05:35 20:23	05:58 20:03	06:26 19:20	06:53 18:33	06:25 16:08-16:28/20 16:51	06:57 16:33
6	07:14 16:47	06:57 16:38-16:58/20 17:21	06:21 17:52	06:33 19:22	05:52 19:51	05:30 20:17	05:35 20:23	05:59 20:02	06:27 19:19	06:54 18:31	06:26 16:06-16:26/20 16:50	06:58 16:33
7	07:14 16:48	06:56 16:40-16:59/19 17:22	06:20 17:53	06:32 19:23	05:51 19:52	05:30 20:17	05:36 20:23	06:00 20:00	06:28 19:17	06:55 18:30	06:27 16:06-16:26/20 16:49	06:59 16:32
8	07:14 16:49	06:55 16:43-16:56/13 17:23	06:18 17:54	06:30 19:24	05:50 19:53	05:29 20:18	05:36 20:23	06:01 19:59	06:29 19:16	06:56 18:28	06:29 16:05-16:25/20 16:48	07:00 16:32
9	07:14 16:50	06:54 17:24	06:17 17:55	06:29 19:25	05:49 19:54	05:29 20:19	05:37 20:22	06:02 19:58	06:30 19:14	06:57 18:27	06:30 16:04-16:24/20 16:47	07:01 16:32
10	07:13 16:51	06:53 17:25	06:15 17:56	06:27 19:26	05:48 19:55	05:29 20:19	05:37 20:22	06:03 19:57	06:31 19:13	06:58 18:25	06:31 16:03-16:23/20 16:46	07:02 16:33
11	07:13 16:52	06:52 17:27	06:14 17:57	06:26 19:27	05:47 19:56	05:29 20:20	05:38 20:22	06:04 19:56	06:32 19:11	06:59 18:24	06:32 16:02-16:21/19 16:45	07:02 16:33
12	07:13 16:28-16:29/1 16:53	06:51 17:28	06:12 17:58	06:24 19:28	05:46 19:57	05:29 20:20	05:39 20:21	06:05 19:55	06:32 19:09	07:00 18:22	06:33 16:03-16:21/18 16:44	07:03 16:33
13	07:13 16:27-16:29/2 16:54	06:50 17:29	06:11 17:59	06:23 19:29	05:45 19:58	05:29 20:21	05:39 20:21	06:05 19:53	06:33 19:08	07:01 18:21	06:34 16:02-16:20/18 16:43	07:04 16:33
14	07:13 16:27-16:30/3 16:55	06:48 17:30	06:09 18:00	06:21 19:30	05:44 19:59	05:29 20:21	05:40 20:20	06:06 19:52	06:34 19:06	07:02 18:19	06:35 16:02-16:19/17 16:42	07:05 16:33
15	07:12 16:28-16:32/4 16:56	06:47 17:31	06:08 18:01	06:20 19:31	05:43 20:00	05:29 20:21	05:41 20:20	06:07 19:51	06:35 19:05	07:03 18:18	06:36 16:02-16:18/16 16:42	07:05 16:33
16	07:12 16:27-16:32/5 16:57	06:46 17:32	06:06 18:02	06:18 19:32	05:42 20:00	05:29 20:22	05:42 20:19	06:08 19:49	06:36 19:03	07:04 18:16	06:37 16:02-16:17/15 16:41	07:06 16:34
17	07:12 16:28-16:34/6 16:58	06:45 17:33	06:05 18:03	06:17 19:33	05:41 20:01	05:29 20:22	05:42 20:19	06:09 19:48	06:37 19:01	07:05 18:15	06:39 16:02-16:16/14 16:40	07:07 16:34
18	07:11 16:27-16:35/8 16:59	06:44 17:35	06:03 18:04	06:15 19:34	05:40 20:02	05:29 20:22	05:43 20:18	06:10 19:47	06:38 19:00	07:06 18:13	06:40 16:03-16:16/13 16:39	07:07 16:34
19	07:11 16:28-16:36/8 17:00	06:42 17:36	06:01 18:05	06:14 19:35	05:40 20:03	05:29 20:23	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 16:03-16:16/13 16:39	07:08 16:35
20	07:10 16:27-16:37/10 17:01	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 16:03-16:15/12 16:38	07:09 16:35
21	07:10 16:28-16:39/11 17:02	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 16:03-16:14/11 16:38	07:09 16:36
22	07:09 16:28-16:40/12 17:04	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:23	05:46 20:15	06:14 19:41	06:41 18:53	07:10 18:08	06:44 16:03-16:13/10 16:37	07:10 16:36
23	07:09 16:28-16:41/13 17:05	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 16:04-16:12/8 16:36	07:10 16:37
24	07:08 16:29-16:42/13 17:06	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24	05:48 20:14	06:15 19:38	06:43 18:50	07:12 18:05	06:46 16:04-16:12/8 16:36	07:11 16:37
25	07:07 16:29-16:43/14 17:07	06:34 17:42	05:52 18:11	06:06 19:41	05:35 20:08	05:30 20:24	05:49 20:13	06:16 19:37	06:44 18:49	06:13 17:04	06:47 16:06-16:12/6 16:35	07:11 16:38
26	07:07 16:29-16:44/15 17:08	06:33 17:43	05:50 18:12	06:04 19:41	05:35 20:09	05:31 20:24	05:50 20:12	06:17 19:36	06:45 18:47	06:14 17:03	06:48 16:06-16:11/5 16:35	07:12 16:38
27	07:06 16:29-16:45/16 17:09	06:31 17:44	05:49 18:13	06:03 19:42	05:34 20:10	05:31 20:24	05:50 20:12	06:18 19:34	06:46 18:45	06:15 17:01	06:49 16:07-16:11/4 16:35	07:12 16:39
28	07:05 16:30-16:47/17 17:10	06:30 17:45	05:47 18:14	06:02 19:43	05:34 20:11	05:31 20:24	05:51 20:11	06:19 19:33	06:47 18:44	06:17 17:00	06:50 16:07-16:10/3 16:34	07:12 16:40
29	07:04 16:30-16:48/18 17:12		06:46 19:14	06:01 19:44	05:33 20:11	05:32 20:24	05:52 20:10	06:20 19:31	06:48 18:42	06:18 16:59	06:51 16:08-16:10/2 16:34	07:13 16:40
30	07:04 16:31-16:50/19 17:13		06:44 19:15	05:59 19:45	05:33 20:12	05:32 20:24	05:53 20:09	06:21 19:30	06:49 18:41	06:19 16:58	06:52 16:09-16:10/1 16:34	07:13 16:41
31	07:03 16:31-16:51/20 17:14		06:43 19:16		05:32 20:13		05:54 20:08	06:22 19:28		06:20 16:56		07:13 16:42
Potential sun hours	303	300	370	396	443	445	453	424	374	347	303	294
Sum of minutes with flicker	215	153	0	0	0	0	0	0	0	0	371	0

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

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

Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 8 - WTG 2B

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13 11:06-12:37/91 15:46-16:03/17 16:43 08:04-09:43/99	07:02 08:13-10:47/154 17:15 16:31-16:43/12	06:29 09:03-11:08/125 17:47	06:41 09:13-11:05/112 19:17	05:58 09:06-10:18/72 19:46	05:32 20:14
2	07:14 11:06-12:37/91 15:47-16:04/17 16:44 08:04-09:43/99	07:01 08:14-10:48/154 17:16 16:32-16:44/12	06:27 09:04-11:08/124 17:48	06:40 09:10-11:03/113 19:18	05:57 09:07-10:17/70 19:47	05:31 20:14
3	07:14 11:07-12:37/90 15:47-16:05/18 16:44 08:04-09:44/100	07:00 08:16-10:50/154 17:17 16:32-16:46/14	06:26 09:04-11:07/123 17:49	06:38 09:09-11:03/114 19:19	05:56 09:07-10:14/67 19:48	05:31 20:15
4	07:14 11:08-12:38/90 15:48-16:06/18 16:45 08:04-09:44/100	06:59 08:18-10:52/154 17:19 16:33-16:45/12	06:24 09:05-11:07/122 17:50	06:36 09:06-11:01/115 19:20	05:55 09:08-10:13/65 19:49	05:31 20:16
5	07:14 11:08-12:38/90 15:49-16:07/18 16:46 08:04-09:45/101	06:58 08:32-10:53/141 16:41-16:47/6 17:20 08:21-08:30/9 16:34-16:40/6	06:23 09:05-11:05/120 17:51	06:35 09:05-11:00/115 19:21	05:53 09:09-10:12/63 19:50	05:30 20:16
6	07:14 11:09-12:38/89 15:50-16:07/17 16:47 08:04-09:45/101	06:57 08:32-10:55/143 17:21 16:36-16:49/13	06:21 09:06-11:05/119 17:52	06:33 09:02-10:58/116 19:22	05:52 09:10-10:10/60 19:51	05:30 20:17
7	07:14 11:10-12:38/88 15:51-16:07/16 16:48 08:04-09:46/102	06:56 08:33-10:56/143 17:22 16:38-16:51/13	06:20 09:06-11:04/118 17:53	06:32 09:01-10:57/116 19:23	05:51 09:11-10:09/58 19:52	05:30 20:18
8	07:14 11:11-12:38/87 15:52-16:08/16 16:49 08:04-09:47/103	06:55 08:34-10:58/144 17:23 16:44-16:53/9	06:18 09:06-11:03/117 17:54	06:30 09:00-10:55/115 19:24	05:50 09:12-10:07/55 19:53	05:29 20:18
9	07:14 11:12-12:38/86 15:52-16:07/15 16:50 08:05-09:47/102	06:54 08:34-10:59/145 17:24 16:46-16:54/8	06:17 09:03-11:01/118 17:55	06:29 09:01-10:54/113 19:25	05:49 09:13-10:06/53 19:54	05:29 20:19
10	07:14 11:12-12:37/85 15:53-16:06/13 16:51 08:04-09:47/103	06:53 08:35-11:01/146 17:26	06:15 09:02-11:00/118 17:56	06:27 09:00-10:52/112 19:26	05:48 09:14-10:04/50 19:55	05:29 20:19
11	07:13 11:14-12:37/83 16:09-16:11/2 16:52 08:04-09:48/104 15:55-16:07/12	06:52 08:36-11:02/146 17:27	06:14 08:59-10:58/119 17:57	06:26 09:00-10:51/111 19:27	05:47 09:15-10:02/47 19:56	05:29 20:20
12	07:13 11:15-12:37/82 16:10-16:13/3 16:53 08:05-09:48/103 15:57-16:08/11	06:51 08:37-11:03/146 17:28	06:12 08:57-10:57/120 17:58	06:24 09:00-10:49/109 19:28	05:46 09:16-10:01/45 19:57	05:29 20:20
13	07:13 11:15-12:36/81 15:58-16:13/15 16:54 08:04-09:48/104	06:50 08:38-11:04/146 17:29	06:11 08:55-10:55/120 17:59	06:23 09:00-10:48/108 19:29	05:45 09:17-09:59/42 19:58	05:29 20:21
14	07:13 11:17-12:36/79 16:03-16:15/12 16:55 08:04-09:49/105	06:49 08:39-11:04/145 17:30	06:09 08:52-10:53/121 18:00	06:21 09:00-10:45/105 19:30	05:44 09:18-09:57/39 19:59	05:29 20:21
15	07:12 11:18-12:36/78 16:04-16:17/13 16:56 08:05-09:52/107	06:47 08:40-11:05/145 17:31	06:08 08:51-10:51/120 18:01	06:20 09:00-10:44/104 19:31	05:43 09:21-09:56/35 20:00	05:29 20:21
16	07:12 11:19-12:35/76 16:04-16:18/14 16:57 08:04-09:55/111	06:46 08:42-11:06/144 17:32	06:06 08:48-10:48/120 18:02	06:18 09:00-10:42/102 19:32	05:42 09:22-09:54/32 20:01	05:29 20:22
17	07:12 11:21-12:35/74 16:05-16:20/15 16:58 08:05-09:58/113	06:45 08:44-11:07/143 17:33	06:05 08:46-10:46/120 18:03	06:17 09:00-10:41/101 19:33	05:41 09:24-09:52/28 20:01	05:29 20:22
18	07:11 11:22-12:33/71 16:06-16:21/15 16:59 08:05-10:00/115	06:44 08:45-11:07/142 17:35	06:03 08:44-10:44/120 18:04	06:15 09:01-10:39/98 19:34	05:41 09:26-09:49/23 20:02	05:29 20:23
19	07:11 11:24-12:33/69 16:07-16:23/16 17:00 08:05-10:03/118	06:42 08:49-11:08/139 17:36	06:01 08:42-10:41/119 18:05	06:14 09:01-10:37/96 19:35	05:40 09:28-09:46/18 20:03	05:29 20:23
20	07:10 11:25-12:31/66 16:08-16:24/16 17:01 08:05-10:07/122	06:41 09:03-11:08/125 17:37 08:55-09:02/7	06:00 08:40-10:38/118 18:06	06:13 09:01-10:36/95 19:36	05:39 09:33-09:43/10 20:04	05:29 20:23
21	07:10 11:28-12:31/63 16:10-16:26/16 17:03 08:06-10:10/124	06:40 09:02-11:08/126 17:38	05:58 08:37-10:35/118 18:07	06:11 09:01-10:34/93 19:37	05:38 20:05 20:23	05:29 20:23
22	07:09 11:29-12:29/60 16:11-16:27/16 17:04 08:06-10:13/127	06:38 09:03-11:09/126 17:39	05:57 08:35-10:32/117 18:08	06:10 09:01-10:32/91 19:38	05:37 20:06 20:24	05:30 20:24
23	07:09 11:31-12:26/55 16:13-16:29/16 17:05 08:06-10:15/129	06:37 09:03-11:09/126 17:40	05:55 08:33-10:29/116 18:09	06:09 09:02-10:31/89 19:39	05:37 20:07 20:24	05:30 20:24
24	07:08 11:35-12:25/50 16:17-16:28/11 17:06 08:07-10:20/133	06:36 09:02-11:09/127 17:41	05:54 08:31-10:26/115 18:10	06:07 09:02-10:29/87 19:40	05:36 20:07 20:24	05:30 20:24
25	07:07 11:37-12:22/45 16:19-16:26/7 17:07 08:07-10:27/140	06:34 09:03-11:09/126 17:42	05:52 08:28-10:22/114 18:11	06:06 09:02-10:27/85 19:41	05:35 20:08 20:24	05:30 20:24
26	07:07 11:41-12:18/37 17:08 08:08-10:31/143	06:33 09:02-11:08/126 17:43	05:50 08:26-10:18/112 18:12	06:05 09:03-10:26/83 19:42	05:35 20:09 20:24	05:31 20:24
27	07:06 11:47-12:14/27 16:29-16:31/2 17:09 08:09-10:35/146	06:32 09:03-11:09/126 17:44	05:49 08:24-10:15/111 18:13	06:03 09:04-10:25/81 19:43	05:34 20:10 20:24	05:31 20:24
28	07:05 11:58-12:03/5 16:30-16:34/4 17:10 08:09-10:38/149	06:30 09:03-11:09/126 17:45	05:47 08:22-10:11/109 18:14	06:02 09:04-10:22/78 19:44	05:34 20:11 20:24	05:31 20:24
29	07:04 08:10-10:40/150 17:12 16:30-16:35/5		06:46 09:20-11:08/108 19:15	06:01 09:04-10:21/77 19:44	05:33 20:11 20:24	05:32 20:24
30	07:04 08:11-10:43/152 17:13 16:31-16:37/6		06:44 09:17-11:07/110 19:16	05:59 09:05-10:20/75 19:45	05:33 20:12 20:24	05:32 20:24
31	07:03 08:12-10:45/153 17:14 16:31-16:39/8		06:43 09:16-11:06/110 19:17		05:32 20:13 20:24	05:32 20:24
	Potential sun hours 303	300	370	396	443	445
	Sum of minutes with flicker 6046	4029	3641	3009	932	0

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

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

Project:

WP\_Sambucello\_REV01

### SHADOW - Calendar per WTG

WTG: 8 - WTG 2B

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	July	August	September	October	November	December	
1	05:33 20:24	05:55 09:26-10:12/46 20:07	06:23 08:59-10:50/111 19:27	06:50 09:35-11:35/120 18:39	06:21 08:05-10:30/145 16:55	06:53 10:56-12:19/83 15:51-15:53/2 16:33 07:46-09:30/104 15:37-15:49/12	
2	05:33 20:24	05:56 09:25-10:14/49 20:06	06:24 08:59-10:51/112 19:25	06:51 09:37-11:36/119 18:37	06:22 08:04-10:29/145 16:54 16:15-16:24/9	06:54 10:55-12:20/85 15:52-15:53/1 16:33 07:47-09:30/103 15:36-15:49/13	
3	05:34 20:24	05:57 09:24-10:15/51 20:05	06:25 08:59-10:52/113 19:24	06:52 09:38-11:37/119 18:36	06:23 08:03-10:27/144 16:53 16:13-16:23/10	06:55 10:55-12:21/86 15:36-15:51/15 16:33 07:48-09:30/102	
4	05:34 20:24	05:57 09:23-10:17/54 20:04	06:25 08:57-10:52/115 19:22	06:53 09:40-11:38/118 18:34	06:24 08:03-10:26/143 16:52 16:08-16:21/13	06:56 10:55-12:22/87 15:36-15:52/16 16:33 07:48-09:31/103	
5	05:35 20:24	05:58 09:21-10:17/56 20:03	06:26 08:57-10:53/116 19:21	06:54 09:42-11:39/117 18:33	06:25 08:02-10:25/143 16:51 16:05-16:19/14	06:57 10:55-12:23/88 15:36-15:52/16 16:33 07:49-09:31/102	
6	05:35 20:23	05:59 09:20-10:19/59 20:02	06:27 08:58-10:54/116 19:19	06:54 09:43-11:40/117 18:31	06:26 08:03-10:24/141 16:04-16:17/13 16:50 07:52-08:02/10	06:58 10:55-12:24/89 15:36-15:53/17 16:33 07:50-09:31/101	
7	05:36 20:23	06:00 09:19-10:20/61 20:01	06:28 09:00-10:55/115 19:17	06:55 09:42-11:40/118 18:30	06:28 07:48-10:23/155 16:49 16:04-16:16/12	06:59 10:55-12:25/90 15:36-15:54/18 16:33 07:51-09:32/101	
8	05:36 20:23	06:01 09:18-10:22/64 19:59	06:29 09:01-10:56/115 19:16	06:56 09:41-11:41/120 18:28	06:29 07:46-10:21/155 16:48 16:03-16:17/14	07:00 10:56-12:26/90 15:36-15:54/18 16:33 07:52-09:32/100	
9	05:37 20:23	06:02 09:17-10:23/66 19:58	06:30 09:03-10:57/114 19:14	06:57 09:40-11:41/121 18:27	06:30 07:45-10:19/154 16:47 16:02-16:15/13	07:01 10:56-12:26/90 15:36-15:54/18 16:33 07:53-09:33/100	
10	05:38 20:22	06:03 09:16-10:25/69 19:57	06:31 09:03-10:56/113 19:13	06:58 09:39-11:41/122 18:25	06:31 07:44-10:17/153 16:02-16:11/9 16:46 16:12-16:14/2	07:02 10:55-12:26/91 15:36-15:53/17 16:33 07:53-09:32/99	
11	05:38 20:22	06:04 09:15-10:26/71 19:56	06:32 09:05-10:57/112 19:11	06:59 09:38-11:42/124 18:24	06:32 07:44-10:15/151 16:45 16:02-16:10/8	07:03 10:56-12:27/91 15:36-15:53/17 16:33 07:54-09:33/99	
12	05:39 20:21	06:05 09:15-10:27/72 19:55	06:33 09:07-10:57/110 19:09	07:00 09:37-11:42/125 18:22	06:33 07:43-10:14/151 16:44 16:03-16:09/6	07:03 10:56-12:28/92 15:37-15:53/16 16:33 07:55-09:33/98	
13	05:40 20:21	06:06 09:13-10:28/75 19:53	06:33 09:08-10:58/110 19:08	07:01 09:36-11:42/126 18:21	06:34 07:42-10:12/150 16:43 16:02-16:07/5	07:04 10:57-12:29/92 15:37-15:53/16 16:33 07:56-09:34/98	
14	05:40 20:20	06:06 09:12-10:29/77 19:52	06:34 09:10-10:58/108 19:06	07:02 09:36-11:41/125 18:19	06:35 11:28-11:36/8 16:02-16:06/4 16:43 07:41-10:10/149	07:05 10:56-12:29/93 15:37-15:53/16 16:33 07:56-09:34/98	
15	05:41 20:20	06:07 09:11-10:30/79 19:51	06:35 09:11-11:00/109 19:05	07:03 09:35-11:41/126 18:18	06:36 11:19-11:46/27 16:02-16:04/2 16:42 07:41-10:07/146	07:06 10:57-12:30/93 15:38-15:53/15 16:33 07:57-09:34/97	
16	05:42 20:19	06:08 09:11-10:32/81 19:50	06:36 09:13-11:04/111 19:03	07:04 09:35-11:41/126 18:16	06:37 11:14-11:51/37 16:41 07:41-10:04/143	07:06 10:57-12:31/94 15:38-15:53/15 16:34 07:58-09:35/97	
17	05:42 20:19	06:09 09:10-10:33/83 19:48	06:37 09:15-11:07/112 19:01	07:05 09:34-11:41/127 18:15	06:39 11:11-11:56/45 15:53-16:00/7 16:40 07:41-10:01/140	07:07 10:57-12:31/94 15:24-15:28/4 16:34 07:58-09:35/97 15:38-15:53/15	
18	05:43 20:18	06:10 09:09-10:34/85 19:47	06:38 09:15-11:09/114 19:00	07:06 09:34-11:40/126 18:13	06:40 11:08-11:59/51 15:51-16:02/11 16:40 07:41-09:54/133	07:08 10:58-12:32/94 15:25-15:30/5 16:34 08:00-09:36/96 15:39-15:54/15	
19	05:44 20:18	06:11 09:08-10:36/88 19:45	06:39 09:17-11:12/115 18:58	07:07 09:33-11:40/127 18:12	06:41 11:06-12:01/55 15:48-16:04/16 16:39 07:41-09:50/129	07:08 10:59-12:33/94 15:25-15:31/6 16:35 08:01-09:37/96 15:40-15:54/14	
20	05:45 20:17	06:12 09:07-10:36/89 19:44	06:40 09:19-11:14/115 18:57	07:08 09:33-11:39/126 18:11	06:42 11:04-12:04/60 15:46-16:02/16 16:38 07:41-09:48/127	07:09 10:59-12:33/93 15:25-15:31/6 16:35 08:01-09:36/95 15:40-15:54/14	
21	05:45 20:16	06:13 09:06-10:37/91 19:43	06:41 09:20-11:17/117 18:55	07:09 09:33-11:38/125 18:09	06:43 11:03-12:06/63 15:45-16:01/16 16:38 07:41-09:45/124	07:09 11:00-12:33/93 15:25-15:33/8 16:36 08:02-09:37/95 15:41-15:55/14	
22	05:46 20:16	06:14 09:06-10:39/93 19:41	06:41 09:22-11:19/117 18:53	07:10 09:22-11:38/136 18:08	06:44 11:01-12:07/66 15:44-16:00/16 16:37 07:41-09:43/122	07:10 11:00-12:33/93 15:25-15:33/8 16:36 08:02-09:37/95 15:41-15:55/14	
23	05:47 20:15	06:15 09:05-10:40/95 19:40	06:42 09:23-11:22/119 18:52	07:11 09:17-11:37/140 18:07	06:45 11:00-12:09/69 15:43-15:59/16 16:36 07:42-09:39/117	07:10 11:01-12:34/93 15:26-15:33/7 16:37 08:03-09:38/95 15:41-15:55/14	
24	05:48 09:40-09:55/15 20:14	06:16 09:04-10:41/97 19:39	06:43 09:25-11:24/119 18:50	07:12 09:15-11:37/142 18:05	06:46 11:00-12:11/71 15:44-15:59/15 16:36 07:43-09:38/115	07:11 11:01-12:34/93 15:27-15:33/6 16:37 08:03-09:38/95 15:42-15:56/14	
25	05:49 09:38-09:58/20 20:13	06:16 09:04-10:43/99 19:37	06:44 09:27-11:26/119 18:49	06:13 08:13-10:36/143 17:04	06:47 10:59-12:13/74 15:43-15:58/15 16:35 07:43-09:36/113	07:11 11:01-12:35/94 15:27-15:33/6 16:38 08:03-09:39/96 15:42-15:56/14	
26	05:50 09:36-10:01/25 20:12	06:17 09:03-10:44/101 19:36	06:45 09:27-11:27/120 18:47	06:14 08:11-10:36/145 17:03	06:48 10:58-12:14/76 15:43-15:57/14 16:35 07:43-09:34/111	07:12 11:02-12:36/94 15:29-15:34/5 16:38 08:03-09:40/97 15:43-15:58/15	
27	05:50 09:34-10:03/29 20:12	06:18 09:03-10:45/102 19:34	06:46 09:29-11:29/120 18:45	06:16 08:10-10:35/145 17:01	06:49 10:57-12:15/78 15:43-15:56/13 16:35 07:44-09:31/107	07:12 11:02-12:36/94 15:31-15:32/1 16:39 08:03-09:40/97 15:43-15:58/15	
28	05:51 09:32-10:05/33 20:11	06:19 09:01-10:45/104 19:33	06:47 09:30-11:31/121 18:44	06:17 08:08-10:34/146 17:00	06:50 10:57-12:16/79 15:43-15:55/12 16:34 07:44-09:29/105	07:12 11:03-12:36/93 15:44-15:55/14 16:40 08:03-09:40/97	
29	05:52 09:30-10:06/36 20:10	06:20 09:01-10:46/105 19:31	06:48 09:32-11:32/120 18:42	06:18 08:07-10:33/146 16:59	06:51 10:56-12:17/81 15:40-15:54/14 16:34 07:45-09:29/104	07:13 11:03-12:36/93 15:44-15:59/15 16:40 08:03-09:41/98	
30	05:53 09:29-10:08/39 20:09	06:21 09:00-10:48/108 19:30	06:49 09:34-11:34/120 18:41	06:19 08:06-10:31/145 16:58	06:52 10:56-12:18/82 15:51-15:54/3 16:34 07:46-09:29/103 15:38-15:50/12	07:13 11:04-12:37/93 15:45-16:01/16 16:41 08:04-09:42/98	
31	05:54 09:27-10:10/43 20:08	06:22 09:00-10:49/109 19:28		06:20 08:06-10:31/145 16:57		07:13 11:05-12:37/92 15:46-16:02/16 16:42 08:04-09:42/98	
	Potential sun hours Sum of minutes with flicker	453 240	424 2479	374 3448	347 4007	303 5380	294 6421

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

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

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 9 - WTG 6

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13 12:24-14:15/111 16:43 09:16-09:58/42	07:02 13:20-13:54/34 17:15	06:29 17:46	06:41 07:18-07:40/22 19:17	05:58 19:21-19:24/3 19:46	05:32 20:14
2	07:14 12:25-14:15/110 16:44 09:16-09:58/42	07:01 13:23-13:51/28 17:16	06:27 17:48	06:39 07:17-07:39/22 19:18	05:57 19:22-19:25/3 19:47	05:31 20:14
3	07:14 12:26-14:16/110 16:44 09:17-09:58/41	07:00 13:27-13:48/21 17:17	06:26 17:49	06:38 07:16-07:39/23 19:19	05:56 19:22-19:26/4 19:48	05:31 20:15
4	07:14 12:27-14:16/109 16:45 09:18-09:58/40	06:59 13:34-13:42/8 17:19	06:24 17:50	06:36 07:14-07:38/24 19:20	05:55 19:24-19:27/3 19:49	05:30 20:16
5	07:14 12:27-14:16/109 16:46 09:18-09:59/41	06:58 17:20	06:23 17:51	06:35 07:13-07:37/24 19:21	05:53 19:26-19:28/2 19:50	05:30 20:16
6	07:14 12:28-14:16/108 16:47 09:19-09:59/40	06:57 17:21	06:21 17:52	06:33 07:12-07:35/23 19:22	05:52 19:51	05:30 20:17
7	07:14 12:29-14:17/108 16:48 09:20-09:59/39	06:56 17:22	06:20 17:53	06:32 07:11-07:33/22 19:23	05:51 19:52	05:30 20:17
8	07:14 12:31-14:17/106 16:49 09:21-09:59/38	06:55 17:23	06:18 17:54	06:30 07:09-07:31/22 19:24	05:50 19:53	05:29 20:18
9	07:14 12:31-14:16/105 16:50 09:20-09:58/38	06:54 17:24	06:17 17:55	06:29 07:08-07:31/23 19:25	05:49 19:54	05:29 20:19
10	07:13 12:32-14:16/104 16:51 09:21-09:58/37	06:53 17:25	06:15 17:56	06:27 07:07-07:30/23 19:26	05:48 19:55	05:29 20:19
11	07:13 12:34-14:17/103 16:52 09:22-09:59/37	06:52 17:27	06:14 17:57	06:26 07:06-07:29/23 19:27	05:47 19:56	05:29 20:20
12	07:13 12:35-14:17/102 16:53 09:24-09:59/35	06:51 17:28	06:12 17:58	06:24 07:05-07:28/23 19:28	05:46 19:57	05:29 20:20
13	07:13 12:36-14:16/100 16:54 09:24-09:58/34	06:50 17:29	06:11 17:59	06:23 07:06-07:27/21 19:29	05:45 19:58	05:29 20:21
14	07:13 12:38-14:16/98 16:55 09:25-09:58/33	06:48 17:30	06:09 18:00	06:21 07:05-07:25/20 19:30	05:44 19:59	05:29 20:21
15	07:12 12:40-14:16/96 16:56 09:27-09:58/31	06:47 17:31	06:08 18:01	06:20 07:06-07:25/19 19:31	05:43 20:00	05:29 20:21
16	07:12 12:41-14:15/94 16:57 09:27-09:56/29	06:46 17:32	06:06 18:02	06:18 07:06-07:23/17 19:32	05:42 20:00	05:29 20:22
17	07:12 12:43-14:15/92 16:58 09:29-09:56/27	06:45 17:33	06:05 18:03	06:17 07:07-07:22/15 19:33	05:41 20:01	05:29 20:22
18	07:11 12:45-14:14/89 16:59 09:30-09:55/25	06:44 17:35	06:03 18:04	06:15 07:09-07:21/12 19:34	05:40 20:02	05:29 20:22
19	07:11 12:48-14:14/86 17:00 09:32-09:54/22	06:42 17:36	06:01 18:05	06:14 07:11-07:17/6 19:35	05:40 20:03	05:29 20:23
20	07:10 12:51-14:12/81 17:01 09:33-09:52/19	06:41 17:37	06:00 18:06	06:13 19:36	05:39 20:04	05:29 20:23
21	07:10 12:57-14:12/75 17:02 09:37-09:50/13	06:40 17:38	05:58 18:07	06:11 19:37	05:38 20:05	05:29 20:23
22	07:09 13:04-14:10/66 17:04 09:42-09:45/3	06:38 17:39	05:57 18:08	06:10 19:38	05:37 20:06	05:29 20:24
23	07:09 13:04-14:07/63 17:05	06:37 17:40	05:55 18:09	06:08 19:39	05:37 20:07	05:30 20:24
24	07:08 13:06-14:04/58 17:06	06:36 17:41	05:54 18:10	06:07 19:40	05:36 20:07	05:30 20:24
25	07:07 13:07-14:01/54 17:07	06:34 17:42	05:52 06:27-06:36/9 18:11	06:06 19:41	05:35 20:08	05:30 20:24
26	07:07 13:08-14:00/52 17:08	06:33 17:43	05:50 06:23-06:38/15 18:12	06:04 19:19-19:20/1 19:42	05:35 20:09	05:31 20:24
27	07:06 13:10-13:59/49 17:09	06:31 17:44	05:49 06:22-06:40/18 18:13 06:41-06:42/1	06:03 19:19-19:21/2 19:42	05:34 20:10	05:31 20:24
28	07:05 13:12-13:59/47 17:10	06:30 17:45	05:47 06:20-06:41/21 18:14	06:02 19:19-19:21/2 19:43	05:34 20:11	05:31 20:24
29	07:04 13:14-13:58/44 17:12		06:46 07:20-07:41/21 19:15	06:01 19:19-19:22/3 19:44	05:33 20:11	05:32 20:24
30	07:04 13:16-13:57/41 17:13		06:44 07:19-07:41/22 19:15	05:59 19:20-19:23/3 19:45	05:32 20:12	05:32 20:24
31	07:03 13:18-13:55/37 17:14		06:43 07:19-07:41/22 19:16		05:32 20:13	
Potential sun hours	303	300	370	396	443	445
Sum of minutes with flicker	3313	91	129	395	15	0

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

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

## SHADOW - Calendar per WTG

WTG: 9 - WTG 6

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time	
0	Sum
8,760	8,760

	July	August	September	October	November	December
1	05:33 20:24	05:55 20:07	06:23 07:05-07:28/23 19:27	06:50 18:39	06:21 16:55	06:53 12:16-13:59/103 16:33 09:05-09:41/36
2	05:33 20:24	05:56 20:06	06:24 07:06-07:29/23 19:25	06:51 18:37	06:22 16:54	06:54 12:15-13:59/104 16:33 09:04-09:41/37
3	05:33 20:24	05:56 20:05	06:24 07:06-07:29/23 19:24	06:52 18:36	06:23 16:53	06:55 12:15-14:00/105 16:33 09:04-09:42/38
4	05:34 20:24	05:57 20:04	06:25 07:06-07:28/22 19:22	06:52 18:34	06:24 16:52	06:56 12:15-14:01/106 16:33 09:05-09:43/38
5	05:35 20:24	05:58 20:03	06:26 07:07-07:29/22 19:20	06:53 18:33	06:25 16:51	06:57 12:15-14:02/107 16:33 09:05-09:44/39
6	05:35 20:23	05:59 20:02	06:27 07:08-07:31/23 19:19	06:54 18:31	06:26 16:50	06:58 12:15-14:02/107 16:33 09:05-09:45/40
7	05:36 20:23	06:00 20:00	06:28 07:08-07:32/24 19:17	06:55 18:30	06:27 13:04-13:14/10 16:49	06:59 12:15-14:03/108 16:32 09:05-09:46/41
8	05:36 20:23	06:01 19:35-19:37/2 19:59	06:29 07:09-07:33/24 19:16	06:56 18:28	06:29 12:58-13:20/22 16:48	07:00 12:15-14:04/109 16:32 09:06-09:46/40
9	05:37 20:22	06:02 19:33-19:36/3 19:58	06:30 07:10-07:33/23 19:14	06:57 18:27	06:30 12:54-13:22/28 16:47	07:01 12:14-14:04/110 16:32 09:06-09:47/41
10	05:37 20:22	06:03 19:32-19:35/3 19:57	06:31 07:11-07:33/22 19:13	06:58 18:25	06:31 12:51-13:25/34 16:46	07:02 12:14-14:04/110 16:33 09:05-09:47/42
11	05:38 20:22	06:04 19:30-19:34/4 19:56	06:32 07:10-07:33/23 19:11	06:59 18:24	06:32 12:48-13:26/38 16:45	07:02 12:14-14:05/111 16:33 09:06-09:48/42
12	05:39 20:21	06:05 19:29-19:32/3 19:55	06:32 07:10-07:32/22 19:09	07:00 18:22	06:33 12:47-13:29/42 16:44	07:03 12:15-14:06/111 16:33 09:07-09:49/42
13	05:39 20:21	06:05 19:28-19:31/3 19:53	06:33 07:10-07:32/22 19:08	07:01 18:21	06:34 12:46-13:30/44 16:43	07:04 12:15-14:07/112 16:33 09:07-09:49/42
14	05:40 20:20	06:06 19:27-19:30/3 19:52	06:34 07:10-07:31/21 19:06	07:02 18:19	06:35 12:44-13:31/47 16:42	07:05 12:15-14:07/112 16:33 09:07-09:49/42
15	05:41 20:20	06:07 19:27-19:29/2 19:51	06:35 07:10-07:31/21 19:05	07:03 18:18	06:36 12:43-13:32/49 16:42	07:05 12:15-14:08/113 16:33 09:07-09:50/43
16	05:42 20:19	06:08 19:26-19:27/1 19:49	06:36 07:11-07:29/18 19:03	07:04 18:16	06:37 12:41-13:33/52 16:41	07:06 12:16-14:08/112 16:34 09:08-09:51/43
17	05:42 20:19	06:09 19:48	06:37 07:12-07:28/16 19:01	07:05 18:15	06:39 12:40-13:34/54 16:40	07:07 12:16-14:08/112 16:34 09:08-09:51/43
18	05:43 20:18	06:10 19:47	06:38 07:13-07:24/11 19:00	07:06 18:13	06:40 12:40-13:38/58 16:39	07:08 12:17-14:09/112 16:34 09:09-09:52/43
19	05:44 20:18	06:11 19:45	06:39 18:58	07:07 18:12	06:41 12:39-13:42/63 16:39	07:08 12:17-14:10/113 16:35 09:10-09:53/43
20	05:45 20:17	06:12 19:44	06:40 18:57	07:08 18:11	06:42 12:39-13:45/66 16:38 09:17-09:20/3	07:09 12:17-14:10/113 16:35 09:10-09:53/43
21	05:45 20:16	06:13 19:43	06:41 18:55	07:09 18:09	06:43 12:32-13:47/75 16:38 09:12-09:25/13	07:09 12:18-14:11/113 16:36 09:11-09:53/42
22	05:46 20:16	06:14 19:41	06:41 18:53	07:10 18:08	06:44 12:27-13:48/81 16:37 09:10-09:28/18	07:10 12:18-14:11/113 16:36 09:11-09:53/42
23	05:47 20:15	06:15 19:40	06:42 18:52	07:11 18:07	06:45 12:24-13:50/86 16:36 09:08-09:30/22	07:10 12:18-14:11/113 16:37 09:12-09:55/43
24	05:48 20:14	06:15 07:14-07:21/7 19:38	06:43 18:50	07:12 18:05	06:46 12:23-13:52/89 16:36 09:08-09:33/25	07:11 12:19-14:12/113 16:37 09:12-09:55/43
25	05:49 20:13	06:16 07:11-07:24/13 19:37	06:44 18:49	06:13 17:04	06:47 12:21-13:53/92 16:35 09:07-09:34/27	07:11 12:20-14:12/112 16:38 09:12-09:55/43
26	05:50 20:12	06:17 07:10-07:25/15 19:36	06:45 18:47	06:14 17:03	06:48 12:20-13:54/94 16:35 09:06-09:35/29	07:12 12:21-14:13/112 16:38 09:13-09:56/43
27	05:50 20:12	06:18 07:09-07:26/17 19:34	06:46 18:45	06:15 17:01	06:49 12:19-13:55/96 16:35 09:06-09:37/31	07:12 12:21-14:13/112 16:39 09:13-09:56/43
28	05:51 20:11	06:19 07:07-07:26/19 19:33	06:47 18:44	06:17 17:00	06:50 12:18-13:56/98 16:34 09:05-09:38/33	07:12 12:21-14:13/112 16:40 09:13-09:56/43
29	05:52 20:10	06:20 07:06-07:26/20 19:31	06:48 18:42	06:18 16:59	06:51 12:17-13:57/100 16:34 09:05-09:39/34	07:13 12:22-14:14/112 16:40 09:14-09:56/42
30	05:53 20:09	06:21 07:06-07:27/21 19:30	06:49 18:41	06:19 16:58	06:52 12:16-13:58/102 16:34 09:05-09:40/35	07:13 12:23-14:15/112 16:41 09:15-09:57/42
31	05:54 20:08	06:22 07:05-07:28/23 19:28		06:20 16:56		07:13 12:24-14:15/111 16:42 09:15-09:57/42
Potential sun hours	453	424	374	347	303	294
Sum of minutes with flicker	0	159	384	0	1790	4711

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

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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## SHADOW - Calendar per WTG

WTG: 10 - WTG 5

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

0	Sum
8,760	8,760

	January	February	March	April	May	June
1	07:13 13:09-14:08/59 16:43 14:20-15:53/93	07:02 15:22-16:31/69 17:15	06:29 16:14-17:03/49 17:47	06:41 07:19-07:34/15 19:17 07:41-07:48/7	05:58 06:45-07:26/41 19:46	05:32 06:36-07:05/29 20:14
2	07:14 13:09-14:08/59 16:44 14:21-15:54/93	07:01 15:23-16:33/70 17:16	06:27 16:16-17:03/47 17:48	06:39 07:16-07:35/19 19:18	05:57 06:44-07:25/41 19:47	05:31 06:37-07:05/28 20:14
3	07:14 13:10-14:09/59 16:44 14:22-15:54/92	07:00 15:24-16:37/73 17:17	06:26 16:17-17:02/45 17:49	06:38 07:15-07:37/22 19:19	05:56 06:42-07:24/42 19:48	05:31 06:38-07:05/27 20:15
4	07:14 13:11-14:09/58 16:45 14:23-15:55/92	06:59 15:25-16:39/74 17:19	06:24 16:19-17:02/43 17:50	06:36 07:13-07:37/24 19:20	05:55 06:41-07:24/43 19:49	05:30 06:38-07:05/27 20:16
5	07:14 13:11-14:09/58 16:46 14:24-15:55/91	06:58 15:26-16:40/74 17:20	06:23 16:22-17:01/39 17:51	06:35 07:13-07:38/25 19:21	05:53 06:40-07:23/43 19:50	05:30 06:39-07:05/26 20:16
6	07:14 13:12-14:10/58 16:47 14:26-15:56/90	06:57 15:27-16:42/75 17:21	06:21 16:27-17:01/34 17:52	06:33 07:12-07:37/25 19:22	05:52 06:40-07:22/42 19:51	05:30 06:40-07:04/24 20:17
7	07:14 13:13-14:10/57 14:45-15:56/71 16:48 14:28-14:44/16	06:56 15:29-16:43/74 17:22	06:20 16:27-16:59/32 17:53	06:32 07:12-07:38/26 19:23 07:39-07:40/1	05:51 06:38-07:22/44 19:52	05:30 06:40-07:04/24 20:17
8	07:14 13:14-14:10/56 14:45-15:57/72 16:49 14:30-14:43/13	06:55 15:30-16:44/74 17:23	06:18 16:28-16:59/31 17:54	06:30 07:11-07:39/28 19:24	05:50 06:37-07:21/44 19:53	05:29 06:40-07:03/23 20:18
9	07:14 13:14-14:09/55 14:33-14:40/7 16:50 14:45-15:56/71	06:54 15:32-16:45/73 17:24	06:17 16:28-16:57/29 17:55	06:29 07:11-07:40/29 19:25	05:49 06:36-07:20/44 19:54	05:29 06:41-07:03/22 20:19
10	07:14 13:15-14:10/55 16:51 14:46-15:58/72	06:53 16:14-16:46/32 17:26 15:35-16:13/38	06:15 16:30-16:56/26 17:56	06:27 07:10-07:39/29 19:26	05:48 06:35-07:19/44 19:55	05:29 06:42-07:03/21 20:19
11	07:13 13:16-14:10/54 16:13-16:15/2 16:52 14:46-16:02/76	06:52 16:14-16:46/32 15:39-15:49/10 17:27 15:52-16:11/19	06:14 16:31-16:53/22 17:57	06:26 07:07-07:39/32 19:27	05:47 06:35-07:18/43 19:56	05:29 06:42-07:03/21 20:20
12	07:13 13:18-14:10/52 16:11-16:19/8 16:53 14:47-16:04/77	06:51 16:14-16:53/39 17:28 15:55-16:05/10	06:12 16:33-16:50/17 17:58	06:24 07:05-07:38/33 19:28	05:46 06:34-07:17/43 19:57	05:29 06:43-07:03/20 20:20
13	07:13 13:18-14:09/51 16:09-16:21/12 16:54 14:47-16:06/79	06:50 16:13-16:55/42 17:29	06:11 16:37-16:47/10 17:59 06:44-06:55/11	06:23 07:05-07:38/33 19:29	05:45 06:33-07:15/42 19:58	05:29 06:43-07:03/20 20:21
14	07:13 13:20-14:10/50 16:55 14:48-16:23/95	06:48 16:13-16:57/44 17:30	06:09 06:41-06:57/16 18:00	06:21 07:04-07:36/32 19:30	05:44 06:33-07:13/40 19:59	05:29 06:44-07:03/19 20:21
15	07:12 13:21-14:10/49 16:56 14:49-16:24/95	06:47 16:13-16:59/46 17:31	06:08 06:40-06:59/19 18:01	06:20 07:01-07:36/35 19:31	05:43 06:34-07:12/38 20:00	05:29 06:45-07:02/17 20:21
16	07:12 13:22-14:09/47 16:57 14:49-16:25/96	06:46 16:13-17:01/48 17:32	06:06 06:39-06:59/20 18:02	06:18 06:57-07:34/37 19:32	05:42 06:33-07:11/38 20:01	05:29 06:45-07:02/17 20:22
17	07:12 13:24-14:09/45 16:58 14:50-16:27/97	06:45 16:12-17:01/49 17:33	06:05 06:38-07:01/23 18:03	06:17 06:55-07:33/38 19:33	05:41 06:33-07:11/38 20:01	05:29 06:45-07:02/17 20:22
18	07:11 13:25-14:08/43 16:59 14:51-16:27/96	06:44 16:11-17:02/51 17:35	06:03 06:36-07:01/25 18:04	06:15 06:54-07:31/37 19:34	05:40 06:32-07:10/38 20:02	05:29 06:46-07:02/16 20:23
19	07:11 13:27-14:08/41 17:00 14:52-16:29/97	06:42 16:11-17:03/52 17:36	06:01 06:34-07:02/28 18:05	06:14 06:52-07:28/36 19:35	05:40 06:32-07:09/37 20:03	05:29 06:46-07:02/16 20:23
20	07:10 13:28-14:07/39 17:01 14:53-16:29/96	06:41 16:12-17:04/52 17:37	06:00 06:32-07:01/29 18:06	06:13 06:51-07:25/34 19:36	05:39 06:33-07:09/36 20:04	05:29 06:47-07:03/16 20:23
21	07:10 13:31-14:06/35 17:02 14:54-16:30/96	06:40 16:11-17:04/53 17:38	05:58 06:30-07:01/31 18:07	06:11 06:49-07:25/36 19:37	05:38 06:33-07:08/35 20:05	05:29 06:47-07:03/16 20:23
22	07:09 13:32-14:05/33 17:04 14:55-16:30/95	06:38 16:11-17:04/53 17:39	05:57 06:30-07:01/31 18:08	06:10 06:49-07:25/36 19:38	05:37 06:33-07:07/34 20:06	05:30 06:47-07:03/16 20:24
23	07:09 13:35-14:03/28 17:05 14:56-16:31/95	06:37 16:12-17:05/53 17:40	05:55 06:29-07:00/31 18:09	06:08 06:48-07:26/38 19:39	05:37 06:33-07:08/35 20:07	05:30 06:47-07:03/16 20:24
24	07:08 13:38-14:01/23 17:06 14:58-16:32/94	06:36 16:11-17:04/53 17:41	05:54 06:29-07:00/31 18:10	06:07 06:47-07:26/39 19:40	05:36 06:33-07:07/34 20:07	05:30 06:48-07:04/16 20:24
25	07:07 13:42-13:58/16 17:07 14:59-16:32/93	06:34 16:12-17:04/52 17:42	05:52 06:28-06:59/31 18:11	06:06 06:46-07:26/40 19:41	05:35 06:34-07:08/34 20:08	05:30 06:47-07:04/17 20:24
26	07:07 15:00-16:32/92 17:08	06:33 16:12-17:03/51 17:43	05:50 06:28-06:58/30 18:12	06:04 06:46-07:26/40 19:42	05:35 06:34-07:07/33 20:09	05:31 06:47-07:04/17 20:24
27	07:06 15:02-16:32/90 17:09	06:32 16:13-17:03/50 17:44	05:49 06:29-06:58/29 18:13	06:03 06:46-07:27/41 19:43	05:34 06:34-07:06/32 20:10	05:31 06:48-07:05/17 20:24
28	07:05 15:05-16:33/88 17:10	06:30 16:13-17:02/49 17:45	05:47 06:29-06:56/27 18:14	06:02 06:45-07:26/41 19:43	05:34 06:35-07:07/32 20:11	05:31 06:47-07:06/19 20:24
29	07:04 15:07-16:32/85 17:12	-	06:46 07:30-07:56/26 19:15	06:01 06:45-07:26/41 19:44	05:33 06:35-07:06/31 20:11	05:32 06:47-07:06/19 20:24
30	07:04 15:21-16:32/71 17:13 15:12-15:18/6	-	06:44 07:31-07:53/22 19:16	05:59 06:45-07:26/41 19:45	05:33 06:36-07:06/30 20:12	05:32 06:47-07:07/20 20:24
31	07:03 15:22-16:32/70 17:14	-	06:43 07:22-07:32/10 19:16 07:34-07:52/18	-	05:32 06:36-07:06/30 20:13	-
Potential sun hours	303	300	370	396	443	445
Sum of minutes with flicker	3954	1634	912	990	1181	603

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

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



Project:

WP\_Sambucello\_REV01

Calculated:

6/19/2023 2:11 PM/3.2.744

### SHADOW - Calendar per WTG

WTG: 10 - WTG 5

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.40	3.90	4.90	6.30	7.50	9.10	10.20	9.60	8.10	6.00	4.50	3.60

Operational time

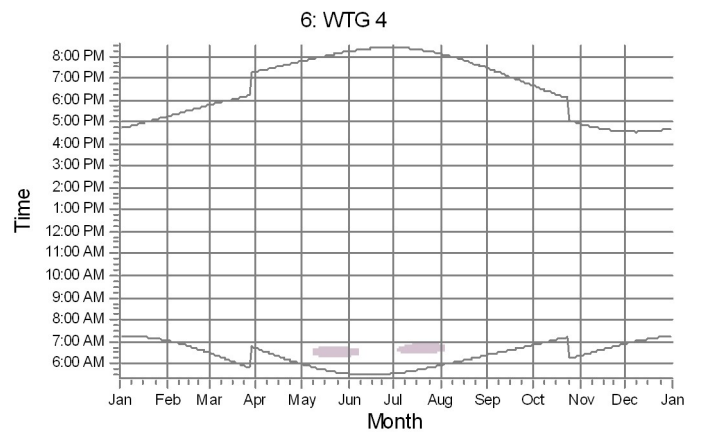
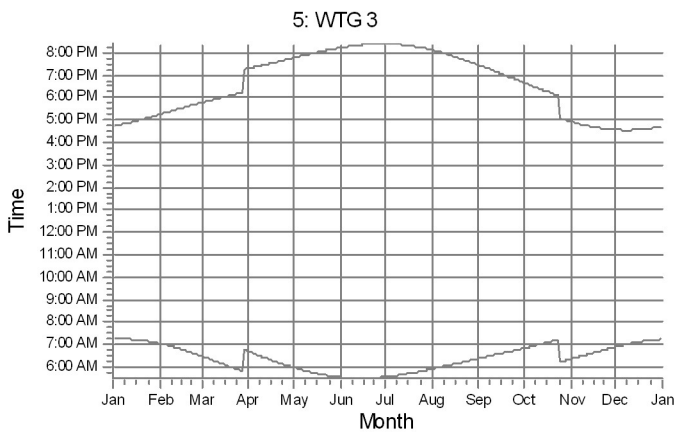
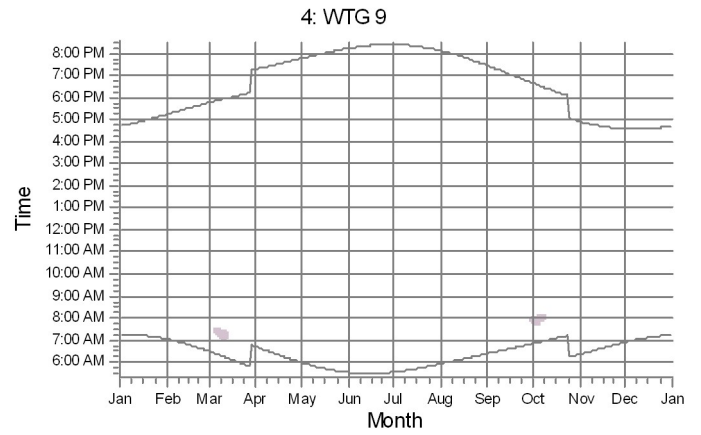
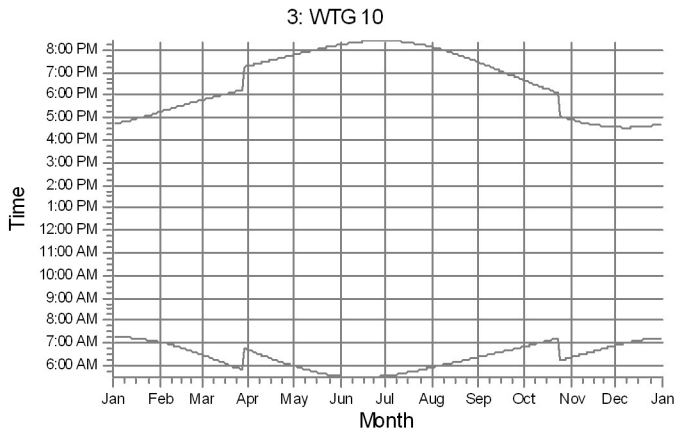
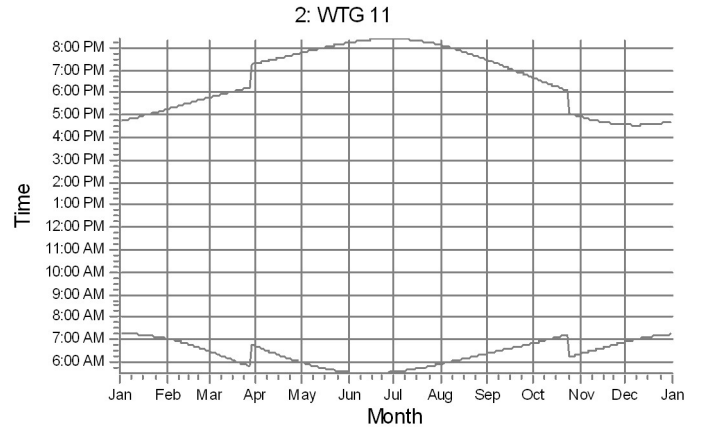
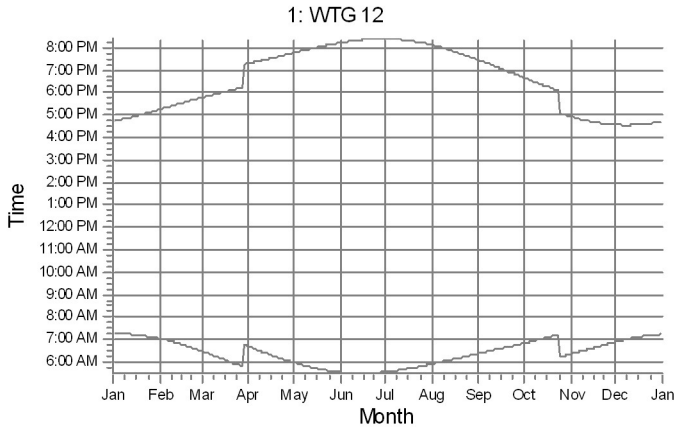
0	Sum
8,760	8,760

	July	August	September	October	November	December
1	05:33 06:47-07:07/20 20:24	05:55 06:45-07:28/43 20:07	06:23 07:06-07:38/32 19:27	06:50 17:14-17:29/15 18:39 07:27-07:32/5	06:21 15:04-16:15/71 16:55	06:53 12:59-13:52/53 15:55-15:58/3 16:33 14:28-15:44/76
2	05:33 06:47-07:08/21 20:24	05:56 06:46-07:29/43 20:06	06:24 07:09-07:38/29 19:25	06:51 17:11-17:31/20 18:37	06:22 15:02-16:15/73 16:54	06:54 12:58-13:53/55 16:33 14:29-15:41/72
3	05:33 06:46-07:08/22 20:24	05:56 06:46-07:30/44 20:05	06:24 07:09-07:38/29 19:24	06:52 17:08-17:33/25 18:36	06:23 15:00-16:14/74 16:53	06:55 12:58-13:53/55 14:17-14:23/6 16:33 14:29-15:40/71
4	05:34 06:46-07:09/23 20:24	05:57 06:47-07:31/44 20:04	06:25 07:08-07:36/28 19:22	06:53 17:07-17:34/27 18:34	06:24 14:58-16:13/75 16:52	06:56 12:58-13:54/56 14:14-14:27/13 16:33 14:29-15:41/72
5	05:35 06:46-07:09/23 20:24	05:58 06:47-07:31/44 20:03	06:26 07:08-07:34/26 19:20 07:35-07:36/1	06:53 17:05-17:35/30 18:33	06:25 14:57-16:12/75 16:51	06:57 12:58-13:55/57 14:30-15:41/71 16:33 14:13-14:29/16
6	05:35 06:46-07:10/24 20:23	05:59 06:48-07:32/44 20:02	06:27 07:08-07:33/25 19:19	06:54 17:04-17:36/32 18:31	06:26 14:56-16:10/74 16:50	16:33 14:12-15:42/90 06:59 12:59-13:56/57
7	05:36 06:45-07:11/26 20:23	06:00 06:50-07:32/42 20:01	06:28 07:08-07:33/25 19:17	06:55 17:03-17:36/33 18:30	06:27 14:56-16:09/73 16:49	16:32 14:12-15:42/90 07:00 12:59-13:57/58
8	05:37 06:45-07:12/27 20:23	06:01 06:50-07:33/43 19:59	06:29 07:08-07:32/24 19:16	06:56 16:59-17:36/37 18:28	06:29 14:55-16:07/72 16:48	16:32 14:11-15:43/92 07:01 12:59-13:58/59
9	05:37 06:45-07:13/28 20:23	06:02 06:51-07:33/42 19:58	06:30 07:09-07:31/22 19:14	06:57 16:55-17:37/42 18:27	06:30 14:54-16:04/70 16:47	16:32 14:11-15:42/91 07:02 12:58-13:58/60
10	05:37 06:45-07:12/27 20:22	06:03 06:52-07:34/42 19:57	06:31 07:10-07:29/19 19:13	06:58 16:53-17:37/44 18:25	06:31 14:53-16:02/69 16:46	16:33 14:10-15:43/93 07:02 12:59-13:58/59
11	05:38 06:45-07:13/28 20:22	06:04 06:53-07:34/41 19:56	06:32 07:11-07:26/15 19:11 07:34-07:39/5	06:59 16:51-17:37/46 18:24	06:32 14:53-16:03/70 16:45	16:33 14:10-15:43/93 07:03 12:59-13:59/60
12	05:39 06:44-07:13/29 20:21	06:05 06:54-07:34/40 19:55	06:33 07:13-07:24/11 19:09 07:25-07:43/18	07:00 16:49-17:36/47 18:22	06:33 14:53-16:04/71 16:44 14:43-14:51/8	16:33 14:10-15:44/94 07:04 13:00-14:00/60
13	05:39 06:44-07:14/30 20:21	06:06 06:53-07:33/40 19:53	06:33 07:23-07:44/21 19:08	07:01 16:47-17:36/49 18:21	06:34 14:39-16:04/85 16:43	16:33 14:10-15:44/94 07:05 12:59-14:00/61
14	05:40 06:44-07:15/31 20:20	06:06 06:53-07:34/41 19:52	06:34 07:21-07:46/25 19:06	07:02 16:46-17:36/50 18:19	06:35 14:36-16:05/89 16:42	16:33 14:10-15:44/94 07:06 13:00-14:01/61
15	05:41 06:44-07:16/32 20:20	06:07 06:53-07:33/40 19:51	06:35 07:19-07:46/27 19:05	07:03 16:45-17:36/51 18:18	06:36 14:35-16:05/90 16:42	16:33 14:10-15:45/95 07:06 13:01-14:01/60
16	05:42 06:43-07:15/32 20:19	06:08 06:53-07:33/40 19:49	06:36 07:18-07:47/29 19:03	07:04 16:44-17:36/52 18:16	06:37 14:33-16:05/92 16:41	16:34 14:10-15:45/95 07:07 13:01-14:01/60
17	05:42 06:43-07:16/33 20:19	06:09 06:53-07:33/40 19:48	06:37 07:18-07:47/29 19:01	07:05 16:43-17:36/53 18:15	06:39 13:16-13:32/16 16:40 14:33-16:05/92	16:34 14:10-15:45/95 07:08 13:01-14:02/61
18	05:43 06:44-07:17/33 20:18	06:10 06:53-07:33/40 19:47	06:38 07:16-07:46/30 19:00	07:06 16:43-17:35/52 18:13	06:40 13:12-13:35/23 16:39 14:32-16:06/94	16:34 14:11-15:46/95 07:08 13:02-14:03/61
19	05:44 06:43-07:16/33 20:18	06:11 06:54-07:32/38 19:45	06:39 07:15-07:46/31 18:58	07:07 16:42-17:35/53 18:12	06:41 13:10-13:38/28 16:39 14:31-16:06/95	16:35 14:12-15:47/95 07:09 13:02-14:03/61
20	05:45 06:43-07:17/34 20:17	06:12 06:53-07:31/38 19:44	06:40 07:15-07:46/31 18:57	07:08 16:42-17:35/53 18:11	06:42 13:07-13:40/33 16:38 14:30-16:05/95	16:35 14:11-15:47/96 07:09 13:02-14:03/61
21	05:45 06:43-07:17/34 20:16	06:13 06:53-07:30/37 19:43	06:41 07:15-07:46/31 18:55	07:09 16:41-17:34/53 18:09	06:43 13:06-13:41/35 16:38 14:29-16:05/96	16:36 14:12-15:48/96 07:09 13:03-14:04/61
22	05:46 06:43-07:18/35 20:16	06:14 06:54-07:29/35 19:41	06:41 07:15-07:46/31 18:53	07:10 16:41-17:33/52 18:08	06:44 13:04-13:43/39 16:37 14:29-16:05/96	16:36 14:12-15:48/96 07:10 13:04-14:05/61
23	05:47 06:43-07:19/36 20:15	06:15 06:55-07:29/34 19:40	06:42 07:16-07:46/30 18:52	07:11 16:41-17:33/52 18:07	06:45 13:03-13:44/41 16:36 14:28-16:05/97	16:37 14:13-15:48/95 07:11 13:04-14:05/61
24	05:48 06:43-07:19/36 20:14	06:15 06:56-07:32/36 19:38	06:43 07:17-07:45/28 18:50	07:12 16:42-17:32/50 18:05	06:46 13:03-13:46/43 16:36 14:29-16:05/96	16:37 14:13-15:49/96 07:11 13:04-14:05/61
25	05:49 06:43-07:20/37 20:13	06:16 06:57-07:34/37 19:37	06:44 07:19-07:44/25 18:49	06:13 15:42-16:31/49 17:04	06:47 13:02-13:47/45 16:35 14:29-16:05/96	16:38 14:14-15:49/95 07:12 13:05-14:06/61
26	05:50 06:43-07:21/38 20:12	06:17 06:59-07:36/37 19:36	06:45 07:20-07:43/23 18:47	06:14 15:43-16:30/47 17:03	06:48 13:01-13:48/47 16:35 14:28-16:04/96	16:38 14:15-15:50/95 07:12 13:06-14:06/60
27	05:50 06:43-07:21/38 20:12	06:18 07:00-07:37/37 19:34	06:46 07:20-07:41/21 18:45	06:16 15:43-16:29/46 17:01	06:49 13:00-13:49/49 16:35 14:28-16:03/95	16:39 14:15-15:50/95 07:12 13:06-14:06/60
28	05:51 06:44-07:22/38 20:11	06:19 07:02-07:36/34 19:33	06:47 07:20-07:40/20 18:44	06:17 15:42-16:27/45 17:00	06:50 13:00-13:50/50 16:34 14:28-16:03/95	16:40 14:16-15:51/95 07:13 13:06-14:07/61
29	05:52 06:43-07:23/40 20:10	06:20 07:05-07:37/32 19:31	06:48 07:21-07:38/17 18:42	06:18 15:42-16:24/42 16:59	06:51 12:59-13:50/51 15:50-16:02/12 16:34 14:28-15:47/79	16:40 14:16-15:51/95 07:13 13:08-14:08/60
30	05:53 06:44-07:25/41 20:09	06:21 07:05-07:38/33 19:30	06:49 17:20-17:23/3 18:41 07:23-07:36/13	06:19 15:42-16:20/38 16:58 15:23-15:34/11	06:52 12:59-13:51/52 15:52-16:00/8 16:34 14:28-15:46/78	16:41 14:18-15:52/94 07:13 13:08-14:08/60
31	05:54 06:44-07:26/42 20:08	06:22 07:05-07:38/33 19:28		06:20 15:43-16:15/32 15:07-15:19/12 16:57 15:20-15:40/20		16:42 14:19-15:53/94
Potential sun hours	453	424	374	347	303	294
Sum of minutes with flicker	971	1214	774	1365	3103	4687

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

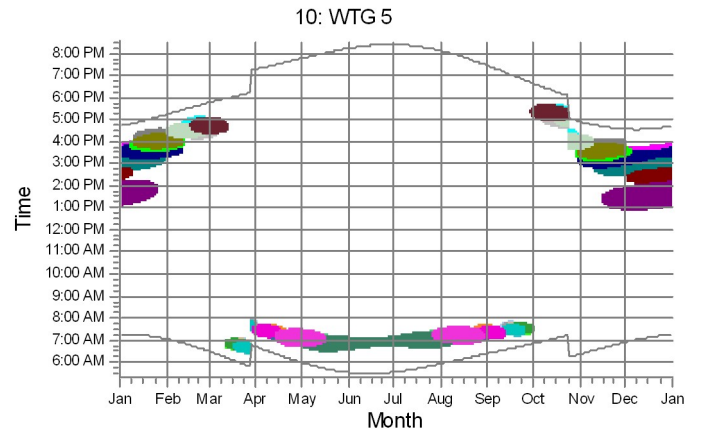
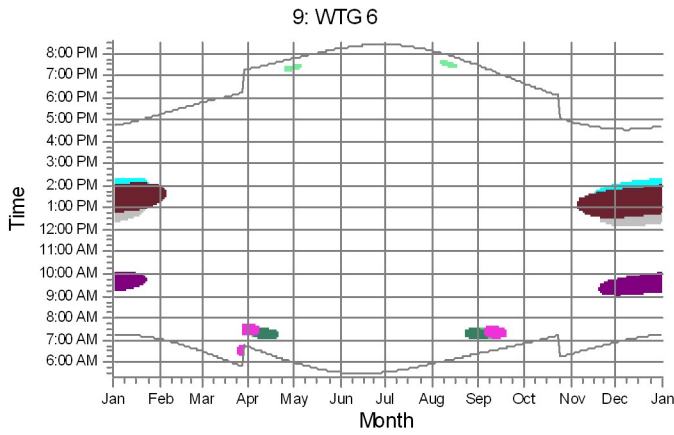
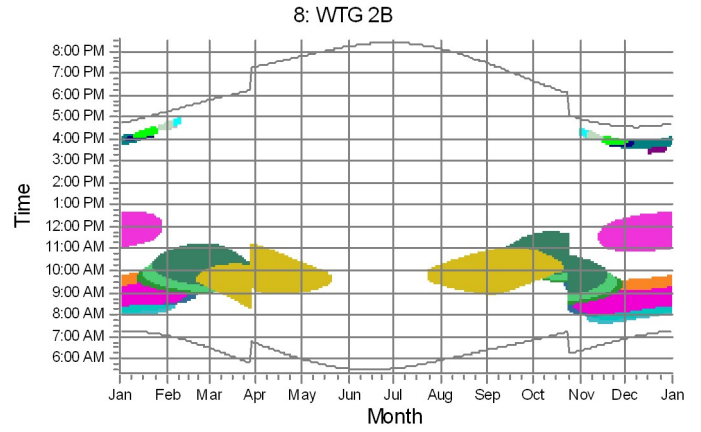
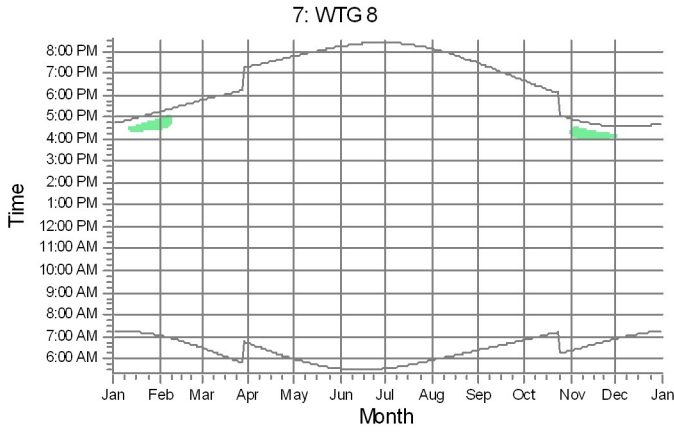
Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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### SHADOW - Calendar per WTG, graphical































Shadow receptors  
Y: 25

### SHADOW - Calendar per WTG, graphical



Shadow receptors

 D: 4	 I: 8	 N: 14	 S: 19	 X: 24	 AD: 30
 E: 5	 J: 9	 O: 15	 T: 20	 Z: 26	 AE: 31
 F: 6	 K: 10	 P: 16	 U: 21	 AA: 27	 AF: 32
 G: 6	 L: 11	 Q: 17	 V: 22	 AB: 28	
 H: 7	 M: 13	 R: 18	 W: 23	 AC: 28	

## **ALLEGATO 8 - SHADOW MAP *REAL CASE***



### Shadow Flickering

Ore all'anno

- 1-25
- 25-50
- 50-75
- 75-100
- >100

- Posizione WTG
- Buffer 1 KM
- Recettori d'ombra

