



REGIONE AUTONOMA DELLA SARDEGNA PROVINCE DI NUORO E SASSARI



COMUNE DI BITTI



COMUNE DI OSIDDA



COMUNE DI BUDDUSO'



PROGETTO PER LA REALIZZAZIONE DEL PARCO EOLICO "BITTI - AREA PIP"

Potenza complessiva 56 MW

PROGETTO DEFINITIVO

DELL'IMPIANTO, DELLE OPERE CONNESSE E DELLE
INFRASTRUTTURE INDISPENSABILI

RS-6.01

STUDIO DEGLI EFFETTI DI SHADOW FLICKERING APPENDICE INTEGRATIVA

COMMITTENTE

**GREEN
ENERGY
SARDEGNA 2**

S.r.L.

**Piazza del Grano 3
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SCALA:

FIRME





Rev.	Descrizione	Redatto	Verificato	Approvato	Data
00	Integrazioni MIBACT DG ABAP Serv.V prot.36506 data 14/12/2020 e DG Ambiente della RAS prot.2668 data 02/02/2021	IAT	GF	GES2	Settembre 2021

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1 PREMESSA

Il presente documento costituisce un'appendice integrativa dell'Elaborato *RS-6_Studio degli effetti di shadow flickering* allegato alla documentazione progettuale depositata ai fini dell'istanza di VIA statale del Parco eolico denominato "Bitti – Area PIP" nei comuni di Bitti, Osidda e Buddusò proposto dalla società Green Energy Sardegna 2 S.r.l. – Gruppo Fri-EI Green Power.

Quanto segue si propone di riscontare le richieste formulate dal Ministero della Cultura – Direzione generale belle arti e paesaggio – Servizio V con nota Prot. 36506_14122020 del 14/12/2020 (nel seguito indicata per brevità come "nota MIBACT") e segnatamente il punto 18, laddove è richiesto di estendere la valutazione degli effetti del fenomeno del *shadow-flickering* considerando quali ricettori - entro una distanza indicativa di 1000 metri dagli aerogeneratori - anche i beni e siti culturali (architettonici e archeologici).



A tal fine, pertanto, si farà riferimento alla ricognizione operata nell'ambito delle verifiche archeologiche condotte dal dott. Matteo Tatti le cui risultanze sono contenute nell'Elaborato *RS-5_Relazione_archeologica* e nella relativa Appendice integrativa (Elaborato RS-5.01 del settembre 2021).

In coerenza con l'impostazione del documento principale inerente al fenomeno del *shadow-flickering* sugli ambienti abitativi (Elaborato RS-6), considerata la presenza di alcuni impianti minieolici nel settore di studio, la valutazione ha considerato gli effetti cumulativi indotti dal progetto in relazione allo specifico fattore di impatto.

Per tutto ciò che attiene alla natura del fenomeno dell'ombreggiamento intermittente ed alle ipotesi alla base dei calcoli previsionali, eseguiti a mezzo di specifico software specialistico, si rimanda integralmente ai contenuti dell'Elaborato RS-6.

In relazione all'aspetto ambientale in questione, corre peraltro l'obbligo di sottolineare fin d'ora come non esista una specifica disciplina regolatoria a livello nazionale né le attuali buone pratiche in materia¹ a livello internazionale contemplino l'opportunità di considerare, tra i potenziali ricettori, siti e beni culturali che non siano riconducibili ad ambienti abitativi.

¹ Linee Guida tedesche (Hinweise zur Ermittlung und Beurteilung der optischen Immissionen von Windkraftanlagen – Aktualisierung 2019)

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2 DOCUMENTI DI RIFERIMENTO

Nella presente relazione sono richiamati i documenti elencati nella tabella sottostante.



Codice	Elaborato	Categoria (*)	Data revisione
PA-R.6.01	Report dei fabbricati censiti e degli edifici sensibili - Appendice integrativa	N	Settembre 2021
RS-6 - All.1	Carta delle ore/anno di ombreggiamento intermittente	A	Settembre 2021
RS-6	Studio degli effetti di shadow flickering	D	Agosto 2020

(*)

D = Documento agli atti

A = Documento aggiornato a seguito delle richieste di integrazioni e chiarimenti

N = Documento di nuova emissione a seguito delle richieste di integrazioni e chiarimenti

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3 INDIVIDUAZIONE DEI RICETTORI CATALOGABILI COME SITI E BENI CULTURALI

In accordo con le indicazioni del MIBACT, ai fini delle verifiche di esposizione all'ombra intermittente, sono stati assunti come riferimento n. 6 beni archeologici e culturali, individuati planimetricamente nell'Elaborato PA-R.6 - Report dei fabbricati censiti e degli edifici sensibili - Appendice integrativa. La Tabella 3.1 riporta per ciascun bene individuato le relative coordinate, secondo il sistema Gauss Boaga, nonché la distanza da più prossimo aerogeneratore in progetto.

Tabella 3.1: Elenco dei ricettori catalogabili come siti e beni culturali

Ricettore	Comune	GB Est	GB Nord	Distanza dal più prossimo WTG [m]	Descrizione
RBP_1	Bitti	1523862	4482503	288 (BAP1)	INSEDIAMENTO ROMANO SAUCCO
RBP_2	Bitti	1527801	4482210	318 (BAP9)	INSEDIAMENTO ROMANO MARIANI UDDA
RBP_3	Bitti	1525779	4481551	370 (BAP6)	NURAGHE LASSANIS
RBP_4	Bitti	1525356	4480759	477 (BAP4)	TOMBA DI GIGANTI SU CANALE MANNU
RBP_5	Nule	1523944	4480897	806 (BAP3)	MENHIR DI ISTE LAI
RBP_6	Nule	1523993	4480893	767 (BAP3)	NURAGHE ISTE LAI

I principali riferimenti dei beni di interesse, comprensivi di uno stralcio della ripresa aerea, sono riportati nell'Elaborato PA-R.6.01 - Report dei fabbricati censiti e degli edifici sensibili - Appendice integrativa del settembre 2021.

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4 RISULTATI

Il risultato dei calcoli è reso disponibile dal programma di simulazione (*Windpro*) sotto diversi formati:

- tabellare (calendario per ciascun ricettore) nel quale per ogni giorno dell'anno sono indicate le ore di luce e l'intervallo di tempo di esposizione all'ombra con l'orario in cui si verifica il fenomeno;
- grafico (per ciascun ricettore) nel quale vengono rappresentati i periodi dell'anno in cui si verifica il fenomeno, l'orario e le turbine responsabili dell'ombra;
- grafico globale con la rappresentazione di isolinee rappresentanti l'incidenza dell'ombra espressa in ore/anno.

Considerata la presenza, nel settore in esame, di alcuni impianti minieolici, ai fini di un'opportuna valutazione degli effetti cumulativi, lo scenario di calcolo ha valutato gli effetti associati all'entrata in esercizio del proposto impianto eolico della Green Energy Sardegna 2 S.r.l. in sovrapposizione alla situazione delineata dal funzionamento degli impianti minieolici.

Con riferimento allo Scenario di progetto, le isolinee d'ombra sono state rappresentate su specifica tavola grafica integrativa, in scala adeguata alla dimensione territoriale da rappresentare, per facilitarne la lettura. La tavola è stata realizzata, pertanto, su base cartografica in scala 1:10.000 (Elaborato RS-6 - All.1 – Rev. 1 Settembre 2021).



I risultati forniti dal modello di calcolo consentono di valutare approssimativamente sia l'impatto puntuale sul singolo ricettore, sia l'impatto distribuito sul territorio (movimento e persistenza dell'ombra).

Nello specifico, all'interno degli allegati report di calcolo sono indicati, per il singolo ricettore, i valori totali di interferenza da *shadow flickering* (espressi in h/anno), il numero di giorni in cui si verifica l'interferenza ed infine la durata massima per singolo giorno.

Come evidenziato nell'Elaborato RS-6, peraltro, l'output fornito dal modello è alquanto conservativo e non realistico, giacché la simulazione non tiene in considerazione i numerosi fattori sfavorevoli al verificarsi del disturbo.

Per quanto precede, nel seguito si procederà ad esaminare le risultanze dei calcoli modellistici, introducendo nella valutazione di impatto ulteriori elementi che tengano conto delle effettive condizioni di funzionamento degli impianti, in rapporto al quadro anemologico atteso, nonché delle condizioni meteorologiche caratteristiche del sito di Ittiri – Villanova Monteleone, con particolare riferimento alle condizioni medie di copertura del cielo.

I risultati numerici delle simulazioni modellistiche sono riportati in Appendice

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5 ANALISI DEI DATI E CONCLUSIONI

Con riferimento allo scenario di progetto (funzionamento simultaneo degli esistenti impianti minieolici e del parco eolico "Bitti – Area PIP"), la Tabella 5.1 riepiloga, per ciascun ricettore rappresentativo dei beni archeologici e architettonici, le risultanze del calcolo modellistico espresse come valori totali di interferenza teorica (o potenziale) da *shadow flickering* (SF_P) in h/anno, numero di giorni in cui si verifica l'interferenza potenziale ed infine durata massima per singolo giorno.

Tabella 5.1: Durata massima del fenomeno di shadow flickering potenziale (SF_P) in corrispondenza dei beni archeologici e culturali individuati entro i 1000 metri dalle postazioni eoliche

ID	Ricettore - Beni archeologici e culturali	[h/anno]	[giorni/anno]	[h/giorno]
1	RBP_01 - INSEDIAMENTO ROMANO SAUCCO	356:04:00	197	02:31
2	RBP_02 - INSEDIAMENTO ROMANO MARIANI UDDA	273:46:00	277	01:47
3	RBP_03 - NURAGHE LASSANIS	97:57:00	233	00:42
4	RBP_04 - TOMBA DI GIGANTI SU CANALE MANNU	125:51:00	103	01:32
5	RBP_05 - MENHIR DI ISTE LAI	30:45:00	84	00:39
6	RBP_06 - NURAGHE ISTE LAI	30:52:00	75	00:41



Ai fini di una appropriata lettura dei valori di h/anno riportati in Tabella 5.1, è opportuno richiamare, così come evidenziato nel documento dell'agosto 2020 (Elaborato RS-6), le ipotesi estremamente conservative alla base del calcolo modellistico (cielo sereno, sufficiente contrasto luci-ombre, velocità del vento al mozzo degli aerogeneratori superiore ai 3 m/s - V_{CUT-IN} , piano del rotore frapposto alla congiungente sole-ricettore).

Muovendo dai risultati della simulazione, la stima dei valori di effettiva esposizione all'ombra intermittente può condursi, pertanto, introducendo quantomeno un opportuno coefficiente di riduzione che tenga conto delle condizioni medie di copertura del cielo.

Valutato che, in base ai dati copertura del cielo richiamati in Tabella 5.2, il numero medio di giorni al mese con copertura nuvolosa superiore ai 4/8 è mediamente pari al 50%, è possibile pervenire alla stima dei valori di SF al netto delle giornate con presenza di cielo coperto (SF_{NC}) attraverso la seguente espressione:

$$SF_{NC}[h/anno] = \sum_{i=1}^{12} SF_{Pi} \cdot (1 - R_{Ni})$$

Dove:

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SF_{NC} = h/anno di *shadow flickering* potenziale al netto delle giornate con presenza di cielo coperto;

SF_{Pi} = ore di *shadow flickering* teorico da modello di calcolo per il mese i-esimo;

R_{Ni} = frequenza dei giorni con copertura del cielo $>4/8$ per il mese i-esimo.

Con riferimento ai ricettori di interesse, i dati di SF_{NC} sono riportati in Tabella 5.3.

Tabella 5.2: Aeronautica Militare – Stazione di Fonni (NU). Dati medi di copertura nuvolosa $>4/8$ registrati nel periodo 1971÷2000 (Fonte, Aeronautica Militare Italiana)

	Ng h6 Nuv>4	Ngh18 Nuv>4	Media Nuv>4	Media Nuv>4 (%)
gen	15,6	19,2	17,4	56%
feb	16,7	21,2	19,0	68%
mar	18,3	22,8	20,6	66%
apr	18,1	21,8	20,0	67%
mag	15,3	19,5	17,4	56%
giu	9,7	12,6	11,2	37%
lug	6	7,1	6,6	21%
ago	6,2	6,9	6,6	21%
set	10,9	14,4	12,7	42%
ott	15,6	18,1	16,9	54%
nov	16,6	18,7	17,7	59%
dic	14,1	15,3	14,7	47%

$Ng h6Nuv>4$: Numero medio di giorni al mese con copertura nuvolosa $> 4/8$ alle ore 6

$Ngh18Nuv>4$: Numero medio di giorni al mese con copertura nuvolosa $> 4/8$ alle ore 18

$MediaNuv>4$: Media del numero medio di giorni al mese con copertura nuvolosa $> 4/8$ registrata alle ore 6 ed alle 18



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Tabella 5.3: Incidenza del fenomeno del shadow flickering al netto delle giornate con cielo coperto in corrispondenza dei beni archeologici e culturali riconosciuti all'interno dell'areale di interesse

ID	Ricettore - Beni archeologici e culturali	[h/anno]
1	RBP_01 - INSEDIAMENTO ROMANO SAUCCO	151:50:53
2	RBP_02 - INSEDIAMENTO ROMANO MARIANI UDDA	119:04:42
3	RBP_03 - NURAGHE LASSANIS	46:01:27
4	RBP_04 - TOMBA DI GIGANTI SU CANALE MANNU	80:52:28
5	RBP_05 - MENHIR DI ISTE LAI	16:21:25
6	RBP_06 - NURAGHE ISTE LAI	16:11:06

Relativamente alle situazioni potenzialmente più sfavorevoli riscontrate (incidenza stimata SF>80 h/anno) le stesse si riferiscono ai beni elencati in Tabella 5.4 e raffigurati planimetricamente in Figura 5.1.

Tabella 5.4 - Beni archeologici e culturali maggiormente esposti al fenomeno dello shadow-flickering (incidenza stimata SF>80 h/anno)

Ricettore - Beni archeologici e culturali	[h/anno]
RBP_01 - INSEDIAMENTO ROMANO SAUCCO	151:50:53
RBP_02 - INSEDIAMENTO ROMANO MARIANI UDDA	119:04:42
RBP_04 - TOMBA DI GIGANTI SU CANALE MANNU	80:52:28

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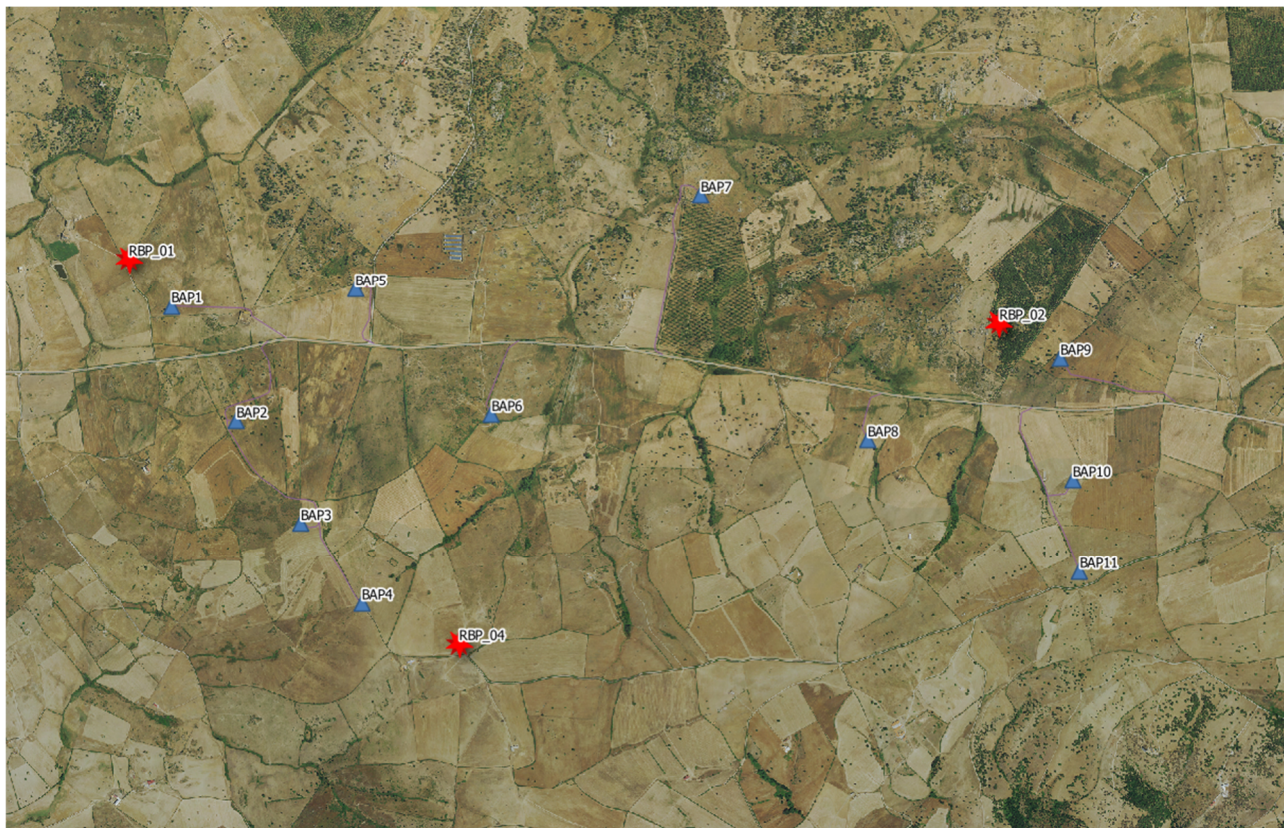






Figura 5.1 – Beni archeologici e culturali maggiormente esposti al fenomeno dello shadow-flickering (incidenza stimata SF>80 h/anno)

Considerato che:

- non esiste una disciplina regolatoria a livello nazionale né le attuali buone pratiche in materia, a livello internazionale, contemplano l’opportunità di considerare, tra i potenziali ricettori, siti e beni culturali che non siano riconducibili ad ambienti abitativi;
- non esistono conseguentemente soglie di riferimento circa l’incidenza del fenomeno che possano essere ragionevolmente assunte come indicatori dell’entità di un potenziale disturbo a carico di eventuali saltuari visitatori dei suddetti beni;
- l’incidenza massima del fenomeno di *shadow-flickering* in corrispondenza dei ricettori considerati (riferibile al bene identificato come RBP_1 Insegiamento Romano Sauccho) è valutabile in circa l’ 8% delle ore di luce in un anno per il sito di Bitti (stimabili in circa 4400 ore);
- anche in previsione di una eventuale futura valorizzazione e fruizione dei suddetti beni archeologici - attualmente non oggetto di indagini scientifiche, di fruizione o valorizzazione e, addirittura, in alcuni casi in stato di abbandono - ogni eventuale disturbo conseguente alla proiezione di ombre intermittenti per effetto del funzionamento degli aerogeneratori in progetto può essere efficacemente mitigato attraverso l’interposizione di ostacoli visivi di modesta altezza al perimetro dei suddetti beni (quali p.e. cortine arboree);

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si può ragionevolmente affermare che gli effetti associati al fenomeno dello *shadow-flickering* sulla godibilità del patrimonio archeologico e culturale riconosciuto in un areale di 1000 metri dal parco eolico in progetto saranno di natura transitoria, scarsamente significativa ed efficacemente mitigabile.

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APPENDICE 1 - REPORT DEI RISULTATI DEL CALCOLO MODELLISTICO – SCENARIO DI PROGETTO

SHADOW - Main Result

Calculation: Shadow_2021_08_04_progetto_beni paesaggistici

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

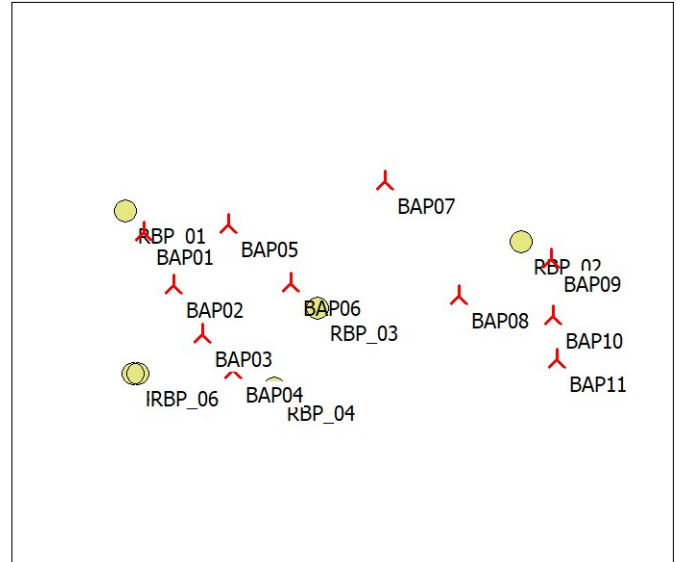
Minimum sun height over horizon for influence 3 °
Day step for calculation 1 days
Time step for calculation 1 minutes
The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from 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: TIN_green3.wpo (5)
Obstacles used in calculation
Eye height for map: 1,5 m
Grid resolution: 10,0 m

All coordinates are in
Italian Gauss-Boaga west-ROMA40 (IT-peninsular <±4m)

WTGs



Scale 1:75.000
New WTG Shadow receptor

	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]
BAP01	1.524.053	4.482.291	715,7	Siemens Gamesa SG ...	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	115,0	2.041	8,8
BAP02	1.524.348	4.481.771	740,7	Siemens Gamesa SG ...	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	115,0	2.041	8,8
BAP03	1.524.634	4.481.288	799,6	Siemens Gamesa SG ...	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	115,0	2.041	8,8
BAP04	1.524.943	4.480.934	795,0	Siemens Gamesa SG ...	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	115,0	2.041	8,8
BAP05	1.524.890	4.482.372	715,2	Siemens Gamesa SG ...	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	115,0	2.041	8,8
BAP06	1.525.512	4.481.797	741,1	Siemens Gamesa SG ...	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	115,0	2.041	8,8
BAP07	1.526.449	4.482.811	710,0	Siemens Gamesa SG ...	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	115,0	2.041	8,8
BAP08	1.527.183	4.481.678	752,2	Siemens Gamesa SG ...	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	115,0	2.041	8,8
BAP09	1.528.099	4.482.044	771,6	Siemens Gamesa SG ...	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	115,0	2.041	8,8
BAP10	1.528.123	4.481.477	782,1	Siemens Gamesa SG ...	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	115,0	2.041	8,8
BAP11	1.528.157	4.481.053	820,0	Siemens Gamesa SG ...	Yes	Siemens Gamesa	SG 6.0-170-6.000	6.000	170,0	115,0	2.041	8,8

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]
RBP_01	INSEDIAMENTO ROMANO SAUCCO	1.523.862	4.482.503	700,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
RBP_02	INSEDIAMENTO ROMANO MARIANI UDDA	1.527.801	4.482.210	755,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
RBP_03	NURAGHE LASSANIS	1.525.779	4.481.551	740,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
RBP_04	TOMBA DI GIGANTI SU CANALE MANNU	1.525.356	4.480.759	807,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
RBP_05	MENHIR DI ISTE LAI	1.523.944	4.480.897	712,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
RBP_06	NURAGHE ISTE LAI	1.523.993	4.480.893	715,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

No.	Name	Shadow, worst case		
		Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
RBP_01	INSEDIAMENTO ROMANO SAUCCO	356:04	197	2:31
RBP_02	INSEDIAMENTO ROMANO MARIANI UDDA	273:46	277	1:47
RBP_03	NURAGHE LASSANIS	97:57	233	0:42
RBP_04	TOMBA DI GIGANTI SU CANALE MANNU	125:51	103	1:32
RBP_05	MENHIR DI ISTE LAI	30:45	84	0:39
RBP_06	NURAGHE ISTE LAI	30:52	75	0:41

SHADOW - Main Result

Calculation: Shadow_2021_08_04_progetto_beni paesaggistici

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

No.	Name	Worst case [h/year]
BAP01	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (56)	330:46
BAP02	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (57)	10:22
BAP03	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (58)	18:17
BAP04	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (59)	207:31
BAP05	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (60)	22:46
BAP06	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (61)	12:56
BAP07	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (62)	13:16
BAP08	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (63)	69:04
BAP09	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (64)	203:12
BAP10	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (65)	0:00
BAP11	Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (66)	0:00

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.

SHADOW - Calendar

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiShadow receptor: RBP_01 - INSEDIAMENTO ROMANO SAUCCO
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	07:47 17:07	08:54 (BAP01) 17:40	07:34 129	08:56 (BAP01) 18:14	06:59 106	09:02 (BAP01) 19:47	07:09 20:18	06:24 20:18	05:56 20:47
2	07:47 17:08	08:54 (BAP01) 17:42	07:33 132	07:53 (BAP06) 18:15	06:57 102	09:03 (BAP01) 19:48	07:07 20:19	06:22 20:19	05:55 20:48
3	07:47 17:08	08:54 (BAP01) 17:43	07:32 136	07:52 (BAP06) 18:16	06:56 100	09:03 (BAP01) 19:49	07:05 20:20	06:21 20:20	05:55 20:48
4	07:47 17:09	08:55 (BAP01) 17:44	07:31 139	07:51 (BAP06) 18:17	06:54 97	09:04 (BAP01) 19:50	07:04 20:21	06:20 20:21	05:54 20:49
5	07:47 17:10	08:55 (BAP01) 17:45	07:30 143	07:50 (BAP06) 18:18	06:53 95	09:04 (BAP01) 19:51	07:02 20:22	06:19 20:22	05:54 20:50
6	07:47 17:11	08:55 (BAP01) 17:47	07:29 145	07:49 (BAP06) 18:19	06:51 97	07:12 (BAP05) 19:52	07:01 20:23	06:18 20:23	05:54 20:50
7	07:47 17:12	08:55 (BAP01) 17:48	07:28 146	07:47 (BAP06) 18:21	06:49 103	07:08 (BAP05) 19:53	06:59 20:24	06:16 20:24	05:53 20:51
8	07:47 17:13	08:56 (BAP01) 17:49	07:27 147	07:46 (BAP06) 18:22	06:48 104	07:07 (BAP05) 19:54	06:57 20:25	06:15 20:25	05:53 20:52
9	07:47 17:14	08:55 (BAP01) 17:50	07:26 149	07:45 (BAP06) 18:23	06:46 104	07:05 (BAP05) 19:55	06:56 20:26	06:14 20:26	05:53 20:52
10	07:47 17:15	08:55 (BAP01) 17:51	07:24 150	07:44 (BAP06) 18:24	06:45 103	07:03 (BAP05) 19:56	06:54 20:27	06:13 20:27	05:53 20:53
11	07:46 17:16	08:56 (BAP01) 17:53	07:23 151	07:43 (BAP06) 18:25	06:43 100	07:02 (BAP05) 19:57	06:53 20:28	06:12 20:28	05:53 20:53
12	07:46 17:17	08:55 (BAP01) 17:54	07:22 150	07:43 (BAP06) 18:26	06:42 99	07:00 (BAP05) 19:58	06:51 20:29	06:11 20:29	05:52 20:54
13	07:46 17:18	08:56 (BAP01) 17:55	07:21 149	07:43 (BAP06) 18:27	06:40 96	06:58 (BAP05) 19:59	06:50 20:30	06:10 20:30	05:52 20:54
14	07:46 17:19	08:56 (BAP01) 17:56	07:20 147	07:44 (BAP06) 18:28	06:38 94	06:57 (BAP05) 20:01	06:48 20:31	06:09 20:31	05:52 20:55
15	07:45 17:20	08:55 (BAP01) 17:58	07:18 145	07:45 (BAP06) 18:29	06:37 90	06:55 (BAP05) 20:02	06:46 20:32	06:08 20:32	05:52 20:55
16	07:45 17:21	08:56 (BAP01) 17:59	07:17 141	07:46 (BAP06) 18:30	06:35 84	06:54 (BAP05) 20:03	06:45 20:33	06:07 20:33	05:52 20:56
17	07:44 17:23	08:55 (BAP01) 18:00	07:16 138	07:47 (BAP06) 18:31	06:33 78	06:53 (BAP05) 20:04	06:43 20:34	06:06 20:34	05:52 20:56
18	07:44 17:24	08:56 (BAP01) 18:01	07:14 131	07:50 (BAP06) 18:32	06:32 69	06:53 (BAP05) 20:05	06:42 20:35	06:05 20:35	05:52 20:56
19	07:43 17:25	08:56 (BAP01) 18:02	07:13 122	08:58 (BAP01) 18:33	06:30 56	06:53 (BAP05) 20:06	06:40 20:36	06:04 20:36	05:53 20:57
20	07:43 17:26	08:56 (BAP01) 18:03	07:12 121	08:58 (BAP01) 18:35	06:28 37	06:53 (BAP05) 20:07	06:39 20:37	06:03 20:37	05:53 20:57
21	07:42 17:27	08:56 (BAP01) 18:05	07:10 120	08:58 (BAP01) 18:36	06:27 36	06:52 (BAP05) 20:08	06:38 20:38	06:03 20:38	05:53 20:57
22	07:42 17:28	08:56 (BAP01) 18:06	07:09 118	08:59 (BAP01) 18:37	06:25 35	06:53 (BAP05) 20:09	06:36 20:39	06:02 20:39	05:53 20:57
23	07:41 17:30	08:56 (BAP01) 18:07	07:07 116	08:59 (BAP01) 18:38	06:24 34	06:53 (BAP05) 20:10	06:35 20:40	06:01 20:40	05:53 20:58
24	07:40 17:31	08:56 (BAP01) 18:08	07:06 115	09:00 (BAP01) 18:39	06:22 31	06:54 (BAP05) 20:11	06:33 20:41	06:00 20:41	05:54 20:58
25	07:40 17:32	08:56 (BAP01) 18:09	07:05 114	09:00 (BAP01) 18:40	06:20 30	06:55 (BAP05) 20:12	06:32 20:42	06:00 20:42	05:54 20:58
26	07:39 17:33	08:56 (BAP01) 18:10	07:03 112	09:00 (BAP01) 18:41	06:19 26	06:56 (BAP05) 20:13	06:30 20:43	05:59 20:43	05:54 20:58
27	07:38 17:34	08:55 (BAP01) 18:12	07:02 110	09:01 (BAP01) 18:42	06:17 23	06:57 (BAP05) 20:14	06:29 20:44	05:58 20:44	05:54 20:58
28	07:37 17:36	08:56 (BAP01) 18:13	07:00 108	09:01 (BAP01) 18:43	06:15 19	06:59 (BAP05) 20:15	06:28 20:45	05:58 20:45	05:55 20:58
29	07:37 17:37	08:56 (BAP01) 18:14		10:49 (BAP01) 18:44		07:18 (BAP05) 20:16	06:26 20:46	05:57 20:46	05:55 20:58
30	07:36 17:38	08:56 (BAP01) 18:15			12	08:14 (BAP05) 20:17	06:25 20:47	05:57 20:47	05:56 20:58
31	07:35 17:39	08:56 (BAP01) 18:16					06:25 20:48	05:57 20:48	05:56 20:58
Potential sun hours	299	298	370	398	447	450			
Total, worst case	3750	3724	2060						

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

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiShadow receptor: RBP_01 - INSEDIAMENTO ROMANO SAUCCO
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	05:56 20:58	06:20 20:39	06:50 19:57	07:19 19:07	07:39 (BAP05) 10:59 (BAP01)	06:52 17:21	07:14 (BAP06) 10:35 (BAP01)	07:26 16:58	08:38 (BAP01) 118 10:36 (BAP01)
2	05:57 20:58	06:21 20:38	06:51 19:55	07:20 19:06	07:40 (BAP05) 11:02 (BAP01)	06:53 17:20	07:15 (BAP06) 10:35 (BAP01)	07:27 16:57	08:38 (BAP01) 118 10:36 (BAP01)
3	05:57 20:58	06:21 20:37	06:52 19:54	07:21 19:04	07:41 (BAP05) 11:04 (BAP01)	06:55 17:19	07:16 (BAP06) 10:35 (BAP01)	07:29 16:57	08:39 (BAP01) 117 10:36 (BAP01)
4	05:58 20:57	06:22 20:36	06:53 19:52	07:22 19:02	07:42 (BAP05) 11:06 (BAP01)	06:56 17:18	07:17 (BAP06) 10:35 (BAP01)	07:29 16:57	08:40 (BAP01) 116 10:36 (BAP01)
5	05:58 20:57	06:23 20:35	06:53 19:51	07:23 19:01	07:43 (BAP05) 11:08 (BAP01)	06:57 17:17	07:19 (BAP06) 10:36 (BAP01)	07:30 16:57	08:40 (BAP01) 116 10:36 (BAP01)
6	05:59 20:57	06:24 20:34	06:54 19:49	07:24 18:59	07:44 (BAP05) 11:10 (BAP01)	06:58 17:16	07:20 (BAP06) 10:36 (BAP01)	07:31 16:57	08:41 (BAP01) 115 10:36 (BAP01)
7	05:59 20:57	06:25 20:33	06:55 19:47	07:25 18:57	07:45 (BAP05) 11:12 (BAP01)	06:59 17:14	07:21 (BAP06) 10:35 (BAP01)	07:32 16:57	08:42 (BAP01) 114 10:36 (BAP01)
8	06:00 20:56	06:26 20:31	06:56 19:46	07:26 18:56	09:41 (BAP01) 11:14 (BAP01)	07:00 17:13	07:22 (BAP06) 10:35 (BAP01)	07:33 16:57	08:43 (BAP01) 113 10:36 (BAP01)
9	06:01 20:56	06:27 20:30	06:57 19:44	07:27 18:54	09:39 (BAP01) 11:15 (BAP01)	07:02 17:12	07:24 (BAP06) 10:36 (BAP01)	07:34 16:57	08:43 (BAP01) 114 10:37 (BAP01)
10	06:01 20:56	06:28 20:29	06:58 19:42	07:28 18:53	09:38 (BAP01) 11:17 (BAP01)	07:03 17:11	08:27 (BAP01) 10:36 (BAP01)	07:35 16:57	08:43 (BAP01) 113 10:36 (BAP01)
11	06:02 20:55	06:29 20:28	06:59 19:41	07:29 18:51	09:37 (BAP01) 11:18 (BAP01)	07:04 17:10	08:27 (BAP01) 10:36 (BAP01)	07:36 16:57	08:44 (BAP01) 112 10:36 (BAP01)
12	06:03 20:54	06:30 20:25	07:00 19:37	07:30 18:48	09:36 (BAP01) 11:19 (BAP01)	07:05 17:09	08:27 (BAP01) 10:35 (BAP01)	07:37 16:57	08:45 (BAP01) 112 10:37 (BAP01)
13	06:03 20:54	06:31 20:25	07:01 19:37	07:31 18:48	09:35 (BAP01) 11:21 (BAP01)	07:06 17:09	08:28 (BAP01) 10:36 (BAP01)	07:37 16:57	08:46 (BAP01) 111 10:37 (BAP01)
14	06:04 20:54	06:32 20:24	07:02 19:36	07:32 18:46	09:33 (BAP01) 11:22 (BAP01)	07:07 17:08	08:28 (BAP01) 10:36 (BAP01)	07:38 16:57	08:47 (BAP01) 111 10:38 (BAP01)
15	06:05 20:53	06:33 20:22	07:03 19:34	07:33 18:45	07:49 (BAP05) 08:07 (BAP05)	07:33 18:45	07:09 17:07	07:39 16:57	08:46 (BAP01) 112 10:38 (BAP01)
16	06:06 20:53	06:34 20:21	07:04 19:32	07:34 18:43	07:46 (BAP05) 08:09 (BAP05)	07:34 18:43	07:10 17:06	07:40 16:58	08:47 (BAP01) 111 10:38 (BAP01)
17	06:06 20:52	06:35 20:20	07:05 19:31	07:35 18:42	07:44 (BAP05) 08:10 (BAP05)	07:35 18:42	07:11 17:05	07:40 16:58	08:48 (BAP01) 111 10:39 (BAP01)
18	06:07 20:51	06:36 20:18	07:06 19:29	07:37 18:40	07:43 (BAP05) 08:12 (BAP05)	07:37 18:40	07:12 17:04	07:41 16:58	08:48 (BAP01) 111 10:39 (BAP01)
19	06:08 20:51	06:37 20:17	07:07 19:27	07:38 18:39	07:41 (BAP05) 08:12 (BAP05)	07:38 18:39	07:13 17:04	07:42 16:59	08:49 (BAP01) 110 10:39 (BAP01)
20	06:09 20:50	06:38 20:15	07:08 19:26	07:39 18:37	07:40 (BAP05) 08:13 (BAP05)	07:39 18:37	07:14 17:03	07:42 16:59	08:49 (BAP01) 110 10:39 (BAP01)
21	06:10 20:49	06:39 20:14	07:09 19:24	07:40 18:36	07:39 (BAP05) 08:13 (BAP05)	07:40 18:36	07:16 17:02	07:43 16:59	08:50 (BAP01) 110 10:40 (BAP01)
22	06:11 20:49	06:40 20:12	07:10 19:22	07:41 18:35	07:38 (BAP05) 08:14 (BAP05)	07:41 18:35	07:17 17:02	07:43 17:00	08:50 (BAP01) 110 10:40 (BAP01)
23	06:11 20:48	06:41 20:11	07:11 19:21	07:42 18:33	07:37 (BAP05) 08:14 (BAP05)	07:42 18:33	07:18 17:01	07:44 17:00	08:51 (BAP01) 110 10:41 (BAP01)
24	06:12 20:47	06:42 20:09	07:12 19:19	07:43 18:32	07:37 (BAP05) 08:13 (BAP05)	07:43 18:32	07:19 17:00	07:44 17:01	08:51 (BAP01) 110 10:41 (BAP01)
25	06:13 20:46	06:43 20:08	07:13 19:17	07:44 17:30	07:36 (BAP05) 10:38 (BAP01)	06:44 17:30	07:20 17:00	07:45 17:02	08:52 (BAP01) 111 10:43 (BAP01)
26	06:14 20:45	06:44 20:06	07:14 19:15	07:45 17:29	07:36 (BAP05) 10:43 (BAP01)	06:45 17:29	07:21 16:59	07:45 17:02	08:52 (BAP01) 111 10:43 (BAP01)
27	06:15 20:44	06:45 20:05	07:15 19:14	07:46 17:28	07:36 (BAP05) 10:47 (BAP01)	06:47 17:28	07:22 16:59	07:45 17:03	08:52 (BAP01) 111 10:43 (BAP01)
28	06:16 20:43	06:46 20:03	07:16 19:12	07:48 17:26	07:36 (BAP05) 10:51 (BAP01)	06:48 17:26	07:23 16:59	07:46 17:03	08:52 (BAP01) 111 10:43 (BAP01)
29	06:17 20:42	06:47 20:02	07:17 19:10	07:49 17:25	07:37 (BAP05) 10:54 (BAP01)	06:49 17:25	07:24 16:58	07:46 17:04	08:53 (BAP01) 112 10:45 (BAP01)
30	06:18 20:41	06:48 20:00	07:18 19:09	07:50 17:24	07:38 (BAP05) 10:57 (BAP01)	06:50 17:24	07:25 16:58	07:46 17:05	08:54 (BAP01) 111 10:45 (BAP01)
31	06:19 20:40	06:49 19:59		06:51 17:23	07:12 (BAP06) 10:34 (BAP01)	07:12 (BAP06) 10:34 (BAP01)	07:47 17:06	07:47 17:06	08:54 (BAP01) 112 10:46 (BAP01)
Potential sun hours	457	427	375	346	299	290			
Total, worst case			826	3624	3896	3484			

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

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiShadow receptor: RBP_02 - INSEDIAMENTO ROMANO MARIANI UDDA
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	07:47	15:41 (BAP08)	07:34	08:20 (BAP09)	06:59	08:00 (BAP09)	07:09	09:16 (BAP09)	06:24	05:55	20:06 (BAP07)	
	17:07	52 16:33 (BAP08)	17:40	70 09:30 (BAP09)	18:14	106 09:46 (BAP09)	19:47	45 10:01 (BAP09)	20:18	20:47	17 20:23 (BAP07)	
2	07:47	15:42 (BAP08)	07:33	08:19 (BAP09)	06:57	08:00 (BAP09)	07:07	09:18 (BAP09)	06:22	05:55	20:06 (BAP07)	
	17:07	51 16:33 (BAP08)	17:41	73 09:32 (BAP09)	18:15	107 09:47 (BAP09)	19:48	39 09:57 (BAP09)	20:19	20:48	17 20:23 (BAP07)	
3	07:47	15:42 (BAP08)	07:32	08:18 (BAP09)	06:55	08:00 (BAP09)	07:05	09:21 (BAP09)	06:21	05:55	20:07 (BAP07)	
	17:08	51 16:33 (BAP08)	17:43	75 09:33 (BAP09)	18:16	106 09:46 (BAP09)	19:49	32 09:53 (BAP09)	20:20	20:48	17 20:24 (BAP07)	
4	07:47	15:43 (BAP08)	07:31	08:17 (BAP09)	06:54	08:00 (BAP09)	07:04	09:25 (BAP09)	06:20	05:54	20:08 (BAP07)	
	17:09	51 16:34 (BAP08)	17:44	78 09:35 (BAP09)	18:17	106 09:46 (BAP09)	19:50	23 09:48 (BAP09)	20:21	20:49	17 20:25 (BAP07)	
5	07:47	15:43 (BAP08)	07:30	08:15 (BAP09)	06:52	07:59 (BAP09)	07:02	09:33 (BAP09)	06:19	05:54	20:08 (BAP07)	
	17:10	51 16:34 (BAP08)	17:45	80 09:35 (BAP09)	18:18	106 09:45 (BAP09)	19:51	5 09:38 (BAP09)	20:22	20:50	17 20:25 (BAP07)	
6	07:47	15:44 (BAP08)	07:29	08:14 (BAP09)	06:51	08:00 (BAP09)	07:00		06:17	05:53	20:09 (BAP07)	
	17:11	51 16:35 (BAP08)	17:46	83 09:37 (BAP09)	18:19	105 09:45 (BAP09)	19:52		20:23	20:50	16 20:25 (BAP07)	
7	07:47	15:45 (BAP08)	07:28	08:13 (BAP09)	06:49	07:59 (BAP09)	06:59		06:16	05:53	20:10 (BAP07)	
	17:12	50 16:35 (BAP08)	17:48	85 09:38 (BAP09)	18:20	104 09:43 (BAP09)	19:53		20:24	20:51	15 20:25 (BAP07)	
8	07:47	15:45 (BAP08)	07:27	08:12 (BAP09)	06:48	07:59 (BAP09)	06:57		06:15	05:53	20:11 (BAP07)	
	17:13	49 16:34 (BAP08)	17:49	87 09:39 (BAP09)	18:21	103 09:42 (BAP09)	19:54		20:25	20:51	14 20:25 (BAP07)	
9	07:47	15:45 (BAP08)	07:25	08:11 (BAP09)	06:46	08:00 (BAP09)	06:56		06:14	05:53	20:12 (BAP07)	
	17:14	50 16:35 (BAP08)	17:50	89 09:40 (BAP09)	18:23	102 09:42 (BAP09)	19:55		20:26	20:52	11 20:23 (BAP07)	
10	07:46	15:46 (BAP08)	07:24	08:11 (BAP09)	06:45	07:59 (BAP09)	06:54		06:13	05:53	20:13 (BAP07)	
	17:15	49 16:35 (BAP08)	17:51	90 09:41 (BAP09)	18:24	102 09:41 (BAP09)	19:56		20:27	20:53	10 20:23 (BAP07)	
11	07:46	15:47 (BAP08)	07:23	08:09 (BAP09)	06:43	08:00 (BAP09)	06:53		06:12	05:52	20:14 (BAP07)	
	17:16	49 16:36 (BAP08)	17:53	93 09:42 (BAP09)	18:25	100 09:40 (BAP09)	19:57		20:28	20:53	8 20:22 (BAP07)	
12	07:46	15:47 (BAP08)	07:22	08:09 (BAP09)	06:41	08:00 (BAP09)	06:51		06:11	05:52	20:15 (BAP07)	
	17:17	48 16:35 (BAP08)	17:54	94 09:43 (BAP09)	18:26	99 09:39 (BAP09)	19:58		20:29	2 20:05 (BAP07)	6 20:21 (BAP07)	
13	07:46	15:48 (BAP08)	07:21	08:08 (BAP09)	06:40	07:59 (BAP09)	06:49		06:10	20:03 (BAP07)	05:52	20:17 (BAP07)
	17:18	48 16:36 (BAP08)	17:55	96 09:44 (BAP09)	18:27	98 09:37 (BAP09)	19:59		20:30	4 20:07 (BAP07)	20:54	3 20:20 (BAP07)
14	07:45	15:48 (BAP08)	07:19	08:08 (BAP09)	06:38	08:00 (BAP09)	06:48		06:09	20:03 (BAP07)	05:52	
	17:19	47 16:35 (BAP08)	17:56	97 09:45 (BAP09)	18:28	97 09:37 (BAP09)	20:00		20:31	5 20:08 (BAP07)	20:55	
15	07:45	15:50 (BAP08)	07:18	08:06 (BAP09)	06:36	08:00 (BAP09)	06:46		06:08	20:02 (BAP07)	05:52	
	17:20	46 16:36 (BAP08)	17:57	99 09:45 (BAP09)	18:29	95 09:35 (BAP09)	20:01		20:32	7 20:09 (BAP07)	20:55	
16	07:45	15:51 (BAP08)	07:17	08:06 (BAP09)	06:35	08:00 (BAP09)	06:45		06:07	20:02 (BAP07)	05:52	
	17:21	45 16:36 (BAP08)	17:59	99 09:45 (BAP09)	18:30	94 09:34 (BAP09)	20:02		20:33	7 20:09 (BAP07)	20:55	
17	07:44	15:51 (BAP08)	07:16	08:06 (BAP09)	06:33	08:01 (BAP09)	06:43		06:06	20:01 (BAP07)	05:52	
	17:22	44 16:35 (BAP08)	18:00	100 09:46 (BAP09)	18:31	92 09:33 (BAP09)	20:03		20:34	9 20:10 (BAP07)	20:56	
18	07:44	15:53 (BAP08)	07:14	08:04 (BAP09)	06:32	08:01 (BAP09)	06:42		06:05	20:01 (BAP07)	05:52	
	17:24	43 16:36 (BAP08)	18:01	102 09:46 (BAP09)	18:32	90 09:31 (BAP09)	20:04		20:35	10 20:11 (BAP07)	20:56	
19	07:43	15:53 (BAP08)	07:13	08:04 (BAP09)	06:30	08:01 (BAP09)	06:40		06:04	20:01 (BAP07)	05:52	
	17:25	42 16:35 (BAP08)	18:02	103 09:47 (BAP09)	18:33	88 09:29 (BAP09)	20:06		20:36	11 20:12 (BAP07)	20:56	
20	07:43	15:53 (BAP08)	07:12	08:04 (BAP09)	06:28	08:02 (BAP09)	06:39		06:03	20:02 (BAP07)	05:52	
	17:26	48 16:34 (BAP08)	18:03	103 09:47 (BAP09)	18:34	86 09:28 (BAP09)	20:07		20:37	11 20:13 (BAP07)	20:57	
21	07:42	15:54 (BAP08)	07:10	08:03 (BAP09)	06:27	08:03 (BAP09)	06:37		06:02	20:01 (BAP07)	05:53	
	17:27	59 16:34 (BAP08)	18:04	104 09:47 (BAP09)	18:35	83 09:26 (BAP09)	20:08		20:38	13 20:14 (BAP07)	20:57	
22	07:42	15:54 (BAP08)	07:09	08:03 (BAP09)	06:25	08:03 (BAP09)	06:36		06:02	20:01 (BAP07)	05:53	
	17:28	65 16:33 (BAP08)	18:06	105 09:48 (BAP09)	18:36	81 09:24 (BAP09)	20:09		20:39	13 20:14 (BAP07)	20:57	
23	07:41	15:55 (BAP08)	07:07	08:02 (BAP09)	06:23	08:04 (BAP09)	06:34		06:01	20:01 (BAP07)	05:53	
	17:29	70 16:32 (BAP08)	18:07	105 09:47 (BAP09)	18:37	79 09:23 (BAP09)	20:10		20:39	14 20:15 (BAP07)	20:57	
24	07:40	15:56 (BAP08)	07:06	08:02 (BAP09)	06:22	08:05 (BAP09)	06:33		06:00	20:02 (BAP07)	05:53	
	17:31	73 16:32 (BAP08)	18:08	106 09:48 (BAP09)	18:39	75 09:20 (BAP09)	20:11		20:40	14 20:16 (BAP07)	20:57	
25	07:40	15:57 (BAP08)	07:04	08:01 (BAP09)	06:20	08:05 (BAP09)	06:32		05:59	20:02 (BAP07)	05:54	
	17:32	76 16:31 (BAP08)	18:09	106 09:47 (BAP09)	18:40	73 09:18 (BAP09)	20:12		20:41	15 20:17 (BAP07)	20:58	
26	07:39	15:58 (BAP08)	07:03	08:01 (BAP09)	06:18	08:07 (BAP09)	06:30		05:59	20:03 (BAP07)	05:54	
	17:33	77 16:29 (BAP08)	18:10	107 09:48 (BAP09)	18:41	70 09:17 (BAP09)	20:13		20:42	15 20:18 (BAP07)	20:58	
27	07:38	15:59 (BAP08)	07:01	08:00 (BAP09)	06:17	08:08 (BAP09)	06:29		05:58	20:03 (BAP07)	05:54	
	17:34	78 16:28 (BAP08)	18:11	107 09:47 (BAP09)	18:42	66 09:14 (BAP09)	20:14		20:43	16 20:19 (BAP07)	20:58	
28	07:37	15:59 (BAP08)	07:00	08:01 (BAP09)	06:15	08:09 (BAP09)	06:28		05:57	20:03 (BAP07)	05:55	
	17:35	75 16:25 (BAP08)	18:13	106 09:47 (BAP09)	18:43	62 09:11 (BAP09)	20:15		20:44	16 20:19 (BAP07)	20:58	
29	07:36	15:59 (BAP08)	06:59	08:01 (BAP09)	06:13	09:11 (BAP09)	06:26		05:57	20:04 (BAP07)	05:55	20:21 (BAP07)
	17:37	70 16:21 (BAP08)	18:14	106 09:46 (BAP09)	18:44	58 09:10 (BAP09)	20:16		20:44	16 20:20 (BAP07)	20:58	1 20:22 (BAP07)
30	07:36	15:59 (BAP08)	06:58	08:01 (BAP09)	06:12	09:12 (BAP09)	06:25		05:56	20:04 (BAP07)	05:56	20:20 (BAP07)
	17:38	64 09:27 (BAP09)	18:15	106 09:46 (BAP09)	18:45	54 09:10 (BAP09)	20:17		20:45	16 20:20 (BAP07)	20:58	5 20:25 (BAP07)
31	07:35	15:59 (BAP08)	06:57	08:01 (BAP09)	06:11	09:14 (BAP09)	06:25		05:56	20:05 (BAP07)	05:56	
	17:39	68 09:29 (BAP09)	18:16	106 09:46 (BAP09)	18:46	50 09:10 (BAP09)	20:18		20:46	16 20:21 (BAP07)	20:58	
Potential sun hours	299		298		370		398		447		450	
Total, worst case	1740		2642		2737		398		447		174	

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

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiShadow receptor: RBP_02 - INSEDIAMENTO ROMANO MARIANI UDDA
 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	05:56 20:58	20:18 (BAP07) 20:26 (BAP07)	06:19 20:14 (BAP07)	06:49 20:15 (BAP07)	07:19 19:07	08:38 (BAP09) 10:17 (BAP09)
2	05:56 20:58	20:18 (BAP07) 20:28 (BAP07)	06:20 20:38	06:50 19:55	07:20 19:05	08:38 (BAP09) 10:18 (BAP09)
3	05:57 20:57	20:17 (BAP07) 20:28 (BAP07)	06:21 20:37	06:51 19:54	07:21 19:04	08:38 (BAP09) 10:19 (BAP09)
4	05:57 20:57	20:17 (BAP07) 20:30 (BAP07)	06:22 20:36	06:52 19:52	07:22 19:02	08:37 (BAP09) 10:19 (BAP09)
5	05:58 20:57	20:16 (BAP07) 20:30 (BAP07)	06:23 20:35	06:53 19:50	07:23 19:00	08:37 (BAP09) 10:20 (BAP09)
6	05:59 20:57	20:16 (BAP07) 20:31 (BAP07)	06:24 20:34	06:54 19:49	07:24 18:59	08:36 (BAP09) 10:20 (BAP09)
7	05:59 20:56	20:16 (BAP07) 20:32 (BAP07)	06:25 20:32	06:55 19:47	07:25 18:57	08:36 (BAP09) 10:20 (BAP09)
8	06:00 20:56	20:15 (BAP07) 20:31 (BAP07)	06:26 20:31	06:56 19:45	07:26 18:56	08:35 (BAP09) 10:20 (BAP09)
9	06:00 20:56	20:15 (BAP07) 20:30 (BAP07)	06:27 20:30	06:57 19:44	07:27 18:54	08:35 (BAP09) 10:20 (BAP09)
10	06:01 20:55	20:14 (BAP07) 20:29 (BAP07)	06:28 20:29	06:58 19:42	07:28 18:52	08:34 (BAP09) 10:20 (BAP09)
11	06:02 20:55	20:14 (BAP07) 20:27 (BAP07)	06:29 20:27	06:59 19:40	07:29 18:51	08:34 (BAP09) 10:20 (BAP09)
12	06:03 20:55	20:13 (BAP07) 20:26 (BAP07)	06:30 20:26	07:00 19:39	07:30 18:49	08:34 (BAP09) 10:20 (BAP09)
13	06:03 20:54	20:13 (BAP07) 20:30 (BAP07)	06:31 20:25	07:01 19:37	07:31 18:48	08:33 (BAP09) 10:20 (BAP09)
14	06:04 20:54	20:12 (BAP07) 20:29 (BAP07)	06:32 20:23	07:02 19:35	07:32 18:46	08:33 (BAP09) 10:20 (BAP09)
15	06:05 20:53	20:12 (BAP07) 20:22 (BAP07)	06:33 20:22	07:03 19:34	07:33 18:45	08:33 (BAP09) 10:19 (BAP09)
16	06:05 20:52	20:12 (BAP07) 20:21 (BAP07)	06:34 20:21	07:04 19:32	07:34 18:43	08:33 (BAP09) 10:19 (BAP09)
17	06:06 20:52	20:12 (BAP07) 20:19 (BAP07)	06:35 20:19	07:05 19:30	07:35 18:42	08:34 (BAP09) 10:19 (BAP09)
18	06:07 20:51	20:12 (BAP07) 20:18 (BAP07)	06:36 20:18	07:06 19:28	07:36 18:40	08:34 (BAP09) 10:19 (BAP09)
19	06:08 20:51	20:12 (BAP07) 20:17 (BAP07)	06:37 20:17	07:07 19:27	07:37 18:39	08:34 (BAP09) 10:19 (BAP09)
20	06:09 20:50	20:12 (BAP07) 20:15 (BAP07)	06:38 20:15	07:08 19:25	07:39 18:37	08:34 (BAP09) 10:18 (BAP09)
21	06:10 20:49	20:12 (BAP07) 20:14 (BAP07)	06:39 20:14	07:09 19:24	07:40 18:36	08:34 (BAP09) 10:18 (BAP09)
22	06:10 20:48	20:12 (BAP07) 20:12 (BAP07)	06:40 20:12	07:10 19:22	07:41 18:34	08:34 (BAP09) 10:17 (BAP09)
23	06:11 20:48	20:11 (BAP07) 20:11 (BAP07)	06:41 20:11	07:11 19:20	07:42 18:33	08:34 (BAP09) 10:16 (BAP09)
24	06:12 20:47	20:11 (BAP07) 20:09 (BAP07)	06:42 20:09	07:12 19:19	07:43 18:32	08:35 (BAP09) 10:17 (BAP09)
25	06:13 20:46	20:11 (BAP07) 20:08 (BAP07)	06:43 20:08	07:13 19:17	07:44 18:30	08:35 (BAP09) 10:16 (BAP09)
26	06:14 20:45	20:12 (BAP07) 20:06 (BAP07)	06:44 20:06	07:14 19:15	07:45 18:29	08:36 (BAP09) 10:15 (BAP09)
27	06:15 20:44	20:12 (BAP07) 20:05 (BAP07)	06:45 20:05	07:15 19:14	07:46 18:28	08:36 (BAP09) 10:14 (BAP09)
28	06:16 20:43	20:12 (BAP07) 20:03 (BAP07)	06:46 20:03	07:16 19:12	07:47 18:26	08:37 (BAP09) 10:13 (BAP09)
29	06:17 20:42	20:13 (BAP07) 20:02 (BAP07)	06:47 20:02	07:17 19:10	07:48 18:25	08:38 (BAP09) 10:13 (BAP09)
30	06:18 20:41	20:12 (BAP07) 20:17 (BAP07)	06:48 20:00	07:18 19:09	07:49 18:24	08:39 (BAP09) 10:12 (BAP09)
31	06:18 20:40	20:13 (BAP07) 20:16 (BAP07)	06:48 19:58	07:19 19:09	07:50 18:23	08:40 (BAP09) 10:11 (BAP09)
Potential sun hours	457			375		
Total, worst case	391	427	1	1616	3171	1991
						290
						1589

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

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiShadow receptor: RBP_03 - NURAGHE LASSANIS
 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	07:47	16:02 (BAP04)	07:34	16:12 (BAP04)	06:59	17:27 (BAP03)	07:09	07:27 (BAP08)	06:24	05:55					
	17:07	30	16:32 (BAP04)	17:40	31	16:43 (BAP04)	18:14	18	17:45 (BAP03)	19:47	12	07:39 (BAP08)	20:18	20:47	
2	07:47	16:02 (BAP04)	07:33	16:13 (BAP04)	06:57	17:26 (BAP03)	07:07	07:25 (BAP08)	06:22	05:55					
	17:08	30	16:32 (BAP04)	17:42	29	16:42 (BAP04)	18:15	22	17:48 (BAP03)	19:48	14	07:39 (BAP08)	20:19	20:48	
3	07:47	16:02 (BAP04)	07:32	16:15 (BAP04)	06:56	17:23 (BAP03)	07:05	07:24 (BAP08)	06:21	05:55					
	17:08	31	16:33 (BAP04)	17:43	26	16:41 (BAP04)	18:16	25	17:48 (BAP03)	19:49	17	07:41 (BAP08)	20:20	20:48	
4	07:47	16:02 (BAP04)	07:31	16:17 (BAP04)	06:54	17:23 (BAP03)	07:04	07:22 (BAP08)	06:20	05:54					
	17:09	32	16:34 (BAP04)	17:44	23	16:40 (BAP04)	18:17	27	17:50 (BAP03)	19:50	19	07:41 (BAP08)	20:21	20:49	
5	07:47	16:02 (BAP04)	07:30	16:19 (BAP04)	06:52	17:21 (BAP03)	07:02	07:21 (BAP08)	06:19	05:54					
	17:10	33	16:35 (BAP04)	17:45	19	16:38 (BAP04)	18:18	29	17:50 (BAP03)	19:51	21	07:42 (BAP08)	20:22	20:50	
6	07:47	16:02 (BAP04)	07:29	16:21 (BAP04)	06:51	17:21 (BAP03)	07:01	07:19 (BAP08)	06:17	05:54					
	17:11	34	16:36 (BAP04)	17:47	14	16:35 (BAP04)	18:19	30	17:51 (BAP03)	19:52	22	07:41 (BAP08)	20:23	20:50	
7	07:47	16:03 (BAP04)	07:28	16:27 (BAP04)	06:49	17:20 (BAP03)	06:59	07:17 (BAP08)	06:16	05:53					
	17:12	34	16:37 (BAP04)	17:48	2	16:29 (BAP04)	18:20	31	17:51 (BAP03)	19:53	29	19:32 (BAP02)	20:24	20:51	
8	07:47	16:02 (BAP04)	07:27		06:48		17:19 (BAP03)	06:57	07:16 (BAP08)	06:15	05:53				
	17:13	35	16:37 (BAP04)	17:49			18:22	32	17:51 (BAP03)	19:54	33	19:33 (BAP02)	20:25	20:52	
9	07:47	16:02 (BAP04)	07:25		06:46		17:19 (BAP03)	06:56	07:14 (BAP08)	06:14	05:53				
	17:14	35	16:37 (BAP04)	17:50			18:23	33	17:52 (BAP03)	19:55	37	19:34 (BAP02)	20:26	20:52	
10	07:47	16:03 (BAP04)	07:24		06:45		17:18 (BAP03)	06:54	07:13 (BAP08)	06:13	05:53				
	17:15	35	16:38 (BAP04)	17:51			18:24	33	17:51 (BAP03)	19:56	40	19:35 (BAP02)	20:27	20:53	
11	07:46	16:03 (BAP04)	07:23		06:43		17:19 (BAP03)	06:53	07:13 (BAP08)	06:12	05:53				
	17:16	36	16:39 (BAP04)	17:53			18:25	32	17:51 (BAP03)	19:57	41	19:36 (BAP02)	20:28	20:53	
12	07:46	16:02 (BAP04)	07:22		06:41		17:18 (BAP03)	06:51	07:13 (BAP08)	06:11	05:52				
	17:17	37	16:39 (BAP04)	17:54			18:26	32	17:50 (BAP03)	19:58	42	19:36 (BAP02)	20:29	20:54	
13	07:46	16:03 (BAP04)	07:21		06:40		17:18 (BAP03)	06:49	07:14 (BAP08)	06:10	05:52				
	17:18	37	16:40 (BAP04)	17:55			18:27	31	17:49 (BAP03)	19:59	42	19:38 (BAP02)	20:30	20:54	
14	07:45	16:03 (BAP04)	07:19		06:38		17:19 (BAP03)	06:48	07:15 (BAP08)	06:09	05:52				
	17:19	38	16:41 (BAP04)	17:56			18:28	30	17:49 (BAP03)	20:00	40	19:38 (BAP02)	20:31	20:55	
15	07:45	16:03 (BAP04)	07:18		06:37		17:19 (BAP03)	06:46	07:16 (BAP08)	06:08	05:52				
	17:20	38	16:41 (BAP04)	17:57			18:29	29	17:48 (BAP03)	20:01	39	19:40 (BAP02)	20:32	20:55	
16	07:45	16:04 (BAP04)	07:17		06:35		17:20 (BAP03)	06:45	07:18 (BAP08)	06:07	05:52				
	17:21	38	16:42 (BAP04)	17:59			18:30	26	17:46 (BAP03)	20:02	35	19:40 (BAP02)	20:33	20:55	
17	07:44	16:03 (BAP04)	07:16		06:33		17:21 (BAP03)	06:43	07:22 (BAP08)	06:06	05:52				
	17:23	39	16:42 (BAP04)	18:00			18:31	24	17:45 (BAP03)	20:04	29	19:42 (BAP02)	20:34	20:56	
18	07:44	16:04 (BAP04)	07:14		06:32		17:22 (BAP03)	06:42	19:18 (BAP02)	06:05	05:52				
	17:24	39	16:43 (BAP04)	18:01			18:32	21	17:43 (BAP03)	20:05	24	19:42 (BAP02)	20:35	20:56	
19	07:43	16:04 (BAP04)	07:13		06:30		17:24 (BAP03)	06:40	19:19 (BAP02)	06:04	05:52				
	17:25	39	16:43 (BAP04)	18:02			18:33	16	17:40 (BAP03)	20:06	25	19:44 (BAP02)	20:36	20:56	
20	07:43	16:04 (BAP04)	07:12		06:28		17:28 (BAP03)	06:39	19:20 (BAP02)	06:03	05:53				
	17:26	39	16:43 (BAP04)	18:03			18:34	9	17:37 (BAP03)	20:07	23	19:43 (BAP02)	20:37	20:57	
21	07:42	16:05 (BAP04)	07:10		06:27			06:37	19:20 (BAP02)	06:02	05:53				
	17:27	39	16:44 (BAP04)	18:05			18:35		20:08	21	19:41 (BAP02)	20:38	12	20:14 (BAP01)	20:57
22	07:42	16:05 (BAP04)	07:09		06:25			06:36	19:22 (BAP02)	06:02	05:53				
	17:28	39	16:44 (BAP04)	18:06			18:37		20:09	18	19:40 (BAP02)	20:39	11	20:14 (BAP01)	20:57
23	07:41	16:05 (BAP04)	07:07		06:23			06:35	19:23 (BAP02)	06:01	05:53				
	17:29	39	16:44 (BAP04)	18:07			18:38		20:10	14	19:37 (BAP02)	20:40	12	20:15 (BAP01)	20:57
24	07:40	16:06 (BAP04)	07:06		06:22			06:33	19:25 (BAP02)	06:00	05:53				
	17:31	39	16:45 (BAP04)	18:08			18:39		20:11	10	19:35 (BAP02)	20:40	12	20:16 (BAP01)	20:58
25	07:40	16:06 (BAP04)	07:05		06:20			06:32		05:59	05:54				
	17:32	39	16:45 (BAP04)	18:09			18:40		20:12	13	20:17 (BAP01)	20:58	13	20:17 (BAP01)	20:58
26	07:39	16:07 (BAP04)	07:03		06:19			06:30		05:59	05:54				
	17:33	38	16:45 (BAP04)	18:10			18:41		20:13		20:42	13	20:18 (BAP01)	20:58	
27	07:38	16:07 (BAP04)	07:02		06:17			06:29		05:58	05:54				
	17:34	37	16:44 (BAP04)	18:11			18:42		20:14		20:43	12	20:18 (BAP01)	20:58	
28	07:37	16:08 (BAP04)	07:00		06:15			06:28		05:58	05:55				
	17:35	36	16:44 (BAP04)	18:13	12	17:31 (BAP03)	18:43		20:15		20:44	13	20:20 (BAP01)	20:58	
29	07:36	16:09 (BAP04)			07:14			06:26		05:57	05:55				
	17:37	36	16:45 (BAP04)		19:44			20:16		20:45	12	20:20 (BAP01)	20:58		
30	07:36	16:10 (BAP04)			07:12			06:25		05:56	05:56				
	17:38	34	16:44 (BAP04)		19:45			20:17	4	07:30 (BAP08)	06:25	9	20:19 (BAP01)	20:58	
31	07:35	16:11 (BAP04)			07:10			06:24		05:56	05:56				
	17:39	33	16:44 (BAP04)		19:46			20:46	8	07:29 (BAP08)	06:25	6	20:11 (BAP01)	20:58	
Potential sun hours	299		298		370			398		447		190		450	
Total, worst case	1118		156		542			647		447		190		450	

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

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiShadow receptor: RBP_03 - NURAGHE LASSANIS
 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	05:56 20:58	06:20 20:39	20:13 (BAP01) 06:50 19:57	07:12 (BAP08) 19:07	07:19 17:58 (BAP03) 06:52	07:26 15:45 (BAP04)
2	05:57 20:58	06:20 20:38	20:15 (BAP01) 06:51 19:57	41 19:35 (BAP02) 07:11 (BAP08) 19:07	32 18:30 (BAP03) 17:57 (BAP03) 06:53	36 16:21 (BAP04) 15:46 (BAP04) 07:27
3	05:57 20:57	06:21 20:37	06:51 19:55	40 19:33 (BAP02) 07:12 (BAP08) 19:05	33 18:30 (BAP03) 17:57 (BAP03) 06:54	35 16:21 (BAP04) 15:46 (BAP04) 07:28
4	05:58 20:57	06:22 20:36	06:52 19:52	37 19:32 (BAP02) 07:13 (BAP08) 19:04	33 18:30 (BAP03) 17:56 (BAP03) 06:56	36 16:22 (BAP04) 15:47 (BAP04) 07:29
5	05:58 20:57	06:23 20:35	06:53 19:50	33 19:30 (BAP02) 07:14 (BAP08) 19:02	33 18:29 (BAP03) 17:56 (BAP03) 06:57	6 15:55 (BAP04) 16:01 (BAP04) 16:57
6	05:59 20:57	06:24 20:34	06:54 19:49	29 19:29 (BAP02) 07:15 (BAP08) 19:01	33 18:29 (BAP03) 17:56 (BAP03) 06:58	15 16:05 (BAP04) 15:48 (BAP04) 16:57
7	05:59 20:57	06:25 20:32	06:55 19:47	23 07:38 (BAP08) 07:16 (BAP08) 18:59	32 18:28 (BAP03) 17:56 (BAP03) 06:59	20 16:08 (BAP04) 15:46 (BAP04) 16:57
8	06:00 20:56	06:26 20:31	06:56 19:46	21 07:37 (BAP08) 07:17 (BAP08) 18:57	31 18:27 (BAP03) 17:56 (BAP03) 07:00	24 16:10 (BAP04) 15:45 (BAP04) 16:56
9	06:01 20:56	06:27 20:30	06:57 19:44	19 07:36 (BAP08) 07:18 (BAP08) 18:56	30 18:26 (BAP03) 17:57 (BAP03) 07:01	26 16:11 (BAP04) 15:43 (BAP04) 16:56
10	06:01 20:55	06:28 20:29	06:58 19:42	17 07:35 (BAP08) 07:18 (BAP08) 18:54	28 18:25 (BAP03) 17:57 (BAP03) 07:03	29 16:12 (BAP04) 15:43 (BAP04) 16:56
11	06:02 20:55	06:29 20:27	06:59 19:41	15 07:33 (BAP08) 07:19 (BAP08) 18:53	27 18:24 (BAP03) 17:58 (BAP03) 07:04	31 16:14 (BAP04) 15:42 (BAP04) 16:56
12	06:03 20:55	20:20 (BAP01) 06:30 20:26	07:00 19:39	12 07:31 (BAP08) 07:20 (BAP08) 18:51	24 18:22 (BAP03) 18:00 (BAP03) 07:05	33 16:15 (BAP04) 15:41 (BAP04) 16:57
13	06:03 20:54	20:19 (BAP01) 06:31 20:25	07:01 19:37	9 07:29 (BAP08) 07:21 (BAP08) 18:49	20 18:20 (BAP03) 18:02 (BAP03) 07:06	34 16:15 (BAP04) 15:40 (BAP04) 16:57
14	06:04 20:54	20:17 (BAP01) 06:32 20:24	07:02 19:36	5 07:26 (BAP08) 07:22 18:48	15 18:17 (BAP03) 18:05 (BAP03) 07:07	36 16:16 (BAP04) 15:41 (BAP04) 16:57
15	06:05 20:53	20:16 (BAP01) 06:33 20:22	07:03 19:34	8 18:13 (BAP03) 07:32 18:46	8 18:13 (BAP03) 07:08 17:08	36 16:17 (BAP04) 15:40 (BAP04) 16:57
16	06:06 20:53	20:16 (BAP01) 06:34 20:21	07:04 19:32	07:33 18:45	07:08 17:07	37 16:17 (BAP04) 15:40 (BAP04) 16:57
17	06:06 20:52	20:15 (BAP01) 06:35 20:19	07:05 19:31	07:34 18:43	07:10 17:06	38 16:18 (BAP04) 15:40 (BAP04) 16:57
18	06:07 20:51	20:14 (BAP01) 06:36 20:18	07:06 19:29	07:35 18:42	07:11 17:05	39 16:19 (BAP04) 15:39 (BAP04) 16:58
19	06:08 20:51	20:14 (BAP01) 06:37 20:17	07:06 19:29	07:36 18:40	07:12 17:04	39 16:19 (BAP04) 15:40 (BAP04) 16:58
20	06:09 20:50	20:13 (BAP01) 06:38 20:15	07:07 19:27	10 19:41 (BAP02) 19:28 (BAP02) 07:08	17 17:03 17:03 16:19	39 16:19 (BAP04) 15:40 (BAP04) 16:59
21	06:10 20:49	20:13 (BAP01) 06:39 20:14	07:09 19:26	16 19:44 (BAP02) 19:25 (BAP02) 07:09	17 17:02 17:02 16:19	39 16:19 (BAP04) 15:40 (BAP04) 16:59
22	06:11 20:48	20:13 (BAP01) 06:40 20:12	07:10 19:25	19 19:45 (BAP02) 19:24 (BAP02) 07:10	18 18:36 18:36 17:02	39 16:19 (BAP04) 15:40 (BAP04) 16:59
23	06:11 20:48	20:12 (BAP01) 06:41 20:11	07:11 19:24	21 19:46 (BAP02) 19:22 (BAP02) 07:11	19 18:34 18:34 17:02	39 16:19 (BAP04) 15:41 (BAP04) 17:00
24	06:12 20:47	20:23 (BAP01) 06:42 20:09	07:12 19:23	4 18:15 (BAP03) 18:19 (BAP03) 18:33	18 17:01 17:01 16:20	39 16:20 (BAP04) 15:41 (BAP04) 17:00
25	06:13 20:46	20:22 (BAP01) 06:43 20:08	07:13 19:22	15 18:24 (BAP03) 18:24 (BAP03) 18:32	19 17:00 17:00 16:20	39 16:20 (BAP04) 15:41 (BAP04) 17:01
26	06:14 20:45	20:22 (BAP01) 06:44 20:06	07:14 19:22	20 18:26 (BAP03) 18:06 (BAP03) 16:44	20 17:00 17:00 16:20	39 16:20 (BAP04) 15:41 (BAP04) 17:01
27	06:15 20:44	20:21 (BAP01) 06:45 20:05	07:15 19:21	23 18:27 (BAP03) 18:27 (BAP03) 17:29	21 17:00 17:00 16:20	39 16:20 (BAP04) 15:42 (BAP04) 17:02
28	06:16 20:43	20:20 (BAP01) 06:46 20:03	07:16 19:20	26 18:28 (BAP03) 18:28 (BAP03) 17:28	22 17:00 17:00 16:20	39 16:20 (BAP04) 15:42 (BAP04) 17:03
29	06:17 20:42	20:20 (BAP01) 06:47 20:02	07:17 19:19	28 18:09 (BAP03) 18:09 (BAP03) 17:43	23 17:00 17:00 16:20	39 16:20 (BAP04) 15:42 (BAP04) 17:03
30	06:18 20:41	20:19 (BAP01) 06:48 20:00	07:18 19:18	29 18:00 (BAP03) 18:00 (BAP03) 17:25	24 17:00 17:00 16:20	39 16:20 (BAP04) 15:44 (BAP04) 17:04
31	06:19 20:40	20:18 (BAP01) 06:49 19:58	07:19 19:17	31 18:30 (BAP03) 17:24	25 16:58 16:58 16:21	37 16:21 (BAP04) 17:05 17:05
Potential sun hours	457	427	375	346	299	290
Total, worst case	189	370	477	379	904	905

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

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiShadow receptor: RBP_04 - TOMBA DI GIGANTI SU CANALE MANNU
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	07:47	07:34	06:59	07:09	06:24		19:36 (BAP04)	05:56	18:57 (BAP04)
	17:07	17:40	18:14	19:47	20:18	9	19:45 (BAP04)	20:47	85 20:22 (BAP04)
2	07:47	07:33	06:57	07:07	06:22		19:29 (BAP04)	05:55	18:57 (BAP04)
	17:08	17:42	18:15	19:48	20:19	23	19:52 (BAP04)	20:48	86 20:23 (BAP04)
3	07:47	07:32	06:56	07:05	06:21		19:24 (BAP04)	05:55	18:57 (BAP04)
	17:08	17:43	18:16	19:49	20:20	31	19:55 (BAP04)	20:48	87 20:24 (BAP04)
4	07:47	07:31	06:54	07:04	06:20		19:21 (BAP04)	05:54	18:57 (BAP04)
	17:09	17:44	18:17	19:50	20:21	37	19:58 (BAP04)	20:49	88 20:25 (BAP04)
5	07:47	07:30	06:53	07:02	06:19		19:18 (BAP04)	05:54	18:57 (BAP04)
	17:10	17:45	18:18	19:51	20:22	41	19:59 (BAP04)	20:50	87 20:24 (BAP04)
6	07:47	07:29	06:51	07:01	06:18		19:16 (BAP04)	05:54	18:57 (BAP04)
	17:11	17:47	18:19	19:52	20:23	44	20:00 (BAP04)	20:50	88 20:25 (BAP04)
7	07:47	07:28	06:49	06:59	06:16		19:14 (BAP04)	05:53	18:57 (BAP04)
	17:12	17:48	18:20	19:53	20:24	47	20:01 (BAP04)	20:51	89 20:26 (BAP04)
8	07:47	07:27	06:48	06:57	06:15		19:13 (BAP04)	05:53	18:58 (BAP04)
	17:13	17:49	18:22	19:54	20:25	49	20:02 (BAP04)	20:52	89 20:27 (BAP04)
9	07:47	07:25	06:46	06:56	06:14		19:11 (BAP04)	05:53	18:58 (BAP04)
	17:14	17:50	18:23	19:55	20:26	52	20:03 (BAP04)	20:52	90 20:28 (BAP04)
10	07:47	07:24	06:45	06:54	06:13		19:10 (BAP04)	05:53	18:57 (BAP04)
	17:15	17:51	18:24	19:56	20:27	54	20:04 (BAP04)	20:53	90 20:27 (BAP04)
11	07:46	07:23	06:43	06:53	06:12		19:08 (BAP04)	05:53	18:57 (BAP04)
	17:16	17:53	18:25	19:57	20:28	57	20:05 (BAP04)	20:53	91 20:28 (BAP04)
12	07:46	07:22	06:41	06:51	06:11		19:07 (BAP04)	05:52	18:58 (BAP04)
	17:17	17:54	18:26	19:58	20:29	59	20:06 (BAP04)	20:54	90 20:28 (BAP04)
13	07:46	07:21	06:40	06:50	06:10		19:06 (BAP04)	05:52	18:58 (BAP04)
	17:18	17:55	18:27	19:59	20:30	61	20:07 (BAP04)	20:54	90 20:28 (BAP04)
14	07:45	07:19	06:38	06:48	06:09		19:05 (BAP04)	05:52	18:58 (BAP04)
	17:19	17:56	18:28	20:00	20:31	63	20:08 (BAP04)	20:55	91 20:29 (BAP04)
15	07:45	07:18	06:37	06:46	06:08		19:04 (BAP04)	05:52	18:58 (BAP04)
	17:20	17:57	18:29	20:01	20:32	65	20:09 (BAP04)	20:55	91 20:29 (BAP04)
16	07:45	07:17	06:35	06:45	06:07		19:03 (BAP04)	05:52	18:58 (BAP04)
	17:21	17:59	18:30	20:02	20:33	66	20:09 (BAP04)	20:55	91 20:29 (BAP04)
17	07:44	07:16	06:33	06:43	06:06		19:02 (BAP04)	05:52	18:58 (BAP04)
	17:23	18:00	18:31	20:04	20:34	68	20:10 (BAP04)	20:56	91 20:29 (BAP04)
18	07:44	07:14	06:32	06:42	06:05		19:01 (BAP04)	05:52	18:58 (BAP04)
	17:24	18:01	18:32	20:05	20:35	70	20:11 (BAP04)	20:56	91 20:29 (BAP04)
19	07:43	07:13	06:30	06:40	06:04		19:00 (BAP04)	05:53	18:59 (BAP04)
	17:25	18:02	18:33	20:06	20:36	72	20:12 (BAP04)	20:56	92 20:31 (BAP04)
20	07:43	07:12	06:28	06:39	06:03		19:01 (BAP04)	05:53	18:59 (BAP04)
	17:26	18:03	18:34	20:07	20:37	72	20:13 (BAP04)	20:57	92 20:31 (BAP04)
21	07:42	07:10	06:27	06:37	06:02		19:00 (BAP04)	05:53	18:59 (BAP04)
	17:27	18:05	18:36	20:08	20:38	74	20:14 (BAP04)	20:57	92 20:31 (BAP04)
22	07:42	07:09	06:25	06:36	06:02		18:59 (BAP04)	05:53	18:59 (BAP04)
	17:28	18:06	18:37	20:09	20:39	75	20:14 (BAP04)	20:57	92 20:31 (BAP04)
23	07:41	07:07	06:23	06:35	06:01		18:59 (BAP04)	05:53	18:59 (BAP04)
	17:30	18:07	18:38	20:10	20:40	77	20:16 (BAP04)	20:57	92 20:31 (BAP04)
24	07:40	07:06	06:22	06:33	06:00		18:59 (BAP04)	05:54	19:00 (BAP04)
	17:31	18:08	18:39	20:11	20:40	77	20:16 (BAP04)	20:58	91 20:31 (BAP04)
25	07:40	07:05	06:20	06:32	06:00		18:58 (BAP04)	05:54	19:00 (BAP04)
	17:32	18:09	18:40	20:12	20:41	79	20:17 (BAP04)	20:58	91 20:31 (BAP04)
26	07:39	07:03	06:19	06:30	05:59		18:58 (BAP04)	05:54	19:00 (BAP04)
	17:33	18:10	18:41	20:13	20:42	80	20:18 (BAP04)	20:58	91 20:31 (BAP04)
27	07:38	07:02	06:17	06:29	05:58		18:58 (BAP04)	05:54	19:01 (BAP04)
	17:34	18:11	18:42	20:14	20:43	80	20:18 (BAP04)	20:58	91 20:32 (BAP04)
28	07:37	07:00	06:15	06:28	05:58		18:58 (BAP04)	05:55	19:01 (BAP04)
	17:36	18:13	18:43	20:15	20:44	82	20:20 (BAP04)	20:58	91 20:32 (BAP04)
29	07:36		07:14	06:26	05:57		18:57 (BAP04)	05:55	19:02 (BAP04)
	17:37		19:44	20:16	20:45	83	20:20 (BAP04)	20:58	91 20:33 (BAP04)
30	07:36		07:12	06:25	05:57		18:58 (BAP04)	05:56	19:02 (BAP04)
	17:38		19:45	20:17	20:45	83	20:21 (BAP04)	20:58	90 20:32 (BAP04)
31	07:35		07:10		05:56		18:57 (BAP04)		
	17:39		19:46		20:46	84	20:21 (BAP04)		
Potential sun hours	299	298	370	398	447			450	
Total, worst case						1914			2701

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

Calculation: Shadow_2021_08_04_progetto_beni_paesaggisticiShadow receptor: RBP_04 - TOMBA DI GIGANTI SU CANALE MANNU
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	05:56 20:58	19:01 (BAP04) 20:32 (BAP04)	06:20 20:39	19:17 (BAP04) 20:15 (BAP04)	06:50 19:57	07:19 19:07
2	05:57 20:58	19:02 (BAP04) 20:32 (BAP04)	06:21 20:38	19:18 (BAP04) 20:14 (BAP04)	06:51 19:55	07:20 19:05
3	05:57 20:57	19:02 (BAP04) 20:32 (BAP04)	06:21 20:37	19:20 (BAP04) 20:13 (BAP04)	06:52 19:54	07:21 19:04
4	05:58 20:57	19:03 (BAP04) 20:32 (BAP04)	06:22 20:36	19:21 (BAP04) 20:13 (BAP04)	06:52 19:52	07:22 19:02
5	05:58 20:57	19:03 (BAP04) 20:32 (BAP04)	06:23 20:35	19:23 (BAP04) 20:12 (BAP04)	06:53 19:50	07:23 19:01
6	05:59 20:57	19:04 (BAP04) 20:32 (BAP04)	06:24 20:34	19:25 (BAP04) 20:11 (BAP04)	06:54 19:49	07:24 18:59
7	05:59 20:57	19:04 (BAP04) 20:32 (BAP04)	06:25 20:32	19:26 (BAP04) 20:09 (BAP04)	06:55 19:47	07:25 18:57
8	06:00 20:56	19:04 (BAP04) 20:31 (BAP04)	06:26 20:31	19:29 (BAP04) 20:08 (BAP04)	06:56 19:46	07:26 18:56
9	06:01 20:56	19:04 (BAP04) 20:31 (BAP04)	06:27 20:30	19:31 (BAP04) 20:07 (BAP04)	06:57 19:44	07:27 18:54
10	06:01 20:55	19:05 (BAP04) 20:30 (BAP04)	06:28 20:29	19:35 (BAP04) 20:04 (BAP04)	06:58 19:42	07:28 18:53
11	06:02 20:55	19:05 (BAP04) 20:30 (BAP04)	06:29 20:27	19:39 (BAP04) 19:59 (BAP04)	06:59 19:41	07:29 18:51
12	06:03 20:55	19:05 (BAP04) 20:30 (BAP04)	06:30 20:26	19:00 19:39	07:00 18:49	07:30 17:09
13	06:03 20:54	19:06 (BAP04) 20:30 (BAP04)	06:31 20:25	07:01 19:37	07:31 18:48	07:06 17:08
14	06:04 20:54	19:06 (BAP04) 20:29 (BAP04)	06:32 20:24	07:02 19:36	07:32 18:46	07:07 17:08
15	06:05 20:53	19:06 (BAP04) 20:28 (BAP04)	06:33 20:22	07:03 19:34	07:33 18:45	07:08 17:07
16	06:06 20:53	19:07 (BAP04) 20:28 (BAP04)	06:34 20:21	07:04 19:32	07:34 18:43	07:10 17:06
17	06:06 20:52	19:08 (BAP04) 20:28 (BAP04)	06:35 20:19	07:05 19:31	07:35 18:42	07:11 17:05
18	06:07 20:51	19:07 (BAP04) 20:26 (BAP04)	06:36 20:18	07:06 19:29	07:36 18:40	07:12 17:04
19	06:08 20:51	19:08 (BAP04) 20:26 (BAP04)	06:37 20:17	07:07 19:27	07:38 18:39	07:13 17:04
20	06:09 20:50	19:09 (BAP04) 20:26 (BAP04)	06:38 20:15	07:08 19:25	07:39 18:37	07:14 17:03
21	06:10 20:49	19:09 (BAP04) 20:25 (BAP04)	06:39 20:14	07:09 19:24	07:40 18:36	07:15 17:02
22	06:11 20:48	19:10 (BAP04) 20:25 (BAP04)	06:40 20:12	07:10 19:22	07:41 18:34	07:17 17:02
23	06:11 20:48	19:11 (BAP04) 20:24 (BAP04)	06:41 20:11	07:11 19:20	07:42 18:33	07:18 17:01
24	06:12 20:47	19:10 (BAP04) 20:22 (BAP04)	06:42 20:09	07:12 19:19	07:43 18:32	07:19 17:00
25	06:13 20:46	19:11 (BAP04) 20:22 (BAP04)	06:43 20:08	07:13 19:17	06:44 17:30	07:20 17:00
26	06:14 20:45	19:12 (BAP04) 20:21 (BAP04)	06:44 20:06	07:14 19:15	06:45 17:29	07:21 16:59
27	06:15 20:44	19:13 (BAP04) 20:20 (BAP04)	06:45 20:05	07:15 19:14	06:46 17:28	07:22 16:59
28	06:16 20:43	19:14 (BAP04) 20:20 (BAP04)	06:46 20:03	07:16 19:12	06:48 17:26	07:23 16:59
29	06:17 20:42	19:15 (BAP04) 20:19 (BAP04)	06:47 20:02	07:17 19:10	06:49 17:25	07:24 16:58
30	06:18 20:41	19:16 (BAP04) 20:18 (BAP04)	06:48 20:00	07:18 19:09	06:50 17:24	07:25 16:58
31	06:19 20:40	19:17 (BAP04) 20:17 (BAP04)	06:49 19:58		06:51 17:23	07:46 17:06
Potential sun hours	457	427		375	346	299
Total, worst case	2455	481				290

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

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiShadow receptor: RBP_05 - MENHIR DI ISTE LAI
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	07:47 17:07	07:34 17:40	06:59 18:14		07:09 19:47	20	07:46 (BAP04) 08:06 (BAP04)	06:24 20:18	05:56 20:47
2	07:47 17:08	07:33 17:42	06:57 18:15		07:07 19:48	24	07:43 (BAP04) 08:07 (BAP04)	06:22 20:19	05:55 20:48
3	07:47 17:08	07:32 17:43	06:56 18:16		07:06 19:49	27	07:42 (BAP04) 08:09 (BAP04)	06:21 20:20	05:55 20:48
4	07:47 17:09	07:31 17:44	06:54 18:17		07:04 19:50	31	07:39 (BAP04) 08:10 (BAP04)	06:20 20:21	05:54 20:49
5	07:47 17:10	07:30 17:45	06:53 18:18		07:02 19:51	32	07:39 (BAP04) 08:11 (BAP04)	06:19 20:22	05:54 20:50
6	07:47 17:11	07:29 17:47	06:51 18:19		07:01 19:52	35	07:37 (BAP04) 08:12 (BAP04)	06:18 20:23	05:54 20:50
7	07:47 17:12	07:28 17:48	06:49 18:21		06:59 19:53	35	07:36 (BAP04) 08:11 (BAP04)	06:16 20:24	05:53 20:51
8	07:47 17:13	07:27 17:49	06:48 18:22		06:57 19:54	37	07:35 (BAP04) 08:12 (BAP04)	06:15 20:25	05:53 20:52
9	07:47 17:14	07:26 17:50	06:46 18:23		06:56 19:55	38	07:34 (BAP04) 08:12 (BAP04)	06:14 20:26	05:53 20:52
10	07:47 17:15	07:24 17:51	06:45 18:24		06:54 19:56	38	07:34 (BAP04) 08:12 (BAP04)	06:13 20:27	05:53 20:53
11	07:46 17:16	07:23 17:53	06:43 18:25		06:53 19:57	39	07:33 (BAP04) 08:12 (BAP04)	06:12 20:28	05:53 20:53
12	07:46 17:17	07:22 17:54	06:42 18:26		06:51 19:58	38	07:34 (BAP04) 08:12 (BAP04)	06:11 20:29	05:52 20:54
13	07:46 17:18	07:21 17:55	06:40 18:27		06:50 19:59	38	07:33 (BAP04) 08:11 (BAP04)	06:10 20:30	05:52 20:54
14	07:46 17:19	07:20 17:56	06:38 18:28		06:48 20:00	38	07:32 (BAP04) 08:10 (BAP04)	06:09 20:31	05:52 20:55
15	07:45 17:20	07:18 17:58	06:37 18:29		06:47 20:02	37	07:33 (BAP04) 08:10 (BAP04)	06:08 20:32	05:52 20:55
16	07:45 17:22	07:17 17:59	06:35 18:30		06:45 20:03	37	07:32 (BAP04) 08:09 (BAP04)	06:07 20:33	05:52 20:56
17	07:44 17:23	07:16 18:00	06:33 18:31		06:43 20:04	36	07:33 (BAP04) 08:09 (BAP04)	06:06 20:34	05:52 20:56
18	07:44 17:24	07:14 18:01	06:32 18:32		06:42 20:05	34	07:34 (BAP04) 08:08 (BAP04)	06:05 20:35	05:52 20:56
19	07:43 17:25	07:13 18:02	06:30 18:33		06:40 20:06	32	07:34 (BAP04) 08:06 (BAP04)	06:04 20:36	05:53 20:57
20	07:43 17:26	07:12 18:03	06:28 18:35		06:39 20:07	31	07:35 (BAP04) 08:06 (BAP04)	06:03 20:37	05:53 20:57
21	07:42 17:27	07:10 18:05	06:27 18:36		06:38 20:08	29	07:35 (BAP04) 08:04 (BAP04)	06:03 20:38	05:53 20:57
22	07:42 17:28	07:09 18:06	06:25 18:37		06:36 20:09	25	07:37 (BAP04) 08:02 (BAP04)	06:02 20:39	05:53 20:57
23	07:41 17:30	07:07 18:07	06:24 18:38		06:35 20:10	22	07:38 (BAP04) 08:00 (BAP04)	06:01 20:40	05:53 20:57
24	07:40 17:31	07:06 18:08	06:22 18:39		06:33 20:11	18	07:40 (BAP04) 07:58 (BAP04)	06:00 20:40	05:54 20:58
25	07:40 17:32	07:05 18:09	06:20 18:40		06:32 20:12	12	07:43 (BAP04) 07:55 (BAP04)	06:00 20:41	05:54 20:58
26	07:39 17:33	07:03 18:10	06:19 18:41		06:30 20:13			05:59 20:42	05:54 20:58
27	07:38 17:34	07:02 18:12	06:17 18:42		06:29 20:14			05:58 20:43	05:55 20:58
28	07:37 17:36	07:00 18:13	06:15 18:43		06:28 20:15			05:58 20:44	05:55 20:58
29	07:37 17:37		07:14 19:44		06:26 20:16			05:57 20:45	05:55 20:58
30	07:36 17:38		07:12 19:45		06:25 20:17			05:57 20:45	05:56 20:58
31	07:35 17:39		07:10 19:46	07:50 (BAP04) 08:03 (BAP04)				05:56 20:46	
Potential sun hours	299	298	370	13	398			447	450
Total, worst case				13	783			447	209

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

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiShadow receptor: RBP_05 - MENHIR DI ISTELEAI
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	05:56	06:19 (BAP06)	06:20	06:50	07:32 (BAP04)	07:19	06:52	07:26
	20:58	06:27 (BAP06)	20:39	19:57	08:11 (BAP04)	19:07	17:21	16:58
2	05:57	06:19 (BAP06)	06:21	06:51	07:32 (BAP04)	07:20	06:53	07:27
	20:58	06:26 (BAP06)	20:38	19:55	08:10 (BAP04)	19:06	17:20	16:57
3	05:57	06:20 (BAP06)	06:22	06:52	07:32 (BAP04)	07:21	06:55	07:28
	20:58	06:26 (BAP06)	20:37	19:54	08:10 (BAP04)	19:04	17:19	16:57
4	05:58	06:20 (BAP06)	06:22	06:53	07:32 (BAP04)	07:22	06:56	07:29
	20:57	06:25 (BAP06)	20:36	19:52	08:09 (BAP04)	19:02	17:18	16:57
5	05:58	06:21 (BAP06)	06:23	06:54	07:33 (BAP04)	07:23	06:57	07:30
	20:57	06:25 (BAP06)	20:35	19:50	08:09 (BAP04)	19:01	17:17	16:57
6	05:59	06:21 (BAP06)	06:24	06:54	07:33 (BAP04)	07:24	06:58	07:31
	20:57	06:24 (BAP06)	20:34	19:49	08:08 (BAP04)	18:59	17:16	16:57
7	05:59	06:22 (BAP06)	06:25	06:55	07:34 (BAP04)	07:25	06:59	07:32
	20:57	06:23 (BAP06)	20:33	19:47	08:07 (BAP04)	18:57	17:14	16:57
8	06:00		06:26	06:56	07:34 (BAP04)	07:26	07:00	07:33
	20:56		20:31	19:46	08:05 (BAP04)	18:56	17:13	16:57
9	06:01		06:27	06:57	07:35 (BAP04)	07:27	07:02	07:34
	20:56		20:30	19:44	08:04 (BAP04)	18:54	17:12	16:57
10	06:01		06:28	06:58	07:37 (BAP04)	07:28	07:03	07:35
	20:56		20:29	19:42	08:02 (BAP04)	18:53	17:11	16:57
11	06:02		06:29	06:59	07:38 (BAP04)	07:29	07:04	07:36
	20:55		20:28	19:41	07:58 (BAP04)	18:51	17:10	16:57
12	06:03		06:30	07:00	07:40 (BAP04)	07:30	07:05	07:37
	20:55		20:26	19:39	07:55 (BAP04)	18:49	17:09	16:57
13	06:03		06:31	07:01		07:31	07:06	07:37
	20:54		20:25	19:37		18:48	17:09	16:57
14	06:04		06:32	07:02		07:32	07:07	07:38
	20:54		20:24	19:36		18:46	17:08	16:57
15	06:05		06:33	07:03		07:33	07:09	07:39
	20:53		20:22	19:34		18:45	17:07	16:57
16	06:06		06:34	07:04		07:34	07:10	07:40
	20:53		20:21	19:32		18:43	17:06	16:58
17	06:06		06:35	07:05		07:35	07:11	07:40
	20:52		20:19	19:31		18:42	17:05	16:58
18	06:07		06:36	07:06	07:48 (BAP04)	07:37	07:12	07:41
	20:51		20:18	19:29	08:01 (BAP04)	18:40	17:04	16:58
19	06:08		06:37	07:07	07:45 (BAP04)	07:38	07:13	07:42
	20:51		20:17	19:27	08:04 (BAP04)	18:39	17:04	16:59
20	06:09		06:38	07:08	07:43 (BAP04)	07:39	07:14	07:42
	20:50		20:15	19:26	08:06 (BAP04)	18:37	17:03	16:59
21	06:10		06:39	07:09	07:42 (BAP04)	07:40	07:15	07:43
	20:49		20:14	19:24	08:07 (BAP04)	18:36	17:02	16:59
22	06:11		06:40	07:10	07:40 (BAP04)	07:41	07:17	07:43
	20:48		20:12	19:22	08:09 (BAP04)	18:35	17:02	17:00
23	06:11		06:41	07:11	07:39 (BAP04)	07:42	07:18	07:44
	20:48		20:11	19:21	08:10 (BAP04)	18:33	17:01	17:00
24	06:12		06:42	07:12	07:38 (BAP04)	07:43	07:19	07:44
	20:47		20:09	19:19	08:10 (BAP04)	18:32	17:01	17:01
25	06:13		06:43	07:13	07:37 (BAP04)	07:44	07:20	07:45
	20:46		20:08	19:17	08:11 (BAP04)	17:30	17:00	17:02
26	06:14		06:44	07:14	07:36 (BAP04)	07:45	07:21	07:45
	20:45		20:06	19:15	08:11 (BAP04)	17:29	17:00	17:02
27	06:15		06:45	07:15	07:35 (BAP04)	07:46	07:22	07:45
	20:44		20:05	19:14	08:12 (BAP04)	17:28	16:59	17:03
28	06:16		06:46	07:16	07:35 (BAP04)	07:47	07:23	07:46
	20:43		20:03	19:12	08:12 (BAP04)	17:26	16:59	17:04
29	06:17		06:47	07:17	07:33 (BAP04)	07:49	07:24	07:46
	20:42		20:02	19:10	08:11 (BAP04)	17:25	16:58	17:04
30	06:18		06:48	07:18	07:33 (BAP04)	07:50	07:25	07:46
	20:41		20:00	19:09	08:11 (BAP04)	17:24	16:58	17:05
31	06:19		06:49	07:19	07:32 (BAP04)	07:51		07:46
	20:40		19:59	19:08	08:11 (BAP04)	17:23		17:06
Potential sun hours	457		427	375		346	299	290
Total, worst case		34	430	376				

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

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiShadow receptor: RBP_06 - NURAGHE ISTE LAI
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	07:47 17:07	07:34 17:40	06:59 18:14	07:09 19:47	07:48 (BAP04) 08:04 (BAP04)	06:24 20:18	05:56 20:47
2	07:47 17:08	07:33 17:42	06:57 18:15	07:07 19:48	07:44 (BAP04) 08:07 (BAP04)	06:22 20:19	05:55 20:48
3	07:47 17:08	07:32 17:43	06:56 18:16	07:06 19:49	07:43 (BAP04) 08:09 (BAP04)	06:21 20:20	05:55 20:48
4	07:47 17:09	07:31 17:44	06:54 18:17	07:04 19:50	07:40 (BAP04) 08:10 (BAP04)	06:20 20:21	05:54 20:49
5	07:47 17:10	07:30 17:45	06:53 18:18	07:02 19:51	07:39 (BAP04) 08:11 (BAP04)	06:19 20:22	05:54 20:50
6	07:47 17:11	07:29 17:47	06:51 18:19	07:01 19:52	07:38 (BAP04) 08:12 (BAP04)	06:18 20:23	05:54 20:50
7	07:47 17:12	07:28 17:48	06:49 18:21	06:59 19:53	07:36 (BAP04) 08:12 (BAP04)	06:16 20:24	05:53 20:51
8	07:47 17:13	07:27 17:49	06:48 18:22	06:57 19:54	07:35 (BAP04) 08:13 (BAP04)	06:15 20:25	05:53 20:52
9	07:47 17:14	07:26 17:50	06:46 18:23	06:56 19:55	07:34 (BAP04) 08:13 (BAP04)	06:14 20:26	05:53 20:52
10	07:47 17:15	07:24 17:51	06:45 18:24	06:54 19:56	07:34 (BAP04) 08:13 (BAP04)	06:13 20:27	05:53 20:53
11	07:46 17:16	07:23 17:53	06:43 18:25	06:53 19:57	07:33 (BAP04) 08:13 (BAP04)	06:12 20:28	05:53 20:53
12	07:46 17:17	07:22 17:54	06:42 18:26	06:51 19:58	07:33 (BAP04) 08:13 (BAP04)	06:11 20:29	05:52 20:54
13	07:46 17:18	07:21 17:55	06:40 18:27	06:50 19:59	07:32 (BAP04) 08:13 (BAP04)	06:10 20:30	05:52 20:54
14	07:46 17:19	07:20 17:56	06:38 18:28	06:48 20:00	07:31 (BAP04) 08:12 (BAP04)	06:09 20:31	05:52 20:55
15	07:45 17:20	07:18 17:58	06:37 18:29	06:47 20:02	07:32 (BAP04) 08:12 (BAP04)	06:08 20:32	05:52 20:55
16	07:45 17:22	07:17 17:59	06:35 18:30	06:45 20:03	07:31 (BAP04) 08:11 (BAP04)	06:07 20:33	05:52 20:56
17	07:44 17:23	07:16 18:00	06:33 18:31	06:43 20:04	07:32 (BAP04) 08:11 (BAP04)	06:06 20:34	05:52 20:56
18	07:44 17:24	07:14 18:01	06:32 18:32	06:42 20:05	07:32 (BAP04) 08:10 (BAP04)	06:05 20:35	05:52 20:56
19	07:43 17:25	07:13 18:02	06:30 18:33	06:40 20:06	07:32 (BAP04) 08:09 (BAP04)	06:04 20:36	05:53 20:57
20	07:43 17:26	07:12 18:03	06:28 18:35	06:39 20:07	07:33 (BAP04) 08:08 (BAP04)	06:03 20:37	05:53 20:57
21	07:42 17:27	07:10 18:05	06:27 18:36	06:38 20:08	07:33 (BAP04) 08:07 (BAP04)	06:03 20:38	05:53 20:57
22	07:42 17:28	07:09 18:06	06:25 18:37	06:36 20:09	07:34 (BAP04) 08:06 (BAP04)	06:02 20:39	05:53 20:57
23	07:41 17:30	07:07 18:07	06:24 18:38	06:35 20:10	07:34 (BAP04) 08:04 (BAP04)	06:01 20:40	05:53 20:57
24	07:40 17:31	07:06 18:08	06:22 18:39	06:33 20:11	07:36 (BAP04) 08:03 (BAP04)	06:00 20:40	05:54 20:58
25	07:40 17:32	07:05 18:09	06:20 18:40	06:32 20:12	07:38 (BAP04) 08:01 (BAP04)	06:00 20:41	05:54 20:58
26	07:39 17:33	07:03 18:10	06:19 18:41	06:30 20:13	07:39 (BAP04) 07:58 (BAP04)	05:59 20:42	05:54 20:58
27	07:38 17:34	07:02 18:12	06:17 18:42	06:29 20:14	07:42 (BAP04) 07:56 (BAP04)	05:58 20:43	05:55 20:58
28	07:37 17:36	07:00 18:13	06:15 18:43	06:28 20:15	07:47 (BAP04) 07:50 (BAP04)	05:58 20:44	05:55 20:58
29	07:37 17:37		07:14 19:44	06:26 20:16		05:57 20:45	05:55 20:58
30	07:36 17:38		07:12 19:45	06:25 20:17		05:57 20:45	05:56 20:58
31	07:35 17:39		07:10 19:46	07:54 (BAP04) 07:59 (BAP04)		05:56 20:46	
Potential sun hours	299	298	370	398	886	447	450
Total, worst case			5				56

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

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiShadow receptor: RBP_06 - NURAGHE ISTE LAI
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

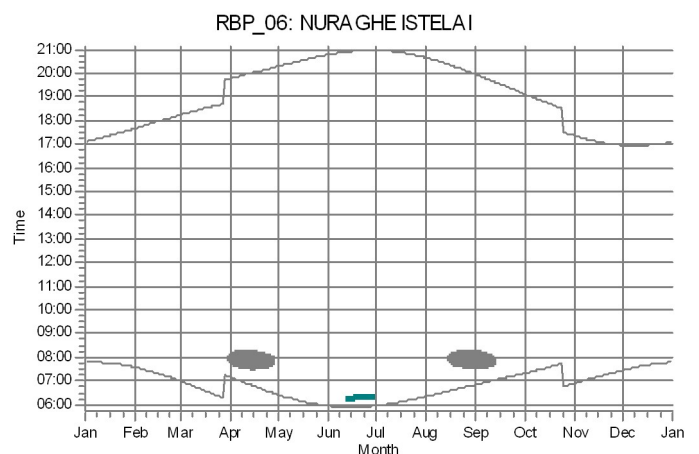
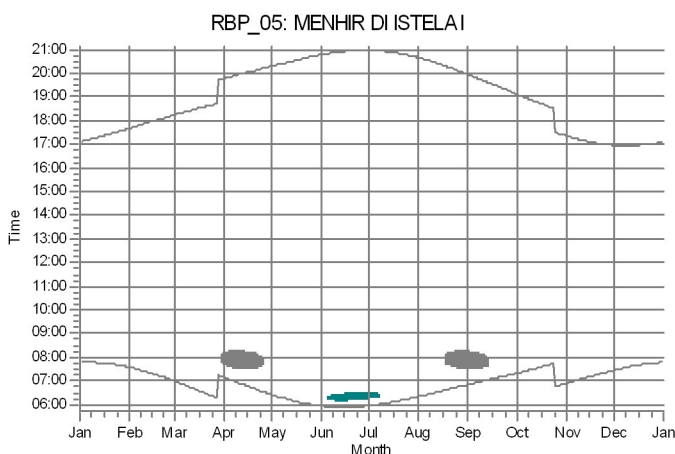
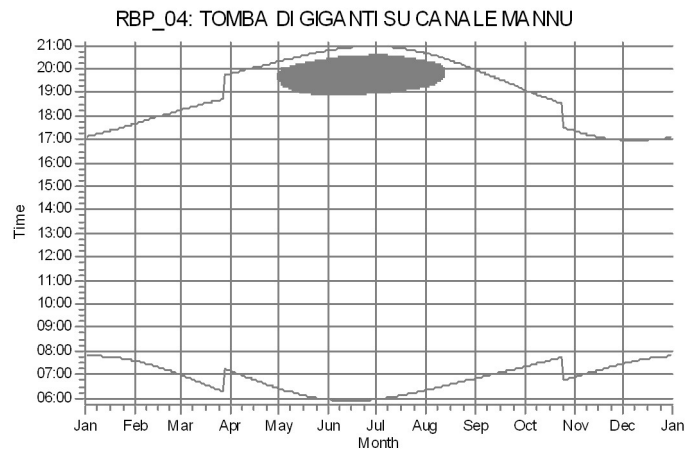
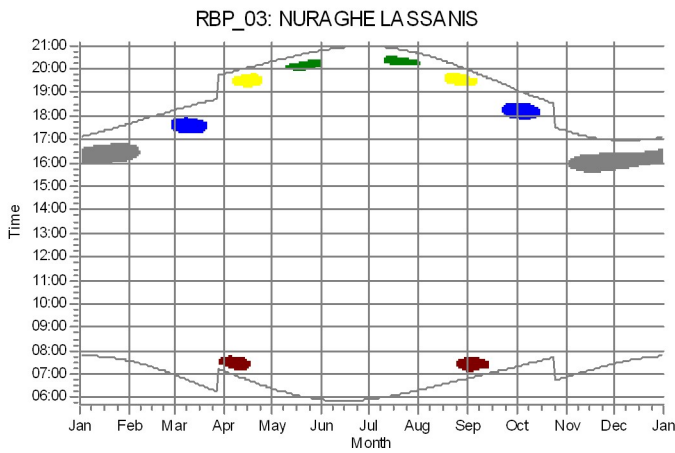
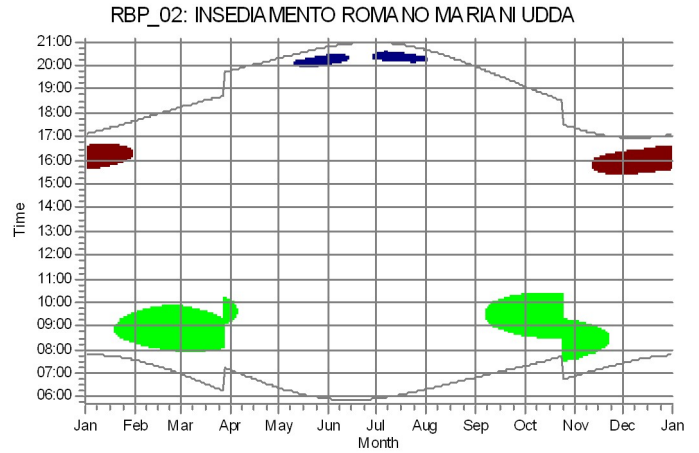
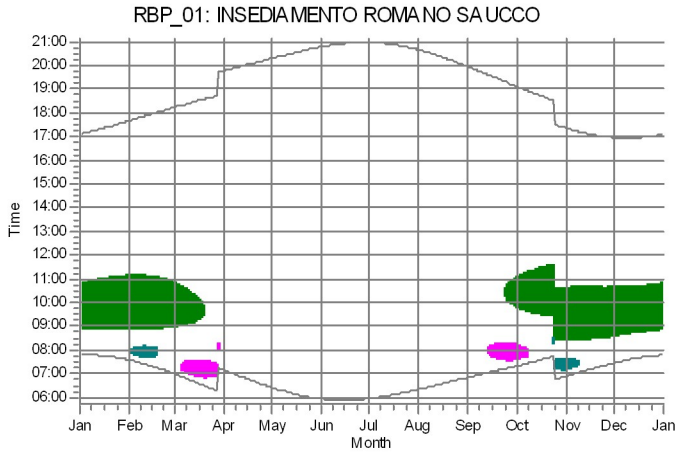
	July	August	September	October	November	December
1	05:56 20:58	06:20 20:39	06:50 19:57	07:32 (BAP04) 19:07	07:19 17:21	07:26 16:58
2	05:57 20:58	06:21 20:38	06:51 19:55	07:32 (BAP04) 19:06	07:20 17:20	06:53 16:57
3	05:57 20:58	06:22 20:37	06:52 19:54	07:32 (BAP04) 19:04	07:21 17:19	06:55 16:57
4	05:58 20:57	06:22 20:36	06:53 19:52	07:32 (BAP04) 19:02	07:22 17:18	06:56 16:57
5	05:58 20:57	06:23 20:35	06:54 19:50	07:33 (BAP04) 19:01	07:23 17:17	06:57 16:57
6	05:59 20:57	06:24 20:34	06:54 19:49	07:34 (BAP04) 18:59	07:24 17:16	06:58 16:57
7	05:59 20:57	06:25 20:33	06:55 19:47	07:34 (BAP04) 18:57	07:25 17:14	06:59 16:57
8	06:00 20:56	06:26 20:31	06:56 19:46	07:35 (BAP04) 18:56	07:26 17:13	07:00 16:57
9	06:01 20:56	06:27 20:30	06:57 19:44	07:37 (BAP04) 18:54	07:27 17:12	07:02 16:57
10	06:01 20:56	06:28 20:29	06:58 19:42	07:38 (BAP04) 18:53	07:28 17:11	07:03 16:57
11	06:02 20:55	06:29 20:28	06:59 19:41	07:40 (BAP04) 18:51	07:29 17:10	07:04 16:57
12	06:03 20:55	06:30 20:26	07:00 19:39	07:44 (BAP04) 18:49	07:30 17:09	07:05 16:57
13	06:03 20:54	06:31 20:25	07:01 19:37	07:44 (BAP04) 18:48	07:31 17:09	07:06 16:57
14	06:04 20:54	06:32 20:24	07:02 19:36	07:44 (BAP04) 18:46	07:32 17:08	07:07 16:57
15	06:05 20:53	06:33 20:22	07:52 (BAP04) 07:59 (BAP04) 19:34	07:03 18:45	07:33 17:07	07:09 16:57
16	06:06 20:53	06:34 20:21	07:48 (BAP04) 08:03 (BAP04) 19:32	07:04 18:43	07:34 17:06	07:40 16:58
17	06:06 20:52	06:35 20:19	07:45 (BAP04) 08:06 (BAP04) 19:31	07:05 18:42	07:35 17:05	07:40 16:58
18	06:07 20:51	06:36 20:18	07:43 (BAP04) 08:07 (BAP04) 19:29	07:06 18:40	07:36 17:04	07:41 16:58
19	06:08 20:51	06:37 20:17	07:41 (BAP04) 08:09 (BAP04) 19:27	07:07 18:39	07:38 17:04	07:42 16:59
20	06:09 20:50	06:38 20:15	07:40 (BAP04) 08:10 (BAP04) 19:26	07:08 18:37	07:39 17:03	07:42 16:59
21	06:10 20:49	06:39 20:14	07:39 (BAP04) 08:11 (BAP04) 19:24	07:09 18:36	07:40 17:02	07:43 16:59
22	06:11 20:48	06:40 20:12	07:38 (BAP04) 08:12 (BAP04) 19:22	07:10 18:35	07:41 17:02	07:43 17:00
23	06:11 20:48	06:41 20:11	07:37 (BAP04) 08:12 (BAP04) 19:21	07:11 18:33	07:42 17:01	07:44 17:00
24	06:12 20:47	06:42 20:09	07:36 (BAP04) 08:13 (BAP04) 19:19	07:12 18:32	07:43 17:01	07:44 17:01
25	06:13 20:46	06:43 20:08	07:35 (BAP04) 08:13 (BAP04) 19:17	07:13 17:30	06:44 17:00	07:45 17:02
26	06:14 20:45	06:44 20:06	07:35 (BAP04) 08:14 (BAP04) 19:15	07:14 17:29	06:45 17:00	07:45 17:02
27	06:15 20:44	06:45 20:05	07:34 (BAP04) 08:14 (BAP04) 19:14	07:15 17:28	06:46 16:59	07:45 17:03
28	06:16 20:43	06:46 20:03	07:34 (BAP04) 08:14 (BAP04) 19:12	07:16 17:26	06:48 16:59	07:46 17:04
29	06:17 20:42	06:47 20:02	07:32 (BAP04) 08:13 (BAP04) 19:10	07:17 17:25	06:49 16:58	07:46 17:04
30	06:18 20:41	06:48 20:00	07:32 (BAP04) 08:13 (BAP04) 19:09	07:18 17:24	06:50 16:58	07:46 17:05
31	06:19 20:40	06:49 19:59	07:32 (BAP04) 08:12 (BAP04)	07:19 17:23	06:51 17:23	07:46 17:06
Potential sun hours	457	427	375	346	299	290
Total, worst case		542	363			

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

Calculation: Shadow_2021_08_04_progetto_beni paesaggistici



WTGs

■	BAP01: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 115,0 m (TOT: 200,0 m) (56)
■	BAP02: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 115,0 m (TOT: 200,0 m) (57)
■	BAP03: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 115,0 m (TOT: 200,0 m) (58)
■	BAP04: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 115,0 m (TOT: 200,0 m) (59)
■	BAP05: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 115,0 m (TOT: 200,0 m) (60)

■	BAP06: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 115,0 m (TOT: 200,0 m) (61)
■	BAP07: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 115,0 m (TOT: 200,0 m) (62)
■	BAP08: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 115,0 m (TOT: 200,0 m) (63)
■	BAP09: Siemens Gamesa SG 6.0-170 6000 170.0 IO! hub: 115,0 m (TOT: 200,0 m) (64)

SHADOW - Calendar per WTG

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiWTG: BAP01 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (56)

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	07:47 08:54-10:46/112 17:07	07:34 08:56-11:05/129 17:40	06:59 09:02-10:48/106 18:14	07:09 19:47	06:24 20:18	05:56 20:47
2	07:47 08:54-10:47/113 17:08	07:33 08:56-11:05/129 17:42	06:57 09:03-10:45/102 18:15	07:07 19:48	06:22 20:19	05:55 20:48
3	07:47 08:54-10:48/114 17:08	07:32 08:56-11:05/129 17:43	06:56 09:03-10:43/100 18:16	07:05 19:49	06:21 20:20	05:55 20:48
4	07:47 08:55-10:48/113 17:09	07:31 08:56-11:05/129 17:44	06:54 09:04-10:41/97 18:17	07:04 19:50	06:20 20:21	05:54 20:49
5	07:47 08:55-10:49/114 17:10	07:30 08:56-11:06/130 17:45	06:53 09:04-10:39/95 18:18	07:02 19:51	06:19 20:22	05:54 20:50
6	07:47 08:55-10:50/115 17:11	07:29 08:56-11:06/130 17:47	06:51 09:06-10:37/91 18:19	07:01 19:52	06:18 20:23	05:54 20:50
7	07:47 08:55-10:51/116 17:12	07:28 08:56-11:05/129 17:48	06:49 09:06-10:34/88 18:21	06:59 19:53	06:16 20:24	05:53 20:51
8	07:47 08:56-10:52/116 17:13	07:27 08:56-11:05/129 17:49	06:48 09:08-10:33/85 18:22	06:57 19:54	06:15 20:25	05:53 20:52
9	07:47 08:55-10:52/117 17:14	07:26 08:56-11:05/129 17:50	06:46 09:08-10:30/82 18:23	06:56 19:55	06:14 20:26	05:53 20:52
10	07:47 08:55-10:53/118 17:15	07:24 08:56-11:05/129 17:51	06:45 09:09-10:27/78 18:24	06:54 19:56	06:13 20:27	05:53 20:53
11	07:46 08:56-10:54/118 17:16	07:23 08:57-11:05/128 17:53	06:43 09:11-10:24/73 18:25	06:53 19:57	06:12 20:04-20:05/1 20:28	05:53 20:53
12	07:46 08:55-10:54/119 17:17	07:22 08:56-11:04/128 17:54	06:42 09:12-10:21/69 18:26	06:51 19:58	06:11 20:04-20:06/2 20:29	05:52 20:54
13	07:46 08:56-10:55/119 17:18	07:21 08:57-11:04/127 17:55	06:40 09:13-10:17/64 18:27	06:50 19:59	06:10 20:03-20:07/4 20:30	05:52 20:54
14	07:46 08:56-10:56/120 17:19	07:20 08:57-11:04/127 17:56	06:38 09:15-10:15/60 18:28	06:48 20:01	06:09 20:03-20:08/5 20:31	05:52 20:55
15	07:45 08:55-10:56/121 17:20	07:18 08:57-11:03/126 17:58	06:37 09:17-10:11/54 18:29	06:46 20:02	06:08 20:02-20:09/7 20:32	05:52 20:55
16	07:45 08:56-10:57/121 17:21	07:17 08:57-11:02/125 17:59	06:35 09:20-10:07/47 18:30	06:45 20:03	06:07 20:02-20:09/7 20:33	05:52 20:56
17	07:44 08:55-10:57/122 17:23	07:16 08:58-11:02/124 18:00	06:33 09:22-10:02/40 18:31	06:43 20:04	06:06 20:02-20:10/8 20:34	05:52 20:56
18	07:44 08:56-10:58/122 17:24	07:14 08:58-11:01/123 18:01	06:32 09:25-09:57/32 18:32	06:42 20:05	06:05 20:02-20:11/9 20:35	05:52 20:56
19	07:43 08:56-10:59/123 17:25	07:13 08:58-11:00/122 18:02	06:30 09:31-09:50/19 18:33	06:40 20:06	06:04 20:01-20:12/11 20:36	05:53 20:57
20	07:43 08:56-11:00/124 17:26	07:12 08:58-10:59/121 18:03	06:28 18:35	06:39 20:07	06:03 20:02-20:13/11 20:37	05:53 20:57
21	07:42 08:56-11:00/124 17:27	07:10 08:58-10:58/120 18:05	06:27 18:36	06:38 20:08	06:03 20:02-20:14/12 20:38	05:53 20:57
22	07:42 08:56-11:00/124 17:28	07:09 08:59-10:57/118 18:06	06:25 18:37	06:36 20:09	06:02 20:03-20:14/11 20:39	05:53 20:57
23	07:41 08:56-11:02/126 17:30	07:07 08:59-10:55/116 18:07	06:24 18:38	06:35 20:10	06:01 20:03-20:15/12 20:40	05:53 20:58
24	07:40 08:56-11:02/126 17:31	07:06 09:00-10:55/115 18:08	06:22 18:39	06:33 20:11	06:00 20:04-20:16/12 20:40	05:54 20:58
25	07:40 08:56-11:02/126 17:32	07:05 09:00-10:54/114 18:09	06:20 18:40	06:32 20:12	06:00 20:04-20:17/13 20:41	05:54 20:58
26	07:39 08:56-11:02/126 17:33	07:03 09:00-10:52/112 18:10	06:19 18:41	06:30 20:13	05:59 20:05-20:18/13 20:42	05:54 20:58
27	07:38 08:55-11:03/128 17:34	07:02 09:01-10:51/110 18:12	06:17 18:42	06:29 20:14	05:58 20:06-20:18/12 20:43	05:54 20:58
28	07:37 08:56-11:04/128 17:36	07:00 09:01-10:49/108 18:13	06:15 18:43	06:28 20:15	05:58 20:07-20:20/13 20:44	05:55 20:58
29	07:37 08:56-11:04/128 17:37		07:14 18:44	06:26 20:16	05:57 20:08-20:20/12 20:45	05:55 20:58
30	07:36 08:56-11:04/128 17:38		07:12 19:45	06:25 20:17	05:57 20:10-20:19/9 20:45	05:56 20:58
31	07:35 08:56-11:05/129 17:39		07:10 19:46		05:56 20:11-20:17/6 20:46	
Potential sun hours	299	298	370	398	447	450
Sum of minutes with flicker	3750	3456	1382	0	190	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

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiWTG: BAP01 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (56)

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	05:56 20:58	06:20 20:13-20:15/2 20:39	06:50 19:57	07:19 09:52-10:59/67 19:07	06:52 08:26-10:35/129 17:21	07:26 08:38-10:36/118 16:58
2	05:57 20:58	06:21 20:38	06:51 19:55	07:20 09:50-11:02/72 19:06	06:53 08:26-10:35/129 17:20	07:27 08:38-10:36/118 16:57
3	05:57 20:58	06:21 20:37	06:52 19:54	07:21 09:48-11:04/76 19:04	06:55 08:26-10:35/129 17:19	07:28 08:39-10:36/117 16:57
4	05:58 20:57	06:22 20:36	06:53 19:52	07:22 09:47-11:06/79 19:02	06:56 08:25-10:35/130 17:18	07:29 08:40-10:36/116 16:57
5	05:58 20:57	06:23 20:35	06:53 19:51	07:23 09:45-11:08/83 19:01	06:57 08:26-10:36/130 17:17	07:30 08:40-10:36/116 16:57
6	05:59 20:57	06:24 20:34	06:54 19:49	07:24 09:43-11:10/87 18:59	06:58 08:26-10:36/130 17:16	07:31 08:41-10:36/115 16:57
7	05:59 20:57	06:25 20:33	06:55 19:47	07:25 09:42-11:12/90 18:57	06:59 08:26-10:35/129 17:14	07:32 08:42-10:36/114 16:57
8	06:00 20:56	06:26 20:31	06:56 19:46	07:26 09:41-11:14/93 18:56	07:00 08:26-10:35/129 17:13	07:33 08:43-10:36/113 16:57
9	06:01 20:56	06:27 20:30	06:57 19:44	07:27 09:39-11:15/96 18:54	07:02 08:27-10:36/129 17:12	07:34 08:43-10:37/114 16:57
10	06:01 20:56	06:28 20:29	06:58 19:42	07:28 09:38-11:17/99 18:53	07:03 08:27-10:36/129 17:11	07:35 08:43-10:36/113 16:57
11	06:02 20:55	06:29 20:28	06:59 19:41	07:29 09:37-11:18/101 18:51	07:04 08:27-10:36/129 17:10	07:36 08:44-10:36/112 16:57
12	06:03 20:20-20:24/4 20:55	06:30 20:26	07:00 19:39	07:30 09:36-11:19/103 18:49	07:05 08:27-10:35/128 17:09	07:37 08:45-10:37/112 16:57
13	06:03 20:19-20:27/8 20:54	06:31 20:25	07:01 19:37	07:31 09:35-11:21/106 18:48	07:06 08:28-10:36/128 17:08	07:37 08:46-10:37/111 16:57
14	06:04 20:17-20:27/10 20:54	06:32 20:24	07:02 19:36	07:32 09:33-11:22/109 18:46	07:07 08:28-10:36/128 17:08	07:38 08:47-10:38/111 16:57
15	06:05 20:16-20:28/12 20:53	06:33 20:22	07:03 19:34	07:33 09:33-11:23/110 18:45	07:09 08:28-10:36/128 17:07	07:39 08:46-10:38/112 16:57
16	06:06 20:16-20:28/12 20:53	06:34 20:21	07:04 19:32	07:34 09:33-11:25/112 18:43	07:10 08:29-10:35/126 17:06	07:40 08:47-10:38/111 16:58
17	06:06 20:15-20:28/13 20:52	06:35 20:20	07:05 19:31	07:35 09:32-11:26/114 18:42	07:11 08:30-10:36/126 17:05	07:40 08:48-10:39/111 16:58
18	06:07 20:14-20:26/12 20:51	06:36 20:18	07:06 19:29	07:37 09:31-11:27/116 18:40	07:12 08:30-10:36/126 17:04	07:41 08:48-10:39/111 16:58
19	06:08 20:14-20:26/12 20:51	06:37 20:17	07:07 19:27	07:38 09:30-11:27/117 18:39	07:13 08:30-10:36/126 17:04	07:42 08:49-10:39/110 16:59
20	06:09 20:13-20:26/13 20:50	06:38 20:15	07:08 19:26	07:39 09:29-11:28/119 18:37	07:14 08:31-10:35/124 17:03	07:42 08:49-10:39/110 16:59
21	06:10 20:13-20:25/12 20:49	06:39 20:14	07:09 19:24	07:40 09:29-11:29/120 18:36	07:16 08:31-10:35/124 17:02	07:43 08:50-10:40/110 16:59
22	06:11 20:13-20:25/12 20:48	06:40 20:12	07:10 19:22	07:41 09:28-11:29/121 18:35	07:17 08:32-10:36/124 17:02	07:43 08:50-10:40/110 17:00
23	06:11 20:12-20:23/11 20:48	06:41 20:11	07:11 19:21	07:42 09:28-11:31/123 18:33	07:18 08:33-10:36/123 17:01	07:44 08:51-10:41/110 17:00
24	06:12 20:12-20:22/10 20:47	06:42 20:09	07:12 10:18-10:31/13 19:19	07:43 09:28-11:31/123 18:32	07:19 08:33-10:35/122 17:00	07:44 08:51-10:41/110 17:01
25	06:13 20:12-20:22/10 20:46	06:43 20:08	07:13 10:10-10:38/28 19:17	06:44 08:27-10:32/125 17:30	07:20 08:34-10:35/121 17:00	07:45 08:52-10:43/111 17:02
26	06:14 20:12-20:21/9 20:45	06:44 20:06	07:14 10:06-10:43/37 19:15	06:45 08:27-10:32/125 17:29	07:21 08:34-10:35/121 16:59	07:45 08:52-10:43/111 17:02
27	06:15 20:12-20:20/8 20:44	06:45 20:05	07:15 10:02-10:47/45 19:14	06:46 08:26-10:32/126 17:28	07:22 08:34-10:35/121 16:59	07:45 08:52-10:43/111 17:03
28	06:16 20:13-20:20/7 20:43	06:46 20:03	07:16 09:59-10:51/52 19:12	06:48 08:27-10:33/126 17:26	07:23 08:36-10:36/120 16:59	07:46 08:52-10:43/111 17:03
29	06:17 20:13-20:19/6 20:42	06:47 20:02	07:17 09:57-10:54/57 19:10	06:49 08:26-10:34/128 17:25	07:24 08:37-10:36/119 16:58	07:46 08:53-10:45/112 17:04
30	06:18 20:13-20:18/5 20:41	06:48 20:00	07:18 09:54-10:57/63 19:09	06:50 08:26-10:34/128 17:24	07:25 08:37-10:36/119 16:58	07:46 08:54-10:45/111 17:05
31	06:19 20:13-20:16/3 20:40	06:49 19:59		06:51 08:26-10:34/128 17:23		07:47 08:54-10:46/112 17:06
Potential sun hours	457	427	375	346	299	290
Sum of minutes with flicker	189	2	295	3322	3776	3484

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

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

SHADOW - Calendar per WTG

Calculation: Shadow_2021_08_04_progetto_beni_paesaggisticiWTG: BAP02 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (57)

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	07:47 17:07	07:34 17:40	06:59 18:14	07:09 19:47	06:24 20:18	05:56 20:47	05:56 20:58	06:20 20:39	06:50 19:57	19:20-19:35/15 19:07	07:19 17:21	06:52 16:58	
2	07:47 17:08	07:33 17:42	06:57 18:15	07:07 19:48	06:22 20:19	05:55 20:48	05:57 20:58	06:21 20:38	06:51 19:55	19:20-19:33/13 19:06	07:20 17:20	06:53 16:57	
3	07:47 17:08	07:32 17:43	06:56 18:16	07:05 19:49	06:21 20:20	05:55 20:48	05:57 20:58	06:21 20:37	06:52 19:54	19:21-19:32/11 19:04	07:21 17:19	06:55 16:57	
4	07:47 17:09	07:31 17:44	06:54 18:17	07:04 19:50	06:20 20:21	05:54 20:49	05:58 20:57	06:22 20:36	06:53 19:52	19:22-19:30/8 19:02	07:22 17:18	06:56 16:57	
5	07:47 17:10	07:30 17:45	06:53 18:18	07:02 19:51	06:19 20:22	05:54 20:50	05:58 20:57	06:23 20:35	06:53 19:50	19:24-19:29/5 19:01	07:23 17:17	06:57 16:57	
6	07:47 17:11	07:29 17:47	06:51 18:19	07:01 19:52	06:18 20:23	05:54 20:50	05:59 20:57	06:24 20:34	06:54 19:49	07:24 18:59	06:58 17:16	07:31 16:57	
7	07:47 17:12	07:28 17:48	06:49 18:21	06:59 19:53	19:27-19:32/5 20:24	06:16 20:24	05:53 20:51	06:25 20:33	06:55 19:47	07:25 18:57	06:59 17:14	07:32 16:57	
8	07:47 17:13	07:27 17:49	06:48 18:22	06:57 19:54	19:25-19:33/8 20:25	06:15 20:25	05:53 20:52	06:26 20:31	06:56 19:46	07:26 18:56	07:00 17:13	07:33 16:57	
9	07:47 17:14	07:26 17:50	06:46 18:23	06:56 19:55	19:23-19:34/11 20:26	06:14 20:26	05:53 20:52	06:27 20:30	06:57 19:44	07:27 18:54	07:02 17:12	07:34 16:57	
10	07:47 17:15	07:24 17:51	06:45 18:24	06:54 19:56	19:22-19:35/13 20:27	06:13 20:27	05:53 20:53	06:28 20:29	06:58 19:42	07:28 18:53	07:03 17:11	07:35 16:57	
11	07:46 17:16	07:23 17:53	06:43 18:25	06:53 19:57	19:21-19:36/15 20:28	06:12 20:53	06:02 20:55	06:29 20:30	06:59 19:41	07:29 18:51	07:04 17:10	07:36 16:57	
12	07:46 17:17	07:22 17:54	06:41 18:26	06:51 19:58	19:19-19:36/17 20:29	06:11 20:54	06:03 20:55	06:30 20:26	07:00 19:39	07:30 18:49	07:05 17:09	07:37 16:57	
13	07:46 17:18	07:21 17:55	06:40 18:27	06:50 19:59	19:19-19:38/19 20:30	06:10 20:54	06:03 20:54	06:31 20:25	07:01 19:37	07:31 18:48	07:06 17:08	07:37 16:57	
14	07:46 17:19	07:20 17:56	06:38 18:28	06:48 20:00	19:18-19:38/20 20:31	06:09 20:55	06:04 20:54	06:32 20:24	07:02 19:36	07:32 18:46	07:07 17:08	07:38 16:57	
15	07:45 17:20	07:18 17:58	06:37 18:29	06:46 20:02	19:19-19:40/21 20:32	06:08 20:55	06:05 20:53	06:33 20:22	07:03 19:34	07:33 18:45	07:09 17:07	07:39 16:57	
16	07:45 17:21	07:17 17:59	06:35 18:30	06:45 20:03	19:18-19:40/22 20:33	06:07 20:56	06:06 20:53	06:34 20:21	07:04 19:32	07:34 18:43	07:10 17:06	07:40 16:58	
17	07:44 17:23	07:16 18:00	06:33 18:31	06:43 20:04	19:18-19:42/24 20:34	06:06 20:56	06:06 20:52	06:35 20:19	07:05 19:31	07:35 18:42	07:11 17:05	07:40 16:58	
18	07:44 17:24	07:14 18:01	06:32 18:32	06:42 20:05	19:18-19:42/24 20:35	06:05 20:56	06:07 20:51	06:36 20:18	07:06 19:29	07:36 18:40	07:12 17:04	07:41 16:58	
19	07:43 17:25	07:13 18:02	06:30 18:33	06:40 20:06	19:19-19:44/25 20:36	06:04 20:57	06:08 20:51	06:37 20:17	19:31-19:41/10 19:27	07:07 18:39	07:13 17:04	07:42 16:59	
20	07:43 17:26	07:12 18:03	06:28 18:35	06:39 20:07	19:20-19:43/23 20:37	06:03 20:57	06:09 20:50	06:38 20:15	19:28-19:44/16 19:26	07:08 18:37	07:14 17:03	07:42 16:59	
21	07:42 17:27	07:10 18:05	06:27 18:36	06:38 20:08	19:20-19:41/21 20:38	06:03 20:57	06:10 20:49	06:39 20:14	19:26-19:45/19 19:24	07:09 18:36	07:15 17:02	07:43 16:59	
22	07:42 17:28	07:09 18:06	06:25 18:37	06:36 20:09	19:22-19:40/18 20:39	06:02 20:57	06:11 20:48	06:40 20:12	19:25-19:46/21 19:22	07:10 18:35	07:17 17:02	07:43 17:00	
23	07:41 17:30	07:07 18:07	06:24 18:38	06:35 20:10	19:23-19:37/14 20:40	06:01 20:57	06:11 20:48	06:41 20:11	19:24-19:47/23 19:20	07:11 18:33	07:18 17:01	07:44 17:00	
24	07:40 17:31	07:06 18:08	06:22 18:39	06:33 20:11	19:25-19:35/10 20:40	06:00 20:58	06:12 20:47	06:42 20:09	19:23-19:47/24 19:19	07:12 18:32	07:19 17:00	07:44 17:01	
25	07:40 17:32	07:05 18:09	06:20 18:40	06:32 20:12	06:00 20:41	05:54 20:58	06:13 20:46	06:43 20:08	19:22-19:46/24 19:17	07:13 18:30	07:20 17:00	07:45 17:02	
26	07:39 17:33	07:03 18:10	06:19 18:41	06:30 20:13	05:59 20:42	05:54 20:58	06:14 20:45	06:44 20:06	19:21-19:44/23 19:15	07:14 18:29	07:21 16:59	07:45 17:02	
27	07:38 17:34	07:02 18:12	06:17 18:42	06:29 20:14	05:58 20:43	05:54 20:58	06:15 20:44	06:45 20:05	19:20-19:42/22 19:14	07:15 18:28	07:22 16:59	07:45 17:03	
28	07:37 17:36	07:00 18:13	06:15 18:43	06:28 20:15	05:58 20:44	05:55 20:58	06:16 20:43	06:46 20:03	19:19-19:41/22 19:12	07:16 18:26	07:23 16:59	07:46 17:03	
29	07:37 17:37	07:00 19:44	06:15 19:44	06:28 20:16	05:58 20:45	05:55 20:58	06:17 20:42	06:47 20:02	19:19-19:39/20 19:10	07:17 18:25	07:24 16:58	07:46 17:04	
30	07:36 17:38	07:00 19:45	06:15 19:45	06:28 20:17	05:57 20:45	05:56 20:58	06:18 20:41	06:48 20:00	19:19-19:38/19 19:09	07:18 18:24	07:25 16:58	07:46 17:05	
31	07:35 17:39	07:00 19:46	06:15 19:46	06:28 20:17	05:56 20:46	05:54 20:46	06:19 20:40	06:49 19:59	19:19-19:36/17 19:09	07:18 18:23	07:26 16:57	07:46 17:06	
Potential sun hours	299	298	370	398	447	450	457	427	375	52	346	299	290
Sum of minutes with flicker	0	0	0	310	0	0	0	260	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:

Eolico_Green_2020_08_7

Licensed user:

I.A.T. Consulenza e progetti S.r.l.

Via Santa Margherita 4

IT-09124 Cagliari

+39 070 658297

Giuseppe Frongia / direttore@iatprogetti.it

Calculated:

04/08/2021 12:46/3.4.415

SHADOW - Calendar per WTG

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiWTG: BAP03 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (58)

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	07:47 17:07	07:34 17:40	06:59 17:27-17:45/18 18:14	07:09 19:47	06:24 20:18	05:56 20:47	05:56 20:58	06:20 20:39	06:50 19:57	07:19 17:58-18:30/32 19:07	06:52 17:21	07:26 16:58
2	07:47 17:08	07:33 17:42	06:57 17:26-17:48/22 18:15	07:07 19:48	06:22 20:19	05:55 20:48	05:57 20:58	06:21 20:38	06:51 19:55	07:20 17:57-18:30/33 19:06	06:53 17:20	07:27 16:57
3	07:47 17:08	07:32 17:43	06:56 17:23-17:48/25 18:16	07:05 19:49	06:21 20:20	05:55 20:48	05:57 20:57	06:21 20:37	06:52 19:54	07:21 17:57-18:30/33 19:04	06:54 17:19	07:28 16:57
4	07:47 17:09	07:31 17:44	06:54 17:23-17:50/27 18:17	07:04 19:50	06:20 20:21	05:54 20:49	05:58 20:57	06:22 20:36	06:53 19:52	07:22 17:56-18:29/33 19:02	06:56 17:18	07:29 16:57
5	07:47 17:10	07:30 17:45	06:53 17:21-17:50/29 18:18	07:02 19:51	06:19 20:22	05:54 20:50	05:58 20:57	06:23 20:35	06:53 19:50	07:23 17:56-18:29/33 19:01	06:57 17:17	07:30 16:57
6	07:47 17:11	07:29 17:47	06:51 17:21-17:51/30 18:19	07:01 19:52	06:18 20:23	05:54 20:50	05:59 20:57	06:24 20:34	06:54 19:49	07:24 17:56-18:28/32 18:59	06:58 17:16	07:31 16:57
7	07:47 17:12	07:28 17:48	06:49 17:20-17:51/31 18:21	06:59 19:53	06:16 20:24	05:53 20:51	05:59 20:57	06:25 20:32	06:55 19:47	07:25 17:56-18:27/31 18:57	06:59 17:14	07:32 16:57
8	07:47 17:13	07:27 17:49	06:48 17:19-17:51/32 18:22	06:57 19:54	06:15 20:25	05:53 20:52	06:00 20:56	06:26 20:31	06:56 19:46	07:26 17:56-18:26/30 18:56	07:00 17:13	07:33 16:57
9	07:47 17:14	07:26 17:50	06:46 17:19-17:52/33 18:23	06:56 19:55	06:14 20:26	05:53 20:52	06:01 20:56	06:27 20:30	06:57 19:44	07:27 17:57-18:25/28 18:54	07:02 17:12	07:34 16:57
10	07:47 17:15	07:24 17:51	06:45 17:18-17:51/33 18:24	06:54 19:56	06:13 20:27	05:53 20:53	06:01 20:56	06:28 20:29	06:58 19:42	07:28 17:57-18:24/27 18:53	07:03 17:11	07:35 16:57
11	07:46 17:16	07:23 17:53	06:43 17:19-17:51/32 18:25	06:53 19:57	06:12 20:28	05:53 20:53	06:02 20:55	06:29 20:28	06:59 19:41	07:29 17:58-18:22/24 18:51	07:04 17:10	07:36 16:57
12	07:46 17:17	07:22 17:54	06:41 17:18-17:50/32 18:26	06:51 19:58	06:11 20:29	05:52 20:54	06:03 20:55	06:30 20:26	07:00 19:39	07:30 18:00-18:20/20 18:49	07:05 17:09	07:37 16:57
13	07:46 17:18	07:21 17:55	06:40 17:18-17:49/31 18:27	06:50 19:59	06:10 20:30	05:52 20:54	06:03 20:54	06:31 20:25	07:01 19:37	07:31 18:02-18:17/15 18:48	07:06 17:08	07:37 16:57
14	07:46 17:19	07:20 17:56	06:38 17:19-17:49/30 18:28	06:48 20:00	06:09 20:31	05:52 20:55	06:04 20:54	06:32 20:24	07:02 19:36	07:32 18:05-18:13/8 18:46	07:07 17:08	07:38 16:57
15	07:45 17:20	07:18 17:57	06:37 17:19-17:48/29 18:29	06:46 20:02	06:08 20:32	05:52 20:55	06:05 20:53	06:33 20:22	07:03 19:34	07:33 18:45	07:09 17:07	07:39 16:57
16	07:45 17:21	07:17 17:59	06:35 17:20-17:46/26 18:30	06:45 20:03	06:07 20:33	05:52 20:56	06:06 20:53	06:34 20:21	07:04 19:32	07:34 18:43	07:10 17:06	07:40 16:58
17	07:44 17:23	07:16 18:00	06:33 17:21-17:45/24 18:31	06:43 20:04	06:06 20:34	05:52 20:56	06:06 20:52	06:35 20:19	07:05 19:31	07:35 18:42	07:11 17:05	07:40 16:58
18	07:44 17:24	07:14 18:01	06:32 17:22-17:43/21 18:32	06:42 20:05	06:05 20:35	05:52 20:56	06:07 20:51	06:36 20:18	07:06 19:29	07:36 18:40	07:12 17:04	07:41 16:58
19	07:43 17:25	07:13 18:02	06:30 17:24-17:40/16 18:33	06:40 20:06	06:04 20:36	05:53 20:57	06:08 20:51	06:37 20:17	07:07 19:27	07:38 18:39	07:13 17:04	07:42 16:59
20	07:43 17:26	07:12 18:03	06:28 17:28-17:37/9 18:34	06:39 20:07	06:03 20:37	05:53 20:57	06:09 20:50	06:38 20:15	07:08 19:26	07:39 18:37	07:14 17:03	07:42 16:59
21	07:42 17:27	07:10 18:05	06:27 18:36	06:37 20:08	06:03 20:38	05:53 20:57	06:10 20:49	06:39 20:14	07:09 19:24	07:40 18:36	07:15 17:02	07:43 16:59
22	07:42 17:28	07:09 18:06	06:25 18:37	06:36 20:09	06:02 20:39	05:53 20:57	06:11 20:48	06:40 20:12	07:10 19:22	07:41 18:35	07:17 17:02	07:43 17:00
23	07:41 17:30	07:07 18:07	06:24 18:38	06:35 20:10	06:01 20:40	05:53 20:57	06:11 20:48	06:41 20:11	18:15-18:19/4 19:20	07:42 18:33	07:18 17:01	07:44 17:00
24	07:40 17:31	07:06 18:08	06:22 18:39	06:33 20:11	06:00 20:40	05:54 20:58	06:12 20:47	06:42 20:09	07:12 18:09-18:24/15 19:19	07:43 18:32	07:19 17:00	07:44 17:01
25	07:40 17:32	07:05 18:09	06:20 18:40	06:32 20:12	06:00 20:41	05:54 20:58	06:13 20:46	06:43 20:08	07:13 18:06-18:26/20 19:17	06:44 17:30	07:20 17:00	07:45 17:02
26	07:39 17:33	07:03 18:10	06:19 18:41	06:30 20:13	05:59 20:42	05:54 20:58	06:14 20:45	06:44 20:06	07:14 18:04-18:27/23 19:15	06:45 17:29	07:21 16:59	07:45 17:02
27	07:38 17:34	07:02 18:12	06:17 18:42	06:29 20:14	05:58 20:43	05:54 20:58	06:15 20:44	06:45 20:05	07:15 18:02-18:28/26 19:14	06:46 17:28	07:22 16:59	07:45 17:03
28	07:37 17:36	07:00 17:31-17:43/12 18:13	06:15 18:43	06:28 20:15	05:58 20:44	05:55 20:58	06:16 20:43	06:46 20:03	07:16 18:01-18:29/28 19:12	06:48 17:26	07:23 16:59	07:46 17:03
29	07:37 17:37	07:00 18:14	06:14 19:44	06:26 20:16	05:57 20:45	05:55 20:58	06:17 20:42	06:47 20:02	07:17 18:00-18:29/29 19:10	06:49 17:25	07:24 16:58	07:46 17:04
30	07:36 17:38	07:00 19:45	06:12 19:45	06:25 20:17	05:57 20:45	05:56 20:58	06:18 20:41	06:48 20:00	07:18 17:59-18:30/31 19:09	06:50 17:24	07:25 16:58	07:46 17:05
31	07:35 17:39	07:00 19:46	06:10 19:46	06:23 20:18	05:56 20:46	05:55 20:58	06:19 20:40	06:49 19:58	07:19 18:00	06:51 17:23	07:26 17:06	07:46 17:06
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
Sum of minutes with flicker	0	12	530	0	0	0	0	0	176	379	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

SHADOW - Calendar per WTG

Calculation: Shadow_2021_08_04_progetto_beni_paesaggisticiWTG: BAP04 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (59)

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	07:47 16:02-16:32/30 17:07	07:34 16:12-16:43/31 17:40	06:59 18:14	07:09 07:46-08:06/20 19:47	06:24 19:36-19:45/9 20:18	05:56 18:57-20:22/85 20:47
2	07:47 16:02-16:32/30 17:08	07:33 16:13-16:42/29 17:42	06:57 18:15	07:07 07:43-08:07/24 19:48	06:22 19:29-19:52/23 20:19	05:55 18:57-20:23/86 20:48
3	07:47 16:02-16:33/31 17:08	07:32 16:15-16:41/26 17:43	06:56 18:16	07:05 07:42-08:09/27 19:49	06:21 19:24-19:55/31 20:20	05:55 18:57-20:24/87 20:48
4	07:47 16:02-16:34/32 17:09	07:31 16:17-16:40/23 17:44	06:54 18:17	07:04 07:39-08:10/31 19:50	06:20 19:21-19:58/37 20:21	05:54 18:57-20:25/88 20:49
5	07:47 16:02-16:35/33 17:10	07:30 16:19-16:38/19 17:45	06:53 18:18	07:02 07:39-08:11/32 19:51	06:19 19:18-19:59/41 20:22	05:54 18:57-20:24/87 20:50
6	07:47 16:02-16:36/34 17:11	07:29 16:21-16:35/14 17:47	06:51 18:19	07:01 07:37-08:12/35 19:52	06:18 19:16-20:00/44 20:23	05:54 18:57-20:25/88 20:50
7	07:47 16:03-16:37/34 17:12	07:28 16:27-16:29/2 17:48	06:49 18:20	06:59 07:36-08:12/36 19:53	06:16 19:14-20:01/47 20:24	05:53 18:57-20:26/89 20:51
8	07:47 16:02-16:37/35 17:13	07:27 17:49	06:48 18:22	06:57 07:35-08:13/38 19:54	06:15 19:13-20:02/49 20:25	05:53 18:58-20:27/89 20:52
9	07:47 16:02-16:37/35 17:14	07:26 17:50	06:46 18:23	06:56 07:34-08:13/39 19:55	06:14 19:11-20:03/52 20:26	05:53 18:58-20:28/90 20:52
10	07:47 16:03-16:38/35 17:15	07:24 17:51	06:45 18:24	06:54 07:34-08:13/39 19:56	06:13 19:10-20:04/54 20:27	05:53 18:57-20:27/90 20:53
11	07:46 16:03-16:39/36 17:16	07:23 17:53	06:43 18:25	06:53 07:33-08:13/40 19:57	06:12 19:08-20:05/57 20:28	05:53 18:57-20:28/91 20:53
12	07:46 16:02-16:39/37 17:17	07:22 17:54	06:41 18:26	06:51 07:33-08:13/40 19:58	06:11 19:07-20:06/59 20:29	05:52 18:58-20:28/90 20:54
13	07:46 16:03-16:40/37 17:18	07:21 17:55	06:40 18:27	06:50 07:32-08:13/41 19:59	06:10 19:06-20:07/61 20:30	05:52 18:58-20:28/90 20:54
14	07:45 16:03-16:41/38 17:19	07:20 17:56	06:38 18:28	06:48 07:31-08:12/41 20:00	06:09 19:05-20:08/63 20:31	05:52 18:58-20:29/91 20:55
15	07:45 16:03-16:41/38 17:20	07:18 17:57	06:37 18:29	06:46 07:32-08:12/40 20:01	06:08 19:04-20:09/65 20:32	05:52 18:58-20:29/91 20:55
16	07:45 16:04-16:42/38 17:21	07:17 17:59	06:35 18:30	06:45 07:31-08:11/40 20:03	06:07 19:03-20:09/66 20:33	05:52 18:58-20:29/91 20:56
17	07:44 16:03-16:42/39 17:23	07:16 18:00	06:33 18:31	06:43 07:32-08:11/39 20:04	06:06 19:02-20:10/68 20:34	05:52 18:58-20:29/91 20:56
18	07:44 16:04-16:43/39 17:24	07:14 18:01	06:32 18:32	06:42 07:32-08:10/38 20:05	06:05 19:01-20:11/70 20:35	05:52 18:58-20:29/91 20:56
19	07:43 16:04-16:43/39 17:25	07:13 18:02	06:30 18:33	06:40 07:32-08:09/37 20:06	06:04 19:00-20:12/72 20:36	05:53 18:59-20:31/92 20:57
20	07:43 16:04-16:43/39 17:26	07:12 18:03	06:28 18:34	06:39 07:33-08:08/35 20:07	06:03 19:01-20:13/72 20:37	05:53 18:59-20:31/92 20:57
21	07:42 16:05-16:44/39 17:27	07:10 18:05	06:27 18:36	06:37 07:33-08:07/34 20:08	06:03 19:00-20:14/74 20:38	05:53 18:59-20:31/92 20:57
22	07:42 16:05-16:44/39 17:28	07:09 18:06	06:25 18:37	06:36 07:34-08:06/32 20:09	06:02 18:59-20:14/75 20:39	05:53 18:59-20:31/92 20:57
23	07:41 16:05-16:44/39 17:30	07:07 18:07	06:24 18:38	06:35 07:34-08:04/30 20:10	06:01 18:59-20:16/77 20:40	05:53 18:59-20:31/92 20:57
24	07:40 16:06-16:45/39 17:31	07:06 18:08	06:22 18:39	06:33 07:36-08:03/27 20:11	06:00 18:59-20:16/77 20:40	05:54 19:00-20:31/91 20:58
25	07:40 16:06-16:45/39 17:32	07:05 18:09	06:20 18:40	06:32 07:38-08:01/23 20:12	06:00 18:58-20:17/79 20:41	05:54 19:00-20:31/91 20:58
26	07:39 16:07-16:45/38 17:33	07:03 18:10	06:19 18:41	06:30 07:39-07:58/19 20:13	05:59 18:58-20:18/80 20:42	05:54 19:00-20:31/91 20:58
27	07:38 16:07-16:44/37 17:34	07:02 18:12	06:17 18:42	06:29 07:42-07:56/14 20:14	05:58 18:58-20:18/80 20:43	05:54 19:01-20:32/91 20:58
28	07:37 16:08-16:44/36 17:36	07:00 18:13	06:15 18:43	06:28 07:47-07:50/3 20:15	05:58 18:58-20:20/82 20:44	05:55 19:01-20:32/91 20:58
29	07:37 16:09-16:45/36 17:37		07:14 19:44	06:26 20:16	05:57 18:57-20:20/83 20:45	05:55 19:02-20:33/91 20:58
30	07:36 16:10-16:44/34 17:38		07:12 19:45	06:25 20:17	05:57 18:58-20:21/83 20:45	05:56 19:02-20:32/90 20:58
31	07:35 16:11-16:44/33 17:39		07:10 19:46		05:56 18:57-20:21/84 20:46	
Potential sun hours	299	298	370	398	447	450
Sum of minutes with flicker	1118	144	13	894	1914	2701

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

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

SHADOW - Calendar per WTG

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiWTG: BAP04 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (59)

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	05:56 19:01-20:32/91 20:58	06:20 19:17-20:15/58 20:39	06:50 07:32-08:12/40 19:57	07:19 19:07	06:52 17:21	07:26 15:45-16:21/36 16:58
2	05:57 19:02-20:32/90 20:58	06:21 19:18-20:14/56 20:38	06:51 07:32-08:11/39 19:55	07:20 19:05	06:53 17:20	07:27 15:46-16:21/35 16:57
3	05:57 19:02-20:32/90 20:57	06:21 19:20-20:13/53 20:37	06:52 07:32-08:11/39 19:54	07:21 19:04	06:54 17:19	07:28 15:46-16:22/36 16:57
4	05:58 19:03-20:32/89 20:57	06:22 19:21-20:13/52 20:36	06:52 07:32-08:10/38 19:52	07:22 19:02	06:56 15:55-16:01/6 17:18	07:29 15:47-16:22/35 16:57
5	05:58 19:03-20:32/89 20:57	06:23 19:23-20:12/49 20:35	06:53 07:33-08:09/36 19:50	07:23 19:01	06:57 15:50-16:05/15 17:17	07:30 15:48-16:22/34 16:57
6	05:59 19:03-20:32/89 20:57	06:24 19:25-20:11/46 20:34	06:54 07:33-08:08/35 19:49	07:24 18:59	06:58 15:48-16:08/20 17:15	07:31 15:48-16:22/34 16:57
7	05:59 19:04-20:32/88 20:57	06:25 19:26-20:09/43 20:32	06:55 07:34-08:07/33 19:47	07:25 18:57	06:59 15:46-16:10/24 17:14	07:32 15:49-16:22/33 16:57
8	06:00 19:04-20:31/87 20:56	06:26 19:29-20:08/39 20:31	06:56 07:34-08:05/31 19:46	07:26 18:56	07:00 15:45-16:11/26 17:13	07:33 15:50-16:22/32 16:57
9	06:01 19:04-20:31/87 20:56	06:27 19:31-20:07/36 20:30	06:57 07:35-08:04/29 19:44	07:27 18:54	07:01 15:43-16:12/29 17:12	07:34 15:50-16:21/31 16:57
10	06:01 19:05-20:31/86 20:56	06:28 19:35-20:04/29 20:29	06:58 07:37-08:02/25 19:42	07:28 18:53	07:03 15:43-16:14/31 17:11	07:35 15:51-16:21/30 16:57
11	06:02 19:05-20:30/85 20:55	06:29 19:39-19:59/20 20:27	06:59 07:38-07:58/20 19:41	07:29 18:51	07:04 15:42-16:15/33 17:10	07:36 15:52-16:22/30 16:57
12	06:03 19:05-20:30/85 20:55	06:30 20:26	07:00 07:40-07:55/15 19:39	07:30 18:49	07:05 15:41-16:15/34 17:09	07:37 15:53-16:22/29 16:57
13	06:03 19:06-20:30/84 20:54	06:31 20:25	07:01 19:37	07:31 18:48	07:06 15:40-16:16/36 17:08	07:37 15:54-16:22/28 16:57
14	06:04 19:06-20:29/83 20:54	06:32 20:24	07:02 19:36	07:32 18:46	07:07 15:41-16:17/36 17:08	07:38 15:54-16:22/28 16:57
15	06:05 19:06-20:28/82 20:53	06:33 07:52-07:59/7 20:22	07:03 19:34	07:33 18:45	07:09 15:40-16:17/37 17:07	07:39 15:55-16:22/27 16:57
16	06:06 19:07-20:28/81 20:53	06:34 07:48-08:03/15 20:21	07:04 19:32	07:34 18:43	07:10 15:40-16:18/38 17:06	07:40 15:56-16:23/27 16:58
17	06:06 19:08-20:28/80 20:52	06:35 07:45-08:06/21 20:19	07:05 19:31	07:35 18:42	07:11 15:39-16:18/39 17:05	07:40 15:56-16:23/27 16:58
18	06:07 19:07-20:26/79 20:51	06:36 07:43-08:07/24 20:18	07:06 19:29	07:36 18:40	07:12 15:40-16:19/39 17:04	07:41 15:57-16:23/26 16:58
19	06:08 19:08-20:26/78 20:51	06:37 07:41-08:09/28 20:17	07:07 19:27	07:38 18:39	07:13 15:40-16:19/39 17:04	07:42 15:58-16:24/26 16:59
20	06:09 19:09-20:26/77 20:50	06:38 07:40-08:10/30 20:15	07:08 19:26	07:39 18:37	07:14 15:40-16:19/39 17:03	07:42 15:58-16:24/26 16:59
21	06:10 19:09-20:25/76 20:49	06:39 07:39-08:11/32 20:14	07:09 19:24	07:40 18:36	07:15 15:40-16:19/39 17:02	07:43 15:59-16:25/26 16:59
22	06:11 19:10-20:25/75 20:48	06:40 07:38-08:12/34 20:12	07:10 19:22	07:41 18:35	07:17 15:40-16:19/39 17:02	07:43 15:59-16:25/26 17:00
23	06:11 19:11-20:24/73 20:48	06:41 07:37-08:12/35 20:11	07:11 19:20	07:42 18:33	07:18 15:41-16:20/39 17:01	07:44 16:00-16:26/26 17:00
24	06:12 19:10-20:22/72 20:47	06:42 07:36-08:13/37 20:09	07:12 19:19	07:43 18:32	07:19 15:41-16:20/39 17:00	07:44 16:00-16:26/26 17:01
25	06:13 19:11-20:22/71 20:46	06:43 07:35-08:13/38 20:08	07:13 19:17	07:44 17:30	07:20 15:41-16:20/39 17:00	07:45 16:00-16:26/26 17:02
26	06:14 19:12-20:21/69 20:45	06:44 07:35-08:14/39 20:06	07:14 19:15	07:45 17:29	07:21 15:42-16:20/38 16:59	07:45 16:01-16:27/26 17:02
27	06:15 19:13-20:20/67 20:44	06:45 07:34-08:14/40 20:05	07:15 19:14	07:46 17:28	07:22 15:42-16:20/38 16:59	07:45 16:01-16:28/27 17:03
28	06:16 19:14-20:20/66 20:43	06:46 07:34-08:14/40 20:03	07:16 19:12	07:48 17:26	07:23 15:42-16:20/38 16:59	07:46 16:01-16:28/27 17:03
29	06:17 19:15-20:19/64 20:42	06:47 07:32-08:13/41 20:02	07:17 19:10	07:49 17:25	07:24 15:44-16:21/37 16:58	07:46 16:01-16:29/28 17:04
30	06:18 19:16-20:18/62 20:41	06:48 07:32-08:13/41 20:00	07:18 19:09	07:50 17:24	07:25 15:44-16:21/37 16:58	07:46 16:02-16:30/28 17:05
31	06:19 19:17-20:17/60 20:40	06:49 07:32-08:12/40 19:58	 	06:51 17:23	 	07:46 16:02-16:31/29 17:06
Potential sun hours	457	427	375	346	299	290
Sum of minutes with flicker	2455	1023	380	0	904	905

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:

Eolico_Green_2020_08_7

Licensed user:

I.A.T. Consulenza e progetti S.r.l.
 Via Santa Margherita 4
 IT-09124 Cagliari
 +39 070 658297
 Giuseppe Frongia / direttore@iatprogetti.it
 Calculated:
 04/08/2021 12:46/3.4.415

SHADOW - Calendar per WTG

Calculation: Shadow_2021_08_04_progetto_beni_paesaggisticiWTG: BAP05 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (60

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	07:47 17:07	07:34 17:40	06:59 18:14	07:09 19:47	06:24 20:18	05:55 20:47	05:56 20:58	06:20 20:39	06:50 19:57	07:19 19:07	07:39-08:10/31 17:21	06:52 16:58	07:26 16:58
2	07:47 17:08	07:33 17:42	06:57 18:15	07:07 19:48	06:22 20:19	05:55 20:48	05:57 20:58	06:20 20:38	06:51 19:55	07:20 19:05	07:40-08:08/28 17:20	06:53 16:57	07:27 16:57
3	07:47 17:08	07:32 17:43	06:56 18:16	07:05 19:49	06:21 20:20	05:55 20:48	05:57 20:58	06:21 20:37	06:52 19:54	07:21 19:04	07:41-08:07/26 17:19	06:55 16:57	07:28 16:57
4	07:47 17:09	07:31 17:44	06:54 18:17	07:04 19:50	06:20 20:21	05:54 20:49	05:58 20:57	06:22 20:36	06:52 19:52	07:22 19:02	07:42-08:05/23 17:18	06:56 16:57	07:29 16:57
5	07:47 17:10	07:30 17:45	06:53 18:18	07:02 19:51	06:19 20:22	05:54 20:50	05:58 20:57	06:23 20:35	06:53 19:50	07:23 19:01	07:43-08:03/20 17:17	06:57 16:57	07:30 16:57
6	07:47 17:11	07:29 17:47	06:51 18:19	07:12-07:18/6 19:52	06:18 20:23	05:54 20:50	05:59 20:57	06:24 20:34	06:54 19:49	07:24 18:59	07:44-08:01/17 17:15	06:58 16:57	07:31 16:57
7	07:47 17:12	07:28 17:48	06:49 18:20	07:08-07:23/15 19:53	06:16 20:24	05:53 20:51	05:59 20:57	06:25 20:32	06:55 19:47	07:25 18:57	07:45-07:57/12 17:14	06:59 16:57	07:32 16:57
8	07:47 17:13	07:27 17:49	06:48 18:22	07:07-07:26/19 19:54	06:15 20:25	05:53 20:52	06:00 20:56	06:26 20:31	06:56 19:46	07:26 18:56	07:00 17:13	06:59 16:56	07:33 16:56
9	07:47 17:14	07:26 17:50	06:46 18:23	07:05-07:27/22 19:55	06:14 20:26	05:53 20:52	06:01 20:56	06:27 20:30	06:57 19:44	07:27 18:54	07:02 17:12	06:59 16:56	07:34 16:56
10	07:47 17:15	07:24 17:51	06:45 18:24	07:03-07:28/25 19:56	06:13 20:27	05:53 20:53	06:01 20:56	06:28 20:29	06:58 19:42	07:28 18:53	07:03 17:11	06:59 16:57	07:35 16:57
11	07:46 17:16	07:23 17:53	06:43 18:25	07:02-07:29/27 19:57	06:12 20:28	05:53 20:53	06:02 20:55	06:29 20:28	06:59 19:41	07:29 18:51	07:04 17:10	06:59 16:57	07:36 16:57
12	07:46 17:17	07:22 17:54	06:41 18:26	07:00-07:30/30 19:58	06:11 20:29	05:52 20:54	06:03 20:55	06:30 20:26	07:00 19:39	07:30 18:49	07:05 17:09	06:59 16:57	07:37 16:57
13	07:46 17:18	07:21 17:55	06:40 18:27	06:58-07:30/32 19:59	06:10 20:30	05:52 20:54	06:03 20:54	06:31 20:25	07:01 19:37	07:31 18:48	07:06 17:08	06:59 16:57	07:37 16:57
14	07:46 17:19	07:20 17:56	06:38 18:28	06:57-07:31/34 20:00	06:09 20:31	05:52 20:55	06:04 20:54	06:32 20:24	07:02 19:36	07:32 18:46	07:07 17:08	06:59 16:57	07:38 16:57
15	07:45 17:20	07:18 17:57	06:37 18:29	06:55-07:31/36 20:02	06:08 20:32	05:52 20:55	06:05 20:53	06:33 20:22	07:03 19:34	07:33 18:45	07:09 17:07	06:59 16:57	07:39 16:57
16	07:45 17:21	07:17 17:59	06:35 18:30	06:54-07:31/37 20:03	06:07 20:33	05:52 20:56	06:06 20:53	06:34 20:21	07:04 19:32	07:34 18:43	07:10 17:06	06:59 16:58	07:40 16:58
17	07:44 17:23	07:16 18:00	06:33 18:31	06:53-07:31/38 20:04	06:06 20:34	05:52 20:56	06:06 20:52	06:35 20:19	07:05 19:31	07:35 18:42	07:11 17:05	06:59 16:58	07:40 16:58
18	07:44 17:24	07:14 18:01	06:32 18:32	06:53-07:30/37 20:05	06:05 20:35	05:52 20:56	06:07 20:51	06:36 20:18	07:06 19:29	07:36 18:40	07:12 17:04	06:59 16:58	07:41 16:58
19	07:43 17:25	07:13 18:02	06:30 18:33	06:53-07:30/37 20:06	06:04 20:36	05:52 20:57	06:08 20:51	06:37 20:17	07:07 19:27	07:37 18:39	07:13 17:04	06:59 16:59	07:42 16:59
20	07:43 17:26	07:12 18:03	06:28 18:34	06:53-07:30/37 20:07	06:03 20:37	05:53 20:57	06:09 20:50	06:38 20:15	07:08 19:26	07:39 18:37	07:14 17:03	06:59 16:59	07:42 16:59
21	07:42 17:27	07:10 18:05	06:27 18:36	06:52-07:28/36 20:08	06:02 20:38	05:53 20:57	06:10 20:49	06:39 20:14	07:09 19:24	07:40 18:36	07:15 17:02	06:59 16:59	07:43 16:59
22	07:42 17:28	07:09 18:06	06:25 18:37	06:53-07:28/35 20:09	06:02 20:39	05:53 20:57	06:11 20:48	06:40 20:12	07:10 19:22	07:41 18:34	07:17 17:02	06:59 17:00	07:43 17:00
23	07:41 17:30	07:07 18:07	06:24 18:38	06:53-07:27/34 20:10	06:01 20:40	05:53 20:57	06:11 20:48	06:41 20:11	07:11 19:20	07:42 18:33	07:18 17:01	06:59 17:00	07:44 17:00
24	07:40 17:31	07:06 18:08	06:22 18:39	06:54-07:25/31 20:11	06:00 20:40	05:53 20:58	06:12 20:47	06:42 20:09	07:12 19:19	07:43 18:32	07:19 17:00	06:59 17:01	07:44 17:01
25	07:40 17:32	07:05 18:09	06:20 18:40	06:55-07:25/30 20:12	06:00 20:41	05:54 20:58	06:13 20:46	06:43 20:08	07:13 19:17	07:44 17:30	07:20 17:02	06:59 17:02	07:45 17:02
26	07:39 17:33	07:03 18:10	06:19 18:41	06:56-07:22/26 20:13	05:59 20:42	05:54 20:58	06:14 20:45	06:44 20:06	07:14 19:15	07:36-08:13/37 17:29	06:45 16:59	06:59 17:02	07:45 17:02
27	07:38 17:34	07:02 18:12	06:17 18:42	06:57-07:20/23 20:14	05:58 20:43	05:54 20:58	06:15 20:44	06:45 20:05	07:15 19:14	07:36-08:13/37 17:28	06:46 16:59	06:59 17:03	07:45 17:03
28	07:37 17:36	07:00 18:13	06:15 18:43	06:59-07:18/19 20:15	05:58 20:44	05:55 20:58	06:16 20:43	06:46 20:03	07:16 19:12	07:36-08:12/36 17:26	06:48 16:59	06:59 17:03	07:46 17:03
29	07:37 17:37	07:00 19:44	06:15 19:44	08:02-08:14/12 20:16	05:57 20:45	05:55 20:58	06:17 20:42	06:47 20:02	07:17 19:10	07:37-08:12/35 17:25	06:49 16:58	06:59 17:04	07:46 17:04
30	07:36 17:38	07:00 19:45	06:15 19:45	08:02-08:14/12 20:17	05:56 20:45	05:56 20:58	06:18 20:41	06:48 20:00	07:18 19:09	07:38-08:11/33 17:24	06:50 16:58	06:59 17:05	07:46 17:05
31	07:35 17:39	07:00 19:46	06:15 19:46		05:56 20:46		06:19 20:40	06:49 19:58		06:51 17:23		06:59 17:06	07:46 17:06
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290	
Sum of minutes with flicker	0	0	678	0	0	0	0	0	531	157	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

SHADOW - Calendar per WTG

Calculation: Shadow_2021_08_04_progetto_beni_paesaggisticiWTG: BAP06 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (61)

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	07:47 17:07	07:34 17:40	06:59 18:14	07:09 19:47	06:24 20:18	05:55 20:47	05:56 20:58	06:19-06:27/8 20:39	06:20 19:57	07:19 19:07	06:52 17:21	07:14-07:35/21 16:58
2	07:47 17:08	07:33 17:42	06:57 18:15	07:07 19:48	06:22 20:19	05:55 20:48	05:57 20:58	06:19-06:26/7 20:38	06:20 19:55	07:20 19:05	06:53 17:20	07:15-07:35/20 16:57
3	07:47 17:08	07:32 17:43	06:56 18:16	07:05 19:49	06:21 20:20	05:55 20:48	05:57 20:57	06:20-06:26/6 20:37	06:21 19:54	07:21 19:04	06:54 17:19	07:16-07:34/18 16:57
4	07:47 17:09	07:31 17:44	06:54 18:17	07:04 19:50	06:20 20:21	05:54 20:49	05:58 20:57	06:20-06:25/5 20:36	06:22 19:52	07:22 19:02	06:56 17:18	07:17-07:33/16 16:57
5	07:47 17:10	07:30 17:45	06:53 18:18	07:02 19:51	06:19 20:22	05:54 20:50	05:58 20:57	06:21-06:25/4 20:35	06:23 19:50	07:23 19:01	06:57 17:17	07:19-07:33/14 16:57
6	07:47 17:11	07:29 17:47	06:51 18:19	07:01 19:52	06:17 20:23	05:54 20:50	05:59 20:57	06:21-06:24/3 20:34	06:24 19:49	07:24 18:59	06:58 17:15	07:20-07:32/12 16:57
7	07:47 17:12	07:28 17:48	06:49 18:20	06:59 19:53	06:16 20:24	05:53 20:51	05:59 20:57	06:22-06:23/1 20:32	06:25 19:47	07:25 18:57	06:59 17:14	07:21-07:31/10 16:56
8	07:47 17:13	07:27 17:49	06:48 18:22	06:57 19:54	06:15 20:25	05:53 20:52	06:00 20:56	06:22-06:20/5 20:31	06:26 19:46	07:26 18:56	07:00 17:13	07:22-07:29/7 16:56
9	07:47 17:14	07:26 17:50	06:46 18:23	06:56 19:55	06:14 20:26	05:53 20:52	06:01 20:56	06:15-06:21/6 20:30	06:27 19:44	07:27 18:54	07:01 17:12	07:24-07:26/2 16:56
10	07:47 17:15	07:24 17:51	06:45 18:24	06:54 19:56	06:13 20:27	05:53 20:53	06:01 20:56	06:14-06:21/7 20:29	06:28 19:42	07:28 18:53	07:02 17:11	07:28 16:56
11	07:46 17:16	07:23 17:53	06:43 18:25	06:53 19:57	06:12 20:28	05:53 20:53	06:02 20:55	06:14-06:21/7 20:27	06:29 19:41	07:29 18:51	07:04 17:10	07:29 16:57
12	07:46 17:17	07:22 17:54	06:41 18:26	06:51 19:58	06:11 20:29	05:52 20:54	06:03 20:55	06:14-06:22/8 20:26	06:30 19:39	07:30 18:49	07:05 17:09	07:30 16:57
13	07:46 17:18	07:21 17:55	06:40 18:27	06:50 19:59	06:10 20:30	05:52 20:54	06:03 20:54	06:14-06:22/8 20:25	06:31 19:37	07:31 18:48	07:06 17:08	07:31 16:57
14	07:45 17:19	07:20 17:56	06:38 18:28	06:48 20:00	06:09 20:31	05:52 20:55	06:04 20:54	06:14-06:23/9 20:24	06:32 19:36	07:32 18:46	07:07 17:08	07:32 16:57
15	07:45 17:20	07:18 17:57	06:37 18:29	06:46 20:01	06:08 20:32	05:52 20:55	06:05 20:53	06:14-06:23/9 20:22	06:33 19:34	07:33 18:45	07:08 17:07	07:33 16:57
16	07:45 17:21	07:17 17:59	06:35 18:30	06:45 20:03	06:07 20:33	05:52 20:56	06:06 20:53	06:14-06:24/10 20:21	06:34 19:32	07:34 18:43	07:10 17:06	07:34 16:57
17	07:44 17:23	07:16 18:00	06:33 18:31	06:43 20:04	06:06 20:34	05:52 20:56	06:06 20:52	06:14-06:24/10 20:19	06:35 19:31	07:35 18:42	07:11 17:05	07:40 16:58
18	07:44 17:24	07:14 18:01	06:32 18:32	06:42 20:05	06:05 20:35	05:52 20:56	06:07 20:51	06:15-06:25/10 20:18	06:36 19:29	07:36 18:40	07:12 17:04	07:41 16:58
19	07:43 17:25	07:13 18:02	06:30 18:33	06:40 20:06	06:04 20:36	05:52 20:57	06:08 20:51	06:15-06:25/10 20:17	06:37 19:27	07:38 18:39	07:13 17:04	07:42 16:59
20	07:43 17:26	07:12 18:03	06:28 18:34	06:39 20:07	06:03 20:37	05:53 20:57	06:09 20:50	06:15-06:25/10 20:15	06:38 19:25	07:39 18:37	07:14 17:03	07:42 16:59
21	07:42 17:27	07:10 18:05	06:27 18:36	06:37 20:08	06:02 20:38	05:53 20:57	06:10 20:49	06:15-06:25/10 20:14	06:39 19:24	07:40 18:36	07:15 17:02	07:43 16:59
22	07:42 17:28	07:09 18:06	06:25 18:37	06:36 20:09	06:02 20:39	05:53 20:57	06:11 20:48	06:15-06:25/10 20:12	06:40 19:22	07:41 18:34	07:17 17:02	07:43 17:00
23	07:41 17:29	07:07 18:07	06:23 18:38	06:35 20:10	06:01 20:40	05:53 20:57	06:11 20:48	06:16-06:26/10 20:11	06:41 19:20	07:42 18:33	07:18 17:01	07:44 17:00
24	07:40 17:31	07:06 18:08	06:22 18:39	06:33 20:11	06:00 20:40	05:53 20:58	06:12 20:47	06:16-06:26/10 20:09	06:42 19:19	07:43 18:32	08:19-08:29/10 17:00	07:44 17:01
25	07:40 17:32	07:05 18:09	06:20 18:40	06:32 20:12	05:59 20:41	05:54 20:58	06:13 20:46	06:16-06:26/10 20:08	06:43 19:17	07:44 18:30	06:44 17:00	07:45 17:01
26	07:39 17:33	07:03 18:10	06:19 18:41	06:30 20:13	05:59 20:42	05:54 20:58	06:14 20:45	06:16-06:26/10 20:06	06:44 19:15	07:45 18:29	06:45 17:02	07:45 17:02
27	07:38 17:34	07:02 18:11	06:17 18:42	06:29 20:14	05:58 20:43	05:54 20:58	06:15 20:44	06:17-06:26/9 20:05	06:45 19:14	07:46 18:28	06:46 17:03	07:46 17:03
28	07:37 17:36	07:00 18:13	06:15 18:43	06:28 20:15	05:58 20:44	05:55 20:58	06:16 20:43	06:17-06:26/9 20:03	06:46 19:12	07:47 18:26	06:47 17:02	07:46 17:03
29	07:36 17:37	18:13	07:14 18:44	06:26 20:16	05:57 20:45	05:55 20:58	06:17 20:42	06:18-06:27/9 20:02	06:47 19:10	07:48 18:25	06:49 17:02	07:46 17:04
30	07:36 17:38		07:12 19:45	06:25 20:17	05:56 20:46	05:56 20:58	06:18 20:41	06:18-06:26/8 20:00	06:48 19:09	07:49 18:24	06:50 16:58	07:46 17:05
31	07:35 17:39		07:10 19:46	06:25 20:17	05:56 20:46	05:56 20:58	06:19 20:40	06:19-06:26/8 19:58	06:49 19:09	07:50 18:22	06:51 16:58	07:46 17:06
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
Sum of minutes with flicker	0	268	0	0	0	209	34	0	0	145	120	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

Calculation: Shadow_2021_08_04_progetto_beni_paesaggisticiWTG: BAP07 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (62)
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	07:47	07:34	06:59	07:09	06:24	05:55	20:06-20:23/17	05:56	20:18-20:26/8	06:19	20:14-20:15/1	06:49	07:19	06:52	07:26
	17:07	17:40	18:14	19:47	20:18	20:47		20:58		20:39		19:57	19:07	17:21	16:57
2	07:47	07:33	06:57	07:07	06:22	05:55	20:06-20:23/17	05:56	20:18-20:28/10	06:20		06:50	07:20	06:53	07:27
	17:07	17:42	18:15	19:48	20:19	20:48		20:58		20:38		19:55	19:05	17:20	16:57
3	07:47	07:32	06:56	07:05	06:21	05:55	20:07-20:24/17	05:57	20:17-20:28/11	06:21		06:51	07:21	06:54	07:28
	17:08	17:43	18:16	19:49	20:20	20:48		20:57		20:37		19:54	19:04	17:19	16:57
4	07:47	07:31	06:54	07:04	06:20	05:54	20:08-20:25/17	05:58	20:17-20:30/13	06:22		06:52	07:22	06:56	07:29
	17:09	17:44	18:17	19:50	20:21	20:49		20:57		20:36		19:52	19:02	17:18	16:57
5	07:47	07:30	06:52	07:02	06:19	05:54	20:08-20:25/17	05:58	20:16-20:30/14	06:23		06:53	07:23	06:57	07:30
	17:10	17:45	18:18	19:51	20:22	20:50		20:57		20:35		19:50	19:01	17:17	16:57
6	07:47	07:29	06:51	07:01	06:17	05:54	20:09-20:25/16	05:59	20:16-20:31/15	06:24		06:54	07:24	06:58	07:31
	17:11	17:46	18:19	19:52	20:23	20:50		20:57		20:34		19:49	18:59	17:15	16:57
7	07:47	07:28	06:49	06:59	06:16	05:53	20:10-20:25/15	05:59	20:16-20:32/16	06:25		06:55	07:25	06:59	07:32
	17:12	17:48	18:20	19:53	20:24	20:51		20:57		20:32		19:47	18:57	17:14	16:56
8	07:47	07:27	06:48	06:57	06:15	05:53	20:11-20:25/14	06:00	20:15-20:31/16	06:26		06:56	07:26	07:00	07:33
	17:13	17:49	18:22	19:54	20:25	20:52		20:56		20:31		19:45	18:56	17:13	16:56
9	07:47	07:25	06:46	06:56	06:14	05:53	20:12-20:23/11	06:01	20:15-20:31/16	06:27		06:57	07:27	07:01	07:34
	17:14	17:50	18:23	19:55	20:26	20:52		20:56		20:30		19:44	18:54	17:12	16:56
10	07:47	07:24	06:45	06:54	06:13	05:53	20:13-20:23/10	06:01	20:14-20:30/16	06:28		06:58	07:28	07:03	07:35
	17:15	17:51	18:24	19:56	20:27	20:53		20:56		20:29		19:42	18:52	17:11	16:56
11	07:46	07:23	06:43	06:53	06:12	05:52	20:14-20:22/8	06:02	20:14-20:30/16	06:29		06:59	07:29	07:04	07:36
	17:16	17:53	18:25	19:57	20:28	20:53		20:55		20:27		19:41	18:51	17:10	16:56
12	07:46	07:22	06:41	06:51	06:11	05:52	20:15-20:21/6	06:03	20:13-20:30/17	06:30		07:00	07:30	07:05	07:37
	17:17	17:54	18:26	19:58	20:29	20:54		20:55		20:26		19:39	18:49	17:09	16:57
13	07:46	07:21	06:40	06:49	06:10	05:52	20:17-20:20/3	06:03	20:13-20:30/17	06:31		07:01	07:31	07:06	07:37
	17:18	17:55	18:27	19:59	20:30	20:54		20:54		20:25		19:37	18:48	17:08	16:57
14	07:45	07:19	06:38	06:48	06:09	05:52	20:03-20:08/5	06:04	20:12-20:29/17	06:32		07:02	07:32	07:07	07:38
	17:19	17:56	18:28	20:00	20:31	20:55		20:54		20:24		19:36	18:46	17:07	16:57
15	07:45	07:18	06:37	06:46	06:08	05:52	20:02-20:09/7	06:05	20:12-20:28/16	06:33		07:03	07:33	07:08	07:39
	17:20	17:57	18:29	20:01	20:32	20:55		20:53		20:22		19:34	18:45	17:07	16:57
16	07:45	07:17	06:35	06:45	06:07	05:52	20:02-20:09/7	06:06	20:12-20:28/16	06:34		07:04	07:34	07:10	07:40
	17:21	17:59	18:30	20:02	20:33	20:55		20:53		20:21		19:32	18:43	17:06	16:57
17	07:44	07:16	06:33	06:43	06:06	05:52	20:01-20:10/9	06:06	20:12-20:28/16	06:35		07:05	07:35	07:11	07:40
	17:22	18:00	18:31	20:04	20:34	20:56		20:52		20:19		19:30	18:42	17:05	16:58
18	07:44	07:14	06:32	06:42	06:05	05:52	20:01-20:11/10	06:07	20:12-20:26/14	06:36		07:06	07:36	07:12	07:41
	17:24	18:01	18:32	20:05	20:35	20:56		20:51		20:18		19:29	18:40	17:04	16:58
19	07:43	07:13	06:30	06:40	06:04	05:52	20:01-20:12/11	06:08	20:12-20:26/14	06:37		07:07	07:37	07:13	07:42
	17:25	18:02	18:33	20:06	20:36	20:56		20:51		20:17		19:27	18:39	17:04	16:58
20	07:43	07:12	06:28	06:39	06:03	05:53	20:02-20:13/11	06:09	20:12-20:26/14	06:38		07:08	07:39	07:14	07:42
	17:26	18:03	18:34	20:07	20:37	20:57		20:50		20:15		19:25	18:37	17:03	16:59
21	07:42	07:10	06:27	06:37	06:02	05:53	20:01-20:14/13	06:10	20:12-20:25/13	06:39		07:09	07:40	07:15	07:43
	17:27	18:04	18:35	20:08	20:38	20:57		20:49		20:14		19:24	18:36	17:02	16:59
22	07:42	07:09	06:25	06:36	06:02	05:53	20:01-20:14/13	06:10	20:12-20:25/13	06:40		07:10	07:41	07:17	07:43
	17:28	18:06	18:37	20:09	20:39	20:57		20:48		20:12		19:22	18:34	17:02	17:00
23	07:41	07:07	06:23	06:35	06:01	05:53	20:01-20:15/14	06:11	20:11-20:23/12	06:41		07:11	07:42	07:18	07:44
	17:29	18:07	18:38	20:10	20:40	20:57		20:48		20:11		19:20	18:33	17:01	17:00
24	07:40	07:06	06:22	06:33	06:00	05:53	20:02-20:16/14	06:12	20:11-20:22/11	06:42		07:12	07:43	07:19	07:44
	17:31	18:08	18:39	20:11	20:40	20:58		20:47		20:09		19:19	18:32	17:00	17:01
25	07:40	07:05	06:20	06:32	05:59	05:54	20:02-20:17/15	06:13	20:11-20:22/11	06:43		07:13	06:44	07:20	07:45
	17:32	18:09	18:40	20:12	20:41	20:58		20:46		20:08		19:17	17:30	17:00	17:01
26	07:39	07:03	06:18	06:30	05:59	05:54	20:03-20:18/15	06:14	20:12-20:21/9	06:44		07:14	06:45	07:21	07:45
	17:33	18:10	18:41	20:13	20:42	20:58		20:45		20:06		19:15	17:29	16:59	17:02
27	07:38	07:02	06:17	06:29	05:58	05:54	20:03-20:19/16	06:15	20:12-20:20/8	06:45		07:15	06:46	07:22	07:45
	17:34	18:11	18:42	20:14	20:43	20:58		20:44		20:05		19:14	17:28	16:59	17:03
28	07:37	07:00	06:15	06:28	05:58	05:55	20:03-20:19/16	06:16	20:12-20:20/8	06:46		07:16	06:48	07:23	07:46
	17:35	18:13	18:43	20:15	20:44	20:58		20:43		20:03		19:12	17:26	16:58	17:03
29	07:36		07:14	06:26	05:57	05:55	20:04-20:20/16	06:17	20:13-20:19/6	06:47		07:17	06:49	07:24	07:46
	17:37		19:44	20:16	20:45	20:58		20:42		20:02		19:10	17:25	16:58	17:04
30	07:36		07:12	06:25	05:56	05:56	20:04-20:20/16	06:18	20:12-20:17/5	06:48		07:18	06:50	07:25	07:46
	17:38		19:45	20:17	20:45	20:58		20:41		20:00		19:09	17:24	16:58	17:05
31	07:35		07:10		05:56	05:56	20:05-20:21/16	06:19	20:13-20:16/3	06:49			06:51		07:46
	17:39		19:46		20:46			20:40		19:58			17:22		17:06
Potential sun hours	299	298	370	398	447	450		457	391	427	375	346	299	290	0
Sum of minutes with flicker	0	0	0	0	230	174		391	1	427	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

SHADOW - Calendar per WTG

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiWTG: BAP08 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (63)

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	07:47 15:41-16:33/52 17:07	07:34 17:40 06:59 18:14		07:09 07:27-07:39/12 19:47	06:24 20:18	05:55 20:47
2	07:47 15:42-16:33/51 17:07	07:33 17:42 06:57 18:15		07:07 07:25-07:39/14 19:48	06:22 20:19	05:55 20:48
3	07:47 15:42-16:33/51 17:08	07:32 17:43 06:56 18:16		07:05 07:24-07:41/17 19:49	06:21 20:20	05:55 20:48
4	07:47 15:43-16:34/51 17:09	07:31 17:44 06:54 18:17		07:04 07:22-07:41/19 19:50	06:20 20:21	05:54 20:49
5	07:47 15:43-16:34/51 17:10	07:30 17:45 06:52 18:18		07:02 07:21-07:42/21 19:51	06:19 20:22	05:54 20:50
6	07:47 15:44-16:35/51 17:11	07:29 17:46 06:51 18:19		07:00 07:19-07:41/22 19:52	06:17 20:23	05:54 20:50
7	07:47 15:45-16:35/50 17:12	07:28 17:48 06:49 18:20		06:59 07:17-07:41/24 19:53	06:16 20:24	05:53 20:51
8	07:47 15:45-16:34/49 17:13	07:27 17:49 06:48 18:21		06:57 07:16-07:41/25 19:54	06:15 20:25	05:53 20:52
9	07:47 15:45-16:35/50 17:14	07:25 17:50 06:46 18:23		06:56 07:14-07:40/26 19:55	06:14 20:26	05:53 20:52
10	07:46 15:46-16:35/49 17:15	07:24 17:51 06:45 18:24		06:54 07:13-07:40/27 19:56	06:13 20:27	05:53 20:53
11	07:46 15:47-16:36/49 17:16	07:23 17:53 06:43 18:25		06:53 07:13-07:39/26 19:57	06:12 20:28	05:52 20:53
12	07:46 15:47-16:35/48 17:17	07:22 17:54 06:41 18:26		06:51 07:13-07:38/25 19:58	06:11 20:29	05:52 20:54
13	07:46 15:48-16:36/48 17:18	07:21 17:55 06:40 18:27		06:49 07:14-07:37/23 19:59	06:10 20:30	05:52 20:54
14	07:45 15:48-16:35/47 17:19	07:19 17:56 06:38 18:28		06:48 07:15-07:35/20 20:00	06:09 20:31	05:52 20:55
15	07:45 15:50-16:36/46 17:20	07:18 17:57 06:37 18:29		06:46 07:16-07:34/18 20:01	06:08 20:32	05:52 20:55
16	07:45 15:51-16:36/45 17:21	07:17 17:59 06:35 18:30		06:45 07:18-07:31/13 20:02	06:07 20:33	05:52 20:55
17	07:44 15:51-16:35/44 17:22	07:16 18:00 06:33 18:31		06:43 07:22-07:27/5 20:03	06:06 20:34	05:52 20:56
18	07:44 15:53-16:36/43 17:24	07:14 18:01 06:32 18:32		06:42 20:04	06:05 20:35	05:52 20:56
19	07:43 15:53-16:35/42 17:25	07:13 18:02 06:30 18:33		06:40 20:06	06:04 20:36	05:52 20:56
20	07:43 15:54-16:34/40 17:26	07:12 18:03 06:28 18:34		06:39 20:07	06:03 20:37	05:53 20:57
21	07:42 15:56-16:34/38 17:27	07:10 18:04 06:27 18:35		06:37 20:08	06:02 20:38	05:53 20:57
22	07:42 15:57-16:33/36 17:28	07:09 18:06 06:25 18:36		06:36 20:09	06:02 20:39	05:53 20:57
23	07:41 15:58-16:32/34 17:29	07:07 18:07 06:23 18:38		06:34 20:10	06:01 20:39	05:53 20:57
24	07:40 16:00-16:32/32 17:31	07:06 18:08 06:22 18:39		06:33 20:11	06:00 20:40	05:53 20:57
25	07:40 16:01-16:31/30 17:32	07:04 18:09 06:20 18:40		06:32 20:12	05:59 20:41	05:54 20:58
26	07:39 16:03-16:29/26 17:33	07:03 18:10 06:18 18:41		06:30 20:13	05:59 20:42	05:54 20:58
27	07:38 16:05-16:28/23 17:34	07:02 18:11 06:17 18:42		06:29 20:14	05:58 20:43	05:54 20:58
28	07:37 16:08-16:25/17 17:35	07:00 18:13 06:15 18:43		06:28 20:15	05:58 20:44	05:55 20:58
29	07:36 16:12-16:21/9 17:37		07:14 19:44	06:26 20:16	05:57 20:45	05:55 20:58
30	07:36 17:38		07:12 07:30-07:34/4 19:45	06:25 20:17	05:56 20:45	05:56 20:58
31	07:35 17:39		07:10 07:29-07:37/8 19:46		05:56 20:46	
Potential sun hours	299	298	370	398	447	450
Sum of minutes with flicker	1202	0	12	337	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

SHADOW - Calendar per WTG

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiWTG: BAP08 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (63)

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	05:56 20:58	06:19 20:39	06:49 07:12-07:38/26 19:57	07:19 19:07	06:52 17:21	07:26 15:29-16:18/49 16:57
2	05:56 20:58	06:20 20:38	06:50 07:11-07:38/27 19:55	07:20 19:05	06:53 17:20	07:27 15:29-16:18/49 16:57
3	05:57 20:57	06:21 20:37	06:51 07:12-07:38/26 19:54	07:21 19:04	06:54 17:19	07:28 15:29-16:19/50 16:57
4	05:58 20:57	06:22 20:36	06:52 07:13-07:38/25 19:52	07:22 19:02	06:56 17:18	07:29 15:30-16:19/49 16:57
5	05:58 20:57	06:23 20:35	06:53 07:14-07:38/24 19:50	07:23 19:00	06:57 17:16	07:30 15:30-16:20/50 16:57
6	05:59 20:57	06:24 20:34	06:54 07:15-07:38/23 19:49	07:24 18:59	06:58 17:15	07:31 15:30-16:21/51 16:56
7	05:59 20:56	06:25 20:32	06:55 07:16-07:37/21 19:47	07:25 18:57	06:59 17:14	07:32 15:30-16:21/51 16:56
8	06:00 20:56	06:26 20:31	06:56 07:17-07:36/19 19:45	07:26 18:56	07:00 17:13	07:33 15:30-16:21/51 16:56
9	06:01 20:56	06:27 20:30	06:57 07:18-07:35/17 19:44	07:27 18:54	07:01 17:12	07:34 15:30-16:21/51 16:56
10	06:01 20:55	06:28 20:29	06:58 07:18-07:33/15 19:42	07:28 18:52	07:03 17:11	07:35 15:31-16:22/51 16:56
11	06:02 20:55	06:29 20:27	06:59 07:19-07:31/12 19:40	07:29 18:51	07:04 17:10	07:36 15:31-16:23/52 16:56
12	06:03 20:55	06:30 20:26	07:00 07:20-07:29/9 19:39	07:30 18:49	07:05 17:09	07:36 15:32-16:23/51 16:57
13	06:03 20:54	06:31 20:25	07:01 07:21-07:26/5 19:37	07:31 18:48	07:06 15:44-15:53/9 17:08	07:37 15:33-16:24/51 16:57
14	06:04 20:54	06:32 20:23	07:02 19:35	07:32 18:46	07:07 15:41-15:58/17 17:07	07:38 15:32-16:24/52 16:57
15	06:05 20:53	06:33 20:22	07:03 19:34	07:33 18:45	07:08 15:38-16:01/23 17:07	07:39 15:33-16:25/52 16:57
16	06:06 20:52	06:34 20:21	07:04 19:32	07:34 18:43	07:10 15:36-16:02/26 17:06	07:39 15:34-16:25/51 16:57
17	06:06 20:52	06:35 20:19	07:05 19:30	07:35 18:42	07:11 15:34-16:04/30 17:05	07:40 15:33-16:25/52 16:58
18	06:07 20:51	06:36 20:18	07:06 19:29	07:36 18:40	07:12 15:34-16:06/32 17:04	07:41 15:34-16:26/52 16:58
19	06:08 20:51	06:37 20:17	07:07 19:27	07:37 18:39	07:13 15:33-16:07/34 17:04	07:41 15:35-16:27/52 16:58
20	06:09 20:50	06:38 20:15	07:08 19:25	07:39 18:37	07:14 15:32-16:08/36 17:03	07:42 15:35-16:27/52 16:59
21	06:10 20:49	06:39 20:14	07:09 19:24	07:40 18:36	07:15 15:31-16:09/38 17:02	07:43 15:36-16:28/52 16:59
22	06:10 20:48	06:40 20:12	07:10 19:22	07:41 18:34	07:16 15:30-16:10/40 17:02	07:43 15:36-16:28/52 17:00
23	06:11 20:48	06:41 20:11	07:11 19:20	07:42 18:33	07:18 15:30-16:12/42 17:01	07:44 15:37-16:29/52 17:00
24	06:12 20:47	06:42 20:09	07:12 19:19	07:43 18:32	07:19 15:30-16:13/43 17:00	07:44 15:37-16:29/52 17:01
25	06:13 20:46	06:43 20:08	07:13 19:17	06:44 17:30	07:20 15:29-16:13/44 17:00	07:45 15:37-16:29/52 17:01
26	06:14 20:45	06:44 07:24-07:31/7 20:06	07:14 19:15	06:45 17:29	07:21 15:29-16:14/45 16:59	07:45 15:38-16:30/52 17:02
27	06:15 20:44	06:45 07:19-07:33/14 20:05	07:15 19:14	06:46 17:28	07:22 15:29-16:15/46 16:59	07:45 15:39-16:30/51 17:03
28	06:16 20:43	06:46 07:17-07:35/18 20:03	07:16 19:12	06:47 17:26	07:23 15:29-16:15/46 16:58	07:46 15:39-16:31/52 17:03
29	06:17 20:42	06:47 07:15-07:36/21 20:02	07:17 19:10	06:49 17:25	07:24 15:28-16:16/48 16:58	07:46 15:39-16:31/52 17:04
30	06:18 20:41	06:48 07:14-07:37/23 20:00	07:18 19:09	06:50 17:24	07:25 15:29-16:17/48 16:58	07:46 15:40-16:32/52 17:05
31	06:19 20:40	06:49 07:13-07:38/25 19:58		06:51 17:22		07:46 15:41-16:32/51 17:06
Potential sun hours	457	427	375	346	299	290
Sum of minutes with flicker	0	108	249	0	647	1589

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

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

SHADOW - Calendar per WTG

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiWTG: BAP09 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (64)

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	07:47 17:07	07:34 08:20-09:30/70 17:40	06:58 08:00-09:46/106 18:14	07:09 09:16-10:01/45 19:47	06:24 20:18	05:55 20:47
2	07:47 17:07	07:33 08:19-09:32/73 17:41	06:57 08:00-09:47/107 18:15	07:07 09:18-09:57/39 19:48	06:22 20:19	05:55 20:48
3	07:47 17:08	07:32 08:18-09:33/75 17:43	06:55 08:00-09:46/106 18:16	07:05 09:21-09:53/32 19:49	06:21 20:20	05:54 20:48
4	07:47 17:09	07:31 08:17-09:35/78 17:44	06:54 08:00-09:46/106 18:17	07:04 09:25-09:48/23 19:50	06:20 20:21	05:54 20:49
5	07:47 17:10	07:30 08:15-09:35/80 17:45	06:52 07:59-09:45/106 18:18	07:02 09:33-09:38/5 19:51	06:19 20:22	05:54 20:50
6	07:47 17:11	07:29 08:14-09:37/83 17:46	06:51 08:00-09:45/105 18:19	07:00 19:52	06:17 20:23	05:53 20:50
7	07:47 17:12	07:28 08:13-09:38/85 17:48	06:49 07:59-09:43/104 18:20	06:59 19:53	06:16 20:24	05:53 20:51
8	07:47 17:13	07:27 08:12-09:39/87 17:49	06:48 07:59-09:42/103 18:21	06:57 19:54	06:15 20:25	05:53 20:51
9	07:47 17:14	07:25 08:11-09:40/89 17:50	06:46 08:00-09:42/102 18:23	06:56 19:55	06:14 20:26	05:53 20:52
10	07:46 17:15	07:24 08:11-09:41/90 17:51	06:45 07:59-09:41/102 18:24	06:54 19:56	06:13 20:27	05:53 20:53
11	07:46 17:16	07:23 08:09-09:42/93 17:52	06:43 08:00-09:40/100 18:25	06:53 19:57	06:12 20:28	05:52 20:53
12	07:46 17:17	07:22 08:09-09:43/94 17:54	06:41 08:00-09:39/99 18:26	06:51 19:58	06:11 20:29	05:52 20:54
13	07:46 17:18	07:21 08:08-09:44/96 17:55	06:40 07:59-09:37/98 18:27	06:49 19:59	06:10 20:30	05:52 20:54
14	07:45 17:19	07:19 08:08-09:45/97 17:56	06:38 08:00-09:37/97 18:28	06:48 20:00	06:09 20:31	05:52 20:55
15	07:45 17:20	07:18 08:06-09:45/99 17:57	06:36 08:00-09:35/95 18:29	06:46 20:01	06:08 20:32	05:52 20:55
16	07:45 17:21	07:17 08:06-09:45/99 17:59	06:35 08:00-09:34/94 18:30	06:45 20:02	06:07 20:33	05:52 20:55
17	07:44 17:22	07:16 08:06-09:46/100 18:00	06:33 08:01-09:33/92 18:31	06:43 20:03	06:06 20:34	05:52 20:56
18	07:44 17:24	07:14 08:04-09:46/102 18:01	06:32 08:01-09:31/90 18:32	06:42 20:04	06:05 20:35	05:52 20:56
19	07:43 17:25	07:13 08:04-09:47/103 18:02	06:30 08:01-09:29/88 18:33	06:40 20:05	06:04 20:36	05:52 20:56
20	07:43 08:47-08:55/8 17:26	07:11 08:04-09:47/103 18:03	06:28 08:02-09:28/86 18:34	06:39 20:07	06:03 20:37	05:52 20:57
21	07:42 08:42-09:03/21 17:27	07:10 08:03-09:47/104 18:04	06:27 08:03-09:26/83 18:35	06:37 20:08	06:02 20:38	05:53 20:57
22	07:42 08:38-09:07/29 17:28	07:09 08:03-09:48/105 18:06	06:25 08:03-09:24/81 18:36	06:36 20:09	06:02 20:39	05:53 20:57
23	07:41 08:34-09:10/36 17:29	07:07 08:02-09:47/105 18:07	06:23 08:04-09:23/79 18:37	06:34 20:10	06:01 20:39	05:53 20:57
24	07:40 08:33-09:14/41 17:31	07:06 08:02-09:48/106 18:08	06:22 08:05-09:20/75 18:39	06:33 20:11	06:00 20:40	05:53 20:57
25	07:40 08:30-09:16/46 17:32	07:04 08:01-09:47/106 18:09	06:20 08:05-09:18/73 18:40	06:32 20:12	05:59 20:41	05:54 20:58
26	07:39 08:28-09:19/51 17:33	07:03 08:01-09:48/107 18:10	06:18 08:07-09:17/70 18:41	06:30 20:13	05:59 20:42	05:54 20:58
27	07:38 08:26-09:21/55 17:34	07:01 08:00-09:47/107 18:11	06:17 08:08-09:14/66 18:42	06:29 20:14	05:58 20:43	05:54 20:58
28	07:37 08:25-09:23/58 17:35	07:00 08:01-09:47/106 18:12	06:15 08:09-09:11/62 18:43	06:28 20:15	05:57 20:44	05:55 20:58
29	07:36 08:23-09:24/61 17:37		07:13 09:11-10:09/58 19:44	06:26 20:16	05:57 20:44	05:55 20:58
30	07:36 08:23-09:27/64 17:38		07:12 09:12-10:06/54 19:45	06:25 20:17	05:56 20:45	05:55 20:58
31	07:35 08:21-09:29/68 17:39		07:10 09:14-10:04/50 19:46		05:56 20:46	
Potential sun hours	299	298	370	398	447	450
Sum of minutes with flicker	538	2642	2737	144	0	0

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

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

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiWTG: BAP09 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (64)

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	05:56 20:58	06:19 20:39	06:49 19:57	07:19 08:38-10:17/99 19:07	06:52 07:40-09:10/90 17:21	07:26 16:57
2	05:56 20:57	06:20 20:38	06:50 19:55	07:20 08:38-10:18/100 19:05	06:53 07:41-09:10/89 17:20	07:27 16:57
3	05:57 20:57	06:21 20:37	06:51 19:54	07:21 08:38-10:19/101 19:04	06:54 07:42-09:09/87 17:19	07:28 16:57
4	05:57 20:57	06:22 20:36	06:52 19:52	07:22 08:37-10:19/102 19:02	06:56 07:43-09:08/85 17:18	07:29 16:57
5	05:58 20:57	06:23 20:35	06:53 19:50	07:23 08:37-10:20/103 19:00	06:57 07:44-09:06/82 17:16	07:30 16:57
6	05:59 20:57	06:24 20:34	06:54 19:49	07:24 08:36-10:20/104 18:59	06:58 07:46-09:06/80 17:15	07:31 16:56
7	05:59 20:56	06:25 20:32	06:55 19:47	07:25 08:36-10:20/104 18:57	06:59 07:47-09:05/78 17:14	07:32 16:56
8	06:00 20:56	06:26 20:31	06:56 09:19-09:42/23 19:45	07:26 08:35-10:20/105 18:56	07:00 07:48-09:03/75 17:13	07:33 16:56
9	06:00 20:56	06:27 20:30	06:57 09:15-09:46/31 19:44	07:27 08:35-10:20/105 18:54	07:01 07:49-09:02/73 17:12	07:34 16:56
10	06:01 20:55	06:28 20:29	06:58 09:11-09:50/39 19:42	07:28 08:34-10:20/106 18:52	07:03 07:51-09:01/70 17:11	07:35 16:56
11	06:02 20:55	06:29 20:27	06:59 09:08-09:53/45 19:40	07:29 08:34-10:20/106 18:51	07:04 07:52-09:00/68 17:10	07:36 16:56
12	06:03 20:55	06:30 20:26	07:00 09:06-09:55/49 19:39	07:30 08:34-10:20/106 18:49	07:05 07:54-08:58/64 17:09	07:36 16:57
13	06:03 20:54	06:31 20:25	07:01 09:03-09:57/54 19:37	07:31 08:33-10:20/107 18:48	07:06 07:55-08:56/61 17:08	07:37 16:57
14	06:04 20:54	06:32 20:23	07:02 09:01-09:59/58 19:35	07:32 08:33-10:20/107 18:46	07:07 07:58-08:55/57 17:07	07:38 16:57
15	06:05 20:53	06:33 20:22	07:03 08:59-10:01/62 19:34	07:33 08:33-10:19/106 18:45	07:08 08:00-08:53/53 17:07	07:39 16:57
16	06:05 20:52	06:34 20:21	07:04 08:57-10:03/66 19:32	07:34 08:33-10:19/106 18:43	07:10 08:01-08:51/50 17:06	07:39 16:57
17	06:06 20:52	06:35 20:19	07:05 08:56-10:04/68 19:30	07:35 08:34-10:20/106 18:42	07:11 08:03-08:49/46 17:05	07:40 16:58
18	06:07 20:51	06:36 20:18	07:06 08:54-10:06/72 19:29	07:36 08:34-10:19/105 18:40	07:12 08:07-08:48/41 17:04	07:41 16:58
19	06:08 20:51	06:37 20:16	07:07 08:52-10:07/75 19:27	07:37 08:34-10:19/105 18:39	07:13 08:09-08:45/36 17:03	07:41 16:58
20	06:09 20:50	06:38 20:15	07:08 08:51-10:09/78 19:25	07:38 08:34-10:18/104 18:37	07:14 08:13-08:42/29 17:03	07:42 16:59
21	06:10 20:49	06:39 20:14	07:09 08:50-10:10/80 19:24	07:40 08:34-10:18/104 18:36	07:15 08:16-08:38/22 17:02	07:43 16:59
22	06:10 20:48	06:40 20:12	07:10 08:48-10:11/83 19:22	07:41 08:34-10:17/103 18:34	07:16 08:23-08:31/8 17:01	07:43 17:00
23	06:11 20:48	06:41 20:11	07:11 08:47-10:12/85 19:20	07:42 08:34-10:16/102 18:33	07:18 07:01 17:01	07:44 17:00
24	06:12 20:47	06:42 20:09	07:12 08:46-10:13/87 19:19	07:43 08:35-10:17/102 18:32	07:19 07:00 17:00	07:44 17:01
25	06:13 20:46	06:43 20:08	07:13 08:45-10:14/89 19:17	06:44 07:36-09:16/100 17:30	07:20 07:00 17:00	07:44 17:01
26	06:14 20:45	06:44 20:06	07:14 08:44-10:15/91 19:15	06:45 07:36-09:15/99 17:29	07:21 06:59 16:59	07:45 17:02
27	06:15 20:44	06:45 20:05	07:15 08:42-10:15/93 19:14	06:46 07:36-09:14/98 17:27	07:22 06:59 16:59	07:45 17:03
28	06:16 20:43	06:46 20:03	07:16 08:41-10:15/94 19:12	06:47 07:37-09:13/96 17:26	07:23 06:58 16:58	07:46 17:03
29	06:17 20:42	06:47 20:01	07:17 08:40-10:16/96 19:10	06:49 07:38-09:13/95 17:25	07:24 06:58 16:58	07:46 17:04
30	06:18 20:41	06:47 20:00	07:18 08:39-10:17/98 19:09	06:50 07:39-09:12/93 17:24	07:25 06:58 16:58	07:46 17:05
31	06:18 20:40	06:48 19:58		06:51 07:39-09:11/92 17:22		07:46 17:06
Potential sun hours	457	427	375	346	299	290
Sum of minutes with flicker	0	0	1616	3171	1344	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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SHADOW - Calendar per WTG

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiWTG: BAP10 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (65)

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	07:47 17:07	07:34 17:40	06:58 18:14	07:09 19:47	06:24 20:18	05:55 20:47	05:56 20:58	06:19 20:39	06:49 19:57	07:19 19:07	06:52 17:21	07:26 16:57
2	07:47 17:07	07:33 17:41	06:57 18:15	07:07 19:48	06:22 20:19	05:55 20:48	05:56 20:57	06:20 20:38	06:50 19:55	07:20 19:05	06:53 17:20	07:27 16:57
3	07:47 17:08	07:32 17:43	06:55 18:16	07:05 19:49	06:21 20:20	05:55 20:48	05:57 20:57	06:21 20:37	06:51 19:54	07:21 19:04	06:54 17:19	07:28 16:57
4	07:47 17:09	07:31 17:44	06:54 18:17	07:04 19:50	06:20 20:21	05:54 20:49	05:57 20:57	06:22 20:36	06:52 19:52	07:22 19:02	06:56 17:18	07:29 16:57
5	07:47 17:10	07:30 17:45	06:52 18:18	07:02 19:51	06:19 20:22	05:54 20:50	05:58 20:57	06:23 20:35	06:53 19:50	07:23 19:00	06:57 17:16	07:30 16:57
6	07:47 17:11	07:29 17:46	06:51 18:19	07:00 19:52	06:17 20:23	05:53 20:50	05:59 20:57	06:24 20:34	06:54 19:49	07:24 18:59	06:58 17:15	07:31 16:56
7	07:47 17:12	07:28 17:48	06:49 18:20	06:59 19:53	06:16 20:24	05:53 20:51	05:59 20:56	06:25 20:32	06:55 19:47	07:25 18:57	06:59 17:14	07:32 16:56
8	07:47 17:13	07:27 17:49	06:48 18:21	06:57 19:54	06:15 20:25	05:53 20:51	06:00 20:56	06:26 20:31	06:56 19:45	07:26 18:56	07:00 17:13	07:33 16:56
9	07:47 17:14	07:25 17:50	06:46 18:23	06:56 19:55	06:14 20:26	05:53 20:52	06:00 20:56	06:27 20:30	06:57 19:44	07:27 18:54	07:01 17:12	07:34 16:56
10	07:46 17:15	07:24 17:51	06:45 18:24	06:54 19:56	06:13 20:27	05:53 20:53	06:01 20:55	06:28 20:29	06:58 19:42	07:28 18:52	07:03 17:11	07:35 16:56
11	07:46 17:16	07:23 17:53	06:43 18:25	06:53 19:57	06:12 20:28	05:52 20:53	06:02 20:55	06:29 20:27	06:59 19:40	07:29 18:51	07:04 17:10	07:36 16:56
12	07:46 17:17	07:22 17:54	06:41 18:26	06:51 19:58	06:11 20:29	05:52 20:54	06:03 20:55	06:30 20:26	07:00 19:39	07:30 18:49	07:05 17:09	07:36 16:57
13	07:46 17:18	07:21 17:55	06:40 18:27	06:49 19:59	06:10 20:30	05:52 20:54	06:03 20:54	06:31 20:25	07:01 19:37	07:31 18:48	07:06 17:08	07:37 16:57
14	07:45 17:19	07:19 17:56	06:38 18:28	06:48 20:00	06:09 20:31	05:52 20:55	06:04 20:54	06:32 20:23	07:02 19:35	07:32 18:46	07:07 17:07	07:38 16:57
15	07:45 17:20	07:18 17:57	06:36 18:29	06:46 20:01	06:08 20:32	05:52 20:55	06:05 20:53	06:33 20:22	07:03 19:34	07:33 18:45	07:08 17:07	07:39 16:57
16	07:45 17:21	07:17 17:59	06:35 18:30	06:45 20:02	06:07 20:33	05:52 20:55	06:05 20:52	06:34 20:21	07:04 19:32	07:34 18:43	07:10 17:06	07:39 16:57
17	07:44 17:22	07:16 18:00	06:33 18:31	06:43 20:03	06:06 20:34	05:52 20:56	06:06 20:52	06:35 20:19	07:05 19:30	07:35 18:42	07:11 17:05	07:40 16:58
18	07:44 17:24	07:14 18:01	06:32 18:32	06:42 20:04	06:05 20:35	05:52 20:56	06:07 20:51	06:36 20:18	07:06 19:29	07:36 18:40	07:12 17:04	07:41 16:58
19	07:43 17:25	07:13 18:02	06:30 18:33	06:40 20:05	06:04 20:36	05:52 20:56	06:08 20:50	06:37 20:16	07:07 19:27	07:37 18:39	07:13 17:03	07:41 16:58
20	07:43 17:26	07:11 18:03	06:28 18:34	06:39 20:07	06:03 20:37	05:52 20:57	06:09 20:50	06:38 20:15	07:08 19:25	07:38 18:37	07:14 17:03	07:42 16:59
21	07:42 17:27	07:10 18:04	06:27 18:35	06:37 20:08	06:02 20:38	05:53 20:57	06:10 20:49	06:39 20:14	07:09 19:24	07:40 18:36	07:15 17:02	07:43 16:59
22	07:42 17:28	07:09 18:06	06:25 18:36	06:36 20:09	06:02 20:39	05:53 20:57	06:10 20:48	06:40 20:12	07:10 19:22	07:41 18:34	07:16 17:01	07:43 17:00
23	07:41 17:29	07:07 18:07	06:23 18:37	06:34 20:10	06:01 20:39	05:53 20:57	06:11 20:47	06:41 20:11	07:11 19:20	07:42 18:33	07:18 17:01	07:44 17:00
24	07:40 17:31	07:06 18:08	06:22 18:39	06:33 20:11	06:00 20:40	05:53 20:57	06:12 20:47	06:42 20:09	07:12 19:19	07:43 18:32	07:19 17:00	07:44 17:01
25	07:39 17:32	07:04 18:09	06:20 18:40	06:32 20:12	05:59 20:41	05:54 20:58	06:13 20:46	06:43 20:08	07:13 19:17	07:44 17:30	07:20 17:00	07:44 17:01
26	07:39 17:33	07:03 18:10	06:18 18:41	06:30 20:13	05:59 20:42	05:54 20:58	06:14 20:45	06:44 20:06	07:14 19:15	07:45 17:29	07:21 16:59	07:45 17:02
27	07:38 17:34	07:01 18:11	06:17 18:42	06:29 20:14	05:58 20:43	05:54 20:58	06:15 20:44	06:45 20:05	07:15 19:14	07:46 17:27	07:22 16:59	07:45 17:03
28	07:37 17:35	07:00 18:12	06:15 18:43	06:28 20:15	05:57 20:44	05:55 20:58	06:16 20:43	06:46 20:03	07:16 19:12	07:47 17:26	07:23 16:58	07:46 17:03
29	07:36 17:37		07:13 19:44	06:26 20:16	05:57 20:44	05:55 20:58	06:17 20:42	06:47 20:01	07:17 19:10	07:49 17:25	07:24 16:58	07:46 17:04
30	07:36 17:38		07:12 19:45	06:25 20:17	05:56 20:45	05:56 20:58	06:18 20:41	06:47 20:00	07:18 19:09	07:50 17:24	07:25 16:58	07:46 17:05
31	07:35 17:39		07:10 19:46		05:56 20:46		06:18 20:40	06:48 19:58		06:51 17:22		07:46 17:06
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
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

SHADOW - Calendar per WTG

Calculation: Shadow_2021_08_04_progetto_beni paesaggisticiWTG: BAP11 - Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: 200,0 m) (66)

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	07:47 17:07	07:34 17:40	06:58 18:14	07:09 19:47	06:24 20:18	05:55 20:47	05:56 20:58	06:19 20:39	06:49 19:57	07:19 19:07	06:52 17:21	07:26 16:57
2	07:47 17:07	07:33 17:42	06:57 18:15	07:07 19:48	06:22 20:19	05:55 20:47	05:56 20:57	06:20 20:38	06:50 19:55	07:20 19:05	06:53 17:20	07:27 16:57
3	07:47 17:08	07:32 17:43	06:55 18:16	07:05 19:49	06:21 20:20	05:55 20:48	05:57 20:57	06:21 20:37	06:51 19:54	07:21 19:04	06:54 17:19	07:28 16:57
4	07:47 17:09	07:31 17:44	06:54 18:17	07:04 19:50	06:20 20:21	05:54 20:49	05:58 20:57	06:22 20:36	06:52 19:52	07:22 19:02	06:55 17:18	07:29 16:57
5	07:47 17:10	07:30 17:45	06:52 18:18	07:02 19:51	06:19 20:22	05:54 20:50	05:58 20:57	06:23 20:35	06:53 19:50	07:23 19:00	06:57 17:16	07:30 16:57
6	07:47 17:11	07:29 17:46	06:51 18:19	07:00 19:52	06:17 20:23	05:53 20:50	05:59 20:57	06:24 20:34	06:54 19:49	07:24 18:59	06:58 17:15	07:31 16:56
7	07:47 17:12	07:28 17:48	06:49 18:20	06:59 19:53	06:16 20:24	05:53 20:51	05:59 20:56	06:25 20:32	06:55 19:47	07:25 18:57	06:59 17:14	07:32 16:56
8	07:47 17:13	07:27 17:49	06:48 18:21	06:57 19:54	06:15 20:25	05:53 20:51	06:00 20:56	06:26 20:31	06:56 19:45	07:26 18:56	07:00 17:13	07:33 16:56
9	07:47 17:14	07:25 17:50	06:46 18:23	06:56 19:55	06:14 20:26	05:53 20:52	06:00 20:56	06:27 20:30	06:57 19:44	07:27 18:54	07:01 17:12	07:34 16:56
10	07:46 17:15	07:24 17:51	06:45 18:24	06:54 19:56	06:13 20:27	05:53 20:53	06:01 20:55	06:28 20:29	06:58 19:42	07:28 18:52	07:03 17:11	07:35 16:56
11	07:46 17:16	07:23 17:53	06:43 18:25	06:53 19:57	06:12 20:28	05:52 20:53	06:02 20:55	06:29 20:27	06:59 19:40	07:29 18:51	07:04 17:10	07:36 16:56
12	07:46 17:17	07:22 17:54	06:41 18:26	06:51 19:58	06:11 20:29	05:52 20:54	06:03 20:55	06:30 20:26	07:00 19:39	07:30 18:49	07:05 17:09	07:36 16:57
13	07:46 17:18	07:21 17:55	06:40 18:27	06:49 19:59	06:10 20:30	05:52 20:54	06:03 20:54	06:31 20:25	07:01 19:37	07:31 18:48	07:06 17:08	07:37 16:57
14	07:45 17:19	07:19 17:56	06:38 18:28	06:48 20:00	06:09 20:31	05:52 20:55	06:04 20:54	06:32 20:23	07:02 19:35	07:32 18:46	07:07 17:07	07:38 16:57
15	07:45 17:20	07:18 17:57	06:36 18:29	06:46 20:01	06:08 20:32	05:52 20:55	06:05 20:53	06:33 20:22	07:03 19:34	07:33 18:45	07:08 17:07	07:39 16:57
16	07:45 17:21	07:17 17:59	06:35 18:30	06:45 20:02	06:07 20:33	05:52 20:55	06:06 20:52	06:34 20:21	07:04 19:32	07:34 18:43	07:10 17:06	07:39 16:57
17	07:44 17:22	07:16 18:00	06:33 18:31	06:43 20:03	06:06 20:34	05:52 20:56	06:06 20:52	06:35 20:19	07:05 19:30	07:35 18:42	07:11 17:05	07:40 16:58
18	07:44 17:24	07:14 18:01	06:32 18:32	06:42 20:04	06:05 20:35	05:52 20:56	06:07 20:51	06:36 20:18	07:06 19:29	07:36 18:40	07:12 17:04	07:41 16:58
19	07:43 17:25	07:13 18:02	06:30 18:33	06:40 20:05	06:04 20:36	05:52 20:56	06:08 20:50	06:37 20:16	07:07 19:27	07:37 18:39	07:13 17:03	07:41 16:58
20	07:43 17:26	07:11 18:03	06:28 18:34	06:39 20:07	06:03 20:37	05:53 20:57	06:09 20:50	06:38 20:15	07:08 19:25	07:38 18:37	07:14 17:03	07:42 16:59
21	07:42 17:27	07:10 18:04	06:27 18:35	06:37 20:08	06:02 20:38	05:53 20:57	06:10 20:49	06:39 20:14	07:09 19:24	07:40 18:36	07:15 17:02	07:43 16:59
22	07:41 17:28	07:09 18:06	06:25 18:36	06:36 20:09	06:02 20:39	05:53 20:57	06:10 20:48	06:40 20:12	07:10 19:22	07:41 18:34	07:16 17:01	07:43 17:00
23	07:41 17:29	07:07 18:07	06:23 18:37	06:34 20:10	06:01 20:39	05:53 20:57	06:11 20:47	06:41 20:11	07:11 19:20	07:42 18:33	07:18 17:01	07:44 17:00
24	07:40 17:31	07:06 18:08	06:22 18:39	06:33 20:11	06:00 20:40	05:53 20:57	06:12 20:47	06:42 20:09	07:12 19:19	07:43 18:32	07:19 17:00	07:44 17:01
25	07:39 17:32	07:04 18:09	06:20 18:40	06:32 20:12	05:59 20:41	05:54 20:58	06:13 20:46	06:43 20:08	07:13 19:17	07:44 17:30	07:20 17:00	07:44 17:01
26	07:39 17:33	07:03 18:10	06:18 18:41	06:30 20:13	05:59 20:42	05:54 20:58	06:14 20:45	06:44 20:06	07:14 19:15	06:45 17:29	07:21 16:59	07:45 17:02
27	07:38 17:34	07:01 18:11	06:17 18:42	06:29 20:14	05:58 20:43	05:54 20:58	06:15 20:44	06:45 20:05	07:15 19:14	06:46 17:27	07:22 16:59	07:45 17:03
28	07:37 17:35	07:00 18:12	06:15 18:43	06:28 20:15	05:57 20:44	05:55 20:58	06:16 20:43	06:46 20:03	07:16 19:12	06:47 17:26	07:23 16:58	07:46 17:03
29	07:36 17:37		07:13 19:44	06:26 20:16	05:57 20:44	05:55 20:58	06:17 20:42	06:47 20:01	07:17 19:10	06:49 17:25	07:24 16:58	07:46 17:04
30	07:35 17:38		07:12 19:45	06:25 20:17	05:56 20:45	05:56 20:58	06:18 20:41	06:47 20:00	07:18 19:09	06:50 17:24	07:25 16:58	07:46 17:05
31	07:35 17:39		07:10 19:46	06:24 20:16	05:56 20:46	05:56 20:58	06:18 20:40	06:48 19:58	07:18 19:09	06:51 17:22	07:25 16:58	07:46 17:06
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

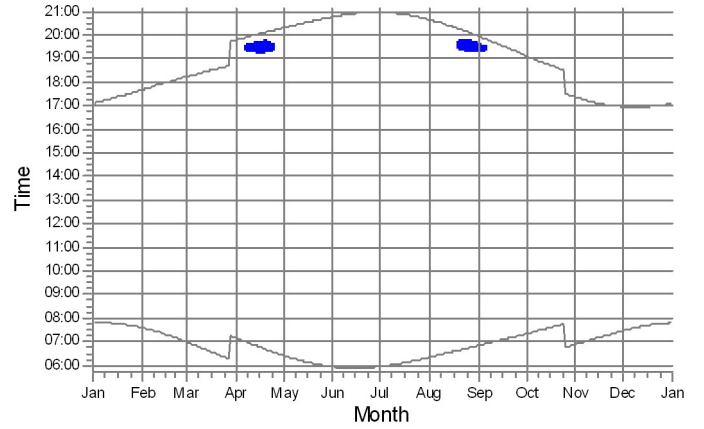
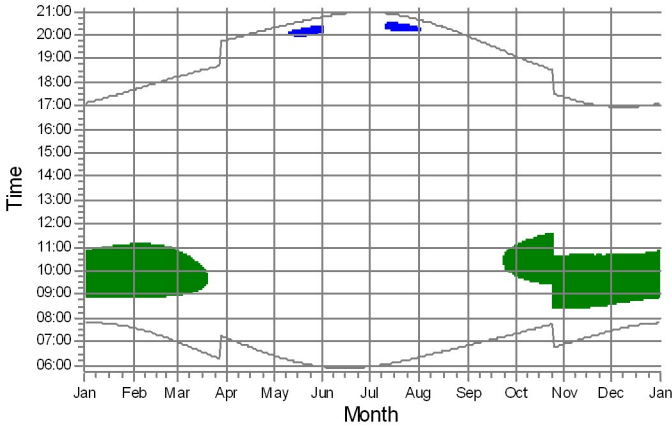
Table layout: For each day in each month the following matrix apply

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

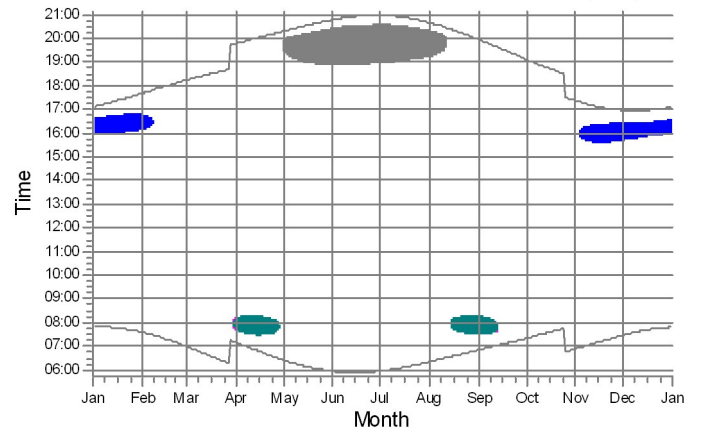
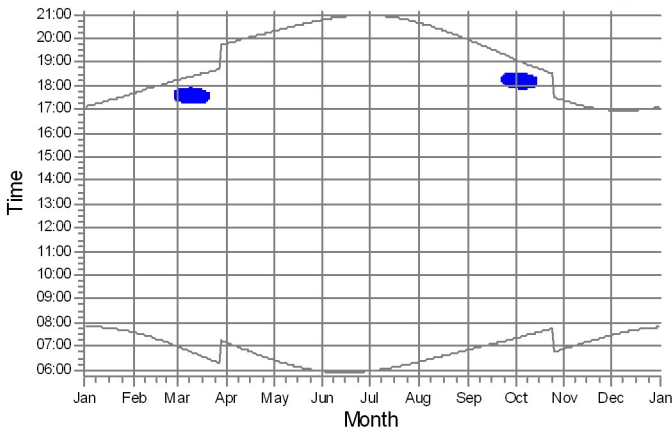
SHADOW - Calendar per WTG, graphical

Calculation: Shadow_2021_08_04_progetto_beni paesaggistici

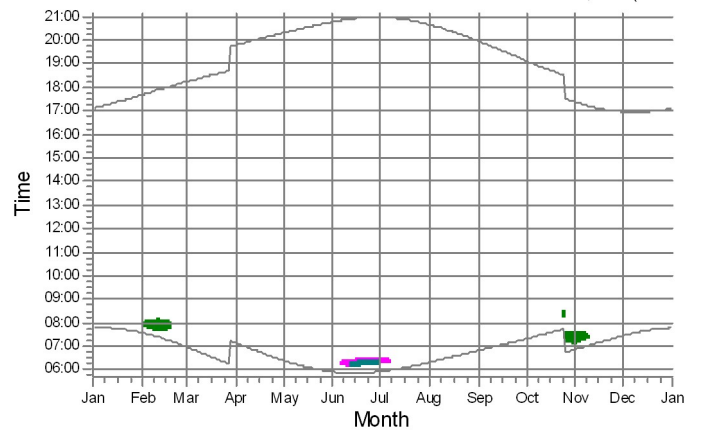
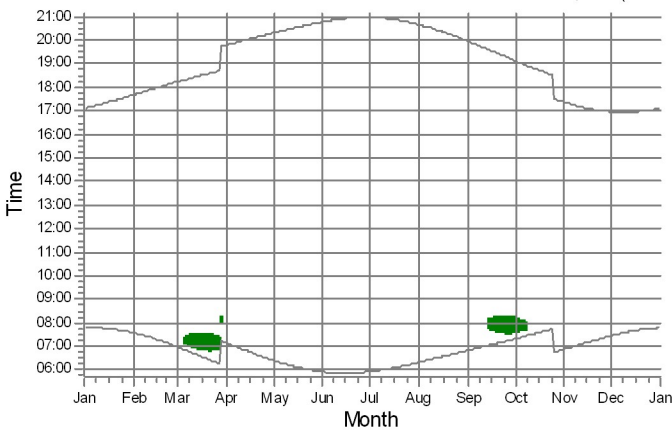
BAP01: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: : BAP02: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: :






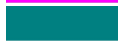

BAP03: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: : BAP04: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: :



BAP05: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: : BAP06: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: :



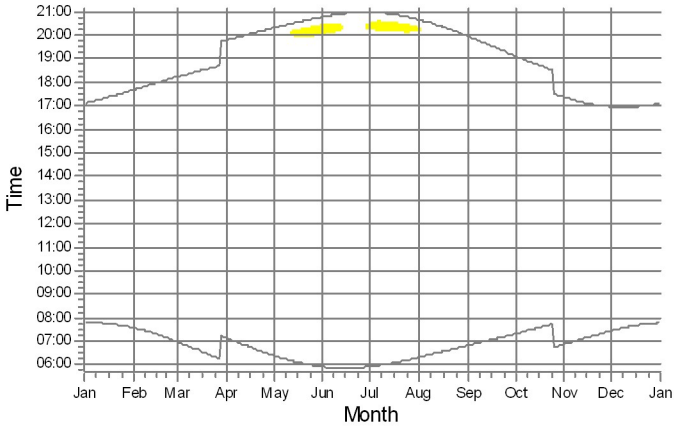
Shadow receptors

-  RBP_01: INSEDIAMENTO ROMANO SAUCCO
-  RBP_05: MENHIR DI ISTELAI
-  RBP_03: NURAGHE LASSANIS
-  RBP_06: NURAGHE ISTELAI
-  RBP_04: TOMBA DI GIGANTI SU CANALE MANNU

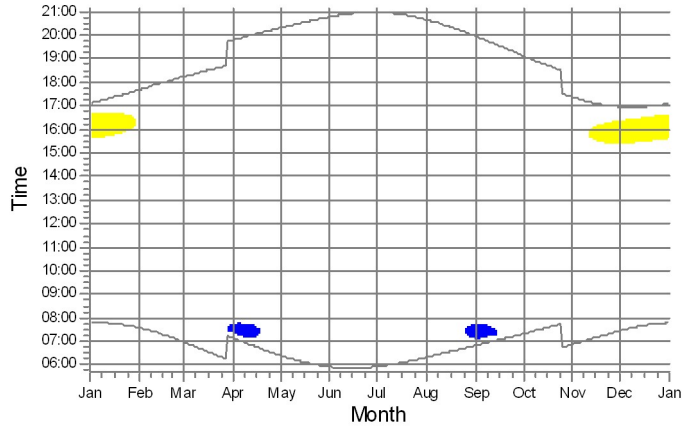
SHADOW - Calendar per WTG, graphical

Calculation: Shadow_2021_08_04_progetto_beni paesaggistici

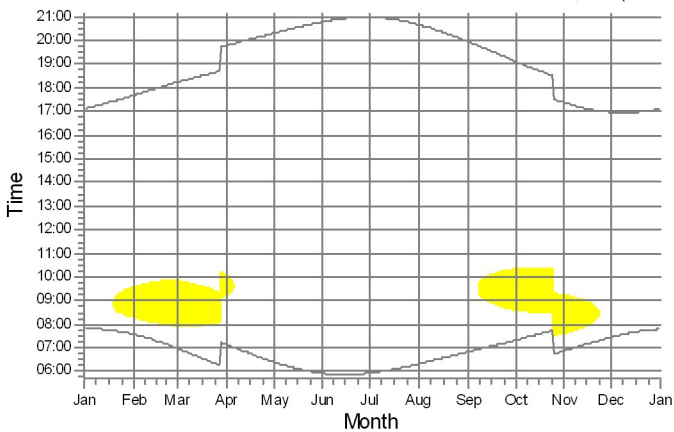
BAP07: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: :



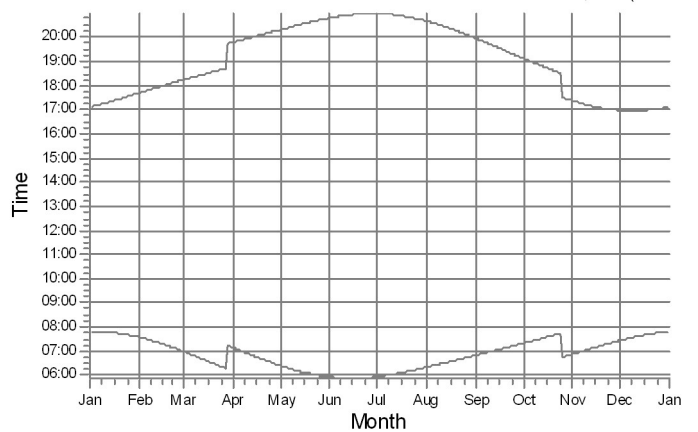
BAP08: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: :



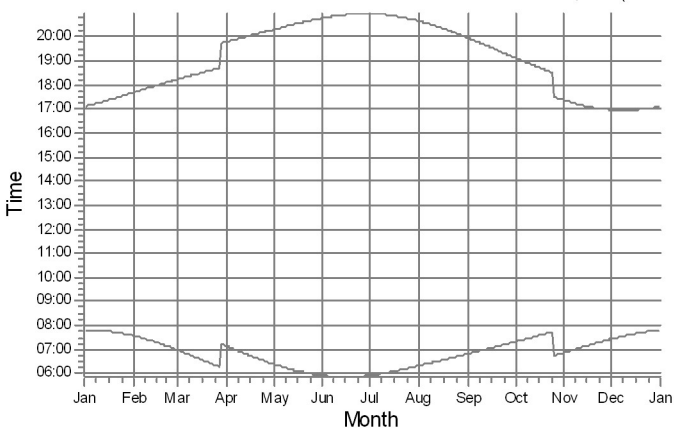
BAP09: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: :



BAP10: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: :



BAP11: Siemens Gamesa SG 6.0-170 6000 170.0 !O! hub: 115,0 m (TOT: :



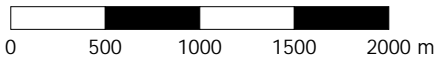
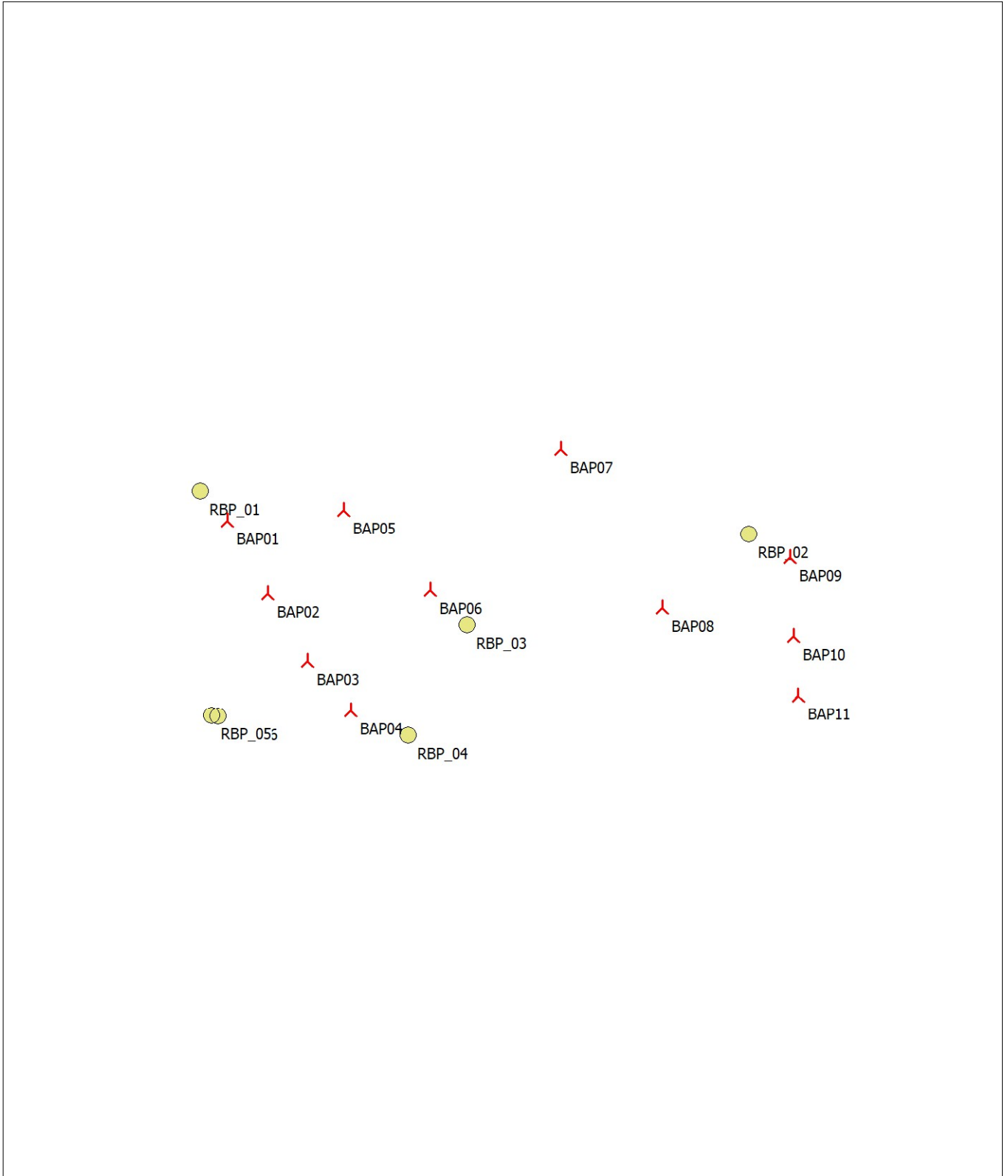
Shadow receptors

RBP_02: INSEDIAMENTO ROMANO MARIANI UDDA

RBP_03: NURAGHE LASSANIS

SHADOW - Map

Calculation: Shadow_2021_08_04_progetto_beni paesaggistici



Map: Blank map , Print scale 1:40.000, Map center Italian Gauss-Boaga west-ROMA40 (IT-peninsular $\pm 4\text{m}$) East: 1.526.009 North: 4.481.785
New WTG Shadow receptor

Flicker map level: Height Contours: TIN_green3.wpo (5)