Energy Trust Shade Effect Evaluation Form	70° ⊢								12h -							
	- 1	(c) Univ. of (regon SRI	MI.					NII.				Esti	mated	annija	AC outpu
Job Name:	_	Sponsor: Ene	rgy Trust			11h	1.6	5		2.3	13h)			tt DC pe	
Contractor:	-	Lat: 44.27; Lo (Solar) time		5	جي.						\forall	Ž,				
Date:	60°	Tilt: 75; Aspe			/ 0.	3/5	1	1.8	2	.7		2.9				
Array Tilt:	00	Redmond, OF	2	10h		A T	\			,	4	ÿ/ /	14h			
Array Orientation:	_					0.8	\				3.4					
Zip Code of Site:	_					20										
	50° –			0.6		10 Page 1		2.0	2.7	} /	80		3.1			
The sun path chart to the right is for a solar electric	50,		9h	0.5	. X	100					100	X.	3.7	15h		
system located in Redmond, Oregon tilted 75	_			M	' / N	1.0					3.1	\mathbb{N}	5.1	Λ		
degrees with a 240 degree azimuthal orientation.	-													1/	_	
The annual AC output for a system with these	nc 1).b.e	∮/ \		\ \	80			1 36	\star /			16.3		
characteristics is about 1 kWh/Watt DC per year.	:j 40° -			, X	0.5	1/20	`	1.8	2.2		P2 V	3.3	1X .	3.6		
	Elevation 004		8h	0 3 / \	ļ	\wedge	1.1				5		// /	J.D \	λ^{16h}	
For comparison, annual production capacity per	H H		$-/\lambda$	+/-	\overline{A}		2			C.		\wedge	\wedge	\wedge	+	
Watt of an optimally oriented system (36 degree tilt and 175 degree azimuth) is 1.43 kWh/Watt DC per					\/	\	(e)			1 C		$ \setminus \rangle$	/	$\setminus \setminus$	\a.\x	
year.	Solar -		<i>- - - - - - - - - -</i>	0.3	X	4	×	1.8	2.2		1 2	2.5 X	3.1	-	7	
yeur.	νχ	7h	0.2 /	/ \	$' \setminus \mid$	\triangle	1.1			2.4	$ \bigwedge $	/		/ \ 3.	$2 \left \left\langle \right\rangle \right 17$	'h
Local Production Capacity = 1.43 kWh/Watt DC per year.			$/$ \ $/$	+	-		(c)	1.4	1.7	Vo _D	+	+	+	+	+ $+$ $+$	
	_		$^{\prime}$ / $\backslash \mid$ / \mid	\	.1 M	0.4	0.8		1.	1.9	2.2	N =	2. ø V	\	. / _\	
	20°	//	/ $$ 0	1	-A		0.0			21.9	2.2	1	\perp	2.5	V 4.2	$\langle \rangle$
At Redmond, a system oriented as in the sun path	-	6h //	′ N	$ / \setminus $	/ \		Sec			(c)				$\setminus \mid \rangle$	\bigwedge 2.4 \setminus	\
chart to the right will produce 70% of the annual	_	\longrightarrow	-		/	V0.2/					1.6	<u> </u>	$\backslash\!\!\!/\!\!\!\!/$	\downarrow /		$\bigvee_{i=1}^{1011}$
electricity produced by an optimally oriented		/ /		/ X	/	1/					$ \setminus $	1.6	X 1.3	$ \setminus $		$\wedge \setminus \bot$
system.	10°	//\`	\	$\langle - / \rangle$	-	y					У	\bot	A	X	1.4	1.2
	_	51 //	Χ /	\	\ / /	/						1.0	$' \setminus$	//	X	11 \ 101
	_	$\frac{5h}{}$		\perp	X/							$\perp \setminus X$	07	/	\triangle	1.1 \\19h
Duran the hearing and the same with about and also de-		/ X /		IX /	/							Y	\\ \ \	(0.2	\backslash / \rangle	\
Draw the horizon on the sun path chart and shade obstructed areas. To calculate the percent reduction			<u>, , V , , , </u>	$I \setminus I$									<u> </u>	0.2	V Lole	1.0/1/07
due to shading, enter the percentage of system		60°	90°	120) ⁰	150)°	18	0°	21	10°	2	40°	2	270°	300°
power output shown on the sun path chart for areas					Ea	ust <-	So	lar A	zimu	th -	-> We	est				
shaded by obstructions into the table on the right.		Period/Hr 5-6 6-7 7-8 8-9 9-10 10-11 11-12 12-13 13-14 14-15 15-16 16-17 17-18 18-19 Period/Hr														
,		May-Jun	3-0 0-	/-0	0-9	9-10	10-11	11-12	12-13	13-14	14-13	13-10	10-1/	1/-10	10-19	Jun-Jul
For example, assume the percentage of system																
power output from 7:00 to 8:00 between September		Apr-May														Jul-Aug
22 and October 21 is 0.4%, and 50% of that period		Mar-Apr														Aug-Sep
is shaded. Enter 0.2% in the column under 7-8 and		Feb-Mar														Sep-Oct
the row labeled Feb-Mar on one side and Sep-Oct		Jan-Feb														Oct-Nov
on the other. Enter zero for each box where there is		Dec-Jan														Nov-Dec

Sum of

Hourly

Shading

Sum of

Hourly

Shading

Sum the shading values in each column and enter the total in the bottom row. Sum the bottom row to determine the percent annual shading.

no shading. Note that hours are in solar time.

Percent Annual Shading: