Energy Trust Shade Effect Evaluation Form	70° ⊢								101							
	-	(c) Univ. of (	Dregon SRML	1					12h				Esti	 mated	annua	l AC outpi
Job Name:	_	Sponsor: Ene	rgy Trust			11h	1.2			2.0	13h		0.7	kWh/W	att DC	per year
Contractor:		Lat: 44.92; Lo (Solar) time			. 32	" \ \					1	<b>X</b> 2.				
Date:	60°	Tilt: 90; Aspe			<b>y</b> 1	1		3	2	.2 /		292				
Array Tilt:	-	Salem, OR		$\int_{10h}$		87	\			/	(4)		\14h			
Array Orientation:	_			A		1.0	\				3.3					
Zip Code of Site:				1.0	$^{\prime}\setminus\mid$	13	1				140	/ `	3.3			
The sun path chart to the right is for a solar electric	50° –		9h /	//		PS.	-	1.6	2.7		100 ES	$\forall -$	+	151		
system located in Salem, Oregon tilted 90 degrees	Ĺ		9n	0.8	8	1.0					3.7	N :	3.7	15h		
with a 240 degree azimuthal orientation. The				$\wedge$							5.1	$\wedge$	+	+		
annual AC output for a system with these	иој 13.40°		/s.8/		/		125			136	/	`	$\setminus$	3.4		
characteristics is about 0.7 kWh/Watt DC per year.	ta L		8h / 0.	5 X	0.7	10		1.7	2.5		J 650	4	X	3.7	16h	
For comparison, annual production capacity per	Eleva		-/X	/			0.9			3.0			$\bigwedge$	$\perp \times$	\	
Watt of an optimally oriented system (32 degree tilt and 189 degree azimuth) is 1.14 kWh/Watt DC per	<u> </u>			/	$\setminus / \mid$		(e) (2)			Por .			/  `	$\backslash / \ /$	3.3	
year.	Solar -		// X	0.5	X	-4		1.1	1.6		√ 3	311	3.9	X 3.	+	
		71	$1 \left( \right) \left( 0.2 \right)$				0.5			1.9				\ \\\ \\\\ \\\\\\\\\\\\\\\\\\\\\\\\\\\	3 \\ \\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	h
Local Production Capacity = 1.14 kWh/Watt DC per year.	L		$/ \setminus   /  $	$\backslash /  $			0.4	1.1	1.4	10 h	\		$ \cdot $		$  \wedge \rangle$	
per year.	20° –	/		$X \rightarrow$	-X	}	0.4		7	1.5	1.4	X 2	2.7 X	3.1	6.9	
At Salem, a system oriented as in the sun path chart	-	6h //	/  X	$/ \setminus  $			Secus			(C)		$/ \setminus$	/ \		X 2.5	\18h
to the right will produce 61% of the annual electricity produced by an optimally oriented	<u>-</u>	<u> </u>				$\bigvee /$	<u> </u>				1.1	0.9	$\forall$	\ /		X - X
system.	100		$\langle \cdot \rangle   \cdot \rangle  $	Λ		$\sqrt{}$						\	1.6			1.4
	-	5h //	$X \mid A \mid$		\ / }	/					\	\o.d\ /	$/ \setminus $		·   X	1.2\\19h
	_		$\langle \cdot \rangle / \rangle$	$\mathcal{A}$	X/							$+\setminus X$	0.3	$A \rightarrow$	$+/\!\!\!/$	
Draw the horizon on the sun path chart and shade		////		X /	/							\ \ \ \ \ \	$\langle                                    $	0.2	$\bigvee$	$L_0 \setminus /$
obstructed areas. To calculate the percent reduction		60°	90°	120	)0	150	00	180	00	21	00	<u>\</u> 2	40°	2 2	700	300
due to shading, enter the percentage of system power output shown on the sun path chart for areas		East < Solar Azimuth> West														
shaded by obstructions into the table on the right.																
shaded by obstitutions into the mole on the fight.		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
For example, assume the percentage of system		May-Jun														Jun-Jul
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: