Energy Trust Shade Effect Evaluation Form	70° ⊢															
		(c) Univ. of	'''   '' Oregon SR	ML	' '	' '			12h'		' '	' '	Esti	mated	annua	l AC outpi
Job Name:	-	Sponsor: Ene	ergy Trust			11h	2.0	)		1.4	13h					per year
Contractor:	-	Lat: 44.92; Lo (Solar) time		02	.3						$\bigvee$	<b>4</b>				
Date:	60° [	Tilt: 90; Aspe			<b>/</b> 3 :	1		2.0	1	3		15				
Array Tilt:		Salem, OR		10h		53	\			Ĭ /	(4)	<i>\</i> \	14h			
Array Orientation:	-					3.4	$\setminus$			_ /	13	$\mathbb{Y} \setminus$				
Zip Code of Site:	F				$\wedge$	6	1			1	<u> </u>					
	50° –			/3.8/	$\overline{}$	PSt.		1.8	1.1		1/40 1/20		1.3			
The sun path chart to the right is for a solar electric	-		91	n / / 3	8						(L)	$\chi_{_{1}}$	.3	\\\15h		
system located in Salem, Oregon tilted 90 degrees with a 90 degree azimuthal orientation. The annual	-			/X	-	3.1				$\perp \perp$	1.1					
AC output for a system with these characteristics is	g					$\setminus  \mid$				10	/	/  \	\	\o.\d		
about 0.53 kWh/Watt DC per year.	:\$ 40° <del> </del>			$/\!\!\!/\!\!\!\!/$	3.6	1	5. P.	1.2	0.7	1 %	2	0.9	-	+		
	Elevation 00 00 00 00 00 00 00 00 00 00 00 00 00		8h / /	4.3		$X^{*}$	2.2		0.1		[ x X	. 0.5	$\mathbb{Z}^{\prime}$	0.7	$\sqrt{16}$ h	
For comparison, annual production capacity per Watt of an optimally oriented system (32 degree tilt	Ele		-/X		$\backslash$		25			0.	8 /		/	+X	$\downarrow$	
and 189 degree azimuth) is 1.14 kWh/Watt DC per			<b>2</b> .9/\		$\backslash /  $		:00			Por Co.		$  \setminus /$		$\backslash \backslash / \  angle$	/p./g	
year.	Solar -		_//	$\chi^{-4}$	<del>                                      </del>	.7	×	0.7	0.5	1	7	).5 X	0.5	X _	_ / / _	
	Ω	71	$n \left  \left\langle \right\rangle \right ^{3.9} /$	/ \ /	/ \		1.2			0.4		/		0.5	$  \rangle   \rangle   \gamma^{17}$	'h
Local Production Capacity = 1.14 kWh/Watt DC	-		/X /				7017	0.6	0.2	Op 2					$\top X \setminus$	
per year.	200	4	.9/ \/ .9	3.5	2.8	1.2	1.0			0.2	0.1	X 0	.1	0.1	\ \p.\	
At Salem, a system oriented as in the sun path chart	~0 [	. /	/ X							OR I			$  / \rangle$		X \	\
to the right will produce 46% of the annual	_	6h //	3.1		/	1.1	Y 0°			ダイ			$\perp / \perp$	\/		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
electricity produced by an optimally oriented		/ /		$\int_{2.0}$	/ 1.1	X /					$  \setminus \rangle$		V		$ \cdot $	$\Lambda \setminus \bot$
system.	10° –	1.7/\	$\left\langle \left\langle \frac{1}{2.0} \right\rangle \right\rangle$			<i>y</i>					X		$\wedge$	+X-	$+ \setminus /$	+
	-	$_{5h}$ //	$X \mid /$	\ /	0.9	,						$\setminus \setminus /$			$\downarrow$	\\ <sub>19h</sub>
	E	1.2	$\bigcirc$	0.6	X/							$+\setminus X$	+	$\wedge$	+/-	.   \
Draw the horizon on the sun path chart and shade	F	///	0.0	3 X	/							X,	$\langle \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	$\langle     \rangle$	\ /	$\backslash \backslash \backslash \backslash$
obstructed areas. To calculate the percent reduction		60°	90°	12	70	157		1 0	00	91	00		10°		700	300°
due to shading, enter the percentage of system		60° 90° 120° 150° 180° 210° 240° 270° 300° East < Solar Azimuth> West														
power output shown on the sun path chart for areas																
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
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 1		Mar-Apr														Aug-Sep

Sep-Oct

Oct-Nov

Nov-Dec

Sum of

Hourly

Shading

Feb-Mar

Jan-Feb

Dec-Jan

Sum of

Hourly

Shading

For example, assume the percentage of system power output from 7:00 to 8:00 between September 22 and October 21 is 0.4%, and 50% of that period is shaded. Enter 0.2% in the column under 7-8 and the row labeled Feb-Mar on one side and Sep-Oct on the other. Enter zero for each box where there is no shading. Note that hours are in solar time.

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.

Percent Annual Shading: