Energy Trust Shade Effect Evaluation Form	70° –	[
37	-	(c) Univ. of (Oregon S	RML		11h	1.4			2.4	131		Esti	mated	annua	l AC outpi
Job Name:	_	Sponsor: Ene	ergy Tru:	st			May	21			7151		0.9 1	kWh/W	att DC	per year
Contractor:		Lat: 43.58; Lo (Solar) time								`						
Date:	60°	Tilt: 75; Aspe	ect: 240		0.	* \	1	5	2	.5		3.2				
Array Tilt:	-	North Bend,	OR	101	1 /		\			_ /			14h			
Array Orientation:	_				/ X	0.8	AF	r 22		1	3.2	$\perp \rangle$	E			
Zip Code of Site:				6.7				1.8	2.5				3.8			
Γhe sun path chart to the right is for a solar electric	50° -) /	\rightarrow		+		2.0			\bigvee	362	15h	+	
system located in North Bend, Oregon tilted 75	-		۲	711	0.7	0.8			_		3.2			\(\)_{1311}		
degrees with a 240 degree azimuthal orientation.				$/ \Lambda$	+/-	1	V	jar 22		1		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	/	ackslash	+	
Γhe annual AC output for a system with these	년 -		/	6.6		$ \rangle$					\ /	200	3\ /	β.β		
characteristics is about 0.9 kWh/Watt DC per year.	по <u>і</u> 40° –		-+/	/	0.5	+	-+	1.6	2.3	-	\rightarrow	3.4	$+$ $\!$	+ + +	+	
For comparison, annual production capacity per	Eleva		8h	0.5			0.8	Feb 21		2.	7 / 2			3.3	\lambda 16h	
Watt of an optimally oriented system (33 degree tilt	畐 -		//	\ /					/			123/	/			
and 188 degree azimuth) is 1.26 kWh/Watt DC per	ag 30°		ø.≱⁄	0.3	3 X (0.4		1.4	2.0		1 2	8 X	3.2		\$.\$	
year.	Solar 30° –	7h	0.2			X	0.7	Jan 21	/	2.1	18			Д 3.	1 \ \ \ 17	7lh
Local Production Capacity = 1.26 kWh/Watt DC			/X + /	$/- \setminus $	+			1.1	1.5		×		+	+	$+\chi$	
per year.	_		/		0.1	0.2	0.5	Dec 21		1.9	1.9	X 2	1.3 V	\		
	20° -	-	$/$ \vee	$-+ \wedge$	+/			υ* -			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	//	$+ \wedge$	2.7	√ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\
At North Bend, a system oriented as in the sun path		6h //	/ <u> </u>	/ \	$\langle \cdot / \cdot \cdot \rangle$	$\setminus \setminus \setminus$	<i>y</i>			X	1/2	/ \	\parallel / \parallel	\ /	2.1	$\left\langle \left\langle \right\rangle _{18\mathrm{h}}\right $
chart to the right will produce 71% of the annual		\longrightarrow	-/ -		\bigvee	χ				,	S >	1.4	\forall	+	+	W -
electricity produced by an optimally oriented system.	100			\bigvee	<u> </u>	$\langle \rangle$					53/		1.7		16	
	10		$X \mid X$	/ \	$ \cdot / /$	/					·	1.2				$ \ \ \ $
+		5h / /	$\triangle \bot /$		$\perp X \angle$							X	0.7		$\perp \triangle$	0.9 \ \ 191
	-	/ X /		ΙΧ	/ У							Y \	$\left\langle \right\rangle$	(0.6	\ /_\	\
Draw the horizon on the sun path chart and shade			<u>, , V , </u>									/	0.14 /	0.0	V Lala	\$.p/ \
obstructed areas. To calculate the percent reduction due to shading, enter the percentage of system		60°	90°	1	.20°	15	0°	18	0°	21	00	24	40°	2	70°	300
power output shown on the sun path chart for areas					E	ast <-	So	lar A	zimu	th	-> W e	est				
shaded by obstructions into the table on the right.		D 1/II	5.0	(7 7	0 0 0	0.10	10 11	11 12	10 12	12 14	14 15	15 16	16 17	17 10	10 10	D 1/II
made of cooling the the thore 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	1/-18	18-19	Period/Hr Jun-Jul
For example, assume the percentage of system		May-Jun														
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
s 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
no shading. Note that hours are in solar time.		Sum of														Sum of

Hourly

Shading

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.

Percent Annual Shading: