Energy Trust Shade Effect Evaluation Form	70° ⊢																
	10	(c) Univ. of ('	12h							Estimated annual AC outpu						
Job Name:	-	Sponsor: Ene Lat: 46.15; Lo					11h	2.	1	1	.6	13h		0.43	kWh/	Watt DO	per year
Contractor:	_	(Solar) time	zone: -			(3)											
Date:Array Tilt:	60°	Tilt: 90; Aspe Astoria, OR	ect: 90			- /3 .	4	\	2.3	. 1.	6 <i>l</i>	1					
Array Orientation:	Ė				10h		à Es	\			Ĭ /		\setminus \setminus	14h			
Zip Code of Site:					-/	X^{\uparrow}	3.4				$\overline{}$	1.6		\setminus			
zip code of site.	_				/3.8/	$/ \setminus $	61	1					/ `	1.5			
The sun path chart to the right is for a solar electric system located in Astoria, Oregon tilted 90 degrees with a 90 degree azimuthal orientation. The annual	50°			01 /	/ /		KŽĪ		1.9	1.4		20 ES			151		
				9h	√ ⅓.	7 X	3.2						1.	5 \	λ^{15h}		
	-				*		3.4					1.5		\uparrow			
AC output for a system with these characteristics is	ation -			\$.9/		/	\				100	/	\	\	1.1		
about 0.43 kWh/Watt DC per year.	ij 40°		8h			3.7	1	5.6	1.3	0.8	18	2	1.2	X ,	1	16h	
For comparison, annual production capacity per	,> I		/	3.9	" / \		X 🐃	2.3	1.0	0.0		La X		1	1 \\	\	
Watt of an optimally oriented system (34 degree tilt	Ele			\wedge	7			1			0.	9 /					
and 191 degree azimuth) is 1.03 kWh/Watt DC per	g 30°		#3/		3.4	$\backslash \angle \perp$		200			Oct			0.5	$\backslash / \backslash $	6/8	
year.	Sola - 008	71	, //,	.0 X	0.4	<i>X</i> ₹	7		0.9	0.4		V 0	.4	0.5	X 0.5	$\left \cdot \right _{17}$	h
I a a al Dua du ati au Cama a itu = 1 02 laWla/Watt DC	_	, 1		.0/\			A	1.8			0.3	Λ			/ \ \	$ \bigvee_{i}$	11
Local Production Capacity = 1.03 kWh/Watt DC per year.			/ /		\setminus / \mid	\	/	(3)	0.5	0.1	No.		1/	$ \setminus $		$ \wedge \rangle$	
or year.	20° –	<i>₱</i>	.9'	2.4	X S	.7	2.1)05°	0.0	0.1	3	0.1	X 0.	1 X	0.1	1.0	
At Astoria, a system oriented as in the sun path	_	6h //	$\left \right _{1.8} \left \right _{1.8}$	\	$/ \setminus \parallel$		\mathcal{A}				20.2 20.2			$ / \rangle$	/	\setminus	\ 18h
chart to the right will produce 42% of the annual electricity produced by an optimally oriented system.	100	$\longrightarrow \mathcal{N}$	1.0	\setminus	\rightarrow	$/ - \downarrow$	1.3	Voe			J. & J.		\longrightarrow	 	\bigvee	- 	\bigvee
			. /	$\setminus \setminus \setminus$	2.2 Y	2.0						\ \ \	(\mathbb{V}	\backslash	$ \cdot $	$^{\prime}$
		1.1/	1.1	-X+	-/	-A	Y +					+	\wedge	\wedge	+X-	$+ \lor /$	+ + +
		$5h / /_{0.8}$	Ă l	/ V		0.9/	/					\	$\backslash \backslash /$			\downarrow \downarrow	$\left\langle \right\rangle$ 19h
		/ X/	$\overline{}$	$/ \rightarrow$	1.0	X/							$+ \times \times$	++	\wedge	+/-	+X+
Draw the horizon on the sun path chart and shade obstructed areas. To calculate the percent reduction	-			0.9	(/	/							Y \	(X	(\bigvee	$\setminus \setminus \setminus$
		60°	90°)	120	0	150	70	18	00	21	100	22	10°	2	70°	300°
due to shading, enter the percentage of system	Foot / Solon Agimuth > West																
bower output shown on the sun path chart for areas shaded by obstructions into the table on the right.																	
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 power output from 7:00 to 8:00 between September		May-Jun															Jun-Jul
		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

Oct-Nov

Nov-Dec

Sum of

Hourly

Shading

Jan-Feb

Dec-Jan

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.

the row labeled Feb-Mar on one side and Sep-Oct

no shading. Note that hours are in solar time.

on the other. Enter zero for each box where there is

Percent Annual Shading: