PS2 Parking Structure 2, 1724 SW Broadway, Portland, Oregon 97201

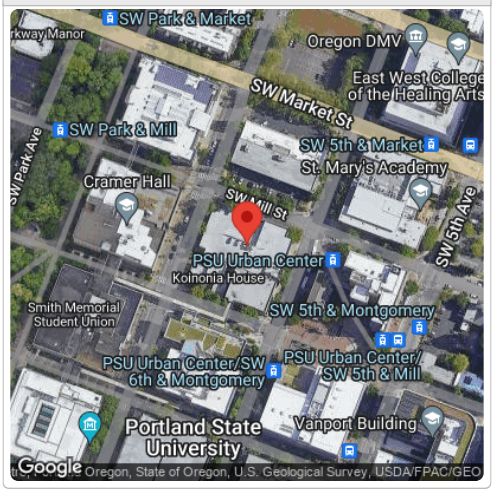
Report

Project Name	Parking Structure 2
Project Description	PS2
Project Address	1724 SW Broadway, Portland, Oregon 97201
Prepared By	Lorin Basche lbasche@pdx.edu

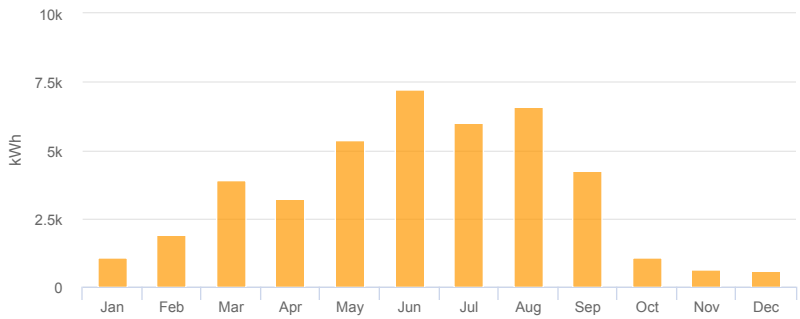
System Metrics

Design	PS2
Module DC Nameplate	80.7 kW
Inverter AC Nameplate	66.0 kW Load Ratio: 1.22
Annual Production	41.85 MWh
Performance Ratio	83.6%
kWh/kWp	518.3
Weather Dataset	TMY, 10km grid (45.55,-122.65), NREL (prospector)
Simulator Version	8716a40dd1-36458414d6-5d33bc25d0-71a0d471a2

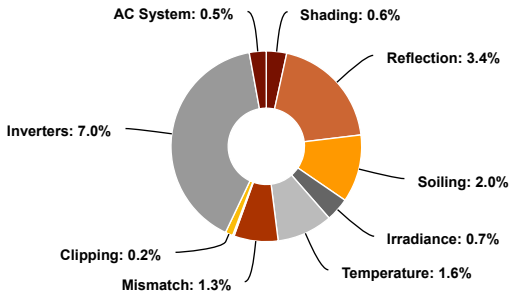
Project Location



Monthly Production



Sources of System Loss



Annual Production

	Description	Output	% Delta
Irradiance (kWh/m²)	Annual Global Horizontal Irradiance	1,284.6	
	Adjusted Global Horizontal Irradiance	582.6	-54.6%
	POA Irradiance	619.8	6.4%
	Shaded Irradiance	616.1	-0.6%
	Irradiance after Reflection	595.0	-3.4%
	Irradiance after Soiling	583.1	-2.0%
	Total Collector Irradiance	**583.1**	**0.0%**
Energy (kWh)	Nameplate	47,040.5	
	Output at Irradiance Levels	46,713.5	-0.7%
	Output at Cell Temperature Derate	45,942.9	-1.6%
	Output After Mismatch	45,342.7	-1.3%
	Optimal DC Output	45,322.6	0.0%
	Constrained DC Output	45,220.4	-0.2%
	Inverter Output	42,061.3	-7.0%
	Energy to Grid	**41,851.0**	**-0.5%**
Temperature Metrics			
	Avg. Operating Ambient Temp		13.3 °C
	Avg. Operating Cell Temp		9.1 °C
Simulation Metrics			
	Operating Hours		4659
	Solved Hours		1989
	Pending Hours		2670

Condition Set

Description	Condition Set 1											
Weather Dataset	TMY, 10km grid (45.55,-122.65), NREL (prospector)											
Solar Angle Location	Meteo Lat/Lng											
Transposition Model	Perez Model											
Temperature Model	Sandia Model											
Spectral Adjustment Model (CdTe cells only)	First Solar Spectral Adjustment by Dew Point Temperature											
Temperature Model Parameters	Rack Type	a	b	Temperature Delta								
	Fixed Tilt	-3.56	-0.075	3°C								
	Flush Mount	-2.81	-0.0455	0°C								
	East-West	-3.56	-0.075	3°C								
	Carport	-3.56	-0.075	3°C								
Soiling (%)	J	F	M	A	M	J	J	A	S	O	N	D
	2	2	2	2	2	2	2	2	2	2	2	2
Irradiation Variance	5%											
Cell Temperature Spread	4° C											
Module Binning Range	-2.5% to 2.5%											
AC System Derate	0.50%											
Trackers	Maximum Angle	Backtracking										
	60°	Enabled										
Module Characterizations	Module	Uploaded By	Characterization									
	FS-4110-3 Feb 2016 (First Solar)	HelioScope	Manufacturer R&D, PAN									
Component Characterizations	Device	Uploaded By	Characterization									
	SG1.5KTL (Sungrow)	HelioScope	Default Characterization									

Components

Component	Name	Count
Inverters	SG1.5KTL (Sungrow)	44 (66.0 kW)
Strings	10 AWG (Copper)	192 (14,810.8 ft)
Module	First Solar, FS-4110-3 Feb 2016 (110W)	734 (80.7 kW)

Wiring Zones

Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	-	3-6	Along Racking

Field Segments

Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment 1	Fixed Tilt	Landscape (Horizontal)	10°	180°	2.0 ft	1x1	204	204	22.4 kW
Field Segment 2	Fixed Tilt	Landscape (Horizontal)	10°	180°	2.0 ft	1x1	530	530	58.3 kW

Detailed Layout