Design 1 FMH, 1855 SW Broadway

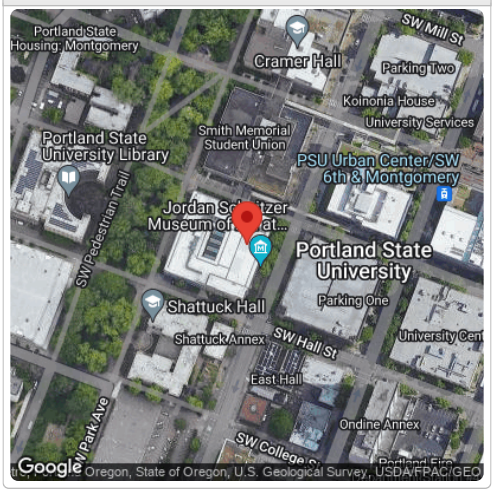
Report

Project Name	FMH
Project Address	1855 SW Broadway
Prepared By	Lorin Basche lbasche@pdx.edu

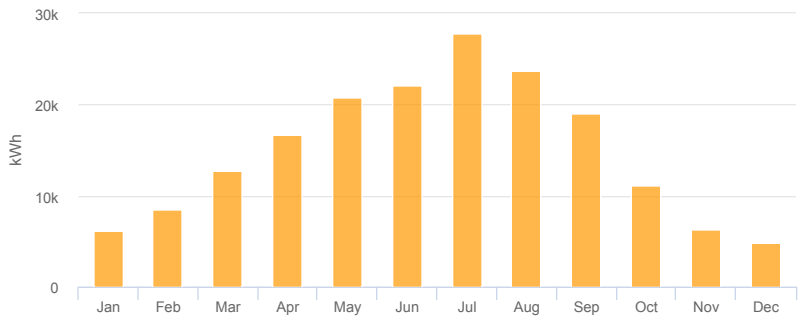
System Metrics

Design	Design 1
Module DC Nameplate	145.4 kW
Inverter AC Nameplate	120.3 kW Load Ratio: 1.21
Annual Production	179.6 MWh
Performance Ratio	87.5%
kWh/kWp	1,235.1
Weather Dataset	TMY, 10km grid (45.55,-122.65), NREL (prospector)
Simulator Version	d60f4785bc-b20b2d3da7-5f5e2f0827-3a8a38ed62

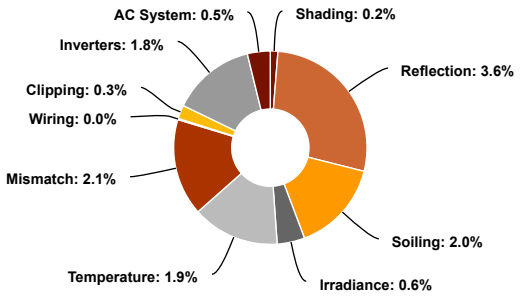
Project Location



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	1,311.6	2.1%
	POA Irradiance	1,411.9	7.7%
	Shaded Irradiance	1,409.6	-0.2%
	Irradiance after Reflection	1,358.6	-3.6%
	Irradiance after Soiling	1,331.5	-2.0%
	Total Collector Irradiance	**1,331.5**	**0.0%**
Energy (kWh)	Nameplate	193,288.7	
	Output at Irradiance Levels	192,125.9	-0.6%
	Output at Cell Temperature Derate	188,460.4	-1.9%
	Output After Mismatch	184,465.7	-2.1%
	Optimal DC Output	184,419.8	0.0%
	Constrained DC Output	183,870.8	-0.3%
	Inverter Output	180,507.1	-1.8%
	Energy to Grid	**179,604.6**	**-0.5%**
Temperature Metrics			
	Avg. Operating Ambient Temp	13.3 °C	
	Avg. Operating Cell Temp	20.8 °C	
Simulation Metrics			
	Operating Hours	4659	
	Solved Hours	4659	

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-4110-2 Sept2014 (First Solar)	HelioScope	Manufacturer, PAN									
Component Characterizations	Device	Uploaded By	Characterization									
	Sunny Tripower 24000TL-US (SMA)	HelioScope	Modified CEC									

Components

Component	Name	Count
Inverters	Sunny Tripower 24000TL-US (SMA)	5 (120.3 kW)
Strings	10 AWG (Copper)	122 (14,729.5 ft)
Module	First Solar, FS-4110-2 Sept2014 (110W)	1,322 (145.4 kW)

Wiring Zones

Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	-	3-11	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	1,322	1,322	145.4 kW

Detailed Layout