Fixed Racking City of Milwaukee- Landfill, 1600 E College Ave, Milwaukee WI

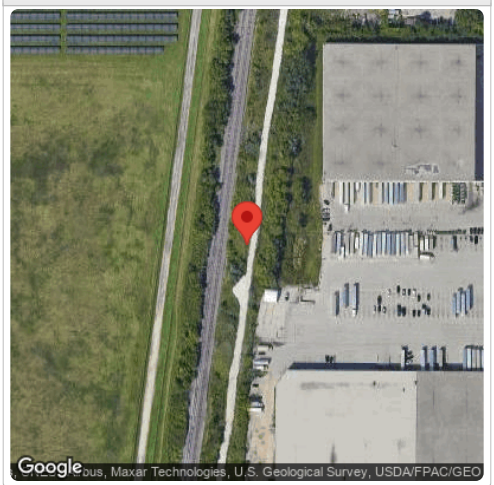
Report

Project Name	City of Milwaukee- Landfill
Project Address	1600 E College Ave, Milwaukee WI
Prepared By	Adam Gusse adamg@sunvest.com

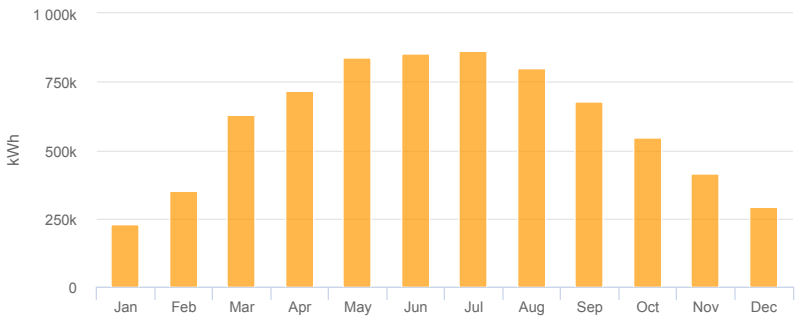
System Metrics

Design	Fixed Racking
Module DC Nameplate	5.93 MW
Inverter AC Nameplate	4.63 MW Load Ratio: 1.28
Annual Production	7.215 GWh
Performance Ratio	71.0%
kWh/kWp	1,217.1
Weather Dataset	TMY, 0.04° Grid (42.93,-87.9), NREL (psm3)
Simulator Version	8450893c5f-c3de092946-8dd4352693-bda843191e

Project Location

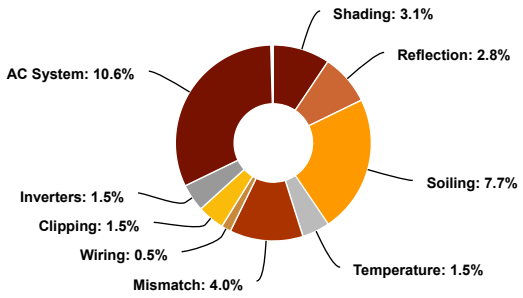


Monthly Production



Month	GHI (kWh/m²)	POA (kWh/m²)	Shaded (kWh/m²)	Nameplate (kWh)	Grid (kWh)
January	50.9	77.7	71.8	243,695.7	231,023.6
February	70.0	97.6	94.6	381,413.7	351,755.1
March	117.2	145.4	142.2	738,121.6	631,064.4
April	146.0	162.0	158.2	885,148.1	715,743.4
May	188.3	192.5	188.0	1,051,016.1	837,173.6
June	201.5	199.0	194.2	1,084,923.4	855,388.6
July	205.8	206.0	201.6	1,128,516.4	861,121.3
August	177.7	191.3	186.9	1,024,679.8	800,642.2
September	131.6	159.0	155.8	853,892.0	679,806.4
October	89.2	118.6	115.7	647,108.6	544,941.9
November	58.8	91.2	85.8	479,516.2	415,961.9
December	44.4	74.4	66.1	319,163.0	290,590.5

Sources of System Loss



Annual Production

	Description	Output	% Delta
Irradiance (kWh/m²)	Annual Global Horizontal Irradiance	1,481.5	
	POA Irradiance	1,714.6	15.7%
	Shaded Irradiance	1,660.9	-3.1%
	Irradiance after Reflection	1,614.3	-2.8%
	Irradiance after Soiling	1,490.0	-7.7%
	Total Collector Irradiance	**1,489.9**	**0.0%**
Energy (kWh)	Nameplate	8,837,194.8	
	Output at Irradiance Levels	8,849,226.5	0.1%
	Output at Cell Temperature Derate	8,713,582.2	-1.5%
	Output After Mismatch	8,361,850.5	-4.0%
	Optimal DC Output	8,317,264.9	-0.5%
	Constrained DC Output	8,194,076.4	-1.5%
	Inverter Output	8,069,849.0	-1.5%
	Energy to Grid	**7,215,213.0**	**-10.6%**
Temperature Metrics			
	Avg. Operating Ambient Temp		11.1 °C
	Avg. Operating Cell Temp		19.6 °C
Simulation Metrics			
	Operating Hours		4341
	Solved Hours		4341

Condition Set

Description	Condition Set 2
Weather Dataset	TMY, 0.04° Grid (42.93,-87.9), NREL (psm3)
Solar Angle Location	Meteo Lat/Lng
Transposition Model	Perez Model
Temperature Model	Sandia Model

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
41	30	10	3	3	3	3	5	5	3	3	16

Irradiation Variance	5%
Cell Temperature Spread	4° C
Module Binning Range	-2.5% to 2.5%
AC System Derate	4.00%

Module Characterizations

Module	Uploaded By	Characterization
CS7N-650MB-AG (CSI Solar Co., Ltd.)	HelioScope	CS7N-650MB-AG_CSI_EXT_V7_20_20220430.PAN, PAN

Component Characterizations

Device	Uploaded By	Characterization
CPS SCH125KTL-DO/US-600 (Chint Power Systems)	HelioScope	Spec Sheet

Components

Component	Name	Count
Inverters	CPS SCH125KTL-DO/US-600 (Chint Power Systems)	37 (4.63 MW)
AC Panels	9 input AC Panel	3
AC Panels	10 input AC Panel	1
AC Home Runs	10 AWG (Copper)	37 (15,074.9 ft)
AC Home Runs	500 MCM (Copper)	4 (13,716.2 ft)
Strings	10 AWG (Copper)	380 (111,906.1 ft)
Module	CSI Solar Co., Ltd., CS7N-650MB-AG (650W)	9,120 (5.93 MW)

Wiring Zones

Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	-	24-24	Along Racking

Field Segments

Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment 1	Fixed Tilt	Portrait (Vertical)	25°	180°	18.3 ft	2x24	190	9,120	5.93 MW

Detailed Layout