Design 6 - Thornova - SMA - 4.36 MWDC - South Facing (row space 9 m) - Final Cambridge Bay - New Site 1, 69.109607, -105.023212

Report

Project Name	Cambridge Bay - New Site 1
Project Address	69.109607, -105.023212
Prepared By	Martha Lenio mlenio@hilat.ca

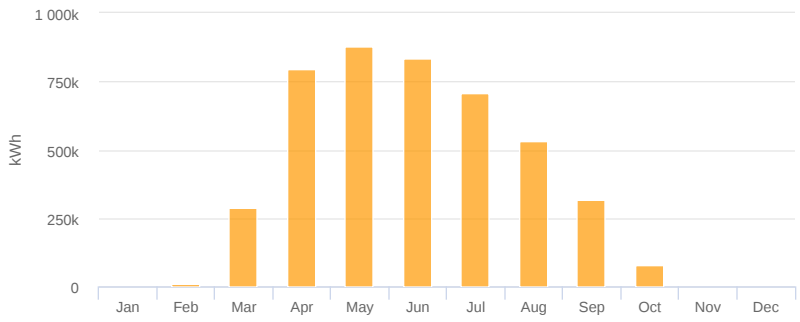
HIGH LATITUDE
ENERGY CONSULTING

System Metrics

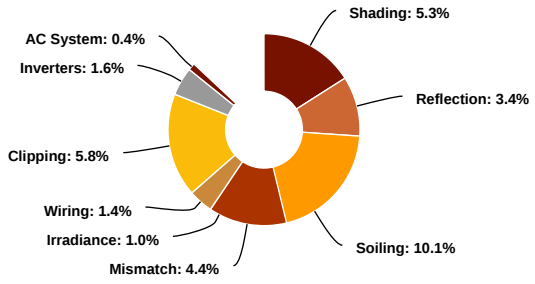
Design	Design 6 - Thornova - SMA - 4.36 MWDC - South Facing (row space 9 m) - Final
Module DC Nameplate	4.36 MW
Inverter AC Nameplate	3.00 MW Load Ratio: 1.45
Annual Production	4.440 GWh
Performance Ratio	74.9%
kWh/kWp	1,017.2
Weather Dataset	TMY, 10km Grid, Meteonorm 7 (meteonorm)
Simulator Version	0e1f9e6f84-627d5ec3d4-01cff11f90-d7c970ffe0

Project Location

Monthly Production



Sources of System Loss



Annual Production

	Description	Output	% Delta
Irradiance (kWh/m²)	Annual Global Horizontal Irradiance	1,000.3	
	POA Irradiance	1,358.9	35.8%
	Shaded Irradiance	1,286.2	-5.3%
	Irradiance after Reflection	1,242.9	-3.4%
	Irradiance after Soiling	1,117.6	-10.1%
	Total Collector Irradiance	**1,117.6**	**0.0%**
Energy (kWh)	Nameplate	4,939,984.3	
	Output at Irradiance Levels	4,891,146.6	-1.0%
	Output at Cell Temperature Derate	5,103,491.6	4.3%
	Output After Mismatch	4,878,194.9	-4.4%
	Optimal DC Output	4,810,634.2	-1.4%
	Constrained DC Output	4,530,004.9	-5.8%
	Inverter Output	4,457,848.3	-1.6%
	Energy to Grid	**4,439,765.5**	**-0.4%**
Temperature Metrics			
	Avg. Operating Ambient Temp		-4.6 °C
	Avg. Operating Cell Temp		1.1 °C
Simulation Metrics			
	Operating Hours		4371
	Solved Hours		4371

Condition Set

Description	Condition Set 1
Weather Dataset	TMY, 10km Grid, Meteonorm 7 (meteonorm)
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
100	90	50	2	2	2	2	2	2	50	90	100

Irradiation Variance	5%
Cell Temperature Spread	4° C
Module Binning Range	0% to 2.5%
AC System Derate	0.50%

Module Characterizations

Module	Uploaded By	Characterization
TS-BGT78(620) (Thornova)	HelioScope	Spec Sheet Characterization, PAN

Component Characterizations

Device	Uploaded By	Characterization
Sunny Highpower PEAK3 150-US (SMA)	HelioScope	Spec Sheet

Components

Component	Name	Count
Inverters	Sunny Highpower PEAK3 150-US (SMA)	20 (3.00 MW)
AC Panels	20 input AC Panel	1
AC Home Runs	250 MCM (Aluminum)	20 (443.7 m)
AC Home Runs	1000 MCM (Copper)	1 (21.5 m)
Home Runs	250 MCM (Aluminum)	20 (5,958.5 m)
Combiners	16 input Combiner	20
Strings	10 AWG (Copper)	320 (80,149.2 m)
Module	Thornova, TS-BGT78(620) (620W)	7,040 (4.36 MW)

Wiring Zones

Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	16	22-22	Along Racking

Field Segments

Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment General	Fixed Tilt	Portrait (Vertical)	Module: 35°	Module: 180°	9.0 m	2x200			0
Field Segment 1	Fixed Tilt	Portrait (Vertical)	Module: 35°	Module: 180°	9.0 m	2x176	17	5,984	3.71 MW
Field Segment 2	Fixed Tilt	Portrait (Vertical)	Module: 35°	Module: 180°	9.0 m	2x22	24	1,056	654.7 kW

Detailed Layout2