Zoning Application

Property Identification

Name
Brett Fuhrman

Address
1345 Hendersonville Road, Asheville, North Carolina 28803-1923

Phone
[redacted]

Email
[redacted]

Zoning
R-1

Lot Size (Acres)
25.88

Email -Submission Verification
[redacted]

Scope of Project-Roof Coverage

Does the project include increasing roof coverage?
No

Is the proposed roof coverage greater than the permitted maximum roof coverage?
No

Scope of Project-Impervious Surface

Does the project include increasing the impervious surface coverage?
No

Scope of Project-Setbacks

Does any part of the project fall within the front yard?
No

Does any part of the project fall within the side/rear yard setback(s)s?
No

Scope of Project-Accessory Structures

Does the project include a detached structure or building?
No

Will there be more than the approved number of

accessory structures/buildings?
No

Project Description

Brief Description of Project
Installation of a 100 kW solar array system on approximately 6,000 square feet of roof space of the Upper School on the Carolina Day School campus.

Estimated Cost of Project
75,000

Estimated Completion Date
12/31/2018

Please attach any drawings, renderings, photographs or other supporting documentation.

Conditional Use Permit Application

I hereby petition the Board of Adjustment to issue a Conditional Use Permit for:

Name
Brett Fuhrman

Property Address
1345 Hendersonville Road

Phone
[redacted]

Email
[redacted]

Type of Conditional Use
802.07 Accessory Buildings

Email-Submission Verification
[redacted]

Description of Project
Installation of a 100 kW solar array system on approximately 6,000 square feet of roof space of the Upper School on the Carolina Day School campus.

Explain why the project would not adversely affect the public interest of those living in the neighborhood:
This is an opportunity to generate some of our power from a clean, renewable energy source. It will also provide us with an incredible educational opportunity for our students. There will be no affect to the public or those living in the neighborhood. Lastly, there is very little visibility of the solar array from a location off of the Carolina Day School campus.

I certify that the information presented by the undersigned in this application is accurate to the best of my knowledge, information and belief.

Signature

Date
10/29/2018

Design 1 Revised Carolina Day School, 1345 Hendersonville Rd, Asheville, NC 28803

Report

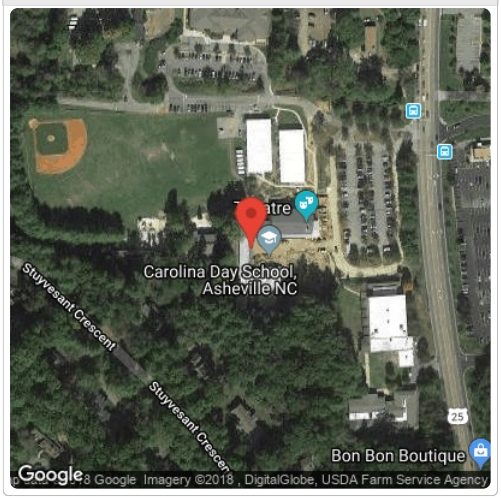
Project Name	Carolina Day School
Project Address	1345 Hendersonville Rd, Asheville, NC 28803
Prepared By	Joe Bennett jbennett@eaglesolarandlight.com

EAGLE SOLAR & LIGHT

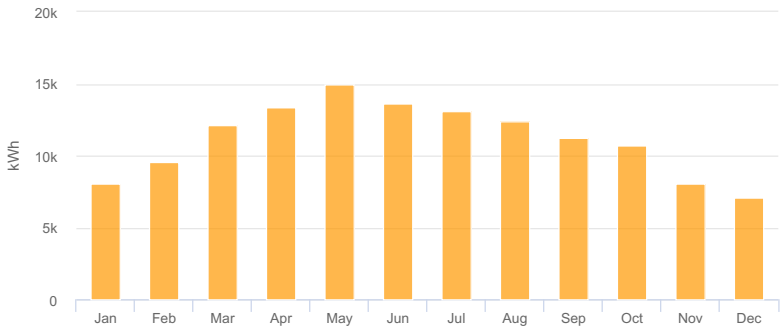
System Metrics

Design	Design 1 Revised
Module DC Nameplate	107.4 kW
Inverter AC Nameplate	100.0 kW Load Ratio: 1.07
Annual Production	134.3 MWh
Performance Ratio	75.1%
kWh/kWp	1,250.8
Weather Dataset	TMY, 10km Grid (35.55,-82.55), NREL (prospector)
Simulator Version	1468d8055c-52441aee5c-623e099696-b542d03352

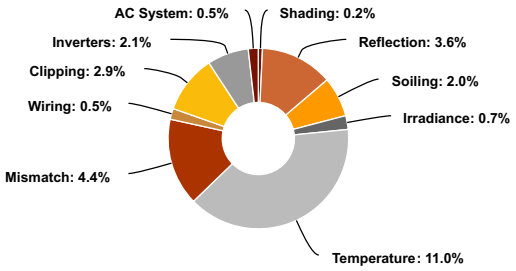
Project Location



Monthly Production



Sources of System Loss



Annual Production

	Description	Output	% Delta
Irradiance (kWh/m²)	Annual Global Horizontal Irradiance	1,620.9	
	POA Irradiance	1,664.8	2.7%
	Shaded Irradiance	1,661.3	-0.2%
	Irradiance after Reflection	1,601.0	-3.6%
	Irradiance after Soiling	1,568.9	-2.0%
	Total Collector Irradiance	**1,568.8**	**0.0%**
Energy (kWh)	Nameplate	168,860.4	
	Output at Irradiance Levels	167,696.6	-0.7%
	Output at Cell Temperature Derate	149,267.3	-11.0%
	Output After Mismatch	142,734.0	-4.4%
	Optimal DC Output	141,959.6	-0.5%
	Constrained DC Output	137,837.7	-2.9%
	Inverter Output	134,984.0	-2.1%
	Energy to Grid	**134,309.0**	**-0.5%**
Temperature Metrics			
	Avg. Operating Ambient Temp		12.2 °C
	Avg. Operating Cell Temp		28.5 °C
Simulation Metrics			
	Operating Hours		4715
	Solved Hours		4715

Condition Set

Description	Condition Set 1											
Weather Dataset	TMY, 10km Grid (35.55,-82.55), NREL (prospector)											
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								
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%											
Module Characterizations	Module	Characterization										
	SST-295W (SunSpark)	Spec Sheet Characterization, PAN										
Component Characterizations	Device	Characterization										
	PVI 50TL 2-22-2017 (Solectria (Yaskawa Solectria Solar))	Default Characterization										

Components

Component	Name	Count
Inverters	PVI 50TL 2-22-2017 (Solectria (Yaskawa Solectria Solar))	2 (100.0 kW)
Strings	10 AWG (Copper)	18 (3,971.0 ft)
Module	SunSpark, SST-295W (295W)	364 (107.4 kW)

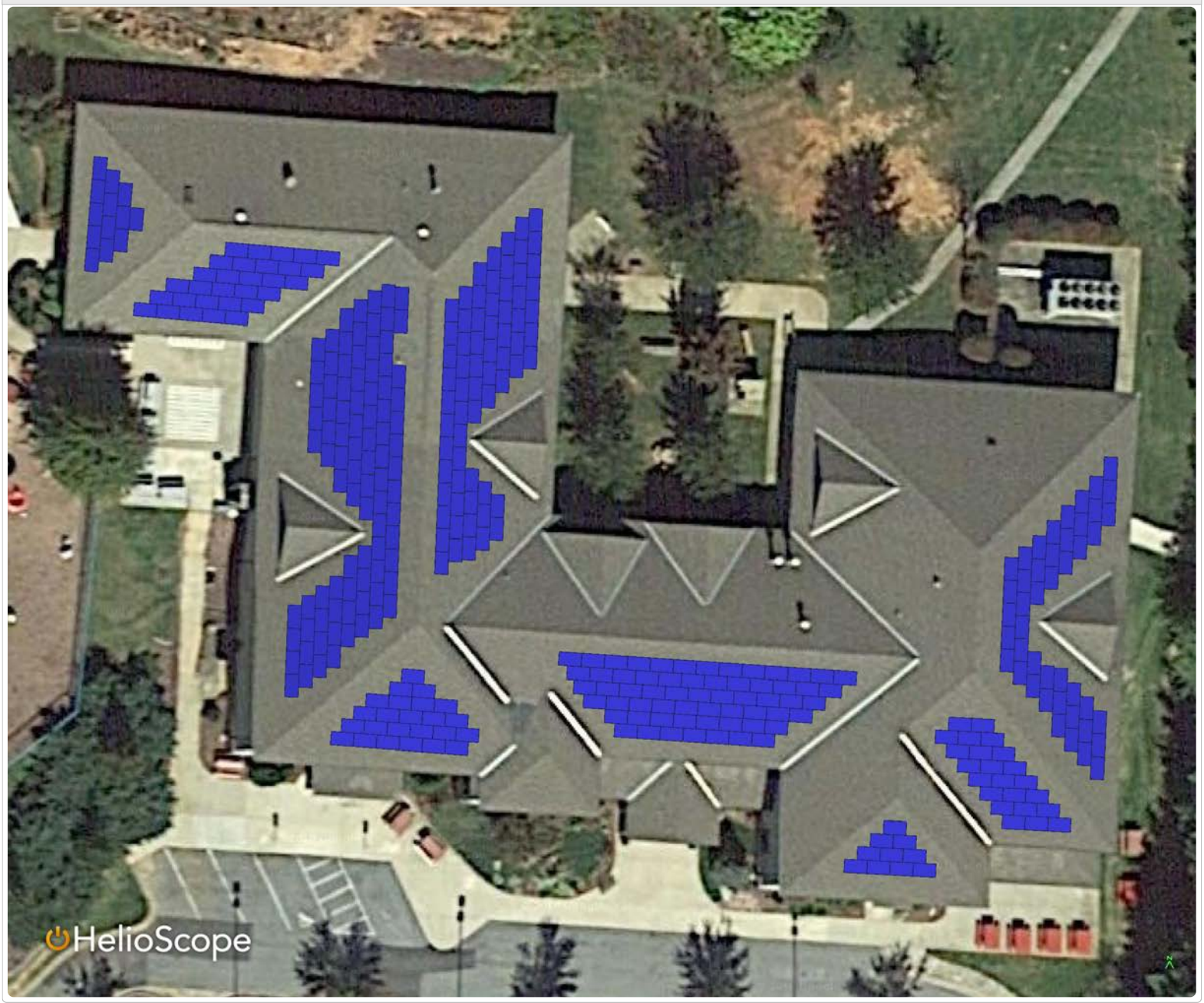
Wiring Zones

Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone 2	12	20-21	Along Racking

Field Segments

Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment 1	Flush Mount	Landscape (Horizontal)	10°	185.029°	0.0 ft	1x1	33	30	8.85 kW
Field Segment 2	Flush Mount	Landscape (Horizontal)	10°	184.389°	0.0 ft	1x1	24	24	7.08 kW
Field Segment 3	Flush Mount	Landscape (Horizontal)	10°	183.876°	0.0 ft	1x1	68	61	18.0 kW
Field Segment 4	Flush Mount	Landscape (Horizontal)	10°	183.13°	0.0 ft	1x1	10	10	2.95 kW
Field Segment 5	Flush Mount	Landscape (Horizontal)	10°	183.056°	0.0 ft	1x1	23	23	6.79 kW
Field Segment 6	Flush Mount	Landscape (Horizontal)	10°	272.213°	0.0 ft	1x1	103	90	26.6 kW
Field Segment 7	Flush Mount	Landscape (Horizontal)	10°	274.9°	0.0 ft	1x1	13	13	3.84 kW
Field Segment 8	Flush Mount	Landscape (Horizontal)	10°	92.5091°	0.0 ft	1x1	52	45	13.3 kW
Field Segment 9	Flush Mount	Landscape (Horizontal)	14°	92.3°	0.0 ft	1x1	72	68	20.1 kW

Detailed Layout



Detailed Layout