KING WILLIAM COUNTY PUBLIC SCHOOLS

SOLAR PORTFOLIO VERSION 3 | JANUARY 2019

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Sun Tribe
SOLAR

Sun Tribe Solar is an industry leader in the engineering, procurement, and construction of large-scale solar facilities. Sun Tribe Solar team members bring over 2 GW of renewable energy experience to the market and have successfully built generating facilities for well-known utilities including Dominion, PSEG, Exelon, and Entergy. Our engineers and project managers have led the design and construction of projects in 13 different states on PV projects ranging in size from 2 MW to over 63 MW. In the past two years, Sun Tribe Solar has successfully delivered 26 solar/solar+storage projects for high profile clients, including Carilion Health Systems, Northrup Grumman, and the University of Virginia.

Sun Tribe Solar was established to reshape the renewable energy industry on the east coast. Today, Sun Tribe Solar is the fastest-growing solar company in Virginia, helping develop the local renewable energy ecosystem and moving the Commonwealth to the forefront of the renewable energy movement.

Safety and quality are the twin pillars of Sun Tribe Solar's construction philosophy. Sun Tribe Solar's safety program, led by a Certified Safety Professional with over 250 MW of solar installation safety management experience, has resulted in zero lost time work injuries and zero OSHA recordables. Sun Tribe Solar's commitment to quality extends through the supply chain to ensure all projects are built using exclusively best-in-class components and assembled with care by experienced NABCEP-certified and OSHA-trained solar professionals. Sun Tribe Solar is a fully bonded and insured contractor (Alternative Energy Systems and Electrical designations) headquartered in Charlottesville, VA.

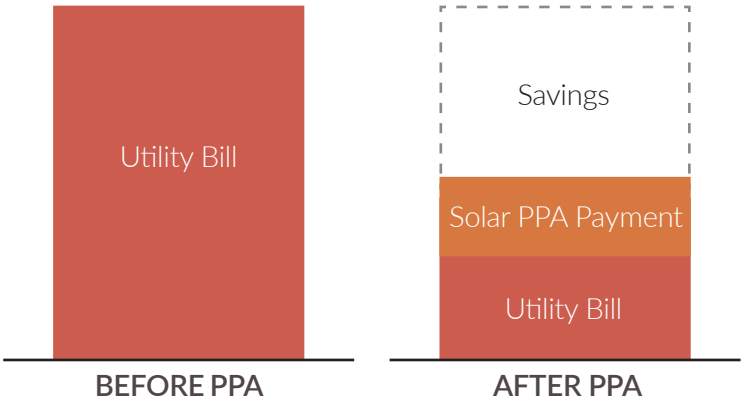
POWER PURCHASE AGREEMENTS

A Power Purchase Agreement (PPA) is a financial arrangement that allows Sun Tribe Solar's client partners to purchase solar electricity with no upfront capital cost. Sun Tribe Solar coordinates the financing, design, construction, and operation of the on-site solar system, and the client partner buys the energy produced without taking on any responsibilities of owning or operating a solar system.

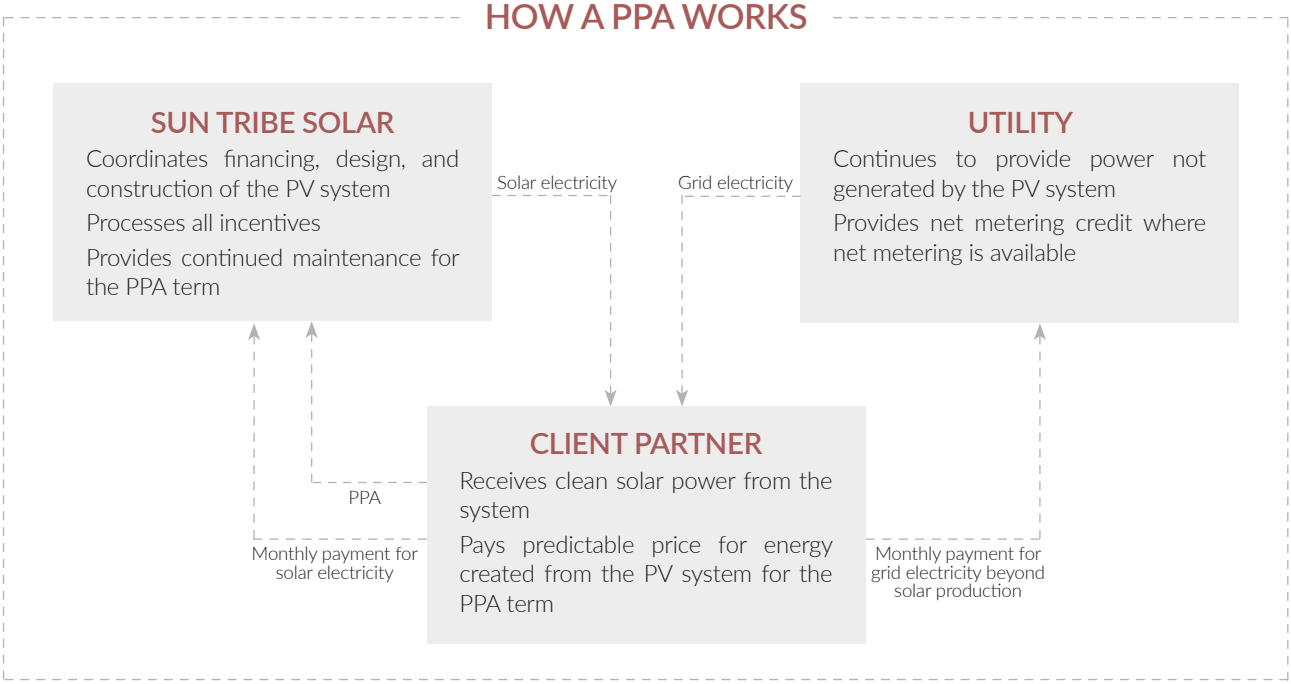
BENEFITS OF A SUN TRIBE SOLAR PPA

- NO UPFRONT COST
- NO PRODUCTION RISK
- NO MAINTENANCE COSTS
- REDUCED MONTHLY ENERGY EXPENSE
- PATH TO SYSTEM OWNERSHIP
- SUSTAINABILITY BRAND BENEFITS
- HEDGE AGAINST RISING ENERGY COSTS

MONTHLY SAVINGS



HOW A PPA WORKS



SUN TRIBE SOLAR GROUND MOUNT PROJECTS

Advancing the solar industry on the east coast with strategic partnerships and flagship projects around the Commonwealth.

Kentuck Solar Farm
Danville, VA

- 8.1 MW
- Single-Axis Tracker Ground Mount
- Construction Management

MIDDLESEX COUNTY PUBLIC SCHOOLS
Locust Hill, VA

- 1.0 MW
- Fixed Ground Mount
- Engineering, Procurement, Construction

CARILION MEDICAL CENTER
Christiansburg, VA

- 1.3 MW
- Single-Axis Ground Mount with 60 kW/120 kWh Battery Storage
- Engineering, Procurement, Construction

Design Proposal

Sun Tribe Solar is proposing to provide the full scope of services for the three schools in the King William County Public Schools Solar PV Portfolio, including engineering, permitting, procurement, installation, and operation and maintenance of the following designs. Full details, layout, and production can be found in the following pages.

85% OFFSET	Acquinton Elementary School, Cool Spring Primary School, and Hamilton Holmes Middle School Proposed System Size: 1.71 MW DC / 1.49 MW AC Forecasted Year 1 Production: 2,438,425 kWh

All work is designed and installed per NFPA 70, VUSBC 2012 and IBC 2012 codes, and the system will be engineered and installed with rapid shutdown, compliant with NEC 2014.

Energy Education

As part of this proposal, Sun Tribe Solar will offer a grant for solar education programming in support of King William County Public Schools. The grant can be used with the National Energy Education Development (NEED) Project with the amount to be determined based on teacher and student participation in each school. Sun Tribe Solar has a successful history of partnering with the NEED Project to support and improve science and energy education in participating schools, improve environmental sustainability at the local level, and broaden and improve the teaching of energy and environmental issues and content in classrooms of all grades and learning abilities.

King William County Public Schools Power Purchase Agreement

To ensure that every organization can realize its clean energy future, Sun Tribe Solar offers third party ownership agreements that require no capital expenditure. Sun Tribe Solar will design, install, own, operate, and maintain rooftop or ground-mounted solar systems, selling clean, renewable energy at or below the current utility cost.

Sun Tribe Solar is pleased to offer the following terms to King William County Public Schools. Further cash flow details can be found in the following pages.

Upfront Cost	$0
Ongoing Maintenance	$0
Production Risk	$0
Energy Price	$0.083 per kWh
Annual Escalator	0%
PPA Term	30 Years
Forecasted Lifetime Savings	$4,051,252

Cooperative Procurement

The procurement path for this PPA could utilize the following cooperative procurement language found in the Westmoreland County School Board RFP # WCPS2018-1 Solar Power Purchase Agreement Services, dated May 8, 2018.

> "Cooperative Contracting: This procurement is being conducted by WCPS in accordance with the provisions of Virginia Code § 2.2-4304. If agreed to by the contractor, other public bodies may utilize this contract. The Contractor shall deal directly with any public body it authorizes to use the contract. WCPS, its officials and staff are not responsible for placement of orders, invoicing, payments, contractual disputes, or any other transactions between the Contractor and any other public bodies, and in no event shall WCPS, its officials or staff be responsible for any costs, damages or injury resulting to any party from use of WCPS'' contract. WCPS assumes no responsibility for any notification of the availability of the contract for use by other public bodies, but the Contractor may conduct such notification."

Sun Tribe Solar PPA

Inputs and Key Financial Metrics

End of Term Buyout Payment	$0	Term	30	Electricity Escalation Rate	3.08%
PPA Escalation Rate	0%	Total Payments	$5,794,206	Federal Income Tax Rate	0%
Starting PPA Rate	$0.083	PV Degradation Rate	0.6%	State Income Tax Rate	0%
Upfront Payment	$0				

Years	PPA Payments	Purchase Option	Electric Bill Savings	Total Cash Flow	Cumulative Cash Flow
Upfront	-	-	-	-	-
1	-$202,389	-	$227,087	$24,698	$24,698
2	-$201,175	-	$232,677	$31,502	$56,200
3	-$199,961	-	$238,396	$38,435	$94,635
4	-$198,746	-	$244,246	$45,500	$140,135
5	-$197,532	-	$250,230	$52,698	$192,833
6	-$196,318	-	$256,352	$60,034	$252,867
7	-$195,103	-	$262,613	$67,510	$320,377
8	-$193,889	-	$269,017	$75,128	$395,505
9	-$192,675	-	$275,566	$82,891	$478,396
10	-$191,460	-	$282,263	$90,802	$569,198
11	-$190,246	-	$289,111	$98,865	$668,063
12	-$189,032	-	$296,113	$107,082	$775,145
13	-$187,817	-	$303,273	$115,456	$890,601
14	-$186,603	-	$310,593	$123,990	$1,014,590
15	-$185,389	-	$318,075	$132,687	$1,147,277
16	-$184,174	-	$325,724	$141,550	$1,288,827
17	-$182,960	-	$333,543	$150,583	$1,439,410
18	-$181,746	-	$341,534	$159,788	$1,599,198
19	-$180,531	-	$349,701	$169,170	$1,768,368
20	-$179,317	-	$358,047	$178,730	$1,947,098
21	-$178,103	-	$366,576	$188,473	$2,135,571
22	-$176,888	-	$375,290	$198,402	$2,333,973
23	-$175,674	-	$384,193	$208,519	$2,542,492
24	-$174,460	-	$393,289	$218,829	$2,761,321
25	-$173,245	-	$402,580	$229,335	$2,990,656
26	-$172,031	-	$412,071	$240,040	$3,230,696
27	-$170,817	-	$421,764	$250,948	$3,481,644
28	-$169,602	-	$431,664	$262,062	$3,743,705
29	-$168,388	-	$441,773	$273,385	$4,017,091
30	-$167,174	-$250,761	$452,096	$34,161	$4,051,252
Totals:	-$5,543,445	-$250,761	$9,845,458	$4,051,252	-

Detailed Layout

*** King William- Rev C Acquinton Elementary School 85% (xgi-65) King William Co, 7301 Acquinton Church Road

Report

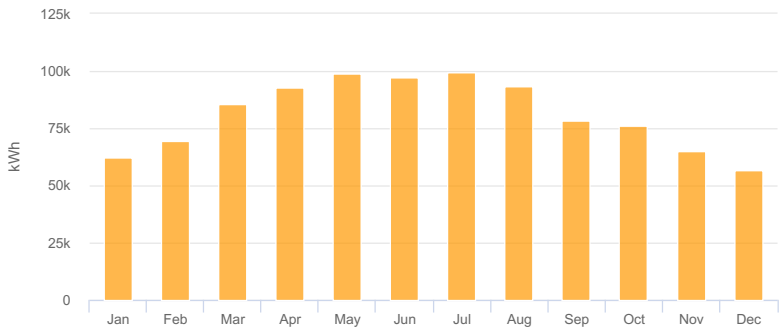
Project Name	King William Co
Project Address	7301 Acquinton Church Road
Prepared By	Trevor Francis, PE trevor@suntribe.solar

System Metrics

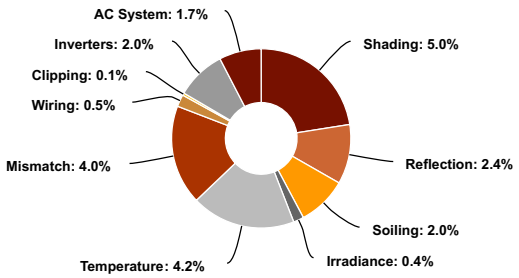
Design	*** King William- Rev C Acquinton Elementary School 85% (xgi-65)
Module DC Nameplate	686.1 kW
Inverter AC Nameplate	585.0 kW Load Ratio: 1.17
Annual Production	974.6 MWh
Performance Ratio	79.7%
kWh/kWp	1,420.5
Weather Dataset	TMY, (37.6921 -77.0369), Solar Anywhere King William (custom)
Simulator Version	a36d904014-4b77413718-cab88881b0-f5d77519c2

Project Location

Monthly Production



Sources of System Loss



Annual Production

	Description	Output	% Delta
Irradiance (kWh/m²)	Annual Global Horizontal Irradiance	1,555.3	
	POA Irradiance	1,782.4	14.6%
	Shaded Irradiance	1,692.7	-5.0%
	Irradiance after Reflection	1,652.1	-2.4%
	Irradiance after Soiling	1,619.0	-2.0%
	Total Collector Irradiance	**1,619.0**	**0.0%**
Energy (kWh)	Nameplate	1,111,186.3	
	Output at Irradiance Levels	1,106,542.2	-0.4%
	Output at Cell Temperature Derate	1,060,110.8	-4.2%
	Output After Mismatch	1,017,574.1	-4.0%
	Optimal DC Output	1,012,591.8	-0.5%
	Constrained DC Output	1,011,654.7	-0.1%
	Inverter Output	991,402.0	-2.0%
	Energy to Grid	**974,586.0**	**-1.7%**
Temperature Metrics			
	Avg. Operating Ambient Temp		17.9 °C
	Avg. Operating Cell Temp		26.5 °C
Simulation Metrics			
	Operating Hours		4560
	Solved Hours		4560

Condition Set

Description	Solar Anywhere Default
Weather Dataset	TMY, (37.6921 -77.0369), Solar Anywhere King William (custom)
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
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
SEG-6MA-365WW (Seraphim)	Spec Sheet Characterization, PAN
JKM 385M-72-V (Jinkosolar)	Jinko_JKM_385M_72_V˜(G3.2_F40).PAN, PAN

Component Characterizations

Device	Characterization
Solectria XGI 1000-65/65 (Yaskawa)	Spec Sheet

Components

Component	Name	Count
Inverters	Solectria XGI 1000-65/65 (Yaskawa)	9 (585.0 kW)
AC Home Runs	250 MCM (Aluminum)	9 (27,717.4 ft)
Strings	10 AWG (Copper)	99 (53,671.5 ft)
Module	Jinkosolar, JKM 385M-72-V (385W)	1,782 (686.1 kW)

Wiring Zones

Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone 3	12	18-18	Along Racking

Field Segments

Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment 2	Fixed Tilt	Portrait (Vertical)	25°	180°	15.0 ft	2x9	0	0	0
Field Segment 3	Fixed Tilt	Portrait (Vertical)	25°	180°	15.0 ft	2x9	99	1,782	686.1 kW

Utility Rates

The table below shows the rates associate with your current utility rate schedule (Schedule 100 - 2.2.18). Your estimated electric bills after solar are shown on the following page.

Fixed Charges		Energy Charges		Demand Charges	
Type	Schedule 100 - 2.2.18	Type	Schedule 100 - 2.2.18	Type	Schedule 100 - 2.2.18
S Monthly	$6.59	S Tier 1 < 150	$0.10041	S NC	$0.01
		S Tier 2 < 300	$0.08941		
		S Tier 3 < 450	$0.08305		
		S Tier 4 > 450	$0.07658		

Current Electric Bill

The table below shows your annual electricity costs based on the most current utility rates and your previous 12 months of electrical usage.

Rate Schedule: Dominion - Schedule 100 - 2.2.18

Time Periods	Energy Use (kWh)	Max Demand (kW)	Charges			
Bill Ranges & Seasons	Total	NC / Max	Other	Energy	Demand	Total
1/1/2018 - 2/1/2018 S	138,960	445	$6.59	$13,124	$4	$13,135
2/1/2018 - 3/1/2018 S	94,320	367	$6.59	$9,039	$4	$9,049
3/1/2018 - 4/1/2018 S	114,480	381	$6.59	$10,863	$4	$10,874
4/1/2018 - 5/1/2018 S	95,040	360	$6.59	$9,092	$4	$9,102
5/1/2018 - 6/1/2018 S	92,880	302	$6.59	$8,788	$3	$8,798
6/1/2018 - 7/1/2018 S	97,920	316	$6.59	$9,257	$3	$9,266
7/1/2018 - 8/1/2018 S	76,320	230	$6.59	$7,157	$2	$7,166
8/1/2018 - 9/1/2018 S	73,440	254	$6.59	$6,985	$3	$6,995
9/1/2017 - 10/1/2017 S	95,040	301	$6.59	$8,964	$3	$8,974
10/1/2017 - 11/1/2017 S	74,240	255	$6.59	$7,059	$3	$7,068
11/1/2017 - 12/1/2017 S	84,960	246	$6.59	$7,931	$2	$7,940
12/1/2017 - 1/1/2018 S	98,640	296	$6.59	$9,245	$3	$9,255
Totals:	1,136,240	-	$79	$107,503	$38	$107,620

New Electric Bill

Rate Schedule: Dominion - Schedule 100 - 2.2.18

Time Periods	Energy Use (kWh)	Max Demand (kW)	Charges			
Bill Ranges & Seasons	Total	NC / Max	Other	Energy	Demand	Total
1/1/2018 - 2/1/2018 S	76,688	329	$6.59	$7,400	$3	$7,409
2/1/2018 - 3/1/2018 S	25,097	244	$6.59	$2,520	$2	$2,529
3/1/2018 - 4/1/2018 S	28,837	253	$6.59	$2,896	$3	$2,905
4/1/2018 - 5/1/2018 S	2,188	228	$6.59	$220	$2	$229
5/1/2018 - 6/1/2018 S	-5,834	215	$6.59	-$586	$2	-$577
6/1/2018 - 7/1/2018 S	815	228	$6.59	$82	$2	$91
7/1/2018 - 8/1/2018 S	-23,099	146	$6.59	-$2,306	$1	-$2,298
8/1/2018 - 9/1/2018 S	-19,767	178	$6.59	-$1,985	$2	-$1,976
9/1/2017 - 10/1/2017 S	16,598	232	$6.59	$1,667	$2	$1,676
10/1/2017 - 11/1/2017 S	-1,882	214	$6.59	-$189	$2	-$180
11/1/2017 - 12/1/2017 S	19,966	200	$6.59	$2,005	$2	$2,013
12/1/2017 - 1/1/2018 S	42,048	277	$6.59	$4,217	$3	$4,226
Totals:	161,655	-	$79	$15,939	$27	$16,045

Annual Electricity Savings: $91,575

*** King William- Rev C Cool Spring Primary School 85% King William Co, 7301

Acquinton Church Road

Report

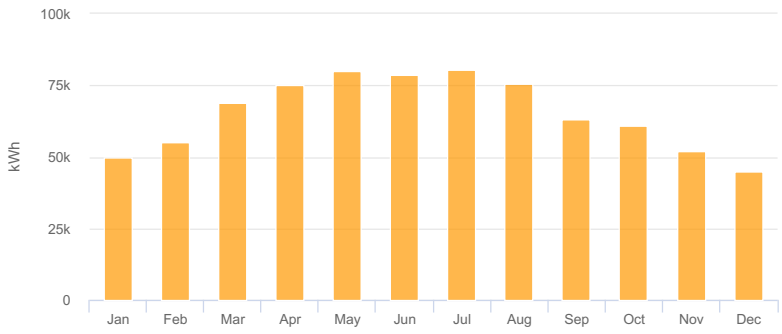
Project Name	King William Co
Project Address	7301 Acquinton Church Road
Prepared By	Trevor Francis, PE trevor@suntribe.solar

System Metrics

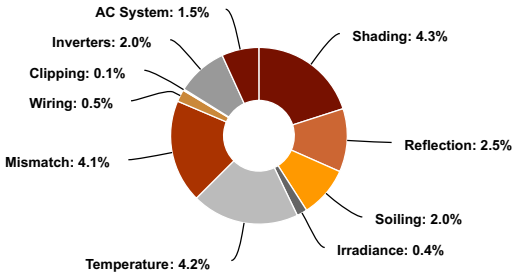
Design	*** King William- Rev C Cool Spring Primary School 85%
Module DC Nameplate	547.5 kW
Inverter AC Nameplate	480.0 kW Load Ratio: 1.14
Annual Production	784.6 MWh
Performance Ratio	80.4%
kWh/kWp	1,433.1
Weather Dataset	TMY, (37.6921 -77.0369), Solar Anywhere King William (custom)
Simulator Version	a36d904014-4b77413718-cab88881b0-f5d77519c2

Project Location

Monthly Production



Sources of System Loss



Annual Production

	Description	Output	% Delta
Irradiance (kWh/m²)	Annual Global Horizontal Irradiance	1,555.3	
	POA Irradiance	1,782.4	14.6%
	Shaded Irradiance	1,705.6	-4.3%
	Irradiance after Reflection	1,663.1	-2.5%
	Irradiance after Soiling	1,629.9	-2.0%
	Total Collector Irradiance	**1,629.8**	**0.0%**
Energy (kWh)	Nameplate	892,642.8	
	Output at Irradiance Levels	888,965.6	-0.4%
	Output at Cell Temperature Derate	851,385.1	-4.2%
	Output After Mismatch	816,838.4	-4.1%
	Optimal DC Output	812,962.4	-0.5%
	Constrained DC Output	812,521.5	-0.1%
	Inverter Output	796,262.0	-2.0%
	Energy to Grid	**784,584.0**	**-1.5%**
Temperature Metrics			
	Avg. Operating Ambient Temp		17.9 °C
	Avg. Operating Cell Temp		26.6 °C
Simulation Metrics			
	Operating Hours		4560
	Solved Hours		4560

Condition Set

Description	Solar Anywhere Default
Weather Dataset	TMY, (37.6921 -77.0369), Solar Anywhere King William (custom)
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
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
SEG-6MA-365WW (Seraphim)	Spec Sheet Characterization, PAN
JKM 385M-72-V (Jinkosolar)	Jinko_JKM_385M_72_V˜(G3.2_F40).PAN, PAN

Component Characterizations

Device	Characterization
Solectria XGI 1000-60/60 (Yaskawa)	Spec Sheet

Components

Component	Name	Count
Inverters	Solectria XGI 1000-60/60 (Yaskawa)	8 (480.0 kW)
AC Home Runs	400 MCM (Aluminum)	8 (37,805.2 ft)
Strings	10 AWG (Copper)	79 (40,795.7 ft)
Module	Jinkosolar, JKM 385M-72-V (385W)	1,422 (547.5 kW)

Wiring Zones

Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone 3	12	18-18	Along Racking

Field Segments

Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment 2	Fixed Tilt	Portrait (Vertical)	25°	180°	15.0 ft	2x9			0
Field Segment 3	Fixed Tilt	Portrait (Vertical)	25°	180°	15.0 ft	2x9	79	1,422	547.5 kW

Utility Rates

The table below show the rates associated with your current utility rate schedule (Schedule 110). Your estimated electric bills after solar are shown on the following page.

Fixed Charges			Energy Charges			Demand Charges		
Type	Schedule 110	Schedule 100 - 2.2.18	Type	Schedule 110	Schedule 100 - 2.2.18	Type	Schedule 110	Schedule 100 - 2.2.18
S Monthly	$6.59	$6.59	S Tier 1 < 150	$0.10103	$0.10041	S NC	$0.01	$0.01
W Monthly	$6.59		S Tier 2 < 300	$0.09003	$0.08941	W NC	$0.01	
			S Tier 3 < 450	$0.08366	$0.08305			
			S Tier 4 > 450	$0.07720	$0.07658			
			W Tier 1 < 150	$0.09589				
			W Tier 2 < 300	$0.08491				
			W Tier 3 < 450	$0.07853				
			W Tier 4 > 450	$0.07205				

Current Electric Bill

The table below shows your annual electricity costs based on the most current utility rates and your previous 12 months of electrical usage.

Rate Schedule: Dominion - Schedule 110

Time Periods	Energy Use (kWh)	Max Demand (kW)	Charges			
Bill Ranges & Seasons	Total	NC / Max	Other	Energy	Demand	Total
1/1/2018 - 2/1/2018 W	139,800	711	$6.59	$13,041	$7	$13,055
2/1/2018 - 3/1/2018 W	75,600	711	$6.59	$7,249	$7	$7,263
3/1/2018 - 4/1/2018 W	86,700	711	$6.59	$8,314	$7	$8,327
4/1/2018 - 5/1/2018 W	64,200	726	$6.59	$6,156	$7	$6,170
5/1/2018 - 6/1/2018 W	64,200	417	$6.59	$6,138	$4	$6,149
6/1/2018 - 7/1/2018 S	72,000	369	$6.59	$7,091	$4	$7,101
7/1/2018 - 8/1/2018 S	62,100	393	$6.59	$6,239	$4	$6,250
8/1/2018 - 9/1/2018 S	62,700	354	$6.59	$6,229	$4	$6,239
9/1/2017 - 10/1/2017 S	81,000	354	$6.59	$7,877	$4	$7,887
10/1/2017 - 11/1/2017 W	66,600	354	$6.59	$6,238	$4	$6,248
11/1/2017 - 12/1/2017 W	65,400	354	$6.59	$6,136	$4	$6,146
12/1/2017 - 1/1/2018 W	80,700	354	$6.59	$7,435	$4	$7,445
Totals:	921,000	-	$79	$88,144	$58	$88,281

New Electric Bill

Rate Schedule Option 1: Dominion - Schedule 110

Time Periods	Energy Use (kWh)	Max Demand (kW)	Charges			
Bill Ranges & Seasons	Total	NC / Max	Other	Energy	Demand	Total
1/1/2018 - 2/1/2018 W	90,153	510	$6.59	$8,495	$5	$8,507
2/1/2018 - 3/1/2018 W	20,357	390	$6.59	$1,952	$4	$1,963
3/1/2018 - 4/1/2018 W	17,763	430	$6.59	$1,703	$4	$1,714
4/1/2018 - 5/1/2018 W	-10,868	478	$6.59	-$1,042	$5	-$1,031
5/1/2018 - 6/1/2018 W	-15,747	314	$6.59	-$1,510	$3	-$1,500
6/1/2018 - 7/1/2018 S	-6,823	195	$6.59	-$689	$2	-$681
7/1/2018 - 8/1/2018 S	-18,522	250	$6.59	-$1,871	$3	-$1,862
8/1/2018 - 9/1/2018 S	-12,669	256	$6.59	-$1,280	$3	-$1,271
9/1/2017 - 10/1/2017 S	17,888	288	$6.59	$1,807	$3	$1,817
10/1/2017 - 11/1/2017 W	5,708	320	$6.59	$547	$3	$557
11/1/2017 - 12/1/2017 W	13,575	276	$6.59	$1,302	$3	$1,311
12/1/2017 - 1/1/2018 W	35,603	325	$6.59	$3,414	$3	$3,424
Totals:	136,418	-	$79	$12,828	$40	$12,947

New Rate Schedule Option 2: Dominion - Schedule 100 - 2.2.18

Time Periods	Energy Use (kWh)	Max Demand (kW)	Charges			
Bill Ranges & Seasons	Total	NC / Max	Other	Energy	Demand	Total
1/1/2018 - 2/1/2018 S	90,153	510	$6.59	$8,902	$5	$8,914
2/1/2018 - 3/1/2018 S	20,357	390	$6.59	$2,044	$4	$2,055
3/1/2018 - 4/1/2018 S	17,763	430	$6.59	$1,784	$4	$1,794
4/1/2018 - 5/1/2018 S	-10,868	478	$6.59	-$1,091	$5	-$1,080
5/1/2018 - 6/1/2018 S	-15,747	314	$6.59	-$1,581	$3	-$1,571
6/1/2018 - 7/1/2018 S	-6,823	195	$6.59	-$685	$2	-$677
7/1/2018 - 8/1/2018 S	-18,522	250	$6.59	-$1,860	$3	-$1,851
8/1/2018 - 9/1/2018 S	-12,669	256	$6.59	-$1,272	$3	-$1,263
9/1/2017 - 10/1/2017 S	17,888	288	$6.59	$1,796	$3	$1,806
10/1/2017 - 11/1/2017 S	5,708	320	$6.59	$573	$3	$583
11/1/2017 - 12/1/2017 S	13,575	276	$6.59	$1,363	$3	$1,372
12/1/2017 - 1/1/2018 S	35,603	325	$6.59	$3,575	$3	$3,585
Totals:	136,418	-	$79	$13,548	$40	$13,667

Annual Electricity Savings: $75,334

*** King William- Rev C HHMS 85% King William Co, 7301 Acquinton Church Road

Report

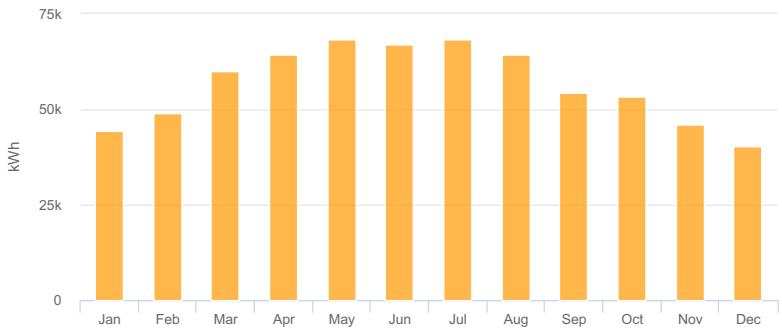
Project Name	King William Co
Project Address	7301 Acquinton Church Road
Prepared By	Trevor Francis, PE trevor@suntribe.solar

System Metrics

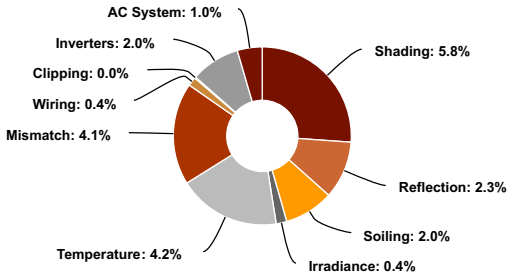
Design	*** King William- Rev C HHMS 85%
Module DC Nameplate	478.2 kW
Inverter AC Nameplate	420.0 kW Load Ratio: 1.14
Annual Production	679.3 MWh
Performance Ratio	79.7%
kWh/kWp	1,420.5
Weather Dataset	TMY, (37.6921 -77.0369), Solar Anywhere King William (custom)
Simulator Version	a36d904014-4b77413718-cab88881b0-f5d77519c2

Project Location

Monthly Production



Sources of System Loss



Annual Production

	Description	Output	% Delta
Irradiance (kWh/m²)	Annual Global Horizontal Irradiance	1,555.3	
	POA Irradiance	1,782.4	14.6%
	Shaded Irradiance	1,678.5	-5.8%
	Irradiance after Reflection	1,639.3	-2.3%
	Irradiance after Soiling	1,606.5	-2.0%
	Total Collector Irradiance	**1,606.4**	**0.0%**
Energy (kWh)	Nameplate	768,476.4	
	Output at Irradiance Levels	765,187.7	-0.4%
	Output at Cell Temperature Derate	733,403.4	-4.2%
	Output After Mismatch	703,039.7	-4.1%
	Optimal DC Output	700,533.6	-0.4%
	Constrained DC Output	700,185.6	0.0%
	Inverter Output	686,174.0	-2.0%
	Energy to Grid	**679,255.0**	**-1.0%**
Temperature Metrics			
	Avg. Operating Ambient Temp		17.9 °C
	Avg. Operating Cell Temp		26.4 °C
Simulation Metrics			
	Operating Hours		4560
	Solved Hours		4560

Condition Set

Description	Solar Anywhere Default
Weather Dataset	TMY, (37.6921 -77.0369), Solar Anywhere King William (custom)
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
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
SEG-6MA-365WW (Seraphim)	Spec Sheet Characterization, PAN
JKM 385M-72-V (Jinkosolar)	Jinko_JKM_385M_72_V˜(G3.2_F40).PAN, PAN

Component Characterizations

Device	Characterization
Solectria XGI 1000-60/60 (Yaskawa)	Spec Sheet

Components

Component	Name	Count
Inverters	Solectria XGI 1000-60/60 (Yaskawa)	7 (420.0 kW)
AC Home Runs	4/0 AWG (Aluminum)	7 (12,513.9 ft)
Strings	10 AWG (Copper)	69 (25,268.3 ft)
Module	Jinkosolar, JKM 385M-72-V (385W)	1,242 (478.2 kW)

Wiring Zones

Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone 3	12	18-18	Along Racking

Field Segments

Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment 2	Fixed Tilt	Portrait (Vertical)	25°	180°	15.0 ft	2x9			0
Field Segment 3	Fixed Tilt	Portrait (Vertical)	25°	180°	15.0 ft	2x9	69	1,242	478.2 kW

Utility Rates

The table below show the rates associated with your current utility rate schedule (Schedule 110). Your estimated electric bills after solar are shown on the following page.

Fixed Charges			Energy Charges			Demand Charges		
Type	Schedule 110	Schedule 100 - 2.2.18	Type	Schedule 110	Schedule 100 - 2.2.18	Type	Schedule 110	Schedule 100 - 2.2.18
S Monthly	$6.59	$6.59	S Tier 1 < 150	$0.10103	$0.10041	S NC	$0.01	$0.01
W Monthly	$6.59		S Tier 2 < 300	$0.09003	$0.08941	W NC	$0.01	
			S Tier 3 < 450	$0.08366	$0.08305			
			S Tier 4 > 450	$0.07720	$0.07658			
			W Tier 1 < 150	$0.09589				
			W Tier 2 < 300	$0.08491				
			W Tier 3 < 450	$0.07853				
			W Tier 4 > 450	$0.07205				

Current Electric Bill

The table below shows your annual electricity costs based on the most current utility rates and your previous 12 months of electrical usage.

Rate Schedule: Dominion - Schedule 110

Time Periods	Energy Use (kWh)	Max Demand (kW)	Charges			
Bill Ranges & Seasons	Total	NC / Max	Other	Energy	Demand	Total
1/1/2018 - 2/1/2018 W	81,346	324	$6.59	$7,441	$3	$7,451
2/1/2018 - 3/1/2018 W	53,635	324	$6.59	$5,088	$3	$5,098
3/1/2018 - 4/1/2018 W	53,048	324	$6.59	$5,038	$3	$5,048
4/1/2018 - 5/1/2018 W	43,512	322	$6.59	$4,172	$3	$4,182
5/1/2018 - 6/1/2018 W	47,250	235	$6.59	$4,399	$2	$4,408
6/1/2018 - 7/1/2018 S	51,139	240	$6.59	$5,000	$2	$5,009
7/1/2018 - 8/1/2018 S	43,859	201	$6.59	$4,280	$2	$4,289
8/1/2018 - 9/1/2018 S	45,847	193	$6.59	$4,446	$2	$4,455
9/1/2017 - 10/1/2017 S	53,641	193	$6.59	$5,148	$2	$5,156
10/1/2017 - 11/1/2017 W	45,260	193	$6.59	$4,161	$2	$4,169
11/1/2017 - 12/1/2017 W	42,802	193	$6.59	$3,952	$2	$3,961
12/1/2017 - 1/1/2018 W	52,069	193	$6.59	$4,739	$2	$4,748
Totals:	613,408	-	$79	$57,864	$29	$57,973

New Electric Bill

Rate Schedule Option 1: Dominion - Schedule 110

Time Periods	Energy Use (kWh)	Max Demand (kW)	Charges			
Bill Ranges & Seasons	Total	NC / Max	Other	Energy	Demand	Total
1/1/2018 - 2/1/2018 W	37,072	213	$6.59	$3,499	$2	$3,507
2/1/2018 - 3/1/2018 W	4,683	181	$6.59	$449	$2	$457
3/1/2018 - 4/1/2018 W	-6,811	193	$6.59	-$653	$2	-$645
4/1/2018 - 5/1/2018 W	-20,740	158	$6.59	-$1,989	$2	-$1,981
5/1/2018 - 6/1/2018 W	-20,943	168	$6.59	-$2,008	$2	-$2,000
6/1/2018 - 7/1/2018 S	-15,752	133	$6.59	-$1,591	$1	-$1,584
7/1/2018 - 8/1/2018 S	-24,581	113	$6.59	-$2,399	$1	-$2,392
8/1/2018 - 9/1/2018 S	-18,523	131	$6.59	-$1,871	$1	-$1,863
9/1/2017 - 10/1/2017 S	-671	143	$6.59	-$68	$1	-$60
10/1/2017 - 11/1/2017 W	-8,088	165	$6.59	-$776	$2	-$767
11/1/2017 - 12/1/2017 W	-3,330	141	$6.59	-$319	$1	-$311
12/1/2017 - 1/1/2018 W	11,838	176	$6.59	$1,135	$2	$1,143
Totals:	-65,846	-	$79	-$2,305	$19	-$2,206

New Rate Schedule Option 2: Dominion - Schedule 100 - 2.2.18

Time Periods	Energy Use (kWh)	Max Demand (kW)	Charges			
Bill Ranges & Seasons	Total	NC / Max	Other	Energy	Demand	Total
1/1/2018 - 2/1/2018 S	37,072	213	$6.59	$3,666	$2	$3,675
2/1/2018 - 3/1/2018 S	4,683	181	$6.59	$470	$2	$479
3/1/2018 - 4/1/2018 S	-6,811	193	$6.59	-$684	$2	-$675
4/1/2018 - 5/1/2018 S	-20,740	158	$6.59	-$2,083	$2	-$2,074
5/1/2018 - 6/1/2018 S	-20,943	168	$6.59	-$2,103	$2	-$2,095
6/1/2018 - 7/1/2018 S	-15,752	133	$6.59	-$1,582	$1	-$1,574
7/1/2018 - 8/1/2018 S	-24,581	113	$6.59	-$2,384	$1	-$2,377
8/1/2018 - 9/1/2018 S	-18,523	131	$6.59	-$1,860	$1	-$1,852
9/1/2017 - 10/1/2017 S	-671	143	$6.59	-$67	$1	-$59
10/1/2017 - 11/1/2017 S	-8,088	165	$6.59	-$812	$2	-$804
11/1/2017 - 12/1/2017 S	-3,330	141	$6.59	-$334	$1	-$326
12/1/2017 - 1/1/2018 S	11,838	176	$6.59	$1,189	$2	$1,197
Totals:	-65,846	-	$79	-$2,305	$19	-$2,206

Annual Electricity Savings: $60,179