REVITY ENERGY

May 7, 2024

Jason M. Pezzullo, MCP, MPA, AICP
City Planning Director
Cranston City Hall
869 Park Avenue
Cranston, Rhode Island 02910

RE: Sharpe Drive Solar
Cranston, Rhode Island
Plat 13 Lot 47

Dear Mr. Pezzullo:

Revity Energy has prepared this letter to provide information to the City of Cranston for the proposed 440 kWac solar array located on Sharpe Drive. As part of the Preliminary Review the ordinance requires the applicant to address the Specific Review Requirements for Major Accessory and Principal SES applications. These specific requirements and relevant information have been provided below.

2(a) – A thorough explanation of any transmission lines access or upgrade required as a result of the project, including but not limited to the route starting and end points, potential impacts to street trees, and right-of-way width;

The only transmission line access and upgrades will be located on site. Currently there are no offsite improvements or substation upgrades proposed.

2(b) – A thorough explanation of any new or proposed upgrades to electrical substations that are related to the proposed project. Information necessary is including but not limited to location, screening, setbacks and noise impacts;

There are currently no electrical substation upgrades required.

2(c) – Diagrams detailing the solar energy facility, associated components and electrical interconnection methods, with all current state electrical code complaint disconnects and over current devices;

Diagrams detailing the solar array and its associated components are shown on both the Preliminary Plans prepared by DiPrete Engineering and also the Conceptual Solar Layout Plan prepared by Photon Renewables.

2(d) – Documentation/details of major system components to be used, including the energy panels, mounting system and inverter;

Details of the system components have been shown on the Preliminary Plans prepared by DiPrete Engineering. Additional information related to the proposed inverters has been included with the submission.

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2(e) – An operation and maintenance plan which addresses site access maintenance, vegetation management, equipment and fence maintenance and any other maintenance that may be needed to address town requirements imposed as a result of unique site conditions;

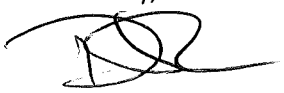
Maintenance requirements have been included within the Stormwater System Operation & Maintenance Plan prepared by DiPrete Engineering. This Operation & Maintenance Plan was also reviewed and approved by RIDEM as part of their permit review.

2(f) – Decommission/restoration plan including an itemized cost estimate for the decommissioning and restoration of the site;

A decommissioning estimate has been prepared by Revity Energy and submitted with the Preliminary Submission package as part of the review.

If you have any further questions on this matter, please feel free to contact me at your earliest convenience.

Sincerely,

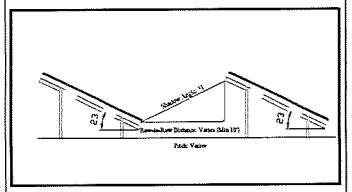


David Russo, PE
Senior Civil Engineer
DRusso@RevityEnergy.com

-NOT FOR CONSTRUCTION, CONCEPTUAL ONLY-

SCALE: 1"=40'

TILT ANGLE AND DISTANCE SCHEME



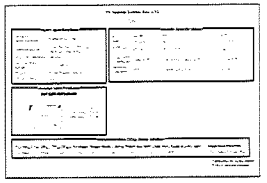
PROJECT INFORMATION

Project Latitude	41.736464 N	Extreme Min.Temperature	-17 C
Project Longitude	-71.455503W	Max. Ambient Temperature	34 C
Utility Name	NATIONAL GRID	Weather Station	T.F.GREEN
Interconnection Voltage	12.47 kV	# of PV Modules	713
AC Size	400 kWac	String Length	23
DC Size	442 kWp	# of Strings	31
DC/AC Ratio	1.10 (MF) / 1.21 (BF)	DC Voltage Rating	1500 V
Tilt Angle	23	Ground Clearance	3' 6"
Azimuth	0	Racking Configuration	2HP GM
PV Module Type	Bifacial	AC Voltage	480 V

ARRAY INFORMATION

PV-Array Name	PV Array 1
Brand	Hanwha Q Cells
Type	Q.TRON XL-G2 620Wp
Power	620
Size (ft)	8.0774 x 3.7205 x 0.1148
Weight (kg)	35
Orientation	Portrait
Nominal Tilt (°)	23
Nominal Azimuth (°)	0
Quantity (pcs)	713
Power (kWp)	442.06

STRING DESIGN



DRAWING NOTES

1. CONCEPTUAL NOT FOR CONSTRUCTION
2. String design subject to inverter manufacturer's approval
3. Max DC/AC ratio subject to inverter manufacturer's approval
4. Usable solar area to be confirmed by the Owner or it's Civil Engineer
5. All setbacks to be confirmed by Owner or it's Civil Engineer

-NOT FOR CONSTRUCTION, CONCEPTUAL ONLY-

Rev	Description	Date	Drawn By
0	INITIAL RELEASE - CONCEPTUAL LAYOUT / NOT FOR CONSTRUCTION	09/23/22	SS
1	SITE PLAN UPDATE - CONCEPTUAL LAYOUT / NOT FOR CONSTRUCTION	09/29/23	SS
2	SITE PLAN UPDATE - CONCEPTUAL LAYOUT / NOT FOR CONSTRUCTION	10/25/23	SS
3	PV MODULE UPDATE - CONCEPTUAL LAYOUT / NOT FOR CONSTRUCTION	04/23/24	SS
4	PV MODULE UPDATE - CONCEPTUAL LAYOUT / NOT FOR CONSTRUCTION	04/25/24	SS

Designed By: Photon Renewables

Owner/Developer Contact Info
Company Name: REVITY ENERGY
Company Address:
Company E-mail:

Owner/Developer Logo: REVITY ENERGY

Customer
Project: Sharpe Dr Solar
Location: Sharpe Dr, Cranston RI

Sheet Name: CONCEPTUAL SOLAR LAYOUT

Designed By: Photon Renewables LLC
Date: 04/25/2024
Sheet Title: PV E1.01
Sheets
Issue
Sheet Number

SOLECTRIA® XGI 1500-250 SERIES

PREMIUM 3-PHASE TRANSFORMERLESS UTILITY-SCALE INVERTERS

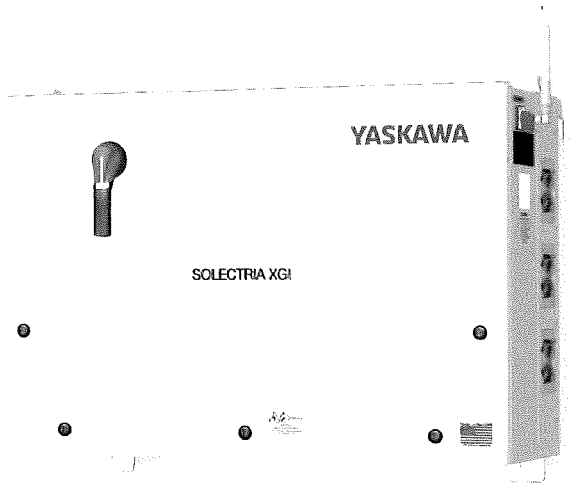
FEATURES

- NEW and MORE POWERFUL!
  - XGI 1500-250/250-600
  - XGI 1500-225-600 (Selectable: 225kW/225kVA or 225kW/250kVA)
  - XGI 1500-200/200-480
  - XGI 1500-175-480 (Selectable: 175kW/175kVA or 175kW/200kVA)
- Industry-leading maximum DC/AC Ratio of 2.0
- Accepts two input PV Output Circuits, with no overcurrent protection required
- Made in the USA with global components
- Buy American Act (BAA) compliant
- 99.0% peak efficiency
- Flexible solution for distributed and centralized system architecture
- Advanced grid-support functionality Rule 21/UL1741SA
- Robust, dependable and built to last
- Lowest O&M and installation costs
- Access all inverters on site via WiFi from one location
- Remote diagnostics and firmware upgrades
- SunSpec Modbus Certified
- Tested compatible with the TESLA PowerPack Microgrid System

OPTIONS

- PV Source Circuit Combiners
- Web-based monitoring
- Extended warranty

Yaskawa Solectria Solar is pleased to introduce its most powerful XGI 1500 inverters, with the XGI 1500-250 models at 600 Vac, and the XGI 1500-200 models for 480 Vac service.



The XGI 1500-250 and XGI 1500-200 feature SiC technology, high power and high efficiency that places them at the top end of the utility-scale string inverters in the market.

Yaskawa Solectria Solar designs all XGI 1500 utility-scale string inverters for high reliability and builds them with the highest quality components -- selected, tested and proven to last beyond their warranty. The XGI 1500 inverters provide advanced grid-support functionality and meet the latest IEEE 1547 and UL 1741 standards for safety.

The XGI 1500 inverters provide ideal solutions for ground-mounted utility-scale PV systems, with models available for service connections at 600 Vac and 480 Vac. Designed and engineered in Lawrence, MA, the SOLECTRIA XGI inverters are assembled and tested at Yaskawa America's facilities in Buffalo Grove, IL. The XGI 1500 inverters are Made in the USA with global components, and are compliant with the Buy American Act.

YASKAWA SOLECTRIA SOLAR

Yaskawa Solectria Solar 1-978-683-9700 | Email: inverters@solectria.com | solectria.com
Document No. FL.XGI1500-04 | 07/21/2022 |

SOLECTRIA® XGI 1500-250 SERIES TECHNICAL DATA

SPECIFICATIONS

PRODUCT SPECIFICATION		XGI 1500 INVERTER MODEL			
		XGI 1500 250/250-600	XGI 1500 225-600	XGI 1500 200/200-480	XGI 1500 175-480
DC Input	Absolute Maximum Input Voltage	1500 VDC			
	Maximum Power Voltage Range (MPPT)	860-1250 VDC		750-1250 VDC	
	Operating Voltage Range (MPPT)	860-1450 VDC		750-1450 VDC	
	Number of MPP Trackers	1 MPPT			
	Maximum Operating Input Current	296.7 A	267 A	237.3 A	207.6 A
	Maximum Operating PV Power	255 kW	230 kW	204 kW	179 kW
	Maximum DC/AC Ratio | Max Rated PV Power	2.0 | 500 kW	2.22 | 500 kW	2.5 | 500 kW	2.86 | 500 kW
	Max Rated PV Short-Circuit Current (∑Isc x 1.25)	800 A			
AC Output	Nominal Output Voltage	600 VAC, 3-Phase		480 VAC, 3-Phase	
	AC Voltage Range	-12% to +10%			
	Continuous Real Output Power	250 kW	225 kW	200 kW	175 kW
	Continuous Apparent Output Power	250 kVA	Selectable: 225 or 250 kVA	200 kVA	Selectable: 175 or 200 kVA
	Maximum Output Current	240.6 A	216.5 A	240.6 A	210.5 A
	Conductor Compatibility	600 kcmil max, Cu or Alum, 1 or 2 conductors with lugs			
	Nominal Output Frequency	60 Hz			
	Power Factor (Unity default)	+/- 0.80 Adjustable			
	Total Harmonic Distortion (THD) @ Rated Load	< 5%			
	Grid Connection Type	3-Ph + N/GND			
	Fault Current Contribution (1 cycle RMS)	144 A			
Efficiency	Peak Efficiency	99.0%			
	CEC Average Efficiency	98.5%			
	Tare Loss	<1 W			
Temperature	Ambient Temperature Range	-40°F to 140°F (-40°C to 60°C)			
	De-Rating Temperature	113°F (45°C)	127°F (53°C)	113°F (45°C)	131°F (55°C)
	Storage Temperature Range	-40°F to 167°F (-40°C to 75°C)			
	Relative Humidity (non-condensing)	0 - 95%			
	Operating Altitude	9,840 ft (3 km)			
Communications	Advanced Graphical User Interface	WIFI			
	Communication Interface	Ethernet			
	Third-Party Monitoring Protocol	SunSpec Modbus TCP/IP			
	Web-Based Monitoring	Optional			
	Firmware Updates	Remote and Local			
Testing & Certifications	Safety Listings & Certifications	UL 1741, IEEE 1547, UL 1998			
	Advanced Grid Support Functionality	Rule 21, UL 1741SA			
	Testing Agency	ETL			
	FCC Compliance	FCC Part 15 (Subpart B, Class A)			
Warranty	Standard and Options	5 Years Standard; Option for 10 Years			
	Acoustic Noise Rating	73 dBA @ 1 m ; 67dBA @ 3 m			
Enclosure	DC Disconnect	Integrated 2-Pole 400 A DC Disconnect			
	Mounting Angle	Vertical only			
	Dimensions	Height: 29.5 in. (750 mm) | Width: 44.3 in. (1125 mm) | Depth: 15.4 in. (390 mm)			
	Weight	290 lbs (131.5 kg)			
	Enclosure Rating and Finish	NEMA 4X, IEC IP66, Type 3R, Polyester Powder-Coated Aluminum			

IT'S PERSONAL

YASKAWA SOLECTRIA SOLAR

Yaskawa Solectria Solar 1-978-683-9700 | Email: inverters@solectria.com | solectria.com
Document No. FL.XGI1500-04 | 07/21/2022 |

DECOMMISSIONING COST ESTIMATE - SHARPE DRIVE SOLAR, 0.44 MW DC
SHARPE DRIVE SOLAR, CRANSTON, RI

	Item Description	Unit	Quantity	Unit Cost	Extended Cost	Comments
1	**Equipment Removal**					
1.1	Removal/Salvage of Inverters	lump sum	1	$2,500	$10,000	
1.2	Removal of Conduit Wire (Leave Conduits in Place)	crew days	1	$2,110	$2,110	Service truck $26.77/hr, Loader/Backhoe $37.00/hr. Laborers (10) $20/hr. = $2,110 per day. Leave in place wire only.
1.3	Removal of Solar Panels	crew days	1	$2,110	$2,110	Service truck $26.77/hr, Loader/Backhoe $37.00/hr. Laborers (10) $20/hr. = $2,110 per day
1.4	Remove Racks/Cable Trays and Haul Steel and Aluminum Away for Salvage	crew days	1	$2,110	$2,110	Service truck $26.77/hr, Loader/Backhoe $37.00/hr. Laborers (10) $20/hr. = $2,110 per day
1.5	Salvage of Racks and Cable Trays	ton	27	($200)	($5,400)	Assumes 135,000 lbs of racking equipment per MW. 0.4 MW x 135,000 lbs = 27 Tons x $200 per ton = $5,400
1.6	Salvage - Wire/Other	lump sum	1	($383)	($383)	15,000 lf of Copper Wire X 30 lb per 1000 lf = 450 lbs of copper wire x $1.70/lb scrap value = $765 (50% used)
1.7	Salvage/Dispose of Solar Panels	ton	18	$25	$450	Assume hauled off with salvage at least of aluminum frames and landfill disposal of remaining materials as non-hazardous solid waste (Crystalline panels). 713 Panels @ 50 lbs each
1.8	Salvage/Dispose of Transformer	1	1	$3,135	$3,135	1 Transformers, Assumes 23-ton crane for 1 day, $265/hr = $2,120, Service Truck for 1 day, $26.77/hr = $215, Trailer for 1 das, $20/hr = $160, Laborers (4) for 1 days, $20/hr = $640
		Task 1 Total (Equipment Removal)			**$14,133**	
2	**Site Restoration**					
2.1	Labor	weeks	0.2	$11,000	$2,200	Assume 10 man crew, $20/hr, 40 hours/wk, $8,000/wk plus equipment cost for $11,000/wk. Assume 1 day for restoration since most of the site is gravel and crushed stone.
2.2	Seeding, Fertilizer	acres	0.0	$1,000	$0	Site is mostly gravel and crushed stone. We have assume no seeding or fertilizer would be needed after removal of the solar array.
2.3	Minor Erosion Repairs	lump sum	1	$1,000	$1,000	Assume minor repairs needed at access road areas, by regrading existing material.
		Task 2 Total (Site Restoration)			**$3,200**	
3	**Engineering Oversight and QA/QC**					
3.1	Resident Engineer/Inspector and Engineering Project Management	days	1	$1,000	$1,000	Assumes 1 day per week for inspections and oversight
3.2	Final Engineer's Report (RI PE)	lump sum	1	$2,500	$2,500	
		Task 3 Total (Engineering Oversight and QA/QC)			**$3,500**	

CAPITAL COST SUBTOTAL	**$20,833**
CAPITAL COST + 1% Inflation over 25 years	**$26,716**
TOTAL CAPITAL COST ESTIMATE	**$26,716**
Cost per MW DC	**$2,208**

NOTES:

1 Costs shown above are based on conceptual design assumptiions, and are considered suitable for overall project evaluation. Actual costs are expected to vary from these conditions due to scope details, market conditons, and conditions at the time of construction.
2 Costs assume fencing to remain in place, roadways to remain in place, and all drainage components in place to control stormwater runoff.
3 Costs to be adjusted based upon final MW of system

Revity Energy, LLC