Permitting Application by Ecogy New York II LLC for Construction of a Canopy Solar System at 75 Ryder Road

Solar Energy System Details
Location: 75 Ryder Road, Ossining, NY 10562 (Zone R-40 one-family residence district)
Type of System: Canopy system over paved parking lot
Size: 666 kW AC
The proposed solar system is a Community Solar project interconnected with Con Edison's distribution grid.

Contact Information
System Owner and Applicant:
Ecogy New York II LLC
c/o Ecogy Energy
Attn: John Bertuzzi and Julia Magliozzo
67 West St. Suite 232, Brooklyn, NY 11222
Email: projectmanagement@ecogyenergy.com
Phone: 718-304-0945

Property Owner:
Catholic Foreign Mission Society of America Inc.
Attn: Rev. Edward Phillips
85 Ryder Road, Ossining, NY 10562
Email: CFO@maryknoll.org
Phone: 914-941-7590 ext 2428

By signing below, the Property Owner consents to the application by Applicant and System Owner for the installation and operation of a solar energy system on the property at 75 Ryder Road.

SYSTEM OWNER AND APPLICANT

DocuSigned by:
John Bertuzzi
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Name: John Bertuzzi

Date: 4/21/2020

PROPERTY OWNER

Edward Phillips

Name: EDWARD PHILLIPS

Date: 4-21-2020

Contents

Attachments

Proposed Height Amendment to Chapter 200-31.3. Solar Energy Systems of the Town of Ossining Code

Ecogy Energy, as a solar developer working on solar projects in the Town of Ossining, has reviewed the Town of Ossining Code as it applies to Solar Energy Systems and commends the Town for its fair and encouraging approach to solar development. With this proposed Height Amendment, Ecogy Energy hopes to further expand the possibilities of beneficial solar development in the Town of Ossining while continuing to support the favorable land-use practices promoted by the Town Code.

The Town of Ossining Code defines solar energy systems in three Tiers as follows:

- Tier 1 solar energy systems are roof-mounted solar energy systems, building-integrated solar energy systems and solar hot air or water collector devices.
- Tier 2 solar energy systems are ground-mounted solar energy systems where the total surface area of all solar panels on the lot does not exceed 900 square feet.
- Tier 3 solar energy systems are systems that are not Tier 1 or Tier 2 solar energy systems. A solar farm is one kind of Tier 3 solar energy system.

The subject of this Height Amendment is Table 3 of the Solar Energy Systems chapter of the Town Code, which is referenced in Solar Energy Systems Section I.(3). The Section states that "Tier 3 solar energy systems shall comply with the height limitations in Table 3 herein", which defines the maximum height of Tier 3 solar systems to be 15 feet in applicable zoning districts.

The definitions of solar energy systems as provided in the Code include canopy solar energy systems in Tier 3, as such canopy solar energy systems are not defined separately from a ground-mounted solar energy system. However, the Town of Ossining Solar Energy System Pilot Law does differentiate between canopy and ground-mounted solar energy systems: in the Solar Energy System PILOT Law a canopy solar energy system is a "canopy that is placed exclusively over Impervious Surfaces or surfaces without vegetation that are used as parking lots".

Given the inclusion of canopy solar energy systems in Tier 3, the height limitations of 15 feet are currently applied to canopy solar energy systems. However, in Ecogy's experience as a developer of solar canopy systems, 15 feet is too low to allow proper clearance beneath the canopy solar energy system. While the low end of the canopy may be 14 feet above the ground, due to the tilt of the canopy, the high end of the canopy is above 15 feet. Note that a low end clearance of 14 ft is typically required for fire trucks and other emergency vehicle passage beneath the canopy. Therefore, for safety reasons, the canopy solar energy system must be taller than 15 feet.

As was done in the Solar Energy Systems PILOT Law to allow a distinction for canopy solar energy systems, so too should the Town Code Solar Energy Systems chapter adopt a distinction in Table 3, as referenced in Solar Energy Systems Section I.(3), to allow for a taller height limitation for canopy solar energy systems. The same definition can be applied: a canopy solar energy system is a "canopy that is placed exclusively over Impervious Surfaces or surfaces without vegetation that are used as parking lots". The height limitation for such a canopy system should be 25 feet.

Allowing for additional height specifically for canopy solar energy systems will ensure the canopies are tall enough for the safe passage of all vehicles beneath them, including emergency vehicles that are typically 13.5 feet or taller, while still maintaining the beneficial land use of developing solar energy systems over already paved surfaces.

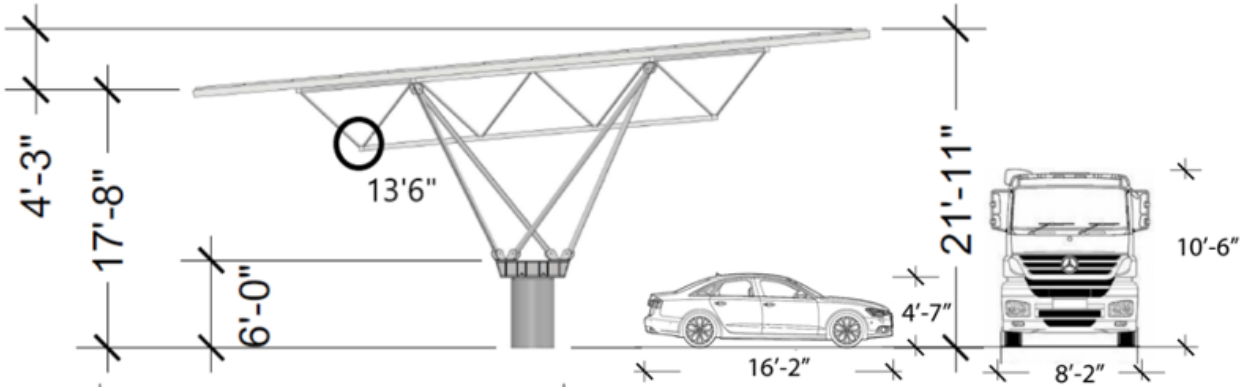


Figure A: This diagram shows a side profile of a typical canopy system in which the lower side is approximately 13'6" tilting to a higher height to accommodate tractor trailer and emergency vehicle access.

As such, Ecogy Energy recommends Amending Table 3 of the Solar Energy Systems chapter of the Ossining Town Code to include an exception to the Tier 3 height limitations of 25 feet for any canopy solar energy system that is placed exclusively over Impervious Surfaces or surfaces without vegetation that are used as parking lots.

Ecogy Energy Maryknoll Solar Project Narrative

The proposed Ecogy Energy Maryknoll Solar Project is a 666 kW AC solar canopy system over two parking lots at 75 Ryder Road, Ossining. The project was developed by Ecogy Energy for Maryknoll Fathers and Brothers as a community solar project, which will allow businesses and residents of Ossining to subscribe to the solar generation and receive discounted solar electricity credits on their Con Edison utility bills.

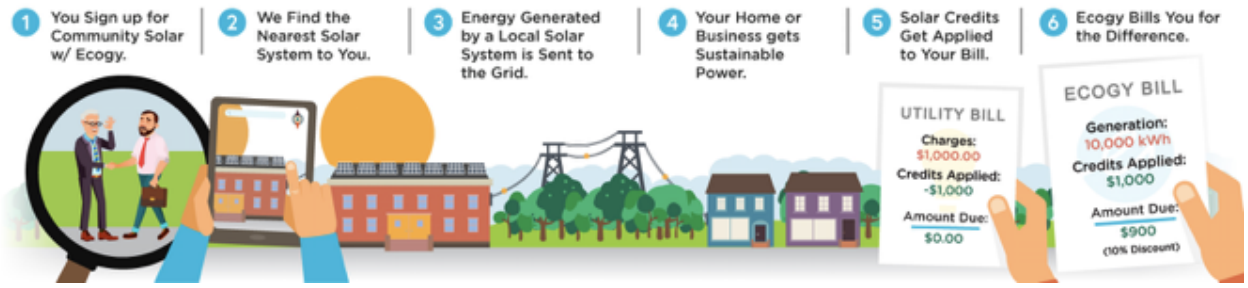


Figure B: This diagram shows the mechanics of Community Solar in the State of New York. Subscribers get allocated bill credits and are charged a certain % of the amount of the bill credits - thereby savings local community members on their energy bills and increasing solar access to renters and apartment dwellers.

In addition to the monetary benefits brought by the solar project, Ecogy believes the proposed solar canopy system is an excellent example of favorable land use for solar development. By designing the solar system on canopies over existing parking lots, Ecogy is avoiding the use of green land that could serve other purposes, such as agriculture or public parks. Further, the installation of the solar canopies does not alter the use of the existing parking lots. Finally, the canopies provide an added amenity to those who use them by creating covered parking.

Of course, the benefits of this solar project also extend to the environment and in meeting New Yorks' Reforming the Energy Vision 2030 Renewable Energy Goals. The proposed system will generate approximately 1,100 MWh of clean, renewable energy every year and over 26,193,000 kWh over its lifetime, which represents significant environmental benefits as shown below.

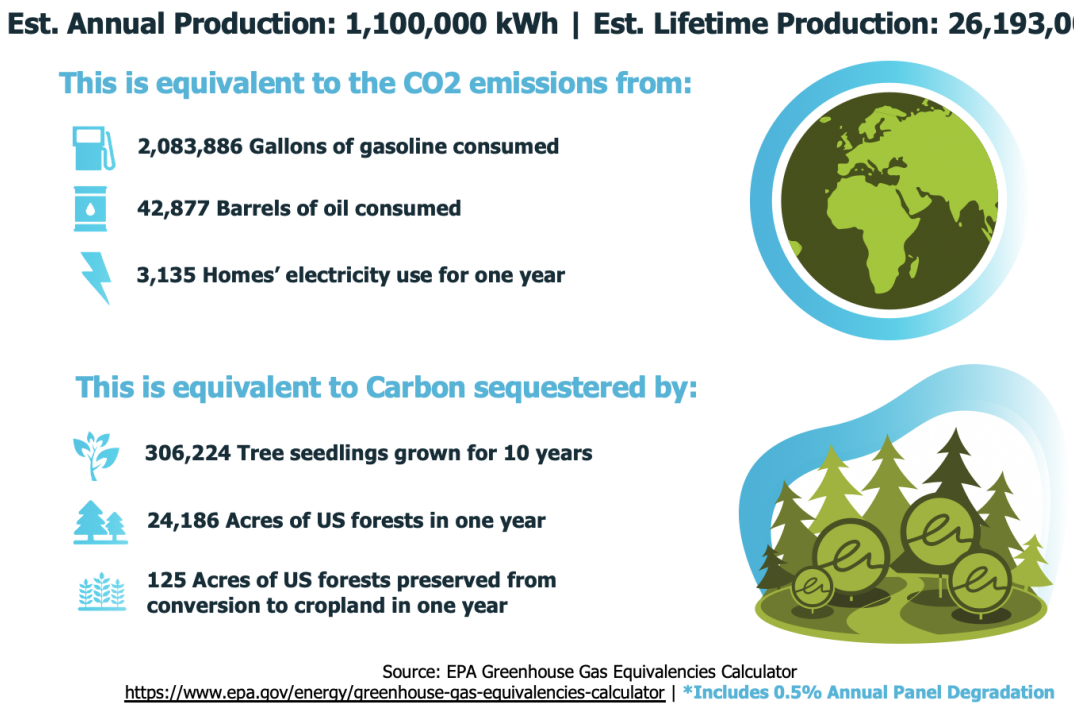


Figure C: This graphic shows the estimated environmental benefits of the proposed canopy solar energy system over its lifetime (25 years).

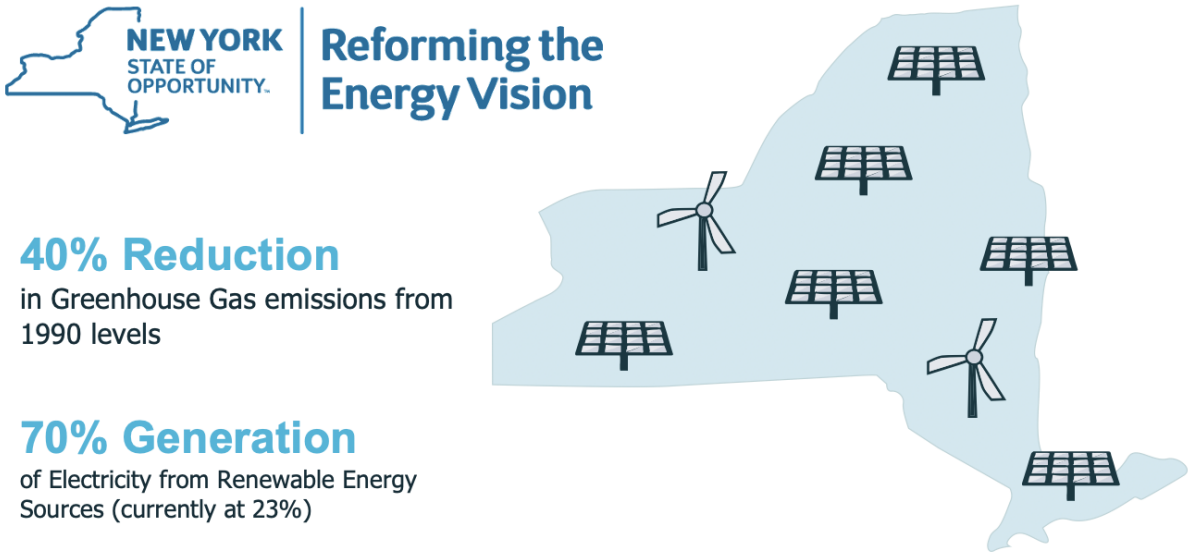


Figure D: New York's expanded Clean Energy Standard calls for 70% of New York's electricity to come from renewable sources by 2030 with the aim to have energy efficiency, increased use of renewables, and more resilient distributed energy resources at the core of our energy system.

Ecogy also recognizes the importance of respecting the goals and character of the Town of Ossining. For this reason, we are respectfully submitting this proposed solar project for Town Board review pursuant to the Solar Energy Systems chapter of the Ossining Town Code (the "Solar Code"). Below are a few key points that we feel we must address from the Solar Code as it pertains to this proposed solar project.

First, per the Solar Code, Ecogy's proposed solar project is a Tier 3 solar energy system.

Second, Ecogy petitions the Town Board to designate tax lot 90.06-1-1 with an address of 75 Ryder Road, Ossining, NY 10562 as a floating zone for solar and to amend the zoning map accordingly. Currently, the lot is zoned as an R-40 one-family residence district, which is eligible to be a floating zone for Tier 3 solar systems per the Solar Code. This solar project, being a canopy solar system over a paved parking lot, is favored by the Solar Code for creation of a floating zone as outlined in Solar Code Section G.(2).

Third, pursuant to Section I.(1) of the Solar Code, the lot is larger than 4 acres, which is the required size for a Tier 3 solar energy system in a one-family residence district. Further, the proposed solar project complies with the 100-foot setbacks as required by Section I.(2).

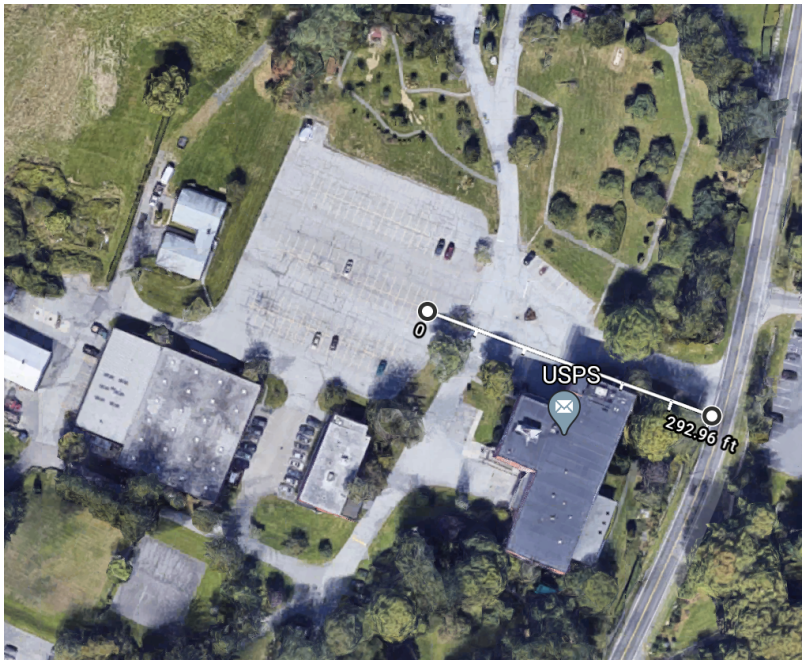


Figure E: Shows approximate distance from Ryder Road to the nearest Canopy Solar Energy System.

Fourth, if the Height Amendment to the Solar Code is passed, then the proposed solar project will adhere to the height requirements of Section I.(3) and Table 3 of the Solar Code.

Fifth, to address Section I.(4) Screening and Visibility, Ecogy wishes to note the distance of the proposed solar canopies from the road as well as the existing trees that screen the parking lot when viewed from the road. Ecogy believes the existing screening is sufficient to prevent visual impacts by the solar canopies on the adjacent public road and neighboring properties. For this reason, Ecogy has chosen not to submit a screening and landscaping plan. Further, Ecogy will not provide a vegetation management plan as outlined in Section I.(16) given that the solar canopies will be installed over an existing paved parking lot and will not displace existing vegetation.

Figure F: This image shows the entrance to Maryknoll Fathers & Brothers facing West towards the parking lot. As can be seen, the existing screening is sufficient to prevent visual impacts from the installation of the solar canopies.

Sixth, tree removal for installation of the proposed solar project will be limited to the removal of one or two trees (dependent on Con Edison requirements) along the driveway on the north side of the parking lots. Per Section D.(5), Ecogy has chosen to place all electrical lines underground, thus no other trees will be removed from the property. However, Con Edison will install poles and wires above ground and will require the removal of trees.

Seventh, LED lighting will be installed beneath the solar canopies and shall not be visible from abutting properties, pursuant to Section I.(8) of the Solar Code.

Eighth, though the area beneath Tier 3 solar systems is included in the calculation of lot coverage per Section I.(11), the use of the lot and the area beneath the solar canopies is not altered by the

installation of the solar canopies. Thus, Ecogy believes the change in lot coverage has no effect on the existing or future use of those areas of the lot for parking.

Ninth, Ecogy will comply with Section I.(12) requirements for a Security in the amount of $25,000 in a cash deposit as explained in the Ecogy Maryknoll Solar Project Solar Decommissioning Plan upon approval of the proposed solar project by the Town Board.

Tenth, Ecogy will comply with all other requirements as outlined in the Ossining Solar Code as shown on the site plan, electrical line diagram, equipment specification sheets, operation and maintenance plan, and decommissioning plan provided with this application.

Ecogy thanks you for your consideration of the proposed Maryknoll Solar Project and hopes to receive all Town approvals as required by the Ossining Solar Code to be permitted to construct the solar canopies at 75 Ryder Road.

Ecogy Maryknoll Solar Project Equipment Specification Sheets

The equipment specification sheets for the Ecogy Maryknoll Solar Project are included on the subsequent pages. The equipment list is as follows:

Solar Panels:
Hanwha Q.Cells Q.Peak Duo L-G5.2 385, 385W solar modules

Inverters:
Six (6) SolarEdge SE100K-US Inverters, Two (2) Solaredge SE33.3K-US Inverters

Optimizers:
SolarEdge P860 Power Optimizer

Canopy Structure:
Quest 7.5 degree Canopies

powered by Q.ANTUM DUO

Q.PEAK DUO L-G5.2 380-395

Q.ANTUM SOLAR MODULE

The new high-performance module Q.PEAK DUO L-G5.2 is the ideal solution for commercial and utility applications thanks to a combination of its innovative cell technology Q.ANTUM and cutting edge cell interconnection. This 1500 V IEC/UL solar module with its 6 busbar cell design ensures superior yields with up to 395 Wp while having a very low LCOE.

LOW ELECTRICITY GENERATION COSTS
Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.9 %.

INNOVATIVE ALL-WEATHER TECHNOLOGY
Optimal yields, whatever the weather with excellent low-light and temperature behavior.

ENDURING HIGH PERFORMANCE
Long-term yield security with Anti LID Technology, Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

EXTREME WEATHER RATING
High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (2400 Pa).

A RELIABLE INVESTMENT
Inclusive 12-year product warranty and 25-year linear performance warranty[2].

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2018

Q CELLS YIELD SECURITY
- ANTI PID TECHNOLOGY (APT)
- HOT-SPOT PROTECT (HSP)
- TRACEABLE QUALITY (TRA.Q™)
- ANTI LID TECHNOLOGY (ALT)

pv magazine award 2017 top innovation

Photon Q CELLS Best polycrystalline solar module 2014 Q.PRO-G2 235 174 modules tested

[1] APT test conditions according to IEC/TS 62804-1:2015, method B (–1500 V, 168 h)
[2] See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

Rooftop arrays on commercial/industrial buildings

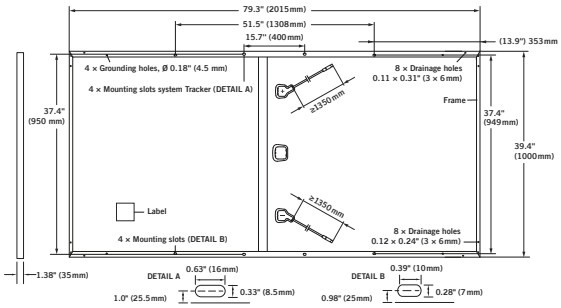
Ground-mounted solar power plants

Engineered in **Germany**

Q CELLS

MECHANICAL SPECIFICATION

Format	79.3 in × 39.4 in × 1.38 in (including frame) (2015 mm × 1000 mm × 35 mm)
Weight	51.8 lbs (23.5 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Anodized aluminum
Cell	6 × 24 monocrystalline Q.ANTUM solar half-cells
Junction box	2.76-3.35 in × 1.97-2.76 in × 0.51-0.83 in (70-85 mm × 50-70 mm × 13-21 mm), Protection class IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥ 53.1 in (1350 mm), (–) ≥ 53.1 in (1350 mm)
Connector	Multi-Contact MC4-EVO2, JMTHY PV-JM601A, IP68 or Renhe 05-6, IP67

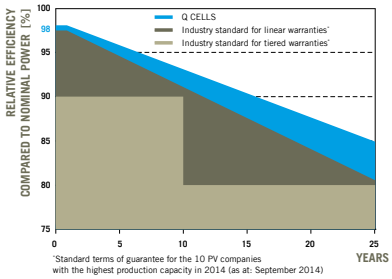


ELECTRICAL CHARACTERISTICS

POWER CLASS				380	385	390	395
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / –0 W)							
Minimum	Power at MPP[1]	P_{MPP}	[W]	380	385	390	395
	Short Circuit Current[1]	I_{SC}	[A]	10.05	10.10	10.14	10.19
	Open Circuit Voltage[1]	V_{OC}	[V]	47.95	48.21	48.48	48.74
	Current at MPP	I_{MPP}	[A]	9.57	9.61	9.66	9.70
	Voltage at MPP	V_{MPP}	[V]	39.71	40.05	40.38	40.71
	Efficiency[1]	η	[%]	≥18.9	≥19.1	≥19.4	≥19.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]							
Minimum	Power at MPP	P_{MPP}	[W]	283.9	287.6	291.3	295.1
	Short Circuit Current	I_{SC}	[A]	8.10	8.14	8.17	8.21
	Open Circuit Voltage	V_{OC}	[V]	45.12	45.37	45.62	45.87
	Current at MPP	I_{MPP}	[A]	7.53	7.57	7.60	7.64
	Voltage at MPP	V_{MPP}	[V]	37.69	38.01	38.33	38.64

[1]Measurement tolerances P_{MPP} ±3 %; I_{SC}; V_{OC} ±5 % at STC: 1000 W/m², 25 ±2 °C, AM 1.5 G according to IEC 60904-3 · [2]800 W/m², NMOT, spectrum AM 1.5 G

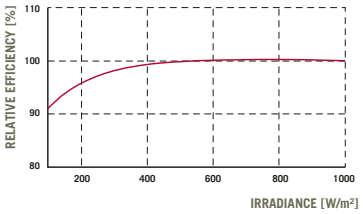
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year.
Thereafter max. 0.54 % degradation per year.
At least 93.1 % of nominal power up to 10 years.
At least 85 % of nominal power up to 25 years.

All data within measurement tolerances.
Full warranties in accordance with the warranty terms of the Q CELLS sales organization of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²).

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	**Temperature Coefficient of V_{OC}**	β	[%/K]	–0.28
Temperature Coefficient of P_{MPP}	γ	[%/K]	–0.37	**Normal Operating Module Temperature**	NMOT	[°F]	109 ±5.4 (43 ±3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500 (IEC) / 1500 (UL)	**Safety Class**	II
Maximum Series Fuse Rating	[A DC]	20	**Fire Rating**	C (IEC) / TYPE 1 (UL)
Max. Design Load, Push / Pull (UL)[2]	[lbs/ft²]	75 (3600 Pa) / 33 (1600 Pa)	**Permitted module temperature on continuous duty**	–40 °F up to +185 °F (–40 °C up to +85 °C)
Max. Test Load, Push / Pull (UL)[2]	[lbs/ft²]	113 (5400 Pa) / 50 (2400 Pa)	[2] see installation manual	

QUALIFICATIONS AND CERTIFICATES

UL 1703; CE-compliant;
IEC 61215:2016, IEC 61730:2016 application class A

C Certified US
UL 1703
(254141)

PACKAGING INFORMATION

Number of Modules per Pallet	29
Number of Pallets per 53' Trailer	26
Number of Pallets per 40' High Cube Container	22
Pallet Dimensions (L × W × H)	81.9 in × 45.3 in × 46.7 in (2080 mm × 1150 mm × 1185 mm)
Pallet Weight	1635 lbs (742 kg)

NOTE: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
300 Spectrum Center Drive, Suite 1250, Irvine, CA 92618, USA | **TEL** +1 949 748 59 96 | **EMAIL** inquiry@us.q-cells.com | **WEB** www.q-cells.us

INVERTERS

Three Phase Inverter with Synergy Technology

for the 277/480V Grid for North America

SE66.6KUS / SE100KUS

Specifically designed to work with power optimizers

- Easy two-person installation – each unit mounted separately, equipped with cables for simple connection between units
- Balance of System and labor reduction compared to using multiple smaller string inverters
- Independent operation of each unit enables higher uptime and easy serviceability
- No wasted ground area: wall/rail mounted, or horizontally mounted under the modules (10˚inclination)
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- Built-in module-level monitoring with Ethernet or cellular GSM
- Fixed voltage inverter for superior efficiency (98.5%) and longer strings
- Integrated DC Safety Switch and optional surge protection
- Built-in RS485 Surge Protection, to better withstand lightning events

solaredge

/ Three Phase Inverter with Synergy Technology for the 277/480V Grid for North America

SE66.6KUS / SE100KUS

	SE66.6KUS	SE100KUS	
OUTPUT			
Rated AC Power Output	66600	100000	VA
Maximum AC Power Output	66600	100000	VA
AC Output Line Connections	4-wire WYE (L1-L2-L3-N) plus PE		
AC Output Voltage Minimum-Nominal-Maximum[1] (L-N)	244 - 277 - 305		Vac
AC Output Voltage Minimum-Nominal-Maximum[1] (L-L)	422.5 - 480 - 529		Vac
AC Frequency Min-Nom-Max[1]	59.3 - 60 - 60.5		Hz
Maximum Continuous Output Current (per Phase) @277V	80	120	A
GFDI Threshold	1		A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes		
INPUT			
Maximum DC Power (Module STC) / Unit	90000 / 45000	135000 / 45000	W
Transformer-less, Ungrounded	Yes		
Maximum Input Voltage DC to Gnd	500		Vdc
Maximum Input Voltage DC+ to DC-	1000		Vdc
Nominal Input Voltage DC to Gnd	425		Vdc
Nominal Input Voltage DC+ to DC-	850		Vdc
Maximum Input Current	80	120	Adc
Maximum Input Short Circuit Current	120		Adc
Reverse-Polarity Protection	Yes		
Ground-Fault Isolation Detection	350kΩ Sensitivity per Unit		
CEC Weighted Efficiency	98.5		%
Nighttime Power Consumption	< 12		W
ADDITIONAL FEATURES			
Supported Communication Interfaces	RS485, Ethernet, Cellular GSM (optional)		
Rapid Shutdown	NEC2014 and NEC2017 compliant/certified, upon AC Grid Disconnect		
RS485 Surge Protection	Built-in		
DC SAFETY SWITCH			
DC Disconnect	1000V / 2 x 40A	1000V / 3 x 40A	
DC Surge Protection	Optional, Type II, field replaceable		
STANDARD COMPLIANCE			
Safety	UL1741, UL1741 SA, UL1699B, UL1998, CSA 2.22		
Grid Connection Standards	IEEE 1547, Rule 21, Rule 14 (HI)		
Emissions	FCC part15 class A		
INSTALLATION SPECIFICATIONS			
Number of units	2	3	
AC Output Conduit Size / Max AWG / Max PE AWG	1.5" / 2/0 / 6	2" / 4/0 / 4	
DC Output Conduit Size / Terminal Block AWG Range / Number of Strings[2]	2 x 1.25" / 6-14 / 6 strings	2 x 1.25" / 6-14 / 9 strings	
Dimensions (H x W x D)	Primary Unit: 37 x 12.5 x 10.5 / 940 x 315 x 260; Secondary Unit: 21 x 12.5 x 10.5 / 540 x 315 x 260		in / mm
Weight	Primary Unit: 105.8 / 48; Secondary Unit 99.2 / 45		lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60[3]		°F / °C
Cooling	Fan (user replaceable)		
Noise	< 60		dBA
Protection Rating	NEMA 3R		
Bracket Mounted (Brackets Provided)			

[1] For other regional settings please contact SolarEdge support
[2] Single input option per unit (up to 3AWG) available
[3] De-rating from 50°C

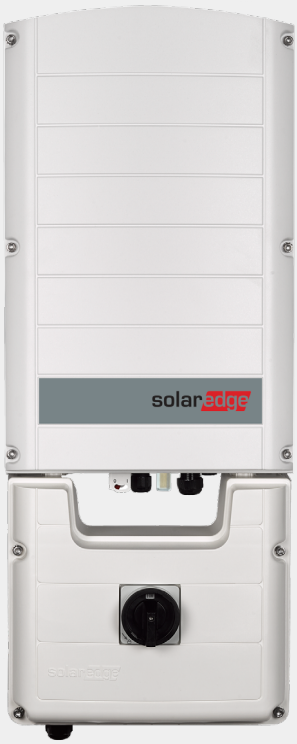
CE RoHS

Three Phase Inverters for the 277/480V Grid

for North America

SE20KUS / SE30KUS / SE33.3KUS

INVERTERS



12-20 YEAR WARRANTY

The best choice for SolarEdge enabled systems

- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Specifically designed to work with power optimizers
- Superior efficiency (98%)
- Fixed voltage inverter for longer strings
- Integrated Safety Switch
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- Built-in module-level monitoring
- Internet connection through Ethernet or Wireless
- Small, lightweight, and easy to install outdoors or indoors on provided bracket
- Supplied with RS485 Surge Protection Device, to better withstand lightning events

solaredge

/ Three Phase Inverters for the 277/480V Grid[1] for North America

SE20KUS / SE30KUS / SE33.3KUS

MODEL NUMBER	SE20KUS	SE30KUS	SE33.3KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXK-XXXXXBXX4			
OUTPUT				
Rated AC Power Output	20000	30000	33300	VA
Maximum AC Power Output	20000	30000	33300	VA
Output Line Connections	3 phase, 4-wire / PE (L1-L2-L3-N), TN, TT			
AC Output Voltage Minimum-Nominal-Maximum[2] (L-N)	244-277-305			Vac
AC Output Voltage Minimum-Nominal-Maximum[2] (L-L)	422.5-480-529			Vac
AC Frequency Min-Nom-Max[2]	59.3 - 60 - 60.5			Hz
Maximum Continuous Output Current (per Phase)	24	36.5	40	A
GFDI Threshold	1			A
Utility Monitoring, Islanding Protection, Country Configurable Set Points	Yes			
THD	≤ 3			%
INPUT				
Maximum DC Power (Module STC)	27000	40500	45000	W
Transformer-less, Ungrounded	Yes			
Maximum Input Voltage DC to Gnd	490			Vdc
Maximum Input Voltage DC+ to DC-	1000			Vdc
Nominal Input Voltage DC to Gnd	420			Vdc
Nominal Input Voltage DC+ to DC-	840			Vdc
Maximum Input Current	26.5	39	40	Adc
Maximum Input Short Circuit Current	45			Adc
Reverse-Polarity Protection	Yes			
Ground-Fault Isolation Detection	1MΩ Sensitivity	350kΩ Sensitivity[3]		
CEC Weighted Efficiency	98	98.5		%
Night-time Power Consumption	< 3	< 4		W
ADDITIONAL FEATURES				
Supported Communication Interfaces	RS485, Ethernet, Built-in Cellular (optional)			
Inverter Commissioning	With the SetApp mobile application using built-in access point for local connection			
Rapid Shutdown – NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect			
RS485 Surge Protection Plug-in	Supplied with the inverter			
Smart Energy Management	Export Limitation			
STANDARD COMPLIANCE				
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07			
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)			
Emissions	FCC part15 class B			
INSTALLATION SPECIFICATIONS				
AC output conduit size / AWG range	3/4" minimum / 12-6 AWG	3/4" minimum / 8-4 AWG		
DC input conduit size / AWG range	3/4" minimum / 12-6 AWG			
Number of DC inputs	2 pairs	3 pairs[4]		
Dimensions (H x W x D)	21 x 12.5 x 10.5 / 540 x 315 x 260			in / mm
Dimensions with Safety Switch (H x W x D)	30.5 x 12.5 x 10.5 / 775 x 315 x 260			in / mm
Weight	67.6 / 30.7	99.5 / 45		lb / kg
Weight with Safety Switch	74.2 / 33.7	106 / 48		lb / kg
Cooling	Fans (user replaceable)			
Noise	< 50	< 55		dBA
Operating Temperature Range	-40 to +140 / -40 to +60[5]			˚F / ˚C
Protection Rating	NEMA 3R			

[1] For 120/208V inverters refer to: https://www.solaredge.com/sites/default/files/se-three-phase-us-inverter-208V-setapp-datasheet.pdf
[2] For other regional settings please contact SolarEdge support
[3] Where permitted by local regulations
[4] Field replacement kit for 1 pair of inputs P/N: DCD-3PH-1TBK; Field replacement kit for 3 pairs of fuses and holders P/N: DCD-3PH-6FHK-S1
[5] For power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf

CE

Power Optimizer
For North America
P860

POWER OPTIMIZER

PV power optimization at the module-level
The most cost effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less cables, fuses and combiner boxes, over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- Use with two PV modules connected in parallel

solaredge

/ Power Optimizer

For North America

P860

Optimizer Model (Typical Module Compatibility)	P860 (for 2 x 72 cell modules)	
INPUT		
Rated Input DC Power[1]	860	W
Connection type	Dual input for independently connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)	60	Vdc
MPPT Operating Range	12.5 - 60	Vdc
Maximum Short Circuit Current (Isc)	22	Adc
Maximum Short Circuit Current per input (Isc)	11	Adc
Maximum Efficiency	99.5	%
Weighted Efficiency	98.6	%
Overvoltage Category	II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)		
Maximum Output Current	18	Adc
Maximum Output Voltage	85	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)		
Safety Output Voltage per Power Optimizer	1 ± 0.1	Vdc
STANDARD COMPLIANCE		
Photovoltaic Rapid Shutdown System	Compliant with NEC 2014, 2017[2]	
EMC	FCC Part15 Class B, IEC61000-6-2, IEC61000-6-3	
Safety	IEC62109-1 (class II safety), UL1741	
Material	UL-94 (5-VA), UV Resistant	
RoHS	Yes	
INSTALLATION SPECIFICATIONS		
Compatible SolarEdge Inverters	Three phase inverters	
Maximum Allowed System Voltage	1000	Vdc
Dimensions (W x L x H)	128 x 168 x 59 / 5 x 6.61 x 2.32	mm / in
Weight (including cables)	1064 / 2.34	gr / lb
Input Connector	MC4 Dual Input[3]	
Output Wire Type / Connector	Double Insulated; MC4	
Output Wire Length	6.9 / 2.1	ft / m
Operating Temperature Range[4]	-40 - +85 / -40 - +185	˚C / ˚F
Protection Rating	IP68 / NEMA6P	
Relative Humidity	0 - 100	%

[1] Rated STC power of the module. Module of up to +5% power tolerance allowed.
[2] NEC 2017 requires max combined input voltage be not more than 80V.
[3] In a case of odd number of PV modules in one string, it is allowed to install one P860 power optimizer connected to one PV module. When connecting a single module to P860, seal the unused input connectors with the supplied pair of seals.
[4] For ambient temperature above +70˚C / +158˚F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Application Note for more details.

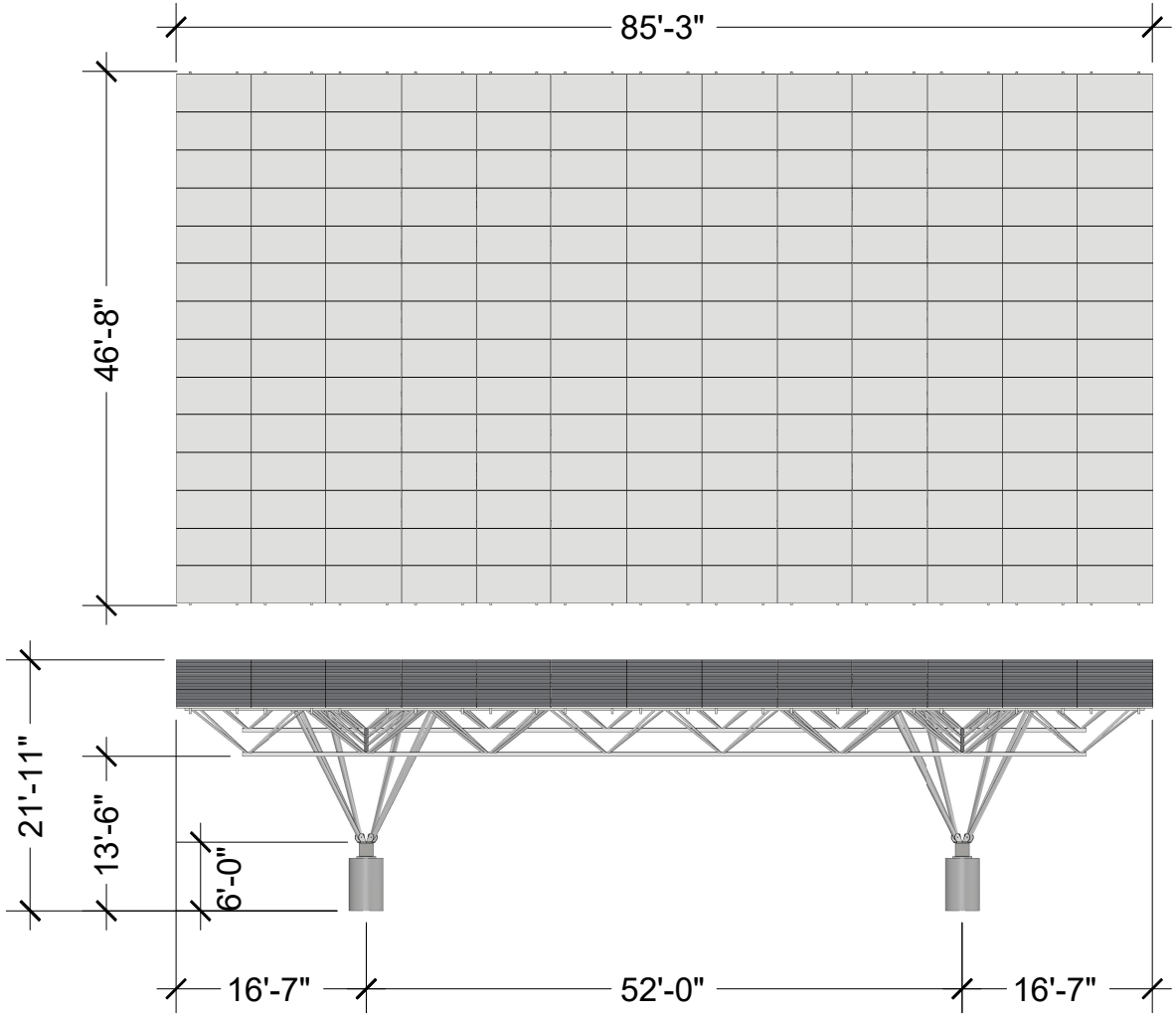
PV System Design Using a SolarEdge Inverter[5]		Three Phase 208V[6]	Three Phase 480V	
Minimum String Length	Power Optimizers	8	13	
	PV Modules	16	26	
Maximum String Length	Power Optimizers	30		
	PV Modules	60		
Maximum Power per String		7200	15300	W
Parallel Strings of Different Lengths or Orientations		Yes		

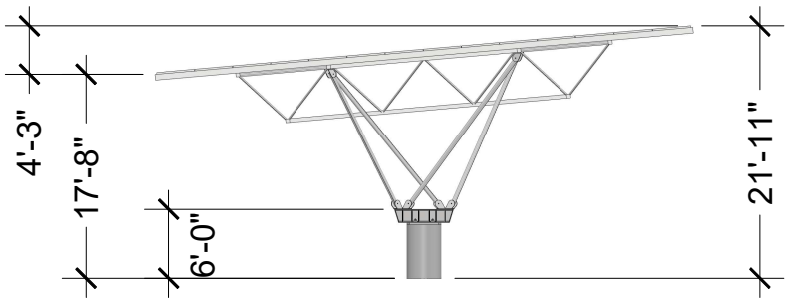
[5] It is not allowed to mix P860 with P730/P800p/P850 in one string or to mix with P300/P320/P400/P405 in one string.
[6] P860 design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.

CE RoHS

CONFIG 1 - 14 x 13

QUEST RENEWABLES
Ecogy Energy 55 Ryder Rd. - Maryknoll
Project# : J023-01





QUEST RENEWABLES

QUEST RENEWABLES
75 5th Street Suite 2150
Atlanta, Georgia 30308

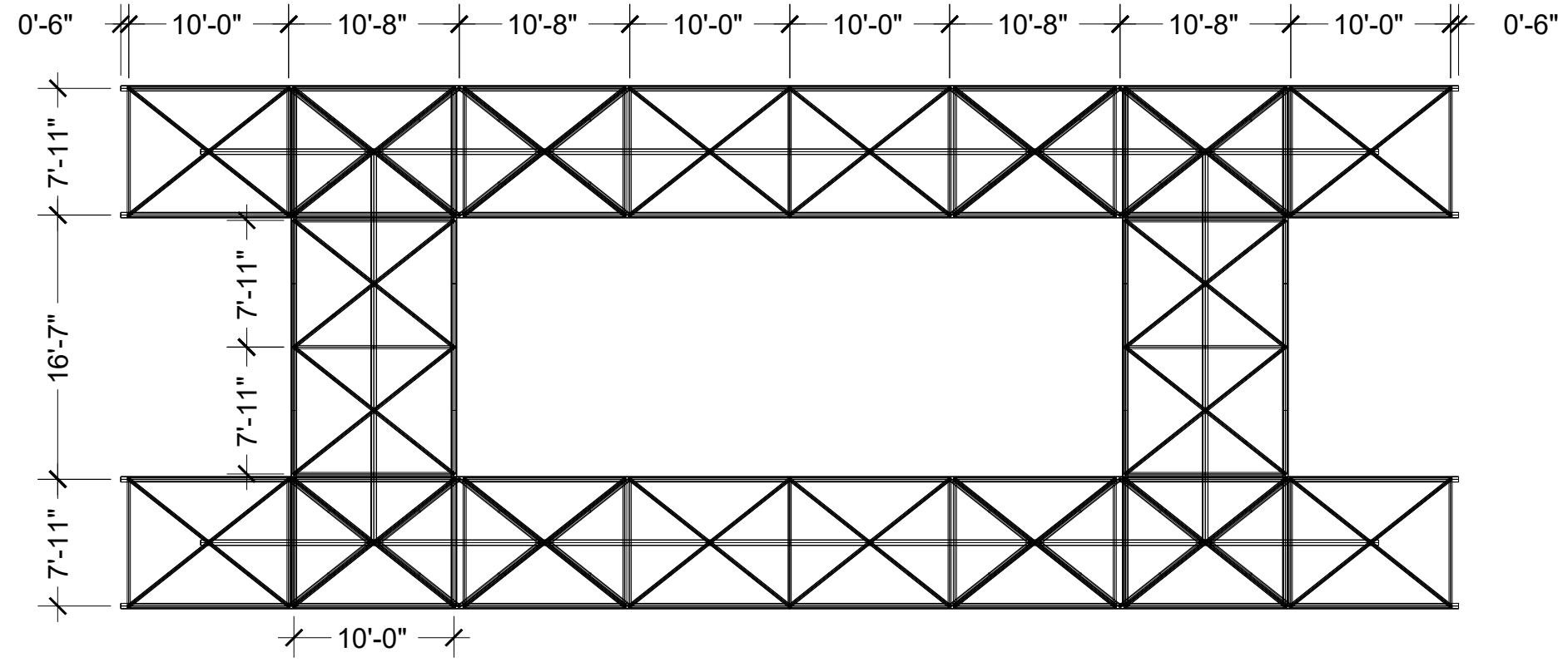
Quad Pod: 3d Truss
Racking & Mounting System

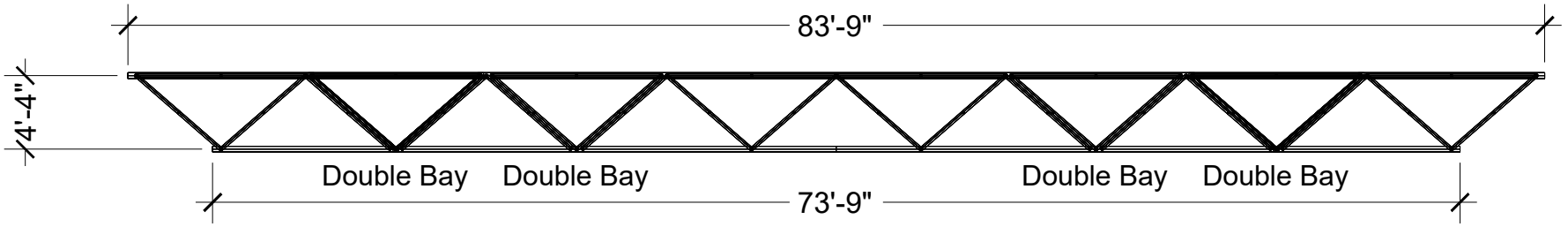
ARRAY LAYOUT
INITIAL ENGINEERING INFO

DATE: 12/12/2019
DRAWN BY: jkeane3
CHECKED BY: W. A.

CONFIG 1 - Truss Details

QUEST RENEWABLES
Ecogy Energy 55 Ryder Rd. - Maryknoll
Project# : J023-01





Ecogy Maryknoll Solar Project Operation and Maintenance Plan

Ecogy Energy will partner with a dedicated Operations and Maintenance provider ("Contractor") for the below services throughout the life of the solar canopies. Ecogy can submit information about the Operations and Maintenance Contractor to the Town for the record once a contract has been signed with a provider.

Description of System Services that Contractor will provide on a MONTHLY basis:

I. Performance Monitoring:
   A. Contractor shall monitor System production beginning on Commencement Date continuously throughout the Term and shall provide a System performance report on a monthly basis, detailing the following:
      1. Actual vs. expected performance of the System for the prior period expressed in kWh
      2. Any shortfall in System production resulting in less than 85% of expected performance

Description of System Services that Contractor will provide on a SEMI-ANNUAL basis:

I. Site and System Inspection:
   A. Contractor shall perform Site and System inspection on or around a mutually agreed upon date no later than six months after Commencement Date and then on a semi-annual basis thereafter. Results of inspection will be provided to Customer within five business days of inspection and shall include:
      1. Array Inspection
         a) Inspect PV modules for damage, discoloration or delamination
         b) Inspect mounting system for damage or corrosion
      2. Site Conditions
         a) Inspect drainage conditions
         b) Inspect system site for array shading which may diminish efficiency of the System (i.e. vegetation, construction, etc.)
         c) Inspect System for fire hazards
         d) Inspect safety conditions and proper signage
      3. Maintenance Reporting
         a) Record results of all inspections
         b) Take photographs of any damage or defects identified
         c) Inform Customer and warranty providers of all deficiencies identified
         d) Provide Customer with recommendations for corrective actions

e) Take photographs of the System and Site, dated within 30 days of end of semi-annual period

Description of System Services that Contractor will provide on an ANNUAL basis:

I. Performance Monitoring:

A. Contractor will provide, on or around the first anniversary of the Contract and annually thereafter, an annual operations and maintenance report, such report to include:

1. Actual vs. expected production of solar energy by System for the previous year and on a cumulative basis to date, expressed in kWh
2. System Availability percentage
3. Performance Index Measure
4. Operation and Maintenance Records
5. Safety, Accidents and Environmental Reporting
6. Proposal of Recommended Actions
7. Photographs of the System and Premises, dated within 30 days of anniversary period.

B. Preventative Maintenance, Inspections & Testing:

1. Array
   a) Inspect PV modules for damage, discoloration or delamination
   b) Inspect mounting system for damage or corrosion
2. Inverter
   a) Torque checks on critical electrical terminations
   b) Clean all filters and fans
   c) Inspect inverter pad and container
3. Electrical Balance of System (BOS)
   a) Inspect ground braids, electrodes and conductors for damage
   b) Perform thermo-graphic analysis of combiner boxes, inverters, transformers, and conductor connections to buses, breakers or disconnects
4. Premises Conditions
   a) Inspect drainage conditions
   b) Inspect site for array shading which may diminish efficiency of the System (i.e. vegetation, construction, etc.)
   c) Inspect System for fire hazards
   d) Inspect safety conditions and proper signage
5. Maintenance Reporting
   a) Record results of all inspections
   b) Take photographs of any damage or defects identified

c) Inform Customer and warranty providers of all deficiencies identified
d) Provide Customer with recommendations for corrective actions

Description of System Services that Contractor will provide on an AS-NEEDED basis at an additional cost:

I. Corrective Maintenance, including:
   A. Module cleaning, to include surface washing of all modules with pressure washing settings not to exceed 1,500 PSI. Contractor will provide before and after photographs of System.
   B. On-site troubleshooting & diagnostics of all system components (service included at no additional cost for systems under Contractor Warranty)
   C. Inverter and Data Acquisition System resets: (service included at no additional cost for systems under Contractor Warranty):
      1. Remote resets (if capability enabled and connection available)
      2. On-site resets
   D. Processing of warranty claims on behalf of Customer and verification of replaced equipment (service included at no additional cost for systems under Contractor Warranty)
   E. Management of repair and replacement for equipment out of warranty (service included at no additional cost for systems under Contractor Warranty).
   F. Ongoing warranty support and representation of Customer's interest with System equipment manufacturers (service included at no additional cost for systems under Contractor Warranty).
   G. All repair and replacement services beyond the installation and workmanship warranty as outlined in Section 3.1.
   H. Repair and replacement of equipment covered by the Manufacturer's warranties as listed in Attachment D.

If the system is performing at or above 100% of the expected system production for the prior six month period, Contractor may elect to forgo the scheduled semi-annual site inspection, maintenance and testing.

Ecogy Maryknoll Solar Project Decommissioning Plan

1. Executive Summary:

   As stated in the Ossining Solar Code, a decommissioning plan for the solar energy system shall be submitted by the applicant. Ecogy has already agreed to a separate decommissioning plan and surety instrument with the property owner as part of previous negotiations, which are the basis for this decommissioning plan. Below is a full report of Ecogy's decommissioning plan for the Maryknoll Solar Project, including costs and timeline.

   This report includes an analysis of the estimated decommissioning costs broken down by system components, as well as a description of the associated time required to perform the decommissioning tasks. In addition, we describe each component's salvage value, the time required to decommission and remove the solar energy system and any ancillary structures, and the time required to repair any damage caused to the property on which the solar energy system is located by the removal of the system. Future costs projected in the model escalate 2% annually due to estimated inflation over the next 25 years and as required by the Ossining Solar Code.

   Given the projected costs and time as analyzed and reported in the decommissioning plan, Ecogy proposes a cash security deposit with the Town of Ossining in the amount of $25,000. This security deposit would be maintained by the Town with statements provided to Ecogy and the property owner each year for proof of available funds.

2. Methodology

   Throughout this report, assumptions are based on current market values, assessments of labor costs, and our professional development experience. Table 2 below shows the proposed canopy solar system's technical specifications as submitted with this application.

   2.1 Proposed PV System Details

   Table 2. Maryknoll Solar Project Technical Details

Proposed Solar System Technical Details	
AC System Size	666.6 kW AC
Racking Type	Canopy Mounted

Component	Type	Quantity	Warranty
PV Module	Hanwha Q.Cells Q.Peak Duo L-G5.2 385W	2254	30-year Power Production Warranty (Expected Life 35-40 Years)
Inverter	SolarEdge 100K-US SolarEdge 33.3K-US SolarEdge P860 Optimizer	6 2 1128	15-year Warranty (Expected replacement at year 15 so expected life of 30 Years)
Transformer	Utility Owned	1	Utility is responsible for maintenance and replacement.
Racking System	Quest 7.5 Degree Double Cantilever	-	25-year Warranty (Expected lifetime 35-50 Years)

2.2 Solar PV Decommissioning Tasks and Costs

Through Ecogy's 10 years of experience and additional research, we have created a list of solar system equipment and its associated decommissioning tasks and timelines. This list forms the basis of Ecogy's decommissioning plan and outlines the steps Ecogy would take to remove the solar canopies from the property. The equipment and steps are as follows:

1. Modules: The modules' frame and surface would be mechanically separated. The glass and aluminum frames would be sold as recycled material.
2. Inverters: Inverters would be properly disposed of at an electronic waste facility.
3. Racking: Racking would be consolidated and sold as recycled scrap steel.
4. Wiring: All wiring would be disconnected and sold as recycled insulated cable.
5. Foundations: Foundations would be broken up on site and either removed or recycled as ABC material. Remediation on site would be limited to re-paving portions of the parking lot disrupted by the foundations since no vegetation currently exists on those portions of the lot.
6. Power Poles: Grid connection wiring and utility owned transformer would be removed or kept depending on preference of the landowner.

To estimate the associated costs for major tasks needed to decommission a PV system, Ecogy used the NYSERDA "Decommissioning Solar Panel Systems; Information for local governments and landowners on the decommissioning of large-scale solar panel systems - 2016", which provides estimates of potential decommissioning costs for a ground-mounted 2,000 kW solar

panel system. The costs were scaled to reflect the smaller size of our proposed 666 kW AC system. It is estimated that many components could be salvaged to offset the labor cost. This analysis is shown in Table 3 below.

Finally, to identify a suitable amount of security to cover the decommissioning plan, Ecogy analyzed the decommissioning costs and salvage values with a 2% escalator over the lifetime of the solar canopy system of 25 years. The analysis is shown in Table 4 below. Given the year 1 decommissioning costs and the subsequent salvage values identified, Ecogy proposes a security of $25,000 in a cash deposit to cover the cost of this decommissioning plan.

Table 3: Summary of Cost Assumptions for Proposed Solar PV System

Component	Est. Cost for NYSERDA 2,000 kW System	Est. Cost for the proposed 666 kW System	Est. Salvage Value	Est. Net Cost of Decommissioning	Est. Timeline
Remove Rack Wiring	$2,459.00	$818.85	$1,500.00	-$681.15	1-5 Days
Remove Panels	$2,450.00	$815.85	$3,500.00	-$2,684.15	5-10 Days
Dismantle Racks	$12,350.00	$4,112.55	$5,000.00	-$887.45	5-10 Days
Remove Electrical Equipment	$1,850.00	$616.05	$1,500.00	-$883.95	5-10 Days
Breakup and Remove Concrete Pads	$1,500.00	$499.50	$0.00	$499.50	1-5 Days
Remove Racks	$7,800.00	$2,597.40	$0.00	$2,597.40	1-5 Days
Remove Cable	$6,500.00	$2,164.50	$0.00	$2,164.50	1-5 Days
Remove Power Poles	$13,850.00	$4,612.05	$0.00	$4,612.05	5-10 Days
Grading/Repaving	$4,000.00	$1,332.00	$0.00	$1,332.00	5-10 Days
Truck to Recycling Center	$2,250.00	$749.25	$0.00	$749.25	1-5 Days
Current Total Cost	$55,009.00	$18,318.00	$11,500.00	$6,818.00	75 Days (High End)
125% of Estimated Decommissioning Cost	$68,761.25	$22,897.50	$11,500.00	$11,397.50	75 Days (High End)

Table 4: 25 Year Decommissioning Plan

25 Year Decommissioning Plan with 2% Annual Inflation			
Year	125% of Est. Decommissioning Cost	Value of Salvage Material	Net Cost of Decommissioning
0	$22,897.50	$11,500.00	$11,397.50
1	$23,355.45	$11,730.00	$11,625.45
2	$23,822.56	$11,964.60	$11,857.96
3	$24,299.01	$12,203.89	$12,095.11
4	$24,784.99	$12,447.97	$12,337.02
5	$25,280.69	$12,696.93	$12,583.76
6	$25,786.30	$12,950.87	$12,835.43
7	$26,302.03	$13,209.89	$13,092.14
8	$26,828.07	$13,474.08	$13,353.98
9	$27,364.63	$13,743.56	$13,621.06
10	$27,911.92	$14,018.44	$13,893.48
11	$28,470.16	$14,298.80	$14,171.35
12	$29,039.56	$14,584.78	$14,454.78
13	$29,620.35	$14,876.48	$14,743.88
14	$30,212.76	$15,174.01	$15,038.75
15	$30,817.02	$15,477.49	$15,339.53
16	$31,433.36	$15,787.04	$15,646.32
17	$32,062.02	$16,102.78	$15,959.25
18	$32,703.26	$16,424.83	$16,278.43
19	$33,357.33	$16,753.33	$16,604.00
20	$34,024.47	$17,088.40	$16,936.08
21	$34,704.96	$17,430.16	$17,274.80
22	$35,399.06	$17,778.77	$17,620.30
23	$36,107.04	$18,134.34	$17,972.70
24	$36,829.19	$18,497.03	$18,332.16
25	$37,565.77	$18,866.97	$18,698.80