GSS
GRANITE STATE SOLAR

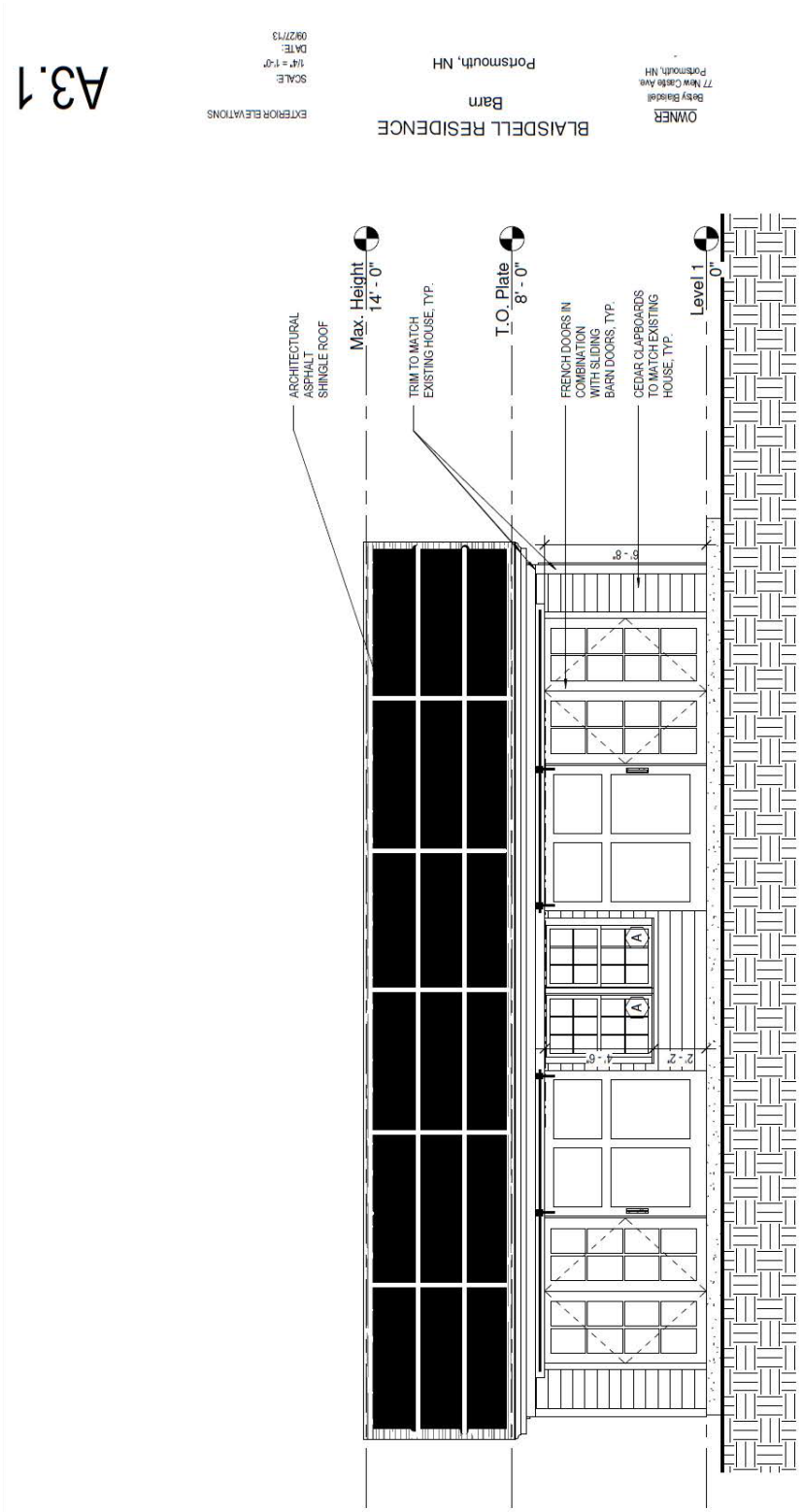
System Quote and Investment Details for:
Betsy Blaisdell

Created 4/15/2019 – Valid for 30-days

Included:
18 Q-Cells 325-Watt DC solar panels, 18 Enphase IQ7+ 295-watt AC micro inverters, Snap & Rack black-anodized flush-cut aluminum mounting system, Enphase My Enlighten monitoring system, Sense whole-home consumption monitor, Envoy IQ revenue-grade production meter with 10-year REC auditing plan pre-paid, permitting, electrical work and labor. Price includes consolidation of meters and 200A service upgrade.

Project Details	**VSECU Financed**
Historical annual usage (kWh consumed over previous 12-months)	5,301
Panel Count	18
Array Output (DC Watts)	5,850
Estimated Annual Production (kWh)	5,847
Percentage of historical electrical usage offset	110%
Gross system cost (Paid to GSS)	$ **22,188.00**
Federal Tax Credit (Claimed by Client)	$ 6,656.40
State PUC Rebate @ $0.20 per-watt	$ 1,000.00
Net cost after recouping incentives	$ **14,531.60**
Monthly Payment at 3.99% fixed for 144 months	**$127.16**
REC sales revenue - estimated annual value paid to Client	$ 29.24
Estimated Annual Rate of Return (factored at an average kWh cost of $0.15/kWh), including REC revenues.	**6.24%**

Your System Size & Placement on Your Property


A3.1
EXTERIOR ELEVATIONS
SCALE: 1/4" = 1'-0"
DATE: 08/27/13
BLAISDELL RESIDENCE
Barn
Portsmouth, NH
OWNER
Betsy Blaisdell
77 New Castle Ave.
Portsmouth, NH
Max. Height 14' - 0"
T.O. Plate 8' - 0"
Level 1 0"
ARCHITECTURAL ASPHALT SHINGLE ROOF
TRIM TO MATCH EXISTING HOUSE, TYP.
FRENCH DOORS IN COMBINATION WITH SLIDING BARN DOORS, TYP.
CEDAR CLAPBOARDS TO MATCH EXISTING HOUSE, TYP.
5' - 8"
A
A
4' - 6"
2' - 2"

Q.ANTUM SOLAR MODULE

The new Q.PEAK DUO-G5 solar module from Q CELLS impresses thanks to innovative Q.ANTUM DUO Technology, which enables particularly high performance on a small surface. Q.ANTUM's world-record-holding cell concept has now been combined with state-of-the-art circuitry half cells and a six-busbar design, thus achieving outstanding performance under real conditions - both with low-intensity solar radiation as well as on hot, clear summer days.

Q.ANTUM TECHNOLOGY: LOW LEVELIZED COST OF ELECTRICITY
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 and 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 (4000 Pa) regarding IEC.

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

STATE OF THE ART MODULE TECHNOLOGY
Q.ANTUM DUO combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology.

[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 residential buildings

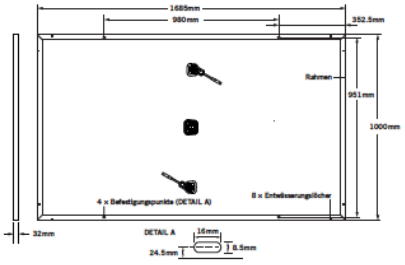
Rooftop arrays on commercial/industrial buildings

Engineered in **Germany**

Q CELLS

MECHANICAL SPECIFICATION

Format	66.3 in × 39.4 in × 1.26 in (including frame) (1685 mm × 1000 mm × 32 mm)
Weight	41.2 lbs (18.7 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 20 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), decentralized, IP67
Cable	4 mm² Solar cable; (+) ≥ 43.3 in (1100 mm), (–) ≥ 43.3 in (1100 mm)
Connector	Multi-Contact MC4, IP65 and IP68

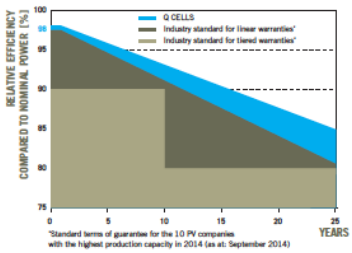


ELECTRICAL CHARACTERISTICS

POWER CLASS				305	310	315	320	325	330
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / –0 W)									
Minimum	Power at MPP[2]	P_{MPP}	[W]	305	310	315	320	325	330
	Short Circuit Current*	I_{SC}	[A]	9.93	9.98	10.04	10.09	10.14	10.20
	Open Circuit Voltage*	V_{OC}	[V]	39.35	39.61	39.87	40.13	40.40	40.66
	Current at MPP*	I_{MPP}	[A]	9.44	9.50	9.55	9.60	9.66	9.71
	Voltage at MPP*	V_{MPP}	[V]	32.30	32.64	32.98	33.32	33.65	33.98
	Efficiency[2]	η	[%]	≥18.1	≥18.4	≥18.7	≥19.0	≥19.3	≥19.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NOC[3]									
Minimum	Power at MPP[2]	P_{MPP}	[W]	226.0	229.7	233.4	237.2	240.9	244.6
	Short Circuit Current*	I_{SC}	[A]	8.00	8.05	8.09	8.14	8.18	8.22
	Open Circuit Voltage*	V_{OC}	[V]	36.80	37.05	37.30	37.54	37.79	38.04
	Current at MPP*	I_{MPP}	[A]	7.43	7.47	7.51	7.56	7.60	7.64
	Voltage at MPP*	V_{MPP}	[V]	30.43	30.75	31.07	31.39	31.70	32.01

[1] 1000 W/m², 25 °C, spectrum AM 1.5G [2] Measurement tolerances STC ±3%; NOC ±5% [3] 800 W/m², NOCT, spectrum AM 1.5G * typical values, actual values may differ

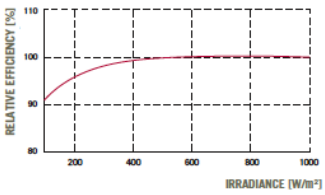
Q CELLS PERFORMANCE WARRANTY



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 Cell Temperature	NOCT	[°F]	113 ±5.4 (45 ±3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1000 (IEC) / 1000 (UL)	Safety Class	II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating	C (IEC) / TYPE 1 (UL)
Design load, push (UL)[2]	[lbs/ft²]	75 (3600 Pa)	Permitted module temperature on continuous duty	–40 °F up to +185 °F (–40 °C up to +85 °C)
Design load, pull (UL)[2]	[lbs/ft²]	55.6 (2666 Pa)	[2] see installation manual	

QUALIFICATIONS AND CERTIFICATES

UL 1703; VDE Quality Tested; CE-compliant;
IEC 61215 (Ed.2); IEC 61730 (Ed.1) application class A

PACKAGING INFORMATION

Number of Modules per Pallet	32
Number of Pallets per 53' Trailer	30
Number of Pallets per 40' High Cube Container	26
Pallet Dimensions (L × W × H)	69.3 in × 45.3 in × 46.9 in (1760 mm × 1150 mm × 1190 mm)
Pallet Weight	1415 lbs (642 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 I TEL +1 949 748 59 96 I EMAIL inquiry@us.q-cells.com I WEB www.q-cells.us

Enphase IQ 7 and IQ 7+ Microinverters

The high-powered smart grid-ready Enphase IQ 7 Micro™ and Enphase IQ 7+ Micro™ achieve the highest system efficiency.

Part of the Enphase IQ System, the IQ 7 and IQ 7+ Micro integrate seamlessly with the Enphase Envoy-S™, and the Enphase Enlighten™ monitoring and analysis software.

The IQ 7 and IQ 7+ Micro extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty.

Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling

Productive and Reliable

- Optimized for high powered 60-cell and 72-cell* modules
- More than a million hours of testing
- Class II double-insulated enclosure

Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles

* The IQ 7+ Micro is required to support 72-cell modules

To learn more about Enphase offerings, visit **enphase.com/au**

ENPHASE.

Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-INT	IQ7PLUS-72-2-INT
Commonly used module pairings[1]	195 W - 330 W +	235 W - 400 W +
Module compatibility	60-cell PV modules only	60-cell and 72-cell PV modules
Maximum input DC voltage	48 V	60 V
Peak power tracking voltage	27 V - 37 V	27 V - 45 V
Operating range	16 V - 48 V	16 V - 60 V
Min/Max start voltage	22 V / 48 V	22 V / 60 V
Max DC short circuit current (module Isc)	15 A	15 A
Overvoltage class DC port	II	II
DC port backfeed under single fault	0 A	0 A
PV array configuration	AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)	**IQ 7 Microinverter**	**IQ 7+ Microinverter**
Peak output power	250 VA	295 VA
Maximum continuous output power	240 VA	290 VA
Nominal (L-N) voltage/range[2]	230 V / 184-276 V	230 V / 184-276 V
Maximum continuous output current	1.04 A	1.26 A
Nominal frequency	50 Hz	50 Hz
Extended frequency range	45 - 55 Hz	45 - 55 Hz
Power factor at rated power	1.0	1.0
Maximum units per 20 A (L-N) branch circuit	16 (230 VAC)	13 (230 VAC)
Overvoltage class AC port	III	III
AC port backfeed under single fault	0 A	0 A
Power factor (adjustable)	0.7 leading ... 0.7 lagging	0.7 leading ... 0.7 lagging
EFFICIENCY	**@230 V**	**@230 V**
EN 50530 (EU) weighted efficiency	96.5 %	96.5 %
MECHANICAL DATA		
Ambient temperature range	-40°C to +65°C	
Relative humidity range	4% to 100% (condensing)	
Connector type	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)	
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)	
Weight	0.92 kg	
Cooling	Natural convection - No fans	
Approved for wet locations	Yes	
Pollution degree	PD3	
Enclosure	Class II double-insulated	
Environmental category / UV exposure rating	Outdoor - IP67	
FEATURES		
Communication	Power line	
Monitoring	Enlighten Manager and MyEnlighten monitoring options Compatible with Enphase IQ Envoy	
Compliance (pending)	AS 4777.2, RCM, IEC/EN 61000-6-3, IEC/EN 62019-1, IEC/EN 62109-2	

1. No enforced DC/AC ratio. See the compatibility calculator at enphase.com/en-us/support/module-compatibility.
2. Nominal voltage range can be extended beyond nominal if required by the utility.

To learn more about Enphase offerings, visit **enphase.com/au**

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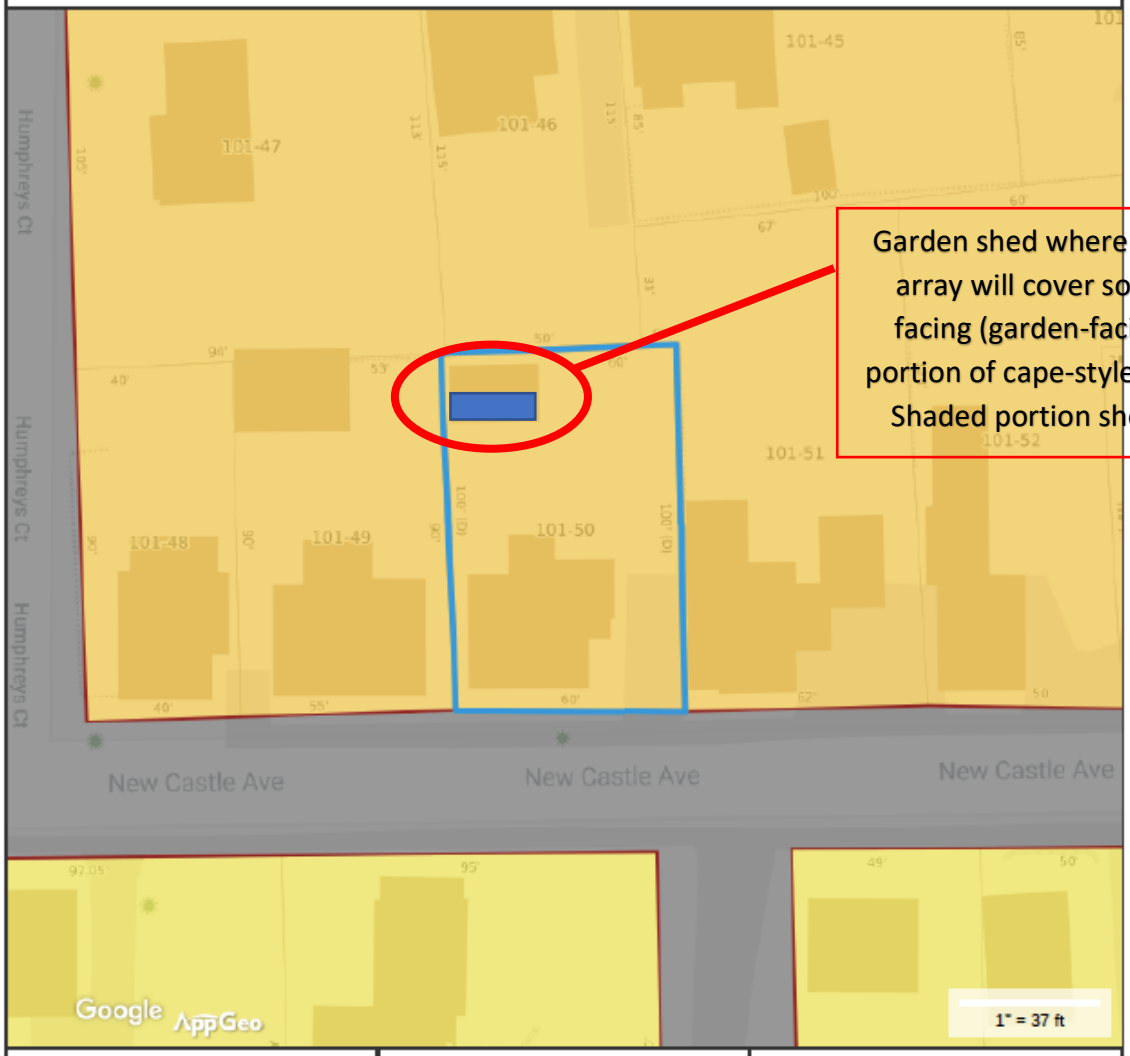
City of Portsmouth, NH June 7, 2019

Site Plan



Property Information

Property ID	0101-0050-0000
Location	77 NEW CASTLE AVE
Owner	BLAISDELL ELISABETH H REV TRUST

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Portsmouth, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 11/30/2018
Data updated 11/19/2018

Main house view of the garden shed. This is the side of the roof that the solar panels will cover.

The red circled area represents the only view of the garden shed visible from the road.

End view of garden shed. The panels will sit approx. 2 inches off the roof and their pitch will match the roof line (no special angling)