CERTIFICATE OF APPROPRIATENESS

Application Date: June 30, 2015

Applicant: Amanda Simmons, Texas Solar Outfitters, for Justin and Sita Feinberg, owners

Property: 1020 Columbia Street, Lot 17, Block 221, Houston Heights Subdivision. The property includes a new 3,986 square foot two-story residence and detached two-story garage situated on a 6,600 square foot interior lot.

Significance: Noncontributing Contemporary residence, constructed circa 2003, located in the Houston Heights Historic District South.

Proposal: Alteration – Install 46 solar panels on the roof of the main residence and detached garage. Solar panels will face south and will be installed to match the existing pitch of the roof.

- The Large array (to be located on the residence) will measure 52’ x 10.88’ (with a small section of this array measuring 16.25’ x 5.44’)
- The Small array (to be located on the garage) will measure 19.5’ x 10.88’

See enclosed application materials and detailed project description on p. 4-10 for further details.

Public Comment: No public comment received.

Civic Association: No comment received.

Recommendation: **Approval**

HAHC Action: **-**

APPROVAL CRITERIA

ALTERATIONS TO NONCONTRIBUTING STRUCTURES

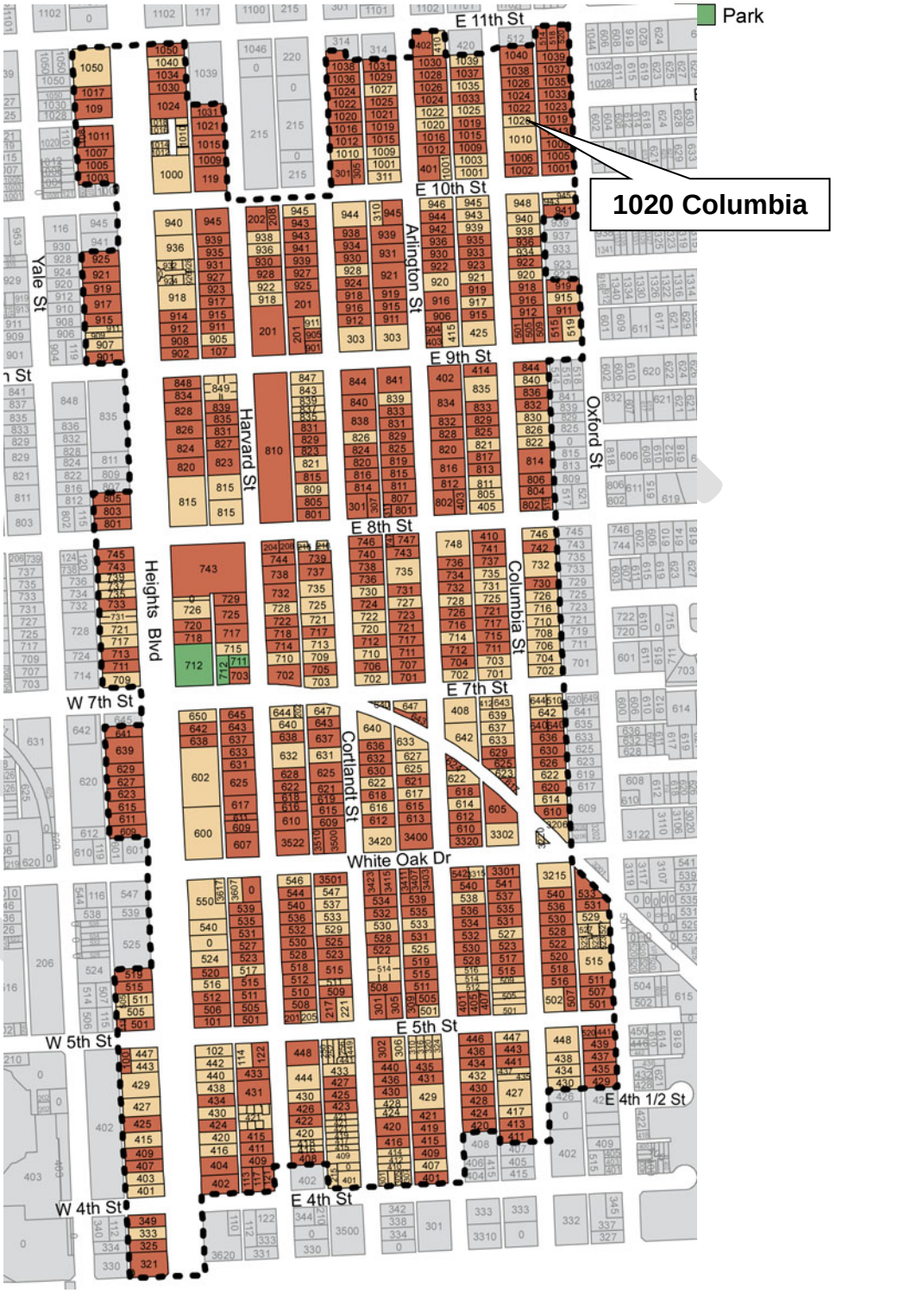
Sec. 33-241(c): HAHC shall issue a certificate of appropriateness for the alteration, rehabilitation, restoration or addition of an exterior feature of any **noncontributing structure in an historic district** upon finding that the application satisfies the following criteria, as applicable:

S	D	NA		**S - satisfies D - does not satisfy NA - not applicable**
☒	☐	☐	(1)	The proposed activity must recognize the building, structure, object or site as a product of its own time and avoid alterations that seek to create an earlier or later appearance
			(2)	For an addition to a noncontributing structure:
☐	☐	☒	(a)	The setback of the addition is no closer to the public right-of-way than the typical setback of existing contributing structures in the historic district;
☐	☐	☒	(b)	The height of the eaves of the addition to a noncontributing structure used or intended for use for residential purposes is not taller than the typical height of the eaves of existing contributing structures used for residential purposes in the historic district; and
☐	☐	☒	(c)	The height of an addition to a noncontributing structure used or intended for use for commercial purposes is not taller than the height of the existing structure.

N

PROPERTY LOCATION

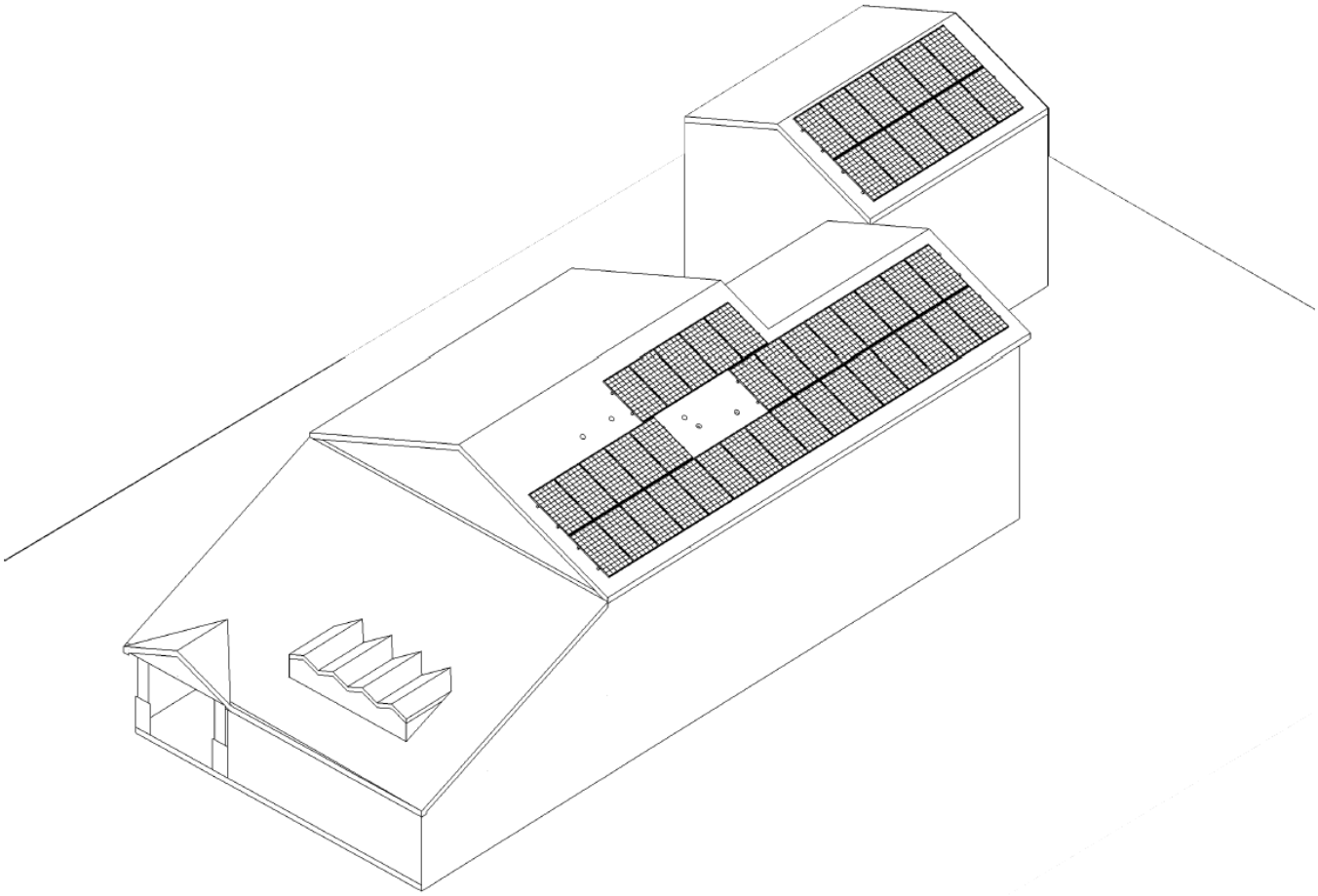
HOUSTON HEIGHTS HISTORIC DISTRICT SOUTH



INVENTORY PHOTO

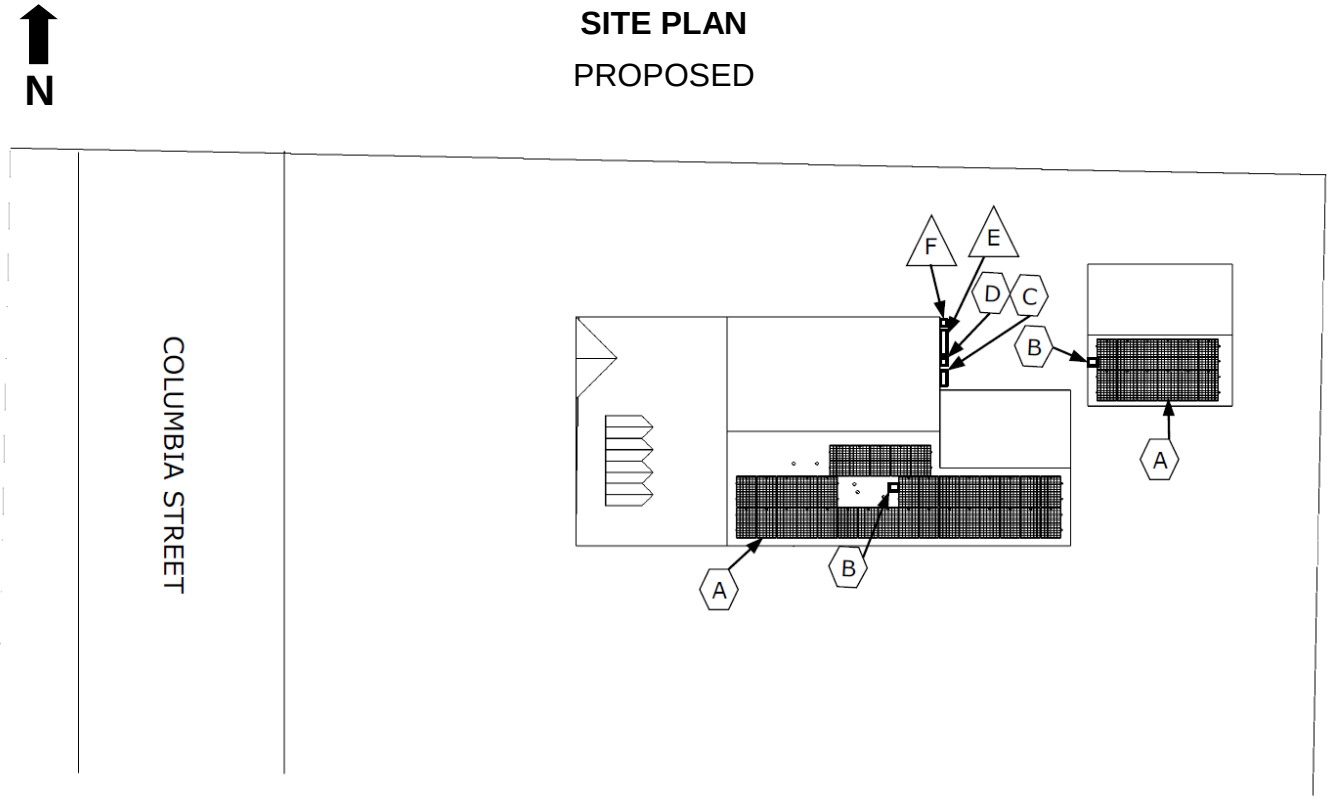
3D RENDERING

PROPOSED



SITE PLAN

PROPOSED



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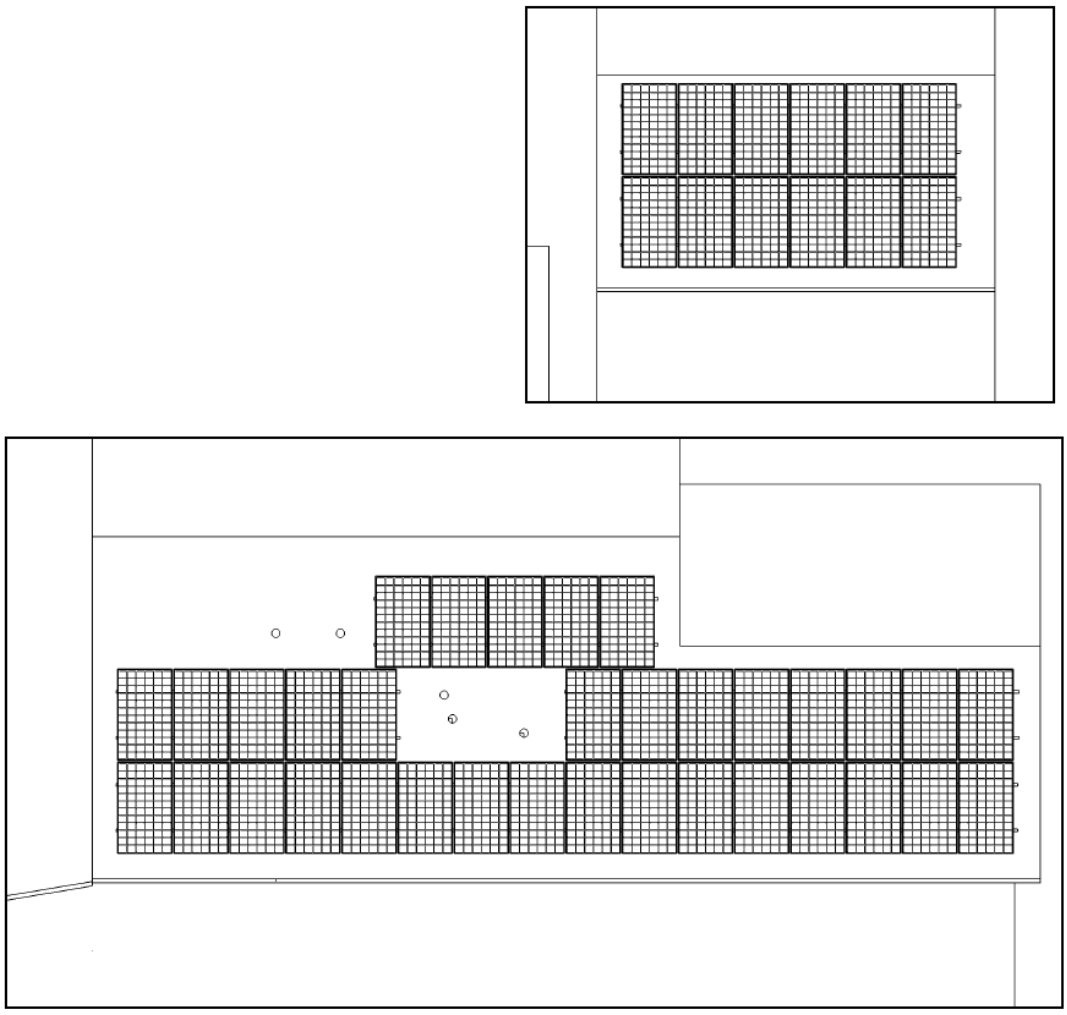
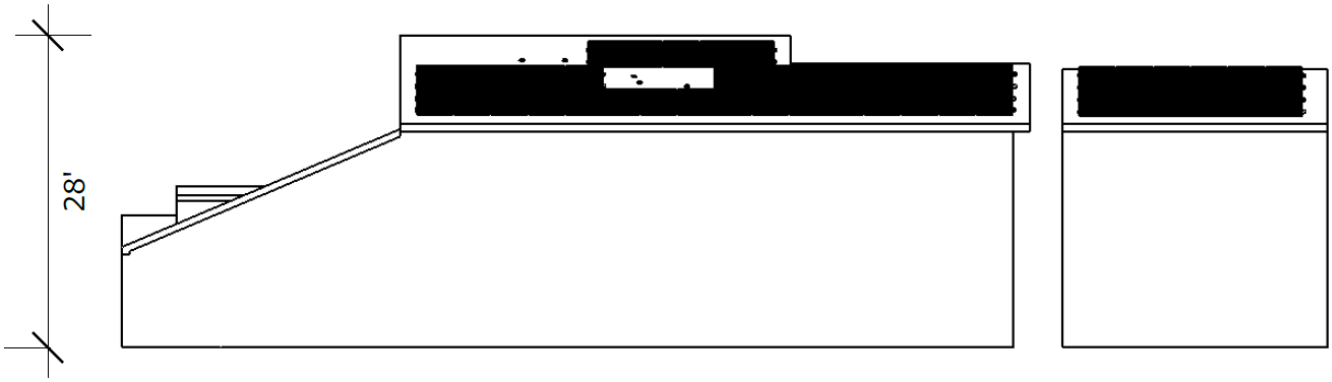
ROOF PLAN

Proposed



PROFILE VIEW

Proposed



SOLAR PANEL SPECIFICATIONS

SILVANTIS® R-SERIES: 270 W TO 290 W

60-Cell High Wattage Modules

SunEdison introduces the next generation of high performance solar modules based on innovative Continuous Cz (CCz) monocrystalline cells with PERC technology. The Silvantis R-Series delivers the highest levels of efficiency and durability; providing homeowners with the same quality and performance SunEdison's utility customers enjoy, while optimizing roof fit, overall system size and installer productivity.

SunEdison is a leader in utility-scale solar systems with over two and a half-million Silvantis modules deployed in some of the world's harshest climates and most remote locations. This experience, coupled with over 50 years of expertise in silicon technology and innovation enables SunEdison to design and produce highly advanced residential solar solutions.

SILVANTIS ADVANTAGE

- 17.7% module efficiency with positive power tolerance
- PID-free: compatible with transformerless and multi-MPPT inverters
- Higher return on investment with more watts-per-module
- Reliability tested beyond international standards
- Utility-grade manufacturing: ISO 14001, ISO 9001 and 100% EL inspection

QUALITY & SAFETY

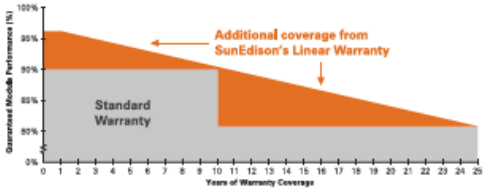
- Industry leading PID test conditions:
  - 96 hours, 85 C, 85% relative humidity, −1kV
- IEC certified by TÜV SÜD:
  - 61730 to ensure electrical safety
  - 61215 long-term operation in a variety of climates including snow loading up to 5400 Pa and hail testing
  - 61701 Level 1 salt mist corrosion resistant for marine regions
  - 62716 ammonia testing for agricultural environments
- Manufactured to AQL 0.4 Level II quality and tested up to 3x beyond IEC standards
- CSA listed to UL 1703 for 1,000 V systems in the US and Canada
- MCS certified by BABT for the UK

ROBUST & AESTHETIC DESIGN

- Black anodized corrosion resistant aluminum frame
  - White back sheet: SE-R2xxCzC-3y
  - Black back sheet: SE-R2xxKzC-3y
- Low glare anti-reflective coated (ARC) tempered glass

SUNEDISON WARRANTY

- 25-year limited warranty for materials and workmanship for installations ≤ 250 kWDC
- 25-year linear power warranty at STC:
  - Year 1: ≤ 3.5% of rated power
  - After year 1: ≤ 0.7% rated power degradation per year



sunedison.com

SOLAR PANEL SPECIFICATIONS

SunEdison

SILVANTIS R-SERIES: 270 W TO 290 W

PHYSICAL PARAMETERS

Module Dimensions	1,658 mm x 990 mm x 50 mm
Module Weight	19 kg
Cell Type	PERC on CCz monocrystalline
Number of Cells	60
Frame Material	Black Anodized Aluminum
Tempered ARC Glass Thickness	3.2 mm

TEMPERATURE COEFFICIENTS AND PARAMETERS[1]

Nominal Operating Cell Temperature (NOCT)	45 C ± 2 C
Temperature Coefficient of Pmax	–0.44 %/C
Temperature Coefficient of Voc	–0.32 %/C
Temperature Coefficient of Isc	+0.05 %/C
Operating Temperature	–40 C to +85 C
Maximum System Voltage	1000 V (UL & IEC)
Limiting Reverse Current	9.20 A
Maximum Series Fuse Rating	15 A
Pmax Production Tolerance	0 W to +5 W
Junction Box Rating	IP67
IEC 61730 Application	Class A
Module Fire Performance	Type 2
Fire Resistance Rating	Class C
Packaging Specifications	20 modules per pallet 520 modules per 40' high-cube container
Wind and Snow Front Load	Up to 5,400 Pa
Wind Back Load	2,400 Pa
Reduction of STC efficiency from 1000 W/m² to 200 W/m² (Relative)	< 4%

STC ELECTRICAL CHARACTERISTICS[2]

Model # (e.g. R2xxCzC-3y)[3]	R270 CzC	R275 CzC	R280 CzC	R285 CzC	R290 CzC	R270 KzC	R275 KzC	R280 KzC	R285 KzC	R290 KzC
Rated Maximum Power Pmax (W)	270	275	280	285	290	270	275	280	285	290
Open-Circuit Voltage Voc (V)	38.5	39.0	39.2	39.3	39.3	38.5	38.6	38.6	38.7	38.7
Short-Circuit Current Isc (A)	9.10	9.30	9.45	9.50	9.55	9.10	9.20	9.30	9.40	9.50
Module Efficiency (%)	16.4	16.8	17.1	17.4	17.7	16.4	16.8	17.1	17.4	17.7
Maximum Power Point Voltage Vmpp (V)	31.5	31.6	31.7	31.9	31.9	31.5	31.6	31.6	31.7	31.7
Maximum Power Point Current Impp (A)	8.58	8.72	8.84	8.95	9.14	8.58	8.72	8.86	9.00	9.14

NOCT ELECTRICAL CHARACTERISTICS[4]

Model # (e.g. R2xxCzC-3y)[3]	R270 CzC	R275 CzC	R280 CzC	R285 CzC	R290 CzC	R270 KzC	R275 KzC	R280 KzC	R285 KzC	R290 KzC
Rated Maximum Power Pmax (W)	197.3	200.9	204.6	208.2	211.8	193.2	196.7	200.3	203.9	207.5
Open-Circuit Voltage Voc (V)	35.5	35.6	35.7	35.8	35.9	35.3	35.5	35.6	35.7	35.8
Short-Circuit Current Isc (A)	7.42	7.45	7.47	7.49	7.51	7.28	7.32	7.35	7.38	7.41
Maximum Power Point Voltage Vmpp (V)	28.4	28.8	29.1	29.4	29.6	28.2	28.6	28.9	29.2	29.5
Maximum Power Point Current Impp (A)	6.94	6.97	7.03	7.09	7.15	6.84	6.88	6.93	6.99	7.05

Listed specifications are subject to change without prior notice.

[1] *Temperature coefficients may vary by ±10%*

[2] *All electrical data at standard test conditions (STC): 1000 W/m², AM 1.5, 25 C; electrical characteristics may vary by ±5% and power measurement tolerance by ±3%*
Pmax Production Tolerance: factory-measured module performance is warranted to meet or exceed the stated panel STC power rating by 0 W to +5 W

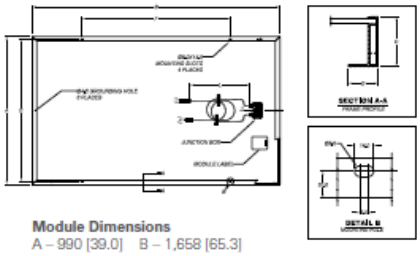
[3] *y indicates connector type: -34 = Bizlink S418; -38 = Amphenol Helios H4*
z indicates manufacturing location: M = Malaysia, X = Mexico, P = China, T = Taiwan

[4] *NOCT electrical characteristics measured under normal operating conditions of cells: 800 W/m², 20 C, AM 1.5, wind 1 m/s*

For more information about SunEdison's Silvantis modules, please visit www.sunedison.com

LWI-19031 R60_DS_Vega_51_60mm_v19 12 2014

R-SERIES SOLAR MODULE DIMENSIONS mm [inch]



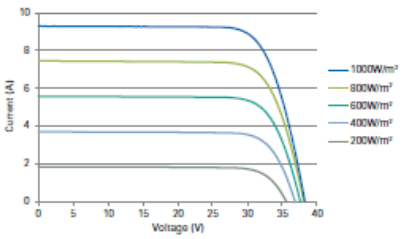
Module Dimensions
A – 990 [39.0] B – 1,658 [65.3]
C – 50 [2.0] D – 30 [1.18]

Mounting Hole Spacing
E – 950 [37.4] F – 994 [39.1]

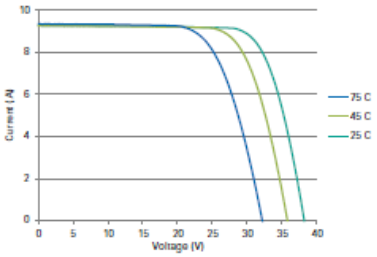
Cable Length
L – 1,000 [39.4]

Junction Box Dimensions
101.5 x 60.0 x 25.5 [3.99 x 2.36 x 1.0]

IV CURVES AT MULTIPLE IRRADIANCES [25 C]



IV CURVES AT MULTIPLE TEMPERATURES [1000 W/m²]



PROJECT DETAILS

Exterior Materials: Install 46 solar panels on the roof of the main residence and detached garage. Solar panels will face south and will be installed to match the existing pitch of the roof. The Large array (to be located on the residence) will measure 52' x 10.88' (with a small section of this array measuring 16.25' x 5.44'). The Small array (to be located on the garage) will measure 19.5' x 10.88'. See drawings for more detail.