

STAFF REPORT FOR THE HISTORIC RESOURCES COMMISSION MEETING OF
NOVEMBER 9, 2017

FILE NO: HRC-17-163

AGENDA ITEM: E-2

STAFF AUTHOR: Hope Sullivan, AICP, Planning Manager

REQUEST: Approval of a request from Jennifer Yen to install roof mounted solar panels on property zoned Residential Office (RO), located at 314 West 5th Street, APN 003-129-04.

APPLICANT: Jennifer Yen

OWNER: Jennifer Yen and Don Ton

LOCATION: 314 West 5th Street

APN: 003-129-04

RECOMMENDED MOTION: "I move to approve HRC-17-163, a request from Jennifer Yen to install roof mounted solar panels on property zoned Residential Office, located at 314 West Fifth Street, APN 003-129-04, based on the findings outlined in the staff report, the Standards and Guidelines for Rehabilitation, the Carson City Historic District Guidelines and consistent with Historic Resources Commission Policies."



RECOMMENDED CONDITIONS OF APPROVAL:

1. All development shall be substantially in accordance with the submitted plans.
2. All on and off-site improvements shall conform to City standards and requirements.
3. The applicant must sign and return the Notice of Decision within 10 days of receipt of notification. If the Notice of Decision is not signed and returned within 10 days, then the item may be rescheduled for the next Historic Resources Commission meeting for further consideration.
4. HRC approval is based upon the project complying with the Standards and Guidelines for Rehabilitation, Carson City Historic District Guidelines, the Historic Resources Commission Policies and that the plans as submitted are in general conformance with the Secretary of the Interiors Standards.
5. Roof mounted HVAC equipment must be removed. Relocation as ground mounted equipment is subject to HRC review and approval.
6. Panels proposed on the southern portion of the home are not permitted consistent with the National Park Service Guidelines on Sustainability for Rehabilitating Buildings which encourages units that are not visible or only minimally visible from the public right-of-way.

LEGAL REQUIREMENTS: CCMC 18.06.015 (Procedure for Proposed Project)

MASTER PLAN DESIGNATION: Mixed-Use Residential (MUR)

ZONING: Residential Office (RO)

PREVIOUS REVIEWS:

V-81-36: Variance from setbacks (expired as permits not pulled)

DISCUSSION:

According to the Assessor's Records, the house on this property was constructed in 1939. The property is utilized as an office, with a parking area on the southeastern portion of the site.

There is currently a large HVAC unit mounted on the eastern portion of the roof. Staff does not have a record of that unit being subject to HRC review. Staff recommends the removal of that unit as it is inconsistent with the guidelines. Staff recognizes the unit will likely need to be relocated so as to be ground mounted. The ground mounted location will be subject to HRC review.

The applicant is seeking solar panels in two areas: one on the roof in the front of the house, and on a roof section on the east side of the house.

As noted below, the Design Standards include standards for roofs.

5.14.1 Guidelines for Historic Buildings

Original roofing material and features are to be retained and repaired if at all possible. If new roofing is necessary or desired, the preferred treatment is to replace the original with identical new material. If this is not possible or desirable, then the use of Fireclass A, organic felt or fiberglass matt composition type shingle, preferably in a “thick butt” design is acceptable. These are to be laid approximately five inches to the weather with straight and true exposed edge lines. Other roof features such as chimneys, dormers and/or decorative elements are to be retained. **New mechanical systems, solar panels, skylights and/or other devices on the roof are to be placed so they are inconspicuous from the street and in such a manner that no damage is done to any character defining features of the building.** *(Secretary of the Interior’s Standards for Rehabilitation (Standard Number: 2, 6) – bold added for emphasis*

Staff would note that the HVAC roof mounted unit is inconsistent with this standard, and recommends that the applicant demonstrate HRC approval of the unit (staff has not found an HRC approval), or remove it from the roof. Ground mounting will require HRC review and approval.

In terms of the solar panels, staff finds the panels in the front of the house to be inconsistent with the standard to make them inconspicuous from the street. Staff finds that placement in the front will compromise the features of the building.

Staff finds the panels on the east are sufficiently inconspicuous, and will not compromise the features of the building, particularly since they are adjacent to a parking area.

Attachments:

Carson City Historic Survey 2000
National Park Service Guidelines on Sustainability
Application (HRC-17-163)

**Historical Survey 2000
Carson City Historic District
Carson City Community Development**



Address: 314 W. Fifth

Location: Northeast corner W. Fifth and S. Division

Construction Date: 1939 (assessor)

Historical Background

This parcel consists of lots 6, 7, and 10. The lots were sold individually until 1867 when J. P. Jones purchased the parcel. The parcel then had a succession of owners. T. J. Connolly bought the property in 1888 and was living at this address in 1895. Connolly was a laborer, a native of Ireland. He and his wife Abby, also a native of Ireland, had three children, all born in Nevada.

Connolly sold the house to Dorcas Briggs in 1906. She lived there with Gilbert Briggs, who was in mining and later worked as a guard at the United States Mint. The Briggs rented rooms. Sol Briggs lived there and worked as a carpenter. Jacob Foster and George Jells were also carpenters who roomed there. Mr. and Mrs. E. H. Light rented a room; he worked as a broker. In 1917 Jesse Bright was living in the house. In 1920 Gilbert Briggs was sharing the house with Joseph Allen, who was employed as a laborer, along with Clarence Hannagen and Charles Priest, who worked as a clerk. In 1923, Clarence Hannagen was still

living in the house with Briggs, and working as a custodian at the Warren Engine Co.

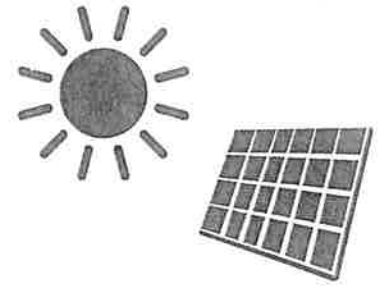
Gilbert Briggs sold the house to Parke and Dorothy Boneysteele in 1924. Boneysteele was an engineer for the State Highway Department. The Boneysteeles shared the house with Huston D. Miles, who was a right-of-way engineer for the Highway Department.

Theodore and Marie Wilson lived in the house in 1929. Wilson was a salesman. Richard Barber bought the house in 1929. He was a salesman and lived there with his wife, Esther. George Barber, who was a grocer, also lived in the house in 1930. Kath Holbrook, the widow of Charles Holbrook shared the home, too, between 1930 and 1937.

Richard Barber sold the house in 1939 to John Ross. Ross was a lawyer and City Attorney, with an office in the Sweetland Building. He lived at 314 W. Fifth Street with his wife Margaret.

Sources: Stewart Title Posting Books; Carson City Directories; Carson City Telephone Directories; United States Census

GUIDELINES FOR SOLAR ENERGY SYSTEMS

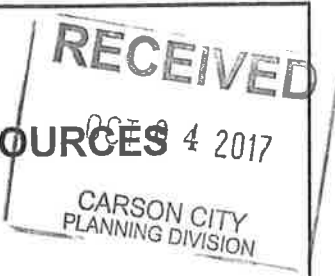


Solar Technology (NPS, Illustrated Guidelines on Sustainability for Rehabilitating Buildings)	
Recommended	Not Recommended
Considering on-site, solar technology only after implementing all appropriate treatments to improve energy efficiency of the building, which often have greater life-cycle cost benefit than on-site renewable energy.	Installing on-site, solar technology without first implementing all appropriate treatments to the building to improve its energy efficiency.
Analyzing whether solar technology can be used successfully and will benefit a historic building without compromising its character or the character of the site or the surrounding historic district.	Installing a solar device without first analyzing its potential benefit or whether it will negatively impact the character of the historic building or site or the surrounding historic district.
Installing a solar device in a compatible location on the site or on a non-historic building or addition where it will have minimal impact on the historic building and its site.	Placing a solar device in a highly-visible location where it will negatively impact the historic building and its site.
Installing a solar device on the historic building only after other locations have been investigated and determined infeasible.	Installing a solar device on the historic building without first considering other locations.
Installing a low-profile solar device on the historic building so that it is not visible or only minimally visible from the public right of way: for example, on a flat roof and set back to take advantage of a parapet or other roof feature to screen solar panels from view; or on a secondary slope of a roof, out of view from the public right of way.	Installing a solar device in a prominent location on the building where it will negatively impact its historic character.
Installing a solar device on the historic building in a manner that does not damage historic roofing material or negatively impact the building's historic character and is reversible.	Installing a solar device on the historic building in a manner that damages historic roofing material or replaces it with an incompatible material and is not reversible.
	Removing historic roof features to install solar panels.
	Altering a historic, character-defining roof slope to install solar panels.
	Installing solar devices that are not reversible.
Installing solar roof panels horizontally – flat or parallel to the roof—to reduce visibility.	Placing solar roof panels vertically where they are highly visible and will negatively impact the historic character of the building.
Investigating off-site, renewable energy options when installing on-site solar devices that would negatively impact the historic character of the building or site.	

Carson City Planning Division
 108 E. Proctor Street • Carson City NV 89701
 Phone: (775) 887-2180 • E-mail: planning@carson.org

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CCMC 18.06



HISTORIC RESOURCES COMMISSION

4 2017

FILE # HRC - 17 - 163

FEE: None

APPLICANT: Jennifer Yen PHONE #: (408) 396-5254

MAILING ADDRESS, CITY, STATE, ZIP: Carson City
314 W 5th St. NV 89703

EMAIL ADDRESS: yendds888@gmail.com

PROPERTY OWNER: Ton & Jennifer Yen PHONE #: (408) 396-5254

MAILING ADDRESS, CITY, STATE, ZIP: Carson City NV
314 W. 5th St Carson City NV

EMAIL ADDRESS: yendds888@gmail.com

APPLICANT AGENT/REPRESENTATIVE: Solar City - Tesla PHONE #: (775) 221-5299

MAILING ADDRESS, CITY, STATE, ZIP: San Mateo
3055 Clearview CA 94402

EMAIL ADDRESS: rsalmansen@solarcity.com

SUBMITTAL PACKET – 4 Complete Packets (1 Unbound Original and 3 Copies) including:

- Application Form with Signatures
- Written Project Description
- Site Plan
- Building Elevations
- Proposed Building Materials
- Documentation of Taxes Paid-to-Date

CD or USB DRIVE with complete application in PDF

Application Received and Reviewed By: _____

Submittal Deadline: See attached Historic Resources Commission application submittal schedule.

Note: Submittals must be of sufficient clarity and detail for all departments to adequately review the request. Additional information may be required.

Project's Assessor Parcel Number(s): 003-129-04

Street Address: 314 W 5th St.

Project's Master Plan Designation: _____

Project's Current Zoning: _____

Nearest Major Cross Street(s): _____

Briefly describe the work to be performed requiring Historic Resources Commission review and approval. In addition to the brief description of your project and proposed use, provide additional page(s) to show a more detailed summary of your project and proposal. NOTE: The Historic District Ordinance and Historic District Design Guidelines, as well as Policy Statements, are available in the Planning Division to aid applicants in preparing their plans. If necessary, attach additional sheets.

9 Solar modules to be installed on roof top.

Site Plan & spec sheets attached.

Reason for project:

Reduce energy bill

Will the project involve demolition or relocation of any structure within or into the Historic District?

Yes

No

If Yes, please describe:

SUPPORTING DOCUMENTATION

Each application requires one complete original packet and three copies, folded to 8 1/2 x 11 inches, including a quality site plan and drawings showing work to be performed on the subject project which requires Historic Resources Commission approval. This is any work which will affect the exterior of any structure and any modifications to the site, i.e., fences, walls, or major landscaping. The name of the person responsible for preparation of the plans and drawings shall appear on each sheet.

After the initial review and acceptance of your application by staff, an additional 14 copies will be required to present your project to the Historic Resources Commission.

Attached is a Plan Checklist to aid preparation of plans and architectural drawings. It is understood that all checklist items may not be included in all projects. The list is intended to give the applicant an idea of the breadth of review by the Commission on those items which are included in the subject project. Photographs can be used for illustration and discussion, but are not acceptable as substitutes.

Jennifer Ken
Owner's Signature


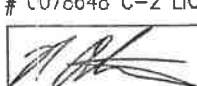

Jennifer Ken
Owner's Printed Name

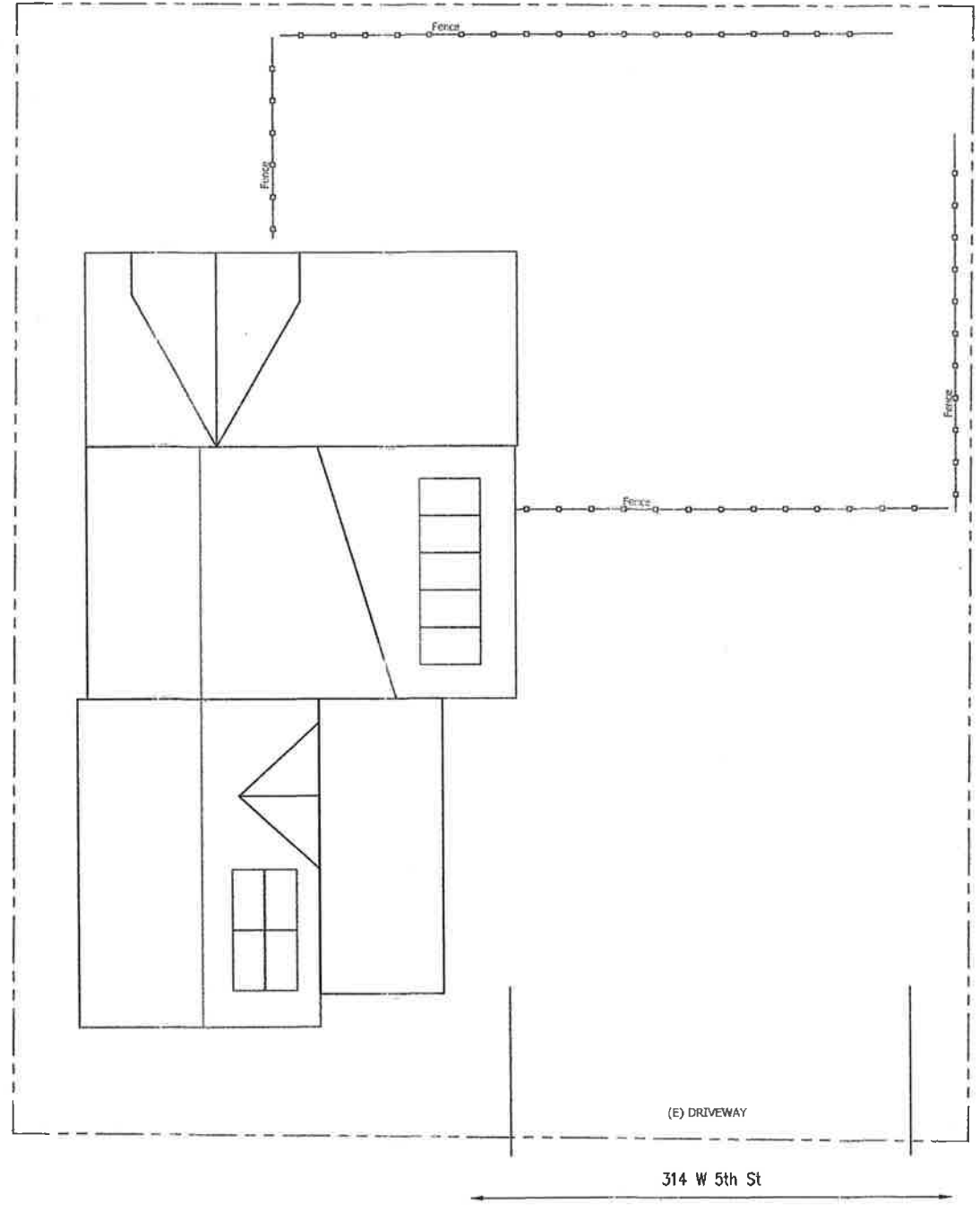
Rosie Salmonsens
Applicant's/Agent's Signature

Rosie Salmonsens
Applicant's/Agent's Printed Name

Permit Coordinator

Rosie Salmonsens

ABBREVIATIONS	ELECTRICAL NOTES	JURISDICTION NOTES																				
<p>A AMPERE AC ALTERNATING CURRENT BLDG BUILDING CONC CONCRETE DC DIRECT CURRENT EGC EQUIPMENT GROUNDING CONDUCTOR (E) EXISTING EMT ELECTRICAL METALLIC TUBING FSB FIRE SET-BACK GALV GALVANIZED GEC GROUNDING ELECTRODE CONDUCTOR GND GROUND HDG HOT DIPPED GALVANIZED I CURRENT Imp CURRENT AT MAX POWER Isc SHORT CIRCUIT CURRENT kVA KILOVOLT AMPERE kW KILOWATT LBW LOAD BEARING WALL MIN MINIMUM (N) NEW NEUT NEUTRAL NTS NOT TO SCALE OC ON CENTER PL PROPERTY LINE POI POINT OF INTERCONNECTION PV PHOTOVOLTAIC SCH SCHEDULE S STAINLESS STEEL STC STANDARD TESTING CONDITIONS TYP TYPICAL UPS UNINTERRUPTIBLE POWER SUPPLY V VOLT Vmp VOLTAGE AT MAX POWER Voc VOLTAGE AT OPEN CIRCUIT W WATT 3R NEMA 3R, RAIN TIGHT</p>	<p>1. THIS SYSTEM IS GRID-INTERTIED VIA A UL-LISTED POWER-CONDITIONING INVERTER. 2. THIS SYSTEM HAS NO BATTERIES, NO UPS. 3. A NATIONALLY-RECOGNIZED TESTING LABORATORY SHALL LIST ALL EQUIPMENT IN COMPLIANCE WITH ART. 110.3. 4. WHERE ALL TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION, A SIGN WILL BE PROVIDED WARNING OF THE HAZARDS PER ART. 690.17. 5. EACH UNGROUNDED CONDUCTOR OF THE MULTI-WIRE BRANCH CIRCUIT WILL BE IDENTIFIED BY PHASE AND SYSTEM PER ART. 210.5. 6. CIRCUITS OVER 250V TO GROUND SHALL COMPLY WITH ART. 250.97, 250.92(B). 7. DC CONDUCTORS EITHER DO NOT ENTER BUILDING OR ARE RUN IN METALLIC RACEWAYS OR ENCLOSURES TO THE FIRST ACCESSIBLE DC DISCONNECTING MEANS PER ART. 690.31(E). 8. ALL WIRES SHALL BE PROVIDED WITH STRAIN RELIEF AT ALL ENTRY INTO BOXES AS REQUIRED BY UL LISTING. 9. MODULE FRAMES SHALL BE GROUNDED AT THE UL-LISTED LOCATION PROVIDED BY THE MANUFACTURER USING UL LISTED GROUNDING HARDWARE. 10. MODULE FRAMES, RAIL, AND POSTS SHALL BE BONDED WITH EQUIPMENT GROUND CONDUCTORS.</p>	<p style="text-align: center;">VICINITY MAP</p> 																				
		INDEX																				
<p style="text-align: center;">LICENSE</p> <p style="text-align: center;">NICK ARMSTRONG NV # C078648 C-2 LICENSE</p> 	<p style="text-align: center;">GENERAL NOTES</p> <p>1. ALL WORK SHALL COMPLY WITH THE 2012 IBC, 2012 IRC 2. ALL ELECTRICAL WORK SHALL COMPLY WITH THE 2011 NATIONAL ELECTRIC CODE. 3. IFC 2012 Section 605</p>	<p>PV1 COVER SHEET PV2 PROPERTY PLAN PV3 SITE PLAN PV4 STRUCTURAL VIEWS PV5 STRUCTURAL VIEWS PV6 UPLIFT CALCULATIONS PV7 THREE LINE DIAGRAM Cutsheets Attached</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>REV</th> <th>BY</th> <th>DATE</th> <th>COMMENTS</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	REV	BY	DATE	COMMENTS																
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<p>MODULE GROUNDING METHOD: ZEP SOLAR</p> <p>AHJ: Carson City</p> <p>UTILITY: NV Energy (Sierra Pacific Power)</p>																						
<p><small>CONFIDENTIAL - THE INFORMATION HEREIN CONTAINED SHALL NOT BE USED FOR THE BENEFIT OF ANYONE EXCEPT TESLA INC., NOR SHALL IT BE DISCLOSED IN WHOLE OR IN PART TO OTHERS OUTSIDE THE RECIPIENT'S ORGANIZATION, EXCEPT IN CONNECTION WITH THE SALE AND USE OF THE RESPECTIVE TESLA EQUIPMENT, WITHOUT THE WRITTEN PERMISSION OF TESLA INC.</small></p>	<p>JOB NUMBER: JB-897204 00</p> <p>MOUNTING SYSTEM: Comp Mount Type C</p> <p>MODULES: (9) SolarCity Standard #SC325</p> <p>INVERTER: SOLAREEDGE # SE3000A-US-ZB-U</p>	<p>PREMISE OWNER: JENNIFER YEN 314 W 5TH ST CARSON CITY, NV 89703</p> <p>DESCRIPTION: Jennifer Yen RESIDENCE 2.925 KW PV ARRAY</p> <p>PAGE NAME: COVER SHEET</p>																				
		<p>DESIGN: Aranxa Tikal Macias</p> <p>SHEET: PV 1 REV: DATE: 9/9/2017</p> 																				



PROPERTY PLAN

Scale: 1" = 20'-0"

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JOB NUMBER: JB-897204 00

MOUNTING SYSTEM:
Comp Mount Type C

MODULES:
(9) SolarCity Standard #SC325

INVERTER:
SOLAREEDGE # SE3000A-US-ZB-U

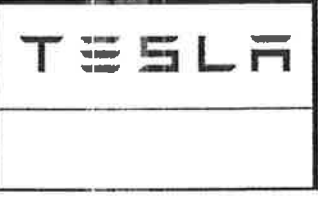
PREMISE OWNER:
JENNIFER YEN
314 W 5TH ST
CARSON CITY, NV 89703

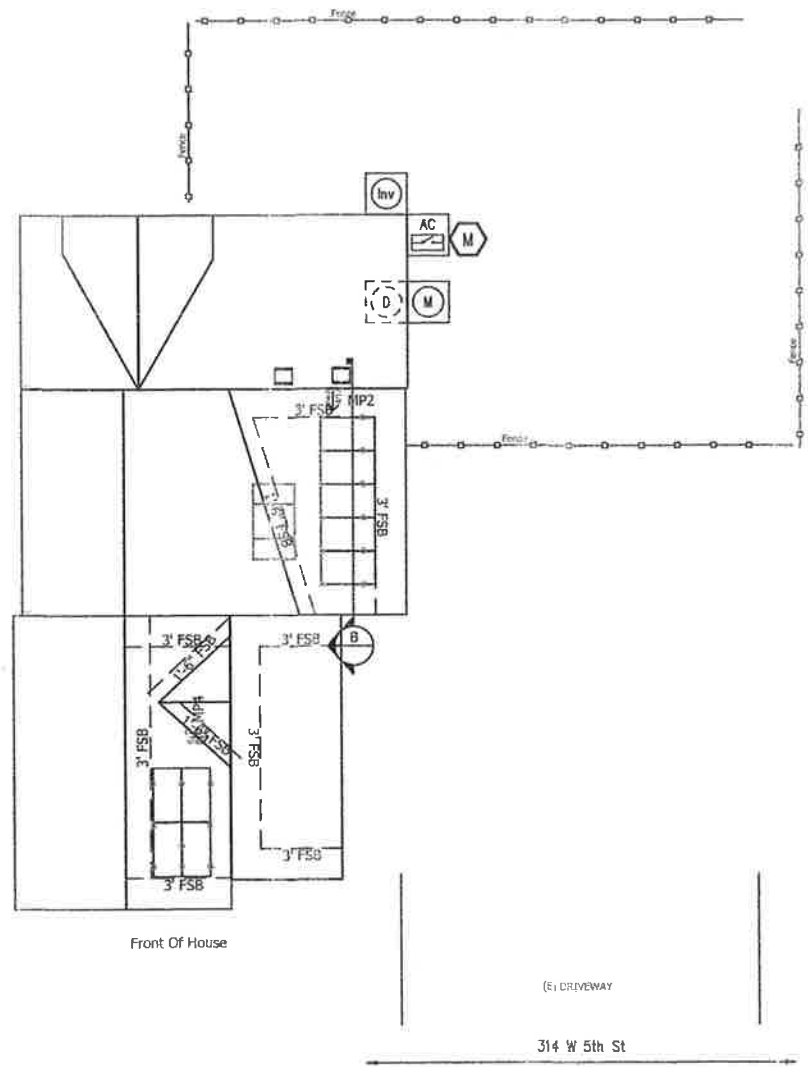
DESCRIPTION:
Jennifer Yen RESIDENCE
2.925 KW PV ARRAY

PAGE NAME:
PROPERTY PLAN

DESIGN:
Aranxa Tikal Macias

SHEET: PV 2 REV: a DATE: 9/9/2017





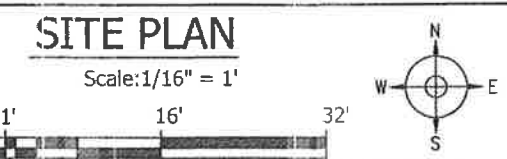
MP2	PITCH: 17 AZIMUTH: 180 MATERIAL: Comp Shingle	ARRAY PITCH: 17 ARRAY AZIMUTH: 180 STORY: 1 Story
MP3	PITCH: 45 AZIMUTH: 90 MATERIAL: Comp Shingle	ARRAY PITCH: 45 ARRAY AZIMUTH: 90 STORY: 1 Story
MP4	PITCH: 38 AZIMUTH: 90 MATERIAL: Comp Shingle	ARRAY PITCH: 38 ARRAY AZIMUTH: 90 STORY: 2 Stories

LEGEND

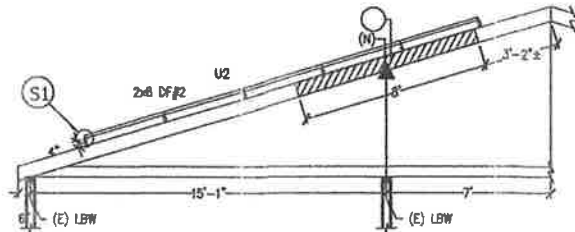
- (E) UTILITY METER & WARNING LABEL
- INVERTER W/ INTEGRATED DC DISCO & WARNING LABELS
- DC DISCONNECT & WARNING LABELS
- AC DISCONNECT & WARNING LABELS
- DC JUNCTION/COMBINER BOX & LABELS
- DISTRIBUTION PANEL & LABELS
- LOAD CENTER & WARNING LABELS
- DEDICATED PV SYSTEM METER
- RAPID SHUTDOWN
- STANDOFF LOCATIONS
- CONDUIT RUN ON EXTERIOR
- CONDUIT RUN ON INTERIOR
- GATE/FENCE
- HEAT PRODUCING VENTS ARE RED
- INTERIOR EQUIPMENT IS DASHED



Chris Kim
 Digitally signed by Chris Kim
 Date: 2017.09.09 18:58:19 -04'00'



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	MOUNTING SYSTEM: Comp Mount Type C	MODULES: (9) SolarCity Standard #SC325	INVERTER: SOLAREEDGE # SE3000A-US-ZB-U	PAGE NAME: SITE PLAN	



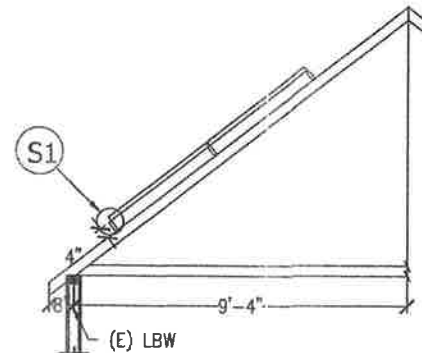
B SIDE VIEW OF MP2 NTS

MP2	X-SPACING	X-CANTILEVER	Y-SPACING	Y-CANTILEVER	NOTES
LANDSCAPE	64"	24"	41"	0"	STAGGERED
PORTRAIT	48"	19"	62"	0"	
RAFTER	2x8 @ 16" OC		ROOF AZI 180 ARRAY AZI 192	PITCH 17	STORIES: 1
C.J.	2x6 @ 16" OC		Comp Shingle		

X AND Y ARE ALWAYS RELATIVE TO THE STRUCTURE FRAMING THAT SUPPORTS THE PV.
X IS ACROSS RAFTERS AND Y IS ALONG RAFTERS.

SISTER UPGRADE INFORMATION: RAFTER UPGRADE INDICATED BY HATCHING

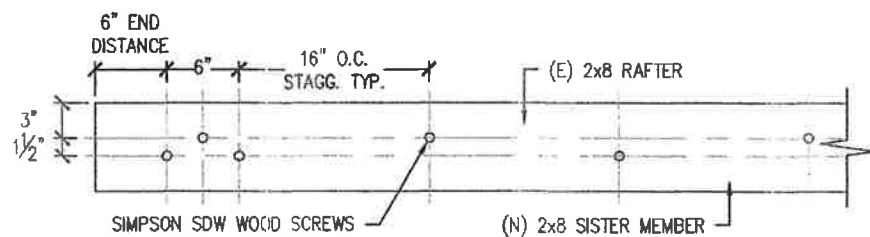
UPGRADE NOTES:
 1. CUT AND ADD (N) SISTER AS SHOWN IN THIS SIDE VIEW AND REFERENCED TOP VIEW.
 2. FASTEN (N) SISTER TO (E) MEMBER W/ SIMPSON SDW 22300 (IF 2-PLY) OR 22458 (IF 3-PLY) SDW SCREWS AS SHOWN AT 16" O.C. ALONG SPAN AS SPECIFIED, IF WOOD SPLITTING IS SEEN OR HEARD, PRE-DRILL WITH A 3/8" DRILL BIT.
 ALT. OPTION FOR FULL LENGTH MEMBERS ONLY- FASTEN (N) SIDE MEMBER TO (E) RAFTER W/ 10d (IF 2-PLY) OR 16d FROM EACH SIDE (IF 3-PLY) COMMON NAILS AT 6" O.C. ALONG SPAN.
 *SISTER: ALL RAFTERS ON THIS MP SECTION INTO WHICH THE ARRAY IS LAGGED



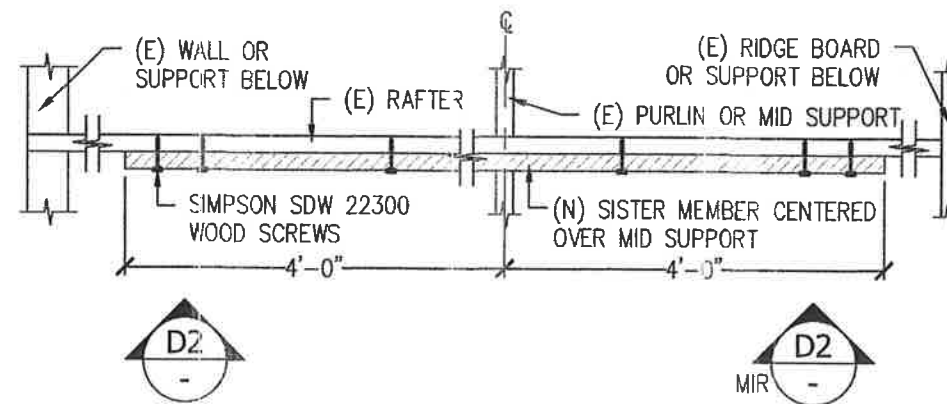
D SIDE VIEW OF MP4 NTS

MP4	X-SPACING	X-CANTILEVER	Y-SPACING	Y-CANTILEVER	NOTES
LANDSCAPE	72"	24"	41"	0"	STAGGERED
PORTRAIT	48"	21"	62"	0"	
RAFTER	2x4 @ 24" OC		ROOF AZI 90 ARRAY AZI 90	PITCH 38	STORIES: 2
C.J.	2x4 @ 24" OC		Comp Shingle - Skip Sheathing		

X AND Y ARE ALWAYS RELATIVE TO THE STRUCTURE FRAMING THAT SUPPORTS THE PV.
X IS ACROSS RAFTERS AND Y IS ALONG RAFTERS.



D2 2x8 END FASTENER GROUPING
Scale: 1"=1'-0"



U2 TOP VIEW OF PARTIAL SISTER OVER SUPPORT
Scale: 3/4"=1'-0"

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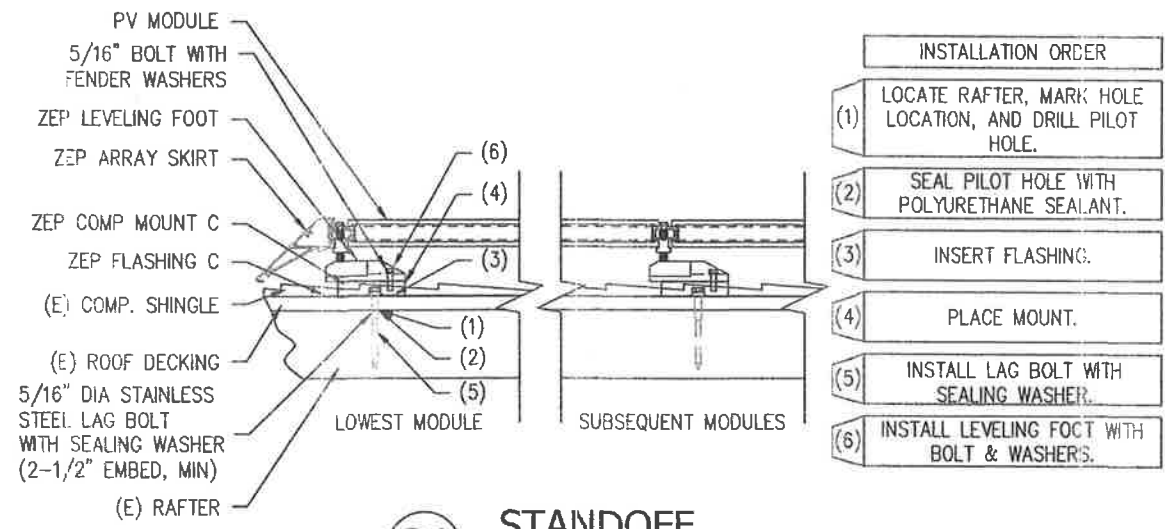
DESCRIPTION:
 Jennifer Yen RESIDENCE
 2.925 KW PV ARRAY

PAGE NAME:
 STRUCTURAL VIEWS

DESIGN:
 Aranxa Tikal Macias

SHEET: PV 4
 REV: a
 DATE: 9/9/2017





- INSTALLATION ORDER**
- (1) LOCATE RAFTER, MARK HOLE LOCATION, AND DRILL PILOT HOLE.
 - (2) SEAL PILOT HOLE WITH POLYURETHANE SEALANT.
 - (3) INSERT FLASHING.
 - (4) PLACE MOUNT.
 - (5) INSTALL LAG BOLT WITH SEALING WASHER.
 - (6) INSTALL LEVELING FOOT WITH BOLT & WASHERS.

S1 STANDOFF
Scale: 1 1/2" = 1'



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PREMISE OWNER:
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DESCRIPTION:
 Jennifer Yen RESIDENCE
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PAGE NAME:
 STRUCTURAL VIEWS

DESIGN:
 Aranxa Tikal Macias

SHEET REV DATE:
 PV 5 a 9/9/2017



DESIGN SUMMARY				09.09.2017 Version #09.6
Jobsite Specific Design Criteria				
Design Code	I	ASCE 7 10		
Importance Factor	1.0			
Ultimate Wind Speed	V-III	130 mph		Fig. 1609A Section 26.7 ASCE Table 7-1
Exposure Category	C			
Ground Snow Load	pg	30.0 psf		
MP Specific Design Information				
MP Name	MP2	MP4		
Roofing	Comp Roof	Comp Roof		
Standoff	Comp Mount Type C	Comp Mount Type C		
Pitch	17°	38°		
SL/RLL: PV	21.0 psf	11.3 psf		
SL/RLL: Non-PV	21.0 psf	20.7 psf		
Standoff Spacing and Layout				
MP Name	MP2	MP4		
X-Spacing	64"	72"		
X-Cantilever	24"	24"		
Y-Spacing	41"	41"		
Y-Cantilever	NA	NA		
X-Spacing	48"	48"		
X-Cantilever	19"	21"		
Y-Spacing	62"	62"		
Y-Cantilever	NA	NA		
Layout	Staggered	Staggered		
<small>X and Y are maximums they are always relative to the structure framing that supports the PV. X is across rafters and Y is along rafters.</small>				

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JOB NUMBER: JB-897204 00
 MOUNTING SYSTEM:
 Comp Mount Type C
 MODULES:
 (9) SolarCity Standard #SC325
 INVERTER:
 SOLAREEDGE # SE3000A-US-ZB-U

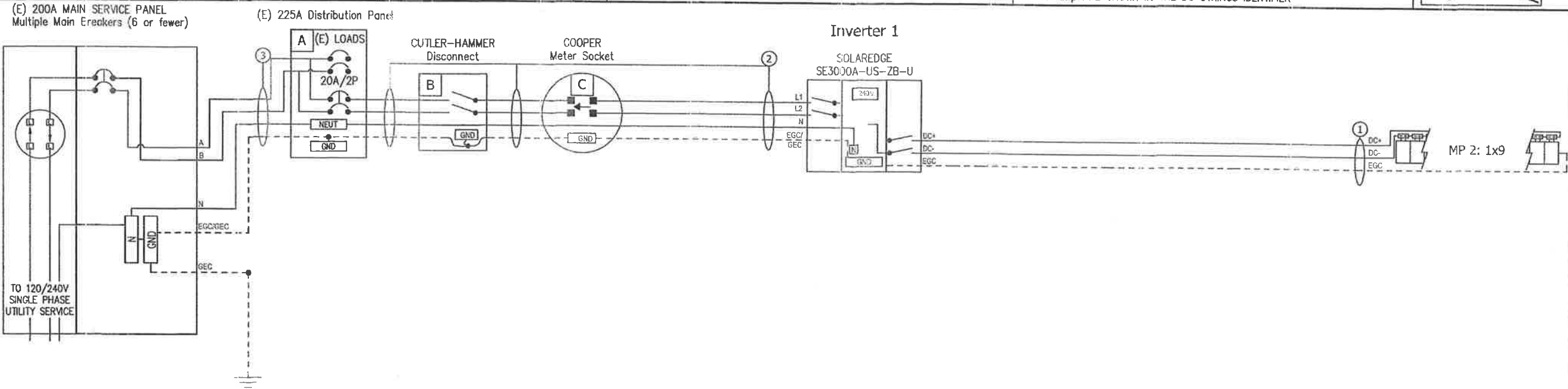
PREMISE OWNER:
 JENNIFER YEN
 314 W 5TH ST
 CARSON CITY, NV 89703

DESCRIPTION:
 Jennifer Yen RESIDENCE
 2.925 KW PV ARRAY
 PAGE NAME:
 UPLIFT CALCULATIONS

DESIGN:
 Aranxa Tikal Macias
 SHEET: PV 6
 REV: a
 DATE: 9/9/2017



GROUND SPECS	MAIN PANEL SPECS	GENERAL NOTES	INVERTER SPECS	MODULE SPECS	LICENSE
BOND (N) #8 GEC TO (E) GROUND ROD AT PANEL WITH IRREVERSIBLE CRIMP	Panel Number: NoLabel Meter Number: 031352808 Underground Service Entrance	Inv 1: DC Ungrounded	INV 1 -- (1) SOLAREEDGE # SE3000A-US-ZB-U LABEL: A Inverter; 3300W, 240V, 97.5% w/Unified Disco and ZB, AFCI INV 2 INV 3	(9) SolarCity Standard #SC325 PV Module; 325W, 306.5 PTC, 40MM, Blk Frm, M34, 600v, ZEP, 96-C Voc: 69.6 Vpmax 57.6 Isc AND Imp ARE SHOWN IN THE DC STRINGS IDENTIFIER	NICK ARMSTRONG NV # 0078648 C-2 LICENSE



Voc* = MAX VOC AT MIN TEMP

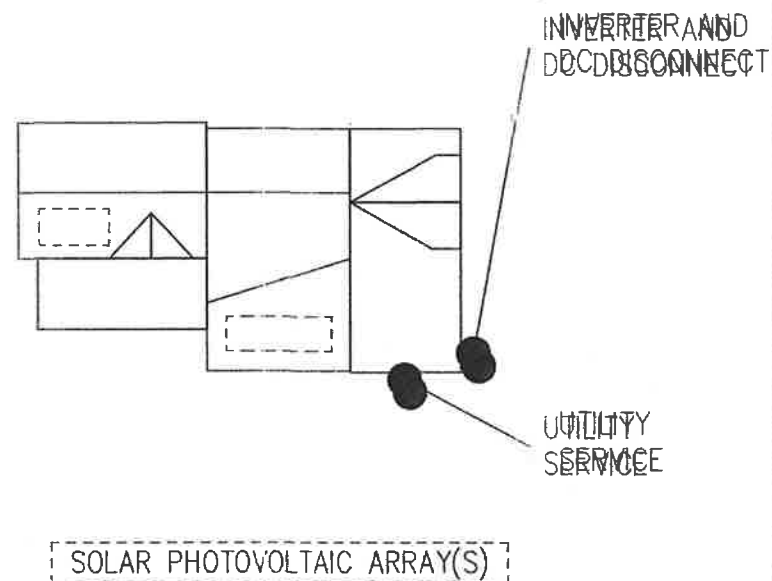
<p>③ (E) 2/0 Cu CONDUCTORS</p>	<p>A (1) SQUARE D # HOM220 PV BACKFEED BREAKER Breaker; 20A/2P, 2 Splices B (1) CUTLER-HAMMER # DG221URB Disconnect; 30A, 240Vcc, Non-Fusible, NEMA 3R (1) CUTLER-HAMMER # DG020NB Ground/Neutral Kit; 30A, General Duty (DG) C (1) COOPER # B-Line Meter Socket 011 Meter Socket; 125A, 4-14AWG, Ring Type (1) AW CAP; B-Line Meter Socket Accessory</p>	AC		PV (9) SOLAREEDGE # P400-5N14M2M PowerBox Optimizer; 400W, ZEP	DC
	<p>② (1) AWG #10, THWN-2, Black (1) AWG #10, THWN-2, Red (1) AWG #10, THWN-2, White (1) AWG #8, THWN-2, Green NEUTRAL Vmp = 240 VAC Imp = 12.5 AAC EGC/GEC -- (1) Conduit Kit; 3/4" EMT</p>			<p>① (2) AWG #10, PV Wire, 600V, Black Voc* = 600 VDC Isc = 15 ADC (1) AWG #10, THWN/THWN-2, Green EGC Vmp = 150 VDC Imp = 8.25 ADC (1) Conduit Kit; 3/4" EMT</p>	

<p>CONFIDENTIAL - THE INFORMATION HEREIN CONTAINED SHALL NOT BE USED FOR THE BENEFIT OF ANYONE EXCEPT TESLA INC., NOR SHALL IT BE DISCLOSED IN WHOLE OR IN PART TO OTHERS OUTSIDE THE RECIPIENT'S ORGANIZATION, EXCEPT IN CONNECTION WITH THE SALE AND USE OF THE RESPECTIVE TESLA EQUIPMENT, WITHOUT THE WRITTEN PERMISSION OF TESLA INC.</p>	<p>JOB NUMBER: JB-897204 00</p>	<p>PREMISE OWNER: JENNIFER YEN 314 W 5TH ST CARSON CITY, NV 89703</p>	<p>DESCRIPTION: Jennifer Yen RESIDENCE 2.925 KW PV ARRAY</p>	<p>DESIGN: Aranxa Tikal Macias</p>	
	<p>MOUNTING SYSTEM: Comp Mount Type C</p> <p>MODULES: (9) SolarCity Standard #SC325</p> <p>INVERTER: SOLAREEDGE # SE3000A-US-ZB-U</p>	<p>PAGE NAME: THREE LINE DIAGRAM</p>	<p>SHEET: PV 7 REV: a DATE: 9/9/2017</p>		

CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN:

- Address: 314 W 5th St



PHOTOVOLTAIC BACK-FED CIRCUIT BREAKER IN MAIN ELECTRICAL PANEL IS AN A/C DISCONNECT PER NEC 690.17

OPERATING VOLTAGE = 240V

JB-897204-00

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JOB NUMBER: JB-897204 00
 MOUNTING SYSTEM:
 Comp Mount Type C
 MODULES:
 (9) SolarCity Standard #SC325
 INVERTER:
 SOLAREDC # SE3000A-US-ZB-U

PREMISE OWNER:
 JENNIFER YEN
 314 W 5TH ST
 CARSON CITY, NV 89703

DESCRIPTION:
 Jennifer Yen RESIDENCE
 2.925 KW PV ARRAY

PAGE NAME:
 SITE PLAN PLACARD

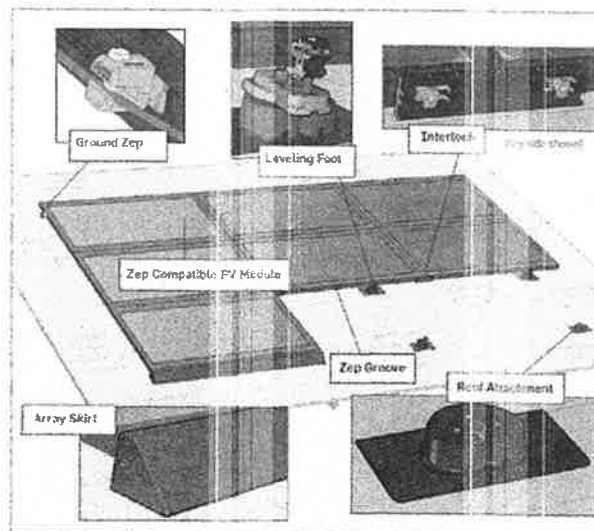
DESIGN:
 Aranza Tikal Macias

SHEET: REV: DATE:
 PV 8 a 9/9/2017



	<p>Label Location: (DC) (INV) Per Code: NEC 690.14.C.2</p>		<p>Label Location: (AC)(POI) Per Code: NEC 690.17.E</p>		<p>Label Location: (DC) (INV) Per Code: NEC 690.35(F) TO BE USED WHEN INVERTER IS UNGROUNDED</p>
	<p>Label Location: (DC) (INV) Per Code: NEC 690.53</p>		<p>Label Location: (POI) Per Code: NEC 690.17.4; NEC 690.54</p>		<p>Label Location: (C) Per Code: 2012 IFC NEC 690.31.G.3</p>
	<p>Label Location: (DC) (INV) Per Code: NEC 690.5(C)</p>		<p>Label Location: (POI) Per Code: NEC 690.64.B.4</p>		
	<p>Label Location: (DC) (CB) Per Code: NEC 690.17(4)</p>		<p>Label Location: (D) (POI) Per Code: NEC 690.64.B.4</p>		
	<p>Label Location: (AC) (POI) Per Code: NEC 690.14.C.2</p>		<p>Label Location: (POI) Per Code: NEC 690.64.B.7</p>		
	<p>Label Location: (AC) (POI) Per Code: NEC 690.54</p>				
<p>(AC): AC Disconnect (C): Conduit (CB): Combiner Box (D): Distribution Panel (DC): DC Disconnect (IC): Interior Run Conduit (INV): Inverter With Integrated DC Disconnect (LC): Load Center (M): Utility Meter (POI): Point of Interconnection</p>					
<p>Label Set</p>					

Zep System
for composition shingle roofs



Description

- PV mounting solution for composition shingle roofs
- Works with all Zep Compatible Modules
- Auto bonding UL-listed hardware creates structural and electrical bond
- Zep System has a UL 1703 Class "A" Fire Rating when installed using modules from any manufacturer certified as "Type 1" or "Type 2"

Specifications

- Designed for pitched roofs
- Installs in portrait and landscape orientations
- Zep System supports module wind uplift and snow load pressures to 50 psf per UL 1703
- Wind tunnel report to ASCE 7-05 and 7-10 standards
- Zep System grounding products are UL listed to UL 2703 and UL 467
- Zep System bonding products are UL listed to UL 2703
- Engineered for spans up to 72" and cantilevers up to 24"
- Zep wire management products listed to UL 1565 for wire positioning devices
- Attachment method UL listed to UL 2582 for Wind Driven Rain

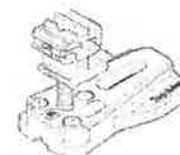
zepsolar.com

This document does not create any express warranty by Zep Solar or about its products or services. Zep Solar's sole warranty is contained in the written product warranty for each product. The end-user documentation shipped with Zep Solar's products constitutes the sole specifications referred to in the product warranty. The customer is solely responsible for verifying the suitability of ZepSolar's products for each use. Specifications are subject to change without notice. Patents and Apps: zspats.com.

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Components



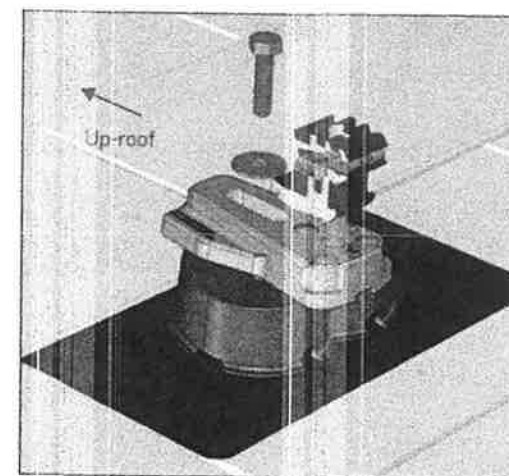
Leveling Foot

Part No. 850-1172
ETL listed to UL 467



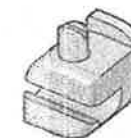
Comp Mount

Part No. 850-1382
Listed to UL 2582
Mounting Block Listed to UL 2703



Interlock

Part No. 850-1388
Listed to UL 2703



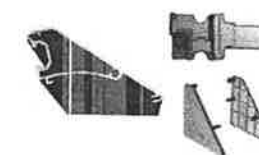
Ground Zep V2

Part No. 850-1511
Listed to UL 467 and UL 2703



DC Wire Clip

Part No. 850-1448
Listed to UL 1565



Array Skirt, Grip, End Caps

Part Nos. 850-0113, 850-1421,
850-1460, 850-1467
Listed to UL 1565

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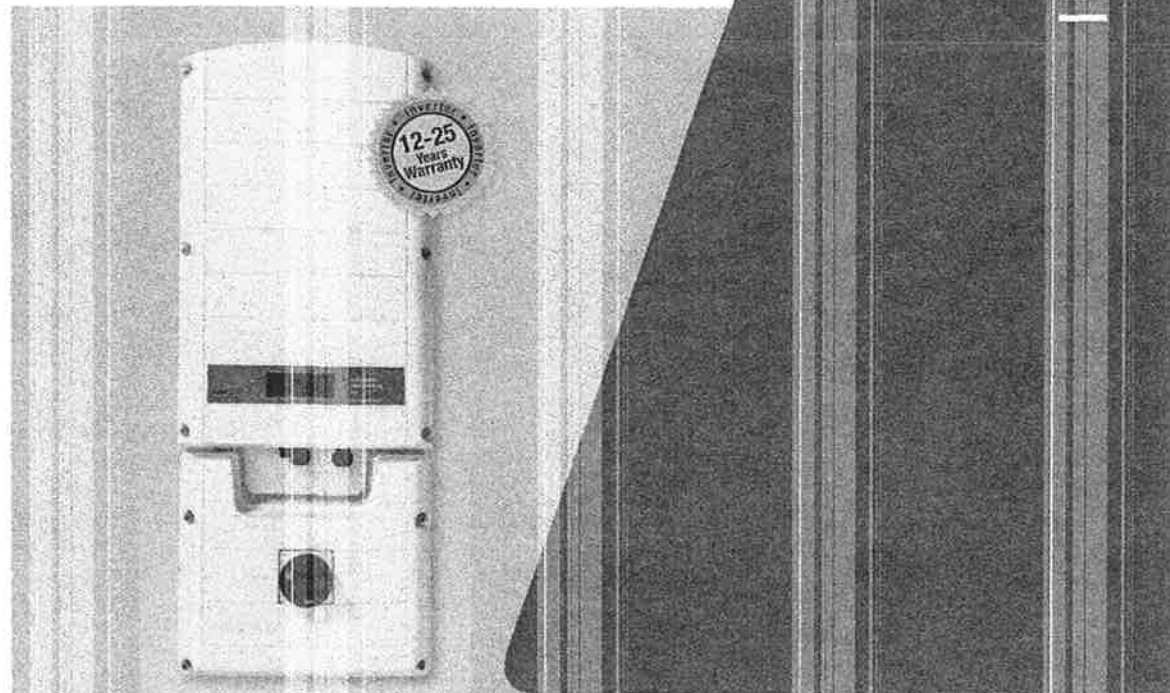
Document # 800-1890-001 Rev A

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SolarEdge Single Phase Inverters For North America

SE3000A-US / SE3800A-US / SE5000A-US / SE6000A-US /
SE7600A-US / SE10000A-US / SE11400A-US



The best choice for SolarEdge enabled systems

- Specifically designed to work with power optimizers
- Integrated arc fault protection for NEC 2011 690.11 compliance
- Rapid shutdown for NEC 2014 690.12
- Superior efficiency (98%)
- Small, lightweight and easy to install on provided bracket
- Built-in module-level monitoring
- Internet connection through Ethernet or Wireless
- Outdoor and indoor installation
- Fixed voltage inverter, 30% AC conversion only
- Pre-assembled Safety Switch for faster installation
- Optional - revenue grade data, ANSI C12.1

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INVERTERS



Single Phase Inverters for North America

SE3000A-US / SE3800A-US / SE5000A-US / SE6000A-US /
SE7600A-US / SE10000A-US / SE11400A-US

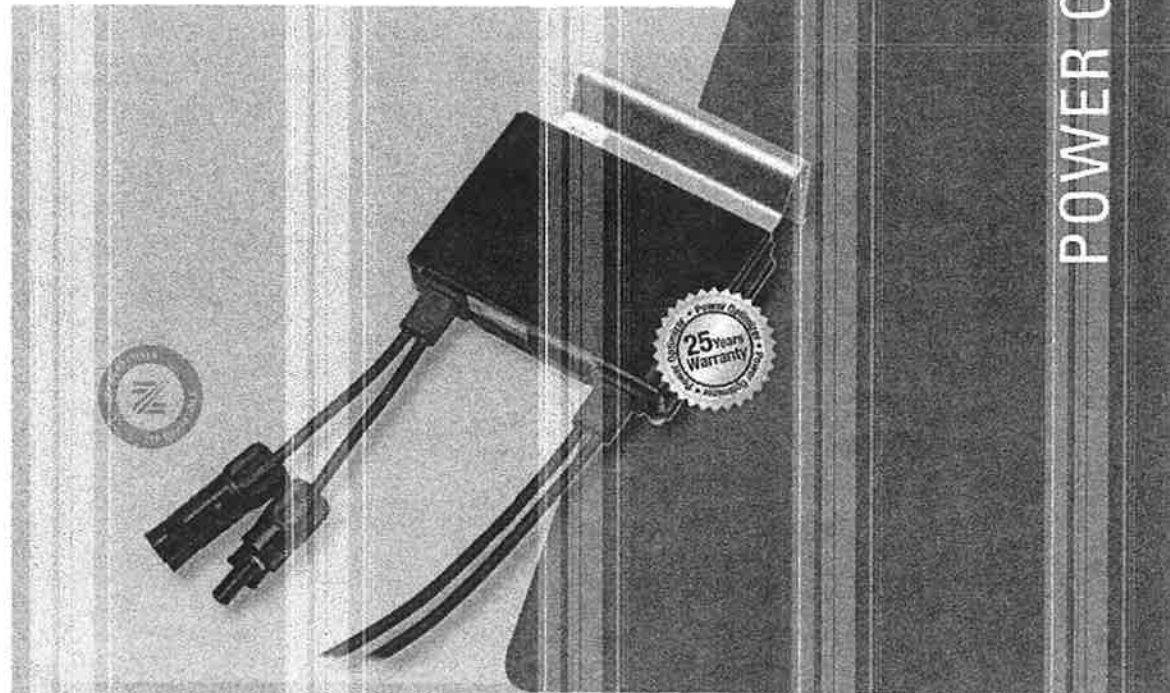
	SE3000A-US	SE3800A-US	SE5000A-US	SE6000A-US	SE7600A-US	SE10000A-US	SE11400A-US	
OUTPUT								
Nominal AC Power Output	3000	3800	5000	6000	7600	9980 @ 208V	11400	VA
Max. AC Power Output	3300	4150	5400 @ 208V 5450 @ 240V	6000	8350	10000 @ 240V 10800 @ 208V 10850 @ 240V	12000	VA
AC Output Voltage Min.-Nom.-Max. ¹⁾								
110 - 208 - 220 Vac			✓					
AC Output Voltage Min.-Nom.-Max. ²⁾			✓	✓	✓	✓	✓	
211 - 240 - 264 Vac	✓	✓	✓	✓	✓	✓	✓	
AC Frequency Min.-Nom.-Max. ³⁾				50	50	50		Hz
50 - 60 - 60.5								
Max. Continuous Output Current	12.5	16	24 @ 208V 21 @ 240V	25	32	48 @ 208V 43 @ 240V	47.5	A
Cold Start Hold				1				A
Utility Monitoring, Islanding Protection, Configurable Thresholds				Yes				Yes
INPUT								
Maximum DC Power (STC)	4050	5100	6750	8100	10250	13300	15350	W
Transformer-less, Ungrounded				Yes				
Max. Input Voltage				500				Vdc
Nom. DC Input Voltage				325 @ 208V / 350 @ 240V				Vdc
Max. Input Current ⁴⁾	9.5	13	16.5 @ 208V 15.5 @ 240V	18	23	33 @ 208V 30.5 @ 240V	34.5	Adc
Max. Input Short Circuit Current				45				Adc
Reverse Polarity Protection				Yes				
Ground Fault Isolation Detection				Yes				
Maximum Inverter Efficiency	97.7	98.2	98.3	98.3	98	98	98	%
CTC Weighted Efficiency	97%	98	97 @ 208V 98 @ 240V	97.5	97.5	97 @ 208V 97.5 @ 240V	97.5	%
Lighting Power Consumption			< 2.5			< 4		W
ADDITIONAL FEATURES								
Supported Communication Interfaces				RS485, RS422, Ethernet, ZigBee (optional)				
Revenue Grade Data, ANSI C12.1				Optional ⁵⁾				
Rapid Shutdown - NEC 2014 690.12				Yes				
STANDARD COMPLIANCE								
Safety				UL1741, UL1547A, UL1699B, UL1998, CSA 22.2				
Cable Connection Standards				IEEE1547				
Emissions				FCC Part 15 class B				
INSTALLATION SPECIFICATIONS								
AC output conduit size / AWG range			3/4" minimum / 1# 5 AWG			3/4" minimum / 3-3 AWG		
DC input conduit size / # of strings / AWG range			3/4" minimum / 1-2 strings / 1# 5 AWG			3/4" minimum / 1-3 strings / 1# 5 AWG		
Dimensions with Safety Switch (H x W x D)			30.5 x 12.5 x 7.2 / 775 x 315 x 184			30.5 x 12.5 x 10.5 / 775 x 315 x 260		in / mm
Weight with Safety Switch			59.2 / 23.2			63.4 / 40.3		lb / kg
Cooling			Natural Convection			Natural convection and internal fan (user replaceable)		
Noise			< 25			< 50		dBA
Min / Max Operating Temperature Range			-13 to +140 / -25 to +60 (-40 to +60 version available ⁶⁾)					F / °C
Protection Rating						NEMA 3R		

¹⁾ For other regional settings please contact SolarEdge support.
²⁾ A higher voltage source may be used; the inverter will not be limited to the values stated.
³⁾ All other regional settings please contact SolarEdge support.
⁴⁾ All other regional settings please contact SolarEdge support.
⁵⁾ Revenue grade data is available for the SE3000A-US, SE3800A-US, SE5000A-US, SE6000A-US, SE7600A-US, SE10000A-US, SE11400A-US.
⁶⁾ The SE3000A-US, SE3800A-US, SE5000A-US, SE6000A-US, SE7600A-US, SE10000A-US, SE11400A-US are not available in the USA.





SolarEdge Power Optimizer - Zep Compatible™ Module Add-On
For North America P300-ZEP, P400-ZEP



Compatible with Zep Groove framed modules

- Certified Zep Compatible™ bracket
- Attaches to module frame without screws - reduces on-roof labor and mounting costs
- Power optimizer equipment grounded through the bracket
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerances to partial shading
- Flexible system design for maximum space utilization
- Next generation maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety

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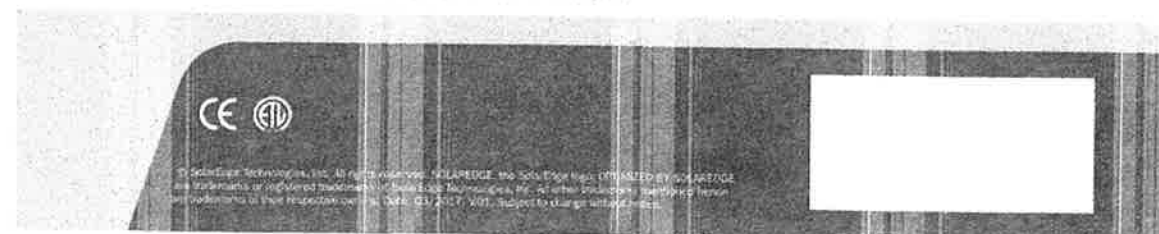
SolarEdge Power Optimizer - Zep Compatible™
Module Add-On For North America P400-ZEP

	P300-ZEP (for 60-cell PV modules)	P400-ZEP (for 72 & 96-cell modules)	
INPUT			
Rated Input DC power ¹⁾	300	400	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	48	80	Vdc
MPP Operating Range	8 - 24	8-80	Vdc
Maximum Short Circuit Current (Isc)	10	15.1	Adc
Maximum DC Input Current	12.5	17.63	Adc
Maximum Efficiency		99.5	%
Weighted Efficiency		98.8	%
Overvoltage Category		II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING INVERTER)			
Maximum Output Current		15	Adc
Maximum Output Voltage		60	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)			
Safety Output Voltage per Power Optimizer		1	Vdc
STANDARD COMPLIANCE			
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3		
Safety	IEC62109-1 (class II safety), UL1741		
RoHS	Yes		
INSTALLATION SPECIFICATIONS			
Maximum Allowed System Voltage	1000		Vdc
Dimensions including mounting bracket (W x H x D)	128 x 196 x 27.5 / 5 x 7.71 x 1.08	128 x 196 x 30 / 5 x 7.71 x 1.37	mm / in
Dimensions excluding mounting bracket (W x H x D)	128 x 152 x 27.5 / 5 x 5.97 x 1.08	128 x 152 x 35 / 5 x 5.97 x 1.37	mm / in
Weight (including cables and mounting bracket)	720 / 1.6	840 / 1.9	kg / lb
Input Connector	MC4 Compatible		
Output Connector	Double Insulated; MC4 Compatible		
Output Wire Length	0.95 / 3.0	1.2 / 3.9	m / ft
Operating Temperature Range	-40 - +85 / -40 - +185		
Protection Rating	IP68 / NEMA 6P		
Relative Humidity	0 - 100		

¹⁾ Fixed STC power of the module. Module of up to +30% power tolerance allowed.

PV SYSTEM DESIGN USING A SOLAREGE INVERTER ¹⁾	SINGLE PHASE HD-WAVE	SINGLE PHASE	THREE PHASE 208V	THREE PHASE 480V	W
	Maximum String Length (Power Optimizers)	8	10	18	
Maximum String Length (Power Optimizers)	25	25	50		
Maximum Power per String	5700 (6000 with SE7600H-US)	5250	6000	12750	
Parallel Strings of Different Lengths or Orientations	Yes				

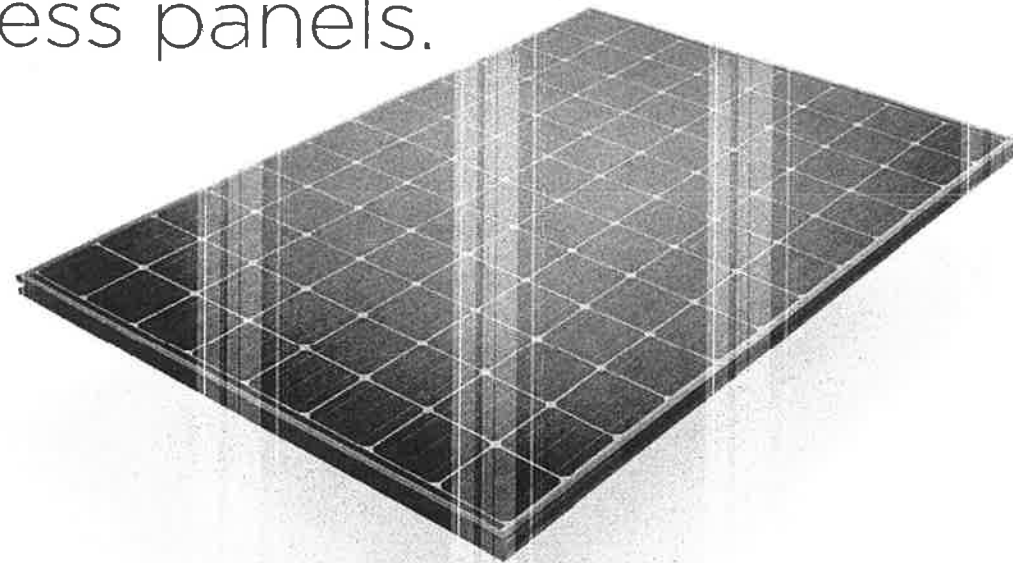
¹⁾ See http://www.solarEdge.com/resources/default/files/string_length.pdf



SC325

SolarCity

More power,
less panels.



With a sunlight to electricity conversion efficiency of over 19.4% the panel ranks amongst the highest in the industry. That means our panels can harvest more energy from the sun, which means it takes fewer of our panels to power your home. Plus, they generate more power output during the hottest times of the day, even in warmer climates.

- More power per panel**
Our 325W panel generates 20% more power than a standard 270W panel.
- More energy every year**
More yearly energy (kWh) compared to other panels as they perform better in the heat.
- Outstanding durability**
With more than 20 additional tests performed beyond what is currently mandated, these panels far exceed industry standards.
- More layers, more power**
Manufactured by Panasonic for SolarCity, the panel uses Heterojunction cell technology, which adds a layer of thin film silicon on top of high efficiency crystalline silicon.
- Leading warranty**
Our panels rank among the best in warranty coverage, with workmanship that extends to 15 years.

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ELECTRICAL AND MECHANICAL CHARACTERISTICS

ELECTRICAL DATA

Max. power (Pmax) [W]	325
Max. power voltage (Vmp) [V]	57.6
Max. power current (Imp) [A]	5.65
Open circuit voltage (Voc) [V]	59.6
Short circuit current (Isc) [A]	6.03
Max. solar current rating [A]	15
Power tolerance [%]	-5/-0
Max. system voltage [V]	600
Solar panel efficiency [%]	19.4

Note: Standard test conditions, Air mass 1.5, irradiance = 1000 W/m², cell temp. 25 °C
*Maximum current at delivery, for limited warranty compliance, please check our technical manual document.

TEMPERATURE CHARACTERISTICS

Temperature (NOCT) [°C]	44.0
Temp. coefficient of Pmax [%/°C]	-0.258
Temp. coefficient of Voc [%/°C]	-0.235
Temp. coefficient of Isc [%/°C]	0.055

AT NOCT (NORMAL OPERATING CONDITIONS)

Max. power (Pmax) [W]	247.5
Max. power voltage (Vmp) [V]	54.2
Max. power current (Imp) [A]	4.56
Open circuit voltage (Voc) [V]	56.3
Short circuit current (Isc) [A]	4.87

Note: Normal Operating Cell Temp. Air mass 1.5, irradiance = 1000 W/m², cell temp. = 20 °C and wind speed = 1 m/s.

AT LOW IRRADIANCE (20%)

Max. power (Pmax) [W]	62.0
Max. power voltage (Vmp) [V]	55.7
Max. power current (Imp) [A]	1.11
Open circuit voltage (Voc) [V]	65.1
Short circuit current (Isc) [A]	1.21

Note: Max. power at 20% irradiance = 200 W/m², cell temp. = 25 °C.

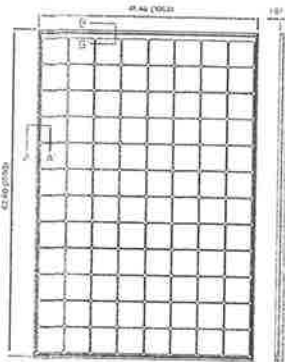
LIMITED WARRANTY	Power output:	10 years (90% of Pmin)
		25 years (80% of Pmin)
	Workmanship:	15 years

MATERIALS	Cell material:	5 inch photovoltaic cells
	Glass material:	AR coated tempered glass
	Frame material:	Black anodized aluminium
	Connectors type:	MC4

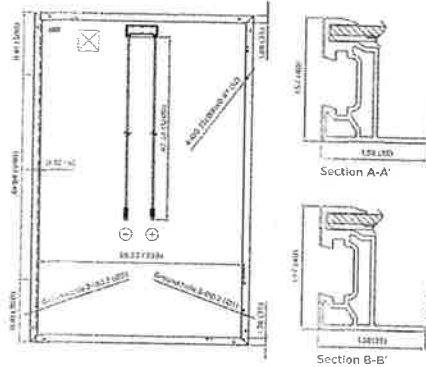
CAUTION! Please read the installation manual carefully before using the products

Panel performance is based on the information provided by SolarCity. SolarCity does not warrant the performance of the products or the results of the installation. SolarCity will handle any warranty claims related to any purchase.

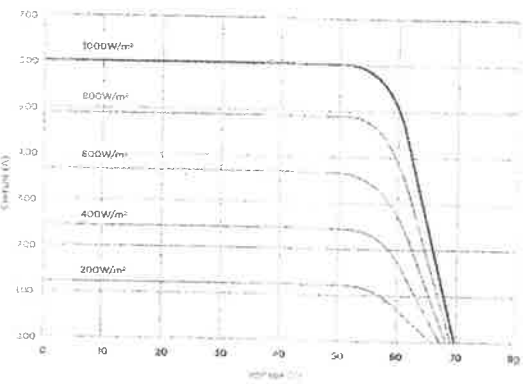
MECHANICAL DATA



Weight: 42.99lbs
Dimensions: 62.6" / 41.5" / 1.57"
Connector: MC4
Frame Color: Black
Snow load: 5400 Pa
Wind load: 2400 Pa
Fire Type: Type 2



DEPENDENCE ON IRRADIANCE



SolarCity