

ICC TRI-CHAPTER UNIFORM CODE COMMITTEE (TUCC)



POLICY NUMBER: 11

APPROVAL DATE: November 6, 2008

SUBJECT: Residential (Single-Family) Solar Photovoltaic System Utility Grid-Tie Connection

This guideline is developed by the Tri-chapter Uniform Code Committee and is intended to enhance regional consistency in application and enforcement of the Building Code. Please verify acceptance of this guideline with your local building department prior to its application.

CODE REFERENCES:

2007 California Electrical Code Article 690 Solar Photovoltaic Systems

ISSUE:

There is a substantial increase in the number of solar photovoltaic system installations because of the California Solar Initiative and the Governor's support for solar energy. However, the permitting process for these systems is not consistent among jurisdictions. Often times, the submitted plans are incomplete and thus delay permit issuance. This guideline will promote uniformity of solar photovoltaic plans in our region and help expedite permit issuance.

PROPOSED GUIDELINES/

Plans submitted for a permit must contain the following items:

- 1) Plan view showing location of the PV installation and layout of existing roof framing members that support the system;
- 2) Details on mounting of PV modules, type and number of roof coverings, and subsequent weatherproofing of the roof;
- 3) Electrical single-line diagram clearly identifying all devices installed in the PV system and indicating total kVA rating of system;
- 4) Clearly identify the point of interconnection with the utility supplied wiring system and provide details on main breaker, PV breaker and rating of bussing;
- 5) Indicate type and size of all conduit and conductors throughout the PV system;

- 6) Provide manufacturer's cut-sheets and installation instructions for all PV modules, mounting systems, combiner boxes (if used), inverters, and disconnects;
- 7) Provide structural calculations, prepared by a registered California design professional, if the total weight of the photovoltaic system is over five pounds per square foot;
- 8) The installation of the PV system shall conform to the requirements of CEC Article 690 and any other applicable articles or standards.

A sample of the plan view and electrical one-line diagram pages are attached.

PV ARRAY LAYOUT & WIRING PLAN

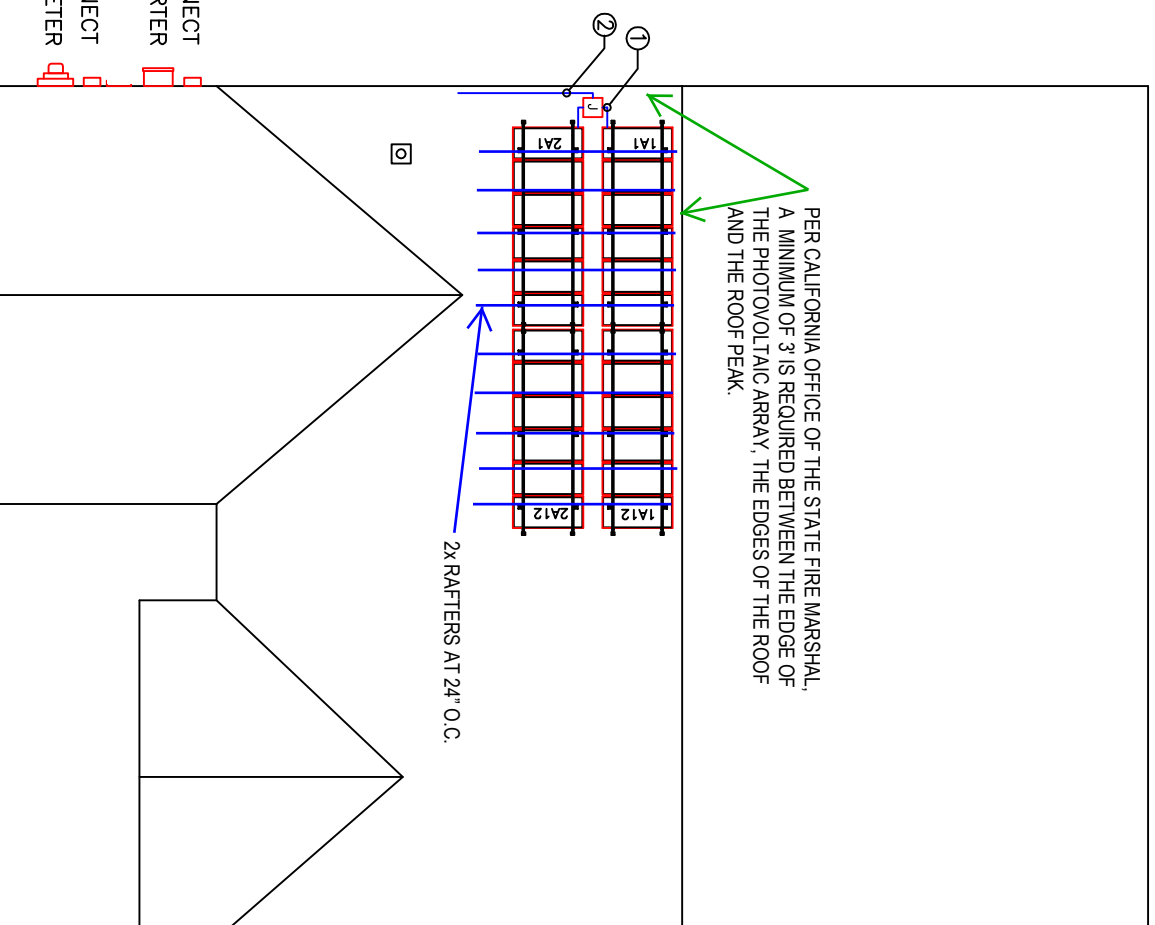
MOUNTING NOTES

1. PANELS MOUNTED ON ALUMINUM RACKING
2. PV ARRAY MOUNTS TO ROOF STRUCTURE WITH $\frac{5}{8}$ " LAGS EMBEDDED 2 $\frac{1}{2}$ " INTO RAFTERS OR SEE NOTE 5 BELOW
3. PV PANELS ARE ANCHORED @ 48" O.C. TRUSSES/ RAFTERS ARE 24" O.C. OR SEE NOTE 5 BELOW
4. WEIGHT OF PV MODULES AND ASSEMBLY LESS THAN 5 LBS PER SQUARE FOOT
5. ALL INSTALLATIONS MUST COMPLY WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.

ARRAY CONDUIT & WIRING ARRANGEMENT

1. FREE-AIR / $\frac{1}{2}$ " CONDUIT SLEEVE**
(2) #12 AWG; R, W
 2. TO DC DISCONNECT
1/2" CONDUIT
(4) #12 AWG: (2)R, (2)W
(1) #8 GND
- ** SLEEVE PROVIDES PROTECTION FROM PHYSICAL DAMAGE PER NEC 300.13 & 300.18

DC DISCONNECT
INVERTER
PHOTOVOLTAIC SYSTEM DISCONNECT
EXISTING SERVICE PANEL / NET METER



CUSTOMER NAME

ADDRESS

DRAWN BY

?

CHECKED BY

?

SCALE

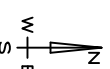
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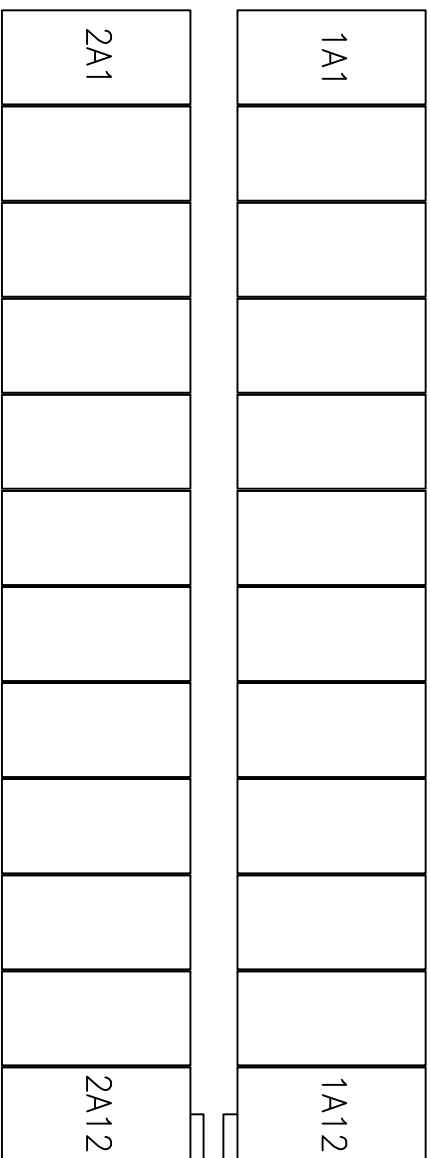
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COMPANY
LOGO

COMPANY NAME
ADDRESS



ELECTRICAL SCHEMATIC



SEE LAYOUT PLAN FOR CONDUIT & WIRING ARRANGEMENT.

COMBINER
(IF USED)

DC
DISCONNECT

INVERTER
MODEL NAME

1/2" CONDUIT
(2) #8 AWG: BK, R
(1) #6 GND
(EXAMPLE ONLY)

AC
DISCONNECT

3/4" CONDUIT OR CABLE
(3) #10 AWG: BK,R,W
(1) #8 GND
(EXAMPLE ONLY)

1/2" CONDUIT
(3) #10 AWG: BK,R,W
(1) #8 GND
(EXAMPLE ONLY)

MAIN PANEL

AC
DISCONNECT
(IF USED)

UTILITY
METER
(IF USED)

- GENERAL NOTES**
1. BOND PV SYSTEM AND PV RAIL ASSEMBLY TO SERVICE ELECTRODE.
 2. CONNECT AC TO CUSTOMER SERVICE VIA 1 DP GE 15 AMP BREAKER.
 3. ELECTRICAL INSTALLATION IN ACCORDANCE WITH 2007 CALIFORNIA ELECTRICAL CODE

CONDUCTOR DESIGNATION BY CONDITION

CONDITION	ALLOWABLE CONDUCTOR TYPE(S)
FREE-AIR	USE-2/RHH/RHW-2
RACEWAY ROOF-TOP	THWN-2 OR XHHW-2 OR RHH/RHW-2
RACEWAY OR CABLE INDOORS OR SHADED	THHN OR THWN OR XHHW*
RACEWAY UNDERGROUND	THHN OR THWN OR XHHW*

* MAY SUBSTITUTE "-2" RATED CONDUCTORS

CUSTOMER NAME

ADDRESS

DRAWN BY

?

CHECKED BY

?

SCALE

NTS

DATE DRAWN

?

COMPANY
LOGO

COMPANY NAME
ADDRESS