



# CITY OF LONG BEACH

Department of Development Services

333 W. Ocean Blvd. Long Beach, CA 90802 Telephone: 562-570-6651 FAX: 562-570-6753

Plan Review Checklist for  
**PhotoVoltaic System Installations**  
All of the following items must be included on the required  
plan sheets prior to issuance of any/all permits:

Project # \_\_\_\_\_ Address \_\_\_\_\_ System Wattage \_\_\_\_\_

- Provide 3 sets of plans, stamped and signed by the *\*responsible party* on minimum 18" x 24" paper.

*\*responsible party*: State of California licensed architect, electrical engineer, design build C-10, C-46 or the single family/duplex owner

- Provide a complete plan view drawing. Include:
- a.) Array rooftop layout. Indicate the overall height of the installation, referenced from grade level.
  - b.) All raceway runs, cable runs, combiner boxes, junction boxes, disconnects, inverters, subpanels, utility electrical service, etc.
  - c.) If the system is a "ground mount" system, provide a complete, dimensioned site plan.

- Provide a complete single line schematic drawing. Include:
- a.) Photo voltaic panels/arrays, raceway runs, cable runs, combiner boxes, junction boxes, disconnects, inverters, subpanels, utility electrical service, etc.
  - b.) Indicate the quantity of photovoltaic modules in each array.
  - d.) Indicate how the modules and arrays are electrically configured with regards to series and/or parallel circuitry.
  - e.) All raceway and conductor sizes, types and quantities.
  - f.) All disconnecting and overcurrent device ratings.
  - g.) The buss amperage ratings of the utility service and any intermediate load centers that will conduct the PhotoVoltaic AC power contribution.
  - h.) All system grounding. Include all grounding electrode(s) to be used, grounding electrode conductor size(s) and type(s), location of all grounding and bonding terminations, etc.

**IMPORTANT: The code required PhotoVoltaic grounding electrode conductor shall be routed separately from all other conductors.**

- Provide a plan note requiring all code required signage.
- Provide a **highly visible** plan note stating the polarity of the DC grounded conductor.

(continued on reverse side)

- Provide the photovoltaic equipment manufacture's specification sheets **on the plans. (not attached 8 1/2" x 11")**

Verify inclusion of all information below:

**Inverter**

- Maximum system voltage (DC)
- Operating DC voltage range voltage
- DC maximum operating current
- Maximum array short circuit current
- Operating AC voltage range
- Nominal AC output voltage
- Maximum continuous output AC current
- Maximum output overcurrent protection
- Continuous power output

**Photovoltaic Module**

- Open circuit voltage
- Maximum power
- Short circuit current
- Maximum power current
- Maximum system voltage
- Series fuse rating

- In order to verify sizing of all equipment, conductors, overcurrent devices, buss ratings, etc., include all pertinent calculations detailed in the currently adopted version of the California Electrical Code.

**DC Side:**

- a.)  $N_{modules} \times V_{oc} \times 1.13$  (T-690.7) = string  $V_{oc}$
- b.)  $module I_{sc} \times N_{strings} \times 1.25 \times 1.25$  = DC conductor *basis amperage* ( $BA_{DC}$ ) and Max. DC overcurrent amperage
- c.) proposed conductor amperage (T-310.16 – 90°) x ambient Temp. correction factor (T-310.16) x fill factor (T-310.15(B)(2)(a)) = minimum DC conductor amperage  
(result must be =>  $BA_{DC}$  **and** =< the corresponding AWG entry at the 75° Col. of T310.16, factor in conductor size adjustments for all runs with > 3% VD)

**AC Side:**

- a.) Inverter maximum output current x 1.25 = AC conductor *basis amperage* ( $BA_{AC}$ ) and Max. AC overcurrent amperage
- b.) proposed conductor amperage (T-310.16 – 90°) x ambient Temp. correction factor (T-310.16) x fill factor (T-310.15(B)(2)(a)) = minimum AC conductor amperage  
(result must be =>  $BA_{AC}$  **and** =< the corresponding AWG entry at the 75° Col. of T310.16, factor in conductor size adjustments for all runs with > 3% VD)

**All PhotoVoltaic System installations require “Building Review” and a “Building Permit” or “Combination Permit”.**

- The plan package shall contain the manufacture's specification sheets for any/all prefabricated, pre-engineered PhotoVoltaic Module support and attachment systems.
- The plan package shall contain engineered plans for any/all *“field built”* PhotoVoltaic Module support and attachment systems.
- The plan package shall contain all applicable engineered attachment details regardless of which system above is utilized.

**The undersigned individual certifies all of the information above has been included in the photovoltaic plan package.**

Print Name \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_