CITY OF FOUNTAIN VALLEY BUILDING DEPARTMENT
PHOTOVOLTAIC PLAN REVIEW CHECKLIST

PLAN CHECK NO.:_____ PROJECT:_____

PROJECT ADDRESS:_____ OCCUPANCY:_____

PROJECT DESCRIPTION:_____ TYPE OF CONSTR.:_____

1ST REVIEW BY:_____ DATE:_____ CORRECTIONS

2ND REVIEW BY:_____ DATE:_____ CORRECTIONS APPROVED

3RD REVIEW BY:_____ DATE:_____ CORRECTIONS APPROVED

INSTRUCTIONS

A. **THIS PLAN REVIEW HAS BEEN MADE TO VERIFY CONFORMANCE TO MINIMUM REQUIREMENTS OF CODES ADOPTED BY THE CITY. CODES USED ARE 2007 CALIFORNIA BUILDING CODE (CBC), CALIFORNIA MECHANICAL CODE (CMC), CALIFORNIA PLUMBING CODE (CPC), AND CALIFORNIA ELECTRICAL CODE (CEC), 2005 TITLE 24 ENERGY REGULATIONS & LOCAL ORDINANCES.**

B. **THE CIRCLED ITEMS BELOW REQUIRE CORRECTION OR CLARIFICATION BEFORE THIS PLAN CHECK CAN BE APPROVED FOR PERMIT ISSUANCE. RETURN ALL CORRECTION MATERIAL WHEN RESUBMITTING.**

C. **NOTE ON THIS CORRECTION SHEET OR ON A SEPARATE SHEET THE LOCATION OF THE COMPLETED CORRECTION. (I.E. SHEET NO., DETAIL, ETC.).**

D. **APPLICATIONS FOR WHICH NO PERMIT IS ISSUED WITHIN 180 DAYS FOLLOWING THE DATE OF APPLICATION SHALL EXPIRE BY LIMITATION. A ONE-TIME EXTENSION OF 180 DAYS MAY BE GRANTED UPON WRITTEN REQUEST.**

PLAN CHECK

1. Provide 3 sets of plans, minimum size is 18" X 24" designed by an Electrical Engineer, Architect, or by the respective California Licensed Contractor installing the system.
2. Provide the plans with a minimum 12 point font. All plans are archived and smaller sized do not reproduce correctly.
3. Plans to include all manufacturer's specification sheets, installation instructions and listings.
4. All sheets of the final plans, specifications and reports prepared by a civil, structural or architect shall bear the signature and stamp of the professional engineer or architect and the expiration date of the registration, along with the date of the signature under the stamp. If prepared by a California Licensed Contractor shall bear the contractor's signature.
5. Fire Department approval is required before a building permit can be issued.
6. Provide a statement on the title sheet of the plans that this project shall comply with the:
   - 2010 California Building Code
   - 2010 California Residential Code
   - 2010 California Electrical Code
   - Ordinances of the City of fountain Valley
   - Construction Hours: 7AM – 8PM Mon-Fri, 9AM – 8PM on Saturday, No time on Sunday or Legal Holidays.
7. Show the following information on the plans:
   A. Weight of the arrays (pounds per square foot including mounting hardware).
   B. Describe and show the roof structural elements including:
      a. Rafter size
      b. Rafter span
      c. Rafter spacing
      d. Roof sheathing
      e. Show / detail supports on the roof area to outside wall (not over the eve or overhang)
   C. Identify roofing type (e.g. comp shingle, shake, light weight tile, etc.) and pitch.
   D. Provide details of PV panel mounting hardware attachment to the roof framing members.
   E. Identify and show method of flashing the roof penetrations.

SITE PLAN

8. Provide fully dimensioned site plan drawn to scale. Show lot size, street, alley, easements, parking spaces, all projections, location, size and use of all structures on the lot and property line walls. Identify property lines, lot dimensions, distances from building to property lines and property line to street centerlines.
9. On the site plan, delineate all projection elements, and show distance to property line, or adjacent structures.
10. Provide a note on the plan that all inverters, motor generators, photovoltaic modules, photovoltaic panels, ac photovoltaic modules, source-circuits combiners, and charge controllers intended for use in a photovoltaic power system shall be identified and listed for the application per 690.4(D).
11. Note on site plan: "**The discharge of pollutants to any storm drainage system is prohibited. No solid waste, petroleum byproducts, soil particulate, construction waste material or wastewater generated on construction site or by construction activities shall be placed, conveyed or discharged into the street, gutter or storm drain system".**
12. Show the size and location of the service meter. Provide load calculations for existing_____amp electric panel. Show the required working clearances around the Service meter main, AC Disconnect, Inverters, and DC disconnects.

SUPPLIED DIAGRAMS

13. Provide a minimum of a single-line diagram with the permit application package showing:
    a. Array configuration
    b. Array wiring identified
    c. Combiner/junction box identified
    d. Conduit and size from junction box to PV power source disconnect identified
    e. Equipment grounding & system grounding specified
    f. Disconnect specified
    g. Conduit and size from disconnect to inverter identified
    h. Inverter specified
    i. Conduit and size from inverter to AC disconnect to panel identified
    j. Point of connection attachment method identified

INVERTER INFORMATION

14. Provide and show the following information on the plans:
    a. Cut sheets for the inverter(s)
    b. Inverter model number
    c. Approval listing for utility interactivity
    d. Maximum continuous output power @ 25 ° C
    e. Input voltage range of inverter
    f. The grounding electrode conductor and associated ground rod or ufer attachment
    g. A minimum of a #6 grounding conductor
    h. Grounding conductor protection

PV MODULE INFORMATION

15. Provide and show the following information on the plans:
    a. Cut sheet for PV Modules
    b. Approval listing for utility interactivity
    c. Open-circuit voltage (Voc) from the listing
    d. Maximum permissible system voltage from the listing

e. Short-circuit current (lsc) from the listing
f. Maximum series fuse rating from the listing
g. Maximum power @ standard test conditions (Pmax)
h. Voltage and current at Pmax

ARRAY INFORMATION

16. Provide and show the following information on the plans:
    a. Number of modules in series
    b. Number of parallel source circuits
    c. Total number modules
    d. Operating voltage (number of modules in series x module voltage @ Pmax)
    e. Operating current (number of parallel source circuits x module current @ Pmax)
    f. Maximum system voltage (CEC 690.7)
    g. Shor-circuit current (CEC 690.8)
    h. Roof mounted arrays for residential dwelling must have Ground Fault Protection (GFPD) (CEC 690.5)

WIRING AND OVERCURRENT PROTECTION

17. Provide and show the following information on the plans:
    a. Wire type is 90° C wet rated
    b. Conductor ampacities are sufficient
        i. PV source circuit current
        ii. PV source circuit ampacity
        iii. PV output circuit ampacity
        iv. Inverter output circuit amapcity
    c. Overcurrent protection on inverter output circuit is sufficient
    d. Point of connection meet provisions of CEC 690.64
    e. Point of connection panel busbar rating
    f. Source circuit over current protection is sufficient
        i. If inverter is not listed for "no backup current", does each source have overcurrent protection in compliance with the listed maximum series fuse?
        ii. If inverter is listed for no back up current, overcurrent protection is not necessary if only two parallel strings are connected to the inverter
18. Provide and show if the DC conductors are run inside of a building or structure, they shall be contained in a metallic raceway or metallic enclosure, from the point of penetration to the first readily accessible disconnecting means per CEC 690.31 (E). The disconnecting means shall comply with 690.14 (A) – (D)
19. Provide and show the connectors shall be of the latching or locking type. Connectors that are readily accessible and that are used in circuits operating at or over 30 volts AC or DC, shall require a tool for opening and are required to be marked "DO NOT DISCONNECT UNDER LOAD" or "NOT FOR CURRENT INTERRUPTING" per 690.33 (C) & (E)
20. Equipment grounding conductors shall be sized in accordance with table 250.122 (no WEEB)

GROUND MOUNTED STRUCTURE

21. Weight of array (pounds per square foot including mounting hardware
22. Provide details of the array supports, framing members, and foundation posts and footings
23. Provide details of the structural mounting. Structures above 6 feet high may require engineering calculations
24. Provide details on the module attachment method to mounting structure

25. Ground mounted units are considered accessory structures and are subject to Planning Department conditions, review and approval.

FINE STRANDED CABLES

26. Fine stranded cables shall be terminated only with terminals, lugs, devices or connectors that are identified and listed for such use per the 2010 CEC 690.31 (f) and 690.74

SYSTEM LABLES AND WARNING

27. Provide a permanent label, located and field installed at the photovoltaic source disconnect means, for the direct-current power source to indicate per the 2010 CEC 690.53:
    Please complete information and show on plans.

RATED MAXIMUM POWER POINT CURRENT_____
RATED MAXIMUM POWER-POINT VOLTAGE_____
MAXIMUM SYSTEM VOLTAGE _____
SHORT CIRCUIT CURRENT _____
MAXIMUM RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER (if installed)

28. Show on the plans the required plaques to be installed on the Main Service Meter Panel and the AC disconnect. To be installed on the face of the service meter panel:

CAUTION **POWER TO THIS BUILDLING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECT LOCATED AS SHOWN**

CAUTION: SOLAR ELECTRIC SYSTEM CONNECTED

29. Show on the plans the required plaques t be installed on the AC Disconnect which is to be installed on the face of the AC disconnect:

CAUTION: SOLAR CIRCUIT DISCONNECT **FOR UTILITY OPERATION**

30. If a switch or circuit breaker has all the terminals energized when in the open position, a label should be placed near it indicating:

WARNING – ELECTRIC SHOCK HAZARD - DO NOT TOUCH TERMINALS, TERMINALS ON BOTH THE LINE AND LOADS SIDES MAY BE ENERGIZED IN THE OPEN POSITION

31. Plaques shall be metal or plastic with engraved or machine printed letters, or electro-photo plating, in a

RED background with WHITE lettering, a minimum of 3/8" height and all capital letters.

32. Plaques shall be attached to the service equipment with pop-rivets, screws, or approved adhesive.
33. Show on the plans the required markings to be installed on the DC Circuits:
    a. Material used for marking shall be weather resistant. UL 969 shall be used as a standard for weather rating.
    b. Marking is required on all interior and exterior DC conduit, raceways, enclosures, cable assemblies, and junction boxes. Markings shall be placed every 10 feet, at turns, and above and/or below penetrations, and at all DC combiner and junction boxes.

CAUTION: SOLAR CIRCUIT