



CITY OF NEWPORT BEACH

COMMUNITY DEVELOPMENT DEPARTMENT BUILDING DIVISION

100 Civic Center Drive | P.O. Box 1768 | Newport Beach, CA 92658-8915
www.newportbeachca.gov | (949) 644-3200

SOLAR VOLTAIC ELECTRICAL PLAN REVIEW COMMENTS RESIDENTIAL

Project Description:

Project Address:

Permit App. Date:

Applicant/Contact:

Plan Check Engineer: Oliver Daluz
ODaluz@NewportBeachCA.gov

Plan Check No.:

Plan Check Expires:

Phone:

Phone: 949-644-3271

1st Review:

2nd Review:

Italic comments

3rd Review:

The code section references are from the 2022 California Building Code and 2022 California Electrical Code, unless otherwise stated.

- **TO EXPEDITE PROJECT APPROVAL:** Please provide a written response indicating how and where each comment was resolved on the plans.
- Resubmit all previously reviewed plans, updated plans and supporting documents with each subsequent review.
- Plan check status: https://css.newportbeachca.gov/EnerGov_Prod/SelfService#/home. Under 'Search' tab, type in plan check number above.

ELECTRICAL

1. Provide and illustrate minimum 3 feet working clearances in front of all solar – voltaic equipment. This correction does not pertain to Planning minimum side yard setback, it pertains to working clearances.
2. Indicate on plans the location of the gas meter. Add note on plans that all new electrical equipment cannot be within 36" horizontal to the gas meter per Southern California Gas Company.
3. Clearly indicate the location of the ESS as inside the building or outside the building. If the ESS is inside the building, then the plans must clearly indicate the nonhabitable room it is to be located within and must demonstrate compliance with section R327.3 & 4 CRC.
4. ESS located in garage or carport must be protected from impact per section R327.6 CRC.
5. This building is new construction submitted and approved after the adoption of 2019 California Energy Code. Energy compliance forms (CF-1R) submitted with the approved building construction documents under plan check _____-202_ indicate that a minimum Solar PV system of _____ kW DC is required for full compliance. Update system to meet the minimum per the approved new building plans or revise the building CF-1R to match this system.

6. Show existing main electric service equipment and ground electrode system, conduit and conductor sizes.
7. Obtain SCE approval for supply side taps. CEC 110.3
8. Obtain manufactures approval for supply side taps. CEC 110.3.
9. Provide an OSHA approve NRTL to verify the listing is maintained for supply side taps. CEC 110.3.
10. Provide justification for derating the main panel. Clearly indicate the main bus rating and the new main breaker capacity. Justify the sum of 125 percent of the inverter output circuit current and the rating of the overcurrent device protecting the busbar to not exceed the ampacity of the busbar per art 705.12(D)(2)(3)(a) CEC
11. Provide residential load calculations to justify de-rating the main OCPD. CEC 220.
12. Justify the sum of 125 percent of the inverter output circuit current and the rating of the overcurrent device protecting the busbar to not exceed 120 percent of the ampacity of the busbar per art 705.12(D)(2)(3)(b) CEC
13. Justify the sum of the amp ratings of all overcurrent devices on panelboard, both load and supply devices, excluding the rating of the overcurrent device protecting the busbar to not exceed the ampacity of the busbar per art 705.12(D)(2)(3)(c) CEC
14. Provide signage: "WARNING: THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES SHALL NOT EXCEED DERATED MAIN OCPD AT ____ A. FOR PHOTOVOLTAIC SOLAR SYSTEM. DO NOT INSTALL LAGER OCPD." CEC 705.12(B)(2)(3)(c) CEC.
15. Provide information indicating if the inverter(s) or charge controller(s) contains current limiting devices that limits the output circuit current to the maximum inverter input DC current rating.
16. For new relocated wiring for back up load panel, or new sub panel, note to provide AFCI protection per 210.12.
17. Provide residential load calculations to justify feeder and OCPD size for back up load panel or new sub panel. CEC 220
18. Show all conduit and conductor sizes, include derating of conductors.
19. Conductors shall be protected in accordance with article 240. Provide protection from all sources CEC 705.30.
20. EMT is not allowed to be exposed outside to weather. Note on plans, and revise single line call outs accordingly. NBMC 15.06.040. Clearly identify all conduit as interior (within the building and its construction) or exterior (outside the building envelope).
21. Ground electrode conductor from inverter to ground electrode to be minimum protection of bare armor sheathed cable, # 8 awg. minimum.
22. Provide electrical load calculations and or complete panel schedule with unique circuit identification per breaker and their capacities with the busbar rating.
23. The maximum voltage of a PV system dc circuits shall be the highest voltage between any two circuit conductors or any conductor and ground. PV dc circuits on one and two-family dwellings shall not exceed 600 volts per article 690.7 CEC. Maximum Open Circuit Voltage = $[(\text{Temp Coef } V_{oc}) \times (V_{oc}) / 100 \times [\text{Low Temp} - \text{STC Temp}] + V_{oc} \times (\text{Modules} / \text{string}) = [[(-0.3 \% / ^\circ\text{C}) \times (48.3 \text{ V}) / 100] \times [-2^\circ\text{C} - 25^\circ\text{C}] + 48.3 \text{ V}] \times (14 / 1 \text{ string}) = \text{System appears to be at } 731 \text{ V}.$
24. Provide D.C. array solar panel Voc and Isc ratings, show calculations – Voc calculated @ x 1.13 [Temp Corr.] // Isc calculated @ x 125% [NEC – 690] x 125% [UL 1703].
25. A.C. disconnect between inverter AC output and connection to utility to be a visible blade, lockable type disconnect listed for its use. Provide maintenance AC disconnect within sight of inverter and main panel. CEC 690.15. and 705.21.
26. Photovoltaic Solar and Electric Storage System A.C disconnects must be located on the exterior of the Building. Clearly indicate on the plans and plaquard their location(s).

27. A.C. disconnect shall be clearly labeled directly outside the panel at the same height and location as the PV breaker stating **“SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN BREAKER INSIDE PANEL”** along with label(s) inside the panel directly adjacent to THE PV breaker(s) stating, **“PHOTOVOLTAIC AC BREAKER – DO NOT RELOCATE THIS OVERCURRENT DEVICE”**
28. A.C. disconnect shall be clearly labeled directly outside the panel/equipment at the same height and location as the PV breaker (Disconnect/Switch) stating **“RAPID SHUTDOWN BREAKER (or SWITCH - only state the applicable device used) FOR SOLAR PV SYSTEM INSIDE ADJACENT PANEL”** along with the label inside the panel directly adjacent to the PV breaker stating, **“PV SOLAR BREAKER – DO NOT RELOCATE THIS OVERCURRENT DEVICE”** for panels that used an increase to the busbar, or ,stating, **“PV SOLAR BREAKER”** for panels without derating a MSP OCPD or **“PV SOLAR DISCONNECT SWITCH”** for manufacturer’s with integrated rapid shutdown switches. If disconnect is on the side or bottom of equipment, then A.C. disconnect shall be clearly labeled directly outside the equipment at the same height and location as the PV switch stating **“RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM ALONG THE SIDE”** (or **BOTTOM** - only state the applicable location). In any case, the labeling must be clearly indicated on the plans as to what goes where, and the labeling must be clearly referenced from an exterior elevation for the applicable label for more electrical power production sources operating opposite a Utility feed or in parallel with a Utility feed.
29. The means to disconnect an electrical energy storage system, with or without a PV system, shall be installed at a readily accessible location on the exterior of the building. Art 705.23 CEC. A visible-open, lockable AC disconnect shall be located within three (3) feet of the meter, photovoltaic disconnect, or as required by the Fire Code Official.
30. Clearly note on the plans: **“ESS shall be listed and labeled for residential is in accordance with UL 9540.**
31. ESS must be at or above the BFE.
32. Provide rapid shutdown of PV system. CEC 690.12.
33. System exceeds inverter maximum useable D.C. input current shown on inverter specification sheet.
34. Provide complete inverter, solar module, AC disconnect, junction box, load center, or other equipment’s manufacturer’s specification sheets within the construction plans.
35. Provide an exterior elevation indicating all equipment and their required labels. Clearly identify the specific location and height of each label on the exterior elevation and clearly identify the complete information required on each label at the MSP, Inverter, disconnect etc.
36. Show all signage, labels, and directory required per 2019 CEC- Article 690, and 705. See California Solar Guide Book for central string inverters and micro inverter signage.