



SMALL ROOF TOP PHOTOVOLTAIC SYSTEMS FOR ONE-AND TWO-FAMILY DWELLINGS OR ACCESSORY STRUCTURES 10 KILOWATTS OR LESS

GENERAL REQUIREMENTS

- System size is 10 kilowatt alternating current name plate rating or less.
- The solar array is roof-mounted on a one or two-family dwelling or accessory structure.
- Solar system is utility interactive with or without battery storage.
- The solar panel/module arrays are set clear of plumbing and mechanical vents.
- A complete building permit application is completed and attached.

PLAN AND SYSTEM REQUIREMENTS

- Three complete sets of the following plans and permit documents:
 - Manufacturers cut sheets and installation manuals for all equipment to be used for the project. These documents can be separated from the plans, but the equipment submittal shall be specific to this project, identified by the applicant and highlighted with all ratings required by the current California Electrical Code.
 - Complete and accurate Solar Photovoltaic System single line diagram.
 - Roof Plan showing arrangement of panels setbacks, combiner box, inverter, disconnect, main service, show approx. distance from panel to all components.
 - Project specific electrical one-line diagram of system (module wiring (series/parallel), disconnects, grounding/bonding, wire and conduit type/size, and number of conductors in each section of conduit). When batteries are to be installed, include them in the diagram, the location, cabinet, listing, required venting, and show working clearances.
 - All current installation and data sheets for the mounting/racking system.
 - Size and location of the service panel load side connection per California Electrical Code article 705 with busbar rating and main overcurrent protection device rating noted.
 - Electrical load calculations are provided for the proposed or required de-rated service panel.
 - A complete signage plan is included per California Electrical Code article 690.
- Provide photos of main service panel or sub-panels to be used for solar interconnection. Photos must be taken with door open and dead front removed.
- Roof structure:
 - Roofing material listed on plans.
 - Roof members are stated with type, size, span, and spacing.
 - Conventional framing or pre-engineered plant manufactured trusses on a legally constructed single-family dwelling, garage, or accessory structure.
 - It is understood that the County may require engineering for any roof system regardless of the type of construction.

- Roof plan must include required fire clearances, fire access and pathways per California Residential Code.
 - Not applicable on unoccupied structures.
- Racking installation detail.

ELECTRICAL REQUIREMENTS

- Current Codes listed on the plans.
- For central/string inverter systems, strings are not combined prior to the inverter.
- For central inverter systems: No more than two inverters are utilized.
- PV module short circuit current is less than 13 Amps.
- No more than four photovoltaic module strings are connected to each Maximum PowerPoint Tracking input where source circuit fusing is included in the inverter.
 - No more than two strings per Maximum PowerPoint Tracking input where source circuit fusing is not included.
 - Fuses, if needed, are rated to the series fuse rating of the photovoltaic module.
 - No more than one non-inverter-integrated direct current combiner is to be utilized per inverter.
- The photovoltaic system is interconnected to a single-phase alternating current service panel of nominal 120/220 Volts with a bus bar rating of 225 amperes or less.
- The photovoltaic system is connected to the load side of the utility distribution equipment.
- A Solar PV Standard Plan and supporting documentation is completed and attached.
 - For standard plans and photovoltaic system information, please see part 3 of the California Solar Permitting Guidebook. Link provided:

[20190226-Solar Permitting Guidebook 4th Edition.pdf](#)

• ELECTRICAL TIPS

- Note: three or more strings, if combined outside the Inverter, require fuses.
- See California Electrical Code article 240.6(A) for a list of standard size breakers.
- If de-rating the main breaker is needed to meet the 120% rule, a load calculation is required if the main breaker is derated to 150 amperes or less.
- When Sub-panels are part of the design, all photovoltaic loads are to be accounted for all the way to the main service panel.
- Single line diagram is to indicate grounding all the way back to the main service panel.
 - Include Ground rod or UFER grounding system.

Any field changes or any deviation from the approved plans will require revisions to be submitted for review and approval.