



CITY *of* CLOVIS

BUILDING DEPARTMENT

1033 FIFTH STREET • CLOVIS, CA 93612

Residential Roof-Mounted Photovoltaic Submittal Requirements

1) Permit application. 2022 CRC R106.1

- An accurate description of work.
- Project address.
- Owner information.
- Contractor information.
- Valuation.
- Signed by Applicant or Applicant's Authorized Agent.

2) Construction Documents - 2022 CRC R106.1

a) Plan Set Cover Sheet. 2022 CRC R106.2

- Project address.
- Vicinity Map.
- Provide the owner's name and phone number.
- Name and address of designer.
- Contractor information.
- Scope of work to be performed.
- List of all equipment or system components to be installed: (PV Modules, Inverters, Main panel Upgrades, Sub Panels, Combiner Panels, Load Centers, Energy Storage Devices, Gateways, Rapid Shutdown Devices, Optimizers, Existing PV Systems, Etc.)
- List of all current and applicable California codes.
- Provide an accurate Sheet index.
- Provide a Legend for all symbols, abbreviations, etc.

b) Site Plan – 2022 CRC R106.1

- Show the lot with property lines and the footprint of existing structures.
- House location on the parcel.
- Show and label the location of all equipment and system components. (PV Modules, Inverters, Main panel Upgrades, Sub Panels, Combiner Panels, Load Centers, Energy Storage Devices, Gateways, Rapid Shutdown Devices, Optimizers, Existing PV Systems, Etc.)
- The streets are shown and labeled.
- Include a North arrow (Compass orientation).

c) Roof (These requirements apply to roof assemblies with a slope greater than 2:12)

- **Show Fire Setbacks** (Setback between horizontal ridges and PV arrays.) **2022 CRC R324.6 and R324.6.1.**
 - (1) Setback dimensions.
 - (2) Provide the total percentage of the plan view of the rooftop that the photovoltaic array(s) cover.
 - (3) Is the residence equipped with fire sprinklers?
- **Show Access Pathways** (Pathway from roof lowest edge to Fire Setbacks on the same plane, adjacent plane, or straddling same and adjacent planes.) **2022 CRC R324.6, and R324.6.2**
 - (1) 2 Access Pathways will be required with a minimum width of 36".

One of the Access pathways must be from the street side of the residence. (In front of the fence.)
 - (2) They shall be located in areas capable of supporting firefighters who can access the roof.
 - (3) Shall be located in areas with minimal obstructions.
- **Emergency Escape and Rescue Openings.** **2022 CRC R324.6.3**
 - (1) PV modules shall not be installed below such openings.
 - (2) A path no less than 36" shall be provided to such openings.

d) Attachment 2022 - CRC R106.1

- Show points of attachment within the array on rafters/trusses. Ensure the maximum span and cantilever indicated in the datasheet are met.
- Show an expanded view of attachment and the build-up of roofing, attachment mechanism, flashing, and sealing.

e) Electrical - 2022 CEC

- Show a complete electrical one-line or three-line diagram.
- Provide equipment schedule with respective ratings/electrical characteristics.
- Show rating of all overcurrent devices. Provide electrical calculations supporting the proposed loads on the overcurrent protection devices. 120% rule, CEC 705.12 (B) (2) (3) (b): Point of connection.
- Show all conduit sizes and types. Provide electrical calculations supporting the conduit sizes and types.
- Provide conductor schedule, including sizes, types, and quantities.
- Is the Main Service Panel existing, or will the existing main service be upgraded?
- Provide electrical calculations supporting the proposed derating of the Main Service Breaker.
- Provide information describing any existing interconnected power sources (Photovoltaic systems, generators, turbines, etc.), and indicate if they are compliant with either non-rapid shutdown devices or rapid shutdown devices. Provide calculations and one-line drawings.
- Energy storage systems.

f) Labeling - 2012 CEC

- Show all applicable labeling in color.
- Directory placard.
 - (1) Show the location of the array(s), equipment, and point of connection.
 - (2) Show dotted lines around exiting arrays that do not conform to the Rapid Shut Down requirements of 2022 CEC.

g) Data Sheets - 2022 CRC R106.1

- Inverters/Micro-inverters.
- PV modules.
- RSD Devices/Optimizers.
- Racking (Please provide the basic datasheet, not the complete installation guide.)
- Attachment system.
- Array bonding.
- Combiner panels.
- Main Service Panels/Sub Panels.
- Monitoring systems.
- Batteries/Energy storage.
- Transfer switches.
- Specialty Electrical Equipment (Green Meter Adapters, EV chargers, etc.)
- Generators, turbines, etc.

h) Addendums, revisions, and resubmittal documents.

- A full description of the changes to the plans for all revisions and addendum submittals is required.
- A cloud or delta will be at every change on the plans set, and any corrections will be addressed on all addendums, revisions, and resubmittal plans.

i) The Energy Storage System (ESS) is “ESS Ready” for new construction. 2022 California Energy Code Section 150.0 (s), 2022 California Residential Code Section 328 Energy Storage Systems, and the 2022 California Electrical Code Article 706.

(s) **Energy storage systems (ESS) ready.** All single-family residences that include one or two dwelling units shall meet the following. All electrical components shall be installed in accordance with the *California Electrical Code*:

1. At least one of the following shall be provided:
 - A. ESS ready interconnection equipment with a minimum backed-up capacity of 60 amps and a minimum of four ESS-supplied branch circuits, or
 - B. A dedicated raceway from the main service to a panelboard (subpanel) that supplies the branch circuits in Section 150.0(s)(2). All branch circuits are permitted to be supplied by the main service panel prior to the installation of an ESS. The trade size of the raceway shall be not less than 1 inch. The panelboard that supplies the branch circuits (subpanel) must be labeled “Subpanel shall include all backed-up load circuits.”
2. A minimum of four branch circuits shall be identified and have their source of supply collocated at a single panelboard suitable to be supplied by the ESS. At least one circuit shall supply the refrigerator, one lighting circuit shall be located near the primary egress and at least one circuit shall supply a sleeping room receptacle outlet.
3. The main panelboard shall have a minimum busbar rating of 225 amps.
4. Sufficient space shall be reserved to allow future installation of a system isolation equipment/transfer switch within 3 feet of the main panelboard. Raceways shall be installed between the panelboard and the system isolation equipment/transfer switch location to allow the connection of backup power source.

1. ESS equipment will be listed, and all specifications for the ESS will be provided.
2. Individual units will be separated by less than three feet unless documentation shows it may be closer per the California Fire Code.
3. Approved locations: Detached garages and accessory structures, attached garages, outdoors or on the exterior wall, 3 ft from doors and windows directly entering the Dwelling unit,
4. Utility closets, basement storage, or utility spaces within the dwelling unit with finished or noncombustible walls and ceilings are enclosed. A 5/8" type X Gypsum wallboard shall be provided with unfinished walls and ceilings.

Note: may not be installed in bedrooms, closets, or spaces opening directly into the sleeping room.

R328.5 Energy Ratings

Individual ESS units shall have a maximum rating of 20 kWh. The ratings of the ESS in each location shall not exceed the ratings in Table R328.5. The total aggregate rating of ESS on the property shall not exceed 600 kWh.

ESS installations exceeding the permitted individual or aggregate ratings shall be installed in accordance with Sections 1207.1 through 1207.9 of the California Fire Code.

TABLE R328.5
MAXIMUM AGGREGATE RATINGS OF ESS

<i>LOCATION</i>	<i>MAXIMUM AGGREGATE RATINGS (kWh)</i>	<i>INSTALLATION REQUIREMENTS</i>
<i>Within utility closets, basements, and storage or utility spaces located within dwelling</i>	<i>40</i>	
<i>In attached garages</i>	<i>80</i>	
<i>On or within 3 feet of exterior walls of dwelling and attached garages</i>	<i>100</i>	
<i>On or within 3 feet of exterior walls of dwellings and attached garages</i>	<i>200</i>	<i>Exterior walls and eaves are constructed with noncombustible surfaces ^a</i>
<i>In detached garages and detached accessory</i>	<i>200</i>	
<i>In detached garages and detached accessory structures</i>	<i>600</i>	<i>Detached garage or detached accessory structures is a minimum 10 feet away from property lines and dwellings</i>
<i>Outdoors on the ground</i>	<i>200</i>	<i>ESS is a minimum 3 feet away from property lines and dwellings</i>
<i>Outdoors on the ground</i>	<i>600</i>	<i>ESS is a minimum 10 feet away from property lines and dwellings</i>

For SI: 1 foot = 304.8 mm.

Footnote: (a) Noncombustible wall surfaces shall extend in accordance with the following:

- 1. A minimum of 5 feet horizontally from the edge of the ESS.*
- 2. A minimum of 1 foot vertically below the bottom edge of the ESS.*
- 3. A minimum of 8 feet vertically above the ESS, or to a noncombustible eave, whichever is less.*

R328.7 Fire Detection

Rooms and areas within dwelling units, basements and attached garages in which ESS are installed shall be protected by smoke alarms in accordance with Section R314. A heat detector, listed and interconnected to the smoke alarms, shall be installed in locations within dwelling units and attached garages where smoke alarms cannot be installed based on their listing.

[SMF] ESS installed in Group R-3 and townhomes shall comply with the following:

1. Rooms and areas within dwelling units, sleeping units, basements, and attached garages in which ESS are installed shall be protected by smoke alarms in accordance with Section R314.
2. A listed heat alarm interconnected to the smoke alarms shall be installed in locations within dwelling units, sleeping units, and attached garages where smoke alarms cannot be installed based on their listing.

Protection from impact per sections R328.8 and R328.8.1 of the 2022 California Residential Code.

Ventilation for indoor ess that produces hydrogen or other flammable gases. Per the 2022 California Mechanical Code.

ESS that has the potential to release toxic and highly toxic gases during normal use shall not be installed within Group R-3 or R-4 occupancies.