

**ADMINISTRATION & ACCOUNTING
OPERATIONS & MAINTENANCE
BUILDING & DEVELOPMENT
ENGINEERING**

Phone: (661) 862-8850
FAX: (661) 862-8905
Toll Free: (800) 552-5376 Option 5
TTY Relay: (800) 735-2929

SUBMITTAL REQUIREMENTS FOR EXPEDITED ROOF TOP SOLAR PERMITTING

- Completed permit application
- Demonstrate compliance with attached "Eligibility Checklist For Expedited Roof Top Solar Permitting"
- Provide three copies of plans showing:
 - Location of main service or utility disconnect
 - Total number of modules, number of modules per string, and the total number of strings
 - Make and model of inverter(s) and/or combiner box if used
 - One-line diagram of system
 - Grounding/bonding, conductor type and size, conduit type and size and number of conductors in each conduit
 - Equipment cut sheets including inverters, modules, AC and DC disconnects, and combiners
 - Labeling of equipment as required by CEC sections 690 and 705
- Roof plan showing:
 - Roof layout
 - PV panels
 - Approximate location of roof access points
 - Location of code-compliant access pathways
 - PV system fire classification
 - Locations of all required labels and markings
- Completed "Structural Criteria for Residential Roof-Mounted Solar Arrays" checklist (Attached)
 - For non-qualifying systems, provide structural drawings and calculations stamped and signed by a California licensed Engineer or Architect
- Fees
 - Solar Permit fees as of 1/1/2017 using this process is as follows:
 - System size: 0 to 6 KW AC CEC rating or less - \$325.50
 - Greater than 6 KW and up to 10 KW AC rating - \$475.50

Note: Fees are subject to change and additional fees may apply at time of application.

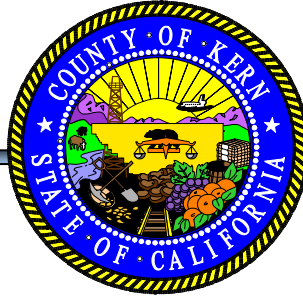
Electronic Submittal Requirements

- PDF file of completed permit application <http://esps.kerndsa.com/building-inspection/building-permit-application>
- PDF file of "Eligibility Checklist For Expedited Roof Top Solar Permitting"
- PDF file of plans listed above
- PDF file of "Structural Criteria for Residential Roof-Mounted Solar Arrays"
 - Email all PDF files to: permitonline@co.kern.ca.us, or fax to: (661) (661) 862-8651, or submit online: <https://accela.co.kern.ca.us/citizenaccess/> Note: if applying for permit online, please read submittal requirements at <https://esps.kerndsa.com/building-inspection/elec-doc-review> prior to submitting.

Job Address: _____ Permit #: _____

Contractor/Installer: _____ License # & Class: _____

Signature: _____ Date: _____



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ELIGIBILITY CHECKLIST FOR EXPEDITED ROOF TOP SOLAR PERMITTING For One and Two Family Dwelling Units

This checklist must be completed by the contractor or an authorized agent of the contractor in order to determine if the roof top solar project is eligible for expedited solar permitting.

GENERAL REQUIREMENTS:

- A. System size is 10 kW AC CEC rating or less. YES NO
- B. The solar array is roof-mounted on one- or two-family dwelling. YES NO
- C. The solar system is utility interactive and without battery storage. YES NO
- D. The solar panel/module arrays will not exceed the maximum legal building height. YES NO
- E. A minimum clear space of three feet is provided on the control side of roof mounted HVAC equipment. YES NO
- F. Permit Application is completed and attached. YES NO

ROOF REQUIREMENTS:

- A. The roof has a single roof covering without a reroof overlay. YES NO
- B. Has the roof structure been verified to be structurally sound, without signs of alterations or significant structural deterioration or deflection? YES NO

FIRE SAFETY REQUIREMENTS:

- A. Access pathways at least three feet in width are provided on gable roofs from the eave to the ridge. Panels shall be located at least 18 inches from a hip or valley if located on both sides of a hip or valley. YES NO
- B. Access pathways at least three feet in width are provided between multiple arrays. YES NO
- C. To allow for smoke ventilation there is a minimum of three feet between the ridge and the panels. YES NO
- D. There are no conductors within the three foot area between the panels and the ridge. YES NO
- E. The panel fire classification is provided and meets the rating required for the structure. YES NO
- F. The plans include a sheet showing the location and verbiage of the required labels. YES NO

SOLAR ARRAY REQUIREMENTS:

- A. Is the distance between the underside of modules and the roof surface at least two inches but not greater than 10 inches? YES NO
- B. Is the plane of the modules (panels) parallel to the plane of the roof? YES NO
- C. The layout of the modules is designed to not overhang any ridges, hips, gable ends and eaves. YES NO
- D. Has the weight of the modules plus support components been verified to weigh no more than: 4 psf for photovoltaic arrays or 5 psf for solar thermal arrays? YES NO
- E. Are the support component manufacturer's project-specific worksheets and tables completed with relevant information identified? YES NO
- F. Is a roof plan of the module and anchor layout included in the plans? YES NO

ELECTRICAL REQUIREMENTS:

- A. No more than four photovoltaic module strings are connected to each Maximum Power Point Tracking (MPPT) input where source circuit fusing is included in the inverter. YES NO
 - 1. No more than two strings per MPPT input where source circuit fusing is not included. YES NO
 - 2. Fuses (if needed) are rated to the series fuse rating of the PV module. YES NO
 - 3. No more than one noninverter-integrated DC combiner is utilized per inverter. YES NO
- B. For central inverter systems: No more than two inverters are utilized. YES NO
- C. The PV system is interconnected to a single-phase AC service panel of nominal 120/220 Vac system with a bus bar rating of 225 A or less. YES NO
- D. The PV system is connected to the load side of the utility distribution equipment. YES NO
- E. A Solar PV Plan and supporting documentation is completed and attached. YES NO
- F. PV system equipped with listed rapid shut down device. N/A YES NO

NOTES and OTHER INFORMATION:

- 1. Clearly illustrate with dimensions, required Fire Department setbacks at ridge, valley and eave roof lines.
- 2. Provide a detailed legend denoting all vents stacks, mechanical vents, B-vents, fire places, cupola’s, dormers , etc.
- 3. Plot plan shall be min scale of 1:10.
- 4. Provide a one-line diagram illustrating disconnects, AC/DC, wiring sizing, panel size, hot taps, side line taps.
- 5. Size of existing service main 200 amp 125 amp 100 amp other please specify _____.
- 6. If the service main is being upgraded and/or replaced, what size will the new service be?
 200 amp 125 amp 100 amp other please specify _____
- 7. If there is a pool or other electrical demands other than the residence, please provide electrical load calculations when there is a pool or other demands with less than 200 amp main.
- 8. All existing mechanical or plumbing vents will not be altered or covered.
- 9. Are smoke detectors and carbon monoxide alarms installed in home and verified in working condition?
Yes No **Note:** Please complete and sign Certification Form prior to final if access to the inspector is not provided to verify working condition of such alarms.

PERMIT ISSUANCE REQUIREMENTS:

If any items are checked NO, the project is not eligible for expedited solar permitting and must go through the standard application process.

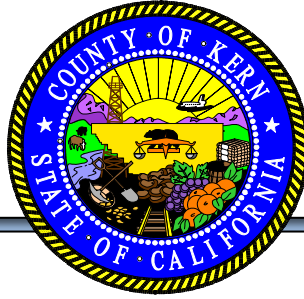
AGREEMENT:

As the responsible contractor or authorized agent for the project I understand that I am responsible for the accuracy of all information provided in this application. I also understand that revisions to this project will result in a revised application and plan review submitted to the Building Inspection Division, which will not be eligible for expedited solar permit issuance.

Job Address: _____ Permit #: _____

Contractor/Installer: _____ License # & Class: _____

Signature _____ Date: _____ Phone #: _____



STRUCTURAL CRITERIA FOR RESIDENTIAL ROOF-MOUNTED SOLAR ARRAYS

1. ROOF CHECKS

A. Visual Review/Contractor's Site Audit of Existing Conditions:

- 1) Is the roof a single roof without a reroof overlay? YES NO
- 2) Does the roof structure appear structurally sound, without signs of alterations or significant structural deterioration or sagging, as illustrated in Figure 1 YES NO

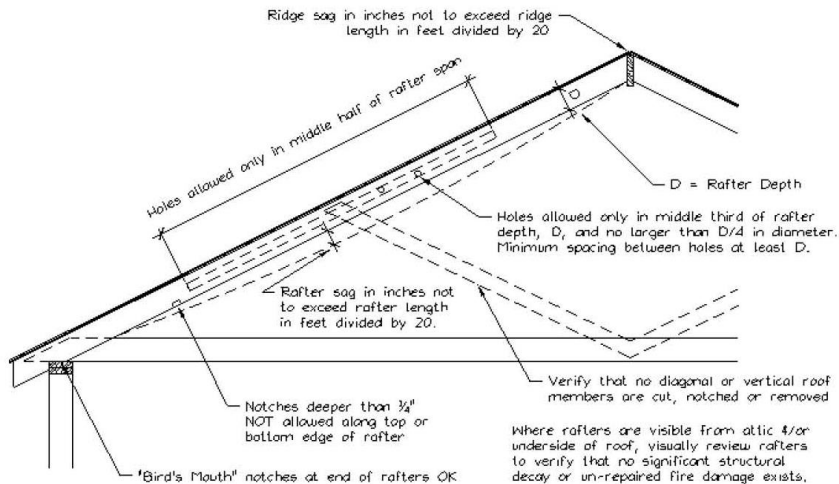


Figure 1. Sample Solar Panel Array and Anchor Layout Diagram (Roof Plan)

The site project superintendent/contractor should verify the following:

1. No visually apparent disallowed rafter holes, notches and truss modifications as shown above.
2. No visually apparent structural decay or un-repaired fire damage.
3. Roof sag, measured in inches, is not more than the rafter or ridge beam length in feet divided by 20.

Rafters that fail the above criteria should not be used to support solar arrays unless they are first strengthened.

B. Roof Structure Data:

- 1) Measured roof slope (e.g. 4:12) _____:12
- 2) Measured rafter/truss spacing (center-to-center) _____ inches
- 3) Type of roof framing (rafter or manufactured truss) Rafter Truss
- 4) Roofing Material Tile Comp Other _____

2. SOLAR ARRAY CHECKS

A. Flush-mounted Solar Array:

- 1) Is the plane of the modules (panels) parallel to the plane of the roof? YES NO
- 2) Is there a 2" to 10" gap between underside of module and the roof surface? YES NO
- 3) Modules do not overhang any roof edges (ridges, hips, gable ends, eaves)? YES NO

B. Do the modules plus support components weigh no more than:

- 4 psf for photovoltaic arrays or 5 psf for solar thermal arrays? YES NO

C. Does the array cover no more than half of the total roof area (all roof planes)?

YES NO

D. Are solar support component manufacturer's project-specific completed worksheets, tables with relevant cells circled, or web-based calculator results attached?

YES NO

E. Is a roof plan of the module and anchor layout attached? (see Figure 2)

YES NO

F. Downward Load Check (Anchor Layout Check):

- 1) Proposed anchor horizontal spacing (see Figure 2): ft in
- 2) Horizontal anchor spacing per Table 1: ft in
- 3) Is proposed anchor horizontal spacing equal to or less than Table 1 spacing? YES NO

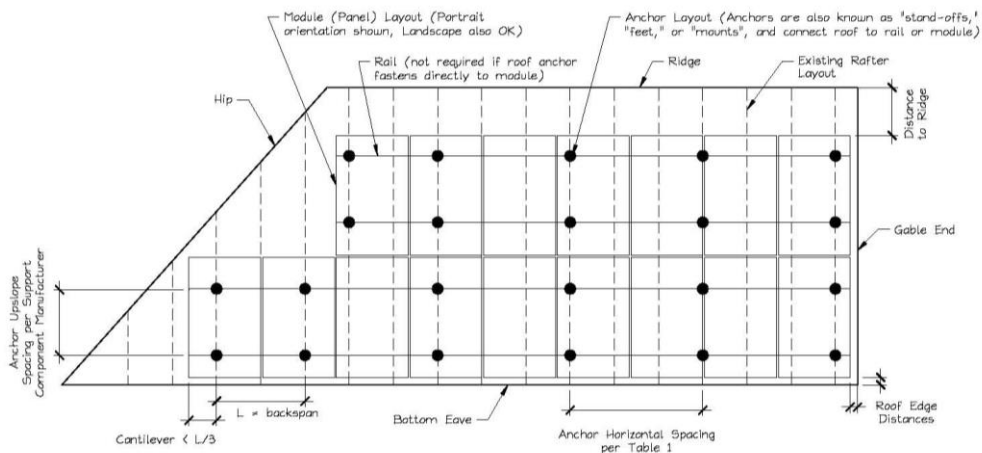


Figure 2. Sample Solar Panel Array and Anchor Layout Diagram (Roof Plan)

Table 1. Maximum Horizontal Anchor Spacing				
Roof Slope		Rafter Spacing		
		16" o.c.	24" o.c.	32" o.c.
Photovoltaic Arrays (4 psf max)				
Flat to 6:12	0° to 26°	5'-4"	6'-0"	5'-4"
7:12 to 12:12	27° to 45°	1'-4"	2'-0"	2'-8"
13:12 to 24:12	46° to 63°	1'-4"	2'-0"	2'-8"
Solar Thermal Arrays (5 psf max)				
Flat to 6:12	0° to 26°	4'-0"	4'-0"	5'-4"
7:12 to 12:12	27° to 45°	1'-4"	2'-0"	2'-8"
13:12 to 24:12	46° to 63°	Calc. Req'd	Calc. Req'd	Calc. Req'd

Table 1 Notes:

- Anchors are also known as "stand-offs," "feet," "mounts" or "points of attachment." Horizontal anchor spacing is also known as "cross-slope" or "east-west" anchor spacing (see Figure 2).
- If anchors are staggered from row-to-row going up the roof, the anchor spacing may be twice that shown above, but no greater than 6'-0".

3. For manufactured plated wood trusses at slopes of flat to 6:12, the horizontal anchor spacing shall not exceed 4'-0" and anchors in adjacent rows shall be staggered.
4. This table is based on the following assumptions:
 - The roof structure conformed to building code requirements at the time it was built.
 - Mean roof height is not greater than 40 feet.
 - Roof sheathing is at least 7/16" thick oriented strand board or plywood. 1x skip sheathing is acceptable.
 - The solar array displaces roof live loads (temporary construction loads) that the roof was originally designed to carry.
 - Please refer to The Structural Technical Appendix of California Solar Permitting Guidebook, latest edition, for additional information and requirements: <https://energycenter.org/permitting/guidebook>

G. Wind Uplift Check (Anchor Fastener Check):

1) Anchor fastener data (see Figure 3):

- a. Diameter of lag screw, hanger bolt or self-drilling screw: _____ inch
- b. Embedment depth of rafter: _____ inch
- c. Number of screws per anchor (typically one): _____
- d. Are 5/16" diameter lag screws with 2.5" embedment into the rafter used, OR does the anchor fastener meet the manufacturer's guidelines? YES NO

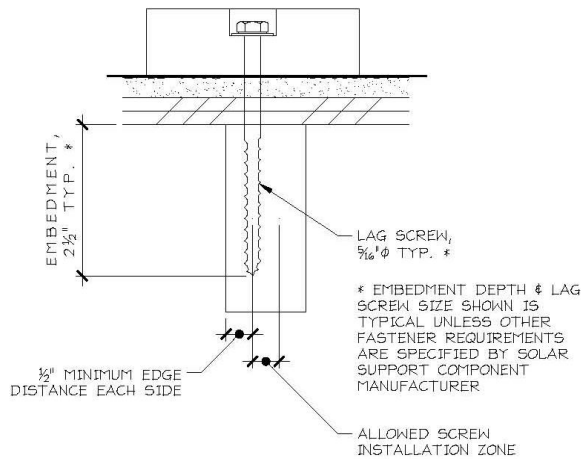


Figure 3. Typical Anchor with Lag Screw Attachment.

3. SUMMARY

If all items above are checked YES, no additional calculations are required. If one or more items are checked NO, project-specific drawings and calculations stamped and signed by a California registered Civil or Structural Engineer or licensed Architect are required.

NOTE: The California Solar Permitting Guidebook provides additional information about installation and analysis requirements. Please visit: <https://energycenter.org/permitting/guidebook>

4. INSPECTION AGREEMENT:

As the responsible contractor or authorized agent for the project, I understand that California Law only allows one site inspection to verify the installation of residential rooftop solar system. Based on this limitation, some or all of the framing and most, if not all, of the anchors will not be visible to the inspector. Therefore, I certify that the roof support structure will be in compliance with this application and the anchors, attachments and flashing will be installed as required by the manufacturer's installation instructions and the California Residential Code.

Job Address: _____ Permit #: _____

Contractor/Installer: _____ License # & Class: _____

Signature _____ Date: _____ Phone #: _____