

SACRAMENTO STREAMLINE

City Permit Counter
300 Richards Blvd. 3rd Floor
Hours M–F:
9am–12pm / 1–4pm



City of Sacramento Guide to Solar Energy Permits

The City of Sacramento encourages the installation of solar energy systems and has streamlined the review process for small-scale solar. All new installations require review for building permits and for interconnection with the Sacramento Municipal Utility District (SMUD). Depending on the size of your system, you may qualify for a flat permit rate of \$280. If you will be rewiring or replacing your electrical panel, please contact SMUD for possible additional requirements.

Definitions:

Solar Photovoltaic (PV) are solar collector modules that capture the sun's energy and convert it into electricity.

Solar Thermal or **Solar Water Heating Systems (SWHS)** are solar collector modules and a storage tank that captures the sun's energy to heat water either for indoor or swimming pool use. This type of system may be considered an active system with the inclusion of mechanical components or passive if without such components.

Building Integrated Photovoltaic (BIPV) refers to solar PV integrated into construction materials such as roof tiles, awnings and curtain walls.

When is planning review required?

In some instances, planning review is required before a solar PV or SWHS can apply for building permits. This depends on where your site is located, size and design of the solar energy system, and the age of any existing building(s) onsite. Email the planning helpdesk at planning@cityofsacramento.org to determine site specific requirements.

Roof-mounted systems on an existing building:

Roof-mounted solar energy systems that are located on an existing building or structure do not require planning review or a discretionary design review (*California State Code, Section 65850.5*) as long as the proposed PV or SHW system does not encroach on setbacks or height requirements in the zone given the following height and setback [exceptions](#).

If a project site is located within a [historic district](#) or is located on a building/structure that is 50 years or older then [preservation review](#) will be required for all proposed solar energy systems.

Solar PV or SWHS as an ancillary use:

Any solar energy system to be built on a new structure (i.e. carport, pergola, etc.) that is ancillary to an existing building is subject to the [Residential Accessory Structure and Use regulations](#). Nonresidential accessory structures may require planning review based on previous planning approval for the site.

(Continued on back)

PV Freestanding or ground-mount systems:

Any solar energy system that is a freestanding system and is the primary use of a site is allowed in *select zones with the approval of a Zoning Administrator's Special Permit* before obtaining building permits.

Permit Fees

Cost for small-scale solar PV of 4 kW or less and for solar thermal of 50 gallons or less are eligible for a flat fee of \$280* (plus applicable surcharges). PV Systems greater than 4kW and/or solar thermal systems over 50 gallons are subject to fees based on valuation of the equipment and labor costs. More information about valuation-based fees for building permits is available at <http://www.cityofsacramento.org/dsd/reference/fees/index.cfm>

***For projects that qualify for the \$280 flat fee as noted above, all applications MUST meet the requirements of the standardized solar submission checklist. Failure to follow these guidelines will result in additional fees.**

Incentives & Rebates¹

To qualify for rebates from SMUD—

- System design is optimized for solar orientation, tilt and shading-reduction. See the Sacramento [Solar Map](#) to determine your rooftop solar potential.
- System is sized appropriately not to exceed customer's anticipated annual energy demands.
- All PV modules and inverters must be new equipment and listed with the California Energy Commission. A list of approved PV equipment can be located at the [GoSolar California website](#).
- All systems must have a minimum 10-year warranty.

Steps to Getting a Solar Permit

Reserve Incentive and System Design	PRE-PERMIT – SMUD
	1. Contact SMUD at solarpv@smud.org or 916-732-5085 to make a Reservation Request for rebates. See SMUD's PV Handbook for more information.
	2. Visit www.SMUD.org to complete and submit SMUD's Generating Facility Interconnection Application.
Submit for City Building Permit	3. Gain pre-approval from SMUD, who will verify documents and conduct an inspection during the application phase to verify accuracy of shading, array tilt and orientation, and physical location. If you are rewiring or replacing electrical panel then additional requirements may apply.
	PERMIT – City Planning & Building Review
	4. Verify if the zone of the project site requires planning review if located within a historic district/design review area or is a freestanding, ground-mount system within the EC, C, HC, SC, M, MRD, MIP, H, SPX, TC, A, AOS, F or ARP-F zones. If planning review is required, submit appropriate planning application and fees.
	5. Submit a complete building application for a building permit from the City of Sacramento at the public counter at 300 Richards Blvd., 3 rd Floor ² . Please note that, in order to qualify for the flat fee for small-scale solar projects, all applications MUST comply with the standardized solar submission checklist and sample plans.
Interconnection & Rebates	6. Obtain city issued permit and complete work. Permits will be issued typically same day for over-the-counter submittals, or next business day.
	7. Schedule and complete building inspection. Please note that one field inspection is included with the \$280 flat fee for small-scale solar projects. Additional plan review and field inspections will incur additional fees.
	POST-PERMIT – SMUD
Interconnection & Rebates	8. Send copy of building permit & PV System Certification Sheet to SMUD
	9. SMUD completes their review & conducts a final inspection, and then rebate is issued.

¹ Visit SMUD's [website](#) to find the most up-to-date information about rebates for solar.

(Footnotes)

² Please verify hours for over-the-counter plan check online at www.cityofsacramento.org/dsd



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Submission Checklist for Residential Photovoltaic Installations

General Requirements:

1. A scaled, dimensioned Site Plan. The Site Plan must show all property line dimensions and the dimensions and locations of all structures on the parcel. Show the location of all electric service and PV equipment; meter(s), inverter(s), AC & DC disconnects, etc whether they are new or existing. Specify the distance from the property line to the wall where the service panel, inverter, etc. will be mounted. Any street(s)/alley(s) that the parcel borders on must be shown, as well as fences, walls or trees, etc. that are within five feet (5') of the PV equipment. Include a project data section which states the address of the project and the contact information for the owner and contractor.
2. Prior to submitting for the Building Permit, meet with the Planning Staff to verify that the location of the installation is permitted by local Zoning Codes.

Structural Requirements:

1. A Roof Framing Plan. Specify the size, grade and maximum spans of all roof framing members that will carry the weight of the PV arrays. Specify the roofing material and number of overlays, if applicable. Show the location of all arrays on this drawing.
2. Installation details and instructions.
 - Attachment details for PV modules. Provide enough information to clearly verify the size, type, and spacing of all fasteners.
 - Show how waterproofing will be addressed.
 - "Cut Sheets" in order to verify panel weights.
3. Structural calculation (stamped and wet signed by a California licensed design professional) are required for:
 - Tile roofs, or systems involving panels which are integrated into roof tiles.
 - On roofs that contain more than two (2) overlays of roofing material.

Electrical Requirements:

1. "Cut Sheets" for:
 - PV modules.
 - Inverters.
2. One-line diagram; please include:
 - Load calculations for arrays.
 - Wire types and sizes.
 - All associated equipment and disconnects whether they are new (N) or existing (E).
 - Location, wire sizes, and details for all grounding methods.
3. When considering the location of disconnects, be sure to consider how any given piece of equipment can be replaced or serviced, without the hazard of "hot" conductors.



Photovoltaic Inspection Guidelines

Residential Interactive Systems

In General

- Customer/Installer shall provide Approved Plans on site for inspector.
- Photovoltaic module number and location of installation must match Approved Site Plan.
- Customer/Installer shall provide access to all areas needed for inspection.
- On Roof, if Tile – Installer shall provide properly supported temporary walking surface to access all connections of all modules. If two story – Installer shall provide a proper and secured ladder(s) to access all areas.
- In House – If wiring in attic and/or garage area, the customer/installer shall ensure access to attic and/or garage.

On Roof

- Verify all structural supports are properly installed per listing and properly sealed.
- Verify all metallic raceways, J-boxes, supports and modules are properly grounded. Modules shall be grounded separately to allow removal of a single module and without disrupting the grounding of other modules by means of properly installed wires, lugs, screws, bolts or other listed methods. (Sheet Metal Screws are not allowed – 250.8). 2010 CEC, Article 690.43
- Verify all exposed wiring is listed Sunlight Resistant. 2010 CEC, Article 690.31
- Verify all module interconnections connectors require a tool for opening. 2010 CEC, Article 690.33

DC Disconnect

- Verify proper location. DC Disconnect shall be readily accessible, within sight of inverter, and properly listed for 600 volt DC power. 2010 CEC, Article 690.14
- If DC wiring is run through the building, a DC Disconnect shall be installed prior to the conductors entering the building or the conductors shall be installed in metallic raceways or metallic enclosures from the point of entrance to the DC Disconnect and all J-boxes shall be labeled “DC Source Circuits”. 2010 CEC, Article 690.31(E)
- Verify proper and permanent labeling with the following information; “PHOTOVOLTAIC DC DISCONNECT” and “WARNING ELECTRIC SHOCK HAZARD – DO NOT TOUCH TERMINALS – TERMINALS ON BOTH THE LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION”. 2010 CEC, Article 690.17
- The DC disconnect shall also be properly and permanently labeled with the following Installed System Information: (1) Rated Maximum Power-Point Current (2) Rated Maximum Power-Point Voltage (3) Maximum System Voltage & (4) Short Circuit Current. 2010 CEC, Article 690.53

Note: Rooftop Micro-Inverter Systems have no DC Disconnect Switches. AC Disconnect shall be installed on the roof or at the Utility panel and be capable of being locked OFF. Installed System Information shall be installed on Utility Service Panel.

Grounding

- Photovoltaic systems with voltage over 50 volts shall be solidly grounded. 2010 CEC, Article 690.41
- The Utility Service Panel shall have a grounding electrode system. 2010 CEC, Article 690.47(A)
- Both the DC system and the AC system shall have a minimum of a # 8 copper grounding electrode conductor and both electrode conductors shall be solidly bonded to the Utility Service Panel electrode system as well as any new grounding electrodes. 2010 CEC, Article 690.47(B,C)
- Additional electrode(s) shall be installed for all arrays and as close as possible. The electrode conductor(s) shall have no other use. 2010 CEC, Article 690.47(D)

AC Disconnect and Utility Panel

- The AC Disconnect shall be permanently identified with (1) Maximum AC Output, and (2) Operating AC Voltage. 2010 CEC, Article 690.50
- If DC Disconnect, Inverter, and/or AC Disconnect are not in the same location as the Utility Service Panel is located, a permanent Plaque shall be installed on the Utility Panel identifying the location(s) of the other equipment. 2010 CEC, Article 690.56
- Photovoltaic interconnection circuit breaker at the Utility Service Panel shall not exceed 20% of the bussing rating and **shall** be positioned at the opposite end of the bussing from the main input circuit location (i.e. 20 amp for 100 amp panel). 2010 CEC, Article 690.64

Testing

- Verify Installer has installed meter jumpers, if so equipped, at PV meter socket.
- Energize system and check display for output (wait time could be up to 5 min).
- Once output observed, turn off AC power at PV interconnection circuit breaker and verify inverter output drops to 0 watts. 2010 CEC, Article 690.61

Note: Rooftop Micro-inverter Systems have LED lights to show conditions or a Voltage tester can be used at load terminals of the circuit breaker/disconnect at the service panel..



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Submission Checklist for Solar Water Heating System

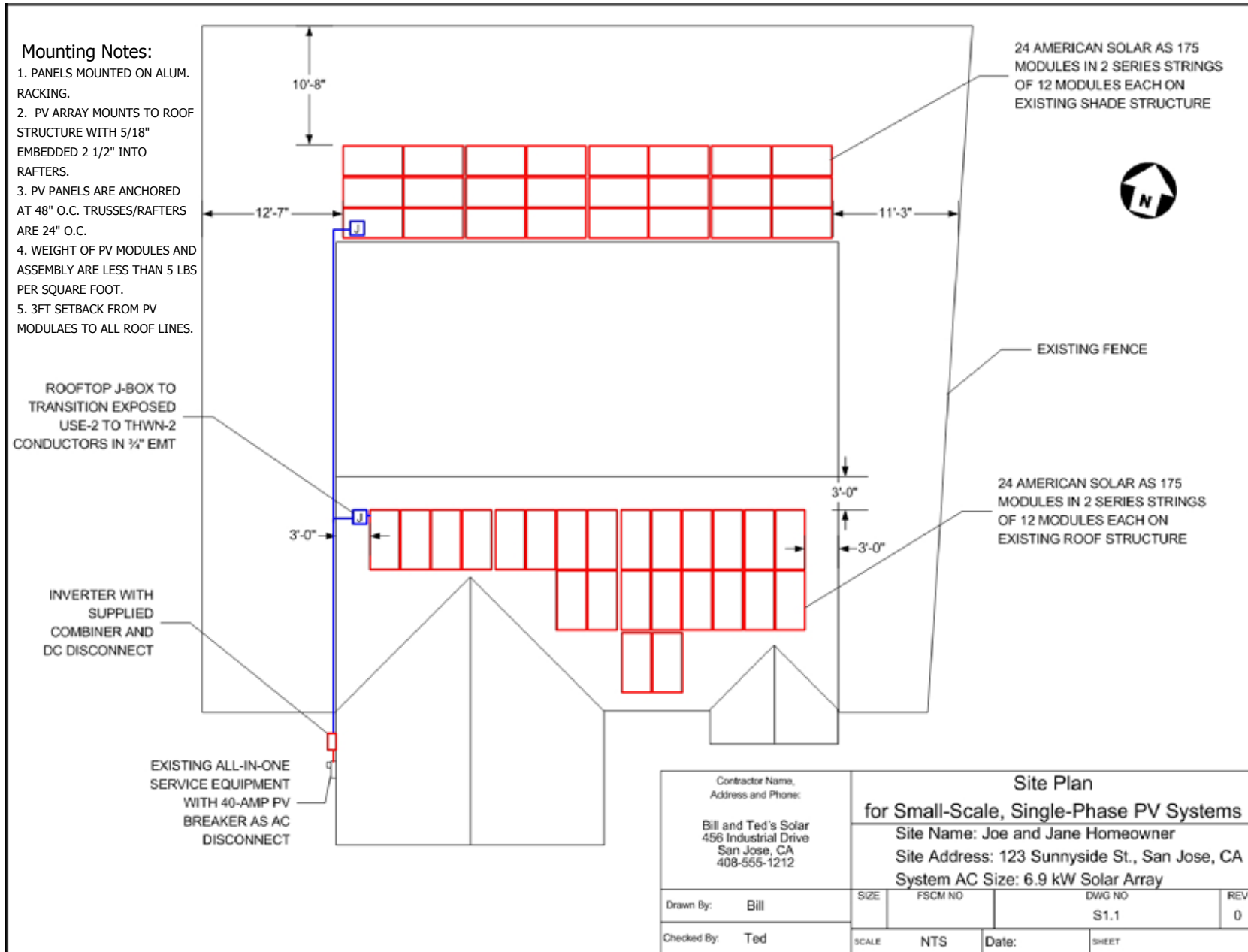
General Requirements

Please provide plans and or documents that clearly show the following:

1. Basic roof plan to scale, which shows the location and number of panels.
2. Size of storage tank in gallons.
3. Manufacturer's data sheets for:
 - Panels
 - Storage tank
 - Backup water heater if being replaced. (The backup water heater is the gas or electric storage type water heater that provides hot water when solar heat is not available)
4. Type of heat transfer medium.
 - Note: For a single wall heat exchange system the heat transfer medium must have a toxic rating of Class 1 as listed in Clinical Toxicology of Commercial Products, 5th edition.
5. Type of heat exchanger, single or double wall.
6. Attachment details for panels.
 - Must be designed to withstand a wind load of 85MPH.
 - Provide enough information to clearly verify the size, type and spacing of all fasteners.

PV ARRAY LAYOUT, MOUNTING & WIRING PLANS

*This sample plan is for illustrative purposes only. All building applications must reflect site specific conditions and the Submission Checklist for Photovoltaic Installations.



SAMPLE ELECTRICAL DIAGRAM

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