



## City of Big Bear Lake - Building and Safety

### Plan Submittal Requirements for Photovoltaic Systems

*\*\*All of the following items must be incorporated into the drawing plans as a process for streamlining photovoltaic systems.*

1. **Site Plan:**  
Provide a fully dimensioned site plan showing property lines, all structures, and the location of the main electrical service, all photovoltaic inverters and disconnects, etc.
2. **Roof Plan:**  
Provide a roof plan showing roof slope, roofing material type (tile, composition shingle, etc.), the location of the photovoltaic panels, and any required walkways to roof mounted equipment (including any roof mounted heating and air conditioning equipment, etc.) Clearly show all 3-foot wide access paths within the roof plan along ridges, eave lines, and within valleys and hips of roof slopes where photovoltaic systems are to be provided in accordance with the California Residential Code for residential structures and California Fire Code for commercial structures.
3. **Roof drainage:**  
Roof-mounted solar PV systems shall not cause excessive sagging of the roof that results in water ponding. They shall not block or impede drainage flows to roof drains and scuppers.
4. **Electrical Single Line Diagram:**  
Provide a complete single line diagram showing utility electrical service, panel rating and busbar ratings in amperes for the main service panel, conductor size and type, conduit size and type, over current protection location and ratings, disconnect size and locations, inverters, subpanels, grounding electrode type and location, point of interconnection to existing service panel, etc.
5. **Signage Specifications:** Provide signage (on panels, disconnects, and transmission line conduits) as required by CEC Section 690. Permanently affixed labels used for markings shall be reflective, weather resistant and suitable for the environment. Markings shall have all letters capitalized with a minimum height of 3/8 inch white on red background.
6. **Smoke and Carbon Monoxide Alarms:**  
When the cost of the proposed solar panels exceeds \$1,000.00, smoke and carbon monoxide alarms shall be required per the California Residential Code to be verified and inspected by the inspector in the field.
7. **Plumbing vent, mechanical equipment, and mechanical exhaust terminations:** Solar PV panels shall not obstruct or interfere with the function of plumbing vents or mechanical equipment.

8. **Product Specifications and Literature:**

Provide specifications on the inverters, solar panels, disconnect boxes and solar panel anchorage system to be used. The solar PV panel/module and other equipment used in the PV system shall be listed/certified by a nationally recognized listing/certification agency in accordance with the applicable standards.

9. **Attachment Details:**

Provide details to show how the photovoltaic panels will be secured to the roof, and the weight of the proposed photovoltaic panels. Roof mounting systems shall be designed to a minimum wind speed of 110 mph (Ultimate), exposure C wind loading.

10. **Roof Penetrations:**

All roof penetrations shall be sealed using approved methods and products to prevent water leakage. Such methods include but not limited to caulking, roof jacks, and sheet metal flashing.

11. **Ground Mounted Systems:**

Location of the ground mounted system shall be provided on the provided site plan, identify distances to property lines and adjacent structures. Identify and dimension the array supports, framing members, and foundations. Structural calculations shall be provided justifying the wind uplift on the system, and the proposed foundation(s).

12. **Structural Calculations:**

Due to the City of Big Bear Lake's 100 psf roof snow load requirement, engineering calculations shall be required to show that the existing roof is adequate to support the added weight of the photovoltaic system in conjunction with the 100 psf roof snow load. The spacing of the roof jack system should be taken into consideration in the structural calculations, which could cause an increase in point loads due to the snow loading acting on the roof. As an example, if the roof jacks are to be spaced at 48 inches on center, then the tributary width acting on the roof framing members should be taken as 48 inches.

Structural calculations can be waived if the roof jacks supporting the photovoltaic arrays bears down on every roof framing member (16" o.c. or 24" o.c.) across a conventional framed or truss roof where the existing roof framing members would not be subjected to additional point loads due to the snow loading, and the roof is adequate for the additional loads.

A letter from a licensed engineer or architect would also be acceptable in lieu of full calculations indicating that the licensed engineer or architect has gone out to the site and the roof framing system is adequate for the additional weight of the propose photovoltaic panels plus the 100 psf roof snow load. The spacing of the roof jacks should be accounted for within the letter provided by a licensed engineer or architect.

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