



DEPARTMENT OF RESOURCE MANAGEMENT

Building Division

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SOLAR REQUIREMENTS FOR NEW BUILDS

(Rev: 07-23-20)

The information provided below is a general overview of the 2019 CBC solar requirements. Any specific requirements, reductions, exemptions, etc. will be determined by a Title 24 energy consultant. The Building department will **NOT** review energy calculations to verify every possible reduction or exemption is met; review will **ONLY** verify the information submitted is correct/valid.

<p><u>When is solar required?</u></p> <p>Solar is required on all new conditioned detached structures.</p> <p>Common examples include but are not limited to:</p> <ol style="list-style-type: none"> 1. New Houses 2. Detached ADU's 3. Conditioned Detached Pool Houses 4. Conditioned Detached Art Studios 	<p><u>When is solar NOT required?</u></p> <p>Solar is not required on any structure that is defined as an addition or conversion, and is not required on any structure that is not conditioned.</p> <p>Common examples include but are not limited to:</p> <ol style="list-style-type: none"> 1. Attached or Detached Garage Conversion to ADU 2. Adding an ADU to an Existing House or Existing Detached Accessory Building 3. Attached or Detached Non-Conditioned Pool House or Art Studio 		
<p><u>Solar Guidelines</u></p> <p>The size of solar that is required for your build is based upon the square footage of the conditioned living area, number of units (single family residence or ADU = 1, duplex = 2, triplex =3, etc.) and the climate zone. Shasta County has 2 climate zones; climate zone 11 and zone 16. Follow the specific equation for the climate zone of your parcel to determine size of solar required. A typical house (1500 – 2000 sq. ft.) will require a PV system that is between 2 kW and 4 kW.</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><i>Climate Zone 16</i> - Lakehead North & Round Mountain/Shingletown/Manton & Areas East</p> <p>The equation to determine the size of the array in climate zone in 16 is:</p> $\frac{(\text{Conditioned living sq. ft.} \times .59)}{1000} + (\# \text{ of units} \times 1.22)$ </td> <td style="width: 50%; vertical-align: top;"> <p><i>Climate Zone 11</i> - All other areas of Shasta County</p> <p>The equation to determine the size of the array in climate zone 11 is:</p> $\frac{(\text{Conditioned living sq. ft.} \times .836)}{1000} + (\# \text{ of units} \times 1.44)$ </td> </tr> </table>		<p><i>Climate Zone 16</i> - Lakehead North & Round Mountain/Shingletown/Manton & Areas East</p> <p>The equation to determine the size of the array in climate zone in 16 is:</p> $\frac{(\text{Conditioned living sq. ft.} \times .59)}{1000} + (\# \text{ of units} \times 1.22)$	<p><i>Climate Zone 11</i> - All other areas of Shasta County</p> <p>The equation to determine the size of the array in climate zone 11 is:</p> $\frac{(\text{Conditioned living sq. ft.} \times .836)}{1000} + (\# \text{ of units} \times 1.44)$
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<p><u>What if I build a new ADU on a lot that already has a primary residence and that primary residence already has PV. Will I get credit for that existing PV applied to the new ADU?</u></p> <p>Regardless of what is already installed, you will have to go through the process of determining how much PV is required for the ADU using the calculator and then you have 2 options:</p> <ol style="list-style-type: none"> 1. You can add required amount to the existing PV system 2. You can add a new second system (either ground or roof mount) <p>There is one exception to this rule if there is an already existing PV system. PV can be re-routed from the existing PV system on the primary house to the ADU by splitting the solar panels and directly tying to a meter on both the Primary Residence and the ADU. For example if the existing house has a 10Kw PV system and the new ADU requires a 3kW system. If each structure has its own meter, you can re-route 3 kW worth of power from the primary residence to the ADU meter directly meeting the solar requirement for the New ADU.</p>			

Are there any exceptions or reductions?

There is only one true exemption for solar in the building code:

“No PV system is required if the effective annual solar access is restricted to less than 80 contiguous square feet by shading from existing permanent natural or manmade barriers external to the dwelling, including but not limited to trees, hills, and adjacent structures. The effective annual solar access shall be 70 percent or greater of the output of an unshaded PV system array on an annual basis.”

There must be a barrier, such as nearby trees, hills or other structures, that inhibits the benefit of solar so much so that it would render the PV system almost useless. A solar assessment test will be required to confirm this exemption is met using a solar assessment tool that is approved by the Energy Commission. Requirements for solar are based on the direction of the roof on the house and where the house is located on the property however the energy code cannot dictate the location of a house according to the efficiency of that location for solar. For example; if there is a 10-acre lot that is split with 5 acres shaded with trees and 5 acres with no shade, it is not required that the house is built in the unshaded area. If the house is built in the shaded area it may be exempt from these solar requirements. This means that it is not required that a ground mount PV system be installed in the unshaded area and tie it to the house. All the requirements for the PV are set based on the exact location of the house and any existing or future barriers for the solar are considered at that time.

Regarding reductions, there are many ways to obtain reductions that will decrease the amount of PV required. One of the biggest ways to obtain a reduction is installing battery storage. It is specifically stated that if a 7.5 kW (or larger) battery storage system is installed then the PV requirement goes down by 25%. Simply put, the more efficient the house the smaller the PV system can be. But you CANNOT trade off the solar away down to zero. In other words, you could build the most efficient house in the world with the best insulation, windows, roofing, water heater, etc and you would still be required to have PV (unless it is exempted).

Common Questions

Can the PV system be leased?

-Yes

Is PV required for any additions or conversions?

-No. See above.

What documentation is required?

-At final inspection the inspector will need to have a completed CF-2R form. Forms can be found here:

<https://energycodeace.com/residentialforms>

Can future trees be taken into consideration with regard to PV requirements and potential exemption?

-Yes, though there is a process for this. Documentation will need to be submitted to the energy commission regarding the trees (number of trees to be planted, species of tree, etc.) and that will need to be approved by the Energy Commission. If approved, the inspector will have to verify at final inspection that all required future trees have been planted.

Can the system be roof or ground mount?

Yes. The system size requirements are based on the roof area and location of the house, but the system itself does not need to be installed on the roof.