



CODE APPLICATIONS AND INTERPRETATIONS:

DATE: July 13, 2021

SUBJECT: Residential Rooftop Solar PV Heavy Snow Exception

CODE CYCLE: 2019 California Building Code

CODES AND SECTIONS: 2019 California Energy Code 150.1[c]14; 2019 California Administrative Code 1-313; CEC Docket No. 19-BSTD-12

2019 California Energy Code section 150.1[c]14 states, in part:

“All low-rise residential buildings shall have a photovoltaic system meeting the minimum qualification requirements as specified in Joint Appendix JA11, with annual electrical output equal to or greater than the dwelling’s annual electrical usage as determined by Equation 150.1-C.”

2019 California Administrative Code section 1-313 states, in part:

“Any local governmental agency, firm or member of the public may petition either the Commission or the authoritative agency for the proposal, adoption, amendment or repeal of any building standard or administrative regulation in Title 24 of the California Code of Regulations.”

BACKGROUND:

On May 9, 2018, the CEC adopted the 2019 Energy Code, which includes new PV requirements for all newly constructed low-rise residential buildings in Title 24, Part 6, §150.1(c)14. “Low-rise residential buildings” are defined as single-family houses, duplexes, and townhomes, as well as multifamily buildings that are three stories or fewer. These requirements, along with the rest of the 2019 Energy Code, went into effect January 1, 2020.

The Administrative Regulations of the California Building Standards Commission (CBSC) (Title 24, Part 1, §1-313) include provisions under which any local government agency, firm, or member of the public may petition the CBSC for the proposal, adoption, amendment, or repeal of any building standard or administrative regulation in Title 24 of the California Code of Regulations. The CBSC may refer received petitions to the state agency having specific jurisdiction for the subject of the adopted building standard. A state agency receiving a petition referred by the CBSC shall process the petition and report decisions made by the agency back to the CBSC. The state agency under consideration for purposes of this specific petition is the California Energy Commission (CEC).

On February 11, 2020, the Town of Truckee and the local Building Working Group submitted a petition to the CBSC requesting an exemption from the 2019 Energy Code PV requirements for building sites where high snow loads make compliance with the PV requirements “routinely impossible or onerous.” Member jurisdictions of the Building Working Group (BWG) consist of the Town of Truckee, Town of Mammoth Lakes, Nevada County, Sierra County, Mono County, and Placer County. The CBSC forwarded this petition to the CEC to consider.

DISCUSSION:

After a lengthy public comment and revision process, the CEC published the Notice of Final Conclusions on January 19, 2021 and was finally approved by the CEC on February 10, 2021. The BWG determined that a ground snow load of 230 psf would be the limit of when rooftop solar panels can be installed without the risk of damage or structural failure given the anticipated snow loading. However, the CEC responded to this proposal and provided additional conditions that would determine whether or not rooftop PV panels can resist snow load forces. Such conditions include site exposure, roof slope, and roof surface characteristics. These conditions have been included in Table 1 (Maximum Ground Snow Loads) in the Notice of Final Conclusions. Based on this table, it appears that many roof configurations that are commonly built in Town may not be able to use the exception.

Of note is commentary included in the Notice of Final Conclusions that indicate that Table 1 is not the only criteria used to determine if rooftop PV panels can tolerate roof snow loads.

The Notice of Final Conclusions states, in part, that *“Table 1 should not be used to guide the design of or perform the Standard 7-16 calculations for PV systems. Pertinent design requirements go beyond what is covered in Table 1, therefore ground snow loads within Table 1 maximum values may still present structural issues or conflict due to other reasons. A registered design professional would need to make this determination.”*

The intent of this statement from the CEC appears to acknowledge that there can be issues with regard to the roof’s design and other site-specific conditions that may make the installation of roof top PV panels problematic with regard to tolerating the anticipated snow loading.

POLICY AND PROCEDURE:

Building permit submittals for new low rise residential buildings will be able to utilize the residential rooftop solar PV exception as outlined in this document and per the CEC’s Notice of Final Conclusions Table 1 effective immediately. Should the project not conform to Table 1, the registered design professional for the project can provide analysis to demonstrate that, in their professional opinion, rooftop solar PV panels will not be able to structurally tolerate the anticipated snow loading that the panels will experience.

The analysis shall consider the specific roof configuration of the building in addition to site specific conditions and the specifications of particular rooftop solar PV systems. The findings of such analysis shall be submitted in writing with the stamp and signature of the California registered design professional.

