



Clark County Department of Building & Fire Prevention

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Division:	Plans Examination	Policy & Procedure	BP-DI-031
Subject:	CCDBFP Solar Photovoltaic Structural Requirements	Effective Date:	09/15/2014
Code:	IFC.605.11, IBC Chap. 16, ASCE 7-10	Revised Date:	06/26/2015

The purpose of this document is to identify requirements for the installation of Solar Photovoltaic Systems (solar PV systems) submitted for permits.

1. General Building Requirements

Building Plans Examination shall review clearances of roof mounted photovoltaic systems in accordance with currently adopted International Fire Code as an alternative to requiring a separate Fire Prevention Permit.

The following clearances apply as noted:

- Panels shall not be closer than 3 feet to the ridge (ref. IFC 605.11.3.2.4)
- Hip roofs shall have a 3 feet clear pathway from the eave to ridge line (ref. IFC 605.11.3.2.1)
- Gable roofs shall have two 3-foot pathways from eave to ridge (ref. IFC 605.11.3.2.2)
- Commercial roofs shall have 6 feet clear perimeter path. This may be reduced to a 4-foot clear perimeter path when either axis of the building is 250 feet or less. (ref. IFC 605.11.3.3.1)
- Commercial buildings shall have a 4-foot pathway on the centerline axes of the roof. (ref. IFC 605.11.3.3.2)
- An additional 4-foot pathway shall be provided to all smoke vents, skylights and roof standpipes (ref. IFC 605.11.3.3.2)
- Maximum array size to be 150 feet by 150 feet, with arrays separated by aisles that are either:
 - 8 feet wide;
 - Minimum 4-foot pathway bordering roof skylights or smoke and heat vents;
 - 4 feet wide and bordering 4ft by 8ft venting cutouts on alternating side of the pathway. (ref. IFC 605.11.3.3.3).

2. Electrical Requirements

No electrical plan review is required for system less than 5kw.

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3. Structural Requirements

The Building Official may waive the requirement for a detailed permit application submittal package and engineering for residential installations. Such installations shall meet all of the following criteria:

- Solar PV systems are roof mounted and do not exceed the existing building height at the highest point.
- The solar PV systems weight does not exceed 4 psf.
- The solar panels are mounted parallel to the roof plane to which they are attached
- The solar PV systems are installed within 24 inches (457 mm) of the roof immediately below.
- The maximum spacing of the solar PV system connection points to the roof shall not exceed 48 inches (1219 mm) on center.
- For wood construction, the solar PV system supports shall be anchored to solid roof rafters or to solid blocking with a minimum of one 5/16 inch (8 mm) diameter lag screw embedded a minimum of 2-1/2 inches (64 mm). For other connection configurations or types of construction, the anchorage shall be as approved by the Building Official.
- Provide a layout plan showing the proposed location of all solar PV system components. Note that all rooftop mounted solar PV systems shall be installed to comply with the layout requirements specified in section 605.11 of the 2012 International Fire Code.

Residential roof-top solar that do not meet the prescriptive criteria above shall be required to have wet sealed engineering calculations and installation details. Wet sealed engineering calculations and installation details for residential roof-top solar shall not require a plan review.

Support and Mounting- Solar PV systems may be either freestanding or supported by a building structure.

- A freestanding installation is ground mounted and treated as a piece of equipment with no associated occupancy or use. Carports, patio covers or shade structures which support solar PV systems do not meet this condition and shall be designed as building structures in accordance with building code requirements.
- All freestanding installations shall be designed by a Nevada Registered Design Professional. The design shall include plans, details and calculations that clearly indicate requirements for foundations, anchorage, structural support frame and connections. Determination of loads shall be in accordance with the 2012 IBC and ASCE 7-10.
- *Exception: Freestanding installations that are less than 10 feet in height above finished grade and have a net wind area less than 100 square feet may be installed in accordance with the manufacturer's published installation requirements, when approved by the Building Official.*

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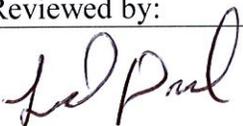
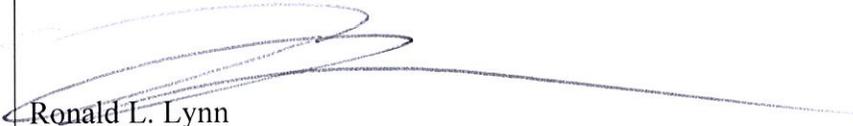
Solar PV's that are attached to and supported by a building structure

- Building integrated components - a type of solar PV that is intended to take the place of a traditional building component (i.e. roofing, wall coverings, windows, etc.). These components shall be subject to the same applicable code requirements as the material which they are replacing unless specific alternate requirements are found elsewhere in the building code.
- Building attached equipment - a type of solar PV that is a standalone system and is attached to a building structure (removal of the system would leave behind an otherwise complete and intact building). All building attached equipment installations shall be designed by a Nevada Registered Design Professional unless the design otherwise satisfies the requirements of Section 3.1 noted at the beginning of Section 3.0. The design shall include plans, details and calculations that clearly indicate requirements for connection and support of solar PV systems to the building structure. The following items shall be addressed in the design:
 - A layout plan showing the proposed location of all solar PV system components. Note that all rooftop mounted solar PV systems shall be installed to comply with the layout requirements specified in section 605.11 of the 2012 International Fire Code.
 - Wind, Seismic, Snow and Dead loads shall be determined in accordance with the 2012 IBC and ASCE 7-10.
 - The determination of minimum roof live loads for rooftop mounted solar PV systems shall comply with this section. Where the proposed solar system component dead load is less than the available roof live load the uniform roof live loads may be reduced in the area covered by the PV system when these areas are inaccessible. Areas where the clear space between the PV system and the rooftop is 24 inches (610 mm) or less shall be considered inaccessible. The exclusion of the roof live load in the area(s) covered by the PV system does not preclude the design of building roofs from complying with the roof live load requirements in 1607.12 for the loading condition where the PV system may be removed or not installed.
 - Where solar PV systems are mounted to an existing structure, the structure shall be evaluated under the alterations provisions of Chapter 34 of the 2012 IBC.

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BP-DI-031	CCDBFP Solar Photovoltaic Structural Requirements	9/15/2014		
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