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Impacts on Photovoltaic Installations of Changes to the 2012 International Codes

**A Solar ABCs White Paper
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This white paper was prepared by a collaborative team effort of diverse stakeholders. Solar ABCs gratefully acknowledges the contributions in preparing this document from [Stephen Barkaszi](#), *Florida Solar Energy Center*; [Christine Covington](#), *Solar Energy Industries Association*; [Mark Graham](#), *National Roofing Contractors Association*; [Dennis Grubb](#), *Orange County Fire Authority*; [Colleen O' Brien](#), *DNV*; [Lorraine Ross](#), *Intech Consulting*; and [John Taecker](#), *Underwriters Laboratories*.



Background on the Codes

- The International Residential Code (IRC) applies to detached one- and two-family dwellings and townhouses not more than three stories above grade in height
- The International Building Code (IBC) applies to all buildings and structures except those covered by IRC
- The Solar ABCs white paper documents changes found in three sections of the 2012 IBC and two sections of the 2012 IRC:
 - IBC Section 1505—Fire Classification,
 - IBC Section 1507 and IRC Section R905—Requirements for Roof Coverings, and
 - IBC Section 1509 and IRC Section M2302—Rooftop Structures



Purpose of the White Paper

- Provide information about changes related to PV installations in the 2012 IBC and the 2012 IRC [Note: Solar ABCs has already published a separate document on the changes to the International Fire Code (IFC)]
- The IBC and IRC codes include fire classification, wind resistance, installation, and materials requirements for building-integrated photovoltaic (BIPV) and rack-mounted PV products
- The White Paper is intended to assist code officials, solar installers, and roofing contractors as they interpret and use these codes



How the White Paper is Presented

- Text of the new language in the Code is shown (in RED) and explanations of the new language are given where needed. For Example:

Materials

IBC Section 1507.17.1 (IRC R905.16.1) details the material requirements for PV modules/shingles used as roof coverings. For PV systems that are adhered or attached to the roof covering, use the relevant code section from IBC 1507 (IRC R905) for the roof covering.

2012 code language:

IBC 1507.17.1 (IRC R905.16.2) Material standards. Photovoltaic modules/shingles shall be listed and labeled in accordance with UL1703.



Some Observations from the White Paper

- Different Code requirements are given for BIPV systems and rack-mounted PV systems
- IBC Section 1509.7.1 specifies that the wind loads shall be calculated using the method prescribed for components and cladding (C&C) using an effective array area based on the dimensions of a single unit. This differs from the procedure described in Solar ABCs report, *Wind Load Calculations for PV Arrays*, which recommends using the main windforce resisting systems (MWFRS) as the design parameter. There are pros and cons associated with the use of each of these methods.
- IBC Section 1509.7.2 specifies that “rooftop mounted photovoltaic systems shall have the same fire classification as the roof assembly required by Section 1505”. Since no PV system fire classification test has yet been adopted, Section 1509.7.2, as written, cannot be easily applied.

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Thank you