The following information is being provided to clarify locations of conduit installed in conjunction with rooftop photovoltaic (PV) systems. The intent is to limit the hazard of cutting live conduit during fire department roof venting operations and to minimize roof mounted tripping hazards for firefighters. All installations shall meet the requirements of the 2016 California Code (CFC) section 605. **Solar Projects are limited to certified professional installers and owner-builder applications are not permitted.**

In addition to standard plan requirements, all plans submitted for PV installation shall include the following details:

1. Plans shall include both ROOF ACCESS and PATHWAYS setbacks. Plans shall include dimensions and shading / hatching for clarity.
2. The location of all roof and attic mounted conduit shall be shown on the plans.
3. Conduit on both interior and exterior runs shall not be located within 3’ feet of the ridge. Plan submittals proposing conduit installations in the attic shall require a section detail of the attic with conduit installation locations with dimensions.
4. Conduit located in attics shall be installed away from the ridge area. When an attic installation is utilized, conduit shall be attached to the bottom of load-bearing members and/or installed directly below the array or mounted to the top of ceiling joists to minimize the likelihood of saws cutting the conduits and conductors.
5. Conduit will be run as directly as possible to an outside wall to reduce trip hazards and maximize ventilation opportunities.
6. Electrical metallic tubing (EMT) and other forms of conduit is not permitted in exposed exterior locations visible from the public right-of-way. Exposed conduit placed toward the rear of the house out of view of the public right-of-way shall be painted to match the color of the house.

**New California Setback Rules - July 1st, 2018**

Effective July 1st, 2018 the standard three-foot setback was changed in California. The goal of this adjustment is to increase the amount of solar one can fit on the roof, while maintaining fire safety requirements.

Some key points to take away from this revision are the following:

1. Carports, shade structures, flat roofs, and detached garages are still exempt from PV array pathways and ridge setbacks.
2. Roof setbacks from ridge for ventilation relaxed from 36 inches to 18 inches for solar systems that take up less than 1/3 of the plan view total roof area.
3. **For homes with sprinkler systems,** if the system takes up less than 2/3 of the plan view total roof area, the setback for ridge ventilation is also relaxed to 18 inches.
4. **Follow the diagrams attached, but in general two pathways on each roof section reduced to one.**
5. In some cases, access pathways for roof faces with PV may be on roof faces adjacent to the roof face with PV modules.
6. Roofs under windows now require 36-inch-wide access pathway.
SECTION 324 SOLAR ENERGY SYSTEMS

R324.1 General. Solar energy systems shall comply provisions of this section.

R324.2 Solar thermal systems. Solar thermal shall be designed and installed in accordance with the California Plumbing Code and the California Fire Code.

R324.3 Photovoltaic systems. Photovoltaic systems shall be designed and installed in accordance with Sections R324.3.1 through R324.6.1 and the California Electrical Code. Inverters shall be listed and labeled in accordance with UL 1741. Systems connected to the utility grid shall use inverters listed for utility interaction.

R324.3.1 Equipment listings. Photovoltaic panels and modules shall be listed and labeled in accordance with UL 1703.

R324.4 Rooftop-mounted photovoltaic systems. Rooftop mounted photovoltaic panel systems installed on or above the roof covering shall be designed and installed in accordance with Section R907.

R324.4.1 Roof live load. Roof structures that provide support for photovoltaic panel systems shall be designed for applicable roof live load. The design of roof structures need not include roof live load in the areas covered by photovoltaic panel systems. Portions of roof structures not covered by photovoltaic panels shall be designed for roof live load. Roof structures that provide support for photovoltaic panel systems shall be designed for live load, LR, for the load case where the photovoltaic panel system is not present.

R324.5 Building-integrated photovoltaic systems. Building-integrated photovoltaic systems that serve as roof coverings shall be designed and installed in accordance with Section R905.

R324.5.1 Photovoltaic shingles. Photovoltaic shingles shall comply with Section R905.16.

R324.6 Roof access and pathways. Roof access, pathways, and setback requirements shall be provided in accordance with Sections R324.6.1 through R324.6.2.1. Access and minimum spacing shall be required to provide emergency access to the roof to provide pathways to specific areas of the roof, to provide for smoke ventilation opportunity areas, and to provide emergency egress from the roof.

Exceptions:
1. Detached, non-habitable structures, including but not limited to detached garages, parking shade structures, carports, solar trellises, and similar structures, shall not be required to provide roof access.
2. Roof access, pathways, and setbacks need not be provided where the fire code official has determined that rooftop operations will not be employed.
3. These requirements shall not apply to roofs with slopes of 2 units vertical in 12 units horizontal (2: 12) or less.

R324.6.1 Pathways. (CFC 605.11.1.2.1) Not less than two minimum 36-inchwide (914 mm) pathways on separate roof planes, from lowest roof edge to ridge, shall be provided on all buildings. At least one pathway shall be provided on the street or driveway side of the roof. For each roof plane with a photovoltaic array, a minimum 36-inch-wide (914 mm) pathway from the lowest roof edge to ridge shall be provided on the same roof plane as the photovoltaic array, on an adjacent roof plane, or straddling the same and adjacent roof planes. Pathways shall be over areas capable of supporting fire fighters accessing the roof. Pathways shall be located in areas with minimal obstructions such as vent pipes, conduit, or mechanical equipment.

R324.6.2 Set back at ridge. For photovoltaic arrays occupying not more than 33 percent of the plan view total roof area, not less than an 18-inch (457 mm) clear set back is required on both sides of a horizontal ridge. For photovoltaic arrays
occupying more than 33 percent of the plan view total roof area, not less than a 36-inch (914 mm) clear set back is required on both sides of a horizontal ridge.

R324.6.2.1 Alternative set back at ridge. Where an automatic sprinkler system is installed within the dwelling in accordance with NFPA 13D setbacks at ridges shall conform to one of the following:

1. For photovoltaic arrays occupying not more than 66 percent of the plan view total roof area, not less than an 18-inch (457 mm) clear setback is required on both sides of a horizontal ridge.

2. For photovoltaic arrays occupying more than 66 percent of the plan view total roof area, not less than a 36-inch (914 mm) clear setback is required on both sides of a horizontal ridge.

R324.6.4 Emergency escape and rescue opening. Panels and modules installed on dwellings shall not be placed on the portion of a roof that is below an emergency escape and rescue opening. A 36-inch-wide (914 mm) pathway shall be provided to the emergency escape and rescue opening.

R324.7 Ground-mounted photovoltaic systems. Ground mounted photovoltaic systems shall be designed and installed in accordance with Section R301.

R324.7.1 Fire separation distances. Ground-mounted photovoltaic systems shall be subject to the fire separation distance requirements determined by the enforcing agency.

R324.7.2 Ground-mounted photovoltaic arrays. Ground mounted photovoltaic arrays shall comply with this section and the California Electrical Code. Setback requirements shall not apply to ground-mounted, free-standing

R324.7.3 Locations of DC conductors. Conduit, wiring systems, and raceways for photovoltaic circuits shall be located as close as possible to the ridge or hip or valley and from the hip or valley as directly as possible to an outside wall to reduce trip hazards and maximize ventilation opportunities. Conduit runs between sub arrays and to DC combiner boxes shall be installed in a manner that minimizes the total amount of conduit on the roof by taking the shortest path from the array to the DC combiner box. The DC combiner boxes shall be located such that conduit runs are minimized in the pathways between arrays. DC wiring shall be installed in metallic conduit or raceways when located within enclosed spaces in a building. Conduit shall run along the bottom of load bearing members.
Pathways to Ridge - Street Access 2016 CA Intervening Code Cycle (Supplement)

**Related CFC Section:** *(CFC 605.11.1.2.1)*

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Ridge Setbacks - **Not Sprinkled**, less than (<33%) Total Roof Area 2016 CA Intervening Code Cycle (Supplement) **Related CFC Section:** *(CFC 605.11.1.2.2)*
Ridge Setbacks - **Not Sprinkled**, greater than (>33%) Total Roof Area 2016 CA Intervening Code Cycle (Supplement) *Related CFC Section: (CFC 605.11.1.2.2)*

Ridge Setbacks - **Sprinkled**, less than (<66%) Total Roof Area 2016 CA Intervening Code Cycle (Supplement) *Related CFC Section: (CFC 605.11.1.2.2.1)*
Ridge Setbacks - Sprinkled, greater than (>66%) Total Roof Area 2016 CA Intervening Code Cycle (Supplement) **Related CFC Section: (CFC 605.11.1.2.2.1)**

R324.6.2.1. Alternative setback at ridge. Where an automatic sprinkler system is installed within the dwelling in accordance with NFPA 13D or Section P2904, setbacks at ridges shall conform with one of the following:

1. [Further details...]

2. For photovoltaic arrays occupying more than 66 percent of the plan view total roof area, not less than a 36-inch (914 mm) clear setback is required on both sides of a horizontal ridge.

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Structural Support of Pathways 2016 CA Intervening Code Cycle (Supplement)

Pathways may have to be located in middle of roofs. Treat them like “pathways” instead of “setbacks.”

R324.6.1. Pathways shall be over areas capable of supporting fire fighters accessing the roof.

Large roof overhang not well supported requires pathway to move over bearing wall.
Setbacks & Pathways Involving Hips & Valleys 2016 Intervening Code Cycle (Supplement)

“At least one pathway shall be provided on the street or driveway side of the roof.”

Setbacks & Pathways Involving Driveways 2016 CA Intervening Code Cycle (Supplement)

“At least one pathway shall be provided on the street or driveway side of the roof.”
R324.6.1 Pathways. [...] For each roof plane with a photovoltaic array, at least one 36 in. (914 mm) wide pathway from lowest roof edge to ridge shall be provided on the same roof plane as the photovoltaic array, or on an adjacent roof plane, or straddling the same and adjacent roof planes.

Emergency Escape & Rescue Opening 2016 CA Intervening Code Cycle (Supplement)

R324.7.2.6. Panels and modules installed on Group R-3 buildings shall not be placed on the portion of a roof that is below an emergency escape and rescue opening. A 36 inch (914 mm) wide pathway shall be provided to the emergency escape and rescue opening.