R324.6
Roof Access for Photovoltaic Solar Energy Systems

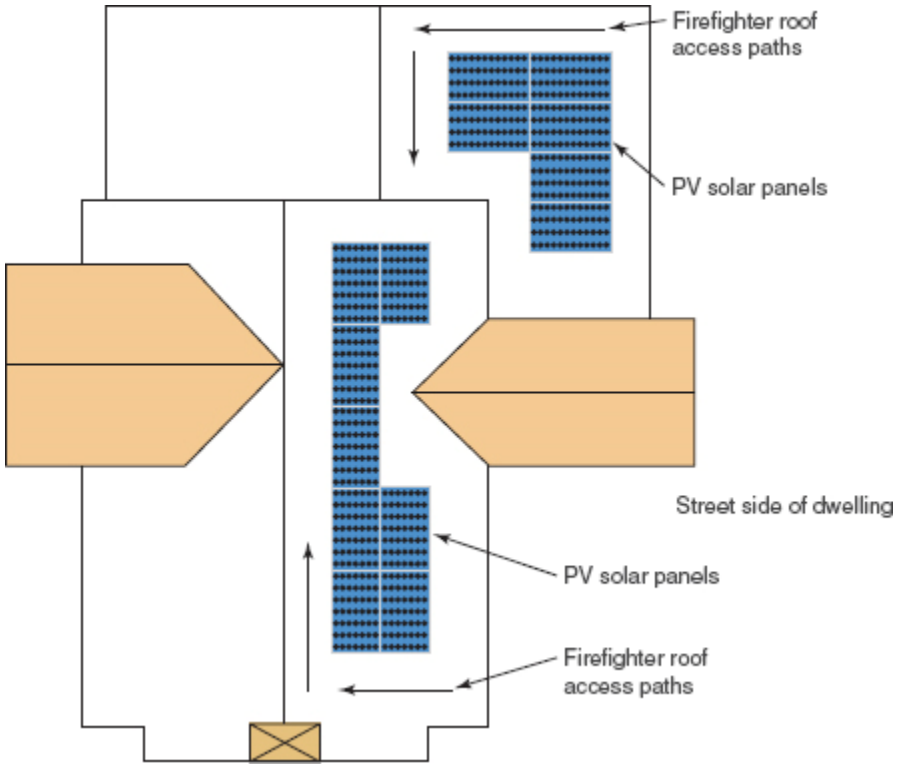
CHANGE TYPE: Addition

CHANGE SUMMARY: Requirements for roof access and pathways for fire fighters have been introduced into the FBCR provisions for rooftop-mounted photovoltaic solar energy systems.

2020 CODE: 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, provide for smoke ventilation opportunity areas and to provide emergency egress from the roof.

Exceptions:

1. Detached, nonhabitable 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 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 (17-percent slope) or less.



Required roof access and pathways for fire fighters for roof-mounted PV solar systems

R324.6.1 Pathways. Not fewer than two pathways, on separate roof planes from lowest roof edge to ridge and not less than 36 inches (914 mm) wide, shall be provided on all buildings. Not fewer than one pathway shall be provided on the street or driveway side of the roof. For each roof plane with a photovoltaic array, a pathway not less than 36 inches wide (914 mm) shall be provided from the lowest roof edge to ridge 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 Setback 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 setback 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 setback is required on both sides of a horizontal ridge.

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 comply with 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.

CHANGE SIGNIFICANCE: Photovoltaic (PV) solar energy systems offer property owners the ability to generate their own electricity and, in many cases, sell excess electricity back to the utility provider. These PV systems have proliferated in the past decade and are now commonly seen on rooftops of residential buildings in some areas of the country. Lack of roof access and clear pathways can present a hazard to fire fighters during rooftop operations. For example, PV arrays may cover a large area of a building's roof, which complicates performing vertical ventilation of a structure fire.

Pathways are provided so fire fighters can perform manual ventilation by cutting one or more holes in a building roof. Section R324.6 states that the purpose of the new provisions is to provide:

- Emergency access to the roof
- Pathways to specific areas of the roof
- Smoke-ventilation opportunity areas
- Emergency egress from the roof

The provisions do not apply to detached garages and similar buildings or to dwellings with low-slope roofs of 2:12 or less. There is also a provision that exempts dwellings where the building official has determined that the fire department will not perform rooftop operations for that property.

Pathways must be at least 36 inches wide, extend from the roof edge to the ridge and be arranged to avoid obstacles such as plumbing or gas vents. The minimum number of pathways is:

- Two per building on separate parts of the roof
- One on the street or driveway side of the dwelling
- One on each roof plane with a PV array (or adjacent roof plane)

Setbacks on both sides of horizontal ridges are also required to provide fire fighters with an area to cut ventilation openings. The minimum setback dimensions depend on the total area of the PV arrays in relation to the roof area and the presence of an automatic fire sprinkler system. As an incentive, the installation of a sprinkler system allows for a smaller setback and a greater area for the PV solar arrays. As stated by the code change proponent, this benefit is based on an analysis that 87 percent of all fires in residential housing are controlled by the fire sprinkler activation. The effectiveness of fire sprinkler systems greatly reduces the need for fire fighters to access the roof when responding to a house fire. See Table 3-1 for the ridge setback requirements.

TABLE 3-1Minimum Ridge Setback

Array Percent of Roof Area	Fire Sprinkler System	Minimum Setback on Both Sides of Ridge (inches)
≤ 33%	No	18
> 33%	No	36
≤ 66%	Yes	18
> 66%	Yes	36

R324.6.2.2 Solar Panels near Emergency Escape and Rescue Openings

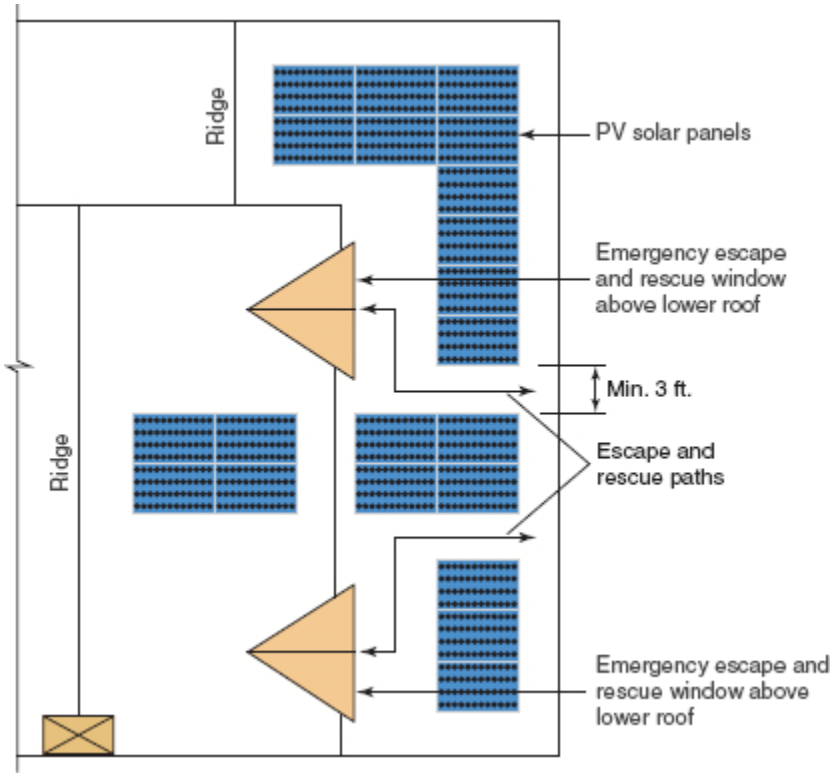
CHANGE TYPE: Addition

CHANGE SUMMARY: Rooftop-mounted photovoltaic solar energy panels and modules are not permitted to be installed directly below emergency escape and rescue openings.

2020 CODE: R324.6.2.2 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 pathway not less than 36 inches (914 mm) wide shall be provided to the emergency escape and rescue opening.

CHANGE SIGNIFICANCE: As covered in Section R310, an emergency escape and rescue opening is required in every bedroom, basement and habitable attic to provide occupants a way out of the dwelling in case fire, smoke or another emergency blocks the means of egress path. The code also provides minimum net dimensions for the escape opening, as well as operational criteria for windows

and coverings. To ensure a path from the escape opening to a public way or yard that opens to a public way, the FBCR spells out window well and area well requirements and requires a path not less than 36 inches high when the opening is under a deck or porch. Similarly, new language in the photovoltaic (PV) solar energy provisions is concerned with providing a safe path for the occupant climbing out of an emergency escape and rescue opening that is above a roof. Installing a PV solar panel below the escape opening would cause an unsafe condition in an emergency situation. The required clear path must be at least 36 inches wide to provide emergency escape from the roof as well as emergency access to the roof as stated in Section R324.6.



A 36-inch-wide pathway is required for emergency escape and rescue openings above roof-mounted PV solar panels.