BCD TECHNICAL BULLETIN
June 2023

Building Codes Division
Department of Consumer and Business Services

Photovoltaic Pathways

Detached One- and Two-Family Dwellings and Townhouses

Overview

The increase in demand for photovoltaic (PV) systems on rooftops created an awareness of the need for firefighter safety. Designated pathways on roofs with PV systems are necessary to provide safe unobstructed access for firefighting operations and to also provide escape routes.

This bulletin is intended to provide technical guidance on the requirements as they apply to PV systems installed on detached one- and two-family dwellings and townhouses and includes some examples illustrating common installations and roof types.

Where required

Designated pathways shall be provided for all rooftop-mounted PV systems installed on detached one- and two-family dwellings and townhouses, except as noted below. The required dimensions and locations of pathways vary based on the amount of roof area the PV system covers and the presence of adjacent roof planes, as uniquely defined.

Pathways are entirely exempted as follows:

- Nonoccupied accessory structures that are separated from occupied structures by not less than five feet or by a two-hour fire-resistance-rated assembly.
- Where pathways are deemed unnecessary for the specific building based on the fire official's recommendation, and approved by the building official.

Definitions

The following definitions are important to the application of the pathway provisions:

Solar roof plane. A roof plane on which a photovoltaic array is installed. A solar roof plane does not include building-integrated photovoltaic solar shingles.

Photovoltaic array. A mechanically integrated assembly of modules or panels with a support structure, foundation, tracker, and other components, as required to form a power-producing unit.

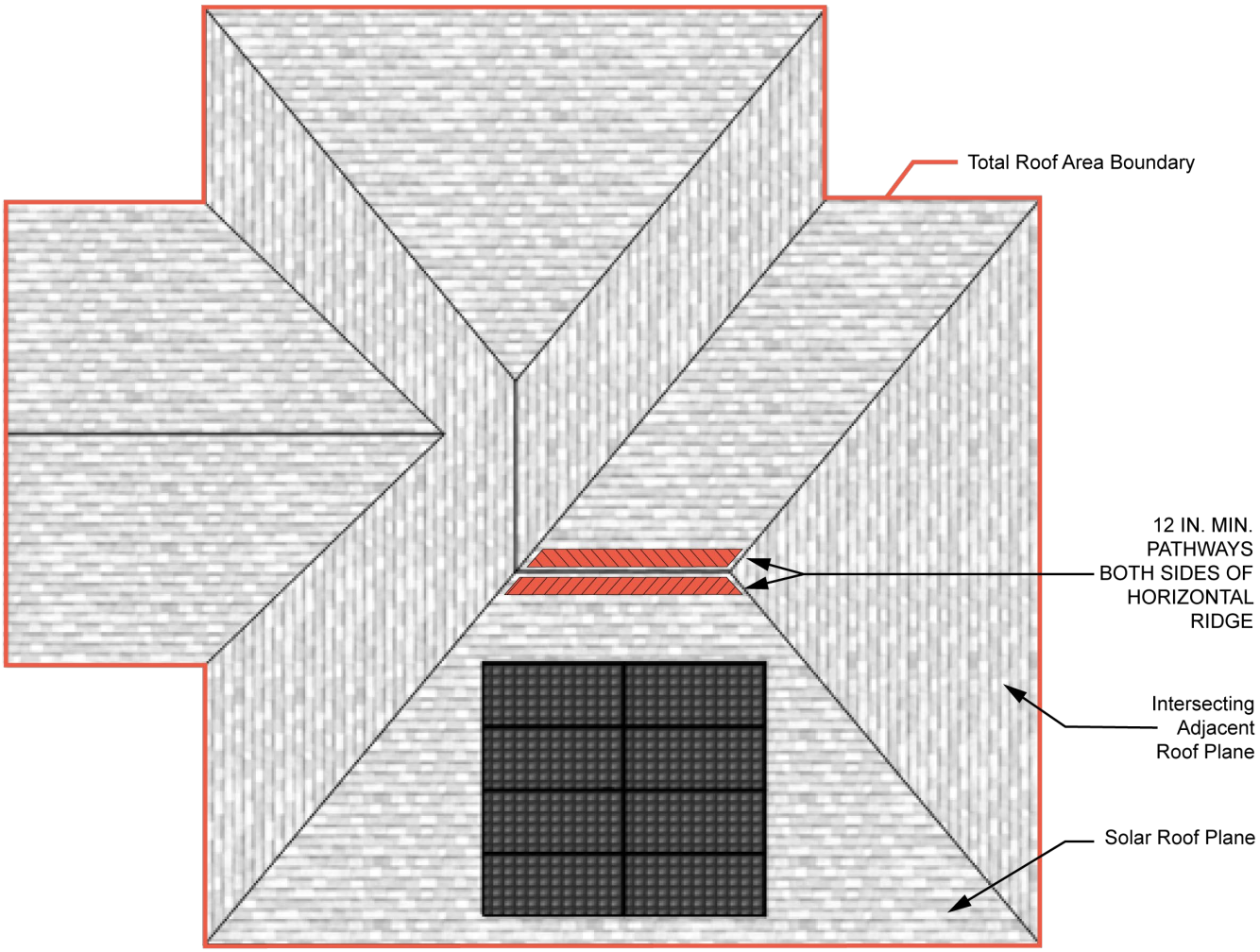
Roof area. The square footage of the roof, measured in plan view sharing a common attic below.

Adjacent roof plane. For the purposes of firefighter access and escape pathway provisions, the solar roof plane is contrasted with the adjacent roof plane. To be considered an adjacent roof plane, the roof plane adjacent to the photovoltaic array installation must be free of photovoltaic panels. In typical gable roof construction, the south-facing roof will generally be the preferred place for the installation of photovoltaic panels, and it will become the solar roof plane. Where the north-facing roof plane does not contain any photovoltaic panels, it would be considered the adjacent roof plane.

Examples

The following examples are provided to illustrate compliance with the pathway requirements and exceptions for common installations and roof types. These examples are not exhaustive and are intended only to provide general guidance related to the intent of the pathway code provisions.

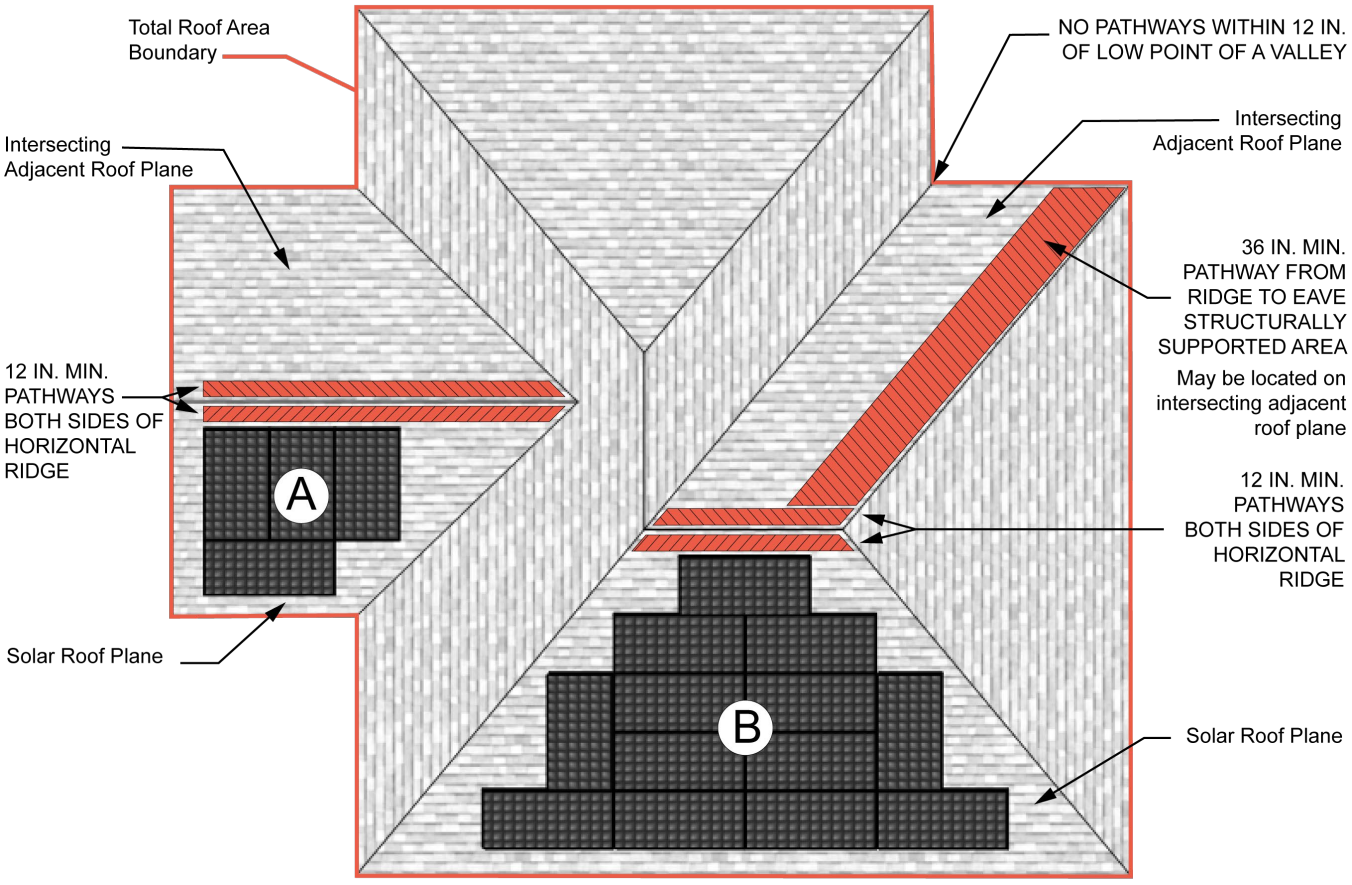
FIGURE 1



Details:

1. Roof slope exceeds 2 in 12.
2. Array is less than 150 ft in length and width.
3. Array is less than 1,000 ft^2 in area.
4. Intersecting adjacent roof planes are present.
5. Array area is less than 25% of the total roof area.
6. Attic spaces are not divided.

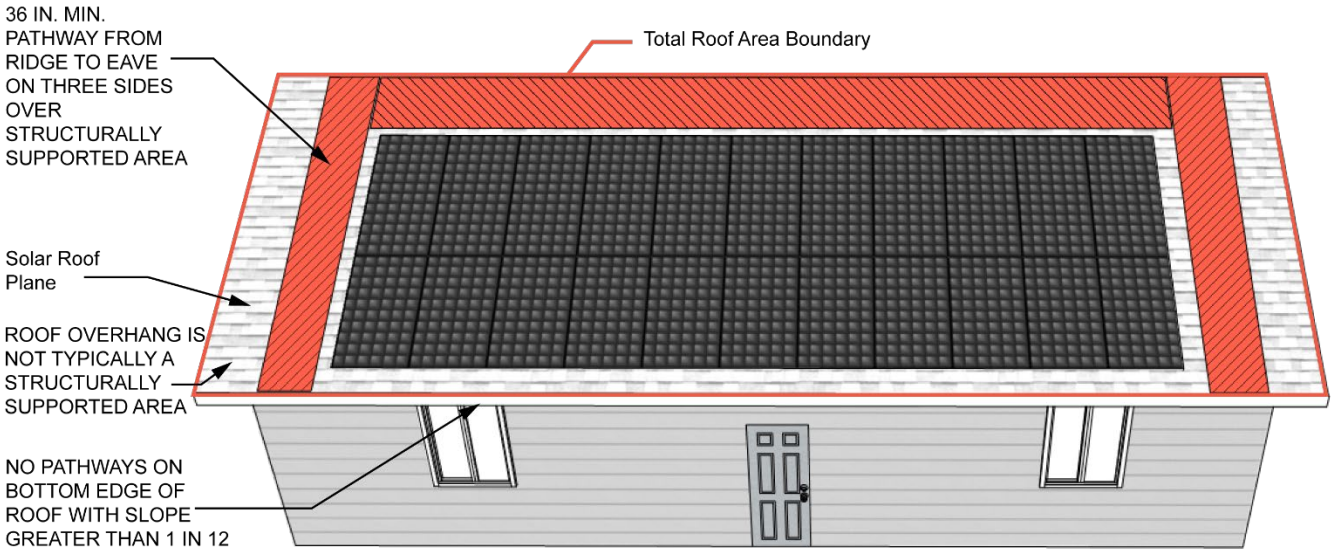
FIGURE 2



Details:

1. Roof slopes exceed 2 in 12.
2. Arrays (A) and (B) are each less than 150 ft in length and width.
3. Arrays (A) and (B) are each less than 1,000 ft^2 in area.
4. Intersecting adjacent roof planes are present.
5. Array (A) area is less than 25% of the total roof area.
6. Array (B) area is greater than 25% of the total roof area.
7. Attic spaces are not divided.

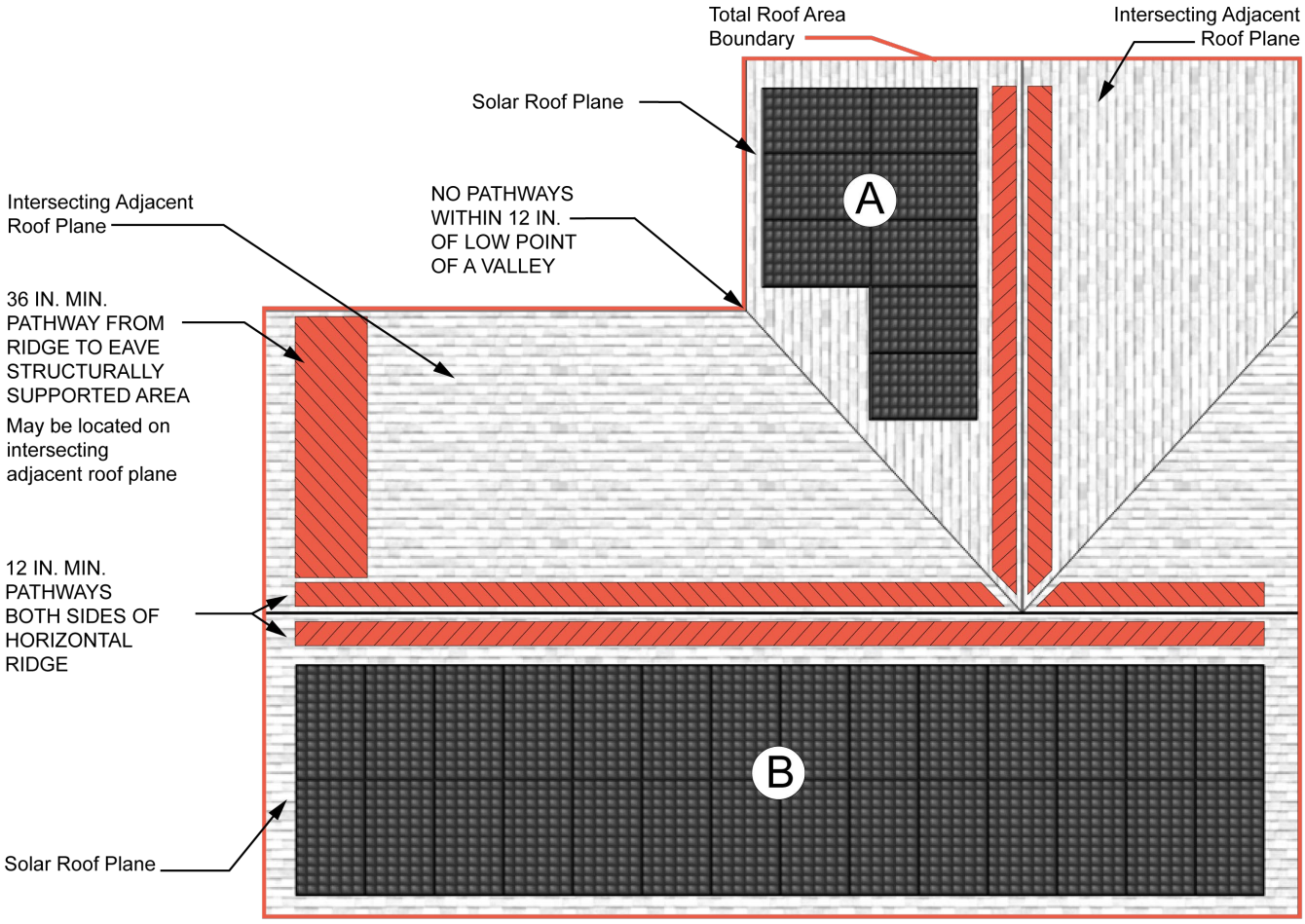
FIGURE 3



Details:

1. Roof slope exceeds 2 in 12.
2. Array is less than 150 ft in length and width.
3. Array is less than 1,000 ft^2 in area.
4. No intersecting adjacent roof planes are present.
5. Array area is greater than 25% of the total roof area.
6. Attic spaces are not divided.

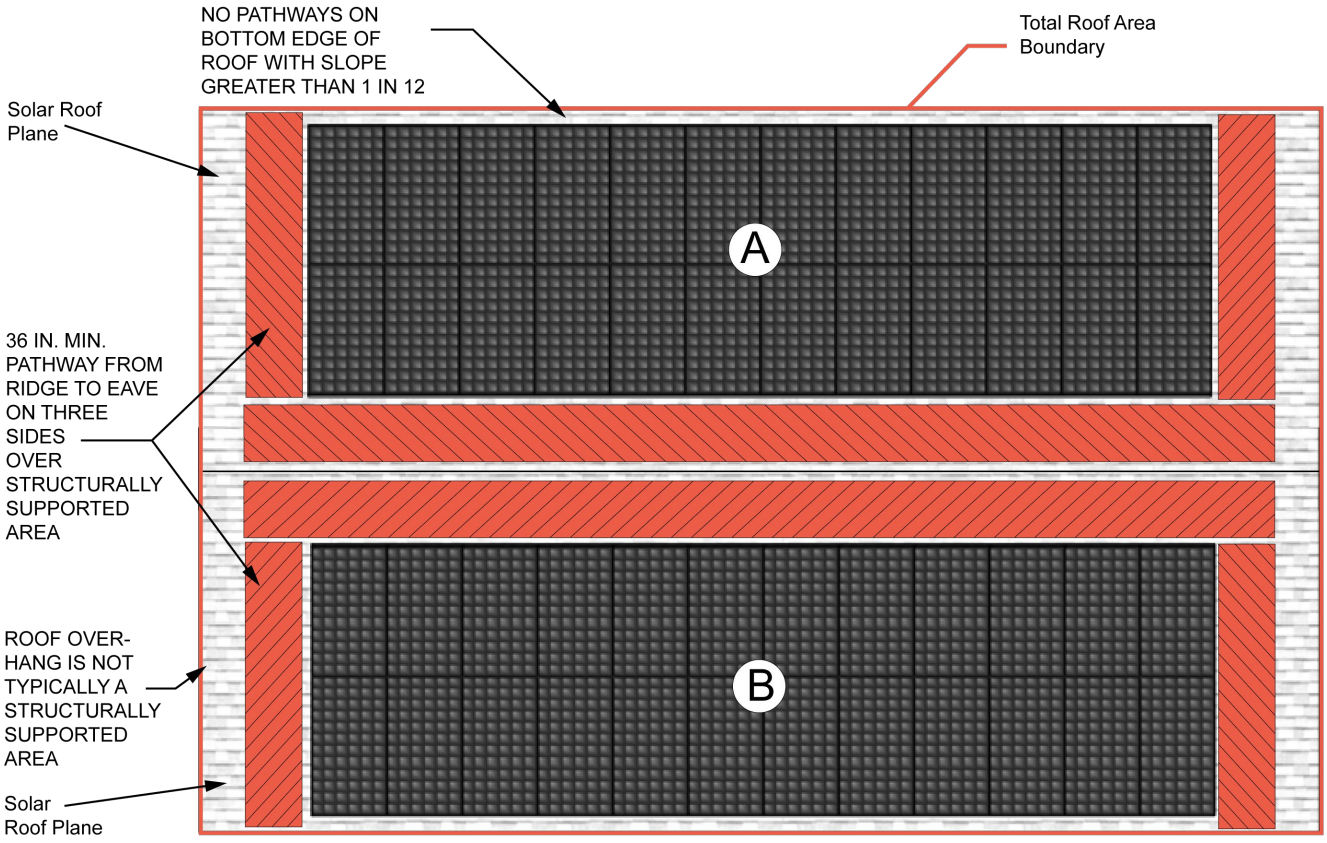
FIGURE 4



Details:

1. Roof slopes exceed 2 in 12.
2. Arrays (A) and (B) are each less than 150 ft in length and width.
3. Arrays (A) and (B) are each less than 1,000 ft^2 in area.
4. Intersecting adjacent roof planes are present.
5. Array (A) area is less than 25% of the total roof area.
6. Array (B) area is greater than 25% of the total roof area.
7. Attic spaces are not divided.

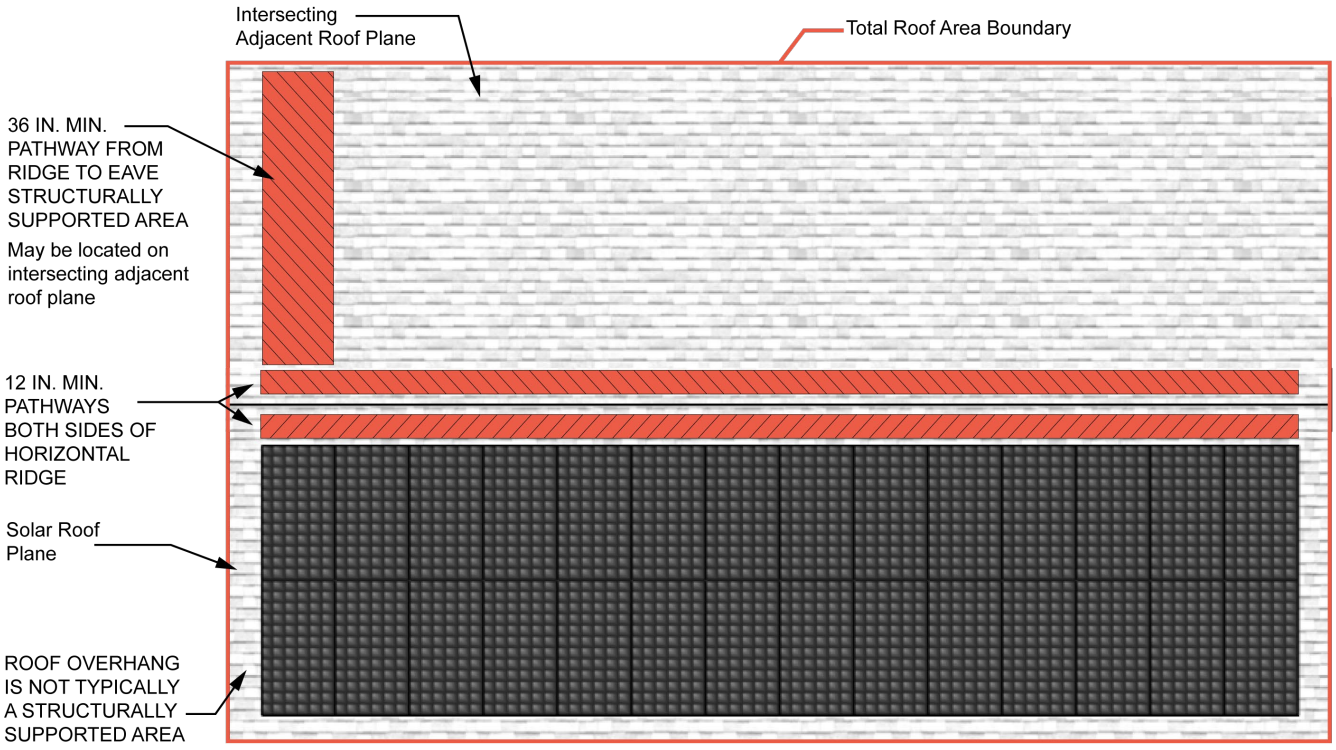
FIGURE 5



Details:

1. Roof slopes exceed 2 in 12.
2. Arrays (A) and (B) are each less than 150 ft in length and width.
3. Arrays (A) and (B) are each less than 1,000 ft^2 in area.
4. No intersecting adjacent roof planes are present.
5. Array (A) area is greater than 25% of the total roof area.
6. Array (B) area is greater than 25% of the total roof area.
7. Attic spaces are not divided.

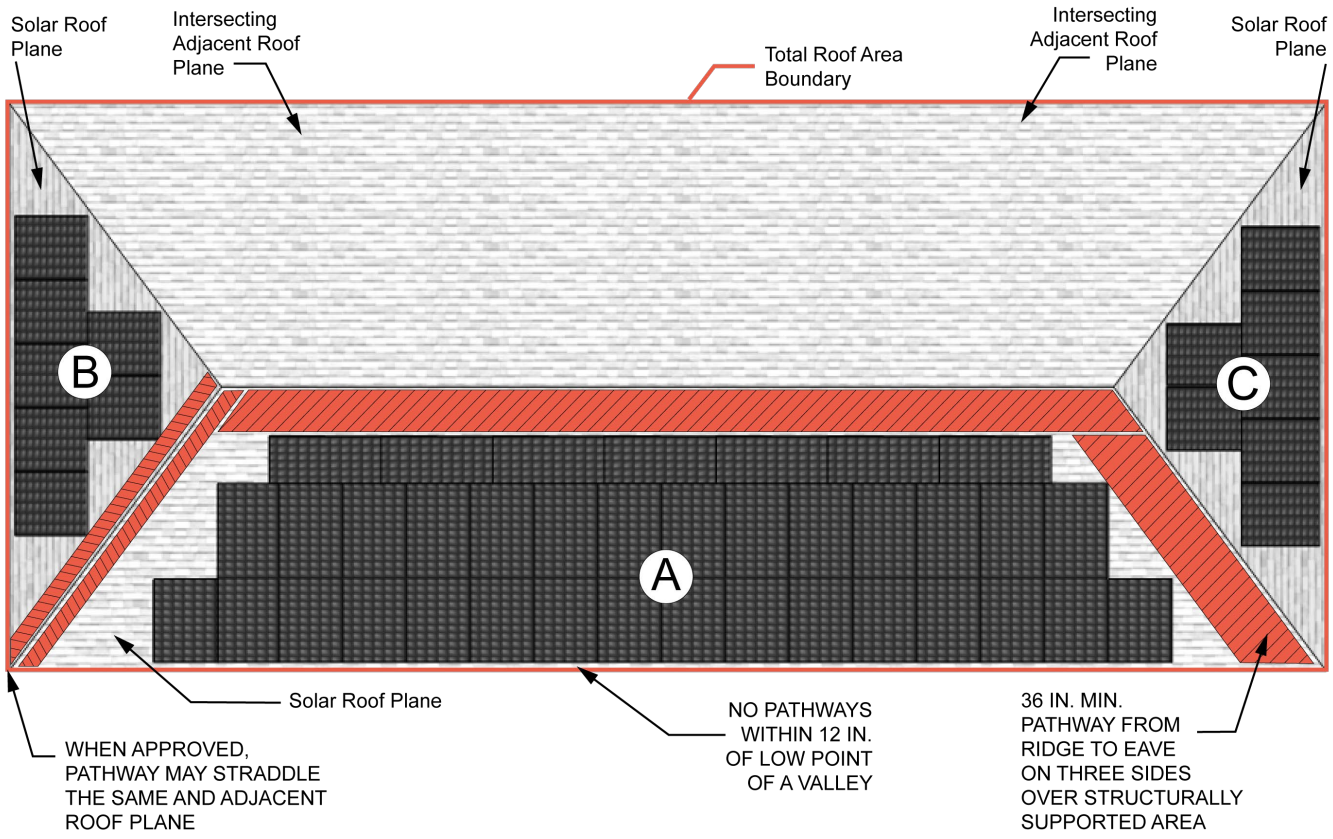
FIGURE 6



Details:

1. Roof slopes exceed 2 in 12.
2. Array is less than 150 ft in length and width.
3. Array is less than 1,000 ft^2 in area.
4. Intersecting adjacent roof plane is present.
5. Array area is greater than 25% of the total roof area.
6. Attic spaces are not divided.

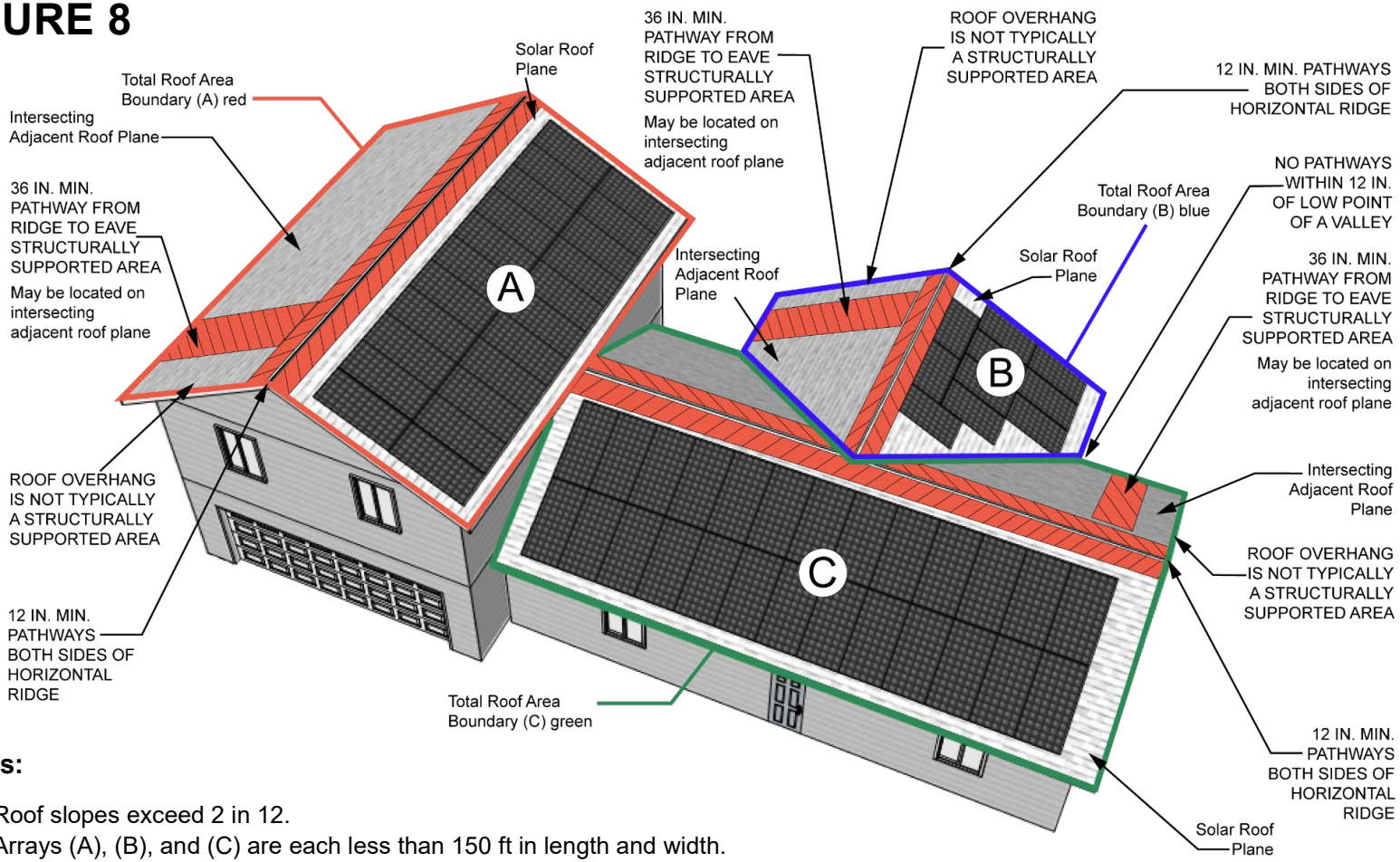
FIGURE 7



Details:

1. Roof slopes exceed 2 in 12.
2. Arrays (A), (B), and (C) are each less than 150 ft in length and width.
3. Array (A) is greater than 1,000 ft^2 in area.
4. Arrays (B) and (C) are each less than 1,000 ft^2 in area.
5. Intersecting adjacent roof planes are present.
6. Array (A) area is greater than 25% of the total roof area.
7. Arrays (B) and (C) areas are each less than 25% of the total roof area.
8. Attic spaces are not divided.

FIGURE 8



Details:

1. Roof slopes exceed 2 in 12.
2. Arrays (A), (B), and (C) are each less than 150 ft in length and width.
3. Intersecting adjacent roof planes are present for arrays (A), (B), and (C).
4. Array (A) area is less than 1,000 ft^2 and greater than 25% of the total red roof area.
5. Array (B) area is less than 1,000 ft^2 and greater than 25% of the total blue roof area.
6. Array (C) area is less than 1,000 ft^2 and greater than 25% of the total green roof area.
7. Attic spaces for the red, blue, and green roof areas are divided and are not contiguous.

Questions?

For information about a specific project, contact the local building department: **Oregon.gov/bcd/lbdd**.