



ENERGY STAR Single-Family New Homes ENERGY STAR Multifamily New Construction Caribbean & Pacific Aperture Placement

Guidance on Item 4.1.3 of the Caribbean & Pacific Rater Design Review Checklist

Item 4.1.3 of the Single-Family New Homes (SFNH) Caribbean & Pacific Rater Design Review Checklist and Multifamily New Construction (MFNC) Caribbean Rater Design Review Checklist defines requirements for the location of apertures:

“The specified components contributing to the operable aperture area in each room shall be located on two or more exterior walls except when placed on a single exterior wall with wing walls. If placed on adjacent walls, components shall be placed at a minimum of one third of the wall width from the adjoining corner.”

Associated SFNH Footnote 19 and MFNC Footnote 11 provide further details on aligning apertures:

Apertures are recommended, but not required, to be on walls that directly bound the primary living area. ¹ Apertures outside the primary living area shall be “effectively aligned” with at least one aperture inside the primary living area. An aperture is “effectively aligned” if a straight line can be drawn from one aperture to within 5 ft. of the other aperture. If the apertures are on walls that don’t directly bound the primary living area, then there shall be an unobstructed path between the primary living area and those apertures that is at least as large as the square footage of those apertures. See energystar.gov/apertures for additional guidance.

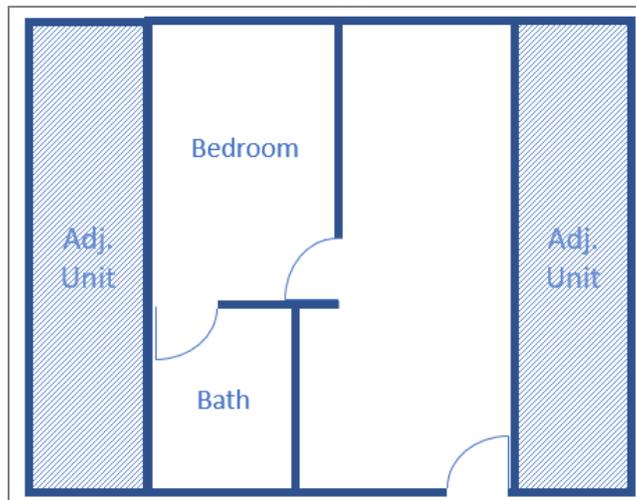
Associated SFNH Footnote 20 and MFNC Footnote 12 provide further details on wing walls:

Where wing walls are included in the building design for ventilation purposes, they shall be placed between windows to create a high-pressure and a low-pressure zone on each window. Wing walls shall extend from the bottom to the top of the window and extend outward from the building a distance at least equal to one-half the width of the window. Additionally, it is recommended but not required that the wing wall be located on the windward side of the building.

This document provides guidance on these footnotes to ensure that this Item’s intent is more consistently met.

Apertures are likely to be most effective if they’re located on walls that directly bound the primary living area. However, architectural constraints may make this difficult to achieve. For example, consider the attached dwelling unit in Exhibit 1, which only has exterior walls on the front and the back.

Exhibit 1



If apertures must be on walls that directly bound the primary living area, the bedroom, then there is no way to meet this Item unless the design incorporates wing walls, which stakeholders have indicated are not currently common practice. Therefore, a pragmatic allowance is provided in this footnote, which does not alter the original intent of the requirements.

Apertures are allowed to be located outside the primary living area if they meet two prerequisites:

1. Apertures outside the primary living area shall be “effectively aligned” with at least one aperture inside the primary living area. An aperture is “effectively aligned” if a straight line can be drawn from one aperture to within 5 ft. of the other aperture.

¹ Per SFNH Footnote 16 and MFNC Footnote 8: Primary living areas include dining rooms, living rooms, family rooms, dens, bedrooms and home offices. Primary living areas do not include other spaces, such as kitchens, bathrooms, hallways, stairways, entrances, garages, and utility rooms.



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2. There shall be an unobstructed path between the primary living area and those apertures outside the primary living area that is at least as large as the square footage of those apertures.

The first prerequisite requires apertures outside the primary living area to be effectively aligned with at least one aperture inside the primary living area. This helps promote effective ventilation by not allowing circuitous routes between apertures. Apertures are “effectively aligned” with at least one aperture inside the primary living area if a straight line can be drawn from one aperture to within 5 ft. of the other aperture. See Exhibits 2 through 5 for illustrations of this prerequisite in three different scenarios.

Exhibit 2: Scenario A – 1st Aperture

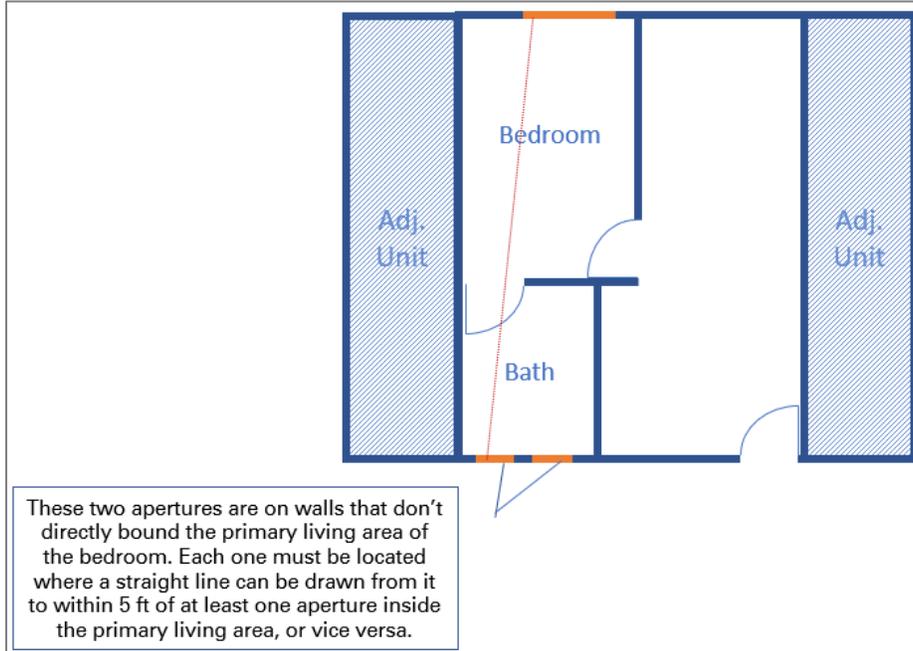
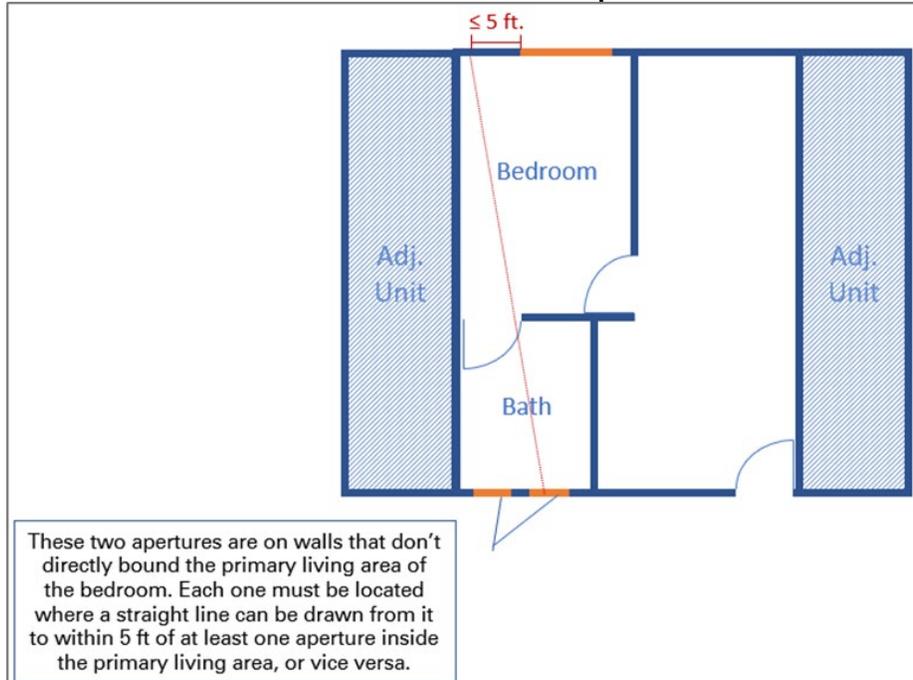


Exhibit 3: Scenario A – 2nd Aperture





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Exhibit 4: Scenario B

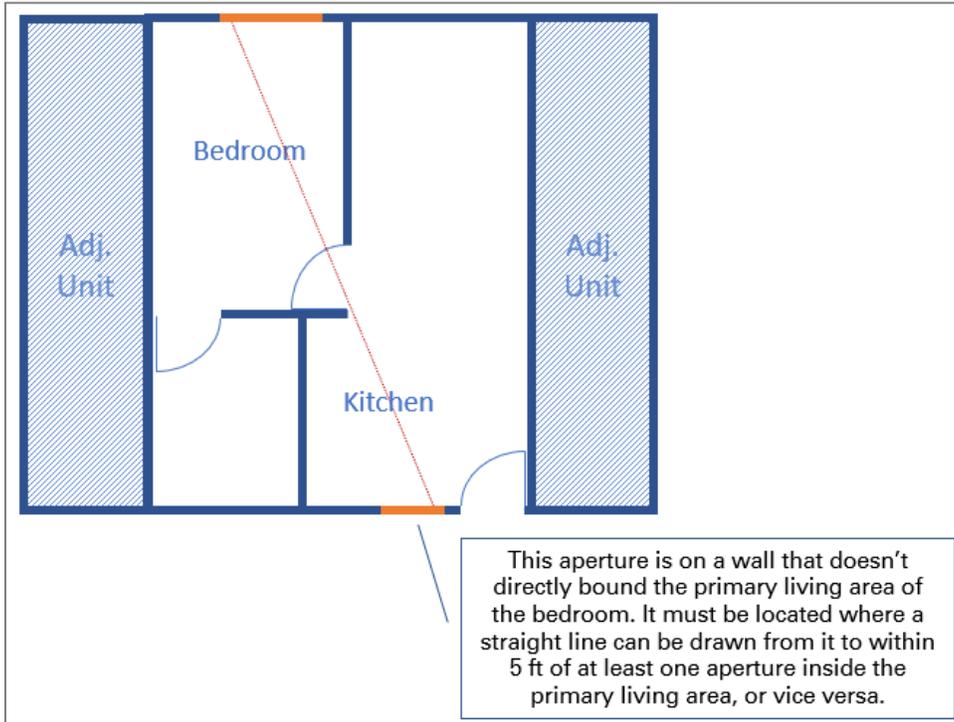
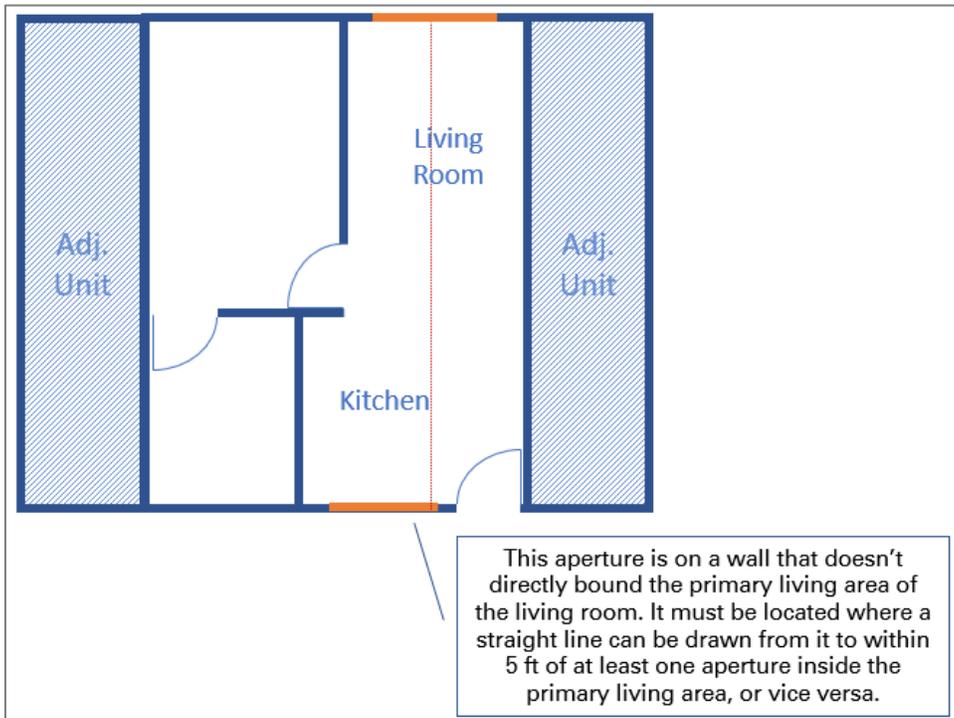


Exhibit 5: Scenario C





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The second prerequisite requires that if apertures are outside the primary living area, then there be an unobstructed path between the primary living area and those apertures that is at least as large as the square footage of those apertures. A movable object (e.g., a door), does not count as an obstruction. This helps promote effective ventilation by not impeding airflow between apertures. See Exhibits 6 through 8 for illustrations of this prerequisite in three different scenarios.

Exhibit 6: Scenario A

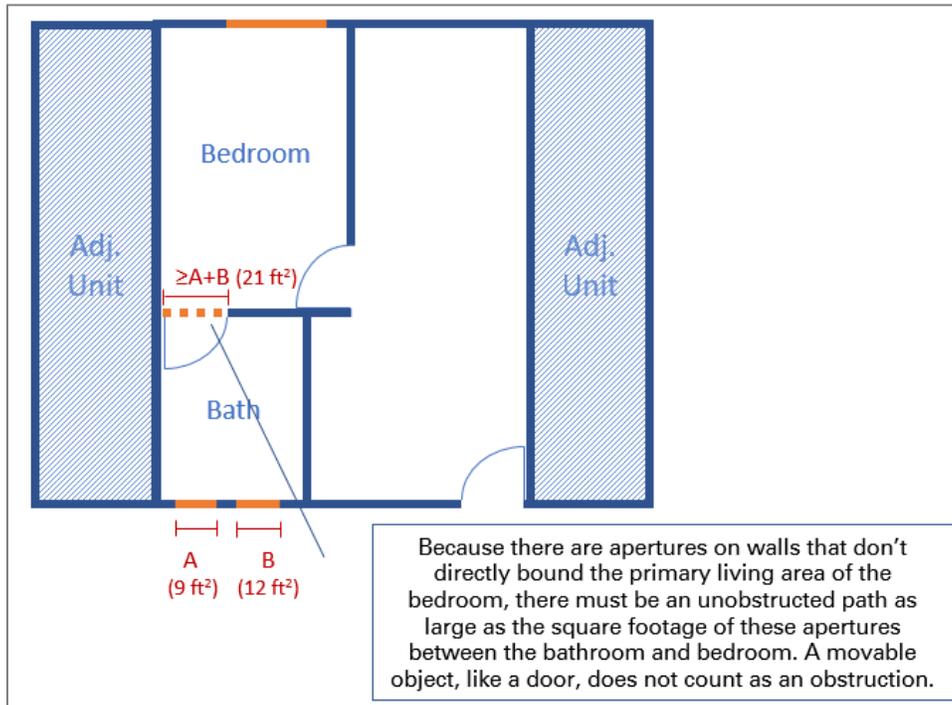
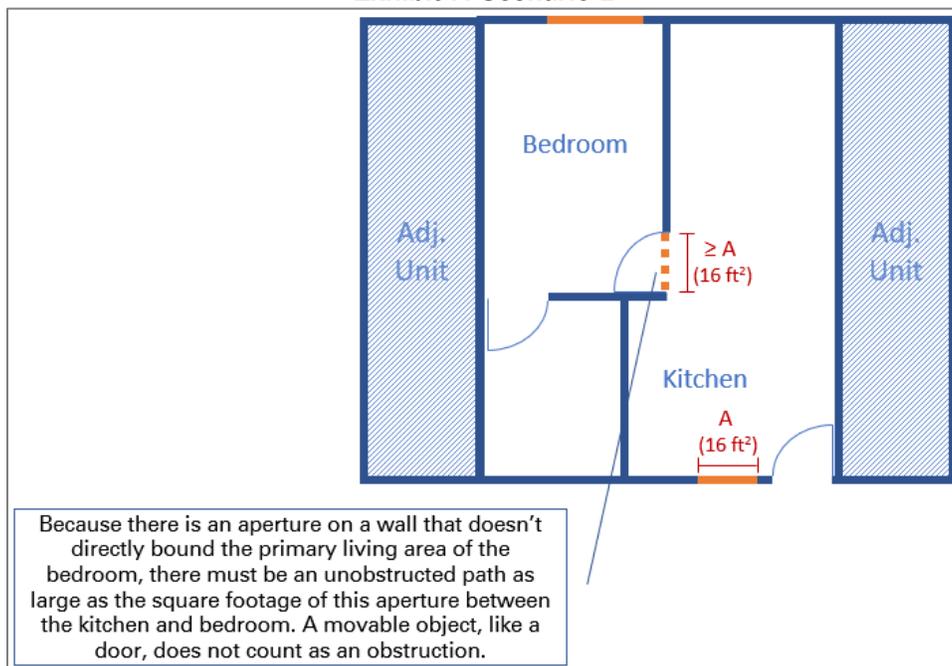


Exhibit 7: Scenario B

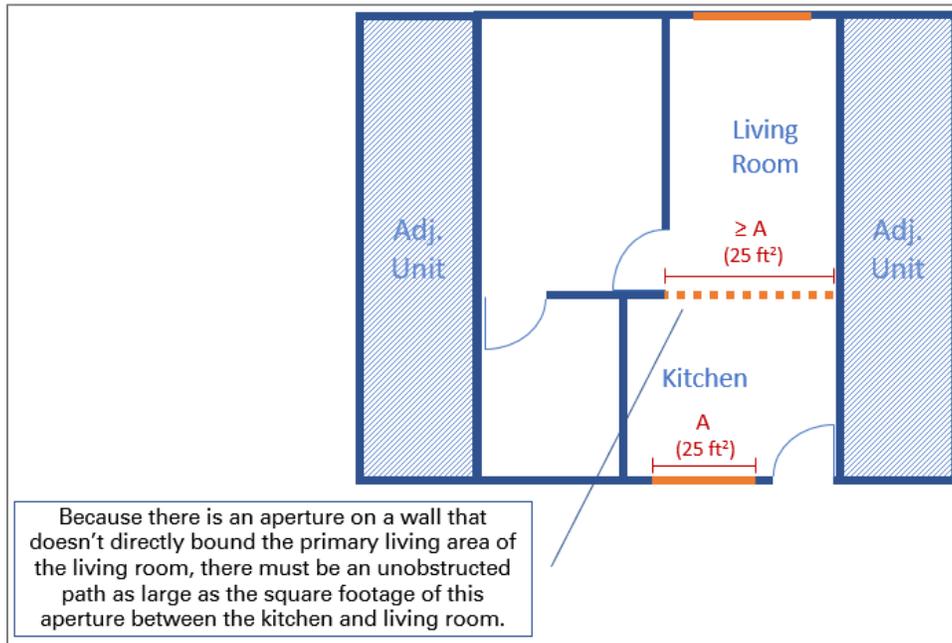




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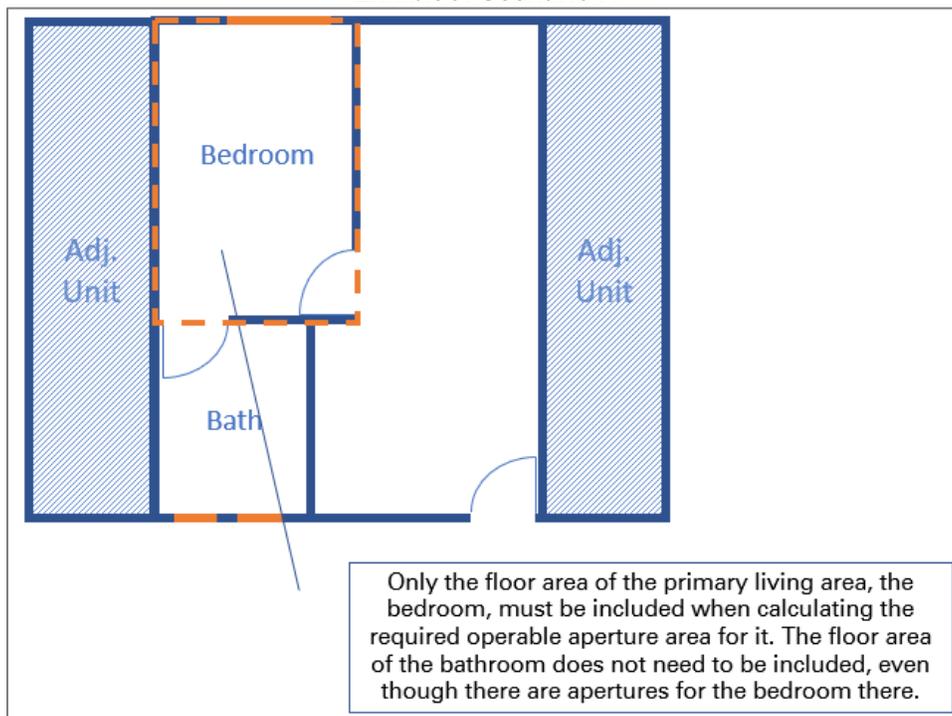
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Exhibit 8: Scenario C



Finally, while already implied, if the apertures are outside the primary living area, then only the floor area of the primary living area needs to be included when calculating the required operable aperture area; the floor area of adjacent spaces do not need to be included. See Exhibits 9 through 11 for illustrations of this intent in three different scenarios:

Exhibit 9: Scenario A





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Exhibit 10: Scenario B

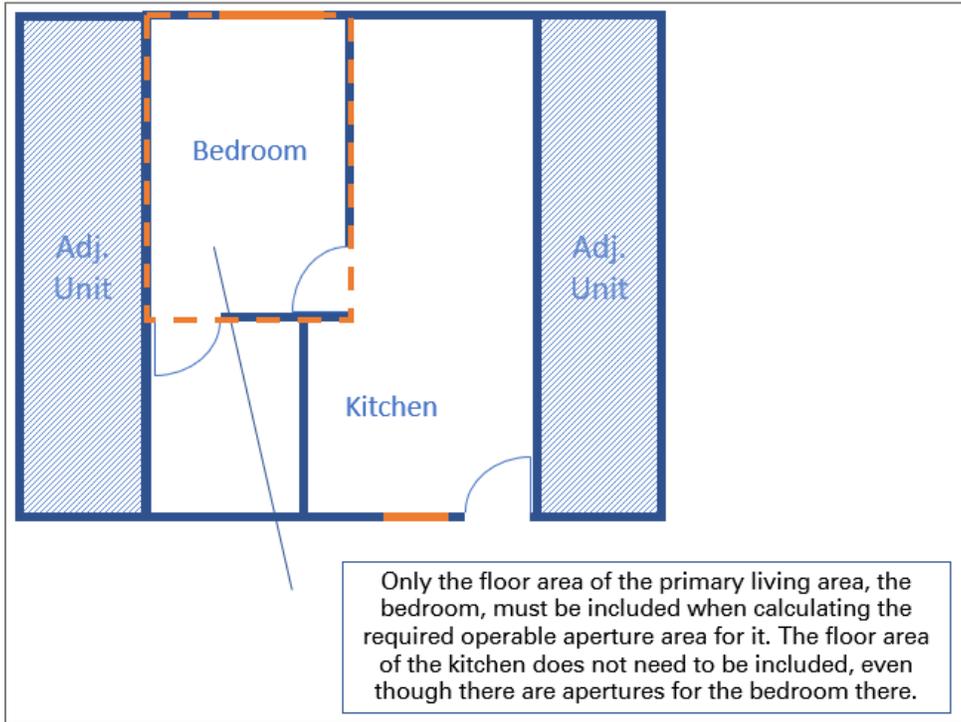


Exhibit 11: Scenario C

