

RESNET Formal Interpretation 2010-02

Definition of Conditioned Floor Area

Approved by the RESNET Board of Directors, 12/27/2010

Proponent: RESNET Standing Technical Committee, Enclosure Subcommittee

Applies to:

2006 Mortgage Industry National Home Energy Rating Systems Standards
Section 3.2 and Appendix A

Purpose: This interpretation clarifies the intended meaning of conditioned floor area (CFA) as defined in Section 302 of the rating standards:

Conditioned Floor Area (CFA) – The finished floor area in square feet of a home that is conditioned by heating or cooling systems, measured in accordance with ANSI Standard Z765-2003 with exceptions as specified in Appendix A of this Standard.

Summary of interpretation

1. CFA includes all finished space that is within the (insulated) conditioned space boundary (that is, within the insulated envelope), regardless of HVAC configuration.
2. CFA includes unfinished spaces that are directly conditioned, that is, they have “fully ducted” intentional HVAC supply (or other intentional heat source).
3. CFA does not include spaces such as insulated basements or attics that are unfinished, if there is no intentional HVAC supply, or minimal supply (inadequate to be considered *directly conditioned* space).
4. CFA does not include heated garages.

Referenced definitions

From ANSI Z765-2003, as referenced:

Finished Area

An enclosed area in a house that is suitable for year-round use, embodying walls, floors, and ceilings that are similar to the rest of the house.

From Section 302 Definitions:

Directly Conditioned Space – An enclosed space having heating equipment with a capacity exceeding 10 Btu/hr-ft², or cooling equipment with a capacity exceeding to 10 Btu/hr-ft². An exception is if the heating and cooling equipment is designed and thermostatically controlled to maintain a process environment temperature less than 65 degrees Fahrenheit or greater than 85 degrees Fahrenheit for the whole space the equipment serves.

Interpretation

Conditioned Floor Area (CFA) shall include the floor area of all conditioned space that is finished, or unfinished but suitably equipped for year-round occupancy (directly conditioned). CFA shall include the following:

- Spaces that are both finished and directly conditioned. This includes any floor area of space that is finished in accordance with the definition of “Finished Area” provided by ANSI Z765-2003, and inside the conditioned space boundary.

- Spaces that are both finished and indirectly conditioned. Examples include (but are not limited to) finished spaces such as bedrooms, bathrooms or other rooms that are inside the conditioned space boundary, but have no terminal devices to deliver heat or cooling, and all finished spaces that are directly conditioned.
- Spaces that are unfinished and *directly conditioned* in accordance with the definition above. Examples include (but are not limited to) basements or attics with terminal devices (such as supply and return air registers and grilles or coils, radiators, heat exchangers, or the like) *designed* to maintain space temperatures suitable for occupancy during heating and cooling seasons.

CFA shall not include the following:

- Spaces that are unfinished and indirectly conditioned. Examples include (but are not limited to) an unfinished basement with insulated walls, or an unfinished, unvented attic space with insulated roof, when those spaces do not have terminal devices; such spaces shall not be included in the CFA, even though they are within the conditioned space boundary of the home.

Note: An unfinished basement with insulated walls, or an unfinished, unvented attic space with insulated roof shall not be included in the CFA just because they include some terminal devices, such as one or two supply registers cut into a trunk duct. The presence of terminal devices that provide less than 10 btu/hr-sf do not meet the definition of “directly conditioned space” and thus such a space would not be included in the CFA. For the purpose of this interpretation, if the actual btu/hour capacity of air registers in an unfinished space is unknown, the space shall be excluded from the CFA if there is less than 15 CFM of supply air for each 100 square feet of floor area.

- Unfinished, heated garages shall not be included in the CFA. A heated garage is not currently defined as a “rated feature” in the standards, and thus is not modeled as conditioned space nor included in the CFA.

There are several areas of inconsistency or ambiguity in the standard:

- The reference on page A-5 to the 1996 edition of ANSI Z765 is incorrect. This is an editorial error, and should refer to the 2003 edition in accordance with the definition of CFA.
- The exception cited in the definition of CFA refers to Appendix A, page A-5: “Measure floor dimensions in accordance with ANSI Z765-1996 with the exception of Section 3 Paragraph 6 (floor areas with ceiling heights of less than 5’ will be included in finished square footage).” The exception in the definition of CFA is to *include* floor areas with ceiling heights of less than 5’ in the finished square footage of the home. This exception was intended to make floor area calculations from plans easier for raters. However, this exception shall *not* apply to attics, basements or crawlspaces; such spaces shall not be included in CFA when the ceiling height is less than 5 feet, even if they are directly conditioned.
- An inconsistency occurs on page A-27: “Determine conditioned and indirectly conditioned volume of space by multiplying conditioned floor area by ceiling height.” In the case where a conditioned space is unfinished and indirectly conditioned, volume of that space(s) shall be included in the conditioned volume of the home, even though the floor area is not included in the CFA.
- On page 3-17, the definition of AFL as “Total floor area of directly conditioned space” conflicts with the inclusion of spaces that are finished and indirectly conditioned. For the purpose of this interpretation, AFL should always be taken as equal to CFA. (This point should be noted by software providers, and should not affect raters).

These inconsistencies will be addressed by a future amendment to the standard.

Rationale: The need for clarification on conditioned floor area and its various implications for conducting a HERS rating are long overdue. Because energy efficiency programs that refer to the RESNET standard may base incentives and/or compliance criteria on CFA, the raters need guidance in order to consistently calculate CFA and apply it to the rating process.