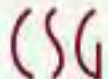




Conditioned Floor Area: Where Are We Now, and Where Are We Going?

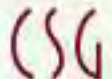
RESNET

Bruce Harley
Conservation Services Group
Mach 1, 2011





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





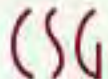
Intentions:

- Inconsistent application of CFA across and within markets
- Bring clarity to confusing issue
- Connection of CFA to Energy Star size adjustment factor per EPA policy



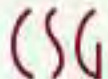


Conditioned Floor Area (CFA) –
The finished floor area in square feet of a home that is conditioned by heating or cooling systems, measured in accordance with ANSI Standard Z765-2003 with exceptions as specified in Appendix A of this Standard.





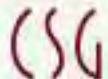
Conditioned Floor Area (CFA) –
The **finished** floor area in square feet of a home that is conditioned by heating or cooling systems, measured in accordance with ANSI Standard Z765-2003 with exceptions as specified in Appendix A of this Standard.





Summary of interpretation

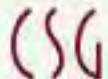
1. CFA includes all finished space that is within the *conditioned space boundary*, regardless of HVAC configuration
2. CFA includes unfinished spaces that are *directly conditioned*; typically they have “fully ducted” intentional HVAC supply





Summary continued...

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 (insufficient for “directly conditioned”)
4. CFA does not include heated garages





How do I model this?

- *Basement insulation on walls*
- *Basement is directly conditioned*
- It is conditioned (finish doesn't matter)
- Model basement walls, not ceiling
- Include in CFA and volume
- Note: Exclusion from SAF needed, IF more than 50% below grade



Marking any given checkbox certifies that the home complies with all mandatory requirements referenced by that checkbox. Needed for showing compliance on various reports.

IECC - Mandatory Requirements

- 2004 IECC
- 2006 IECC
- 2009 IECC
- 2010 NY IECC

ENERGY STAR Version 2

- Thermal Bypass Checklist
- ENERGY STAR Products

ENERGY STAR Version 2.5 and 3.0

Checklists Fully Enforced for 3.0

- Thermal Enclosure
- HVAC System Quality Installation Contractor
- HVAC System Quality Installation Rater
- Water Management System Builder
- Indoor airPlus Verification

ENERGY STAR Product Count

- # Refrigerators
- # Ceiling Fans
- # Exhaust Fans
- # Dishwashers

Conditioned Basement Exclusion

- Basement Qualifies for SAF exclusion? (See Help)
- Basement Conditioned Floor Area:
- Number of Bedrooms in Basement:





How do I model this?

- *Basement insulation on walls*
- *Unfinished space; not directly conditioned*
- Basement is “conditioned” (indirectly)
- Model basement walls, not ceiling
- ***Do not*** include in CFA
 - do include in volume
- No exclusion from SAF needed



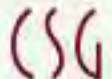
How do I model this?

- *Basement insulation on walls*
- **Finished** space; *not directly conditioned*
- Basement is “conditioned” (indirectly)
- Model basement walls, not ceiling
- Include in CFA and volume
- Exclusion from SAF needed, IF more than 50% below grade



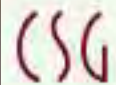
If the foundation walls are insulated:

- The thermal boundary is the walls
- The energy model is based on that
- Conditioned volume *includes* that space
- Blower door and duct testing includes that space
- But it's conditioned space.... So why not count the floor area in CFA?





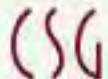
Conservation Services Group





CFA is used for:

- Plug loads
- Window area of reference home
- Air leakage of reference home
- Ventilation requirements applied to consider decreased air leakage in rated home





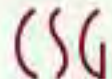
Specific leakage area in Reference

- Does the real air leakage of that house increase by 50% - 100% just because you decide to insulate the basement walls?
 - Why should it in the reference home?



Specific leakage area in Reference

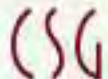
- Do you count the attic floor area when you insulate the roof with spray foam?
 - Just because you add that conditioned volume, why would you change the reference home air leakage and plug loads in the house by 50-100%?





How do I model this?

- *Sealed 4' high crawlspace insulated at walls*
- *It is directly conditioned, unfinished space*
- Crawlspace is “conditioned” space
- Model walls, not floor above
- Don't include in conditioned floor area due to low ceiling height
- Do include in conditioned volume





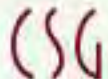
How do I model this?

- *Attic insulated at rafters*
- *Attic is indirectly conditioned, unfinished space*
- Attic is “conditioned” space
- Model roof, not attic floor (as “vaulted”)
- Don’t include in conditioned floor area
 - Do include in volume



Directly Conditioned - Definition

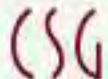
- ***Directly Conditioned Space*** – An enclosed space having heating equipment with a capacity exceeding 10 Btu/hr-ft², or cooling equipment with a capacity exceeding to 10 Btu/hr-ft²





Directly Conditioned - How

- Exceeding 10 Btu/hr-ft²:
- Deemed as 15 cfm per 100 sf or more
- 0.15 CFM/SF, or 150 CFM for 1000 SF
 - Generally not met by 1-2 supply registers cut into the trunk





So.... Where to next?

