

ADVISORY COMMITTEE COMMENT FORM FOR PROPOSED CODE CHANGES

(This form must be submitted electronically)

Author/requestor: Bruce Nelson

Email address: bruce.nelson@state.mn.us

Telephone number: 651-297-2313

Firm/Association affiliation, if any: Minn. Dept. of Commerce

1323, CE-10

Proposed Code Change - Language

Please provide your proposed code change in strikeout/underline format. Provide the *specific* language you would like to see changed, with new words underlined and words to be deleted should be ~~stricken~~. Also, state whether the language contained in your proposal is from a code book or from an amendment currently found in Minnesota Rule. (You may provide the language (electronically) on a separate, attached sheet).

Minn. Rules. Ch. 1323 (Commercial Energy Code)

C202 General Definitions

BUILDING THERMAL ENVELOPE. The basement walls, exterior walls, floor, roof, air barrier, and any other building envelope components that enclose conditioned space or provides a boundary between conditioned space and exempt or unconditioned space.

Proposed Code Change – Need and Reason

Please provide a thorough explanation of the need for this change and why this proposed code change is a reasonable change. During the rulemaking process, the Agency must defend the need and reasonableness of all its proposed changes. The Agency must submit evidence that it has considered all aspects of the proposal. (You may provide the need and reason (electronically) on a separate attached sheet).

The change is needed to correct an apparent oversight by the authors of the 2012 IECC to include “air barrier” (which is defined on the very same page) in the definition of Building Thermal Envelope. It is needed to assure that the energy code will be interpreted and applied consistent with building science.

The change is reasonable because it will make the code consistent with commonly understood and widely accepted building science that an air barrier is a critically important component of the building thermal envelope.

A question was addressed in a series of November, 2011 emails exchange with code experts and building scientists. Excerpted from emails appear below, and copies of the complete emails are available available on request. All responses supported the recommendation that the definition of Building Thermal Envelope must include the air barrier. The question posed was whether

residential ducts running in exterior walls (and outside the air barrier) would be required to be tested for air tightness. Even though this exchange concerned the residential code, it is certainly a fact that the same building science that applies to residential buildings also applies to commercial buildings. And code provisions based on that building science should apply the same to both commercial and residential buildings. The responses follow:

“We are in agreement any duct outside of the Conditioned Space is anything outside of the vapor barrier.”

Dave Ruffcorn, Construction/Energy Engineer, Iowa Department of Public Safety, Building Code Bureau, 11/21/11

“The opinion that I offer is my own, and does not represent the official opinion of the International Code Council. The final authority of code opinions is the responsibility of the code official.

2009 IECC Section R403.2.2 contains an Exception that states “Duct tightness test is not required if the air handler and all ducts are located within conditioned space.” Before I offer an opinion, I would also like to note the new language in the 2012 IECC Section R403.2.2 that states “The total leakage test is not required for ducts and air handlers located entirely within the building thermal envelope.”

In my opinion, the building thermal envelope consists of the wall framing, interior drywall, exterior sheathing, the insulation within the wall cavity, and appropriate air sealing. When a duct is placed within the wall framing, I have always believed that duct should be sealed to prevent air and moisture movement within (and through) the thermal envelope. I do not consider a duct placed inside of the wall framing cavity to be “within conditioned space,” and therefore the duct needs to have the duct tightness verified by the provisions of the section. I would also agree with your opinion that a conditioned space would start at the interior finish material, such as the gypsum board, which probably serves as the interior air barrier.”

Peter Kulczyk, Technical Staff, International Code Council, Inc., 11/21/2011

“In reading Dave (Ruffcorn)’s response I think that he should change this to outside of (on the unconditioned side) or the air barrier. This would eliminate taking credit for ducts that are installed in the attic that are buried in insulation but would allow ducts installed in unvented attics (as defined by the IRC) to be included.”

Eric Makela, Building Energy and Systems Technologies Group, Pacific Northwest National Laboratory, 11/21/11

In response to the following email from Bruce Nelson to Mike DeWein: The question is on the definition of residential “Conditioned space” and specifically when the IECC 2009 exception to 403.2.2 (duct leakage test) applies. Seems to Don Sivigny and I that ducts installed in exterior wall cavities (outside the air barrier) are outside of the “Conditioned space” and therefore a duct tightness test would be required.

“...I would generally agree with you.”

Mike DeWein, Technical Director, Building Codes Assistance Project 11/22/11

It is clear that codes and technical experts agree with the fact that any location outside the air barrier is also outside of the conditioned space. The code must be amended to erase any question about this fact.

Proposed Code Change – Cost/Benefit Analysis

Please consider whether this proposed code change will increase/decrease costs or indicate that it will not have any cost implications and explain how it will not. If there is an increased cost, will this cost be offset somehow by a life safety or other benefit? If so, please explain. Are there any cost increases/decreases to enforce or comply with this proposed code change? If so, please explain. (You may provide the cost/benefit analysis (electronically) on a separate, attached sheet).

A picture is worth a thousand words:

(A picture of serious building deterioration caused by a leaky duct outside the air barrier will be added when permission is obtained.)

Other Factors to Consider Related to Proposed Code Change

1. Is this proposed code change meant to:

change language contained in a published code book? If so, list section(s).
2012 IECC, section C202

change language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

delete language contained in a published code book? If so, list section(s).

delete language contained in an existing amendment in Minnesota Rule? If so, list Rule part(s).

neither; this language will be new language, not found in the code book or in Minnesota Rule.

2. Is this proposed code change required by a Minnesota Statute or new legislation? If so, please provide the citation to the Statute or legislation.

M.S. §326B.118 ENERGY CODE. “The commissioner shall take steps to adopt the chosen code with all necessary and appropriate amendments ... that addresses, at a minimum, air quality, building durability, moisture, enforcement, enforceability cost benefit, and liability.”

3. Will this proposed code change impact other sections of a published code book or of an amendment in Minnesota Rule? If so, please list the affected sections or rule parts.
No.

4. Will this proposed code change impact other parts of the Minnesota State Building Code? If so, please list the affected parts of the Minnesota State Building Code.
No.

5. Who are the parties affected or segments of industry affected by this proposed code change?
Building designers and HVAC contractors.

6. Can you think of other means or methods to achieve the purpose of the proposed code change? If so, please explain what they are and why your proposed change is the preferred method or means to achieve the desired result.

No.

7. Are you aware of any federal requirement or regulation related to this proposed code change? If so, please list the regulation or requirement.

No.