

Frequently Asked Questions (FAQ) – Module 1

General:

Q: Is it the correct call to have building inspectors regulating compliance with energy regulations?

A: Yes, just as a lot of contractors don't have a specialty, they are just "General Contractors" and inspectors are not different. Just like contractors, inspectors are trained to know where to find the information in the books, not to memorize all the code books.

Q: How do contractors handle situations where jurisdictions do not have enough staff to handle energy inspections?

A: They can get third party inspections or provide documentation to the building department but the building department will have their own policy on how to handle inspections that they don't cover. No matter what, whether a building department inspects or not, it doesn't allow the contractor out of the code requirements.

Q: What steps are being taken to ensure competency among code officials?

A: Training at the state, local and national level; Work experience; Networking opportunities with other inspectors; Colorado Chapter ICC Educational meetings. ICC offers certifications. There are probably more training opportunities for inspectors than there are for contractors, unfortunately.

Q: Will there be continued energy code training once the stimulus money is gone?

A: Colorado Chapter of ICC will continue to provide training. The Governor's Energy Office is continuing to seek ways to offer more training. Xcel Energy is piloting a program to offer training for people in their service area. The tool kit at www.colorado.gov/energy codes will provide online classes and many training tools can be found at the Department of Energy's website at www.energycodes.gov.

Q: Do I need to install ceiling insulation in older buildings?

A: The IECC does require existing buildings to be brought up to code if there is an alteration to that portion of the building. That being said, there is an exemption for historic buildings and for buildings where you don't expose the cavity. One thing to keep in mind is the actual design of the snow load of that building because older designs that didn't have insulation were not designed to a high snow load because the snow melted. If we put insulation in them now, there may be the need to get an engineer involved to assess if the roof will now hold the snow load.

Q: When is it a floor and when is it a ceiling?

A: If you are standing in conditioned space and the unconditioned air is below you, such as a crawl space, or a room over a garage, you use the floor value. If the unconditioned air is above you, such as an attic, then you use the ceiling R-value. The key is that you have to be standing IN the conditioned space to use this formula.

Q: The IMC and IECC have a conflict, which code overrules?

A: The IMC. This code is not meant to abridge health or life safety, so the building, plumbing and mechanical codes take precedence over the IECC.

Q: There are a lot of times when projects do not have to comply with IECC per Chapter 1. What happens if my jurisdiction deletes Chapter 1?

A: It would be up to the jurisdiction to decide if those exceptions would be allowed. The building official always has the right to make that call.

Q: Why are the definitions for residential and commercial buildings different in the IECC compared to IBC and IRC?

A: The definitions in the IBC and IRC are based on occupancy and the way that occupancy behaves. The definition in the IECC is based on how the building behaves and the loads associated with each type of building. So while an R2 might be a commercial building per the IBC, it is still a residential building per the IECC as long as it is 3 stories or less. Buildings 3 stories or less perform one way. Buildings 4 stories and higher perform another way. The stack effect, the mechanical requirements and different internal loads make them different. It doesn't matter what the occupancy of the building is in the IECC once you have 4 stories or more, it's all commercial.

Q: Is there a way to create an implementation plan for IECC enforcement?

A: Yes. When you adopt a code, you are supposed to start enforcing it. There is something to be said to taking a stepped approach to implementation. This approach allows building department staff, designers and contractors to learn a section of the code and work with it before moving to the next step. For instance, a jurisdiction that has never looked at air barriers, starts enforcing the air barrier requirements, and then 6 months later they start requiring insulation inspections and then 6 months later they start requiring Manual J's, then 6 months later they start requiring Manual D's, and so on. This allows them to step into energy requirements rather than just jumping in to them all together.

Q: What are the repercussions of adopting the 2009 IECC without adopting the other 2009 I Codes?

A: The codes are written as a "family of codes" and some thought usually goes into how a change in one code affects another one in the family but if you adopt different editions of the codes, you don't have that same thought process. An example would be if a jurisdiction adopts the 2006 Building codes but is on the 2009 IECC for ARRA reasoning, then it could be possible that the jurisdiction wouldn't have vapor barrier requirements to enforce because the vapor barrier requirements were in the 2006 and earlier editions of the Energy Code but in 2009 they were moved to the Building Codes so if you have the 2006 building code there were no vapor barrier requirements in there and if you have the 2009 IECC, there are no vapor barrier requirements in there and now you have nothing to go off of for enforcement in that area.

Residential:

Q: What is the prescriptive approach in the 2009 IECC?

A: The prescriptive approach is a prescribed set of requirements that when used for a project in the correct climate zone leads to an Energy Code compliant building. The prescriptive approach is often considered the simplest approach because you just do exactly what is prescribed without trading off anything or trying to assess how the building performs.

Q: What is a trade-off approach, and can I still use it with the 2009 IECC?

A: A trade-off approach allows you to trade enhanced energy efficiency in one component against decreased energy efficiency in another component. The 2009 IECC only allows you to trade off levels of insulation and glazing efficiency. For example, trade decreased wall efficiency (lower R-value) for increased window efficiency (lower U-factor), or increase the roof insulation and reduce or eliminate slab-edge insulation. Typically, this method is less restrictive than prescriptive approaches because components that exceed the requirements can compensate for those that do not meet the code.

Q: What is a performance approach?

A: A performance approach (also known as a systems performance approach) allows you to compare your proposed design to a baseline or reference design and demonstrate that the proposed design is at least as efficient as the baseline in terms of annual energy use. This approach allows greater flexibility but requires considerably more effort. A performance approach is often necessary to obtain credit for special features, such as passive solar design, photovoltaic cells, thermal energy storage, and fuel cells. This approach requires an annual energy analysis for the proposed design and the reference design. DOE does not offer residential software products at this time to comply using this approach, but future versions of the REScheck™ software will include the DOE-2 energy analysis engine to perform the necessary calculations needed to determine compliance.

Q: Which approach is the best for a particular residential building project?

A: Choosing the appropriate approach depends on the complexity and/or uniqueness of the building and the amount of time and money available for demonstrating compliance. The prescriptive approach allows quick review of the requirements. If these requirements are too restrictive, try a trade-off approach. For example, if the window area of the building exceeds that allowed by the prescriptive approach, a trade-off approach may be preferable. If nontraditional components are used or if energy use trade-off between building systems (e.g., envelope, mechanical) is desired, then use the performance approach.

- Additions may use the prescriptive or trade-off approach.
- An addition project that also includes alterations to the existing part of the building should show compliance separately for each part (the addition separately from alterations).
- For alterations, the prescriptive approach is preferable; otherwise the entire building should be brought up to code.

Q: Do the three approaches yield different results?

A: Yes, they can. Performance approaches require a higher degree of detail for an individual building to be designed to exactly meet the energy code requirements. Prescriptive approaches tend to be somewhat conservative and use worst-case default assumptions in order for the prescriptive packages to apply to all buildings. Although the prescriptive approach may result in a more energy-efficient building because of its conservative assumptions, this is not always the case. The prescriptive approach generally does not account for several features that affect energy use, such as the effect of window orientation and external shading on solar heat gain.

Trade-off approaches fall somewhere between the prescriptive and performance approaches in both flexibility and complexity.

Q: Why are there so many compliance approaches?

A: Over the years, residential energy codes have grown to provide different approaches of varying simplicity and flexibility in order to meet user needs. The simpler approaches are less flexible but are generally easier to use. Some of the approaches have considerable overlap.

Commercial:

Q: What is a commercial performance approach?

A: A performance approach (also known as a systems performance approach) allows you to compare your proposed design to a baseline or reference design and demonstrate that the proposed design is at least as efficient as the baseline in terms of annual energy use. This approach allows greater flexibility but requires considerably more effort. A performance approach is often necessary to obtain credit for special features, such as passive solar design, photovoltaic cells, thermal energy storage, and fuel cells. This approach requires an annual energy analysis for the proposed design and the reference design. DOE does not offer commercial software products at this time to comply using this approach, but future versions of the COMcheck™ software will include the DOE-2 energy analysis engine to perform the necessary calculations needed to determine compliance. Samples of performance software available are listed in the Building Energy Software Tools Directory on the Building Technologies Program website (www.eere.energy.gov/buildings).

Q: Which approach is the best for a specific Commercial building?

A: The choice of approach depends on the complexity or uniqueness of the building, and the amount of time and money available for demonstrating compliance. The prescriptive approach allows quick review of the requirements. If these requirements are too restrictive, or if nontraditional components are involved, try the performance approach. Of course, not all building projects are new construction. Beyond minor repairs, renovations must also comply with the energy code, and approaches may vary by project. For example:

- Additions usually use the prescriptive.
- For alterations, the prescriptive approach is preferable; otherwise the entire building should be brought up to code.

- When an alteration includes a change of occupancy or converts unconditioned space to conditioned space, treat the project as new construction, for which any of the approaches can be used.

Q: Do the approaches produce different results?

A: Yes, they can. Performance approaches require a higher degree of detail so that an individual building can be designed to exactly meet the IECC requirements. Prescriptive approaches tend to be somewhat conservative and use worst-case default assumptions so the prescriptive packages will apply to all buildings. Although the prescriptive approach may appear to result in a more energy-efficient building because of its conservative assumptions, this is not always the case. The prescriptive approach generally does not account for many of the features that affect energy use, such as the effect window orientation and external shading may have on solar heat gain. Performance approaches tend to offer more flexibility.

Q: For commercial buildings, do 2009 IECC Sections 501.1, Scope, and 501.2, Application, allow the permit applicant to mix-and-match provisions of IECC Chapter 5 and ASHRAE Standard 90.1-2007 on a single permit application for compliance assessment?

A: No, New to the 2009 IECC are revisions to the Scope and Application provisions of the Commercial Chapter 5, Sections 501.1 and 501.2, respectively. The revisions no longer allow designers to select a customized path to compliance using the provisions of both Standard 90.1 and the IECC Chapter 5. In fact, Sections 501.1 and 501.2 now require the designer to demonstrate compliance with either the provisions of IECC Chapter 5 (in its entirety) or the provisions of Standard 90.1 (in its entirety); no combination thereof is permitted.