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Comment Received From: Patrick Splitt
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Re: Implementation of the 2013 Building Energy Efficiency Standards

Please add this document to this Docket. They are problems in the 2013 code that I wish to see corrected. CEC staff responses to them will also be added to the Docket. Note that the staff agreed with many of the points made. They just did not think an Emergency Rulemaking was necessary to correct them.
Pat Splitt

Additional submitted attachment is included below.

2: Errors/Corrections

2.1. Section 120.7

There are 2 ways of demonstrating compliance, Prescriptive or Performance. This section has no effect on Prescriptive, since the required minimum Prescriptive u-factors are always equal to or more restrictive than those in this section. For Performance compliance this section mandates minimum insulation whether it is needed for compliance or not. For example:

If I had a project that just met minimum Performance levels with uninsulated concrete walls, it would not comply with the Standards because the wall u-factor did not meet mandatory minimums. To comply, I would have to add insulation plus additional framing and wall coverings to meet the required minimum u-factor. This will increase the compliance margin but also the cost of construction. I can then, however, reduce insulation in other parts of the building to recover some of these added costs. The result of all this screwing around would be that the building costs increased but the modeled energy consumption was back to where it was before adding additional wall insulation. These Mandatory Insulation Requirements will

not reduce building energy consumption. The only effect they will have is to increase costs and reduce design flexibility.

How can this be a cost effective conservation feature? It Can't!

The way to correct this section is to delete it.

2.2. NR-ACM Reference Man. Section 5.5.7

This section erroneously requires that the Non-Residential Standard Design Building fenestration type for vertical glazing must always be modeled as "Fixed". Also, the Standard Design Building fenestration type for skylights is restricted to "Glass, Curb Mounted".

Title 24 Part 6 Section 140.1 (a) requires that the prescriptive requirements for modeled features shall be those specified in the NR Prescriptive Standards. If a proposed building has Storefront fenestration, for instance, the Standard Design Building u-factor should be modeled as 0.41 (Storefront), NOT 0.36 (Fixed). The CEC has shown that a u-factor of 0.36 is NOT cost-effective for Storefront glazing. How can this value then be used as the basis for the Standard building design? The Standard Design fenestration type must always be equal to the actual Proposed Design fenestration type.

2.3. Section 150.0 (q)

Similar to Section 120.7, these requirements do not increase energy efficiency, they just reduce design flexibility.

Solution? … Delete them.

2.4. Section 150.1 (c) 3. A. Exception 4

I cannot understand the intent of this Exception. Some Questions:

1. First of all, the Tables should be 110.6-A and 110.6-B.
2. Why does this exception only apply if ALL the windows are site-built?
3. Do we have to differentiate various glazing Product Types, as required by NA6? The current Forms do not allow for this differentiation.
4. Can Performance modeling of a new building with single pane site-built windows use a Reference u-factor of 1.28?
5. It is not clear that any of these exceptions are correctly implemented when defining the reference building for a Performance calculation.

2.5. Section 150.2 (b) 2. + B.

What does “include trade-offs between two or more altered components” mean? If a Performance calculation can demonstrate compliance by just replacing windows, the alteration meets Performance criteria. One does not have to also improve some other aspect of the project.

Delete this sentence.

Sub-part B. Third party verification is only required for components where one is taking credit for improving existing conditions. If I am replacing windows, but not taking credit for upgrading existing performance, HERS verification of existing conditions is NOT required. This is what the center column of Table 150.2-B is all about.

2.6. Section 141.0 (b) 1.

There is no valid reason to mandate minimum insulation values for these assemblies from an energy conservation viewpoint. This section also conflicts with Section 120.7.

Delete these requirements.

2.7. Section 141.0 (b) 2. B. iii

What if one is replacing the shake roof on a Victorian building that has been converted to offices? This building probably has a vented unconditioned attic with the insulation on the attic floor. The primary effect of adding continuous insulation under the new shakes will be to void the warranty, since this assembly requires air circulation under the shakes.

There needs to be an exception for roofs over insulated, or potentially insulated unconditioned attics.

2.8. Section 141.0 (b) 2. I

Delete "For each enclosed space," Line should read:

"Alterations to existing indoor lighting shall meet the following requirements:"

Section 141.0(b) 2. I. v. contradicts section 140.6 and 140.6 (a).

The entire permitted space needs to meet the Prescriptive lighting power density as a whole, not the lighting power density in each individual room.

2.9. Section 141.0 (b) 2. I. iii. b. 1.

Why should it matter if someone is also repainting the walls, for instance, while the luminaire modifications in place are being done?

Delete this section.

2.10. Section 141.0 (b) 3. B.

"all components proposed for alteration" do NOT have to be third party verified, only those components where compliance credit is being taken for improving existing conditions.

Delete this sentence.

2.11. Table 141.0-E

Lighting power should be based on total permitted space, not each enclosed space. One space can exceed the allowed wattage density if another uses less than that which is allowed. Table 141.0-E should only be used to specify *lighting control* requirements for Enclosed Spaces, not allowed power density.

2.12. Section 150.0 (j) 1. A.

Installing storage water heaters with an energy factor less than the Federal minimum is illegal, why specify insulation

requirements for these units? Why does a water heater with exactly the minimum allowed energy factor require an R-12 blanket, while any water heater even slightly more efficient requires no blanket of any kind?

Finally, why does the blanket have to be at least R-12? When this requirement first appeared in the Standards, it was decided that Insulation R-16 was a cost effective goal for the total insulation of a storage water heater. At that time the minimum insulation for these tanks was R-4. The minimum federally required insulation for these tanks has been increasing steadily since then. As of April 16th, 2015 most new tank water heaters will have at least R-16 internal insulation.

Delete all references to R-12 blankets.

2.13. Section 150.0 (j) 2. A. B. & C.

The required insulation thickness is not practical for many residential installations, especially where PEX tubing is being utilized. There does not appear to have been any consideration of residential applications when the Life-cycle cost analysis was done for these original specifications.

Most modern pre-insulated underground piping systems cannot meet the replacement requirements of Part B. Site-built installations also would not be able to cost-effectively comply.

Also, what is meant by “non-crushable casing”? Cast iron pipe is crushable!

Why should the amount of pipe insulation for hydronic heating systems depend on the pressure in the pipe?

All residential hydronic system requirements need to be revised in a public workshop where industry experts can coordinate the currently conflicting hydronic equipment requirements with what is actually current “best practice”.

2.14. Reference JA2

Using Zip Codes to define Climate zones is adding unnecessary complexity for building departments. For instance, Santa Cruz County used to be entirely CTZ03. Now parts of it are in CTZ04!

Put the climate zone boundaries back to where they used to be. These boundaries were developed with the help of CALBO with the aim of simplifying enforcement.

2.15. Section 110.2 (a) 3.

Delete “or both space heating and water heating”. There are many boilers rated only for space heating, which can also

provide domestic water heating. There are also many tank water heaters that are not certified as space heaters, which can also provide space heating. There is no federal requirement to test for all possible uses of this equipment, only for the primary listed use, as determined by the manufacturer.

2.16. Section 10-103 (a) 5.

Non Residential Certificates of Verification are required to be completed and registered as of July 1st 2014! There does not appear to be any way to actually do this. Registration of NR Certificates of Compliance, Certificates of Installation, and Certificates of Acceptance has been postponed, but there was no delay allowed for registering Certificates of Verification.

It seems that the registries are not performing as required. Does anyone at the Commission actually monitor the performance of the registries?

The primary problem seems to be that the CEC has not adequately developed the required procedures to implement Verification regulations. Since PREF-1 forms do not need to be registered, how will a HERS Rater ever know that these tests are required?

2.17. Section 120.3

Requiring pipe insulation to be at least 1” thick is not practical in many instances. This is especially true in High-Rise residential buildings utilizing PEX tubing for DHW and hydronic space conditioning distribution systems. One of the primary reasons for using PEX tubing is its flexibility and ease of installation. Requiring insulation this thick is not cost effective, in these situations.

Note that this is a Mandatory Feature.

Revise these insulation requirements to adhere to industry standard/best practices.

2.18. Section 120.8

Design Phase Design Review does not require a more efficient building design. It only requires additional cost for a review that will in most cases then be entirely ignored!

What if the “Owner’s Project Requirement” is to build the least expensive, energy inefficient building that the Energy Code will allow? Doesn’t this then become the design reviewer’s mandate?

What qualifies a licensed professional engineer to do this work? Shouldn’t this person need to demonstrate some level of

knowledge of the State's Energy Code and energy efficient building design principles as a minimum prerequisite?

2.19. Section 130.2 (b)

This section conflicts with and is more complex than the BUG requirements in the Cal Green Code. This is especially true of the requirement to determine Zonal Lumens for proposed luminaires.

Solution: Delete these requirements and replace them with the Green Code BUG requirements. Some exceptions can remain, especially for additions and alterations, which are not covered in the Green Code. However, coordinate these with Cal Green Code to eliminate conflicts.

2.20. Mini-Split Heat Pumps.

Why are these systems treated differently than conventional split system heat pumps? Why is there a requirement to model ducts in an attic, when most of these systems will never use ducts? These additional restrictions specifically on mini-split heat pumps appear to be entirely arbitrary and capricious.

2.21. Live/Work Spaces

Live/Work buildings are to use residential compliance except for portions of the lighting system that are designated as non-residential. (Ref: Res. Compliance Manual Section 1.5.1, and Non-Res. Compliance Manual Section 1.7.9.).

If a room has several desks and file cabinets, it would be considered non-residential. If that same room had a bed and dressers, it would be considered residential. There could also be a room that is clearly used as a living room that also has art work for sale, on display. There is no way to accurately determine whether any specific luminaire is residential or non-residential.

The most serious problem with the current procedures is the reliance on residential ventilation requirements. Some of these spaces will have hazardous processes such as painting or welding that can significantly pollute the air that the occupants breathe. In many instances some of these occupants are going to be young children, or even infants. These spaces must be subject to non-residential ventilation requirements, not inadequate residential requirements. Under the current procedures, it’s just a matter of time before the Commission gets sued because

someone claims to have gotten lung cancer from breathing this polluted air.

The solution to these problems is to require Live/Work buildings to comply entirely with non-residential compliance methods, not residential. To account for the 24-7 occupancy of these spaces, develop an Occupancy Type and set of schedules specifically for these Live/Work occupancies. Use lighting Area Category “Library, Reading areas” for all areas designated as residential except for kitchens, which would use the “Kitchen” Area Category.