1. Roll Call and Introductions

2. Discussion and voting on IECC Staff Block Vote packaged proposals
   a. #160: IECC Section C503.3.1 Pulled Item #160 to be heard 1st on 6/20 agenda

3. Discussion and voting on Chapter C4 of the IECC and/or DBC-IECC
   a. (P53)351: C401.2 Solar Ready CA
   b. (P66)364: CA103.6, CA103.7 Solar Ready CA
   c. (P64)362: C401.2.2
   d. (P52)350: C402.5
   e. (P167)485: C402.5.1
   f. (P51)349: C103.2 and C402.5.1.3
   g. (P122)440: C402.5.2.1
   h. (P95)400: C403 Tabled 5/20 until June 20
   i. (P49)347: C403.5 Tabled 5/20 until June 20
   j. (P46)341: C403.4.6 Tabled 5/20 until June 20
   k. (P133)451: C403.7.1.2 Tabled 5/20 until June 20
   l. (P123)441: C403.7.4
   m. (P126)444: C403.7.4
   n. (P121)439: C403.7.4 Exception 8
   o. (P125)443: Table C403.7.4(1)
   p. (P124)442: Table C403.7.4(2)
   q. (P63)361: C403.8.5
   r. (P47)342: C403.9.6
   s. (P60)358: C404.2.1
   t. (P67)365: C404.2.2

Please note that any items that we do not get to in this hearing will be automatically transferred to the next scheduled hearing date and will be the first items on the agenda for that hearing.

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Denver 2018 IECC Committee Hearings

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Proposal # 160
The purpose of the amendment is to add an exception to the requirement for increased above-deck roof insulation where the existing exterior wall openings would need to be modified to accommodate the increased roof-height. This Section presently requires elevating existing roof deck doors and infilling openings in walls abutting a roof replacement.

Public Testimony in Support: Exchanged emails with Daniel, understand code version on the web. More limited in scope than the one originally posted to the website, would like to suggest that it read “where increasing the R Value” and at the end of exception language “shall be compliant with C402”. If a dark roof is replaced with a cool roof you may creating condensation issues within that roof. Absolute insulation minimum.

To address the concern, when cool roof will fall under there is an analysis that has to be done and Denver has a department which addresses that.

If the analysis shows that condensation would be present, then you can leave as is.

Not sure about language at the end but shall comply would lead to previous section when this is an exception. Issue that conflicts is interior wall thickness.

Public Testimony in Opposition: None

Questions from the Committee to Proponent:
1. Can you give a scenario for the committee?
   a. Replaced occupied roof deck, required to now insulate. Details shows insulation never installed. They put in insulation that you made it so you couldn’t walk out on to the deck, so would have required modifying the exterior walls of the building.

2. What about an overflow drain would that classify?
   a. You would have to raise curbs and equipment. This is specific to exterior wall openings.

3. Talked about increasing roof curbs, large cost associated. Maximum Extent Feasible with this?
   a. Intent is for you to be able to increase insulation that doesn’t cause you to be less compliant with the IBC. It’s intended to refer to the first part where you are not making it less compliant.

4. Different materials provide different R Values. How does this address that area?
   a. The thickness is what’s in conflict.

5. Can you not have different insulations with different R Values. If you have a material 6 inches to get R40 but there’s another material that can get R40.
   a. Subjective to what the building department deems acceptable. Increased insulation this kicks in when increase in insulation would conflict.

Original Motion: As-Submitted (AS)

Discussion:
Understand the concern, because people may find a loophole. It’s feasible to get a better R value locally and with the thickness. Trying to safeguard owners with odd window conditions so we avoid admin mods. Trying to be fair in what we require building owners to replace.

Final Motion: As Submitted
Final Vote: AS Passes 12-0

Additional staff or committee comments for the record:

Proposal # P53 & P66 to be heard together

P53 The purpose of this proposal is to make the solar readiness provisions of Appendix CA mandatory for commercial code projects.

P66 The purpose of this proposal is to modify Appendix CA to create requirements that will make it easier to add onsite storage to buildings in the future.

Public Testimony in Support: Great for city, high climate goals as a city. Lost cost measure in cost of construction, allows future building owner to add Solar if they’d like. Help us reach sustainability goals. Jim Meyers – Modeled after residential appendix, this came in 2018. Really light Solar Ready zone needs to be documented on the plan and recognize obstructions, document roof loads and documenting interconnection pathway. Simple way for communities to move forward

Public Testimony in Opposition: None

Committee Discussion:

Even in downtown this doesn’t mean you can’t have solar; means you can’t be connected to the grid.

One requirement is to add spaces in the panel for future solar use, as soon as they do a remodel, those spaces could be used and would no longer exist.

   There’s always that chance, point of appendix is to provide max amount of future cost avoidance. It might be the case where they have to update the panel. No worse than if they hadn’t followed this appendix from the start.

Calculation for size of power requirement. Who will be responsible for checking designer calculations?

   We check every PV system that comes through. We would look at load calculations.

For P66 it talks about interconnection pathway, do we have an estimate monetarily, what this would cost.

   It’s so variable depending on the design of the building. It will add cost but there is the time and expense to install. Hard to give an estimate because different building to building.

Conduit to a battery location so would we have to have a dedicated spot for this?

   This will require you to identify a location, could be on exterior of the building. Just designate a spot where it could be in the future.

Calculation on battery size would be needed in order to designate a future spot.

   Doesn’t require a specific amount of space for the battery.

On P66 is it the intent to have that space maintained throughout the life of the building?

   No. This is similar to issue of physical space in the panel. The location could be undermined by future activity. Can’t prevent in new construction code. We want to provide the widest penetration while avoiding the mostly costly part. Much cheaper during new construction vs retro fit. Just trying to get rid of the large obstacle cost of retro fit.

Clarify we are going to req 30 story building conduit penetrates roof down to basement where battery storage is?

   Only applies to 5 story or less.

Panel to Solar Ready Zone and Conduit to Battery.
Committee Motion on #P66 – AS – 2nd –

Important to future proof our buildings, give them options to install solar in the future.

In regards to 5 stories or fewer, do we have a percent?

More than any other permit in Denver.

Not understanding what changed between P66 and P53

Difference between the two is you would install a conduit not just have space for it.

Says not less than 40%, you could do calculations to determine that. Goes back to who is checking those calculations.

Concern that structural design as panels change over time.

What would city want to see for storage area? Could someone just poke a hole and say that’s a space? How would you review that?

No way to review it.

Forcing them to reserve a space, tenant finishes they are going to use that space. Requiring a space when building is built only to be utilized right away when tenant moves in.

Could affect business owner and operations.

Motion to Table this proposal until 7/11

P53 The purpose of this proposal is to make the solar readiness provisions of Appendix CA mandatory for commercial code projects.

Original Motion: As-Submitted (AS)

Adding this to the code is beneficial to the city’s goals.

Discussion:

Boulder has been doing for years, easy to review.

Some committee members feel it is a challenge to review.

Help support green building ordinance; green roof would be exempted.

Does not tie in with storage.

Final Motion: As Submitted

Final Vote: AS 13-0

Additional staff or committee comments for the record:

Proposal # P64

The purpose of this proposal is to close a loophole opaque wall performance where mechanical equipment penetrations create a significant reduction in the total wall thermal performance.

Public Testimony in Support: None

Public Testimony in Opposition: None

Questions from the Committee to Proponent:

1. How would this be modeled if you’re following performance?
   a. If you’re going performance already have to add U Factor if you meet threshold for these mechanical provisions. Could do UA Calcs for whole walls.

2. Would this require increasing exterior wall insulation?
   a. It could, depends on how far above you go. Depends on wall assembly you’ve chosen as well. % of your wall that uses mechanical ventilation.

Q: Where did 1% come form, what’s the basis.

A: Where do you have an impact on energy performance? After 1% that’s where you begin to see an
impact in actual performance. Code is delivering actual performance, it is promising. NY City use 1% triggers what this is meant to get at. Don’t want triggered by air vents in the wall.

Q: 1% ventilation intake. On opaque above grade wall area, thermal envelope might be at floor and ceiling, but we are talking about opaque part of the façade, want to make sure we are capturing what we want to capture

A: Definition of above grade wall is including the thermal envelope

Q: Does this only apply to new construction, or remodels included?

A: If they touch the area that area would then have to be brought up to code.

Q: How do you enforce this on a remodel project, you’d now ask for insulation to the walls?

A: Not a concern because this wouldn’t apply.

Q: It would for a change of occupancy. Are you willing to address change in use and maybe for clarity take out opaque and italicize opaque wall. 1% to 2%

Modification #1 change 1% to 2%

Modification #2 Take out opaque and put grade walls in parenthesis.

Modification #3 Add exception for change in occupancy and use.

Discussion:

16x42 PTAC if you take a typical building 4½ ft 2% of opaque wall 25% window to wall ratio. We are essentially putting an extra cost on affordable housing. Punishing unitary systems. Developer I can’t afford PTAC now I’m going to go to gas and put a condenser on the roof, this goes against what I’m trying to do. Long pay back for adding on insulation. Doesn’t serve what Denver is trying to move towards.

Appreciate conversation, wasn’t think of it that way. If Sean’s intent was to stop PTAC in multifamily. Like to understand the nuance.

Other would use those as well: hotels, assisted living.

If it forces them to gas, that’s not what we want.

Proponent did open by saying that this is for more open modeling.

If I’m modeling my base line is a PTAC if I take that away that project would get extra credit.

Open Back up to Proponent:

Intent is to account for impact of unit penetrating the wall on the actual performance of the space. Another proposal leakage testing that touches this. Hard time believing a project would go from pack to gas system might be from your market. PTAC are extremely inefficient in use.

Motion: Would like to withdraw motion for AS and Modifications -2nd

New Motion – Disapprove – 2nd

Discussion: Don’t want to make affordable housing more expensive but also don’t want to see these buildings with leaky inefficient systems.

Only thing addressed in this proposal is the thermal bridge not the leaky inefficient systems. Code accounts for that in base line.

Final Vote: Disapproval Passes 11-1 (1 abstain)

Proposal # P52
The purpose of this proposal is to improve the air leakage rates of commercial buildings through requiring air leakage testing in most cases.

**Public Testimony in Support:** Proponent stand on reason statement.
**Public Testimony in Opposition:** None

**Questions from the Committee to Proponent:**

**Q:** Under building thermal envelope testing it says for R2 occupants 25% of dwelling unit should be tested, where did that come from? ResNet? Have you had any other folks who have had difficulty in meeting this?

**A:** Mandatory testing in place in Washington state. Buildings achieve .25 when they pay attention to these things. Level of infiltration is feasible.

**Q:** Can you talk about the level of ease of compliance immediately. Also, the savings and impact, importance attributable to this.

**A:** Savings – Study by PNNL testing is delivering higher compliance. By moving all projects to testing, bringing great clarity for air barrier.

**Q:** Right out the gate 50% of buildings are not going to met compliance. What’s the cost associated with these air barriers and testing associated?

**A:** 2 primary drivers on cost. how much the building can use residential scale equipment. Air Barrier testing something that has substantial savings for energy savings 2-4% depending on building type. Also, this isn’t directly energy related, but moisture problems are driven by infiltration.

**Q:** How does cost and effectiveness compare commissioning vs testing?

**A:** Commissioning is lower, we find that testing practices required are activities that are needed to pass the testing requirements.

**Q:** Can you give us the return on this investment and how long is payback time? How has learning process gone in other markets?

**A:** Took about 2 years in the mid-south. In ft Collins took 25% learning the hard way. It took efforts to try and do repairs. What we’ve found is some buildings couldn’t achieve the standard and building official could grant an exemption. Developer on next project had it dialed in.

**Q:** Are we saying even mixed-use facilities would have to be tested? Two different ways?

**A:** Yes. Generally, when you have different requirements for different occupancies they would be broken down.

**Committee Discussion:**
If you fail, you have to get into compliance and retest. Projects that don’t pass don’t have to circle back and retest, they have to mitigate.

Depends upon where you fail, by how much and you would need to retest if you exceed that .6 This allows for some learning curve. Have to fail big before being required to make big repairs.

**Public Testimony:** Involved in a lot of leaky buildings, owner that buys leaky building doesn’t know. Then tenant is uncomfortable. I think this is critical to getting to net zero. Generally, we can use mechanical equipment to do the testing. That can allow lower cost.

**Original Motion:** A/S with Intent to Modify (ASM)
**Discussion:**

.4 level should be base level and then if you fail you test again. If they fail again at .6 it should be the discretion of the building official.
Suggest if you are beyond the .6 you would need to submit remediation steps and have building retested.

I would worry that there is potential to say there’s discrimination based on building official determination. Could be misconstrued.

If you test at .4 to .6 you remediate you don’t have to retest

Fail the first test, show plan to correct, retest.

Modification:

Elizabeth – Who do we allow to do this testing?

Scott – Would be included in the modification.

Daniel – Like to exempt change of occupancy buildings and existing buildings.

As submitted with intent to modify –

Agreement is that staff will come up with wording for this modification

Vote for Modification: 13-0

Final Motion: AM

Final Vote: AM Passes 11-0-2

Additional staff or committee comments for the record: