

## IECC-C Modeling Subcommittee Meeting – Notes

Monday February 7, 2022 –2:00-4:00 PM EST

[Join via WebEx](#)

**Attendance:**

| #  | Voting Members, Effective 12/06/21       | Present | Guests                                   | Present |
|----|--|---------|--|---------|
| 1  | Eades, Greg - EPA (Chair)                | ✓       | Jim Ranfone - AGA                        | ✓       |
| 2  | Eley, Charles - Architecture 2030 (VC)   | ✓       | Shannon Corcoran - AGA                   | ✓       |
| 3  | Anderson, Courtney - City and Co. Denver | ✓       | Bryan Holland - NEMA                     | ✓       |
| 4  | Bomer, Bryan - Montgomery Co., MD        | ✓       | Steve Rosenstock - EEI                   | ✓       |
| 5  | Burk, Diana - NBI                        | ✓       | Jerry Phelan                             | ✓       |
| 6  | Dalzell, John - Boston Planning and Dev. |         | Steve Orłowski                           | ✓       |
| 7  | Edwards, Ben - Mathis Consulting         | ✓       | Eric Lacey                               | ✓       |
| 8  | Giunta, Frank – Trane Technologies       | ✓       | Joe Cain                                 | ✓       |
| 9  | Goldstein, David - NRDC                  | ✓       | T Weston                                 | ✓       |
| 10 | Gowri, Krishnan - Intertek Inc           | ✓       | Amit Manik                               | ✓       |
| 11 | Grew, Milton - City of East Harford      |         | Doug Powell – University of Texas        | ✓       |
| 12 | Harbeck, Nicolas - AHRI                  | ✓       | Maria Karpman                            | ✓       |
| 13 | Harris, Stephen - University of Texas    | ✓       | Amy Boyce- EECC                          | ✓       |
| 14 | Hernandez, Alfonso - Gensler             | ✓       | Helen Sanders                            | ✓       |
| 15 | Hoffman, Emily - NYC                     | ✓       | Rupal Choksi                             | ✓       |
| 16 | Jakobs, Diane - Rheem                    | ✓       | Norman Wang – State of Maryland          | ✓       |
| 17 | Lessans, Mark - Johnson Controls         | ✓       | Nicholas Ross – State of Connecticut     | ✓       |
| 18 | McCullough, Anna - Group 14 Eng.         | ✓       | Kevin Rose - NEEA                        | ✓       |
| 19 | Mock, Don - Howard County                | ✓       | Laura Petrillo-Groh - AHRI               | ✓       |
| 20 | Panigrahi, Amiya - TTUHSC                | ✓       | Kim Cheslak - NBI                        | ✓       |
| 21 | Port, Darren - NEEP                      | ✓       | Jeff Mang                                | ✓       |
| 22 | Rosenberg, Mike – PNNL (Consultant)      | ✓       | Linda Baskerville – City of Arlington VA | ✓       |
| 23 | Wood, Amber - ACEEE                      | ✓       | Rupal Choski                             | ✓       |
| 24 |  |         | Greg Johnson                             | ✓       |
| 25 |  |         | Jon McHugh                               | ✓       |
| 26 |  |         | Aaron Phillips                           | ✓       |
| 27 |  |         | Hope Medina                              | ✓       |
| 28 |  |         | Jay Crandell                             | ✓       |

**AGENDA:**

1. Attendance: quorum
2. Review of agenda: February 21<sup>st</sup> meeting at 2 PM will stand despite President’s Day
3. Meeting note taker
4. Schedule:
  - a. Modeling SC meets the first and third Mondays of every month, 12/6/2021 until 12/5/2022, from 2:00 PM to 4:00 PM
5. Next meeting is scheduled on 2/21/22 at 2 PM EST
6. Approval of meeting notes
7. Announcements:

- a. C406 Work Group – Diana Burk
  - i. Diana is going to hold work group to work through all of the Section C406 proposals
  - ii. Michael Rosenberg: Proponent of proposals is out for the next 1.5 weeks
  - iii. Charles Eley: Very important for Reid to be on the calls
  - iv. Michael Rosenberg: Could we incorporate improvements from similar 90.1 proposal that has been through public review?
  - v. Diana took notes of all hands raised to join work group
8. Revised CCP Review
  - a. CEPI-024 Part 1 Simulated vs. Total Building Performance- Amy Boyce
    - i. Open to not having revised definition,
    - ii. Krishnan Gowri comment: Definition says “simulated building performance option,” should be “Total Simulated Building Performance Option” – proposal edited
    - iii. Alfonso: “Proposed Building” and “Standard Reference Design” should be in italics – proposal edited
    - iv. Ben Edwards: Definition should be removed
    - v. Michael Rosenberg: “Use” should not be stricken – proposal edited
    - vi. Alfonso: “Proposed Building Design” should be “Proposed Design” – proposal edited
    - vii. Proposal passes: 19 Accept, 0 Reject
  - b. CEPI-203 EUI Disclosure – Helen Sanders
    - i. Helen: Refocused the proposal around a plan for disclosure, proposal now adapts C405.12 to create a plan for disclosure and will be required before COO is issued. This way, agency who asks for the reporting can do conversion to carbon emissions themselves as buildings will have energy data reporting. Added requirement to report electric water heating use. Added language to make it clear that existing section only requires electric metering. Added in sections for gas, district heating or cooling, renewable energy use. Added in section to require information from energy model for buildings complying via Section C407.
    - ii. Michael Rosenberg: “If possible” should be stricken from Section C405.12.6. Question about “the same frequency as metered systems” in C405.12.7. – proposal revised
    - iii. John McHugh: Can change that section to reference C405.12.4 to require same frequency as electrical meters – proposal revised
    - iv. David Goldstein: Very supportive of code change, this provides an opportunity to compare simulated and metered, will inform building owners and code writers. This is not a new idea, has been in code in Russia since 1998.
    - v. Amiya: Two issues with natural gas metering: 1 – it is a response meter, 2 – natural gas meters cannot transmit this data
    - vi. Jon McHugh – Many gas meters installed have a pulse output, idea is to make sure all meters installed have a pulse output. Also states “Or a method for usage calculation from annual energy bills.” If whatever reason you don’t have a pulse output, you could use the bill
    - vii. Charles Eley: In support of this. When the performance approach of 407 is used, we want this requirement to apply, so must be mandatory. Currently the way this is written, it would be mandatory
    - viii. Helen: That was our intent
    - ix. Alfonso: Software used needs to be validated. Cannot be any software. Should refer to a list of software in DOE’s website.
    - x. Helen and Greg Eades: Isn’t this already referenced in C407.5? – No change made
    - xi. Anna McCullough – Shouldn’t all paragraphs be C406?

- xii. Helen – Yes – Proposal Updated
- xiii. Don Mock – Concerned about who is supposed to be collecting the energy use data?
- xiv. Helen – This is just so that buildings have the capability to report this energy use if required in the future by the jurisdiction
- xv. Don – If you include this, the code reviewer is required to collect the data annually. Doesn't have the staff to go back on every building every year to make sure they are doing their annual energy report
- xvi. Helen – That is not the intent. The intent is to ready them to provide that information if required.
- xvii. Greg Johnson – This doesn't have anything to do with design and construction of buildings, which is the whole point of the code. This is an instruction for operations of the building post-occupancy. This is not within the scope of the code. Would be in the scope of the code to require that the equipment is installed with the capability to provide this data.
- xviii. Steve Rosenstock – Proposal still needs some work, ex. If you have to report annually, why do you need to report hourly? Need more understanding of what peak energy they want to collect. Also need to provide information for renewable thermal energy (geo, biomass, etc).
- xix. Vote: 9 accept, 2 reject, 3 revise
- c. CEPI-207 Source vs Site Energy – James Ranfone/Shannon Corcoran
  - i. James (Jim) Ranfone: Added a table for regions available to calculate source energy conversion factors. Also added map.
  - ii. Charles Eley – Thank you, this is much better than a single source conversion factor. Only issue – there should be a tracking way of reporting source energy, not just stagnant numbers
  - iii. Steve Rosenstock – Not consistent with standard 105, “1.10 for fuels other than electricity” does not work if not using natural gas (ex. Propane). The source energy conversion factors are worst case scenario and do not reflect the electricity created using renewables.
  - iv. Joe Cain – Do we need motions and seconds?
  - v. Charles Eley – Not a requirement at the subcommittee level
  - vi. Kristopher Stenger – Main thing is making sure everyone is clear on what the vote is on
  - vii. Ben Edwards – What are our options for voting?
  - viii. Greg Eades – There will be option to revise
  - ix. Joe Cain – As an interested party, very concerned about this proposal. Thought that this one was rejected.
  - x. Greg Eades – This one was not
  - xi. Joe Cain – I am not in support of this proposal, source energy factors do not reflect increase of renewables on grid
  - xii. Vote: 0 to accept, 9 to reject, 11 to revise
  - xiii. Greg – Is the main issue the source conversion factors?
  - xiv. Alfonso – Yes
  - xv. Kris – We need to be through all of these by the end of May, can be revised as many times as you want
  - xvi. Greg – James and Shannon do you have what you need to revise?
  - xvii. Jim – Yes
  - xviii. Anna McCullough – In support of previous comment to reference a standard or moving reference for source conversion factors to reference up-to-date values as renewables are added to the grid

- a. CEPI-255 Part 1 Proposed “Above Base Energy Codes” Appendix – Hope Medina
  - i. Hope Medina: Appendix is an a la carte type of option where you’re able to pick things your community really wants to do that are vetted instead of one community just trying to create something that is a good idea without understanding unintended consequences.
    - 1. Took items out of National Green Construction Code or NGBS and put them into this Appendix so that we know that have been implemented in the field.
    - 2. There is a portion that deals with the additional efficiency packages – requires additional 5 points, now will require a total of 15 points from Section C406
  - ii. Ben Edwards: Doesn’t think that NGBS reference is good as you get bronze compliance with 2018 IECC compliance. Is not above code.
  - iii. Hope: Referencing 2020 NGBS
  - iv. Steve Rosenstock: IgCC works with ASHRAE 189.1, which won’t be published until the fall of 2023, can we reference a standard that hasn’t been published?
  - v. Hope: Would still reference 2024 because these I-Codes work together, so need to reference the group of codes
  - vi. Charles Eley: Likes the proposal. May want to hold off on the Section C406 add and send it to the task group Diana Burke is chairing as the number of points may change. This section may need to be modified to reflect changes to Section C406.
  - vii. Jay Crandell: No statements that require buildings to comply with entirety of code if they don’t use the exception.
  - viii. Hope: Not the intent of the proposal – this would be included in addition to the base code. Suggestion to change that line to reflect the intent.
  - ix. T Weston: Have you searched the monograph to see if this has been proposed similarly somewhere else? How did you select these items?
  - x. Hope: I have not searched the monograph. I chose the air barrier for the locations that are currently exempt, I think they are very important. The second focus was dealing with the areas outside of the building. There is an awful lot of energy use outside of the envelope. Automatic pool cover requirement from chat:
    - 1. X103.1.3 Automatic covers. Swimming pools and spas located inground shall have an automatic motorized non-permeable pool cover that covers the entire pool surface.
  - xi. Hope: Energy efficient appliances could be the next progression of the code as we are optimizing envelope and other items of the building
  - xii. Mike Rosenberg: Snow and ice melt insulation requirement should go under base code
  - xiii. T Weston: My question on the air barrier part, there are 17 proposals on the air barrier. It is likely that the base requirement and air barrier section numbers will change. The only place where an air barrier is not required under Section C402.5.1 is 2B. Is that what you meant? Or were you looking to require testing everywhere?
  - xiv. Hope: Should be talking about 2B. The intent is that you are required to do testing on all building types.
  - xv. T Weston: You might want to increase the clarity around that.
  - xvi. Eric Lacey: Agrees with the concern around referencing the 2020 NGBS. And is it your intent that this meets the mandatory requirements of the code?
  - xvii. Hope: Yes, it is the intent.
  - xviii. Joe Cain: Does this disallow pools of irregular shape or vanishing edges due to automatic cover section? Is the insulation requirement section for pools aspirational or is it achievable?

- xix. Hope: Insulation is required under ASHRAE 189.1 so it is not new. Has seen motorized pool covers for pools of odd shapes.
- xx. Vote: 0 Accept, 0 Reject, 17 Revise
- xxi. Hope has information needed to revise proposal
- b. CEPI-256 Proposed “Construction and Site Waste” Appendix – Hope Medina
  - i. Hope: Trying to help with jurisdictions who want the a la carte option. Deals with construction and site waste, can really assist with communities and their goals. Concept is not new, included in IgCC and NGBS. In Colorado, we have quite a few jurisdictions that included construction and site waste. A lot of this was taking out of other above code green programs.
  - ii. Krishnan Gowri: Is this within the scope of this code? Outside the scope of energy in his opinion.
  - iii. Hope: I believe the new scope does include dealing with carbon reduction.
  - iv. Kris: Carbon is listed in the intent, to what extent is not dictated. We have worked through sub-committees on both sides that are envelope and embodied energy. We have proposals related to embodied energy. Where it goes within the code is still up for discussion.
  - v. Alfonso Hernandez: We are the modeling subcommittee. Is this a gateway to talking about embodied carbon in the code? The analysis and how that gets incorporated
  - vi. Vote: 12 Accept, 3 Reject, 2 Revise
- c. CEPI-215 Expanded Commissioning – Kim Cheslak
  - i. Kim: Revises exceptions to mechanical systems commissioning, to be in line with what’s under ASHRAE 90.1 and combine the heating, cooling, and hot water capacity. Really are targeting the 10,000 SF requirement. Setting buildings up to comply with the existing building requirements that take effect as soon as the COO is issued.
  - ii. Michael Rosenberg: Should change “and” to “or” in exception 1.
  - iii. Kim: I don’t disagree with that. It was intentionally an “and.” We would support that, didn’t want to go too far beyond what is currently in the code.
  - iv. Krishnan Gowri: Conversions are not consistent with what has been stricken out. 280 kW should be 263 kW.
  - v. Greg Eades: Conversion is correct.
  - vi. Mark Lessans: Putting or in the exception actually makes it less restrictive, not more restrictive
  - vii. Mike Rosenberg: You’re right. “Or” is reverted back to “and”
  - viii. Steve Rosenstock: When you add up the current capacities, that is 1,080,000 Btu/h. Why is it being knocked down?
  - ix. Kim: The 960,000 Btu/h is from the ASHRAE code. Proven to be the most cost effective.
  - x. Jon McHugh: Is the square footage needed at all? If I have a large warehouse with almost no capacity, this would require commissioning.
  - xi. Kim: Yes, that is the intent because these very large buildings are being subject to additional policies. Having these systems being commissioned will give a facility manager or owner more information about the building. For a building even with a low energy capacity, if that building is being subject to a building performance standard or retro-commissioning requirement, the commissioning report will be invaluable to owner.
  - xii. Jon McHugh: How does cost effectiveness work out for a building with a few UHs and an EWH?
  - xiii. Vote: Unanimous – Accept
- 10. Charles Eley: Appendix CC has a similar issue as Section C406, willing to chair a group on Appendix CC.
  - a. Raised hands to join task group