G. Eades - Chair
Version: **3/15/22**

**March 21, 2022**

# IECC-C Modeling Subcommittee Meeting – Notes

**Monday March 21, 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) | | Sean Denniston - NBI | ✓ |
| 2 | Eley, Charles - Architecture 2030 (VC) | ✓ | Greg Grew – Grew Design | ✓ |
| 3 | Anderson, Courtney - City and Co. Denver | ✓ | Jim Ranfone - AGA | ✓ |
| 4 | Bomer, Bryan - Montgomery Co., MD | ✓ | Shannon Corcoran - AGA | ✓ |
| 5 | Burk, Diana - NBI | ✓ | Eric Lacey – Responsible Energy Codes Alliance | ✓ |
| 6 | Dalzell, John - Boston Planning and Dev. | | Alamelu Brooks – Energy Solution | ✓ |
| 7 | Edwards, Ben - Mathis Consulting | ✓ | Kim Cheslak - NBI | ✓ |
| 8 | Giunta, Frank – Trane Technologies | ✓ | Mike Moore – Broan-NuTone | ✓ |
| 9 | Goldstein, David - NRDC | ✓ | Anurag Goel – evVerid Systems | ✓ |
| 10 | Gowri, Krishnan - Intertek Inc | ✓ | Theresa Weston - ABAA | ✓ |
| 11 | Grew, Milton - City of East Harford | | Jerry Phelan - Covestro | ✓ |
| 12 | Harbeck, Nicolas - AHRI | ✓ | Amanda Hickman – Hickman Group | ✓ |
| 13 | Harris, Stephen - University of Texas | ✓ | Bryan Ahee – Bradford White | ✓ |
| 14 | Hernandez, Alfonso - Gensler | ✓ | Jim Earley | ✓ |
| 15 | Hoffman, Emily - NYC | ✓ | Joe Cain - SEIA | ✓ |
| 16 | Jakobs, Diane - Rheem | ✓ | Amy Boyce - IMT | ✓ |
| 17 | Lessans, Mark - Johnson Controls | ✓ | Kim Cheslak - NBI | ✓ |
| 18 | McCullough, Anna - Group 14 Eng. | ✓ | Gina Borca - NYC | ✓ |
| 19 | Mock, Don - Howard County | ✓ | Kevin Rose - NEEA | ✓ |
| 20 | Panigrahi, Amiya - TTUHSC | ✓ | Doug Powell – University of Texas | ✓ |
| 21 | Port, Darren - NEEP | ✓ | Wayne Stoppelmoor | ✓ |
| 22 | Rosenberg, Mike – PNNL (Consultant) | ✓ | Nicholas Ross – State of Connecticut | ✓ |
| 23 | Waite, Mike - ACEEE | ✓ | Brian Swiecicki - NPGA | ✓ |
| | | | Craig Conner | ✓ |
| | | | Matt Swenka - WIldan | ✓ |

## Agenda:

1. Introductions/Attendance
2. Determination of quorum and review of agenda
3. Meeting Note Taker: Nick Harbeck - AHRI
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.
    b. Next meeting is scheduled on 4/4/22 at 2 PM EDT

5. Approval of meeting notes *vote*
    a. 3/7/2022

Upon motion and duly seconded, members unanimously approved the March 7, 2022 notes.

6. Announcements *information*
    a. C406 Work Group Update – Diana Burk

Ms. Burk updated members on two meetings of the Work Group discussing CEPI-193. The next meeting will discuss envelop measures on March 24 at 12:30 PM EST. Members interested in joining were encouraged to contact Ms. Burk.

    b. Appendix CC Work Group Update – Charles Eley

Mr. Eley updated members on work group continuous progress related to proposed changes to Appendix CC. The next meeting will take place at 9:00 AM EST March 22. The group has resolved almost a dozen code change proposals and expects to complete its work in a timely manner.

Proposals from the work groups could eventually be voted as one consensus proposal or individually.

7. Old Business, Tabled Motions *discussion/vote*
    a. Revised CCP Review
        i. CEPI-207 Source vs Site Energy – James Ranfone/Shannon Corcoran

Mr. Gowri summarized updated recommendations to CEPI-207 including revisions to source energy factors and revisions addressing previous comments. Latest fossil fuel source energy conversion factors, aligned with ASHRAE 189 Appendix M, were included in an updated table. Electric sub-grids not included in the table were also covered by the 'All other electricity' addition to the table.

Mr. Ranfone agreed with the additions addressing previous subcommittee comments and supported the revisions.

Mr. Waite also noted that the committee should consider source emissions more holistically if these exemptions become incorporated more broadly into the code in the future.

The proposal was accepted 17-0-1 (accept-reject-abstain).

        ii. CEPI-211 Changes Table C407.4.1(1) Mechanical Ventilation Requirements – Anurag Goel

Mr. Goel updated language in CEPI-211 to address performance building path and describes how a standard reference design should be modeled. The proposed design was updated to stay consistent with the proposal, consistent with Section C403.2.2. The standard reference design was updated for systems 5-11 to align with IMC Section 403.3 because it uses a constant volume calculation. Systems 1-4 should align with ASHRAE 62.1 6.2.4.3 to determine the baseline of multizone and variable volume calculations. Finally, natural ventilation, would be treated as 'same as proposed.' This proposal may overlap with CEPI-213.

Mr. Swenka asked what savings would be provided by this proposal. Trade-offs from this measure might counteract other long-term efforts. Mr. Goel found that some buildings have significant savings through

reducing ventilation load. Energy recovery is another comparable option.

Mr. Rosenberg noted the standard reference design does not capture demand control ventilation, natural ventilation is not credited, the proposal may allow trade-offs with more permanent measures, and asked about a filtration penalty.

Mr. Waite commented that system numbers might need to reference the table defining the type of equipment (in table C407.4.1(3)). Mr. Stenger noted that these definitions could be aligned editorially.

The proposal was updated to include 'C403.7 of this code' to the language in the 'Standard Reference Design' column. Members noted the IMC distinguishes between mechanical and natural ventilation and recommended removing reference to natural ventilation in the table.

Ms. Cheslak recommended updating the table to remove exclusive reference to Mechanical ventilation to ensure natural ventilation can receive credit. The IMC includes it in Section 402. Mr. Edwards recommended the subcommittee table the proposal and that it should be updated and aligned with CEPI-213 before the subcommittee votes on it. Mr. Goldstein also agreed with the need to incorporate natural ventilation into the credits.

Mr. Grew noted that performance ventilation rates are not present in the code making it difficult to benchmark.

The proposal was remanded for modification 0-0-15-1 (accept-reject-revise-abstain).

8. New Business *discussion/vote*
    a. CEPI-213 Table C407.4.1(1) Natural Ventilation Requirements – Mike Moore

Mr. Moore shared that CEPI-213 was intended to address ventilation that exceeds the code requirements. It would align the commercial code with the residential code to allow ventilation to incentivize energy efficiency. Fan power should reference the broader C403.8.

Mr. Rosenberg was concerned that fan power standard reference design requirements might be too high and should be more closely aligned with ASHRAE 90.1, especially for smaller systems. Mr. Moore intended the section to meet the minimally compliant section of the code and welcomed friendly amendments. Mr. Eley suggested proponents of CEPI-211 and CEPI-213 coordinate their proposals and bring back to the committee. Mr. Rosenberg suggested aligning the language with ASHRAE 90.1 with some modifications and offered to work on editing the language with the proponent.

Mr. Goldstein noted that trade-offs must be narrowly targeted, especially as it related to pressure drop. CEPI-211 may already address this concern.

The proposal was remanded for modification and combination with CEPI-211.

    b. CEPI-217 Incorporates Prescriptive Path Requirements for Existing Buildings – Sean Denniston

Mr. Denniston explained that CEPI-217 leveraged additional efficiency options in C406 and applies them to large projects for existing buildings. It explains how to use Section C406 for an addition, revision, and adds section C506 explaining how to use C406.

C506.1 explains how to get the credits from C406. Additions are required to achieve 10 credits, but it includes a series of exceptions to remove small projects from its scope. The exceptions also ensure buildings have enough C406 options to choose from. Alterations are required to achieve five credits with a similar exception process to additions. DOE's proposal also addresses alterations and Mr. Denniston believes CEPI-217 is the better option to address these cases. CEPI-217 credit requirements would need to be recalibrated if CEPI-193 passes.

Mr. Waite asked why the addition of C506 is needed and why the exceptions were included in the 'addition' section. Mr. Denniston clarified that referencing C406 instead of adding C506 would need language explaining how to apply new construction language to existing buildings and that adding C506 is more user friendly. Mr. Denniston noted that the language could also allow for existing building-specific credits in the future. The current set of exemptions are also intended to be broad in the first proposal.

Mr. Rosenberg recommended some language should also be included in the DOE proposal. Some coordination between proponents would benefit both proposals. Ms. Burk agreed that the proposal should be included in the work of the C406 Work Group.

The proposal was remanded for review by the C406 Work Group 0-0-17-1 (accept-reject-revise-abstain).

c. CEPI-229 Ensures Partial Equipment Replacements Comply with C408 Acceptance Testing Requirements – Sean Denniston

Mr. Denniston shared that the last round of commercial code updates incorporated a blanket reference from C408 and do not apply to existing buildings. Nothing in the code requires acceptance testing to ensure the altered system still works well. The proposal clarifies language to address testing requirements that only applies to existing buildings. The thresholds might also need to be updated to new construction requirements.

Mr. Harbeck clarified that the proposal should be aligned with proposed changes to the previously accepted CEPI-215.

Ms. McCullough noted additional changes would need to be made to some of the section C503 and C408 language referenced in the proposal for consistency. Mr. Denniston agreed and noted references to Section C408 could be removed in the original Section C503.3, C503.4, and C503.5 language for additional clarity.

The proposal was accepted as amended 18-0-0-1 (accept-reject-revise-abstain).

d. CEPI-216 Adds ASHRAE 100 Compliance to C501.2 Exceptions – Amy Boyce

Ms. Boyce shared that CEPI-216 adds the option to use ASHRAE 100 as an additional compliance section for C501.2, separate from ASHRAE 90.1.

Mr. Denniston was concerned that the proposal does not necessarily provide an additional exception due to the language of the proposal. Ms. Boyce clarified that the intent is not to make the code less stringent. There are benefits to include buildings complying with ASHRAE 100. Mr. Phelan agreed with Ms. Boyce's characterization and noted a modification might be needed to address building renovations and ensure these renovations are holistically considered. Mr. Stoppelmoor also noted this option does not reduce stringency.

Mr. Rosenberg and Mr. Dennisiton agreed that the code should revise the language to clarify that ASHRAE 100 applies in addition to the code.

The proposal was remanded for modification 0-2-15-1 (accept-reject-revise-abstain).

9. Adjourn