**IECC-C Modeling Subcommittee Meeting** – **Notes**

**Monday May 16, 2022 –2:00-4:00 PM EDT**

[**Join via WebEx**](https://iccsafe.webex.com/wbxmjs/joinservice/sites/iccsafe/meeting/download/d1ebf65ce61e494baa34967a02de107a?siteurl=iccsafe&MTID=mc385da5ed83221db03729adca045361d)

**Attendance:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **Voting Members, Effective 12/06/21** | **Present** | **Guests** | **Present** |
| 1 | Eades, Greg - EPA (Chair) | ✓ | Steve Rosenstock – Edison Electric Institute | ✓ |
| 2 | Eley, Charles - Architecture 2030 (VC) | ✓ | Reid Hart - PNNL | ✓ |
| 3 | Anderson, Courtney - City and Co. Denver | ✓ | Alamelu Brooks – Energy Solutions | ✓ |
| 4 | Bomer, Bryan - Montgomery Co., MD | ✓ | Kim Cheslak - NBI | ✓ |
| 5 | Burk, Diana - NBI | ✓ | Thomas Scultz – AGA | ✓ |
| 6 | Dalzell, John - Boston Planning and Dev. |  | Eric Lacey - RECA | ✓ |
| 7 | Edwards, Ben - Mathis Consulting | ✓ | Kristopher Stenger – ICC | ✓ |
| 8 | Giunta, Frank – Trane Technologies | ✓ | Doug Powell – University of Texas | ✓ |
| 9 | Goldstein, David - NRDC | ✓ | Christine – Karpman Consulting | ✓ |
| 10 | Gowri, Krishnan - Intertek Inc |  | Joe Cain – SEIA | ✓ |
| 11 | Grew, Greg – Architect/Code Consultant | ✓ | Craig Conner - Self | ✓ |
| 12 | Harbeck, Nicolas - AHRI | ✓ | Jean Kim - NYC | ✓ |
| 13 | Harris, Stephen - University of Texas |  | Greg Johnson - NMHC | ✓ |
| 14 | Hernandez, Alfonso - Gensler | ✓ | Kevin Rose - NEEA | ✓ |
| 15 | Hoffman, Emily - NYC | ✓ | Aaron Phillips – Asphalt Roofing Assoc. | ✓ |
| 16 | Jakobs, Diane - Rheem | ✓ | Norman Wang – State of Maryland | ✓ |
| 17 | Lessans, Mark - Johnson Controls | ✓ | Steve Orlowski – Sundowne Building Code Consultants | ✓ |
| 18 | McCullough, Anna - Group 14 Eng. | ✓ | Mike Tillou - PNNL | ✓ |
| 19 | Mock, Don - Howard County | ✓ | Jessica Archer - Target | ✓ |
| 20 | Panigrahi, Amiya - TTUHSC |  | Shannon Corcoran - AGA | ✓ |
| 21 | Port, Darren - NEEP | ✓ |  |  |
| 22 | Rosenberg, Mike – PNNL (Consultant) | ✓ |  |  |
| 23 | Waite, Mike - ACEEE | ✓ |  |  |

**Agenda:**

1. Introductions/Attendance
2. Determination of quorum and review of agenda
3. Meeting Note Taker: Emily Hoffman
4. Schedule
	1. 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.
	2. Next meeting is scheduled on 6/6/22 at 2 PM EDT
5. Approval of meeting notes *vote*

5/2/2022 ✓

 CEPI-193

**Summary: Reid Hart** (PNNL)

* Presented at the last meeting Modeling Subcommittee on May 2nd and May 11th
* The latest version (emailed on 5/12) had few minor changes, documented as track-changes:
	+ A correction is made on the standby kW in the Commercial Kitchen Q02, Table C406.2.7.2(3)
	+ Minor changes to the measure E06 fenestration requirements, including U-factors for operable windows.
* This is expanding (doubling) the number of energy saving measures – implementing an approach where depending on the Climate Zone and building type – the number of credits varies. Shifted the credit scoring – now targeting 6.8% energy savings without renewables/load management and another ~6% energy savings based on cost for the renewable/load management. There’s about 10% variability from one building type to another.
* Merged in several other proposals including window shading, upgrades to kitchen equipment, coordinated air leakage measure (referred back to testing procedure in base code)

**No comments** from subcommittee

**Vote:** 15 approve, 1 abstained (unanimous)

**Reason Statement:** Improves the customization of requirements to individual building use groups and provides for expanded savings compared to the 2021 IECC.

Post CEPI-193 Discussion

Mike Rosenberg (PNNL) – testament to hard work, Reid reached out to everyone involved, he reached out and built consensus – and a model for how we should be reviewing and approving complicated proposals. Thanks to Diana Burk’s hard work too.

Reid Hart (PNNL) – large team of folks at PNNL that did the analysis and gave these numbers credibility

Michael Rosenberg (PNNL) – should we vote on the other C406 proposals?

Greg Eades (chair, EPA) – going to wait until we reach out to the proponents of all other C406 code change proposals to see if the proponents will withdraw

Steve Rosenstock (Edison Electric Institute) – not going to withdraw until after main committee vote

Charles Eley - For CECPI-5 – we already discussed them withdrawing their proposals if CECPI-5 passes on Wednesday.

CEPI-022 – All Electric Building Appendix

Summary: Kim Cheslak (NBI)

Introduced CEPI-022 and highlighted brief overview of the changes

* Modified C405.16.1 – Electric infrastructure for dwelling and sleeping units
* Mixed fuel buildings need to achieve additional credits from C406 – C406.1 will need to be updated to reflect the total number of credits based on CEPI-193

**Discussion on CEPI-022**

Thomas Schultz (Spire/AGA) – concerned, imposes a significant cost, complete supplemental power system and doesn’t offer any energy efficiency savings for that accommodation. I thought that Electric-Ready mandate was part of the appendix. That as a base code mechanism and not offering any energy efficiency savings and significant cost is an unnecessary requirement for the base code. Recognize the electric-ready mandate in the base code is not appropriate.

Charles Eley –How would you determine the alternative for a very large gas boiler? Example: 10million BTU gas boiler, the alternative would not be a hot water distribution but some other system. It would be more than just replacing the gas with electric boiler – more likely you’d change the system type to something else. Can you share with the committee how you would anticipate the electric-ready requirement to apply to large fossil fuel boilers?

* Kim Cheslak – good question. How do you anticipate every type of HVAC swap? In each system section – specific language for each type of system alternative. It asks the designer to size the electrical system to accommodate a branch circuit for sufficient electrical capacity for the equivalent equipment capacity. So, doesn’t ask the designer to replace boiler with electric boiler – but think about the future heat pump alternative. Anticipates what you need to think about with that HVAC swap, doesn’t dictate heat pump system.

Steve Rosenstock (Edison Electric Institute) – we are being neutral about this, but some of our members pointed out that we will give whatever type of equipment designers want. There’s a concern that city’s pushing to all- electric, but that the electric infrastructure could sit there and not be used. Some of the issues are not energy issues.

Diana Burk (NBI) –

* responding to costs. 50,000 sqft office building. Electric infrastructure costs (RS Means) – $0.03 / sqft for water heating. $0.06 /sqft for other heating. DOE did residential cost effectiveness – the minor costs that were more than paid for in savings from avoided retrofit costs. 3X the cost for a retrofit versus new construction.
* Responding to “This proposal doesn’t affect the efficiency” – we require mixed fuel buildings to meet more points (based on CEPI-193), but does have an efficient requirement
* Responding to Steve Rosenstock’s comment – stranded assets and small commercial owners going out of business. We know that buildings will last 50 years and by 2050 USA to be carbon neutral. I am hopeful that these electric requirements are not stranded assets. That’s why the residential committee approved requirements for residential.

Shannon Corcoran (American Gas Assoc.)

* I agree with Rosenstock’s statement on stranded assets. Consumers want either electric or gas. If you mandate both installed, puts burden on consumer. AGA is about consumer choice.
* Metrics – EPA supports site metrics. What is the actual metric when you use site v. source.
* Safety codes and standards that ICC produces – safety standards take precedence over Energy Efficiency. Some of these provisions will put in conflict of the safety codes – IRC, IMC, UMC and National/International Fuel Gas Codes. Should be in an appendix to be adopted. 22 States have prohibited mandating a fuel source and focus on consumer choice.

Kim Cheslak (NBI)

* Responding to duplication of infrastructure. What to be clear about what proposal does. If building is all electric, does not require gas infrastructure. Only requires duplication of infrastructure if there’s a gas end use. This proposal does not require gas infrastructure that may never get used. Disagree that electric infrastructure would never be used.
* Shannon mentioned something about site v. source – didn’t follow it that closely – doesn’t have anything to do about this proposal – don’t be confused.
* Nothing in this proposal that prohibits consumer choice. Just asks for building to be set up for future electric plug and play.
* Take issue that this is in conflict with other safety codes – would like a specific example.

Diana Burk (NBI) – by requiring electric infrastructure in buildings, you’re allowing consumer choice. If you don’t have the electric infrastructure, then you’re handicapping consumers from reducing emissions. Huge health consequences from cooking on gas stoves – this is a safety concern by not installing gas infrastructure.

Mike Waite (ACEEE) – question for Kim, any guidance or references on cost on the time of construction versus during the retrofit. Know it’s dependent on the building. How non-linear it is on the capacity of the electric infrastructure. If you’re off a bit on the electric capacity – how much cost difference is there in upgrading the electric capacity if you already have something there.

Kim Cheslak (NBI) – good question – NBI did cost study of our decarb code, which is what this proposal is: <https://newbuildings.org/resource/cost-study-of-the-building-decarbonization-code/>

Does show increase in cost. We knew going into the cost study that electric infrastructure is not granular. If I did a load sizing calculation, load requires 3 ton, but only 4 ton unit available. You have more electric capacity just sitting there. It’s difficult to talk about across all buildings and building types. If you have the cooling capacity, you have most of the heating capacity already. Does not apply to existing buildings, only new construction. We’ve learned that the shift from cooling to heating has some variability – but if you have the cooling capacity for electrical, you likely have the space heating capacity (not water heating, cooking, clothes drying), it’s not as big of a lift as you think it is.

Darren Port (NEEP) via chat:

 <https://neep.org/sites/default/files/LifeSafetyCodes_info_final_2.pdf>

<https://www.swenergy.org/energy-codes-are-life-safety-codes>

Mike Waite (ACEEE) – I’m thinking of the designer having to lay out particularly sized equipment. If you don’t know what that will be, it’ll be hard to say how the cost variables come into play.

Thomas Schultz (Spire/AGA) – By allowing a more easily adoptable energy code, you gain more energy efficiency if you have more adoptability. This particular proposal pushes us into this stretch code mechanism and not what the IECC is. This committee could make a philosophical shift to gain more progress and focus – like CEPI-193 – in significant improvements that this code can bring. But if we push for significant cost upfront like this proposal does, there will be a shift.

Steve Rosenstock (Edison Electric Institute) – responding to sizing equipment – use a design day. In DC in the winter, it’s 20F – in summer it’s 95F/85F wb – base your systems on the capacity changes. Then you base it on the equipment specified – and the efficiency at those temperatures. Whether it’s ASHP, GSHP – that’s how you size equipment. The numbers will vary based on your equipment decision.

Frank Giunta (Trane) If we look at design temps, it can vary. Looking at a path to electrification, you’ll size differently. Looking at VAV air distribution, COPs for ASHP. COPs can vary from 1.2 to 4-5, depending on cold climate air source and water source.

**Vote**

**Accept: 9, Reject: 0, Revise: 7, Abstain: 1**

4 remaining code change proposals

Next meeting June 6th, 2022

Meeting ended 2:58pm EST