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

**Monday May 2, 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:**

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| **#** | **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 |  | Theresa Weston - ABBA | ✓ |
| 4 | Bomer, Bryan - Montgomery Co., MD |  | Maureen Guttman – Energy Codes Alliance | ✓ |
| 5 | Burk, Diana - NBI | ✓ | Jay Crandell - FSC | ✓ |
| 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 | ✓ | Maria Karpman – Karpman Consulting | ✓ |
| 10 | Gowri, Krishnan - Intertek Inc | ✓ | Joe Cain – SEIA | ✓ |
| 11 | Grew, Greg – Architect/Code Consultant |  | Vincent Martinez – Architecture 2030 | ✓ |
| 12 | Harbeck, Nicolas - AHRI | ✓ | Jerry Phelan - Covestro | ✓ |
| 13 | Harris, Stephen - University of Texas | ✓ | Greg Johnson - NMHC | ✓ |
| 14 | Hernandez, Alfonso - Gensler | ✓ | John McHugh – McHugh Energy | ✓ |
| 15 | Hoffman, Emily - NYC | ✓ | Aaron Phillips – Asphalt Roofing Assoc. | ✓ |
| 16 | Jakobs, Diane - Rheem | ✓ | Tom Gleason – City of Denver | ✓ |
| 17 | Lessans, Mark - Johnson Controls | ✓ | Rupal Choski – Madison IAQ | ✓ |
| 18 | McCullough, Anna - Group 14 Eng. | ✓ | Norman Wang – State of Maryland | ✓ |
| 19 | Mock, Don - Howard County | ✓ | Jennifer Hatfield – Pool & Hot Tub Alliance | ✓ |
| 20 | Panigrahi, Amiya - TTUHSC | ✓ | Steve Orlowski – Sundowne Building Code Consultants | ✓ |
| 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: Diane Jakobs
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 5/16/22 at 2 PM EDT
5. Approval of meeting notes *vote*
   1. 4/18/2022 - Approved

1. Announcements *information*
   1. None

1. Old Business, Tabled Motions *discussion/vote*
   1. CEPI-255 Above Code Appendix – Hope Medina – Ok to send to full committee?

Mike Waite – made motion to table because it refers to efficiency credits. Time limit should be for the next meeting after review of CEPI – 193. Charles – There was a lot of discussion from Mechanical in full committee.

1. New Business *discussion/vote*
   1. CECPI-5-21 Appendix CC Consensus Proposal (Addresses CEPIs 234-253) – Charles Eley

Will improve the bar chart for modeling. Had a TG. Met 5 times. Addressed 19 CEPIs. Alignment with CECPI-2-21 – Section 405.13 that have already been approved. Common definitions. Renewable Energy Requirements can be used towards Appendix CC. Exceptions for inadequate solar, shading and roof obstructions.

Prescriptive Minimum Renewable Energy Requirement: Requirements updated by latest progress indicator work from PNNL Expanded all “all others”

Off-Site Renewable Energy Procurement Factors – replaced table. Updated green tariff for procurement factor.

Miscellaneous simplifications

Basis of 7.5 W/ft2 On-Site Renewable

15 W/ft2 is typical and achievable. Reasonable for ½ of roof area. Exception for shaded or used for other purposes. Collector don’t need to be on the roof. Less than 7.5 W/ft2 will meet requirement. Showed table with color coding.

Simplification of procurement factors. Minimum On-site renewable energy 1.0 except .2 for RECs. No on-site renewable energy .75 except .2 for RECs. Replace with paragraph.

Showed changes on screen. Definitions updated and cleaned up. Calculation of on-site renewable energy. RECs assigned to original building owners. Updated table and added grocery store, laboratory and assembly. Procurement factor paragraph.

John Dalzell – Was the ramification of state solar programs supported by utilities discussed? Charles - REC assigned to building owner.

Mike Waite – What was the reasoning for using 1.0 for offsite? Off-site contracts don’t have the same reliability. Charles - Community solar can’t buy any more energy than you use. Whatever is left from off site would be lost. Why not allow for all off site?

Vincent Martinez – Much of the original purpose was to allow all renewable. Not a discussion of the risk but does still incentivize on-site first. Wanted simplicity.

Mike Waite – Factors are not to incentivize but to account for risk.

Vincent Martinez – PPA are the primary application which are currently stronger.

Charles Eley – More consistent. Tri

Greg Johnson – In his opinion, on-site renewable energy should have a value of 1. Because of waste management. At building level, any system at the building is subject to mishandling. More supportive of community having priority.

Steve Rosenstock – Charles incorporated all of the changes into his proposal. There are a lot of improvements. All comments have been answered but may make a public comment. With on site when a business closes the systems may be disconnected. Could be tweaked.

Joe Cain – Agree with the factor for community solar could be 1.0 but this proposal is not about recycling. Recycling is a red herring. Doesn’t think there is a difference. Shouldn’t be a consideration.

Greg Johnson – Not talking about the infrastructure of recycling. Talking about building owners not doing the right thing. Even if the solar industry provides all of the capacity, not all building owners will do the right think.

Diana Burke – Concern that they allowed off site renewable. Thinks that 7.5 W/ft2 is sufficient not to need off site. People want to protect land.

Jon McHugh – Agree with Diana. Footprint of business is appropriate. Does not think recycling is an issue for professionals. Supportive of proposal.

Mike Waite – Text CC103.3.3.1. Except for unbundled RECs should be in the last sentence as well.

Charles Eley – Intent is to meet requirement with off site and RECs would not be required..

Mike Waite – Did the working group vote?

Charles Eley – Yes most were unanimous take one thing at a time. No vote on the whole thing.

Jon McHugh – RECs procurement factor in Mike Waite’s comment. Intent is that it applies to everything except RECs.

Charles Eley – It could be changed now. Modified on screen. Good comment.

Jay Crandell – Still confused. Not clear that unbundled RECs have a procurement factor of .2 Permissive language is not appropriate code language in Clause CC103.3.3.1. Shall not may.

Vincent Martinez – Did discuss that if the modeling approve Charles’ proposal then his proposal will be withdrawn.

Steve Rosenstock – will also withdraw with some tweaks in public comment. Will wait until after full committee.

Jay Crandell – C103.2.1 there is the 15 year certificate. What happens after 30 or 40 years? What mechanism is there to make sure that it stays there? Maintenance? Replacement?

Greg Eades – Ready for a vote. Approve – 16-0-1 for Greg. Will be presented on the 18th meeting.

* 1. CEPI-193 Additional Efficiency Credits (Addresses CEPIs 194-200) – Diana Burk

CEPI-193 – Additional Efficiency Credits – Diana Burk

Reid Hart – Go to reason statement. Schedule – Introduce it today. Not final until noon on the 4th. Proposals will be considered. Presentation on the 11th. Will show Comcheck will address this. On the 14th there will be a final proposal a week early. Hope there will be a vote up or down without changes.

Teresa Weston – Add in subcommittee proposal CEPI - …

Reid Hart – Granted that it is long. About 1/3 appear in 2021. Will show which ones have changed. There were at least a dozen meetings on the proposal.

Diana Burk – Part was review and invited other subcommittees to review proposal.

Reid Hart – There was a lot of input. Still the DOE proposal. Not a combination of proposals. There is a parallel proposal in 90.1. The IECC preceded 90.1 public review. Incorporated changes. Those other proposal are included. Reduced the number of measures. There may be changes to fenestration. Did remove additions and alterations coverage. Will be proposed separately. Kept Core/shell & build out clarified. Pipe sizing did not do much for apartment did not save much energy. Changed to fixtures only. Coordinated leakage with envelope subcommittee. Coordinated with proposals on window shading. Worked residential control credits only belong in R2 R4 I1 tables. CEPI-2 used to revise renewable credit. Incorporated language for clarification. Does add load management measures. Moved renewables. Many jurisdictions have TOU and the idea is to get the controls in place if there is not DR it can plug in down the road. Buildings can respond to the electric grid as it changes. New criteria for cost effectiveness. Every climate zone and building type has a group of measures that are cost effective. Not every building has to do the credits. Questions?

Greg – Questions?

Diana Burk – Cost effectiveness test. Two criteria 2% or 7% discount rates. Which one was used?

Reid – Went with the 7% because it is the most stringent. Table C406.1.1 the credits were pulled down to a max of 90. Applicability of measure varies by climate zone and building type. Trimmed another 5%. ASHRAE uses cost and IECC uses energy.

Mike Waite – Is this available?

Reid – Yes it is in the reason statement.

Mike Waite – There is likely to be a cost of carbon aspect. Might just give another benchmark become some go down.

Reid – there is an appendix Table CD. These numbers did not go down but they could go down. Based on what is possible and not what is cost effective.

Jon McHugh – In terms of the core/shell requirements. Want to understand HVAC local versus remote. What is that definition?

Reid – Language at top C406 1.3. Only if more than 20% does not have final lighting. There are adjustments. Where there is central HVAC or WH that is sized for building there is one requirement. Alternatively, there is a different requirement. Core shell thing is challenging. AHJ has to make a call.

David Goldstein – Follow on Diana’s explanation. Cost effectiveness sub committee had three discount rates. Cost effectiveness is based on 7%. Suggestion is to draw some type of points for effective scalar ratio so that all three assumptions can be used.

Reid – Could do some of that. There is information in the appendix. There are constraints in some type of buildings. Surprised that there was not criteria. Table 2 shows a lot of different measures. It is difficult to do some of that. Frankly 3% and 7% are very close. If we get some number for carbon it could be done.

David - would like to see how much difference it makes.

Reid – What number is used for cost of carbon makes a big difference.

Steve Rosenstock – Table C406.1.2, does all other basically cover houses of worship, laboratories, …? Low energy application mixed with high energy.

Reid - No requirement for manufacturing. Parking garages are at ½ the requirement for warehouse.

Steve Rosenstock – 1.1 Chillers boilers … Do you want to add an air system to the list?

Reid – Will look at the wording.

Greg – Other questions?

Reid – Please email specific language by Wednesday of this week. Expect to make changes for fenestration in the Tables.

John Dalzell – Are these based on EUI?

Reid – Based on site.

Diana Burk – Appendix CC has factors for on site and off site renewables.

Mike Waite – Is already in the proposal just buried in the math. Not really apple to apples. There are other proposals. And address them in public comment.

Greg Eades – from the chat box. Amiya Panigrahi/TTUHSC Unable to accept because of Table 406.1.2 requirements. Can it be moved to an appendix?

Diana Burk – Hopefully will vote at the next modeling meeting.

Reid – Saw comment in the chat. Refers to Renewables. Interested because the requirement can be met by RECs.

Amiya Panigrahi – We don’t have energy models to account for all of these requirements. Discussed with other universities. It is not possible.

Reid – Can do community renewable. Lighting load management. It can be done with off site if needed.

Amiya Panigrahi – There is not enough off site available. Not cost effective.

Reid – Based on lighting an off site renewable.

Jon McHugh – Is it right that you don’t have to use DR and can use off site renewables.

Amiya Panigrahi – In Table C406.3(4) We don’t do off site.

Reid – I should just call it renewable.

Diana – Based on W/ft2.

Greg – Let’s move on.

Steve Rosenstock – Table C406.3 (4) G02 No credits for 0A.

Reid – During peak period there was not benefit from the model because it never cools off in 0A.

Steve Rosenstock – Interesting.

Reid – If we organized according to moisture it would make more sense.

Greg – Hopefully we will be ready to vote at our next meeting.

Reid – Meeting on the 11th will be available for those who did not participate on the WG.

Meeting ended at 2:56 CDT.