G. Eades - Chair
Version: **2/28/22**

March 7, 2022

IECC-C Modeling Subcommittee Meeting – Agenda

Monday March 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)			
2	Eley, Charles - Architecture 2030 (VC)			
3	Anderson, Courtney - City and Co. Denver			
4	Bomer, Bryan - Montgomery Co., MD			
5	Burk, Diana - NBI			
6	Dalzell, John - Boston Planning and Dev.			
7	Edwards, Ben - Mathis Consulting			
8	Giunta, Frank – Trane Technologies			
9	Goldstein, David - NRDC			
10	Gowri, Krishnan - Intertek Inc			
11	Grew, Milton - City of East Harford			
12	Harbeck, Nicolas - AHRI			
13	Harris, Stephen - University of Texas			
14	Hernandez, Alfonso - Gensler			
15	Hoffman, Emily - NYC			
16	Jakobs, Diane - Rheem			
17	Lessans, Mark - Johnson Controls			
18	McCullough, Anna - Group 14 Eng.			
19	Mock, Don - Howard County			
20	Panigrahi, Amiya - TTUHSC			
21	Port, Darren - NEEP			
22	Rosenberg, Mike – PNNL (Consultant)			
23	Wood, Amber - ACEEE			

Agenda:

1. Introductions/Attendance
2. Determination of quorum and review of agenda
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.
    b. Next meeting is scheduled on 3/21/22 at 2 PM EST

5. Approval of meeting notes *vote*
    a. 2/7/2022

6. Announcements *information*
    a. C406 Work Group Update – Diana Burk
    b. Appendix CC Work Group Update – Charles Eley

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

8. New Business *discussion/vote*
    a. CEPI-205 Increase C407 Maximum Renewable Energy Credit – Joe Cain
    b. CEPI-209 C407.4.1(1) Envelope Requirements – Jay Crandell
    c. CEPI-212 C407.4(1) Roof Requirements – Jay Crandell
    d. CEPI-211 Changes Table C407.4.1(1) Mechanical Ventilation Requirements – Anurag Goel

9. Adjourn

2021 International Energy Conservation Code

Revise as follows:
C407.2 Mandatory requirements.

Compliance based on total building performance requires that a proposed design meet all of the following:

1. The requirements of the sections indicated within Table C407.2.

2. An annual energy cost that is less than or equal to 80 percent of the annual energy cost of the *standard reference design*. Energy prices shall be taken from a source *approved* by the *code official*, such as the Department of Energy, Energy Information Administration's *State Energy Data System Prices and Expenditures* reports. *Code officials* shall be permitted to require time-of-use pricing in energy cost calculations. The reduction in energy cost of the proposed design associated with *on-site renewable energy* shall be not more than 5 percent of the total energy cost. The amount of renewable energy purchased from off-site sources shall be the same in the *standard reference design* and the *proposed design*.

Exceptions:
1. Jurisdictions that require site energy (1 kWh = 3413 Btu) rather than energy cost as the metric of comparison.
2. Where energy use based on source energy expressed in Btu or Btu per square foot of conditioned floor area is substituted for the energy cost, the source energy ~~multipliers~~ factors shall be 2.80 for electricity and 1.10 for fuels other than electricity, or ~~other multipliers for national or~~ regional source energy factors from Table C407.2.1, Table C407.2.2, or source energy factors from other ~~annual average energy consumption from~~ nationally-recognized and validated data sources.

Table C407.2.1
Source Energy Conversion Factors for Electricity

eGRID 2018 Subregion Acronym	eGRID 2018 Subregion Name	Source Energy Conversion Factors
AKGD	ASCC Alaska Grid	3.09
AKMS	ASCC Miscellaneous	3.43
ERCT	ERCOT All	2.86
FRCC	FRCC All	2.83
HIMS	HICC Miscellaneous	3.59
HIOA	HICC Oahu	3.46
MORE	MRO East	3.36
MROW	MRO West	3.27
NYLI	NPCC Long Island	3.63
NEWE	NPCC New England	2.76
NYCW	NPCC NYC/Westchester	3.13
NYUP	NPCC Upstate New York	2.73
RFCE	RFC East	2.99
RFCM	RFC Michigan	3.33

RFCW	RFC West	3.30
SRMW	SERC Midwest	3.15
SRMV	SERC Mississippi Valley	2.76
SRSO	SERV South	3.00
SRTV	SERC Tennessee Valley	3.17
SRVC	SERC Virginia/Carolina	2.90
SPNO	SPP North	3.44
SPSO	SPP South	3.39
CAMX	WECC California	2.64
NWPP	WECC Northwest	2.18
RMPA	WECC Rockies	3.22
AZNM	WECC Southwest	2.91

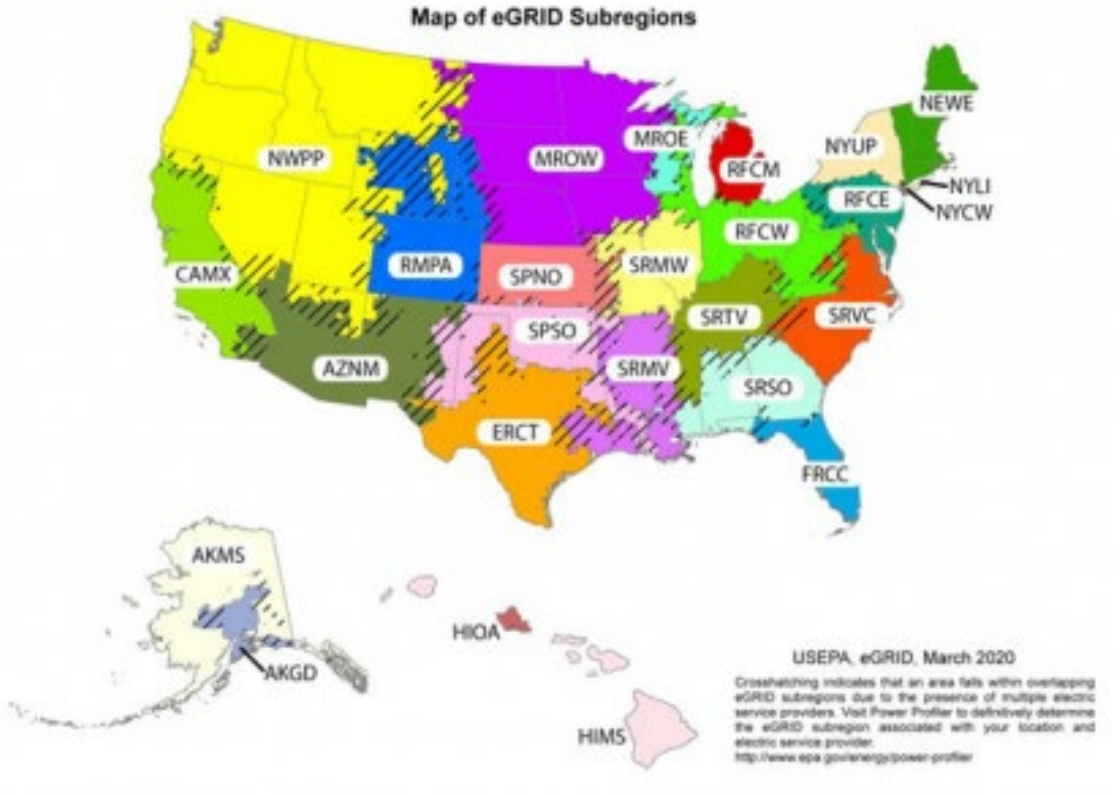

Figure J-2 U.S. EPA eGRID subregion map.
(Note: This is a representational map. Many of the boundaries shown on this map are approximate because they are based on companies, not on strictly geographical boundaries. EPA's Power Profiler website offers an online calculator that can be used to determine the building's eGRID subregion based on the local zip code.)

Table C407.2.2
Grid Electricity Primary Energy Conversion Factors for Regional Comparisons

eGRID 2018 Subregion Acronym	eGRID 2018 Subregion Name	Primary Energy Conversion Factor–	Primary Energy Conversion Factor–

		Captured Energy Efficiency Approach	**Infinite Energy Efficiency Approach**
AKGD	ASCC Alaska Grid	2.66	2.46
AKMS	ASCC Miscellaneous	1.91	1.21
ERCT	ERCOT All	2.51	2.31
FRCC	FRCC All	2.77	2.62
HIMS	HICC Miscellaneous	2.91	2.51
HIOA	HICC Oahu	3.51	3.06
MROE	MRO East	3.07	2.88
MROW	MRO West	2.69	2.35
NYLI	NPCC Long Island	3.36	2.79
NEWE	NPCC New England	2.77	2.26
NYCW	NPCC NYC/Westchester	2.94	2.88
NYUP	NPCC Upstate NY	2.23	1.72
RFCE	RFC East	2.95	2.83
RFCM	RFC Michigan	2.97	2.82
RFCW	RFC West	3.08	3.01
SRMW	SERC Midwest	3.14	3.08
SRMV	SERC Mississippi Valley	2.78	2.71
SRSO	SERC South	2.86	2.72
SRTV	SERC Tennessee Valley	2.94	2.81
SRVC	SERC Virginia/Carolina	2.99	2.81
SPNO	SPP North	2.67	2.37
SPSO	SPP South	2.61	2.31
CAMX	WECC California	2.07	1.55
NWPP	WECC Northwest	1.93	1.28
RMPA	WECC Rockies	2.59	2.27
AZNM	WECC Southwest	2.87	2.71

Reason Statement:

The proposed change brings C407.2 into greater consistency with R405.3 and source energy metric usage in Federal energy programs including Energy Star for Commercial Buildings and Home Energy Score. This revised exception provides the only means of assessing energy performance on fuel cycle energy consumption and ultimately carbon footprints since site energy metrics alone cannot account for these upstream energy system losses. In addition, the allowance in the proposed exception language for use of “other multipliers” addresses a persistent criticism of national average multipliers, which may not reflect regional or local mixes of renewable energy in meeting building demands, and encourages authorities having jurisdiction to use locally-relevant multipliers as provided in Tables 407.2.1 and 407.2.2 that is based on information extracted from ANSI/ASHRAE 105-2021, *Methods for Determining, Expressing, and Comparing Building Energy Performance and Greenhouse Gas Emissions (Table K-4 and K-6)*, or other factors that are available from utilities and other validated sources. Also, greater usefulness of the exception is critical since the basic requirements of C407.2 focusing on energy cost is not consistent with the intent of the IECC as stated in C101.3, which addresses energy use and conservation, not energy cost.

Cost Impact:

The code change proposal will neither increase nor decrease the cost of construction.

Cost Impact: The code change proposal will not increase or decrease the cost of construction The proposal would not increase the cost of construction since the proposal is for changes to an exception. If the use of source energy metrics allows more alternatives for achieving energy performance improvements, it may decrease construction costs ultimately.Cost Impact: The code change proposal will not increase or decrease the cost of construction The proposal would not increase the cost of construction since the proposal is for changes to an exception. If the use of source energy metrics allows more alternatives for achieving energy performance improvements, it may decrease construction costs ultimately.

CEPI-212-21 (MODIFICATION)

IECC®: TABLE C407.4.1(1)

Proponents: Jay Crandell, P.E., ABTG/ARES Consulting, representing Foam Sheathing Committee of the American Chemistry Council (jcrandell@aresconsulting.biz)

2021 International Energy Conservation Code

Modify as follows:
(shown as yellow highlighting for clarity)

TABLE C407.4.1(1)
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

Portions of table not shown remain unchanged.

BUILDING COMPONENT CHARACERISTICS	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Roofs	Type: insulation entirely above deck	As proposed
	Gross area: same as proposed	As proposed
	U-factor: as specified in Table C402.1.4	As proposed
	Solar absorptance: Climate Zone 0, 1, 2, and 3 = 0.45 and 0.75 in all others ~~except as specified in Table C402.3 for Climate Zones 0, 1, 2, and 3~~	As proposed
	Emittance: Climate Zone 0, 1, 2, and 3 = 0.75 and 0.90 in all others ~~except as specified in Table C402.3 for Climate Zones 0, 1, 2, and 3~~	As proposed

Reason for Modification: The modification doesn't change the technical intent of the proposal, but changes formatting to provide the required values for solar absorptance and emittance directly in table rather than referencing Table C402.3 for Climate Zones 0, 1, 2, and 3.

Reason Statement: This proposal aligns the standard reference design roof parameters with conditions required in the prescriptive path for roof solar reflectance and thermal emittance in Section C402.3. The prescriptive provisions are intended to serve as the basis for the standard reference design in the performance path of Section C407.

Cost Impact: The code change proposal will neither increase nor decrease the cost of construction.
This proposal addresses an apparent error or omission in aligning the standard reference design with the prescriptive path which is unchanged by this proposal and is the basis of cost-effectiveness.