International Energy Conservation Code
Consensus Committee-Residential

Draft Meeting Agenda (9/1/23 posting-update)

Webex Meeting Link

September 7, 2023
2:00 - 5:00 PM Eastern

Committee Chair: JC Hudgison, CBO, Assoc. AIA
Committee Vice Chair: Bridget Herring

1. Call to order.

2. Meeting Conduct.
   a. Identification of Representation/Conflict of Interest
   b. ICC Council Policy 7 Committees: Section 5.1.10 Representation of Interests
   c. ICC Code of Ethics: ICC advocates commitment to a standard of professional behavior that exemplifies the highest ideals and principles of ethical conduct which include integrity, honesty, and fairness. As part of this commitment it is expected that participants shall act with courtesy, competence and respect for others.
   d. ICC Antitrust Compliance Guideline

3. Roll Call.

4. Approve Agenda

5. Approve Minutes-August 31, 2023 meeting

6. Administrative issues-staff

7. Action Items-

RE2D-53-23(Remove Appendix RG)	Modeling disapprove 11-0-3
RE2D-54-23(Remove Appendix RH)	Modeling disapprove 13-0-1
RE2D-30-23(Remove ERI w/OPP)	Modeling disapprove 13-1-0
REC2D-1-23(Below-grade walls and slabs)	Envelope as modified 14-0-0
RE2D-49-23(Stretch code appendix)	Modeling heard comment with no action
RE2D-59-23(PNNL Comments)	Modeling as modified 15-2-0
RE2D-66-23(Table R408.2 edit)	Modeling as modified 9-4-6
RE2D-67-23(Table R408.2 edit)	Modeling approve 10-0-3
RE2D-68-23(Table R408.2 edit)	Modeling split 3-3-7
RE2D-69-23(Table R408.2 edit)	
RE2D-70-23(Table R408.2 edit)	
~~RE2D-71-23(Table R408.2 edit)~~	withdrawn

~~RE2D-72-23(Table R408.2 edit)~~ withdrawn
RE2D-73-23(Table R408.2 edit)
RE2D-74-23(Table R408.2 edit)
RE2D-75-23(Table R408.2 edit)
RE2D-76-23(Table R408.2 edit)
RE2D-77-23(Table R408.2 edit)
RE2D-78-23(Table R408.2 edit)

8. Other business.

9. Upcoming meetings. Thursday, September 14 at 2 pm Eastern

10. Adjourn.

FOR FURTHER IECC Residential INFORMATION BE SURE TO VISIT THE ICC WEBSITE: IECC Residential Website

FOR ADDITIONAL INFORMATION, PLEASE CONTACT:
Kristopher Stenger, AIA, CBO
Director of Energy Programs
International Code Council
kstenger@iccsafe.org

Join by meeting number

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International Energy Conservation Code

Code Change Proposal Tracking Sheet

Proposal #	RE2D-53-23 Remove Appendix RG
CDP ID #	1838
Code	IECC RE
Code Section(s)	Appendix RG
Location	
Proponent	Eric Tate eric.tate@atmosenergy.com
Proposal Status	SC rev
Subcommittee	RE Econ, Model, Metric
Subcommittee Notes	Motion for Disapproval Gayathri Vijayakumar; 2nd Ben Edwards
Recommendation	The Sub-Committee approved the addition of the Stretch Code appendix in the last round to provide AHJs with options to exceed the requirements of the main body if that aligned with their local climate policy goals. The proponent didn't provide specific changes to resolve their objections to the existence of this optional Appendix. SC Action: Disapprove
Vote	DISAPPROVE: 11 YES; 0 NO; 3 ABSTAIN
Recommendation Date	August 15, 2023
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RE2D-54-23 Remove Appendix RH
CDP ID #	1839
Code	IECC RE
Code Section(s)	Appendix RH
Location	
Proponent	Eric Tate eric.tate@atmosenergy.com
Proposal Status	SC rev
Subcommittee	RE Econ, Model, Metric
Subcommittee Notes	Motion for Disapproval Gayathri Vijayakumar; 2nd Ben Edwards
Recommendation	The Sub-Committee approved the addition of the Carbon Rating appendix in the last round to provide AHJs with options to shift the focus of their requirements to reducing GHG emissions, rather than just energy. The proponent didn't provide specific changes to resolve their objections to the existence of the optional Appendix. SC Action: Disapprove
Vote	DISAPPROVE: 13 YES; 0 NO; 1 ABSTAIN
Recommendation Date	August 15, 2023
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RE2D-30-23 Remove ERI w OPP
CDP ID #	1824
Code	IECC RE
Code Section(s)	R406.5 table
Location	
Proponent	Eric Tate eric.tate@atmosenergy.com
Proposal Status	SC rev
Subcommittee	RE Econ, Model, Metric
Subcommittee Notes	
Recommendation	
Vote	disapprove
Recommendation Date	8/22/23
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	REC2D-01-23 Below-grade walls and slabs
CDP ID #	1723
Code	IECC RE
Code Section(s)	R402.2.9.2
Location	SC rev
Proponent	Jay Crandell jcrandell@aresconsulting.biz
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	tabled to 8/16 (14-0-1)
Recommendation	REC2D-01-23 As Modified Reason Statement: This proposal adds necessary language and tables that coordinate the proper calculation of F-factors for slabs and ground coupling for crawl space walls and basement walls.
Vote	14-0-0 approved as modified
Recommendation Date	8/23/23
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

Replacement Proposal for REC2D-01-23

Revise footnote 'a' of Table R402.1.2 as follows:

a. Nonfenestration *U*-factors and *F*-factors shall be obtained from measurement, calculation, ~~or~~ an approved source, or Appendix RF of this code where such appendix is adopted or approved.

REASON: (1) Provides a single location to reference Appendix RF which is where sources for U-factors and F-factors are currently referenced as approved sources. (2) Allows simplification of code text in the following revisions (and also reduced the complexity of the original proposal).

Revise as follows:

R402.1.3 *R*-value alternative. Assemblies with *R*-value of insulation materials equal to or greater than that specified in **Table R402.1.3** shall be an alternative to the *U*-factor or *F*-factor in **Table R402.1.2**. ~~*R*-values of insulation materials for the assemblies specified in Appendix RF that have a *U*-factor less than or equal to the *U*-factor required by Table R402.1.2 shall be permitted~~

REASON: (1) Redundant with R402.1.2 which provides means to determine equivalent R-value solutions using U-factors. (2) Missing F-factors which inadvertently limits use of F-factors in Section R402.1.2 and in Appendix RF for equivalent slab insulation R-value alternatives.

Revise as follows:

R402.2.10.2 Alternative slab-on-grade insulation configurations. For *buildings* complying with Sections R405 or R406, slab-on-grade insulation shall be installed in accordance with the *proposed design* or *rated design*. ~~The *proposed design* or *rated design* shall use an alternative insulation configuration and associated F-factor complying with Appendix A of ASHRAE 90.1 or, where adopted, Appendix RF of this code. Where used to comply with Section R401.2.1, the F-factor shall be equal to or less than the F-factor required by Table R402.1.2 for a heated or unheated slab, as applicable.~~

R402.2.11.2 Alternative crawl space wall insulation configurations. For *buildings* complying with Sections R405 or R406 *crawl space wall* insulation shall be installed in accordance with the *proposed design* or *rated design*. ~~The *proposed design* or *rated design* shall use an alternative insulation configuration and associated U-factor or C-factor complying with Appendix A of ASHRAE 90.1 or, where adopted, Appendix RF of this code. Where used to comply with Section R401.2.1, the U-factor or C-factor shall be equal to or less than the U-factor required by Table R402.1.2 for crawl space walls.~~

REASON: Deleted text is not needed by adding a single reference to Appendix RF in existing footnote 'a' of Table R402.1.2 (see above). This footnote already establishes sources for U-factors and F-factors and is the appropriate location for such sources. Also, the last sentence in each of the above sections is wrong and would limit the ability to do TC trade-offs with slabs or crawlspaces in Section R402.1.5 (through the reference to R401.2.1 which includes R402.1.5).

Revise Appendix RF as follows:

(NOTE: underlining in tables omitted for clarity)

RF105

BASEMENT AND CRAWL SPACE WALLS~~. RESERVED.~~

RF105.1 Basement and Crawlspace Walls. U-factors for basement and crawl space walls shall be as specified in accordance with Table RF105.1. Effective U-factors for the proposed and reference foundation wall design must be used to demonstrate compliance with Section R402.1.5. Effective U-factors shall not be used for other compliance methods referenced in Section R401.2.1 of the code.

TABLE RF105.1

U-FACTORS FOR BASEMENT AND CRAWL SPACE WALLS[a]

Insulation Configurations[b]	Wall U-factor[c] (Btu/hr-ft^2-F)	Wall Effective U-factor[d] by Percentage of Wall Height Projecting Above Grade (Btu/hr-ft^2-F) for Use Only with Section R402.1.5			
		50%	35%	20%	5%
BASEMENT WALLS					
Uninsulated & unfinished basement wall	0.360	0.324	0.288	0.252	0.216
Continuous Insulation					
R-5ci	0.122	0.109	0.097	0.085	0.073
R-7.5ci	0.093	0.084	0.075	0.065	0.056
R-10ci	0.076	0.068	0.060	0.053	0.045

R-15ci	0.055	0.049	0.044	0.038	0.033
R-20ci	0.043	0.039	0.034	0.030	0.026
R-25ci	0.035	0.032	0.028	0.025	0.021
Cavity Insulation					
R-11	0.076	0.068	0.060	0.053	0.045
R-13	0.067	0.060	0.054	0.047	0.040
R-15	0.060	0.054	0.048	0.042	0.036
R-19	0.050	0.045	0.040	0.035	0.030
R-21	0.045	0.041	0.036	0.032	0.027
Cavity + Continuous Insulation					
R-13 + R-5ci	0.050	0.045	0.040	0.035	0.030
R-13 + R-7.5ci	0.045	0.040	0.036	0.031	0.027
R-13 + R-10ci	0.040	0.036	0.032	0.028	0.024
R-19 + R-5ci	0.040	0.036	0.032	0.028	0.024
R-19 + R-7.5ci	0.036	0.033	0.029	0.025	0.022
R-19 + R-10ci	0.033	0.030	0.027	0.023	0.020

Table RF105.1 (continued)

Insulation Configurations[b]	Wall U-factor[c] (Btu/hr-ft^2-F)	Wall Effective U-factor[d] by Percentage of Wall Height Projecting Above Grade (Btu/hr-ft^2-F) for Use Only with Section R402.1.5			
		50%	35%	20%	5%
CRAWL SPACE WALLS					
Uninsulated crawl space wall	0.477	0.429	0.382	0.334	n/a
Continuous Insulation					
R-5ci	0.141	0.127	0.113	0.099	n/a
R-7.5ci	0.104	0.094	0.083	0.073	
R-10ci	0.083	0.074	0.066	0.058	
R-15ci	0.058	0.053	0.047	0.041	
R-20ci	0.045	0.041	0.036	0.032	
R-25ci	0.037	0.033	0.030	0.026	
Cavity Insulation					
R-11	0.083	0.074	0.066	0.058	n/a
R-13	0.072	0.065	0.058	0.051	
R-15	0.065	0.058	0.052	0.045	
R-19	0.054	0.049	0.043	0.038	
R-21	0.048	0.043	0.038	0.033	
Cavity + Continuous Insulation					
R-13 + R-5ci	0.053	0.048	0.043	0.037	n/a
R-13 + R-7.5ci	0.047	0.042	0.038	0.033	
R-13 + R-10ci	0.042	0.038	0.034	0.029	
R-19 + R-5ci	0.043	0.038	0.034	0.030	
R-19 + R-7.5ci	0.039	0.035	0.031	0.027	
R-19 + R-10ci	0.035	0.032	0.028	0.025	

n/a = not applicable

Table Notes:

a. The wall U-factor excludes exterior air-film R-value and, for insulated assemblies, includes the following: 0.68 R for interior air film, 0.45 R for ½" gypsum panel finish (insulated basement walls only), and 2.1 R for 12" block basement wall or 1.4 R for 8" block crawlspace wall, both with empty cells. Where cavity insulation is included between 2x4 or 2x6 framing on the interior side of a foundation wall, wood stud material with thermal resistivity of R-1.25/in is assumed to be spaced at not less than 16-inches on center with an assumed framing factor not greater than 0.15.

b. All insulation configurations extend from top of foundation wall to floor of basement or crawlspace. Extrapolation to partial height insulation shall not be permitted; U-factors for such insulation configurations shall be determined by accepted engineering practice for modeling of thermal bridging and ground-coupled assemblies.

c. Applicable to Sections R402.1.2, R405 and R406.

d. Effective U-factors are adjusted to account for ground-coupling effects to provide equivalency to U-factors used for above-grade building thermal envelope assemblies. The Effective U-factors are provided for use with Section R402.1.5 for evaluation of trade-offs with above-grade assemblies and other components of the *building thermal envelope*. The Effective U-factor shall apply to the foundation wall area from interior floor or ground surface to top of wall. Interpolation between R-values and percentage of wall height projecting above grade within a given insulation configuration type is permitted.

~~**RF106**~~

~~**CRAWLSPACE WALLS. RESERVED.**~~

RF106 ~~**RF107**~~

SLABS-ON-GRADE~~**. RESERVED.**~~

RF106.1 Slabs-on-grade. F-factors for unheated and heated slabs-on-grade shall be as specified in Table RF106.1. All applicable adjustment factors in the table footnotes shall apply. F-factors for basement floor slabs and crawl space ground surface located below exterior grade shall be adjusted in accordance footnote 'f' as applicable.

TABLE RF106.1

F-FACTORS FOR SLABS-ON-GRADE[a,b,c,d,e,f]

Unheated Slabs-on-Grade – Insulation Configurations	F-FACTOR (Btu/hr-ft-F)
Uninsulated Slab	0.73
Horizontal Insulation Under Slab at Slab Perimeter – Slab Edge Not Insulated	
≥R-5 for 2 ft	0.70
R-5 for 4 ft	0.67
≥R-10 for 4 ft	0.64
Vertical Insulation on Exterior Face[g] – Slab Edge Insulated[h]	
R-2.5 for 2ft	0.66
R-5 for 2 ft	0.58
R-7.5 for 2 ft	0.56
R-10 for 2 ft	0.54
R-15 for 2 ft	0.52
R-5 for 3 ft	0.56
R-7.5 for 3 ft	0.54
R-10 for 3 ft	0.51
R-15 for 3 ft	0.49
R-5 for 4 ft	0.54
R-7.5 for 4 ft	0.51
R-10 for 4 ft	0.48
R-15 for 4 ft	0.45
Fully Insulated Slab – Full Slab Area and Slab Edge Continuously Insulated	
R-5 entire slab area and R-3.5 edge	0.48
R-5 entire slab area and edge	0.46
R-7.5 entire slab area and R-3.5 edge	0.45
R-7.5 entire slab area and edge	0.41
R-10 entire slab area and R-5 edge	0.40
R-10 entire slab area and edge	0.36

R-15 entire slab area and R-5 edge	0.35
R-15 entire slab area and edge	0.30
R-10 slab edge and under slab perimeter inward 4 ft; R-5 remaining slab area	0.42
R-15 slab edge and under slab perimeter inward 4 ft; R-5 remaining slab area	0.40
R-15 slab edge and under slab perimeter inward 4 ft; R-10 remaining slab area	0.34

Table RF106.1 continued

Heated Slabs-on-Grade – Insulation Configurations	**F-FACTOR (Btu/hr-ft-F)**
Uninsulated	1.35
Fully Insulated Slab – Full Slab Area and Slab Edge Continuously Insulated	
R-5 entire slab area and R-3.5 edge	0.77
R-5 entire slab area and edge	0.74
R-7.5 entire slab area and R-3.5 edge	0.71
R-7.5 entire slab area and edge	0.64
R-10 entire slab area and R-5 edge	0.62
R-10 entire slab area and edge	0.55
R-15 entire slab area and R-5 edge	0.54
R-15 entire slab area and edge	0.44
R-20 entire slab area and R-7.5 edge	0.44
R-20 entire slab area and edge	0.37
R-5 entire slab area and R-10 slab edge extending downward for minimum 3 ft	0.66
R-10 slab edge and under slab perimeter inward 4 ft; R-5 remaining slab area	0.66
R-15 slab edge and under slab perimeter inward 4 ft; R-5 remaining slab area	0.62
R-15 slab edge and under slab perimeter inward 4 ft; R-10 remaining slab area	0.51

Table Notes:

a. For alternative slab-on-grade insulation configurations, F-factors shall be determined in accordance with accepted engineering practice for modeling three dimensional ground-coupled building assemblies using project-specific building and site conditions to estimate annual energy use attributed to foundation heat transfer and converting the result to an equivalent air-to-air F-factor basis.
b. Interpolation between R-values for a given insulation configuration type is permitted.
c. Tabulated F-factors are based on a typical soil thermal conductivity of 0.75 Btu/hr-ft-F and shall be multiplied by one of the following adjustment factors as applicable to site soil conditions: (1) rock or any soil on sites with poor drainage or high water table – 1.2; (2) sandy soils – 1.1; (3) loam or clay soils on well-drained sites in dry climate zones – 0.85; and (3) for all other soil or site conditions – 1.00. Where soil conditions are unknown, use of 1.00 is permitted.
d. Tabulated F-factors are based on a slab area to perimeter length ratio of 9:1 and shall be multiplied by one of the following adjustment factors as applicable to a slab's area to perimeter length ratio: 5:1 – 0.7; 6:1 – 0.8; 7:1 – 0.9; 8:1 – 0.95; 9:1 – 1.0; 10:1 – 1.05; 15:1 – 1.2; 20:1 – 1.35; 30:1 – 1.5; and for ≥ 40:1 – 1.7,
e. Tabulated F-factors are based on a slab perimeter edge projection above exterior finish grade of 6 inches. For portions of slab perimeter projecting 12 inches or more above grade, multiply the tabulated F-factors by one of the following adjustment factors as applicable: less than 12 inches – 1.0; 12 inches – 1.05; 18 inches – 1.1; 24 inches – 1.15; and 30 inches – 1.2.
f. For basement floor slabs and crawlspaces slabs or gravel floors, the tabulated F-factors shall be multiplied by one of the following adjustment factors based on the depth of the floor surface below exterior finish grade: less than 1ft – 1.0; 1 ft – 0.95; 3 ft – 0.9; and 6 ft or more – 0.8.
g. Vertical insulation on the exterior shall extend for the indicated depth below finish grade and above grade to the top of slab or stem wall. Where insulation is placed on the interior side of a foundation stem wall, it shall extend from the top of slab to the indicated depth below the exterior finish grade and the applicable tabulated F-factor shall be multiplied by 1.05.
h. The R-value of the vertical insulation located on the interior side of a stem wall shall be permitted to be reduced to R-2.5 at the slab edge, not exceeding 6 inches thick, provided the applicable F-factor is multiplied by 1.15 where R-5 vertical insulation is specified, 1.2 where R-10 vertical insulation is specified, or 1.25 where R-15 vertical insulation is specified.

REASON: The main purpose of this [REPLACEMENT] proposal is to coordinate with changes to R402.2.10.2 (slabs-on-grade) and R402.2.11.2 (crawlspace walls) which added a reference to Appendix RF in the legislative draft, but the appendix did not include solutions for these assemblies (only placeholders). This proposal provides the solutions and data in Appendix RF as anticipated as a follow-up to these changes made during the recently completed Draft 2 development. It also adds a consistent reference to Appendix RF for alternative assemblies used in the simulated performance compliance path (Section R405). The tabulated F-factors align with those used for R-value and F-factor requirements in Tables R402.1.2 and R402.1.3 of the code. The values are based on the same research used for the code and also referenced in ASHRAE 90.1 Appendix A (see bibliography).

More importantly, tabulated U-factors (and Effective U-factors) for below-grade walls (enclosing conditioned basements or crawlspaces) are also provided based on the same research. The Effective U-factors for below grade walls in Section RF105.1 are derived in the same manner as F-factors where ground coupling effects are considered and then used to convert the U-factor (or C-factor as used in the commercial code) to an effective value based on air-to-air (instead of air-to-ground) heat exchange such that they have the same basis as U-factors used for above grade assemblies in terms of impacts on annual energy use. This also ensures that equivalent "apples-to-apples" trade-offs are made between above- and below-grade assemblies when using Section R402.1.5 (see revisions to R402.1.5 to coordinate). It also ensures consistent additional UA credits are achieved in accordance with Section R408 for above- and below-grade assemblies since TC calculated per Section R402.1.5 is referenced for that purpose. Without these effective U-factors for basement and crawlspace walls, the trade-off value of adding insulation to a typical basement or crawlspace could be over-estimated by as much as 60%. This degree of non-conservative error or bias should not be tolerable. Effective U-factors are only applicable for compliance in accordance with Section R402.1.5 and are not applicable to other code compliance paths, such as R402.1.2, R405, and R406 which are based on modeling to account for ground coupling effects using a traditional U-factor for foundation walls.

Bibliography

Kennedy, M. (1991). Super Good Cents Heat Loss Reference, Volume IV, Earth Contact: Assumptions, Calculations, and Coefficient Tables. Prepared by Ecotope, Seattle, WA for Bonneville Power Administration (Contract No. DE-AP79-91BP15338).

Baylon, D. and Kennedy, M. (2007). Calculating the Impact of Ground Contact on Residential Heat Loss. Buildings X, ASHRAE.

Cleaveland, J.P. and Akridge, J.M. (198?). Slab-on-Grade Thermal Loss in Hot Climates. Georgia Institute of Technology for ASHRAE.

Bahnfleth, W.P. and Amber, J. (1990). Algorithms for Slab-on-Grade Heat Transfer Calculations. U.S. Army Corps of Engineers, USACERL Technical Report E-90/15, September 1990.

Cost Impact: The code change proposal will decrease the cost of construction.

This proposal provides U-factor and F-factor data (for a wide variety of R-value solutions) to assist in compliance with the code and provides flexibility in solutions that are equivalent to code or which support accurate trade-offs per Section R402.1.5 with greater accuracy. It also corrects errors as noted in the reason statement which would have increased cost and restricted options unnecessarily.

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RE2D-59-23 Credits for Additional Energy Efficiency
CDP ID #	
Code	IECC RE
Code Section(s)	R408.2
Location	
Proponent	Gayathri Vijayakumar gvijayakumar@swinter.com
Proposal Status	SC rev
Subcommittee	RE Econ, Model, Metric
Subcommittee Notes	Motion for Approval based on MOD1 & MOD2: Gayathri Vijayakumar; 2nd Tom Marston
Recommendation	The Sub-committee first discussed the edits submitted by PNNL and shown in RE2D-59. The Sub-Committee then discussed multiple edits to the table of points that were editorial and/or erratas to align with Committee Action on RED1-351. The Sub-Committee also discussed some changes to the point values for the electric water heater measures and the two dual-fuel heat pump measures that resulted from updates to the simulations that were performed by PNNL. Based on those changes, the Sub-Committee then discussed removing the iHPWH row with UEF of 3.75 since it resulted in the same points as the UEF=3.3. All changes discussed were supported and the motion to modify 59 was Approved. SC Action is Approval
Vote	APPROVE AS MODIFIED: 15 YES; 0 NO; 2 ABSTAIN
Recommendation Date	August 29, 2023
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RE2D-66-23 Increase Credits for Gas Furnaces
CDP ID #	
Code	IECC RE
Code Section(s)	R408.2
Location	
Proponent	Vladimir Kochkin vkochkin@nahb.org
Proposal Status	SC rev
Subcommittee	RE Econ, Model, Metric
Subcommittee Notes	Motion for approval: Vladimir Kochkin; 2nd Aaron Gary
Recommendation	At the last consensus committee there was substantial support for expanding equipment compliance options in R408. This proposal replaces N/A for several equipment options with credit values from the PNNL analysis. In addition, N/A in some cases appear to indicate that zero credit is allowed if a more efficient practice used than a similar practice with a credit (e.g., 5 credits for a 90 AFUE furnace and 0 credits for a 95 AFUE for climate zone 4). If the committee does not want to give additional credit as will be for a 97 AFUE compared to a 90 AFUE, then the credit should be listed as 5 for 97 AFUE (not zero). Some N/A are left as such intentionally (e.g., a cold climate heat pump in a warm climates). Note: There were 8 Yeses and one Abstain vote; it was incorrectly conveyed in the meeting as 9 yeses and no abstain. SC Action is Approval
Vote	APPROVE AS MODIFIED: 8 YES; 5 NO; 1 ABSTAIN
Recommendation Date	August 29, 2023
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____X_____
Consensus Committee	
Committee Response	

Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RE2D-67-23 Adjust Credits for Ground Source Heat Pumps
CDP ID #	
Code	IECC RE
Code Section(s)	TABLE R408.2, R408.2.2(1)
Location	
Proponent	Gayathri Vijayakumar gvijayakumar@swinter.com
Proposal Status	SC rev
Subcommittee	RE Econ, Model, Metric
Subcommittee Notes	Motion for Approve: Gayathri Vijayakumar ; 2nd Tom Marston
Recommendation	The points proposed for the GSHP measure seemed higher than I expected. It was explained that the savings & points were calculated outside the software used to simulate the other HVAC measures. In consultation with PNNL and Dandelion Energy, I reviewed their savings calculations and worked with them to modify inputs in their tool to provide different values, while maintaining the inherent savings potential of GSHP beyond traditional ASHP. The reason update is to show the basis of the revised points SC Action is Approve
Vote	APPROVE AS SUBMITTED: 10 YES; 0NO; 3 ABSTAIN
Recommendation Date	August 29, 2023
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RE2D-68-23 Add Credits for home lighting control and efficient lighting (RECD1-13-22 Public Comment on Credits for home lighting control and efficient lighting)
CDP ID #	
Code	IECC RE
Code Section(s)	TABLE R408.2 R408.2.11 &12
Location	
Proponent	Michael Jouaneh
Proposal Status	SC rev
Subcommittee	RE Econ, Model, Metric
Subcommittee Notes	Motion to Approve as Modified to include CD1-14 comments: Ian Finlayson; 2nd Tom Marston
Recommendation	1) The points below are wrong per PNNL. Use the points from the correct PNNL file per PNNL's comment. Victor Salcido said the points in the table below were shifted accidently and in error. Per the correct file, there should be 1 point in Climate Zone 0-3 for Whole-Home Lighting Control not 0. 2) The biggest waste in residential lighting energy is leaving lighting ON when no one is home. The whole-home lighting control provision addresses this directly by making it easy for the occupants to turn off the lights when they leave. This ALL-OFF function is used daily by occupants that have a whole-home lighting control system. So, it is hard to understand why demand responsive thermostats get 1 point in each climate zone while whole-home lighting control gets 0 in Climate Zones 4-8. DR thermostats may never be used as DR events do not happen often (maybe once or twice per year) and when they do happen it is for a short period of time (4-6 hours), while an ALL-OFF feature of whole-home lighting control systems are used daily by occupants that have this feature. 3) It is confusing if there are only zeroes in every climate zone. I know that there is still value if they are zero, but projects will not likely choose a measure with zero points. There should be at least one point available in at least one climate zone for each measure. 4) To rectify my concerns, I propose changes to R408.2-10 and R408.2.11. The larger the home, the more lighting and therefore the more lighting savings from the whole-home lighting control system and from higher efficacy lighting. According to the latest RECS data (Table CE5.1a Detailed household site electricity end-use consumption, released June 2023) US homes larger than 3,000 square feet use double the lighting electricity than homes which are 2,500 to 2,999 square feet (28.1 vs 61.4 trillion Btu). What's more, is that per RECS Table HC5.9 Lighting in U.S. homes by size, over 1.6 million homes larger than 3000 square feet have 20 or more indoor lights used at least 4 hours a day. So, for CZ 4-8 on whole-home lighting control, I propose a point if the home is larger than 5,000 sf or if the home has more than 50 permanently installed luminaires. I choose 5,000 to be well beyond the 3,000 square feet level in RECS plus it is consistent with ASHRAE 90.2 which has a similar mandatory provision for large homes (i.e., mansions larger than 5,000 square feet). Similarly, for the higher efficacy lighting provision, I propose a point in all climate zones but only for homes larger than 5,000 sf or if the home has more than 50 permanently installed luminaires. Instead of using an installed lighting wattage threshold, I propose a luminaire threshold as counting permanently installed lighting fixtures (i.e., hard-wired luminaires) is

	easier than totaling installed lighting wattage. SC Action is Disapprove as modified
Vote	APPROVE AS MODIFIED: 3 YES; 3 NO; 8 ABSTAIN
Recommendation Date	August 29, 2023
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	