International Energy Conservation Code
HVACR & WH Subcommittee

Meeting Agenda

October 17, 2022
11:00 PM Eastern to 1:00 PM Eastern (2 hours)
Webex Link

Subcommittee Chair: John A. Hensley, Jr.
Subcommittee Vice Chair: Ricardo Madrid

1. Call to order.

2. Meeting Conduct. Staff
   2.1. Identification of Representation/Conflict of Interest
   2.2. ICC Council Policy 7 Committees: Section 5.1.10 Representation of Interests
   2.3. 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.

3. Roll Call – **Vice Chair Ricardo Madrid**

4. Agenda - **Chair John Hensley**

5. Review correlation of REPI-18-21 and REPI-136-21

6. New Business

7. Adjourn

FOR FURTHER INFORMATION BE SURE TO VISIT THE ICC WEBSITE:
ICC Energy webpage
Code Change Monograph

A modification to correlate RECPI-10, REPI-136 & REPI-18

RECPI-10 (modified, with red text to clearly show changes from RECPI-10, REPI-136 and REPI-18)

TABLE R408.2
CREDITS FOR ADDITIONAL ENERGY EFFICIENCY

R408.2.43-Reduced energy use in service water-heating options.

Measure Number	Measure Description		Credit Value							
		CZ 0 & 1	CZ 2	CZ 3	CZ 4	CZ 4C	CZ 5	CZ 6	CZ 7	CZ 8
R408.2.4 (1)	Fossil fuel service water heating system option 1	7	6	5	3	3	2	2	3	1
R408.2.4 (2)	Fossil fuel service water heating system option 2	7	6	5	3	3	2	2	3	1
R408.2.4 (23)	Electric service water heating system option 1~~High performance heat pump water heating system option 1~~	12	11	11	8	8	6	5	5	3
R408.2.4 (34)	Electric service water heating system ~~High performance heat pump water heating system~~ option 2	12	12	11	8	8	6	5	5	3
R408.2.4 (45)	Solar hot water heating system	4	5	6	6	6	6	5	5	4
R408.2.4 (56)	Compact hot water distribution	2	2	2	2	2	2	2	2	2

For measure numbers R408.2.4 (1) through R408.2.4 (5), t~~T~~he hot water system shall meet one of the ~~following~~ Uniform Energy Factors (UEF) or Solar Uniform Energy Factors (SUEF) ~~efficiencies:~~ in Table R408.2.~~34~~. For measure number R408.2.4 (6), the hot water system shall comply with R408.2.4.1.

~~1. Greater than or equal to 82 EF fossil fuel service water-heating system.~~
~~2. Greater than or equal to 2.0 EF electric service water-heating system.~~
~~3. Greater than or equal to 0.4 solar fraction solar water-heating system.~~

Table 408.2.~~34~~ Service water-heating efficiencies

Measure Number ~~Option~~	Water Heater	Size and Usage Bin	Type	Efficiency
~~1.~~R408.2.4 (1)	Gas-fired storage water heaters	≤ 55 gallons, Medium Usage	~~Medium Draw Pattern~~	UEF ≥~~0.64~~ 0.81

	~~Uniform Energy Factor (UEF)~~	≤ 55 gallons, High Usage	~~High Draw Pattern~~	UEF ≥~~0.68~~ 0.86
	~~First hour rating FHR ≥ 51 gallons per hour~~	>55 gallons, Medium or High Usage	~~Medium Draw Pattern~~	~~UEF ≥0.78~~
			~~High Draw Pattern~~	UEF ≥~~0.80~~ 0.86
~~2.~~ R408.2.4 (2)	Gas-fired instantaneous water heater			UEF ≥~~0.87~~ 0.95
~~3.~~ R408.2.4 (3)	Electric water heaters		Integrated HPWH	UEF ≥ 3.30
R408.2.4 (4)	Electric water heaters ~~Uniform Energy Factor (UEF)~~		Integrated HPWH, 120 Volt/15 Amp Circuit	UEF ≥ 2.20
	~~First hour rating FHR ≥ 45 gallons per hour~~		Split-system HPWH	UEF ≥ 2.20
~~4.~~ R408.2.4 (5)	Solar water heaters		Electric backup	SUEF ≥ 3.00
	~~Solar uniform energy factor (SUEF)~~		Gas backup	SUEF ≥ 1.80

R408.2.4.1. Compact hot water distribution. For Compact Hot Water Distribution system credit, the volume shall store not more than 16 ounces of water in the nearest source of heated water and the termination of the fixture supply pipe when calculated using section R403.5.4.

To ~~field or plan review,~~ verify that the system meets the prescribed limit, one of the following must be done:

a. At plan review, referencing ounces of water per foot of tube on plans as per Table R403.5.4.1
b. At rough in (plumbing), referencing ounces of water per foot of tube installed as per Table R403.5.4.1
c. At final inspection, in accordance with Department of Energy's Zero Energy Ready Home National Specification (Rev. 07 or higher) footnote on Hot water delivery systems.

REPI-136 (modified in red to correlate with REPI-18)

R408.2 Additional efficiency package options.
~~Buildings meeting the requirements~~ Additional efficiency package options for compliance with Section R401.2.1 are set forth in Sections R408.2.1 through R408.2.5.

R408.2.~~3~~2 More efficient HVAC equipment performance options. Heating and cooling *equipment* shall meet one of the following efficiencies:

~~Centrally Ducted Systems~~

~~1. Greater than or equal to 95 AFUE natural gas furnace and 16 SEER 15.2 SEER2 in Climate Zones 5, 6 and 7 and 16.0 SEER2 in other Climate Zones for air conditioner.~~
~~2. Greater than or equal to 95 AFUE natural gas furnace and 8.5 HSPF2/16.0 SEER2 air source heat pump.~~
~~3. Greater than or equal to 10 HSPF / 16 SEER 8.5 HSPF2/16.0 SEER2 air source heat pump.~~
~~4. Greater than or equal to 3.5 COP ground source heat pump.~~

~~Ductless Systems~~
~~1. Single Zone: 8.5HSPF2/16.9 SEER2 variable speed air source heat pump~~
~~2. Multi Zone: 8.5HSPF2/16.9 SEER2 variable speed air source heat pump (Non-Ducted Indoor Units)~~
~~3. Multi Zone: 8.5HSPF2/15.2 SEER2 variable speed air source heat pump (Ducted or Mixed Indoor Units)~~

1. Greater than or equal to ~~95 AFUE natural gas furnace and~~ 16.9 SEER2 air conditioner in Climate Zones 1 and 2.
2. Greater than or equal to 16.0 SEER2 air conditioner in Climate Zones 1 and 2.
3. Greater than or equal to 15.2 SEER2 air conditioner in Climate Zones 1 and 2.
4. Greater than or equal to 96 AFUE natural gas furnace in Climate Zones 6-8.
5. Greater than or equal to ~~92 AFUE natural gas furnace~~. 96 AFUE natural gas furnace and 15.2 SEER2 air conditioner for Climate Zones 3-5.
6. Greater than or equal to ~~10 HSPF/16 SEER~~ 8.5 HSPF2/~~16.9~~ 18.7 SEER2 air source heat pump.
7. Greater than or equal to 8.2 HSPF2/16.9 SEER2 air source heat pump.
8. Greater than or equal to 8.0~~-1~~ HSPF2/15.2 SEER2 air source heat pump.
9. Greater than or equal to 3.5 COP ground source heat pump.

For multiple cooling systems, all systems shall meet or exceed the minimum efficiency requirements in this section and shall be sized to serve 100 percent of the cooling design load. For multiple heating systems, all systems shall meet or exceed the minimum efficiency requirements in this section and shall be sized to serve 100 percent of the heating design load.

TABLE R408.2
CREDITS FOR ADDITIONAL ENERGY EFFICIENCY

Measure Number	Measure Description	Credit Value								
		CZ 0 & 1	CZ 2	CZ 3	CZ 4	CZ 4C	CZ 5	CZ 6	CZ 7	CZ 8
R408.2.3 (1)	High performance cooling system option 1	7	6	5	3	3	3	1	1	1
R408.2.3 (2)	High performance cooling system option 2	5	5	4	3	3	2	1	1	0
R408.2.3 (3)	High performance cooling system option 3	3	3	2	1	1	1	1	1	0

R408.2.3 (~~3~~4)	High performance gas furnace option 1	0	2	3	5	5	7	8	8	10
R408.2.3 (~~4~~5)	High performance gas furnace and cooling option 2	0	2	2	4	4	5	7	7	8
R408.2.3 (~~5~~6)	High performance heat pump system option 1	8	7	6	6	6	6	5	5	4
R408.2.3 (~~6~~7)	High performance heat pump system option 2	6	6	5	5	5	5	4	4	3
R408.2.3 (8)	High performance heat pump system option 3	5	5	4	4	4	4	3	3	2
R408.2.3 (~~7~~9)	Ground source heat pump	0	2	4	6	6	8	7	6	5
R408.2.5 (1)	More efficient distribution system	4	6	7	10	10	12	13	15	16
R408.2.5 (2)	100% of ducts in conditioned space	4	6	8	12	12	15	17	19	20
R408.2.5 (3)	Reduced total duct leakage	1	1	1	1	1	1	2	2	2

REPI-136 correlated with REPI-18

R408.2 Additional efficiency package options.
~~Buildings meeting the requirements~~ Additional efficiency package options for compliance with Section R401.2.1 are set forth in Sections R408.2.1 through R408.2.5.

R408.2.~~3~~2 More efficient HVAC equipment performance option~~s~~. Heating and cooling *equipment* shall meet one of the following efficiencies:

~~Centrally Ducted Systems~~
1. ~~Greater than or equal to 95 AFUE natural gas furnace and 16 SEER~~ ~~15.2 SEER2 in Climate Zones 5, 6 and 7 and 16.0 SEER2 in other Climate Zones for air conditioner.~~
2. ~~Greater than or equal to 95 AFUE natural gas furnace and 8.5 HSPF2/16.0 SEER2 air source heat pump.~~
3. ~~Greater than or equal to 10 HSPF / 16 SEER~~ ~~8.5 HSPF2/16.0 SEER2 air source heat pump.~~
4. ~~Greater than or equal to 3.5 COP ground source heat pump.~~

~~Ductless Systems~~
1. ~~Single Zone: 8.5HSPF2/16.9 SEER2 variable speed air source heat pump~~
2. ~~Multi Zone: 8.5HSPF2/16.9 SEER2 variable speed air source heat pump (Non-Ducted Indoor Units)~~
3. ~~Multi Zone: 8.5HSPF2/15.2 SEER2 variable speed air source heat pump (Ducted or Mixed Indoor Units~~

REPI -18 and REPI-136- Centrally Ducted Systems (low to high ratings)

1. Greater than or equal to 15.2 SEER2 (~~16 SEER) and 12 EER~~ air conditioner. (option 1) (REPI-18)
2. Greater than or equal to 16.9 SEER2 (~~18 SEER) and 14 EER~~ air conditioner. (option 2) (REPI-18)
3. Greater than or equal to 7.6 HSPF2/15.2 SEER2 ~~(9 HSPF/16 SEE)~~ air source heat pump. (option 1) (REPI-18)
4. Greater than or equal to 8.5 HSPF2/16.0 SEER2 air source heat pump. (option 2) (REPI-136)
5. Greater than or equal to 8.5 HSPF2/16.9 SEER2 ~~(10 HSPF/18 SEER~~) air source heat pump. (option 3) (REPI-18)
6. Greater than or equal to 3.5 COP ground source heat pump. (REPI-18)
7. Greater than or equal to 92 AFUE natural gas furnace.(option1) (REPI-18)
8. Greater than or equal to 96 AFUE natural gas furnace. (option2)(REPI-18)
9. Greater than or equal to 95 AFUE natural gas furnace and 15.2 SEER2 air conditioner (option 1) (part of #1 in REPI-136)
10. Greater than or equal to 95 AFUE natural gas furnace and 16.0 SEER2 air conditioner (option 2) (part of #1 in REPI-136)
11. Greater than or equal to 95 AFUE natural gas furnace and 8.5 HSPF2/16.0 SEER2 air source heat pump. (dual fuel, unique to REPI-136)

~~4. Greater than or equal to 3.5 COP ground source heat pump~~. (duplicated in REPI-18, so removed in alignment process)

REPI-136- Ductless Systems

12. Single Zone -greater than or equal to 8.5 HSPF2/16.9 SEER2 variable speed air source heat pump (REPI-136)
13. Multi Zone- greater than or equal to 8.5 HSPF2/16.9 SEER2 variable speed air source heat pump (Non-Ducted Indoor Units) (REPI-136)
14. Multi Zone-greater than or equal to 8.5 HSPF2/15.2 SEER2 variable speed air source heat pump (Ducted or Mixed Indoor Units) (REPI-136)

For multiple cooling systems, all systems shall meet or exceed the minimum efficiency requirements in this section and shall be sized to serve 100 percent of the cooling design load. For multiple heating

systems, all systems shall meet or exceed the minimum efficiency requirements in this section and shall be sized to serve 100 percent of the heating design load.

TABLE R408.2
CREDITS FOR ADDITIONAL ENERGY EFFICIENCY

Measure Number	Measure Description		Credit Value							
		CZ 0 & 1	CZ 2	CZ 3	CZ 4	CZ 4C	CZ 5	CZ 6	CZ 7	CZ 8
R408.2.3 (1)	Centrally ducted A/C (option 1)	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	0
R408.2.3 (2)	Centrally ducted A/C (option 2)	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
R408.2.3 (3)	Centrally ducted Air Source HP (option 1)	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
R408.2.3 (4)	Centrally ducted Air Source HP (option 2)	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
R408.2.3 (5)	Centrally ducted Air Source HP (option 3)	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
R408.2.3 (6)	Ground Source HP	0	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
R408.2.3 (7)	Natural gas furnace (option 1)	0	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
R408.2.3 (8)	Natural gas furnace (option 2)	0	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
R408.2.3 (9)	Gas furnace/A/C (option 1)	0	0	0	0	0	TBD	TBD	TBD	0
R408.2.3 (10)	Gas furnace/A/C (option 2)	TBD	TBD	TBD	TBD	TBD	0	0	0	TBD
R408.2.3 (11)	Dual Fuel (option 1)	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
R408.2.3 (12)	Ductless -Single zone	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
R408.2.3 (13)	Ductless -Multizone (Non-ducted indoor unit)	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
R408.2.3 (14)	Ductless – Multizone (Ducted or Mixed)	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Rest of	Table needs to be added as noted……..									
R408.2.5 (1)	More efficient distribution system	4	6	7	10	10	12	13	15	16
R408.2.5 (2)	100% of ducts in conditioned space	4	6	8	12	12	15	17	19	20
R408.2.5 (3)	Reduced total duct leakage	1	1	1	1	1	1	2	2	2