2009-2010 ICC CODE DEVELOPMENT CYCLE

TECHNICAL UPDATES TO THE 2009/2010 FINAL ACTION AGENDA TO THE INTERNATIONAL CODES

Updated 9/24/2010

INCLUDES UPDATES TO:

ADMINISTRATIVE PROVISIONS
INTERNATIONAL ENERGY CONSERVATION CODE

TENTATIVE HEARING ORDER:

ADM6-09/10:	**Add "Part I"**

ADMINISTRATIVE PROVISIONS:

ADM6-09/10:	**Only Part I received a Public Comment, Part II is shown for informational purposes only.**

INTERNATIONAL ENERGY CONSERVATION CODE:

EC13-09/10, Part I:	**Add Public Comment 23**
EC13-09/10, Part II:	**Add Public Comment 22**
EC25-09/10, Part I:	**Add Public Comment 5**
EC25-09/10, Part II:	**Add Public Comment 5**
EC27-09/10, Part I:	**Add Public Comment 7**
EC27-09/10, Part II:	**Add Public Comment 8**
EC47-09/10, Part I:	**Add Public Comment 6**
EC47-09/10, Part II:	**Add Public Comment 7**
EC48-09/10, Part I:	**Add Public Comment 6**
EC48-09/10, Part II:	**Add Public Comment 7**
EC66-09/10, Part I:	**Replace Public Comment 2**
EC66-09/10, Part II:	**Replace Public Comment 2**
EC97-09/10:	**Add Craig Conner as a co-proponent of the original proposal and remove him as a proponent of the Public Comment.**
EC99-09/10:	**Revise Committee Modification**
EC141-09/10:	**Add Public Comment 2**
EC142-09/10:	**Add Public Comment 2**
EC157-09/10:	**Add Public Comment 3**
EC176-09/10:	**Change Public Hearing Results from "Disapproved" to "Approved as Submitted":**
EC216-09/10, Part I & II:	**Change proponents request from "Approval as Submitted" to "Approval as Modified by this Public Comment" on both public comments:**

ADM6-09/10: Add "Part I"

ADMIN
(See page 39)
ADMIN3, Part I
ADMIN3, Part II
ADMIN6, Part I
ADMIN12
ADMIN35
ADMIN38
ADMIN39

ADM6-09/10: Only Part I received a Public Comment, Part II is shown for informational purposes only.

ADM6-09/10, Part I
IBC 105.2, IRC R105.2

NOTE: PART II REPRODUCED FOR INFORMATION PURPOSES ONLY – SEE ABOVE

PART II – IRC BUILDING/ENERGY

Revise as follows:

R105.2 Work exempt from permit. Permits shall not be required for the following. Exemption from permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction.

Building:

1. One-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided the floor area does not exceed 120 square feet (11.15 m^2).
2. Fences not over ~~6 feet (1829 mm)~~ 7 feet (2134 mm) high.
3. Retaining walls that are not over 4 feet (1219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge.
4. Water tanks supported directly upon grade if the capacity does not exceed 5,000 gallons (18 927 L) and the ratio of height to diameter or width does not exceed 2 to 1.
5. Sidewalks and driveways.
6. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.
7. Prefabricated swimming pools that are less than 24 inches (610 mm) deep.
8. Swings and other playground equipment.
9. Window awnings supported by an exterior wall which do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support.
10. Decks not exceeding 200 square feet (18.58m2) in area, that are not more than 30 inches (762 mm) above *grade* at any point, are not attached to a *dwelling* and do not serve the exit door required by Section R311.4.

(Remainder of text unchanged)

Reason: While this code change may seem petty, it does point out the reality faced by building departments on a daily basis and the conflict that occurs when the point at which fences are regulated hits smack dab in the middle of the height range of commonly constructed fences. The current language establishes the maximum height for a fence not needing a permit at 6 feet. However, fence boards are commonly sold in lengths of 6 feet to 6 feet ½ inch. Coupled with the fact that fences are almost always constructed with fence boards slightly above grade and your standard six foot fence is most often 6 feet 1 inch to 6 feet 2 inches high. Fences are often constructed because of a dispute between neighbors. Then one of those neighbors will often complain to the building department that their neighbor should have a permit to construct a fence that is only an inch or two more than six feet. This attempt to place the building department in the middle of the dispute is often successful. Raising the height when a permit is needed to seven feet will not have any significant impact on the design of fences and changes the point when a permit is required to a height that is not as likely to conflict with standard construction practices. This would be much better public policy.

Cost Impact: The code change proposal will not increase the cost of construction.

PART II – IRC-B/E

Committee Action: **Approved as Submitted**

Committee Reason: This change provides a more reasonable fence height that reflects what is actually being built as stated in the proponent's published reason.

Assembly Action: **None**

INTERNATIONAL ENERGY CONSERVATION CODE

EC13-09/10, Part I: Add Public Comment 23

EC13-09/10, Part I

Public Comment 23:

Mark Halverson, representing APA, requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

TABLE 402.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY Component

CLIMATE ZONE	FENESTRATION *U*-FACTOR	SKYLIGHT *U*-FACTOR	GLAZED FENESTRATION SHGC	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE	MASS WALL *R*-VALUE[i]	FLOOR *R*-VALUE	BASEMENT[c] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c] WALL *R*-VALUE
1	~~1.20~~ NR	0.75	0.30	30	13	3 / 4	13	0	0	0
2	~~0.65~~ 0.50[j]	0.65 ~~0.75~~	0.30	30	13	4 / 6	13	0	0	0
3	~~0.50~~ 0.40[j]	0.55 ~~0.65~~	0.30[e]	~~30~~38	13	5 / 8	19	5/13[f]	0	5 / 13
4 except Marine	0.35	0.55 ~~0.60~~	NR	38	~~13~~ 20 or 13+5[h]	~~5 / 10~~ 8 / 13	19	10 / 13	10, 2 ft	10/13
5 and Marine 4	~~0.35~~ 0.32	0.55 ~~0.60~~	NR	~~38~~49	20 or 13+5[h]	13 / 17	30[g]	10/13	10,2ft	10/13
6	~~0.35~~ 0.32	0.55 ~~0.60~~	NR	49	20~~+5~~ or 13+~~5~~ 10[h]	15 / ~~19~~ 20	30[g]	15/19	10,4ft	10/13
7 and 8	~~0.35~~ 0.32	0.55 ~~0.60~~	NR	49	~~21~~ 20+5 or 13+10[h]	19 / 21	38[g]	15/19	10,4ft	10/13

For SI: 1 foot = 304.8 mm.

a. *R*-values are minimums. *U*-factors and SHGC are maximums. R-19 batts compressed into a nominal 2x6 framing cavity such that the R-value is reduced by R-1 or more shall be marked with the compressed batt R-value in addition to the full thickness R-value.
b. The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
c. 15/19" means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home. "10/13" means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.
d. R-5 shall be added to the required slab edge *R*-values for heated slabs. Insulation depth shall be the depth of the footing or 2 ft, whichever is less, in zones 1 through 3 for heated slabs.
e. There are no SHGC requirements in the Marine zone.
f. Basement wall insulation is not required in warm-humid locations as defined by Figure 301.1 and Table 301.1.
g. Or insulation sufficient to fill the framing cavity, R-19 minimum.
h. First value is cavity insulation, second is continuous insulation, so "13+5" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required in the locations where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.
i. The second R-value applies when more than half the insulation is on the interior of the mass wall.
j. For impact rated fenestration in wind-borne debris regions the maximum U-factor shall be 0.75 in Zone 2 and 0.65 in Zone 3.

(Portions of code change proposal not shown remain unchanged)

Commenter=s Reason: The building code should be product neutral. It is not appropriate for the code to require builders in these climate zones to use a specific product class (insulated sheathing) to meet the prescriptive requirements when other reasonable options are available.

This modification to the original proposal adds R-24 cavity insulation only options (Table 2) to climate zones 6 through 8 to a level that exceeds the wood frame wall R-values in those climate zones in the 2006 IECC (Table 1) by approximately 30%. The R24 cavity insulation option is within 6% of the insulation value of the R-20 plus R-5 continuous insulation option (Table 3), but is 700% greater in R-value than the minimum required window glass (U-0.32) whose area has not been limited in past energy codes. There are R-20+ cavity insulation products available in North America including commonly found cavity insulations combined with spray-foam in "flash and batt" type applications and some spray-foam products.

This option will encourage further product innovation as well as greater options for the builders, including more cost effective ways to meet the structural requirements of the IRC. Considering that the U-values for windows in these same climate zones in EC13-09/10 increase efficiency

by less than 10% over the 2006 IECC and the ceiling R-Values remain the same as the 2006, the R-24 requirement in wood frame walls in this Public Comment is significant and appropriate.

We ask the code body to support the committee's approval of this proposal as modified by this Public Comment.

Wall R-Value Comparison Calculations

Table 1. Base Case Wall 2006 IRC – Climate zones 6-8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – ½" OSB	.55	0.55	
Fiberglass Batt		17.65*	
5 1/2" Stud	6.25		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c.	23%	77%	
Total Wall Component R-Values	**8.55**	**19.95**	
Total Wall Assembly R-Value	1.97	15.36	17.33

*6 1/2" R19 batt compressed into a 5 1/2" cavity

Table 2. Cavity Insulation Only Option – 2012 IECC – zones 6-8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – ½" OSB	0.55	0.55	
Cavity Insulation		R24	
5 1/2" Stud	6.25		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c. studs	23%	77%	
Total Wall Component R-Values	**9.18**	**26.3**	
Total Wall Assembly R-Value	1.97	20.25	22.22

Table 3. Cavity Insulation Only Option – 2012 IECC – zones 6-8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – 1" Foam	5.0	5.0	
Cavity Insulation		20	
5 1/2" Stud	6.25		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c. studs	23%	77%	
Total Wall Component R-Values	**13.0**	**26.75**	
Total Wall Assembly R-Value	2.99	20.59	23.59

EC13-09/10, Part II

Public Comment 22:

Mark Halverson, representing APA, requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

TABLE N1102.1
INSULATION AND FENESTRATION REQUIREMENTS BY Component

CLIMATE ZONE	FENESTRATION *U*-FACTOR	SKYLIGHT *U*-FACTOR	GLAZED FENESTRATION SHGC	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE	MASS WALL *R*-VALUE[k]	FLOOR *R*-VALUE	BASEMENT[c] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c] WALL *R*-VALUE
1	NR	0.75	0.30	30	13	3/4	13	0	0	0
2	0.50[i]	0.65	0.30	30	13	4/6	13	0	0	0
3	0.40[i]	0.55	0.30[e]	38	13	5/8	19	5/13[f]	0	5 / 13
4 except Marine	0.35	0.55	NR	38	20 or 13+5[h]	8/13	19	10 / 13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5[h]	13/17	30[f g]	10/13	10,2ft	10/13
6	0.32	0.55	NR	49	20+5 or 13+10[h] or 24	15/20	30[g]	15/19	10,4ft	10/13
7 and 8	0.32	0.55	NR	49	20+5 or 13+10[h] or 24	19/21	38[g]	15/19	10,4ft	10/13

For SI: 1 foot = 304.8 mm.

a. *R*-values are minimums. *U*-factors and SHGC are maximums. R-19 batts compressed into a nominal 2x6 framing cavity such that the R-value is reduced by R-1 or more shall be marked with the compressed batt R-value in addition to the full thickness R-value.
b. The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
c. The first value applies to continuous insulation, the second to framing cavity insulation; either insulation meets the requirement.
d. R-5 shall be added to the required slab edge *R*-values for heated slabs. Insulation depth shall be the depth of the footing or 2 ft, whichever is less, in zones 1 through 3 for heated slabs.
e. There are no SHGC requirements in the Marine zone.
f. Basement wall insulation is not required in warm-humid locations as defined by Figure N1101.2 and Table N1101.2.
g. Or insulation sufficient to fill the framing cavity, R-19 minimum.
h. First value is cavity insulation, second is continuous insulation, so “13+5” means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required in the locations where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.
i. For impact rated fenestration in wind-borne debris regions, the maximum U-factor shall be 0.75 in Zone 2 and 0.65 in Zone 3.
j. The second R-value applies when more than half the insulation is on the interior of the mass wall.

(Portions of code change proposal not shown remain unchanged)

Commenter=s Reason: The building code should be product neutral. It is not appropriate for the code to require builders in these climate zones to use a specific product class (insulated sheathing) to meet the prescriptive requirements when other reasonable options are available.

This modification to the original proposal adds R-24 cavity insulation only options (Table 2) to climate zones 6 through 8 to a level that exceeds the wood frame wall R-values in those climate zones in the 2006 IECC (Table 1) by approximately 30%. The R24 cavity insulation option is within 6% of the insulation value of the R-20 plus R-5 continuous insulation option (Table 3), but is 700% greater in R-value than the minimum required window glass (U-0.32) whose area has not been limited in past energy codes. There are R-20+ cavity insulation products available in North America including commonly found cavity insulations combined with spray-foam in “flash and batt” type applications and some spray-foam products.

This option will encourage further product innovation as well as greater options for the builders, including more cost effective ways to meet the structural requirements of the IRC. Considering that the U-values for windows in these same climate zones in EC13-09/10 increase efficiency by less than 10% over the 2006 IECC and the ceiling R-Values remain the same as the 2006, the R-24 requirement in wood frame walls in this Public Comment is significant and appropriate.

We ask the code body to support the committee’s approval of this proposal as modified by this Public Comment.

Wall R-Value Comparison Calculations:
Table 1. Base Case Wall 2006 IRC – Climate zones 6-8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – ½” OSB	.55	0.55	
Fiberglass Batt		17.65*	

5 1/2" Stud	6.25		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c.	23%	77%	
Total Wall Component R-Values	**8.55**	**19.95**	
Total Wall Assembly R-Value	1.97	15.36	17.33

*6 1/2" R19 batt compressed into a 5 1/2" cavity

Table 2. Cavity Insulation Only Option – 2012 IECC – zones 6-8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – ½" OSB	0.55	0.55	
Cavity Insulation		R24	
5 1/2" Stud	6.25		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c. studs	23%	77%	
Total Wall Component R-Values	**9.18**	**26.3**	
Total Wall Assembly R-Value	1.97	20.25	22.22

Table 3. Cavity with Foam Insulation Option – 2012 IECC – zones 6-8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – 1" Foam	5.0	5.0	
Cavity Insulation		20	
5 1/2" Stud	6.25		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c. studs	23%	77%	
Total Wall Component R-Values	**13.0**	**26.75**	
Total Wall Assembly R-Value	2.99	20.59	23.59

EC25-09/10, Part I: Add Public Comment 5

EC25-09/10, Part I

Public Comment 5:

Mark Halverson, representing APA, requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

TABLE 402.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

Climate Zone	Fenestration U-Factor	Glazed Fenestration SHGC[b,e]	Ceiling R-Value	Wood Frame Wall R-Value[h]	Mass Wall R-Value[i]	Basement [c] Wall R-Value	Crawl Space [c] Wall R-Value
1	NR	0.25	30	13	3/4	0	0
2	0.40	0.25	38	13	4/6	0	0
3	0.35	0.25	38	~~20 or 13+5~~ 13	~~8/13~~ 5/8	5/13[f]	5/13
4 except Marine	0.35	NR	49	20 or 13+5	8/13	10/13	10/13
5 and Marine 4	0.32	NR	49	20 or 13+5	13/17	15/19	15/19
6	0.32	NR	49	20+5 or 13+10	15/20	15/19	15/19
7 and 8	0.32	NR	49	20+5 or 13+10-	19/21	15/19	15/19

(Portions of table, notes and code change proposal not shown remain unchanged)

Commenter=s Reason: We support the increase in prescriptive wood frame wall and mass wall R-values introduced in EC13 and shown in this Public Comment. The increase in R-values in Climate Zone 3 in wood frame walls is not cost effective and shown to have a payback period of over 35 years.

While we support the increase in prescriptive wall insulation values in climate zone 4, energy savings does not justify the increased wood frame wall R-value in climate zone 3. When analyzing the construction cost vs. energy savings, the simple payback can potentially be longer than the expected life of the home. There are multiple areas within buildings where energy savings can be captured at much less cost impact to the homebuyer.

The following analysis demonstrates the cost savings comparison for a 1,968 square foot two-story home located in various Climate Zone 3 cities. The gross exterior wall area is 2,026 square feet and the cost to go from R-13 2x4 wall to R-20 2x6 is, according to ASHRAE RP-1481 $1.18 per square foot of wall (the same study has a cost of $1.23/sq ft to go from R-13 to R-13 with R5 continuous insulation). The cost of energy is $0.11/kWh and $1.10 per therm.

City	Energy Savings	Construction Cost	Simple Payback
San Diego, CA	$22/yr	$2,390	108 years
Charleston, SC	$33/yr	$2,390	72 years
Dallas, TX	$45/yr	$2,390	53 years
Atlanta, GA	$49/yr	$2,390	49 years
Oklahoma City	$64/yr	$2,390	37 years

This payback will be unacceptable to nearly all consumers. With energy savings only running between $2 and $5.50 per month in climate zone 3, we urge the code body to approve this proposal with the modification made in this Public Comment.

EC25-09/10, Part II: Add Public Comment 5

EC25-09/10. Part II

Public Comment 5:

Mark Halverson, representing APA, requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

TABLE N1102.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

Climate Zone	Fenestration U-Factor	Glazed Fenestration SHGC[b,e]	Ceiling R-Value	Wood Frame Wall R-Value[h]	Mass Wall R-Value	Basement[c] Wall R-Value	Crawl Space[c] Wall R-Value
1	NR	0.25	30	13	3/4	0	0
2	0.40	0.25	38	13	4/6	0	0
3	0.35	0.25[e]	38	~~20 or 13+5~~ 13	~~8/13~~ 5/8	5/13[f]	5/13
4 except Marine	0.35	NR	49	20 or 13+5	8/13	10/13	10/13
5 and Marine 4	0.32	NR	49	20 or 13+5	13/17	15/19	15/19
6	0.32	NR	49	20+5 or 13+10	15/20	15/19	15/19
7 and 8	0.32	NR	49	20+5 or 13+10	19/21	15/19	15/19

(Portions of table, notes and code change proposal not shown remain unchanged)

Commenter=s Reason: We support the increase in prescriptive wood frame wall and mass wall R-values introduced in EC13 and shown in this Public Comment. The increase in R-values in Climate Zone 3 in mass and wood frame walls in not cost effective and shown to have an payback period of over 35 years.

While we support the increase in prescriptive wall insulation values in climate zone 4, energy savings does not justify the increased wood frame wall R-value in climate zone 3. When analyzing the construction cost vs. energy savings, the simple payback can potentially be longer than the expected life of the home. There are multiple areas within buildings where energy savings can be captured at much less cost impact to the homebuyer.

The following analysis demonstrates the cost savings comparison for a 1,968 square foot two-story home located in various Climate Zone 3 cities. The gross exterior wall area is 2,026 square feet and the cost to go from R-13 2x4 wall to R-20 2x6 is, according to ASHRAE RP-1481 $1.18 per square foot of wall (the same study has a cost of $1.23/sq ft to go from R-13 to R-13 with R5 continuous insulation). The cost of energy is $0.11/kWh and $1.10 per therm.

City	Energy Savings	Construction Cost	Simple Payback
San Diego, CA	$22/yr	$2,390	108 years
Charleston, SC	$33/yr	$2,390	72 years
Dallas, TX	$45/yr	$2,390	53 years
Atlanta, GA	$49/yr	$2,390	49 years
Oklahoma City	$64/yr	$2,390	37 years

This payback will be unacceptable to nearly all consumers. With energy savings only running between $2 and $5.50 per month in climate zone 3, we urge the code body to approve this proposal as modified by this Public Comment.

EC27-09/10, Part I: Add Public Comment 7

EC27-09/10, Part I

Public Comment 7:

Mark Halverson, representing APA, requests Approval as Modified by this Public Comment.

Further modify the proposal as follows:

TABLE 402.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR	SKYLIGHT *U*-FACTOR	GLAZED FENESTRATION SHGC	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE	MASS WALL *R*-VALUE[i]	FLOOR *R*-VALUE	BASEMENT[c] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c] WALL *R*-VALUE
1	NR	0.75	0.30	30	13	3 / 4	13	0	0	0
2	0.50[j]	0.65	0.30	30	13	4 / 6	13	0	0	0
3	0.40[j]	0.55	0.30[e]	38	13	5 / 8	19	5/13[f]	0	5 / 13
4 except Marine	0.35	0.55	NR	38	20 or 13+5[h]	8 / 13	19	10 / 13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5[h]	13 / 17	30[g]	10/13	10,2ft	10/13
6	0.32	0.55	NR	49	20+5 or 13+10[h] or 24	15 / 20	30[g]	15/19	10,4ft	10/13
7 and 8	0.32	0.55	NR	49	20+5 or 13+10[h] or 24	19 / 21	38[g]	15/19	10,4ft	10/13

For SI: 1 foot = 304.8 mm.

a. *R*-values are minimums. *U*-factors and SHGC are maximums. R-19 batts compressed into a nominal 2x6 framing cavity such that the R-value is reduced by R-1 or more shall be marked with the compressed batt R-value in addition to the full thickness R-value.
b. The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
c. 15/19" means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home. "10/13" means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.
d. R-5 shall be added to the required slab edge *R*-values for heated slabs. Insulation depth shall be the depth of the footing or 2 ft, whichever is less, in zones 1 through 3 for heated slabs.
e. There are no SHGC requirements in the Marine zone.
f. Basement wall insulation is not required in warm-humid locations as defined by Figure 301.1 and Table 301.1.
g. Or insulation sufficient to fill the framing cavity, R-19 minimum.
h. First value is cavity insulation, second is continuous insulation, so "13+5" means R-13 cavity insulation plus R-5 continuous insulation or insulating sheathing. If structural sheathing covers 25 percent or less of the exterior, continuous insulation or insulating sheathing is not required in the locations where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with continuous insulation or insulating sheathing of at least R-2.
i. The second R-value applies when more than half the insulation is on the interior of the mass wall.
j. For impact rated fenestration in wind-borne debris regions, the maximum U-factor shall be 0.75 in Zone 2 and 0.65 in Zone 3.

(Portions of code changed proposal not shown remain unchanged)

Commenter=s Reason: The building code should be product neutral. It is not appropriate for the code to require builders in these climate zones to use a specific product class (insulated sheathing) to meet the prescriptive requirements when other reasonable options are available.

This modification to the original proposal adds R-24 cavity insulation only options (Table 2) to climate zones 6 through 8 to a level that exceeds the wood frame wall R-values in those climate zones in the 2006 IECC (Table 1) by approximately 30%. The R24 cavity insulation option is within 6% of the insulation value of the R-20 plus R-5 continuous insulation option (Table 3), but is 700% greater in R-value than the minimum required window glass (U-0.32) whose area has not been limited in past energy codes. There are R-20+ cavity insulation products available in North America including commonly found cavity insulations combined with spray-foam in "flash and batt" type applications and some spray-foam products.

This option will encourage further product innovation as well as greater options for the builders, including more cost effective ways to meet the structural requirements of the IRC. Considering that the U-values for windows in these same climate zones in EC13-09/10 increase efficiency by less than 10% over the 2006 IECC and the ceiling R-Values remain the same as the 2006, the R-24 requirement in wood frame walls in this Public Comment is significant and appropriate.

We ask the code body to support the committee's approval of this proposal as modified by this Public Comment.

Wall R-Value Comparison Calculations

Table 1. Base Case Wall 2006 IRC – Climate zones 6-8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	

Siding Layer	0.45	0.45	
Sheathing – ½" OSB	.55	0.55	
Fiberglass Batt		17.65*	
5 1/2" Stud	6.25		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c.	23%	77%	
Total Wall Component R-Values	**8.55**	**19.95**	
Total Wall Assembly R-Value	1.97	15.36	17.33

*6 1/2" R19 batt compressed into a 5 1/2" cavity

Table 2. Insulation Only Option – 2012 IECC – zones 6-8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – ½" OSB	0.55	0.55	
Cavity Insulation		R24	
5 1/2" Stud	6.25		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c. studs	23%	77%	
Total Wall Component R-Values	**9.18**	**26.3**	
Total Wall Assembly R-Value	1.97	20.25	22.22

Table 3. Cavity with Foam Insulation Option – 2012 IECC – zones 6-8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – 1" Foam	5.0	5.0	
Cavity Insulation		20	
5 1/2" Stud	6.25		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c. studs	23%	77%	
Total Wall Component R-Values	**13.0**	**26.75**	
Total Wall Assembly R-Value	2.99	20.59	23.59

EC27-09/10, Part II: Add Public Comment 7

EC27-09/10, Part II

Public Comment 8:

Mark Halverson, representing APA, requests Approval as Modified by this Public Comment.

Further modify the proposal as follows:

TABLE N1102.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR	SKYLIGHT *U*-FACTOR	GLAZED FENESTRATION SHGC	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE[h]	MASS WALL *R*-VALUE[j]	FLOOR *R*-VALUE	BASEMENT[c] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c] WALL *R*-VALUE
1	NR	0.75	0.30	30	13	3 / 4	13	0	0	0
2	0.50[i]	0.65	0.30	30	13	4 / 6	13	0	0	0
3	0.40[i]	0.55	0.30[e,]	38	13	5 / 8	19	5/13[f]	0	5 / 13
4 except Marine	0.35	0.55	NR	38	20 or 13+5g[h]	8 / 13	19	10 / 13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5[h]	13 / 17	30[g-]	10/13	10,2ft	10/13
6	0.32	0.55	NR	49	20+5 or 13+10[h] or 24	15 / 20	30[g]	15/19	10,4ft	10/13
7 and 8	0.32	0.55	NR	49	20+5 or 13+10[h] or 24	19 / 21	38[g]	15/19	10,4ft	10/13

For SI: 1 foot = 304.8 mm.

a. *R*-values are minimums. *U*-factors and SHGC are maximums. R-19 batts compressed into a nominal 2x6 framing cavity such that the R-value is reduced by R-1 or more shall be marked with the compressed batt R-value in addition to the full thickness R-value.
b. The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
c. The first value applies to continuous insulation, the second to framing cavity insulation; either insulation meets the requirement.
d. R-5 shall be added to the required slab edge *R*-values for heated slabs. Insulation depth shall be the depth of the footing or 2 ft, whichever is less, in zones 1 through 3 for heated slabs.
e. There are no SHGC requirements in the Marine zone.
f. Basement wall insulation is not required in warm-humid locations as defined by Figure N1101.2 and Table N1101.2.
g. Or insulation sufficient to fill the framing cavity, R-19 minimum.
h. First value is cavity insulation, second is continuous insulation, so “13+5” means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required in the locations where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.
i. For impact rated fenestration in wind-borne debris regions, the maximum U-factor shall be 0.75 in Climate Zone 2 and 0.65 in Climate Zone 3.
j. The second R-value applies when more than half the insulation is on the interior of the mass wall.

(Portions of code change proposal not shown remain unchanged)

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – ½” OSB	.55	0.55	
Fiberglass Batt		17.65*	
5 1/2" Stud	6.25		
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Inside Air Film	0.68	0.68	
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Total Wall Component R-Values	**8.55**	**19.95**	
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Commenter=s Reason: The building code should be product neutral. It is not appropriate for the code to require builders in these climate zones to use a specific product class (insulated sheathing) to meet the prescriptive requirements when other reasonable options are available.

This modification to the original proposal adds R-24 cavity insulation only options (Table 2) to climate zones 6 through 8 to a level that exceeds the wood frame wall R-values in those climate zones in the 2006 IECC (Table 1) by approximately 30%. The R24 cavity insulation option is within 6% of the insulation value of the R-20 plus R-5 continuous insulation option (Table 3), but is 700% greater in R-value than the minimum required window glass (U-0.32) whose area has not been limited in past energy codes. There are R-20+ cavity insulation products available in North America including commonly found cavity insulations combined with spray-foam in “flash and batt” type applications and some spray-foam products.

This option will encourage further product innovation as well as greater options for the builders, including more cost effective ways to meet the structural requirements of the IRC. Considering that the U-values for windows in these same climate zones in EC13-09/10 increase efficiency by less than 10% over the 2006 IECC and the ceiling R-Values remain the same as the 2006, the R-24 requirement in wood frame walls in this Public Comment is significant and appropriate.

We ask the code body to support the committee’s approval of this proposal as modified by this Public Comment.

Wall R-Value Comparison Calculations

Table 1. Base Case Wall 2006 IRC – Climate zones 6-8

*6 1/2” R19 batt compressed into a 5 1/2” cavity

Table 2. Cavity Insulation Only Option – 2012 IECC – zones 6-8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – ½” OSB	0.55	0.55	
Cavity Insulation		R24	
5 1/2" Stud	6.25		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c. studs	23%	77%	
Total Wall Component R-Values	**9.18**	**26.3**	
Total Wall Assembly R-Value	1.97	20.25	22.22

Table 3. Cavity with Foam Insulation Option – 2012 IECC – zones 6-8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – 1” Foam	5.0	5.0	
Cavity Insulation		20	

5 1/2" Stud	6.25		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c. studs	23%	77%	
Total Wall Component R-Values	**13.0**	**26.75**	
Total Wall Assembly R-Value	2.99	20.59	23.59

EC47-09/10, Part I: Add Public Comment 6

EC47-09/10, Part I

Public Comment 6:

Mark Halverson, representing APA requests Approval as Modified by this Public Comment.

Further modify the proposal as follows:

TABLE 402.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGCb, [e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE[h]	MASS WALL R-VALUE[i]	FLOOR R-VALUE	BASEMENT[c] WALL R-VALUE	SLABd R-VALUE & DEPTH	CRAWL SPACE[c] WALL R-VALUE
1	1.2	0.75	0.30	30	13	3/4	13	0	0	0
2	0.65[j]	0.75	0.30	30	13	4/6	13	0	0	0
3	0.50[j]	0.65	0.30	30	~~20 or 13 + 5~~ 13	~~8/13~~ 5/8	19	5/13[f]	0	5/13
4 except Marine	0.35	0.60	NR	38	20 or 13+5	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.35	0.60	NR	38	20 or 13+5	13/17	30[g]	10/13	10, 2 ft	10/13
6	0.35	0.60	NR	49	20 or 13+5	15/19	30[g]	15/19	10, 4 ft	10/13
7 and 8	0.35	0.60	NR	49	21	19/21	38[g]	15/19	10, 4 ft	10/13

h. First value is cavity insulation, second is continuous insulation, so “13+5” means R-13 cavity insulation plus R-5 continuous insulation or insulating sheathing. If structural sheathing covers 25 percent or less of the exterior, continuous insulation or insulating sheathing is not required in the locations where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with continuous insulation or insulating sheathing of at least R-2.

(Footnotes not shown remain unchanged)

(Portions of code change proposal not shown remain unchanged)

Commenter=s Reason: We support the increase prescriptive R-values introduced in EC13 and shown in this Public Comment. The increase in R-values in Climate Zone 3 in mass and wood frame walls in not cost effective and shown to have an payback period of over 35 years.

While we support the increase in prescriptive wall insulation values in climate zone 4, energy savings does not justify the increased wood frame wall R-value in climate zone 3. When analyzing the construction cost vs. energy savings, the simple payback can potentially be longer than the expected life of the home. There are multiple areas within buildings where energy savings can be captured at much less cost impact to the homebuyer.

The following analysis demonstrates the cost savings comparison for a 1,968 square foot two-story home located in various Climate Zone 3 cities. The gross exterior wall area is 2,026 square feet and the cost to go from R-13 2x4 wall to R-20 2x6 is, according to ASHRAE RP-1481 $1.18 per square foot of wall (the same study has a cost of $1.23/sq ft to go from R-13 to R-13 with R5 continuous insulation). The cost of energy is $0.11/kWh and $1.10 per therm.

City	Energy Savings	Construction Cost	Simple Payback
San Diego, CA	$22/yr	$2,390	108 years
Charleston, SC	$33/yr	$2,390	72 years
Dallas, TX	$45/yr	$2,390	53 years
Atlanta, GA	$49/yr	$2,390	49 years
Oklahoma City	$64/yr	$2,390	37 years

This payback will be unacceptable to nearly all consumers. We ask the code body to support the committee’s approval of this proposal as modified by this Public Comment.

EC47-09/10, Part II: Add Public Comment 7

EC47-09/10, Part II

Public Comment 7:

Mark Halverson, representing APA, requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

TABLE N1102.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC	CEILING R-VALUE	WOOD FRAME WALL R-VALUE [h]	MASS WALL R-VALUE[k]	FLOOR R-VALUE	BASEMENT[c] WALL R-VALUE	SLAB[d] R-VALUE AND DEPTH	CRAWL SPACE[c] WALL R-VALUE
1	1.2	0.75	0.35[j]	30	13	3/4	13	0	0	0
2	0.65[i]	0.75	0.35[j]	30	13	4/6	13	0	0	0
3	0.50[i]	0.65	0.35[e, j]	30	~~20 or 13+5~~ 13	~~8/13~~ 5/8	19	5/13[f]	0	5/13
4 except Marine	0.35	0.60	NR	38	20 or 13+5	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.35	0.60	NR	38	20 or 13 + 5	13/17	30[f]	10/13	10, 2 ft	10/13
6	0.35	0.60	NR	49	20 or 13 + 5	15/19	30[g]	10/13	10, 4 ft	10/13
7 and 8	0.35	0.60	NR	49	21	19/21	30[g]	10/13	10, 4 ft	10/13

(Footnotes remain unchanged)

(Portions of code change proposal not shown remain unchanged)

Commenter=s Reason: We support the increase prescriptive R-values introduced in EC13 and shown in this Public Comment. The increase in R-values in Climate Zone 3 in mass and wood frame walls in not cost effective and shown to have an payback period of over 35 years.

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Oklahoma City	$64/yr	$2,390	37 years

This payback will be unacceptable to nearly all consumers. We ask the code body to support the committee's approval of this proposal as modified by this Public Comment.

EC48-09/10, Part I: Add Public Comment 6

EC48-09/10, Part I

Public Comment 6:

Mark Halverson, representing APA, requests Approval as Modified by this Public Comment.

Further modify the proposal as follows:

TABLE 402.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGCb, [e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE[h]	MASS WALL R-VALUE[i]	FLOOR R-VALUE	BASEMENT[c] WALL R-VALUE	SLABd R-VALUE & DEPTH	CRAWL SPACE[c] WALL R-VALUE
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3	0.50[j]	0.65	0.30	30	13	5/8	19	5/13[f]	0	5/13
4 except Marine	0.35	0.60	NR	38	13	5/10	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.35	0.60	NR	38	20 or 13+5	13/17	30[g]	10/13	10, 2 ft	10/13
6	0.35	0.60	NR	49	20+5 or 13+10 or 24	15/20	30[g]	15/19	10, 4 ft	10/13
7 and 8	0.35	0.60	NR	49	20+5 or 13+10 or 24	19/21	38[g]	15/19	10, 4 ft	10/13

h. First value is cavity insulation, second is continuous insulation, so “13+5” means R-13 cavity insulation plus R-5 continuous insulation or insulating sheathing. If structural sheathing covers 25 percent or less of the exterior, continuous insulation or insulating sheathing is not required in the locations where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with continuous insulation or insulating sheathing of at least R-2.

(Portions of code change proposal not shown remain unchanged)

Commenter=s Reason: The building code should be product neutral. It is not appropriate for the code to require builders in these climate zones to use a specific product class (insulated sheathing) to meet the prescriptive requirements when other reasonable options are available.

This modification to the original proposal adds R-24 cavity insulation only options (Table 2) to climate zones 6 through 8 to a level that exceeds the wood frame wall R-values in those climate zones in the 2006 IECC (Table 1) by approximately 30%. The R24 cavity insulation option is within 6% of the insulation value of the R-20 plus R-5 continuous insulation option (Table 3), but is 700% greater in R-value than the minimum required window glass (U-0.32) whose area has not been limited in past energy codes. There are R-20+ cavity insulation products available in North America including commonly found cavity insulations combined with spray-foam in “flash and batt” type applications and some spray-foam products.

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We ask the code body to support the committee’s approval of this proposal as modified by this Public Comment.

Wall R-Value Comparison Calculations

Table 1. Base Case Wall 2006 IRC – Climate zones 6-8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – ½” OSB	.55	0.55	
Fiberglass Batt		17.65*	
5 1/2" Stud	6.25		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c.	23%	77%	
Total Wall Component R-Values	**8.55**	**19.95**	
Total Wall Assembly R-Value	1.97	15.36	17.33

*6 1/2” R19 batt compressed into a 5 1/2” cavity

Table 2. Cavity Insulation Only Option – 2012 IECC – zones 6-8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value

Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – ½" OSB	0.55	0.55	
Cavity Insulation		R24	
5 1/2" Stud	6.25		
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Total Wall Assembly R-Value	1.97	20.25	22.22

Table 3. Cavity with Foam Insulation Option – 2012 IECC – zones 6-8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – 1" Foam	5.0	5.0	
Cavity Insulation		20	
5 1/2" Stud	6.25		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c. studs	23%	77%	
Total Wall Component R-Values	**13.0**	**26.75**	
Total Wall Assembly R-Value	2.99	20.59	23.59

EC48-09/10, Part II: Add Public Comment 7

EC48-09/10, Part II

Public Comment 7:

Mark Halverson, representing APA, requests Approval as Modified by this Public Comment.

Further modify the proposal as follows:

TABLE N1102.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC	CEILING R-VALUE	WOOD FRAME WALL R-VALUE[h]	MASS WALL R-VALUE[k]	FLOOR R-VALUE	BASEMENT[c] WALL R-VALUE	SLAB[d] R-VALUE AND DEPTH	CRAWL SPACE[c] WALL R-VALUE
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4 except Marine	0.35	0.60	NR	38	13	5/10	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.35	0.60	NR	38	20 or 13 + 5h	13/17	30[f]	10/13	10, 2 ft	10/13
6	0.35	0.60	NR	49	20+5 or 13+10 or 24	15/20	30[g]	10/13	10, 4 ft	10/13
7 and 8	0.35	0.60	NR	49	20+5 or 13+10 or 24-	19/21	30[g]	10/13	10, 4 ft	10/13

(Footnotes remain unchanged)

(Portions of code change proposal not shown remain unchaged)

Commenter=s Reason: The building code should be product neutral. It is not appropriate for the code to require builders in these climate zones to use a specific product class (insulated sheathing) to meet the prescriptive requirements when other reasonable options are available.

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Cavity Insulation		20	
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1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c. studs	23%	77%	
Total Wall Component R-Values	**13.0**	**26.75**	
Total Wall Assembly R-Value	2.99	20.59	23.59

EC66-09/10, Part I: Replace Public Comment 2

EC66-09/10, Part I

Public Comment 2:

Joe Nebbia and Mike Moore, Newport Ventures, representing Steel Framing Alliance, request Approval as Modified by this Public Comment.

Modify the proposal as follows:

402.2.5 Steel-frame ceilings, walls, and floors. Steel frame ceilings, walls and floors shall meet the insulation requirements of Table 402.2.5 or shall meet the *U*-factor requirements in Table 402.1.3. The calculation of the *U*-factor for a steel-frame envelope assembly shall use a series-parallel path calculation method.

~~**Exception:** In Climate Zones 1 and 2, the continuous insulation requirements in Table 402.2.4 shall be permitted to be reduced to R-3 for steel frame wall assemblies with studs spaced at 24 inches (610 mm) on center.~~

TABLE 402.2.5
STEEL-FRAME CEILING, WALL AND FLOOR INSULATION (R-VALUE)

WOOD FRAME R-VALUE REQUIREMENT	COLD-FORMED STEEL EQUIVALENT R-VALUE[a]
Steel Truss Ceilings[b]	
R-30	R-38 or R-30 + 3 or R-26 + 5
R-38	R-49 or R-38 + 3
R-49	R-38 + 5
Steel Joist Ceilings[b]	
R-30	R-38 in 2 x 4 or 2 x 6 or 2 x 8 R-49 in any framing
R-38	R-49 in 2 x 4 or 2 x 6 or 2 x 8 or 2 x 10
Steel-Framed Wall, 16" O.C.	
R-13	R-13 + 5 or R-15+ 4 or R-21 + 3 or R-0 + 10
R-19	R-13 + 9 or R-19 + 8 or R-25 +7
~~R-20~~	~~R-0 + 12.5 or R-13 + 7.3 or R-19 + 6.2 or R-21 + 5.9~~
R-21	R-0 + 13.0 or R-13 + 10 or R-19 + 9 or R-25 + 8
Steel Framed Wall, 24" O.C.	
R-13	R-0+9.3 or R-13+3.0 or R-15+2.4
R-13+3	R-0+11.2 or R-13+4.9 or R-15+4.3 or R-19+3.5 or R-21+3.1
R-20	R-0+14.0 or R-13+7.7 or R-15+7.1 or R-19+6.3 or R-21+5.9
R-20+5	R-13+11.5 or R-15+10.9 or R-19+10.1 or R-21+9.7 or R-25+9.1
R-21	R-0+14.6 or R-13+8.3 or R-15+7.7 or R-19+6.9 or R-21+6.5 or R-25+5.9
Steel Joist Floor	
R-13	R-19 in 2 x 6 R-19 + 6 in 2 x 8 or 2 x 10
R-19	R-19 + 6 in 2 x 6 R-19 + 12 in 2 x 8 or 2 x 10

a. Cavity insulation *R*-value is listed first, followed by continuous insulation *R*-value.
b. Insulation exceeding the height of the framing shall cover the framing.

Commenter's Reason: During the public hearings, we asked the committee to disapprove EC66 because it was incomplete. Based on feedback received during and following the public hearings, the following changes have been made to improve the original proposal:

1. This comment simply extends the intent of the exception to Section 402.2.5 of the 2009 IECC (achieving thermal equivalency between steel walls at 24" o.c. and wood frame walls at 16" o.c.) to each wood frame wall assembly listed in Table 402.1.1. For example, the 2009 IECC is limited in that it only draws one thermal equivalency comparison between wood frame walls at 16" o.c. and steel frame walls at 24" o.c., stating that R-13+3 in the 24" o.c. steel frame wall is equivalent to R-13 in the wood frame wall. While this one point of comparison can be verified to have equivalent thermal performance using DOE's REScheck software, the exception stops short in that it fails to capture options for achieving thermal equivalency when wood walls are insulated to values other than R-13.
2. REScheck was selected in developing the values for this comment since its methodology for calculating wood and steel framed U-factors has served as the basis for U-factor calculations of these assemblies since the adoption of the 2004 IECC, and because it has more conservative values for steel framed assemblies (i.e. requires more insulation). Also, note that REScheck values result in a 24" o.c. steel frame R-13+3 wall being thermally equivalent to an R-13 wood framed. This is in exact agreement with the 2009 IECC exception to 402.2.5, which is being replaced by introducing a 24" o.c. equivalency path to Table 402.2.5.
3. The comment clearly distinguishes between equivalent R-values for steel framing at 16" o.c. and at 24" o.c. so that code officials are provided with better guidance as to which insulation values to require under different scenarios. All of the assemblies listed are supported within and verified by REScheck code compliance software.
4. Also included with this comment is a note to the ICC staff which requests staff to remove any new references within this table to wood wall assemblies that are not ultimately listed within Table 402.1.1 of the 2012 IECC. This will ensure that the steel equivalent assemblies listed within this table remain relevant, regardless of what other changes occur at the final action hearings.

Details of Calculations and Assumptions

REScheck's U-factors for wood framed walls were determined to be the following. Where there is overlap with IECC requirements in Table 402.1.3, these values are in exact agreement with the IECC as well:

Wood R-13: 0.082
Wood R-13+3: 0.071
Wood R-20: 0.059
Wood R-20+5: 0.048
Wood R-21: 0.057

Steel framed walls at 24" o.c. were then modeled in REScheck, and cavity and exterior insulation were added until equivalent U-factors were obtained for steel assemblies (resulting in thermal equivalence for wood and steel assemblies). Continuous insulation requirements were calculated to the nearest tenth of an R-value. Providing continuous insulation requirements to the nearest tenth is consistent with how

continuous insulation requirements are addressed in Chapter 5 of the IECC, and is also in-step with how this product is labeled by the manufacturer. The results are proposed within the table.

Why this Change is Needed

Adopting the proposed changes will clear up confusion within the current table as to the framing spacing assumed when determining thermal equivalency. Also, the change will encourage conservation of materials and energy by recognizing efficiency gains that can be realized by increasing the spacing of framing to 24" o.c. These efficiencies are realized without compromising the ability of the framing to withstand its structural load requirements. Further, this change would establish agreement among the methodology used to establish IECC U-factors, federally-sponsored code compliance software (RESCheck), and the steel equivalence table within the code. Finally, the change provides continuous insulation values to the nearest tenth to reflect how this insulation is labeled by the manufacturer.

Note to ICC Staff: Submitted with this comment is a request to the ICC staff to remove references to wall assemblies introduced within this comment that are not listed within Table 402.1.1 of the 2012 IECC. For example, if either R-13+3 or R-20+5 is not referenced within the "wood frame wall R-value" column of the 2012 IECC Table 402.1.1, then we request that the corresponding reference also be omitted from Table 402.2.5 of the 2012 IECC.

EC66-09/10, Part II: Replace Public Comment 2

EC66-09/10, Part II

Public Comment 2:

Joe Nebbia and Mike Moore, Newport Ventures, representing Steel Framing Alliance, request Approval as Modified by this Public Comment.

Modify the proposal as follows:

N1102.2.5 Steel-frame ceilings, walls, and floors. Steel frame ceilings, walls and floors shall meet the insulation requirements of Table N1102.2.5 or shall meet the *U*-factor requirements in Table N1102.1.2. The calculation of the *U*-factor for a steel-frame envelope assembly shall use a series-parallel path calculation method.

~~**Exception:** In Climate Zones 1 and 2, the continuous insulation requirements in Table N1102.2.5 shall be permitted to be reduced to R-3 for steel frame wall assemblies with studs spaced at 24 inches (610 mm) on center.~~

TABLE N1102.2.5
STEEL-FRAME CEILING, WALL AND FLOOR INSULATION (R-VALUE)

WOOD FRAME R-VALUE REQUIREMENT	COLD-FORMED STEEL EQUIVALENT R-VALUE[a]
Steel Truss Ceilings[b]	
R-30	R-38 or R-30 + 3 or R-26 + 5
R-38	R-49 or R-38 + 3
R-49	R-38 + 5
Steel Joist Ceilings[b]	
R-30	R-38 in 2 x 4 or 2 x 6 or 2 x 8 R-49 in any framing
R-38	R-49 in 2 x 4 or 2 x 6 or 2 x 8 or 2 x 10
Steel-Framed Wall, 16"O.C.	
R-13	R-13 + ~~3.2~~ 5 or ~~R-19 +2.1~~ R-15 + 4 or R-21 + ~~2.0~~ 3 or R-0 + ~~8.4~~ 10
R-19	R 13 + 9 or R-19 + 8 or R-25 + 7
~~R-20~~	~~R-0 + 12.5 or R-13 + 7.3 or R-19 + 6.2 or R-21 + 5.9~~
R-21	~~R-0 + 13.0 or~~ R-13 + ~~7.7~~ 10 or R-19 + ~~6.6 or R-21 + 6.4~~ 9 or R-25 + 8
Steel Framed Wall, 24" O.C.	
R-13	R-0+9.3 or R-13+3.0 or R-15+2.4
R-13+3	R-0+11.2 or R-13+4.9 or R-15+4.3 or R-19+3.5 or R-21+3.1
R-20	R-0+14.0 or R-13+7.7 or R-15+7.1 or R-19+6.3 or R-21+5.9
R-20+5	R-13+11.5 or R-15+10.9 or R-19+10.1 or R-21+9.7 or R-25+9.1
R-21	R-0+14.6 or R-13+8.3 or R-15+7.7 or R-19+6.9 or R-21+6.5 or R-25+5.9
Steel Joist Floor	
R-13	R-19 in 2 x 6 R-19 + 6 in 2 x 8 or 2 x 10
R-19	R-19 + 6 in 2 x 6 R-19 + 12 in 2 x 8 or 2 x 10

a. Cavity insulation *R*-value is listed first, followed by continuous insulation *R*-value.
b. Insulation exceeding the height of the framing shall cover the framing.

Commenter's Reason: During the public hearings, we asked the committee to disapprove EC66 because it was incomplete. Based on feedback received during and following the public hearings, the following changes have been made to improve the original proposal:

1. This comment simply extends the intent of the exception to Section N1102.2.5 of the 2009 IRC (achieving thermal equivalency between steel walls at 24" o.c. and wood frame walls at 16" o.c.) to each wood frame wall assembly listed in Table N1102.2.5. For example, the 2009 IRC is limited in that it only draws one thermal equivalency comparison between wood frame walls at 16" o.c. and steel frame walls at 24" o.c., stating that R-13+3 in the 24" o.c. steel frame wall is equivalent to R-13 in the wood frame wall. While this one point of comparison can be verified to have equivalent thermal performance using DOE's REScheck software, the exception stops short in that it fails to capture options for achieving thermal equivalency when wood walls are insulated to values other than R-13.
2. REScheck was selected in developing the values for this comment since its methodology for calculating wood and steel framed U-factors has served as the basis for U-factor calculations of these assemblies since the adoption of the 2004 IECC, and because it has more conservative values for steel framed assemblies (i.e. requires more insulation). Also, note that REScheck values result in a 24" o.c. steel frame R-13+3 wall being thermally equivalent to an R-13 wood framed. This is in exact agreement with the 2009 IRC exception to N1102.2.5, which is being replaced by introducing a 24" o.c. equivalency path to Table N1102.2.5.
3. The comment clearly distinguishes between equivalent R-values for steel framing at 16" o.c. and at 24" o.c. so that code officials are provided with better guidance as to which insulation values to require under different scenarios. All of the assemblies listed are supported within and verified by REScheck code compliance software.
4. Also included with this comment is a note to the ICC staff which requests staff to remove any new references within this table to wood wall assemblies that are not ultimately listed within Table N1102.1 of the 2012 IRC. This will ensure that the steel equivalent assemblies listed within this table remain relevant, regardless of what other changes occur at the final action hearings.

Details of Calculations and Assumptions

REScheck's U-factors for wood framed walls were determined to be the following. Where there is overlap with IRC requirements in Table N1102.1.2, these values are in exact agreement with the IRC as well:

Wood R-13: 0.082
Wood R-13+3: 0.071
Wood R-20: 0.059
Wood R-20+5: 0.048
Wood R-21: 0.057

Steel framed walls at 24" o.c. were then modeled in REScheck, and cavity and exterior insulation were added until equivalent U-factors were obtained for steel assemblies (resulting in thermal equivalence for wood and steel assemblies). Continuous insulation requirements were calculated to the nearest tenth of an R-value. Providing continuous insulation requirements to the nearest tenth is consistent with how continuous insulation requirements are addressed in Chapter 5 of the IECC, and is also in-step with how this product is labeled by the manufacturer. The results are proposed within the table.

Why this Change is Needed

Adopting the proposed changes will clear up confusion within the current table as to the framing spacing assumed when determining thermal equivalency. Also, the change will encourage conservation of materials and energy by recognizing efficiency gains that can be realized by increasing the spacing of framing to 24" o.c. These efficiencies are realized without compromising the ability of the framing to withstand its structural load requirements. Further, this change would establish agreement among the methodology used to establish IRC/IECC U-factors, federally-sponsored code compliance software (REScheck), and the steel equivalence table within the code. Finally, the change provides continuous insulation values to the nearest tenth to reflect how this insulation is labeled by the manufacturer.

Note to ICC Staff: Submitted with this comment is a request to the ICC staff to remove references to wall assemblies introduced within this comment that are not listed within Table N1102.1 of the 2012 IRC. For example, if either R-13+3 or R-20+5 is not referenced within the "wood frame wall R-value" column of the 2012 IRC Table N1102.1, then we request that the corresponding reference also be omitted from Table N1102.2.5 of the 2012 IRC.

EC97-09/10

EC97-09/10: Add Craig Conner as a co-proponent of the original proposal and remove him as a proponent of the Public Comment.

EC99-09/10: Revise Committee Modification as follows:

EC99-09/10, Part I

WHOLE HOUSE MECHANICAL VENTILATION SYSTEM. An exhaust system, supply system, or combination thereof that is designed to mechanically exchange indoor air with outdoor air ~~for the purpose of diluting and removing indoor air contaminants~~ <u>when operating</u> ~~The system is designed to provide ventilation air~~ continuously or through a programmed intermittent schedule to satisfy the <u>whole house</u> ventilation rate~~s required for the whole house~~. ~~Local exhaust or supply fans are permitted to serve as such a system.~~

TABLE 403.5.1
WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM FAN EFFICACY

FAN LOCATION	AIR FLOW RATE MINIMUM (CFM)	MINIMUM EFFICACY[a] (CFM/WATT)	AIR FLOW RATE MAXIMUM (CFM)
Range hoods	any	2.8 cfm/watt	any
In-line fan	any	2.8 cfm/watt	any
Bathroom, utility room	10	1.4 cfm/watt	<90
Bathroom, utility room	90	2.8 cfm/watt	any

a. ~~When tested in accordance with HVI Standard 916~~

~~3. Add new standard to Chapter 44 as follows:~~

~~HVI~~ ~~Home Ventilating Institute~~
~~1000 North Rand Road~~
~~Suite 214~~
~~Wauconda, IL 60084~~

~~HVI~~
~~916-09 Airflow Test Procedure~~

EC141-09/10: Add Public Comment 2

EC141-09/10

Public Comment 2:

Mark Halverson, representing APA, requests Approval as Submitted.

Commenter=s Reason: Utilizing equipment efficiency toward energy code compliance has been part of the energy code since the inception of the IECC. Even though the energy neutral tradeoffs were unfortunately removed from the performance path in Chapter 4 in the 2009 IECC they are still ingrained in the Preface if the IECC. Equipment efficiencies

Taken from the 2009 IECC Preface (highlighted for emphasis):

> ***Introduction***
> *Internationally, code officials recognize the need for a modern, up-to-date energy conservation code addressing the* ***design of energy-efficient building envelopes and installation of energy efficient mechanical, lighting and power systems through requirements emphasizing performance****. The International Energy Conservation Code®, in this 2009 edition, is designed to meet these needs through model code regulations that will result in the optimal utilization of fossil fuel and nondepletable resources in all communities, large and small.*
>
> ***Development***
> *…*
>
> *This code is founded on principles intended to establish provisions consistent with the scope of an energy conservation code that* ***adequately conserves energy; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products or methods of construction.***

Not considering equipment efficiency in code compliance does unnecessarily increase construction costs, discourages the use of new (high efficiency equipment) materials and gives preferential treatment to insulation and fenestration materials over that of efficient equipment.

Removal of the equipment efficiencies that occurred in the 2009 IECC goes against the grain of the spirit of the IECC. Equipment efficiencies are critical in achieving higher target building performance levels set forth by DOE and other organizations. To require higher building performance levels and simultaneously take away the tools to achieve this goal is counterproductive.

All other minimum energy efficiency codes, including Chapter 5 of the IECC recognize the importance of equipment efficiencies along with beyond code programs, including Energy Star, DOE's Builders Challenge and the National Green Building Standard (ICC 700), utilize equipment efficiencies.

Energy neutral equipment efficiency considerations must be returned to the energy code in order to provide flexibility and cost-effective methods to achieve an energy efficient home.

We ask the code body to over-turn the committee's disapproval of this comment and approve it as submitted.

EC142-09/10: Add Public Comment 2

EC142-09/10

Public Comment 2:

Mark Halverson, representing APA, requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

TABLE 405.5.2(1)
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Fenestration	Total area[a] = ~~(a) The proposed fenestration area; where the proposed fenestration area is less than 15% of the conditioned floor area~~ ~~(b)~~ ~~15~~ 18% of the conditioned floor area~~; where the proposed fenestration area is 15% or more of the conditioned floor area~~	As proposed
	Opaque Door: opaque door (SHGC = 0) as proposed up to 40 ft^2 shall be included in proposed total fenestration area and oriented the same as in the proposed design	As proposed
	Orientation: all fenestration other than the opaque door equally distributed to four cardinal compass orientations (N, E, S & W)	As proposed
	U-Factor: from Table 402.1.3	As proposed
	SHGC: from Table 402.1.1 except that for climates with no requirement (NR) SHGC = 0.40 shall be used.	Same as standard reference design
	Interior shade fraction: Summer (all hours when cooling is required) = 0.70 Winter (all hours when heating is required) = 0.85[c]	As proposed
	External shading: none	

(Portions of table and footnotes not shown remain unchanged)

Commenter=s Reason: The initial proposal (EC142) combined the glazing and door area in the performance analysis into one fenestration area. While this is not an unreasonable concept, how it was written is problematic. According to various studies summarized in a PNNL report, the average window/conditioned floor area varies between 12-18% window to conditioned floor area with an overall average in the 15% range. However, this does not include the door area which is estimated at 5% of the conditioned floor area[2]. So if glazing and door area are to be combined, there should be an increase in the allowable percentage to compenstate for the door area, this is why the 15% has been increased to 18% in order to provide a nominal increase in stringency (where 20% should have been used) along with a more equitable calculation for homes with less than 18% fenestration to conditioned floor area ratio.

Homes with a lower percentage of windows and doors (below 18%) generally perform better than the code minimum; therefore, these homes should get credit for the additional performance. It makes the code shorter, easier to understand, more equitable and provides flexibility to builders and architects.

We ask the code body to overturn the decision by the committee to disapprove and approve EC142 as modified with this Public Comment.

1.Taylor, Z.T., Conner, C.C., Lucas, R.G., *Eliminating Window-Area Restriction in the IECC*, PNNL-SA-35432, 2001
2. Entermodal Engineering Limited, *Characterization of Framing Factors for New Low-Rise Residential Building Envelope (904-RP),* ASHRAE, 2001

EC157-09/10: Add Public Comment 3

EC157-09/10

Public Comment 3:

Mark Halverson, representing APA, requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

Table 502.2(1)
BUILDING ENVELOPE REQUIREMENTS – OPAQUE ASSEMBLIES

CLIMATE ZONE	**1**		**2**		**3**		**4 EXCEPT MARINE**		**5 AND MARINE 4**		**6**		**7**		**8**	
	All other	Group R	All other	Group R	All other	Group R	All other	Group R	All other	Group R	All other	Group R	All other	Group R	All other	Group R
Roofs																
Insulation entirely above deck	R-15 R-20ci	R-20ci	R-20ci	R-20ci	R-20ci	R-20ci	R-20 R-25ci	R-20 R-25ci	R-20 R-25ci	R-20 R-25ci	R-20 R-30ci	R-20 R-30ci	R-25 R-35ci	R-25 R-35ci	R-25 R-35ci	R-25 R-35ci
Metal buildings (with R-5 R-3.5 thermal blocks [a,b])	R-19 R-19 + R11Ls	R-19 R-19 + R11Ls	R-13 + R-13 R-19 + R11Ls	R-13 + R-13 R-13 + R19	R-13 + R-13 R-19 + R11Ls	R-19 R-19 + R11Ls	R-13 + R-13 R-19 + R11Ls	R-19 R-19 + R11Ls	R-13 + R-13 R-19 + R11Ls	R-19 R-19 + R11Ls	R-13 + R-19 R-25 + R11Ls	R-19 R-25 + R11Ls	R-13 + R-19 R-30 + R11Ls	R-19 + R-10xx R-30 + R11Ls	R-11xx + R-19 R-30 + R11Ls	R-19 + R-10xx R-30 + R11Ls
Attic and other	R-30 R-38	R-38	R-38	R-38	R-38	R-38	R-38	R-38	R-38	R-38	R-38 R-49	R-38 R-49	R-38 R-49	R-38 R-49	R-49	R-49
Walls, Above Grade																
Mass	NR R-5.7ci	R-5.7ci	R-5.7ci	R-7.6ci	R-7.6ci	R-9.5ci	R-9.5ci	R-11.4ci	R-11.4ci	R-13.3ci	R-13.3ci	R-15.2ci	R-15.2ci	R-15.2ci	R-25ci	R-25ci
Metal building[b]	R-16 R-13+ R-6,5c.i.	R-16 R-13+ R-6,5c.i.	R-16 R-13+ R-6,5c.i.	R-16 R-13+ R-13c.i.	R-19 R-13+ R-6,5c.i	R-16 R-13+ R-13c.i	R-16 R-13+ R-13c.i	R-16 R-13+ R-13c.i	R-13 + R-5.6ci R-13+ R-13c.i	R-13 + R-5.6ci R-13+ R-13c.i	R-13 + R-5.6ci R-13+ R-13c.i	R-13 + R-5.6ci R-13+ R-13c.i	R-19 + R-5.6ci R-13+ R-13c.i	R-19 + R-5.6ci R-13+ R-19.5c.i	R-19 + R-5.6ci R-13+ R-13c.i	R-19 + R-5.6ci R-13+ R-26c.i
Metal framed	R-13 + R-5 ci	R-13 + R-5 ci	R-13 + R-5 ci	R-13 + R-7.5ci	R-13 + R-3.8ci R-5 ci	R-13 + R-7.5ci	R-13 + R-7.5	R-13 + R-7.5ci	R-13 + R-7.5ci	R-13 + R-7.5ci	R-13 + R-7.5ci	R-13 + R-7.5ci	R-13 + R-7.5ci	R-13 + R-15.6ci	R-13 + R-7.5ci	R-13 + R-18.8ci
Wood framed and other	R-13 + 3.8c.i. or R-20	R-13 + 3.8c.i. or R-20	R-13 + 3.8c.i or R-20	R-13 + 3.8c.i. or R-20	R-13 + 3.8c.i. or R-20	R-13 + 3.8c.i. or R-20	R-13 + 3.8c.i. or R-20	R-13 + R-3.8ci or R-20	R-13 + R-3.8ci or R-20	R-13 + R-3.8 7.5 c.i.	R-13 + R-7.5 c.i. or R23	R-13 + R-7.5 c.i. or R23	R-13 + R-7.5ci or R23	R-13 + R-7.5ci or R23	R-13 + R-15.6ci or R30	R-13 + R-15.6ci or R30
Walls, Below Grade																
Below-grade wall[d]	NR	NR	NR	NR	NR	NR	NR R-7.5ci	R-7.5ci	R-7.5ci	R-7.5ci	R-7.5ci	R-7.5ci	R-7.5ci R-10ci	R-10ci	R-7.5ci R-10ci	R-12.5ci
Floors																
Mass	NR	NR	R-6.3ci	R-8.3ci	R-6.3ci R-10ci	R-8.3ci R-10ci	R-10ci	R-10.4ci	R-10ci	R-12.5ci	R-12.5ci	R-14.6ci	R-15ci	R-16.7ci	R-15ci	R-16.7ci
Joist/Framing	NR	NR	R-19	R-30	R-19	R-30	R-30	R-30	R-30	R-30	R-30	R-30[e]	R-30	R-30[e]	R-30[e]	R-30[e]
Slab-on-Grade Floors																
Unheated slabs	NR	NR	NR	NR	NR	NR	NR R-10 for 24 in. below	R-10 for 12 24 in. below	NR R-10 for 24 in. below	R-10 for 24 in. below	R-10 for 24 in. below	R-15 for 24 in. below	R-15 for 24 in. below	R-15 for 24 in. below	R-15 for 24 in. below	R-20 for 24 in. below
Heated slabs	R-7.5 for 12 in. below	R-7.5 for 12 in. below	R-7.5 for 12 in. below	R-7.5 for 12 in. below	R-10 for 24 in. below	R-10 for 24 in. below	R-15 for 24 in. below	R-15 for 24 in. below	R-15 for 24 36 in. below	R-15 for 24 36 in. below	R-15 for 24 36 in. below	R-20 for 48 in. below	R-20 for 24 in. below	R-20 for 48 in. below	R-20 for 48 in. below	R-20 for 48 in. below
Opaque Doors																
Swinging	U-0.70 U-0.61	U-0.70 U-0.61	U-0.70 U-0.61	U-0.70 U-0.61	U-0.70 U-0.61	U-0.70 U-0.61	U-0.70 U-0.61	U-0.70 U-0.61	U-0.70 U-0.37	U-0.70 U-0.37	U-0.70 U-0.37	U-0.70 U-0.37	U-0.50 U-0.37	U-0.50 U-0.37	U-0.50 U-0.37	U-0.50 U-0.37
Roll-up or sliding	U-1.45 R-4.75	U-1.45 R-4.75	U-1.45 R-4.75	U-1.45 R-4.75	U-1.45 R-4.75	U-1.45 R-4.75	U-0.50 R-4.75	U-0.50 R-4.75	U-0.50 R-4.75	U-0.50 R-4.75	U-0.50 R-4.75	U-0.50 R-4.75	U-0.50 R-4.75	U-0.50 R-4.75	U-0.50 R-4.75	U-0.50 R-4.75

For SI: 1 inch = 25.4 mm.
ci = Continuous insulation. NR = No requirement.
a. When using *R*-value compliance method, a thermal spacer block is required, otherwise use the *U*-factor compliance method. [see Tables 502.1.2 and 502.2(2)].
b. Assembly descriptions can be found in Table 502.2(2).

c. R-5.7 ci is allowed to be substituted with concrete block walls complying with ASTM C 90, ungrouted or partially grouted at 32 inches or less on center vertically and 48 inches or less on center horizontally, with ungrouted cores filled with material having a maximum thermal conductivity of 0.44 Btu-in./h-f2 F.
d. When heated slabs are placed below grade, below-grade walls must meet the exterior insulation requirements for perimeter insulation according to the heated slab-on-grade construction.

e. Steel floor joist systems shall to be R-38.
(Portions of code change proposal not shown remain unchanged)

Commenter=s Reason: The building code should be product neutral. It is not appropriate for the code to require builders in these climate zones to use a specific product class (insulated sheathing) to meet the prescriptive requirements when other reasonable options are available.

This modification to the original proposal adds R23 cavity only insulation options to above grade wood framed walls in climate zones 5R through 7R, which is equivalent to the R13 + R7.5 continuous insulation option already found in the proposal. In addition, a R30 cavity only insulation option was added to climate zone 8. These options exceed the wood frame wall R-values in the 2006 IECC by 67% and 32%, respectively. Cavity only options in these climate zones will increase energy efficiency while facilitating a wider variety of exterior cladding options.

We ask the code body to support the committee's approval of this proposal as modified by this Public Comment.
Assembly Wall R-Value Calculations:

Table 1. Current 2012 IECC Climate zones 5R–7R (R13 + 7.5ci)

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – continuous insulation	7.5	7.5	
Sheathing – ½" OSB	0.55	0.55	
3 1/2" Fiberglass Batt		13.0	
3 1/2" Stud	4.38		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c. studs	23%	77%	
Total Wall Component R-Values	**14.18**	27.45	
Total Wall Assembly R-Value	3.26	17.56	20.82

Table 2. Base Case Wall 2006 IECC Climate zone 5-7

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – ½" OSB	.55	0.55	
3 1/2" Fiberglass Batt		13.0	
3 1/2" Stud	4.38		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c. studs	23%	77%	
Total Wall Component R-Values	**6.68**	**15.3**	
Total Wall Assembly R-Value	1.54	11.78	13.32

Table 3. Cavity Insulation Only Option 2012 IECC Climate zone 5-7

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – ½" OSB	0.55	0.55	
Cavity Insulation		23	
5 1/2" Stud	6.25		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c. studs	23%	77%	
Total Wall Component R-Values	**8.55**	**25.3**	
Total Wall Assembly R-Value	1.97	19.48	21.45

Table 4. Base Case Wall 2006 IECC Climate zone 8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	

Sheathing – continuous insulation	7.5	7.5	
Sheathing – ½" OSB	0.55	0.55	
3 1/2" Fiberglass Batt		13.0	
3 1/2" Stud	4.38		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c. studs	23%	77%	
Total Wall Component R-Values	**14.18**	27.45	
Total Wall Assembly R-Value	3.26	17.56	20.82

Table 5. Cavity Insulation Only Option 2012 IECC Climate zone 8

Component	R-Value Studs	R-Value Cavity	Assembly R-Value
Wall - Outside Air Film	0.17	0.17	
Siding Layer	0.45	0.45	
Sheathing – ½" OSB	0.55	0.55	
Cavity Insulation		30	
3 1/2" + 3 ½" Studs	8.75		
1/2" Drywall	0.45	0.45	
Inside Air Film	0.68	0.68	
Percent for 16" o.c. studs	23%	77%	
Total Wall Component R-Values	**11.05**	**32.3**	
Total Wall Assembly R-Value	2.54	24.87	27.41

EC176-09/10: Change Public Hearing Results from "Disapproved" to "Approved as Submitted":

EC176-09/10

Public Hearing Results

Committee Action: **Approved as Submitted**

Committee Reason: The committee felt the proposal clarified determination of energy equivalency and corrected an oversight in previous changes to the code.

Assembly Action: **None**

EC216-09/10 Part I and II – Change proponents request from "Approval as Submitted" to "Approval as Modified by this Public Comment" on both public comments:

EC216-09/10, Part I & II

Public Comment 1:

Jennifer Hatfield, representing Association of Pool & Spa Professionals requests Approval as Modified by this Public Comment.

(No change to proposed modification)

Public Comment 2:

Jennifer Hatfield, representing Association of Pool & Spa Professionals requests Approval as Modified by this Public Comment.

(No change to proposed modification)