AGENDA

UNIFORM BUILDING CODE COMMISSION
MECHANICAL ADVISORY COMMITTEE
MEETING
May 24, 2022 12:00

Anchor Location
Heber M Wells Building Rm 474
160 E 300 S
Salt Lake City UT 84114

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This agenda is subject to change up to 24 hours prior to the meeting.

1. Roll call
2. Approve minutes from the April 12, 2022 meeting
3. Continue with the review of the energy portion of the 2021 IRC and current & proposed amendments
   Table N1102.1.2 & Table N1102.1.3 (R402.1.2 & R402.1.3)
   N1102.2.1(R402.2.1)/N1102.3.2 (R402.3.3)/N1102.3.4 (R402.3.4)
   N1102.2.9.1 (R402.2.9.1)
   Table N1102.4.1.1 (R402.4.1.1)/N1102.4.6 (R402.4.6)
   N1102.4.1.3 (R402.4.1.3)
   N1103.3.1 (R403.3.1
   N1103.5.1.1 (R403.5.1.1)
   N1103.6.3 (R403.6.3)
   N1104.1.1 (R404.1.1)

In compliance with the Americans with Disabilities Act, individuals needing special accommodations (including auxiliary communicative aids and services) during this meeting should notify Dave Taylor, ADA Coordinator, at least three working days prior to the meeting. Division of Occupational and Professional Licensing, 160 East 300 South, Salt Lake City UT 84115, Phone 530-6628 or toll-free in Utah only 866-275-3675.

N1104.2 (R404.2 / N1104.3 (R404.3)
N1105.2 (R405.2)
N1105.4.2(1) Table R405.4.2(1)
N1106.3 (R406.3)/ N1106.3.1 (406.3.1) / N1106.3.2 (R406.3.2) / N1106.4 (R406.4)
Chapter 11

Next Scheduled Meeting: June 14, 2022

If you do not plan on attending this meeting, please call Sharon at 530-6163 or email at ssmalley@utah.gov

In compliance with the Americans with Disabilities Act, individuals needing special accommodations (including auxiliary communicative aids and services) during this meeting should notify Dave Taylor, ADA Coordinator, at least three working days prior to the meeting. Division of Occupational and Professional Licensing, 160 East 300 South, Salt Lake City UT 84115, Phone 530-6628 or toll-free in Utah only 866-275-3675.

MINUTES

UNIFORM BUILDING CODE COMMISSION
MECHANICAL ADVISORY COMMITTEE

Meeting

April 12, 2022 3:00 pm

Convened 3:02 PM Adjourned 5:09

STAFF:
Steve Duncombe, Bureau Manager
Sharon Smalley, Board Secretary

MECHANICAL ADVISORY COMMITTEE:

David Halverson	David Wilson
Clay Monroe (excused)	Chris Jensen
Terry Palmer	Alyssa Wahlin
Martin Carillo	Trent Hunt, Commission Liaison (absent)

VISITORS:

Brent Ursenbach	Thomas Kissenger
Kevin Emerson	Macario Garcia
Max Marchand	Ross Ford
Teddy Charlton	Kyle

MINUTES	A motion was made by Dave Wilson to approve the minutes from the March 8, 2022 meeting as written. The motion was seconded by Terry Palmer and passed unanimously.
CONTINUE WITH REVIEW OF THE ENERGY PORTION OF THE 2021 IRC AND CURRENT AMENDMENTS & PROPOSED AMENDMENTS TABLE R405.4.2(1) TABLE R1102.1.2 (R402.1.2)/ TABLE N1102.1.3 R402.1.3 CHAPTER 11 N1101.13 (R401.2) / N1101.13.5 (R401.2.5) / N1108 (R408)	Kevin Emerson spoke to the committee in connection with the proposed amendments and spoke out in opposition to all of the proposals. He also recommended that the 2021 residential energy code be phased in over a six year period. Teddy Charlton, Max Marchand and Macario Garcia from Westminster College spoke in favor of adopting the 2021 energy code without any amendments. Ross Ford pointed out that there are utility incentives available that help pay down the costs and that by adopting the code without any

N1101.14 (R401.3) #7
N1102.2.1 (R402.2.1) N1102.3.3 (R402.3.3) / N1102.3.4 (R02.3.4)
N1102.2.9.1 (R402.2.9.1)
TABLE N1104.4.1.1 (R402.4.1.1) N1102.4.6 (R402.4.6)
N1102.4.1.3 (R402.4.1.3)
N1103.3.1 (R403.3.1)
N1103.5.1.1 (R403.5.1.1)
N1103.6.3 (R403.6.3)
N1104.2 (R404.2) / N1104.3 (R404.3)
N1105.2(R405.2)
N1106.3 (R406.3) / N1106.3.1 (R406.3.1) / N1106.4 (R406.4)

amendments might do away with some of these incentives.

The committee reviewed the proposal for Table R405.4.2(1). Following the discussion, a motion was made by Martin Carrillo to deny the proposal for N1101.13 / N1101.13.5 / N1108 and corresponding residential numbers. The motion was seconded by Dave Wilson and passed unanimously.

Following the discussion on the code section and the proposed amendment for N1101.14, a motion was made by Alyssa Wahlin to deny the proposed amendment and go with the section as written. The motion was seconded by Chris Jensen and passed unanimously.

During the review of the proposed amendment for Table N1102.1.3, Brent Ursenbach presented a proposal that would be a compromise between the proposal and the code. He recommended that the proposal for climate zones that are not in Utah not be considered as part of the amendment. Those present reviewed both proposals for E1 Wall R-Value in climate zone 5. A motion was made by Chris Jensen to accept Brent Ursenbach's proposal for the modification to climate zone 5 and to delete the proposal for climate zone 4. The motion was seconded by Dave Wilson and passed unanimously. The committee will continue with the review of the remaining portions of the proposed amendment to the table at the next meeting.

The committee will not hold their next meeting on May 10th but instead rescheduled the meeting for May 24th at 12:00. The meeting will be an in person meeting for those who can attend.

The meeting adjourned a 5:08.

Note: These minutes are not intended to be a verbatim transcript but are intended to record the significant features of the business conducted in this meeting. Discussed items are not necessarily shown in the chronological order they occurred.

UTAH DEPARTMENT OF COMMERCE
DIVISION OF OCCUPATIONAL AND PROFESSIONAL LICENSING
160 East 300 South Salt Lake City UT 84111
PO Box 146741 Salt Lake City UT 84114-6741
E-mail: b8@utah.gov
Web: www.dopl.utah.gov

REQUEST FOR CODE AMENDMENT

Requesting Agency/Person: Utah State HBA	Date: 1/24/2021
Street Address: 38 West 13775 South	
City, State, Zip Draper, UT 84020	
Contact Person: Ross Ford	Phone: 801-352-8266
Code to be Amended: (Include edition) 2021 IRC / IECC 2021	
Section: TABLE R1102.1.2 (R402.1.2) / TABLE N1102.1.3 (R402.1.3)	
Section Title: MAXIMUM ASSEMBLY U-FACTORS a AND FENESTRATION REQUIREMENTS / INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT	

AMENDMENT: R-Value / U Factor Corrections

Type proposed amendment in rule change form. (Using strikeout on portions being removed and underline on all new wording.)

1. Include the entire section you wish to amend.
2. Attach additional sheets if necessary.

See attached sheet with modifications to tables for Climate Zones 3, 5 and 6.

Purpose of or Reason for the amendment:

See attached Explanation Sheets referenced in proposed changes (i.e. NAHB E4) for detailed reasons and explanations, along with cost and payback data. However, in short, payback periods of 24 - 122 years are not reasonable investments to force on Utah families when purchasing a home.

Cost or Savings Impact of Amendment:

Ref #	Brief Description	Cost	Payback if Implemented
E3	Ceiling Insulation CZ3	$1,366	122 years
E4	Ceiling Insulation CZ5	$1,366	118 years
E4	Ceiling Insulation CZ6	$1,366	105 years
E19	Wall Insulation CZ3	$1,199	24 years
E1	Wall Insulation CZ5	$4,970	78 years
E20	Wall Insulation CZ6	$1,819	55 years
E18	Basement Wall CZ5	$590	84 years
E2	Slab Insulation CZ3	$1,988	23 years
E2	Slab Insulation CZ5	$993	28 years

See attached sheets labelled with Ref # at Left for detailed cost and back data for each proposed change.

Compliance Costs for Affected Persons (APerson@ means any individual, partnership, corporation, association, governmental entity, or public or private organization of any character other than an agency.) (You must break out the impact cost to State Budget, Local Government and you must state aggregate cost to other persons {cost per person times number of persons affected}):

None

Signature:	Date:

For Division Use:

Date Received:

Committee Action:	**UBC Commission Decision for Hearing:**
☐ Approved ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled	☐ Approved for hearing ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled
Date Filed:	Public Hearing Date:
UBC Commission Decision for Adoption: ☐ Approved ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled	Effective Date:

TABLE R1102.1.2 (R402.1.2)
MAXIMUM ASSEMBLY *U*-FACTORS [a] AND FENESTRATION REQUIREMENTS

CLIMATE ZONE	FENESTRATION U-FACTOR [f]	SKYLIGHT U-FACTOR	GLAZED FENESTRATION SHGC [d,e]	CEILING U-FACTOR	WOOD FRAME WALL U-FACTOR	MASS WALL U-FACTOR [b]	FLOOR U-FACTOR	BASEMENT WALL U-FACTOR	CRAWL SPACE WALL U-FACTOR
3	0.30	0.55	0.25	NAHBE2 0.030 ~~0.026~~	NAHBE19 ~~0.060~~ 0.084	0.098	0.047	0.091 [c]	0.136
5 and Marine 4	0.30	0.55	NR	NAHBE4 0.026 ~~0.024~~	NAHBE1 ~~0.045~~ 0.060	0.082	0.033	NAHBE18 ~~0.050~~ 0.059	0.055
6	0.30	0.55	NR	NAHBE4 0.026 ~~0.024~~	NAHBE20 ~~0.045~~ 0.060	0.060	0.033	0.050	0.055

TABLE N1102.1.3 (R402.1.3)
INSULATION MINIMUM *R*-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT [a]

CLIMATE ZONE	FENESTRATION U-FACTOR [b,i]	SKYLIGHT [b] U-FACTOR	GLAZED FENESTRATION SHGC [b,e]	CEILING R-VALUE	WOOD FRAME WALL *R*-VALUE [g]	MASS WALL *R*-VALUE [h]	FLOOR R-VALUE	BASEMENT [c,g] WALL R-VALUE	SLAB [d] R-VALUE & DEPTH	CRAWL SPACE [c, g] WALL R-VALUE
3	0.30	0.55	0.25	NAHBE3 ~~49~~ 38	NAHBE19 ~~20 + 5 or 13 + 5 10ci~~ ~~0 + 15~~	8/13	19	5 ci or 13 [f]	NAHBE2 ~~10ci, 2 ft~~ 0	5 ci or 13 [f]
5 & Marine 4	0.30 [i]	0.55	0.40	NAHBE4 ~~60~~ 49	NAHBE1 20 ~~+ 5~~ or 13 + 5 ~~10~~ci ~~0 + 15~~	13/17	30	NAHBE18 10 ci or 13 ~~15ci or 19 or 13 + 5ci~~	NAHBE2 ~~10ci, 4 ft~~ 10ci, 2 ft	15ci or 19 or 13 + 5ci
6	0.30 [i]	0.55	NR	NAHBE4 ~~60~~ 49	NAHBE20 20 ~~+ 5~~ or 13 + 5 ~~10~~ci or 0 + 15 ~~20~~	15/20	30	15ci or 19 or 13 + 5ci	10ci, 4 ft	15ci or 19 or 13 + 5ci

Summary of Costs and Payback. See attached Explanation sheets with corresponding Ref # for full details.

Ref #	Brief Description	Cost	Payback if Implemented
E3	Ceiling Insulation CZ3	$ 1,366	122 years
E4	Ceiling Insulation CZ5	$ 1,366	118 years
E4	Ceiling Insulation CZ6	$ 1,366	105 years
E19	Wall Insulation CZ3	$ 1,199	24 years
E1	Wall Insulation CZ5	$ 4,970	78 years
E20	Wall Insulation CZ6	$ 1,819	55 years
E18	Basement Wall CZ5	$ 590	84 years
E2	Slab Insulation CZ3	$ 1,988	23 years
E2	Slab Insulation CZ5	$ 993	28 years

R24 or R13+7ci or R19+5ci or R0+20ci

E1. Wall R-Value/U-Factor Corrections (Climate Zones 4 & 5)

This amendment modifies the prescriptive wall insulation levels for above-grade framed walls from R-20+5 to R-20 and R-13+10 to R-13+5. It restores prescriptive options for walls with cavity-only insulation.

Revise as follows:

R402.1.2 Insulation and fenestration criteria. The building thermal envelope shall meet the requirements of Table R402.1.2, based on the climate zone specified in Chapter 3. Assemblies shall have a U-factor equal to or less than that specified in Table R402.1.2. Fenestration shall have a U-Factor and glazed fenestration SHGC equal to or less than that specified in Table R402.1.2.

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 in Table R402.1.2.

TABLE R402.1.2

MAXIMUM ASSEMBLY *U*-FACTORS[a] AND FENESTRATION REQUIREMENTS

CLIMATE ZONE	FENESTRATION *U*-FACTOR[f]	SKYLIGHT *U*-FACTOR	GLAZED FENESTRATION SHGC[d, e]	CEILING *U*-FACTOR	WOOD FRAME WALL *U*-FACTOR	MASS WALL *U*-FACTOR[b]	FLOOR *U*-FACTOR	BASEMENT WALL *U*-FACTOR	CRAWL SPACE WALL *U*-FACTOR
0	0.50	0.75	0.25	0.035	0.084	0.197	0.064	0.360	0.477
1	0.50	0.75	0.25	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.25	0.026	0.084	0.165	0.064	0.360	0.477
3	0.30	0.55	0.25	0.026	0.060	0.098	0.047	0.091[c]	0.136
4 except Marine	0.30	0.55	0.40	0.024	0.060 ~~0.045~~	0.098	0.047	0.059	0.065
5 and Marine 4	0.30	0.55	0.40	0.024	0.060 ~~0.045~~	0.082	0.033	0.050	0.055
6	0.30	0.55	NR	0.024	0.045	0.060	0.033	0.050	0.055
7 and 8	0.30	0.55	NR	0.024	0.045	0.057	0.028	0.050	0.055

Footnotes remain unchanged

TABLE R402.1.3

INSULATION MINIMUM *R*-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b, i]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b, e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE[g]	MASS WALL *R*-VALUE[h]	FLOOR *R*-VALUE	BASEMENT[c, g] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c, g] WALL *R*-VALUE
0	NR	0.75	0.25	30	13 or 0&10ci	3/4	13	0	0	0
1	NR	0.75	0.25	30	13 or 0&10ci	3/4	13	0	0	0
2	0.40	0.65	0.25	49	13 or 0&10ci	4/6	13	0	0	0
3	.30	0.55	0.25	49	20 or 13&5ci[h] or 0 & 15ci[h]	8/13	19	5ci or 13[f]	10ci, 2 ft	5ci or 13[f]

4 except Marine	.30	0.55	0.40	60	~~30 or~~ 20~~&5ci~~[h] or 13&~~5ci~~~~10~~[h] or ~~0 & 20ci~~[h]	8/13	19	10ci or 13	10ci, 4 ft	10ci or 13
5 and Marine 4	0.30[i]	0.55	0.40	60	~~30 or~~ 20~~&5ci~~[h] or 13&~~5ci~~~~10~~[h] or ~~0 & 20ci~~[h]	13/17	30	15ci or 19 or 13 & 5ci	10ci, 4 ft	15ci or 19 or 13 &5ci
6	0.30[i]	0.55	NR	60	30 or 20&5ci[h] or 13&10ci[h] or 0 & 20ci[h]	15/20	30	15ci or 19 or 13 & 5ci	10ci, 4 ft	15ci or 19 or 13 &5ci
7 and 8	0.30[i]	0.55	NR	60	30 or 20&5ci[h] or 13&10ci[h] or 0 & 20ci[h]	19/21	38	15ci or 19 or 13 & 5ci	10ci, 4 ft	15ci or 19 or 13 &5ci

Footnotes remain unchanged

Reason:

This amendment restores wall insulation values to the 2018 IECC. The requirement for added levels of continuous insulation is onerous and unjustified for the following reasons:

- It has a small impact on the energy use. Removing this requirement from the code will change energy use only by **$4.0** per month on average in **CZ 4** and **$5.3** per month on average in **CZ 5** for a 2,600 square foot single-family house.
- The added cost to consumer of constructing wall assemblies with exterior insulation is $4,970.
- Simple payback for the added level of insulation relative to the 2018 code is **103 years in CZ 4 and 78 years in CZ 5.**
- It leads to onerous installation requirements for cladding and fenestration over thick foam sheathing that are not commensurate with the small energy savings.
- Installing vinyl cladding directly over a thick layer of foam leads to challenges with ensuring that the nails are embedded into the framing and can impact resilience of the building during high wind events.
- The use of 20+5 assemblies limits interior vapor retarder options. Approved design is required for walls that use a Class I vapor retarder (e.g. sheet polyethylene).
- The net present value of the added continuous insulation over a 40-year useful life is negative – it costs much more than it saves over a 40-year period.
- The added continuous insulation results in a negative cash flow for the consumer throughout a 30-year mortgage – the consumer's total payment for the mortgage and energy bill is higher every month.

Return to Summary Table

E2. Slab Edge R-Value Correction (Climate Zones 3, 4 & 5)

This amendment restores the requirement for slab edge insulation in Climate Zones 3, 4, and 5.

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 in Table R402.1.2.

TABLE R402.1.3

INSULATION MINIMUM *R*-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b,j]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE[g]	MASS WALL *R*-VALUE[h]	FLOOR *R*-VALUE	BASEMENT[c,g] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c,g] WALL *R*-VALUE
0	NR	0.75	0.25	30	13 or 0&10ci	3/4	13	0	0	0
1	NR	0.75	0.25	30	13 or 0&10ci	3/4	13	0	0	0
2	0.40	0.65	0.25	49	13 or 0&10ci	4/6	13	0	0	0
3	.30	0.55	0.25	49	20 or 13&5ci[h] or 0 & 15ci[h]	8/13	19	5ci or 13[f]	~~10ci, 2 ft~~ 0	5ci or 13[f]
4 except Marine	.30	0.55	0.40	60	30 or 20& 5ci[h] or 13& 10ci[h] or 0& 20ci[h]	8/13	19	10ci or 13	~~10ci, 4 ft~~ 10ci, 2 ft	10ci or 13
5 and Marine 4	0.30[i]	0.55	0.40	60	30 or 20& 5ci[h] or 13& 10ci[h] or 0& 20ci[h]	13/17	30	15ci or 19 or 13 & 5ci	~~10ci, 4 ft~~ 10ci, 2 ft	15ci or 19 or 13 &5ci
6	0.30[i]	0.55	NR	60	30 or 20& 5ci[h] or 13& 10ci[h] or 0& 20ci[h]	15/20	30	15ci or 19 or 13 & 5ci	10ci, 4 ft	15ci or 19 or 13 &5ci
7 and 8	0.30[i]	0.55	NR	60	30 or 20& 5ci[h] or 13& 10ci[h] or 0& 20ci[h]	19/21	38	15ci or 19 or 13 & 5ci	10ci, 4 ft	15ci or 19 or 13 &5ci

Footnotes remain unchanged

Reason:

This amendment restores wall insulation values to the 2018 IECC. The requirement for added levels of slab insulation is onerous and unjustified for the following reasons:

- It has a small impact on the energy use: **$7.3 per month on average in CZ 3** and **$3.0 in CZ 4 & 5** for a 2,600 square foot single-family house.
- The added costs to consumer of installing slab insulation is $1,988 in CZ3 and $993 in CZ 4 & 5.
- This corresponds to a simple payback **of 23 years in CZ 3** and **28 years in CZ 4 & 5.**
- Large parts of CZ 3 overlap with the area with very heavy termite infestation probability in the states of South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas (refer to Figure R318.4 in 2021 IRC). The decision to add slab insulation in CZ 3 should be made by the building designer based on several factors and should not be a requirement. The remainder of CZ 3, all of CZ 4, and part of CZ 5 are designated as moderate to heavy probability of termite infestation.

- The net present value of the added continuous insulation over a 40-year useful life is negative – it costs much more than it saves over a 40-year period.
- The added continuous insulation results in a negative cash flow for the consumer throughout 30-year mortgage – the consumer's total payment for the mortgage and energy bill is higher every month.

Return to Summary Table

E3. Attic R-Value/U-Factor Corrections (Climate Zones 2 & 3)

This amendment restores the prescriptive attic insulation levels from R-49 to R-38.

Revise as follows:

R402.1.2 Insulation and fenestration criteria. The building thermal envelope shall meet the requirements of Table R402.1.2, based on the climate zone specified in Chapter 3. Assemblies shall have a U-factor equal to or less than that specified in Table R402.1.2. Fenestration shall have a U-Factor and glazed fenestration SHGC equal to or less than that specified in Table R402.1.2.

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 in Table R402.1.2.

TABLE R402.1.2

MAXIMUM ASSEMBLY *U*-FACTORS[a] AND FENESTRATION REQUIREMENTS

CLIMATE ZONE	FENESTRATION *U*-FACTOR[f]	SKYLIGHT *U*-FACTOR	GLAZED FENESTRATION SHGC[d, e]	CEILING *U*-FACTOR	WOOD FRAME WALL *U*-FACTOR	MASS WALL *U*-FACTOR[b]	FLOOR *U*-FACTOR	BASEMENT WALL *U*-FACTOR	CRAWL SPACE WALL *U*-FACTOR
0	0.50	0.75	0.25	0.035	0.084	0.197	0.064	0.360	0.477
1	0.50	0.75	0.25	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.25	0.030 ~~0.026~~	0.084	0.165	0.064	0.360	0.477
3	0.30	0.55	0.25	0.030 ~~0.026~~	0.060	0.098	0.047	0.091[c]	0.136
4 except Marine	0.30	0.55	0.40	0.024	0.045	0.098	0.047	0.059	0.065
5 and Marine 4	0.30	0.55	0.40	0.024	0.045	0.082	0.033	0.050	0.055
6	0.30	0.55	NR	0.024	0.045	0.060	0.033	0.050	0.055
7 and 8	0.30	0.55	NR	0.024	0.045	0.057	0.028	0.050	0.055

Footnotes remain unchanged

TABLE R402.1.3

INSULATION MINIMUM *R*-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b, i]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b, e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE[g]	MASS WALL *R*-VALUE[h]	FLOOR *R*-VALUE	BASEMENT[c, g] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c, g] WALL *R*-VALUE
0	NR	0.75	0.25	30	13 or 0&10ci	3/4	13	0	0	0
1	NR	0.75	0.25	30	13 or 0&10ci	3/4	13	0	0	0
2	0.40	0.65	0.25	38 ~~49~~	13 or 0&10ci	4/6	13	0	0	0
3	.30	0.55	0.25	38 ~~49~~	20 or 13&5ci[h] or 0 & 15ci[h]	8/13	19	5ci or 13[f]	10ci, 2 ft	5ci or 13[f]

4 except Marine	.30	0.55	0.40	60	30 or 20& 5ci[h] or 13& 10ci[h] or 0& 20ci[h]	8/13	19	10ci or 13	10ci, 4 ft	10ci or 13
5 and Marine 4	0.30[i]	0.55	0.40	60	30 or 20& 5ci[h] or 13& 10ci[h] or 0& 20ci[h]	13/17	30	15ci or 19 or 13 & 5ci	10ci, 4 ft	15ci or 19 or 13 &5ci
6	0.30[i]	0.55	NR	60	30 or 20& 5ci[h] or 13& 10ci[h] or 0& 20ci[h]	15/20	30	15ci or 19 or 13 & 5ci	10ci, 4 ft	15ci or 19 or 13 &5ci
7 and 8	0.30[i]	0.55	NR	60	30 or 20& 5ci[h] or 13& 10ci[h] or 0& 20ci[h]	19/21	38	15ci or 19 or 13 & 5ci	10ci, 4 ft	15ci or 19 or 13 &5ci

Footnotes remain unchanged

Reason:
This amendment restores attic insulation values to the 2018 IECC. The requirement for R49 is onerous and unjustified for the following reasons:

- It has a negligible impact on the energy use: **$0.67 per month on average in CZ 2** and **$0.92 per month on average in CZ 3** for a 2,600 square foot single-family house.
- The added costs to consumer of installing ceiling insulation is $1,366.
- This corresponds to a simple payback of **177 years in CZ 2** and **122 years in CZ 3.**
- Vaulted or cathedralized ceiling are very problematic when trying to achieve R- 49, which is about 16 inches thick. This would require a rafter at least 17" tall (which does not exist) or a prefabricated insulated panel (which represents a very small portion of the market). Developing an engineered solution for vaulted or cathedral ceilings would add substantial costs and that would make paybacks even longer.
- The net present value of the added continuous insulation over a 40-year useful life is negative – it costs much more than it saves over a 40-year period.
- The added continuous insulation results in a negative cash flow for the consumer throughout the 30-year mortgage – the consumer's total payment for the mortgage and energy bill is higher every month.

Return to Summary Table

E4. Attic R-Value/U-Factor Corrections (Climate Zones 4-8)

This amendment restores the prescriptive attic insulation levels from R-60 to R-49.

Revise as follows:

R402.1.2 Insulation and fenestration criteria. The building thermal envelope shall meet the requirements of Table R402.1.2, based on the climate zone specified in Chapter 3. Assemblies shall have a U-factor equal to or less than that specified in Table R402.1.2. Fenestration shall have a U-Factor and glazed fenestration SHGC equal to or less than that specified in Table R402.1.2.

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 in Table R402.1.2.

TABLE R402.1.2

MAXIMUM ASSEMBLY *U*-FACTORS[a] AND FENESTRATION REQUIREMENTS

CLIMATE ZONE	FENESTRATION *U*-FACTOR[f]	SKYLIGHT *U*-FACTOR	GLAZED FENESTRATION SHGC[d, e]	CEILING *U*-FACTOR	WOOD FRAME WALL *U*-FACTOR	MASS WALL *U*-FACTOR[b]	FLOOR *U*-FACTOR	BASEMENT WALL *U*-FACTOR	CRAWL SPACE WALL *U*-FACTOR
0	0.50	0.75	0.25	0.035	0.084	0.197	0.064	0.360	0.477
1	0.50	0.75	0.25	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.25	0.026	0.084	0.165	0.064	0.360	0.477
3	0.30	0.55	0.25	0.026	0.060	0.098	0.047	0.091[c]	0.136
4 except Marine	0.30	0.55	0.40	0.026 ~~0.024~~	0.045	0.098	0.047	0.059	0.065
5 and Marine 4	0.30	0.55	0.40	0.026 ~~0.024~~	0.045	0.082	0.033	0.050	0.055
6	0.30	0.55	NR	0.026 ~~0.024~~	0.045	0.060	0.033	0.050	0.055
7 and 8	0.30	0.55	NR	0.026 ~~0.024~~	0.045	0.057	0.028	0.050	0.055

Footnotes remain unchanged

TABLE R402.1.3

INSULATION MINIMUM *R*-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b, i]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b, e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE[g]	MASS WALL *R*-VALUE[h]	FLOOR *R*-VALUE	BASEMENT[c, g] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c, g] WALL *R*-VALUE
0	NR	0.75	0.25	30	13 or 0&10ci	3/4	13	0	0	0
1	NR	0.75	0.25	30	13 or 0&10ci	3/4	13	0	0	0
2	0.40	0.65	0.25	49	13 or 0&10ci	4/6	13	0	0	0
3	.30	0.55	0.25	49	20 or 13&5ci[h] or 0 & 15ci[h]	8/13	19	5ci or 13[f]	10ci, 2 ft	5ci or 13[f]

4 except Marine	.30	0.55	0.40	49 ~~60~~	30 or 20& 5ci[h] or 13& 10ci[h]or 0& 20ci[h]	8/13	19	10ci or 13	10ci, 4 ft	10ci or 13
5 and Marine 4	0.30[i]	0.55	0.40	49 ~~60~~	30 or 20& 5ci[h] or 13& 10ci[h]or 0& 20ci[h]	13/17	30	15ci or 19 or 13 & 5ci	10ci, 4 ft	15ci or 19 or 13 &5ci
6	0.30[i]	0.55	NR	49 ~~60~~	30 or 20& 5ci[h] or 13& 10ci[h]or 0& 20ci[h]	15/20	30	15ci or 19 or 13 & 5ci	10ci, 4 ft	15ci or 19 or 13 &5ci
7 and 8	0.30[i]	0.55	NR	49 ~~60~~	30 or 20& 5ci[h] or 13& 10ci[h]or 0& 20ci[h]	19/21	38	15ci or 19 or 13 & 5ci	10ci, 4 ft	15ci or 19 or 13 &5ci

Footnotes remain unchanged

Reason:

This amendment restores attic insulation values to the 2018 IECC. The requirement for R60 is onerous and unjustified for the following reasons:

- It has a negligible impact on the annual energy use and unreasonable paybacks:

Climate Zone (CZ)	Average Monthly Savings	Simple Payback
CZ 4	$0.75 per month	152 years
CZ 5	$1.0 per month	118 years
CZ 6	$1.0 per month	105 years
CZ 7	$1.25 per month	90 years

- The added costs to consumer of installing ceiling insulation is $1,366.
- Higher levels of insulation are more challenging to implement in practice because the rafters or top chords limit the amount of insulation that can be placed around the perimeter, reducing the overall effectiveness of the requirement. This is particularly an issue in homes with smaller footprints or more complex roof configurations (hip roofs, dormers, etc.) where the perimeter attic insulation is a larger portion of the overall attic insulation.
- Vaulted or cathedral ceilings are very problematic when trying to achieve R-60, which is about 20 inches thick. This would require a rafter at least 21" tall (which does not exist) or a prefabricated insulated panel (which represents a very small portion of the market). Developing an engineered solution for vaulted or cathedral ceilings would add substantial costs and that would make paybacks even longer.
- The net present value of the added continuous insulation over a 40-year useful life is negative – it costs much more than it saves over a 40-year period.
- The added continuous insulation results in a negative cash flow for the consumer throughout the 30-year mortgage – the consumer's total payment for the mortgage and energy bill is higher every month.

Return to Summary Table

E18. Basement Wall R-Value/U-Factors Correction (Climate Zone 5)

This amendment reduces the basement wall insulation value requirements in Climate Zone 5, to a more reasonable R-Value/U-Factor based on cost-effectiveness criteria.

Revise as follows:

TABLE R402.1.2

MAXIMUM ASSEMBLY *U*-FACTORS[a] AND FENESTRATION REQUIREMENTS

CLIMATE ZONE	FENESTRATION *U*-FACTOR[f]	SKYLIGHT *U*-FACTOR	GLAZED FENESTRATION SHGC[d, e]	CEILING *U*-FACTOR	WOOD FRAME WALL *U*-FACTOR	MASS WALL *U*-FACTOR[b]	FLOOR *U*-FACTOR	BASEMENT WALL *U*-FACTOR	CRAWL SPACE WALL *U*-FACTOR
0	0.50	0.75	0.25	0.035	0.084	0.197	0.064	0.360	0.477
1	0.50	0.75	0.25	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.25	0.026	0.084	0.165	0.064	0.360	0.477
3	0.30	0.55	0.25	0.026	0.060	0.098	0.047	0.091[c]	0.136
4 except Marine	0.30	0.55	0.40	0.024	0.045	0.098	0.047	0.059	0.065
5 and Marine 4	0.30	0.55	NR	0.024	0.045	0.082	0.033	<u>0.059</u> ~~0.050~~	0.055
6	0.30	0.55	NR	0.024	0.045	0.060	0.033	0.050	0.055
7 and 8	0.30	0.55	NR	0.024	0.045	0.057	0.028	0.050	0.055

Footnotes remain unchanged

TABLE R402.1.3

INSULATION MINIMUM *R*-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b, i]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b, e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE[g]	MASS WALL *R*-VALUE[h]	FLOOR *R*-VALUE	BASEMENT[c, g] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c, g] WALL *R*-VALUE
0	NR	0.75	0.25	30	13 or 0 + 10	3/4	13	0	0	0
1	NR	0.75	0.25	30	13 or 0 + 10	3/4	13	0	0	0
2	0.40	0.65	0.25	49	13 or 0 + 10	4/6	13	0	0	0
3	.30	0.55	0.25	49	20 or 13 + 5ci or 0 + 15	8/13	19	5ci or 13[f]	10ci, 2 ft	5ci or 13[f]
4 except Marine	.30	0.55	0.40	60	20 + 5 or 13 + 10ci or 0 + 15	8/13	19	10ci or 13	10ci, 4 ft	10ci or 13
5 and Marine 4	0.30[i]	0.55	0.40	60	20 + 5 or 13 + 10ci or 0 + 15	13/17	30	<u>10ci or 13</u> ~~15ci or 19 or 13 + 5ci~~	10ci, 4 ft	15ci or 19 or 13 + 5ci
6	0.30[i]	0.55	NR	60	20 + 5ci or 13 + 10ci or 0 + 20	15/20	30	15ci or 19 or 13 + 5ci	10ci, 4 ft	15ci or 19 or 13 + 5ci
7 and 8	0.30[i]	0.55	NR	60	20 + 5ci or 13 + 10ci or 0 + 20	19/21	38	15ci or 19 or 13 + 5ci	10ci, 4 ft	15ci or 19 or 13 + 5ci

Footnotes remain unchanged

Reason:

The prescriptive basement wall requirement increased from R-10 to R-15 in the 2012 IECC. Calculations used to justify the change were based on energy models with less sophisticated algorithms than Energy Plus, now DOE's preferred modeling software. When using Energy Plus, the energy savings in a 700-square-foot basement totaled $7 a year in Chicago (Climate Zone 5). The additional cost for this is conservatively estimated at $590. This makes the simple payback in excess of 84 years.

Climate Zone	Representative City	Basement Wall R-Value Change	Energy Savings	Incremental Cost	Simple Payback
5	Chicago, IL	R-10->R-15	$7/yr	$590 ($0.82/ft2)	84 years

The energy modeling was done using the Energy Plus simulation engine and BEopt version 1.4, Cost figures came from ASHRAE RP-1481.

Return to Summary Table

E19. Wall R-Value/U-Factors Corrections (Climate Zone 3)

This amendment reinstates the appropriate minimum wall assembly R-Values/U-Factors in climate zone 3.

Revise as follows:

TABLE R402.1.2

MAXIMUM ASSEMBLY *U*-FACTORS[a] AND FENESTRATION REQUIREMENTS

CLIMATE ZONE	FENESTRATION *U*-FACTOR[f]	SKYLIGHT *U*-FACTOR	GLAZED FENESTRATION SHGC[d, e]	CEILING *U*-FACTOR	WOOD FRAME WALL *U*-FACTOR	MASS WALL *U*-FACTOR[b]	FLOOR *U*-FACTOR	BASEMENT WALL *U*-FACTOR	CRAWL SPACE WALL *U*-FACTOR
0	0.50	0.75	0.25	0.035	0.084	0.197	0.064	0.360	0.477
1	0.50	0.75	0.25	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.25	0.026	0.084	0.165	0.064	0.360	0.477
3	0.30	0.55	0.25	0.026	0.084 ~~0.060~~	0.098	0.047	0.091[c]	0.136
4 except Marine	0.30	0.55	0.40	0.024	0.045	0.098	0.047	0.059	0.065
5 and Marine 4	0.30	0.55	NR	0.024	0.045	0.082	0.033	0.050	0.055
6	0.30	0.55	NR	0.024	0.045	0.060	0.033	0.050	0.055
7 and 8	0.30	0.55	NR	0.024	0.045	0.057	0.028	0.050	0.055

Footnotes remain unchanged

TABLE R402.1.3

INSULATION MINIMUM *R*-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b, i]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b, e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE[e]	MASS WALL *R*-VALUE[h]	FLOOR *R*-VALUE	BASEMENT[c, g] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c, g] WALL *R*-VALUE
0	NR	0.75	0.25	30	13 or 0 + 10	3/4	13	0	0	0
1	NR	0.75	0.25	30	13 or 0 + 10	3/4	13	0	0	0
2	0.40	0.65	0.25	49	13 or 0 + 10	4/6	13	0	0	0
3	.30	0.55	0.25	49	~~20 or~~ 13 ~~+ 5ci or 0 + 15~~	8/13	19	5ci or 13[f]	10ci, 2 ft	5ci or 13[f]
4 except Marine	.30	0.55	0.40	60	20 + 5 or 13 + 10ci or 0 + 15	8/13	19	10ci or 13	10ci, 4 ft	10ci or 13
5 and Marine 4	0.30[i]	0.55	0.40	60	20 + 5 or 13 + 10ci or 0 + 15	13/17	30	15ci or 19 or 13 + 5ci	10ci, 4 ft	15ci or 19 or 13 + 5ci
6	0.30[i]	0.55	NR	60	20 + 5ci or 13 + 10ci or 0 + 20	15/20	30	15ci or 19 or 13 + 5ci	10ci, 4 ft	15ci or 19 or 13 + 5ci
7 and 8	0.30[i]	0.55	NR	60	20 + 5ci or 13 + 10ci or 0 + 20	19/21	38	15ci or 19 or 13 + 5ci	10ci, 4 ft	15ci or 19 or 13 + 5ci

Footnotes remain unchanged

Reason:
Frame wall requirements of R-20 in Climate Zone 3 is not cost effective for the consumer.

Climate Zone	Representative City	Wall R-Value Change	Energy Savings	Incremental Cost	Simple Payback
3	Atlanta, GA	R-13->R-20	$50/yr	$1,199	24 years

The energy modeling was done using the Energy Plus simulation engine and BEopt version 1.4, Cost figures came from ASHRAE RP-1481. Not only is the payback extremely long, but for a consumer, there would be a negative cash flow based on the incremental cost and energy savings. The increase in the monthly mortgage would be $6.43 (@ 5%) and the average monthly energy savings would be $4.17 in Zone 3 causing the homeowner to pay more in additional monthly mortgage payments than the energy savings returns.

Return to Summary Table

E20. Wall R-Value/U-Factors Corrections (Climate Zones 6-8)

This amendment reinstates the appropriate minimum wall assembly R-Values/U-Factors in climate zone 6 based on cost effectiveness. This change is complementary to amendment E1.

Revise as follows:

TABLE R402.1.2

MAXIMUM ASSEMBLY *U*-FACTORS[a] AND FENESTRATION REQUIREMENTS

CLIMATE ZONE	FENESTRATION *U*-FACTOR[f]	SKYLIGHT *U*-FACTOR	GLAZED FENESTRATION SHGC[d, e]	CEILING *U*-FACTOR	WOOD FRAME WALL *U*-FACTOR	MASS WALL *U*-FACTOR[b]	FLOOR *U*-FACTOR	BASEMENT WALL *U*-FACTOR	CRAWL SPACE WALL *U*-FACTOR
0	0.50	0.75	0.25	0.035	0.084	0.197	0.064	0.360	0.477
1	0.50	0.75	0.25	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.25	0.026	0.084	0.165	0.064	0.360	0.477
3	0.30	0.55	0.25	0.026	0.060	0.098	0.047	0.091[c]	0.136
4 except Marine	0.30	0.55	0.40	0.024	0.045	0.098	0.047	0.059	0.065
5 and Marine 4	0.30	0.55	NR	0.024	0.045	0.082	0.033	0.050	0.055
6	0.30	0.55	NR	0.024	0.060 ~~0.045~~	0.060	0.033	0.050	0.055
7 and 8	0.30	0.55	NR	0.024	0.045	0.057	0.028	0.050	0.055

Footnotes remain unchanged

TABLE R402.1.3

INSULATION MINIMUM *R*-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b, i]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b, e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE[g]	MASS WALL *R*-VALUE[h]	FLOOR *R*-VALUE	BASEMENT[c, g] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c, g] WALL *R*-VALUE
0	NR	0.75	0.25	30	13 or 0 + 10	3/4	13	0	0	0
1	NR	0.75	0.25	30	13 or 0 + 10	3/4	13	0	0	0
2	0.40	0.65	0.25	49	13 or 0 + 10	4/6	13	0	0	0
3	.30	0.55	0.25	49	20 or 13 + 5ci or 0 + 15	8/13	19	5ci or 13[f]	10ci, 2 ft	5ci or 13[f]
4 except Marine	.30	0.55	0.40	60	20 + 5 or 13 + 10ci or 0 + 15	8/13	19	10ci or 13	10ci, 4 ft	10ci or 13
5 and Marine 4	0.30[j]	0.55	0.40	60	20 + 5 or 13 + 10ci or 0 + 15	13/17	30	15ci or 19 or 13 + 5ci	10ci, 4 ft	15ci or 19 or 13 + 5ci
6	0.30[j]	0.55	NR	60	20 ~~+ 5ci~~ or 13 + ~~5~~10ci or 0 + ~~15~~20	15/20	30	15ci or 19 or 13 + 5ci	10ci, 4 ft	15ci or 19 or 13 + 5ci
7 and 8	0.30[j]	0.55	NR	60	20 + 5ci or 13 + 10ci or 0 + 20	19/21	38	15ci or 19 or 13 + 5ci	10ci, 4 ft	15ci or 19 or 13 + 5ci

Footnotes remain unchanged

Reason:
The prescriptive wall requirement of R-20+R5 in climate zones 6 is not cost effective to the consumer. The additional cost for this is estimated at $1,819 for 1,016 square feet of wall. This makes the simple payback between of 55 years. This also will create a negative cash flow for the consumer in all cases.

Climate Zone	Representative City	Basement Wall R-Value Change	Energy Savings	Incremental Cost	Simple Payback
6	Minneapolis, MN	R-20->R-20+5	- $33/yr	$1,819 ($1.79/ft2)	55 years

The energy modeling was done using the Energy Plus simulation engine and BEopt version 1.4. Cost figures came from ASHRAE RP-1481.

Return to Summary Table

UTAH DEPARTMENT OF COMMERCE
DIVISION OF OCCUPATIONAL AND PROFESSIONAL LICENSING
160 East 300 South Salt Lake City UT 84111
PO Box 146741 Salt Lake City UT 84114-6741
E-mail: b8@utah.gov
Web: www.dopl.utah.gov

REQUEST FOR CODE AMENDMENT

Requesting Agency/Person: Utah State HBA	Date: 1/24/2021
Street Address: 38 West 13775 South	
City, State, Zip Draper, UT 84020	
Contact Person: Ross Ford	Phone: 801-352-8266
Code to be Amended: (Include edition) 2021 IRC / IECC 2021	
Section: N1102.2.1 (R402.2.1) / N1102.3.3 (R402.3.3) / N1102.3.4 (R402.3.4) Opaque door exemption	
Section Title: Ceilings with attic spaces / Glazed fenestration exemption / Opaque door exemption	

AMENDMENT: UA alternative exemptions reinstated

Type proposed amendment in rule change form. (Using strikeout on portions being removed and underline on all new wording.)

1. Include the entire section you wish to amend.
2. Attach additional sheets if necessary.

See attached

Purpose of or Reason for the amendment: These three sections penalize those using the Total UA alternative when determining which U values or R values can be used for a particular component without justification of reason.
Cost or Savings Impact of Amendment: Adopting these changes will never add costs to the home. In some cases, it will save money by not requiring additional upgrades be made for those using the UA alternative.
Compliance Costs for Affected Persons (APerson@ means any individual, partnership, corporation, association, governmental entity, or public or private organization of any character other than an agency.) (You must break out the impact cost to State Budget, Local Government and you must state aggregate cost to other persons {cost per person times number of persons affected}): None

Signature:	Date:

For Division Use:

Date Received:	
Committee Action: ☐ Approved ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled	**UBC Commission Decision for Hearing:** ☐ Approved for hearing ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled
Date Filed:	Public Hearing Date:
UBC Commission Decision for Adoption: ☐ Approved ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled	Effective Date:

N1102.2.1 (R402.2.1) Ceilings with attic spaces. Where Section N1102.1.3 requires R-49 insulation in the ceiling or attic, installing R-38 insulation over 100 percent of the ceiling or attic area requiring insulation shall satisfy the requirement for R-49 insulation wherever the full height of uncompressed R-38 insulation extends over the w top plate at the eaves. Where Section N1102.1.2 requires R-60 insulation in the ceiling, installing R-49 over 100 percent of the ceiling area requiring insulation shall satisfy the requirement for R-60 insulation wherever the full height of uncompressed R-49 insulation extends over the wall top plate at the eaves. This reduction shall not apply to the insulation and fenestration criteria in Section N1102.1.2 ~~and the Total UA alternative in Section N1102.1.5~~.

N1102.3.3 (R402.3.3) Glazed fenestration exemption. Not greater than 15 square feet (1.4 m2) of glazed fenestration per dwelling unit shall be exempt from the U-factor and SHGC requirements in Section N1102.1.2. ~~This exemption shall not apply to the Total UA alternative in Section N1102.1.5.~~

N1102.3.4 (R402.3.4) Opaque door exemption. One side-hinged opaque door assembly not greater than 24 square feet (2.22 m2) in area shall be exempt from the U-factor requirement in Section N 1102.1.2. ~~This exemption shall not apply to the and the Total UA alternative in Section N1102.1.5~~.

UTAH DEPARTMENT OF COMMERCE
DIVISION OF OCCUPATIONAL AND PROFESSIONAL LICENSING
160 East 300 South Salt Lake City UT 84111
PO Box 146741 Salt Lake City UT 84114-6741
E-mail: b8@utah.gov
Web: www.dopl.utah.gov

REQUEST FOR CODE AMENDMENT

Requesting Agency/Person: Utah State HBA	Date: 1/24/2021
Street Address: 38 West 13775 South	
City, State, Zip Draper, UT 84020	
Contact Person: Ross Ford	Phone: 801-352-8266
Code to be Amended: (Include edition) 2021 IRC / IECC 2021	
Section: N1102.2.9.1 (R402.2.9.1)	
Section Title: Slab-on-grade floor insulation installation	

AMENDMENT: Alternative thermal break at slab

Type proposed amendment in rule change form. (Using strikeout on portions being removed and underline on all new wording.)

1. Include the entire section you wish to amend.
2. Attach additional sheets if necessary.

See attached.

Purpose of or Reason for the amendment:

As written, 45 degree cut insulation creates unstable joint for flooring to attach to floor due to break at slab near triangle edge next to foundation. Proposed alternative provides desired thermal break, without undue compromise to floor support.
See attached drawings

Cost or Savings Impact of Amendment:

Minimal installation cost, if chosen, with significant long term and durability cost savings for floor system. Code still allows for 45 degree installation if desired by builder and homebuyer.

Compliance Costs for Affected Persons (APerson@ means any individual, partnership, corporation, association, governmental entity, or public or private organization of any character other than an agency.) (You must break out the impact cost to State Budget, Local Government and you must state aggregate cost to other persons {cost per person times number of persons affected}):

None

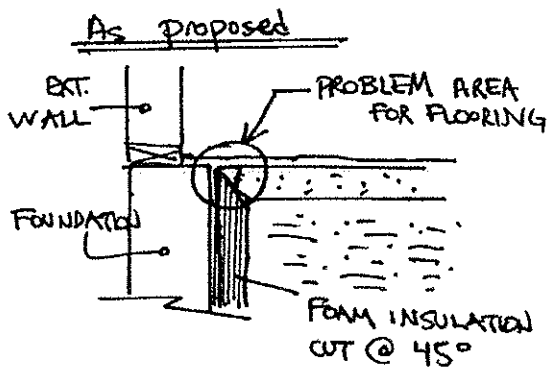
Signature:	Date:

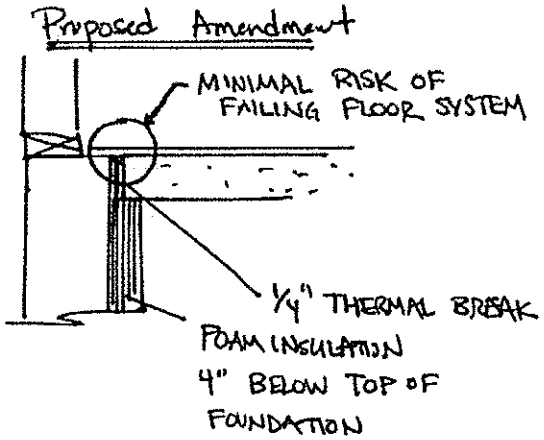
For Division Use:

Date Received:

Committee Action:	**UBC Commission Decision for Hearing:**
☐ Approved ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled	☐ Approved for hearing ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled
Date Filed:	Public Hearing Date:
UBC Commission Decision for Adoption: ☐ Approved ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled	Effective Date:

N1102.2.9.1 (R402.2.9.1) Slab-on-grade floor insulation installation. Where installed, the insulation shall extend downward from the top of the slab on the outside or inside of the foundation wall. Insulation located below grade shall extend the distance provided in Table N1102.1.3 or the distance of the proposed design, as applicable, by any combination of vertical insulation, insulation extending under the slab or insulation extending out from the building. Insulation extending away from the building shall he protected by pavement or by not less than 10 inches (254 mm) of soil. The top edge of the insulation installed between the exterior wall and the edge of the interior slab shall be permitted to be (i) cut at a 45-degree (0.79 rad) angle away from the exterior wall, or (ii) lowered from top of slab 4" when a 4" thermal break material such as felt with a minimum thickness of ¼" is installed at the upper 4" of slab.





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REQUEST FOR CODE AMENDMENT

Requesting Agency/Person: Utah State HBA	Date: 1/24/2021
Street Address: 38 West 13775 South	
City, State, Zip Draper, UT 84020	
Contact Person: Ross Ford	Phone: 801-352-8266
Code to be Amended: (Include edition) 2021 IRC	
Section: TABLE N1102.4.1.1 (R402.4.1.1) / N1102.4.6 (R402.4.6)	
Section Title: AIR BARRIER, AIR SEALING AND INSULATION INSTALLATION / Electrical and communication outlet boxes (air-sealed boxes).	

AMENDMENT: Revise Rim Joist and Electrical Box provisions

Type proposed amendment in rule change form. (Using strikeout on portions being removed and underline on all new wording.)

1. Include the entire section you wish to amend.
2. Attach additional sheets if necessary.

See attached

Purpose of or Reason for the amendment: Refer to E14 attached for discussion on Rim Joist. For the Electrical boxes the benefit does not justify the cost of $369 to consumer price of home.
Cost or Savings Impact of Amendment: The cost of compliance with the electrical outlet box provisions for an average 2600 sf house is estimated to add $369 to the consumer price of the house. When interpreted as intended the Rim Joist change would have no cost/savings impact, however, left as is could lead to costly changes, confusion, or failed inspections.
Compliance Costs for Affected Persons (APerson@ means any individual, partnership, corporation, association, governmental entity, or public or private organization of any character other than an agency.) (You must break out the impact cost to State Budget, Local Government and you must state aggregate cost to other persons {cost per person times number of persons affected}): None

Signature:	Date:

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Date Received:	
Committee Action: ☐ Approved ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled	**UBC Commission Decision for Hearing:** ☐ Approved for hearing ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled
Date Filed:	Public Hearing Date:
UBC Commission Decision for Adoption: ☐ Approved ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled	Effective Date:

TABLE N1102.4.1.1 (R402.4.1.1)
AIR BARRIER, AIR SEALING AND INSULATION INSTALLATION [a]

Rim joists	Rim joists shall include an ~~exterior~~ air barrier[b] ~~The junctions of the rim board to the sill plate and the rim board and the subfloor shall be air sealed.~~	Rim joists shall be insulated so that the insulation maintains permanent contact with the exterior rim board.
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical or communication boxes. Alternatively, caulking or gaskets shall be used. ~~air-sealed boxes shall be installed.~~	-

b. Air barrier and insulation full enclosure is not required in unconditioned/ventilated attic spaces and at rim joists.

~~**N1102.4.6 (R402.4.6) Electrical and communication outlet boxes (air-sealed boxes).** Electrical and communication outlet boxes installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces. Where air-sealed boxes are required by Table N1102.4.1.1, electrical and communication outlet boxes shall comply with all of the following:~~
~~1. be tested in accordance with NEMA OS 4, Requirements for Air-Sealed Boxes or Electrical and Communication Applications, and shall~~
~~2. have an air leakage rate of not greater than 2.0 cubic. per minute (0.944 L/s) at a pressure differential of 1.57 psf (75 Pa). Electrical and communication outlet boxes shall~~
~~3. be marked "NEMA OS 4" or "OS 4" in accordance with NEMA OS 4. Electrical and communication outlet boxes shall~~
~~4. be installed per the manufacturer's instructions and with any supplied components required to achieve compliance with NEMA OS 4.~~

E14. Air Barrier Location at Rim Joist – Clarification of Intent

This amendment clarifies the intent of the provision for an air barrier at the rim joist.

Revise as follows:

TABLE R402.4.1.1

AIR BARRIER, AIR SEALING AND INSULATION INSTALLATION[a]

COMPONENT	AIR BARRIER CRITERIA INSULATION	INSTALLATION CRITERIA
Rim joists	Rim joists shall include an ~~exterior~~ air barrier.[b] ~~The junctions of the rim board to the sill plate and the rim board and the subfloor shall be air sealed.~~	Rim joists shall be insulated so that the insulation maintains permanent contact with the exterior rim board.[b]

a. Inspection of log walls shall be in accordance with the provisions of ICC 400.

b. Air barrier and insulation full enclosure is not required in unconditioned/ventilated attic spaces and at rim joists.

Reason:
This amendment simplifies the provisions and allows the building designer the choice of selecting an air barrier based on the specific wall assembly design. Any air barrier at the rim will constitute an exterior air barrier because the rim is always located at the exterior of the structure. Having the additional word "exterior" can lead to misinterpretation that the air barrier always must be outboard of the rim joist's exterior face. That was never the intent of the change that was approved for the 2021 IECC as evidenced by the supporting reason statement that was included by the proponent of the change.

Examples of acceptable air barrier options that meet the intent of the code include (not an exhaustive list):

- Sealing the entire rim joist from the interior with closed-cell spray foam;
- Sealing the rim joist boundaries and joints with caulk from the interior;
- Taping or sealing the joints on the on exterior face of the rim joist;
- Installing mechanically attached membrane (i.e., house wrap) taped at all seams and boundaries;
- Installing exterior rigid foam sheathing taped or sealed at all joints and boundaries;
- Installing a fluid-applied membrane on the exterior face of walls;
- Installing a peel-and-stick membrane on the exterior face of walls.

It is noted that a whole-building tightness test is required to verify the overall air tightness of the house.

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E15. Coordination of Requirements for Air-Sealed Outlet Boxes in Exterior Walls

This amendment coordinates the new prescriptive requirements for electrical and communication outlet boxes with the provisions of Table R402.4.1.1 for air barriers.

Revise as follows:

R402.4.6 Electrical and communication outlet boxes (air-sealed boxes).

~~Electrical and communication outlet boxes installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces.~~ Where air-sealed boxes are required by Table R402.4.1.1, ~~E~~electrical and communication outlet boxes shall comply with all of the following:

1. be tested in accordance with NEMA OS 4, *Requirements for Air-Sealed Boxes for Electrical and Communication Applications*, ~~and shall~~
2. have an air leakage rate of not greater than 2.0 cubic feet per minute (0.944 L/s) at a pressure differential of 1.57 psf (75 Pa)~~. Electrical and communication outlet boxes~~ shall
3. be marked "NEMA OS 4" or "OS 4" in accordance with NEMA OS 4~~.~~, ~~Electrical and communication outlet boxes shall~~; and,
4. be installed per the manufacturer's instructions and with any supplied components required to achieve compliance with NEMA OS 4.

Reason:
Table R402.4.1.1 prescribes conditions where sealed boxes are required. This amendment coordinates the requirements of Table R402.4.1.1 with the new prescriptive provisions for electrical and communication outlet boxes installed in exterior building envelope and penetrating the primary air barrier. Where a continuous air barrier is located behind the outlet box (i.e., between the outlet box and the exterior), these additional prescriptive requirements do not apply.

The cost of compliance with these provisions for an average 2,600 sq.ft. house is estimated to add $369 to the consumer price of the house.

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REQUEST FOR CODE AMENDMENT

Requesting Agency/Person: Utah State HBA	Date: 1/24/2021
Street Address: 38 West 13775 South	
City, State, Zip Draper, UT 84020	
Contact Person: Ross Ford	Phone: 801-352-8266
Code to be Amended: (Include edition) 2021 IRC / IECC 2021	
Section: N1102.4.1.3 (R402.4.1.3)	
Section Title: Leakage rate	

AMENDMENT: ACH(50) = 4.0 for SF and 5.0 for Townhomes

Type proposed amendment in rule change form. (Using strikeout on portions being removed and underline on all new wording.)

1. Include the entire section you wish to amend.
2. Attach additional sheets if necessary.

See attached

Purpose of or Reason for the amendment: See NAHB Explanation for full details, however, note that their recomendation is based on 5.0 for all homes, while the Utah State HBA is proposing 4.0 for single family homes. Experience, locally and nationally, has proven the challenges in building below 4.0 ACH(50), especially on multifamily projects and smaller homes. Below 3.0 requires additional systems investments, but this can't be determined until the end of the construction; hitting an exact number is impossible in practice resulting in uncertainty of actual requirements until the end.
Cost or Savings Impact of Amendment: See attached
Compliance Costs for Affected Persons (APerson@ means any individual, partnership, corporation, association, governmental entity, or public or private organization of any character other than an agency.) (You must break out the impact cost to State Budget, Local Government and you must state aggregate cost to other persons {cost per person times number of persons affected}): None

Signature:	Date:

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Date Received:	
Committee Action: ☐ Approved ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled	**UBC Commission Decision for Hearing:** ☐ Approved for hearing ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled
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N1102.4.1.3 (R402.4.1.3) Leakage rate. Where complying with Section N1101.13.l, the building or dwelling unit shall have an air leakage rate not exceeding 4.0 ~~5.0 air changes per hour in Climate Zones 0, 1 and 2, and 3.0~~ air changes per hour ~~in Climate Zones 3 through 8~~, when tested in accordance with Section N1102.4.1.2.

Exception: When testing individual dwelling units, an air leakage rate not exceeding 5.0 air changes per hour ~~or 0.30 cubic feet per minute per square foot [0.008 m3/(s x m2)] of the dwelling unit enclosure area~~, tested in accordance with ANSI/RESNET/ICC 380, ASTM E779 or ASTM E1827 and reported at a pressure of 0.2 inch w.g, (50 Pa), shall be an accepted alternative for:

1. Attached single and multiple-family building dwelling units.
2. Buildings or dwelling units that are 1,500 square feet (139.4 m2) or smaller.

The following amendments apply to provisions of the 2021 IECC that existed since an earlier edition of the code.

E17. Air Leakage Rate Correction (Climate Zones 1-8)

This amendment modifies the requirements from 3 Air Changes per Hour (ACH) to 5 ACH in climate zones 3 through 8.

Revise as follows:

R402.4.1.3 Leakage rate. When complying with Section R401.2.1, the building or dwelling unit shall have an air leakage rate not exceeding 5.0 air changes per hour ~~in Climate Zones 0, 1 and 2, and 3.0 air changes per hour in Climate Zones 3 through 8,~~ when tested in accordance with Section R402.4.1.2.

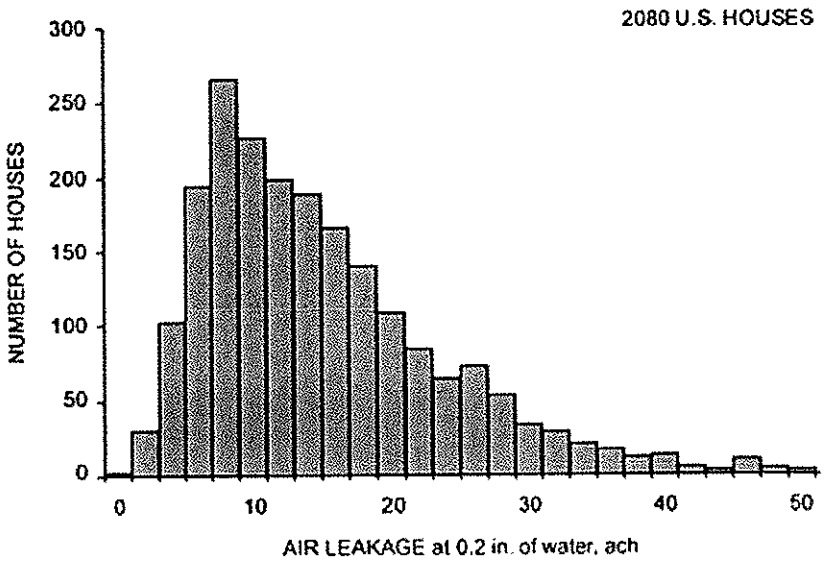
Table R405.4.2 (1)
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Air exchange rate	The air leakage rate at a pressure of 0.2 inch w.g. (50 Pa) shall be ~~*Climate Zones* 1 and 2:~~ 5 air changes per hour. ~~*Climate Zones* 3 through 8: 3 air changes per hour.~~ The mechanical ventilation rate shall be in addition to the air leakage rate and shall be the same as in the proposed design, but not greater than $0.01 \times CFA + 7.5 \times (N_{br} + 1)$ where: CFA = conditioned floor area, ft^2 N_{br} = number of bedrooms	The measured air exchange rate[a]. The mechanical ventilation rate[b] shall be in addition to the air leakage rate and shall be as proposed

Footnotes remain unchanged

Reason:
Building airtightness is an important part of an energy-efficient and comfortable house. However, 3 air changes (ACH) per hour at 50 Pascals is an extremely low target tightness, especially for smaller homes. The ASHRAE Handbook of Fundamentals shows that around 8% of U.S. homes achieve 3 ACH or less, 13% achieve 4 and less than 23% achieve 5. The proposed 5 ACH while still an aggressive tightness level will provide a tight, comfortable, energy-efficient home.

2013 ASHRAE Handbook—Fundamentals



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REQUEST FOR CODE AMENDMENT

Requesting Agency/Person: Utah State HBA	Date: 1/24/2021
Street Address: 38 West 13775 South	
City, State, Zip Draper, UT 84020	
Contact Person: Ross Ford	Phone: 801-352-8266
Code to be Amended: (Include edition) 2021 IRC (IECC 2021)	
Section: N1103.3.1 (R403.3.1)	
Section Title: Ducts located outside conditioned space.	

AMENDMENT:

Type proposed amendment in rule change form. (Using strikeout on portions being removed and underline on all new wording.)

1. Include the entire section you wish to amend.
2. Attach additional sheets if necessary.

See attached

Purpose of or Reason for the amendment: Retain language and requirements of existing building code. Changes are proposed without adequate justification or evidence supporting increased cost of construction. Both the proposed language and this amendment have the same requirements for ducts in attics outside of conditioned space. Only rare cases of ducts below slabs are affected.
Cost or Savings Impact of Amendment: No additional cost. Modest savings in rare cases.
Compliance Costs for Affected Persons (APerson@ means any individual, partnership, corporation, association, governmental entity, or public or private organization of any character other than an agency.) (You must break out the impact cost to State Budget, Local Government and you must state aggregate cost to other persons {cost per person times number of persons affected}): None

Signature:	Date:

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Committee Action: ☐ Approved ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled	**UBC Commission Decision for Hearing:** ☐ Approved for hearing ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled
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N1103.3.1 (R403.3.1) Ducts located outside conditioned space. ~~Supply and return ducts located outside conditioned space shall be insulated to an R-value of not less than R-8 for ducts 3 inches (76 mm) in diameter and larger and not less than R-6 for ducts smaller than 3 inches (76 mm) in diameter. Ducts buried beneath a building shall be insulated as required by this section or have an equivalent thermal distribution efficiency. Underground ducts utilizing the thermal distribution efficiency method shall be listed and labeled to indicate the R-value equivalency.~~

Supply and return ducts in attics shall be insulated to a minimum of R-8 where 3 inches (76.2 mm) in diameter and greater and R-6 where less than 3 inches (76.2 mm) in diameter. Supply and return ducts in other portions of the building shall be insulated to a minimum of R-6 where 3 inches (76.2 mm) in diameter or greater and R-4.2 where less than 3 inches (76.2 mm) in diameter.

Exception: Ducts or portions thereof located completely inside the *building thermal envelope*

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REQUEST FOR CODE AMENDMENT

Requesting Agency/Person: Utah State HBA	Date: 1/24/2021
Street Address: 38 West 13775 South	
City, State, Zip Draper, UT 84020	
Contact Person: Ross Ford	Phone: 801-352-8266
Code to be Amended: (Include edition) 2021 IRC	
Section: N1103.5.1.1 (R403.5. 1.1)	
Section Title: Circulation Systems	

AMENDMENT: Clarify that circulation systems are not required in every home.

Type proposed amendment in rule change form. (Using strikeout on portions being removed and underline on all new wording.)

1. Include the entire section you wish to amend.
2. Attach additional sheets if necessary.

N1103.5.1.1 (R403.5. 1.1) Circulation systems. Where installed, heated water circulation systems shall be provided with a circulation pump.

Purpose of or Reason for the amendment: As written, it implies that a heated water circulation system SHALL be provided in every home, which is not reasonable, and unlikely the intent.
Cost or Savings Impact of Amendment: $1000 to $2500 savings
Compliance Costs for Affected Persons (APerson@ means any individual, partnership, corporation, association, governmental entity, or public or private organization of any character other than an agency.) (You must break out the impact cost to State Budget, Local Government and you must state aggregate cost to other persons {cost per person times number of persons affected}): None

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Contact Person: Ross Ford	Phone: 801-352-8266
Code to be Amended: (Include edition) 2021 IRC / IECC 2021	
Section: N1103.6.3 (R403.6.3)	
Section Title: Testing.	

AMENDMENT: Delete entire section

Type proposed amendment in rule change form. (Using strikeout on portions being removed and underline on all new wording.)

1. Include the entire section you wish to amend.
2. Attach additional sheets if necessary.

Delete section entirely

Purpose of or Reason for the amendment:

Ventilation systems should be installed in accordance with mechanical provisions of Chapters 15 and 16 of the IRC and the manufacturer's installation instructions. Where both are followed, good performance will be achieved without the need for testing and the associated cost. The focus should be on achieving compliance with the mechanical code provisions such as proper fan air flow rating, fan efficacy, maximum duct length, number of elbows, and duct sealing.

Cost or Savings Impact of Amendment:

Estimated at $1,000 per average home, could be much more in remote parts of state or cause unnecessary delays in schedules. Adequate supply of testing equipment is not on hand to test every home built or remodelled with any level of efficiency or reliability.

Compliance Costs for Affected Persons (APerson@ means any individual, partnership, corporation, association, governmental entity, or public or private organization of any character other than an agency.) (You must break out the impact cost to State Budget, Local Government and you must state aggregate cost to other persons {cost per person times number of persons affected}):

None

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N1103.6.3 (R403.6.3) Testing. Mechanical ventilation systems shall be tested and verified to provide the minimum ventilation flow rates required by Section N1103.6. Testing shall be performed according to the ventilation equipment manufacturer's instructions, or by using a flow hood or box, flow grid, or other airflow measuring device at the mechanical ventilation fan's inlet terminals or grilles, outlet terminals or grilles, or in the connected ventilation ducts. Where required by the code official, tTesting may shall be conducted by the code official, the general contractor, or an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official.
Exception: Kitchen range hoods that are ducted to the outside with 6-inch (152 mm) or larger duct and not more than one 90-degree (1 .57 rad) elbow or equivalent in the duct run.

E7. Mechanical Code Compliance for Ventilation Systems

This amendment removes the requirement for flow rate testing on mechanical ventilation systems.

Revise as follows:

~~**R403.6.3 Testing.**~~

~~Mechanical ventilation systems shall be tested and verified to provide the minimum ventilation flow rates required by Section R403.6. Testing shall be performed according to the ventilation equipment manufacturer's instructions, or by using a flow hood or box, flow grid, or other airflow measuring device at the mechanical ventilation fan's inlet terminals or grilles, outlet terminals or grilles, or in the connected ventilation ducts. Where required by the code official, testing shall be conducted by an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official.~~

> ~~**Exception:** Kitchen range hoods that are ducted to the outside with 6-inch (152 mm) or larger duct and not more than one 90-degree (1.57 rad) elbow or equivalent in the duct run.~~

Reason:

Ventilation systems should be installed in accordance with mechanical provisions of Chapters 15 and 16 of the IRC and the manufacturer's installation instructions. Where both are followed, good performance will be achieved without the need for testing and the associated cost. The focus should be on achieving compliance with the mechanical code provisions such as proper fan air flow rating, fan efficacy, maximum duct length, number of elbows, and duct sealing.

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City, State, Zip Draper, UT 84020	
Contact Person: Ross Ford	Phone: 801-352-8266
Code to be Amended: (Include edition) 2021 IRC / IECC 2021	
Section: N1104.1.1 (R404. 1.1)	
Section Title: Exterior lighting	

AMENDMENT: Resolving conflict with Commercial Energy Code Ext Lighting Requirements

Type proposed amendment in rule change form. (Using strikeout on portions being removed and underline on all new wording.)

1. Include the entire section you wish to amend.
2. Attach additional sheets if necessary.

Delete section entirely

Purpose of or Reason for the amendment: Low-rise residential buildings should not be required to comply with complex lighting provisions of the commercial energy code that address a wide range of occupancies covered by the I-Codes. The IRC is a standalone code that was always intended to function independently of other I-codes. IRC Section R404.3 addresses Exterior Lighting Controls.
Cost or Savings Impact of Amendment:
Compliance Costs for Affected Persons (APerson@ means any individual, partnership, corporation, association, governmental entity, or public or private organization of any character other than an agency.) (You must break out the impact cost to State Budget, Local Government and you must state aggregate cost to other persons {cost per person times number of persons affected}): None

Signature:	Date:

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~~**N1104.1.1 (R404. 1.1) Exterior lighting.** Connected exterior lighting for Group R-2, R-3 and R-4 buildings shall comply with Section C405.4 of the international Energy Conservation Code – Commercial Provisions.~~

~~**Exceptions:**~~

1. ~~Detached one- and two-family dwellings.~~
2. ~~Townhouses.~~
3. ~~Solar-powered lamps not connected to any electrical service.~~
4. ~~Luminaires controlled by a motion sensor.~~

E9. Resolving Conflict with Commercial Energy Code Exterior Lighting Requirements

This amendment removes the requirement for residential exterior lighting systems to comply with commercial lighting provisions.

Reason:

Low-rise residential buildings should not be required to comply with complex lighting provisions of the commercial energy code that address a wide range of occupancies covered by the I-Codes. The IRC is a standalone code that was always intended to function independently of other I-codes. IRC Section R404.3 addresses Exterior Lighting Controls.

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Street Address: 38 West 13775 South	
City, State, Zip Draper, UT 84020	
Contact Person: Ross Ford	Phone: 801-352-8266
Code to be Amended: (Include edition) 2021 IRC / IECC 2021	
Section: N1104.2 (R404.2) / N1104.3 (R404.3)	
Section Title: Interior lighting controls / Exterior lighting controls	

AMENDMENT: Remove required lighting controls

Type proposed amendment in rule change form. (Using strikeout on portions being removed and underline on all new wording.)

1. Include the entire section you wish to amend.
2. Attach additional sheets if necessary.

Delete both Sections entirely.
See attached strike through text.

Purpose of or Reason for the amendment:

The provisions for lighting controls are removed for the following reasons:
- The language allows "other control" which can be a simple on/off switch;
- With the requirement for high-efficacy lamps, adding controls does not result in significant energy savings;
- Occupancy sensors can be disruptive to the occupant; and,
- Dimmers and sensors, which primarily address lifestyle preferences, should remain a design option.

Cost or Savings Impact of Amendment:

Savings an estimated $100 per home

Compliance Costs for Affected Persons (APerson@ means any individual, partnership, corporation, association, governmental entity, or public or private organization of any character other than an agency.) (You must break out the impact cost to State Budget, Local Government and you must state aggregate cost to other persons {cost per person times number of persons affected}):

None

Signature:	Date:

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~~**N1104.2 (R404.2) Interior lighting controls.** Permanently installed lighting fixtures shall be controlled with a dimmer, an occupant sensor control or another control that is installed or built into the fixture.~~
~~**Exception:** Lighting controls shall not be required for the following:~~

~~1. Bathrooms.~~
~~2. Hallways.~~
~~3. Exterior lighting fixtures.~~
~~4. Lighting designed for safety or security.~~

~~**N1104.3 (R404.3) Exterior lighting controls.** Where the total permanently installed exterior lighting power is greater than 30 watts, the permanently installed exterior lighting shall comply with the following:~~

~~1. Lighting shall be controlled by a manual on and off switch that permits automatic shut-off actions.~~
~~**Exception:** Lighting serving multiple dwelling units.~~
~~2. Lighting shall be automatically shut off when daylight is present and satisfies the lighting needs.~~
~~3. Controls that override automatic shut-off actions shall not be allowed unless the override automatically returns automatic control to its normal operation within 24 hours.~~

E8. Design Option for Lighting Controls

This amendment removes the requirement for lighting controls.

Reason:

The provisions for lighting controls are removed for the following reasons:
• The language allows "other control" which can be a simple on/off switch;
• With the requirement for high-efficacy lamps, adding controls does not result in significant energy savings;
• Occupancy sensors can be disruptive to the occupant; and,
• Dimmers and sensors, which primarily address lifestyle preferences, should remain a design option.

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City, State, Zip Draper, UT 84020	
Contact Person: Ross Ford	Phone: 801-352-8266
Code to be Amended: (Include edition) 2021 IRC	
Section: N1105.2 (R405.2)	
Section Title: Performance-based compliance.	

AMENDMENT:

Type proposed amendment in rule change form. (Using strikeout on portions being removed and underline on all new wording.)

1. Include the entire section you wish to amend.
2. Attach additional sheets if necessary.

N1105.2 (R405.2) Performance-based compliance. Compliance based on total building performance requires that a proposed design meets all of the following:

1. The requirements of the sections indicated within Table N1105.2.
2. The building thermal envelope greater than or equal to levels of efficiency and solar heat gain coefficients in Table R402.1.1 or R402.1.3 of the 2009 International Energy Conservation Code.
3. An annual energy cost that is less than or equal to the annual energy cost of the standard reference design. Energy prices shall be taken from a source ~~approved by the code official~~, such as the Department of Energy, Energy Information Administration's State Energy Data System Prices and Expenditures reports. Code officials shall be permitted to require time-of use pricing in energy cost calculations, where applicable and readily available.

Purpose of or Reason for the amendment: Remove ambiguity of sources for energy cost sources.
Cost or Savings Impact of Amendment: None
Compliance Costs for Affected Persons (APerson@ means any individual, partnership, corporation, association, governmental entity, or public or private organization of any character other than an agency.) (You must break out the impact cost to State Budget, Local Government and you must state aggregate cost to other persons {cost per person times number of persons affected}): None

Signature:	Date:

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Committee Action: ☐ Approved ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled	**UBC Commission Decision for Hearing:** ☐ Approved for hearing ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled
Date Filed:	Public Hearing Date:
UBC Commission Decision for Adoption: ☐ Approved ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled	Effective Date:

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REQUEST FOR CODE AMENDMENT

Requesting Agency/Person: Utah State HBA	Date: 1/24/2021
Street Address: 38 West 13775 South	
City, State, Zip Draper, UT 84020	
Contact Person: Ross Ford	Phone: 801-352-8266
Code to be Amended: (Include edition) 2021 IRC / IECC 2021	
Section: TABLE R405.4.2(1) N1105.4.2(1)	
Section Title: SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS	

AMENDMENT: Corrections to Standard Reference Designs

Type proposed amendment in rule change form. (Using strikeout on portions being removed and underline on all new wording.)

1. Include the entire section you wish to amend.
2. Attach additional sheets if necessary.

See attached changes.

Purpose of or Reason for the amendment: These amendments bring the table into compliance with other changes effective in other parts of the building code as amended, including the Utah version of RESCheck already in use.
Cost or Savings Impact of Amendment: No change
Compliance Costs for Affected Persons (APerson@ means any individual, partnership, corporation, association, governmental entity, or public or private organization of any character other than an agency.) (You must break out the impact cost to State Budget, Local Government and you must state aggregate cost to other persons {cost per person times number of persons affected}): None

Signature:	Date:

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Committee Action: ☐ Approved ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled	**UBC Commission Decision for Hearing:** ☐ Approved for hearing ☐ Denied ☐ Approved with revisions ☐ Referred to: ☐ Tabled
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TABLE R405.4.2(1)—continued

SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Air exchange rate	The air leakage rate at a pressure of 0.2 inch w.g. (50 Pa) shall be Climate Zones 0 through 2; 5.0 air changes per hour. NAHB Climate Zones 3 through 8 : ~~3.0~~ 5.0 air changes per hour.	The measured air exchange rate. [a]
	The mechanical ventilation rate shall be in addition to the air leakage rate and shall be the same as in the proposed design, but no greater than 0.01 x CFA + 7.5 x (N_{br} + 1) where: CFA = conditioned floor area N_{br} = number of bedrooms The mechanical ventilation system type shall be the same as in the proposed design. Energy recovery shall not be assumed for mechanical ventilation.	The mechanical ventilation rate [b] shall be in addition to the air leakage rate and shall be as proposed
Heating systems [d,e]	NAHB ~~For other than electric heating without a heat pump: as proposed. Where the proposed design utilizes electric heating without a heat pump the standard reference design shall be an air source heat pump meeting the requirements of Section C403 of the International Energy Conservation Code – Commercial Provisions.~~ Fuel Type: same as proposed design Efficiencies- Electric: air-source heat pump with prevailing federal minimum standards Nonelectric furnace: natural gas furnace with prevailing federal minimum standards Nonelectric boilers: natural gas boiler with prevailing federal minimum standards Capacity: sized in accordance with Section N11403.7	~~As proposed~~ As proposed As proposed As proposed As proposed
Cooling systems [d,f]	~~As proposed~~ Fuel Type: Electric Efficiency: in accordance with prevailing federal minimum standards Capacity: sized in accordance with Section N11403.7.	~~As proposed~~ As proposed As proposed As proposed
Service water Heating [d,g]	~~As proposed~~ Fuel Type: same as proposed design Efficiency: in accordance with prevailing federal minimum standards Use in units of gal/day = 30 + (10 x N_{br}) where: N_{br}= number of bedrooms Tank temperature: 120 °F	~~As proposed~~ As proposed Same as standard reference Same as standard reference Same as standard reference ~~Use, in units of gal/day = 25.5 + (8.5 x N_{br}) x (1 - HWDS) where :~~ ~~N_{br}= number of bedrooms~~ ~~HWDS = factor for the compactness of the hot water distribution system.~~

~~Compactness ratio factor~~		~~HWDS~~
~~1 story~~	~~2 or more stories~~	
~~> 60%~~	~~> 30%~~	~~0~~
~~> 30%≤60%~~	~~>15%≤30%~~	~~0.05~~
~~>15%≤30%~~	~~>7.5%≤15%~~	~~0.10~~
~~<15%~~	~~<7.5%~~	~~0.15~~

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REQUEST FOR CODE AMENDMENT

Requesting Agency/Person: Utah State HBA	Date: 1/24/2021
Street Address: 38 West 13775 South	
City, State, Zip Draper, UT 84020	
Contact Person: Ross Ford	Phone: 801-352-8266
Code to be Amended: (Include edition) 2021 IRC / IECC 2021	
Section: N1106.3 (R406.3) / N1106.3.1 (R406.3.1) / N1106.3.2 (R406.3.2) / N1106.4 (R406.4)	
Section Title: Building thermal envelope /On-site renewables are not included/ On-site renewables are included/ Energy Rating Index	

AMENDMENT: ERI Compliance Path - Design Options and Ventilation Correction

Type proposed amendment in rule change form. (Using strikeout on portions being removed and underline on all new wording.)

1. Include the entire section you wish to amend.
2. Attach additional sheets if necessary.

See attached.

Purpose of or Reason for the amendment: See attached
Cost or Savings Impact of Amendment: See attached
Compliance Costs for Affected Persons (APerson@ means any individual, partnership, corporation, association, governmental entity, or public or private organization of any character other than an agency.) (You must break out the impact cost to State Budget, Local Government and you must state aggregate cost to other persons {cost per person times number of persons affected}): None

Signature:	Date:

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REVISE AS FOLLOWS:

N1106.3 (R406.3) Building thermal envelope. ~~Building and portions thereof shall comply with Section N1106.3.1 or N1106.3.2.~~

~~**N1106.3.1 (R406.3.1) On-site renewables are not included.** Where on-site renewable energy is not included for compliance using the ERI analysis of Section N1106.4, the~~ The proposed total building thermal envelope UA, which is sum of U-factor times assembly area, shall be less than or equal to the building thermal envelope UA using the prescriptive U-factors from Table N1102.1.2 multiplied by 1.15 in accordance with Equation 11-4. The area-weighted maximum fenestration SHGC permitted in Climate Zones 0 through 3 shall be 0.30.

$UA_{Proposed\ design} = 1.15 \times UA_{Prescriptive\ reference\ design}$

(Equation 11-4)

~~**N1106.3.2 (R406.3.2) On-site renewables are included.** Where on-site renewable energy is included for compliance using the ERI analysis of Section N1106.4, the building thermal envelope shall be greater than or equal to the levels of efficiency and SHGC in Table N1102.1.2, or Table R402.1.4 of the 2015 International Energy Conservation Code.~~

N1106.4 (R406.4) Energy Rating Index. The Energy Rating Index (ERI) shall be determined in accordance with RESNET/ICC 301 except that the ERI ~~reference design ventilation rate shall be in accordance with Equation 11-5~~ shall be permitted to be calculated using the minimum total air exchange rate for the rated home (Q_{tot}) and for the index adjustment factor in accordance with Equation 11.5.

~~Ventilation rate, CFM~~ Q_{tot}, CFM= (0.01 x total square foot area of house) + [7.5 x (number of bedrooms + 1)]

(Equation 11-5)

Energy used to recharge or refuel a vehicle used for transportation on roads that are not on the building site shall not be included in the ERI reference design or the rated design. For compliance purposes, any reduction in energy use of the rated design associated with on-site renewable energy shall not exceed ~~5~~ 15 percent of the total energy use.

Reason:

This amendment restores the flexibility in design options for achieving ERI thresholds. The proposed modification maintains a consistent set of envelope requirements for the building independent of on-site generation. It also increases the allowance for the fraction of the overall energy use that can be met by on-site renewables from 5 to 15 percent. The 5% limit is a new requirement that did not exist in the previous energy code and is overly restrictive.

This amendment also fixes a problem that was introduced in the 2018 IRC by requiring the reference design ventilation rate be in accordance with the IRC ventilation rate. This change in 2018 IRC resulted in a significant increase in the calculated ERI scores for the building. That was never the intent of the original change as was acknowledged by the proponent, and it was the result of a lack of coordination of the proposal with the specific terms used in Standard 301. The amendment resolves the issues in accordance with the original intent by allowing the IRC ventilation rate to be used in calculating the ERI instead of changing the reference design building.

E12. ERI Compliance Path – Design Options and Ventilation Correction

This amendment restores the design options for achieving target ERI.

Revise as follows:

R406.3 Building thermal envelope. ~~Building and portions thereof shall comply with Section R406.3.1 or R406.3.2.~~

~~R406.3.1 On-site renewables are not included. Where on-site renewable energy is not included for compliance using the ERI analysis of Section R406.4,~~ tThe proposed total building thermal envelope UA, which is sum of U-factor times assembly area, shall be less than or equal to the building thermal envelope UA using the prescriptive U-factors from Table R402.1.2 multiplied by 1.15 in accordance with Equation 4-1. The area-weighted maximum fenestration SHGC permitted in Climate Zones 0 through 3 shall be 0.30.

$UA_{Proposed\ design} = 1.15 \times UA_{Prescriptive\ reference\ design}$ (Equation 4-1)

~~**R406.3.2 On-site renewables are included.** Where onsite renewable energy is included for compliance using the ERI analysis of Section R406.4, the building thermal envelope shall be greater than or equal to the levels of efficiency and SHGC in Table R402.1.2 or Table R402.1.4 of the 2015 International Energy Conservation Code.~~

R406.4 Energy Rating Index. The Energy Rating Index (ERI) shall be determined in accordance with RESNET/ICC 301 except for buildings covered by the International Residential Code, the ERI ~~reference design ventilation rate shall be in accordance with Equation 4-2~~ shall be permitted to be calculated using the minimum total air exchange rate for the rated home (Q_{tot}) and for the index adjustment factor in accordance with Equation 4.2.

~~Ventilation rate~~Qtot, CFM = (0.01 × total square foot area of house) + [7.5 × (number of bedrooms + 1)] (Equation 4-2)

Energy used to recharge or refuel a vehicle used for transportation on roads that are not on the building site shall not be included in the ERI reference design or the rated design. For compliance purposes, any reduction in energy use of the rated design associated with on-site renewable energy shall not exceed ~~5~~ 15 percent of the total energy use.

Reason:

This amendment restores the flexibility in design options for achieving ERI thresholds. The proposed modification maintains a consistent set of envelope requirements for the building independent of on-site generation. It also increases the allowance for the fraction of the overall energy use that can be met by on-site renewables from 5 to 15 percent. The 5% limit is a new requirement that did not exist in the previous energy code and is overly restrictive.

This amendment also fixes a problem that was introduced in the 2018 IRC by requiring the reference design ventilation rate be in accordance with the IRC ventilation rate. This change in 2018 IRC resulted in a significant increase in the calculated ERI scores for the building. That was never the intent of the original change as was acknowledged by the proponent, and it was the result of a lack of coordination of the proposal with the specific terms used in Standard 301. The amendment resolves the issues in accordance with the original intent by allowing the IRC ventilation rate to be used in calculating the ERI instead of changing the reference design building.

Return to Summary Table

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REQUEST FOR CODE AMENDMENT

Requesting Agency/Person: Utah State HBA	Date: 1/24/2022
Street Address:	
City, State, Zip	
Contact Person:	Phone:
Code to be Amended: (Include edition) IRC 2021 / IECC	
Section: Chapter 11	
Section Title: various	

AMENDMENT: Existing state amendments and clarifications

Type proposed amendment in rule change form. (Using strikeout on portions being removed and underline on all new wording.)

1. Include the entire section you wish to amend.
2. Attach additional sheets if necessary.

See attached sheets for applicable sections with recommended state amendments to keep in the proposed 2021 IRC.

Purpose of or Reason for the amendment: To retain the currently adopted state amendments of the IRC in order to provide reasonably energy efficient homes at an affordable price to Utah families.
Cost or Savings Impact of Amendment: There should be no additional cost or savings compared to the currently adopted state building codes
Compliance Costs for Affected Persons (APerson@ means any individual, partnership, corporation, association, governmental entity, or public or private organization of any character other than an agency.) (You must break out the impact cost to State Budget, Local Government and you must state aggregate cost to other persons {cost per person times number of persons affected}): None

Signature:	Date:

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N1101.5 (R103.2) Information on construction documents. Construction documents shall be drawn to scale on suitable material. Electronic media documents are permitted to be submitted when approved by the code official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in sufficient detail pertinent data and features of the building, systems and equipment as herein governed. ~~Details shall include the following as applicable:~~

~~1. Energy compliance path.~~
~~2. Insulation Materials and their R-values.~~
~~3. Fenestration U-factors and solar heat gain coefficients (SHGC).~~
~~4. Area-weighted U-factor and solar heat gain coefficient (SHGC) calculations.~~
~~5. Mechanical system design criteria.~~
~~6. Mechanical and service water heating systems and equipment types, sizes and efficiencies.~~
~~7. Equipment and system controls.~~
~~8. Duct sealing, duct and pipe insulation and location.~~
~~9. Air sealing details.~~

Construction Documents required for building permits shall include only those items specified in 10-5-132(8) of the state building code

N1101.12 (R303.3) Maintenance information. Maintenance instructions shall be furnished for equipment and systems that require preventive maintenance. ~~Required regular maintenance actions shall be clearly stated and incorporated on a readily visible label. The label shall include the title or publication number for the operation and maintenance manual for that particular model and type of product.~~

N1102.1.5 (R402.1.5) Total UA alternative. Where the total building thermal envelope UA, the sum of U-factor times assembly area, is less than or equal to the total UA resulting from multiplying the U-factors in Table N1102.1.2 by the same assembly area as in the proposed building, the building shall be considered to be in compliance with Table N1102.1.2. The UA calculation shall be performed using a method consistent with the ASHRAE Handbook of Fundamentals and shall include the thermal bridging effects of framing materials. In addition to UA compliance, the SHGC requirements of Table N1102.1.2 and the maximum fenestration U-factors of Section N1102.5 shall be met.

Compliance with this section may be shown by demonstrating a result, using the software RESCheck 2012 Utah Energy Conservation Code, of "5% better than code", which shall satisfy the R-value and U-value requirements of N1102.1, N1102.2, and N1102.3

Footnote to Table

TABLE N1102.1.3 (R402.1.3)
INSULATION MINIMUM *R*-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT

j. Log walls complying with ICC400 and with a minimum average wall thickness of 5 inches or greater shall be permitted in Zones 5 thorough 8 when overall window glazing has .31 U-factor or lower, minimum heating equipment efficiency is for gas 90 AFUE, or, for oil, 84 AFUE, and all other component requirements are met.

N1102.4.1 (R402.4.1) Building thermal envelope. The building thermal envelope shall comply with Sections N1102.4.1.1 ~~and~~ or N1102.4.1.2 through N1102.4.1.3. The sealing methods between dissimilar materials shall allow for differential expansion and contraction.

N1102.4.1.1 (R402.4.1.1) Installation. The components of the building thermal envelope as indicated in Table N1102.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria indicated in Table N1102.4.1.1, as applicable to the method of construction. Where required by the code official, the builder shall certify compliance with criteria indicated in Table 1102.4.1 for items which are not readily visible during regularly scheduled inspections.

N1102.4.1.2 (R402.4.1.2) Testing. The building or dwelling unit shall be tested for air leakage. The maximum air leakage rate for any building or dwelling unit under any compliance path shall not exceed 5.0 air changes per hour ~~or 0.28 cubic feet per minute (CFM) per square foot [0.0079 m3/(s x m2) of dwelling unit enclosure area~~. Testing shall be conducted in accordance with ANSJ/RESNET/ICC 380, ASTM E779 ASTM E1827 and reported at a pressure of 0.2 inches w.g. (50 Pascals). Where required by the code official, testing shall be conducted by an approved ~~third~~ party. The following parties shall be approved to conduct testing: Parties certified by BPI or RESNET, or licensed contractors who have completed training provided by Blower Door Test equipment manufacturers or other comparable training. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope have been sealed.

Exception: For heated, attached private garages and heated, detached private garages accessory to one and two-family dwellings and townhouses not more than three stories above grade plane in height, building envelope tightness and insulation installation shall be considered acceptable where the items in Table N1102.4.1.1, applicable to the method of construction, are field verified. ~~Where required by the code official, an approved third-party independent from the installer shall inspect both air barrier and insulation installation criteria~~. Heated, attached private garage space and heated, detached private garage space shall be thermally isolated from all other conditioned spaces in accordance with Sections N1102.2.12 and N1102.3.5, as applicable.

N1103.3.5 (R403.3.5) Duct testing. Ducts shall be pressure tested in accordance with ANSI/RESNET/ICC 380 or ASTM E1554 to determine air leakage by one of the following methods:

1. Rough-in test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25Pa) across the system, including the manufacturer's air handler enclosure if installed at the time of the test. Registers shall be taped or otherwise sealed during the test.
2. Postconstruction test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure, Registers shall be taped or otherwise sealed during the test.

Exception: A duct air-leakage test shall not be required for ducts serving heating, cooling or ventilation systems that are not integrated with ducts serving heating or cooling systems.

Exception: A duct air leakage test shall not be required where all air handlers and at least 80% of all ducts (measured by length) are located entirely within the building thermal envelope. A written report of the results of the test shall be signed by the party conducting the test and provided to the *code official.*

The following parties shall be approved to conduct testing:

1. Parties certified by BPI or RESNET.
2. Licensed contractors who have completed training provided by Duct Test equipment manufacturers or other comparable training.

N1103.3.6 (R403.3.6) Duct leakage. The total leakage of the ducts, where measured in accordance with Section N1103.3.5, shall be as follows:

1. Rough-in test: The total leakage shall be less than or equal to 8.0 ~~4.0~~ cubic feet per minute (170 ~~113.3~~

L/min) per 100 square feet (9.29 m2) of conditioned floor area where the air handler is installed at the time of the test. Where the air handler is not installed at the time of the test, the total leakage shall be less than or equal to 6.0 ~~3.0~~ cubic feet per minute (85 L/min) per 100 square feet (9.29 m2) of conditioned floor area.

2. Postconstruction test: Total leakage shall be less than or equal to 6.0 ~~4.0~~ cubic feet per minute (113.3 • L/min) per 100 square feet (9.29 m2) of conditioned floor area.
3. Test for ducts within thermal envelope: Where all ducts and air handlers are located entirely within the building thermal envelope, a duct leakage test is not required. ~~total leakage shall be less than or equal to 8.0 cubic feet per minute (226.6 L/min) per 100 square feet (9.29 m2 conditioned floor area.~~

N1103.3.7 (R403.3.7) Building cavities. Building framing cavities shall not be used as ducts ~~or plenums~~.

N1104.1 (R404.1) Lighting equipment. ~~All~~ Not less than 75 percent of the lamps in permanently installed lighting fixtures, excluding kitchen appliance lighting fixtures, shall contain only high-efficacy lighting sources.