

1 **ENERGY CONSERVATION CODE AMENDMENTS**

2 2013 GENERAL SESSION

3 STATE OF UTAH

4 **Chief Sponsor: Brad R. Wilson**

5 Senate Sponsor: Curtis S. Bramble

7 **LONG TITLE**

8 **General Description:**

9 This bill amends the State Construction Code.

10 **Highlighted Provisions:**

11 This bill:

- 12 ▶ adopts the 2012 edition of the International Energy Conservation Code;
- 13 ▶ modifies certain provisions of the International Energy Conservation Code; and
- 14 ▶ modifies certain energy provisions of the International Residential Code.

15 **Money Appropriated in this Bill:**

16 None

17 **Other Special Clauses:**

18 This bill provides a contingent effective date.

19 **Utah Code Sections Affected:**

20 AMENDS:

21 **15A-2-103**, as last amended by Laws of Utah 2012, Chapter 76

22 **15A-3-203**, as enacted by Laws of Utah 2011, Chapter 14

23 **15A-3-701**, as enacted by Laws of Utah 2011, Chapter 14

24 **Uncodified Material Affected:**

25 ENACTS UNCODIFIED MATERIAL

27 *Be it enacted by the Legislature of the state of Utah:*

28 Section 1. Section **15A-2-103** is amended to read:

29 **15A-2-103. Specific editions adopted of construction code of a nationally**

30 **recognized code authority.**

31 (1) Subject to the other provisions of this part, the following construction codes are
32 incorporated by reference, and together with the amendments specified in Chapter 3, Statewide
33 Amendments to International Plumbing Code, and Chapter 4, Local Amendments Incorporated
34 as Part of State Construction Code, are the construction standards to be applied to building
35 construction, alteration, remodeling, and repair, and in the regulation of building construction,
36 alteration, remodeling, and repair in the state:

37 (a) the 2009 edition of the International Building Code, including Appendix J, issued
38 by the International Code Council;

39 (b) the 2009 edition of the International Residential Code, issued by the International
40 Code Council;

41 (c) the 2009 edition of the International Plumbing Code, issued by the International
42 Code Council;

43 (d) the 2009 edition of the International Mechanical Code, issued by the International
44 Code Council;

45 (e) the 2009 edition of the International Fuel Gas Code, issued by the International
46 Code Council;

47 (f) the 2011 edition of the National Electrical Code, issued by the National Fire
48 Protection Association;

49 (g) the ~~2009~~ 2012 edition of the International Energy Conservation Code, issued by
50 the International Code Council;

51 (h) subject to Subsection 15A-2-104(2), the HUD Code;

52 (i) subject to Subsection 15A-2-104(1), Appendix E of the 2009 edition of the
53 International Residential Code, issued by the International Code Council; and

54 (j) subject to Subsection 15A-2-104(1), the 2005 edition of the NFPA 225 Model
55 Manufactured Home Installation Standard, issued by the National Fire Protection Association.

56 (2) Consistent with Title 65A, Chapter 8, Management of Forest Lands and Fire
57 Control, the Legislature adopts the 2006 edition of the Utah Wildland Urban Interface Code,

58 issued by the International Code Council, with the alternatives or amendments approved by the
 59 Utah Division of Forestry, as a construction code that may be adopted by a local compliance
 60 agency by local ordinance or other similar action as a local amendment to the codes listed in
 61 this section.

62 Section 2. Section **15A-3-203** is amended to read:

63 **15A-3-203. Amendments to Chapters 6 through 15 of IRC.**

64 [~~(1) IRC, Sections R612.2 through R612.4.2, are deleted.~~]

65 [~~(2) IRC, Chapter 11, is deleted and replaced with Chapter 11 of the 2006 International
 66 Residential Code and Chapter 4 of the 2006 International Energy Conservation Code.~~]

67 (1) In IRC, Section N1101.8 (R103.2), all words after the words "herein governed." are
 68 deleted and replaced with the following: "Construction documents include all documentation
 69 required to be submitted in order to issue a building permit."

70 (2) In IRC, Section N1101.14 (R303.3), all wording after the first sentence is deleted.

71 (3) In IRC, Table N1102.1.1 (R402.1.1) and Table N1102.1.3 (R402.1.3), the rows for
 72 "climate zone 3", "climate zone 5 and Marine 4", and "climate zone 6" are deleted and replaced
 73 and a new footnote j is added as follows:

74 "TABLE N1102.1.1 (R402.1.1)										
75 INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT ^a										
76 CLIMATE ZONE	FENESTRATION U-FACTOR ^b	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC ^{b,c}	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE ^{i,j}	FLOOR R-VALUE	BASEMENT ^c WALL R-VALUE	SLAB ^d R-VALUE & DEPTH	CRAWL SPACE ^e WALL R-VALUE
77 3	0.65	0.65	0.40	30	15	5	19	0	0	5/13
78 5 and Marine 4	0.35	0.60	NR	38	19 or 13 + 5 ^h	13	30 ^g	10/13	10, 2 ft	10/13
79 6	0.35	0.60	NR	49	19 or 13 + 5 ^h	15	30 ^g	10/13	10, 4 ft	10/13

80j. Log walls complying with ICC400 and with a minimum average wall thickness of 5" or greater shall be permitted in Zones 5-8 when overall window glazing is .31 U-factor or lower, minimum heating equipment efficiency is 90 AFUE (gas) or 84 AFUE (oil), and all other component requirements are met."

TABLE N1102.1.3 (R402.1.3)

EQUIVALENT U-FACTORS^a

<u>CLIMATE ZONE</u>	<u>FENESTRATION U-FACTOR</u>	<u>SKYLIGHT U-FACTOR</u>	<u>CEILING U-FACTOR</u>	<u>FRAME WALL U-FACTOR</u>	<u>MASS WALL U-FACTOR^b</u>	<u>FLOOR U-FACTOR</u>	<u>BASEMENT WALL U-FACTOR</u>	<u>CRAWL SPACE WALL U-FACTOR</u>
<u>3</u>	<u>0.65</u>	<u>0.65</u>	<u>0.035</u>	<u>0.082</u>	<u>0.141</u>	<u>0.047</u>	<u>0.360</u>	<u>0.136</u>
<u>5 and Marine 4</u>	<u>0.35</u>	<u>0.60</u>	<u>0.030</u>	<u>0.060</u>	<u>0.082</u>	<u>0.033</u>	<u>0.059</u>	<u>0.065</u>
<u>6</u>	<u>0.35</u>	<u>0.60</u>	<u>0.026</u>	<u>0.060</u>	<u>0.060</u>	<u>0.033</u>	<u>0.059</u>	<u>0.065</u>

(4) In IRC, Section N1102.2.1 (R402.2.1), the last sentence is deleted.

(5) In IRC, Section N1102.2.2 (R402.2.2), the last sentence is deleted.

(6) In IRC, Section N1102.3.3 (R402.3.3), the last sentence is deleted.

(7) In IRC, Section N1102.3.4 (R402.3.4), the last sentence is deleted.

(8) In IRC, Section N1102.4.1 (R402.4.1), in the first sentence, the word "and" is deleted and replaced with the word "or".

(9) In IRC, Section N1102.4.1.1 (R402.4.1.1), the last sentence is deleted and replaced with the following: "Where allowed by the building official, the builder may certify compliance to components criteria for items which may not be inspected during regularly scheduled inspections."

(10) In IRC, Section N1102.4.1.2 (R402.4.1.2), the following changes are made:

(a) In the first sentence, the words "in Zones 1 and 2, and 3 air changes per hour in Zone 3 through 8" are deleted.

(b) In the third sentence, the words "Where required by the building official," and the word "third" are deleted.

(c) The following sentence is inserted after the third sentence: "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"

105 manufacturers or other comparable training."

106 (11) In IRC, Section N1102.4.4 (R402.4.4), the last sentence is deleted.

107 (12) In IRC, Section N1103.2.2 (R403.2.2), the requirements for total leakage testing
108 are deleted and replaced with the following:

109 "1. Postconstruction test: Total leakage shall be less than or equal to 10 cfm (283
110 L/min) per 100 square feet (9.29 m²) of conditioned floor space when tested at a pressure
111 differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer's air
112 handler enclosure. All register boots shall be taped or otherwise sealed during the test.

113 2. Rough-in test: Total leakage shall be less than or equal to 10 cfm (283 L/min) per
114 100 square feet (9.29 m²) of conditioned floor area when tested at a pressure differential of at
115 least 0.1 inches w.g. (25 Pa) across the system, including the manufacturer's air handler
116 enclosure. All registers shall be taped or otherwise sealed during the test. If the air handler is
117 not installed at the time of the test, total leakage shall be less than or equal to 7.5 cfm (212
118 L/min) per 100 square feet (9.29 m²) of conditioned floor area."

119 (13) In IRC, Section N1103.2.2 (R403.2.2), the exception for total leakage testing is
120 deleted and replaced with the following: "Exception: The total leakage test is not required for
121 systems with all air handlers and at least 50% of all ducts (measured by length) located entirely
122 within the building thermal envelope."

123 (14) In IRC, Section N1103.2.3 (R403.2.3), the words "or plenums" are deleted.

124 (15) In IRC, Section N1103.4.2 (R403.4.2), the sentences for "3.", "9.", and the last
125 sentence are deleted.

126 (16) In IRC, Section N1103.5 (R403.5), the first sentence is deleted.

127 (17) IRC, Section N1104.1 (R404.1) and the exception are deleted, and N1104.1.1
128 (R404.1.1) becomes N1104.1 (R404.1).

129 (18) In IRC, Table N1105.5.2(1) (R405.5.2(1)), the following changes are made under
130 the column STANDARD REFERENCE DESIGN:

131 (a) In the row "Air exchange rate", the words "in Zones 1 and 2, and 3 air changes per
132 hour in Zones 3 through 8" are deleted.

133 (b) In the row "Heating systems^{f, g}", the standard reference design is deleted and
134 replaced with the following:

135 "Fuel Type: same as proposed design

136 Efficiencies:

137 Electric: air source heat pump with prevailing federal minimum efficiencies

138 Nonelectric furnaces: natural gas furnace with prevailing federal minimum efficiencies

139 Nonelectric boilers: natural gas boiler with prevailing federal minimum efficiencies

140 Capacity: sized in accordance with Section N1103.6"

141 (c) In the row "Cooling systems^{f, h}" the words "As proposed" are deleted and replaced
142 with the following:

143 "Fuel Type: Electric

144 Efficiency: in accordance with prevailing federal minimum standards"

145 (d) In the row "Service water heating^{f, g, h, i}", the words "As proposed" are deleted and
146 replaced with the following:

147 "Fuel Type: same as proposed design

148 Efficiency: in accordance with prevailing federal minimum standards

149 Tank Temperature: 120° F"

150 (e) In the row "Thermal distribution systems" the word "none" is deleted and replaced
151 with the following: "Thermal distribution system efficiency (DSE) of .080 shall be applied to
152 both the heating and cooling system efficiencies."

153 (19) In Table N1105.5.2(2) (R405.5.2(2)), the number "0.80" is inserted under "Forced
154 air systems" for "Distribution system components located in unconditioned space".

155 (20) In IRC, Section M1307.2, the words "In Seismic Design Categories D1 and D2"
156 are deleted.

157 (21) The RESCheck Software adopted by the United States Department of Energy and
158 modified to meet the requirements of this section shall be used to verify compliance with this
159 section. The software shall address the Total UA alternative approach and account for
160 Equipment Efficiency Trade-offs when applicable per the standard reference design as

161 amended.

162 [~~(3)~~] (22) IRC, Section M1411.6, is deleted.

163 [~~(4)~~ In IRC, Section M1502.4.4.1, the words "25 feet (7,620 mm)" are deleted and
164 replaced with "35 feet (10,668 mm)."]

165 Section 3. Section **15A-3-701** is amended to read:

166 **Part 7. Statewide Amendments to IECC**

167 **15A-3-701. General provisions.**

168 The following is adopted as an amendment to the IECC to be applicable statewide[, in
169 IECC, Section 504.4,]:

170 (1) In IECC, Section C202, the definition for "CONDITIONED SPACE" is deleted and
171 replaced with the following: "CONDITIONED SPACE. An area, room or space enclosed
172 within the building thermal envelope that is directly heated or cooled, or indirectly heated or
173 cooled by any of the following means:

- 174 1. Openings directly into an adjacent conditioned space.
175 2. An un-insulated floor, ceiling or wall adjacent to a conditioned space.
176 3. Un-insulated duct, piping or other heat or cooling source within the space."

177 (2) In IECC, Section C404.4, a new exception is added as follows: "Exception: Heat
178 traps, other than the arrangement of piping and fittings, shall be prohibited unless a means of
179 controlling thermal expansion can be ensured as required in the IPC Section 607.3."

180 (3) In IECC, Section R103.2, all words after the words "herein governed." are deleted
181 and replaced with the following: "Construction documents include all documentation required
182 to be submitted in order to issue a building permit."

183 (4) In IECC, Section R202, the definition for "CONDITIONED SPACE" is deleted and
184 replaced with the following: "CONDITIONED SPACE. An area, room or space enclosed
185 within the building thermal envelope that is directly heated or cooled, or indirectly heated or
186 cooled by any of the following means:

- 187 1. Openings directly into an adjacent conditioned space.
188 2. An un-insulated floor, ceiling or wall adjacent to a conditioned space.

189 3. Un-insulated duct, piping or other heat or cooling source within the space."

190 (5) In IECC, Section R303.3, all wording after the first sentence is deleted.

191 (6) In IECC, Table R402.1.1 and Table R402.1.3, the rows for "climate zone 3",

192 "climate zone 5 and Marine 4, and climate zone 6" are deleted and replaced and a new footnote

193 j is added as follows:

194 "TABLE R402.1.1

195 INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT^a

<u>CLIMATE ZONE</u>	<u>FENESTRATION U-FACTOR^b</u>	<u>SKYLIGHT^b U-FACTOR</u>	<u>GLAZED FENESTRATION SHGC^{b,c}</u>	<u>CEILING R-VALUE</u>	<u>WOOD FRAME WALL R-VALUE</u>	<u>MASS WALL R-VALUE^{f,j}</u>	<u>FLOOR R-VALUE</u>	<u>BASEMENT^c WALL R-VALUE</u>	<u>SLAB^d R-VALUE & DEPTH</u>	<u>CRAWL SPACE^e WALL R-VALUE</u>
<u>3</u>	<u>0.65</u>	<u>0.65</u>	<u>0.40</u>	<u>30</u>	<u>15</u>	<u>5</u>	<u>19</u>	<u>0</u>	<u>0</u>	<u>5/13</u>
<u>5 and Marine 4</u>	<u>0.35</u>	<u>0.60</u>	<u>NR</u>	<u>38</u>	<u>19 or 13 + 5^h</u>	<u>13</u>	<u>30^g</u>	<u>10/13</u>	<u>10, 2 ft</u>	<u>10/13</u>
<u>6</u>	<u>0.35</u>	<u>0.60</u>	<u>NR</u>	<u>49</u>	<u>19 or 13 + 5^h</u>	<u>15</u>	<u>30^g</u>	<u>10/13</u>	<u>10, 4 ft</u>	<u>10/13</u>

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

201 TABLE R402.1.3 EQUIVALENT U-FACTORS^a

<u>CLIMATE ZONE</u>	<u>FENESTRATION U-FACTOR</u>	<u>SKYLIGHT U-FACTOR</u>	<u>CEILING U-FACTOR</u>	<u>FRAME WALL U-FACTOR</u>	<u>MASS WALL U-FACTOR^b</u>	<u>FLOOR U-FACTOR</u>	<u>BASEMENT WALL U-FACTOR</u>	<u>CRAWL SPACE WALL U-FACTOR</u>
<u>3</u>	<u>0.65</u>	<u>0.65</u>	<u>0.035</u>	<u>0.082</u>	<u>0.141</u>	<u>0.047</u>	<u>0.360</u>	<u>0.136</u>
<u>5 and Marine 4</u>	<u>0.35</u>	<u>0.60</u>	<u>0.030</u>	<u>0.060</u>	<u>0.082</u>	<u>0.033</u>	<u>0.059</u>	<u>0.065</u>
<u>6</u>	<u>0.35</u>	<u>0.60</u>	<u>0.026</u>	<u>0.060</u>	<u>0.060</u>	<u>0.033</u>	<u>0.059</u>	<u>0.065</u>

206 (7) In IECC, Section R402.2.1, the last sentence is deleted.

207 (8) In IECC, Section R402.2.2, the last sentence is deleted.

208 (9) In IECC, Section R402.3.3, the last sentence is deleted.

209 (10) In IECC, Section R402.3.4, the last sentence is deleted.

210 (11) In IECC, Section R402.4.1, in the first sentence, the word "and" is deleted and

211 replaced with the word "or".

212 (12) In IECC, Section R402.4.1.1, the last sentence is deleted and replaced with the
213 following: "Where allowed by the building official, the builder may certify compliance to
214 components criteria for items which may not be inspected during regularly scheduled
215 inspections."

216 (13) In IECC, Section R402.4.1.2, the following changes are made:

217 (a) In the first sentence, the words "in Zones 1 and 2, and 3 air changes per hour in
218 Zone 3 through 8" are deleted.

219 (b) In the third sentence, the words "Where required by the building official," and the
220 word "third" are deleted.

221 (c) The following sentence is inserted after the third sentence: "The following parties
222 shall be approved to conduct testing: Parties certified by BPI or RESNET, or licensed
223 contractors who have completed training provided by Blower Door Test equipment
224 manufacturers or other comparable training."

225 (14) In IECC, Section R402.4.4, the last sentence is deleted.

226 (15) In IECC, Section R403.2.2, the requirements for duct tightness testing are deleted
227 and replaced with the following:

228 "1. Postconstruction test: Total leakage shall be less than or equal to 10 cfm (283
229 L/min) per 100 square feet (9.29 m²) of conditioned floor space when tested at a pressure
230 differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer's air
231 handler enclosure. All register boots shall be taped or otherwise sealed during the test.

232 2. Rough-in test: Total leakage shall be less than or equal to 10 cfm (283 L/min) per
233 100 square feet (9.29 m²) of conditioned floor area when tested at a pressure differential of at
234 least 0.1 inches w.g. (25 Pa) across the system, including the manufacturer's air handler
235 enclosure. All registers shall be taped or otherwise sealed during the test. If the air handler is
236 not installed at the time of the test, total leakage shall be less than or equal to 7.5 cfm (212
237 L/min) per 100 square feet (9.29 m²) of conditioned floor area."

238 (16) In IECC, Section R403.2.2, the exception for total leakage testing is deleted and

239 replaced with the following: "Exception: The total leakage test is not required for systems with
240 all air handlers and at least 50% of all ducts (measured by length) located entirely within the
241 building thermal envelope."

242 (17) In IECC, Section R403.2.3, the words "or plenums" are deleted.

243 (18) In IECC, Section R403.4.2, the sentences for "3." and "9." and the last sentence
244 are deleted.

245 (19) In IECC, Section R403.5, the first sentence is deleted.

246 (20) IECC, Section R404.1 and the exception are deleted, and R404.1.1 becomes
247 R404.1.

248 (21) In IECC, Table R405.5.2(1), the following changes are made under the column
249 STANDARD REFERENCE DESIGN:

250 (a) In the row "Air exchange rate", the words "in Zones 1 and 2, and 3 air changes per
251 hour in Zones 3 through 8" are deleted.

252 (b) In the row "Heating systems^{f, g}", the standard reference design is deleted and
253 replaced with the following:

254 "Fuel Type: same as proposed design

255 Efficiencies:

256 Electric: air source heat pump with prevailing federal minimum efficiencies

257 Nonelectric furnaces: natural gas furnace with prevailing federal minimum efficiencies

258 Nonelectric boilers: natural gas boiler with prevailing federal minimum efficiencies

259 Capacity: sized in accordance with Section N1103.6"

260 (c) In the row "Cooling systems^{f, h}" the words "As proposed" are deleted and replaced
261 with the following:

262 "Fuel Type: Electric

263 Efficiency: in accordance with prevailing federal minimum standards"

264 (d) In the row "Service water heating^{f, g, h, i}", the words "As proposed" are deleted and
265 replaced with the following:

266 "Fuel Type: same as proposed design

267 Efficiency: in accordance with prevailing federal minimum standards

268 Tank Temperature: 120° F"

269 (e) In the row "Thermal distribution systems" the word "none" is deleted and replaced
270 with the following: "Thermal distribution system efficiency (DSE) of .080 shall be applied to
271 both the heating and cooling system efficiencies."

272 (22) In IECC, Table R405.5.2(2), the number "0.80" is inserted under "Forced air
273 systems" for "Distribution system components located in unconditioned space".

274 (23) The RESCheck Software adopted by the United States Department of Energy and
275 modified to meet the requirements of this section shall be used to verify compliance with this
276 section. The software shall address the Total UA alternative approach and account for
277 Equipment Efficiency Trade-offs when applicable per the standard reference design as
278 amended.

279 **Section 4. Study on improving residential energy efficiency.**

280 (1) During the 2013 interim, the Architectural Advisory Committee of the Uniform
281 Building Code Commission, in consultation with the Mechanical Advisory Committee of the
282 Uniform Building Code Commission, shall study and make recommendations regarding
283 increasing residential energy performance.

284 (2) The Architectural Advisory Committee shall present its recommendations to the
285 Business and Labor Interim Committee no later than the October 2013 interim meeting.

286 **Section 5. Contingent effective date.**

287 This bill takes effect on the first day of the month following the month in which the
288 Uniform Building Code Commission certifies in writing to the Business and Labor Interim
289 Committee that the United States Department of Energy has adopted a version of the
290 RESCheck software that can be used to verify compliance to the requirements of this bill.