2016 Energy Update Quiz

Instructions
1. Print these pages. Fee $ 20
2. Answer the Simple questions that follow the mini sections of the code language.
3. Circle the correct answers and transfer the answers to the answer sheets (see last pages).
4. After answering the simple questions you will become familiar with the new code changes.
5. Page down to the last page for the verification form, answer sheets and mailing instructions.

2 course hours for: Course # 17725
1. Dwelling Contractor Qualifier Certification.
2. UDC Construction Inspector.

Live Support at 920-381-6714 or email tmklinka@hotmail.com

TEXT OF RULE

SPS 322.01 (3) (b) is created to read:

SPS 322.01 (3) (b) The vapor retarder requirements under s. SPS 322.38 do not apply to an unheated space, such as an attached, unheated garage.

SECTION 93. SPS 322.01 (3) (Note) is repealed.

SECTION 94. SPS 322.21 (3) (b) is amended to read:

SPS 322.21 (3) (b) The protective covering shall cover the exposed exterior insulation and extend a minimum of ~~6~~ 2 inches below grade, except the covering is not required below a brick ledge.

SECTION 95. SPS 322.31 Table 322.31–1 is amended to read:

1. The protective covering shall cover the exposed exterior insulation and extend a minimum of ____ inches below grade.
   a. 2
   b. 4
   c. 6
   d. 8
2. The protective covering shall cover the exposed exterior insulation including the covering required below a brick ledge.
   a. true
   b. false
3. The vapor retarder requirements under s. SPS 322.38 do not apply to an _____ space, such as an attached, unheated garage.
   a. tempered
   b. heated
   c. unheated
   d. all of the above

SECTION 95. SPS 322.31 Table 322.31–1 is amended to read:

TABLE 322.31-1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a] a

Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling R-Value	Wood Frame Wall R-Value	Mass Wall R-Value[i] i	Floor R-Value	Basement ~~or Crawl Space~~ Wall R-Value[b] b	Crawl Space Wall R-Value[b] b	Heated Slab R-Value[c] c	Unheated Slab R-Value[d] d
1	0.35	0.60	49[e] e	~~19[f]~~ 20[f] f or 13+5[g] g	15/19	30[h] h	~~10/13~~ 15/19	10/13	10/15	10
2	0.35	0.60	49[e] e	21[f] f	19/21	~~30[h]~~38[h] h	~~10/13~~ 15/19	10/13	10/15	10

a. R−values are minimums. U−factors are maximums.
b. The first R−value applies to continuous insulation. The second R−value applies to framing cavity insulation. Either insulation meets the requirement.
c. The first R−value applies under the entire slab, regardless of depth below grade. The second R−value applies to the slab edge where the bottom of the slab is less than 12 inches below adjacent grade. Slab edge insulation shall extend downward from the top of the slab for a minimum of 48 inches or downward to at least the bottom of the slab and then horizontally to the interior or exterior for a minimum total distance of 48 inches. Also, see s. SPS 321.16 for protection against frost for slabs with supports less than 4 feet below grade.
d. The R−value applies to any slab, the bottom of which is less than 12 inches below adjacent grade. Also, see s. SPS 321.16 for protection against frost for slabs with supports less than 4 feet below grade.
e. See s. SPS 322.32 (1) for application and permitted reduced R−value.
f. ~~R-19~~ R-20 and R-21 may be compressed into a 2X6 cavity.
g. "13+5" means R−13 cavity insulation plus R−5 insulated sheathing. If structural sheathing covers 25% or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25% of the exterior, structural sheathing shall be covered with insulated sheathing of at least R−2.
h. Or insulation sufficient to fill the framing cavity with a minimum of R−19.
i. The second R-value applies when more than half of the insulation is on the interior of the mass wall.

4. Heated Slab R-Value. The first R−value applies to the:
   a. under the entire slab, regardless of depth below grade
   b. slab edge where the bottom of the slab is less than 12 inches below adjacent grade
   c. both a & b
   d. none of the above
5. 4. Heated Slab R-Value. The second R−value applies to:
   a. under the entire slab, regardless of depth below grade
   b. slab edge where the bottom of the slab is less than 12 inches below adjacent grade
   c. both a & b
   d. none of the above
6. Heated Slab R-Value. The first R−value would be _____.
   a. 10
   b. 13
   c. 15
   d. 19
7. Heated Slab R-Value. The second R−value would be _____.

a. 10
b. 13
c. 15
d. 19

8. Unheated Slab R-Value. The R−value applies to any slab, the bottom of which is less than ___ inches below adjacent grade.

a. 6
b. 8
c. 12
d. 4

9. Unheated Slab R-Value. Also, see s. SPS 321.16 for protection against frost for slabs with supports less than ____ feet below grade.

a. 6
b. 8
c. 12
d. 4

10. Unheated Slab R-Value. The minimum R-value for an unheated slab which is less than 12 inches below adjacent grade would require R ____?

a. 10
b. 13
c. 15
d. 19

11. Minimum ceiling R-value in zone 2 would require R ____.

a. 49
b. 30
c. 38
d. 21

12 Minimum wood frame wall R-value in zone 2 would require R _____.

a. 49
b. 30
c. 38
d. 21

13. R-____ may be compressed into a 2x6 cavity in a wood frame wall.

a. 25
b. 20
c. 21
d. both b & c

14. Minimum wood frame wall R-value. 13+5 means _____.

a. R−13 cavity insulation
b. R−5 insulated sheathing
c. both a & b
d. none of the above

15. Minimum 13+5 wood frame wall R-value. If structural sheathing covers _____ % or less of the exterior, insulating sheathing is not required where structural sheathing is used.

a. 10
b. 15
c. 20
d. 25

16. Minimum 13+5 wood frame wall R-value. If structural sheathing covers more than 25% of the exterior, structural sheathing shall be covered with insulated sheathing of at least R−____.
    a. 2
    b. 3
    c. 4
    d. 5
17. Minimum Floor R-value would be _____.
    a. R-30 for zone 1
    b. R-38 for zone 2
    c. Or insulation sufficient to fill the framing cavity with a minimum of R−19
    d. all of the above
18. See s. SPS _____ for application and permitted reduced R−value.
    a. 322.31 (1)
    b. 322.32 (1)
    c. 322.33 (1)
    d. none of the above
19. Minimum crawl space wall R-Value in zone 1 would be _____.
    a. R-10 continuous insulation
    b. R-13 framing cavity insulation
    c. both a & b
    d. none of the above
20. Minimum crawl space wall R-Value in zone 2 would be _____.
    a. R-13 continuous insulation
    b. R-10 framing cavity insulation
    c. both a & b
    d. none of the above
21. R−values are minimums and U−factors are maximums for the above table.
    a. true
    b. false
22. The _____R-value applies when more than half of the insulation is on the interior of the mass wall.
    a. first
    b. second
    c. both
    d. none of the above
23. The second R-value for a mass wall in zone 2 would be _____.
    a. 15
    b. 19
    c. 21
    d. none of the above
24. TABLE 322.31-1. INSULATION AND FENESTRATION REQUIREMENTS BY _____.
    a. alterative methods
    b. component
    c. U-factors
    d. R-values

SECTION 96. SPS 322.31 Table 322.31–2 is amended to read:

TABLE 322.31-2
EQUIVALENT U-FACTORS

Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Wood Frame Wall U-Factor	Mass Wall U-Factor	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor	Unheated Slab U-Factor
1	0.35	0.60	0.026	~~0.060~~ 0.057	0.060[a] a	0.033	~~0.065~~ 0.050	0.065	10
2	0.35	0.60	0.026	0.057	0.057[a] a	~~0.033~~ 0.028	~~0.065~~ 0.050	0.065	10

a When more than half the insulation is on the interior, the mass wall U-factors shall be the same as the frame wall U-factor.

25. TABLE 322.31-2. EQUIVALENT _____.
- a. alterative methods
- b. component
- c. U-factors
- d. R-values

26. When more than half the insulation is on the _____, the mass wall U-factors shall be the same as the frame wall U-factor.
- a. exterior
- b. mid-point
- c. interior
- d. none of the above

SECTION 97. SPS 322.31 Table 322.31–4 is amended to read:

TABLE 322.31-4
COMPONENT DWELLING THERMAL ENVELOPE REQUIREMENTS FOR DWELLINGS USING LOWER EFFICIENCY APPLIANCES[a] a

Fenestration U-Factor	Skylight U-Factor	Ceiling R-Value	Wood Frame Wall R-Value	Mass Wall R-Value	Floor R-Value	Basement or Crawl Space Wall b R-Value[b]	Heated Slab R-Value[c] c	Unheated Slab R-Value[d] d
0.30	0.60	49[e] e	21[f] or f 19+5[g] g	19	30[h] h	15/19	10/20	15
Equivalent U-Factors								
0.30	0.60	~~0.26*~~ 0.026	0.057	0.057	0.033	0.045	0.033	0.047

~~* **Note:** The correct number is .026. An error was discovered in the rule order after completion of the rule–making process.~~

a. R–values are minimums. U–factors are maximums.

b. The first R–value applies to continuous insulation. The second R–value applies to framing cavity insulation.

c. The first R–value applies under the entire slab, regardless of depth below grade. The second R–value

applies to the slab edge. Slab edge insulation shall extend downward from the top of the slab for a minimum of 48 inches or downward to at least the bottom of the slab and then horizontally to the interior or exterior for a minimum total distance of 48 inches.

d. The R−value applies to the slab perimeter insulation, where the bottom of the slab is less than 12 inches below adjacent grade. Slab edge insulation shall extend downward from the top of the slab for a minimum of 48 inches or downward to at least the bottom of the slab and then horizontally to the interior or exterior for a minimum total distance of 48 inches. Also, see s. SPS 321.16 for protection against frost for slabs with supports less than 4 feet below grade.

e. See s. SPS 322.32 (1) for application and permitted reduced R−value.

f. R−21 may be compressed into a 2X6 cavity.

g. "19+5" means R−19 cavity insulation plus R−5 insulated sheathing. If structural sheathing covers 25% or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25% of the exterior, structural sheathing shall be covered with insulated sheathing of at least R−2.

h. Or insulation sufficient to fill the framing cavity with a minimum of R−19.

27. TABLE 322.31-4. COMPONENT DWELLING THERMAL ENVELOPE REQUIREMENTS FOR DWELLINGS USING _____ EFFICIENCY APPLIANCES.

a. higher
b. mid-grade
c. lower
d. none of the above

28. The minimum U-value for a ceiling would be _____.

a. 0.26
b. 0.026
c. 0.0026
d. none of the above

SECTION 98. SPS 322.31 Table 322.31–4 (Note) is repealed:

SECTION 99. SPS 322.31 (2) (b) (Note) is amended to read:
SPS 322.31 (2) (b) Note: (b) *Software version.* If a REScheck software program is used to show compliance with this section, a version approved by the department shall be used.
Note: The IECC 2009 version of REScheck meets the thermal envelope requirements of this code.

29. The _____ version of REScheck meets the thermal envelope requirements of this code.

a. 4.2.2
b. 4.6.1 Wisconsin 2009 Code
c. IECC 2009 (International Energy Conservation Code)
d. none of the above

Wisconsin "Uniform Dwelling Code" REScheck software guidance

Energy Code Compliance will still need to be completed for homes permitted starting January 1,2016 and the REScheck software is the most commonly used method used to demonstrate that Compliance. REScheck is by definition the "Total UA Tradeoff" method which allows you to 'trade off' thermal values from one component to another. This is what makes it so popular and practical. Most of us are reasonably familiar with the workings and process related to running a Compliance report using REScheck.

Since the Wisconsin Energy Code effective January 1, 2016 has increased the "Prescriptive Table Reference Values", the trade off method with REScheck will be even more valuable. As you can see from Table 322.31-1 the most significant change occurs with Basements. These R-values come directly from the 2009 International Energy Conservation Code (IECC) which moves Wisconsin similar to the 2009 IECC.

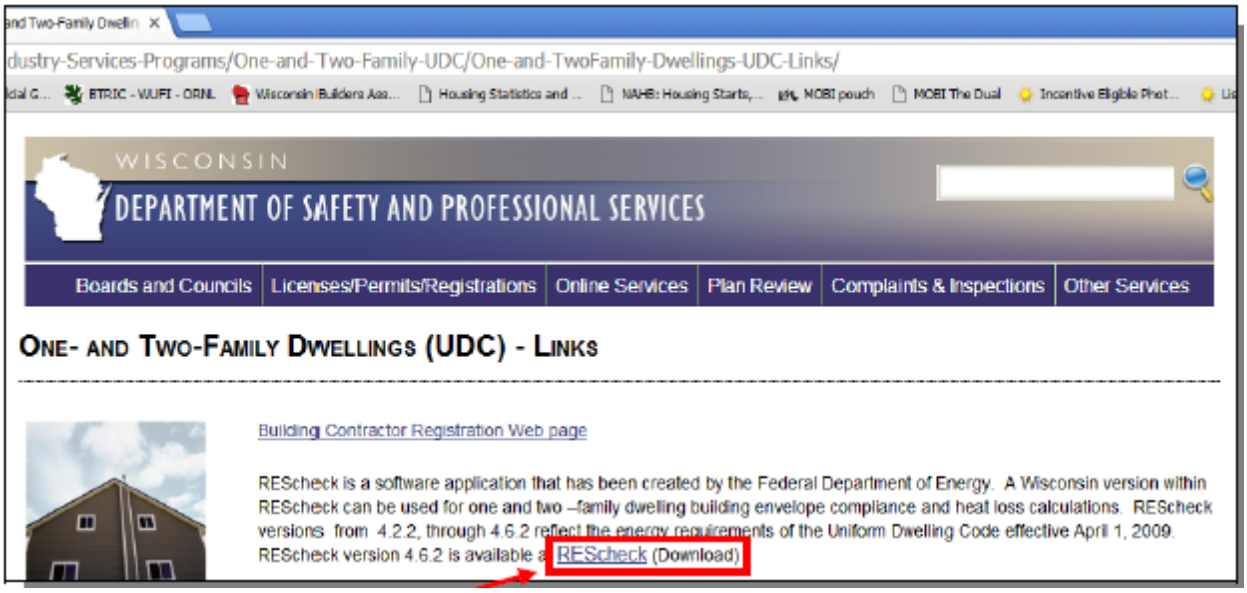
TABLE 322.31-1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling R-Value	Wood Frame Wall R-Value	Mass Wall R-Value[i]	Floor R-Value	Basement ~~or Crawl Space~~ Wall R-Value[b]	Crawl Space Wall R-Value[b]	Heated Slab R-Value[c]	Unheated Slab R-Value[d]
1	0.35	0.60	49[e]	~~19~~[f] 20[f] or 13+5[g]	15/19	30[h]	~~10/13~~ 15/19	10/13	10/15	10
2	0.35	0.60	49[e]	21[f]	19/21	~~30~~[f] 38[h]	~~10/13~~ 15/19	10/13	10/15	10

The temporary challenge with using REScheck is that REScheck has not yet been updated to integrate this table effective January 1, 2016. This REScheck update is currently being worked on.

In the meantime you can still use the current version of REScheck 4.62. Many of you may already have this version. If not you can download a copy directly from the Wisconsin DSPS website. Here is the link.

----Copy and paste this 'http' address directly into your web browser----
http://dsps.wi.gov/Programs/Industry-Services/Industry-Services-Programs/One-and-Two-Family-UDC/One-and-TwoFamily-Dwellings-UDC-Links/

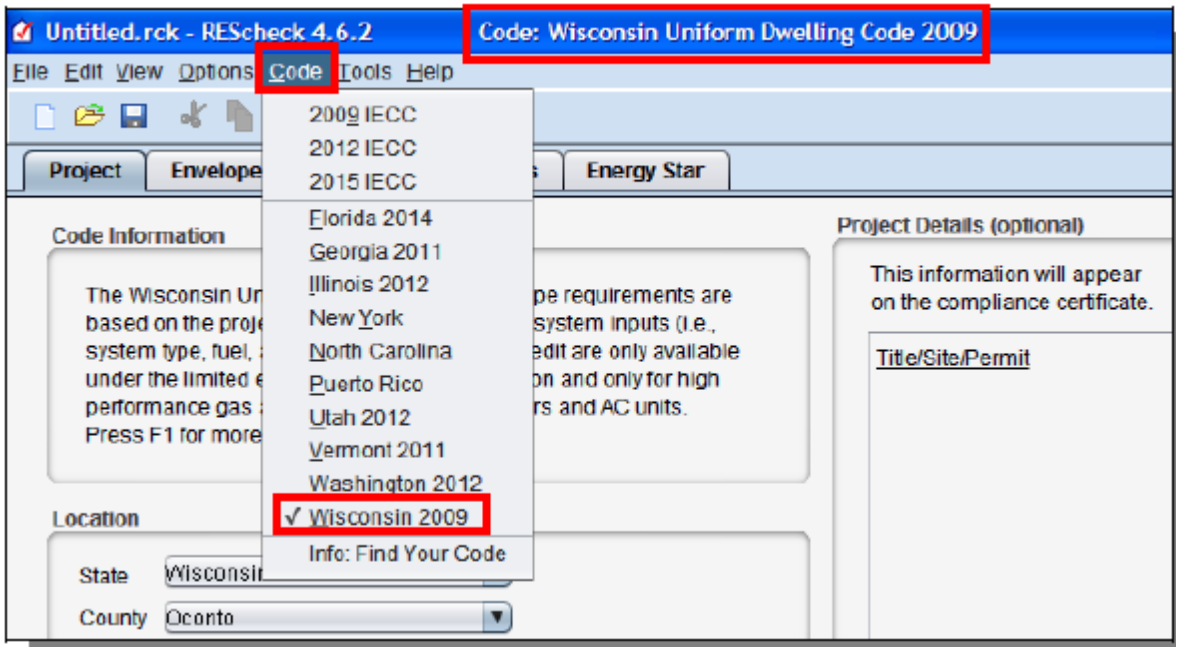


Click on the REScheck download hotlink and a copy will automatically be downloaded to your computer. Once the download is complete, double-click on it and 'run' the installer and follow the setup instructions.
The REScheck download should put a 'shortcut' directly on your computer desktop.
Locate this shortcut and open and run REScheck 4.62. You may get 3 pop-up dialog boxes.

1) Read the reminder about multi-family and toggle 'ok'

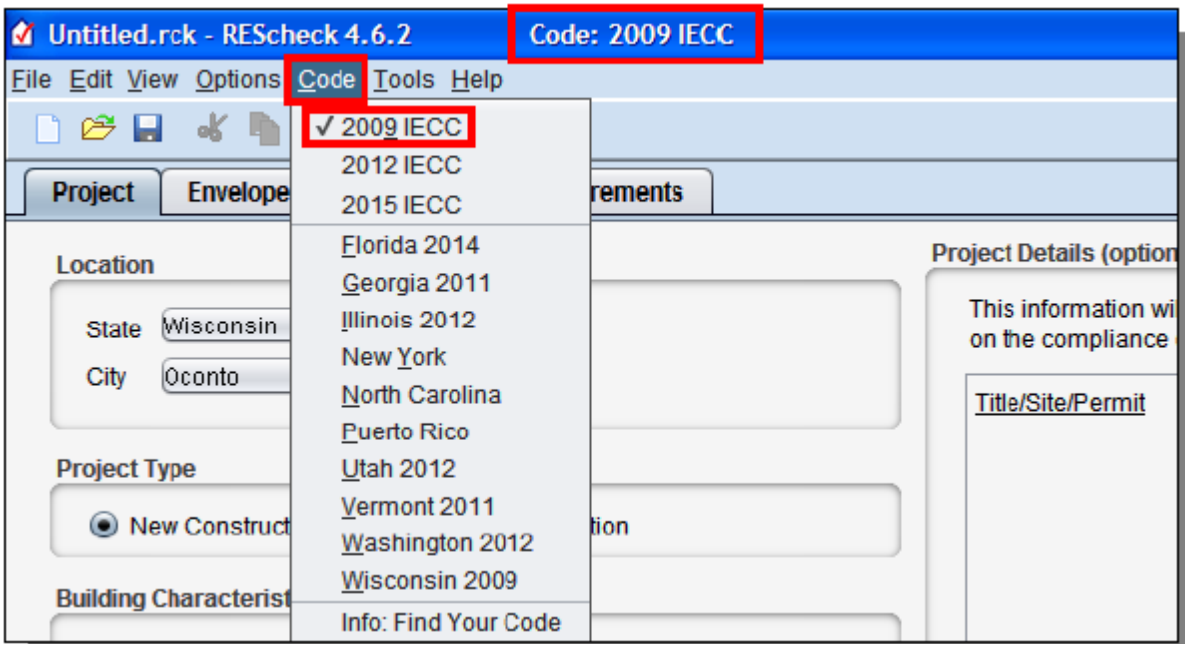
2) You may then get a reminder about the Wisconsin code. Ignore this and hit 'ok'.
3) You may now get another reminder about the Wisconsin Uniform Dwelling Code; hit 'ok'

At this point you should be ready to enter the information for a new home project: STOP!



Until further notice you CANNOT use the "Wisconsin 2009" Code selection as shown. This represents the pre-2016 Energy Code for Wisconsin. This is wrong until further notice.

Temporarily you will need to select the code as the "2009 IECC". This will set the new thermal values used to calculate compliance per the updated Table 322.31-1



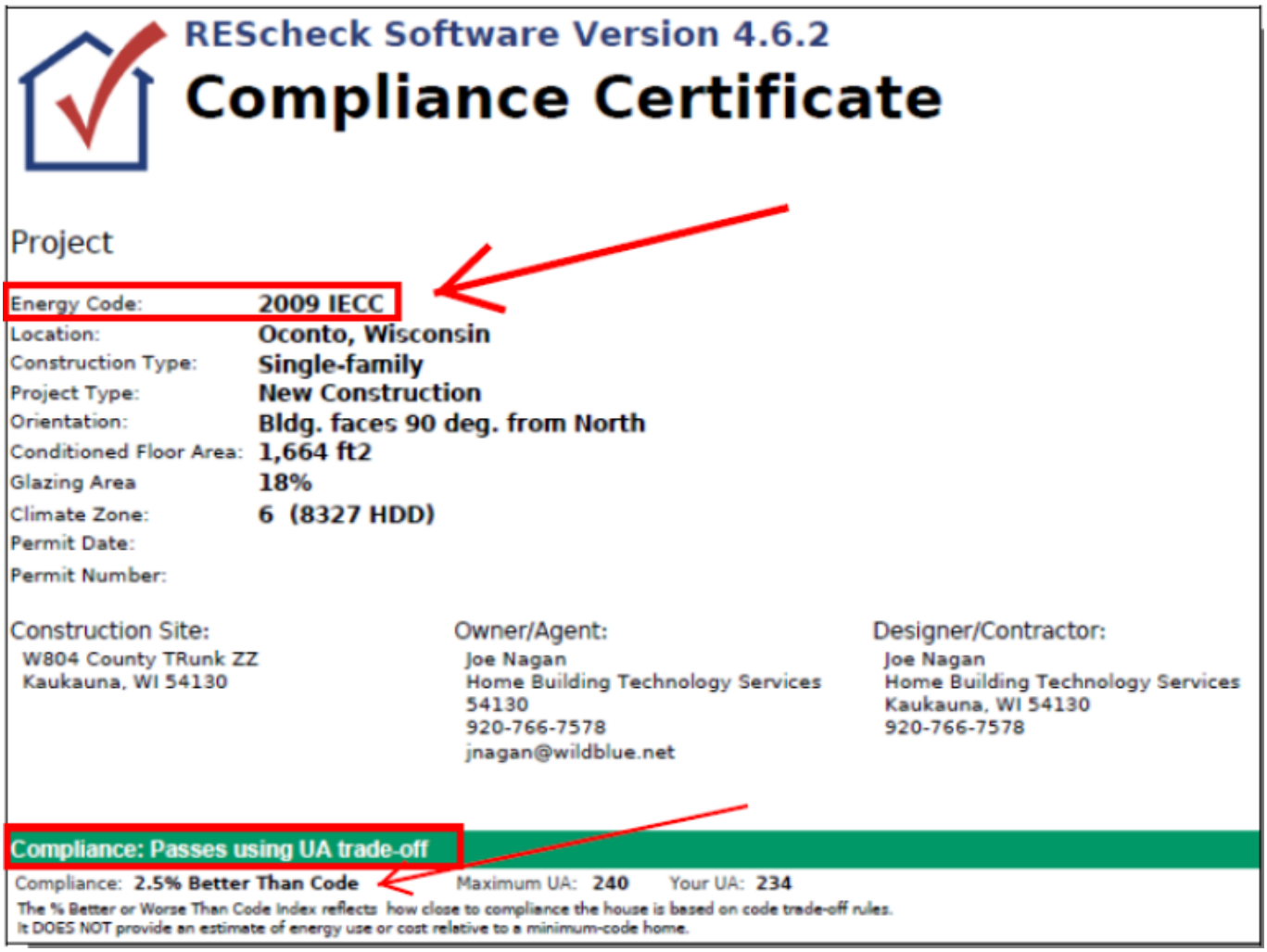
Wisconsin will still require the Compliance with Table 322.31-3 for Minimum Equipment Efficiencies. Using this code selection of "2009 IECC" will not provide an option to actually enter equipment AFUE as

before under the Mechanical tab. Ignore this but you must comply with the Minimum Equipment Efficiencies.

Reference to Table 322.31-3 Minimum Efficiencies: 90% AFUE for Furnaces & Boilers.

When completed this is how your compliance certificate should look:

1) Must meet the energy requirements shown as "% Better than Code"
2) The 'Climate Zone' will not show a UDC Zone as previous. This is temporary.
3) There will be NO 'Equipment Sizing' report as previously. This is temporary.



REScheck Software Version 4.6.2

Compliance Certificate

Project

Energy Code:	**2009 IECC**
Location:	**Oconto, Wisconsin**
Construction Type:	**Single-family**
Project Type:	**New Construction**
Orientation:	**Bldg. faces 90 deg. from North**
Conditioned Floor Area:	**1,664 ft2**
Glazing Area	**18%**
Climate Zone:	**6 (8327 HDD)**
Permit Date:	
Permit Number:	

Construction Site:
W804 County TRunk ZZ
Kaukauna, WI 54130

Owner/Agent:
Joe Nagan
Home Building Technology Services
54130
920-766-7578
jnagan@wildblue.net

Designer/Contractor:
Joe Nagan
Home Building Technology Services
Kaukauna, WI 54130
920-766-7578

Compliance: Passes using UA trade-off

Compliance: **2.5% Better Than Code** Maximum UA: **240** Your UA: **234**

The % Better or Worse Than Code Index reflects how close to compliance the house is based on code trade-off rules.
It DOES NOT provide an estimate of energy use or cost relative to a minimum-code home.

FYI: Most homes will require the below items when using the updated REScheck.

a) Windows at 0.30 U-value or lower
b) Attic insulation at R-49
c) Above grade walls at R-19
d) Rim joist at R-19
e) Basement walls at R-10 to R-15

SECTION 100. SPS 322.32 (1) is renumbered SPS 322.32 (1) (a).

SECTION 101. SPS 322.32 (1) (b) is created to read:

SPS 322.32 (1) (b) An attic-access cover shall be weatherstripped and insulated to a level equivalent to the insulation on the surrounding surfaces when the attic is an unconditioned space. A wood framed or equivalent baffle or retainer is required to be provided when loose fill insulation is installed, the purpose of which is to prevent loose fill insulation from spilling into the living space when the attic access is opened, and to provide a permanent means of maintaining the installed R-value of the loose fill insulation.

SECTION 102. SPS 322.32 (3) (b) is repealed.

SECTION 103. SPS 322.32 (3) (title) and (a) are consolidated, renumbered, and amended to read:

SPS 322.32 (3) MASS WALLS. ~~(a)~~ The requirements of Table 322.31-1 are applicable ~~in a~~ to mass ~~wall~~ walls where at least 50 percent of the required insulation R- value is on the exterior of, or integral to, the wall.

SECTION 104. SPS 322.32 (9) is renumbered SPS 322.32 (9) (a).

SECTION 105. SPS 322.32 (9) (b) is created to read:

SPS 322.32 (9) (b) The vertical and flared walls in a skylight shall meet the insulation requirements for walls. Tube skylights shall be insulated per the manufacturer's recommendations.

30. An attic-access cover shall have a ___ that is required to be provided when loose fill insulation is installed.
    a. wood framing
    b. equivalent baffle
    c. retainer
    d. all of the above
31. Attic-access cover, the purpose of which is to _____.
    a. prevent loose fill insulation from spilling into the living space when the attic access is opened
    b. provide a permanent means of maintaining the installed R-value of the loose fill insulation
    c. both a & b
    d. none of the above
32. The _____ in a skylight shall meet the insulation requirements for walls.
    a. vertical walls
    b. flared walls
    c. tube wall
    d. both a & b
33. _____ shall be insulated per the manufacturer's recommendations.
    a. vertical walls
    b. flared walls
    c. tube skylights
    d. both a & b

SECTION 106. SPS 322.33 (1) is renumbered SPS 322.33 (1) (a) and amended to read:

SPS 322.33 (1) (a) Any heated or unheated slab floor, the bottom of which is less than 12 inches below adjacent grade, shall be provided with perimeter insulation in accordance with Table 322.31-1 or Table 322.31-4, except as provided in par. (b).

SECTION 107. SPS 322.33 (1) (b) and (3) (c) are created to read:

SPS 322.33 (1) (b) At the threshold or the base of any door opening that leads directly to the exterior of the structure, the vertical perimeter insulation shall be at least R-5, excluding all garage doors.

(3) (c) Insulation on a foundation wall for a basement may be interrupted at the junction with a foundation wall.

SECTION 108. SPS 322.34 (2) (d) is amended to read:

SPS 322.34 (2) (d) Crawl Spaces. The edges of the vapor retarder shall extend at least 6 inches up the foundation wall and shall be attached and sealed to the foundation wall or insulation.

34. Insulation on a foundation wall for a basement ____ be interrupted at the junction with a foundation wall.
    a. shall not
    b. may
    c. shall
    d. none of the above
35. The edges of the vapor retarder in a crawl space shall extend at least ____ inches up the foundation wall.
    a. 4
    b. 6
    c. 8
    d. 12
36. The edges of the vapor retarder in a crawl space shall be _____ to the foundation wall.
    a. attached
    b. sealed
    c. attached or sealed
    d. both a & b
37. The edges of the vapor retarder in a crawl space shall be attached and sealed to the _____.
    a. foundation wall
    b. insulation
    c. both a or b
    d. both a and b
38. At the threshold or the base of any door opening that leads directly to the exterior of the structure, the vertical perimeter insulation shall be at least R-___.
    a. 2
    b. 4
    c. 5
    d. 10
39. At the threshold or the base of any door opening that leads directly to the exterior of the structure, the vertical perimeter insulation may be excluded at all garage doors.
    a. true
    b. false

40. Any heated or unheated slab floor, the bottom of which is less than __ inches below adjacent grade, shall be provided with perimeter insulation in accordance with Table 322.31-1 or Table 322.31-4.

a. 6
b. 8
c. 12
d. 18

SECTION 109. SPS 322.37 (6) (intro), (a) 1. to 7. and (b) are created to read:

SPS 322.37 (6) COMPLIANCE DEMONSTRATION. Building envelope air tightness and insulation installation shall be demonstrated to comply with one of the following options:

(a) *Testing option*. Building envelope tightness and insulation installation shall be considered acceptable when tested air leakage is less than seven air changes per hour (ACH) when tested with a blower door at a pressure of 33.5 psf (50 Pa). Testing shall occur after rough in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation and combustion appliances. During testing all of the following shall be done:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed;

2. Dampers shall be closed, but not sealed, including exhaust, intake, makeup air, backdraft and flue dampers;

3. Interior doors shall be open;

4. Exterior openings for continuous ventilation systems and heat recovery ventilators shall be closed and sealed;

5. Heating and cooling system(s) shall be turned off;

6. HVAC ducts shall not be sealed; and

7. Supply and return registers shall not be sealed.

(b) *Visual inspection option*. Building envelope tightness and insulation installation shall be considered acceptable when the items listed in Table 332.37, applicable to the method of construction, are field verified. Where required by the code official, an approved party independent from the installer of the insulation shall inspect the air barrier and insulation.

41. COMPLIANCE DEMONSTRATION. Building envelope air tightness and insulation installation shall be demonstrated to comply with one of the following options:

a. Testing option
b. Visual inspection option
c. both a & b
d. none of the above

42. Testing option. During testing all of the following shall be done:

a. Heating and cooling system(s) shall be turned off
b. HVAC ducts shall not be sealed

c. Supply and return registers shall not be sealed
d. all of the above

43. Testing option. During testing all of the following shall be done:
a. Interior doors shall be closed
b. Dampers shall be open and sealed
c. Exterior windows and doors, fireplace and stove doors shall be open
d. none of the above

44. Visual inspection option. Where required by the code official, an approved party independent from the _____ shall inspect the air barrier and insulation.
a. inspector of the insulation
b. installer of the framing
c. installer of the insulation
d. all of the above

SECTION 110. SPS 322.37 (6) Table 322.37 is created to read:

TABLE 332.37
AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA

COMPONENT	CRITERIA
Air barrier and thermal barrier	Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier.
	Breaks or joints in the air barrier are filled or repaired. Air-permeable insulation is not used as a sealing material. Air-permeable insulation is inside of an air barrier.
Ceiling/attic	Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and any gaps are sealed. Attic access (except unvented attic), knee wall door, or drop down stair is sealed.
Walls	Corners and headers are insulated. Junction of foundation and sill plate is sealed.
Windows and doors	Space between window/door jambs and framing is sealed.
Rim joists	Rim joists are insulated and include an air barrier.
Floors (including above-garage and cantilevered floors)	Insulation is installed to maintain permanent contact with underside of subfloor decking. Air barrier is installed at any exposed edge of insulation.
Crawl space walls	Insulation is permanently attached to walls. Exposed earth in unvented crawl spaces is covered with Class I vapor retarder with overlapping joints taped.
Shafts, penetrations	Duct shafts, utility penetrations, knee walls and flue shafts opening to exterior or unconditioned space are sealed.
Narrow cavities	Batts in narrow cavities are cut to fit, or narrow cavities are filled by sprayed/blown insulation.
Garage separation	Air sealing is provided between the garage and conditioned spaces.
Recessed lighting	Recessed light fixtures are air tight, IC rated, and sealed to drywall. Exception-fixtures in conditioned space.
Plumbing and wiring	Insulation is placed between outside and pipes. Batt insulation is cut to fit around wiring and plumbing, or sprayed/blown insulation extends behind piping and wiring.
Shower/tub on exterior wall	Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.
Electrical/phone box on exterior walls	Air barrier extends behind boxes or air sealed-type boxes are installed.
Common wall	Air barrier is installed in common wall between dwelling units.
HVAC register boots	HVAC register boots that penetrate building envelope are sealed to subfloor or drywall.
Fireplace	Fireplace walls include an air barrier.

45. Air barrier extends behind boxes or air sealed−type boxes are installed defines:
    a. Garage separation

b. Electrical/phone box on exterior walls
c. Crawl space walls
d. Shafts, penetrations

46. Air sealing is provided between the garage and conditioned spaces defines:
a. Garage separation
b. Electrical/phone box on exterior walls
c. Crawl space walls
d. Shafts, penetrations

47. Insulation is permanently attached to walls defines:
a. Garage separation
b. Electrical/phone box on exterior walls
c. Crawl space walls
d. Shafts, penetrations

48. Duct shafts, utility penetrations, knee walls and flue shafts opening to exterior or unconditioned space are sealed defines:
a. Garage separation
b. Electrical/phone box on exterior walls
c. Crawl space walls
d. Shafts, penetrations

SECTION 111. SPS 322.38 (1) (b) is renumbered SPS 322.38 (1) (b) 1. and amended to read:

SPS 322.38 (1) (b) 1. The vapor retarder shall be continuous. All joints in a vapor retarder consisting of sheet material shall be overlapped 6 inches and taped or sealed. except as provided in subd. 2. Rips, punctures, and voids in the vapor retarder shall be patched with vapor retarder materials and taped or sealed. Seams that are not over a framing member shall be taped or sealed.

SECTION 112. SPS 322.38 (1) (b) 2. is created to read:

SPS 322.38 (1) (b) 2. Taping or sealing a vapor retarder is not required around doors and windows, behind bathtub enclosures, and at top and bottom wall plates, if the retarder is held to those materials in an airtight manner by other building components, such as gypsum wallboard.

SECTION 113. SPS 322.38 (2) (c) 4. is amended to read:

SPS 322.38 (2) (c) 4. No vapor retarder is required over cavities that ~~are insulated solely with~~ have at least 50% of the required R-value provided by spray-applied foam having a perm rating of 1.0 or less, unless required by the foam manufacturer.

SECTION 114. SPS 322.38 (2) (c) 4. (Note) is repealed.

SECTION 115. SPS 322.38 (2) (c) 5. is created to read:

SPS 322.38 (2) (c) 5. A vapor retarder for a floor over an open, unheated area may consist of 5/8-inch tongue-and-groove oriented-strand board, or 3/4-inch tongue- and-groove CDX plywood, which is exposure-rated plywood.

49. Taping or sealing a vapor retarder is not required around doors and windows, behind bathtub enclosures, and at top and bottom wall plates, if the retarder is held to those materials in an _____ manner by other building components, such as gypsum wallboard.
    a. workman type
    b. breathable
    c. airtight
    d. all of the above
50. No vapor retarder is required over cavities that _____ spray-applied foam having a perm rating of 1.0 or less, unless required by the foam manufacturer.
    a. are insulated solely with
    b. have at least 50% of the required R-value provided by
    c. both a & b
    d. none of the above
51. A vapor retarder for a floor over an open, unheated area may consist of _____ which is exposure-rated plywood.
    a. 5/8-inch tongue-and-groove oriented-strand board
    b. 3/4-inch tongue- and-groove CDX plywood
    c. both a & b
    d. none of the above
52. The vapor retarder shall be continuous. All joints in a vapor retarder consisting of sheet material shall be overlapped ___ inches and taped or sealed.
    a. 2
    b. 4
    c. 6
    d. 12
53. Rips, punctures, and voids in the vapor retarder shall be _____.
    a. taped
    b. sealed
    c. patched with vapor retarder materials
    d. all of the above
54. Seams that are just over a framing member shall be taped or sealed.
    a. true
    b. false

SECTION 116. SPS 322.42 (1m) is created to read.

SPS 322.42 (2) Cooling supply ducts that pass through unconditioned spaces conducive to condensation, such as attics, shall be provided with insulation having a thermal resistance of at least R–8. The exterior of that insulation shall be covered with a vapor retarder that meets the requirements in s. SPS 322.38 (1)

SECTION 117. SPS 322.43 (7) (intro) and 1. and 2. and (8) are created to read:

SPS 322.43 (7) Except where exempted as indicated in par. (8), duct tightness shall be verified by either of the following:

1. Post construction test: Leakage to outdoors shall be less than or equal to 8 cfm per 100 ft^2 of conditioned floor area or a total leakage less than or equal to 12 cfm per 100 ft^2 of conditioned floor area when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test.

2. Rough-in test: Total leakage shall be less than or equal to 6 cfm per 100 ft^2 of conditioned floor area when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the roughed in system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test. If the air handler is not installed at the time of the test, total leakage shall be less than or equal to 4 cfm per 100 ft^2 of conditioned floor area.

(8) A duct tightness test is not required if the air handler and all ducts are located within conditioned space.

SECTION 118. SPS 322.44 and (title) are renumbered 322.44, (title) and (3).

SECTION 119. SPS 322.44 (1) and (2) are created to read:

SPS 322.44 (1) Mechanical system piping capable of carrying fluids above 105°F (41°C) or below 55°F (13°C) shall be insulated to a minimum of R-3.

(2) All circulating service hot water piping shall be insulated to at least R-2. Circulating hot water systems shall include an automatic or readily accessible manual switch that can turn off the hotwater circulating pump when the system is not in use.

55. Except where exempted as indicated in par. (8), duct tightness shall be verified by either of the following:
    a. Post construction test
    b. Rough-in test
    c. both a or b
    d. none of the above

56. Cooling supply ducts that pass through unconditioned spaces conducive to condensation, such as attics, shall be provided with insulation having a thermal resistance of at least R–____.
    a. 4
    b. 6
    c. 8
    d. 10

57. Cooling supply ducts that pass through unconditioned spaces conducive to condensation, such as attics, shall be provided with insulation. The exterior of that insulation shall be covered with a _____that meets the requirements in s. SPS 322.38 (1).
    a. foam insulation
    b. bubble wrap
    c. vapor retarder
    d. all of the above

SECTION 120. SPS 322. 47 (title), and (1) and (2) are created to read:

SPS 322. 47 Equipment requirements. (1) Mechanical ventilation outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.

(2) Snow melt system controls. Snow- and ice-melting systems, supplied through energy service to the building, shall include automatic controls capable of shutting off the system when the pavement

temperature is above 50°F, and no precipitation is falling and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40°F.

SECTION 121. SPS 322.48 (title), (intro), and (1), (2) (title) and (a) to (c), and (3) (title) and (a) and (b) are created to read:

58. Snow melt system controls. Snow- and ice-melting systems, supplied through energy service to the building, shall include _____ controls capable of shutting off the system when the pavement temperature is above 50°F, and no precipitation is falling and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40°F.

a. manual
b. semi-automatic
c. automatic
d. all of the above

SPS 322.48 Indoor Pools. Indoor pools shall be provided with energy- conserving measures in accordance with all of the following:

(1) POOL HEATERS. All pool heaters shall be equipped with a readily accessible on-off switch to allow shutting off the heater without adjusting the thermostat setting. Pool heaters fired by natural gas shall not have continuously burning pilot lights.

(2) TIME SWITCHES. (a) Except where allowed in pars. (b) and (c), time switches that can automatically turn off and on heaters and pumps according to a preset schedule shall be installed on swimming pool heaters and pumps.

(b) Where public health standards require 24-hour pump operation, time switches are not required.

(c) Where pumps are required to operate solar- and waste-heat-recovery pool heating systems, time switches are not required.

SECTION 122. SPS 322.49 is created to read:

SPS 322.49 **Lighting Equipment.** A minimum of 50 percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps.

59. POOL HEATERS. All pool heaters shall be equipped with a readily accessible on-off switch to allow shutting off the heater without adjusting the thermostat setting. Pool heaters fired by _____ gas shall not have continuously burning pilot lights.

a. LP
b. bottle
c. natural
d. all of the above

60. A minimum of ___ percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps.

a. 40
b. 50
c. 60
d. 80

2016 Energy Update Quiz

1	a	b	c	d	21	a	b	c	d	41	a	b	c	d
2	a	b	c	d	22	a	b	c	d	42	a	b	c	d
3	a	b	c	d	23	a	b	c	d	43	a	b	c	d
4	a	b	c	d	24	a	b	c	d	44	a	b	c	d
5	a	b	c	d	25	a	b	c	d	45	a	b	c	d
6	a	b	c	d	26	a	b	c	d	46	a	b	c	d
7	a	b	c	d	27	a	b	c	d	47	a	b	c	d
8	a	b	c	d	28	a	b	c	d	48	a	b	c	d
9	a	b	c	d	29	a	b	c	d	49	a	b	c	d
10	a	b	c	d	30	a	b	c	d	50	a	b	c	d
11	a	b	c	d	31	a	b	c	d	51	a	b	c	d
12	a	b	c	d	32	a	b	c	d	52	a	b	c	d
13	a	b	c	d	33	a	b	c	d	53	a	b	c	d
14	a	b	c	d	34	a	b	c	d	54	a	b	c	d
15	a	b	c	d	35	a	b	c	d	55	a	b	c	d
16	a	b	c	d	36	a	b	c	d	56	a	b	c	d
17	a	b	c	d	37	a	b	c	d	57	a	b	c	d
18	a	b	c	d	38	a	b	c	d	58	a	b	c	d
19	a	b	c	d	39	a	b	c	d	59	a	b	c	d
20	a	b	c	d	40	a	b	c	d	60	a	b	c	d

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