

## Oklahoma Uniform Building Code Commission

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> www.ok.gov/oubcc

(Located at Shepherd Mall)

# **History and Purpose**

- The OUBCC was created by the legislature in 2009 and was mandated to provide state-wide *minimum* building codes for residential and commercial construction for use by all entities within the state. O.S. 59 § 1000.20-1000.29
- These *minimum* building codes are created utilizing the review and adoption of existing codes by reference through the Oklahoma Secretary of State's Office of Administrative Rules.

  O.S. 59 § 1000.24

# **Composition of the Commission**

## The Commission is comprised of eleven (11) members. 0.5.59 §1000.21

- 1. David Timberlake (Chairman) represents general commercial contractors
- 2. Larry Herzel (Vice-Chairman) represents licensed architects
- 3. Curtis McCarty represents general contractors for residential construction
- 4. Ross Barrick represents electrical contractors
- 5. Danny Hancock represents plumbing contractors
- 6. Joe McKenzie represents heating and cooling contractors
- 7. Amber Armstrong is a Certified Building Official employed by a political subdivision
- 8. David Hall represents the insurance industry with knowledge of building codes and experience in property loss mitigation
- 9. Chris Henderson represents a local-level regulator/inspector who has represented municipalities and had statutory functions for municipalities for at least fifteen (15) years prior to November 1, 2005
- 10. Cary Williamson represents the State Fire Marshal as his appointee
- 11. Jim George represents the Construction Industries Board as an appointee



### Staff at the Commission

Chief Executive Officer:

Billy Pope – <u>Billy.Pope@oubcc.ok.gov</u>

**Executive Assistant:** 

Kathy Hehnly – <u>Kathy.Hehnly@oubcc.ok.gov</u>

Administrative Assistant

Shawnta Mitchell – <u>Shawnta.Mitchell@oubcc.ok.gov</u>



# **Funding for the OUBCC**

The OUBCC utilized a \$200,000 grant to start up the agency in 2009 from the American Recovery and Reinvestment Act (ARRA) funds given to the state of Oklahoma.

Statutes allow for the OUBCC to collect up to \$5.00 for each building permit issued by any jurisdiction in Oklahoma. Statutes further allow for each jurisdiction to charge an additional fee up to \$0.50 per permit to cover their administrative costs. 59 O.S. § 1000.25

The OUBCC currently collects a \$4.00 fee for each permit issued. Jurisdictions report monthly to the OUBCC either manually or by utilizing our on-line reporting system.



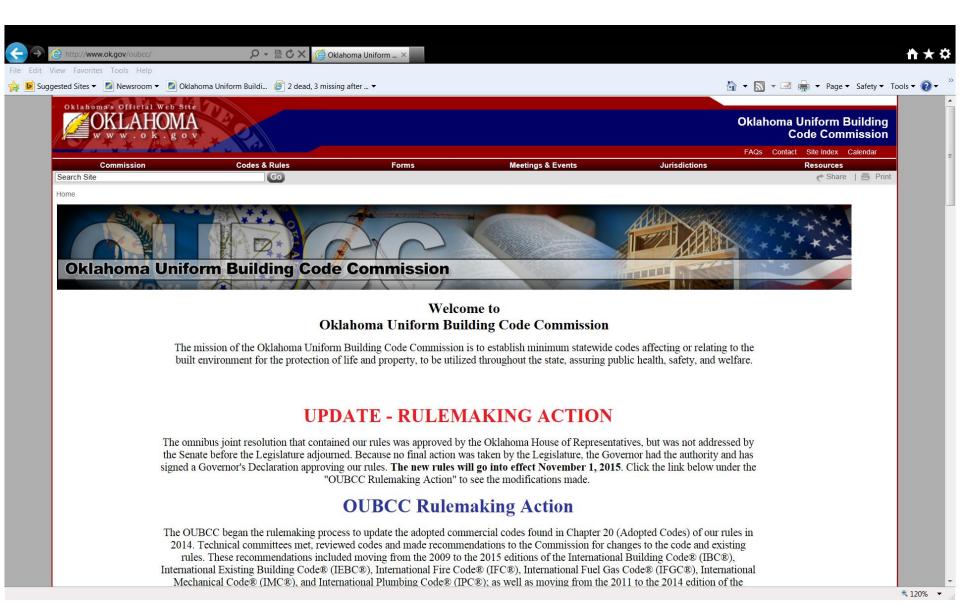
# Code Approval Process Technical Committees

#### Overview:

The Commission determines which codes should be reviewed and then creates technical committees to review the codes. These technical committees will be required to review the codes and make recommendations on any changes needed to fit the needs of Oklahoma. 59 O.S. 1000.24(B)(5).

#### **Technical Committee Make Up:**

Each technical committee will include at least one Commissioner who will serve as a liaison to the Commission. All other members will be from the public providing in general for a cross-section of expert representatives in the field of construction related to the task assignment given to the Committee by the Commission.





# **Adopted Codes**

The first code adopted by the Commission was the International Residential Code® (IRC®), 2009 edition. The IRC® was adopted as amended and modified by the Commission and became effective July 15, 2011 as the statewide *minimum* standard for residential construction for one- and two-family dwellings and townhouses pursuant to 59 O.S. §1000.23.

Effective November 1, 2012 the following codes were adopted as amended and modified by the Commission:

- 1. International Building Code®, 2009 Edition (IBC®)
- 2. International Existing Building Code®, 2009 Edition (IEBC®)
- 3. International Fire Code®, 2009 Edition, (IFC®)
- 4. International Fuel Gas Code®, 2009 Edition (IFGC®)
- 5. International Mechanical Code®, 2009 Edition (IMC®)
- 6. International Plumbing Code®, 2009 Edition (IPC®)
- 7. National Electrical Code®, 2011 Edition (NEC®) NFPA 70

In 2015 the Commission adopted updated versions of the following codes:

- 1. International Building Code®, 2015 Edition (IBC®, 2015)
- 2. International Existing Building Code®, 2015 Edition (IEBC®, 2015)
- 3. International Fire Code®, 2015 Edition, (IFC®, 2015)
- 4. International Fuel Gas Code®, 2015 Edition (IFGC®, 2015)
- 5. International Mechanical Code®, 2015 Edition (IMC®, 2015)
- 6. International Plumbing Code®, 2015 Edition (IPC®, 2015)
- 7. National Electrical Code®, 2014 Edition (NEC®, 2014) NFPA 70

The modifications adopted go into effect on November 1, 2015.

All codes adopted by the OUBCC apply statewide, regardless if the jurisdiction in which the work is being done has an Authority Having Jurisdiction.



## International Residential Code®, 2009 (IRC®, 2009)

The 2009 edition of the International Residential Code was adopted by the OUBCC and went into effect on July 15, 2011.

The OUBCC did not modify anything in Chapter 9 of the code, so it stands as published. The questions pertaining to roofing that we get the most calls on is below with the ICC commentary.

#### **Section 905 – Requirements for Roof Coverings**

**R905.1 Roof covering application.** Roof coverings shall be applied in accordance with the applicable provisions of this section and the manufacturer's installation instructions. Unless otherwise specified in this section, roof coverings shall be installed to resist the component and cladding loads specified in Table R301.2(2), adjusted for height and exposure in accordance with Table R301.2.(3).

**ICC Commentary:** In addition to the minimum requirements specified for roof coverings in the code, manuals published by various associations provide detailed discussions of the proper methods of installing roof coverings. These methods have been established based on many years of experience with the materials and their performance. Although the provisions in these documents are not specific code requirements, this section

mandates the use of the manufacturer's installation instructions. It is important that roof coverings remain intact and in place when subjected to wind. Without an intact roof covering, the building would be subjected to either water damage, which could reduce its structural stability, or to higher wind pressures than the building is designed for. Unless Section R905 specifies otherwise, roof coverings must be installed to resist the wind pressures determined from Table R301.2(2).

**R905.2 Asphalt shingles.** The installation of asphalt shingles shall comply with the provisions of this section.

**ICC Commentary:** This section regulates asphalt shingles composed of organic felt or glass felt and coated with mineral granules. Provisions address requirements for sheathing, roof slope, underlayment, fasteners and attachment.



**R905.2.1 Sheathing requirements.** Asphalt shingles shall be fastened to solidly sheathed decks.

**ICC Commentary:** The code requires a solid roof surface for the installation of asphalt shingles. Section R803 regulates solid sheathing.

#### Section R803 – Roof Sheathing

**R803.1 Lumber sheathing.** Allowable spans for lumber used as roof sheathing shall conform to Table R803.1. Spaced lumber sheathing for wood shingle and shake roofing shall conform to the requirements of Sections R905.7 and R905.8. Spaced lumber sheathing is not allowed in Seismic Design Category  $D_2$ .

Table R803.1 MINIMUM THICKNESS OF LUMBER ROOF SHEATHING

RAFTER OR BEAM SPACING (INCHES)	MINIMUM NET THICKNESS (INCHES)	
24	5/8	
48 <sup>a</sup>		
60 <sup>b</sup>	1 1/2 T & G	
72°		

For SI: 1 inche = 25.4 mm.

a. Minimum 270  $F_{hr}$  340,000 E.

b. Minimum 420 F<sub>h</sub>, 660,000 E.

c. Minimum 600 F<sub>b</sub>, 1,150,000 E.



#### R803.2 Wood structural panel sheathing.

**R803.2.1 Identification and grade.** Wood structural panels shall conform to DOC PS 1, DOC PS 2, or, when manufactured in Canada, CSA O437 or CSA O325, and shall be identified by a grade mark or certificate of inspection issued by an approved agency. Wood structural panels shall comply with the grades specified in Table R503.2.1.1(1).

**R803.2.1.1** Exposure durability. All wood structural panels, when designed to be permanently exposed in outdoor applications, shall be of an exterior exposure durability. Wood structural panel roof sheathing exposed to the underside may be of interior type bonded with exterior glue, identified as Exposure I

**R803.2.1.2** Fire-retardant-treated plywood. The allowable unit stresses for fire-retardant-treated plywood, including fastener values, shall be developed from an approved method of investigation that considers the effects of anticipated

temperature and humidity to which the fire-retardant-treated plywood will be subjected, the type of treatment and redrying process. The fire-retardant-treated plywood shall be graded by an approved agency.

**R803.2.2** Allowable spans. The maximum allowable spans for wood structural panel roof sheathing shall not exceed the values set forth in Table R503.2.1.1(1) or APA E30.

**R803.2.3 Installation.** Wood structural panel used as roof sheathing shall be installed with joints staggered or not staggered in accordance with Table R602.3(1) or APA E30 for wood roof framing or with Table R804.3 for steel roof framing.

**R905.2.2 Slope.** Asphalt shingles shall be used only on roof slopes of two units vertical in 12 units horizontal (2:12) or greater. For roof slopes from two units vertical in 12 units horizontal (2:12) and up to four units vertical in 12 units horizontal (4:12), double underlayment application is require in accordance with Section R905.2.7.

**ICC Commentary:** The performance on all roof coverings is based in part on the slope of the roof surface. As the slope of the roof decreases, water drainage is slowed, and the

potential for water intrusion increases because of the greater potential of water back-up under the roofing. Asphalt shingles, because of their configuration and installation methods are restricted to use on roofs having a minimum slope of 2:12. Where the slope is no steeper than 4:12 the underlayment must be doubled to provide a grater barrier to leakage. Section R905.2.7 specifies the method of such double underlayment.

**R905.2.3 Underlayment.** Unless otherwise noted, required underlayment shall conform to ASTM D266 Type I, ASTM D 4869 Type I, or ASTM D 6757. Self-adhering polymer modified bitumen sheet shall comply with ASTM D 1970.

**ICC Commentary:** Four types of underlayment are recognized for use with asphalt shingle roof coverings; asphalt-saturated organic felts as regulated by ASTM D 266, Type I; asphalt-saturated organic felt shingles, per ASTM D 4869, Type I; inorganic underlayment for use with steep slope roof, per ASTM D 6767; and self-adhering polymer modified bitumen sheet materials are addressed in ASTM D 1970. Section R905.2.7 contains the methods prescribed for the installation of underlayment for asphalt shingles.



**R905.2.4 Asphalt Shingles.** Asphalt shingles shall comply with ASTM D 225 or D 3462.

**ICC Commentary:** Two test standards regulate asphalt shingles, ASTM D 225 addresses asphalt shingles made from organic felt, while ASTM D 3462 deals with shingles made from glass felt. Both shingle types are surfaced with mineral granules.

R905.2.4.1 Wind resistance of asphalt shingles. Asphalt shingles shall be tested in accordance with ASTM D 7158. Asphalt shingles shall meet the classification requirements of Table R905.2.4.1(1) for the appropriate maximum basic wind speed. Asphalt shingle packaging shall bear a label to indicate compliance with ASTM D 7158 and the required classification in Table R905.2.4.1(1). Exception: Asphalt shingles not included in the scope of ASTM D 7158 shall be tested and labeled to indicate compliance with ASTM D 3161 and the required classification in table R905.2.4.1(2).

**ICC Commentary:** This section provides requirements for the testing, classification and labeling of asphalt shingles to demonstrate resistance to wind forces. The asphalt shingles must meet the classification requirement for the appropriate maximum basic wind speed and comply with the appropriate product standard. The required standard is ASTM D 7158 with an exception for products outside the scope of ASTM D 7158. ASTM D 7158



Provides a method of testing that is appropriate for sealed asphalt shingles. The exception references ASTM D 3161 and is necessary for unsealed shingles. Tables R905.2.4.1(1) and R905.2.4.1(2) provide the proper application of the two standards. The tables will assist in the proper selection of asphalt shingles based upon the appropriate basic wind speed and the applicable standard.

TABLE R905.2.4.1(1)
CLASSIFICATION OF ASPHALT ROOF SHINGLES PER ASTM D 7158

MAXIMUM BASIC WIND SPEED FROM FIGURE 301.2(4) (mph)	CLASSIFICATION REQUIREMENT	
85	D, G, or H	
90	D, G, or H	
100	G or H	
110	G or H	
120	G or H	
130	Н	
140	Н	
150	Н	

For SI: 1 mile per hour = 0.447 m/s.



# TABLE R905.2.4.1(2) CLASSIFICATION OF ASPHALT SHINGLES PER ASTM D 3161

MAXIMUM BASIC WIND SPEED FROM FIGURE 301.2(4) (mph)	CLASSIFICATION REQUIREMENT	
85	A, D, or F	
90	A, D or F	
100	A, D, or F	
110	F	
120	F	
130	F	
140	F	
150	F	

For SI: 1 mile per hour = 0.447 m/s.

**R905.2.5 Fasteners.** Fasteners for asphalt shingles shall be galvanized steel, stainless steel, aluminum or copper roofing nails, minimum 12 gage [0.105 inch (3 mm)] shank with a minimum 3/8-inch (10 mm) diameter head. ASTM F 1667, of a length to penetrate through the roofing materials and a minimum of <sup>3</sup>/<sub>4</sub> inch (19 mm) into the roof sheathing. Where the roof sheathing is less than <sup>3</sup>/<sub>4</sub> inch (19 mm) thick, the fasteners shall penetrate through the sheathing. Fasteners shall comply with ASTM F 1667.

**ICC Commentary:** Roofing nails must be of a corrosion-resistant material, specified in this section as either galvanized steel, stainless steel, aluminum, or copper. A roofing nail must have a minimum 12 gage shank with a head at least 3/8 inch (9.5 mm) in diameter. To provide the necessary holding power, roofing nails must penetrate the roof sheathing a minimum of 3/4 inch (19.1 mm). For roof sheathing having a thickness less than 3/4 inch (19.1 mm), the nails must penetrate completely through the sheathing. The material specification standard for roofing nails is ASTM F 1667.

**R905.2.6 Attachment.** Asphalt shingles shall have the minimum number of fasteners required by the manufacturer, but not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 21 units vertical in 12 units horizontal (21:12, 175 percent slope) shingles shall be installed as required by the manufacturer.

**ICC Commentary:** Section R905.2.4.1 requires the wind resistance of asphalt shingles to be determined by ASTM D 7158 or ASTM D 3161. The ASTM D 7158 test method covers the procedure for calculating the wind resistance of asphalt shingles when applied in accordance with the manufacture's instruction and sealed under defined conditions. The ASTM D 3161 test method covers the procedure for testing asphalt shingles that are

resistant to wind blow-up or blow-off when applied on low slopes in accordance with the manufacturers instructions. This test method may be used to test self-sealing or interlocked shingles.

Neither of these tests is a test of the fasteners. However, fastening in accordance with the manufacturer's instruction is required for shingles that pass these tests.

The minimum number of fasteners for asphalt shingles must be the number required by the manufacturer's instructions. Except for steep roof slopes, the minimum quantity of fasteners per shingle is four for strip shingles and two for individual shingles.

For steep roof slopes (slopes greater than 21:12), the manufacture's installation instructions and minimum quantity of fasteners per shingles must be followed.

R905.2.7 Underlayment application. For roof slopes from two units vertical in 12 units horizontal (17-percent slope), up to four units vertical in 12 units horizontal (33-percent slope), underlayment shall be two layers applied in the following manner. Apply a 19-inch (483 mm) strip of underlayment felt parallel to and starting at the eave, apply 36-inch wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm) and fastened sufficiently to hold in place. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. For roof slopes of four units



vertical in 12 units horizontal (33-percent slope) or greater, underlayment shall be applied in the following manner. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches (51 mm), fastened sufficiently to hold in place. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be offset by 6 feet (1829 mm).

ICC Commentary: This section specifies the underlayment requirements for asphalt shingles installed on both low-slope and high-slope roofs. Low-slope roofs present a potential problem because water drains slowly, and this creates the opportunity for water back-up. Therefore, a special underlayment application method is used so that the roof remains weathertight. All portions of the roof will be protected by a minimum of two layers of underlayment if the installer follows the instructions found in this section. Only one layer of underlayment applied in shingle fashion in accordance with this section, is mandated for high-slope roofs of asphalt shingles. For both low-slope and high-slope roofs the underlayment must not have distortions that will interfere with the ability of the shingles to lie flat and seal. Installation of shingles over a distorted surface can result in reduced wind resistance and unacceptable aesthetics.

R905.2.7.1 Ice barrier. In areas where there has been a history of ice forming along the eaves causing a backup of water as designated in Table R301.2(1), an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet, shall be used in lieu of normal underlayment and extend from the lowest edges of all roof surfaces to a point at least 24 inches high (610 mm) inside the exterior wall line of the building. Exception: Detached accessory structures that contained no conditioned floor area.

ICC Commentary: Where ice dams may be formed along the eave because snow continually freezes and thaws or frozen slush backs up in gutters, the underlayment application in the area of the eaves must be modified to prevent ice dams from forcing water under the roofing, which could damage ceilings, walls, and insulation. Two layers of underlayment should be cemented together with asphalt cement from the lowest edge of the roof and continue up the roof to a point that is at least 24 inches (610 mm) inside the interior wall line of the building. The environment within the envelope of the building provides adequate warmth to prevent ice dams from forming above the heated space; therefore, the two layers of cemented underlayment are permitted to terminate 24 inches (610 mm) inside the interior wall line of the building.

The local jurisdiction is responsible for determining whether the ice barrier is required based on weather records, and it must so indicate in Table R301.2(1).

An exception to this section exempts accessory buildings from such restrictions because they are unheated structures where the need for protection against ice dams is unnecessary. The same exception is found in Sections R905.4.3.1, R905.5.3.1, R905.6.3.1, R905.7.3.1, and R905.8.3.1.

**R905.2.7.2 Underlayment and high wind.** Underlayment applied in areas subject to high winds 'above 110 mph (49 m/s) per Figure R301.2(4)] shall be applied with corrosion-resistance fasteners in accordance with the manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914 mm) on center.

**ICC Commentary:** In high-wind areas, corrosion-resistant fasteners must be located in accordance with the manufacture's installation instructions, but in no case can they be more than 36 inches (914 mm) on center. The general requirement for sufficient fastening to hold the underlayment in place is not adequate where increase wind loads anticipated.

**R905.2.8 Flashing.** Flashing for asphalt shingles shall comply with this section.

**ICC Commentary:** This section sets forth the special conditions for flashing installed as part of an asphalt shingle roof system. Specific flashing locations addressed includes base and cap flashing, valleys, crickets and saddles and sidewall flashing.

R905.2.8.1 Base and cap flashing. Base and cap flashing shall be installed in accordance with manufacture's installation instructions. Base flashing shall be of either corrosion-resistant metal of minimum nominal 0.019-inch (0.5 mm) thickness or mineral surface roll roofing weighing a minimum of 77 pounds per 100 square feet (4 kg/m²). Cap flashing shall be corrosion-resistant metal of a minimum nominal 0.019-inch (0.5 mm) thickness.

**ICC Commentary:** If metal is used as a cap or base flashing, it must be corrosion resistant and have a minimum nominal thickness of 0.019-inch (0.483 mm). Mineral-surface roll roofing may also be used as base flashing, if it has a minimum weight of 77 pounds per  $100 \text{ square feet } (4 \text{ kg/m}^2)$ .



**R905.2.8.2 Valleys.** Valley linings shall be installed in accordance with the manufacture's installation instructions before applying shingles. Valley linings of the following types shall be permitted:

- 1. For open valleys (valley lining exposed) lined with metal, the valley lining shall be at least 24 inches (610 mm) wide and of any of the corrosion-resistant metals in Table R905.2.8.2
- 2. For open valleys, valley lining of two piles of mineral surfaced roll roofing, complying with ASTM D 3909 or ASTM D 6380 Class M, shall be permitted. The bottom layer shall be 18 inches (457 mm) and the top layer a minimum of 36 inches (914 mm) wide.
- 3. For closed vales (valley covered with shingles), the valley lining of one ply of smooth roll roofing complying with ASTM D 6380 and at least 36 inches wide (914 mm) or valley lining as described in Item 1 or 2 above shall be permitted. Self-adhering polymer modified bitumen underlayment complying with ASTM D 1970 shall be permitted in lieu of the lining material.

**ICC Commentary:** Open valley linings may be of either metal or mineral surfaced roll roofing as set forth in this section. Closed valleys are also permitted with a number of lining alternatives available.



#### TABLE R905.2.8.2 VALLEY LINING MATERIAL

MATERIAL	MINIMUM THICKNESS (inches)	GAGE	WEIGHT (pounds)
Cold-rolled copper	0.0216 nominal	-	ASTM B 370, 16 oz. per square foot
Lead-coated copper	0.0216 nominal	-	ASTM B 101, 16 oz. per square foot
High-yield copper	0.0162 nominal	-	ASTM B370, 12 oz. per square foot
Lead-coated high- yield copper	0.0162 nominal	-	ASTM B101, 12 oz. per square foot
Aluminum	0.024	-	-
Stainless steel	-	28	-
Galvanized steel	0.0179	26 (zinc coated G90)	-
Zinc alloy	0.027	-	-
Lead	-	-	2 1/2
Painted terne	-	-	20

For SI: 1 inch = 25.4 mm, 1 pound =0.54 kg.

**ICC Commentary:** If exposed corrosion-resistant metal materials are used as valley linings, they are regulated by this table. The table identifies a variety of acceptable metal linings, including copper, aluminum, stainless steel, galvanized steel, zinc alloy, lead, and painted terne. The materials are regulated by their thickness, gage or weight.



The OUBCC has received numerous calls and questions regarding the sheathing for roofs. One of the issues has been the reported issue with insurance companies refusing to cover policy endorsements if the jurisdiction was not inspecting roofs as the insurance company determined the code was not enforced if not inspected.

We reached out to the Oklahoma Insurance Department (OID) and are working with them to resolve this issue. The OID has opened an investigation. The contact with the OID is:

#### Tyler Laughlin

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Five Corporate Plaza
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Office: 405-522-6654

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# 2015 and Beyond

#### **Spring**, 2015:

The 2015 Edition of the International Residential Code® in the process of review for possible adoption. Final presentation will be submitted in late fall. If approved by the Governor and the Legislature, the updated code will be effective November 1, 2016.

Alternative Fuels Program Technical Committee: A technical committee is currently reviewing and will be recommending further changes to the 2015 editions of the International Fire Code® and International Fuel Gas Code®, and the 2014 Edition of the National Electrical Code® to bring these codes in alignment to industry standards in relation to alternative fuel fueling stations and repair garages.



Questions?



#### Oklahoma Uniform Building Code Commission

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#### www.ok.gov/oubcc

If you wish to be added to our notification list (meeting agendas and other important information), please contact Kathy Hehnly at <u>Kathy.Hehnly@oubcc.ok.gov</u>