

Provider:

Florida Refrigeration and Air Conditioning Contractors Association  
466 94<sup>th</sup> Avenue N., St. Petersburg, FL 33702  
727-576-3225 / fax 727-578-9982 / email: [charris@fracca.org](mailto:charris@fracca.org)

Course Title: Advanced Mechanical/Energy Code  
Course Edition: 2010 Florida Building Code

Provider #0003199                      Course #0009078 Resubmitted for On-line Use

## COURSE SYLLABUS INFORMATION

### Course Description

This one hour course will provide the contractor with information on the most recent building mechanical and energy code requirements.

### Course Objectives

This course will update contractors on the Florida building mechanical and energy code requirements and how the differences from the previous versions of the code affect their projects.

### Time Line

- |   |                  |
|---|------------------|
| <b>I. New Base Code – Overview</b>  | <b>2 minutes</b> |
| <ul style="list-style-type: none"><li>• 2009 International Energy Conservation Code (IECC)</li><li>• Florida specifics are integrated into the document</li><li>• The biggest change is reorganization of the code</li><li>• The energy code will once again become a separate document: the <i>Florida Building Code, Energy Conservation</i></li><li>• The code will become 5% more stringent than it is now<ul style="list-style-type: none"><li>• 20% more stringent than the 2006 IECC</li><li>• The base code is more prescriptive, so the “you gotta’s” likely make up the 5% increase in stringency</li></ul></li></ul> |                  |
| <b>II. New Code Format - FBC Energy Conservation -Table of Contents</b>   | <b>1 minute</b>  |
| <b>III. Compliance Chapter Format - FBC Energy Conservation – Chapter 1, Part 1, Section 101.5</b>  | <b>1 minute</b>  |
| <b>IV. Compliance Methods –FBC Energy Conservation – Chapter 1, Part 1, Section 103.2.1 and 103.2.2 Prescriptive Method</b>   | <b>5 minutes</b> |
| <b>FBC Residential Building Form 402</b> <ul style="list-style-type: none"><li>• Residential will have an alternate Form 402 from a Florida-specific ResCheck</li></ul>   |                  |

### **FBC Commercial Building Form 502**

- No EZ Com will be available
- Form 502 is only for shell buildings, renovations, changeouts

#### Performance Method

- **FBC Residential Building Form 405**
- **FBC Commercial Building Form 506**

### **V. Computer programs for code compliance - FBC Energy Conservation – Chapter 4 – Section 405.1 and Section 405.2** **3 minutes**

- Computer programs allowed to be used for code compliance are no longer referenced by the code
- Programs will be approved separately by the Florida Building Commission
- They must utilize the Standard Reference Design (baselines) and other criteria from Normative Appendix B and demonstrate validity to the Commission.
- They must print out in a format familiar to the building departments inspecting for code compliance.

### **VI. Limited/special use buildings; alternate materials & methods - FBC Energy Conservation Chapter 1 – Section 101.4.10 (Special Use) and Chapter 1 – Section 102.1 and 102.1.1 (Alternate materials)** **2 minutes**

- Buildings determined by the code official to have a **limited energy use or special use** requirement may have code requirements adjusted by the code official where nationally recognized energy analysis procedures are used to demonstrate that the building would use less energy than a code compliant building.
- Code official may approve **alternate materials & methods** where a nationally recognized energy analysis procedure is used to demonstrate that a building or component will use less energy than a code compliant building or component.
- Code no longer requires Commission approval of materials and methods.

### **VII. Replacement of HVAC equipment - FBC Energy Conservation – Chapter 4 – Section 403.6, 403.6.1 (Sizing) and Chapter 1 – Section 101.4.7.1 and 101.4.7.1.1 (Duct Sealing)** **10 minutes**

- Mix-matched criteria unchanged.
- Equipment sizing no longer exempted for existing buildings.
- Existing equipment need not meet minimum code efficiencies; shall be returned to the conditions of its listing.
- With total replacement of HVAC evaporators and condensing units, **all accessible** ( $\geq 30$  inches clearance) **joints & seams in the air distribution system** shall be inspected and sealed where needed using reinforced mastic or code approved equivalent
  - Signed certification by the contractor attached to air handler
  - Exceptions:
    1. Ducts in conditioned space
    2. Joints or seams that are already sealed with fabric & mastic
    3. If system is tested and repaired as necessary.

## VIII. Residential: What's new?

15 minutes

**FBC Energy Conservation – Chapter 4, Section 402.4 Air leakage**

**FBC Energy Conservation – Chapter 4, Section 402 - T402.11 Windows**

**FBC Energy Conservation – Chapter 4, Section 403.1 – 403.2.1 Systems**

**FBC Energy Conservation – Chapter 4, Appendix C, Forms, 402-2010**

- Air infiltration
  - **Blower door test to  $\leq 7$  ACH or checklist for inspection**
  - Recessed lights shall be IC-rated and labeled to meet ASTM E 283
- Window limits
  - Prescriptive compliance: **Max. 20% CFA; U-factor  $\leq 0.65$ ; SHGC  $\leq 0.30$**
  - Performance compliance: **Max. weighted average SHGC 0.50** except if 4' overhang
- Ducts:
  - Prescriptive compliance: Must be inside conditioned space & tested by BERS Rater
  - Equipment efficiencies & duct sealing referenced to Chapter 5.
  - Programmable thermostat required for forced air systems
  - Lighting: must have 50% high efficacy lamps

### **High-efficacy lamps, defined - FBC Energy Conservation – Chapter 2, Section 202 - Definitions**

Compact fluorescent lamps, T-8 or smaller diameter linear lamps, or lamps with a minimum efficacy of:

1. 60 lumens per watt for lamps over 40 watts,
2. 50 lumens per watt for lamps over 15 watts to 40 watts, and
3. 40 lumens per watt for lamps 15 watts or less

Examples:

Compact Fluorescent  
Linear Fluorescent  
Metal Halide  
High Pressure Sodium  
LED  
Induction

## IX. Residential Swimming Pools FBC Energy Conservation – Chapter 4, Section 403.9

3 minutes

- Gas pool heaters will have to meet a new national standard of 82% thermal efficiency on April 16, 2013.
- Heated pools shall have a vapor-retardant cover or a liquid cover or some other means to reduce heat loss.
- Pool filtration pump motors shall:
  - Not be split-phase, shaded-pole or capacitor start-induction

- Motors with  $\geq 1$  hp shall have capability of operating at two or more speeds; low speed no more than  $\frac{1}{2}$  the motor's maximum rotation rate
- Motor controls shall have capability to operate at  $\geq 2$  speeds; default residential filtration speed with higher speed override capability--except can be higher for not to exceed 24 hours
  - Except solar pool heating systems during periods of usable solar heat gain

**X. Residential - What's not new?**

**5 minutes**

- Florida equipment "Standard Reference Design" (baselines) did NOT go to "same as Proposed Design" as in the IECC.
  - The IECC does not give credit for higher efficiency systems
  - Florida follows federal law, which requires state codes with baselines to have equipment baselines at federal minimums.
  - Florida's increase in overall stringency comes from a multiplier of 0.80 applied to the entire Standard Reference Design budget...which makes the code 20% more stringent overall than the baseline features.
  - The requirements of Florida's prescriptive compliance method reflect a building that would minimally comply with Florida's performance-based code.
  - There is NO CHANGE to duct requirements for residential buildings complying by the performance method: insulate ducts in attics to R-6; credit is given for duct testing by a certified BERS rater.
- Credits may be claimed as per previous performance-based code.

**XI. Commercial - What's new?**

**15 minutes**

**FBC Energy Conservation – Chapter 5, Section 503.1-503.4**

**FBC Energy Conservation – Chapter 5, Section 503.2.10**

**FBC Energy Conservation – Chapter 5, Section 506.3**

**FBC Energy Conservation – Chapter 5, Section 505.2, and Section 505.6**

- HVAC equipment updated to ASHRAE 90.1-07 addenda
  - IEERs (Integrated Energy Efficiency Ratio) replace IPLVs for most commercial-sized cooling equipment
  - See footnote "c": tables are formatted to combine cooling equipment with different heating types into one category. May subtract 0.2 from required EER and IEER where the heating is not electric resistance heat.
- Equipment is treated as either a simple or complex system.
- New water chilling package table provides 2 paths for determining compliance, A & B, and a new equation for determining chiller efficiency required (for max. full load and NPLV) where not designed for operation at AHRI 550/590 test conditions
- Credit is allowed for Enthalpy Recovery Ventilation (ERVs)
- Credit is provided for vegetative roofs under certain conditions
- Fan power limitation for supply fans, return/relief fans and fan-powered terminal units associated with systems providing heating or cooling capability, now has two options:
  - Allowable fan system motor nameplate hp
  - Fan system bhp

Retail lighting power may now be calculated as follows:

- Additional Interior Lighting Power Allowance = 1000 watts + (Retail Area 1 x 0.6 W/ft<sup>2</sup>) + (Retail Area 2 x 0.6 W/ft<sup>2</sup>) + (Retail Area 3 x 1.4 W/ft<sup>2</sup>) + (Retail Area 4 x 2.5 W/ft<sup>2</sup>)
- Where:
  - Retail Area 1 = The floor area for all products not listed in Retail Areas 2, 3, or 4.
  - Retail Area 2 = The floor area used for the sale of vehicles, sporting goods and small electronics.
  - Retail Area 3 = The floor area used for the sale of furniture, clothing, cosmetics and artwork.
  - Retail Area 4 = The floor area used for the sale of jewelry, crystal and china.
- **Exception:** *Other merchandise categories are permitted to be included in Retail Areas 2 through 4 above, provided that justification documenting the need for additional lighting power based on visual inspection, contrast, or other critical display is approved by the authority having jurisdiction.*
- **Daylight Zone Control.** Daylight zones, as defined by this code, shall be provided with individual controls that control the lights independent of general area lighting. Contiguous daylight zones adjacent to vertical fenestration are allowed to be controlled by a single controlling device provided that they do not include zones facing more than two adjacent cardinal orientations (i.e., north, east, south, west). Daylight zones under skylights more than 15 feet from the perimeter shall be controlled separately from daylight zones adjacent to vertical fenestration.

*Exception: Daylight spaces enclosed by wall or ceiling height partitions and containing two or fewer light fixtures are not required to have a separate switch for general area lighting.*

Exterior lighting is divided into four zones with individual lighting power allowances provided for each type

#### **Lighting zone description**

- Zone 1: Developed areas of national parks, state parks, forest land, and rural areas
- Zone 2: Areas predominately consisting of residential zoning, neighborhood business districts, light industrial with limited nighttime use and residential mixed use areas
- Zone 3: All other areas
- Zone 4: High activity commercial districts in major metropolitan areas as designated by the local land use planning authority

## **XII. Commercial: What's not new?**

**3 minutes**

- Most requirements are the same, just reformatted.
- Duct insulation criteria are the same as '07 code
- Florida-specific duct construction requirements are combined into a table, Table 503.2.7.2
  - New criteria added for plastic duct, duct fasteners
  - Duct support criteria moved to the Mechanical code

- Piping insulation requirements unchanged

**XIII. Code support has moved!!!**

**1 minute**

Method of Instruction

On-line instruction using video presentation by approved instructor. On-line delivery of the course provided by the Contractors Institute platform.

Method of Evaluation

On-line quizzes throughout the session.

Revision May 2, 2012

