

# 2010 CHANGES TO THE *FLORIDA ENERGY CODE*

Effective March 15, 2012

What's new?



...including “fixes” made to the  
code in the 2012 Supplement



# New Base Code

- 2009 *International Energy Conservation Code* (IECC)
- Florida specifics are integrated into the document
- The biggest change is reorganization of the code
- The energy code will once again become a separate document: the *Florida Building Code, Energy Conservation*
- The code will become 5% more stringent than it was in the 2007 code; 20% more stringent than the 2006 IECC
  - The base code is more prescriptive, so the “you gotta’s” likely make up the 5% increase in stringency



# NEW CODE FORMAT

- Chapter 1 ADMINISTRATION
- Chapter 2 DEFINITIONS
- Chapter 3 DESIGN CRITERIA (GENERAL)
- Chapter 4 RESIDENTIAL ENERGY EFFICIENCY
- Chapter 5 COMMERCIAL ENERGY EFFICIENCY
- Chapter 6 REFERENCED STANDARDS
- Appx A JURISDICTIONAL DATA
- Appx B CRITERIA FOR COMPUTER MODELING
- Appx C FORMS

# Compliance Chapter Format

## RESIDENTIAL Sections

- 401 General
- 402 Building Thermal Envelope
- 403 Systems
- 404 Electrical Power and Lighting Systems
- 405 Simulated Performance Alternative

## COMMERCIAL Sections

- 501 General
- 502 Building Envelope Requirements
- 503 Bldg Mechanical Systems
- 504 Service Water Heating
- 505 Electrical Power and Lighting Systems
- 506 Total Building Performance

# Compliance Methods

- The code still has two main compliance methods:
  - **PRESCRIPTIVE:**
    - Residential** section 402 --**Form 402**
      - Residential will have an alternate Form 402 from a Florida-specific ResCheck
    - Commercial** section 502—**Form 502**
      - No EZ Com will be available
      - Form 502 is only for shell buildings, renovations, changeouts
  - **PERFORMANCE:**
    - Residential computer printout—**Form 405**
    - Commercial computer printout—**Form 506**

# Computer programs for use by the PERFORMANCE Method

- 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 by use of criteria in the *Energy Simulation Tool Approval Technical Assistance Manual*.
- They must print out in a format familiar to the building departments inspecting for code compliance.
- Approved programs can be found at the following web site:  
[http://www.floridabuilding.org/fbc/committees/energy/Energy\\_Code\\_Compliance\\_Software.html](http://www.floridabuilding.org/fbc/committees/energy/Energy_Code_Compliance_Software.html)



# In the 2012 Supplement

- The Standard Reference Design criteria for commercial buildings from Chapter 11 of ASHRAE 90.1-2004 are added to Appendix B, Table B-2.2.
- Provides transparency so the designer can see what the building is being compared to (plus the .80 multiplier!)
- Exemptions to code compliance inadvertently omitted from Chapter 1 are added back in by the 2012 Supplement
  - Buildings designed for purposes other than general space comfort conditioning



# Computer programs to demonstrate residential code compliance by the Total UA Alternative

- This is a PRESCRIPTIVE code compliance method alternative for residential applications (Section 402.1.1.3).
- It allows U-value tradeoffs for the building envelope.
- All other criteria for compliance by Section 402 must be met.
- Table 402.1.1.3 was fixed in the 2012 Supplement to change footnote b to the “exterior” of the wall and to change the Mass Wall U-factor allowed to reflect an actual block wall.
- Programs don't have to meet criteria in the *Energy Simulation Tool Approval Technical Assistance Manual*.
- Approved programs (so far) include REScheck Florida and EnergyGauge USA.

# Limited/special use buildings; alternate materials & methods

- 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.
  - Commission approval is no longer required.

# Replacement of HVAC equipment

- Mix-matched criteria unchanged.
- Equipment sizing is now required for **existing residential buildings** (requirement for sizing for existing commercial buildings was deleted in the 2012 Supplement).
- 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 on **residential buildings**, **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.

# Residential: What's new?

- Air infiltration requirements are changed
  - Blower door test to demonstrate  $\leq 7$  ACH **or** checklist for inspection
  - Recessed lights shall be IC-rated and labeled to meet ASTM E 283

# RESIDENTIAL: What's new?

## Section 402:

### Prescriptive compliance

- **Windows:** Maximum 20% of conditioned floor area; U-factor  $\leq 0.65$ ; SHGC  $\leq 0.30$
- **Ducts:** Must be inside conditioned space & tested to  $Q_n \leq 0.03$  by a Class 1 BERS Rater or Class A, B or Mechanical contractor
- **HVAC Controls:** Programmable thermostat required for forced air furnaces

## Section 405:

### Performance compliance

- **Windows:** Maximum weighted average SHGC 0.50 except if 4' overhang
- **Ducts:** No change
- **HVAC Controls:** No change

# Residential lighting: 50% of lights must be high-efficacy lamps

- High-efficacy lamps include compact fluorescent lamps, T-8 or smaller diameter linear fluorescent 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



# New Residential Swimming Pools

- 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

# RESIDENTIAL: What's not?

- 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.
- Credits may be claimed as per previous performance-based code; ceiling fan credit was reinstated by 2012 Supplement.




# Residential: HVAC equipment and air distribution

- Minimum equipment efficiencies and duct sealing requirements are referred to Chapter 5 to avoid duplication.
- Section 402, the Prescriptive code compliance method, requires ducts to be in conditioned space and tested to be “substantially air tight” ( $Q_n \leq 0.03$ ).
  - Duct testing by a certified BERS rater, Class A or B Air-conditioning or Mechanical Contractor (changed by law and the 2012 Supplement)
- A programmable thermostat is required for compliance by Section 402; credit is provided by Section 405.
- There is NO CHANGE to duct requirements for residential buildings complying by Section 405
  - R-8 duct insulation appeared to be required by Section 403.2 but was not specified elsewhere; R-6 was clarified in the 2012 Supplement
  - Credit is given for duct testing to test result level efficiency.

# COMMERCIAL BUILDINGS

## What's new?

- 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

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- 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
  - Credit is allowed for Enthalphy Recovery Ventilation (ERVs)
  - Credit is provided for vegetative roofs under certain conditions

# What happened with the commercial program?

- Unintended consequences were corrected.
- Credit for improved fan power system was inadvertently eliminated at first, but was reinstated with the 2012 Supplement.
- Scheduling issues with “unmet hours” also were resolved with the 2012 Supplement
- The code got more stringent by 5 percent
- Equipment efficiency requirements went up in some cases

# Building envelope requirements in Section 502.1.1.1

- Florida has not had a prescriptive energy code compliance method since the 2004 *Florida Building Code* because of the overall increase in code stringency.
- Apparent R-values for shell buildings are very high (R-40!)
- Section 101.4.9 of the energy code allows shell buildings to comply by either Sec. 502 or Sec. 506, but requires compliance by Section 506 be demonstrated later anyway.
- If complying by Section 506, all assumptions made about features not installed until later that are not on the plans must be listed and appended to the code compliance form.

# COMMERCIAL: What's new, cont.

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.***

# Daylighting control

- **505.2.3 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.*



# COMMERCIAL: What's new, cont.

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



# COMMERCIAL: What's not new?

- 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 (they were corrected in the 2012 Supplement)
- Electrical requirements and motors unchanged

# Code support has moved!!!

- From the Florida Department of Community Affairs (DCA) to the Florida Department of Business and Professional Regulation (DBPR).
- The Building Code Information System remains at [www.floridabuilding.org](http://www.floridabuilding.org)
- Individual email addresses are changed to put .dbpr where .dca used to be.
  - Example: [Ann.Stanton@dbpr.state.fl.us](mailto:Ann.Stanton@dbpr.state.fl.us)
- Telephone numbers will change as well. If all else fails, try [www.myflorida.com](http://www.myflorida.com), click on 411 on top and search by agency or person.