



FLORIDA BUILDING COMMISSION REPORT AND  
RECOMMENDATIONS TO THE 2008 FLORIDA  
LEGISLATURE

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## 1. Executive Summary and Recommendations

The primary focus of the Florida Building Commission during 2007 was the triennial code update process culminating with the adoption of the 2007 Edition of the Florida Building Code (Code). This represents the second update and third edition of the Code, with an effective date of October 1, 2008. As a major component of the Code Update process the Commission effected code enhancements to the Florida Energy Code, as well as enhancements to the wind, water intrusion and hurricane protection provisions of the Florida Building Code.

In addition, the Commission convened several workgroups with affected stakeholder interests to develop recommendations on product approval, window installation and water intrusion, termite code provisions, energy efficiency and green building, and recommendations regarding public education and awareness of energy efficiency and building green.

During 2007 the Commission once again focused on consensus-building efforts regarding the implementation of Commission policy, with extensive input from stakeholders and interests affected by Commission policy. Chairman Raul L. Rodriguez, AIA, encouraged and led the Commission's consensus-building initiatives. In addition, as required by the 2007 Legislature, the Commission eliminated windborne debris protection exceptions, and eliminated from the Code the option regarding interior pressure design. Finally, the Commission continued with its focus of developing storm damage investigations and research and adopting code amendments related to making Florida's structures, and the products that comprise them, more storm resistant.

The Florida Building Code System was developed after Hurricane Andrew to streamline statewide adoption and enforcement of improved hurricane protection standards. Hurricanes Charley, Frances, Ivan and Jeanne in 2004 and Dennis, Katrina and Wilma in 2005 demonstrated the overall effectiveness of the Code, and identified areas that need additional refinements. Analyses of these storms were conducted throughout 2005, 2006, and 2007 and will continue during the coming year. Assessments indicate the design wind speeds required by the Code were adequate and buildings built to the new code did not experience nearly as severe damage as older buildings. While some new building technologies did have weaknesses, the major structural systems failures seen in older buildings were avoided in buildings complying with the Florida Building Code. The Commission addressed many of the weaknesses through implementation of the expedited code amendments authorized by the 2005 Legislature, the code enhancements adopted during the 2006 annual interim amendment process, and the adoption of the 2007 Edition of the Code, which will become effective on October 1, 2008. With the continuing work of the Hurricane Research Advisory Committee and various product-specific workgroups, during 2007 the Commission remained committed to addressing building and product weaknesses by working with industry to identify and fund research as well as identifying and implementing additional code amendments designed to strengthen the Code's building envelope protection and energy efficiency requirements. This process was expanded upon with the adoption of the 2007 Edition of the Florida Building Code.

The Code establishes minimum requirements to protect buildings and their occupants from wind, rain, flood and storm surge based on well-researched and continually-evolving engineering standards for

buildings and the products that go into their construction. It is important that the Commission be able to quickly integrate these standards into the Code to keep pace with changes in building technology and advances in the sciences of storm dynamics and building performance.

The Commission is required by Florida law to update the Florida Building Code every three years, and the 2007 Edition represented the second update and third edition of the Code. The update process is based on the code development cycle of the national model building codes, which serve as the “foundation” codes for the Florida Building Code. With the implementation of the 2004 Edition of the Code, Florida developed a new code specific to existing buildings based on the International Existing Buildings Code, the Existing Building Code, and the addition of a new code specific to one and two family homes and townhouses based on the International Residential Code, the Residential Code. During 2006 the Commission implemented code amendments to enhance the high wind provisions of the Residential Code, and initiated the 2007 Update process by selecting the 2006 I Codes as foundation for the 2007 Florida Building Code. During 2007 the Commission evaluated proposed code amendments culminating in the adoption of the 2007 Edition of the Florida Building Code. In 2008 the Commission will conduct a glitch code amendment process, and initiate the development process for the 2010 Code Update cycle.

The Code is a complex interrelated document consisting of thousands of pages and containing myriad related standards and references that must be evaluated and updated on an ongoing basis. In the case of editorial and unintended glitches, it is important for the Commission to correct these non-controversial glitch and correlation issues as quickly as possible in order to prevent unintended consequences and unnecessary delays and complications for all of the building code system participants. With the new expedited code amendment authority, the Commission is now capable of updating standards as needed. In 2007, the Commission use administrative rules to develop criteria for what the Commission will consider during annual interim amendment processes, as well as allowing the Commission’s Technical Advisory Committees (TAC’s) to review proposed code amendments and provide the Commission with a technical review of the public’s comments on the TAC’s code amendment recommendations.

The product approval system is an internet based system administered by a contracted Product Approval Administrator. With major consensus-based revisions to the system implemented through rule development in 2007, the system is processing hundreds of applications monthly with efficiency and satisfaction by the product manufacturers who use the system. The Commission’s Product Approval Program Oversight Committee (POC) convenes at every Commission meeting to review product and entity applications, address petitions for declaratory statements, and consider enhancements to the product approval system. Since the system went into effect in October 2003, the Commission has approved 7,720 product applications and 33,510 products for statewide use within limitations established by the approvals, as well as approved 144 product approval entities.

With the hiring of an Education System Administrator in 2006, the Commission’s Education Product Oversight Committee now receives technical assistance in establishing course development guidelines and conducting the oversight function of the Building Code Education Accreditation System. With the repeal of the Building Codes Education and Outreach Council in 2007, a workgroup was formed composed of representatives of the Florida Building Commission, related regulatory boards, industry licensee organizations, education providers, and accreditors. The workgroup meets quarterly, and provides the Commission’s Education POC with recommendations on procedural issues as well as on subjects for education and training on the Florida Building Code.

Education is one of the cornerstones of the Building Code System, and the effectiveness of the Building Code depends on the knowledge of professionals who design and construct buildings. The Commission continues to work with the Department of Business and Professional Regulation and representatives of the licensing boards to establish a cooperative system for approving building code courses and integrating building code continuing education into licensing requirements. In collaboration with the Education Workgroup and the System Administrator, the Commission is working to ensure the accountability and efficacy of the Education System.

The Commission's commitment to consensus-building on substantive issues was spotlighted during 2007, with Chairman Rodriguez appointing facilitated workgroups of Commission members and representative stakeholders to reach agreement on packages of recommendations in their respective subject areas. The workgroups convened during 2007 include: the Hurricane Research Advisory Committee, Green Building Workgroup, Product Approval Validation Workgroup, Window Workgroup, Wind Mitigation Workgroup, and the Termite Workgroup. Each of these groups worked with stakeholders to identify issues, evaluate a full range of options, and submit consensus recommendations to the Florida Building Commission on their respective topics. In addition, the Chair convened a workshop to develop recommendations on wind mitigation retrofits, and a forum to consider energy efficiency and moisture control in the Florida environment.

The 2007 Legislature assigned the Commission a variety of projects, including establishing in rule wind mitigation retrofits, elimination of wind-borne debris protection exemptions, elimination of the option to design for internal pressure, and establishment of recommendations regarding coastal code plus criteria for Citizens insurance qualification. In addition, the Commission implemented by rule Code changes directed by the Legislature regarding carbon monoxide detectors, electrical bonding of pool decks, and removing the requirement for sprinklering existing portions of warehouse expansions. The Commission, working with affected interests, has developed recommendations and/or implemented all of their legislative assignments, and the Commission's recommendations and resulting actions are detailed in this report.

Monitoring the building code system and determining refinements that will make it more efficacious is a primary responsibility of the Commission, and consequently the Commission is continually effecting refinements to the building code system by administrative rule amendment(s) where the statutes provide authority. However, the building code system is established in law, requiring that some refinements must be implemented through changes to law.

**The Florida Building Commission's Recommendations for Legislative Actions Designed to Improve the System's Effectiveness are Summarized as Follows:**

- *The Commission, consistent with its policy regarding identification of specific standards in statute, recommends repeal of Section 553.731, F.S. The Statute requires enforcement of specific provisions of the International Building Code and International Residential Code that, in turn, adopt ASCE 7-02 as the standard for wind resistant construction in the State. This requirement creates the potential for confusion among Building Officials, who are obligated to enforce the Florida Building Code, and unnecessarily restricts the ability of the Florida Building Commission to ensure that the State is governed by the most current standards incorporating advancing technology and improved data and research.*

- *The Commission supports the Department of Children and Families' (DCF) recommendation to amend Chapter 553.79(9) to place construction regulations for secure mental health facilities under the jurisdiction of DCF.*

**553.80 Enforcement.--**

*(1) Except as provided in paragraphs (a)-(f), each local government and each legally constituted enforcement district with statutory authority shall regulate building construction and, where authorized in the state agency's enabling legislation, each state agency shall enforce the Florida Building Code required by this part on all public or private buildings, structures, and facilities, unless such responsibility has been delegated to another unit of government pursuant to s. [553.79\(9\)](#).*

*(a) Construction regulations relating to correctional facilities under the jurisdiction of the Department of Corrections and the Department of Juvenile Justice, and secure mental health treatment facilities under the jurisdiction of the Department of Children and Family Services, are to be enforced exclusively by those departments.*

- *The Commission supports the goal of the Energy Commission's recommendation #LC-5 ("Long-Term Enhancements to the Florida Energy Code") to increase the energy efficiency requirements of the Energy Code by at least 50%, but recommends that the time-frame for achieving the goal be indexed to the Code's 2004 Edition with 2006 Supplement instead of the Energy Commission's recommended 2007 Edition of the Code. This would provide 15 instead of 12 years to accomplish the 50% increase in efficiency proposed, as well as acknowledge the enhancements effected by the Commission prior to the 2007 Update.*
- *The Commission, consistent with the Energy Commission's and Green Building Workgroup's recommendations, recommends the Florida Legislature amend Florida Statute to prohibit any state or local zoning or building authority, or homeowners', cooperative or condominium association from preventing or restricting the use of building systems and construction practices promoting resource conservation. This would be an expansion of the Energy Commission's recommendation # 17 regarding energy efficient roof designs.*
- *The Commission recommends that the Legislature amend Section 553.844, F.S. regarding mitigation retrofits to provide the Commission with sufficient flexibility to work with stakeholders to amend the Wind Mitigation Rule, to ensure the Rule provides protections for homeowners, is enforceable by building officials, and understandable and implementable by industry, consistent with Legislative intent. The Commission recommends that specific requirements be removed from the law in favor of the Commission working with interests to develop the mitigation techniques in the Code.*
- *The Commission recommends that the Legislature amend Chapter 489 F.S. regarding amending the scope of practice for roofing contractors to allow nailing and replacing roof sheathing.*
- *The Commission recommends that the Legislature clarify in law the Commission's authority to update editions of the National Electrical Code (NEC) as well as Florida specific amendments as needed, outside of the triennial code update cycle.*
- *The Commission recommends that the Legislature direct the Department of Community Affairs (DCA) and the Department of Health (DOH) to work collaboratively to conduct a study regarding the sizing of residential private sewage systems, and to report recommendations to the 2009 Legislature. The study should include input from affected stakeholder interest groups.*

## The Florida Building Commission's Recommendations Regarding Legislative Assignments are Summarized as Follows:

### ➤ ***Coastal Code Plus Criteria for Increasing the Hurricane Resistance of Buildings***

*The Commission recommends the following Coastal Code Plus criteria for use by Citizens Insurance:*

- *Single wind speed per county based on 2007 calculations for 500 year recurrence interval hurricane.*
- *High Velocity Hurricane Zone wind-borne debris protection criteria- (per the Florida Building Code).*
- *Building elevations based on FEMA 500 year recurrence interval hurricane flood elevations.*

*The Florida Building Code is referenced for all base requirements and further technical clarifications including wind load design calculations and specifics of the High Velocity Hurricane Zone Wind-Borne Debris protection requirements. A table of "code plus" design wind speeds and elevation requirements to be applied to the coastal zone are provided to complement the Code.*

*(Section 3 of this Report provides additional detail and analysis.)*

### ➤ ***Energy Code Evaluation for Residential Cost-Effective Baseline and Commercial Conservation Enhancements***

*The Commission contracted for a study conducted by the Florida Solar Energy Center (FSEC) to evaluate the cost effectiveness of energy conservation measures (ECMs) necessary to increase building energy efficiency requirements of the Florida Energy Efficiency Code for Building Construction (Florida Energy Code) and to compare the Florida code to national model codes and standards. It was determined the Florida Energy Code currently establishes a higher standard for energy efficiency of residential buildings than the International Energy Conservation Code and ASHRAE standards for residential buildings. The Commission also determined that Florida's code addresses Florida's hot and humid climate and energy source mix more appropriately than the national codes and determined Florida's Energy Code should be retained as the basis of energy conservation requirements in Florida. The cost effectiveness study conducted by FSEC determined there are a number of cost effective ECMs that would provide options to building owners for complying with a higher standard of energy efficiency. (See detailed reporting in Section 3 of this report) The study also indicated there are a number of cost effective ECMS for energy using building systems not explicitly identified in law therefore not covered by the Energy Code. Expanding the Energy Code authority to include these systems would allow further reduction of building related energy use in the future.*

*Based on the study's determination there are multiple cost effective options for achieving a higher standard of efficiency the Commission voted to increase the 2007 Florida Building Code required energy efficiency of new buildings 15% by reducing the energy budget that must be met to comply with the Code. This approach allows consumers to decide how to stay within budget rather than the state deciding which energy conservation measures they will have to use.*



*The Commission voted to implement the following enhancements to the Florida Energy Code:*

*Residential Buildings:*

*The energy budget will be calculated based on tighter air ducts, higher efficiency windows with Solar Heat Gain Coefficient (SHGC) of .30, and a 15% glass to floor area ratio.*

*Commercial Buildings:*

*Use current ASHRAE design guides for Small Office, Small Mercantile and School buildings to establish the energy budgets that must be met for compliance.*

*Establish minimum glazing efficiency ratings.*

*Implement ASHRAE 90.1-2007 for other commercial occupancy buildings.*

*(Section 3 and 8 of this Report provides additional detail and analysis.)*

➤ ***Model Green Building Ordinance***

*The Commission recommends adoption of a Model Green Building Ordinance that includes a comprehensive approach to energy and resource conservation. The Model Ordinance would be voluntary for use by local governments who desire to implement incentive based conservation and resource saving initiatives. The Model Ordinance addresses a broad spectrum of measures and provides a suite of options for each measure.*

*(The complete recommendations are included as “Appendix G” to this Report.)*

## 2. Introduction

In 1974, Florida adopted a state minimum building code law that required all local governments to adopt and enforce a building code. The system provided four separate model codes that local governments could consider and adopt to establish minimum standards of health and life safety for the public. In that system the state's role was limited to adopting all or relevant parts of new editions of the four model codes. Local governments could amend and enforce their local codes as they saw fit.

Hurricane Andrew demonstrated in 1992 that this system of local codes did not provide the level of public protection that was necessary, in light of the fact that a local code that was universally acknowledged to set the strongest standard for hurricane protection essentially failed. The resulting problems had impacts well beyond southern Miami-Dade County. The state filled the property insurer void left by failed and fleeing private insurance companies and the federal government poured billions of dollars of aid into the disaster area. It became starkly apparent the state had a significant interest in the effectiveness of building codes.

After Andrew, Miami-Dade County conducted an exhaustive review of its building code and made significant changes to both the code and support systems for code enforcement. In other areas of the state the Florida Board of Building Codes and Standards (predecessor to the Florida Building Commission) adopted significant upgrades to the wind resistance standards of the model state minimum code that was used by the majority of other local governments. The state also began licensing local governments' building code enforcement personnel. These steps proved critical in leading to the building codes that produced improved building performance in the 2004 hurricane season.

Like Miami-Dade County, the state went beyond just modernizing the minimum building codes. In 1996 a study commission was appointed to review the system of local codes created by the 1974 law and make recommendations for modernizing the entire system. The 1998 Legislature adopted the study commission's recommendations for a single state building code and an enhanced oversight role for the state in local code enforcement. The 2000 Legislature authorized implementation of the Florida Building Code, and the first edition replaced all local codes on March 1, 2002.

In order to implement the new Florida Building Code, the Florida Building Commission was established in law. The Florida Building Commission is a 23-member Governor-appointed group that successfully created, implemented, and maintains the new statewide Florida Building Code. The Commission is composed of the Governor's Chair and 22 members appointed according to criteria established by the American National Standards Institute (ANSI) for representation. They are, in the general interest category: four code officials, two state government representatives, a local government representative, a representative of persons with disability; in the consumer category: an architect, a structural engineer, a mechanical engineer, representatives of fire protection technology, the building management industry, and the insurance industry; and in the producer category: a general contractor, a residential contractor, a mechanical contractor, a plumbing contractor, an

electrical contractor, a roofing/sheet metal/air conditioning contractor, a manufactured building representative, and a building product manufacturer.

The first major tests of the building code enhancements put in place after Hurricane Andrew came with 2004's Hurricanes Charley, Frances, Ivan and Jeanne. Hurricanes Frances and Jeanne produced winds below the design speeds required by the Code but they were long in duration and produced significant rainfall. Hurricane Charley was a design wind speed storm that moved quickly across the state and produced less rainfall. Hurricane Ivan, similar to Hurricane Opal in 1995, was a category 4-5 storm in the Gulf but its winds diminished dramatically when it approached land, lowering winds below building code design wind speeds. However, storm surges wreaked havoc along barrier islands and mainland waterways. Each storm provided different kinds of tests and exposed different types of building failures. The difference in the building failures experienced by buildings built to older codes and those built to the new Florida Building Code was that older buildings had major damage to property and proved to be unsafe shelters. In contrast, buildings built to the Code had minor property damage and provided safe shelter. The testimony of homeowners, who in 2002 were skeptical of the new code requirements and their added costs, was that they felt safe in their homes and found value in the additional costs associated with complying with the Florida Building Code.

During 2005 the code was again tested when Florida was battered by another series of hurricanes. Although Hurricanes Dennis, Katrina, and Wilma were devastating to the citizens of the state, they added further evidence that the Florida Building Code is working. In addition, the observations, investigations and research regarding storm-related damage provided additional insight on how to improve the products and construction methods used in Florida. The Commission continues to study how to enhance the Code through the work of its Hurricane Research Advisory Committee, which convenes at each Commission meeting.

Engineering standards progress as new real-world tests like hurricanes provide the laboratory for expanding knowledge. It is essential that Florida maintain pace with the evolving standards because its coastal exposure and rapidly expanding population create a major risk and limit options for ensuring the safety of its citizens. The Commission keeps pace by amending the Code annually to adopt updated reference standards and by major updates every three years to incorporate new editions of the national model codes. A major focus of the Commission's efforts in 2005 was the consideration and adoption of enhanced storm protection provisions, resulting from a comprehensive review of investigations resulting from the hurricanes of 2004 and 2005.

The Florida Building Commission's Hurricane Research Advisory Committee continues to meet to review research and make recommendations to the Commission regarding proposed code enhancements. Some of the Committee's recommendations were implemented in a specially authorized "expedited" code amendment process conducted in 2005. Other recommendations that required additional development effort were adopted with the Glitch Code amendments in 2006, and with adoption of the 2007 Edition of the Florida Building Code. In addition, additional code amendments will be implemented during the 2008 Glitch Code process.

In an effort to address building and product weaknesses in the Code, the Committee in 2006 developed and ranked a list of issues that require research and development in order to make Florida's structures, and the products that comprise them, more storm resistant. Of particular note, water managed window and door installation requirements are under development, and the Commission is working with industry to ensure that windows, garage doors and shutters are labeled in a way to provide building officials with the information they need, in a field-useable format, to ensure that the correct products are installed according to the appropriate conditions of their use.

The Florida Building Commission seeks to develop consensus decisions on its recommendations and policy decisions. Consensus is a participatory process whereby, on matters of substance, the members strive for agreements they all can accept, support, live with or agree not to oppose. In instances where unanimity is not possible, final decision on substantive decisions, and the Commission finds that 100% acceptance or support is not achievable, final decisions require at least 75% favorable vote of all members present and voting. This super-majority decision rule underscores the importance of actively developing consensus throughout the process on substantive issues. The Commission's consensus process is conducted as an open public process with multiple opportunities for the public to provide input to the Commission on substantive issues. At each Commission meeting, the public is welcome to speak during the public comment period provided for each substantive issue under consideration, as well as during general public comment periods provided at the end of each day's meeting. In addition, most substantive issues before the Commission go through a workgroup process where consensus recommendations are developed by appointed representative stakeholder groups, providing additional opportunities for public input. Workgroup recommendations approved by the Commission usually require rule development to implement, affording at least two additional entry points for public comment. Since its formation in July 1998, the Commission has demonstrated a commitment to working with affected interests to build consensus on complex issues. The adoption of the first edition of the Florida Building Code (2001 Edition), developed from September 1998 through January 2001, involved 27 Commission meetings, dozens of facilitated public workshops, and hundreds of Technical Advisory Council meetings. The Commission has consistently worked with all affected interests to build the best possible consensus-based decisions for the citizens of Florida. Through its committees and workgroups of experts, the Commission has always developed its decisions on the results of the best engineering-based science available. Although the Code is by law a minimum building code, the Florida Building Code is the strongest consensus and science-based building code in the country.

In summary, the Florida Building Commission provides a forum for stakeholders representing different interests to participate in a consensus-building process where issues affecting the construction industry are discussed and evaluated on both their technical merits and cost-benefits to the citizens of the State of Florida.

### 3. Legislative Assignments

The 2007 Florida Legislature through the passage of a number of bills during the 2007 regular and special sessions, charged the Commission with a range of assignments including Energy Code enhancements, wind protections, and revising specific Building Code provisions.

In response, the Commission worked with stakeholders and affected interests to address each of the legislative assignments through facilitated processes yielding consensus-based recommendations and Commission decisions. The Commission's actions are detailed in the following section of this report. The recommendations are organized into four categories: wind recommendations, code recommendations, energy recommendations, and research and assignments.

#### 2007 Wind Related Assignments

##### **Coastal Code Plus Criteria for Increasing the Hurricane Resistance of Buildings**

As required by provisions of 2007 Legislation within Chapter 2007-1 LOF, regarding developing voluntary "Code Plus" guidelines for increasing the hurricane resistance of buildings, the Florida Building Commission voted unanimously to contract with Applied Research Associates (ARA)/University of Florida to fund a new research project to develop insurance qualifying criteria for buildings built within 2500 feet of the coast after January 1, 2009.

In evaluating the coastal code plus criteria the Commission's concept is to keep the recommendation simple, understandable and easily communicated. This is accomplished by recommending only three simple but significant modifications to the Building Code and relying on the Code for all else. The three modifications are:

- Single wind speed per county based on 2007 calculations for 500 year recurrence interval hurricane.
- High Velocity Hurricane Zone wind-borne debris (HVHZ WBD) protection criteria- (per the Florida Building Code).
- Building elevations based on FEMA 500 year recurrence interval hurricane flood elevations.

The Florida Building Code is referenced for all base requirements and further technical clarifications including the wind load design calculations and specifics of the HVHZ WBD protection requirements. The design wind speed enhancements are presented as a single speed for the entire coastal zone of each coastal county. The building elevation requirements are Federal Emergency Management Administration (FEMA) 500 year storm elevations for coasts with adjustment factors for the landward side of bays. (Note: While Citizens does not insure buildings for flood damage, moving water characteristic of what occurs in the 2500 foot coastal zone can weaken buildings thereby reducing their resistance to wind forces and wind driven rain water intrusion.)

## Coastal Code Plus Design Wind Speeds

| Region          | Coastal County | Coastal Code Plus Design Wind Speed mph | Region            | Coastal County | Coastal Code Plus Design Wind Speed mph |
|-----------------|----------------|---|-------------------|----------------|---|
| Panhandle Coast | Escambia       | 150                                     | SW Gulf Coast     | Sarasota       | 148                                     |
|                 | Santa Rosa     | 148                                     |                   | Charlotte      | 149                                     |
|                 | Okaloosa       | 139                                     |                   | Lee            | 154                                     |
|                 | Walton         | 135                                     |                   | Collier        | 162                                     |
|                 | Bay            | 131                                     |                   | Monroe         | 173                                     |
|                 | Gulf           | 140                                     |                   |                |   |
|                 | Franklin       | 130                                     | SW Atlantic Coast | Miami-Dade     | 166                                     |
|                 | Wakulla        | 120                                     |                   | Broward        | 164                                     |
|                 | Jefferson      | 120                                     |                   | Palm Beach     | 162                                     |
| Taylor          | 120            | Martin                                  |                   | 159            |   |
|                 |                | Saint Lucie                             |                   | 159            |   |
|                 |                |   | Indian River      | 155            |   |
| NW Gulf Coast   | Dixie          | 120                                     | NW Atlantic Coast | Brevard        | 150                                     |
|                 | Levy           | 125                                     |                   | Volusia        | 136                                     |
|                 | Citrus         | 133                                     |                   | Flagler        | 128                                     |
|                 | Hernando       | 135                                     |                   | Saint Johns    | 126                                     |
|                 | Pasco          | 136                                     |                   | Duval          | 120                                     |
|                 | Pinellas       | 144                                     |                   | Nassau         | 120                                     |
|                 | Hillsborough   | 138                                     |                   |                |   |
| Manatee         | 142            |   |                   |                |   |

The design wind speeds derived from the 500 year storm are 0 to 24 mph greater than those required by the Code, which is a close correlation with most major storms in the historic record (see the chart below) but not quite as high as experienced in Hurricanes Andrew, Charley and the 1935 Labor Day hurricane. The coastal code plus design wind speeds are increasingly greater, compared to building code requirements, further south along the Atlantic and Gulf coasts and farther west along the Panhandle coast consistent with the historical risk of higher intensity hurricanes. Generally, the recommended criteria would require: design for category 4 hurricanes along Florida's southeast, southwest and far western Panhandle coasts; design for category 3 hurricanes along its northern Gulf, northern Atlantic and middle Panhandle coasts, and; design for category 2 hurricanes along the Big Bend region of the Gulf and northern-most Atlantic coasts.

The High Velocity Hurricane Zone wind-borne debris (WBD) criteria establish a higher standard of performance consistent with property protection goals. They require impact resistance for the entire exterior surface of the building, both glazed and unglazed, from the ground to building tops, where the Code WBD criteria outside the HVHZ requires protection of only glazed openings up to sixty feet. Glazing protection systems complying with HVHZ WBD criteria are typically more robust also.

The building elevation recommendations derived from the 500 year storm are 1 to 6 feet above current National Flood Insurance Program minimum requirements administered through local flood plain management ordinances. Data from the Commission's study of Tampa Bay, Biscayne Bay, Pensacola Bay, Apalachee Bay and Charlotte Harbor indicate the FEMA 500 year storm flood elevations are adequate except potentially on the mainland side of some bays. Adjustments to the FEMA flood elevations for this location is being evaluated under contract and will be provided in the study final report.

(Note: The Florida Building Code defers to local ordinances and the Florida Coastal Construction Control Line program for building elevation requirements to prevent damage due to pounding surf.)

## Recommended Coastal Code Plus Design Wind Speeds with Comparison to Building Code Requirements and Historic Storms (3 second gust speeds)

| Region            | Coastal County | Florida Building Code mph | New Model (250 yr) mph | New Model (500 yr) mph | Historic Storm speed (3 sec gust)* mph | Coastal Code Plus Design Wind Speed mph | Saffir-Simpson Category |
|-------------------|----------------|---------------------------|------------------------|------------------------|--|---|-------------------------|
| Panhandle Coast   | Escambia       | 140                       | 140                    | 150                    | 133 (Dennis)                           | 150                                     | 4                       |
|                   | Santa Rosa     | 140                       | 138                    | 148                    |  | 148                                     | 4                       |
|                   | Okaloosa       | 130                       | 130                    | 139                    | 133 (1917)                             | 139                                     | 3                       |
|                   | Walton         | 130                       | 127                    | 135                    | 133 (Eloise)                           | 135                                     | 3                       |
|                   | Bay            | 130                       | 124                    | 131                    | 127 (1851,1877)                        | 131                                     | 3                       |
|                   | Gulf           | 140                       | 114                    | 122                    |  | 140***                                  | 3                       |
|                   | Franklin       | 130                       | 108                    | 117                    |  | 130***                                  | 2                       |
|                   | Wakulla        | 120                       | 101                    | 110                    |  | 120***                                  | 2                       |
|                   | Jefferson      | 120                       | 101                    | 110                    |  | 120***                                  | 2                       |
| Taylor            | 120            | 101                       | 111                    |                        | 120***                                 | 2                                       |                         |
| NW Gulf Coast     | Dixie          | 120                       | 105                    | 115                    |  | 120***                                  | 2                       |
|                   | Levy           | 120                       | 116                    | 125                    | 139(1896), 127(1871)                   | 125                                     | 3                       |
|                   | Citrus         | 120                       | 124                    | 133                    |  | 133                                     | 3                       |
|                   | Hernando       | 120                       | 126                    | 135                    |  | 135                                     | 3                       |
|                   | Pasco          | 127                       | 128                    | 136                    | 133 (Easy 1950)                        | 136                                     | 3                       |
|                   | Pinellas       | 130                       | 135                    | 144                    | 133 (1921)                             | 144                                     | 3                       |
|                   | Hillsborough   | 120                       | 130                    | 138                    |  | 138                                     | 3                       |
|                   | Manatee        | 140                       | 133                    | 142                    |  | 142                                     | 3                       |
| SW Gulf Coast     | Sarasota       | 130                       | 137                    | 148                    | 133 (1944)                             | 148                                     | 4                       |
|                   | Charlotte      | 130                       | 140                    | 149                    | <b>165</b> (Charley)                   | <b>149</b>                              | 4                       |
|                   | Lee            | 130                       | 142                    | 154                    | 159** (Donna)                          | 154                                     | 4                       |
|                   | Collier        | 139                       | 150                    | 162                    | 159** (Donna)                          | 162                                     | 4                       |
|                   | Monroe         | 150                       | 161                    | 173                    | 158(1919,Donna)<br><b>205**</b> (1935) | <b>173</b>                              | 4~5                     |
| SE Atlantic Coast | Miami-Dade     | 146                       | 155                    | 166                    | <b>184</b> (Andrew)                    | <b>166</b>                              | 4                       |
|                   | Broward        | 140                       | 154                    | 164                    | 158 (1947)                             | 164                                     | 4                       |
|                   | Palm Beach     | 140                       | 151                    | 162                    | 158 (1928)                             | 162                                     | 4                       |
|                   | Martin         | 140                       | 148                    | 159                    | 133 (Jeanne)                           | 159                                     | 4                       |
|                   | Saint Lucie    | 140                       | 148                    | 159                    | 158** (1928)                           | 159                                     | 4                       |
|                   | Indian River   | 140                       | 145                    | 155                    |  | 155                                     | 4                       |
| NE Atlantic Coast | Brevard        | 130                       | 140                    | 150                    |  | 150                                     | 4                       |
|                   | Volusia        | 120                       | 126                    | 136                    |  | 136                                     | 3                       |
|                   | Flagler        | 120                       | 118                    | 128                    |  | 128                                     | 3                       |
|                   | Saint Johns    | 120                       | 116                    | 126                    |  | 126                                     | 3                       |
|                   | Duval          | 120                       | 111                    | 120                    |  | 120                                     | 2                       |
|                   | Nassau         | 120                       | 111                    | 120                    |  | 120                                     | 2                       |

\* NOAA official one minute wind speeds have been converted to 3 second gust design wind speeds for comparison

\*\* NOAA is conducting a "Re-analysis" for official wind speeds. This year is not completed.

\*\*\* Recommended design wind speed is current code minimum where new 500 year speed is less.

### **Wind Mitigation Retrofits—Rule Adoption on Rule 9B-3.0475**

At the June 2007 meeting, in response to legislation required by Chapter 2007-126 LOF, the Commission conducted a rule development workshop on wind mitigation retrofits in order to implement the 2007 legislative direction regarding developing mitigation techniques for the retrofit of existing site-built residential buildings. In addition, at the request of stakeholders the Commission conducted a facilitated workshop in Tampa on August 8, 2007 and participants provided recommendations for the Commission's consideration regarding the legislative directive. At the August 2007 meeting the Commission conducted a rule adoption hearing and voted to adopt the first edition of prescriptive techniques for required hurricane mitigation retrofit of homes by deck nailing, secondary water barriers installation, and roof to wall connections enhancement when a roof is replaced and voluntary gable end bracing in order to comply with the Legislature's mandated implementation date of October 1, 2007. The Commission also voted to support the Florida Roofing and Sheet Metal Association's request that the Legislature delay implementation of the mitigation requirements. The Commission recommended that the Florida Legislature delay the implementation date to October 1, 2008 allowing adoption of the rule through the Commission's Glitch Amendments to the 2007 Florida Building Code process. The reason(s) for the recommended delay included the issues identified by stakeholders during the rule adoption hearing (i.e., licensure issues, permitting issues, liability issues, inspection and enforcement issues, structural efficacy issues regarding the roof-to-wall requirements, and the need to conduct a comprehensive review and development of recommendations working with all interested stakeholders). In order to comply with the 2007 Legislature's direction for an October 1, 2007 implementation date, at the August 2007 Commission meeting the Commission adopted Rule 9B-3.0475, Wind Mitigation retrofits. However, during the rule development process the public identified numerous concerns with some of the Rule's requirement including the roof to wall connection provisions, and as a result the Commission acknowledged that the current draft needs enhancements and the Commission committed to working with stakeholders during the Glitch Code process to consider enhancements to the Rule. As a result Chairman Rodriguez appointed a Wind Mitigation Workgroup to develop recommendations to the Commission on the wind mitigation provisions for implementation during the Glitch Code amendment process. The Commission's Wind Mitigation Workgroup met in December of 2007 to address rule challenges to the Rule, and met in January of 2008 to begin developing additional recommendations for enhancements to the Rule. It should be noted that the Commission conducted a special telephonic meeting on January 8, 2008 and reached consensus on amendments to the Rule for addressing concerns expressed through two rule challenges regarding the roof-to-wall connection provisions of the Rule.

The provisions of the Legislation required that the Commission:

1. Develop mitigation techniques for retrofit of existing site-built residential buildings:
  - Prescriptive gable end bracing techniques
  - Secondary water barrier requirements and standards
  - Prescriptive roof-to-wall attachment techniques (not to exceed 15% of re-roofing cost)
  - Strengthening/correction roof deck attachment/fastening
  - Opening protection
2. Adopt for site-built residential buildings by October 1, 2007:
  - Mitigation techniques
  - Requirement that roof replacement requires secondary water barrier and roof deck



attachment/fastening

- Requirement that within WBD region roof replacement for buildings insured for \$300K or more must also have roof-to-wall connections upgraded
- Requirement that any permitted activity valued at \$50K or more for buildings located within the WBD region and insured for \$750K or more must also provide for openings protection

3. Adopt in 2007 FBC:

- Requirements of 1) and 2).

Working with industry stakeholders, and based on recommendations from the Commission's Wind Mitigation Workgroup, the Commission implemented several enhancements to the rule including the following provisions:

Revised Section 101 "Retrofits required" as follows:

- Clarify that the scope of the rule is limited to "site built single-family detached residential structures."
- Clarify that a roofing contractor is allowed to perform roof decking attachments and secondary water barrier applications.

Revised Section 201.1 "Roof sheathing fastening for site-built single family residential structures" to define the length and profile of a ring shank nail.

Revises Table 201.1 "Supplement Fasteners at Panel Edges and Intermediate Framing" to allow existing nails to be counted as part of required nailing.

Revise Section 201.2 "Roof secondary water barrier for site-built single family residential structures" to allow for the following:

- Allow alternatives to the required secondary water barrier as follows:
  - (1) #30 felt underlayment installed with nails and tin-tabs as required for the HVHZ, and
  - (2) #30 felt fastened with 1 inch round plastic cap or metal cap nails attached in a grid pattern of 12 inches staggered between the overlaps, with 6-inch spacing at the overlaps for non-HVHZ areas.
- Provide exceptions for
  - (1) roofs with slopes < 2:12 which have continuous roof system, and
  - (2) Clay and Concrete tile roof system.
- Revised Section 201.3 "Roof-to-wall connections for site-built single family residential structures" as follows:
- Provide for exception(s) where it can be documented that the roof-to-wall connections were required by the building code in effect at the time of the original construction.
- Allow alternative means to gain access to the roof-to-wall connections for inspection.
- Clarify the roof-to-wall connection requirements for both gable roofs (corners) and hip roofs (corners, and hip rafter and hip girder).

- Clarify that work related to roof-to-wall connection is not required when the evaluation and execution of roof to wall connections can not be completed for 15% or less of the cost of roof replacement.

Finally, the Commission will continue working with industry groups and other stakeholders in 2008 to ensure that the Rule provides protections for homeowners, is enforceable by building officials, and understandable and implementable by industry.

*(Appendix M—Hurricane Mitigation Manual)*

### **Florida Building Code Wind-Borne Debris Protection—Rule Adoption on Rule 9B-3.047**

In order to implement the legislative requirements from special session found in Chapter 2007-1 LOF, regarding eliminating wind-borne debris protection exceptions (the Panhandle windborne debris region requirements) less stringent than those of s. 1609.1 2006 International Building Code (IBC) and International Residential Code (IRC) by June 1, 2007, the Commission voted unanimously at the March 2007 meeting to limit the scope of rulemaking for Rule 9B-3.047 regarding implementing the legislative requirements to the following: revising the wind speed map to remove the Panhandle exception to the wind-borne debris region, revising the definition of “Wind Borne Debris Region” (WBD) to remove the Panhandle exception, and removing the interior pressure design option from the Code, and to conduct only a rule adoption hearing without a rule development workshop. The rule development adopted the ASCE-7 120 mph and greater criteria for WBD regions in the Panhandle to be consistent with the rest of the State, with the exception of the higher requirements for the High Velocity Hurricane Zone (HVHZ). The adopted provisions define the Wind-Borne Debris Region as follows: portions of hurricane-prone regions that are within 1 mile of the coastal mean high water line where the basic wind speed is 110 mph or greater, or portions of hurricane-prone regions where the basis wind speed is 120 mph or greater.

The March 2007 rule adoption hearing was the final step in adopting the wind-borne debris protection requirements by the July 1, 2007 date mandated by the Florida Legislature. At the conclusion of the hearing the Commission voted unanimously to accept the rule language as drafted, and to proceed with rule adoption for Rule 9B-3.047, Florida Building Code Wind-Borne Debris Protection as required by the Florida Legislature.

Of note, one of the Legislative mandates pertaining to wind speed lines in the Panhandle and prohibiting the internal pressure design option throughout the State was codified in Florida Statutes in Section 553.731. The result is that Florida Law currently recognizes ASCE 7-02 as the minimum standard for wind resistant construction in the State notwithstanding the status of the Code and any developments to the standard subsequent to 2002 despite the fact that the bill adopting the source language of the statute specifically and intentionally intended its effect to be superceded by Commission rulemaking. The Commission has consistently opposed identification of standards in statute and advocates for repeal of this provision.

*(Appendix F—Revised Wind-Borne Debris Region Map)*

### **Elimination of the “Design for Internal Pressure” Option for Buildings in Wind-Borne Debris Regions**

With the adoption of the 2007 Supplement to the 2004 Edition of the Florida Building Code, the Commission implemented the legislative mandate to eliminate the interior pressure design option in the Code for buildings in the wind-borne debris regions of Florida consistent with provisions of the IBC and IRC. This change requires that windows in buildings located in wind-borne debris regions

shall have glazed openings protected from wind-borne debris, and may no longer be designed as a partially enclosed building.

### **Delayed Implementation of Design for Internal Pressure**

In accordance with the requirements of Chapter 2007-90 Laws of Florida (LOF), the Commission notified building departments and the construction industry of the legislatively prescribed delay and new implementation date of June 1, 2007.

## **2007 Building Code Assignments**

### **Carbon Monoxide Detectors—Rule Adoption on Rule 9B-3.0472**

In order to comply with provisions required by 2007 Legislation within Chapter 2007-181 LOF regarding carbon monoxide detectors, at the June 2007 meeting the Commission conducted a rule development workshop on carbon monoxide detectors in order to implement the 2007 legislative direction regarding the issue. The rule requires CO detectors in buildings with fossil fuel burning heater, or appliance, fireplace, or attached garage rooms used for sleeping purposes. In August of 2007 the Commission conducted a rule adoption hearing as the final step in the process to finalize the rule. At the conclusion of the hearing the Commission voted unanimously to proceed with rule adoption for Rule 9B-3.0472, Carbon Monoxide Detectors, integrating and noticing the approved changes recommended by the Commission's Mechanical and Electrical TAC's and proceeding with rule adoption without conducting an additional hearing. Specific carbon monoxide detector criteria will be developed and adopted into the Code during the 2008 Glitch Code process.

The Rule language implementing the carbon monoxide provisions are found in Appendix N.

*(Appendix N—Carbon Monoxide Protection)*

### **Electrical Bonding of Pool Decks—Rule Adoption on Rule 9B-3.0477**

In order to comply with provisions required by 2007 Legislation within Chapter 2007-187 LOF regarding electrical bonding of pool decks, at the June 2007 meeting the Commission conducted a rule development workshop on electrical bonding of pool decks in order to implement the 2007 legislative direction regarding the issue. In August of 2007 the Commission conducted a rule adoption hearing as the final step in the process to finalize the rule. At the conclusion of the hearing the Commission voted unanimously to proceed with rule adoption for Rule 9B-3.0477, Electrical Bonding of Pool Decks, by filing the Rule, adopting the provisions of the 2008 NEC.

The specific Rule language and requirements are found in "Appendix L.

*(Appendix L—Electrical Bonding of Pools)*

### **Sprinklering Existing Portions of Warehouse Expansions**

In accordance with the requirements of Chapter 2007-227 LOF, the Commission posted notice of the statutory requirements on the Commission's website and notified building departments and the Building Officials Association of Florida (BOAF) regarding the removal of the Florida specific Code requirements that required adding sprinklers to existing portions of a warehouse when the building was expanded. The new statutorily mandated provisions, that do not require adding sprinklers to existing warehouse portions providing they meet other requirements, were implemented with the adoption of the 2007 Florida Building Code.

## **2007 Energy Assignments**

The 2007 Legislature through passage of Chapter 2007-187 LOF created a suite of energy related assignments for the Building Commission. The Energy Code provisions were a major focus of the Commission during 2007, and the Commission completed all of their legislative assignments in this regard. The Commission's Energy recommendations and Code amendments are summarized in this section of the Report.

### **Model Energy Efficiency Ordinance and Green Building Public Awareness Campaign**

#### **Green Building Workgroup-**

The Green Building Workgroup met three times in 2007 and once in 2008 and developed a package of consensus recommendations for the Commission to consider at their January 2008 meeting. The Workgroup process commenced with a Forum where all participants were invited to provide their recommendations which were compiled and presented to the Workgroup for evaluation. The Workgroup met throughout the fall of 2007, and at the final meeting on January 16, 2008, was able to evaluate and reach consensus on a broad suite of options regarding recommendations for a model efficiency ordinance for residential development, and implementing a public awareness campaign that promotes energy efficiency and the benefits of building green. The Workgroup worked with the Florida Solar Energy Center (FSEC) at the University of Central Florida to develop recommendations for the model efficiency ordinance for residential development. FSEC provided research and support by identifying and soliciting input from local governments and other organizations with current and developing initiatives for energy conservation, green building and sustainable development, including but not limited to, energy and water conservation and hurricane resistant buildings and communities. The model ordinance was approved by the Commission for reporting to the Legislature and is in "Appendix G – Model Green Building Ordinance" of this report. (*Appendix G—Model Green Building Ordinance*)

The Green Building Workgroup also worked with FSEC to develop recommendations for a public awareness campaign that promotes energy efficiency and the benefits of building green and has implemented the components deemed feasible within the funds available through the contract. The public awareness campaign plan includes website, trade show, print media and television strategies. The Commission used the funding appropriated for the Green Building project to support the Workgroup established by law and to implement the website component of the PA plan. Matching funds were appropriated to the Department of Environmental Protection to conduct a public awareness campaign.

The website plan is for a comprehensive single-source website that will be developed in two phases. The key components of each phase is as follows:

#### *Phase One – Completion by January 01, 2008*

- Solicit additional input from public and interested parties regarding inclusive content
- Determine most effective content organization
- Explain cost vs. benefits of energy and water efficiency
- Provide links to all Florida utility energy analysis tools
- Provide a consolidated list of energy efficiency tips
- Provide links to relevant Web sites

- Provide list of rebates and incentives
- Provide frequently asked questions and answers

*Phase Two – June 20, 2008*

- Develop Florida-specific energy calculation tools
- Showcase Florida green buildings
- Provide testimonials of green building owners
- Provide case studies of high efficiency and green homes and buildings
- Provide green maintenance and operation practices for building owners
- Develop database of local and state green ordinances
- Develop database of financial incentives, including rebates and energy-efficient mortgages

**Energy Code Evaluation for Residential Cost-Effective Baseline and Commercial Conservation Enhancements**

The Commission funded research to evaluate the Florida Energy Code for residential cost effective baseline, commercial conservation enhancements, and comparison to the International Energy Conservation Code (IECC), ASHRAE 90.1 and 90.2. The consultant, the Florida Solar Energy Center (FSEC), delivered recommendations to the Department of Community Affairs which in turn developed recommendations to the Commission that were adopted for reporting to the 2008 Florida Legislature.

Following are summary findings as described by FSEC:

For all economic indicators, results were found to be most sensitive to Economic Conservation Measures (ECM) cost. Variation of mortgage interest rate, general inflation rate, discount rate and energy escalation rate impacted the results but not as much as did ECM cost variation. Tables 1 through 3 below provide the degree of this variation for each of the economic indicators.

Using Internal Rate of Return (IRR)  $\geq 10\%$  as the cost effectiveness criteria, more than 60% of the 27 ECMs were found to be cost effective in all climates under all cost scenarios. Table 1 presents these results.

**Table 1.** Number of ECMs (Out of 27 Total) Found to be Cost-Effective by IRR  $\geq 10\%$

| <b>Climate:</b>     | <b>90% of cost</b> | <b>100% of cost</b> | <b>120% of cost</b> | <b>150% of cost</b> |
|---------------------|--------------------|---------------------|---------------------|---------------------|
| <b>Jacksonville</b> | 26                 | 24                  | 22                  | 18                  |
| <b>Tampa</b>        | 25                 | 24                  | 22                  | 19                  |
| <b>Miami</b>        | 23                 | 21                  | 21                  | 19                  |

Using Cost of Conserved Energy (CCE)  $\leq \$0.12$  as the cost effectiveness criteria, more than 50% of the 27 ECMs were found to be cost effective in all climates under all cost scenarios. Table 2 presents these results.

**Table 2.** Number of ECMs (Out of 27 Total) Found to be Cost-Effective by CCE  $\leq \$0.12$

| <b>Climate:</b>     | <b>90% of cost</b> | <b>100% of cost</b> | <b>120% of cost</b> | <b>150% of cost</b> |
|---------------------|--------------------|---------------------|---------------------|---------------------|
| <b>Jacksonville</b> | 24                 | 23                  | 22                  | 15                  |
| <b>Tampa</b>        | 23                 | 22                  | 19                  | 14                  |
| <b>Miami</b>        | 22                 | 19                  | 19                  | 15                  |

Using the Simple Payback (SP)  $\leq 7$  years as the cost effectiveness criteria, more than 40% of the 27 ECMs were found to be cost effective in all climates under all cost scenarios. Table 3 presents these results.

**Table 3.** Number of ECMs (Out of 27 Total) Found to be Cost-Effective by SP  $\leq 7$  years

| Climate:     | 90% of cost | 100% of cost | 120% of cost | 150% of cost |
|--------------|-------------|--------------|--------------|--------------|
| Jacksonville | 18          | 17           | 14           | 13           |
| Tampa        | 19          | 15           | 14           | 12           |
| Miami        | 14          | 14           | 12           | 12           |

The effectiveness of the energy conservation measures on a statewide basis can be estimated by weighting the results by the populations of the three Florida climate zones. This is accomplished using data from Rose (1993).<sup>1</sup> According to these data, the population percentages of the three Florida climate zones are as follows: North – 20%; Central – 41%; and South – 39%. Applying these as weighting factors to the results and using the cost effectiveness criteria that IRR must be greater than 10%, 23 of the 27 ECMs are found to be cost effective on a statewide basis using their base cost estimates. Table 1 above indicates that this list would be reduced by the 3 least cost-effective measures if ECM costs are inflated by 150%. This would mean that the last 3 measures shown in Table 4 below would be eliminated from the list at 150% of base ECM costs.

**Table 4.** Cost effective ECMs using Baseline Assumptions and IRR Criteria

| Energy Conservation Measure | Internal Rate of Return | % Savings (of Total) | % Savings (of Code)** |
|-----------------------------|-------------------------|----------------------|-----------------------|
| Shng                        | 10005.8%                | 1.5%                 | 3.3%                  |
| Wwalls                      | 7758.5%                 | 0.8%                 | 1.6%                  |
| HW2 (gas)                   | 448.5%                  | 5.7%                 | 11.2%                 |
| Lgts*                       | 447.2%                  | 6.9%                 | NA                    |
| Ducts                       | 338.2%                  | 3.9%                 | 8.3%                  |
| Fridg*                      | 333.7%                  | 1.1%                 | NA                    |
| effPool*                    | 269.9%                  | 9.0%                 | NA                    |
| dWash*                      | 222.6%                  | 0.5%                 | NA                    |
| HW1 (gas)                   | 220.1%                  | 1.5%                 | 3.0%                  |
| Pstat                       | 200.8%                  | 2.2%                 | 4.7%                  |
| HAcloths*                   | 195.8%                  | 0.7%                 | NA                    |
| cFan*                       | 156.4%                  | 2.7%                 | NA                    |
| Furn1 (gas)                 | 128.7%                  | 0.8%                 | 1.6%                  |
| HW                          | 114.7%                  | 0.5%                 | 1.0%                  |
| Furn2 (gas)                 | 98.2%                   | 1.2%                 | 2.4%                  |
| HVAC2                       | 84.2%                   | 6.1%                 | 13.2%                 |
| HPWH                        | 74.7%                   | 7.9%                 | 16.9%                 |
| WinU                        | 64.7%                   | 2.7%                 | 5.7%                  |
| Package***                  | 57.2%                   | 24.9%                | 53.5%                 |
| SHW                         | 54.6%                   | 10.4%                | 22.4%                 |
| RBS                         | 40.7%                   | 3.2%                 | 7.0%                  |
| HRU                         | 35.9%                   | 4.4%                 | 9.4%                  |
| IDucts                      | 32.0%                   | 8.6%                 | 18.5%                 |
| HVAC3                       | 13.9%                   | 8.7%                 | 18.6%                 |

<sup>1</sup> Rose, Matthew, Craig McDonald, Peter Shaw, and Steve Offutt. 1993. *Electricity Conservation and Energy Efficiency in Florida: Appendix C-D Technical and Achievable Potential Data Inputs*. SRC Report No. 7777-R8. Synergic Research Corporation, Bala Cynwyd, Penn.

- \* Not currently covered by Florida's Building Code
- \*\* Only 46% of total home energy use is covered by Florida's Code
- \*\*\* Package consists of all highlighted individual measures

Based on these findings, there are a significant number of energy conservation measures that produce cost-effective energy savings with respect to Florida's minimum residential building code requirements. When the non-competing ECMs with the largest energy savings are simulated as a package of measures, the result shows total energy savings of almost 25% with an internal rate of return greater than 57% (see highlighted cells of Table 4). If we limit the savings basis to only those energy uses currently covered by Florida's Energy Code\*, which is the same criteria used in selecting the package of measures, the savings with respect to Florida's Code requirements are greater than 53%.

(\*This study shows that Florida's Residential Energy Code, which regulates only heating, cooling and hot water energy uses, accounts for about 46% of total typical residential energy use. A previous study entitled "Effectiveness of Florida's Residential Energy Code: 1979 – 2007" resulted in the same finding. See <http://www.fsec.ucf.edu/en/publications/pdf/FSEC-CR-1717-07.pdf> for a copy of this study.)

If we assume ECM costs of 150% of their base costs, the internal rate of return for this package of measures is reduced from 57% to 19%, which is still a highly attractive internal rate of return that can not be matched by normal investments without taking extreme risks with investment capital.

Following are FSEC's conclusions:

The new home energy savings of 15% above 2007 Code requested by Executive Order #07-127 is cost-effectively achievable. This is true even if the lighting and appliance energy uses of the typical home are included in the basis from which this energy savings percentage is calculated. Note that interpretation of Executive Order #07-127 as applying to total home energy use, as opposed to only those energy uses covered by the current energy code, would result in more than double the energy savings.

There are six energy conservation measures for lighting and appliance energy use shown in Table 4 that are not included by Florida's Residential Energy Code. Each of these lighting and appliance ECMs are highly cost-effective with the lowest-ranked one on the list (ENERGY STAR ceiling fans) having an IRR greater than 150%. Inclusion of these measures as options within Florida's performance-based Residential Energy Code would provide more opportunities for additional, and often more cost-effective, improvements to be selected as part of residential code compliance.

Commission Action:

The Commission's response to the conclusions was to initiate rule amendments to modify the already completed 2007 Florida Building Code to implement the 15% immediate efficiency increase in the 2007 Florida Building Code, effective October 1, 2008. Expanding the list of residential building energy using systems covered by the Florida Energy Code will be investigated in the coming year for future code revisions.

## **Research Assignments**

### **Gravel Roof Covering Research**

The Legislature directed the Commission to evaluate whether gravel or stone roofing systems should be eliminated from the 2007 Florida Building Code per the elimination by the 2006 International Building Code “foundation code”. The Commission contracted with the University of Florida to conduct a review of the scientific literature and appointed a workgroup comprised of roofing experts and insurance industry representatives to review the issues. The project is documenting and evaluating the following issues for determining whether to eliminate the systems from Code:

- Scientific basis or reason for elimination;
- An available alternative equivalent in cost and durability;
- Whether elimination will unnecessarily restrict or eliminate business or consumer choice in roofing systems; and,
- In coordination with the Fish and Wildlife Conservation Commission, whether elimination will negatively affect the nesting habitat of any species of nesting bird.

To date the consultant has completed a literature review and reported to the workgroup which will make its recommendations to the Commission by the June 2008 start of the 2007 Code glitch fix cycle.



## 4. The Florida Building Code

The Commission is required by law to update the Florida Building Code (FBC) every three years, and the 2007 Edition represents the second update and third edition of the Code. The update process is based on the code development cycle of the national model building codes, which serve as the “foundation” codes for the Florida Building Code. National model building codes and most engineering standards are updated every three years and the intent is to keep the Code up-to-date with evolving national standards of health, safety and welfare of the public.

The model building codes on which the Florida Building Code is based have undergone a major transformation since work began on the Florida Building Code in 1998. In 1998 there were three model code organizations, each with a separate model code that included a “building” code for structural, fire safety and general building design requirements and separate plumbing, mechanical (heating, cooling and ventilation) and fuel gas sub-codes. The code for electrical systems is a reference standard and is developed by a separate organization. During the late 1990s the three regional model code organizations transitioned into a single organization, the International Code Council, which was to develop a single national model code. When that code was completed and the organizations merged, the three prior model codes were abandoned. In late 1998 when the Commission selected a model code to provide the base requirements for the Florida Building Code, the International Plumbing, Mechanical and Fuel Gas sub-codes were in place but the “Building” Code was still under development. The first edition of the Florida Building Code was based on the International sub-codes and the Standard Building Code, which had been used by Florida counties, municipalities and state agencies since the mid-1970s, for the “building” volume. The last edition of the Standard code was published in 1999. The first edition of the new International Building Code was in place by 2000 and has since been updated with a second edition, the 2003 International Building Code. With the adoption of the Second Edition of the Florida Building Code, the Code is now based on the International Family of Codes, modified with Florida-specific amendments. Florida-specific amendments go through a rigorous review process including posting to the Building Code Information System (BCIS) for 45 days prior to a review by the Commission’s Technical Advisory Committees (TAC), posting the councils recommendations for 45 days prior to Commission consideration, and then the Chapter 120 rule development process. The Commission provides multiple input opportunities for public comment, and once the code is published six months must pass before the Code’s effective date.

The adoption of the 2007 Florida Building Code represented the second update and third edition of the Code. This was a major focus of the Commission in 2007 and represented initiation of the triennial code update process for the 2007 Edition of the FBC. The 2006 Edition of the International Building Code (IBC) was published in March of 2006, and the Commission’s process—which by law could not begin until six months after the printing and availability of the IBC—commenced in October of 2006 with selection of the 2006 I Codes as foundation for the 2007 Florida Building Code.

Florida Statute, Chapter 553.73(6), requires the Commission to update the Florida Building Code every 3 years; by selecting the most current version of the International Family of Codes; the

commission may modify any portion of the foundation codes only as needed to accommodate the specific needs of this state, maintaining Florida-specific amendments previously adopted by the commission and not addressed by the updated foundation code. The Commission complied with this statutory requirement by selecting certain of the 2006 Editions of the I-Codes as the foundation code for the 2007 Code (Building, Residential, Mechanical, Plumbing, Fuel Gas, and Existing Building Codes). The Florida Electrical Code has already been updated with the Commission's adoption of the 2005 NFPA 70: National Electrical Code.

The 2007 Edition of the Florida Building Code was completed as scheduled in 2007, and will be implemented on October 1, 2008. At the June 2007 meeting the Commission conducted a rule development workshop on Rule 9B-3.047, and after deciding on the TAC's recommendations for modifications to the Code, moved to proceed with rule adoption integrating the Commission's draft rule. In August of 2007 the Commission conducted a rule adoption hearing on Rule 9B-3.047, the Florida Building Code, as the next step in the Commission's consideration of proposed modifications for the 2007 Update to the Florida Building Code. The 2007 Code Update process has been an exhaustive process beginning with the posting of proposed modifications to the Code for at least 45 days, followed by an extensive TAC review and recommendation process conducted in March of 2007 where extensive public comment was considered. The TAC's recommendations were then posted for at least 45 days, and comments were compiled for a second TAC review at the June 2007 meeting where the Commission decided on TAC recommendations in a rule development workshop. During the June workshop the Commission discussed every modification that the public requested be re-evaluated prior to voting on the package of modifications to the Code. In fact, as Chairman Rodriguez noted, there had been extensive discussion at the TAC and Commission levels, and the public had multiple and extensive opportunities to comment on proposed code amendments prior to the Commission's final adoption of amendments for the 2007 Code Update at the August hearing. At the conclusion of the hearing in August of 2007, the Commission voted unanimously to proceed with rule adoption for Rule 9B-3.047, the Building Code Rule, integrating and noticing the approved changes recommended by DCA staff and identified in the matrix presented during the hearing, and proceeding with rule adoption without conducting an additional hearing, with an implementation date of October 1, 2008.

*Recommendations adopted during the 2007 Code Update Process included:*

- Energy Code revisions
- Accessibility code updates
- Window labeling requirements
- Window installation instructions
- Shutter and garage door labeling requirements
- Termite provision enhancements
- Correlation between the FBC and Florida Fire Prevention Code (FFPC) including path of travel provisions
- Water and air intrusion enhancements
- Exposure Category C definition
- Elimination of Panhandle wind-borne debris protections requirements exemption; amending the 2004 Code to eliminate wind-borne debris protection exemptions less stringent than those of the 2006 IBC and 2006 IRC
- Mitigation techniques for the retrofit of existing site-built residential buildings

- Electrical bonding and grounding for swimming pool decks
- Warehouse expansion sprinkler requirements
- Carbon monoxide detector requirements
- Elimination of “Interior Pressure Design” option for buildings in Wind-Borne Debris Regions (WBDR)
- Product validation criteria for methods of demonstrating compliance with the Code (Product Approval Rule change)
- Schedule of penalties for product approval validation entities (Product Approval Rule change)

In the process of considering amendments to the 2004 Florida Building Code the Commission evaluated the following considerations and findings:

- A. The amendment has a reasonable and substantial connection to the health, safety, and welfare of the general public; and,
- B. The amendment does not degrade the effectiveness of the Code and either strengthens or improves the Code or provides for innovation or new technology by allowing equivalent or better products, methods, or systems of construction; and,
- C. The Amendment does not discriminate against products, methods, or systems of construction of demonstrated capabilities; and,
- D. The Amendment has the following fiscal impact:
  1. The fiscal impact of enforcement imposed upon local government is as indicated by TAC review.
  2. The fiscal impact of compliance imposed upon property and building owners is as indicated by TAC review.
  3. The fiscal impact of compliance imposed upon industry is as indicated by TAC review.
- E. The Amendment’s benefits noted with regard to fiscal impact and efficacy outweigh the costs imposed.
- F. The Amendment addresses a Florida-specific need.
- G. The Amendment does not diminish requirements related to wind resistance or prevention of water intrusion contained in the Code or its referenced standards and criteria.

It should be noted that with the adoption of the 2007 Edition of the Florida Building Code the Commission also implemented a variety of legislative assignments and additional enhancements to the Code’s wind and water intrusion related hurricane and storm provisions. Following is the revised Building Code Rule implementing the 2007 Edition of the Florida Building Code:

**9B-3.047 State Building Code Adopted**

(1) The Florida Building Code, 2007 edition, as updated by the Florida Building Commission, and as approved by the Commission on August 21, 2007, incorporated herein by reference is hereby adopted as the building code for the State of Florida.

(2) Modifications and Amendments. All proposed modifications to the selected base codes and amendments to the Florida Building Code shall be submitted on the form adopted by reference in subsection 9B-3.050(4), F.A.C., that must be completed in full prior to submittal. The text of the proposed modification or amendment must be provided in legislative format, with underlining indicating where new language is added to the existing provisions and strikeout indicating where existing language is deleted.

### **Florida Accessibility Code—Rule Adoption on Rule 9B-7.0042 and Rule 9B-7.003**

The Commission adopted amendments to the Florida Accessibility Code in order to integrate the parking standards moved from the DOT statute to the Accessibility Code Statute into the Florida Accessibility Code for Building Construction (Rule 9B-7.0042). In addition, the Commission adopted amendments to the Florida Accessibility Code in order to update the accessibility waiver request form (Rule 9B-7.003).

It should be noted that the Florida Accessibility Code is not amended under the same procedures as the rest of the Florida Building Code which follow the process as required by Chapter 553.73, F.S. The Accessibility Code is amended pursuant to the Accessibility Code Statute via the Accessibility Code Rule, and by law the Florida Building Code is then deemed amended. In addition, by law the Commission can only amend the Accessibility Code to adopt new editions of the Federal ADA Accessibility Guidelines or to integrate accessibility requirements placed in Florida law.

### **Glitch Amendments to the 2007 Florida Building Code—2008 Glitch Code Process**

During 2008 the Commission will conduct its glitch code process by focusing on correcting glitches to the 2007 Florida Building Code and integrating legislated enhancements to the wind loss mitigation provisions adopted into the 2007 Code. The deadline for submittal of proposed Glitch amendments is June 1, 2008 and following rule development in June and August, amendments will become effective on September 27, 2008, prior to the October 1, 2008 effective date of the 2007 Edition of the Florida Building Code.

### **Development Process for the 2010 Florida Building Code**

The Commission is required by law to update the Florida Building Code (Code) every three years, and the 2007 Edition represents the second update and third edition of the Code. The update process is based on the code development cycle of the national model building codes which serve as the “foundation” codes for the Florida Building Code. National model building codes and most engineering standards are updated every three years and the intent is to keep the Code up-to-date with evolving national standards of health, safety and welfare of the public. In 2008 Chairman Rodriguez will appoint a study committee which will develop recommendations which the Commission will consider and adopt following a public hearing conducted in mid-year 2008.

## **2007 Energy Code Amendments**

### **Energy Code Evaluation**

The Commission evaluated the Energy Code provisions of the Florida Energy Code during the 2007 Code Update it had conducted a special workgroup evaluation of the International Energy Conservation Code to determine whether to use that national model code in the Florida Building Code and determined it is not sufficient for the Florida climate and energy characteristics. Minor changes were made to the Florida Energy Code mainly to simplify its text organization consistent with the workgroup study recommendations for inclusion in the 2007 Florida Building Code. Other significant changes to the Code so far are:

## Residential Buildings

- In minor areas where the residential Baseline features differed from those in the *International Energy Conservation Code (IECC)*, Baseline features were revised to reflect those in Section 404 of the *IECC*.
- The performance-based code compliance tool (Method A) was replaced with a more comprehensive computer program, EnergyGauge USA.
- The old hand calculation (Alternate Method A) was retained in an appendix.
- The prescriptive compliance method (Method B) was revised to a single list of requirements comparable to those in the Section 402 of the *IECC*, although glazing was limited to 16 % of floor area when using this method.
- Residential energy code provisions were included in the *Florida Building Code, Residential*, as Chapter 11 and Appendix G.

## Commercial Buildings

- Updated to the American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) Standard 90.1-2004.

The Florida Energy Code will be enhanced further during the “glitch fix cycle” for the Florida Building Code, which will be conducted during the summer of 2008, to achieve the 15% increase in required building energy efficiency directed by Governor Christ’s Executive Order 2007-127. See the following section of this report, “Amend the Florida Energy Code to require 15% More Efficiency in Buildings”, for further details.

*(Appendix E—Building Code and Energy Code Relationship)*

## 5. Hurricane Damage Investigations—Hurricane Research Advisory Committee

Developing the scientific foundation for the building code is fundamental to solving hurricane problems in the most efficient and effective ways. To support code development and other legislative assignments the Commission contracted with the University of Florida and Applied Research Associates for studies in 2007 to address wind-borne debris risks, water intrusion, wind resistance of roof systems and “code plus” requirements that go beyond the Code minimums for coastal buildings.

As a result of hurricanes affecting Florida during the 2004 and 2005 seasons, the Florida Building Commission’s Hurricane Research Advisory Committee (HRAC) continues to meet at most Commission meeting to review research and make recommendations to the Commission regarding proposed code enhancements and research needs. Some of the Committee’s recommendations were adopted with the 2006 Glitch Code amendments to the 2004 Code and others were adopted during the 2007 Code Update cycle, and still others will be implemented during the 2008 Glitch Code amendment process. The Committee continues to consider enhancements to the Florida Building Code based on sound science. In addition, the Committee has recommended research to advance the science and allow the Commission to continually study and update the storm protection provisions of the Florida Building Code. The Committee is continuously monitoring current research and recommending the development of standards and installation practices related to protecting against wind damage and water infiltration.

During 2007 the Committee has developed and ranked a list of issues that require research and development in order to make Florida’s structures, and the products that comprise them, more storm resistant. Of particular note, water managed window and door installation requirements were developed, and the Commission worked with industry to ensure windows, garage doors and shutters are labeled in a way to provide building officials with the information they need, in a field useable format, to ensure that the correct products are installed according to the appropriate conditions of their use.

The Committee identified the following issues for additional research:

- Criteria for wind resistant soffits
- Criteria for wind-driven rain resistance of soffits
- Water managed window and door installation criteria
- Water managed criteria for dryer vents, electrical panel boxes, electrical boxes and vent fan hoods
- Soffit venting alternative designs
- Unvented attic alternative designs
- Water control for masonry, wood and other wall system types
- Blow-off resistance of aggregate on built-up and sprayed polyurethane foam roofs
- Window water leakage test and performance criteria for hurricane prone regions
- Securement of Lightning protection systems
- Wall paint

- Pressure coefficients for roof systems
- Attached structures
- Roof wall connection for mitigation
- Secondary water barrier standard development
- Protect habitat of birds/roof nesting
- Impact of fencing/WBD
- Facing of Signs/ WBD
- Water control capability/necessity for shutter
- Rating system for opening protection product water resistance
- Probabilities of opening protection damage/failure and water intrusion do to that failure
- Field applied window films
- Implications of tile roof damage and WBD
- Installation contributions to product failures (end use to identify mandatory inspections)
- Certification of window installers (installation improvement)
- Education component
- Roof deck vents wind/water
- In-swing doors

The Committee prioritized for funding of research: sealing of masonry walls, soffit systems, window water infiltration standards, aggregate roof blow-off, testing procedures for hurricane zones, lightening protection systems, and tile roof systems.

During 2007 the Committee recommended and the Commission approved funding a variety of research projects which are summarized below.

The HRAC prioritized various research topics regarding resistance side component and cladding and Main Wind Force Resisting System (MWFRS) research, including developing a post hurricane building damage assessment survey contingency.

The University of Florida, under contract with the Commission/DCA, is conducting testing for wind forces and resistance to wind forces for buildings and building components to assist the Commission in developing Code and product enhancements to resist the effects of wind pressure. The research is on load side wind pressure research, resistance side component and cladding, and main wind-force resisting systems.

Wind tunnel testing conducted in the first phase of research on wind-borne debris revealed that wind resistance requirements of current national engineering standards and model building codes do not adequately address wind forces on the edges of roofs. Tests were expanded during the 2007 phase two studies to develop the breadth of data necessary for modifying the engineering standards. When the improved standards are implemented buildings will be significantly stronger and subject to less damage of roof structures by very strong storms.

Studies were also conducted to complete the characterization of terrain effects on wind-borne debris risk. This area of study was initiated to address requirements for the Florida Panhandle region but addresses a much broader weakness of the national engineering standard and model codes. The

national standard and codes recognize the effects of terrain on wind speeds and provide a procedure for reducing required design pressures related to a given wind speed where terrain is rough enough to break up the wind at the earth's surface. They do not yet have a parallel level of sophistication for tailoring wind-borne debris protection requirements to terrain effects. Terrain roughness reduces the effective speed and pressure developed by winds and the amount debris and energy it contains decrease with reduced wind pressures and speeds. Terrain roughness therefore reduces wind-borne debris risk. The study will provide characterizations of wind-borne debris risk associated with the terrain, subdivisions and buildings characteristic of Florida.

The 2004 and 2005 hurricanes demonstrated the Florida Building Code has solved the worst building structural failure problems. However, they revealed that water intrusion is occurring even without the failure of major structural components like a section of roof or a window or door. Water damage is a primary cause of insurance claims and post hurricane assessments identified water intrusion occurs at many places in the building envelope. The 2007 studies focused on leakage at the windows and doors and walls which is not understood as well as leakage at other building components. Large scale hurricane simulator tests were developed to evaluate the window to wall interface for multiple combinations of window and wall systems. The work is ongoing and projected to develop information for window installation and wall water proofing requirements.

The 2007 Legislature tasked the Commission with developing recommendations for criteria Citizens Insurance will apply to determining the insurability of buildings built after January 1, 2009 within 2500 feet of the coast. Studies were conducted using the latest analysis techniques to evaluate wind speeds and storm surge that should be applied for insurance purposes. The Code's primary purpose is to provide minimum standards for the life safety of building occupants. Property can be damaged so long as the damage is not of a type or amount that lives are threatened. Protection of property to allow less costly damage typically requires more stringent and costly standards for buildings and may be more applied as insurance requirements. The results and recommendations of this study are provided in a separate section of this report.

The Committee will meet next to receive updates on related research updates and projects, and to continue to develop consensus on recommendations to the Commission for additional code enhancements for the 2008 Glitch Code process and subsequent code updates.

Of particular note was the extensive opportunity for public input during Hurricane Research Advisory Committee and Commission meetings. In addition, each Hurricane Research Advisory Committee meeting provided opportunities for individuals and entities to present the results of their observations, studies, and research regarding the effects of the 2004 and 2005 hurricanes on the citizens of Florida and the built environment.

*(Appendix I—Hurricane Research Advisory Committee Project)*



## 6. Product Approval

The Florida Building Code establishes standards for products integrated into buildings in addition to standards for the design of buildings themselves. Where compliance with prescriptive standards such as location of fire exits can be determined by reviewing building plans and onsite inspections during construction, how well products such as windows perform cannot be determined by review of drawings or inspection of the product alone. Yet compliance of the individual products is fundamental to compliance of the overall building. To determine whether products and building systems comply, the building official must rely on engineers and testing laboratories to evaluate performance then rely on the manufacturers to maintain quality control of production to ensure that production products perform like the ones tested. The product approval system framed in law and implemented through rule requires accreditation of the product evaluators and quality assurance monitors and standardizes the information that must be provided to demonstrate code compliance.

The Commission directed a major part of its efforts since its inception in 1998 to developing a standardized system for public regulation from the many combinations of product evaluation and quality control monitoring services provided by private companies. The diversity of approaches used in different industries for product evaluation and quality control monitoring make standardization particularly difficult, and a considerable amount of time and effort have been dedicated to this task. Patience and hard work characterize the contributions of all parties.

With the significant enhancements to the Product Approval system implemented through revisions to Rule 9B-72, State Product Approval—details of the revisions were described in the 2006 and 2007 Reports to the Legislature—and the hiring of a Product Approval administrator to process applications, the Product Approval System is functioning more efficiently and user satisfaction, as determined by surveys, is very high.

The revisions include clarifications to the Rule's various provisions, and enhancements to the application review process including requiring additional supporting documentation. The Rule revisions include implementing the statutory requirement to remove provisions related to local approval from the State system. In addition, the rule revisions clarify the technical documentation required for compliance using testing and evaluation reports. Enhancements to the rule also included items such as requiring installation documents to be submitted for all compliance methods including the verification of the installation requirements by qualified entities. The Commission concluded rulemaking to implement enhancements to the validation requirements of the Product Approval Rule in October of 2007, and adopted additional Product Approval Program Oversight Committee (POC) recommendations for revisions to the Rule including product validation criteria and the integration of the Window Labeling Workgroup's consensus recommendations for requirements for installation instruction submittals for product approval applications. Working with stakeholders the Commission also clarified instructions for how manufactures may obtain product approval via associations. In order to satisfy procedural requirements of Chapter 120 regarding timelines for completing rulemaking, the Commission conducted a final rule adoption hearing at the January 2008 meeting and finalized revisions to the Rule.

Another major enhancement to the Product Approval system is the complete revamping of the Building Code Information System (BCIS) website/database, using state-of-the-art computer software and web-design. The new website is more user friendly and provides formatting with screens that are more specific to the product model(s), and provides more detailed summary screens.

During 2007 the Commission implemented the following changes to the BCIS:

1. March 2007: Manufactured Buildings Module Deployment was added.
2. June 2007: Several Binding Interpretations enhancements including requiring the attachment of the Petition Submitted to the Board, and the Board's Final Order, adding email communication to Building Officials Association of Florida (BOAF) and DCA throughout the Petition and Binding Interpretation process, and updating the system to ensure the Petition # and Binding Interpretation # match.
3. June 2007: Tree Structure pages per system module were added.
4. July 2007: Product Approval Administrator changeover was effected.
5. August 2007: Additional Product Approval search capabilities were added to the system.

The final action the Commission took during 2007 regarding the Product Approval System, was implementing changes to product approval application deadlines. The revised process provides for the implementation of a new application review procedure. The new procedure will establish one deadline for submitting applications and provides for an opportunity for written public comment in advance of the meeting which can be reviewed by the manufacturer and the interest groups. Under the new procedure only complete applications will be considered (no conditional approvals). The Committee agreed that DCA Staff should gradually transition to this procedure, but have it in place by the March 2008 meeting.

Following is the adopted process:

Completion Deadline: three weeks prior to Commission meeting. Applications must be submitted, validated, and reviewed by the Administrator and given a recommendation for approval by this deadline. Under this system no specific validation deadline is set. This system will allow for greater application discussion time. If applicant responds with correct changes prior to the Completion deadline, the application will go through and be recommended for approval. If applicant does not respond and any deficiencies are not rectified, the application will be incomplete and not considered at the meeting.

Public Comment Report will be posted with all applications recommended for approval: three weeks from meeting date, 7 days after Completion Deadline. Note - Applications that were recommended for approval by the Administrator may be subject to change of the recommendation after public comment review. All public comments and concerns must be in written format, preferably via email to the Administrator. All public comment documentation (i.e. Code sections, compliance reports, standards, etc.) must be delivered before the comment deadline to be considered.

Public Comment Deadline: NOON – 1 (8 full days) week after initial report is posted, 7 days prior to meeting. No further public comment will be accepted.

Final Report Posted: 1 week prior to meeting Administrator posts final recommendations for approval.

### Product Approval Statistics

Since inception, the Commission has approved 2,393 product applications under the 2001 Florida Building Code, and 5,326 product applications under the 2004 Florida Building Code. The Commission approved 62 testing laboratories, 31 quality assurance entities, 7 accreditation bodies, 5 evaluation entities, 15 certification agencies, and 24 evaluation entities. In addition, the Commission has approved 21,592 products under the 2004 Code. Following are relevant product approval system statistics since inception:

| TYPE   | SINCE INCEPTION | DURING 2007 |
|--|-----------------|-------------|
| <b>APPLICATIONS</b>                          |                 |             |
| Approved 2001 Applications                   | 2,394           | N/A         |
| Approved 2004 Applications                   | 5,326           | 1,489       |
| <b>PRODUCTS</b>                              |                 |             |
| Approved 2001 Applications                   | 11,918          | N/A         |
| Approved 2004 Applications                   | 21,592          | 4,529       |
| <b>ENTITIES</b>                              |                 |             |
| Testing Labs (TST)—Active                    | 43              | 4           |
| Testing Labs—Including Expired               | 62              | 4           |
| Quality Assurance Entities (QUA)—Active      | 25              | 2           |
| Quality Assurance Entities—Including Expired | 31              | 2           |
| Accreditation Bodies (ACC)—Active            | 6               | 0           |
| Accreditation Bodies—Including Expired       | 7               | 0           |
| Evaluation Entities (EVL)—Active             | 5               | 0           |
| Evaluation Entities—Including Expired        | 5               | 0           |
| Certification Agencies (CER)—Active          | 14              | 1           |
| Certification Agencies—Including Expired     | 15              | 1           |
| Validation Entities (VAL)—Active             | 17              | 1           |
| Validation Entities—Including Expired        | 24              | 1           |

## 7. Building Code Training Program

The state building code system, first established in 1974, was overhauled in 1998 to improve its effectiveness. The Legislature recognized that the effectiveness of the Florida Building Code depended on the various participants' knowledge of the codes. The Building Code Training Program was intended to improve compliance and enforcement by providing a focus for code-related education through coordination of existing training resources, including those of universities, community colleges, vocational technical schools, private construction schools and industry and professional associations.

During 2007 the Commission's Education Program Oversight Committee (POC), working with the program administrator and other entities, developed outreach initiatives for Florida construction and design industries for the purpose of ensuring these licensees are informed about Florida Building Code requirements and aware of specific duties there under. Initiatives developed include outreach for mandates such as changes in code, law, and standards; outreach to inform licensees of resources, training opportunities, and reminders of obligations; and outreach on technical information and compliance requirements.

Through the solicitation and competitive bid process, an administrator for the Building Codes Education and Outreach Council was selected and charged with coordinating education and outreach needs for licensees required to comply with the Florida Building Code. The Administrator performed at the direction of the Education Program Oversight Committee (Education POC) and through a team, including the Building Officials Association of Florida and the Education POC Administrator. During fiscal year 2006-2007, the Commission working with stakeholders, accomplished a number of actions regarding education on the Florida Building Code. A summary of key actions taken by the Florida Building Commission, at the recommendation of the Education POC and through the services of the POC and Program Administrator, are summarized below.

First, the Commission developed outreach initiatives for Florida construction and design industries for the purpose of ensuring these licensees are informed about Florida Building Code requirements and aware of specific duties there under. Initiatives developed include outreach for mandates such as changes in code, law, and standards; outreach to inform licensees of resources, training opportunities, and reminders of obligations; and outreach on technical information and compliance requirements.

Second, the Commission drafted education outreach programs through a clearinghouse to achieve the ultimate goal of licensee understanding and compliance. A primary role of the clearinghouse for education outreach programs is to ensure that all licensees (and others) have access to as much information as possible. This includes available education providers and courses, resources, and sources of codes-related information both technical and practical and have a means for providing input to determine the need for education and outreach.

Third, the Commission coordinated outreach education program availability through the use of a structure that includes an informational website, access to materials and courses, possible use of mailings and presentations, and a mechanism for telephone, facsimile, or electronic mail inquiries. Crucial to this coordination is participation from the respective licensee trade and professional associations.

Fourth, the Commission coordinated advanced course subjects as first proposed by the Building Codes Education and Outreach Council\* for development of a list of topics that education providers can develop to assist licensees in meeting their continuing education requirements and improving Florida Building Code knowledge and compliance. The complete list is available in the final report of the Building Code Education and Outreach Council Administrator and includes such topics as accessibility, water conservation through storm water design, roof gardens and green roofs, LEED related topics (landscape architecture perspective), several topics relating to the Florida Energy Code and the Florida Building Fire Prevention Codes, and more. In addition to course topics, a way to encourage development of a greater number of courses was also proposed.

Fifth, the Commission drafted a workplan for approved subject education and training through the use of surveys and resulting recommendations and input for modifications to the established processes and systems for course review and approval and access to information about courses. The workplan includes four steps as follows: 1) identify training needs in a systematic manner; 2) share survey results with regulatory (licensing) boards and associations and seek feedback or change; 3) ensure further research and discussion with education providers on education needs and available courses; and 4) improve access to information for all licensees about available courses in a way that allows education providers to focus on course presentation, rather than marketing the availability of courses. In addition, an initiative for remedial education and training was proposed as a separate and distinct program to address areas where compliance or comprehension are a problem.

Finally, the Commission developed a list of proposed course subjects that updates and augments the earlier developed list. The complete list is available in the final report of the Building Code Education and Outreach Council Administrator and includes such topics as a greater variety of roofing courses, how to build green, combined or separate courses on fire walls, doors, and smoke detectors, coastal or steel inspections, building department management, understanding and applying Florida Building Code for facilities in the high-velocity hurricane zone for engineers, understanding and applying Florida Energy Code commercial building compliance methods for HVAC systems and calculations for total building compliance and for lighting and electrical systems, and more.

The overall conclusion of the Building Codes Education and Outreach Council Administrator's Report, is that education and training for the design and construction industries in Florida will benefit greatly from a well-developed single source of information so that all interested parties can go to one entity and one location to find information on available courses, licensing requirements, related materials, and opportunities for course development. Access to such information and materials must be such that it is easy and useful for infrequent users, and it must be based primarily on the needs of the affected licensees required to comply with the Florida Building Code. The ways to accomplish the needed changes are:

- Bring together in one place all information relating to available and approved continuing education courses including all types of courses.
- With all information gathered, determine if and where gaps exist.
- Take steps to close the gaps.
- Encourage interaction and sharing among education providers.
- Address practical process problems for providers and licensees.
- Address access problems for licensees.
- Eliminate existing barriers to development of a greater number and variety of advanced codes courses.
- Expand and adjust the available methods of delivery of courses.
- Develop distinct structure and criteria for remedial courses.
- Address timing conflicts and discrepancies that exist for continuing education.

\*The Building Codes Education and Outreach Council was repealed by the Florida Legislature in chapter 2007-187, Laws of Florida, now in effect. This council is replaced by a workgroup composed of representatives of the Florida Building Commission, related regulatory boards, industry licensee organizations, education providers, and accreditors. The workgroup will meet quarterly, and all efforts will be made to hold meetings in conjunction with Florida Building Commission meetings. The workgroup will provide to the Education POC and appropriate licensing boards recommendations on the structure and practical needs as well as subjects for education and training on the Florida Building Code.

## 8. Florida Building Code System—Updates on 2007 Commission Actions

### FLORIDA BUILDING CODE SYSTEM

Florida Statute, Chapter 553.77(1)(b), requires the Commission to make a continual study of the Florida Building Code and related laws and on a triennial basis report findings and recommendations to the Legislature for provisions of law that should be changed. In 2005 the Commission conducted, and reported to the 2006 Legislature, the results of the Building Code System assessment, which resulted in the 2006 Legislature granting the Commission authority to conduct expedited code amendments. Following are 2007 Commission initiatives and actions related to the Florida Building Code System:

**The Florida Building Code and the Code Development Process.** The new Florida Building Code is a statewide code implemented in 2001 and updated every three years. The Florida Building Commission developed the Florida Building Code from 1999 through 2001, and is responsible for maintaining the Code through annual interim amendments and a triennial foundation code update. In 2006, the Commission selected the 2006 I Codes as foundation for the 2007 Florida Building Code, during 2007 developed and adopted the 2007 Edition of the Code, representing the second update and Third Edition of the Florida Building Code. The Commission amended its rules to develop criteria ensuring that annual amendments are restricted to issues that are urgent and cannot wait for the triennial code updates, such as life-safety issues, and updating standards and changes to state and federal law(s). The Commission also developed rules for Technical Advisory Committee (TAC) proposed code amendments to include TAC comments on the its review of amendments to ensure the Commission has additional input from its technical experts.

*(Appendix A—History of the Florida Building Code)*

**The Commission.** The Commission is an appointed representative stakeholder body that develops, amends and updates the Code. The Commission is composed of members representing each of the key interests in the Building Code System. The Commission meets every six weeks and, in addition to its code development responsibilities, regularly considers petitions for declaratory statements, accessibility waiver requests, the approval of products and entities, and the approval of education courses and course accreditors. The Commission also monitors the Building Code System and reports to the Legislature annually with its recommendations for changes to statute and law. During 2007 the Commission amended its rules of procedure to provide for alternate members for Committee and workgroups, ensuring all decisions have input from all of the affected interest groups.

*(Appendix C—Case Study of the Florida Building Commission)*

**Local Administration of the Code.** Florida Law requires that the Code be administered and enforced by local government building and fire officials. The Commission has certain authorities in this respect such as the number and type of required inspections. In 2007, the Commission conducted an assessment survey to review and address the code administration needs of local governments with consideration of measures to improve uniform and effective enforcement of the

Code. The Commission identified a need to address the code administration needs of local governments with an emphasis on identifying measures to improve uniform and effective enforcement of the Code. During 2007 the Commission conducted an assessment of needs as identified by various local jurisdictions, and then convened the Commission's Code Administration Technical Advisory Committee to develop recommendations to enhance the functioning of this important component of the Building Code System. The assessment process will be conducted by the TAC with final recommendations delivered to the Commission in 2008.

**Strengthening Compliance and Enforcement.** Compliance and enforcement of the Code is a critical component of the system, and the Commission's emphasis in this regard is on education and training. During 2007 the Commission's Education Program Oversight Committee (POC), working with the program administrator and other entities, developed outreach initiatives for Florida construction and design industries for the purpose of ensuring these licensees are informed about Florida Building Code requirements and aware of specific duties there under. Initiatives developed include outreach for mandates such as changes in code, law, and standards; outreach to inform licensees of resources, training opportunities, and reminders of obligations; and outreach on technical information and compliance requirements. The Commission is working with the newly formed Education Workgroup to ensure education on the Code remains a priority.

**Product Evaluation and Approval.** In order to promote innovation and new technologies, a product and evaluation system was determined to be the fifth cornerstone of an effective Building Code System. The product approval process should have specific criteria and strong steps to determine that a product or system is appropriately tested and complies with the Code. Quality control should be performed by independent agencies and testing laboratories that meet stated criteria and are periodically inspected. A quality assurance program was also deemed essential. The Commission adopted a Product Approval System by rule and currently approves products for state approval and product approval entities. Local product approval remains under the purview of local building officials a part of the building permit approval process.

In 2007, the Commission implemented enhancements to the system developed by working with stakeholders, including requirements for installation instruction submittals for product approval applications. In addition, the Commission concluded amending the Product Approval Rule, Rule 9B-72, to address the validation aspects of the system.

### **Manufactured Buildings Program**

The Manufactured (Modular) Buildings Program is authorized under Chapter 553, Part I F.S. and Rule 9B-1, FAC, and regulates all factory-built buildings constructed to the Florida Building Code (FBC), of closed construction (excluding HUD standard mobile homes). All approved buildings must bear the Department of Community Affairs (DCA) Insignia, which attests to compliance with the FBC prior to leaving the factory.

Certification of manufacturers' facilities, quality assurance manuals, plan reviews, product approval and in-plant inspections of modular buildings are performed by state approved Third Party Agencies, licensed under the Department of Business & Professional Regulation, and acting as an agent for the State.



The sale of modular buildings in Florida is a multi-hundred million dollar industry, largely due to State growth and hurricanes, exemplified by the FY07-08 sales of DCA insignias as follows:

**Insignias Issued**

|                     |  |
|---------------------|--|
| Storage Sheds       | 8199                                       |
| Portable Classrooms | 3862 (573 new and 3289 existing buildings) |
| Residential         | 295  |
| Commercial          | 550  |
| Recertifications    | 190  |

In 2007, the Commission conducted rulemaking changes to the Manufactured Buildings Rule 9B-1, FAC. The changes were intended to clarify the programmatic procedures of the Manufactured Buildings Program. These changes include refinements to the following sections of the rule: Procedures; Definitions; Fees; Inspections & Insignias.

In addition, the Manufactured Buildings Program module on the Building Code Information System (BCIS) underwent a major update in early 2007 to reflect rule and programmatic changes in a new more user friendly format. A collaborative initiative between DCA and the Building Code Administrators and Inspectors Board resulted in rule change(s) in 2007 to allow more licensees to conduct plan reviews and inspections of modular buildings.

**Prototype Buildings Program**

The Florida Prototype Building Program (FPBP) is a plan review and approval system that allows businesses to simplify the permitting process across the state. Buildings and structures to be constructed multiple times in different locations can undergo plan review once, saving time, money and effort. Authorized by Florida Statute 553.77 in 2000, the program came on-line May 12, 2003 as part of the Department of Community Affairs’ Building Code Information System website: [www.floridabuilding.org](http://www.floridabuilding.org).

One of the first goals of the Program was to inform the designers and developers/builders of the availability and potential benefits of the Prototype Building Program. Because it was a revolutionary new program, the Program met with resistance from some building departments and skepticism from potential users. Several concerns identified by the building departments stemmed from their experiences with “Master Plans” filed at the local level. Building departments were also concerned with having the Prototype Plans properly reviewed. Some building departments questioned an “outside” organization’s capability of doing the job correctly. Designers of commercial buildings were among the first to express interest in the Prototype Program. From inception through repeal, the Program had 109 prototype plan use requests, and 5 plan reviews were conducted.

As a result of low Program usage the administrator decided not to pursue a continuation of the contract at the conclusion of FY 2006/2007 (June 30, 2007), and the Commission was unable to secure another administrator even after two RFP’s were issued. At the May 2007 meeting the Commission voted to conduct a rule development workshop on Prototype Buildings to decide how to deal with the Program not having an administrator after June of 2007. The Program Oversight Committee made an effort to locate another program administrator, but due to a variety of factors there were no interested parties willing to continue with the program. As a result, at the June

meeting the Commission conducted a rule development workshop and voted to repeal the program. The August rule adoption hearing was the final step in the process to repeal the program, and at the conclusion of the hearing the Commission voted unanimously to proceed with rule adoption for Rule 9B-74, the Prototype Building Rule by filing the rule to repeal the Program.

### **Rules for Appeal of Building Official Decisions—Binding Interpretations**

One of the Florida Building Commission's responsibilities is to provide appeals of building officials decisions. Section 553.775 F.S. provides the Commission with the authority to issue binding interpretations. The system requires the Commission in coordination with the Building Officials Association of Florida (BOAF) to designate a five-member panel to hear requests to review decisions of local building officials. The newly implemented web-based process is in place and administered by BOAF, and in 2007 several binding interpretations were issued.

In addition, the Commission's established informal process for rendering nonbinding interpretations of the Florida Building Code is also functioning, and nonbinding opinions were also issued in 2007. (*Appendix B—Code Resolution Process Flowchart*)

## **2007 COMMISSION ACTIONS**

(*Appendix D—Commission 2007 Milestones*)

### **Annual Interim Amendments to the Code**

The Commission implanted changes to Rule 9B-3.050, the rule for Statewide Amendments to the Code. In 2006 the Code Amendment Process Review Workgroup delivered consensus recommendations to the Committee Organization and Process Ad Hoc Committee regarding proposed limitations for annual interim amendments to the Florida Building Code. The Commission received and unanimously adopted the recommendations at the December 2006 meeting. At the March 2007 meeting the Commission conducted a rule development workshop, and in June conducted a rule adoption hearing as the final step in the process to implement by rule the Commission's policy for annual interim amendments to restricting annual amendments to Commission interpretations, emergency issues, updating referenced standards, consistency with federal and state laws rules and regulations, and coordination with the Florida Fire Prevention Code.

### **Commission Workgroups and Committee Alternates**

The Commission implanted changes to Rule 9B-3.004, the rule regarding Commission Organization and Operations. At the December 2006 Commission meeting, an Ad Hoc committee of Commission members, the Committee Organization and Process Ad Hoc Committee, met to review committee organization and process issues, including considering alternate members for TAC's and workgroups. The Ad Hoc developed a package of consensus recommendations regarding alternate members which the Commission unanimously adopted. The Commission unanimously adopted the detailed policy and requirements for how this will be done at the December 2006 meeting, and at the March 2007 meeting the Commission conducted a rule development workshop, and in June conducted a rule adoption hearing as the final step in the process to implement by rule the Commission's policy on alternate members for workgroups and TAC's. The rule formalizes the Commission's use of workgroups to develop consensus recommendations on special topics, and provides that non-Commissioner members of TAC's and workgroups may recommend alternate members to participate and vote in their absence.

### **Commission Legislative Liaison Process**

As a result of the recommendations the Commission approved from the Building Code System Assessment project, the Commission initiated a bi-weekly conference call during the 2007 legislative session as well as during the various special sessions conducted during 2007. The conference calls were noticed in the Florida Administrative Weekly (FAW) as a meeting of the Commission, and members were provided with updates from staff on the status of the Commission's legislative agenda as well as other issues of interest to the Commission. In addition, the Commission was able to discuss and develop recommendations and provide ongoing guidance to staff as appropriate, throughout the session(s).

### **Product Approval—Rule Adoption on Rule 9B-72**

The Commission's Product Approval Validation Workgroup worked for over a year to develop a consensus package of recommendations regarding the validation criteria for methods of demonstrating compliance with the Code, as required in the Product Approval Rule. The Workgroup concluded their work in June of 2006 and the Commission reviewed the recommendations during the fall of 2006. The Commission's Product Approval POC held a special meeting on January 24, 2007 to review the proposed changes and provide the POC's recommendations to the Commission. The POC met again on February 5, 2007 and reviewed and recommended to the Commission additional revisions proposed by staff, which the Commission adopted during a February Rule Development Workshop. In addition, the Commission conducted a supplemental rule development workshop at the May meeting and adopted additional Product Approval POC recommendations for revisions to the Rule including the integration of the Window Labeling Workgroup's consensus recommendations for requirements for installation instruction submittals for product approval applications. In June the Commission conducted a rule adoption hearing and voted to conduct a supplemental hearing regarding a disciplinary process for validators. At the August 2007 meeting the POC recommended the Commission conduct an additional supplemental rule adoption hearing in order to provide the POC additional time to discuss a schedule of penalties. The October 2007 rule adoption hearing was the final step in the adoption of the current round of revisions to Rule 9B-72. At the conclusion of public comment an opportunity was offered for Commission discussion, and then the Commission voted unanimously to adopt the schedule of penalties for validators along with previously adopted changes regarding product validation criteria and to proceed with rule adoption for Rule 9B-72, Product Approval. As a result of the length of the rule development process and to comply with rulemaking requirements, the Commission conducted an additional rule adoption hearing at the January 2008 meeting.

### **Termite Workgroup Recommendations**

Chairman Rodriguez appointment a termite workgroup to consider proposals for enhancing the Code's termite provisions. The Workgroup was conducted as a facilitated stakeholder consensus-building process, and during 2006 the Workgroup developed recommendations on proposed code amendments and enhancements to the existing termite provisions in the Florida Building Code.

During 2007 the Workgroup was reconvened and given a Phase II scope and purpose to consider two issues referred by the Structural TAC from the March 2007 TAC review process for proposed modifications for the 2007 Code Update process. The first issue was to consider options for addressing the potential for termite entry through the annular space created from sleeved pipes penetrating foundations, identified in "modification 2009" proposed to amend Chapter 1816.2. The second issue was to review a proposal regarding Termite Resistant Materials proposed to amend R320.

Of particular note is the collaboration between the Commission and the Department of Agriculture and Consumer Services (DACs) to review and propose revisions to the Code's termite provisions.

Following are the Workgroup's consensus recommendations:

*Sleeving of pipes to prevent termite entry:*

*When protective sleeving is used, the nominal thickness of the sleeving shall be 0.025", and shall be sized appropriately relative to the pipe's size, and shall be sealed within the slab using a non-corrosive mechanical clamping device to eliminate the annular space between the pipe and pipe sleeve.*

*Code recommendation:*

Regarding the proposed modification to R320, Termite Resistant Materials the Workgroup reviewed and agreed not to support any of the code proposals for changes to this section of the Code. The Workgroup determined that the existing Code adequately addressed the issue of termite resistant materials and the proposed changes provided no enhancements to the Code.

*(Appendix K—Termite Workgroup Project)*

### **Windows Workgroup Recommendations**

Chairman Rodriguez appointment a Window Labeling Workgroup whose purpose was to provide recommendations for providing building officials with needed information for conducting field inspections to ensure windows comply with the relevant wind pressure Code requirements. In addition, the workgroup was charged with considering issues related to window installation and water intrusion. The Workgroup developed recommendations to the Florida Building Commission regarding the window labeling provisions of the Florida Building Code during 2006, and the recommendations were implemented through the adoption of the 2007 Florida Building Code.

During 2007 the Workgroup was charged with developing consensus recommendations for a template for installation instructions submitted for product approval submittals which were adopted by the Commission and integrated into the Product Approval Rule. Following are the Workgroup's consensus recommendations regarding installation instructions:

Installation instructions shall indicate the following:

*The maximum rough opening gap between the product and the substrate that it is being attached to.*

*The type, and grade of anchor, and/or manufacturers anchor specifications; including minimum nominal size, minimum penetration into substrate, and minimum edge distances.*

*The type, physical dimensions, material and grade of any accessory item or strap, if applicable.*

*The spacing of anchors, shims, accessory items and straps.*

*Illustrated diagrams of the attachment of the product to the structure.*

*(Appendix J—Windows Workgroup Project)*

### **Code Administration Assessment Project Update**

One of the Florida Building Commission's responsibilities is making a continual study of the Florida Building Code and related laws, and on a triennial basis reporting findings and recommendations to the Legislature. The first triennial assessment was conducted in 2005 and recommendations were reported to the 2006 Legislature. A variety of issues were identified during the course of the assessment survey and Ad Hoc Committee review process, and one of the recommendations developed and adopted by the Commission was to conduct an assessment of local building officials on their needs regarding administration of the Florida Building Code (Code). Some of the key issues identified during the review process included training and education, communication and outreach, staffing and qualifications, interpretations and appeals, funding, and state oversight.

Local administration and enforcement of the Code is one of the key foundations of the Building Code System, and during 2007 the Commission sought the views of local jurisdictions—of all sizes and in all geographic regions of the State—on their perspectives and needs regarding the local administration of the Code, as well as their recommendations for measures to improve the uniform and effective enforcement of the Code, including how the Commission could best assist local jurisdictions relative to the administration of the Florida Building Code. The Florida Conflict Resolution Consortium at Florida State University (<http://consensus.fsu.edu/>) designed and conducted an on-line survey in order to ensure that the needs and views of the broadest possible spectrum of local jurisdictions were considered during the survey which was linked to BOAF's website and distributed to BOAF's members. The Survey was completed and reviewed with the Commission at the October 2007 meeting.

The code administration assessment survey was the first step in the process of evaluating the enforcement aspects of the Florida Building Code System and will serve as the basis for an assessment report with recommendations in 2008, followed by a review of the topic by the Commission's Code Administration TAC, who will in turn make recommendations to the Commission.

*(Appendix H—Code Administration Assessment Survey Project)*

### **Energy Efficiency and Moisture Control in the Florida Climate Forum**

As a result of an identified need, Chairman Rodriguez announced that there would be a "Symposium on Energy Efficiency and Humidity Control in Florida Homes". The idea for the Symposium derived from discussions at the Energy Code Work Group meetings, primarily between the window manufacturers and air conditioner manufacturers. The Workgroup process identified the need for a technical forum to discuss how energy efficiency measures that effect "sensible heat" gains impact air conditioning equipment's ability to control indoor humidity. Industry stakeholder put this workshop together with the help of Commission staff. The goal of the Symposium is to create a broader base of understanding on how building envelope energy efficiency measures interact with air conditioning systems so we can better plot a strategy to improve energy efficiency while maintaining healthy indoor environments.

The "Symposium on Energy Efficiency and Humidity Control in Florida Homes" was held on February 28, 2007 in Tampa, at the Doubletree Hotel, Tampa Westshore Airport location. Two factors led to the organization of the Commission-sponsored symposium on energy efficiency and humidity control of February 2007. First, the uncertainties regarding humidity control with current construction practices and new air-conditioning equipment complying with federal SEER standards. Second, the renewed interest in energy conservation by the Florida Legislature and advocacy for

national efficiency standards at the Commission. The purpose of the symposium was to educate non-air-conditioning professionals on the humidity control challenge and to identify actions that can be taken and options that can be pursued to maintain humidity control and healthy environments while enhancing energy conservation standards for Florida buildings.

Symposium participants identified two major options to be pursued through several actions. The first, and potentially most difficult, is education of the air-conditioning service industry, homebuilders and consumers about the humidity control and indoor air quality problems resulting from equipment over-sizing and poor air distribution systems. The second is to work with equipment manufacturer's research and development teams to develop design parameters for equipment that can reliably increase the latent load removal capacity of equipment. The three major manufacturers represented at the symposium committed to working on improved equipment. These two paths provide the Commission with opportunities to keep in balance, while advancing, the two primary policies of the State: energy conservation and healthy indoor environments. The Commission continues to work with stakeholders to ensure the Florida energy Code contains energy efficient provisions based on sound science and implementable technology.

Forum participants agreed on and prioritized the following eight key issues: proper design considerations/ standards (sizing), education & training on how all components interact, enforcement & compliance, changes to the Building Code, cost/benefit considerations, research, the interface between technologies & how they work as a system (technologies includes building practices & techniques), and the pace of implementation and incorporating feedback from stakeholders for implementation.

An education and outreach plan is being developed and coordinated with the Commission's Education and Outreach Program coordinator for implementation.

### **Amend the Florida Energy Code to Require 15% More Efficiency in Buildings**

Governor Crist issued Executive Order 07-127 establishing actions to reduce greenhouse gas emissions within Florida, and a component of the EO has an impact on the energy performance requirements of the Florida Energy Code. DCA Secretary Tom Pelham attended the Commission's October 2007 meeting to detail the Governor's requirements. Secretary Pelham reported that Governor Crist has committed his Administration to charting a new direction in energy policy in Florida. The Secretary stated that in Executive Order 07-127 the Governor made two statements that require immediate attention:

“Global climate change is one of the most important issues facing the State of Florida this century” and, “Immediate actions are available and required to reduce emissions of greenhouse gases within Florida.”

The Executive Order directs the Department of Community Affairs and the Florida Building Commission to work together to revise the Florida Energy Code for Building Construction to increase the energy performance of new construction in Florida by at least 15 percent. It also instructs DCA to initiate rulemaking on Florida appliance efficiency standards, with the objective of increasing the efficiency of appliances by 15 percent. The Governor has charged DCA and the Commission with accomplishing these tasks by 2009.

The Commission reviewed energy related code amendments adopted in the 2007 Florida Building Code Update to determine their cumulative level of increased efficiency, and the Commission adopted additional amendments required to achieve Governor Crist’s directive of 15% increased efficiency by January 1, 2009 using procedures of Part VI, Chapter 553, F.S. The Energy Code will be amended by administrative rule authorized by that part then the revised Energy Code will be adopted into the 2007 Florida Building Code during the 2008 “glitch” cycle and concurrently with the October 1, 2008 effective date of the 2007 Florida Building Code.

As the next step, the Department of Community Affairs (DCA) developed recommendations for Energy Code amendments based on a cost effectiveness study of residential construction conducted by the Florida Solar energy Center (FSEC) and proposals for amendments to national model energy conservation standards and codes. In general, the approach to achieve the 15% overall level of increased efficiency was achieved by requiring a 10% to 15% increased efficiency for residential buildings and a 15% to 25% increased efficiency for light commercial buildings.

**Residential Buildings:**

Change the baseline efficiency levels for building components that establish the energy budget which must be met to comply with the Code without mandating those new efficiency levels have to be used in all buildings, and allow the owner to determine which of the 18 options is more cost effective or otherwise attractive to them. This approach allows consumers to make choices regarding achieving the required performance level without mandating specific provisions.

Following are the recommended changes:

- Standard ducts to tight ducts
- Low E to Lower E windows (SHGC = .40 to SHGC to .30)
- 18% to 15% for glass to floor area ratio

**Conservation Measure First Cost and Internal Rate of Return**

| ECM  | First Cost | IRR  |
|--|------------|------|
| Standard Ducts to Tight Ducts                          | \$165      | 338% |
| Low E to Lower E Windows<br>(SHGC = .40 to SHGC = .30) | \$396      | 65%  |
| 18% to 15% Glass to Floor                              | - *        | - *  |

\* Reducing windows reduces building costs

**Percent Energy Efficiency Increase per Region and Overall**

| Climate Zone | Base    | Win     | Win + LFducts | diff (W+D) | Pop-fact | Weighted Average |
|--------------|---------|---------|---------------|------------|----------|------------------|
|              | MBtu/yr | MBtu/yr | MBtu/yr       | %          | %        | %                |
| Jax          | 43.04   | 37.30   | 35.71         | 17.0%      | 20%      | 15.8%            |
| Tampa        | 43.77   | 38.76   | 37.18         | 15.1%      | 41%      |                  |
| Miami        | 53.93   | 47.21   | 45.26         | 16.1%      | 39%      |                  |

Cost effective ECMs using Baseline Assumptions and IRR Criteria

| Energy Conservation Measure | Internal Rate of Return | % Savings (of Total) | % Savings (of Code)** |
|-----------------------------|-------------------------|----------------------|-----------------------|
| White walls                 | 7758.5%                 | 0.8%                 | 1.6%                  |
| HW2 (gas)                   | 448.5%                  | 5.7%                 | 11.2%                 |
| Lgts*                       | 447.2%                  | 6.9%                 | NA                    |
| Ducts                       | 338.2%                  | 3.9%                 | 8.3%                  |
| Fridg*                      | 333.7%                  | 1.1%                 | NA                    |
| effPool*                    | 269.9%                  | 9.0%                 | NA                    |
| dWash*                      | 222.6%                  | 0.5%                 | NA                    |
| HW1 (gas)                   | 220.1%                  | 1.5%                 | 3.0%                  |
| Pgrm Tstat                  | 200.8%                  | 2.2%                 | 4.7%                  |
| HAcloths*                   | 195.8%                  | 0.7%                 | NA                    |
| cFan*                       | 156.4%                  | 2.7%                 | NA                    |
| Furn1 (gas)                 | 128.7%                  | 0.8%                 | 1.6%                  |
| HW (elec)                   | 114.7%                  | 0.5%                 | 1.0%                  |
| Furn2 (gas)                 | 98.2%                   | 1.2%                 | 2.4%                  |
| HVAC2                       | 84.2%                   | 6.1%                 | 13.2%                 |
| HPWH                        | 74.7%                   | 7.9%                 | 16.9%                 |
| WinU                        | 64.7%                   | 2.7%                 | 5.7%                  |
| Package***                  | 57.2%                   | 24.9%                | 53.5%                 |
| SHW                         | 54.6%                   | 10.4%                | 22.4%                 |
| RBS                         | 40.7%                   | 3.2%                 | 7.0%                  |
| HRU                         | 35.9%                   | 4.4%                 | 9.4%                  |
| IDucts                      | 32.0%                   | 8.6%                 | 18.5%                 |
| HVAC3                       | 13.9%                   | 8.7%                 | 18.6%                 |

\* Not currently covered by Florida's Building Code

\*\* Only 46% of total home energy use is covered by Florida's Code

\*\*\* Package consists of White Shingle, White Walls, Tight Ducts, Programmable Tstat, AC SEER=15.0, Lower Low E Windows, Solar Hot Water, Radiant Barrier



## ECM Acronyms, Descriptions and Costs Ranked by First Cost

| Acronym | Description of Measure   | Incremental Gross Cost | Federal Tax Credit | Florida Rebate | Incremental Net Cost |
|---------|--|------------------------|--------------------|----------------|----------------------|
| Wwalls: | White walls (solar reflectance = 60%)  | \$2                    |                    |                | \$2                  |
| HW:     | 50 gal hot water heater EF increased from 0.90 to 0.92   | \$50                   |                    |                | \$50                 |
| HW1:    | Medium efficiency gas hot water heater (EF=0.63)   | \$100                  |                    |                | \$100                |
| Pstat:  | Programmable thermostat with 2 °F setup/setback  | \$150                  |                    |                | \$150                |
| Furn1:  | High-efficiency non-condensing furnace (AFUE=90%)  | \$150                  |                    |                | \$150                |
| Ducts:  | Tight ducts (normalized leakage from 0.10 to 0.03)   | \$165                  |                    |                | \$165                |
| HW2:    | High efficiency gas hot water heater (EF=0.80)   | \$300                  | \$100              |                | \$200                |
| Furn2:  | High-efficiency condensing furnace (AFUE=95%)  | \$400                  | \$150              |                | \$250                |
| WinU:   | Window upgrade to vinyl frame; U=0.39; SHGC=0.28   | \$396                  |                    |                | \$396                |
| Walls:  | Add R-3 wall sheathing   | \$406                  |                    |                | \$406                |
| RBS:    | Attic radiant barrier system   | \$563                  |                    |                | \$563                |
| HVAC2:  | SEER-15; HSPF-9.0 high efficiency heat pump (\$300 federal tax credit)   | \$1,000                | \$300              |                | \$700                |
| HRU:    | Heat recovery water heater   | \$750                  |                    |                | \$750                |
| HPWH:   | Heat pump water heater (COP = 3.0)   | \$1,092                |                    |                | \$1,092              |
| IDucts: | Entire forced air distribution system inside conditioned space boundary  | \$1,650                |                    |                | \$1,650              |
| SHW:    | Solar hot water system* (closed loop; 40 ft <sup>2</sup> -80 gal; PV pumped – 30% federal tax credit + \$500 Florida rebate) | \$3,092                | \$1,050            | \$500          | \$1,692              |
| HVAC3:  | SEER-17; HSPF-9.2 ultra high efficiency heat pump (\$300 federal tax credit)   | \$2,500                | \$300              |                | \$2,200              |
| Roof:   | White metal roof (solar reflectance = 70%)   | \$2,941                |                    |                | \$2,941              |

\* For solar hot water systems closed-loop systems were assumed in north Florida and open-loop systems were assumed in central and south Florida.

**Commercial Buildings:**

Use current American Society of Heating Refrigeration and Air-conditioning Engineers (ASHRAE) design guides for small office buildings, small mercantile buildings, and schools to establish energy budgets that must be met for compliance. Adopt the current edition of the national engineering design standard, ASHRAE 90.1-2007, for other commercial occupancy buildings. Establish minimum glazing efficiency ratings.

Example:

**ASHRAE 90.1-2007 and the ASHRAE Light Commercial Office Building Design Guide for efficient buildings increase building efficiency compared to current Code:**

| City         | ASHRAE Climate Zone | 90.1-2007 Savings | ASHRAE Design Guide Savings |
|--------------|---------------------|-------------------|-----------------------------|
| Jacksonville | Zone 2              | 9.3%              | 17.4%                       |
| Orlando      | Zone 2              | 7.2%              | 14.8%                       |
| Tampa        | Zone 2              | 7.1 %             | 15.0%                       |
| Miami        | Zone 1              | 6.0%              | 13.3%                       |

### **Implementation of Electrical System Requirements of the Energy Efficiency Code**

In 2006, the Commission convened a Forum on Energy Code Electrical Requirements Enforcement to review concerns and discuss issues related to the implementation of Energy Code electrical requirements from an enforcement perspective. The concern is how to enhance education and awareness of the Florida Energy Efficiency Code for Building Construction and electrical load management. These requirements were adopted over 15 years ago, and reports indicate that some regions of the State have not been enforcing the provisions. In order to ensure that the Energy Code's electrical requirements are being uniformly enforced across the State, the Commission charged DCA staff with developing a workplan to implement the education and outreach recommendations for enforcing the Energy Code's electrical provisions. During 2007, notices regarding the current electrical provisions were placed on the Commission and BOAF websites, BOAF developed and conducted an education training course on the issue, and the topic was included in the Education and Outreach contract for FY 2007/2008.

### **Building and Fire Code Duplicate Provisions and Overlapping Responsibilities**

The Florida Building Code and the Florida Fire Prevention Code, by design, contain overlapping technical provisions in order to ensure that buildings are designed and constructed with life-safety considerations as an integral part of both. In order to design buildings of certain size and occupancies both codes must be used together and one code may trigger the use of the other. In some instances the same provisions are in both codes, this is referred to as duplicate provisions. In other instances one code may reference the other, and in a few cases the two codes have conflicting requirements. In addition, the enforcement of the two codes, from plans review through final inspection, involve building and fire officials at the local, and in the case of fire, sometimes at the State level.

The Joint Fire TAC and Fire Code Advisory Council continued to meet throughout 2007 to consider how to clarify/resolve issues regarding the duplicate provisions and overlapping responsibilities between the Florida Building Code and the Florida Fire Prevention Code. The Joint TAC achieved consensus on the following policy in regards to overlapping responsibilities and code provisions between the FBC and FFPC.

*Continue to utilize Florida Statutory provisions as the tool to resolve conflicts.*

*Continue to review both codes to correct conflicts.*

*There will continue to be a consistent review of both codes.*

In conformance with the Commission's policy decision, that conflicts between the codes should be identified and resolved on an ongoing basis, the Joint TAC reviewed specific code requirements for recommendations to the Commission regarding proposed amendments to the 2004 Code during the 2007 Code Update process by resolving specific conflicts between the respective codes regarding path of travel conflicts between the Codes. The TAC's recommendations were ultimately adopted by the Commission and implemented during the 2007 Code Update process.

**APPENDIX A**  
**HISTORY OF THE FLORIDA BUILDING CODE AS OF 2007**

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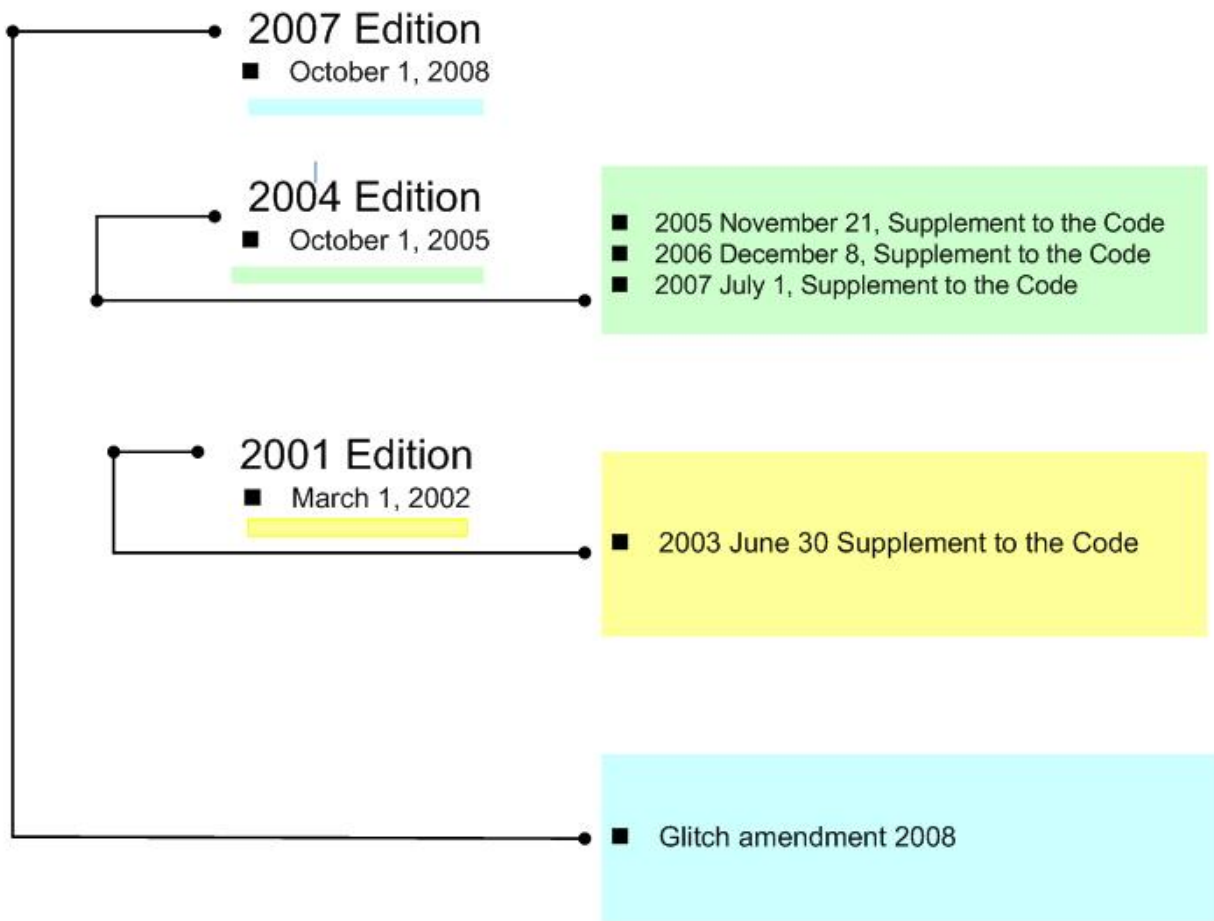
**History of the Florida Building Code as of 2007**

*Florida Building Code 2001-2007*

The Florida Department of Community Affairs

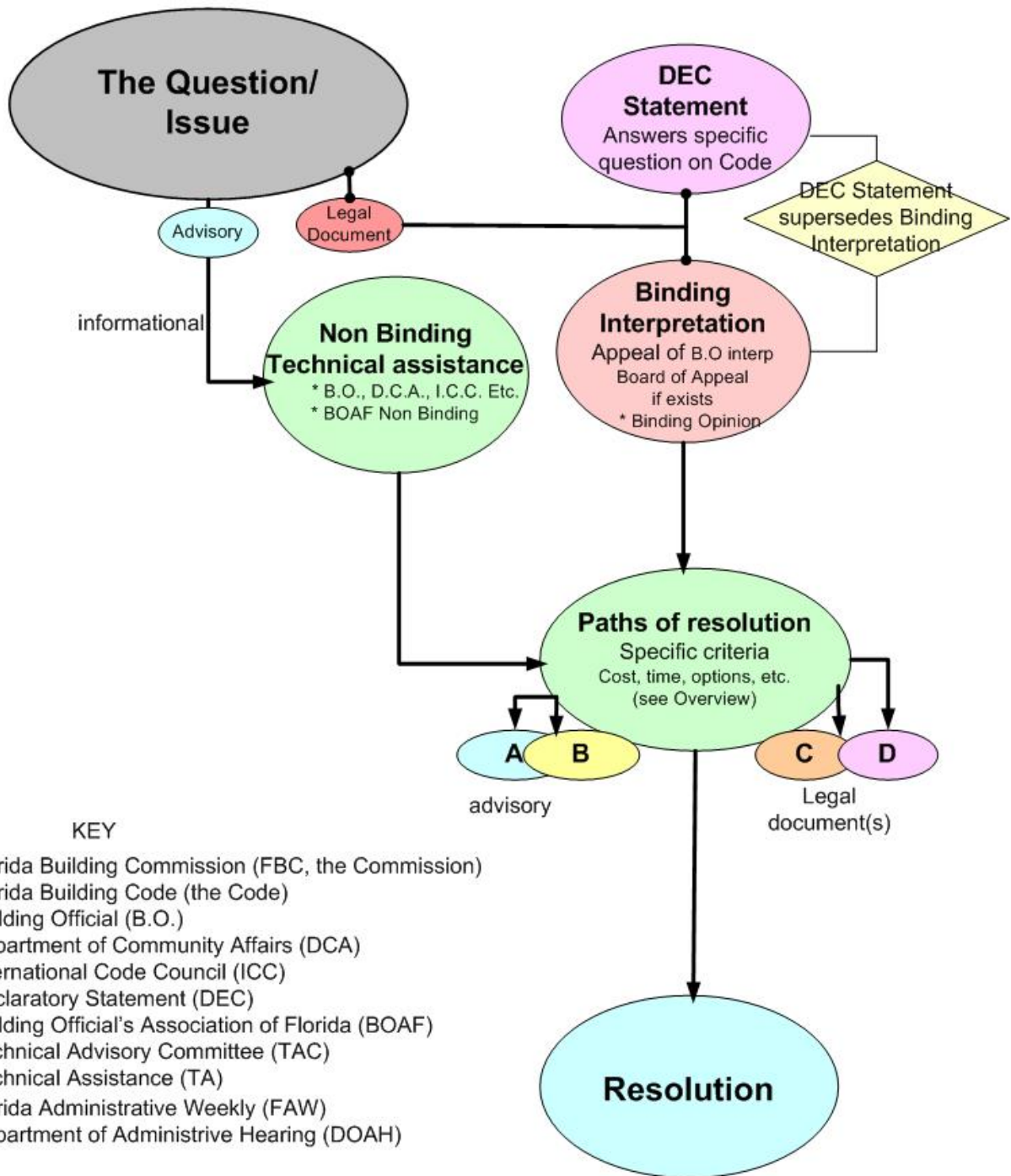
*Florida Building Commission*

*Established by s. 553.73, F.S.*



**APPENDIX B  
CODE RESOLUTION PROCESS**

## Code Resolution Process



**KEY**

- Florida Building Commission (FBC, the Commission)
- Florida Building Code (the Code)
- Building Official (B.O.)
- Department of Community Affairs (DCA)
- International Code Council (ICC)
- Declaratory Statement (DEC)
- Building Official's Association of Florida (BOAF)
- Technical Advisory Committee (TAC)
- Technical Assistance (TA)
- Florida Administrative Weekly (FAW)
- Department of Administrative Hearing (DOAH)

Note: Licensing facilities and state agencies enforcing the Code may be subject to an alternative process

## APPENDIX C

### CASE STUDY OF FLORIDA BUILDING COMMISSION PROJECT

This case study appears on the Policy Consensus Initiative (PCI) website and is available as a PDF document. Following is the link:

<http://www.policyconsensus.org>

#### **Case Study: Building Consensus Statewide on a Building Code**

Following Hurricane Andrew in 1992, Florida experienced record-breaking insurance losses resulting in a crisis affecting every homeowner in the state. The Governor appointed a Building Code Study Commission, The Florida Conflict Resolution Consortium designed and facilitated a two-year study and deliberation process with the 28 members representing a range of interests in the public and private sectors, through which the Commission evaluated the building code system.

The study revealed that building code adoption and enforcement was inconsistent throughout the state and even local codes thought to be the strongest proved inadequate when tested by major hurricane events. The consequences were devastation to lives and economies and a statewide property insurance crisis. The Commission recommended reform of the state building construction system which placed emphasis on uniformity and accountability.

The legislature enacted the consensus recommendations into law in 1998. In late 1998, the Consortium was asked by the Commission's chair to assist the newly created Florida Building Commission in its effort to build consensus for a uniform building code proposal. A complex consensus building process was put in place that included designing and facilitating meetings of 11 balanced technical advisory groups of 15 members each appointed by the Commission, as well as the Commission's meetings.

The Consortium designed and led a series of facilitated public workshops around the state for the Commission to receive input on its draft products. After public comment was obtained, the Commission refined the Code and presented it to the 2000 Florida Legislature for review and approval.

The Florida legislature enacted the new Florida Building Code and directed the Commission to continue to build consensus on key topics involved in its implementation, including product approvals and other controversial issues. The Consortium continues to assist the Commission and its Technical Advisory Committees and Special Issues Workgroups at each of its meetings.

The Florida Building Commission is a 23 member Governor appointed stakeholder group who successfully created, implemented, and maintains the new statewide Florida Building Code. Commission Chair Rodriguez, praised the consensus process that has resulted in the code decisions thus far. "I am absolutely in awe of this process. The intent is not to compromise, because one does not compromise on issues of life safety, but to find and reach consensus on the best way to achieve results the people want."

The Florida Building Commission (FBC) seeks to develop consensus decisions on its recommendations and policy decisions. The members strive for agreements which all of the members can accept, support, live with or agree not to oppose. In instances where, after vigorously exploring possible ways to enhance the members' support for the final decision, the Commission finds 100% acceptance or support is not achievable, decisions require at least 75% favorable vote of all members present and voting. This super majority decision rule underscores the importance of actively developing consensus throughout the process on substantive issues with the participation of all members and which all can live with and support. The consensus process is conducted as an open public process with multiple opportunities for the public to provide input to the Commission on substantive issues.

In summary, the Florida Building Commission continues to provide a forum for stake-holders representing different interests to participate in a consensus-building process where issues affecting the construction industry are discussed and evaluated on their technical merits and cost-benefits to the citizens of the State of Florida. In addition, as a result of the Commission's proven consensus-building process and success in developing consensus on tough issues, the Florida Legislature annually assigns policy issues to the Commission for evaluation and implementation.

## APPENDIX D

### FLORIDA BUILDING COMMISSION MILESTONES FOR 2007

<http://consensus.fsu.edu/FBC/index.html>

- February 2007** Commission conducts rule adoption hearing on Rule 9B-70, the Building Code Training Program, and conducts rule development workshops on Rule 9B-72, the Product Approval Rule, and Rule 9B-3, the Florida Building Commission Rule. The Commission adopts process for TAC review of code amendments for the 2007 Code update process, authorizes funding for hurricane research projects, and approves final Report to the 2007 Legislature.
- March 2007** Commission TAC's review and develop recommendations on proposed amendments to the 2007 Edition of the Florida Building Code. Commission conducts a supplemental rule development workshop on Rule 9B-72, Product Approval, rule development workshop on Rule 9B-3.004, Florida Building Commission, rule development workshop on Rule 9B-3.050, Florida Building Commission, rule development workshop on Rule 9B-7, Florida Building Commission, and a rule adoption hearing on Rule 9B-3.047, Florida Building Code Wind-Borne Debris Protection.
- May 2007** Commission's TAC's review staff's recommendations regarding integration of Florida Specific amendments for inclusion in the 2007 Edition of the Florida Building Code. Commission conducts additional supplemental rule development workshop on Rule 9B-72, the Product Approval Rule, and integrates the Window Labeling Workgroup's recommendations for installation instructions required for product approval submittal. Chairman Rodriguez revises the name and scope of the Window Labeling Workgroup to the Windows Workgroup to address the issue of water infiltration and related issues, respectively.
- June 2007** Commission's TAC's review comments on TAC's Code recommendations. Commission conducts rule development workshops on: Rule 9B-74, Prototype Building, Rule 9B-3.0472, Carbon Monoxide Detectors, Rule 9B-3.0475, Wind Mitigation Retrofits, Rule 9B-3.0477, Electrical Bonding of Pool Decks, and Rule 9B-3.047, The Florida Building Code.  
Commission conducts rule adoption hearings on: Rule 9B-3.004, Florida Building Commission, Rule 9B-3.050, Florida Building Commission, Rule 9B-7, Florida Accessibility Code, and Rule 9B-72, Product Approval. Chairman Rodriguez announces formation of Association Product Approval Workgroup.



**August 2007**

Commission conducts supplemental rule adoption hearings on Rule 9B-7.0042, Florida Accessibility Code and Rule 9B-72, Product Approval. Commission conducts rule adoption hearings on: Rule 9B-7.003, Florida Accessibility Code, Rule 9B-74, Prototype Building, Rule 9B-3.0472, Carbon Monoxide Detectors, Rule 9B-3.0475, Wind Mitigation Retrofits, Rule 9B-3.0477, Electrical Bonding of Pool Decks, and Rule 9B-3.047, Florida Building Code. Commission reviews Code Administration Assessment project survey of building officials.

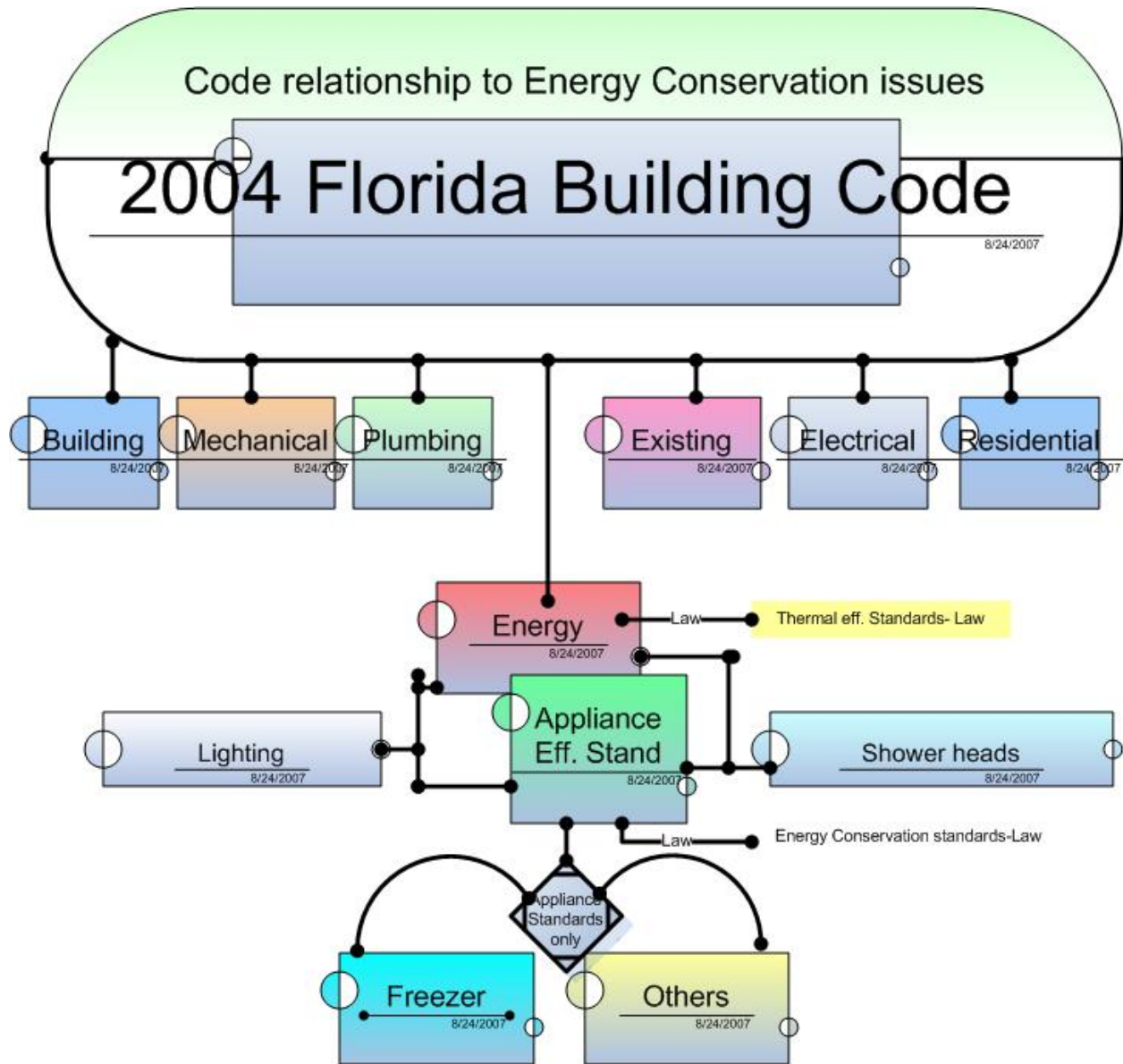
**October 2007**

Commission conducts supplemental rule adoption hearings on Rule 9B-7.042, Florida Accessibility Code and Rule 9B-72, Product Approval. Commission receives Governor's directive to increase energy performance requirements by 15% in the Florida Energy Code. Commission conducts Green Building Forum and creates a Green Building Workgroup. Commission adopts criteria for coastal code plus performance goal of a 500 year recurrence interval, with Exposure C throughout and no reduction of windspeed from the Code minimum allowed for areas where wind maps predict lower speeds. Commission Chair creates Wind Mitigation Workgroup.

**December 2007**

Commission votes to conduct an additional rule adoption hearing on Rule 9B-72, Product Approval, and a rule development workshop on Rule 9B-70, the Education Rule. Commission adopts criteria for coastal code plus performance. Commission reviews energy related projects, and approves issues for inclusion in the 2008 Report to the Legislature. Commission charges Wind Mitigation Workgroup to work with stakeholders to develop consensus on enhancements to the Wind Mitigation Retrofits Rule, and options for resolving the rule challenge to Rule 9B-3.0475, the Wind Mitigation Retrofits Rule.

**APPENDIX E**  
**FLORIDA BUILDING CODE AND ENERGY CODE**



# APPENDIX F

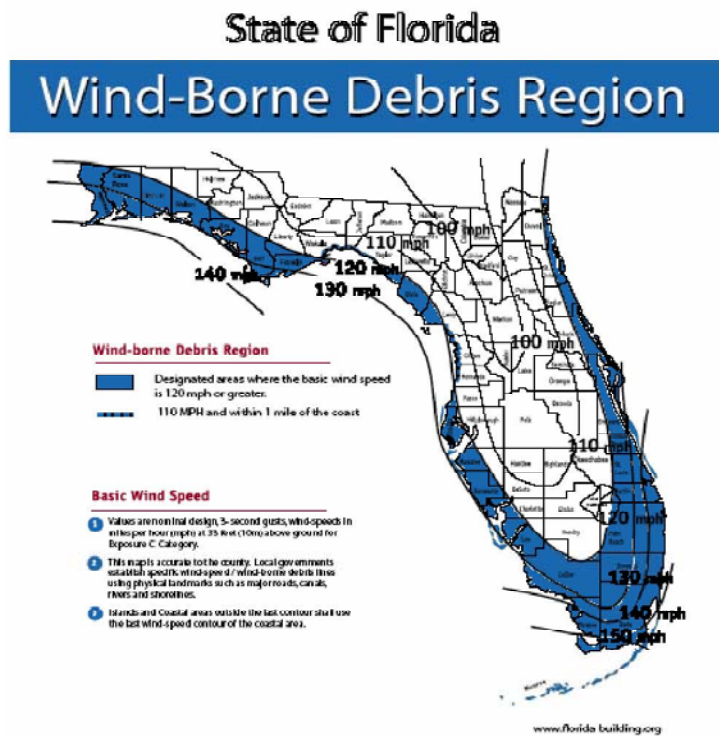
## REVISED WIND-BORNE DEBRIS REGION

### FLORIDA BUILDING CODE 2007 SUPPLEMENT

*Florida Building Code, Building*

#### CHAPTER 16 STRUCTURAL DESIGN

Figure 1609 Change to read as shown:



## APPENDIX G

### MODEL GREEN BUILDING ORDINANCE AND GREEN BUILDING WORKGROUP PROJECT

#### **Overview**

The Green Building Workgroup worked with the Florida Solar Energy Center (FSEC) to develop recommendations for a model efficiency ordinance for residential development. FSEC provided additional research and support by identifying and soliciting input from local governments and other organizations with current and developing initiatives for energy conservation, green building and sustainable development, including but not limited to, energy and water conservation and hurricane resistant buildings and communities. The Florida Conflict Resolution Consortium at Florida State University worked with the Workgroup by providing consensus-building and facilitation services.

The Green Building Workgroup worked with FSEC to develop recommendations for developing and implementing a public awareness campaign that promotes energy efficiency and the benefits of building green and implement the components deemed feasible within the funds available through the contract. The public awareness campaign includes website, trade show, print media and television strategies. FSEC provided additional research and support by identifying strategies for using print advertising, press releases, and television advertising to promote voluntary utilization of energy efficiency and green building practices and presented recommendations to the Commission at the January 2008 meeting for approval. The campaign is focusing on the benefits of promoting energy efficiency to the purchasers of new homes, the various green building ratings and labels available, and the promotion of various energy-efficient products through existing trade shows.

The Workgroup's recommendations for a Model Green Building Ordinance and Public Awareness Campaign strategy are included as part of "Appendix G".

#### **Project Webpage**

Information on the project, including recommendations, agenda packets, meeting reports, and related documents may be found in downloadable formats at the project webpage below:

<http://consensus.fsu.edu/FBC/GBW.html>

# MODEL GREEN BUILDING ORDINANCE



**Report of the Florida Green Building Workgroup to  
The Florida Building Commission  
Prepared By:  
Florida Solar Energy Center  
University of Central Florida  
January 25, 2008**

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*This document is developed to help local governments develop a green building ordinance. The template offers many definitions and ideas that a local government may wish to include.*

*The annotated language in green italics is intended to provide the rationale for the specified provisions, alternative language options, and examples from community ordinances that have implemented similar provisions. Therefore, the language in italics is not necessarily intended to be taken in its entirety as language that would be adopted if the ordinance were enacted. A copy of the ordinance without any of the annotated language is included in the appendix. There are also examples of some of the first ordinances and resolutions passed by Florida local jurisdictions in the appendix.*

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## MODEL GREEN BUILDING ORDINANCE

ORDINANCE NO. \_\_\_\_\_

### Definitions.

The following words, terms and phrases, when used in this chapter, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning.

*jurisdiction* means the \_\_\_\_\_ of \_\_\_\_\_, Florida.

*commission* means the \_\_\_\_\_ Commission of the \_\_\_\_\_, Florida.

- (1) ASHRAE: acronym for the American Society of Heating, Refrigeration and Air Conditioning Engineers.
- (2) ASHRAE 90.1 Appendix G: the Standard developed by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) to provide specific guidance on the rules and procedures used to simulate building energy use when the objective is to substantially exceed the requirements of ASHRAE Standard 90.1-2004, “Energy Standard for Buildings Except Low-Rise Residential Structures.”
- (3) Conserve Florida: name of a statewide water conservation effort by water management districts and Florida DEP to develop and implement an accountable and measurable program to allow public water supply utilities to tailor cost-effective conservation programs to reflect their individual circumstances to achieve greater water use efficiency.
- (4) Construction: any project associated with the creation, development, or erection of any building eligible for the program.
- (5) Current: the standard in place at the time a program participant submits a project application form with the jurisdiction:
- (6) FGBC: acronym for the Florida Green Building Coalition, Inc., a Florida 501(c) 3 not-for-profit corporation whose mission is to establish and maintain a Florida

system of statewide green building standards and third party certification programs with environmental and economic benefits.

(7) FGBC Local Government designation: A designation given by FGBC to a City or County that achieves the requirement of their local government rating system that examines environmental best practices for all local government functions. Levels of platinum, gold, silver and certified can be achieved.

(8) Federal tax credit for energy efficient homes: Refers to the tax credit recognized by the United States Internal Revenue Service for the construction of a home.

(9) Federal tax credit for solar energy systems: Refers to the tax credit recognized by the United States Internal Revenue Service for the installation of qualified residential solar water heating or photovoltaic systems.

(10) Florida Friendly Landscaping: Nine principles to guide Florida Yard and Neighborhood programs. The nine principles are to locate the right plant in the right place, water efficiently, fertilize appropriately, mulch, attract wildlife, manage pests responsibly, recycle, reduce stormwater runoff and protect the waterfront.

(11) Florida Green Lodging: A program by the Florida Department of Environmental Protection to designate lodging establishments as “green” for following environmentally sensitive operating procedures.

(12) Florida Solar Energy Center (FSEC): As the state of Florida’s energy research institute, FSEC conducts research in Building Science, Photovoltaics, Solar Thermal, Hydrogen and Alternative Fuels, Fuel Cells and other advanced energy technologies.

(13) Florida Solar Energy System Incentives Program: A program of state law providing for rebates for the installation of qualified solar energy systems, codified at section 377.806, Florida Statutes.

(14) Florida Water Star Program: A third party certification program offered by water management districts to encourage water efficiency in household appliances, plumbing fixtures, irrigation systems and landscapes.

(15) Florida Yard and Neighborhoods: A University of Florida Extension Service program that encourages homeowners and professionals to create and maintain Florida-friendly landscapes that protect the natural environment for future generations.

(16) GBI: Acronym for the Green Building Initiative, a not-for-profit organization whose mission is to accelerate the adoption of building practices that result in energy-efficient, healthier and environmentally sustainable buildings by promoting credible and practical green building approaches for residential and commercial construction.

(17) GHDS: acronym for the Green Home Designation Standard of the Florida Green Building Coalition, Inc.



- (18) Green Building: A designation given to buildings that have achieved the requirements of the green building rating system defined in this green building program.
- (19) Green Building Program: The program outlined in this ordinance for obtaining incentives for green buildings and developments.
- (20) Green Globes: the U.S. commercial/institutional building rating system of the Green Building Initiative.
- (21) HERS® Index: the Home Energy Rating System Index used as part of Florida’s Home Energy Rating system in which a home with a HERS Index of 100 represents the energy use of the “American Standard Home” and an Index of 0 (zero) indicates that the rated home uses no net purchased energy.
- (22) Independent or Independent of the jurisdiction: not employed by, or acting as agents of, the jurisdiction.
- (23) IBHS (Institute for Business and Home Safety) is an insurance and reinsurance organization whose mission is to reduce the social and economic effects of natural disasters and other property losses by conducting research and advocating improved construction, maintenance and preparation practices..
- (24) LEED: the Leadership in Energy and Environmental Design Rating System of the U.S. Green Building Council.
- (25) NAHB: Acronym for the National Association of Home Builders, a Washington-based trade association whose mission is to enhance the climate for housing and the building industry.
- (26) Positively Green Project: a building project that generates more energy on-site through renewable sources than it uses on an annual basis while providing for its water needs through typical annual rainfall (*water rating tool may be forthcoming*), and meets all of the requirements of this jurisdiction’s green building program. To meet energy qualifications, residential applicants shall achieve a HERS index of 0 or less, and non-residential shall achieve 100% energy reduction from non-renewables using procedures in ASHRAE 90.1 Appendix G. rating procedure.
- (27) Private: property not owned by the jurisdiction.
- (28) Program: the jurisdiction’s green building program.
- (29) Program Certification: the final designation awarded to a program participant for satisfying all requirements associated with the program for a particular project.
- (30) Program Participant: any person or entity seeking program certification for a particular project.

(31) Project: any construction associated with the creation, development, or erection of any building eligible for the program.

(32) Project Application Form: the form submitted to the jurisdiction indicating that a program participant is interested in participating in the program for a particular project.

(33) Sub-program: means any area of construction covered by the program.

(34) Sustainable Construction: the process of environmentally sensitive, resource efficient site selection, preparation, design, construction, and operation of buildings.

(35) Unit: A residence permitted according to the Florida building code.

(36) USGBC: acronym for the United States Green Building Council, a non-profit organization whose mission is to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy and prosperous environment that improves the quality of life.

**Sec. 1.0. TITLE.**

The provisions of Section 1.0 through Section 15 inclusive shall be known as the City or County of \_\_\_\_\_ “green building ordinance.” (Ord. xxxxx § x, Date)

**Sec. 2.0. PURPOSE AND INTENT.**

The purpose is to establish goals, programs and procedures that will help the jurisdiction become a more sustainable community. This program shall establish new environmental goals for the jurisdiction, define a certification-based “green building” program with incentives, and define new measurement parameters and reporting criteria to track the jurisdiction’s performance towards its environmental goals. This program will promote economic and environmental health in the jurisdiction, through the design, construction, operations and deconstruction of its own facilities and provide leadership to both the private and public sectors in the arena of green building practices including resource efficiency and disaster mitigation.

*The Purpose and Intent section increases the legal defensibility of the ordinance by substantiating that the regulations of the ordinance are a warranted exercise of the police power of governments for the protection of the public health, safety and welfare. Specific purposes and intent should be custom tailored to the individual municipality with respect to its needs, resources, environmental conditions, and reasons for adopting the ordinance.*

*Potential phrases that may fit some jurisdictions:*

**(1) Promote a sustainable future that meets today’s needs of a stable, diverse and equitable economy without compromising the ability of future generations to meet their needs by –**

- a) Protecting the quality of the air, water, land and other natural resources*
- b) Conserving native vegetation, fish, wildlife habitat and other ecosystems*
- c) Minimizing human impacts on local and worldwide ecosystems*
- d) Reducing green house gas emissions*

*(2) Become a leader in setting policies and practicing service delivery innovations that promote environmental sustainability.*

*(3) Create a sustainable jurisdiction by delivering renewable energy and energy efficiency projects, alternatively-fueled vehicles, developing green buildings and water-thrifty landscapes, resource education, and utilizing recycling and environmentally sound solid waste services.*

*(4) Establish a green building program to:*

- (a) Improve the economic and environmental health of the jurisdiction through measurable objectives*
- (b) Track and analyze key indices to measure performance*
- (c) Commit the jurisdiction to achieve green designations*
- (d) Provide incentives for voluntary compliance*
- (e) Provide green building educational opportunities for the community*

*(5) Execute a green building program to help local government. meet its overall goals of reducing emissions, reducing energy needs, water consumption, including*

- (a) CO<sub>2</sub> emission reductions by \_\_\_ %,*
- (b) NO<sub>x</sub> emission reduction by \_\_\_%,*
- (c) Energy consumption per capita by \_\_\_%,*

*(d) Water consumption per capita by \_\_\_\_%.*

### **Sec 3.0. GOVERNMENT LEADERSHIP.**

To demonstrate the jurisdiction's commitment to a green building program, the jurisdiction shall comply with the green building programs established herein for all government buildings, and

*The jurisdiction may choose to adopt one or more of a number of leadership items:*

- (a) become and maintain an FGBC Local Government designation*
- (b) Commit to the Architecture 2030 challenge, a program of the American Institute of Architects, for government owned buildings to achieve fossil fuel reduction standard of at least:  
60% in 2010  
70% in 2015  
80% in 2020  
90% in 2025  
Carbon-neutral in 2030 (using no fossil fuel GHG emitting energy to operate).*
- (c) Commit to sign the U.S. Mayors Climate Protection Agreement (As endorsed by the 73<sup>rd</sup> Annual U.S. Conference of Mayors meeting, Chicago, 2005 –see appendix) :*
- (d) Track and report the government's monthly water and energy use (potentially this could be done on a public web site) and*
- (e) Publish an annual report that outlines the jurisdiction's energy and water use and greenhouse gas emission performance for the prior year and outlines a plan to reduce it for the coming year*

### **Sec. 4.0. DESIGNATION OF RESPONSIBILITY FOR ADMINISTRATION AND IMPLEMENTATION.**

The program shall be administered by the jurisdiction's \_\_\_\_\_ department, which shall be responsible for:

*The implementation of methods to fund, promote, apply for incentives and resolve disputes of the program is left up to the jurisdiction and should be accomplished in consultation with the jurisdiction's legal counsel.*

*Possible ideas are:*

- (a) Funding the program through annual funds budgeted and appropriated by the jurisdiction commission or funds generated through resource conservation fees assessed through local water or energy utility bills;*
- (b) Marketing the program to the community by any reasonably effective means, including but not limited to press releases, television advertising, or advertising in electronic or print mailers;*
- (c) Developing any appropriate or necessary application procedures, including but not limited to, the program application form;*
- (d) Writing policies and procedures for staff implementation of the green building program*
- (e) Providing the certifications for use in the program*
- (f) Providing an incentive award to any program participant who has successfully satisfied the requirements associated with that incentive; and*
- (g) Resolving disputes that may arise from implementing the program.*

### **Sec. 5.0. GREEN BUILDING PROGRAM APPLICABILITY.**

- (a) For all private projects, the program shall be voluntary.*
- (b) For any new building owned and constructed by or on behalf of the jurisdiction is mandatory.*

(c) For any renovation of a government building owned by; the jurisdiction undergoing a level III alteration, per FBC, shall comply with this program providing a positive cost analysis can demonstrate 100% pay back with in ten years

*The intent is to have all new buildings that are constructed by or for any of the local government departments adhere to the green building program outlined in this ordinance, and to have those undergoing a level III alteration adhere as well unless payback can not be reached in ten years, in which case it would be to the option of the jurisdiction. Private projects would be optional but only those private projects fully adhering to the ordinance would receive any incentives.*

#### **Sec. 6.0. GREEN BUILDING COVERAGE.**

The program shall be comprised of the following sub-programs:

- (a) New residential construction;
- (b) Residential retrofitting/remodeling;
- (c) New commercial/non-residential construction,
- (d) Existing Commercial/non-residential construction
- (e) Land developments

*Ideally the locality has a program for each of the types listed. As a starting point, a jurisdiction may choose to just implement some of the above choices.*

#### **Sec. 7.0. GREEN BUILDING STANDARDS.**

In addition to the Florida Building Code's minimum standards, the program shall be administered using standards developed by the Florida Green Building Coalition, the U.S. Green Building Council, the Green Building Initiative, or the National Association of Home Builders. These standards shall apply to each sub-program as follows.

- (a) New residential permitted projects: New residential projects shall satisfy all of the requirements associated with either
  - i) the current Green Home Designation Standard of the FGBC,
  - ii) the current USGBC LEED for Homes® program,
  - iii) the current National Association of Home Builders National Green Home program, or
  - iv) the GBI new home designation, including but not limited to, any monetary or certification requirements.
- (b) Remodeling of existing homes: The participant shall meet requirements of remodeling certification for either
  - i) the current Green Home Designation Standard of the FGBC,
  - ii) the current LEED for Homes® program, or
  - iii) the current NAHB National Green Home program, or
  - iv) The GBI including but not limited to, any monetary or certification requirements. The home shall meet the requirements for “remodeling” or “existing home” of the designation.
- (c) New commercial or institutional buildings: The program participant shall satisfy all of the requirements associated with the
  - i) the current Green Commercial Designation Standard of the FGBC,
  - ii) the current LEED for New Construction or derived USGBC LEED rating system (e.g., LEED for Schools, LEED for Health Care) or

- iii) the Green Globes environmental assessment system for new designs including but not limited to any monetary or certification requirements.
- (d) Existing commercial and institutional buildings: The program participant shall satisfy all of the requirements associated with the
  - i) the current Green Commercial Designation Standard of the FGBC,
  - ii) the current LEED for existing buildings or derived USGBC LEED rating system (e.g., LEED for Schools, LEED for Health Care) program, or
  - iii) the Green Globes environmental assessment system for existing designs, including but not limited to any monetary or certification requirements.
- (e) Land Developments: The participant shall satisfy all of the requirements associated with the
  - i) the current Green Development Designation Standard of the FGBC,
  - ii) the current LEED for Neighborhoods and Developments rating system program, or
  - iii) the NAHB development designation, including but not limited to any monetary or certification requirements.
- (f) Review. For the purpose of this section of the program, a program participant shall be bound by the standard designated for a particular sub-program unless the program participant requests to be certified under a more current version of a designated standard and the request is approved by the jurisdiction responsible for administering the particular program.
- (g) Green Practices Supersede Conflicting Covenants and Deed Restrictions: Local developers and homeowner association covenant and deed restrictions shall not limit the adoption of practices encouraged to achieve credit under these green standards.

*If only covering some of the programs in section 6, select only those items (a) – (e)) here. Paragraph (g) could receive legal challenges and should be included only after review by legal council. There are already state laws regarding solar access and Florida friendly landscaping. You may want to reference Section 163.04(2) – language on deed restrictions*

### **Sec. 8.0. INCENTIVES.**

The program shall include incentives designed to encourage the use of the program.

*Select incentives that are appropriate for the goals, implementation, budget and legal requirements of your community.*

*(a) All sub-programs. For any voluntary program participant seeking a program certification, the jurisdiction's general government shall provide the following fast-track permitting incentives (following example based on Sarasota County Resolution 2006-174):*

- i. Site and Development plans for a proposed “Green Development” shall be processed in \_\_\_\_\_ working days. All such applications shall be accompanied by the appropriate green building program application form.*
- ii. Building permit applications for residential green buildings shall be processed within \_\_\_\_\_ working days. All such applications shall be accompanied by the appropriate green building program application form.*
- iii. Building permit applications for commercial green buildings shall be processed in \_\_\_\_\_ working days. All such applications shall be accompanied by the appropriate green building program application form.*

(b). For all projects other than one and two-family residential projects, there shall be a reduced development plan review fee, which shall equal \_\_\_\_\_ percent of the fee required for a non-program participant.

(c). There shall be a rebate of \$\_\_\_\_\_ for projects that meet all of the requirements of the program **and** reduce energy **and** water consumption by 50% **and** meet the minimum requirements of the Institute for Business and Home Safety. Reductions in energy shall be calculated using the HERS® Index for residences and the ASHRAE 90.1 Appendix G rating procedure for commercial buildings. Water use shall be calculated in accordance with jurisdiction requirements.

(d). Shall refund an organization's registration fees on projects deemed "Positively Green Projects."

(e). Shall provide \_\_\_% increase in density for projects that meet the requirements of the green land development designation and permanently preserve \_\_\_% of land that would otherwise be deemed buildable under current codes and laws.

(f). Shall provide \$\_\_\_\_\_ annual rebates for businesses operating in a building certified as green under this program. [This provision is to encourage the many non-owner developers to build green as a method to help create more green buildings in the community.]

(g). Shall provide for waiver or mitigation of impact fee of \$\_\_\_\_\_ for homes that qualify for and implement this program as described in Section 7 and also achieve one fo the following: 1) federal tax credit for energy efficient homes, 2) the federal tax credit for solar energy systems, or 3) the rebate for solar photovoltaic or thermal systems under the Florida Solar Energy System Incentives Program.

(g). Shall provide \$\_\_\_\_\_ annual rebates for businesses supplying 10% or more of their annual energy needs through on-site solar energy.

(h) Marketing for all sub-programs. For any program participant seeking program certification for new residential construction, residential retrofitting/remodeling, new commercial/non-municipal construction, or new jurisdiction owned civic or office construction projects, the jurisdiction's general government shall provide the following marketing incentives, including but not limited to:

- i. Provide an outdoor sign that the builder may use to promote a project being designated under this program;
- ii. The inclusion of program participants on a webpage dedicated to the program;
- iii. The creation of promotional packages such as a program logo for a program participant's advertisements or brochures;
- iv. Press releases; and
- v. Information about available financial programs, including but not limited to, those associated with Fannie Mae/Freddie Mac.
- vi. Provision of website links to local sustainable businesses and green building materials.
- vii. Cooperation with local banking, Realtors, and insurance companies to make green building more affordable

(i) Green building award. For the purpose of publicly recognizing outstanding commitment to "green building," the program shall provide for an award called the "green building award" to be awarded annually by the jurisdiction's general government to one program participant in each sub-program.

(j) Special green contribution award. The jurisdiction shall annually provide a special recognition award to those contractors that donate significant reusable building materials to non-profit local building organizations.

## **Sec. 9.0. CERTIFICATION.**

The program shall be subject to certification by a qualified third party who has been trained and certified as a green building certifier. For the purpose of this section of the program, "third party" means any person or entity authorized according to the requirements of the standard in section 7.0 for a particular project.

## **Sec. 10.0. EDUCATION AND TRAINING.**

(a) The jurisdiction in conjunction with FSEC, FGBC, Green Globes, NAHB or USGBC shall conduct at least one training workshop per year for the purpose of educating potential or current program participants about the program.

*It is recommended that the jurisdiction's website or an appropriate locally run website (if one is available) include information about the program, frequently asked questions and answers, and guidance for participation.*

(b) The jurisdiction shall attempt to make available a meeting space at a government facility when available for green building programs offered by organizations that are of a general nature (not product specific). Organizations shall contact the facilities staff to make arrangements.

(c) Jurisdiction building and planning department staff shall be encouraged to attend at least \_\_\_ hours of green building training a year.

*Local governments should encourage training as needed or required to learn the requirements and encourage staff to learn more about new resource efficient building practices. Some training may help staff maintain licenses. You may choose to make continuing education in green building criteria in their annual review.*

## **Sec. 11.0. INDEX AND REPORT.**

The goals and objectives of the program and their status as outlined in the Preamble shall be recorded, analyzed and reported to the commission. The jurisdiction administrator/manager shall be responsible for this indexing and reporting.

*An additional recommendation is to display the goals and objectives of the program and their status as outlined in Section 2 and make publicly available on a public website or library.*

## **Sec. 12.0. PROGRAM REVIEW.**

(a) Staff review. The jurisdiction shall provide for a review of the program to determine the need for changes in the program to increase its effectiveness.

(b) Frequency. The program shall be subject to review one year after the effective date of this ordinance and thereafter at a frequency of not more than once per year.

(c) Purpose. The purpose of reviewing the program includes but is not limited to updating program incentives, recommending program or marketing changes to the jurisdiction, reviewing suggestions made by program participants, and annually awarding the green building awards of the program.

## **Sec. 13.0. CONFLICTING REGULATIONS REPEALED.**

Where conflicts occur this ordinance shall supercede.

*Jurisdiction legal council may have preferred language.*



**Sec. 14.0. SEVERABILITY.**

If any portion of this ordinance is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed a separate provision and shall not affect the validity of the remaining portions of the ordinance.

**Sec. 15.0. EFFECTIVE DATE.**

This ordinance shall take effect on the date on which it is enacted by the jurisdiction.

# Model Ordinance Appendices

## MO Appendix A. U.S. Mayors Climate Protection Agreement as endorsed by the 73rd Annual U.S. Conference of Mayors meeting, Chicago, 2005

*A. We urge the federal government and state governments to enact policies and programs to meet or beat the target of reducing global warming pollution levels to 7 percent below 1990 levels by 2012, including efforts to: reduce the United States' dependence on fossil fuels and accelerate the development of clean, economical energy resources and fuel-efficient technologies such as conservation, methane recovery for energy generation, waste to energy, wind and solar energy, fuel cells, efficient motor vehicles, and biofuels;*

*B. We urge the U.S. Congress to pass bipartisan greenhouse gas reduction legislation that 1) includes clear timetables and emissions limits and 2) a flexible, market-based system of tradable allowances among emitting industries; and*

*C. We will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution by taking actions in our own operations and communities such as:*

- 1. Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan.*
- 2. Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities;*
- 3. Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit;*
- 4. Increase the use of clean, alternative energy by, for example, investing in "green tags", advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste to energy technology;*
- 5. Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting and urging employees to conserve energy and save money;*
- 6. Purchase only Energy Star equipment and appliances for City use;*
- 7. Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system;*
- 8. Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel;*
- 9. Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production;*

*10. Increase recycling rates in City operations and in the community;*

*11. Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO<sub>2</sub>; and*

*12. Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.*

## MO Appendix B. Florida local green building programs

### B-1. City of Gainesville Green Building Program

#### ARTICLE I.5. GAINESVILLE GREEN BUILDING PROGRAM

##### Sec. 6-5. Definitions.

The following words, terms and phrases, when used in this chapter, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning.

*City* means the City of Gainesville, Florida.

*City commission* means the City Commission of the City of Gainesville, Florida.

*City-owned civic or office construction project* means city-owned buildings providing a public gathering place or office facilities.

*Construction* means any project associated with the creation, development, or erection of any building eligible for the program.

*FGBC* means the Florida Green Building Coalition.

*GHDS* means the Green Home Designation Standard of the Florida Green Building Coalition.

*Green building* means generally the resource efficient design, construction, and operation of buildings by employing environmentally sensible construction practices, systems, and materials.

*Independent or independent of the city* means not employed by, or acting as agents of, the city.

*L.E.E.D. 2.0* means the Leadership in Energy and Environmental Design Rating System, Version 2.0, of the U.S. Green Building Council.

*Municipal* means owned by the city.

*Private* means property not owned by the city.

*Program* means the city green building program.

*Program certification* means the final designation awarded to a program participant for satisfying all requirements associated with the program for a particular project.

*Program participant* means any person or entity seeking program certification for a particular project.

*Project* means any construction associated with the creation, development, or erection of any building eligible for the program.

*Project application form* means the form submitted to the building inspection department indicating that a program participant is interested in participating in the program for a particular project.

*Sub-program* means any area of construction covered by the program.

*USGBC* means the U.S. Green Building Council.

(Ord. No. 001835, § 1, 10-14-02)

##### Sec. 6-6. Intent and purpose.

The purpose of the program shall be to provide the city community with a certification-based "green building" program. It is expected that city owned civic or office construction projects will follow the program guidelines, upon review by the city commission. This program will be voluntary for all others. This program will promote sustainable and environmentally-friendly practices of construction and design.

(Ord. No. 001835, § 1, 10-14-02)

**Sec. 6-7. Designation of responsibility for administration and implementation.**

The program shall be jointly administered by the building inspection department and city regional utilities, which shall be responsible for:

- (1) Funding the program through annual funds budgeted and appropriated by the city commission;
- (2) Marketing the program to the Gainesville community by any reasonably effective means, including but not limited to print advertising, press releases, television advertising, or advertising in monthly mailers;
- (3) Developing any appropriate or necessary application procedures, including but not limited to, the program application form;
- (4) Providing an incentive award to any program participant who has successfully satisfied the requirements associated with that incentive; and
- (5) Resolving disputes that may arise from implementing the program.

(Ord. No. 001835, § 1, 10-14-02)

**Sec. 6-8. Program.**

- (a) For all non-city projects, the program shall be voluntary.
- (b) For any city-owned civic or office construction project, the city is expected to participate in the program unless the city commission determines that the cost (e.g., time, function, or funding) associated with participating in the program significantly outweighs the benefits of participating in the program to the city.
- (c) The city manager and the general manager for utilities or their designees shall develop policies and procedures to implement the green building program.

(Ord. No. 001835, § 1, 10-14-02)

**Sec. 6-9. Scope.**

The program shall be administered on a per-unit basis. For the purpose of this section of the program, "per-unit" means each unit built, except that any multi-family dwelling or similarly clustered structure may count as one unit, as determined by the city manager or general manager for utilities or their designee(s).

(Ord. No. 001835, § 1, 10-14-02)

**Sec. 6-10. Coverage.**

The program shall be comprised of the following sub-programs:

- (1) New residential construction;
- (2) Residential retrofitting/remodeling;
- (3) New commercial/non-city construction, not including any expansions or remodeling; and
- (4) City-owned civic or office construction, not including any expansions or remodeling.

(Ord. No. 001835, § 1, 10-14-02)

**Sec. 6-11. Standards.**

The program shall be administered using standards developed by the city for certification of retrofitting/remodeling of existing residential units and standards developed by 1) the Florida Green Building Coalition and 2) the U.S. Green Building Council for certification of all other building certifications. These standards shall apply to each sub-program as follows:

- (1) *GHDS*. For any program participant seeking program certification for new residential construction the program participant shall satisfy all of the requirements associated with the current Green Home Designation Standard of the FGBC, including but not limited to, any monetary or certification requirements. For the purpose of this section of

the program, "current" means at the time a program participant submits a project application form with the building inspection department. A set of standards developed by the city will be used for certification of residential retrofitting/remodeling.

(2) *L.E.E.D. 2.0*. For any program participant seeking program certification for new commercial/non-city construction or new municipal civic or office construction, the program participant shall satisfy all of the requirements associated with the L.E.E.D. 2.0, including but not limited to any monetary or certification requirements.

(3) *Review*. For the purpose of this section of the program, a program participant shall be bound by the standard designated for a particular sub-program unless the program participant both requests to be certified under a more current version of a designated standard and the request is approved by the city department responsible for administering the particular program.

(Ord. No. 001835, § 1, 10-14-02)

### **Sec. 6-12. Incentives.**

The program shall consist of incentives designed to encourage the use of the program.

(1) *All sub-programs*. For any program participant seeking program certification for new residential construction, residential retrofitting/remodeling, new commercial/noncity construction, or new city owned civic or office construction, the city's general government shall provide the following incentives:

- a. Fast-track permitting for building permits.
- b. Reduced permitting fee, which shall equal 50 percent of the fee required for a non-program participant, subject to availability of funds; if program participant is building in a designated enterprise zone, then the reduced permitting fee shall be 50 percent off the usual permitting fee in the enterprise zone.
- c. Final project designation by the city.

(2) *Sub-program of retrofitting/remodeling*. Any program participant meeting program certification criteria for multi-family residential retrofitting/remodeling, shall be eligible for the following incentives provided by GRU.

- a. A cash renovation incentive, subject to availability of funds; and
- b. A solar water heater incentive, subject to availability of funds and meeting other solar rebate program requirements.

(3) *Marketing for all sub-programs*. For any program participant seeking program certification for new residential construction, residential retrofitting/remodeling, new commercial/non-municipal construction, or new city owned civic or office construction projects, the city's general government shall provide the following marketing incentives, including but not limited to:

- a. The erection of building site signs designating a project under the program;
- b. The inclusion of program participants on a city webpage dedicated to the program;
- c. The creation of promotional packages such as a program logo for a program participant's advertisements or brochures;
- d. Press releases; and
- e. Information about available financial programs, including but not limited to, those associated with Fannie Mae/Freddie Mac.

(4) *Green building award*. For the purpose of publicly recognizing outstanding commitment to "green building," the program shall provide for an award called the "green building award" to be awarded annually by the city's general government to one program participant in each sub-program.

(Ord. No. 001835, § 1, 10-14-02)

**Sec. 6-13. Certification.**

The program shall be subject to certification by a qualified third party who has been trained and certified as a green building rater. For the purpose of this section of the program, "third party" means any person or entity authorized by the FGBC or the USGBC to verify that a program participant has satisfied any or all of the requirements associated with the standard designated for a particular project. (Ord. No. 001835, § 1, 10-14-02)

**Sec. 6-14. Training.**

The building inspection department in conjunction with FGBC shall conduct at least one training workshop per year for the purpose of educating potential or current program participants about the program. (Ord. No. 001835, § 1, 10-14-02)

**Sec. 6-15. Program review.**

(a) *Staff review.* The building inspection department shall initiate a review of the program with the assistance of GRU as necessary to determine the need for changes in the program to increase its effectiveness.

(b) *Frequency.* The program shall be subject to review one year after the effective date of this ordinance and thereafter at a frequency of no more than once per year.

(c) *Purpose.* The purpose of reviewing the program includes but is not limited to updating program incentives, recommending program or marketing changes to the city, reviewing suggestions made by program participants, and annually awarding the green building award in accordance with section 6-12(d) of the program.

(Ord. No. 001835, § 1, 10-14-02)

## B-2 Miami-Dade Green Building Ordinance

### Miami-Dade Legislative Item

**File Number: 052225**

**File Number:** 052225 **File Type:** Ordinance **Status:** Adopted

**Version:** 0 **Reference:** 05-115 **Control:**

**File Name:** EXPED REVIEW & APPROVAL OF BLDG PERMIT APPS FOR GREEN BLDGS

**Introduced:**

8/3/2005

**Requester:** NONE **Cost:** **Final Action:** 6/7/2005

**Agenda Date:** 6/7/2005 **Agenda Item Number:** 7E

**Notes:** THIS IS FINAL

VERSION AS

ADOPTED. (also

see 050971)

**Title:** ORDINANCE CREATING PROGRAM FOR EXPEDITED REVIEW AND APPROVAL OF BUILDING PERMIT APPLICATIONS FOR GREEN BUILDINGS; DEFINING GREEN BUILDINGS; PROVIDING FOR ADMINISTRATIVE ORDER; CREATING SECTION 8-6 OF THE CODE; PROVIDING SEVERABILITY, INCLUSION IN THE CODE, AND AN EFFECTIVE DATE (SEE AGENDA ITEM NO. 9D1A)[SEE ORIGINAL ITEM UNDER FILE NO. 050971]

**Indexes:** PERMITS

BUILDING DEPARTMENT

**Sponsors:** Katy Sorenson

**Sunset Provision:** No **Effective Date:** **Expiration Date:**

**Registered Lobbyist:** None Listed

### Legislative History

**Acting Body Date Agenda Item Action Sent To Due Date**

**Returned Pass/Fail**

County Attorney 8/3/2005 Assigned Hugo Benitez

8/3/2005

Board of County

Commissioners

6/7/2005 7E AMENDED Adopted as

amended

P

**REPORT:** The Board adopted the foregoing proposed ordinance as amended to correct a scrivener's error that reflected Section 8.6 as Section 8.8.

### Legislative Text

**TITLE**

ORDINANCE CREATING PROGRAM FOR EXPEDITED REVIEW AND APPROVAL OF BUILDING PERMIT APPLICATIONS FOR GREEN BUILDINGS; DEFINING GREEN BUILDINGS; PROVIDING FOR ADMINISTRATIVE ORDER; CREATING SECTION 8-6 OF THE CODE; PROVIDING SEVERABILITY, INCLUSION IN THE CODE, AND AN EFFECTIVE DATE



**BODY**

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA, that:

Section 1. Chapter 8 of the Code of Miami-Dade County is hereby amended by the creation of a new section 8-6 as follows:

\* \* \*

>>Section 8-6. Expedited permit program for green buildings.

It is the intent of Miami-Dade County to promote environmentally sensitive design and construction. To that end, the Building Official shall implement a program to expedite the review and approval of permit applications for green buildings. As used in this Section a green building shall mean one whose design, construction, and operation promote the preservation of resources and environmentally sensitive construction practices, systems and materials. In making the determination of whether the structure is a green building, the Building Official shall rely on the review, evaluation and where available registration or certification of the design by recognized environmental rating agencies including the Florida Green Building Coalition, the National Home Builder Association and the U.S. Green Building Council. The green buildings program shall be implemented through administrative order to be approved by the Board of County Commissioners.<<

Section 2. If any section, subsection, sentence, clause or provision of this ordinance is held invalid, the remainder of this ordinance shall not be affected by such invalidity.

Section 3. It is the intention of the Board of County Commissioners, and it is hereby ordained that the provisions of this ordinance, including any Sunset provision, shall become and be made a part of the Code of Miami-Dade County, Florida. The sections of this ordinance may be renumbered or re-lettered to accomplish such intention, and the word "ordinance" may be changed to "section," "article," or other appropriate work.

Section 4. This ordinance shall become effective 10 days after the date of enactment unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

**B-3 Sarasota County Green Building Resolution 2006-174**

RESOLUTION NO. 2006- 174

RESOLUTION OF THE BOARD OF COUNTY COMMISSIONERS OF SARASOTA COUNTY, FLORIDA

A Resolution of The Board of County Commissioners of Sarasota County, Florida which demonstrates a substantial commitment of the part of Sarasota County (herein referred to as the "County"), to Green Building, and Green Development; and

Whereas, the County has already demonstrated its commitment to sustainable principles, practices and technologies through the County's Sustainability Resolution No. 02-119; and

Whereas, the County has already demonstrated is commitment to green building principles, practices, and technologies thorough the County's Green Building Resolution No. 2005-048; and

Whereas, the County is a member of the U.S. Green Building Council, The United States Department of Energy's Rebuild America Program, the United States Environmental Protection Agency's ENERGY STAR® program and the Florida Green Building Coalition, all of which advocate for higher performance buildings and developments; and

Whereas, The U.S. Green Buildings Council (USGBC) has developed the Leadership in Energy and Environmental Design (LEED) rating system that is a voluntary, consensus based certification program for design of sustainable buildings; and

Whereas, The Florida Green Building Coalition (FGBC) has developed the Florida Green Building Residential Designation Standard, the Florida Green Commercial Designation Standard, and the Florida Green Development Designation which are voluntary, consensus based certification programs for the design of sustainable green buildings and developments; and

Whereas, high performance sustainable buildings and developments are a means of balancing economic development with the preservation of the quality of life;  
NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF SARASOTA, FLORIDA, in public meeting assembled:  
That it shall be the policy of the County to expedite the processing of Developments of Critical Concern (DOCC), amendments to sector plans, rezone and special exception petitions, site and development plans, and building permit applications for those developments which meet the following standards for green buildings or green developments and where the owners, developers and/or builders agree to the following conditions in a written agreement:

1. Rezone or special exception petitions for a proposed "Green Development" shall include the application and documentation required by the Florida Green Building Coalition's Green Development Designation. As phases of the development are completed, the Certificate from the Florida Green Building Coalition (FGBC) shall be presented to the Land Development Administration or designee. Such petitions shall be process within six (6) months from the date the petition is deemed complete.
2. Site and Development plans for a proposed "Green Development" shall be processed in ten (10) working days.
3. Building permit applications for residential green buildings shall be processed within three (3) working days. Building permit applications for commercial green buildings shall be processed in five (5) working days. All such applications shall be accompanied by the appropriate checklist from United States Green Building Coalition (USGBC) Standard Leadership in Energy & Environmental Design ("LEED") or the Florida Green Building Coalition Designation Standard.
4. The owner and/or development commits that the Engineer of Record (EOF) and lead Planner are senior staff members acceptable to the Executive Director of Planning and Development Services or designee who shall be the responsible persons in charge.
5. The Planning Commission plays an important advisory role in the review Rezone and Special Exception petitions. In order for the Board to hold its hearings in a timely manner, the Board requests that the Planning Commission refrain from continuing these petitions except in the most extraordinary circumstances.
6. The engineering and/or planning firm will respond to the County's staff

comments within the same number of days within which the County responded to plans submitted when feasible and mutually agreed upon.

7. Persons or corporations who fail to keep their commitments may be deemed ineligible for any future expedited reviews as determined by the Land Development Administration, Building Official and the Zoning Administrator and with a concurrence of the Executive Director of Planning and Development Services.

8. Any existing violation of any Federal, State or County Code or Ordinance, shall be resolved prior to any expedited review.

9. New violations or consultations with Federal and/or State agencies which require additional time to resolve may extend the proposed timeframes.

10. The plat shall include language about recorded deed restrictions for green building and/or development.

11. A declaration by the Board of County Commissioners that an emergency exists due to a natural disaster or other circumstances automatically relieves the County from meeting the expedited review timeframes.

This resolution shall become effective upon adoption.

**PASSED AND DULY ADOPTED BY THE BOARD OF COUNTY COMMISSIONERS OF SARASOTA COUNTY, FLORIDA THIS 22<sup>nd</sup> DAY OF August, 2006.**

**ATTEST:**

**KAREN E. RUSHING**, Clerk of the  
Circuit Court and Ex-Officio Clerk of the  
Board of County Commissioners of  
Sarasota County, Florida Solar Energy Center

BY: \_\_\_\_\_

Deputy Clerk

MO Appendix C. Model Green Building Ordinance Without Annotations  
**MODEL GREEN BUILDING ORDINANCE**



**Report of the Florida Green Building Workgroup to  
The Florida Building Commission**

**Prepared By:**

**Florida Solar Energy Center**

**University of Central Florida**

**January 25, 2008**

# MODEL GREEN BUILDING ORDINANCE

ORDINANCE NO. \_\_\_\_\_

## Definitions.

The following words, terms and phrases, when used in this chapter, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning.

*jurisdiction* means the \_\_\_\_\_ of \_\_\_\_\_, Florida.

*commission* means the \_\_\_\_\_ Commission of the \_\_\_\_\_, Florida.

(1) ASHRAE: acronym for the American Society of Heating, Refrigeration and Air Conditioning Engineers.

(2) ASHRAE 90.1 Appendix G: the Standard developed by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) to provide specific guidance on the rules and procedures used to simulate building energy use when the objective is to substantially exceed the requirements of ASHRAE Standard 90.1-2004, "Energy Standard for Buildings Except Low-Rise Residential Structures."

(3) Conserve Florida: name of a statewide water conservation effort by water management districts and Florida DEP to develop and implement an accountable and measurable program to allow public water supply utilities to tailor cost-effective conservation programs to reflect their individual circumstances to achieve greater water use efficiency.

(4) Construction: any project associated with the creation, development, or erection of any building eligible for the program.

(5) Current: the standard in place at the time a program participant submits a project application form with the jurisdiction:

(6) FGBC: acronym for the Florida Green Building Coalition, Inc., a Florida 501(c) 3 not-for-profit corporation whose mission is to establish and maintain a Florida system of statewide green building standards and third party certification programs with environmental and economic benefits.

(7) FGBC Local Government designation: A designation given by FGBC to a City or County that achieves the requirement of their local government rating system that examines environmental best practices for all local government functions. Levels of platinum, gold, silver and certified can be achieved.

(8) [Federal tax credit for energy efficient homes: Refers to the tax credit recognized by the United States Internal Revenue Service for the construction of a home.](#)

(9) Federal tax credit for solar energy systems: Refers to the tax credit recognized by the United States Internal Revenue Service for the installation of qualified residential solar water heating or photovoltaic systems.

(10) Florida Friendly Landscaping: Nine principles to guide Florida Yard and Neighborhood programs. The nine principles are to locate the right plant in the right place, water efficiently, fertilize appropriately, mulch, attract wildlife, manage pests responsibly, recycle, reduce stormwater runoff and protect the waterfront.

(11) Florida Green Lodging: A program by the Florida Department of Environmental Protection to designate lodging establishments as “green” for following environmentally sensitive operating procedures.

(12) Florida Solar Energy Center (FSEC): As the state of Florida’s energy research institute, FSEC conducts research in Building Science, Photovoltaics, Solar Thermal, Hydrogen and Alternative Fuels, Fuel Cells and other advanced energy technologies.

(13) Florida Solar Energy System Incentives Program: A program of state law providing for rebates for the installation of qualified solar energy systems, codified at section 377.806, Florida Statutes.

(14) Florida Water Star Program: A third party certification program offered by water management districts to encourage water efficiency in household appliances, plumbing fixtures, irrigation systems and landscapes.

(15) Florida Yard and Neighborhoods: A University of Florida Extension Service program that encourages homeowners and professionals to create and maintain Florida-friendly landscapes that protect the natural environment for future generations.

(16) GBI: Acronym for the Green Building Initiative, a not-for-profit organization whose mission is to accelerate the adoption of building practices that result in energy-efficient, healthier and environmentally sustainable buildings by promoting credible and practical green building approaches for residential and commercial construction.

(17) GHDS: acronym for the Green Home Designation Standard of the Florida Green Building Coalition, Inc.

(18) Green Building: A designation given to buildings that have achieved the requirements of the green building rating system defined in this green building program.

(19) Green Building Program: The program outlined in this ordinance for obtaining incentives for green buildings and developments.

(20) Green Globes: the U.S. commercial/institutional building rating system of the Green Building Initiative.

(21) HERS® Index: the Home Energy Rating System Index used as part of Florida’s Home Energy Rating system in which a home with a HERS Index of 100 represents the energy use of

the “American Standard Home” and an Index of 0 (zero) indicates that the rated home uses no net purchased energy.

(22) Independent or Independent of the jurisdiction: not employed by, or acting as agents of, the jurisdiction.

(23) IBHS (Institute for Business and Home Safety) is an insurance and reinsurance organization whose mission is to reduce the social and economic effects of natural disasters and other property losses by conducting research and advocating improved construction, maintenance and preparation practices..

(24) LEED: the Leadership in Energy and Environmental Design Rating System of the U.S. Green Building Council.

(25) NAHB: Acronym for the National Association of Home Builders, a Washington-based trade association whose mission is to enhance the climate for housing and the building industry.

(26) Positively Green Project: a building project that generates more energy on-site through renewable sources than it uses on an annual basis while providing for its water needs through typical annual rainfall (*water rating tool may be forthcoming*), and meets all of the requirements of this jurisdiction’s green building program. To meet energy qualifications, residential applicants shall achieve a HERS index of 0 or less, and non-residential shall achieve 100% energy reduction from non-renewables using procedures in ASHRAE 90.1 Appendix G. rating procedure.

(27) Private: property not owned by the jurisdiction.

(28) Program: the jurisdiction’s green building program.

(29) Program Certification: the final designation awarded to a program participant for satisfying all requirements associated with the program for a particular project.

(30) Program Participant: any person or entity seeking program certification for a particular project.

(31) Project: any construction associated with the creation, development, or erection of any building eligible for the program.

(32) Project Application Form: the form submitted to the jurisdiction indicating that a program participant is interested in participating in the program for a particular project.

(33) Sub-program: means any area of construction covered by the program.

(34) Sustainable Construction: the process of environmentally sensitive, resource efficient site selection, preparation, design, construction, and operation of buildings.

(35) Unit: A residence permitted according to the Florida building code.

(36) USGBC: acronym for the United States Green Building Council, a non-profit organization whose mission is to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy and prosperous environment that improves the quality of life.

**Sec. 1.0. TITLE.**

The provisions of Section 1.0 through Section 15 inclusive shall be known as the City or County of \_\_\_\_\_ “green building ordinance.” (Ord. xxxxx § x, Date)

**Sec. 2.0. PURPOSE AND INTENT.**

The purpose is to establish goals, programs and procedures that will help the jurisdiction become a more sustainable community. This program shall establish new environmental goals for the jurisdiction, define a certification-based “green building” program with incentives, and define new measurement parameters and reporting criteria to track the jurisdiction’s performance towards its environmental goals. This program will promote economic and environmental health in the jurisdiction, through the design, construction, operations and deconstruction of its own facilities and provide leadership to both the private and public sectors in the arena of green building practices including resource efficiency and disaster mitigation.

**Sec 3.0. GOVERNMENT LEADERSHIP.**

To demonstrate the jurisdiction’s commitment to a green building program, the jurisdiction shall comply with the green building programs established herein for all government buildings, and

**Sec. 4.0. DESIGNATION OF RESPONSIBILITY FOR ADMINISTRATION AND IMPLEMENTATION.**

The program shall be administered by the jurisdiction’s \_\_\_\_\_ department, which shall be responsible for:

**Sec. 5.0. GREEN BUILDING PROGRAM APPLICABILITY.**

- (a) For all private projects, the program shall be voluntary.
- (b) For any new building owned and constructed by or on behalf of the jurisdiction is mandatory.
- (c) For any renovation of a government building owned by; the jurisdiction undergoing a level III alteration, per FBC, shall comply with this program providing a positive cost analysis can demonstrate 100% pay back with in ten years

**Sec. 6.0. GREEN BUILDING COVERAGE.**

The program shall be comprised of the following sub-programs:

- (a) New residential construction;
- (b) Residential retrofitting/remodeling;
- (c) New commercial/non-residential construction,
- (d) Existing Commercial/non-residential construction
- (e) Land developments

**Sec. 7.0. GREEN BUILDING STANDARDS.**

In addition to the Florida Building Code’s minimum standards, the program shall be administered using standards developed by the Florida Green Building Coalition, the U.S. Green Building Council, the Green Building Initiative, or the National Association of Home Builders. These standards shall apply to each sub-program as follows.



- (a) New residential permitted projects: New residential projects shall satisfy all of the requirements associated with either
- i) the current Green Home Designation Standard of the FGBC,
  - ii) the current USGBC LEED for Homes® program,
  - iii) the current National Association of Home Builders National Green Home program, or
  - iv) the GBI new home designation,
- including but not limited to, any monetary or certification requirements.
- (b) Remodeling of existing homes: The participant shall meet requirements of remodeling certification for either
- i) the current Green Home Designation Standard of the FGBC,
  - ii) the current LEED for Homes® program, or
  - iii) the current NAHB National Green Home program, or
  - iv) The GBI
- including but not limited to, any monetary or certification requirements. The home shall meet the requirements for “remodeling” or “existing home” of the designation.
- (c) New commercial or institutional buildings: The program participant shall satisfy all of the requirements associated with the
- i) the current Green Commercial Designation Standard of the FGBC,
  - ii) the current LEED for New Construction or derived USGBC LEED rating system (e.g., LEED for Schools, LEED for Health Care) or
  - iii) the Green Globes environmental assessment system for new designs including but not limited to any monetary or certification requirements.
- (d) Existing commercial and institutional buildings: The program participant shall satisfy all of the requirements associated with the
- i) the current Green Commercial Designation Standard of the FGBC,
  - ii) the current LEED for existing buildings or derived USGBC LEED rating system (e.g., LEED for Schools, LEED for Health Care) program, or
  - iii) the Green Globes environmental assessment system for existing designs, including but not limited to any monetary or certification requirements.
- (e) Land Developments: The participant shall satisfy all of the requirements associated with the
- i) the current Green Development Designation Standard of the FGBC,
  - ii) the current LEED for Neighborhoods and Developments rating system program, or
  - iii) the NAHB development designation, including but not limited to any monetary or certification requirements.
- (f) Review. For the purpose of this section of the program, a program participant shall be bound by the standard designated for a particular sub-program unless the program participant requests to be certified under a more current version of a designated standard and the request is approved by the jurisdiction responsible for administering the particular program.
- (g) Green Practices Supersede Conflicting Covenants and Deed Restrictions: Local developers and homeowner association covenant and deed restrictions shall not limit the adoption of practices encouraged to achieve credit under these green standards.

## **Sec. 8.0. INCENTIVES.**

The program shall include incentives designed to encourage the use of the program.

## **Sec. 9.0. CERTIFICATION.**

The program shall be subject to certification by a qualified third party who has been trained and certified as a green building certifier. For the purpose of this section of the program, "third party" means any person or entity authorized according to the requirements of the standard in section 7.0 for a particular project.

**Sec. 10.0. EDUCATION AND TRAINING.**

(a) The jurisdiction in conjunction with FSEC, FGBC, Green Globes, NAHB or USGBC shall conduct at least one training workshop per year for the purpose of educating potential or current program participants about the program.

(b) The jurisdiction shall attempt to make available a meeting space at a government facility when available for green building programs offered by organizations that are of a general nature (not product specific). Organizations shall contact the facilities staff to make arrangements.

(c) Jurisdiction building and planning department staff shall be encouraged to attend at least \_\_\_ hours of green building training a year.

**Sec. 11.0. INDEX AND REPORT.**

The goals and objectives of the program and their status as outlined in the Preamble shall be recorded, analyzed and reported to the commission. The jurisdiction administrator/manager shall be responsible for this indexing and reporting.

**Sec. 12.0. PROGRAM REVIEW.**

(a) Staff review. The jurisdiction shall provide for a review of the program to determine the need for changes in the program to increase its effectiveness.

(b) Frequency. The program shall be subject to review one year after the effective date of this ordinance and thereafter at a frequency of not more than once per year.

(c) Purpose. The purpose of reviewing the program includes but is not limited to updating program incentives, recommending program or marketing changes to the jurisdiction, reviewing suggestions made by program participants, and annually awarding the green building awards of the program.

**Sec. 13.0. CONFLICTING REGULATIONS REPEALED.**

Where conflicts occur this ordinance shall supercede.

**Sec. 14.0. SEVERABILITY.**

If any portion of this ordinance is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed a separate provision and shall not affect the validity of the remaining portions of the ordinance.

**Sec. 15.0. EFFECTIVE DATE.**

This ordinance shall take effect on the date on which it is enacted by the jurisdiction.

## APPENDIX H

### CODE ADMINISTRATION ASSESSMENT SURVEY PROJECT CODE ADMINISTRATION INTERPRETATION AND ENFORCEMENT NEEDS OF LOCAL GOVERNMENTS ASSESSMENT SURVEY

#### **Overview**

One of the Florida Building Commission's (Commission) responsibilities is making a continual study of the Florida Building Code and related laws, and on a triennial basis reporting findings and recommendations to the Legislature. The first triennial assessment was conducted in 2005 and recommendations were reported to the 2006 Legislature. A variety of issues were identified during the course of the assessment survey and ad hoc committee review process, and one of the recommendations developed and adopted by the Commission was to conduct an assessment of local building officials on their needs regarding administration of the Florida Building Code (Code). Some of the key issues identified during the review process included training and education, communication and outreach, staffing and qualifications, interpretations and appeals, funding, and state oversight.

Local administration and enforcement of the Code is one of the key foundations of the Building Code System, and the Commission is seeking the views of local jurisdictions—of all sizes and in all geographic regions of the State—on their perspectives and needs regarding the local administration of the Code, as well as their recommendations for measures to improve the uniform and effective enforcement of the Code, including how the Commission could best assist local jurisdictions relative to the administration of the Florida Building Code.

The survey is the first step in the process and will serve as the basis for an assessment report, followed by a review of the topic by the Commission's Code Administration TAC, who will in turn make recommendations to the Commission. Results of the survey are reported in a general way and no views are attributed to individuals. Respondents represent views from the Florida Keys to South East and South West Florida, from Central East and West, and from the North East to the Florida Panhandle. Responses were received from city and county jurisdictions, large, medium and small. In summary, the survey results reflect the diversity of Florida from geographic, political, and demographic perspectives.

#### **Project Webpage**

Information on the project, including recommendations, agenda packets, meeting reports, and related documents may be found in downloadable formats at the project webpage below:

[http://consensus.fsu.edu/FBC/fbc\\_survey.html](http://consensus.fsu.edu/FBC/fbc_survey.html)

## APPENDIX I

### HURRICANE RESEARCH ADVISORY COMMITTEE PROJECT

#### **Overview**

At the January 26, 2005 Commission meeting, Chairman Rodriguez appointed a small coordinating group consisting of Commissioners and other stakeholder representatives, charged with identifying what research is being conducted related to building failure issues resulting from the 2004 hurricanes, identifying any research gaps on key issues identified but not being researched, and finally, to ensure that the Commission is provided with all relevant research findings on each of the major issues, prior to the Commission considering code enhancements resulting from lessons learned. The Committee has been instrumental in evaluating and making recommendations to the Commission on a broad suite of proposals regarding Building Code enhancements and research projects.

As a result of hurricanes affecting Florida during the 2004 and 2005 seasons, the Florida Building Commission's Hurricane Research Advisory Committee (HRAC) continues to meet at most Commission meeting to review research and make recommendations to the Commission regarding proposed code enhancements and research needs. Some of the Committee's recommendations were adopted with the 2006 Glitch Code amendments to the 2004 Code and others were adopted during the 2007 Code Update cycle, and still others will be implemented during the 2008 "Glitch" code annual interim amendment process. The Committee continues to consider enhancements to the Florida Building Code based on sound science. In addition, the Committee has recommended research to advance the science and allow the Commission to continually study and update the storm protection provisions of the Florida Building Code. The Committee is continuously monitoring current research and recommending the development of standards and installation practices related to protecting against wind damage and water infiltration.

During 2007 the Committee has developed and ranked a list of issues that require research and development in order to make Florida's structures, and the products that comprise them, more storm resistant. Of particular note, water managed window and door installation requirements were developed, and the Commission worked with industry to ensure windows, garage doors and shutters are labeled in a way to provide building officials with the information they need, in a field useable format, to ensure that the correct products are installed according to the appropriate conditions of their use.

#### **Project Webpage**

Information on the project, including recommendations, agenda packets, meeting reports, and related documents may be found in downloadable formats at the project webpage below:

<http://consensus.fsu.edu/FBC/hrac.html>

## APPENDIX J

### WINDOWS WORKGROUP PROJECT

#### **Overview**

Raul L. Rodriguez, AIA, Chair of the Florida Building Commission, appointed a Window Workgroup charged with representing their stakeholder group's interests, and working with other interest groups to develop a consensus package of recommendations for submittal to the Florida Building Commission.

The revised scope of the Workgroup for 2007 was to discuss and develop consensus recommendations for a template for installation instructions submitted for product approval submittals. Chairman Rodriguez agreed to reconvene the Workgroup at the request of workgroup members.

The Workgroup's recommendations were submitted to the Product Approval POC, and the POC's comments along with the Workgroup's recommendations, were submitted to the Commission during the May 2007 plenary session. The Commission voted on a package of recommendations and amended Rule 9B-72 in order to implement the recommendations.

#### **Project Webpage**

Information on the project, including recommendations, agenda packets, meeting reports, and related documents may be found in downloadable formats at the project webpage below:

<http://consensus.fsu.edu/FBC/wwg.html>

## APPENDIX K

### TERMITE WORKGROUP PROJECT

#### **Overview**

Chairman Rodriguez appointed the Termite Workgroup to consider proposals for enhancing the Code's termite provisions. The Workgroup process was conducted as a facilitated stakeholder consensus-building process. The Workgroup's Phase I scope was to review the Code's termite related provisions and develop recommendations for possible modifications for the 2007 Code Update. The Workgroup's Phase II scope was to review referred modifications considered by the Structural TAC during the TAC's March 2007 review of proposed Code modifications.

#### **Project Webpage**

Information on the project, including recommendations, agenda packets, meeting reports, and related documents may be found in downloadable formats at the project webpage below:

<http://consensus.fsu.edu/FBC/tw.html>

## APPENDIX L

### ELECTRICAL BONDING OF POOL DECKS

#### **9B-3.0477 Electrical Bonding of Pools.**

National Fire Protection Association [NFPA] 70 - 05: National Electric Code, Article 680 (Swimming Pools, Fountains, and Similar Installation), Section 680.26, Equipotential Bonding, as adopted within Chapter 27 of the Florida Building Code, Building Volume; and to NFPA 70A - 05: National Electric Code, Article 680 (Swimming Pools, Fountains, and Similar Installation), Section 680.26, Equipotential Bonding, adopted within Chapter 33 of the Florida Building Code, Residential Volume, define bonding requirements for swimming pools constructed in the State. In response to legislative direction, the Florida Building Commission has adapted the draft 2008 National Electrical Code requirements for immediate use as set forth below. As an alternative to the requirements in the Building Code as adopted in Rule 9B-3.047, F.A.C., the following shall be permissible:

(1) Performance. The equipotential bonding required by this section shall be installed to reduce voltage gradients in the pool area.

(2) Bonded Parts. The parts specified in paragraphs (a) through (g) hereof shall be bonded together using solid copper conductors, insulated covered, or bare, not smaller than 8 AWG or with rigid metal conduit of brass or other identified corrosion-resistant metal. Connections to bonded parts shall be made in accordance with Section 250.8 of the National Electrical Code as adopted within the Florida Building Code. An 8 AWG or larger solid copper bonding conductor provided to reduce voltage gradients in the pool area shall not be required to be extended or attached to any remote panelboard, to service equipment, or electrodes.

(a) Conductive Pool Shells. Bonding to conductive pool shells shall be provided as specified in subparagraphs 1. or 2. hereof. Poured concrete, pneumatically applied or sprayed concrete, and concrete block with painted or plastered coating shall all be considered conductive materials due to water permeability and porosity. Vinyl liners and fiberglass composite shells shall be considered to be non-conductive materials.

1. Structural Reinforcing Steel. Unencapsulated structural reinforcing steel shall be bonded together by steel tie wires or the equivalent. Where structural reinforcing steel is encapsulated in a nonconductive compound, a copper conductor grid shall be installed in accordance with subparagraph 2.

2. Copper Conductor Grid. A copper conductor grid shall be provided and shall comply with the following conditions:

a. Be constructed of minimum 8 AWG bare solid copper conductors bonded to each other at all points of crossing.

b. Conform to the contour of the pool and the pool deck.

c. Be arranged in a 300 mm (12 in.) by 300 mm (12 in.) network of conductors in a uniformly spaced perpendicular grid pattern with a tolerance of 100 mm (4 in.).

d. Be secured within or under the pool no more than 150 mm (6 in.) from the outer contour of the pool shell.

(b) Perimeter Surfaces. The perimeter surface shall extend for 1 m (3 ft.) horizontally beyond the inside walls of the pool and shall include unpaved surfaces as well as poured concrete and other types of paving. Bonding to perimeter surfaces shall be provided as specified in subparagraph 1. or 2. hereof, and shall be attached to the pool reinforcing steel or copper conductor grid at a minimum of four (4) points uniformly spaced around the perimeter of the pool. For non-conductive pool shells, bonding at four points shall not be required.

1. Structural Reinforcing Steel. Structural reinforcing steel shall be bonded in accordance with subparagraph (2)(a)1.

2. Alternate Means. Where structural reinforcing steel is not available or is encapsulated in a nonconductive compound, copper conductor(s) shall be utilized where the following conditions are met:

a. At least one minimum 8 AWG bare solid copper conductor shall be provided.

b. The conductor(s) shall follow the contour of the perimeter surface.

c. Only listed splices shall be permitted.

d. The required conductor shall be 450 to 600 mm (18 to 24 in.) from the inside walls of the pool.

e. The required conductor shall be secured within or under the perimeter surface 100 to 150 mm (4 to 6 in.) below the subgrade.

(c) Metallic Components. All metallic parts of the pool structure, including reinforcing metal not addressed in subparagraph (2)(a)1., shall be bonded. Where reinforcing steel is encapsulated with a nonconductive compound, the reinforcing steel shall not be required to be bonded.

(d) Underwater Lighting. All metal forming shells and mounting brackets of no-niche luminaires shall be bonded except that listed low-voltage lighting systems with nonmetallic forming shells shall not require bonding.

(e) Metal Fittings. All metal fittings within or attached to the pool structure shall be bonded. Isolated parts that are not over 100 mm (4 in.) in any dimension and do not penetrate into the pool structure more than 25 mm (1 in.) shall not require bonding.

(f) Electrical Equipment. Metal parts of electrical equipment associated with the pool water circulating system, including pump motors and metal parts of equipment associated with pool covers, including electric motors, shall be bonded except that metal parts of listed equipment incorporating an approved system of double insulation shall not be bonded.

1. Double-Insulated Water Pump Motors. Where a double-insulated water-pump motor is installed under the provisions of this rule, a solid 8 AWG copper conductor of sufficient length to make a bonding connection to a replacement motor shall be extended from the bonding grid to an accessible point in the vicinity of the pool pump motor. Where there is no connection between the swimming pool bonding grid and the equipment grounding system for the premises, this bonding conductor shall be connected.

2. Pool Water Heaters. For pool water heaters rated at more than 50 amperes and having specific instructions regarding bonding and grounding, only those parts designated to be bonded shall be bonded and only those parts designated to be grounded shall be grounded.

(g) Metal Wiring Methods and Equipment. Metal-sheathed cables and raceways, metal piping, and all fixed metal parts shall be bonded except:

1. Those separated from the pool by a permanent barrier shall not be required to be bonded.

2. Those greater than 1.5 m (5 ft.) horizontally of the inside walls of the pool shall not be required to be bonded.

3. Those greater than 3.7 m (12 ft.) measured vertically above the maximum water level of the pool, or as measured vertically above any observation stands, towers, or platforms, or any diving structures shall not be required to be bonded.

(3) Pool Water. An intentional bond of a minimum conductive surface area of 5806 square mm (9 square in.) shall be installed in contact with the pool water. This bond shall be permitted to consist of parts that are required to be bonded in subsection (2).

*Specific Authority s. 1, Chapter 2007-187, Laws of Florida. Law Implemented 553.72 FS. 553.73(2), 553.73(3), 553.73(7), 553.73(9) FS., s. 1, Chapter 2007-187, Laws of Florida History—New 10-18-07.*



**APPENDIX M**  
**HURRICANE MITIGATION MANUAL**

Following is the Rule language implementing the mitigation retrofits provisions:

**9B-3.0475 Mitigation Retrofits Required.**

The 2007 Manual of Hurricane Mitigation Retrofits for Existing Site-Built Single Family Residential Structures is hereby adopted by reference. The manual provides requirements for construction in addition to those contained in the Florida Building Code as adopted by Rule 9B-3.047, F.A.C., that shall be enforced as provided in the manual and as required by Section 553.844, F.S.

Following is the Hurricane Mitigation Manual as adopted:

**RULE 9B-3.0475**  
**HURRICANE MITIGATION RETROFITS FOR**  
**EXISTING SITE-BUILT SINGLE FAMILY RESIDENTIAL STRUCTURES**

**101 Retrofits Required.** Pursuant to Section 553.844, Florida Statutes, strengthening of existing site-built, single family residential structures to resist hurricanes shall be provided. Site built single- family residential structures shall mean site built single family detached residential structures.

- 101.1** When a roof on an existing site-built, single family residential structure is replaced, the following procedures shall be permitted to be performed by the roofing contractor:
- (a) Roof-decking attachment and fasteners shall be strengthened and corrected as required by section 201.1.
  - (b) A secondary water barrier shall be provided as required by section 201.2.
- 101.2** When a roof is replaced on a building that is located in the wind-borne debris region as defined in s. 1609.2 of the Florida Building Code, Building and that has an insured value of \$300,000 or more or, if the building is uninsured or for which documentation of insured value is not presented, has a just valuation for the structure for purposes of ad valorem taxation of \$300,000 or more:
- (a) Roof to wall connections shall be improved as required by section 201.3.
  - (b) Mandated retrofits of the roof-to-wall connection shall not be required beyond a 15 percent increase in the cost of re-roofing.
  - (c) Where complete retrofits of all the roof-to-wall connections as prescribed in Section 201.3 would exceed 15 percent of the cost of the re-roofing project, the priorities outlined in Section 201.3.7 shall be used to limit the scope of work to the 15 percent limit.
- 101.3** When any activity requiring a building permit that is applied for on or after July 1, 2008, and for which the estimated cost is \$50,000 or more for a building that is located in the wind borne debris region as defined in s. 1609.2 of the Florida Building Code, Building and that has an insured value of \$750,000 or more, or, if the building is uninsured or for which documentation of insured value is not presented, has a just valuation for the structure for purposes of ad valorem taxation of \$750,000 or more.:
- (a) Opening protections as required within the Florida Building Code, Building or Florida Building Code, Residential for new construction shall be provided.

**101.4** When retrofit enhancement of gable end bracing is provided during construction which otherwise requires a permit the techniques in Appendix A shall be allowed.

**201 Roof System Mitigation Techniques.** Roof sheathing fastening, secondary water barriers, roof to wall connection and gable end bracing shall be permitted pursuant to this section.

**201.1 Roof sheathing fastening for site-built single family residential structures.** For site-built single family residential structures the fasteners and spacing required in Table 201.1 are deemed to comply with the requirements of Section 507.2.2, of the 2004 Florida Building Code, Existing Building.

Board roof decking secured with at least two 8d nails into roof framing members shall be deemed to be sufficiently connected. Board roof decking secured with smaller fasteners than 8d nails or with fewer than two 8d nails per board shall be deemed sufficiently connected if two 8d clipped head, round head, or ring shank nails are in place on each framing member.

Supplemental fasteners as required by Table 201.1 shall be 8d ring shank nails with round heads and the following minimum dimensions:

1. 0.113 inch nominal shank diameter
2. Ring diameter of 0.012 over shank diameter
3. 16 to 20 rings per inch
4. 0.280 inch full round head diameter
5. Ring shank to extend a minimum of 1 ½” from the tip of the nail.
6. Minimum 2-1/4 inch nail length

**Table 201.1  
Supplement Fasteners at Panel Edges and Intermediate Framing**

| <b>Existing fasteners</b>                  | <b>Existing spacing</b> | <b>Wind speed 110 mph or less supplemental fastening shall be no greater than</b> | <b>Wind speed greater than 110 mph supplemental fastening shall be no greater than</b> |
|--|-------------------------|---|--|
| Staples or 6d                              | Any                     | 6” o.c. <sup>b</sup>  | 6” o.c. <sup>b</sup>   |
| 8d clipped head, round head, or ring shank | 6” o.c. or less         | None necessary  | None necessary   |
| 8d clipped head, round head, or ring shank | Greater than 6” o.c.    | 6” o.c. <sup>a</sup>  | 6” o.c. <sup>a</sup>   |

a. Maximum spacing determined based on existing fasteners and supplemental fasteners.

b. Maximum spacing determined based on supplemental fasteners only.

**201.2 Roof secondary water barrier for site-built single family residential structures.** A secondary water barrier shall be installed using one of the following methods when reroofing.

- a) All joints in structural panel roof sheathing or decking shall be covered with a minimum 4 in. wide strip of self-adhering polymer modified bitumen tape applied directly to the sheathing or

decking. The deck and self adhering polymer modified bitumen tape shall be covered with one of the underlayment systems approved for the particular roof covering to be applied to the roof.

b) The entire roof deck shall be covered with an approved self-adhering polymer modified bitumen sheet. No additional underlayment shall be required on top of this sheet for new installations.

c) The entire roof deck shall be covered with an approved asphalt impregnated 30# felt underlayment installed with nails and tin-tabs as required for the HVHZ. (No additional underlayment shall be required over the top of this sheet).

d) Outside of the HVHZ, an underlayment complying with section 1507.2.3 of the Florida Building Code, Building fastened as described below or a layer of asphalt impregnated approved #30 felt shall be installed. The felt is to be fastened with 1" round plastic cap or metal cap nails, attached to a nailable deck in a grid pattern of 12 inches (305 mm) staggered between the overlaps, with 6-inch (152 mm) spacing at the overlaps. For slopes of 2:12 to 4:12 an additional layer of felt shall be installed in a shingle-fashion and lapped 19" and fastened as described above. (No additional underlayment shall be required over the top of this sheet).

**Exceptions:**

1. Roof slopes < 2:12 having a continuous roof system shall be deemed to comply with section 201.2 requirements for a secondary water barrier.
2. Clay and Concrete tile roof systems installed as required by the Florida Building Code are deemed to comply with the requirements of section 201.2 for Secondary Water Barriers.

**201.3 Roof-to-wall connections for site-built single family residential structures.** Where required by Section 101.2, the intersection of roof framing with the wall below shall be strengthened by adding metal connectors, clips, straps, and fasteners such that the performance level equals or exceeds the uplift capacities as specified in Table 201.3. As an alternative to an engineered design, the prescriptive retrofit solutions provided in Sections 201.3.3 through 201.3.6 shall be accepted as meeting the mandated roof-to-wall retrofit requirements.

**Exceptions:**

1. Where it can be demonstrated (by code adoption date documentation and permit issuance date) that roof-to-wall connections and/or roof-to-foundation continuous load path requirements were required at the time of original construction.
2. Roof- to- wall connections shall not be required unless evaluation and installation of connections at gable ends or all corners can be completed for 15% of the cost of roof replacement.

**201.3.1 Access for Retrofitting Roof to Wall Connections.** These provisions are not intended to limit the means for gaining access to the structural elements of the roof and wall for the purposes of retrofitting the connection. The retrofit of roof to wall connections can be made by access through the area under the eave, from above through the roof, or from the interior of the house. Methods for above access include removal of roof panels or sections thereof or removal of portions of roof paneling at selected locations large enough for access, viewing, and installing the retrofit connectors and fasteners.

Where panels or sections are removed, the removed portions shall not be reused. New paneling shall be used and fastened as in new construction.

**201.3.2 Partially inaccessible straps:** Where part of a strap is inaccessible, if the portion of the strap that is observed is fastened in compliance with these requirements, the inaccessible portion of the strap shall be presumed to comply with these requirements.

**201.3.3 Prescriptive method for gable roofs on a wood frame wall.** The anchorage of each of the exposed rafters or truss within 6 ft of the corner along the exterior wall on each side of each gable end shall be inspected. Wherever a strap is missing or an existing strap has fewer than four fasteners on each end, approved straps, ties or right angle gusset brackets with a minimum uplift capacity of 500 lbs shall be installed that connect each rafter or truss to the top plate below. Adding fasteners to existing straps shall be allowed in lieu of adding a new strap provided the strap is manufactured to accommodate at least 4 fasteners at each end. Wherever access makes it possible (without damage of the wall or soffit finishes), both top plate members shall be connected to the stud below using a stud to plate connector with a minimum uplift capacity of 500 lbs.

**201.3.4 Prescriptive method for gable roofs on a masonry wall.** The anchorage of each of the exposed rafters or truss within 6 ft of the corner along the exterior wall on each side of each gable end shall be inspected. Wherever a strap is missing or an existing strap has fewer than four fasteners on each end, approved straps, ties or right angle gusset brackets with a minimum uplift capacity of 500 lbs shall be installed that connect each rafter or truss to the top plate below or directly to the masonry wall using approved masonry screws that will provide at least a 2-1/2 inch embedment into the concrete or masonry. When the straps or right angle gusset brackets are attached to a wood sill plate, the sill plate shall be anchored to the concrete masonry wall below. This anchorage shall be accomplished by installing 1/4-inch diameter masonry screws, each with supplementary 1/4-inch washer, having sufficient length to develop a 2-1/2 inch embedment into the concrete and masonry. These screws shall be installed within 4-inches of the truss or rafter on both sides of each interior rafter or truss and on the accessible wall side of the gable end truss or rafter.

**201.3.5 Prescriptive method for hip roofs on a wood frame wall.** Unless it is possible to verify through non-destructive inspection or from plans prepared by a design professional that the roof structure is anchored at least as well as outlined below, access shall be provided at a minimum to the hip rafter (commonly known as a “king jack”), to the hip girder and at each corner of the hip roof. The hip rafter (commonly known as a “king jack”), the hip girder and the rafters/trusses adjacent to the hip girder that are not anchored with a strap having at least four fasteners on each end, shall be connected to the top plate below using a strap or a right angle gusset bracket having a minimum uplift capacity of 500 lbs. Adding fasteners to existing straps shall be allowed in lieu of adding a new strap provided the strap is manufactured to accommodate at least 4 fasteners at each end. Wherever access makes it possible (without damage of the wall or soffit finishes), both top plate members shall be connected to the stud below using a stud to plate connector with a minimum uplift capacity of 500 lbs.

**201.3.6 Prescriptive method for hip roofs on a masonry wall.** Unless it is possible to verify through non-destructive inspection or from plans prepared by a design professional that the roof structure is anchored at least as well as outlined below, access shall be provided at a minimum to the hip rafter (commonly known as a “king jack”), to the hip girder and at each corner of the hip roof. The hip rafter (commonly known as a “king jack”), the hip girder and the rafters/trusses adjacent to the hip girder that are not anchored with a strap having at least four fasteners on each end, shall be connected to the concrete masonry wall below using approved straps or right angle gusset brackets with a minimum uplift capacity of 500 lbs. Adding fasteners to existing straps shall be allowed in lieu of adding a new strap provided the strap is manufactured to accommodate at least 4 fasteners at each end. The straps or right

angle gusset brackets shall be installed such that they connect each rafter or truss to the top plate below or directly to the masonry wall using approved masonry screws that will provide at least a 2-1/2 embedment into the concrete or masonry. When the straps or right angle gusset brackets are attached to a wood sill plate, the sill plate shall be anchored to the concrete masonry wall below. This anchorage shall be accomplished by installing 1/4-inch diameter masonry screws, each with supplementary 1/4-inch washer, with sufficient length to develop a 2-1/2 inch embedment into the concrete and masonry. These screws shall be installed within 4-inches of the truss or rafter on both sides of each interior rafter or truss and on the accessible wall side of the gable end truss or rafter.

**201.3.75 Priorities for mandated roof-to-wall retrofit expenditures.** For houses with both hip and gable roof ends, the priority shall be to retrofit the gable end roof-to-wall connections unless the width of the hip end is more than 1.5 times greater than the width of the gable end. Priority shall be given to connecting the corners of roofs to walls below where the spans of the roofing members are greatest.

**Table 201.3  
REQUIRED UPLIFT CAPACITIES FOR ROOF-TO-WALL CONNECTIONS  
(POUNDS PER LINEAR FOOT)**

|  | Basic Wind Speed | Roof Span (Feet) |         |         |         |          |          |          | Overhangs |
|--|------------------|------------------|---------|---------|---------|----------|----------|----------|-----------|
|  |                  | 12               | 20      | 24      | 28      | 32       | 36       | 40       |           |
| Within 6 feet of building corner       | 85               | -69.85           | -116.42 | -139.70 | -162.99 | -186.27  | -209.55  | -232.84  | -27       |
|  | 90               | -82.67           | -137.78 | -165.34 | -192.90 | -220.45  | -248.01  | -275.57  | -30.3     |
|  | 100              | -110.51          | -184.18 | -221.01 | -257.85 | -294.68  | -331.52  | -368.36  | -37.4     |
|  | 110              | -141.27          | -235.45 | -282.55 | -329.64 | -376.73  | -423.82  | -470.91  | -45.3     |
|  | 120              | -174.97          | -291.62 | -349.94 | -408.26 | -466.59  | -524.91  | -583.23  | -53.9     |
|  | 130              | -211.60          | -352.66 | -423.19 | -493.72 | -564.26  | -634.79  | -705.32  | -63.2     |
|  | 140              | -251.15          | -418.59 | -502.31 | -586.02 | -669.74  | -753.46  | -837.18  | -73.3     |
|  | 150              | -293.64          | -489.40 | -587.28 | -685.16 | -783.04  | -880.92  | -978.80  | -84.2     |
| Greater than 6 ft from building corner | 170              | -387.40          | -645.67 | -774.81 | -903.94 | -1033.08 | -1162.21 | -1291.35 | -108      |
|  | 85               | -39.10           | -65.17  | -78.20  | -91.24  | -104.27  | -117.30  | -130.34  | -27       |
|  | 90               | -48.20           | -80.33  | -96.39  | -112.46 | -128.52  | -144.59  | -160.66  | -30.3     |
|  | 100              | -67.95           | -113.24 | -135.89 | -158.54 | -181.19  | -203.84  | -226.49  | -37.4     |
|  | 110              | -89.78           | -149.63 | -179.55 | -209.48 | -239.40  | -269.33  | -299.25  | -45.3     |
|  | 120              | -113.68          | -189.47 | -227.37 | -265.26 | -303.16  | -341.05  | -378.94  | -53.9     |
|  | 130              | -139.67          | -232.78 | -279.34 | -325.90 | -372.45  | -419.01  | -465.57  | -63.2     |
|  | 140              | -167.74          | -279.56 | -335.47 | -391.38 | -447.29  | -503.21  | -559.12  | -73.3     |
|  | 150              | -197.88          | -329.80 | -395.76 | -461.72 | -527.68  | -593.64  | -659.60  | -84.2     |
| 170                                    | -264.41          | -440.68          | -528.81 | -616.95 | -705.08 | -793.22  | -881.35  | -108     |           |

**Notes:**

- a. The required capacities are pounds per lineal foot of building length. For roof framing spaced at 16 inches on center multiply table values by 1.33. For roof framing spaced at 24 inches on center multiply table values by 2.
- b. The required capacities include an allowance for 10 pounds of dead load.
- c. The required capacities do not account for the effects of overhangs. The overhang loads given shall be multiplied by the overhang projection and added to the required capacities in the table.

## APPENDIX A

### GABLE END WALL BRACING RETROFIT

#### SECTION A101

##### GENERAL

**A101.1 Intent and purpose.** The provisions of this subsection provide prescriptive solutions for the retrofitting of gable ends of buildings. The retrofit measures are not intended to provide strengthening of buildings equal to the structural provisions of the latest building code requirements for new buildings. Design for compliance of new buildings and additions to existing buildings shall conform to the requirements of the Florida Building Code, Building or Florida Building Code, Residential as applicable.

**A101.2 Scope.** The following prescriptive methods are intended for applications where the gable end wall framing is provided by a wood gable end wall truss or a conventionally framed rafter system. The retrofits are appropriate for wall studs oriented with their broad face parallel to or perpendicular to the gable wall surface. An overview perspective drawing of the retrofit is shown in Figure A104.1.

#### SECTION A102

##### DEFINITIONS

**ANCHOR BLOCK.** A nominal 2-inch thick by at least 4" wide piece of lumber secured to horizontal braces and filling the gap between existing framing members for the purpose of restraining horizontal braces from movement perpendicular to the framing members.

**COMPRESSION BLOCK.** A nominal 2-inch thick by at least 4" wide piece of lumber used to restrain in the compression mode (force directed towards the interior of the attic) an existing or retrofit stud. It is attached to a horizontal brace and bears directly against the existing or retrofit stud.

**CONVENTIONALLY FRAMED GABLE END.** A conventionally framed gable end with studs whose faces are perpendicular to the gable end wall.

**HORIZONTAL BRACE.** A nominal 2-inch thick by at least 4" wide piece of lumber used to restrain both compression and tension loads applied by a retrofit stud. It is typically installed horizontally on the top of floor framing members (truss bottom chords or ceiling joists) or on the bottom of pitched roof framing members (truss top chord or rafters).

**RETROFIT STUD.** A nominal 2-inch lumber member used to structurally supplement an existing gable end wall stud.

**RIGHT ANGLE GUSSET BRACKET.** A 14 gage or thicker metal right angle bracket with a minimum load capacity perpendicular to the plane of either face of 350 lbs when connected to wood or concrete with manufacturer specified connectors.

**STUD-TO-PLATE CONNECTOR.** A manufactured metal connector designed to connect studs to plates with a minimum uplift capacity of 500 lbs.

**TRUSS GABLE END.** An engineered factory made truss or site built truss that incorporates factory installed or field installed vertical studs with their faces parallel to the plane of the truss and are spaced no greater than 24-inches on center. Web or other diagonal members other than top chords may or may not be present. Gable end trusses may be of the same height as nearby trusses or may be drop chord trusses in which the top chord of the truss is lower by the depth of the top chord or outlookers.

## **SECTION A103 MATERIALS OF CONSTRUCTION**

**A103.1 Existing materials.** All existing wood materials that will be part of the retrofitting work (trusses, rafters, ceiling joists, top plates, wall studs, etc.) shall be in sound condition and free from defects or damage that substantially reduce the load-carrying capacity of the member. Any wood materials found to be damaged or deteriorated shall be strengthened or replaced with new materials to provide a net dimension of sound wood equivalent to its undamaged original dimensions.

**A103.2 New Materials.** All materials approved by this code, including their appropriate allowable stresses, shall be permitted to meet the requirements of this chapter.

**A103.3 Dimensional Lumber.** All dimensional lumber for braces, studs, and blocking shall conform to applicable standards or grading rules. Dimensional lumber shall be identified by a grade mark of a lumber grading or inspection agency that has been approved by an accreditation body that complies with DOC PS 20. All new dimensional lumber to be used for retrofitting purposes shall be a minimum grade and species of #2 Spruce-Pine-Fir or shall have a specific gravity of 0.42 or greater. In lieu of a grade mark, a certificate of inspection issued by a lumber grading or inspection agency meeting the requirements of this code shall be accepted.

**A103.4 Metal Plate Connectors, Straps and Anchors.** Metal plate connectors, straps and anchors shall have product approval. They shall be approved for connecting wood-to-wood or wood-to-concrete as appropriate. Straps and tie plates shall be manufactured from galvanized steel with a minimum thickness provided by 20 gauge. Tie plates shall have holes sized for 8d nails.

**A103.5 Twists in straps.** Straps shall be permitted to be twisted 90 degrees in addition to a 90 degree bend where they transition between framing members or connection points.

**A103.6 Fasteners.** Fasteners meeting the requirements of Sections A103.6.1 and A103.6.2 shall be used and shall be permitted to be screws or nails meeting the minimum length requirement shown in figures and specified in tables.

**A103.6.1 Screws.** Screws shall be a minimum #8 size with head diameters no less than 0.3 inch. Screw lengths shall be no less than indicated in the Figures and in Tables. Permissible screws include deck screws, wood screws, or sheet metal screws (without drill bit type tip, but can be sharp pointed). Screws shall have at least 1 inch of thread. Fine threaded screws or drywall screws shall not be permitted. Note that many straps will not accommodate screws larger than #8.

**A103.6.2 Nails.** Unless otherwise indicated in the provisions or drawings, where fastener lengths are indicated in Figures and Tables as 1-1/4 inch, 8d common nails with shank diameter 0.131 inch and head diameters no less than 0.3 inch shall be permitted. Unless otherwise indicated in the provisions or drawings, where fasteners lengths are indicated in Figures and Tables as 3 inch, 10d common nails with shank diameter of 0.148 inch and head diameters no less than 0.3 inch shall be permitted.

**A103.7 Fastener spacing.** Fastener spacing shall be as follows:

- a) distance between fasteners and the edge of lumber shall be a minimum of 1/2 inch unless otherwise indicated,
- b) distance between fasteners and the end of lumber shall be a minimum of 2-1/2 inch,
- c) distance between fasteners parallel to grain (center-to-center) when straps are not used shall be a minimum of 2-1/2 inches unless a 1/2-inch stagger (perpendicular to the grain) is applied for adjacent fasteners, then the distance between fasteners parallel to the grain shall be a minimum of 1-1/4 inches.
- d). distance between fasteners across grain (row spacing) when straps are not used shall be a minimum of 1 inch, and the
- e) distance between fasteners inserted in metal plate connectors, straps and anchors as defined in Section A103.4 shall be those provided by holes manufactured into the straps.

## **SECTION A104 RETROFITTING GABLE END WALLS**

**A104.1 Scope and intent.** Gable ends to be strengthened shall be permitted to be retrofitted using methods prescribed by provisions of this section. These prescriptive methods of retrofitting are intended to increase the resistance of existing gable end wall construction for out-of-plane wind loads resulting from high wind events. The retrofit method addresses four issues. These include strengthening the framing members of the walls if necessary (retrofit studs), bracing the top and bottom of the gable wall so that lateral loads are transmitted into the roof and ceiling diaphragms (horizontal braces, straps to retrofit studs and compression blocks) and connecting the bottom of the gable end wall to the wall below to help brace the top of that wall (specialty metal brackets).

The following prescriptive methods are intended for applications where the gable end wall framing is provided by a wood gable end wall truss or a conventionally framed rafter system. The retrofits are appropriate for wall studs oriented with their broad face parallel to or perpendicular to the gable wall surface. An overview perspective drawing of the retrofit is shown in Figure A104.1.

**A104.2 Horizontal Braces.** Horizontal braces shall be installed approximately perpendicular to the top and bottom chords of the existing roof trusses or approximately perpendicular to the rafters and ceiling joists at the location of each existing gable end wall stud greater than 3-feet in length. If the spacing of existing gable end studs is greater than 24 inches or no vertical gable end stud is present, a stud and horizontal braces shall be installed such that the maximum spacing between existing and added studs shall be 24-inches. Additional gable end wall studs shall not be required at locations where their length would be 3-feet or less. Each required added stud shall be attached to the existing roofing framing members (truss top chord or rafter and truss bottom chord or ceiling joist) using a minimum of two 3-inch toenail fasteners (#8 wood screws or 10d nails) and a metal connector or mending plate with a minimum of four 1-1/4 inch long fasteners (#8 wood screws or 8d nails) at each end. The horizontal braces shall consist of the minimum size member indicated in Table A104.2. The horizontal brace shall



be oriented with their long face across the top and bottom chords of the wood trusses (or rafters and ceiling joists) and extend a minimum of three framing spacings from the gable end wall plus 2-1/2 inch beyond the last top chord or bottom chord member (rafter or ceiling joist) as shown in Figure A104.2.1 (and A104.2.6). The horizontal brace shall be located no farther than 1/2 inch from the inside face of the gable end wall truss. Each horizontal brace shall be fastened to each existing framing member (top chord or rafter or bottom chord or ceiling joist) that it crosses using three 3-inch long fasteners (#8 wood screws or 10d nails) as indicated in Figures A104.2.2 through A104.2.5 for trusses (and Figures A104.2.7 through A104.2.10 for rafters).

**Exceptions:**

1. Where obstructions, other permanently attached obstacles or conditions exist that will not permit installation of new horizontal braces at the indicated locations, refer to Section A104.5 for permitted modification of these prescriptive retrofit methods.
2. Where obstructions, other permanently attached obstacles or conditions exist that will not permit extension of the new horizontal braces across the existing framing members a minimum of three framing spaces from the gable end wall, the horizontal braces may be shortened provided that all of the following conditions are met.
  - a. The horizontal brace shall be installed across a minimum of two framing spaces and fastened to each existing framing member with three 3-inch long fasteners (#8 wood screws or 10d nails).
  - b. The minimum size of the anchor block shall be equivalent to the existing framing members. The anchor block shall be fastened to the side of the horizontal brace in the second framing space from the gable end wall as shown in Figure A104.2.11. Six 3-inch long fasteners (#8 wood screws or 10d nails) shall be used to fasten the anchor block to the side of the horizontal brace.
  - c. The anchor block shall extend beyond the surface of the horizontal brace that is in contact with the existing framing members a minimum of one-half the depth of the existing framing member. The anchor block shall be installed tightly between the existing framing members such that the gap at either end shall not exceed 1/8 inch.

**A104.3 Retrofit Studs.** The retrofit studs shall consist of the minimum size members for the height ranges of the existing vertical gable end wall studs indicated in Table A104.2. Retrofit studs shall be installed adjacent to the existing or added (Section A104.2) vertical gable end wall studs and extend from the top of the lower horizontal brace to the bottom of the upper horizontal brace. A maximum gap of 1/8-inch shall be permitted between the retrofit stud and the bottom horizontal brace. A maximum gap of 1/2-inch shall be permitted between the top edge of the retrofit stud closest to the upper horizontal brace and the horizontal brace surface.

**Exception:**

Where obstructions, other permanently attached obstacles or conditions exist that will not permit the installation of a new retrofit stud adjacent to an existing gable end wall stud, refer to Section A104.5 for permitted modification of these prescriptive retrofit methods.

**A104.3.1 Retrofit Stud Fastening.** Each retrofit stud shall be fastened to the top and bottom horizontal brace members with a minimum of a 20 gauge, 1<sup>1</sup>/<sub>4</sub> inch wide flat metal strap with pre-punched fastener holes. The flat metal straps shall be the minimum length as indicated in Table A104.2. Each top and bottom strap shall extend sufficient distance onto the vertical face of the retrofit stud and be fastened with the number of 1-1/4 inch long fasteners (#8 wood screws or 8d nails) indicated in Table A104.2. Each strap shall be fastened to the top and bottom horizontal brace members with the minimum number of 1-1/4 inch long fasteners (#8 wood screws or 8d nails) as indicated in Table A104.2. The retrofit stud members shall also be fastened to the side of the existing vertical gable end wall studs with 3-inch long fasteners (#8 wood screws or 10d nails) spaced at 6-inches on center as shown in Figure A104.2.1.

**A104.3.2 Retrofit Stud Splices.** Retrofit studs greater than 8-feet in height may be field spliced as shown in Figure A104.3.

**A104.4 Compression Blocks.** Compression blocks shall have minimum lengths as indicated in Table A104.2. Compression blocks shall be installed on the horizontal braces directly against either the existing vertical gable end wall stud or the retrofit stud. For clarity, Figures A104.2.2 through A104.2.5 (trusses) and Figures A104.2.7 through A104.2.10 (rafters) show the installation of the compression block against the existing vertical gable end wall stud with the strap from the retrofit stud running beside the compression block. When the compression block is installed against the retrofit stud, the block shall be allowed to be placed on top of the strap. A maximum gap between the compression block and the existing vertical gable end wall stud member or retrofit stud of 1/8 inch shall be permitted. Compression blocks shall be fastened to the horizontal braces with the minimum number of 3-inch long fasteners (#8 wood screws or 10d nails). End and edge distances for fastener installation shall be as listed in Section A103.7 and shown in Figures A104.2.2 through A104.2.5 (trusses) and Figures A104.2.7 through A104.2.10 (rafters).

**A104.5 Obstructions – Permissible modifications to prescriptive gable end retrofits.** Where obstructions, other permanently attached obstacles or conditions exist in attics that preclude the installation of a retrofit stud or horizontal braces in accordance with Sections A104.2 or A104.3, the gable end retrofit shall be deemed to meet the requirements of this section if the requirements of Section A104.5.1 are met. Obstructions to the installation of retrofit studs or horizontal braces include gable end vents, attic accesses, recessed lights, skylight shafts, chimneys, air conditioning ducts, or equipment. Where the installation of a horizontal brace for the top of a center stud is obstructed by truss plates near the roof peak, methods prescribed in A104.5.1 are permitted to be used, or retrofit ridge ties as prescribed in Section A104.5.2 are permitted to be used to support the horizontal brace.

**A104.5.1 Remedial measures where obstacles prevent installation of retrofit studs or horizontal braces.** If a retrofit stud or horizontal brace cannot be installed because of an obstruction, the entire assembly can be omitted from that location provided all of the following conditions are met.

1. No more than two assemblies of retrofit studs and horizontal braces are omitted on a single gable end.
2. There shall be at least two retrofit studs and horizontal brace assemblies on either side of the locations where the retrofit studs and horizontal bracing members are omitted (no two ladder braces bearing on a single retrofit stud).

3. The retrofit studs on each side of the omitted retrofit stud are increased to the next indicated member size in Table A104.2 and fastened as indicated in Section A104.3.1.
4. The horizontal bracing members on each side of the omitted brace shall be sized in accordance with Table A104.2 for the required retrofit studs at these locations.
5. The horizontal bracing members on each side of the omitted brace shall extend a minimum of three framing spaces from the gable end wall unless anchor blocks are installed in accordance with Exception 2 of Section A104.2.
6. Ladder bracing is provided across the location of the omitted retrofit studs as indicated in Figures A104.5.1.1 (trusses) and A104.5.1.2 (rafters).
7. Ladder bracing shall consist of a minimum 2x4 members oriented horizontally and spaced at 12-inches on center vertically. Ladder bracing shall be attached to each adjacent retrofit stud with a metal framing angle with a minimum lateral capacity of 175 lbs. Ladder bracing shall be attached to the existing stud at the location of the omitted retrofit stud with a metal hurricane tie with a minimum capacity of 175 lbs.
8. Where ladder bracing spans across a gable end vent, no attachment to the gable end vent framing shall be required.
9. Notching of the ladder bracing shall not be permitted.

**A104.5.2 Retrofit ridge ties.** When obstructions along the ridge of the roof obstruct the installation of a horizontal brace for one or more studs near the middle of the gable wall, retrofit ridge ties may be used to provide support for the required horizontal brace. Retrofit ridge tie members shall be installed a maximum of 12 inches below the existing ridge line. The retrofit ridge tie members shall be installed across a minimum of three bays to permit fastening of the horizontal brace. A minimum of a 2x4 member shall be used for each ridge tie and fastening shall consist of two 3-inch long wood screws, four 3-inch long 10d nails or two 3-1/2 inch long 16d nails driven through and clinched at each top chord or web member intersected by the ridge tie as illustrated in Figure A104.5.2.

**A104.5.3 Notching of retrofit studs.** Retrofit studs may be notched in one location along the height of the stud member provided that all of the following conditions are met.

1. The retrofit stud to be notched shall be sized such that the remaining depth of the member at the location of the notch (including cut lines) shall not be less than that required by Table A104.2.
2. The notched retrofit stud shall not be spliced within 12 inches of the location of the notch. The splicing member shall not be notched and shall be installed as indicated in Figure A104.3.
3. The length of the flat metal straps indicated in Table A104.2 shall be increased by the increased depth of the notched retrofit stud member to be installed.
4. The height of the notch shall not exceed 12 inches vertically as measured at the depth of the notch.

5. The notched retrofit stud member shall be fastened to the side of the existing gable end wall studs in accordance with Section A104.3.1. Two additional 3-inch fasteners (#8 wood screws or 10d nails) shall be installed on each side of the notch in addition to those required by Section A104.3.1.

**A104.6 Connection of gable end wall to wall below.** The bottom chords or bottom members of wood framed gable end walls shall be attached to the wall below using one of the methods prescribed in Sections A104.6.1 or A104.6.2. The particular method chosen shall correspond to the framing system and type of wall construction encountered. Due to access considerations, this retrofit needs to be carried out before any of the other gable end retrofit activities referenced in Sections A104.2, A104.3, A104.4 or A104.5.

**A104.6.1 Truss gable end wall.** The bottom chords of the gable end wall shall be attached to the wall below using right angle gusset brackets consisting of 14 gage or thicker material with a minimum load capacity of 350 lbs perpendicular to the plane of either face of the connector. The right angle gusset brackets shall be installed throughout the portion of the gable end where the gable end wall height is greater than 3 feet at the spacing specified in Table A104.6. A minimum of two of the fasteners specified by the manufacturer shall engage the body of the bottom chord. Connection to the wall below shall be by one of the methods listed below:

1. For a wood frame wall below, the two fasteners into the top of the wall below that are closest to the face of the gable end bottom chord shall be 4-1/2 inches long and of the same diameter and style specified by the bracket manufacturer. Other fasteners shall be consistent with the bracket manufacturer's specifications for size, style and length.
2. For a concrete or masonry wall below without a sill plate, the fasteners into the wall shall be consistent with the bracket manufacturer's specifications for fasteners installed in concrete or masonry.
3. For a concrete or masonry wall below with a 2x sill plate, the fasteners into the wall below shall be of the diameter and style specified by the bracket manufacturer for concrete or masonry connections; but, long enough to pass through the wood sill plate and provide the required embedment into the concrete or masonry below. Alternatively, the bracket can be anchored to the sill plate using fasteners consistent with the bracket manufacturer's specifications for wood connections provided, the sill plate is anchored to the wall on each side of the bracket by a 1/4-inch diameter masonry screw with a 2-1/2 inch embedment into the concrete or masonry wall. 1/4-inch washers shall be placed under the heads of the masonry screws.

**A104.6.2 Conventionally framed gable end wall.** Each stud in a conventionally framed gable end wall, throughout the length of the gable end wall where the wall height is greater than 3-feet, shall be attached to the bottom or sill plate using a stud to plate connector. The bottom or sill plate shall then be connected to the wall below using one of the methods listed below:

1. For a wood frame wall below, the sill or bottom plate shall be connected to the top plates below using 1/4-inch diameter screws 4-1/2 inches long. The fasteners shall be installed at the spacing indicated in Table A104.6.
2. For a concrete or masonry wall below, the sill or bottom plate shall be connected to the concrete or masonry wall below using 1/4-inch diameter concrete or masonry screws of sufficient length to provide a 2-1/2 inch embedment into the top of the concrete or masonry wall. The fasteners shall be installed at the spacing indicated in Table A104.6.

## APPENDIX N

### CARBON MONOXIDE PROTECTION

Following is the Rule language implementing the carbon monoxide provisions:

**9B-3.0472 Carbon Monoxide Protection.**

(1) Definitions: For purposes of this rule, the following definitions shall apply:

(a) CARBON MONOXIDE ALARM. A device for the purpose of detecting carbon monoxide, that produces a distinct audible alarm, and is listed or labeled with the appropriate standard, either ANSI/UL 2034 - 96, Standard for Single and Multiple Station CO Alarms, incorporated herein by reference, or UL 2075 - 04, Gas and Vapor Detector Sensor, incorporated herein by reference, in accordance with its application. Both documents may be obtained by writing to: Codes and Standards Section, Department of Community Affairs, 2555 Shumard Oak Boulevard, Tallahassee, Florida 32399-2100.

(b) FOSSIL FUEL. Coal, kerosene, oil, fuel gases, or other petroleum or hydrocarbon product that emits carbon monoxide as a by-product of combustion.

(2) Every building for which a permit for new construction is issued on or after 7/1/08 and having a fossil-fuel-burning heater or appliance, a fireplace, or an attached garage shall have an operational carbon monoxide alarm installed within 10 feet of each room used for sleeping purposes.

(3) In new construction, alarms shall receive their primary power from the building wiring when such wiring is served from the local power utility. Such alarms shall have battery back up.

(4) Combination smoke/carbon monoxide alarms shall be listed or labeled by a Nationally Recognized Testing Laboratory.