FLORIDA ENERGY CODE WORKGROUP

REPORT TO THE FLORIDA BUILDING COMMISSION

OCTOBER 14, 2009—MEETING VII

TAMPA, FLORIDA

FACILITATION, MEETING AND PROCESS DESIGN BY

FCRC CONSENSUS CENTER

REPORT BY JEFF A. BLAIR
FCRC CONSENSUS CENTER
FLORIDA STATE UNIVERSITY

jblair@fsu.edu
http:// consensus.fsu.edu

This document is available in alternate formats upon request to Department of Community Affairs, Codes & Standards, 2555 Shumard Oak Blvd., Tallahassee, FL 32399, (850) 487.1824.

FLORIDA BUILDING COMMISSION

FLORIDA ENERGY CODE WORKGROUP REPORT

OVERVIEW

Governor Crist directed the Commission to increase building energy efficiency requirements by 15% in his July 2007 Executive Order 127. In addition, the 2008 Legislature through passage of The Energy Act of 2008 created a suite of energy related assignments for the Building Commission. The Energy Code provisions were a major focus of the Commission during 2008, and the Commission increased the thermal efficiency requirements for the Florida Energy Code by 15% and integrated the enhanced requirements into the 2007 Florida Building Code. The Commission reviewed energy related code amendments adopted in the 2007 Florida Building Code Update to determine their cumulative level of increased efficiency, and adopted additional amendments required to achieve Governor Crist's directive of 15% increased efficiency. During 2008 the Energy Code was amended by administrative rule and then the revised Energy Code was adopted into the 2007 Florida Building Code during the 2008 "glitch" cycle concurrently with the March 1, 2009 effective date for the 2007 Florida Building Code. Working with stakeholders using consensus-building workgroups, the Commission was able to achieve the 15% increase in efficiency in buildings and implement code amendments that are efficient, consistent, understandable and enforceable for the full spectrum of Energy Code users. The Commission's Energy Code Workgroup will develop recommendations regarding energy conservation measures for increasing efficiency requirements in the 2010 FBC by 20% as required by law.

MEMBERS AND REPRESENTATION

Raul L. Rodriguez, AIA, Chair of the Florida Building Commission, made the following appointments to the Florida Energy Code Workgroup. Members are 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 Commission.

2010 Florida Energy Code Workgroup

Steve Bassett, Rusty Carroll, Bob Cochell, Phillip Fairey, Dale Greiner, Jeff Gross, Jeff Householder, Bill Kent, Tom Larson, Larry Maxwell, Donny Pittman, Paul Savage, Drew Smith, Jeff Stone, and Rob Vickers.

Meeting Schedule

February 3, 2009: Melbourne, March 5, 2009: Cape Canaveral, March 27, 2009: Tampa, April 30, 2009: Tallahassee, May 28, 2009: Tallahassee, September 3, 2009: Gainesville, October 14, 2009: Tampa; November 12, 2009: Gainesville; December 9, 2009: Orlando; February 3, 2010: Tampa.

REPORT OF THE OCTOBER 14, 2009 MEETING

Opening and Meeting Attendance
Steve Bassett (Mandy Parks alternate), Rusty Carroll, Bob Cochell, Phillip Fairey, Dale Greiner, Jeff Gross, Jeff Householder, Bill Kent (Dino Muggeo alternate), Tom Larson, Larry Maxwell, and Jeff Stone.

Members Absent:
Donny Pittman, Paul Savage, Drew Smith, and Rob Vickers.

DCA Staff Present
Rick Dixon, Mo Madani, Jim Richmond, and Ann Stanton.

FSEC Staff Present
Muthusamy Swami.

Meeting Facilitation
The meeting was facilitated by Jeff Blair from the FCRC Consensus Center at Florida State University. Information at: http://consensus.fsu.edu/

Project Webpage
Information on the project, including agenda packets, meeting reports, and related documents may be found in downloadable formats at the project webpage below:
http://consensus.fsu.edu/FBC/2010-Florida-Energy-Code.html

Agenda Review and Approval
The Workgroup voted unanimously, 10 - 0 in favor, to approve the agenda as presented including the following objectives:

- ✓ To Approve Regular Procedural Topics (Agenda and Summary Report)
- ✓ To Hear Presentation on IECC Requirements, DOE Proposals and Future Efficiency Increases
- ✓ To Hear Presentation on IECC Residential Compliance Method Modification to Allow Efficiency Tradeoffs and Maintenance of Equivalent Standards Between Compliance Methods
- ✓ To Hear Presentation on Analysis of Commercial Building Energy Efficiency Standard Increases
- ✓ To Evaluate Issues and Options Regarding Strategic Plan
- ✓ To Adopt Strategic Plan for Submittal to the Commission
- ✓ To Identify Issues and Options Regarding Project Tasks and Sub-Tasks
- ✓ To Discuss and Evaluate Level of Acceptability of Proposed Options
- ✓ To Consider Public Comment
- ✓ To Identify Needed Next Steps and Agenda Items for Next Meeting

September 3, 2009 Facilitator's Summary Report Approval
Jeff Blair, Commission Facilitator, asked if any members had corrections or additions to the September 3 2009 Report, and none were offered. The Workgroup voted unanimously, 10 - 0 in favor, to approve the September 3, 2009 Facilitator's Summary Report as presented.

Presentation on IECC Requirements, DOE Proposals for 2012 IECC, and Plan for Future IECC Efficiency Standard Increases

IECC Requirements
Darren Myer and Phil McMahon, ICC, provided the Workgroup with a PowerPoint presentation on IECC requirements and answered member's questions. Following the presentation there was an opportunity for questions and answers and a discussion. The public was included in the discussions and provided opportunities to comment.

PowerPoint Summary:
Code Council Perspective:
- Can IECC be modified to meet E.O. 127 energy targets?
- Do *Florida-isms* preclude use of software in public domain?
- Energy WG procedural topics, Schedule of EE increases
- Directives of Laws: FS553.73, FS553.9061and E.O. 127
- FSEC Reports:
    - FSEC-CR-1794-09 "Cost Effectiveness Tests" *Feb 27, 2009*
    - FSEC-CR-1806-09 "2009 IECC §405 v. FEC 2009 Sup" *Jun 15, 2009*
    - FSEC-CR-1807-09 "Integration of Foundation Code" *Jul 31, 2009*
- Qualitative comparison 2009 IECC v. 2007 FEC*(10/31/07)*

Putting the IECC in Context:
- "The national model energy code of choice" for U.S. cities, counties and states that adopt codes.
    - *Thirty-one (31) adopt IECC residential platforms; Three IRC*
    - *Thirty (30) adopt IECC commercial platforms*
- Continues to emphasize both prescriptive and performance-related provisions for both commercial and residential buildings.
- Performance criteria for residential and commercial energy efficiency using simulated energy analysis is also addressed.
- Cited throughout Federal law for national private and public housing initiatives.
- Basis for federal tax credits for energy efficient homes, standards for federal residential buildings and manufactured housing.
- Under federally insured EEM programs *(FHA and VA)* and the conventional mortgage market *(Fannie Mae Freddie Mac)*, properties meeting *IECC* help borrowers qualify for larger loans.

2009 IECC vs. 2006 IECC:
- Brings more energy efficiency gains than in history of *IECC*
- Gains set for *new and renovated IECC*-compliant homes:
    - *"From +12.2 to +14.7% or more, improvement over 2006 IECC"*
    - 2009 ICF study, commissioned by Energy Efficient Codes Coalition
- Yes, energy and cost savings will vary by climate zone
    - *"From +9.5% to +15.0% improvement over 2006 IECC"*

- Homes built to the 2009 *IECC* will consume less energy
- U.S. families living in 2009 *IECC* homes will save money
- A National Average of $235/ year

2009 Chapter 4: Residential Efficiency:
- *Significant Changes*
- 1.Improved window and skylight efficiency for Climate Zones 1-4;
- 2.Section 405 Equipment efficiency tradeoff eliminated
- 3.Improved basement/crawl wall insulation across all climate zones;
- 4.Building air tightness must be demonstrated through testing or rigorous inspection;
- 5.An air-barrier and insulation checklist is codified;
- 6.Wood fireplaces required to have gasketed doors and must draw combustion air from outside;
- 7.Programmable (set-back) thermostats required;
- 8.All duct systems outside of the building required to be tested for air tightness;
- 9.New criteria for duct system testing provided;
- 10.A minimum of 50% of lamps in permanent fixtures are to be high efficiency lamps;
- 11.Provisions for snow and ice-melt control added;
- 12.New energy conservation requirements for pools.

2009 Chapter 5: Commercial Efficiency:
- *Significant Changes*
- 1.Scoping choice – Meet either the commercial provisions of the IECC or Standard 90.1-2007;
- 2.Insulation/window tables now contain separate requirements for high-rise condo's and apartments;
- 3.Improved insulation efficiency Climate Zones 7 & 8;
- 4.Radiant heating required for unenclosed spaces;
- 5.Indicates when/where a Demand Control Ventilation strategy is required; and
- 6.Fan motor energy use and HP limitations improved.

DOE Nationwide Analysis Reports:
- The Building Energy Codes Program tasked by U.S. DOE to analyze potential energy savings if current state building energy codes were updated to…
- The *baseline codes* in the Recovery Act:
    - *2009 IECC*® for one- and two-family dwellings, townhomes, and low-rise residential buildings,
    - *ASHRAE/IESNA Standard 90.1-2007* for commercial and high-rise multifamily residential buildings, and
    - *2009 IECC*® as "Safe Harbor" to *Standard 90.1-2007* for commercial and high-rise multifamily residential buildings.
- Links to the residential and commercial analysis reports for individual states are available in the state status pages of the Status of State Energy Codes database.

Is 2009 "Safe Harbor" for 90.1-2007:
- At Energy Codes 2009, Portland in July, when asked whether DOE would issue guidance to the states, DOE's Jean Boulin responded by saying that while DOE would not offer a determination on the issue, it would accept determinations of the states, that conclude the 2009 IECC equivalent for purposes of compliance with the Recovery Act.

- The Code Council has posted a comparison providing an analysis which we believe provides adequate grounding for such a determination. http://www.iccsafe.org/news/energy/pdf/Comparison-IECC-ASHRAE.pdf
- As of this time, there is no official letter or other statement from DOE on the issue.
- We believe the reasons are largely political, rather than practical.
- We believe states using the IECC as their residential and commercial building code will not be challenged by DOE, and found compliant with the Recovery Act.
- We have so advised the Council's members and government relations field staff.

How readily can the IECC be modified to meet the Governor's energy targets:
- Very readily. Based on experience w/ other State agencies and authorities, the terms of engagement are negotiated. The State agency's preferences are a paramount consideration.

Can IECC be modified to meet E.O. 127 energy targets?
- Yes.

Do *Florida-isms* preclude use of software in public domain:
- More than likely, Yes.
- Based on experience w/ other State agencies they would likely preclude the implementation of training and certification programs in Florida developed to uniformly advance energy efficient building design and code compliance assessment practices.
- DOE will no longer develop state-specific REScheck™ or COMcheck™ versions. This means that states will have to assume the responsibility to develop their own, if they pass state-specific amendments that would weaken EE in a state-developed code
- Weakening amendments to 2009 IECC or Standard 90.1-2007 do not meet the requirements of the Recovery Act.
- DOE will not be able to fulfill Illinois' request to modify RES*check* to permit a reduction of envelope efficiency in trade for an increase in equipment efficiency. Currently, the efficiency of equipment being installed in new buildings is significantly more efficient than required by code in the Midwest. The large market penetration of more efficient equipment is such that such a tradeoff is no longer justified. Unfortunately, upgrading the appliance manufacturing standards under NAECA has taken longer than planned. The equipment manufacturing standards govern what can be required in code. As more stringent equipment standards in the code are preempted by NAECA, the IECC was revised to eliminate reduced envelope efficiency for equipment efficiencies that are already being regularly installed. The Department supported this change at the IECC hearings. Therefore, DOE cannot agree to revise REScheck to permit such a tradeoff.

DOE Proposals for 2012 IECC, and Plan for Future IECC Efficiency Standard Increases

Bob Lucas, DOE consultant, provided members with an overview of DOE proposals for 2012 IECC, and the plan for future IECC efficiency standard increases and answered member's questions. Following the presentation there was an opportunity for questions and answers and a discussion. The public was included in the discussions and provided opportunities to comment.

Summary of Report:
- There are 230 DOE proposals for the 2012 IECC code update process.
- Approximately 80 commercial and 145 residential proposals.
- Working toward a 30% increase in efficiency standard from the 2006 IECC.

- We are about 1/2 way there with achieving the 30% increase in efficiency standard target.
- Commercial proposals: whether to use ASHRAE 90.1 for commercial code.
- Residential code: 30% increase is the goal.
- Proposals include testing for air-tightness of building envelope, duct-leakage tighten-up with testing,
- water heater piping insulation requirement, and increasing insulation level requirements.
- The IECC can't control equipment efficiency requirements, they are set by federal standards.
- Proposal to require that 50% of lighting must be high efficiency.
- DOE has a large package proposal to achieve the proposed 30% increase in efficiency.
- There is also a NAHB energy efficiency proposal.
- Various code groups/alliances are also making proposals.

A document with proposed changes to the 2009 IECC may be reviewed at the project webpage, as follows: http://consensus.fsu.edu/FBC/2010-Florida-Energy-Code.html

Presentation on IECC Residential Energy Budget Compliance Method Modification to Allow Efficiency Tradeoffs for all Building Components and Maintenance of an Equivalent Energy Efficiency Standard for All Compliance Methods

Philip Fairey, FSEC Deputy Director, provided the Workgroup with an overview regarding efficiency tradeoffs, and answered member's questions. Following the presentation there was an opportunity for questions and answers and a discussion. The public was included in the discussions and provided opportunities to comment.

Overview:

- REScheck has no limitations on amount of glass.
- The IECC performance compliance method would have to be modified so that it would be equivalent to other compliance methods.
- UA calculation is simply a methodology where you multiply the area of a component by the thermal characteristics of that component to achieve an overall envelope U.
- The alternative to DOE modifying REScheck would be to modify Florida software to include a UA calculation that includes window limitations.

Summary of Questions and Discussion:

- Cochell: With new glass available, why limit glass?
- Fairey: As you allow the % glass to increase, you allow more heat gain into the building, even if glass is better. In the IECC, the performance method recognizes it by reducing the % glass from 18 to 15 percent. UA concentrates on envelope.

Presentation on Analysis of Commercial Building Energy Efficiency Standard Increases

Muthusamy Swami, Florida Solar Energy Center (FSEC), provided the Workgroup with a PowerPoint presentation titled: "Getting to 50 What Will It Take", and answered member's questions. Following the presentation there was an opportunity for questions and answers and a discussion. The public was included in the discussions and provided with opportunities to comment.

FSEC produced a report titled:
"Comparison of ASHRAE Standard 90.1-2004, ASHRAE Standard 90.1- 2007 and the 2008 Florida Energy Code (2009 Supplement)—FSEC-CR-1822-09"

Overview of FSEC-CR-1822-09:
Typical models for three building types including a strip mall, a small office and a medium sized office were simulated using the EnergyGauge® software. These models were built to three different baseline standards, the ASHRAE 90.1 2004, ASHRAE 90.1-2007 and the 2008 Florida Building code respectively.

Conclusion of FSEC-CR-1822-09:
The simulation runs comparing ASHRAE 90.1-2004 to ASHRAE 90.1-2007 and 2008 Florida Building code show that 90.1-2007 is anywhere from 4% to 8% more efficient than 90.1-2004. The 2008 Florida code is 15% better than ASHRAE 90.1-2004, since it is a requirement of the Florida Building Code. In effect, the current 2008 Florida Building Energy Code for commercial buildings is better than the ASHRAE 90.1-2007 baseline by a margin of 7% to 11% subject to building type and size.

PowerPoint Presentation Summary ("Getting to 50 What Will It Take?"):

Background:
- Currently 15% savings
- HB 7135 Florida Energy Code (FEC) requirements:
    - 20% savings by 2010
    - 30% savings by 2013
    - 40% savings by 2016
    - 50% savings by 2019
- All with respect to 2007 FEC
- Overarching question: How can we get to 50%?

Considerations:
- Legislative energy savings requirement must govern solutions
- Required cost-effectiveness rule making procedure is well underway and generally accepted
- ASHRAE 90.1 is the base. 2009 IECC process essentially similar to ASHRAE for commercial buildings.
- Bumping up against technology and cost effectiveness limits for enclosure features (R-Value, U-Factor, SHGC, etc.).

Focus of Analysis:
- Where do we currently stand on envelope feature (R-Value)?
- What are the technology limits for other energy features (window U-Value/SHGC)?
- How does climate location impact savings potential (Jacksonville versus Miami)?
- What will it ultimately take to reach 50%?

General Analysis Process:
- Obtained Building specifications from DOE Commercial Building Energy Benchmark database (Torcellini et al, 2008)
- Building specifications were as follows:

    - Small Office: 10,000 ft2, 1 zone, single storey, 50% WWR
    - Medium Office: 53,600 ft2, 15 zones, three storey, 48% WWR
    - Strip Mall: 22,500 ft2, 10 zones, single storey, 26% WWR
- Created FEC compliant building models for small office, medium office and strip mall
- Varied
    - Envelope parameters
    - Window parameters
    - HVAC system efficiencies
    - Lighting density
- For 3 locations (Miami, Orlando and Jacksonville)

Other Envelope Features:
- Commercial Buildings are generally internal- load dominated
- Envelope improvement impacts are limited
- Depends on climate & building type

Other Factors:
- Window-to-Wall Area (WWA) percentage lower than 50% (40% in 2007) does not get credit in ASHRAE standard 90.1
- Window-to-Wall Area (WWA) percentage greater than 50% (40% in 2007) is penalized in ASHRAE Standard 90.1
- How much can we improve?

% Savings from Envelope Best Practice:

	Small Office	Medium Office	Strip Mall
Jacksonville	17.8	6.4	18.7
Orlando	14.3	9.6	14.3
Miami	9.3	9.3	8.8

Getting to 50:
- Options thus far will not get us to 50%
- About the best we can do with "best practice" envelope features is 82 in Jacksonville (where insulation matters most)
- Must add impact of improved lighting and equipment efficiencies
- Note that improved lighting reduces both lighting energy use as well as cooling energy use

What it will take in Miami to get to 50% or beyond:

	Small Office	Medium Office	Strip Mall
Envelope	Best Envelope	Best Envelope	Best Envelope
Lighting	0.4 W/SF	0.4 W/SF	0.8 W/SF
Cooling	18 EER	18 EER	18 EER
Fan	0.5 W/CFM	0.5 W/CFM	0.5 W/CFM
Heating	0.98 Et	--	0.98 Et

What it will take in Jacksonville to get to 50% or beyond:

	Small Office	Medium Office	Strip Mall
Envelope	Best Envelope	Best Envelope	Best Envelope
Lighting	0.4 W/SF	0.3 W/SF	0.8 W/SF
Cooling	18 EER	18 EER	18 EER
Fan	0.5 W/CFM	0.5 W/CFM	0.5 W/CFM
Heating	0.98 Et	--	0.98 Et

What more will it take:

- Renewable Energy
    - PV
    - Solar
- Advanced Equipment
    - Energy Recovery
    - Variable Refrigerant Flow
    - Variable Frequency Drives

Additional Considerations:

- Cost effectiveness will depend on price and technology structures in the 2017-2018 time-frame
- Federal legislation (Waxman-Markey) likely to rapidly advance required federal model code efficiencies
    - 30% more savings than FEC 2007 by 2011
    - 50% more savings than FEC 2007 by 2017
    - 5% per year from 2020-2029

Responsible Energy Codes Alliance (RECA) Public Comment

Eric Lacey, Chair RECA, provided written comments that members received in advance of the meeting. Eric requested an opportunity to provide the Workgroup with an overview of RECA's comments and to answer any questions members may have. The Workgroup agreed to provide five minutes for Eric to give an overview of RECA's comments.

Overview of Comments:

RECA looked at relevant statutes and believes that F.S. 553.73 shows the Legislature's intent is to adopt the *IECC*'s overall structure and specific requirements, except in those cases where a provision of the Florida Energy Code (FEC) is more efficient than the *IECC* and/or amendments are necessary to accommodate the specific needs of the state. RECA's Letter states:

> The statute specifically requires the Commission to adopt the most recent version of the *IECC* as its "foundation code." In the limited cases in which the *IECC*'s requirements are demonstrated to be less efficient or where issues are not addressed by the *IECC*, the *IECC* shall be modified only to the extent necessary to "accommodate the specific needs" of the state. This statute establishes a presumption in favor of the provisions of the 2009 *IECC* and does not anticipate entire sections or compliance options from the FEC being substituted in place of the *IECC*'s requirements. The statute also does not anticipate modifications to the *IECC* for reasons other than efficiency, such as convenience or because another option might

appear to be more cost-effective.[1] The burden clearly rests on proponents of any change to demonstrate in each case that the proposed deviation from the *IECC* is required for energy efficiency and to accommodate the specific needs of the state.

RECA Provided comments on FSEC's Report titled: " *Preliminary Report on Integration of Florida's Code Energy Efficiencies using the 2009 IECC as the Foundation Code"*. Following are excerpted from the RECA Letter:
1.) FSEC's report recommends eliminating the UA trade -off path and replacing the entire *IECC* performance option with the performance compliance option from the FEC, including permitting only the software produced by FSEC without showing that these proposals would result in more energy efficiency and are necessary to accommodate the specific needs of the state.
2.) Equipment efficiencies are preempted by Federal Law, and equipment trade-offs within a building energy code reduce energy efficiency. The elimination of the equipment trade-off in the 2009 *IECC* closes a significant compliance loophole that has been used for many years to weaken building efficiency.
3.) The report's fenestration recommendations are based on considerations that conflict with energy efficiency. The report alleges that several problems arise from the fenestration requirements of the 2009 *IECC*, the reality is that these measures save energy. As such, the measures should not be removed from the *IECC* for the state of Florida.

RECA Conclusion Excerpted from Letter:
"Any analysis comparing the 2009 FEC to the 2009 *IECC* must begin with the foundation code, the 2009 *IECC*, as the baseline. We recommend that the Commission review each specific requirement of the 2009 *IECC* and the 2009 FEC in terms of energy efficiency, and amend the 2009 *IECC* only in cases where the FEC's requirements are clearly more energy efficient. Once this task is completed, the stakeholders should work together to develop further improvements so that the code meets the targets of Florida law."

Summary of Questions and Discussion:
- Richmond: Legal issue on pages 2 & 3 of RECA Letter regarding Statute: overlooks Part VI, which directs the adoption of Florida energy efficiency code. Issue is how to harmonize the different legislative directives. Not simple, only way to do it may be with two different codes. Should try to harmonize both under same cover, not one or the other.
- Gross: Are you saying that we need a little of both? There is no "A" or "B". Need to come up with a mixture of both.

Develop Strategic Plan for Energy Standards Revision (Task 46, Pursuant to 553.9061, F.S.)
Rick Dixon, FBC Executive Director, provided the Workgroup with an overview and DCA's proposal regarding a strategic plan for energy standard revisions pursuant to requirements of Section 553.9061, F.S. that require the strategic plan to implement scheduled increases in the Code's energy performance standard, to recognize certain energy performance options, and to consider the cost effectiveness of the scheduled increases. The complete text of s. 553.9061, F.S. is included as "Attachment 4" of this Report.

Rick noted that the goal of the Strategic Plan is to provide a strategy for achieving incremental increases in energy efficiency culminating with a 50% increase in efficiency relative to the 2007 FEC by 2019. The strategic plan should provide a strategy for achieving the increased efficiency

requirements required by law by providing the best combination of compliance methods to meet the ten (10) criteria for achieving the required efficiencies.
Following the presentation there was an opportunity for questions and answers and a discussion. The public was included in the discussions and provided opportunities to comment.
(Attachment 4—Background Documents)
(Attachment 5—Matrix of Characteristics)

Overview of Report:
- Differences between code compliance methods.
- Not as much savings available, given FL climate.
- Criteria on what strategic plan should achieve.
- Took #10 & put on top, determined by law.
- Other things required by law.
- Fundamental principles: if build building to any method should be equivalent.
- Percentage increases in efficiencies: harder to achieve.
- Need determination of cost effectiveness, to the consumer.
- Also, need net economic benefit.
- Need to select latest edition of model code, amend to include FL specific criteria.
- Point, don't step backward.
- More specific need, overrides general.
- Must take into account solar, cool roofs, etc..
- Additional criteria from law.
- Retains Florida efficiencies: shall adopt, modify & maintain.
- Direction to have two different codes, is not advised.
- Different set of criteria to be considered: envelope, equipment, service water heating, minimum R-19 ceiling.
- Set requirements for swimming pool pumps.
- Set requirements for portable electric spas.
- Different compliance methods will need to be evaluated.
- Industry advantages, try not to create by regulation any advantages for one industry over another.
- Identify other options that improve efficiency in Florida, propose to IECC.
- Two excerpts from Statute:
    - building code statute
    - 553.901 DCA shall prepare code, statewide energy efficiency code. FBC shall adopt the FBC and maintain it per Ch. 120.
    - Dept. shall triennially determine most cost effective components and refer to Commission.

DCA's Proposal:
- Commission select the IECC as foundation code per 553.73(6)(a), F.S.
- Modifications:
    - Use IECC prescriptive method, add maximum % glass.
    - Maintain the IECC UA approach, modify to reach 20% improvement reqd by FL law.
    - Use EG USA to determine annual energy usage per building, figure out what kinds of equipment would achieve it, given Fed. Limitations on equipment.
    - Performance method. Retain Florida's energy budget method, including equipment efficiencies.

(Attachment 4—Background Documents)

Summary of Questions and Discussion:

- Stone: Minimum wall requirements focus on wood frame, lots of CBS in Florida. How do we deal with different wall types.
- Dixon: Example of mass walls, studied impact by time of day. R-value for prescriptive package may differ.
- Householder: What would the structure of the code document look like?
- Dixon: Starts with IECC, amends to include Florida
- Carroll: What happens to designer who wants to use IECC software.
- Dixon: Heard testimony that DOE is no longer tweaking REScheck for states. Would have to find a way to include in program. Can include UA calculation.
- Householder: Will DOE software be available?
- Fairey: Calculation for UA can easily be incorporated in EG USA.
- Stone: Lots of turf protection. How do people that have a product know that their product is being treated fairly in the software.

Public Input:

- Stewart: Feasibility of software. Is the intent of the UA to be a different way of performing the calculation based on the same inputs.
- Fairey: UA only looks at envelope components, then software runs. Simply a different calculation.
- Stewart: Don't believe that there will be a user issue.
- Lacey: REScheck is on list. See as a red herring. Don't want to speak for DOE, but understand that if a state would allow a weakening of the standard, DOE would not revise REScheck to accommodate a weakening standard. If proposal is to adopt UA with window cap, could authorize use of software.
- Lucas: Can't speak for DOE, but see Lacey's comments as about right.
- Dixon: Can check with DOE, see if UA change to get to 20% would be more stringent.
- Lacey: Few more comments. Equipment tradeoffs: comments about whether it is a positive or negative aspect. Consider two homes, one with minimum equipment, other with higher efficiency equipment. FSEC report said that by the time furnace is replaced there will be more efficient equipment available. In 10-15 years, home A will still be more efficient because envelope is more efficient over its lifetime. Agree that achieving 50% more stringent requires equipment efficiency increase. Need to find ways to make today's homes more efficient. Last comment: 2009 IECC assumes glazing area of 15%, if less %, same used; above % compared to 15%. Designed so that even homes with less glazing will be as efficient, no tradeoffs. Bottom line: Starting with IECC, don't scrap performance path.
- Stone: Building officials have argued that Florida is unique because of humidity. Will it create problems elsewhere.
- Hebrink: Clarity issues. If adopting IECC as base code, if already 15 percent more stringent, why not just add another 5 percent to IECC.
- Dixon: Florida went to 15 percent. There is no better way to get to 15% than multiply baseline by .85. Florida 20% is relative to the 2007 FEC. So only need an additional 5% for the 2010 code update.
- Hebrink: Talking about glass criteria. Why adopt glass % limitation?
- Dixon: IECC would have to be modified to maintain Florida directive of 20% increase.

- Taylor: Looked at 2012 IECC proposals. Re: trying to achieve 50%, proposals used controls for measurement. When evaluating various systems, do you intend to include conditions as one of them, especially energy management systems and monitoring. Should be required for all new buildings.
- Dixon: Commissioning is the only way that buildings will ultimately perform as designed, but the code does not have a way to require this.
- Stewart: Keep going around about the window area issue. Prudent to look at study done by PNNL prior to 2004 that supported removal of glazing area from IECC.
- Ross: Adopting IECC as the base code is good idea. You can't get to 50% by just envelope. Importance of doing best case well shown by Swami's presentation. Importance of the building envelope is shown by DOE in their retrofit/rental program, looking at how we can reduce energy conservation in existing buildings. Should do the best we can on walls and windows, upgrades are limited on existing buildings. Be careful when doing something different when certifying to DOE. Increasing incentives for residential and commercial buildings aimed at measures; shouldn't have to use a different tool to certify to IRS for tax credits. Current ARRA dollars, stringent accountability factors. Have to demonstrate savings. Need new ideas.
- Fairey: Agree with 95% of what just said. However, its not true that software has to be DOE, same software can be used.
- Glenn: Needs to be a concerted effort, i.e. IECC 2009. Concern for reformatting a code people have used since 1979. Need to resolve current issues before looking at future editions.

Workgroup Discussion:
- Gross: Do the percentages apply to renovations?
- Dixon: Code only requires components being changed to be brought up to code. No specific percentage for renovations. What may be reasonable in one situation may not be reasonable for another.
- Glenn: Neither the Governor, the EO, or legislation address existing buildings.
- Carroll: % glass in performance not limited? No.
- Fairey: Both Florida Code and IECC have prescriptive and performance paths. In IECC performance pathway, 15% glass cap, if proposed home has 10 percent, IECC limits it.
- Greiner: Believe glass prescriptive should be to keep flexibility.
- Gross: Glass area, need at least 4 – 8 percent glazing in residential for egress.

Workgroup Action on Strategic Plan:
Following Rick's presentation, questions and answers, public comment and discussion, the Workgroup developed the following recommendation for submittal to the Energy TAC and Commission.

The Workgroup Recommends the Following Strategic Plan for Achieving the Required Energy Code Efficiency Increases Pursuant to 553.9061, F.S.:

- The Commission Select The IECC As Foundation Code For Florida Building Code, Energy Pursuant To S.553.73(6)(A), F.S.
- Commission Adopt The Florida Energy Efficiency Code For Building Construction (FEC) Within The Florida Building Code Pursuant To S.553.901, F.S. By --
- Modifying The IECC To Maintain The Efficiencies Of The FEC Adopted And Amended Pursuant To S.553.901, F.S. As Directed By S.553.73(6)(A), F.S.

Modifications To Include:

- Adding A Maximum Glass Percent Criteria To The Prescriptive Compliance Method To Maintain A Consistent Standard Of Energy Efficiency For All Compliance Methods. (Criteria 10, S.553.73(6)(A)), And S.553.901, F.S.).
- Modifying The Prescriptive Compliance Method's Component Efficiency Requirements To Meet The 20% Overall Efficiency Requirement Improvement Pursuant To S.553.9061(1), F.S., As Determined By Simulations Of Annual Energy Use By Energy Gauge USA Fla/Res. (Criteria 10 And S.553.73(6)(A)).
- Modifying The UA Compliance Method's Compliance Criteria To Meet The 20% Overall Efficiency Requirement Improvement Pursuant To S.553.9061(1), F.S., As Determined By Simulations Of Annual Energy Use By Energy Gauge USA Fla/Res. (Criteria 10 And S.553.73(6)(A)).
- Using The Energy Gauge USA Fla/Res Implementation Of The FEC Energy Budget Compliance Method For The Performance Compliance Method And Using 80 Points As The Compliance Criteria (S.553.73(6)(A), F.S., S.553.901, F.S., Criteria 4, 5, 6, 7, 8, 9, 10, 11 And 12).
- Modifying The IECC To Include All Other Energy Efficiency Requirements Adopted Pursuant To S.553.901, F.S. The "Thermal Efficiency Code".

Ranking Exercise Results for Strategic Plan Proposal:

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Ranking Results 10/14/09	**5**	**4**	**0**	**1**

The ranking exercise results indicate that that the Workgroup supported the strategic plan proposal by a vote of 9 - 1 in favor.

Comments and Reservations Following Ranking:

- Stone: This is too big a change to be foisted on at last second. If IECC also meets goal, why not use it? Too different from what previously proposed.
- Glenn: Having seen this for the first time, and with so many elements, reservations. Should have looked at the elements separately first. May have supported it fully if presented separately.
- Stewart: Asked previously for comparison between codes and what would be changed.
- Madani: We need an agreed upon approach in order to prepare a draft Code.

All of the Workgroup's adopted consensus recommendations are included as "Attachment 3" of this Report. *(Attachment 3—Workgroup's Consensus Recommendations)*

General Public Comment
Members of the public were invited to provide the Workgroup with comments. In addition, members of the public spoke on each of the substantive discussion issues before the Workgroup throughout the meeting.
None were provided.

Member's Comments and Issues
Workgroup members were invited to provide comments, or identify any issues or agenda items for the next meeting.
None were provided.

Review of Workgroup Delivery and Meeting Schedule
The Workgroup will be meeting as follows:
February 3, 2009: Melbourne, March 5, 2009: Cape Canaveral, March 27, 2009: Tampa, April 30, 2009: Tallahassee, May 28, 2009: Tallahassee, September 3, 2009: Gainesville, October 14, 2009: Tampa; November 12, 2009: Gainesville; December 9, 2009: Orlando; February 3, 2010: Tampa.

Following Workgroup meetings will focus on identifying and evaluating options regarding the additional project subtasks as follows: humidity and moisture control problems, specific building options to achieve energy efficiency improvements, and strategy to achieve statutory requirements for energy efficiency increases. Subsequent meetings will continue to focus on the project subtasks.

The delivery schedule is as follows:

Subtask 46: Strategic Plan for Energy Standards Revision Pursuant to Section 553.9061, F.S.

Schedule:

Workgroup appointed	12/9/08
Workgroup meetings	4/30/09
	5/28/09
	8/11/09
	9/3/09
	10/14/10
	11/12/09
Recommendations to Commission	12/09

Next Steps
Need to check with DOE to see if they would modify REScheck allow states to make their codes more stringent than the IECC.

Adjournment
The Workgroup voted unanimously, 10 – 0 in favor, to adjourn at ~ 4:00 PM.

ATTACHMENT 1

MEETING EVALUATION RESULTS

October 14, 2009—Tampa, Florida

Average rank using a 0 to *10* scale, where *0* means totally disagree and *10* means totally agree.

1. Please assess the overall meeting.

8.63 The background information was very useful.
7.57 The agenda packet was very useful.
9.38 The objectives for the meeting were stated at the outset.
9.38 Overall, the objectives of the meeting were fully achieved.

2. Do you agree that each of the following meeting objectives was achieved?

9.38 Presentation on IECC Requirements, DOE Proposals and Future Efficiency Increases.
8.75 Presentation on IECC Residential Compliance Method Modification to Allow Efficiency Tradeoffs.
9.13 Presentation on Analysis of Commercial Building Energy Efficiency Standard Increases.
9.00 Evaluation and Ranking of Issues and Options Regarding Strategic Plan.
8.50 Adoption of Strategic Plan for Submittal to the Commission.
8.57 Identification of Next Steps.

3. Please tell us how well the Facilitator helped the participants engage in the meeting.

9.75 The members followed the direction of the Facilitator.
9.88 The Facilitator made sure the concerns of all members were heard.
9.88 The Facilitator helped us arrange our time well.
9.57 Participant input was documented accurately.

4. Please tell us your level of satisfaction with the meeting?

8.38 Overall, I am very satisfied with the meeting.
9.88 I was very satisfied with the services provided by the Facilitator.
8.13 I am satisfied with the outcome of the meeting.

5. Please tell us how well the next steps were communicated?

8.13 I know what the next steps following this meeting will be.
8.13 I know who is responsible for the next steps.

6. What did you like best about the meeting?

- Presentations- outstanding job by Jeff and Staff for gathering presentations.
- Stayed on schedule and subject.
- Informal, but close to not well managed respecting participation.
- Discussions with ICC and DOE.

7. How could the meeting have been improved?

- Sound system needs improvement, with some type of work group speakers.
- Coffee needed. I propose we collect voluntary punts for refreshments.
- Information that is critical to decision packages need to be provided well in advance! I feel that I was blindsided by staff.

8. Member Evaluation Comments.

- Background information was incomplete, more in advance would be good.
- Couldn't see slides on evaluation and ranking of issues and options regarding strategic plan, too small.
- There was too much change in the agenda packet at the last minute.
- I think participant input was documented accurately.

Public Written Comments

None were provided.

ATTACHMENT 2
MEETING ATTENDANCE

Public Meeting Attendance	
NAME	**REPRESENTATION**
Dwight Wilkes	QiTEC LLC
Lorraine Ross	INTECH Consulting
Arlene Z. Stewart	AZS Consulting Inc.
Jack Glenn	FHBA
Roger Sanders	NOVA Engineering
Robert Lucas	PAC. Northwest National Lab
Darren Meyers	International Coast Council
Jim Heise	PGT
Maury Pinto	PGT
Dick Wilhelm	FMA/WDMA

ATTACHMENT 3

WORKGROUP'S CONSENSUS RECOMMENDATIONS

1.A. ENERGY EFFICIENCY COST-EFFECTIVENESS TESTS FOR RESIDENTIAL CODE CONSENSUS RECOMMENDATIONS

The Florida Legislature directed the Commission to develop a rule for determining cost effectiveness of energy conservation measures to be considered for inclusion in the Florida Energy Code. The rule must be completed and applied to the update of the energy provisions of the for the 2010 Florida Building Code.

"(3) The Florida Building Commission shall, prior to implementing the goals established in subsection (1), adopt by rule and implement a cost-effectiveness test for proposed increases in energy efficiency. The cost-effectiveness test shall measure cost-effectiveness and shall ensure that energy efficiency increases result in a positive net financial impact."

Energy Analysis Calculations Methodology

Energy analysis necessary to determine energy savings for Energy Conservation Measures (ECMs) be accomplished using Florida's code compliance software, EnergyGauge®.

Energy simulation analysis will be conducted for both single ECMs and packages of ECMs.

Economic Analysis Assumptions

Energy Conservation Measure (ECM) costs will be the full, installed incremental cost of improvements, where the incremental cost is equal to the difference between the baseline measure cost and the improved measure cost unencumbered by any federal tax credits, utility incentives or state rebates.

Energy Conservation Measure (ECM) costs will be the full, installed incremental cost of improvements, where the incremental cost is equal to the difference between the baseline measure cost and the improved measure cost unencumbered by any federal tax credits, utility incentives or state rebates, with option to consider encumbering utility incentives, etc. later, if possible.

Study Life Period

The analysis for residential buildings shall be conducted over a 30 year study period.

ECM Service Life

The evaluation shall be conducted using the appropriate service lives of the measures.

Home Mortgage Parameter Values

Mortgage interest rate: the greater of the most recent 5-year average and 10-year average simple interest rate for fixed-

rate, 30-year mortgages computed from the Primary Mortgage Market Survey (PMMS) as reported by Freddie Mac.

Mortgage down payment: 10%.

Annual Rate Parameter Values

General inflation rate: the greater of the most recent 5-year and 10-year Annual Compound Interest Rate (ACIR) computed from the annual average Consumer Price Index (CPI) as reported by the U.S. Bureau of Labor Statistics.

Discount rate: General inflation rate plus 2%.

Fuel escalation rate: the greater of 5-year and 10-year ACIR computed from revenue-based prices as reported by Florida Public Service Commission minus the general inflation rate.

The baseline electricity and natural gas prices used in the analysis shall be the statewide, revenue-based average residential price for the most recent available 12 months as provided by the Florida Public Service Commission.

Cost Effectiveness Criteria

For present value cost-to-benefit ratio (PVCB) a value of 1.0 or greater.

For the internal rate of return (IRR) on investments, a value equal to 8%. {The recommended value is approximately 1.5% greater than the guaranteed return on State of Florida DROPS (retirement account) investments and is considered large enough that any rational investor would consider the investment wise compared with any other long-term investment.}

*For the levelized cost of conserved energy (LCCE), a value equal to the statewide residential revenue-based retail cost of electricity adjusted at the fuel escalation rate over one-half of the life of the measure (yields average over the measure life). {This is based on the fact that, over their life, accepted measures will cost consumers the same or less than purchasing electricity from the utility, where: LCCE criteria = (current price) * [(1+fuelEsc) ^ (life/2)].}*

Evaluation Methodology for Measures and Packages of Measures

Create multiple packages of ECMs that result in the target % efficiency increase for each code cycle update (20, 30, 40 and 50%), based on comparison to the 2007 FBC as adopted October 31, 2007 (without the 2009 supplement).

Evaluate each ECM using adopted cost effectiveness indicators (PVBC, IRR, LCCE), within their specific package of ECMs. PVBC will be considered the primary measure with IRR and LCEE used as measures for illustration and communication of individual ECMs and packages of ECMs comparative economic viability.

Validation of the cost effectiveness of Florida Energy Efficiency Code for Building Construction changes shall mean that a number of ECM packages evaluated to comply with the statutory percent energy efficiency increase requirements have a greater benefit than cost as measured in present value dollars.

1.B. ENERGY EFFICIENCY COST-EFFECTIVENESS TESTS FOR COMMERCIAL CODE CONSENSUS RECOMMENDATIONS

Energy Analysis Calculations Methodology

Energy analysis necessary to determine energy savings for Energy Conservation Measures (ECMs) will be accomplished using Florida's code compliance software, EnergyGauge®.

Energy simulation analysis will be conducted for both single ECMs and packages of ECMs.

Economic Analysis Assumptions

Energy Conservation Measure (ECM) costs will be the full, installed incremental cost of improvements, where the incremental cost is equal to the difference between the baseline measure cost and the improved measure cost unencumbered by any federal tax credits, utility incentives or state rebates.

Energy Conservation Measure (ECM) costs will be the full, installed incremental cost of improvements, where the incremental cost is equal to the difference between the baseline measure cost and the improved measure cost unencumbered by any federal tax credits, utility incentives or state rebates, with option to consider encumbering utility incentives, etc. later, if possible.

Study Life Period

The analysis for commercial buildings shall be conducted over a 30 year study period with appropriate service lives included in the analysis.

ECM Service Life

The evaluation shall be conducted using the appropriate service lives of the measures.

Mortgage Parameter Values

Mortgage interest rate: the greater of the most recent 5-year average and 10-year average simple interest rate for fixed-rate, 30-year mortgages computed from the Primary Mortgage Market Survey (PMMS) as reported by Freddie Mac, rate plus 2%.

Mortgage down payment: 20%.

Annual Rate Parameter Values

General inflation rate: the greater of the most recent 5-year and 10-year Annual Compound Interest Rate (ACIR) computed from the annual average Consumer Price Index (CPI) as reported by the U.S. Bureau of Labor Statistics.
Discount rate: General inflation rate plus 2%.

Fuel escalation rate: the greater of 5-year and 10-year ACIR computed from revenue-based prices as reported by Florida Public Service Commission minus the general inflation rate.

The baseline electricity and natural gas prices used in the analysis be the statewide, revenue-based average commercial price for the most recent available 12 months as provided by the Florida Public Service Commission.

Cost Effectiveness Criteria

For present value cost-to-benefit ratio (PVCB) a value of 1.0 or greater.

For the internal rate of return (IRR) on investments, a value equal to 7%.

*For the levelized cost of conserved energy (LCCE), a value equal to the statewide commercial revenue-based retail cost of electricity adjusted at the fuel escalation rate over one-half of the life of the measure (yields average over the measure life). {This is based on the fact that, over their life, accepted measures will cost consumers the same or less than purchasing electricity from the utility, where: LCCE criteria = (current price) * [(1+fuelEsc) ^ (life/2)].}*

Evaluation Methodology for Measures and Packages of Measures

Create multiple packages of ECMs that result in the target % efficiency increase for each code cycle update (20, 30, 40 and 50%), based on comparison to the 2007 FBC as adopted October 31, 2007 (without the 2009 supplement).

Evaluate each ECM using adopted cost effectiveness indicators (PVBC, IRR, LCCE), within their specific package of ECMs. PVBC will be considered the primary measure with IRR and LCEE used as measures for illustration and communication of individual ECMs and packages of ECMs comparative economic viability.

Validation of the cost effectiveness of Florida Energy Efficiency Code for Building Construction changes shall mean that a number of ECM packages evaluated to comply with the statutory percent energy efficiency increase requirements have a greater benefit than cost as measured in present value dollars.

1.C. DEFINITION OF "CONSUMER" (APPLIES TO BOTH RESIDENTIAL AND COMMERCIAL)

Consumer: A class of economic system participant that makes no distinction between the owner of the building and the utility rate payer.

All of the above recommendations have been adopted by the Commission.

3. ENERGY CONSERVATION MEASURES FOR REPLACEMENT OF AIR CONDITIONING EQUIPMENT RECOMMENDATIONS

Consensus Recommendations:

Sizing of Replacement Air Conditioning Systems:

The A/C contractor or licensed Florida PE shall submit a nationally recognized method based sizing calculation at time of permit application for total replacement of the condensing / evaporator components of HVAC systems 65,000 Btu/h and less.

Exception: Buildings designed in accordance with Section 105.3.1.2 of the Florida Building Code, Building.

Testing of air distribution systems when air conditioning systems are replaced:

At the time of the total replacement of HVAC evaporators & condensing units, under 65,000 Btu/h, all accessible (a minimum of 30 inches clearance) joints and seams in the air distribution system shall be sealed using reinforced mastic or code approved equivalent and shall include a signed certification by the contractor that is attached to the air handler unit stipulating that this work had been accomplished.

Exception:

1. Ducts in conditioned space.

2. Joints or seams that are already sealed with fabric and mastic.

3. If system is tested and repaired as necessary.

2. DEVELOP A STRATEGIC PLAN FOR INCREASED EFFICIENCY REQUIREMENTS REQUIRED BY LAW FOR FUTURE FBC EDITIONS

Consensus Recommendations:

Strategic Plan Criteria

1. The Strategic Plan must implement s.553.9061(1), F.S., scheduled increases in the Code's energy performance standard.
2. The Strategic plan must consider cost effectiveness of the incremental changes in efficiency required by the Code.
3. The Strategic Plan must implement s.553.73(6)(a), F.S., selection of the IECC as a foundation code and its modification to maintain the efficiencies of the Florida Energy Efficiency Code for Building Construction, s.553.901, F.S..
4. The Strategic Plan must implement s.553.9061(2), F.S., requiring the Code to recognize including energy efficiency performance options and elements including but not limited to: Solar water heating; Energy efficient appliances; Energy efficient windows, doors and skylights; Low solar absorption roofs/cool roofs; Enhanced ceiling and wall insulation; Reduced leak duct systems; Programmable thermostats; and Energy efficient lighting systems.
5. The Strategic Plan should identify compliance methods with the best potential for complying with the schedule for increasing efficiency standards.
6. The Strategic Plan should be adaptable for all potential mandated efficiency performance standard increase schedule.
7. The Strategic Plan should allow flexibility for builders to choose different ways to adapt their construction.
8. The Strategic Plan should provide flexibility appropriate to product innovation.
9. The Strategic Plan should provide for easy measurement and demonstration of compliance with the energy efficiency increases required by s.553.9061, F.S..
10. The Strategic Plan should require that compliance meets an equivalent energy standard regardless of the compliance method.

Strategic Plan Consensus Recommendation

Commission Select The IECC As Foundation Code For Florida Building Code, Energy Pursuant To S.553.73(6)(A), F.S.

Commission Adopt The Florida Energy Efficiency Code For Building Construction (FEC) Within The Florida Building Code Pursuant To S.553.901, F.S. By --

Modifying The IECC To Maintain The Efficiencies Of The FEC Adopted And Amended Pursuant To S.553.901, F.S. As Directed By S.553.73(6)(A), F.S.

Modifications To Include:

- Adding A Maximum Glass Percent Criteria To The Prescriptive Compliance Method To Maintain A Consistent Standard Of Energy Efficiency For All Compliance Methods. (Criteria 10, S.553.73(6)(A)), And S.553.901, F.S.)

- Modifying The Prescriptive Compliance Method's Component Efficiency Requirements To Meet The 20% Overall Efficiency Requirement Improvement Pursuant To S.553.9061(1), F.S., As Determined By Simulations Of Annual Energy Use By Energy Gauge USA Fla/Res. (Criteria 10 And S.553.73(6)(A))

- Modifying The UA Compliance Method's Compliance Criteria To Meet The 20% Overall Efficiency Requirement Improvement Pursuant To S.553.9061(1), F.S., As Determined By Simulations Of Annual Energy Use By Energy Gauge USA Fla/Res. (Criteria 10 And S.553.73(6)(A))

- Using The Energy Gauge USA Fla/Res Implementation Of The FEC Energy Budget Compliance Method For The Performance Compliance Method And Using 80 Points As The Compliance Criteria (S.553.73(6)(A), F.S., S.553.901, F.S., Criteria 4, 5, 6, 7, 8, 9, 10, 11 And 12)

Modifying The IECC To Include All Other Energy Efficiency Requirements Adopted Pursuant To S.553.901, F.S. The "Thermal Efficiency Code".

ATTACHMENT 4

BACKGROUND DOCUMENTS

Five Criteria Result From Law

10. The Strategic Plan must require that compliance meets an equivalent energy standard regardless of the compliance method. (s.553.73(6)(a), F.S.)

1. The Strategic Plan must implement s.553.9061(1), F.S., scheduled increases in the Code's energy performance standard.

2. The Strategic plan must consider cost effectiveness of the incremental changes in efficiency required by the Code. (s.553.9061(3), F.S.)

3. The Strategic Plan must implement s.553.73(6)(a), F.S., selection of the IECC as a foundation code and its modification to maintain the efficiencies of the Florida Energy Efficiency Code for Building Construction, s.553.901, F.S..

4. The Strategic Plan must implement s.553.9061(2), F.S., requiring the Code to recognize including energy efficiency performance options and elements including but not limited to:

a. Solar water heating;
b. Energy efficient appliances;
c. Efficient windows, doors and skylights;
d. Low solar absorption roofs/cool roofs;
e. Enhanced ceiling and wall insulation;
f. Reduced leak duct systems;
g. Programmable thermostats;
h. Energy efficient lighting systems.

Additional Criteria From Law

11. The IECC shall be modified to maintain the efficiencies of the Florida Energy Code adopted and amended pursuant to 553.901. (s.553.73 (6)(a), F.S.)

12. The Florida Building Commission shall adopt the Florida Energy Efficiency Code for Building Construction within the Florida Building Code and shall modify, update and maintain the code to implement the provisions of this thermal efficiency code. (s.553.901, F.S.)

13. Thermal efficiency standards for new residential buildings shall take into account at a minimum: (s.553.905, F.S.)
a. Exterior envelope physical characteristics
b. HVAC system selection and configuration
c. HVAC equipment performance
d. Service water heating selection and equipment performance
e. Ceiling insulation minimum R19 space permitting

14. The Florida Energy Code shall set minimum requirements for commercial and residential swimming pool pumps, swimming pool water heaters and water heaters to heat potable water (s.553.909 (1), (3), (4), F.S.)

15. The code includes a potable electric spa standby power requirement established in law. (s.553.909 (50, F.S.)

s.553.73(6)(a), F.S.
"…The commission shall select the most current version of the International Energy Conservation Code (IECC) as a foundation code; however, the IECC shall be modified by the commission to maintain the efficiencies of the Florida Energy Efficiency Code for Building Construction adopted and amended pursuant to s.553.901."

s.553.901, F.S.
"Purpose of thermal efficiency code.--
The Department of Community Affairs shall prepare a thermal efficiency code to provide for a statewide uniform standard for energy efficiency in the thermal design and operation of all buildings statewide, consistent with energy conservation goals, and to best provide for public safety, health, and general welfare. The Florida Building Commission shall adopt the Florida Energy Efficiency Code for Building Construction within the Florida Building Code, and shall modify, revise, update, and maintain the code to implement the provisions of this thermal efficiency code and amendments thereto, in accordance with the procedures of chapter 120. The department shall, at least triennially, determine the most cost-effective energy-saving equipment and techniques available and report its determinations to the commission, which shall update the code to incorporate such equipment and techniques. .."

553.9061 Scheduled increases in thermal efficiency standards.--

(1) The purpose of this section is to establish a schedule of increases in the energy performance of buildings subject to the Florida Energy Efficiency Code for Building Construction. The Florida Building Commission shall:

(a) Include the necessary provisions by the 2010 edition of the Florida Energy Efficiency Code for Building Construction to increase the energy performance of new buildings by at least 20 percent as compared to the energy efficiency provisions of the 2007 Florida Building Code adopted October 31, 2007.

(b) Increase energy efficiency requirements by the 2013 edition of the Florida Energy Efficiency Code for Building Construction by at least 30 percent as compared to the energy efficiency provisions of the 2007 Florida Building Code adopted October 31, 2007.

(c) Increase energy efficiency requirements by the 2016 edition of the Florida Energy Efficiency Code for Building Construction by at least 40 percent as compared to the energy efficiency provisions of the 2007 Florida Building Code adopted October 31, 2007.

(d) Increase energy efficiency requirements by the 2019 edition of the Florida Energy Efficiency Code for Building Construction by at least 50 percent as compared to the energy efficiency provisions of the 2007 Florida Building Code adopted October 31, 2007.

(2) The Florida Building Commission shall identify within code support and compliance documentation the specific building options and elements available to meet the energy performance goals established in subsection (1). Energy efficiency performance options and elements include, but are not limited to:

(a) Solar water heating.

(b) Energy-efficient appliances.

(c) Energy-efficient windows, doors, and skylights.

(d) Low solar-absorption roofs, also known as "cool roofs."

(e) Enhanced ceiling and wall insulation.

(f) Reduced-leak duct systems.

(g) Programmable thermostats.

(h) Energy-efficient lighting systems.

(3) The Florida Building Commission shall, prior to implementing the goals established in subsection (1), adopt by rule and implement a cost-effectiveness test for proposed increases in energy efficiency. The cost-effectiveness test shall measure cost-effectiveness and shall ensure that energy efficiency increases result in a positive net financial impact.

ATTACHMENT 5

MATRIX OF CHARACTERISTICS—IECC/FEECBC

(a) MATRIX OF CONCEPTUAL CHARACTERISTICS OF THE IECC AND THE FLORIDA ENERGY CODE RESIDENTIAL ≤ 3 STORIES

	IECC 09				FEECBC '09 Supplement		
Characteristic	Prescriptive	Component Performance	Performance		Prescriptive		Performance
				'09		'09*	
Building Envelope							
Credit for reduced glass area?	**no**	**no**		**no**		**no**	**yes**
Penalty for increasing glass area?	**no**	**partial**		**yes**		**yes**	**yes**
Restricts glass area?	**no**	**partial**		**no**		**yes**	**no**
Credit for potential wall insulation levels?	**no**	**partial**		**yes**		**no**	**yes**
Credit for potential ceiling insulation levels?	**no**	**partial**		**yes**		**no**	**yes**
Credit for potential floor insulation level?	**no**	**partial**		**yes**		**no**	**yes**
Credit for air infiltration testing	**yes**	**partial**		**yes**		**no**	**yes**
Mechanical Systems							
Credit for air conditioner efficiency?	**no**	**no**		**no**		**no**	**yes**
Credit for heating system efficiency?	**no**	**no**		**no**		**no**	**yes**
Credit for alternative water heating?	**no**	**no**		**no**		**no**	**yes**
Credit for tested ducts?	**yes**	**no**		**yes**		**yes**	**yes**
Penalty for untested ducts?	**yes**	**yes**		**yes**		**no**	**possible**
Lighting Systems							
Considers alternative lighting?	**yes**	**yes**		**no**		**no**	**no**
General							
Credit for solar, passive systems?	**no**	**no**		**yes**		**no**	**yes**
Equivalent	**no**	**no**		**no**		**yes**	**yes**

	IECC 09				FEECBC '09 Supplement		
Characteristic	Prescriptive	Component Performance	Performance		Prescriptive		Performance
				'09		'09*	
stringency prescriptive vs. performance?							
Equivalent stringency for different fuel types?	**yes**	**yes**		**no**		**yes**	**yes**

***Criteria are somewhat different for renovations, equipment change-outs and small additions.**

COMMERCIAL and RESIDENTIAL > 3 STORIES

	IECC '09			FEECBC '09 Supplement	
CHARACTERISTIC	Prescriptive IECC ASHRAE 90.1 5.5	Bldg Envelope Tradeoff ASHRAE 90.1 5.6	Performance IECC 506 / ASHRAE 90.1 Chapter 11	Prescriptive**	Performance ASHRAE 90.1 Chapter 11
Building Envelope					
Credit for reduced glass area?	**No**	**No**	**No**	---	**No**
Penalty for increase glass area?	**No**	**Yes**	**Yes**	---	**Yes**
Restricts glass area?	**Yes**	**No**	**No**	---	**No**
Credit for potential wall insulation levels?	**No**	**Yes**	**Yes**	---	**Yes**
Credit for potential ceiling insulation levels?	**No**	**Yes**	**Yes**	---	**Yes**
Credit for potential floor insulation level?	**No**	**Yes**	**Yes**	---	**Yes**
Credit for air infiltration testing?	**No**	**No**	**No**		**No**
Mechanical Systems					
Credit for air conditioner efficiency?	**No**	**No**	**Yes**	---	**Yes**
Credit for heating system efficiency?	**No**	**No**	**Yes**	---	**Yes**
Credit for alternative water heating?	**No**	**No**	**No**	---	**No**
Credit for tested ducts?	**No**	**No**	**No**	---	**No**
Penalty for untested ducts?	**No**	**No**	**No**	---	**No**

Lighting Systems					
Credit for alternative lighting?	**No**	**No**	**Yes**	---	**Yes**
General					
Credit for solar, passive systems?	**No**	**No**	**No**	---	**No**
Equivalent stringency prescriptive vs. performance?	**No**	**Yes**	**No**	---	**No**
Equivalent stringency for different fuel types?	**Yes**	**No**	**Yes**	---	**Yes**

****There are prescriptive criteria for shell buildings at first permit, renovations, equipment and lighting change-outs, and changes of occupancy type**