FLORIDA ENERGY CODE WORKGROUP

REPORT TO THE FLORIDA BUILDING COMMISSION

March 27, 2009

Tampa, Florida

Facilitation, Meeting and Process Design By

FCRC CONSENSUS SOLUTIONS

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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, has 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 consensus package(s) of recommendations for submittal to the Commission.

2010 Florida Energy Code Workgroup

Steve Bassett, Rusty Carrol, Bob Cochell, Phillip Fairey, Dale Greiner, Jeff Gross, Jeff Householder, 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.

REPORT OF THE MARCH 27, 2009 MEETING

Opening and Meeting Attendance
The meeting started at 9:00 AM, and the following Workgroup members were present:
Steve Bassett, Tom Larson (for Rusty Carroll), Phillip Fairey, Jeff Householder, Donny Pittman, Paul Savage, and Jeff Stone.

Members Absent:
Bob Cochell, Dale Greiner, Jeff Gross, Larry Maxwell, Drew Smith, and Rob Vickers.

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

FSEC Staff Present
Sherri Shields and Nick Waters.

Meeting Facilitation
The meeting was facilitated by Jeff Blair from the Florida Conflict Resolution Consortium 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, 7 - 0 in favor, to approve the agenda as presented including the following objectives:

- ✓ To Approve Regular Procedural Topics (Agenda and Summary Report)
- ✓ To Identify Issues and Options Regarding Development of Cost Effectiveness Test for Commercial Buildings/Code
- ✓ To Review Draft Recommendations Regarding Cost Effectiveness Test for Residential Buildings/Code
- ✓ To Adopt Cost Effectiveness Test Recommendations for Submittal to 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

March 5, 2009 Facilitator's Summary Report Approval
Jeff Blair, Commission Facilitator, asked if any members had corrections or revisions to the March 5, 2009 Report, and none were offered.
The Workgroup voted unanimously, 7 - 0 in favor, to approve the March 5, 2009 Facilitator's Summary Report as presented.

Identification of Issues and Options Regarding Cost Effectiveness Test Recommendations for Commercial Buildings/Code

Workgroup members were asked to identify key topical issues that should be evaluated for developing cost effectiveness test requirements and criteria regarding commercial buildings recommendations for the Florida Building Code. Jeff Blair explained that the Options Evaluation Worksheet contained the key issues extracted from the FSEC Report to create a starter list, and member's should identify other key issues for evaluation, if any. Members of the public were also provide an opportunity to comment and offer key issues for evaluation. The Workgroup did not offer additional issues from those outlined in the Worksheet, and agreed that the key issues for evaluation regarding developing recommendations to the Commission for a cost effectiveness test (residential and commercial), were as outlined in the Worksheet. In addition, members were requested to identify, discuss and evaluate a range of options regarding development of cost effectiveness test recommendations regarding commercial buildings for submittal to the Commission. For each of the key topical issue areas, members were asked to identify a range of potential options for the Workgroup to consider. Issues and Options were organized to address the tasks assigned by the Florida Building Commission and the Florida Legislature. A preliminary list of options was compiled in the Worksheet and the Workgroup was requested to discuss and add any additional relevant options they deem appropriate. Options with 75% or greater number of 4's and 3's in proportion to 2's and 1's shall be considered consensus draft recommendations. Members of the public were also invited to provide feedback and options for evaluation.

The Results of the Options Ranking Exercise and relevant comments and discussion are included as Attachment 3 of this Report.

(Attachment 3—Options Evaluation Exercise Results)

Review and Discussion of Draft Recommendations Regarding Cost Effectiveness Test For Residential Buildings/Code

Members were asked to review the options evaluated during the March 5, 2009 meeting regarding cost effectiveness test requirements and criteria regarding residential buildings recommendations for the Florida Building Code, and to determine whether to add new options and/or to re-evaluate any of the options.

Overview of Comments and Discussion:

No additional issues were identified.

Discussion and Adoption of Cost Effectiveness Test Recommendations for Submittal to the Florida Building Commission

Members were asked to formally adopt the package of recommendations, all options that achieved a 75% or greater number of 4's and 3's in proportion to 2's and 1's. Following additional discussion and public comment the Workgroup took the following action as follows.

Workgroup Action:

Motion—The Workgroup voted unanimously, 7 - 0 in favor, to recommend the package of consensus recommendations regarding cost effectiveness test requirements and criteria regarding residential and commercial buildings for the Florida Building Code, as follows:

1. OPTIONS FOR ENERGY EFFICIENCY COST-EFFECTIVENESS TESTS FOR RESIDENTIAL CODE

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.

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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.

2. OPTIONS FOR ENERGY EFFICIENCY COST-EFFECTIVENESS TESTS FOR COMMERCIAL CODE

Energy Analysis Calculations Methodology

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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: tied to a relevant and appropriate commercial lending vehicle.

Mortgage down payment: based on appropriate commercial lending vehicle(s).

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%.

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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.

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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.

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 and issues of agenda items for the next meeting.
None were provided.

Key to Commenters in Report:
Steve Bassett: SB
Phillip Fairey: PF
Jeff Householder: JH
Donny Pittman: DP
Paul Savage: PS
Jeff Stone: JS

Rick Dixon: RD
Mo Madani: MM
Arlene Stewart: AS
Tom Larson: TL
Kent Walling: KW
Ann Stanton: AS2

Review of Workgroup Delivery and Meeting Schedule
The Workgroup will be meeting as follows during 2009:
February 3, 2009: Melbourne; March 5, 2009: Cape Canaveral; March 27, 2009: Tampa;
April 30, 2009: Tallahassee and May 28, 2009: Tallahassee.

The April 30, 2009 meeting will focus on identifying and evaluating options regarding the additional project subtasks as follows: replacement of air conditioning equipment, humidity and moisture control problems, energy efficient pool pumps, green and energy efficient roofs and specific building options to achieve energy efficiency improvements. Subsequent meetings will focus on the subtasks. The delivery schedule is as follows:

Schedule for Sub-Task 27—Cost Effectiveness Test

Appoint Workgroup	12/9/08
Work Group/TAC meetings to develop recommendation	2/09, 3/09
Rule Development Workshop	4/09
Rule Adoption Hearing	6/09
Rule Effective	7/09

Schedule for Other Sub-Tasks (26, 29, 39, 42, and 45)

Workgroup/TAC considers options and develops consensus plan	3/09, 4/09, 5/09, 6/09, 8/09
Recommendations to Commission	10/09
Proposals submitted for 2010 FBC Update	12/09

ATTACHMENT 1

MEETING EVALUATION RESULTS

March 27, 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.

8.8 The background information was very useful.
9.0 The agenda packet was very useful.
9.2 The objectives for the meeting were stated at the outset.
9.0 Overall, the objectives of the meeting were fully achieved.

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

9.2 Evaluation of Options Regarding Development of Cost Effectiveness Test (commercial).
9.3 Adoption of Cost Effectiveness Test Recommendations for Submittal to Commission.
9.0 Identification and Evaluation of Options Regarding Project Tasks and Sub-Tasks.
9.0 Identification of Next Steps.

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

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

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

9.0 Overall, I am very satisfied with the meeting.
9.4 I was very satisfied with the services provided by the Facilitator.
9.4 I am satisfied with the outcome of the meeting.

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

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

6. What did you like best about the meeting?

- Open dialog, especially with public (manageable since small turnout).
- Facilitator.

7. How could the meeting have been improved?

- More official participants being present.

8. Member Evaluation Comments.

None were provided.

Public Written Comments

I have a different recollection of AC workshop. I remember that R&D said they had technology to remove humidity, that it wasn't an issue. Florida contractors indicated it was a cost issue. 30 cents traditional vs. $30 for moisture control equipment. Home builders were unwilling to purchase equipment. I have had that experience with no way to legally combat improperly oversized because code language allows the next size closest to load. What if selected model is only produced in 1 ton increments? But manufacturer offers a different model that does the job. Is there any way to require the closest unit?

IECC address many of the non-energy level questions that are raised. We should adopt the timeline to address IECC aspects that aren't independent on the cost-effectiveness test

Cost Effectiveness Criteria
Should the group change it's mind on the 30 year period, a more appropriate PVCB for bridging envelope measure should be developed and adopted to reflect the nature of building envelope and structural requirements.

On IRR
Investors will not be required to implement longer payback measures. The marketplace will determine desirable components to investors because of the nature of performance codes.

Economic Analysis Assumptions
Where is commercial refinance parameters included in Chapter 13 – What is the criteria?

ECM Life Values
Longer time periods should be considered because building envelope measures are long-term measures. Will not be able to upgrade buildings as much as possible because of structural requirements. We do a disservice to the public and future occupants by short-changing the building envelope.

ATTACHMENT 2
MEETING ATTENDANCE

Public Meeting Attendance
Name
Arlene Stewart
Amanda Hickman
Tom Larson
Kent Walling
Mike Biddle

ATTACHMENT 3

OPTIONS EVALUATION EXERCISE RESULTS

OPTIONS FOR ENERGY EFFICIENCY COST-EFFECTIVENESS TESTS FOR COMMERCIAL CODE

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®.

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**5**	**2**	**0**	**0**

Member's Comments and Reservations (March 27, 2009):

JG: Minor reservation. Haven't seen software. It is official software of state.
PS: Minor reservation. Purpose is to bring issues listed in FL statute forward (solar, ee windows). Also, develop methodology for cost effectiveness. Question to Counsel: does statute give enough room for agency to take this course of action (e.g. relying on EG software)?
JR: Yes. Law is more expansive that list of issues, enhancement of energy efficiency, statute is not even a mandatory list.
PF: 8 items listed in law. Code currently considers 6 of items already. Only appliances & lighting not covered.
JS: Is it like ComChek?
PF: No. Software creates a reference building and simulates both a proposed and reference building analysis, much more detailed than ComChek.
AS: What type of appliances? How is it defined? Different parameters for code than consumer choices.
PF: Has statute. Does not define appliances.
SB: Commercial is different than residential. Appliances are included as building construction: include upfront Energy Star appliances.
MM: Keep with items at hand.

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

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**6**	**1**	**0**	**0**

Member's Comments and Reservations (March 27, 2009):

PS: How would this apply to single and packages of ECMs?
PF: Let's look at the cost effectiveness report. Table 3. Single measures won't make 20% by themselves. Code only looks at heating, cooling & hot water, so Code impact is less than with entire spectrum. As long as there are a number of options that will get you to the cost effective goal, objective is met.
JH: Interpretation of statute? How else would you do it?
PF: Statute directs Commission to develop methodology.

Economic Analysis Assumptions

Energy Conservation Measure (ECM) costs 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.

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**6**	**1**	**0**	**0**

Member's Comments and Reservations (March 27, 2009):

AS: Want clarification on how baseline is developed in ASHRAE 90.1. Where in energy code is baseline adopted.
PF: Baseline in ASHRAE 90.1 is determined in Chapter 11 of the standard. Has rule set, determines what the standard building looks like.
AS: Baselines not always included in code. IECC '09 adds commercial reference standard. Best of knowledge, old Form 400C was F/C baseline.
KW: BOMA. Education process. Involved in financial issues, including new energy efficiency items. Have looked at ways FL code went re: inputting Governor's directive.
For investors: 1)Private investor – 3-7 years
2) Institutional investor
3) Long term holders & governmental entities. Long term.
Factors: Purchase of land, build out, capital cost
Financial constraints. Respectfully request BOAM be involved, work together for good of all, including hotel industry.
JS: Only looking at planning side. What are actual results.
RD: Stimulus bill provided that some of the money can be used for training and measuring effectiveness of code. May 12 submittal for funding. Need a benchmark. Did one 14 years ago, FSEC evaluated effectiveness of residential energy code.
SB: Realty group has given funding to compare LEED buildings to non-LEED buildings, may be of benefit.
JS: Prefer second option.

Energy Conservation Measure (ECM) costs 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.

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**7**	**0**	**0**	**0**

Member's Comments and Reservations (March 27, 2009):

None were offered.

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.

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**7**	**0**	**0**	**0**

Member's Comments and Reservations (March 27, 2009):

KW: Would prefer real numbers. Average debt is 3 - 10 years. What doe appropriate vehicle mean? Mortgage down payment varies from 5 – 50% down.
AS: Should consider life of building. Certain option might not get adequate consideration if not.
RD: Consider consistency with economic analyses of other regulations. Feds, economic analyses. NOPR for efficiency standards, has analysis. ASHRAE has analysis standards.
SB: Previous 2 points emphasize issue: can't compare light bulbs with 30 year life. Needs to be service life of the measure, not life of loan.
PF: 30 year is big picture, service life is piece of big picture. E.g. lighting measures, include other measures. Say do all options within 30 year period, replacement cost, maintenance over 30 year horizon.
SB: Suggest combine measurement options.
TL: Include study period, not length of mortgage.
JS: Simply establishing a baseline for analysis tools.
SB: Rebuilds need to be taken into account.
KW: Investor will not consider a 30 a year period. Should be a shorter period.
PF: Statute requires that Commission study cost effectiveness over a given period of time. Replacement features need to be inflated at general inflation rate.
SB: Need long period, not short.
RD: Be consistent with other federal & ASHRAE analyses.
JH: Titled wrong. Life cycle costs. Separate issues, PSC does. Study should be separated from service life of ECMs. Establishing parameters by rule. Identify study period. Specify criteria.
PF: Analysis needs to be done over time, include service lives. End result same.
TL: Different options have different study life.
PF: Building may last for 100 years. If don't make study life long enough, lose benefit.

ECM Service Life

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

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**7**	**0**	**0**	**0**

Member's Comments and Reservations (March 27, 2009):

Mortgage Parameter Values

Mortgage interest rate: tied to a relevant and appropriate commercial lending vehicle.

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**7**	**0**	**0**	**0**

Member's Comments and Reservations (March 27, 2009):

JS: Agree with first statement. How is it going to be done?
PF: Don't know. Much easier for residential. Need to find source for commercial. Period of financing likely different. Freddy Mac keeps records for interest rates.
JS: Suggest BOMA submit something for guidance.
KW: Quite different. Will look into records for interest rates. Different occupancies different.
JH: Is there any reason why you wouldn't use the ASHRAE interest rate? McBride, Scalar ratios. Calculated for different interest rates.
PF: Use at specific time period. Need to provide methodology for time period where at.

Mortgage down payment: appropriate commercial lending vehicle

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**7**	**0**	**0**	**0**

Member's Comments and Reservations (March 27, 2009):

PF: Source? No. May be little high for commercial property.
TL: Find standard reference.
KW: Will research.

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.

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**7**	**0**	**0**	**0**

Member's Comments and Reservations (March 27, 2009):

JB: Taking one vote for all 4 issues.

Discount rate: General inflation rate plus 2%.

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**7**	**0**	**0**	**0**

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.

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**7**	**0**	**0**	**0**

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.

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**7**	**0**	**0**	**0**

Cost Effectiveness Criteria

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

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**5**	**2**	**0**	**0**

Member's Comments and Reservations (March 27, 2009):

AS: If choose to use shorter time line, do it in such a way as to not shortchange options.
KW: Understand 30 year study period, may need to analyze cost effectiveness over shorter period of time. 8% may need to be changed.
SB: Commercial, won't find anybody who will agree with 30 year payback. Payback needs to be less, investor won't go with it.
RD: We are setting a regulation, not telling an investor how to spend their money. Setting minimum standard affects society.
SB: Groundswell significant, controversy, won't get it passed. Listen to commercial industry. Service life, building envelope. Need to be reasonable.
PF: This item says the same thing as ASHRAE 90.1, FL uses it.
TL: There is an implicit value of a building, regardless of age of building.
JS: 30 year is unrealistic for commercial investment. Don't have information required.
PF: Unanimous agreement that study period should be 30 years.
JS: Problem is that the investment may not be cost effective within 30 years.
AS: Execution of code does not impact investor. Not telling investor to incorporate measure.
SB: See it as unrealistic to require, if it does not pay back in a shorter period.
PF: Need to be careful to not require options be in code. Coming up with a tool to consider options.
JS: Can we come up with industry to demonstrate payback. Would like info to be available.
PF: Numbers will be available.
JH: No package would include ECMs with 1.0 or greater? And a replacement based on service life?
PF: Yes, and original cost escalated at General Inflation Rate.
PS: Not mandating anything. Confused at cost effectiveness test vs. overall savings? Example new technology. Apply cost effectiveness test, meets test, proceed to include in code?
RD: Under law, DCA proposes options. If option has 1.0 or better benefit cost ratio, it is one way to get to % savings required. Collision, what if economic analysis is conducted and we can't get to, say, 50%. Which prevails.
PS: When will test be applied?
PF: Have, in past, allowed any technology to be considered in code. If decide 20% is criteria, ok. Ask 3 contractors for job on house, will get very divergent costs. High performance windows used to be much more expensive because not in the supply chain. Code allows people to establish their own criteria to choose options.

PS: How will test apply in 4 years? Thought as threshold measure for what gets into code.
RD: Want to use it as tool to determine if people can cost effectively achieve a certain % savings. If now, should not, per law, set level that low.
PF: Sole purpose of this task is to determine where the cost effectiveness vs. % savings collide.
JH: Many measures in code are not cost effective; should not be set. Methodology is at issue.
SB: Only prescriptive packages have specific requirements.
MM: Even in performance base, have certain code minimum requirements, like equipment efficiencies, roof insulation.
TL: Cost effectiveness method is to establish that there is one or more attainable paths.
AS: Have we considered how many packages have to be found to establish a given % savings?

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.}

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**7**	**0**	**0**	**0**

*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)].}*

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**7**	**0**	**0**	**0**

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 (without the 2009 supplement).

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**7**	**0**	**0**	**0**

Member's Comments and Reservations (March 27, 2009):
AS: How many is multiple?
SB: More than one.
PS: Who creates multiple packages.
RD: DCA recommends to Commission.

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.

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**7**			

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.

	4=acceptable	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Initial Ranking 3/27/09	**7**	**0**	**0**	**0**

2.5 Clarify Definition of "Consumer" (applies to both Residential and Commercial)

Define "Consumer" as a Class of the economic system participant (e.g. consumer, producer, regulator) similar to energy regulation system consideration.

The Workgroup recommends that the Energy TAC develop a definition for "Consumer" for inclusion in recommendations to the Commission.

Member's General Discussion

RD: Point is to use BOMA's comment. Some consumers are more sophisticated than others. When looking at commercial, so many different options & levels of interest are at issue. The point is to clarify in the rule what the term "consumer" means so its not open to challenges in the future.
PF: Do you mean, who is paying the fuel bill?
RD: Yes.
TL: PSC uses the term customer, rate payer.
AS: We're all paying for the power plant together. If commercial customers peaking, impacts equation.
RD: Is the consumer a person or a group of people?
JS: Are there different classes of consumer?
RD: Just looking for one definition.
JS: 1) Building owner, 2) building leasor.
RD: It would be the person paying the bill.
JS: Include the lease and the utility.
SB: Where is "consumer" used?
RD: Statute says to establish cost effective to the consumer.
PF: Problem is split incentives.
RD: Someone pays the bill. If owner goes with bad design, large peaks, utility establishes time of day rates, leasor will have to pay the bill. If consumer is everybody, then can support a higher standard of efficiency.
SB: Difficult to establish cost (owner) vs. tenant (payer of bills). Can't see how to define consumer.
RD: By defining consumer as everybody, can set an efficiency standard. If has to be original owner, will never get there.
PS: Statute says cost effectiveness test shall result in a net positive financial impact.
RD: Implication is "to the consumer".
JR: We have the authority to set the definition in the rule.
TL: Are we talking about the ratepayer for a building? Community at large? High level of generality to get a society, total resource cost?
PF: This analysis excludes externalities.

JS: Should not be voting on this at this time.
JB: May want to defer to the Energy TAC.
JH: Do different building types have different budgets?
PF: No consumer as much as occupant. Analysis has been done based on who is paying the energy bill.
JH: Also have cost of capital.
PF: Looking at class of building, not type.
RD/JB: The recommendations go to the Energy TAC and then to the Commission.
JB: Ask for vote to take recommendations from meeting to the Energy TAC and Commission. Unanimous in favor.

The following topics were not evaluated by the Workgroup, but were discussed in a general sense to ensure understanding for the next meeting.

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

Issues

- *Sizing of replacement air conditioning systems.*
- *Testing of air distribution systems when air conditioning systems are replaced.*

Member's General Discussion

PF: Could get leaky supply side ducts out of attics & improve moisture control. Many commercial buildings also have duct leakage problems.
SB: DX units can't do as much dehumidification, especially if put in attic with higher temperatures. Closing off the attic decreases humidity in house. Same thing in commercial buildings. Oversized units can be fixed easier than undersized. Duct supply to return, gets colder, removes humidity.
PS: Proper sizing and duct testing do same thing to begin with.
RD: Code requires commercial building buildings to avoid unsealed cavity issues.
AS: Can this be attained by education and market transformation.
TL: Difference between builder & replacement buyer.
JS: Economizers used more outside Florida.
PF: Many places in FL dew point temperature is above 80, 80 % humidity.
PS: Quality of installation is not good, duct leakage. Competing with unscrupulous contractors. Important to look at quality installation.
DP: From a codes standpoint, "quality" is judgmental. Codes only look at meeting minimum standard. Biggest thing is education. Years ago, spent a lot of time training. Both contractors and inspectors side. Important that energy code requirements also be in mechanical code. Inspection on S.F. house, new unit, don't know if it is running properly. Can tell quality, can't enforce.
SB: Design professional not better than the installer. Code change requires all design professionals sign/seal energy calculation. Electrical inspectors didn't want to review energy code provisions.
PS: Quality installation, PowerPoint: sizing & duct testing.
MM: Energy code requires sizing and duct sealing. IECC is only for new construction

4. OPTIONS FOR ADDRESSING HUMIDITY AND MOISTURE CONTROL PROBLEMS FOR HOT AND HUMID CLIMATES

Issues

- *Minimum efficiency equipment can result in problems with indoor humidity control for situations where AC equipment is oversized and sensible heat loads are diminished by advanced ECMs relative to latent loads contributed by outdoor moisture infiltration/diffusion and indoor moisture generation.*
- *Energy conservation achieved by sensible load reduction measures must be balanced with equipment requirements for improved moisture removal and latent loading control measures.*
- *High efficiency variable speed and variable capacity AC systems provide load matching capability and increase moisture removal effectiveness.*
- *Building envelope tightening to limit outdoor moisture infiltration/diffusion typically reduce air exchange resulting in building performance characteristics that may lead to required forced air ventilation of homes.*
- *Forced ventilation of homes will require preconditioning of ventilation air to remove moisture to achieve indoor humidity control.*

Member's General Discussion

RD: Explanation of previous circumstances. Increase in equipment efficiency, moisture problems in tunnel from construction. Example, FL code has requirements for air return, eliminating pressure differentials between rooms, driver of infiltration of hot humid air. ASHRAE 62 committee: focuses on chemical off-gassing from furniture, etc; requires dilution. Hard to achieve without enthalpy tools, etc. Energy Code was targeted as resulting in indoor air quality problems. Need to keep indoor air quality in mind. A/C contractors feel that not much more can be done about source of moisture in buildings. E.g. eliminating passages through ceiling. Relationship between latent load and sensible load: reduce temperature on coil, increase surface area of coil. R&D for three major manufacturers of central air source equipment have indicated potential for lack of control of moisture. Venting of attics creates pumping effect, pressure differentials. Solution appears to be A/C systems that match capacity of load, vary speed of air over cooling coil, can improve moisture capability of systems. Reheat system are even better, can go farther. FL code gives credit for A/C. A/C contractors typically go to higher efficiency equipment. Point is not so much a solution, have to consider how the system works with the envelope, how incentivise to avoid indoor air quality period.
PF: Could get leaky supply side ducts out of attics & improve moisture control. Many commercial buildings also have duct leakage problems.
SB: DX units can't do as much dehumidification, especially if put in attic with higher temperatures. Closing off the attic decreases humidity in house. Same thing in commercial buildings. Oversized units can be fixed easier than undersized. Duct supply to return, gets colder, removes humidity.
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inspectors side. Important that energy code requirements also be in mechanical code. Inspection on S.F. house, new unit, don't know if it is running properly. Can tell quality, can't enforce.
SB: Design professional not better than the installer. Code change requires all design professionals sign/seal energy calculation. Electrical inspectors didn't want to review energy code provisions.
PF: Is there any mechanism to look at best practices. Some standard.
RD: Option of using BERS as tool.
PF: Is it possible to allow alternate ratings to be deemed to comply?
RD: Would require change to law.
MM: There are performance codes, alternate materials & methods. Need incentives.
PS: Quality installation, PowerPoint: sizing & duct testing.
MM: Energy code requires sizing and duct sealing. IECC is only for new construction.
JS: Would like to see credit for daylighting. Lighting is a significant user of power. Site lighting on a commercial property can use significant amounts of energy.
AS: IECC has provisions for above code programs, training. Lot of resources nationally. Section numbers.

5. OPTIONS FOR DESIGN CRITERIA FOR ENERGY EFFICIENT POOLS

The Energy Act of 2008 (HB 7135) directs adoption of pool pump efficiencies in the 2010 FBC. During discussions with the Florida Spa and Pool Association regarding energy efficiency requirements for pool pumps members suggested improved efficiency could be achieved through criteria for pool hydronic system design.

This task will be evaluated by a Pool Efficiency Subcommittee to the Florida Energy Code Workgroup.

Issues

- *Pool pump standards.*
- *Pool plumbing system design.*
- *Performance and prescriptive compliance paths for pools.*
- *Credits for alternative energy sources for pool heating, lighting and pumping.*

6. OPTIONS FOR ENERGY CONSERVATION MEASURES REGARDING DEVELOPING A PLAN FOR 20% INCREASED EFFICIENCY REQUIREMENT FOR 2010 FBC—IDENTIFY SPECIFIC BUILDING OPTIONS TO ACHIEVE THE ENERGY EFFICIENCY IMPROVEMENTS

The Legislature established a schedule for increases in building energy efficiency requirements. This task expands the study of energy conservation measures for residential buildings to investigation of efficiency options for commercial buildings and the development of a plan to implement the requirements of the new law. Section 553.9061 "Scheduled increases in thermal efficiency standards." was created to establish percent increases in efficiency to be implemented in the 2010, 2013, 2016 and 2019 Code. With the adoption of the Glitch Amendments to the 2007 Edition of the Florida Building Code and the revisions to Rule 9B-13 Thermal Efficiency Standards, the Commission implemented a strategy for increasing the energy efficiency provisions of the Code by 15%. The Commission's Energy Code Workgroup and Energy TAC are working with stakeholder to evaluate options for achieving an additional 5% increase for the 2010 Edition of the Code, and for achieving the progressive increases in efficiency required for subsequent editions of the code.

Energy act of 2008 (HB 7135) directs the Commission to include, as a minimum, certain technologies for achieving enhanced building efficiency targets established by the Act in the Florida Energy Code. The Building Code act of 2008 (HB 697) directs the Commission to facilitate and promote the use of certain renewable energy technologies.

Issues

- *Review the adequacy of the current Code's accounting for the list of technologies recognized in statute.*
- *Identify technologies not yet in Code and prioritize for adding capability to consider.*
- *Conduct a cost/benefit analysis for ECMs using the new economic test rule for the 2010 Edition of the Code.*

7. Evaluate Requirements for Green Roofs Recognition in Florida Building Code

This task will be evaluated by a Subcommittee to the Florida Energy Code Workgroup.