# FLORIDA ENERGY CODE WORKGROUP

## REPORT TO THE FLORIDA BUILDING COMMISSION

**April 30, 2009**

*Tallahassee, 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 Carroll, Bob Cochell, Phillip Fairey, Dale Greiner, Jeff Gross, Jeff Householder, Tom Larson, Bill Kent, 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 APRIL 30, 2009 MEETING

**Opening and Meeting Attendance**
The meeting started at 9:00 AM, and the following Workgroup members were present:
Steve Bassett, Rusty Carroll, Bob Cochell, Phillip Fairey, Dale Greiner, Jeff Gross, Tom Larson, Bill Kent, Donny Pittman, Paul Savage, Drew Smith, and Jeff Stone, and Rob Vickers.

Members Absent:
Jeff Householder and Larry Maxwell.

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

**FSEC Staff Present**
None.

**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, 12 - 0 in favor, to approve the agenda as presented including the following objectives:

- ✓ To Approve Regular Procedural Topics (Agenda and Summary Report)
- ✓ To Discuss Remaining Cost Effectiveness Test Recommendations for Commercial Buildings
- ✓ To Discuss and Develop Recommendation Regarding Definition of "Consumer"
- ✓ To Discuss and Develop Recommendation Regarding AC Equipment Replacement
- ✓ To Discuss Energy Efficiency Standards and Planning for Compliance with Statutory Requirements for Building Efficiency Increases
- ✓ 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 27, 2009 Facilitator's Summary Report Approval**
Jeff Blair, Commission Facilitator, asked if any members had corrections or revisions to the March 27, 2009 Report, and none were offered.
The Workgroup voted unanimously, 12 - 0 in favor, to approve the March 27, 2009 Facilitator's Summary Report as presented.

**Discuss and Develop Recommendations Regarding Definition of "Consumer"**
The Workgroup voted at the March meeting to send this issue to the Energy TAC for discussion. At the April meeting, the Commission decided that DCA would provide recommendations to the Workgroup for their evaluation. DCA's recommendation for a definition of Consumer was as follows: *Define "Consumer" as a Class of the economic system participant (e.g. consumer, producer, regulator) similar to energy regulation system consideration.*

The Workgroup discussed the issue and following questions and answers, public comment, and Workgroup discussion, decided as follows:

*Workgroup Action:*

**Motion—**The Workgroup voted, 12 - 1 in favor, to define "Consumer" as:
*"A class of the economic system participant that makes no distinction between the owner of the building and the utility rate payer."*

**Complete Cost Effectiveness Test Recommendations for Commercial Buildings**
The Workgroup developed consensus recommendations for cost effectiveness test for commercial buildings with the understanding that BOMA would provide specific input on mortgage interest rate, mortgage down payment, and internal rate of return. The Commission adopted the Workgroup's recommendations and tasked the Workgroup with completing the tasks below as follows:

Mortgage Parameter Values:
*Mortgage interest rate: tied to a relevant and appropriate commercial lending vehicle.*
DCA will work with BOMA to develop recommendations for rule adoption hearing.

*Mortgage down payment: based on appropriate commercial lending vehicle(s).*
DCA will work with BOMA to develop recommendations for rule adoption hearing.

*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.}*
DCA will work with BOMA to develop recommendations for rule adoption hearing.

The Workgroup discussed the issue and following questions and answers, public comment, and Workgroup discussion, decided as follows:

*Workgroup Action:*

**Motion—**The Workgroup voted unanimously, 12 - 0 in favor, to recommend a Commercial Mortgage interest rate as follows: *"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%."*

**Motion—**The Workgroup voted unanimously, 13 - 0 in favor, to recommend a Commercial Mortgage down payment as follows: "*Mortgage down payment: 20%."*

**Motion—**The Workgroup voted unanimously, 13 - 0 in favor, to recommend a Commercial Internal Rate of Return as follows: *"For the internal rate of return (IRR) on investments, a value equal to 8%."*

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)*

**Discuss and Develop Recommendations for Air Conditioning Equipment Replacement**

Members were asked to identify and evaluate a range of options regarding recommendations for energy conservation measures for air conditioning replacement. Following discussions, questions and answers, and public comment, the Workgroup took the following action:

*Workgroup Action:*

**Motion—**The Workgroup voted, 11 - 1 in favor*, to recommend as follows: *" The A/C contractor 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 Btuh and less."*

* Paul Savage did not vote on the recommendation.

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)*

**Discuss Energy Efficiency Standards and Planning for Compliance with Statutory Requirements for Building Efficiency Increases**

Members were asked to identify issues and options regarding energy efficiency standards and planning for compliance with statutory requirements for building efficiency increases.

*Following is the Legislative assignment:*

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.*

Rick Dixon, provided members with an overview of a plan for developing a strategy for achieving the statutory requirements for building efficiency increases as follows:

**GOAL**
Implement the energy efficiency standards increases established by s. 553.9061, F.S.

**OBJECTIVE**
Develop long range strategic plan for how to comply with statutory schedule of efficiency increases.

**TASKS**

1. Evaluate how to provide for future flexibility to implement efficiency increases for the broadest range of housing prices.
2. Compare characteristics of FEECBC to IECC for flexibility to achieve higher efficiency standards.
3. Develop strategic plan for FBC energy standards compliance methods.
4 Integrate FEECBC and IECC to implement the strategic plan for the 2010 FBC.

**Task/Analysis:**

**Task 1:**
- Identify compliance methods used in current national model and Florida energy codes.
- Identify compliance method characteristics that provide for future flexibility of efficiency increases.

**Task 2:**
- Create a matrix of IECC and FEECBC characteristics.
- Evaluate for flexibility to implement future efficiency increases.

**Task 3:**
- Select compliance method characteristics that provide the maximum potential to implement the 553.9061 mandated efficiency increases to form the strategic plan.

**Task 4:**
- Develop a draft of the energy standards chapters for the 2010 FBC.

**Task Schedule:**
Step 1: April 30 and May 29, 2009
Step 2: April 30 – May 29, 2009

Step 3: May 29, 21009
Step 4: June – August (proposals for 2010 FBC mods by October 2009)

**Step 1:**
(a) Types of Compliance Methods
(b) Characteristics of Compliance Methods:

**Compliance Method Types**

**IECC**
Prescriptive
Component Performance
Performance

**FEECBC**
Prescriptive
Performance

**ASHRAE 90.1**

Members identified the following key issues for evaluation:

- *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.*
- *Consider whether certifications of compliance with "above code programs" should be recognized in lieu of Code documentation and inspection.*
- *Evaluate FEECBC/IECC integration for 2010 FBC.*

For each issue members will be asked to identify and evaluate a range of options. For each issue an opportunity was provided for question and answers, public comment, and Workgroup discussion.

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)*

**Discussion, Identification and Evaluation in Turn of Issues and Options Regarding Project Tasks and Sub-Tasks—**Humidity and moisture control problems; Energy efficient pools systems; Specific building options to achieve energy efficiency improvements, and; Green roofs and cool roofs.

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.
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**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 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 May 28, 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, 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:

*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 |

**Adjournment**

The Workgroup voted unanimously, 13 – 0 in favor, to adjourn at 2:30 PM.

# ATTACHMENT 1

# MEETING EVALUATION RESULTS

**April 30, 2009—Tallahassee, 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.**

8.67 The background information was very useful.
8.78 The agenda packet was very useful.
9.00 The objectives for the meeting were stated at the outset.
9.00 Overall, the objectives of the meeting were fully achieved.

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

8.78 Identification of Issues and Options Regarding Project Subtasks.
8.67 Evaluation of Options Regarding Project Tasks and Sub-Tasks.
8.88 Identification of Next Steps.

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

8.67 The members followed the direction of the Facilitator.
9.67 The Facilitator made sure the concerns of all members were heard.
9.33 The Facilitator helped us arrange our time well.
9.44 Participant input was documented accurately.

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

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

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

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

**6. What did you like best about the meeting?**

- Facilitator.
- Location and room.

**7. How could the meeting have been improved?**

- Call for votes earlier, many comments redundant.

**8. Member Evaluation Comments.**
*None were provided.*

**Public Written Comments**

- The nationally recognized equipment sizing calculation should be in included in the reference section. If its proprietary manufacturers software, there needs to be direction on what those calculator programs should include so there is a similar end performance**.** Arlene Stewart – AZS Consulting

# ATTACHMENT 2
# MEETING ATTENDANCE

| Public Meeting Attendance | |
|---|---|
| **NAME** | **REPRESENTATION** |
| Kenneth Locke | City of Tallahassee/BOAF |
| Larry Nelson | FPL |
| Jen Hatfield | FSPA |
| Don Massey | Trane |
| Dick Wilhelm | FMA/WDMA |
| Arlene Stewart | AZS Consulting |
| Jack Glenn | FHBA |

# ATTACHMENT 3

# OPTIONS EVALUATION EXERCISE RESULTS

## ACCEPTABILITY RANKING EXERCISE

This list of options is a preliminary list and is not meant to be an exhaustive list. All of the options regarding cost effectiveness test were extracted the FSEC Report: "Energy Efficiency Cost-Effectiveness Tests for Residential Code Update Process", and the balance were proposed by members during meetings. During the meeting(s) members are asked to propose any additional option(s) they would like the Workgroup to evaluate, and to develop and rank options, and following discussions and refinements, may be asked to do additional rankings of the options if requested by a Workgroup member. Members should be prepared to offer specific refinements to address their reservations. The following scale will be utilized for the ranking exercises:

| **Acceptability Ranking Scale** | ***4 = acceptable,*** *I agree* | ***3 = acceptable,*** *I agree with* ***minor reservations*** | ***2 = not acceptable, I*** *don't agree unless* ***major reservations*** *addressed* | ***1 = not acceptable*** |
|---|---|---|---|---|

## WORKGROUP'S OPTIONS EVALUATION PROCESS OVERVIEW

For each key topical issue area the following format will be used:

- Overview of the option will be provided by proponent,
- Questions and answers on the option,
- General discussion with Workgroup members on the topic/issue,
- Refinements proposed to existing options (to enhance option's acceptability),
- Public input on option or sweet of options,
- Acceptability ranking of options (new, or any a Workgroup member proposes to be re-evaluated),
- Information needs identified.

For each of the key topical issue areas, member's will be asked to identify a range of potential options for the Workgroup to consider. Issues and Options will be organized to address the tasks assigned by the Florida Building Commission and the Florida Legislature. A preliminary list of options will be drafted and the Workgroup may discuss and add any additional relevant options they deem appropriate. When available, staff will provide information from data collections, research studies, and other pertinent sources to the Workgroup. Members and staff should request any information they feel necessary for evaluating an issue, option or range of options. Once ranked by the Workgroup, options achieving a consensus level of support will be listed within relevant key topical issue areas. Options with 75% or greater number of 4's and 3's in proportion to 2's and 1's shall be considered consensus options/recommendations.

**Key to Commenters in Report:**
Steve Bassett: SB
Rusty Carroll: RC
Bob Cochell: BC
Phillip Fairey: PF
Dale Greiner: DG
Jeff Gross: JG
Tom Larson: TL
Bill Kent: BK
Donny Pittman: DP
Paul Savage: PS
Drew Smith: DS
Rob Vickers: RV
Jeff Stone: JS
Rick Dixon: RD
Mo Madani: MM
Ann Stanton: AnSt

Arlene Stewart: AS
Ken Locke: KL
Jack Glenn: JG
Larry Nelson: LN
Jennifer Hatfield: JH
Dick Wilhelm: DW

**April 30, 2009**

## OPTIONS FOR ENERGY EFFICIENCY COST-EFFECTIVENESS TESTS FOR COMMERCIAL CODE—REMAINING ISSUES

### Mortgage Parameter Values

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

**Proposal:** *Use residential formula plus 2 points.*

| | *4=acceptable* | *3= minor reservations* | *2=major reservations* | *1= not acceptable* |
|---|---|---|---|---|
| *Initial Ranking 4/30/09* | **6** | **6** | **0** | **0** |

**Member's Comments and Reservations (April 30, 2009):**

JG: BOMA is still working on numbers: 8 – 10 years.
PF: Came up at Energy TAC: recommended coming up with some type of "adder". Suggest use residential number plus 2 points.
JG: BOMA will get back to Workgroup before June hearing.
DG/PF: Have a need to use historical records for residential to determine trends and whether commercial tracks with residential trends.
PF: Minor reservations: Need historical evidence to track residential/commercial. By how much.

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

**Proposal:** *Use 20% for commercial buildings.*

| | *4=acceptable* | *3= minor reservations* | *2=major reservations* | *1= not acceptable* |
|---|---|---|---|---|
| *Initial Ranking 4/30/09* | **8** | **5** | **0** | **0** |

**Member's Comments and Reservations (April 30, 2009):**

JG: BOMA is still working on numbers, and will get back to Workgroup before June hearing.
TL: Need a tool to track this.
PF: High down payment comes up with a higher cost/benefit ratio.
ASHRAE has a methodology, has a "monogram" with different interest rates, many combinations of factors. Unclear on how to pick the number.
RD: How about commercial Energy Star for DOE.
PF: Need 1 years data for Energy Star.
JG: Traditionally, much larger down payment for commercial than residential.
SB: Aren't we talking about cost on energy improvement. Talking about residual value of components in building. Energy improvement only affects first cost of mortgage.
PF: Only talking about new buildings. Similar to % of first mortgage. Present value is what you paid at the time. Generally speaking, the mortgage rate is higher than interest rate at large.
RC: There is nothing standardized for 30 years.
JG: Three kinds of commercial builders: Developer, institutional, corporate. All have different values, types of investment. Too premature to see if energy improvements increase the value of the building. BOMA said down payments vary from 10% to 50% for commercial buildings.

JS: ASHRAE 189.1 has a draft under review. Same issues are being discussed. 20% down payment is conservative. Its reasonable, and will not artificially inflate benefits.
BK: Why is down payment a factor?
JS: Standard statistical procedure.
PF: Workgroup is charged with establishing a cost effective test methodology. Will become part of a rule to be used as a yardstick to determine what % energy savings will be established in the Energy Code.
RD: Has to be an economic benefit through the eyes of the State. What is a reasonable demand for building code standard. Affects how much generation of power is required. Means of limiting the growth so have time to make decisions on what type of power is available (cost). Have schedule to meet. Limit impact on industry.
BK: How much money is put down won't affect energy savings in building.

**Cost Effectiveness Criteria**

*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.}*

**Proposal:** *Internal Rate of Return: Use 8% IRR.*

| | *4=acceptable* | *3= minor reservations* | *2=major reservations* | *1= not acceptable* |
|---|---|---|---|---|
| *Initial Ranking 4/30/09* | **7** | **6** | **0** | **0** |

**Member's Comments and Reservations (April 30, 2009):**
JS: Should be greater than 8%. Needs to be 1.5% above DROPS. Need to take risk factor into consideration.
PF: IRR includes all mortgage interest rates. 8% over and above mortgage and everything else (all costs). Return of 8% on all money you spend. 8% is a good return. IRR is used to determine how people are going to invest their money.
RD: Alternative approach would be to tie it to a more secure investment, like bonds.
PF: Now at 1 ½ percent. IRR is a secondary tool for investment strategy.
JG: Institutional purchaser will see that over 30 years.
PF: One comment received from an outside economist is that the number is too high because of impact of taxes on money saved is not included. They recommended 6%. Recommendation to Commission is Primary Cost Benefit Analysis.

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

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

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

| | *4=acceptable* | *3= minor reservations* | *2=major reservations* | *1= not acceptable* |
|---|---|---|---|---|
| *Initial Ranking 4/30/09* | **6** | **6** | **1** | **0** |

**Member's Comments and Reservations (April 30, 2009):**
TL: PSC study, results still coming out from consultant. Won't be ready until mid to late May. In the PSC world, the "consumer" is the rate payer.
PF: California. Total Resource Test. PSC: Participant Test. Rate Impact Measure Test. How the cost of energy impacts the entire system. Substantial allowances for lost revenues to utility. Large number of highly cost effective energy efficiency measures wouldn't pass REM test, would pass Participant Test. Environment is changing.
TL: SB 7135 spoke to adding total resource test. May be part of a FECA proceeding this summer.
PF: Provisions of law say "net positive impact"; doesn't say to whom. Could be interpreted as consumer or as state as a whole.
RD: See societal impact as goal, not ratepayer.
JS: Analyzing the market, see the owner not the government. Residential: Owner, leaser passed on. Commercial: occupant pays bill. ASHRAE 189, see need to sub it out to tenant. Use owner, define owner.
PF: Have effectively defined the consumer as the person paying the bills. Commercial : Split incentive, owner and person paying the bill have different motivation. Job of regulators is to overcome this split incentive.
JG: Another factor: Florida uses mostly electricity. Only get rebate if cut use during peak times. How does peaking factor in?
SB: Talking about new construction. Don't have a tenant. Attractiveness of the building as a whole to rent.
TL: Share concern about split incentive. Apartment buildings. Often separated from decisions about costs. Consumer still comes back to who pays the bill. Potential buyer is evaluating total costs. Builder thinks about attractiveness of building to renters.
DS: Echo SB PF & TL comments. See more of a benefit to the building owner because the building is more economical to operate. Will attract more renters.
JS: Owner puts out the investment.
MM: ASHRAE uses cost to end customer.
AS: Who is capable of making a change after the building is constructed. Tenant would have to get permission from mall or neighboring merchants. When owner makes decision, tenant gets locked in.
RD: Answer is on what to apply to owner is to require a higher standard to invest in than they may otherwise have.

PF: Proposed a definition (see above). Costs and benefits have to accrue to the same consumer before you can determine impact.
JS: Don't think the definition defines what we're trying to do.

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

**Issues**

*Sizing of replacement air conditioning systems.*

*Overview of Discussion:*
PS: Two programs on the FSU Consortium web site are relevant to this issue: "ENERGY STAR HVAC Quality Installation Program" and "HVAC Quality Installation Specification". Worked this issue through the Energy TAC last year. Will recues myself from the voting.
Quality Installation (QI): Consumer is purchasing a minimum 13 SEER, sometimes higher. Not being installed or sized properly. Not performing adequately.
Sizing and duct tightness issues. Get a 13 SEER performing like a 10 SEER. Customer is paying for high efficiency unit and is not getting better performance. Have an execution (installation) problem. ACCA and Energy Star have standards. IECC now includes sizing of ducts. Issues of non-permitted work. Underbidding. ASHRAE 119. FL Method B requires duct testing. Effort focused on replacement A/C units. Find common ground, not too onerous. Need sizing requirement, at least an inspection. Testimony that most of leaks can be found in same areas, and can be inspected.
DS: Shouldn't we also address commercial buildings. Old buildings can have leaky ducts.
PF: Need PS to suggest language. Sizing of replacing A/C systems, in past, significant oversizing has been done. Are there problems with telling people what to do. Require an analysis.
JB: PS should sit at table, and there is no need to recues. This is not a rule development process or a quasi-judicial process. It is a workgroup making recommendations to the Commission.
BC: Practical person. Existing space has load. Largest source of heat gain in FL is windows. Will determine size of equipment. Sizing needs to be done. Most companies don't do it for existing buildings. Calculations are often fraudulent. Quality depends on integrity of contractor. How do you enforce that? Biggest stumbling block is not knowing the efficiency of the windows, for doing calculations. Duct leakage is a killer for comfort. Outdoor air is introduced in places where you don't want it; mold/mildew air quality problems that result.
SB: Close ventilation to attic. If ductwork is above the insulation, leakage is still a problem. Can get humidity issues with undersized unit as well.
RC: Consumer will spend money for high efficiency unit but won't test duct work.
PS: New and renovations have requirement for sizing.
DG: Trying to address existing structures is difficult. Has to be addressed through the code. Look at what the IECC says.
RD: Deferred to 2010 code.
BK: Isn't there some kind of field verification for this kind of problem? Yes.
AnSt: Equipment manufacturers have simple sizing procedures for existing homes.
BC: Manufacturers haven't updated their sizing for existing buildings; newer old buildings are not as old or leaky.
MM: New equipment installed in existing buildings must meet code.

PS: Federal equipment standards are set. Duct testing is the issue.
KL: Method B form for replacements, duct testing does not apply to additions & renovations. From an enforcement standpoint, how do you enforce a duct testing standard? Review in office, view in field? Bring entire system up to standard? If you take out a really old system & not replace ducts, probably have a leaky duct, and ducts not sized correctly. Upping the ante, more costly, how to enforce such a requirement?
Larry: Most utilities have a duct testing standard.
KL: Existing windows. Energy code does have assumptions for existing homes. Don't know what modifications have been made since built.
PS: Enforcement details extremely critical. Multiple trips. Faking/lying ensue. Details need to be worked out. Don't see need to bring all systems up to code. Craft to address sizing and duct testing.
JB: Would like to see specific suggestions for a proposal.

**Proposal***: The A/C contractor 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 Btuh and less.*

| | *4=acceptable* | *3= minor reservations* | *2=major reservations* | *1= not acceptable* |
|---|---|---|---|---|
| *Initial Ranking 4/30/09* | **8** | **3** | **0** | **1** |

**Member's Comments and Reservations (April 30, 2009):**
PS: Sizing analysis & duct test:
1) Require a sizing analysis for total replacement of HVAC condensing unit and evaporator units.
BC: When does sizing occur? Suggest limit to residential at present. One million systems per year. On non-utility rebate installations, only 1/3 have permit pulled. Would like to see utility company programs expanded.
SB: Does replacing with same size constitute sizing. How about emergency replacement?
BC: Essential that it be inspected.
RC: Broward has a fax hotline, not all permits pulled. Recommend that "the A/C contractor shall submit sizing at time of permit…"
TL: This is important to the consumer.
PS: Need to address this to catch up with other codes.
DG: In emergency situation, call in to building department., and then submit for permit within 3 days.
KL: If no sizing calculation is specified, BO may take letter from contractor. Chapter 1 allows for emergency repairs.
AS: Support reference to Manual J, include input summary.
JG: If worried about residential market, put in FBC Residential if apartments, FBC Building. Tie to occupancy classification.
KL: Existing Building code does not reference FBC Residential, sends you to Mechanical Code. May be able to make exceptions.
MM: Equipment replacements, someone has to do audit. Is it free? Or an additional cost.
BC: 20-25% do it correctly. Most don't. This is a radical departure. Change-out is now the largest market.
SB: We should not use Manual J as a generic for national load calculations.
JG: Don't see why commercial is lumped with residential. Should not be included.
SB: Manual hand calculation is still sufficient. Currently working on a project where engineer will get in trouble, should have required a calculation.

*Testing of air distribution systems when air conditioning systems are replaced.*

**Proposal***: At the time of the total replacement of HVAC condensing and evaporator units under 65,000 Btuh the air distribution system shall be tested using a pressure differential of 25 Pascals.*

| | *4=acceptable* | *3= minor reservations* | *2=major reservations* | *1= not acceptable* |
|---|---|---|---|---|
| *Initial Ranking 4/30/09* | **1** | **3** | **6** | **2** |

**Member's Comments and Reservations (April 30, 2009):**

PS: Need some editing of the proposal language.
PF: Could reference a standard that allows a pressure pan test. Energy use has cost.
RC: Adding cost to homeowners. Workgroup needs to see every test that is available. Smoke test on home showed major leaks. Need to look at cost to consumer.
BC: Is the objective to make this affordable? A lot of ductwork cannot be seen. Not defined. Can't price it.
DG: Need to know exactly how to test it and report it. Cost to the consumer is an open question.
SB: There also is a test for return air. Take temperature of return, temp of coil, temperature of outside air, and compare them.
JG: There was briefly proposed legislation to do this. Found currently 600 active duct testers in Florida. Can't be done.
PS: Assuming this isn't done, there is a huge amount of Stimulus money that should rapidly increase the population of Raters. May be available by time code goes into effect.
TL: Need to look at testing options and costs by next meeting.
PF: Can provide methods, not costs.
BC: if PF provides tests, I will provide costs.
BC: Let's evaluate: Existing ducts, when HVAC equipment is replaced, shall be sealed with glass fabric and mastic where accessible and necessary.

**Proposal:** *Existing main ducts and branch connections, where equipment is replaced, shall be visually inspected where ducts are accessible (a minimum of 30 inches clearance) and, where necessary, sealed with glass fabric and mastic.*

| | *4=acceptable* | *3= minor reservations* | *2=major reservations* | *1= not acceptable* |
|---|---|---|---|---|
| *Initial Ranking 4/30/09* | **3** | **3** | **4** | **2** |

**Member's Comments and Reservations (April 30, 2009):**

JG: Who can perform this test?
SB: Change to read: …*shall be visually inspected and a report provided to the homeowner.*
Air handlers leak 6% of rated air. If in garage, pulling in air. [PF: absolute minimum]
BC: My company does this as part of our proposal. Duct leakage is a major component is A/C repair.
TL: A lot of people will be moved by such information and make the repair.
JG: Do we have any idea how much this will save?
PF: About 20% of heating and cooling in residential.
RD: In term of inspections and report to homeowner, do all homeowners have you make the repairs. BC: we only take the job if we make the repairs.
RC: Unrealistic to expect A/C contractor to inspect all ducts.
BC: Inspect all trunk lines and branch lines; most other are not accessible.

## 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.*

## 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.*
- *Consider whether certifications of compliance with "above code programs" should be recognized in lieu of Code documentation and inspection.*
- *Evaluate FEECBC/IECC integration for 2010 FBC.*

### *General Discussion:*

JS: Ground source heat pumps are an effective energy source.
PF: 45 degrees TD inside to outside gives a boost with heat pump. North FL 74 degrees, SF 78 degrees. Ground temperature 72 degrees. Ratings for ground source heat pumps does not count pumping energy. Gives false impression of efficiency of ground source in comparison to air source heat pumps.
JB: Belongs under specific options for building energy improvement. Can go to specific options or go to policy issues for discussion.
PF: It is applicable in Florida, just not as good for FL as other options.
SB: Should also address air handling use in unvented space.

### *Specific Building Options To Achieve Energy Efficiency Improvements*

### *Overview of Discussion:*

BC: Manufacturers already make air tight air handlers.

TL: Ground source/geothermal units need to be evaluated. ITRON has 250 issues listed in report. Are in process of considering costs, etc in about a month.
PF: Language in 7135 should be included, at a minimum: solar water heating, energy efficient appliances, energy efficient windows and doors, skylights, cool roofs, enhanced ceiling /wall systems, reduced duct leakage, programmable thermostats, lighting. Lighting & energy efficient appliances are not in the Code.
RC: Why not include products that produce electricity. Roofing systems, PV.
AS: Think they are covered. Can PF give scope of program, what is possible? Framing fractions, solar-absorption tile. How does it work together.
PF: Some new technologies, variable refrigerant flow, no DOE test for rating. Encourage AHRI or DOE to develop standards.
RD: New & emerging technologies have been included in the code with credits given for their use.
BC: Geothermal issue. Less than ½ of 1 percent penetration in the market. Water used is loaded with calcium. Injection wells, chemicals go back into aquifer. Closed loop units can be controlled.
PS: Need incentive or allowance for trying new things. Office buildings, closet with server, takes a lot of HVAC. Data center efficiencies should be evaluated.
SB: Geothermal. Article this month, LEED certified building, 450 wells. Should look at chilled beams. Underfloor ductwork systems. Should at least put them in the program.
PF: Micro combined heat and power systems, residential.
BK: FL Heat Pumps, have had water source heat pumps installed in in1982. Also manufacture water source heat pumps. Fountaine Bleu Hotel, taking water off heating tower & heating pools.
JG: New lighting technologies. Induction lighting.
JS: Green Building movement, issue of daylighting. Can't ignore.
RD: State energy plan states that state energy policy will promote passive design.
JG: New York Times building, 0.38 w/sf.

**Discuss Energy Efficiency Standards and Planning for Compliance with Statutory Requirements for Building Efficiency Increases**

RD: Law has two directions. Have been focusing on cost effective part. There is also the criteria that "cost effective" means cost effective to the consumer. Also need to figure out the schedule for energy efficiency increases for each successive energy code edition. Have to try to establish a strategic plan to try and get to where the Legislature told us to go. Expect conflicts between instructions. Is there a way of delaying that conflict (and go with potential national effort) : 1) establish energy efficiency standards for 2010 code. 15% was fairly easy. 20% becomes more difficult. The 2016 code may become problematic. Discuss how compliance methodologies are structured to enable most effective strategy. E.g. R-59 in attic may not be practical (or economical). Task is to look at different options, different models, to determine which methods and approaches give us the best possibility of achieving goals.

Subtasks:

1) Provide for future flexibility to enable energy efficiency.
2) How apply equally to different groups/individuals.

**GOAL**
Implement the energy efficiency standards increases established by s. 553.9061, F.S.

**OBJECTIVE**
Develop long range strategic plan for how to comply with statutory schedule of efficiency increases.

**TASKS**

1. Evaluate how to provide for future flexibility to implement efficiency increases for the broadest range of housing prices.
2. Compare characteristics of FEECBC to IECC for flexibility to achieve higher efficiency standards.
3. Develop strategic plan for FBC energy standards compliance methods.
4. Integrate FEECBC and IECC to implement the strategic plan for the 2010 FBC determine level of flexibility.

**Task/Analysis:**

**Task 1:**

- Identify compliance methods used in current national model and Florida energy codes
- Identify compliance method characteristics that provide for future flexibility of efficiency increases

**Task 2:**

- Create a matrix of IECC and FEECBC, ASHRAE 90.1 characteristics
- Evaluate for flexibility to implement future efficiency increases

**Task 3:**

- Select compliance method characteristics that provide the maximum potential to implement the 553.9061 mandated efficiency increases to form the strategic plan

**Task 4:**

- Develop a draft of the energy standards chapters for the 2010 FBC

*Overview of Discussion:*

BK: Are operational use patterns taken into account here?
RD: Initiative as part of Stimulus money requires that states shall also measure effect of code implementation and provide training.
BK: It is typical in Europe that lights in hallways are controlled by an occupancy sensor. In US, huge waste of energy.
RD: 1989 code required motion detectors. See it happening in the future.
RV: State energy program, anticipates funds set aside for code compliance, training. Submit proposal to DOE by 5/12/09.
DG: From code perspective. Evaluate whether features can be affordable.
JS: Also look at how complicated the code is, and enforcement capabilities.
DG: Energy Code enforcement has been lower on priority list, need to work on it with building departments.
RD: At one time, enforcement was fairly good. Cost of energy has been down for years, not much training, outreach.
PF: Money for training should improve enforcement of energy code.
SB: Reliance on mechanical inspectors (building departments) for enforcement. No one inspects wall-ceiling, wall-sill plate sealing. Electrical departments don't believe they are responsible for energy code. Need to educate building departments that the building envelope is just as important. Have always relied on ASHRAE Chapter 11 to determine compliance. Should look at Appendix G, LEEDs certification criteria to expand code. As reduce efficiencies, make mandatory like Appendix G does.

RD: Group that we tried to make contact with in past is architectural community. They see energy efficiency as limiting their flexibility of design. Value engineering frequently deletes the efficient glazing. Also professions need to get involved in designing buildings. Electrical engineers.
BC: HVAC 50% of energy consumption. Since 3/1/09, 14 SEER is now a standard, now much more affordable (10-15% less cost). When we start tweaking buildings to remove sensible heat, get to a series of high end A/C, need variable low speed units. Typically units 70% SHR, when at 65 SHR, not enough sensible heat to make system work. 15 SEER starting to come down. Suggest do trade-off, and not tweak just windows. Make it verifiable and enforceable. Feds are working on a higher efficiency standard (expect SEER 15). Would get more bang for buck if look at HVAC.
DP: Since early 90's, mechanical side predominant. Need to look at the envelope side. Not readily enforced throughout FL, both residential and commercial. Air barriers, conditioned vs. unconditioned space. Gear up education for envelope.
RD: Used to be more attention on envelope. Some features, like housewrap, now are standard. Key is consistency in training. More emphasis on green buildings.
SB: If you want to control humidity, have to close the attic.
DS: Green building movement looks more at envelope, A/C systems are changeable, envelope is there forever. Make sure items are actually being done.

*Public Comment on Strategy to Achieve Energy Efficiency Requirements:*
JG: Task list, where does inclusion of Legislative mandate fit in?
RD: Already included. Targets going forward, need to decide what compliance approaches are included. Increasing efficiency of buildings may not be possible without expanding scope of code. Law says not to make less stringent than Florida.
JG: IECC has a different approach, doesn't that mean that approach has to change.
RD: IECC has to be the base.
JG: Questions as to whether we have the technology to make a 50% increase in stringency. Increase is a goal, not a mandate. Average person may not be able to afford it.
DW: Represent window manufacturers. Agree with reducing multiplier to allow options. Strongly encourage looking at the envelope. Weak enforcement. Have product that will meet window standards for any budget.
AS: Last ten years, looked at process. Takes 5 miles to turn a battleship. Can't just turn the A/C industry, have to turn all industries to have something cost effective. Have to give people targets to implement at manufacturers, distributors, customers. As long as high efficiency units are custom order, will be expensive. Not advocating a performance path. Each industry needs goal to shoot for. Driven by government. Need tools to do it.
RD: Legislature gave us goals. Lots of options. It is industry's responsibility to sell options, not government.
PF: Nice article by FL engineer that actually looks at what commercial buildings will have to do in 2013 to meet the requirements of 7135 over time.
RD: Have an opportunity to come up with a strategic plan to get to 2013, 2016 targets.
KL: In speaking specifically to residential, for HVAC 9 times out of 10, builder is not telling the person doing the calculations for energy code compliance what is going in the house. SEER 13 units can still be installed if actual information for windows is used in programs. Default values in program is causing houses not to pass. Need to use the actual values and houses will pass the energy performance requirements.