POOL EFFICIENCY SUBCOMMITTEE TO THE FLORIDA ENERGY CODE WORKGROUP REPORT TO THE FLORIDA BUILDING COMMISSION

June 8, 2009

Tampa, Florida

Facilitation, Meeting and Process Design By

CONSENSUS SOLUTIONS

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FLORIDA BUILDING COMMISSION

POOL EFFICIENCY SUBCOMMITTEE TO THE FLORIDA ENERGY CODE WORKGROUP REPORT

Pool Efficiency Subcommittee to Florida Energy Code Workgroup
The Energy act of 2008 (HB 7135) directs adoption of pool pump efficiencies in the 2010 Code. 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 initiative is being conducted in coordination with the national industry and other state's initiatives currently underway.

The Commission convened a Pool Efficiency Subcommittee to the Florida Energy Code Workgroup to provide recommendations to the Florida Energy Code Workgroup regarding the pool equipment efficiencies subtask for pool pumps and heaters efficiencies and hydronic systems standards. The Chair indicted that subcommittees will be facilitated using the Commission's workgroup process.

The Subcommittee Members are as Follows:
Steve Bassett, Tony Caruso, Kevin Fennel, Ken Gregory, Dale Greiner, Dan Johnson, Bill Kent, Dino Muggeo, Gordon Shepardson, Jeff Sonne, and Rob Vieira.

Florida Energy Code Workgroup Subtask Regarding Energy Efficient Pools

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.*

Subtask 29 Develop Criteria for Energy Efficient Pool and Spa Systems

Schedule:

Workgroup appointed	4/8/09
Workgroup meetings	6/8/09 8/09-10/09
Recommendations to Commission	12/09
Proposals for 2010 FBC submitted for adoption (See 2010 FBC development schedule)	3/10

Status: *Pending*

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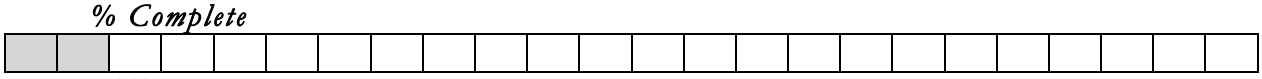

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Origination: Energy act of 2008 (HB 7135) directs adoption of pool pump efficiencies in the 2010 FBC.

REPORT OF THE JUNE 8, 2009 MEETING

Opening and Meeting Attendance
The meeting started at 1:00 PM, and the following Subcommittee members were present: Tony Caruso, Kevin Fennel, Ken Gregory, Dale Greiner, Dan Johnson, Bill Kent, Gordon Shepardson, and Jeff Sonne.

Members Absent
Steve Bassett, Dino Muggeo, and Rob Vieira.

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

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/Pool-Efficiency.html

Agenda Review and Approval
The Workgroup voted unanimously, 8 - 0 in favor, to approve the agenda as presented including the following objectives:

- ✓ To Approve Regular Procedural Topics (Agenda)
- ✓ To Review Subcommittee Procedures, Guidelines, and Decision-Making Requirements
- ✓ To Hear an Overview of the Subcommittee's Scope, Charge, and Task Development Strategy
- ✓ To Discuss Subtasks and Identify Information Development Needs
- ✓ To Identify and Evaluate Issues and Options Regarding Pool Energy Efficiency
- ✓ To Consider Public Comment
- ✓ To Identify Needed Next Steps and Agenda Items for Next Meeting

Review of Commission's Subcommittee Meeting Guidelines, Consensus-Building and Decision-Making Process, and Sunshine Requirements
Jeff Blair, Commission Facilitator, reviewed the Workgroup's process, decision-making procedures, and applicability of the Sunshine Law and answered member's questions. The relevant documents were provided on pages 4 – 7 of the meeting agenda packet.

Review of Commission's Energy Related Workplan Tasks and Subcommittee Scope and Task Development Strategy

Rick Dixon, Commission Executive Director, provided the Subcommittee with an overview of the project scope and answered member's questions. Rick explained that the Energy act of 2008 (HB 7135) directs adoption of pool pump efficiencies in the 2010 Code. 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. The Subcommittee's initiative is being conducted in coordination with the national industry and other state's initiatives currently underway. Rick reviewed the Subcommittee's statutorily defined project scope. Following is the legislation adopted with passage of HB 7135 (2008 Legislature):

6347 553.909 Setting requirements for appliances; exceptions.--

(1) The Florida Energy Efficiency Code for Building Construction shall set the minimum requirements for commercial or residential swimming pool pumps, swimming pool water heaters, and ~~heat traps and thermostat settings for~~ water heaters used to heat potable water ~~sold for residential use~~. The code shall further establish the minimum acceptable standby loss for electric water heaters and the minimum recovery efficiency and standby loss for water heaters fueled by natural gas or liquefied petroleum gas.

(3) Commercial or residential swimming pool pumps or water heaters sold after July 1, 2011, shall comply with the requirements of this subsection. Natural gas pool heaters shall not be equipped with constantly burning pilots. Heat pump pool heaters shall have a coefficient of performance at low temperature of not less than 4.0. The thermal efficiency of gas fired pool heaters and oil-fired pool heaters shall not be less than 78 percent. All pool heaters shall have a readily accessible on-off switch that is mounted outside the heater and that allows shutting off the heater without adjusting the thermostat setting.

(4) Pool pump motors shall not be split-phase, shaded pole, or capacitor start-induction run types. Residential pool pumps and pool pumps motors with a total horsepower of 1 HP or more shall have the capability of operating at two or more speeds with a low speed having a rotation rate that is no more than one-half of the motor's maximum rotation rate. Residential pool pump motor controls shall have the capability of operating the pool pump at a minimum of two speeds. The default circulation speed shall be the residential filtration speed, with a higher speed override capability being for a temporary period not to exceed one normal cycle or 120 minutes, whichever is less. Except that circulation speed for solar pool heating systems shall be permitted to run at higher speeds during periods of usable solar heat gain.

5) Portable electric spas standby power shall not be greater than 5(V2/3) watts where V = the total volume, in gallons, when spas are measured in accordance with the spa industry test protocol.

(6)~~(3)~~ The Florida Energy Efficiency Code for Building Construction may include standards for other appliances and energy-using systems if they are determined by the department to have a significant impact on the energy use of the building and if they are cost-effective to the consumer.

(7)(4) If the provisions of this section are preempted in part by federal standards, those provisions not preempted shall apply.

Identification of Key Subtasks/Issues for Evaluation and Information Development Needs
Subtasks: pool pump standards; pool plumbing system design; performance and prescriptive compliance paths for pools; and, credits for alternative energy sources for pool heating, lighting and pumping.

Jeff Blair, Commission Facilitator, reviewed the project "Subtasks" and invited members to identify additional key issues regarding developing recommendations to the Commission for pool efficiency standard enhancements for adoption into the Florida Building Code. In addition, members of the public were invited to provide input on same.

Summary of Discussion and Comments:
BK: Plumbing TAC Subcommittee talked about same things. Why not combine the pool subcommittees?
RD: The Commission put together a Subcommittee (Energy Code Workgroup's Subcommittee) of experts to make recommendations to the Commission. The workgroup process allows for broader representation of stakeholders than that of the TAC process that follows the ANSI representation requirements. The Pool Efficiency Subcommittee will only be convened for the duration of the specific task, and the Swimming Pool Subcommittee to the Plumbing TAC is a standing subcommittee charged with developing recommendations on proposed code amendments. There is a need for two separate groups with different tasks and representation considerations.
BK: Federal guidelines (water velocities). As long as the subcommittees meet on the same day, that will be fine so travel is minimized.
RD: FL law. 2 speed systems.
KG: Have always had variable, speed technology. Becoming more prevalent. Title 20 (California) reflects technological advances.
RM: Lower speed is less efficient.
RD: Pump efficiency vs. motor efficiency. Need to research this.
KG: Impellor is designed to turn at a certain rpm, when it slows down it doesn't move as much water, and here is less efficiency. Manufacturers are getting better at it.
DJ: Testing in Fayetteville, TN. Discovery: standard pump, increase resistance, slow down, need to properly mate pump and system to achieve maximum efficiency.
RD: Challenge is to provide guidance for pool design.
JH: California has changed language in 553.909 (5) to provide more detail to the formula.
TC: Water features. Need enough pump to make systems work. 8 hr day bill $140/month. 11.5 Cents/KW. Variable speed pump, saves 5%. If ran at 30% efficiency, 2 turnovers in 24 hrs, reduced power bill. 1 hour high speed, 23 hrs 30%. Major power reduction. Have moved to dual speeds on every pool. Have reduced whole house energy bill 40%.
DJ: When combining circulating system with multi-speed pumps have reduced energy use as much as 71%, with the least of 36%.
BK: APSP Committee is meeting this weekend in Sacramento, 2nd meeting. Trying to go to Energy Star for swimming pool design. Committee believes it is needed as a method for measuring energy consumption, and savings. Likely this will take a year or two (ANSI process). May have something by 2010.
JH: Looking at a model state code. Spa formula.
JS: 1999, large home study, 4200 KW/year. Lower gc pumps, 2 speed pumps, 2" piping, sizing not more than 25% over calculated size. Annual savings about half. Will provide copy of study to Jeff Blair for distribution and posting to project webpage.
DJ: California Title 20 has a curve by which one can determine most energy conserving pump(s).

TC: 20,000 gallon pool. Majority of systems today can operate on 45 gallons/minute at 20 feet of head pressure. Running pools with small pool pumps is definitely the way to do it. Building 12,000 gallon pools today (smaller than in the past).
BK: Need to consider options to address aftermarket products. With the current rate of construction there will be 8,000 pools made this year. Short term impacts needs to address aftermarket/existing pool stock. How do we accomplish this?
RD: Statute refers to pumps sold in state (3): (Commercial or residential swimming pool pumps or water heaters sold after July 1, 2011, shall comply with the requirements of this subsection.)
BK: Are we trying to save energy or lower peak load?
RD: Save energy. PSC seems to be going in direction of load shifting, turning off appliances.
BK: Definition of Energy Transport in Chapter 13. Discusses chemical demand.
RD: No.
BK: Use patterns. Requirement to put pool covers on heated pools. To suggest taking it out of code is counterintuitive. Gas heater compared to solar. No way to compute 70% of energy use.
RD: Should determine whether there is a way to calculate energy use instead of prescriptive method.
BK: In field plumbing not the same as design. Put in code something that could be inspected, some performance level of energy consumption. Dilemma: pool covers, this requirement does not make sense. Recommend fix in the IEECC.
RD: Alternative may be solar water heater.
BK: Heat pump is also taking heat from air. Need expectations on how to determine energy savings. 1984 study by Roger Messenger: don't need to do a turnover every day.
DJ: Agree with BK. Concept of solar good, have to run pump. Often have a spa and pool, tendency is to heat only spa. Not sure it's the best thing we can do.
DG: Is ANSI pipe committee looking at water circulation? Where does the number come from?
DJ: ANSI 5 is in rewrite. Hasn't gone to consensus ballad process yet. Expect more discussion. Also ANSI 7 is being rewritten. Relevant to how much pump capacity is needed to overcome resistance. Trying to keep up with technologies. Waiting for energy committees to make policy. ANSI 5 is residential construction standard.
RD: What is rewrite schedule?
DJ: APSP who reviews standards is a minimum of 5 years. As soon as ANSI 7 hits street it was used within ½ year. New discoveries every day. For example, flow requirements will change. When they do change, will need to pull back others standards for revision.
RD: Question: What is the status of California's efforts?
DJ: Final changes were made 5 months ago. Documents extremely well done. Have looked at resources available. ANSI 7 committee recently revised spa standard.
RD: Better to not re-invent the wheel. Should build on existing work.
BK: Issue: commercial pools. One size doesn't fit all. Most energy inefficient. Issue of health/safety. Mistake is not to engage powers that be in commercial pool environment. Some don't have many people using them, compared to 500/day. Commercial pools standards should be updated/revised.
RD: Will work with DOH.
JS: One other thought. Credit for using PV for direct control of DC motors, 1/2 hp pump 6-900 watts. Decoupled. Expect 11-12 KW savings per day.
LN: FP&L: Have a research project in South Florida monitoring 10 pools, existing pumps, almost all single speed pumps, looking at replacing pumps. Study goes through 2010 summer. Looking at savings impacts.
RM, Pentair. Caution. Don't set standard that limits a builder from using a certain size pipe. Some pumps more efficient with 1 ¼" pipe. Get best efficiency, go down a pump curve, pumping 80

gallons/minute. We are now plumbing pools better, so the motor has to work harder, may not be at most efficient set-ups at this time.
TC: Need to pay attention to service factor. Talk about horse power.
RM: California requires rating sfhp on pump.
BK: They use operating or maximum rating on pumps. Some pumps too large for filter**.** Water to watts is what matters.
RM: All pumps we sell, labels are there because they are required in California.
JB: If member's have other issues they should send them to Jeff Blair for incorporation into a project worksheet.

General Public Comment
Members of the public were invited to provide the Subcommittee with general comments. In addition, members of the public spoke on each of the substantive discussion issues before the Subcommittee throughout the meeting.

Public Comment:
No additional public comments were offered.

Review of Subcommittee Delivery and Meeting Schedule
The Subcommittee's delivery and meeting schedule is as follows:

Workgroup appointed	4/8/09
Workgroup meetings	6/8/09 8/09-10/09
Recommendations to Commission	12/09
Proposals for 2010 FBC submitted for adoption	3/10

(See 2010 FBC development schedule: 2010 Code Effective date is 12/31/2011)

Next Steps
Workgroup members will identify issues and options regarding pool efficiency standards, and send them to Jeff Blair for compilation in an "Options Evaluation Worksheet". At the next meeting the Workgroup will review and agree on the list of key topical issues, and identify and evaluate the range of options for each key issue.

Adjourn
The Subcommittee voted unanimously, 8 - 0 in favor, to adjourn at 2:30 PM.

ATTACHMENT 1

MEETING ATTENDANCE—PUBLIC

Public Meeting Attendance
Name
Jim Manning
Jennifer Hatfield
Frank O'Neill
Larry Nelson
Bob Boyer