

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

FEBRUARY 1, 2010—MEETING III

TAMPA, FLORIDA

FACILITATION, MEETING AND PROCESS DESIGN BY



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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 indicated 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.*

7g. Develop Criteria for Energy Efficient Pool and Spa Systems

Subtask 29

Schedule:

Pool Sub-workgroup appointed	4/8/09
Workgroup meetings	6/8/09
	8/12/09
	2/2/10
Proposals for 2010 FBC submitted for adoption	3/10

(See 2010 FBC development schedule)

Status: Pending

% Complete **50%**



Origination: 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.

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 $5(V^{2/3})$ watts where V = the total volume, in gallons, when spas are measured in accordance with the spa industry test protocol.

REPORT OF THE FEBRUARY 1, 2010 MEETING

Opening and Meeting Attendance

The meeting started at 10:00 AM, and the following Subcommittee members were present: Tony Caruso, Kevin Fennel, Ken Gregory, Dale Greiner, Dan Johnson, Bill Kent, Dino Muggeo, Gordon Shepardson, Jeff Sonne, and Rob Vieira.

Members Absent

Steve Bassett.

DCA Staff Present

Rick Dixon, 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 Subcommittee voted unanimously, 10 - 0 in favor, to approve the agenda as presented including the following objectives:

- ✓ To Approve Regular Procedural Topics (Agenda and Summary Report)
- ✓ To Hear an Update Regarding CEC Title 24 Pool and Spa Equipment Initiative
- ✓ To Identify and Evaluate Code Amendment Options Regarding Pool Energy Efficiency
- ✓ To Consider Public Comment
- ✓ To Adopt Consensus Recommendations for Submittal to Florida Building Commission
- ✓ To Identify Needed Next Steps and Agenda Items for Next Meeting

August 12, 2009 Facilitator's Summary Report Review and Approval

Jeff Blair, Commission Facilitator, asked if any members had corrections or revisions to the August 12, 2009 Report, and none were offered.

The Subcommittee voted unanimously, 10 - 0 in favor, to approve the August 12, 2009 Facilitator's Summary Report as presented.

CEC Title 24 Pool and Spa Equipment Initiative Update

Jennifer Hatfield, FSPA/APSP, provided members with an update regarding the CEC Title 24 Pool and Spa Equipment initiative and answered member's questions. Jennifer reported that the Subcommittee members were provided (also posted to project webpage) with revised versions of APSP-15 (Standard for Energy Efficiency for Residential In-ground Swimming Pools) and APSP-14 (Portable Spa Energy Efficiency Standard). The standards are not yet final and will not be finalized in time for submittal during the 2010 Florida Building Code Update process. However, they are largely complete and there will likely be few additional changes to the actual language. The hope/goal is for Florida to adopt a Code consistent with California. Industry will be proposing legislation to make Florida consistent with California. SB 648 will be the vehicle for the legislation, and will amend s. 553.909 F.S. to revise pool requirements for pool pump motors to conform to Federal law. Specifically, changing the default circulation speed's higher speed override capability for a temporary period not to exceed one normal cycle of 24 hours instead of ~~420 minutes~~. The effective date for the legislation will be for units manufactured after 2011.

Identification and Evaluation in Turn of Code Amendment Options Regarding Pool Energy

Efficiency— *{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}*

The Subcommittee reviewed and discussed APSP-15 (Standard for Energy Efficiency for Residential In-ground Swimming Pools) and APSP-14 (Portable Spa Energy Efficiency Standard) for possible inclusion in the Florida Building Code, Energy Conservation, and following discussions and public comment developed consensus recommendations for submittal to the Energy Code Workgroup and Florida Building Commission.

Following discussion and public comment the Subcommittee took the following actions:

Subcommittee Actions:

Motion—The Pool Efficiency Subcommittee to the Energy Code Workgroup voted unanimously, 10 – 0 in favor, (Heaters/Energy Design: 4.3.1.3) that electric resistance heating is prohibited.

Motion—The Pool Efficiency Subcommittee to the Energy Code Workgroup voted unanimously, 10 – 0 in favor, (System Piping and Circulation: 5.5.2) to eliminate the following requirement: ~~A length of straight pipe that is at least 4 pipe diameters shall be installed before the pump.~~

Motion—The Pool Efficiency Subcommittee to the Energy Code Workgroup voted 7 – 3* in favor, to eliminate the pool cover requirement for heated swimming pools. Motion failed.

**The motion failed as a result of not achieving the 75% or greater in support threshold required for approving motions.*

Motion—The Pool Efficiency Subcommittee to the Energy Code Workgroup voted unanimously, 10 – 0 in favor, to recommend that the Energy Code Workgroup and the Florida Building Commission adopt APSP-15 (Standard for Energy Efficiency for Residential In-ground Swimming Pools) as revised by the Subcommittee to serve as the draft Code language for inclusion in the Florida Building Code, Energy Volume.

Motion—The Pool Efficiency Subcommittee to the Energy Code Workgroup voted unanimously, 10 – 0 in favor, to recommend to the Energy Code Workgroup and the Florida Building Commission that the Florida Building Code, Energy, shall provide energy code credits (points) for PV and alternative/renewable technologies that reduce energy consumption for pool pump motors.

Motion—The Pool Efficiency Subcommittee to the Energy Code Workgroup voted unanimously, 10 – 0 in favor, to recommend to the Energy Code Workgroup and the Florida Building Commission that APSP-14 (Portable Spa Energy Efficiency Standard) is an appliance standard and therefore not within the scope of the Florida Building Code.

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:

- Manny Garcia of Carrollwood Pools: Passed out information on product. Equate turnover rate, (Blue Whale technology). Good to use larger pipes, need to use larger skimmers. Review how company gets to more efficient pool design. Reduce the power without using higher hp motors. Eliminated plumbing motor in entirety. Have reduced turnover rate. Standard flow meter, calculate KW. By using high flow rates, control surface debris. Eliminate suction from main drains to skimmers. Can handle up to 100 gallons per minute. Stay within 30 feet of head. Problem disseminating of the information. High flow rate systems, advantage, most of power is on surface. Trying to improve high chlorine demand, and allow the use of less chlorine. Efficiency is related to high turnover rates. Eliminates main drain.
- Johnson: Applaud efforts of Garcia, have issues with circulation.

Adoption of Workgroup’s Consensus Recommendations for Submittal to the Energy Code Workgroup and Florida Building Commission

After discussion and public comment the Subcommittee considered actions for submittal to the Energy Code Workgroup and Florida Building Commission.

Following discussion and public comment the Subcommittee took the following actions:

Subcommittee Actions:

Motion—The Pool Efficiency Subcommittee to the Energy Code Workgroup voted unanimously, 10 – 0 in favor, to adopt the package of consensus recommendations (all motions achieving a 75% or higher level of support) for submittal to the Energy Code Workgroup and the Florida Building Commission.

Review of Subcommittee Delivery and Meeting Schedule

The Subcommittee's delivery and meeting schedule is as follows:

Pool Sub-workgroup appointed	4/8/09
Workgroup meetings	6/8/09
	8/12/09
	2/2/10
Proposals for 2010 FBC submitted for adoption (See 2010 FBC development schedule)	3/10

Next Steps

APSP-15 (Standard for Energy Efficiency for Residential In-Ground Swimming Pools) as modified by the Subcommittee will be proposed as draft code language for the Florida Building Code, Energy Conservation.

The APSP Energy Standard writing committees (one for pools, one for spas) have set out their objectives into three phases with the timeline as follows:

Phase One: complete a model code, APSP Energy Standard committees noted that this is being done in cooperation with the FBC Pool Efficiency Subcommittee, and they will continue to provide all their language/documentation. Jennifer Hatfield will continue to keep Subcommittee up to date from APSP's end so the language put into the 2010 Florida Building Code is as consistent as possible.

Phase two: complete the APSP-15 and APSP-14 pool and spa energy standards respectively, goal is to have language ready for canvas by the end of 2010.

Phase Three: an equipment scoring system (a rating system based on the national Energy Star Program that would score equipment categories such as pumps), probably completed by 2011.

Adjourn

The Subcommittee voted unanimously, 10 - 0 in favor, to adjourn at 12:41 PM.

ATTACHMENT 1

MEETING EVALUATION RESULTS

February 1, 2010—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.

- 9.50 The background information was very useful.
- 9.25 The agenda packet was very useful.
- 9.50 The objectives for the meeting were stated at the outset.
- 10.00 Overall, the objectives of the meeting were fully achieved.

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

- 8.13 Update Regarding CEC Title 24 Pool and Spa Equipment Initiative.
- 9.88 Evaluation of Code Amendment Options Regarding Pool Energy Efficiency.
- 9.88 Adoption of Recommendations for Submittal to Energy Code Workgroup and FBC.
- 8.83 Identification of Next Steps.

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

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

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

- 9.75 Overall, I am very satisfied with the meeting.
- 10.00 I was very satisfied with the services provided by the Facilitator.
- 9.38 I am satisfied with the outcome of the meeting.

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

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

6. What did you like best about the meeting?

- Good group of participants.
- Input from participants was adequate.
- The knowledge of the members.
- The professional manner in which items were discussed and resolved.
- Progress.

7. How could the meeting have been improved?

- More time.
- Post meeting time on title block.

8. Do you have any other comments?

None were offered.

ATTACHMENT 2
MEETING ATTENDANCE—PUBLIC

Public Meeting Attendance	
Name	
Jen Hatfield	FSPA/APSP
Manny Garcia	Carrollwood Pools Inc.
John O'Conner	BOAF

ATTACHMENT 3

SUMMARY OF COMMENTS AND DISCUSSION

Identification and Evaluation in Turn of Code Amendment Options Regarding Pool Energy Efficiency Discussion

The Subcommittee reviewed and discussed APSP-15 (Standard for Energy Efficiency for Residential In-ground Swimming Pools) and APSP-14 (Portable Spa Energy Efficiency Standard) for possible inclusion in the Florida Building Code, Energy Conservation, and following discussions and public comment developed consensus recommendations for submittal to the Energy Code Workgroup and Florida Building Commission. Following is an overview of the discussions.

Overview of Comments and Discussion:

- Kent: we should focus on APSP-15. It is appropriate to go through changes and discuss what should be in the Florida Energy Code.
- Sonne: 5.1.3 Elbow type fittings. Recommended this not be mandatory.
- Johnson: At the lower pressure, no difference in efficiency. Takes more room to use sweeps. When testing for suction avoidance, when transitioning between high and low speed, low speed no difference.
- Vieira: Exceptions for less than 1 hp.
- Shepardson: What is the justification for desiring to remove the heated pool cover requirement?
- Kent: It is the difference between different heat types, can't justify. Pool covers are required by code, but are hard to use and create other problems for the owners.
- Vieira: There are exceptions to lower speed pumps.
- Gregory: It is cheaper to use lower HP pumps to get the same thing done.
- Johnson: There is data. 1 1/2 inch elbow.
- Gregory: New energy code built in both safety and lower energy needs. APSP reduces velocity to 6.
- Kent: Now have to justify that you're not pushing pool turnover too fast.
- Gregory: ANSI 5 min turnover rate of 5; 12 hours not quick enough.
- Johnson: 24 hours sequential dilution. Smaller pumps turnover adequate.
- Caruso: Challenge to manufacturers is to make low speed motors.
- Gregory: Industry has been putting in too large of pumps forever.
- Hatfield: APSP-15, p. 5. DOE conducting rulemaking to change 78% to 80 or 84% efficiency for pool heaters.
- Kent: Solar connections. 5.5.3. CA is 36 inches. Committee believes this is too high. This version is more reasonable at 18 inches.
- Greiner: Section 4.3.1.3: How do you determine if 60% is from site solar. How do you document this?
- Dixon: Need standardized method to calculate.
- Kent: Could delete. Will review at next committee meeting.
- Gregory: Resistance water heating no longer used. Should strike it.
- Greiner: Otherwise should prohibit strip heat.
- Johnson: Should take it out. Not troubling to me. If someone wants to add electric heat, prove it is efficient. Not likely to come up.

- Gregory: Electric systems very inefficient. Can't slow water down enough. Heater stays on all the time.
- Kent: Electric resistance is 100%. Gas is 82%. Little effect either way. If we accept APSP, should leave it alone. Goal for manufacturers is consistency.
- Hatfield: Could take comments back to committee, list things Subcommittee is concerned with.
- Dixon: Complexity. Heater is COP 1, piping losses reduce efficiency. Expect to at some point push heat recovery or dedicated hp water heaters. Consumer vs. societal benefits.
- Gregory: What was rationale for including 60%?
- Vieira: Recommend Florida allow no electric resistance pool heaters.
- Kent: Parts of Country have a lot of hydroelectric power.
- Gregory: Because standard doesn't exist as written, recommend strike requirement.
- Johnson: Pipe sizes. 5.5.2 Reduces transition. If strain inline, makes difference. No justification for 4 pipe diameters before the pump. With 0 lot lines, it could be a problem.
Gregory: Recommend we delete the requirement. Same justification, will be code. Strainer is required by code.
- Fennell: Instead of striking it out, could put "It is recommended..."
- Gregory: Can get same amount of water through different size pipes. Typical pool, 2" pipe. With exotic pools, can see from 100-120 gpm demand. Would need larger pipe. 6"/second is where the safety issue is. Expect backup pipe for safety.

Pool Covers Discussion:

- Gregory: Transparent ones could trap kids.
Greiner: There are a number of types of pool covers. Which are safe?
- Johnson: I don't trust the data. I question DOE data as well. \$58 no payback, especially when people don't use them.
- Fennell: Can make them buy a cover, can't make them use it.
- Caruso: Options today is for hard cover or bubbles. New option liquid cover should be considered for the Code.
- Kent: Pool heater document don't, I know where it came from. DOE numbers are not accurate for this area: \$100 in Miami?
- Vieira: Huge energy use, heat thousands of gallons of water, not an incidental cost.
- Gregory: Can't disagree, safeguards to prevent kid loss.
- Greiner: Can't see the argument that child loss (prevented other ways) vs. saving energy.
- Stanton: No R-value requirement for cover currently in Florida code, IECC R-12 over 90 degrees.
- Johnson: New technology allows other methods.
- Kent: Creates games where people leave the cover in garage once approved.
- Vieira: Like putting insulation in attic. Huge societal cost. Trying to ignore.
- Dixon: Code requirements can easily be defeated by homeowners.
- Greiner: Can't justify not trying to prevent major heat loss.
- Johnson: Difference between providing the capability and actual use.
- Hatfield: FPSA: Doesn't believe pool cover should be required. Safety concerns should make us cautious. Could we put in as a recommendation removing the cover requirement. A middle ground.
- Caruso: Would like to see other approved technologies/methods allowed for in the Code.
- Maggeo: If liquid blankets were allowed, could get more people involved with actually using them.

- Dixon: Florida Energy Code has required covers since the 80's, Code structure would be to leave it in or take it out.
- Stanton: Code has been interpreted as heat pumps meet 70% over years, engineering analysis.
- Vieira: Any information on the liquid blanket? Have not seen much sold information on this. Chemical composition. R-value?
- Kent: Doesn't belong in a building code.
- Hatfield: Last meeting voted to remove pool cover. Latest vote didn't pass. Which takes precedence?
- Blair: the previous meeting was only an acceptability ranking exercise. Today's action was a formal voted and failed, that takes precedence.
- Rick: Code change is required anyway to change this since it is a Florida Specific requirement it should be in the draft and folks can propose changes as they desire.
- Johnson: Did the numbers, 61% liquid blanket plus cover, 40% just liquid blanket
- Kent: Just not practical. Covers are ugly and people won't use them.

APSP-14 Discussion:

- Hatfield: Committee has members as manufacturers of portable spas.
- Gregory: Manufacturers have agreed to meet this standard. How as a code do we enforce this standard? 110 volt appliance.
- Fennell: Really not regulating them at this time.
- Greiner: How they are built is more important.
- Dixon: Maybe it should be covered by appliance standard law.
- Kent: What are the statutory limits of code?
- Dixon: There are things that require a permit. Don't need a permit for a refrigerator.
- Blair: What is the consensus of committee?
- Kent: Think we're going too fast. Would like to review in detail before adopted.
- Hatfield: CA Title 20 only applies to pools.
- Gregory: Would force contractor to design spas to pool criteria.
- Johnson: Only real effect on spas may not be greater than turnover rate.
- Kent: Can't turn over in less than 6 hours.
- Fennell: APSP-15 only covers residential in-ground pools.
- Gregory: If you're building an in-ground spa in conjunction with a pool, spa is turning over at same rate as pool. If heating spa, would have to run the pool as fast as the spa.
- Hatfield: Only applies to pools, not spas. Would violate test standard.
- Gregory: Would like to clarify that pool/spa combination, nothing applies. If stand-alone in-ground spa, what?
- Johnson: Leave spas out of this, already covered.