Proposed Code Modifications

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WITHOUT COMMENTS

TAC: Electrical

Total Mods for **Electrical** in **Approved as Submitted: 1**

Total Mods for report: 4

Sub Code: Building

E6452 1

Date Submitted	11/6/2015	**Section**	454.1.4.2.3	**Proponent**	Bryan Holland
Chapter	4	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Approved as Submitted
Commission Action Pending Review

Comments

General Comments **No** **Alternate Language** **No**

Related Modifications

N/A

Summary of Modification

This modification restores the electrical requirements for underwater luminaires to the national standard by removing redundant and unnecessary language.

Rationale

The requirements of the National Electrical Code, as written, provide practical safeguarding of persons and property from hazards arising from the use of electricity. There is no evidence the current requirement in Section 454.1.4.2.3 of the FBC-B that limits underwater lighting to 15V & 300W constitutes a safer and less hazardous installation. As currently written, other equally safe and effective means of providing underwater illumination at swimming pools are prohibited with no substantiation. This modification will restore the electrical requirements for underwater luminaires to the national standard.

This includes 680.23(A)(1), (3), and (8) of the 2014 NEC. These sections ensure that only listed and GFCI protected products are used for the installation of pool lighting systems above the 15V threshold. It is virtually impossible to be shocked or electrocuted by any underwater lighting product when properly installed and maintained.

This modification harmonizes the requirements for underwater luminaires for public and private commercial swimming pools with private residential swimming pools. Current product standards and installation requirements make the stricken language in the modification unnecessary.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This modification will reduce the burden on the local AHJ to enforce the unnecessary state modification to the national standard. This will help reduce conflicts between installers and the AHJ during permitting, plan review, and inspection.

Impact to building and property owners relative to cost of compliance with code

This modification could potentially reduce the cost of compliance to building and property owners by providing them more options when selecting the type and rating of the underwater luminaires to be installed.

Impact to industry relative to the cost of compliance with code

This modification would not increase or decrease the cost of compliance to the industry.

Impact to small business relative to the cost of compliance with code

This modification would not increase or decrease the cost of compliance to small business.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This modification removes an unnecessary prohibition in the code while maintaining the minimum requirements to ensure health, safety, and welfare of the general public.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This modification restores the code to the national standard which provides equivalent products and methods for illuminating swimming pools.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification removes the requirements that discriminate against safe and effective products, methods and systems which have demonstrated equivalent safety.

Does not degrade the effectiveness of the code

This modification does not degrade the effectiveness of the code.

Is the proposed code modification part of a prior code version? No

1st Comment Period History

E6452-G1

Proponent	Thomas Lasprogato	Submitted	2/3/2016	Attachments	No

Comment:
I SUPPORT

1st Comment Period History

E6452-G2

Proponent	Vincent Della Croce	Submitted	2/7/2016	Attachments	No

Comment:
Support

1st Comment Period History

E6452-G3

Proponent	Jennifer Hatfield	Submitted	2/25/2016	Attachments	No

Comment:
On behalf of the Association of Pool & Spa Professionals' Technical Committee, which includes E.P. Hamilton III, Ph.D., who sits on Panel 17 of the National Electrical Code, the following is submitted:

1. Luminaires need to comply with the adopted edition of the NEC.

2. In this aspect this proposal can accomplish what it appears to intend (as to the details) by simply requiring the luminaires and installation comply with the NEC edition adopted at the time of the alteration. The detailed text requirements are unnecessary and redundant.

454.1.4.2.3 Underwater lighting. Underwater luminaires shall comply with Chapter 27 of the Florida Building Code, Building. ~~Underwater lighting shall utilize transformers and low-voltage circuits with each underwater light being grounded. The maximum voltage for each light shall be 15 volts and the maximum incandescent lamp size shall be 300 watts.~~ The location of the underwater ~~lights~~ luminaires shall be such that the underwater illumination is as uniform as possible. ~~and shall not be less than 18 inches (457 mm) below the normal operating water level determined by the center-line of the skimmer or top lip of the gutter. All underwater lights which depend upon submersion for safe operation shall have protection from overheating when not submerged.~~ Underwater lighting requirements can be waived when the overhead lighting provides at least 15 footcandles (150 lux) of illumination at the pool water surface and pool wet deck surface. ~~Alternative lighting systems which use 15 volts or less, or use no electricity in the pool or on the pool deck, such as LED (light emitting diode) fiber-optic systems, may be utilized if the manufactures specifications provide for the equivalency in watt output.~~

TAC: Electrical

Total Mods for **Electrical** in **No Affirmative Recommendation with a Second: 3**

Total Mods for report: 4

Sub Code: Building

E6492 2

Date Submitted	11/22/2015	**Section**	2703	**Proponent**	Mo Madani
Chapter	35	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation No Affirmative Recommendation with a Second
Commission Action Pending Review

Comments

General Comments **No** **Alternate Language** **No**

Related Modifications

6491

Summary of Modification

The proposed code change provides for provisions necessary to prevent electrocution in swimming pools by requiring that all pool electrical circuits feeding equipment have GFCI protection.

Rationale

The proposed code change provides for provisions necessary to prevent electrocution in swimming pools by requiring that all pool electrical circuits feeding equipment have GFCI protection. (see uploaded files).

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Further enforcement/inspections would be necessary by the enforcement agencies to implement this prevision.

Impact to building and property owners relative to cost of compliance with code

The proposed code change has the potential of adding cost to construction and at the same time reducing electrocution in swimming pools.

Impact to industry relative to the cost of compliance with code

The proposed code change has the potential of adding cost to construction and at the same time reducing electrocution in swimming pools.

Impact to small business relative to the cost of compliance with code

The proposed code change has the potential of adding cost to construction and at the same time reducing electrocution in swimming pools.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

The proposed code change has the potential reducing electrocution in swimming pools.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

The proposed code change has the potential reducing electrocution in swimming pools.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

The proposed code change does not discriminate against materials or products.

Does not degrade the effectiveness of the code

The proposed code change improves the code by providing provisions for reducing electrocution in swimming pools.

Is the proposed code modification part of a prior code version? No

1st Comment Period History

E6492-G1

Proponent Thomas Lasprogato **Submitted** 2/3/2016 **Attachments** No

Comment:

NEUTRAL

1st Comment Period History

E6492-G2

Proponent Bryan Holland **Submitted** 2/22/2016 **Attachments** No

Comment:

While I generally support the concept of this proposed modification, I believe this action is best addressed by modifications #6530 and #6531. Proposals specific to Florida should be contained in the Florida Building Code, so I do not feel we need a modification to the National Electrical Code for this issue.

1st Comment Period History

E6492-G3

Proponent Joe Bigelow **Submitted** 2/25/2016 **Attachments** Yes

Comment:

Comment submitted by Irv Chazen

1st Comment Period History

E6492-G4

Proponent Jennifer Hatfield **Submitted** 2/25/2016 **Attachments** No

Comment:

On behalf of the Association of Pool & Spa Professionals' Technical Committee, which includes E.P. Hamilton III, Ph.D., who sits on Panel 17 of the National Electrical Code, the following is submitted:

1. This proposal, as written, is vague and unenforceable. First, there is no definition of “equipment that could potentially energize a pool.” No voltage level is specified. Further, since any ground fault anywhere on the electrical system is capable of energizing the water in a pool where there is improper, damaged and/or nonexistent equipotential bonding and an electrical connection exists between the pool water and the electrical grounding system (e.g., via the green ground wire in a properly connected metallic underwater light, regardless of voltage, or any bond to water on any pool with a pump), the proposal would require the use of GFCI protection for personnel on each and every electrical circuit on the premises, regardless of whether or not they are associated with the pool. A GFCI does not and cannot detect or protect against current flowing in the green equipment grounding conductor.

2. This proposal would require GFCI protection for personnel on the line side of transformers and power supplies serving low voltage lights and any other low voltage equipment not exceeding the LVCL. A GFCI does not and cannot detect or protect against ground faults on the load (low voltage) side of these devices and therefore this rule would require the unnecessary installation of a GFCI on a low voltage light circuit while not providing any level of protection for the low voltage light. The NEC has historically not required GFCI protection for low voltage lights for this reason.

There is no evidence this proposal would provide additional safety, instead we encourage adoption of the 2014 NEC that provides the latest technologies and safety requirements for pools & spas.

1st Comment Period History

E6492-G5

Proponent Jennifer Hatfield **Submitted** 2/25/2016 **Attachments** No

Comment:

On behalf of the Association of Pool & Spa Professionals' Technical Committee, which includes E.P. Hamilton III, Ph.D., who sits on Panel 17 of the National Electrical Code, the following is submitted as a general comment to ALL the swimming pool electrical proposals put forward (ten in total):

1. The appropriate edition of the NEC which should be adopted is the 2014 Edition, which has been in effect since August 21, 2013. Earlier editions do not incorporate changes that reflect and address latest technologies and contain sections that have been eliminated or significantly modified in current editions.

2. The 15 volt ac limit utilized in editions of the NEC prior to the 2011 edition has been superseded by the Low Voltage Contact Limit (LVCL), which addresses current technology. All references to 15 volts ac should be replaced with the LVCL (as defined in the NEC). The LVCL is defined as follows: Low Voltage Contact Limit. A voltage not exceeding the following values:
(1) 15 volts RMS for sinusoidal ac
(2) 21.2 volts peak for nonsinusoidal ac
(3) 30 volts for continuous dc
(4) 12.4 volts peak for dc that is interrupted at a rate of 10 to 200 Hz

With the adoption of the 2014 NEC, Florida will have the edition that provides the latest technologies and safety requirements for pools & spas. Proper education of these requirements and hiring of properly licensed contractors who go through the permitting process is critical.

Chapter 27 Electrical

Add Section 2703 GFCI Protection to read as follows:

Section 2703 GFCI Protection

2703.1 NFPA70-14 National Electric Code, Article 680.21 (Motors), Section 680.21(C) GFCI Protection, is amended to read as follows:

Revise 680.21(C) to read as follows:

(C) GFCI Protection. Outlets supplying pool pump motors to a single phase. 120-volt through 240-volt branch circuits, whether by receptacle or by direct connection, shall be provided with ground-fault circuit-interrupter protection for personnel. All electrical circuits feeding equipment that could potentially energize a pool shall also be provided with ground-fault circuit-interrupter.

FLORIDA BUILDING COMMISSION

SWIMMING POOL ELECTRICAL SAFETY PROJECT

CONCURRENT MEETING OF THE SWIMMING POOL TAC AND ELECTRICAL TAC

OCTOBER 14, 2015 MEETING SUMMARY REPORT

WEDNESDAY, OCTOBER 14, 2015

MEETING SUMMARY AND OVERVIEW

On Wednesday, October 14, 2015 the Swimming Pool TAC and Electrical TAC met concurrently in Daytona Beach to develop recommendations regarding swimming pool safety issues focused on the prevention of electrocution in swimming pools. At the initial scoping meeting held on September 28, 2015 the TACs agreed that the project scope was to focus on evaluation of whether to recommend a code amendment requiring low voltage lighting in residential pools for new construction (Phase I). In addition, it was agreed that additional electrical pool safety relevant topical issues including bonding, grounding, retrofitting of existing pools, and education would be considered as a second phase of the project (Phase II). At the October 14, 2015 meeting the TACs proposed and acceptability ranked options for low voltage lighting in residential pools for new construction. In addition, the TACs evaluated proposed options to address the other key topical issues, and ultimately developed a consensus package of recommendations for consideration by the Florida Building Commission. The TACs voted unanimously to recommend the Commission approve the consensus package of recommendations from the TACs. The TACs' specific recommendations are as follow:

Grounding

The Electrical TAC and the Swimming Pool TAC voted unanimously to recommend that the Commission charge staff to work with the TAC chairs and in consultation with stakeholders to formulate a code amendment requiring that all electrical circuits feeding equipment that could potentially energize a pool have GFCI protection for new residential and commercial swimming pools (the goal is to fill in any gaps in the current Code).

Education

The Electrical TAC and the Swimming Pool TAC voted unanimously to recommend that the Commission support a comprehensive educational effort to ensure there is a consistent message to enhance pool electrical safety issues for existing and new pools by working with existing resources including educational providers and associations. The effort should include defining the problems, identifying solutions and communicating a consistent message to stakeholders (contractors, consumers, home inspectors, pool maintenance providers, etc.) through training courses, flyers, brochures, websites, etc. Key issues for education messaging include lighting, bonding, grounding, GFCI, maintenance of existing pools, and monitoring devices to detect stray currents in the pool water, etc.

Existing Swimming Pools

The Electrical TAC voted 6-2 in favor (75%), to recommend the Commission charge staff to work with the TAC chair and in consultation with stakeholders to formulate a code amendment requiring

existing commercial and residential swimming pools to have GFCI protection for replacement pool pump motors, if not already in place; to provide GFCI protection for the replacement of 120 volt pool lights when they are replaced; and, as part of the close out inspection ensuring that the existing bonding system is complete and terminated properly.

Note: The Swimming Pool TAC vote 5-3 (63%) in favor of the option.

PROJECT OVERVIEW

The 2015 Florida Legislature identified the need to evaluate the electrical aspects of swimming pool safety focusing on minimizing electrocution risks linked to swimming pools. In response, the Florida Building Commission approved a research project (technical enrichment) for a *Swimming Pool Electrocution Prevention Study*. In order to implement the project the Commission convened a process to develop recommendations for pool safety focused on the prevention of electrocution in swimming pools. The Commission determined that the project would be evaluated and recommendations developed by convening concurrent meetings of the Commission's Swimming Pool Technical Advisory Committee and Electrical Technical Advisory Committee (TAC). The objective of the project is to evaluate key topical issues, and as appropriate develop code amendment proposals designed to minimize electrocution risks linked to swimming pools.

In response to the Commission's direction the Swimming Pool TAC and Electrical TAC agreed that the initial Phase I scope of the project is to determine whether to recommend a proposed code amendment that would require low voltage lighting in residential swimming pools for new construction. Once the Swimming Pool TAC and the Electrical TAC conclude their evaluation of low voltage lighting they will evaluate additional project relevant topics in Phase II of the project: specifically bonding, grounding, retrofitting of existing pools, and education.

AGENDA ITEM OUTCOMES

OPENING AND MEETING ATTENDANCE

The meeting was opened at 10:00 AM once a quorum was established for the Swimming Pool and Electrical TACs respectively, and the following members participated:

Swimming Pool TAC: James Batts (chair), Jordan Clarkson, Bill Dumbaugh, Kevin Flanagan, John O'Conner, Mark Pabst, Gordon Shepardson, Bob Vincent, and John Wahler. (9 of 11)

Absent Members:
Tom Allen, and Corky Williams.

Electrical TAC: Kevin Flanagan (chair), Neal Burdick, Ken Castronovo, Leonard Devine, Jr. (*Alternate: Nelson Montgomery*), Shane Gerwig, David Rice (*Alternate: Steve Mitchell*), Joe Territo, Clarence Tibbs, and Dwight Wilkes. (9 of 11)

Absent Members:
Oriol Haage, and Roy Van Wyk.

DBPR Staff Present

Norman Bellamy, Chris Burgwald, Jim Hammers, April Hammonds, Mo Madani, and Jim Richmond.

Commissioners Present

Fred Schilling, Jim Schock, and Jeff Stone.

Meeting Facilitation and Reporting

The TAC Chairs meeting was facilitated by Jeff Blair from the FCRC Consensus center at Florida State University. Information at: http://consensus.fsu.edu/

FCRC CONSENSUS CENTER

Background and Supporting Documents

The agenda and relevant background and supporting documents are linked to each agenda item. The Agenda URLs for the October 14, 2015 TAC meetings are as follows:

http://www.floridabuilding.org/fbc/commission/FBC_1015/Swimming_Pool_TAC/Swimming_Pool_TAC_Agenda_101415.htm

http://www.floridabuilding.org/fbc/commission/FBC_1015/Electrical_TAC/Electrical_Agenda_TAC_101415.htm

AGENDA REVIEW

The Swimming Pool TAC voted unanimously, 8 - 0 in favor, to approve the agenda for the October 24, 2015 meeting as posted/presented.

The Electrical TAC voted unanimously, 9 - 0 in favor, to approve the agenda for the October 14, 2015 meeting as posted/presented.

Following are the key agenda items approved for consideration:

- To Approve Regular Procedural Topics (Agenda and Meeting Summary Report)
- To Discuss and Approve Phase I Recommendations (Low Voltage Lighting in Residential Pools for New Construction)
- To Discuss Phase II Topics (Bonding, Grounding, Retrofitting of Existing Pools, and Education)
- To Adopt Consensus Recommendations for Submittal to the Commission
- To Consider Public Comment
- To Identify Needed Next Steps: Information, Assignments, and Agenda Items for Next Meeting

The complete Agenda is included as *"Attachment 1"* of this report.

(See Attachment 1—Agenda)

APPROVAL OF SEPTEMBER 28, 2015 MEETING SUMMARY REPORT

The Swimming Pool TAC voted unanimously, 8 - 0 in favor, to approve the Meeting Summary Report for the September 28, 2015 meeting as posted/presented.

APPROVAL SEPTEMBER 28, 2015 MEETING SUMMARY REPORT

The Electrical TAC voted unanimously, 9 - 0 in favor, to approve the Meeting Summary Report for the September 28, 2015 meeting as posted/presented.

IDENTIFICATION, DISCUSSION, AND ACCEPTABILITY RANKING OF PHASE I OPTIONS
Requirement for Low Voltage Lighting in Residential Pools for New Construction

At the September 28, 2015 meeting the Swimming Pool TAC and the Electrical TAC voted to approve in concept a code amendment proposal requiring low voltage lighting in residential pools for new construction, with the understanding that relevant safety data and other documentation would be evaluated prior to a final vote on any recommendation submitted to the Florida Building Commission.

At the October 14, 2015 meeting the TACs were asked to offer options regarding possible requirement for low voltage lighting in residential pools for new construction. In addition, the public was invited to comment on the options and/or suggest additional options prior to the TACs ranking them for acceptability. Jeff explained that members would be asked to rank each proposed option in turn utilizing a four-point acceptability ranking scale where 4 = acceptable, 3 = minor reservations, 2 = major reservations, and 1 = unacceptable. Following discussion and refinement of options, members may be asked to do additional rankings of proposed options if requested by a *TAC* member. Members should be prepared to offer specific refinements to address their reservations.

Once ranked, options with a 75% or greater number of 4's and 3's in proportion to 2's and 1's shall be considered consensus recommendations. The *TACs'* consensus recommendations will be submitted to the Commission for consideration.

Following the opportunity provided for questions and answers, public comment, and discussion, the TACs ranked a series of options regarding low voltage lighting in residential pools for new construction.

The complete Options Acceptability Ranking Results are included as *"Attachment 2"* of this report.

(See Attachment 2—Ranking Results)

DISCUSSION AND EVALUATION OF PHASE II TOPICS IN TURN

Identification of Issues and Options, and Acceptability Ranking of Options in Turn

Jeff explained that the TACs would address each of the four key issues in turn by topic, and that members would be invited to propose and comment on options before the TAC members ranked them. In addition, the public was invited to comment on the options and/or suggest additional options prior to the TACs ranking them for acceptability. The Phase II topics are Bonding, Grounding, Retrofitting of Existing Swimming Pools, and Education of Contractors and Consumers. Jeff explained that TAC members would be asked to rank each proposed option in turn utilizing a four-point acceptability ranking scale where 4 = acceptable, 3 = minor reservations, 2 = major reservations, and 1 = unacceptable. Following discussion and refinement of options, members may be asked to do additional rankings of proposed options if requested by a *TAC* member. Members should be prepared to offer specific refinements to address their reservations. Once ranked, options with a 75% or greater number of 4's and 3's in proportion to 2's and 1's shall be considered consensus recommendations. The *TACs'* consensus recommendations will be submitted to the Commission for consideration.

Following the opportunity provided for questions and answers, public comment, and discussion, the TACs ranked the proposed options for acceptability. All of the options proposed are included in the ranking results. Following are the option(s) ranked that achieved a consensus level of support (≥ 75% in favor):

Grounding

The Electrical TAC and the Swimming Pool TAC voted unanimously to recommend that the Commission charge staff to work with the TAC chairs and in consultation with stakeholders to formulate a code amendment requiring that all electrical circuits feeding equipment that could potentially energize a pool have GFCI protection for new residential and commercial swimming pools (the goal is to fill in any gaps in the current Code).

Education

The Electrical TAC and the Swimming Pool TAC voted unanimously to recommend that the Commission support a comprehensive educational effort to ensure there is a consistent message to enhance pool electrical safety issues for existing and new pools by working with existing resources including educational providers and associations. The effort should include defining the problems, identifying solutions and communicating a consistent message to stakeholders (contractors, consumers, home inspectors, pool maintenance providers, etc.) through training courses, flyers,

brochures, websites, etc. Key issues for education messaging include lighting, bonding, grounding, GFCI, maintenance of existing pools, and monitoring devices to detect stray currents in the pool water, etc.

Existing Swimming Pools
The Electrical TAC voted 6-2 in favor (75%), to recommend the Commission charge staff to work with the TAC chair and in consultation with stakeholders to formulate a code amendment requiring existing commercial and residential swimming pools to have GFCI protection for replacement pool pump motors, if not already in place; to provide GFCI protection for the replacement of 120 volt pool lights when they are replaced; and, as part of the close out inspection ensuring that the existing bonding system is complete and terminated properly.

Note: The Swimming Pool TAC vote 5-3 (63%) in favor of the option.
The complete Options Acceptability Ranking Results are included as *"Attachment 2"* of this report.

(See Attachment 2—Ranking Results)

TAC ACTIONS

Following the opportunity provided for questions and answers, public comment and discussion, the TACs took the following actions:

MOTION—The Swimming Pool TAC voted unanimously, 8 - 0 in favor, to recommend the Commission approve the TACs' package of consensus recommendations.

MOTION—The Electrical Pool TAC voted unanimously, 8 - 0 in favor, to recommend the Commission approve the TACs' package of consensus recommendation.

NEXT STEPS

Following are the next steps for the Swimming Pool Electrical Safety Project:

- The Commission will evaluate the TACs' (Swimming Pool TAC and Electrical TAC) consensus package of recommendations at the October 15, 2015 meeting.
- The Commission will take the lead with ensuring Code amendments are proposed consistent with any recommendations approved by the Commission regarding swimming pool electrical safety requirements.

ADJOURNMENT

After a determination that a quorum was still present the Swimming Pool TAC voted unanimously, 8 – 0 in favor, to adjourn the meeting at 3:30 PM on Wednesday, October 14, 2015.

After a determination that a quorum was still present the Electrical TAC voted unanimously, 8 – 0 in favor, to adjourn the meeting at 3:30 PM on Wednesday, October 14, 2015.

ATTACHMENT 1
OCTOBER 14, 2015 MEETING AGENDAS

FLORIDA BUILDING COMMISSION
SWIMMING POOL TECHNICAL ADVISORY COMMITTEE (TAC)
CONCURRENTLY WITH THE ELECTRICAL TAC
OCTOBER 14, 2015—MEETING II

PLAZA HISTORIC BEACH RESORT AND SPA
600 NORTH ATLANTIC BOULEVARD—DAYTONA BEACH, FLORIDA 33706

MEETING OBJECTIVES

- ➢ To Approve Regular Procedural Topics (Agenda and Meeting Summary Report)
- ➢ To Discuss and Approve Phase I Recommendations (Low Voltage Lighting in Residential Pools for New Construction)
- ➢ To Discuss Phase II Topics (Bonding, Grounding, Retrofitting of Existing Pools, and Education)
- ➢ To Adopt Consensus Recommendations for Submittal to the Commission
- ➢ To Consider Public Comment
- ✓ To Identify Needed Next Steps: Information, Assignments, and Agenda Items for Next Meeting

MEETING AGENDA—WEDNESDAY, OCTOBER 14, 2015		
All Agenda Times—Including Adjournment—Are Approximate and Subject to Change		
10:00 AM	**A.)**	**WELCOME AND INTRODUCTIONS**
	B.)	**AGENDA REVIEW AND APPROVAL (October 14, 2015)**
	C.)	**REVIEW AND APPROVAL OF FACILITATOR'S SUMMARY REPORT (September 28, 2015)**
	D.)	**IDENTIFICATION, DISCUSSION, AND ACCEPTABILITY RANKING OF PHASE I OPTIONS** Requirement for Low Voltage Lighting in Residential Pools for New Construction • Identification, Discussion and Acceptability Ranking of Options In Turn
	E.)	**ADOPTION OF PHASE I CONSENSUS RECOMMENDATIONS FOR SUBMITTAL TO THE COMMISSION**
12:00 PM	*LUNCH*	
1:00 PM	**F.**	**DISCUSSION AND EVALUATION OF PHASE II TOPICS IN TURN** Identification of Issues and Options, and Acceptability Ranking of Options in Turn • Bonding • Grounding • Retrofitting of Existing Swimming Pools • Education of Contractors and Consumers
3:00 PM	*BREAK*	
3:15 PM	**F.**	**DISCUSSION AND EVALUATION OF PHASE II TOPICS IN TURN CONTINUED**
	G.)	**ADOPTION OF ANY PHASE II CONSENSUS RECOMMENDATIONS FOR SUBMITTAL TO THE COMMISSION**
	H.)	**GENERAL PUBLIC COMMENT**
	I.)	**NEXT STEPS: AGENDA ITEMS, NEEDED INFORMATION, ASSIGNMENTS, DATE AND LOCATION IF NEEDED**
~5:00 PM	*J.)*	*ADJOURN*

FLORIDA BUILDING COMMISSION
ELECTRICAL TECHNICAL ADVISORY COMMITTEE (TAC)
CONCURRENTLY WITH THE SWIMMING POOL TAC
OCTOBER 14, 2015—MEETING II

PLAZA HISTORIC BEACH RESORT AND SPA
600 NORTH ATLANTIC BOULEVARD—DAYTONA BEACH, FLORIDA 33706

MEETING OBJECTIVES
➢ To Approve Regular Procedural Topics (Agenda and Meeting Summary Report)
➢ To Discuss and Approve Phase I Recommendations (Low Voltage Lighting in Residential Pools for New Construction)
➢ To Discuss Phase II Topics (Bonding, Grounding, Retrofitting of Existing Pools, and Education)
➢ To Adopt Consensus Recommendations for Submittal to the Commission
➢ To Consider Public Comment
✓ To Identify Needed Next Steps: Information, Assignments, and Agenda Items for Next Meeting

MEETING AGENDA—WEDNESDAY, OCTOBER 14, 2015		
All Agenda Times—Including Adjournment—Are Approximate and Subject to Change		
10:00 AM	**A.)**	**WELCOME AND INTRODUCTIONS**
	B.)	**AGENDA REVIEW AND APPROVAL (October 14, 2015)**
	C.)	**REVIEW AND APPROVAL OF FACILITATOR'S SUMMARY REPORT (September 28, 2015)**
	D.)	**IDENTIFICATION, DISCUSSION, AND ACCEPTABILITY RANKING OF PHASE I OPTIONS** Requirement for Low Voltage Lighting in Residential Pools for New Construction • Identification, Discussion and Acceptability Ranking of Options In Turn
	E.)	**ADOPTION OF PHASE I CONSENSUS RECOMMENDATIONS FOR SUBMITTAL TO THE COMMISSION**
12:00 PM	*LUNCH*	
1:00 PM	**F.**	**DISCUSSION AND EVALUATION OF PHASE II TOPICS IN TURN** Identification of Issues and Options, and Acceptability Ranking of Options in Turn • Bonding • Grounding • Retrofitting of Existing Swimming Pools • Education of Contractors and Consumers
3:00 PM	*BREAK*	
3:15 PM	**F.**	**DISCUSSION AND EVALUATION OF PHASE II TOPICS IN TURN CONTINUED**
	G.)	**ADOPTION OF ANY PHASE II CONSENSUS RECOMMENDATIONS FOR SUBMITTAL TO THE COMMISSION**
	H.)	**GENERAL PUBLIC COMMENT**
	I.)	**NEXT STEPS: AGENDA ITEMS, NEEDED INFORMATION, ASSIGNMENTS, DATE AND LOCATION IF NEEDED**
~5:00 PM	*J.)*	*ADJOURN*

ATTACHMENT 2
OPTIONS ACCEPTABILITY RANKING RESULTS

I. PHASE I RECOMMENDATIONS

LOW VOLTAGE LIGHTING IN RESIDENTIAL SWIMMING POOLS FOR NEW CONSTRUCTION

Low Voltage *October 14, 2015*	*4=acceptable*	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Option A: **Require low voltage lighting in residential pools for new construction (Miami-Dade requirements).**				
Swimming Pool TAC (6-3) 67%	5	1	1	2
Electrical TAC (5-4) 56%	4	1	1	3
Option B: **Maintain NEC requirements for new residential pools**				
Swimming Pool TAC (7-2) 78%	6	1	1	1
Swimming Pool TAC (6-3) 67%	5	1	1	2
Revised Ranking *Electrical TAC* (5-4) 56%	4	1	3	1
Option C: **Require low voltage lighting in residential pools for new construction (Miami-Dade requirements) for energy conservation purposes.**				
Swimming Pool TAC (7-2) 78%	5	2	1	1
Swimming Pool TAC (4-5) 44%	2	2	2	3
Revised Ranking *Electrical TAC* (6-3) 67%	2	4	0	3
Revised Ranking *Electrical TAC* (5-4) 56%	3	2	1	3
Option D: **Require LED pool lights with plastic niches or without niches in new construction.**				
Swimming Pool TAC (3-6) 33%	2	1	3	3
Electrical TAC (2-7) 22%	1	1	4	3

Option E: **All residential pools shall meet the requirements of code and shall be require a monitoring device to detect stray currents in the water.**				
Swimming Pool TAC (2-7) 22%	**0**	**2**	**5**	**2**
Electrical TAC (3-6) 33%	**1**	**2**	**6**	**0**

II. PHASE II RECOMMENDATIONS

1. BONDING

No specific options were evaluated for bonding.

2. GROUNDING

Grounding *October 14, 2015*	*4=acceptable*	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Option A: **Require that all electrical circuits feeding equipment that could potentially energize a pool have GFCI protection for new residential and commercial swimming pools (the goal is to fill in any gaps in the current Code).**				
Swimming Pool TAC **(9-0) 100%**	**4**	**5**	**0**	**0**
Electrical TAC **(9-0) 100%**	**5**	**4**	**0**	**0**

3. RETROFITTING OF EXISTING POOLS

Retrofitting *October 14, 2015*	*4=acceptable*	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Option A: **Require existing commercial and residential swimming pools to have GFCI protection for replacement pool pump motors, if not already in place; to provide GFCI protection for the replacement of 120 volt pool lights when they are replaced; and, as part of the close out inspection ensuring that the existing bonding system is complete and terminated properly.**				
Swimming Pool TAC (5-3) 63%	**2**	**3**	**3**	**0**
Electrical TAC **(6-2) 75%**	**4**	**2**	**2**	**0**

4. EDUCATION INITIATIVES FOR CONTRACTORS AND CONSUMERS

Education *October 14, 2015*	*4=acceptable*	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Option A: **Initiate a comprehensive educational effort to ensure there is a consistent message to enhance pool electrical safety issues for existing and new pools by working with existing resources including educational providers and associations. The effort should include defining the problems, identifying solutions and communicating a consistent message to stakeholders (contractors, consumers, home inspectors, pool maintenance providers, etc.) through training courses, flyers, brochures, websites, etc. Key issues for education messaging include lighting, bonding, grounding, GFCI, maintenance of existing pools, and monitoring devices to detect stray currents in the pool water, etc.**				
Swimming Pool TAC **(9-0) 100%**	**9**	**0**	**0**	**0**
Electrical TAC **(9-0) 100%**	**8**	**0**	**0**	**0**

FLORIDA BUILDING COMMISSION

SWIMMING POOL ELECTRICAL SAFETY PROJECT

CONCURRENT MEETING OF THE SWIMMING POOL TAC AND ELECTRICAL TAC

OCTOBER 14, 2015

RECOMMENDATIONS TO THE FLORIDA BUILDING COMMISSION

MONDAY, OCTOBER 14, 2015

MEETING SUMMARY AND OVERVIEW

On Wednesday, October 14, 2015 the Swimming Pool TAC and Electrical TAC met concurrently in Daytona Beach to develop recommendations regarding pool safety issues focused on the prevention of electrocution in swimming pools. At the initial scoping meeting held on September 28, 2015 the TACs agreed that the project scope was to focus on evaluation of whether to recommend a code amendment requiring low voltage lighting in residential pools for new construction (Phase I). In addition, it was agreed that additional electrical pool safety relevant topical issues including bonding, grounding, retrofitting of existing pools, and education would be considered as a second phase of the project (Phase II). At the October 14, 2015 meeting the TACs proposed and acceptability ranked options for low voltage lighting in residential pools for new construction. In addition, the TACs evaluated proposed options to address the other key topical issues, and ultimately developed a consensus package of recommendations for consideration by the Florida Building Commission. The TACs specific recommendations are as follow:

Grounding

The Electrical TAC and the Swimming Pool TAC voted unanimously to recommend that the Commission charge staff to work with the TAC chairs and in consultation with stakeholders to formulate a code amendment requiring that all electrical circuits feeding equipment that could potentially energize a pool have GFCI protection for new residential and commercial swimming pools (the goal is to fill in any gaps in the current Code).

Education

The Electrical TAC and the Swimming Pool TAC voted unanimously to recommend that the Commission support a comprehensive educational effort to ensure there is a consistent message to enhance pool electrical safety issues for existing and new pools by working with existing resources including educational providers and associations. The effort should include defining the problems, identifying solutions and communicating a consistent message to stakeholders (contractors, consumers, home inspectors, pool maintenance providers, etc.) through training courses, flyers, brochures, websites, etc. Key issues for education messaging include lighting, bonding, grounding, GFCI, maintenance of existing pools, and monitoring devices to detect stray currents in the pool water, etc.

Existing Swimming Pools

The Electrical TAC voted 6-2 in favor (75%), to recommend the Commission charge staff to work with the TAC chair and in consultation with stakeholders to formulate a code amendment requiring existing commercial and residential swimming pools to have GFCI protection for replacement pool pump motors, if not already in place; to provide GFCI protection for the replacement of 120 volt pool lights when they are replaced; and, as part of the close out inspection ensuring that the existing bonding system is complete and terminated properly.

TAC ACTIONS

MOTION—The Swimming Pool TAC voted unanimously, 8 - 0 in favor, to recommend the Commission approve the 2 consensus recommendations from the TAC (grounding and education).

MOTION—The Electrical Pool TAC voted unanimously, 8 - 0 in favor, to recommend the Commission approve the 3 consensus recommendations from the TAC (grounding, education, and existing swimming pools).

CERTIFIED GUNITE COMPANY, INC. • INCORPORATED IN FLORIDA AUGUST, 1964

February 23, 2016

TO: MEMBERS OF THE FLORIDA BUILDING COMMISSION

Innocent people are being electrocuted in their own backyard swimming pools. The prevention of electrocution is well worth the few additional cost dollars. I do not want the pools that I build, or the pools built by other members of my industry, to cause death or serious injury to the people who only want to enjoy them. I have been building swimming pools in Dade County since 1959. CC# 0605 was issued to me at that time. My company has installed GFCI breakers in the electrical panels together with 12 volt reduction transformers to power 12 volt pool lights in all of the pools we have built for about the past 30 years. We have not had one incident of electric shock or electrocution since then.

The NEC does not provide adequate protection from electrical shock and electrocution. Incidents of electric shock and electrocution have occurred in swimming pools that were built to NEC standards. The installation of GFCI breakers in the electrical panel together with voltage reduction transformers and low volt lights would provide the level of protection needed to prevent further incidents of this type of avoidable accident.

Implementing these code changes would then eliminate the present double standard that makes low volt lighting mandatory in commercial swimming pools, but not in residential swimming pools. We need to place the safety of the people and families who reside in Florida, ahead of efforts to save a few dollars. As lawmakers, you are empowered to change the building code and remove the danger of having people die from electrocution, while having fun in their backyard pools.

Thank you for giving serious consideration to my recommendations and for allowing me to express my opinion to you on this very crucial topic.

CUSTOM POOLS

Irv Chazen, President

13250 S.W. 131 STREET, SUITE 100 • MIAMI, FLORIDA 33186 • PHONE: 305 NEW POOL • FAX: 305 255-9720
www.custompoolsmiami.com

E7078

3

Date Submitted	1/1/2016	**Section**	3902	**Proponent**	Joseph Belcher
Chapter	39	**Affects HVHZ**	Yes	**Attachments**	No

TAC Recommendation No Affirmative Recommendation with a Second
Commission Action Pending Review

Comments

General Comments **No** **Alternate Language** **No**

Related Modifications

Summary of Modification

Removes kitchen and laundry areas from code.

Rationale

FHBA believes arc fault protection in locations where appliances and other mechanical equipment may cause frequent arcs will be problematic. If people are away from their homes when an arc fault circuit interrupter activates on a refrigerator or freezer located in the kitchen or a laundry room or perhaps a spare refrigerator or freezer in a garage or other room, it could result in considerable loss of food and substantial expense to replace. FHBA recommends retaining 2011 NEC Section 210.12 (A) with the Exceptions 1 – 3 and (B). A recent report by the University of Florida estimates the cost of compliance with the revisions to E3902.16 [NEC 210.12(A)] will cost $200.00 per house. Nationally, from 2006 to 2010 arc or sparks from operating equipment was the factor contributing to fires in 110 fires or 6% of the total with no civilian deaths or injuries. (Home Structure Fires Involving Kitchen Equipment Other Than Cooking Equipment, John R. Hall, Jr., NFPA Fire Analysis and Research Division, November 2012) The National Association of Home Builders estimates a cost of over $2.5 BILLION per year nationally to provide all the fault protection required in dwellings.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact.

Impact to building and property owners relative to cost of compliance with code

Approximate savings of $200 per unit with no increased risk.

Impact to industry relative to the cost of compliance with code

Approximate savings of $200 per unit with no increased risk.

Impact to small business relative to the cost of compliance with code

Approximate savings of $200 unit with no increased risk.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

While we agree there is always a risk, the risk of false activations and loss of food seem greater.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

The proposal will remove an unnecessary expansion of the code thereby improving the code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

Does not degrade the effectiveness of the code

Does not degrade the code.

Is the proposed code modification part of a prior code version? No

1st Comment Period History

E7078-G1

Proponent Thomas Lasprogato **Submitted** 2/3/2016 **Attachments** No

Comment:

I OPPOSE

1st Comment Period History

E7078-G2

Proponent Vincent Della Croce **Submitted** 2/7/2016 **Attachments** No

Comment:

Oppose.

o The loss in fire, injury and death far exceeds that of lost food in a refrigerator. The kitchen requirement includes all branch circuits that are subject to hazardous arcing faults and not just the refrigerator.

o Cord-and-plug kitchen and laundry appliances are fully compatible with AFCI devices. There should be no interoperability issues with AFCIs on kitchen and laundry area branch circuits. Several states, such as Texas and Georgia have been requiring the installation of AFCIs in accordance with the 2014 NEC & 2015 IRC for over a year. There have been no reported problems or issues with unwanted or nuisance tripping in these states.

o Branch circuits supplying these two areas are the same wiring method (NM cable) and are routed in the same locations as other AFCI protected circuits (in attics and behind walls). The exposure to damage from sharp points, nails and screws is the same for all branch circuits supplying outlets and devices within a dwelling.

o AFCI protection has been endorsed by the NFPA, NEMA, CPSC, ESFI, NECA, and the IAEI.

1st Comment Period History

E7078-G3

Proponent Bryan Holland **Submitted** 2/24/2016 **Attachments** No

Comment:

The National Electrical Manufacturers Association (NEMA) strongly opposes this proposed modification to the Florida Building Code. The substantiation provided by the proponent simply does not justify the reduction in safety that would result with the deletion of AFCI protection of branch circuits that supply kitchens and laundry areas. The cost to replace groceries can never be compared to the loss in life and property from fire. The savings to Floridian's as a result of this proposal would be completely wiped away by the death of a single person from an electrical fire that could have been prevented by AFCI protection. AFCI protection represents an extremely inexpensive and effective public safety policy.

NEMA urges the members of the Electrical TAC to reject this proposal and keep the expansion of this life saving device intact. The state of Florida has had a history of supporting and prompting above-code policies when it comes to the safety of persons and property from the use of electricity. Let's not start a precedent with the approval of this proposal that will result in less effective safety codes, higher insurance premiums, greater property loss, and diminished public trust in the government.

We greatly appreciate your sincere consideration of this important issue. Thank You.

E3902.16 Arc-fault circuit-interrupter protection. Branch circuits that supply 120-volt, single-phase, 15- and 20- ampere outlets installed in ~~kitchens,~~ family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreations rooms, closets, hallways, ~~laundry areas~~ and similar rooms or areas shall be protected by any of the following: [210.12(A)]

REMAINDER OF SECTION UNCHANGED

Date Submitted	11/22/2015	**Section**	4203.1.3	**Proponent**	Mo Madani
Chapter	42	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation No Affirmative Recommendation with a Second
Commission Action Pending Review

Comments

General Comments **No** **Alternate Language** **No**

Related Modifications

Summary of Modification

The proposed code change provides for provisions necessary to prevent electrocution in swimming pools by requiring that all pool electrical circuits feeding equipment have GFCI protection.

Rationale

As directed by the Commission, the said code change was submitted to improve/prevent electrocution in swimming pools. Also, see uploaded support files.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Further enforcement/inspections would be necessary by the enforcement agencies to implement this prevision.

Impact to building and property owners relative to cost of compliance with code

The proposed code change has the potential of adding cost to construction and at the same time reducing electrocution in swimming pools.

Impact to industry relative to the cost of compliance with code

The proposed code change has the potential of adding cost to construction and at the same time reducing electrocution in swimming pools.

Impact to small business relative to the cost of compliance with code

The proposed code change has the potential of adding cost to construction and at the same time reducing electrocution in swimming pools.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

The proposed code change has the potential reducing electrocution in swimming pools.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

The proposed code change has the potential reducing electrocution in swimming pools.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

The proposed code change does not discriminate against materials or products.

Does not degrade the effectiveness of the code

The proposed code change improves the code by providing provisions for reducing electrocution in swimming pools.

Is the proposed code modification part of a prior code version? No

1st Comment Period History

E6491-G2

Proponent Thomas Lasprogato **Submitted** 2/3/2016 **Attachments** No

Comment:

NEUTRAL

1st Comment Period History

E6491-G3

Proponent Bryan Holland **Submitted** 2/22/2016 **Attachments** No

Comment:

While I generally support the concept of this proposed modification, I believe this action is best addressed by modifications #6530 and #6531.

1st Comment Period History

E6491-G4

Proponent Jennifer Hatfield **Submitted** 2/25/2016 **Attachments** No

Comment:

On behalf of the Association of Pool & Spa Professionals' Technical Committee, which includes E.P. Hamilton III, Ph.D., who sits on Panel 17 of the National Electrical Code, the following is submitted:

1. This proposal, as written, is vague and unenforceable. First, there is no definition of “equipment that could potentially energize a pool.” No voltage level is specified. Further, since any ground fault anywhere on the electrical system is capable of energizing the water in a pool where there is improper, damaged and/or nonexistent equipotential bonding and an electrical connection exists between the pool water and the electrical grounding system (e.g., via the green ground wire in a properly connected metallic underwater light, regardless of voltage, or any bond to water on any pool with a pump), the proposal would require the use of GFCI protection for personnel on each and every electrical circuit on the premises, regardless of whether or not they are associated with the pool. A GFCI does not and cannot detect or protect against current flowing in the green equipment grounding conductor.

2. This proposal would require GFCI protection for personnel on the line side of transformers and power supplies serving low voltage lights and any other low voltage equipment not exceeding the LVCL. A GFCI does not and cannot detect or protect against ground faults on the load (low voltage) side of these devices and therefore this rule would require the unnecessary installation of a GFCI on a low voltage light circuit while not providing any level of protection for the low voltage light. The NEC has historically not required GFCI protection for low voltage lights for this reason.

There is no evidence this proposal would provide additional safety, instead we encourage adoption of the 2014 NEC that provides the latest technologies and safety requirements for pools & spas.

Chapter 42 Swimming Pools

Revise Section E4203.1.3 to read as follows:

E4203.1.3 GFCI protection. All 15- and 20-ampere, single phase, 125-volt receptacles located within 20 feet (6096 mm) of the inside walls of pools and outdoor spas and hot tubs shall be protected by a ground-fault circuit interrupter. Outlets supplying pool pump motors supplied

from branch circuits rated at 120 volts through 240 volts, single phase, whether by receptacle or direct connection, shall be provided with ground-fault circuit-interrupter protection for personnel. All electrical circuits feeding equipment that could potentially energize a pool shall also be provided with ground-fault circuit-interrupter. [680.21(C) and 680.22(A)(4)]

FLORIDA BUILDING COMMISSION

SWIMMING POOL ELECTRICAL SAFETY PROJECT

CONCURRENT MEETING OF THE SWIMMING POOL TAC AND ELECTRICAL TAC

OCTOBER 14, 2015 MEETING SUMMARY REPORT

WEDNESDAY, OCTOBER 14, 2015

MEETING SUMMARY AND OVERVIEW

On Wednesday, October 14, 2015 the Swimming Pool TAC and Electrical TAC met concurrently in Daytona Beach to develop recommendations regarding swimming pool safety issues focused on the prevention of electrocution in swimming pools. At the initial scoping meeting held on September 28, 2015 the TACs agreed that the project scope was to focus on evaluation of whether to recommend a code amendment requiring low voltage lighting in residential pools for new construction (Phase I). In addition, it was agreed that additional electrical pool safety relevant topical issues including bonding, grounding, retrofitting of existing pools, and education would be considered as a second phase of the project (Phase II). At the October 14, 2015 meeting the TACs proposed and acceptability ranked options for low voltage lighting in residential pools for new construction. In addition, the TACs evaluated proposed options to address the other key topical issues, and ultimately developed a consensus package of recommendations for consideration by the Florida Building Commission. The TACs voted unanimously to recommend the Commission approve the consensus package of recommendations from the TACs. The TACs' specific recommendations are as follow:

Grounding

The Electrical TAC and the Swimming Pool TAC voted unanimously to recommend that the Commission charge staff to work with the TAC chairs and in consultation with stakeholders to formulate a code amendment requiring that all electrical circuits feeding equipment that could potentially energize a pool have GFCI protection for new residential and commercial swimming pools (the goal is to fill in any gaps in the current Code).

Education

The Electrical TAC and the Swimming Pool TAC voted unanimously to recommend that the Commission support a comprehensive educational effort to ensure there is a consistent message to enhance pool electrical safety issues for existing and new pools by working with existing resources including educational providers and associations. The effort should include defining the problems, identifying solutions and communicating a consistent message to stakeholders (contractors, consumers, home inspectors, pool maintenance providers, etc.) through training courses, flyers, brochures, websites, etc. Key issues for education messaging include lighting, bonding, grounding, GFCI, maintenance of existing pools, and monitoring devices to detect stray currents in the pool water, etc.

Existing Swimming Pools

The Electrical TAC voted 6-2 in favor (75%), to recommend the Commission charge staff to work with the TAC chair and in consultation with stakeholders to formulate a code amendment requiring

existing commercial and residential swimming pools to have GFCI protection for replacement pool pump motors, if not already in place; to provide GFCI protection for the replacement of 120 volt pool lights when they are replaced; and, as part of the close out inspection ensuring that the existing bonding system is complete and terminated properly.

Note: The Swimming Pool TAC vote 5-3 (63%) in favor of the option.

PROJECT OVERVIEW

The 2015 Florida Legislature identified the need to evaluate the electrical aspects of swimming pool safety focusing on minimizing electrocution risks linked to swimming pools. In response, the Florida Building Commission approved a research project (technical enrichment) for a *Swimming Pool Electrocution Prevention Study*. In order to implement the project the Commission convened a process to develop recommendations for pool safety focused on the prevention of electrocution in swimming pools. The Commission determined that the project would be evaluated and recommendations developed by convening concurrent meetings of the Commission's Swimming Pool Technical Advisory Committee and Electrical Technical Advisory Committee (TAC). The objective of the project is to evaluate key topical issues, and as appropriate develop code amendment proposals designed to minimize electrocution risks linked to swimming pools.

In response to the Commission's direction the Swimming Pool TAC and Electrical TAC agreed that the initial Phase I scope of the project is to determine whether to recommend a proposed code amendment that would require low voltage lighting in residential swimming pools for new construction. Once the Swimming Pool TAC and the Electrical TAC conclude their evaluation of low voltage lighting they will evaluate additional project relevant topics in Phase II of the project: specifically bonding, grounding, retrofitting of existing pools, and education.

AGENDA ITEM OUTCOMES

OPENING AND MEETING ATTENDANCE

The meeting was opened at 10:00 AM once a quorum was established for the Swimming Pool and Electrical TACs respectively, and the following members participated:

Swimming Pool TAC: James Batts (chair), Jordan Clarkson, Bill Dumbaugh, Kevin Flanagan, John O'Conner, Mark Pabst, Gordon Shepardson, Bob Vincent, and John Wahler. (9 of 11)

Absent Members:
Tom Allen, and Corky Williams.

Electrical TAC: Kevin Flanagan (chair), Neal Burdick, Ken Castronovo, Leonard Devine, Jr. (*Alternate: Nelson Montgomery*), Shane Gerwig, David Rice (*Alternate: Steve Mitchell*), Joe Territo, Clarence Tibbs, and Dwight Wilkes. (9 of 11)

Absent Members:
Oriol Haage, and Roy Van Wyk.

DBPR Staff Present

Norman Bellamy, Chris Burgwald, Jim Hammers, April Hammonds, Mo Madani, and Jim Richmond.

Commissioners Present

Fred Schilling, Jim Schock, and Jeff Stone.

Meeting Facilitation and Reporting

The TAC Chairs meeting was facilitated by Jeff Blair from the FCRC Consensus center at Florida State University. Information at: http://consensus.fsu.edu/

FCRC CONSENSUS CENTER

Background and Supporting Documents

The agenda and relevant background and supporting documents are linked to each agenda item. The Agenda URLs for the October 14, 2015 TAC meetings are as follows:

http://www.floridabuilding.org/fbc/commission/FBC_1015/Swimming_Pool_TAC/Swimming_Pool_TAC_Agenda_101415.htm

http://www.floridabuilding.org/fbc/commission/FBC_1015/Electrical_TAC/Electrical_Agenda_TAC_101415.htm

AGENDA REVIEW

The Swimming Pool TAC voted unanimously, 8 - 0 in favor, to approve the agenda for the October 24, 2015 meeting as posted/presented.

The Electrical TAC voted unanimously, 9 - 0 in favor, to approve the agenda for the October 14, 2015 meeting as posted/presented.

Following are the key agenda items approved for consideration:

- To Approve Regular Procedural Topics (Agenda and Meeting Summary Report)
- To Discuss and Approve Phase I Recommendations (Low Voltage Lighting in Residential Pools for New Construction)
- To Discuss Phase II Topics (Bonding, Grounding, Retrofitting of Existing Pools, and Education)
- To Adopt Consensus Recommendations for Submittal to the Commission
- To Consider Public Comment
- To Identify Needed Next Steps: Information, Assignments, and Agenda Items for Next Meeting

The complete Agenda is included as *"Attachment 1"* of this report.

(See Attachment 1—Agenda)

APPROVAL OF SEPTEMBER 28, 2015 MEETING SUMMARY REPORT

The Swimming Pool TAC voted unanimously, 8 - 0 in favor, to approve the Meeting Summary Report for the September 28, 2015 meeting as posted/presented.

APPROVAL SEPTEMBER 28, 2015 MEETING SUMMARY REPORT

The Electrical TAC voted unanimously, 9 - 0 in favor, to approve the Meeting Summary Report for the September 28, 2015 meeting as posted/presented.

IDENTIFICATION, DISCUSSION, AND ACCEPTABILITY RANKING OF PHASE I OPTIONS
Requirement for Low Voltage Lighting in Residential Pools for New Construction

At the September 28, 2015 meeting the Swimming Pool TAC and the Electrical TAC voted to approve in concept a code amendment proposal requiring low voltage lighting in residential pools for new construction, with the understanding that relevant safety data and other documentation would be evaluated prior to a final vote on any recommendation submitted to the Florida Building Commission.

At the October 14, 2015 meeting the TACs were asked to offer options regarding possible requirement for low voltage lighting in residential pools for new construction. In addition, the public was invited to comment on the options and/or suggest additional options prior to the TACs ranking them for acceptability. Jeff explained that members would be asked to rank each proposed option in turn utilizing a four-point acceptability ranking scale where 4 = acceptable, 3 = minor reservations, 2 = major reservations, and 1 = unacceptable. Following discussion and refinement of options, members may be asked to do additional rankings of proposed options if requested by a *TAC* member. Members should be prepared to offer specific refinements to address their reservations.

Once ranked, options with a 75% or greater number of 4's and 3's in proportion to 2's and 1's shall be considered consensus recommendations. The *TACs'* consensus recommendations will be submitted to the Commission for consideration.

Following the opportunity provided for questions and answers, public comment, and discussion, the TACs ranked a series of options regarding low voltage lighting in residential pools for new construction.

The complete Options Acceptability Ranking Results are included as *"Attachment 2"* of this report.

(See Attachment 2—Ranking Results)

DISCUSSION AND EVALUATION OF PHASE II TOPICS IN TURN

Identification of Issues and Options, and Acceptability Ranking of Options in Turn

Jeff explained that the TACs would address each of the four key issues in turn by topic, and that members would be invited to propose and comment on options before the TAC members ranked them. In addition, the public was invited to comment on the options and/or suggest additional options prior to the TACs ranking them for acceptability. The Phase II topics are Bonding, Grounding, Retrofitting of Existing Swimming Pools, and Education of Contractors and Consumers. Jeff explained that TAC members would be asked to rank each proposed option in turn utilizing a four-point acceptability ranking scale where 4 = acceptable, 3 = minor reservations, 2 = major reservations, and 1 = unacceptable. Following discussion and refinement of options, members may be asked to do additional rankings of proposed options if requested by a *TAC* member. Members should be prepared to offer specific refinements to address their reservations. Once ranked, options with a 75% or greater number of 4's and 3's in proportion to 2's and 1's shall be considered consensus recommendations. The *TACs'* consensus recommendations will be submitted to the Commission for consideration.

Following the opportunity provided for questions and answers, public comment, and discussion, the TACs ranked the proposed options for acceptability. All of the options proposed are included in the ranking results. Following are the option(s) ranked that achieved a consensus level of support (≥ 75% in favor):

Grounding

The Electrical TAC and the Swimming Pool TAC voted unanimously to recommend that the Commission charge staff to work with the TAC chairs and in consultation with stakeholders to formulate a code amendment requiring that all electrical circuits feeding equipment that could potentially energize a pool have GFCI protection for new residential and commercial swimming pools (the goal is to fill in any gaps in the current Code).

Education

The Electrical TAC and the Swimming Pool TAC voted unanimously to recommend that the Commission support a comprehensive educational effort to ensure there is a consistent message to enhance pool electrical safety issues for existing and new pools by working with existing resources including educational providers and associations. The effort should include defining the problems, identifying solutions and communicating a consistent message to stakeholders (contractors, consumers, home inspectors, pool maintenance providers, etc.) through training courses, flyers,

brochures, websites, etc. Key issues for education messaging include lighting, bonding, grounding, GFCI, maintenance of existing pools, and monitoring devices to detect stray currents in the pool water, etc.

Existing Swimming Pools
The Electrical TAC voted 6-2 in favor (75%), to recommend the Commission charge staff to work with the TAC chair and in consultation with stakeholders to formulate a code amendment requiring existing commercial and residential swimming pools to have GFCI protection for replacement pool pump motors, if not already in place; to provide GFCI protection for the replacement of 120 volt pool lights when they are replaced; and, as part of the close out inspection ensuring that the existing bonding system is complete and terminated properly.

Note: The Swimming Pool TAC vote 5-3 (63%) in favor of the option.
The complete Options Acceptability Ranking Results are included as *"Attachment 2"* of this report.

(See Attachment 2—Ranking Results)

TAC ACTIONS

Following the opportunity provided for questions and answers, public comment and discussion, the TACs took the following actions:

MOTION—The Swimming Pool TAC voted unanimously, 8 - 0 in favor, to recommend the Commission approve the TACs' package of consensus recommendations.

MOTION—The Electrical Pool TAC voted unanimously, 8 - 0 in favor, to recommend the Commission approve the TACs' package of consensus recommendation.

NEXT STEPS

Following are the next steps for the Swimming Pool Electrical Safety Project:

- The Commission will evaluate the TACs' (Swimming Pool TAC and Electrical TAC) consensus package of recommendations at the October 15, 2015 meeting.
- The Commission will take the lead with ensuring Code amendments are proposed consistent with any recommendations approved by the Commission regarding swimming pool electrical safety requirements.

ADJOURNMENT

After a determination that a quorum was still present the Swimming Pool TAC voted unanimously, 8 – 0 in favor, to adjourn the meeting at 3:30 PM on Wednesday, October 14, 2015.

After a determination that a quorum was still present the Electrical TAC voted unanimously, 8 – 0 in favor, to adjourn the meeting at 3:30 PM on Wednesday, October 14, 2015.

ATTACHMENT 1
OCTOBER 14, 2015 MEETING AGENDAS

FLORIDA BUILDING COMMISSION
SWIMMING POOL TECHNICAL ADVISORY COMMITTEE (TAC)
CONCURRENTLY WITH THE ELECTRICAL TAC
OCTOBER 14, 2015—MEETING II

PLAZA HISTORIC BEACH RESORT AND SPA
600 NORTH ATLANTIC BOULEVARD—DAYTONA BEACH, FLORIDA 33706

MEETING OBJECTIVES

- ➢ To Approve Regular Procedural Topics (Agenda and Meeting Summary Report)
- ➢ To Discuss and Approve Phase I Recommendations (Low Voltage Lighting in Residential Pools for New Construction)
- ➢ To Discuss Phase II Topics (Bonding, Grounding, Retrofitting of Existing Pools, and Education)
- ➢ To Adopt Consensus Recommendations for Submittal to the Commission
- ➢ To Consider Public Comment
- ✓ To Identify Needed Next Steps: Information, Assignments, and Agenda Items for Next Meeting

MEETING AGENDA—WEDNESDAY, OCTOBER 14, 2015		
All Agenda Times—Including Adjournment—Are Approximate and Subject to Change		
10:00 AM	**A.)**	**WELCOME AND INTRODUCTIONS**
	B.)	**AGENDA REVIEW AND APPROVAL (October 14, 2015)**
	C.)	**REVIEW AND APPROVAL OF FACILITATOR'S SUMMARY REPORT (September 28, 2015)**
	D.)	**IDENTIFICATION, DISCUSSION, AND ACCEPTABILITY RANKING OF PHASE I OPTIONS** Requirement for Low Voltage Lighting in Residential Pools for New Construction • Identification, Discussion and Acceptability Ranking of Options In Turn
	E.)	**ADOPTION OF PHASE I CONSENSUS RECOMMENDATIONS FOR SUBMITTAL TO THE COMMISSION**
12:00 PM	*LUNCH*	
1:00 PM	**F.**	**DISCUSSION AND EVALUATION OF PHASE II TOPICS IN TURN** Identification of Issues and Options, and Acceptability Ranking of Options in Turn • Bonding • Grounding • Retrofitting of Existing Swimming Pools • Education of Contractors and Consumers
3:00 PM	*BREAK*	
3:15 PM	**F.**	**DISCUSSION AND EVALUATION OF PHASE II TOPICS IN TURN CONTINUED**
	G.)	**ADOPTION OF ANY PHASE II CONSENSUS RECOMMENDATIONS FOR SUBMITTAL TO THE COMMISSION**
	H.)	**GENERAL PUBLIC COMMENT**
	I.)	**NEXT STEPS: AGENDA ITEMS, NEEDED INFORMATION, ASSIGNMENTS, DATE AND LOCATION IF NEEDED**
~5:00 PM	*J.)*	*ADJOURN*

FLORIDA BUILDING COMMISSION
ELECTRICAL TECHNICAL ADVISORY COMMITTEE (TAC)
CONCURRENTLY WITH THE SWIMMING POOL TAC
OCTOBER 14, 2015—MEETING II

PLAZA HISTORIC BEACH RESORT AND SPA
600 NORTH ATLANTIC BOULEVARD—DAYTONA BEACH, FLORIDA 33706

MEETING OBJECTIVES
➢ To Approve Regular Procedural Topics (Agenda and Meeting Summary Report)
➢ To Discuss and Approve Phase I Recommendations (Low Voltage Lighting in Residential Pools for New Construction)
➢ To Discuss Phase II Topics (Bonding, Grounding, Retrofitting of Existing Pools, and Education)
➢ To Adopt Consensus Recommendations for Submittal to the Commission
➢ To Consider Public Comment
✓ To Identify Needed Next Steps: Information, Assignments, and Agenda Items for Next Meeting

MEETING AGENDA—WEDNESDAY, OCTOBER 14, 2015		
All Agenda Times—Including Adjournment—Are Approximate and Subject to Change		
10:00 AM	**A.)**	**WELCOME AND INTRODUCTIONS**
	B.)	**AGENDA REVIEW AND APPROVAL (October 14, 2015)**
	C.)	**REVIEW AND APPROVAL OF FACILITATOR'S SUMMARY REPORT (September 28, 2015)**
	D.)	**IDENTIFICATION, DISCUSSION, AND ACCEPTABILITY RANKING OF PHASE I OPTIONS** Requirement for Low Voltage Lighting in Residential Pools for New Construction • Identification, Discussion and Acceptability Ranking of Options In Turn
	E.)	**ADOPTION OF PHASE I CONSENSUS RECOMMENDATIONS FOR SUBMITTAL TO THE COMMISSION**
12:00 PM	*LUNCH*	
1:00 PM	**F.**	**DISCUSSION AND EVALUATION OF PHASE II TOPICS IN TURN** Identification of Issues and Options, and Acceptability Ranking of Options in Turn • Bonding • Grounding • Retrofitting of Existing Swimming Pools • Education of Contractors and Consumers
3:00 PM	*BREAK*	
3:15 PM	**F.**	**DISCUSSION AND EVALUATION OF PHASE II TOPICS IN TURN CONTINUED**
	G.)	**ADOPTION OF ANY PHASE II CONSENSUS RECOMMENDATIONS FOR SUBMITTAL TO THE COMMISSION**
	H.)	**GENERAL PUBLIC COMMENT**
	I.)	**NEXT STEPS: AGENDA ITEMS, NEEDED INFORMATION, ASSIGNMENTS, DATE AND LOCATION IF NEEDED**
~5:00 PM	*J.)*	*ADJOURN*

ATTACHMENT 2
OPTIONS ACCEPTABILITY RANKING RESULTS

I. PHASE I RECOMMENDATIONS

LOW VOLTAGE LIGHTING IN RESIDENTIAL SWIMMING POOLS FOR NEW CONSTRUCTION

Low Voltage *October 14, 2015*	*4=acceptable*	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Option A: **Require low voltage lighting in residential pools for new construction (Miami-Dade requirements).**				
Swimming Pool TAC (6-3) 67%	5	1	1	2
Electrical TAC (5-4) 56%	4	1	1	3
Option B: **Maintain NEC requirements for new residential pools**				
Swimming Pool TAC (7-2) 78%	6	1	1	1
Swimming Pool TAC (6-3) 67%	5	1	1	2
Revised Ranking *Electrical TAC* (5-4) 56%	4	1	3	1
Option C: **Require low voltage lighting in residential pools for new construction (Miami-Dade requirements) for energy conservation purposes.**				
Swimming Pool TAC (7-2) 78%	5	2	1	1
Swimming Pool TAC (4-5) 44%	2	2	2	3
Revised Ranking *Electrical TAC* (6-3) 67%	2	4	0	3
Revised Ranking *Electrical TAC* (5-4) 56%	3	2	1	3
Option D: **Require LED pool lights with plastic niches or without niches in new construction.**				
Swimming Pool TAC (3-6) 33%	2	1	3	3
Electrical TAC (2-7) 22%	1	1	4	3

Option E: **All residential pools shall meet the requirements of code and shall be require a monitoring device to detect stray currents in the water.**				
Swimming Pool TAC (2-7) 22%	**0**	**2**	**5**	**2**
Electrical TAC (3-6) 33%	**1**	**2**	**6**	**0**

II. PHASE II RECOMMENDATIONS

1. BONDING

No specific options were evaluated for bonding.

2. GROUNDING

Grounding *October 14, 2015*	*4=acceptable*	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Option A: **Require that all electrical circuits feeding equipment that could potentially energize a pool have GFCI protection for new residential and commercial swimming pools (the goal is to fill in any gaps in the current Code).**				
Swimming Pool TAC **(9-0) 100%**	**4**	**5**	**0**	**0**
Electrical TAC **(9-0) 100%**	**5**	**4**	**0**	**0**

3. RETROFITTING OF EXISTING POOLS

Retrofitting *October 14, 2015*	*4=acceptable*	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Option A: **Require existing commercial and residential swimming pools to have GFCI protection for replacement pool pump motors, if not already in place; to provide GFCI protection for the replacement of 120 volt pool lights when they are replaced; and, as part of the close out inspection ensuring that the existing bonding system is complete and terminated properly.**				
Swimming Pool TAC (5-3) 63%	**2**	**3**	**3**	**0**
Electrical TAC **(6-2) 75%**	**4**	**2**	**2**	**0**

4. EDUCATION INITIATIVES FOR CONTRACTORS AND CONSUMERS

Education *October 14, 2015*	*4=acceptable*	*3= minor reservations*	*2=major reservations*	*1= not acceptable*
Option A: **Initiate a comprehensive educational effort to ensure there is a consistent message to enhance pool electrical safety issues for existing and new pools by working with existing resources including educational providers and associations. The effort should include defining the problems, identifying solutions and communicating a consistent message to stakeholders (contractors, consumers, home inspectors, pool maintenance providers, etc.) through training courses, flyers, brochures, websites, etc. Key issues for education messaging include lighting, bonding, grounding, GFCI, maintenance of existing pools, and monitoring devices to detect stray currents in the pool water, etc.**				
Swimming Pool TAC **(9-0) 100%**	**9**	**0**	**0**	**0**
Electrical TAC **(9-0) 100%**	**8**	**0**	**0**	**0**

FLORIDA BUILDING COMMISSION

SWIMMING POOL ELECTRICAL SAFETY PROJECT

CONCURRENT MEETING OF THE SWIMMING POOL TAC AND ELECTRICAL TAC

OCTOBER 14, 2015

RECOMMENDATIONS TO THE FLORIDA BUILDING COMMISSION

MONDAY, OCTOBER 14, 2015

MEETING SUMMARY AND OVERVIEW

On Wednesday, October 14, 2015 the Swimming Pool TAC and Electrical TAC met concurrently in Daytona Beach to develop recommendations regarding pool safety issues focused on the prevention of electrocution in swimming pools. At the initial scoping meeting held on September 28, 2015 the TACs agreed that the project scope was to focus on evaluation of whether to recommend a code amendment requiring low voltage lighting in residential pools for new construction (Phase I). In addition, it was agreed that additional electrical pool safety relevant topical issues including bonding, grounding, retrofitting of existing pools, and education would be considered as a second phase of the project (Phase II). At the October 14, 2015 meeting the TACs proposed and acceptability ranked options for low voltage lighting in residential pools for new construction. In addition, the TACs evaluated proposed options to address the other key topical issues, and ultimately developed a consensus package of recommendations for consideration by the Florida Building Commission. The TACs specific recommendations are as follow:

Grounding

The Electrical TAC and the Swimming Pool TAC voted unanimously to recommend that the Commission charge staff to work with the TAC chairs and in consultation with stakeholders to formulate a code amendment requiring that all electrical circuits feeding equipment that could potentially energize a pool have GFCI protection for new residential and commercial swimming pools (the goal is to fill in any gaps in the current Code).

Education

The Electrical TAC and the Swimming Pool TAC voted unanimously to recommend that the Commission support a comprehensive educational effort to ensure there is a consistent message to enhance pool electrical safety issues for existing and new pools by working with existing resources including educational providers and associations. The effort should include defining the problems, identifying solutions and communicating a consistent message to stakeholders (contractors, consumers, home inspectors, pool maintenance providers, etc.) through training courses, flyers, brochures, websites, etc. Key issues for education messaging include lighting, bonding, grounding, GFCI, maintenance of existing pools, and monitoring devices to detect stray currents in the pool water, etc.

Existing Swimming Pools

The Electrical TAC voted 6-2 in favor (75%), to recommend the Commission charge staff to work with the TAC chair and in consultation with stakeholders to formulate a code amendment requiring existing commercial and residential swimming pools to have GFCI protection for replacement pool pump motors, if not already in place; to provide GFCI protection for the replacement of 120 volt pool lights when they are replaced; and, as part of the close out inspection ensuring that the existing bonding system is complete and terminated properly.

TAC ACTIONS

MOTION—The Swimming Pool TAC voted unanimously, 8 - 0 in favor, to recommend the Commission approve the 2 consensus recommendations from the TAC (grounding and education).

MOTION—The Electrical Pool TAC voted unanimously, 8 - 0 in favor, to recommend the Commission approve the 3 consensus recommendations from the TAC (grounding, education, and existing swimming pools).