Energy

Proposed Code Modifications

TAC: Energy

Sub Code: Building

Total Mods for Energy: 107

EN3986

Date Proposal Submitted	3/27/2010	**Section**	1203.3.2
Chapter	12	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	J Glenn-BASF	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

1. Delete Florida Specific amendment to 1203.3.2 and retain IBC language. 2. Change code reference to Chapter 13 of the Florida Building Code, Building 3. Retain exception #5 and renumber to #6.

Rationale

Based code, IBC 1203.3.2 provides an effective method of ventilating crawl spaces. Retaining exception #5 and renumber to #6 will allow a Florida Design Professional to design an unvented crawl spaces.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on local enforcement

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

There is no impact on health, safety or welfare.

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

Brings the code in line with the nationally practice.

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

Does not discriminate against materials

Does not degrade the effectiveness of the code

Does not degrade the code.

General Comment

EN3986-G1

Proponent Joy Duperault **Submitted** 5/27/2010 **Attachments** No

Comment

It is important to note that item #6 of the exception pertains to venting for air ventilation purposes. For buildings located in flood hazard areas, allowing engineered crawlspaces per item #6 in the exception, does not obviate the requirement to comply with requirements for flood openings.

~~**1203.3.2 Exceptions.** The following are exceptions to Sections 1203.3 and 1203.3.1:~~

~~1. Where warranted by climatic conditions, ventilation openings to the outdoors are not required if ventilation openings to the interior are provided.~~

~~2. The total area of ventilation openings is permitted to be reduced to 1/1,500 of the under-floor area where the ground surface is treated with an approved vapor retarder material and the required openings are placed so as to provide cross ventilation of the space. The installation of operable louvers shall not be prohibited.~~

~~3. Ventilation openings are not required where continuously operated mechanical ventilation is provided at a rate of 1.0 cubic foot per minute (cfm) for each 50 square feet (1.02 L/s for each 10 m2) of crawl space floor area and the ground surface is covered with an approved vapor retarder.~~

~~4. Ventilation openings are not required when the ground surface is covered with an approved vapor retarder, the perimeter walls are insulated and the space is conditioned in accordance with Chapter 13 of Florida Building Code, Building.~~

5. Crawl spaces, designed by a Florida-licensed engineer or registered architect to eliminate the venting.

1203.3.2 Exceptions. The following are exceptions to Sections 1203.3 and 1203.3.1:1. Where warranted by climatic conditions, ventilation openings to the outdoors are not required if ventilation openings to the interior are provided.

2. The total area of ventilation openings is permitted to be reduced to 1/1,500 of the under-floor area where the ground surface is covered with a Class I vapor retarder material and the required openings are placed so as to provide cross ventilation of the space. The installation of operable louvers shall not be prohibited.

3. Ventilation openings are not required where continuously operated mechanical ventilation is provided at a rate of 1.0 cubic foot per minute (cfm) for each 50 square feet (1.02 L/s for each 10 m2) of crawl space floor area and the ground surface is covered with a Class I vapor retarder.

4. Ventilation openings are not required when the ground surface is covered with a Class I vapor retarder, the perimeter walls are insulated and the space is conditioned in accordance with the ~~International Energy Conservation Code~~Chapter 13 of Florida Building Code, Building.

5. For buildings in flood hazard areas as established in Section 1612.3, the openings for under-floor ventilation shall be deemed as meeting the flood opening requirements of ASCE 24 provided that the ventilation openings are designed and installed in accordance with ASCE 24.

~~5~~ 6. Crawl spaces, designed by a Florida-licensed engineer or registered architect to eliminate the venting.

Date Proposal Submitted	4/2/2010	**Section**	New appendix
Chapter	2711	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Doug Harvey	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	No

Related Modifications

Add code reference to chapter 35 including the edition date.

Summary of Modification

Add a new Appendix “XX” (Designation to be assigned)

Rationale

Please see support document for rationale.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This proposed change does not impact local enforcement, it merely provides an alternate path for design that adhere to the Florida Building Code

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

No fiscal impact to the building owner is anticipated

Impact to industry relative to the cost of compliance with code

No fiscal impact to the industry is anticipated

Requirements

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

This proposed change protects the health, safety and welfare by allowing the code compliant use of “green” ideas and technologies

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

This proposed change improves the code for design consistency

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

This proposed code change does not discriminate

Does not degrade the effectiveness of the code

This proposed change does not degrade the effectiveness of the code.

General Comment

EN4391-G1

Proponent Doug Harvey **Submitted** 6/1/2010 **Attachments** No

Comment

BOAF has suggested the International Green Construction Code (IGCC) be included as an adoptable appendix. While many ideas for “green” and green construction are present in the marketplace today, no other document has been through the process the IgCC has. This document has been compared to the base codes for Building, Mechanical, Plumbing, Fuel Gas and Energy. The code has been scrutinized so as to prevent conflicts between building code requirements and green/sustainable requirements. The IgCC has been evaluated and endorsed by the USGBC and ASHRAE as well through the national consensus process. Many areas are in the process of trying to adopt “green” standards for their communities. This will provide a method for jurisdictions looking to mandate greener and more sustainable requirements. In addition, this document was created in conjunction with ASHRAE, ICC and others, including public meetings, to ensure compatibility with many of the existing requirements in existence today and with a forward looking approach. While this is a relatively new document, inclusion as an adoptable appendix will offer an option that will help with code compliance, not code violation or putting different standards at odds with each other.

General Comment

EN4391-G2

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

The new appendix is based on a proposed standard that is not yet approved.

APPENDIX 'XX' (Designation to be assigned)

International Green Construction Code (IGCC)

The provisions in this appendix are not mandatory unless specifically referenced in the adopting ordinance

SECTION (XX) 101

GENERAL

(XX) 101.1 Scope. The provisions of this appendix are applicable to all occupancies covered by the International Green Construction Code (IGCC).

(XX) 101.2 Intent. The intent of this appendix is to provide direction for communities having a desire to preserve natural resources, especially water, and lessen the impact of construction on the built environment. Adoption of this standard is to safeguard the environment, public health, safety and general welfare through the establishment of requirements to reduce the negative potential impacts and increase the potential positive impacts of the built environment and building occupants, by means of minimum requirements to: conservation of natural resources, materials and energy; the employment of renewable energy technologies, indoor and outdoor air quality; and building operations and maintenance.

(XX) 101.3 Requirements. The design of buildings shall be in accordance with the International Green Construction Code (IGCC).

Add the Following to Chapter 35 – references:

ICC

International Code Council, Inc.

500 New Jersey Avenue, NW

6th Floor

Washington, DC 20001

Standard Referenced: IGCC

Title: **International Green Construction Code (IGCC)**

Reference in code section number: Appendix L

Date Submitted	April 2, 2010
Mod Number	
Code Version	2010
Code Change Cycle	2010 Triennial Original Modifications 03/01/2010/-/04/02/2010
Sub-code	Building
Chapter Topic	Appendix, International Green Construction Code
Section	Appendix
Related Modification	Add code reference to chapter 35 including the edition date.
Affects HVHZ	No
Summary of modification	Add a new Appendix "XX" (Designation to be assigned)
Text of Modification	APPENDIX 'XX' (Designation to be assigned) International Green Construction Code (IGCC) The provisions in this appendix are not mandatory unless specifically referenced in the adopting ordinance SECTION (XX) 101 GENERAL (XX) 101.1 Scope. The provisions of this appendix are applicable to all occupancies covered by the International Green Construction Code (IGCC). (XX) 101.2 Intent. The intent of this appendix is to provide direction for communities having a desire to preserve natural resources, especially water, and lessen the impact of construction on the built environment. Adoption of this standard is to safeguard the environment, public health, safety and general welfare through the establishment of requirements to reduce the negative potential impacts and increase the potential positive impacts of the built environment and building occupants, by means of minimum requirements to: conservation of natural resources, materials and energy; the employment of renewable energy technologies, indoor and outdoor air quality; and building operations and maintenance. (XX) 101.3 Requirements. The design of buildings shall be in accordance with the International Green Construction Code (IGCC). Add the Following to Chapter 35 – references: ICC International Code Council, Inc.

	500 New Jersey Avenue, NW 6th Floor Washington, DC 20001 Standard Referenced: IGCC Title: International Green Construction Code (IGCC) Reference in code section number: Appendix L
Rational	1. The purpose of this proposed change is to add a new optional appendix to the FBC. 2. The proposed appendix will reference the International Green Construction Code (IGCC). This newly-developed, consensus-based standard may be used in conjunction with local code requirements specific to green buildings covered in the scope. 3. Green buildings are currently being designed and constructed nationwide using different programs guidelines, rating systems, and standards. The IGCC was developed under the direction of ICC, in conjunction with representatives from other nationally-recognized organizations with experience and expertise in this field, including ASHRAE members. In many cases, limited guidance is given as to the criteria to be used to determine if the building project meets the expectations. The IGCC provides a path using a publicly-reviewed resource for local jurisdictions to adopt and use in the administration of green residential building design.
Fiscal Impact statement	
Impact to Local Enforcement	This proposed change does not impact local enforcement, it merely provides an alternate path for design that adhere to the Florida Building Code
Impact to Building owner	No fiscal impact to the building owner is anticipated
Impact to Industry	No fiscal impact to the industry is anticipated
Requirements	
Has connection to health safety and Welfare	This proposed change protects the health, safety and welfare by allowing the code compliant use of "green" ideas and technologies
Strengths or improves Code	This proposed change improves the code for design consistency
Does not discriminate	This proposed change does not discriminate
Does not degrade effectiveness of code	This proposed change does not degrade the effectiveness of the code.

Sub Code: Energy Conservation

Date Proposal Submitted	3/23/2010	**Section**	101.2
Chapter	1	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Darrell Winters	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Jurisdictions should be allowed to adopt a more stringent code but not a less stringent one.

Rationale

It allows jurisdictions to adopt a more stringent code which will save addtional energy.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on code officials.

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

Minor impact on cost will provide pay back from energy savings.

Impact to industry relative to the cost of compliance with code

Energy savings will reduce demand on power supply and demand and benefit utility companies.

Requirements

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

No impact on health, safety and welfare.

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

This modification strenthens the code and may provide better construction quality.

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

No discrimation against materials, products methods or systems.

Does not degrade the effectiveness of the code

This modification improves the effectiveness of the code.

General Comment

EN3709-G1

Proponent Ann Stanton **Submitted** 5/24/2010 **Attachments** No

Comment

Section 553.903, Florida Statutes, Applicability, reads, in part, as follows: "This part shall apply...Construction. The provisions of this part shall constitute a statewide uniform code."
Section 553.904, Florida Statutes, Thermal efficiency standards for new nonresidential buildings, states, in part: "Thermal designs ...eqiupment performance and shall not be required to meet standards more stringent than the provisions of the Florida Energy Efficiency Code for Building Construction."
Section 553.905, Florida Statutes, Thermal efficiency standards for new residential buildings states, in part: "Thermal designs ...shall at a minimum take into account...and shall not be required to meet standards more stringent than the provisions of the Florid Energy Efficiency Code for Building Construction....period."
Section 553.906, Florida Statutes, Thermal efficiency standards for renovated buildings, states, in part: "Thermal designs ...Such buildings shall not be required to meet standards more stringent than the provisions of the Florida Energy Efficiency Code for Building Construction. These standards apply only to those portions of the structure which are actually renovated."
In short, the mandating legislation prevents imposition of more stringent standards than those included in the Code.

General Comment

EN3709-G2

Proponent Amy Schmidt **Submitted** 5/25/2010 **Attachments** No

Comment

At the least this code should be a statewide "minimum" code. Jusisdictions should not be allowed to adopt a less stringent code that would adversely affect energy efficiency. If language allows jurisdictions should have the option of adopting a more stringent code to further reduce the energy consumption of buildings if they so choose.

General Comment

EN3709-G3

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

Language is not consistent with F.S. 553.73(4) local amendments.

101.2 Scope. This code applies to residential and commercial buildings. It is a statewide uniform minimum code ~~and shall not be made more stringent or lenient by local government~~. Local jurisdictions may adopt a more stringent code but shall not adopt a less stringent code.

Date Proposal Submitted	3/24/2010	**Section**	101.4.10
Chapter	1	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Allow code official to determine limited/special use building application.

Rationale

Code officials should have the responsibility of determining whether a building fits the limited/special use category. Provides criteria for determining compliance.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Would require the code official to determine if a limited or special use building meets the code.

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

Would not require limited/special use buildings to go before the Florida Building Commission.

Impact to industry relative to the cost of compliance with code

Less steps to jump through.

Requirements

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

Yes.

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

Yes.

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

No.

Does not degrade the effectiveness of the code

No.

101.4.10 Limited or special use buildings. Buildings determined by the code official ~~Florida Building Commission~~ to have a limited energy use potential based on size, configuration or time occupied, or to have a special use requirement shall be considered limited or special use buildings and shall comply with the code by Form 502. Code compliance requirements may ~~shall~~ be adjusted by the code official ~~Commission~~ to handle such cases when nationally recognized energy analysis procedures have been used to demonstrate that the building would use less energy than a code compliant building of the same configuration ~~warranted~~.

Date Proposal Submitted	4/1/2010	**Section**	101.4.10
Chapter	1	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	WILLIAM KALKER	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

4240, 3848

Summary of Modification

PROPOSED CHANGE IN THERMAL ENVELOPE REQUIREMENTS FOR SPECIAL USE STRUCTURES

Rationale

PERMIT REDUCTION IN THERMAL ENVELOPE REQUIREMENTS FOR SPECIAL USE BUILDINGS WHICH BECAUSE OF THEIR USE AND SMALL AREA CANNBOT BE DESIGNED TO COMPLY WITH THE STANDARD CODE REQUIREMENTS (IE, SMALL AREA WITH CONSTANT OPENING OF DOORS AND WINDOWS EXHAUSTS CONDITIONED AIR PREVENTING COMPLIANCE WITH STANDARD ASHRAE INDOOR TEMPERATURE DESIGN CRITERIA)

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

NONE

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

REDUCE COSTS OF STRUCTURE

Impact to industry relative to the cost of compliance with code

REDUCE BUILDING COSTS WHEN COMPLIANCE IS NOT POSSIBLE

Requirements

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

NO IMPACT

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

PERMITS COMPLIANCE

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

DOES NOT DESCRIMINATE

Does not degrade the effectiveness of the code

PROVIDES ALTERNATE DESIGN CRITERIA

101.4.10 Limited or special use buildings. Buildings determined by theFlorida Building Commission to have a limited energy use potential based on the size, configuration or time the building is occupied, or to have a special use requirement shall be considered limited or special use buildings and shall comply with the code by Form 502. Code compliance requirements shall be adjusted by the Commission to handle such cases when warranted.

Similarly, buildings which are less than 500 square feet in area which are heated or cooled to control extreme temperature swings, and which are either not designed or cannot be designed to maintain standard ASHRAE design conditions because of the type of use of the building may comply with the envelope requirements specified in Table 502.1.1.1 (3) in lieu of the other envelope design criteria specified in this code. Examples of this type of structure are guard sheds or similar buildings whose intended use make the design of the HVAC systems to maintain normal design conditions impractical.

TABLE 502.1.1.1 (3)

ENVELOPE PRESCRIPTIVE MEASURES

FOR BUILDINGS NOT DESIGNED TO COMPLY WITH STANDARD

ASHRAE DESIGN CRITERIA

Building Element	**Mandatory**
Roof:	
Absorptance	=0.22
R-value (U-value)	R-19 (U=0.053)
Wall:	
Above grade wall:	
Absorptance	=0.3
R-value (U-value)	R-13 (U=0.089)
Below grade wall:	No requirement
Raised Floor Insulation	
R-value (U-value)	R-19 (U=0.051)
Window:	
U-factor	= 1.20

SHGC (by window area)	
0-40% WW Ratio	0.80
>40 WW Ratio	0.60
Skylights:	
SHGC	=0.19
Skylight U-value	=1.36
Opaque Door U-value	
Swinging	= 0.70
Non-swinging	= 1.45

Date Proposal Submitted	3/24/2010	**Section**	101.4.3
Chapter	1	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Clarify that the exceptions apply where buildings are not exempt from compliance with the code.

Rationale

Most of these exceptions are exempt by the renovations clause; if the cost of the job exceeds 30% of the assessed value of the structure, only the items being changed need meet code. If the building is a major renovation and is not exempt from compliance for the items being changed, adding common weatherization features should not trigger requiring the replacement of the entire set of windows to meet code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None.

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

Will allow common weatherization techniques without requiring major retrofits.

Impact to industry relative to the cost of compliance with code

None.

Requirements

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

Yes. Will allow upgrades without prohibitive cost.

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

Allows people to weatherize their building without triggering major renovation.

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

No.

Does not degrade the effectiveness of the code

No.

101.4.3 Additions, alterations, renovations or repairs. Additions, alterations, renovations or repairs to an existing building, building system or portion thereof shall conform to the provisions of Table 101.4.1 of this code as they relate to new construction without requiring the unaltered portion(s) of the existing building or building system to comply with this code. Additions, alterations, renovations or repairs shall not create an unsafe or hazardous condition or overload existing building systems. An addition shall be deemed to comply with this code if the addition alone complies or if the existing building and addition comply with this code as a single building.

Exceptions ~~(see also Table 101.4.1)~~: Where an existing building, or part of an existing building, is not exempt from the energy code in accordance with Table 101.4.1, t~~T~~he following need not comply provided the energy use of the building is not increased:

1. Storm windows installed over existing fenestration.

2. Glass only replacements in an existing sash and frame.

3. Existing ceiling, wall or floor cavities exposed during construction provided that these cavities are filled with insulation.

4. Construction where the existing roof, wall or floor cavity is not exposed.

5. Reroofing for roofs where neither the sheathing nor the insulation is exposed. Roofs without insulation in the cavity and where the sheathing or insulation is exposed during reroofing shall be insulated either above or below the sheathing.

6. Reserved.

7. Alterations that replace less than 50 percent of the luminaires in a space, provided that such alterations do not increase the installed interior lighting power.

8. Alterations that replace only the bulb and ballast within the existing luminaires in a space provided that the alteration does not increase the installed interior lighting power.

Date Proposal Submitted	3/24/2010	**Section**	101.5.1
Chapter	1	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

4462, 4467, 4457, 4461

Summary of Modification

Reserve code section that would allow the code official to accept software and other materials for code compliance that are not specified in the code.

Rationale

Specific code compliance materials are specified in the code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None expected. Consistency of code enforcement by consistency of materials.

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

None.

Impact to industry relative to the cost of compliance with code

None.

Requirements

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

Yes. Would ensure that a minimum standard of efficiency is met.

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

Yes.

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

No.

Does not degrade the effectiveness of the code

No.

101.5.1 Compliance materials. Reserved. ~~The code official shall be permitted to approve specific computer software, worksheets, compliance manuals and other similar materials that meet the intent of this code.~~

Date Proposal Submitted	3/24/2010	**Section**	102.1
Chapter	1	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Provide criteria by which code officials may determine code compliance by alternate materials and methods.

Rationale

Assist code officials by providing criteria by which the alternate materials and methods clause may be used.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Will help code officials determine whether a new and emerging technology will be equivalent or better than typical building components in energy efficient building design.

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

Allows easier access to new and emerging technologies.

Impact to industry relative to the cost of compliance with code

Provides a vehicle for documenting relative efficiency of new and emerging technologies.

Requirements

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

Yes.

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

Yes.

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

No.

Does not degrade the effectiveness of the code

No.

SECTION 102

ALTERNATE MATERIALS—

METHOD OF CONSTRUCTION, DESIGN OR INSULATING SYSTEMS

102.1 General. This code is not intended to prevent the use of any material, method of construction, design or insulating system not specifically prescribed herein, provided that such construction, design or insulating system has been approved by the code official as meeting the intent of this code. Nationally recognized energy analysis procedures may be used to demonstrate that the building, or component thereof, will use less energy than a code compliant building (or building component) of the same configuration..

Date Proposal Submitted	3/23/2010	**Section**	202
Chapter	2	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Darrell Winters	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Modifies the definition of "Space Permitting - Insulation."

Rationale

This modification will result in more energy efficient homes.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on code officials.

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

No impact on cost.

Impact to industry relative to the cost of compliance with code

No impact on industry.

Requirements

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

Will not affect health, safety and welfare.

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

This modification improves the code by providing a more comfortable living environment.

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

No discrimination against any material, product, method or system.

Does not degrade the effectiveness of the code

Improves the code.

General Comment

EN3711-G1

Proponent Ann Stanton **Submitted** 5/24/2010 **Attachments** No

Comment

Section 553.905, Florida Statutes, Thermal efficiency standards for new residential buildings, states, in part: "Thermal designs and operations for new residential buildings...manufacturer. All new residential buildings, except those herein exempted, shall have insulation in ceilings rated at R-19 or more, space permitting. Thermal...period."
In other words, Florida law specifically allows the "space permitting" language for new residential construction.

General Comment

EN3711-G2

Proponent Amy Schmidt **Submitted** 5/28/2010 **Attachments** No

Comment

I support this proposal. Homes can easily be designed to have enough space for the insulation. This proposal supports FL goal of 20% higher efficiency.

Section 202. SPACE PERMITTING – INSULATION. Where an enclosed space exists in which insulation can be placed without the creation of space for that purpose only; e.g. dropped ceiling below a floor deck or space between joists. This definition only applies to alterations, repairs or additions of less than 200 square feet. This definition shall not be used in the design and/or constructions of new single family residences.

Date Proposal Submitted	3/23/2010	**Section**	202
Chapter	2	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Add definitions for Absorptance, Multi-Scene Control and Normative.

Rationale

Adds definitions that clarify terms used in the code whose meaning is not readily apparent.
Absorptance: Table 502.1.1.1
Multi-Scene Control: Sec. 505.2.1.1
Normative: Sections 405.4.1, 506.4, Appendix B

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Makes code clearer.

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

None.

Impact to industry relative to the cost of compliance with code

None.

Requirements

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

Yes. Clarifies code.

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

Yes.

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

No.

Does not degrade the effectiveness of the code

No.

ABSORPTANCE. The ratio of the total unabsorbed radiation to the total incident radiation; equal to 1 (unity) minus the transmittance.

MULTI-SCENE CONTROL. A lighting control device or system that allows for two or more pre-defined lighting settings, in addition to all off, for two or more groups of luminaires to suit multiple activities in the space, and allows the automatic recall of those settings.

NORMATIVE. Made an integral part of a standard or code.

Date Proposal Submitted	4/2/2010	**Section**	202
Chapter	2	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Add lighting-related definitions per ASHRAE 90.1 Addenda aa.

Rationale

This mod would add definitions for lighting-related terms that are important to understanding and applying some of the lighting requirements in the code. Per Addendum aa to ASHRAE 90.1-2004

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Clarifies code requirements.

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

None.

Impact to industry relative to the cost of compliance with code

Aid in understanding intent of code.

Requirements

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

Yes, improves the code.

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

Yes, clarifies code intent.

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

No.

Does not degrade the effectiveness of the code

No.

ASTRONOMICAL TIME SWITCH. A device that turns the lighting on at a time relative to sunset and off at a time relative to sunrise, accounting for geographic location and day of year.

EFFICACY (of a lamp). The ratio of the total luminous output of a lamp to the total power input to the lamp. Typically expressed in lumens per watt.

PHOTOSENSOR. A device that detects the presence of visible light, infrared transmission (IR) and/or ultraviolet (UV) energy.

TASK LIGHTING. Lighting directed to a specific surface or area that provides illumination for visual tasks.

Date Proposal Submitted	4/1/2010	**Section**	Definitions
Chapter	2	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Amanda Hickman	**General Comments**	Yes
Attachments	No	**Alternate Language**	Yes

Related Modifications

Mod 4309 - adds new section (402.3.2) - compliance paths to meeting SHGC requirements in Table 402.1.1.

Summary of Modification

Add permanent shading to chapter 2 definitions

Rationale

This is a companion change to our modification 4309 on the requirements for permanent shading. The definition clarifies the intent of the modification and indicates what categories of products and devices would be in code compliance.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This definition is a companion change to our modification to section 402.3.2 on “Permanent Shading” sees the fiscal impact statement on modification 4309.

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

This definition is a companion change to our modification to section 402.3.2 on “Permanent Shading” see the fiscal impact statement on modification 4309.

Impact to industry relative to the cost of compliance with code

This definition is a companion change to our modification to section 402.3.2 on “Permanent Shading” see the fiscal impact statement on modification 4309.

Requirements

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

This definition is a companion change to our modification to section 402.3.2 on “Permanent Shading” see the statement on modification 4309.

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

This definition is a companion change to our modification to section 402.3.2on “Permanent Shading” see the statement on modification 4309.

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

This definition is a companion change to our modification to section 402.3.2 on “Permanent Shading” see the statement on modification 4309.

Does not degrade the effectiveness of the code

This definition is a companion change to our modification to section 402.3.2 on “Permanent Shading” see the statement on modification 4309.

Alternate Language

EN4307-A1

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** Yes

Rationale

Provide language consistent with good enforcement practice.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

no change from original proposal

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

no change from original proposal

Impact to industry relative to the cost of compliance with code

no change from original proposal

Requirements

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

no change from original proposal

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

no change from original proposal

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

no change from original proposal

Does not degrade the effectiveness of the code

no change from original proposal

General Comment

EN4307-G1

Proponent Brian Sernulka **Submitted** 6/1/2010 **Attachments** No

Comment

BCAP believes that the Florida Building Code should be efficient, simple, and enforceable. Any trade-offs or exceptions to code requirements should be narrowly defined so that energy efficiency is improved (or at least maintained), and building officials should not be forced to make on-the-spot decisions about component efficiency. Modifications 4307, 4309, 4317, 4327, and 4329 all fail these basic principles, and should be rejected.

Modification 4307 creates enforcement issues because the definition of "permanent shading" does not actually require that interior shading devices, glazing material, or adherent materials be "permanent," nor does it require that these products be independently rated for efficiency. It is not clear from these proposals how a building official is supposed to calculate the SHGC of interior shading, and whether that includes venetian blinds or storm curtains. Uniform, objective ratings for products (such as R-value, SHGC, and U-factor) keep building officials out of the business of ad-hoc decisions on the building site. This modification should be rejected because it creates ambiguity and does not result in additional energy efficiency.

General Comment

EN4307-G2

Proponent Garrett Stone **Submitted** 6/1/2010 **Attachments** No

Comment

Modification 4307 adds a new, very broad definition of "permanent shading" to the code that is not currently used in any other state or national code. Several of the provisions in this definition would create huge ambiguity and compliance issues, and it is not clear that this definition (or any of the related modifications) would save an equivalent amount of energy. In fact, given the items included in the definition, the label "permanent" simply does not apply. The definition should be rejected for a number of reasons:

1. "Adherent materials" and interior shading devices have never been allowed in any version of the IECC as a prescriptive trade-off for SHGC. Indeed, it is not clear what is actually included in "adherent materials."
2. Although the definition requires that exterior devices or building elements be "permanently attached," the definition does not make clear that interior shading devices and adherent materials are required to be "permanently attached," nor does it explain how such devices could be made permanent, even if that is the intent.
3. These types of materials and devices are not truly "permanent." For example, "adherent materials" can be removed or damaged, and are certainly not as durable as windows with proper SHGC coatings. If occupants demand more daylighting or a less obstructed view, these materials can simply be removed, and all savings are eliminated.
4. Likewise, interior window shades do not provide permanent reductions in SHGC because they can be operated at non-optimal times or completely removed by occupants, whereas low-SHGC windows will perform in a predictable manner regardless of the occupant.

For the reasons above, we urge the Commission to reject Modification 4307 and all other modifications that cite to this definition (4309, 4317, 4327, and 4329).

General Comment

EN4307-G3

Proponent Thomas Larson **Submitted** 6/1/2010 **Attachments** No

Comment

SACE's main interest in code revision is to advance energy efficiency as fast and as much as possible, respecting full life-cycle cost effectiveness. Fla. Energy Code should be aligned with IECC 2009 & successive revisions as closely as possible, and contribute to 20% energy improvement over 2007. We offer comment on this proposal:

• The Energy Code Workgroup carefully reviewed the IECC and the Florida Building Code and combined them in a manner that ensured a reasonable level of flexibility for builders, while reaching a 20% improvement in energy efficiency over the 2004 FBC.
• These proposals introduce a long list of alternative products that are not guaranteed to meet the same level of efficiency as the low-SHGC windows proposed in the code. The proposals also introduce a high level of ambiguity into the code and could create problems for code officials.
• Many of the products or devices listed as exceptions to the low-SHGC window requirement are either less durable than windows or can be easily removed by homeowners. There is no reason to allow trade-offs between SHGC, which is rated and labeled to a uniform standard, and products that may not be rated at all.
• It is much easier and more cost effective to install the correct glazing products in the first place. These proposals would create incentives to install windows that are not appropriate for Florida's climate.
• While well-designed shading can bring additional benefits to buildings, credit for shading is confined to computer-simulated compliance methods in which the precise impact can be measured.
• By contrast, the proposed set of alternatives allows shading (and a long list of other practices not typically allowed as trade-offs) to be directly traded off against SHGC.
• The benefits of low-SHGC windows are well settled. They result in lower energy bills, lower peak demand, and a lower environmental impact. These benefits should not be traded away for less certain benefits.

General Comment

EN4307-G4

Proponent Eric Lacey **Submitted** 6/1/2010 **Attachments** No

Comment

By attempting to define "permanent shading," Mod 4307 is connected to Mods 4309, 4317, 4327, or 4329, which attempt to create exceptions to window SHGC requirements where there is "permanent shading." RECA recommends rejection of Mod 4307 because the proposed definition for "permanent shading" is virtually impossible to consistently enforce, creates potential liability issues for building officials and builders, includes shading approaches that are not permanent and does not guarantee equivalent energy savings.

• Because the definition includes terms such as "interior shading devices" and "adherent materials," it is far from clear what devices and approaches would qualify as "permanent shading." It appears that this language could be construed to include operable window shades, window films, or other operable, less permanent and/or untested products, which could then be used to supplant objectively rated window products.

• The definition does not require that adherent materials or other permanent shading devices be objectively rated, and it is unclear how a building official or builder could determine the equivalence of such materials to the SHGC rating provided on an NFRC label. Although we assume the definition includes to window films, it does not appear to exclude other products that are not intended for use on building fenestration.
Mod 4307 creates a host of problems for builders and code officials, and the proponent has not shown that equivalent or superior energy savings would result from creating the open-ended definition for permanent shading. Mod 4307 should be rejected.

General Comment

EN4307-G5

Proponent jeff inks **Submitted** 6/1/2010 **Attachments** No

Comment

We recommend disapproval of this proposal. In addition to comments submitted on EN: 4309, 4317, 4327 & 4329 in opposition to including prescriptive permanent shading provisions, there are also concerns with this proposed definition. Among other concerns, the terms included in the definition are ill-defined for code purposes and none are necessarily permanent in nature.

General Comment

EN4307-G6

Proponent Harry Misuriello **Submitted** 6/1/2010 **Attachments** No

Comment

Mod 4307 should be disapproved. The proposed definition of “permanent shading” provides numerous loopholes and exceptions that are to not likely to be as effective (e.g. interior shading) as the SHGC they replace, or even rated for comparable SHGC performance (e.g. adherent materials). This proposed Mod will place new interpretation burdens on code officials and not move the Florida energy code towards 20% energy efficiency improvement. The proposed Mod also has compliance and enforceability issues in interpreting its complicated requirements. We urge the Task Group and Commission to disapprove this proposed Mod.

Permanent Shading is the protection from heat gains due to direct solar radiation by permanently attached exterior devices or building elements, interior shading devices, glazing material, or adherent materials.

Permanent Shading is permanently attached exterior devices or building elements, interior shading devices, glazing material, or adherent materials that have been tested by nationally-accepted standards or procedures and certified by the manufacturer to reduce heat gains due to direct solar radiation.

Date Proposal Submitted	4/2/2010	**Section**	303.2
Chapter	3	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

4442

Summary of Modification

Add criteria for insulation installation from the appendices of the present Florida energy code that were inadvertently omitted from the Florida-specific criteria included in the base code.

Rationale

This mod would put back into the code general requirements for insulation installation that were previously contained in the appendices to the Florida energy code. The base code does not provide this level of detail.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Would provide backup to code officials who see poorly installed insulation.

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

Would ensure that insulation is adequately installed.

Impact to industry relative to the cost of compliance with code

Would require insulation be installed correctly.

Requirements

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

Yes, poorly installed insulation does not perform as designed.

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

Yes, provides more detailed criteria by which insulation should be installed.

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

No.

Does not degrade the effectiveness of the code

No.

SECTION 303

MATERIALS, SYSTEMS AND EQUIPMENT

303.1 Identification

303.2 Insulation i~~I~~nstallation. Insulation materials shall comply with the requirements of their respective ASTM standard specification and shall be installed in accordance with their respective ASTM installation practice in Table 303.2 in such a manner as to achieve rated R-value of insulation. Open-blown or poured loose-fill insulation shall not be used in attic roof spaces when the slope of the ceiling is more than three in twelve. When eave vents are installed, baffling of the vent openings shall be provided to deflect the incoming air above the surface of the insulation.

Exception: Where metal building roof and metal building wall insulation is compressed between the roof or wall skin and the structure.

TABLE 303.2

INSULATION INSTALLATION STANDARDS

Insulation Material	Standard Specification	Installation Practice
Mineral Fiber Batt/Blanket	ASTM C 665	ASTM C 1320
Mineral Fiber Loose Fill	ASTM C 764	ASTM C 1015
Cellulose Loose Fill	ASTM C 739	ASTM C 1015
Polystyrene Foam	ASTM C 578	
Polyisocyanurate Foam	ASTM C 1289	
Reflective	ASTM C 1224	ASTM C 727
Radiant Barrier	ASTM C 1313	ASTM C 1158
Vermiculite	ASTM C 516	
Perlite	ASTM C 549	
Spray-Applied Rigid Cellular Polyurethane Foam	ASTM C 1029	
Interior Radiation Control Coating Systems	ASTM C 1321	

303.2.1 Compressed insulation. Insulation that has been compressed to 85-percent or less of the manufacturer's rated thickness for the product shall use the R-values given in Table 303.2.1. These values are to be used except where data developed by an independent testing laboratory is provided.

TABLE 303.2.1

R-VALUES OF COMPRESSED INSULATION

% of Original Thickness	R-5	R-7	R-11	R-14	R-19	R-30	R-38
90	5	6	10	13	18	28	36
80	4	6	10	12	17	26	33
70	4	5	9	11	15	24	30
60	3	5	8	10	14	22	27
50	3	4	7	9	12	18	24
40	2	4	6	8	10	15	20
30	2	3	4	6	8	12	16
20	20	2	2	3	4	10	10

303.2.2 Substantial Contact. Insulation shall be installed in a permanent manner in substantial contact with the inside surface in accordance with manufacturer's recommendations for the framing system used. Flexible batt insulation installed in floor cavities shall be supported in a permanent manner by supports no greater than 24 inches (610 mm) on center (o.c.).

Exception: Insulation materials that rely on airspaces adjacent to reflective surfaces for their rated performance.

303.2.3 Recessed Equipment. Lighting fixtures; heating, ventilating, and air-conditioning equipment, including wall heaters, ducts, and plenums; and other equipment shall not be recessed in such a manner as to affect the insulation thickness unless:

1. The total combined area affected (including necessary clearances) is less than one percent of the opaque area of the assembly, or

2. The entire roof, wall, or floor is covered with insulation to the full depth required, or

3. The effects of reduced insulation are included in calculations using an area-weighted average method and compressed insulation values obtained from Table 303.2.1.1.

In all cases, air leakage through or around the recessed equipment to the conditioned space shall be limited in accordance with Section 404.2.5 or 502.3.8, as applicable.

303.2.4 Insulation Protection. Exterior insulation shall be covered with a protective material to prevent damage from sunlight, moisture, landscaping operations, equipment maintenance, and wind. In attics and mechanical rooms, a way to access equipment that prevents damaging or compressing the insulation shall be provided. Foundation

vents shall not interfere with the insulation. Insulation materials in ground contact shall have a water absorption rate no greater than .3 percent when tested in accordance with ASTM C272,

~~303.2.1 Protection of exposed foundation insulation.~~ ~~Insulation applied to the exterior of basement walls, crawlspace walls and the perimeter of slab-on-grade floors shall have a rigid, opaque and weather-resistant protective covering to prevent the degradation of the insulation's thermal performance. The protective covering~~ shall cover the exposed exterior insulation and shall extend a minimum of 6 inches (153 mm) below grade.

Date Proposal Submitted	4/2/2010	**Section**	304
Chapter	3	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

4433

Summary of Modification

Add criteria for determining thermal properties of building materials and assemblies.

Rationale

How the thermal properties of building materials/assemblies are determined can mean the difference between a building passing and failing code; also the building may not perform as designed. Such criteria have been included in the appendices of Florida's energy code for some time. This mod would include them in the new Energy Conservation code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Not much, unless the code official understands the basics of thermal properties of buildings and the procedures by which they are determined.

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

Ensures that a building will meet code and perform as designed.

Impact to industry relative to the cost of compliance with code

Avoids gaming and misleading claims based on inadequate tests.

Requirements

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

Yes, ensures that the thermal parameters of a building are calculated correctly.

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

Yes, ensures that the thermal parameters of a building are calculated correctly.

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

Provides a consistent standard for determining the thermal properties of building materials.

Does not degrade the effectiveness of the code

No.

SECTION 304

MATERIALS TESTING AND THERMAL PROPERTIES

304.1 Building material thermal properties, general.

304.1.1 Commerical and residential high rise. R-values for building materials used to demonstrate code compliance with Chapter 5shall be taken from ASHRAE 90.1 Normative Appendix A, from the EnergyGauge Summit Fla/Com computer program, from manufacturer's product literature or from other nationally recognized engineering sources. Assembly U-factor calculations shall follow the procedure(s) detailed in section 304.3 or be tested in accordance with procedures(s) described in section 304.2.

Concrete block R-values shall be calculated using the isothermal planes method or a two-dimensional calculation program, thermal conductivities from ASHRAE 90.1 Normative Appendix A, from the EnergyGauge Summit Fla/Com program and dimensions from ASTM C90. The parallel path calculation method is not acceptable.

Exception: R-values for building materials or thermal conductivities determined from testing in accordance with Section 304.2.

304.1.2 Residential one- and two-family. R-values referenced in Chapter 4 of this code refer to the R-values of the added insulation only. The R-values of structural building materials such as framing members, concrete blocks or gypsum board shall not be included. Insulation levels shall be achieved with insulation products tested and rated according to the procedures recognized by the Federal Trade Commission (FTC) in 16 CFR Part 460.

304.1.2.1 When installing two layers of bulk or board insulation, the R-values of each material may be added together for a total R-value. When installing two separate reflective insulation products in layers, the total R-value of the system shall have been achieved by testing under FTC regulations, 16 CFR Part 460.

304.2 Testing of Building Materials Thermal Properties.

304.2.1 Single materials. If building material R-values or thermal conductivities are determined by testing, one of the following test procedures shall be used:

a. ASTM C177

b. ASTM C236

c. ASTM C518

For concrete, the oven-dried conductivity shall be multiplied by 1.2 to reflect the moisture content as typically installed.

304.2.2 Assembly U-factors. If assembly U-factors are determined by testing, ASTM C1363 shall be used.

Product samples tested shall be production line material or representative of material as purchased by the consumer or contractor. If the assembly is too large to be tested at one time in its entirety, then either a representative portion shall be tested or different portions shall be tested separately and a weighted average determined. To be

representative, the portion tested shall include edges of panels, joints with other panels, typical framing percentages, and thermal bridges.

304.3 Calculation procedures and assumptions. The following procedures and assumptions shall be used for all Chapter 5 code calculations. R-values for air films, insulation, and building materials shall be taken from Sections 304.3.1 or 304.3.2, respectively. In addition, the appropriate assumptions listed, including framing factors, shall be used.

304.3.1 Air Films: Prescribed R-values for air films shall be as follows:

R-Value	Condition
0.17	All exterior surfaces
0.46	All semi-exterior surfaces
0.61	Interior horizontal surfaces, heat flow up
0.92	Interior horizontal surfaces, heat flow down
0.68	Interior vertical surfaces

304.3.1.1 Exterior surfaces are areas exposed to the wind.

304.3.1.2 Semi-exterior surfaces are protected surfaces that face attics, crawl spaces, and parking garages with natural or mechanical ventilation.

304.3.1.3 Interior surfaces are surfaces within enclosed spaces.

304.3.1.4 The R-value for cavity airspaces included in the EnergyGauge Summit Fla/Com program are taken from ASHRAE 90.1 Normative Appendix A. No credit shall be given for airspaces in cavities that contain any insulation or less than 0.5 inch (12.7 mm). The values for 3.5 inch (84 mm) cavities shall be used for cavities of that width and greater.

304.3.2 Assembly U-Factor, C-Factor and F-Factor Calculation

304.3.2.1 Pre-calculated assembly U-factors, C-factors, F-factors, or heat capacities. The U-factors, C-factors, F-factors, and heat capacities for typical construction assemblies included in the EnergyGauge Summit Fla/Com computer program are taken from ASHRAE 90.1 Normative Appendix A. These values shall be used for all calculations unless otherwise allowed by applicant-determined assembly U-factors, C-factors, F-factors, or heat capacities. Interpolation between values for rated R-values of insulation, including insulated sheathing is allowed; extrapolation beyond values in the ASHRAE 90.1 Normative Appendix A tables is not.

304.3.2.2 Applicant-determined assembly U-factors, C-factors, F-factors, or heat capacities. If the building official determines that the proposed construction assembly is not adequately represented in the appropriate table of ASHRAE 90.1 Normative Appendix A, the applicant shall determine appropriate values for the assembly using the assumptions in ASHRAE 90.1 Normative Appendix A. An assembly is deemed to be adequately represented if:

a. the interior structure, hereafter referred to as the base assembly, for the class of construction is the same as described in Normative Appendix A and

b. changes in exterior or interior surface building materials added to the base assembly do not increase or decrease the R-value by more than 2 from that indicated in the descriptions in ASHRAE 90.1 Normative Appendix A.

Insulation, including insulated sheathing, is not considered a building material.

Date Proposal Submitted	3/30/2010	**Section**	402
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jeff Sonne	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

- 402.2.1 Delete: "and the total UA..."
- 402.2.2 Delete: "and the total UA..."
- Table 402.1.3 note d. Delete: "U-factors for determining...air films"
- 402.3.3 Delete: "and the Total UA..."
- 402.3.4 Delete: "and the total UA..."

Summary of Modification

Eliminate the “Total UA Alternative” residential energy code compliance method described in section 402.1.1.3.

Rationale

Florida Solar Energy Center analysis shows that results using the Total UA Alternative method can vary significantly in equivalence from the other compliance methods provided by Section 402 and Section 405. Thus, the Total UA Alternative cannot be relied upon to provide equivalence to other Section 402 and Section 405 compliance methods.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Eliminating a compliance method should reduce local code enforcement workload as it reduces the number of compliance methods that will have to be learned, maintained and enforced.

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

Negligible; there are still multiple compliance methods available.

Impact to industry relative to the cost of compliance with code

Negligible; there are still multiple compliance methods available.

Requirements

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

Public is benefited by elimination of non-equivalent energy code compliance methods.

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

Improves the code by eliminating a non-equivalent compliance method.

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

Neutral—only concerns a code compliance method.

Does not degrade the effectiveness of the code

Improves code effectiveness by eliminating a non-equivalent compliance method.

General Comment

EN4080-G1

Proponent Darrell Winters **Submitted** 5/25/2010 **Attachments** No

Comment

Showing compliance using the total UA calculation is much simplier than the performance option, and the purchase of software is unnecessary. Eliminating the UA alternative would remove this option from builders. Having this as an alternative may improve code compliance among builders.

General Comment

EN4080-G2

Proponent Brian Sernulka **Submitted** 6/1/2010 **Attachments** No

Comment

BCAP believes that the 2010 Florida Building Code should facilitate all phases of code compliance – including simplicity, flexibility, and enforceability. Because not every house is the same, the energy code must afford builders a reasonable level of flexibility, as long as energy efficiency is maintained. The Total UA Alternative has been effectively used for many years by builders who need some trade-off capability among thermal envelope components without having to go through the more complex simulated performance alternative.

The Total UA is more conducive to builder and code official training than the full performance option. Given ARRA’s requirement of 90% compliance, Florida should ensure that reasonable compliance options are accessible to builders who are not inclined to learn all the elements of the performance option. We support the inclusion of the Total UA Alternative in the Florida Building Code, and urge disapproval of Modification 4080.

General Comment

EN4080-G3

Proponent Eric Lacey **Submitted** 6/1/2010 **Attachments** No

Comment

The IECC offers three primary compliance methods with differing degrees of complexity – 1. A simple prescriptive list of components; 2. A more complex, but still relatively simple envelope-only UA trade-off calculation; 3. A more complex and comprehensive, dynamic performance calculation that includes all building components and systems. As a middle ground, the Total UA alternative affords builders a simple set of trade-offs among building envelope components without requiring them to use a more complex performance analysis.

While an argument can certainly be made that a UA trade-off approach is not absolutely necessary with a robust performance compliance path, a strong argument can be made that the relative ease of compliance via a UA calculation would lead to more actual compliance.

General Comment

EN4080-G4

Proponent jeff inks **Submitted** 6/1/2010 **Attachments** No

Comment

We recommend disapproval of this proposal. Removal of the UA alternative has not been justified. The inclusion of the total UA alternative is an accepted, straightforward and reliable alternative means for demonstrating compliance. Eliminating it would needlessly force the use other more complicated and potentially costly methods to demonstrate the same compliance without adequate reason.

~~**402.1.1.3 Total UA alternative.** If the total building thermal envelope UA (sum of U-factor times assembly area) is less than or equal to the total UA resulting from using the U-factors in Table 402.1.3 (multiplied by the same assembly area as in the proposed building), the building shall be considered in compliance with Table 402.1.1. All other prescriptive criteria of Table 402.1, the prescriptive criteria in Section 402.1.5 and footnotes to Table 402.1.3 shall be met.The UA calculation shall be done using a method consistent with the ASHRAE Handbook of Fundamentals and shall include the thermal bridging effects of framing materials. The SHGC requirements shall be met in addition to UA compliance.~~

Date Proposal Submitted	3/26/2010	**Section**	402.1.1
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	Yes	**Commission Action**	Pending Review
Proponent	Eric Lacey	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	Yes

Related Modifications

Summary of Modification

This proposal creates a second option for builders to install roofing materials with a solar reflectance over 0.10, as long as the area-weighted average fenestration SHGC does not exceed 0.25.

Rationale

(See attached file for detailed reason statement.) This proposal creates a second option for builders to install roofing materials with a solar reflectance over 0.10, as long as the area-weighted average fenestration SHGC does not exceed 0.25.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This proposal will not complicate enforcement of the code.

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

The proposal will allow increased flexibility within the prescriptive path, and should ultimately save homeowners money.

Impact to industry relative to the cost of compliance with code

The increased flexibility of this proposal will also give builders more options to comply with the code, reducing initial construction costs.

Requirements

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

This proposal will maintain a reasonable level of energy efficiency.

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

The proposal allows two different methods for controlling solar heat gain, which will allow more flexibility.

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

Given the wide availability of low-SHGC windows, this proposal should expand the number of options for builders and design professionals to comply with the prescriptive option.

Does not degrade the effectiveness of the code

The proposal does not degrade the effectiveness of the code.

Alternate Language

EN3956-A2

Proponent Roger LeBrun **Submitted** 5/21/2010 **Attachments** Yes

Rationale

Increases efficiency of the code by allowing sufficient daylight to realize energy savings that more than offset cooling energy losses. Also would permit the use of more tubular daylighting devices (TDDs), many types of which would otherwise not comply.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

Same as original proposal

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

Adds options at no energy cost

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

Expands the options available for compliance

Does not degrade the effectiveness of the code

Improves the code's efficiency

Alternate Language

EN3956-A3

Proponent Arlene Stewart **Submitted** 6/1/2010 **Attachments** Yes

Rationale

This comment offers alternative language for the presecriptive path. These provisions integrate the 20% improvement required by statue by improving provisions that are more mature in the marketplace, thereby making usage easier and more cost effective. The addition of roof reflectance is a relatively new concept - consequently less product has the appropriate testing. The original incorporation includes a highly efficient white roof. The combination of tested material AND highly efficient ma

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. The products and processes included in this comment are already in use today.

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

None. This comment provides an equivalent energy performance as indicated by statue. Therefore the operational cost to the owner will remain the same.

Impact to industry relative to the cost of compliance with code

This is expected to lessen the cost because the prescriptive compliance path is meant to be simple. The changes made reflect more commonly available provisions, thereby saving builders time and therefore dollars because of more mature market competition than the original provision.

Requirements

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

This comment offers an alternative with mainstream, readily available products, therefore making the implementation easier, leading to better health, safety and welfare of the general public.

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

It improves the code because it uses mainstream provisions in a simple way, leading to easier compliance.

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

It does not discriminate against materials. The prescriptive path is only one way to comply with this code.

Does not degrade the effectiveness of the code

No. It provides an equivalent performance to meet the legislative requirement of 20% better.

General Comment

EN3956-G1

Proponent jeff inks **Submitted** 6/1/2010 **Attachments** No

Comment

Based on our evaluation, this proposal if approved together with the other more stringent amendments proposed by the state for Table 402.1 Component Efficiencies Required and elsewhere in Chapter 4 will result in a set energy code requirements that significantly exceed the 20% increase in stringency set as the objective for this revision.

Given the significant impact these collective increases would have on reducing prescriptive compliance options, we believe the Committee needs to consider other options for a more balanced approach such as balancing lower SHGC requirements with more reasonable HVAC and duct work requirements.

We are not proposing specific alternative language at this time but will work to do so in preparation for subsequent consideration of this proposal.

TABLE 402.1.1

COMPONENT EFFICIENCIES REQUIRED[a,l]

% Glazing[c]	Fenestration U-Factor[b]	Sky-light[b] U-Factor	Glazed Fenes-tration SHGC[b]	~~Ceiling~~ ~~R-value~~	Roof Reflectance Tested per S. 405.6.2	Ceiling R-value	Wood Frame Wall R-value	Mass Wall R-value[i]	Floor R-value / Slab R-value[d]	Door U-Factor	Ducts: R-value/ Location[k]	Air Handler Location[k,]	Air Leakage Tested per S. 403.2.2.1
20%	0.65[j]	0.75	0.30	~~30~~	0.25	30	13	6 / 7.8	13/0	0.65	R-6/	Conditioned	Qn=0.03
			[0.25][e]		[0.10][e]						Conditioned		

For SI: 1 foot = 304.8 mm.

a. R-values are minimums. U-factors and SHGC are maximums. R-19 batts compressed into a nominal 2 × 6 framing cavity such that the R-value is reduced by R-1 or more shall be marked with the compressed batt R-value in addition to the full thickness R-value.

b. The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.

c. Percent glazing shown shall be the maximum glazing allowed for compliance by Section 402. Percent glazing area shall be measured in window to floor area and shall include skylight area

d. R-5 shall be the required slab edge R-values for heated slabs only; insulation depth shall be the depth of the footing or 2 feet, whichever is. No insulation is required for unheated slabs, basement walls or crawl space walls.

e. ~~Reserved.~~ Where area-weighted average maximum SHGC for fenestration does not exceed 0.25, roof solar reflectance shall meet or exceed 0.10.

f. Reserved.

g. Or insulation sufficient to fill the framing cavity, R-19 minimum.

h. "13+5" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.

i. The second R-value applies when more than half the insulation is on the interior of the mass wall.

j. For impact rated fenestration complying with Section R301.2.1.2 of the Florida Building Code, Residential or Section 1609.1.2 of the Florida Building Code, Building the maximum U-factor shall be 0.75.

k. Conditioned= entire distribution system located inside both the thermal and air barrier of the home. Unconditioned = any portion located in unconditioned space.

l. Limitations to compliance by Section 402 found in Section 402.2 shall be met.

(Portions of table and footnotes not shown shall remain unchanged.)

(Image file showing revisions to the original proposal was uploaded)

TABLE 402.1.1

COMPONENT EFFICIENCIES REQUIRED[a,l]

Vertical Fenestration U-Factor[b]	Skylight[b] U-Factor	~~Glazed~~ Vertical Fenestration SHGC[b]	Skylight SHGC
0.65[j]	0.75	0.30 [0.25][e]	0.35

b. ~~The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.~~ Reserved.

e. ~~Reserved.~~ Where area-weighted average maximum SHGC for vertical fenestration does not exceed 0.25, roof solar reflectance shall meet or exceed 0.10.

j. For impact rated vertical fenestration complying with Section R301.2.1.2 of the Florida Building Code, Residential or Section 1609.1.2 of the Florida Building Code, Building the maximum U-factor shall be 0.75.

(Portions of proposed table and footnotes not shown shall remain unchanged.)

TABLE 402.1.1

COMPONENT EFFICIENCIES REQUIRED[a,l]

% Glazing[c]	Fenestration U-Factor[b]	Sky-light[b] U-Factor	Glazed Fenes-tration SHGC[b]	Ceiling R-value	Roof Reflectance Tested per S. 405.6.2	Wood Frame Wall R-value	Mass Wall R-value[l]	Floor R-value/ Slab R-value[d]	Door U-Factor	Ducts: R-value and Location[k]	Air Handler Location[k,]	Du Le T p 40
~~20%~~ 18%	0.65[j]	0.75	~~0.30~~ 0.25[e]	30	0.25/NR[e]	13	6 / 7.8	13/0	0.65	R-6 and Conditioned/NR[e]	ConditionedQn=(	

e. ~~Reserved.~~ Where all ducts are located within the thermal building envelope, there is no requirement (NR) for roof reflectance, duct insulation, or duct air leakage testing.

TABLE 402.1.1.3

EQUIVALENT U-FACTORS[a,f,g]

e. Window to floor area, including skylights, shall not exceed ~~20~~ 18 percent. See Section 402.1.2.3.

(Portions of table 402.1.1 and footnotes not shown shall remain unchanged.)

Revise sections 402.1.2.3 and 403.2.2 as follows:

402.1.2.3 Maximum percent window area. The window area as a percentage of the conditioned floor area (CFA) shall not exceed 18~~20~~ percent.

403.2.2 Sealing (Mandatory). All ducts, air handlers, filter boxes and building cavities which form the primary air containment

passageways for air distribution systems shall be considered ducts or plenum chambers, shall be constructed and sealed in accordance with Section 503.2.7.2 of this code and shall be shown to meet duct tightness criteria in Section 403.2.2.1.

Exception: For buildings complying under Section 402, where air handler and all ducts are located within the thermal building envelope, the test required in Section 403.2.2.1 is not required.

(Portions of sections 402.1.2.3 and 403.2.2 not shown shall remain unchanged.)

Roof Reflectance or SHGC Option

This proposal incorporates a reasonable set of options for builders that will bring significant energy and cost savings to homeowners. Although we generally support the inclusion of a solar reflectance requirement in Florida's climate zones, the 2007 Florida Building Code (including the 2009 Supplement) did not include a prescriptive requirement for solar reflectance, nor does the 2009 IECC. We believe that the prescriptive path should offer a simple, component-based means of building efficient homes, but want to be cautious that the proposed prescriptive path can be readily utilized by the builder and wish to make sure, if possible, that no component of the prescriptive path creates a major impediment to use and acceptance of the path.

The proposal above creates a second option for builders who, because of product scarcity or design concerns, may not want to install materials with a solar reflectance over 0.25. In these circumstances, a builder could opt instead to install fenestration with an area-weighted average SHGC of 0.25 or less. The 0.10 solar reflectance requirement still eliminates many darker-colored roofing materials, but it allows a broader range of materials, including light-colored asphalt shingles. If the Committee determines that another number is more appropriate for this option – either higher or lower – we would not be opposed to a reasonable compromise number. For more information on roof solar reflectance, refer to the Florida Solar Energy Center's publication, *Laboratory Testing of the Reflectance Properties of Roofing Materials* at http://www.fsec.ucf.edu/en/publications/html/fsec-cr-670-00.

We also submitted a separate proposal that would require a 0.25 SHGC regardless of roof solar reflectance, and we consider that the most efficient option. Lower SHGC windows will bring increased comfort, lower summer peak demands, and will bring cost savings because of downsized HVAC equipment. Windows with a 0.25 SHGC are widely available and in many cases, cost no more than windows that meet the 0.30 SHGC. If, however, the Committee does not wish to require a 0.25 SHGC in all homes built to the prescriptive path, the proposal above represents a reasonable option that would still bring a 16% reduction in solar heat gain – a result that will achieve a benefit similar to a roof with high solar reflectance.

Date Proposal Submitted	3/26/2010	**Section**	402.1.1
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	Yes	**Commission Action**	Pending Review
Proponent	Eric Lacey	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	Yes

Related Modifications

3956

Summary of Modification

This proposal increases energy efficiency, reduces peak demand and sizing of cooling systems, and improves comfort for building occupants by lowering the prescriptive fenestration SHGC value to 0.25.

Rationale

(See attached file for detailed reason statement.) This proposal increases energy efficiency, reduces peak demand and sizing of cooling systems, and improves comfort for building occupants by lowering the prescriptive fenestration SHGC value to 0.25.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This proposal will not impact enforcement of the code.

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

The proposal will save building and property owners energy and money over the lifetime of the building.

Impact to industry relative to the cost of compliance with code

In many cases, there will be no cost impact associated with this proposal. In cases where there is an impact, the cost will be minimal.

Requirements

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

The proposal will increase occupant comfort and will reduce energy consumption.

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

The proposal strengthens the effectiveness of the code by requiring more efficient fenestration.

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

The proposal does not discriminate against any products or systems of construction. A wide variety of products on the market will meet this standard.

Does not degrade the effectiveness of the code

The proposal will not degrade the effectiveness of the code.

Alternate Language

EN3957-A2

Proponent Roger LeBrun **Submitted** 5/21/2010 **Attachments** Yes

Rationale

Increases efficiency of the code by allowing sufficient daylight to realize energy savings that more than offset cooling energy losses. Also would permit the use of more tubular daylighting devices (TDDs), many types of which would otherwise not comply.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

Same as originally proposed

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

Increases efficiency of the code

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

Expands options for compliance

Does not degrade the effectiveness of the code

Increases efficiency of the code

General Comment

EN3957-G1

Proponent Thomas Larson **Submitted** 6/1/2010 **Attachments** No

Comment

The Southern Alliance for Clean Energy's primary interest in building code revision is to advance energy efficiency as fast and as much as possible, respecting full life-cycle cost effectiveness. We support alignment of Fla. Energy Code with IECC 2009 and successive revisions as closely as possible, and would foster each measure's contributions to 20% energy improvement over 2007. To that end, we offer comment on this proposed modification:

- Lower SHGC reduces energy use during periods of peak electricity demand, saving the homeowner money and reducing Florida's need to build peak generating capacity.
- The reduction in peak demand can also yield environmental benefits for Florida. During summer peaks, utilities typically use the least efficient, highest-polluting generation to meet demand. Because these units use more fuel per kWh produced, utility costs are higher. Environmental impacts and the time-dependent cost of electricity are not directly addressed by code compliance software, so effective caps are extremely important.
- Homes built with lower SHGC fenestration can often downsize air conditioning equipment, which will save money at construction and every time the equipment is replaced in the future.

General Comment

EN3957-G2

Proponent jeff inks **Submitted** 6/1/2010 **Attachments** No

Comment

Based on our evaluation, this proposal if approved together with the other more stringent amendments proposed by the state for Table 402.1 Component Efficiencies Required and elsewhere in Chapter 4 will result in a set energy code requirements that significantly exceed the 20% increase in stringency set as the objective for this revision.

Given the significant impact these collective increases would have on reducing prescriptive compliance options, we believe the Committee needs to consider other options for a more balanced approach such as balancing lower SHGC requirements with more reasonable HVAC and duct work requirements.

We are not proposing specific alternative language at this time but will work to do so in preparation for subsequent consideration of this proposal.

TABLE 402.1.1

COMPONENT EFFICIENCIES REQUIRED[a,l]

% Glazing[c]	Fenestration U-Factor[b]	Sky-light[b] U-Factor	Glazed Fenes-tration SHGC[b]	Ceiling R-value	Roof Reflectance Tested per S. 405.6.2	Wood Frame Wall R-value	Mass Wall R-value[l]	Floor R-value/ Slab R-value[d]	Door U-Factor	Ducts: R-value/ Location[k]	Air Handler Location[k,]	Air Leakage Tested per S. 403.2.2.1
20%	0.65[j]	0.75	~~0.30~~ 0.25	30	0.25	13	6 / 7.8	13/0	0.65	R-6/ Conditioned	Conditioned	Qn=0.03

(Portions of table and footnotes not shown shall remain unchanged.)

(Image was uploaded)

TABLE 402.1.1

COMPONENT EFFICIENCIES REQUIRED[a,l]

Vertical Fenestration U-Factor[b]	Skylight[b] U-Factor	~~Glazed~~Vertical Fenestration SHGC[b]	Skylight SHGC
0.65[j]	0.75	0.~~30~~25	0.35

b. ~~The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.~~ Reserved.

e. ~~Reserved.~~ Where area-weighted average maximum SHGC for vertical fenestration does not exceed 0.25, roof solar reflectance shall meet or exceed 0.10.

j. For impact rated vertical fenestration complying with Section R301.2.1.2 of the Florida Building Code, Residential or Section 1609.1.2 of the Florida Building Code, Building the maximum U-factor shall be 0.75.

(Portions of proposed table and footnotes not shown shall remain unchanged.)

Fenestration SHGC 0.25

This proposal increases energy efficiency, reduces peak demand and sizing of cooling systems, and improves comfort for building occupants by lowering the prescriptive SHGC value to 0.25. While we support the current proposal to lower SHGC from 0.35 to 0.30, we believe an additional measure of stringency will reduce energy usage resulting in lower utility bills to homeowners and will help curb the use of expensive peak electricity generation for summer peak demands.

The 0.25 SHGC requirement has already been explored by the Florida Solar Energy Center (FSEC), and has been discussed in previous meetings of the Energy Task Group. In a September 3, 2009 report to the Task Group, *Getting to 50, What Will it Take*, Philip Fairey summarized the results and recommendations of FSEC regarding the appropriate SHGC requirement for Florida's climate zones. The report's "Best Practices Analysis" found that a 0.25 SHGC is cost effective and will save energy statewide. The complete report can be found at http://consensus.fsu.edu/FBC/2010-Florida-Energy-Code/FSEC_Presentation_Energy_Increases.pdf.

The proposal above reflects that recommendation by establishing a statewide 0.25 SHGC. This improvement would reduce fenestration solar gain by over 28% as compared with the 2007 Florida Building Code (or over 16% as compared to the current draft). There should be no significant construction cost impact from this increase in energy code stringency since the existing SHGC requirements already effectively dictate a low solar gain low-e window and the new requirements will also require low solar gain low-e glass, but only with a lower SHGC. The FSEC "Best Practices Analysis" cited above found that 0.25 SHGC is within a "reasonable technology limit." Such lower SHGC glass is readily available in the market. A recent review of the NFRC product certification database showed that of over 5.3 million certified window listings, over 2.1 million windows, or **51% of all certified window listings nationwide achieve a 0.25 SHGC or lower**. Given the wide availability of windows that meet the requirement proposed above, there should be no significant cost impact. By contrast, the impact on energy savings is substantial. Moreover, the potential for smaller HVAC systems could generate substantial cost savings at initial construction and every time the HVAC system is replaced for the lifetime of the home.

This proposal represents a reasonable and cost effective improvement that will provide states and local jurisdictions with an option to easily increase the efficiency of their code.

Date Proposal Submitted	4/1/2010	**Section**	402.1.1
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Amy Schmidt	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

None

Summary of Modification

Removing footnote From Table 402.1.1, language that does not apply to FL requirements.

Rationale

The FL code does not require Floor Insulation greater than R-13 so footnote g does not apply.

The FL code does not have a cavity + continuous wall insulation option shown in the table therefore footnote h does not apply.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

This modification does not diminish the the health, safety, or welfare of the general public.

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

Removal of this footnote language will make the code less cluttered and prevent misinterpretation.

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

This modification does not discriminate against materials, products, methods, or systems of construction.

Does not degrade the effectiveness of the code

This modification only enhances the effectiveness of the code by preventing any confusion.

g. Reserved ~~Or insulation sufficient to fill the framing cavity, R-19 minimum.~~

h. Reserved ~~"13+5" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.~~

Date Proposal Submitted	3/26/2010	**Section**	402.1.1 and 402.1.3
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Eric Lacey	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

This code proposal improves thermal envelope efficiency by increasing the ceiling insulation requirement to R-38, consistent with U.S. DOE and FSEC recommendations.

Rationale

(See attached file for detailed reason statement.) This code proposal improves thermal envelope efficiency by increasing the ceiling insulation requirement to R-38, consistent with U.S. DOE and FSEC recommendations.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This proposal should have no additional impact on enforcement of the code.

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

This proposal will save energy and money over the lifetime of the home.

Impact to industry relative to the cost of compliance with code

This proposal will increase the initial cost of construction.

Requirements

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

This proposal will save a substantial amount of energy over the lifetime of the building.

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

The proposal strengthens the energy efficiency of the code and encourages better building practices.

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

The proposal does not discriminate against any products. Any combination of insulating material may be used to meet the requirement.

Does not degrade the effectiveness of the code

The proposal does not degrade the effectiveness of the code.

General Comment

EN3955-G1

Proponent Darrell Winters **Submitted** 5/25/2010 **Attachments** No

Comment

Increasing ceiling insulation from R-30 to R-38 is a proven cost effective improvement for residential construction, and one that remains in place for the life of the structure. R-38 is still below the recommendations of the Department of Energy and the Florida Solar Energy Center.

TABLE 402.1.1

COMPONENT EFFICIENCIES REQUIRED[a,l]

% Glazing[c]	Fenestration U-Factor[b]	Sky-light[b] U-Factor	Glazed Fenes-tration SHGC[b]	Ceiling R-value	Roof Reflectance Tested per S. 405.6.2	Wood Frame Wall R-value	Mass Wall R-value[l]	Floor R-value/ Slab R-value[d]	Door U-Factor	Ducts: R-value/ Location[k]	Air Handler Location[k,]	Air Leakage Tested per S. 403.2.2.1
20%	0.65[j]	0.75	0.30	~~30~~ 38	0.25	13	6 / 7.8	13/0	0.65	R-6/ Conditioned	Conditioned	Qn=0.03

TABLE 402.1.3

EQUIVALENT U-FACTORS[a,f,g]

Fenestration U-Factor[e]	Skylight U-Factor	Ceiling U-Factor[h]	Frame Wall U-Factor	Mass Wall U-Factor[b]	Floor U-Factor	Basement Wall U-Factor[d]	C
0.65	0.75	~~0.035~~ 0.030	0.082	0.124	0.064	0.360	

(Portions of table and footnotes not shown shall remain unchanged.)

R-38 Ceiling

This code proposal is intended to improve thermal envelope efficiency through improved insulation in ceilings. This proposed improvement is reasonable, producing energy savings of around 0.8% in climate zone 2. Moreover, unlike many building components, ceiling insulation can last for the life of the building, delivering consistent energy savings far longer than most energy savings measures.

Increased ceiling insulation requirements have already been explored by the Florida Solar Energy Center (FSEC), and have been discussed in previous meetings of the Energy Task Group. In a September 3, 2009 report to the Task Group, *Getting to 50, What Will it Take*, Philip Fairey summarized the results and recommendations of FSEC regarding the most energy efficient and cost-effective levels of insulation for Florida's climate zones. The report recommended that ceiling insulation in the range of R-40 represents the "Best Practice" for Florida and meets reasonable cost-effectiveness. The complete report can be found at http://consensus.fsu.edu/FBC/2010-Florida-Energy-Code/FSEC_Presentation_Energy_Increases.pdf.

The U.S. Department of Energy has also issued new recommendations for cost-effective insulation levels in new homes in early 2008.
http://www1.eere.energy.gov/consumer/tips/insulation.html

For Florida's climate zones, DOE recommended the following:

Climate Zone	Attic
1	R30 to R49
2	R30 to R60

The R-values in this proposal are conservative, cost-effective improvements to ceiling insulation requirements that are consistent with DOE recommendations for new construction.

Date Proposal Submitted	3/26/2010	**Section**	402.1.1 and 402.1.3
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	Yes	**Commission Action**	Pending Review
Proponent	Eric Lacey	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

This proposal saves energy by improving the fenestration and skylight U-factors, consistent with proposals approved by the IECC Code Development Committee for inclusion in the 2012 IECC.

Rationale

(See attached file for detailed supporting statement.) This proposal saves energy by improving the fenestration and skylight U-factors, consistent with proposals approved by the IECC Code Development Committee for inclusion in the 2012 IECC.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This proposal will not impact local enforcement of the code.

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

The proposal will save energy and money over the lifetime of the building.

Impact to industry relative to the cost of compliance with code

A very high percentage of fenestration products already meet the proposed U-factors. For builders using these products, there will be no cost impact. For builders who would have selected products with higher U-factors, the cost impact will be minor.

Requirements

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

This proposal will save energy and money over the lifetime of the building.

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

This proposal improves the effectiveness of the code by requiring more efficient fenestration products. It will encourage better building practice.

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

The proposal does not discriminate against any materials, products, or systems of construction.

Does not degrade the effectiveness of the code

The proposal does not degrade the effectiveness of the code.

General Comment

EN3958-G1

Proponent Michael Nau **Submitted** 5/18/2010 **Attachments** No

Comment

This modification exceeds the adopted 2009 IECC criteria. There is no information showing the true savings from .65 Ufactor to .040 in southern Florida. This has a definate negative impact on the aluminum impact products currently providing safety and meeting all the HVHZ areas. The $ savings running Energy Gauge with .40 windows and .65 windows is almost insignificant in most of the State. .40 will only provide a hardship for those in IECC zone1 due to availability problems and excessive costs for windows that show no additional savings.

General Comment

EN3958-G2

Proponent Thomas Larson **Submitted** 6/1/2010 **Attachments** No

Comment

The Southern Alliance for Clean Energy's primary interest in building code revision is to advance energy efficiency as fast and as much as possible, respecting full life-cycle cost effectiveness. We support alignment of Fla. Energy Code with IECC 2009 and successive revisions as closely as possible, and would foster each measure's contributions to 20% energy improvement over 2007. To that end, we offer comment on this proposed modification:

- Lower fenestration U-factors will reduce the energy used in homes and will help control condensation.
- These lower U-factors are derived from EECC and DOE proposals that have been approved by the IECC Code Development Committee for inclusion in the 2012 IECC, pending approval at the Final Action Hearing.
- Skylights were not allowed in the prescriptive path of the 2007 Florida Building Code. If the 2010 version of the code allows skylights in the prescriptive path, it is not unreasonable to require a moderate level of efficiency.

General Comment

EN3958-G3

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

While the change has been approved for inclusion in the 2012 I-code it should be considered in the next FBC edition until it is in the base code.

TABLE 402.1.1

COMPONENT EFFICIENCIES REQUIRED[a,l]

% Glazing[c]	Fenestration U-Factor[b]	Sky-light[b] U-Factor	Glazed Fenes-tration SHGC[b]	Ceiling R-value	Roof Reflectance Tested per S. 405.6.2	Wood Frame Wall R-value	Mass Wall R-value[l]	Floor R-value/ Slab R-value[d]	Door U-Factor	Ducts: R-value/ Location[k]	Air Handler Location[k,]	Air Leakage Tested per S. 403.2.2.1
20%	~~0.65~~0.40[j]	~~0.75~~ 0.65	0.30	30	0.25	13	6 / 7.8	13/0	0.65	R-6/ Conditioned	Conditioned	Qn=0.03

TABLE 402.1.3

EQUIVALENT U-FACTORS[a,f,g]

Fenestration U-Factor[e]	Skylight U-Factor	Ceiling U-Factor[h]	Frame Wall U-Factor	Mass Wall U-Factor[b]	Floor U-Factor	Basement Wall U-Factor[d]	C
~~0.65~~ 0.40	~~0.75~~ 0.65	0.035	0.082	0.124	0.064	0.360	

(Portions of table and footnotes not shown shall remain unchanged.)

Fenestration U-factor 0.40 and Skylight U-factor 0.65

This proposal reflects some of the improvements to the prescriptive requirements proposed by the U.S. Department of Energy and the Energy Efficient Codes Coalition which were approved by the IECC Code Development Committee for inclusion in the 2012 IECC. Although code officials and governmental representatives will finalize approvals at the ICC Final Action Hearings in October 2010, it is likely that substantial improvements will be made to fenestration U-factors at those hearings. This proposal was one of many (including several "omnibus proposals") that lower U-factors for windows and skylights. It represents a reasonable increase in efficiency that is achievable by a broad range of products.

Efficient Windows. A recent review of the NFRC product certification database showed that of over 5.3 million certified window listings, over 4.2 million, or **79% of all certified windows listed nationwide achieve a 0.40 U-factor or lower**. Given the wide availability of windows that meet the requirement proposed above, there should be no cost impact. By contrast, the impact on energy savings is substantial. This proposal would reduce the U-factors of windows by over 38%, and skylights by over 13%.

Efficient Skylights. This would also be the first improvement to skylight efficiency in the IECC since the substantial revisions to the 2004 edition, even though windows and doors have met increasingly stringent standards during that same period. In the 2007 version of the Florida Building Code (including the 2009 Supplement), skylights are not allowed in homes built to the Component Prescriptive Method (B). *See* Section 13-600.1.2. While the addition of skylights to the prescriptive option allows more design flexibility for builders and brings the code closer to the prescriptive path of the 2009 IECC, it is reasonable to require that skylights meet a sufficient level of energy efficiency.

These are commonsense upgrades to windows and skylights that will bring greater comfort and more energy savings to Florida homeowners at little or no cost.

Date Proposal Submitted	4/2/2010	**Section**	402.1.1.3
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jack Glenn	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Clarifies that two options are available to meet the air duct tightness requirements

Rationale

This modification reconciles the IECC language in Florida. Currently not only do the ducts have to be located in conditioned space but also has to be tested to be substantially leak free. If the ducts are located in conditioned space, testing is an excessive cost that is a duplication of efforts because the air tightness criteria is only for air leaks outside the conditioned space.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on local enforcement

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

It benefits the industry because affords an additional compliance alternative

Impact to industry relative to the cost of compliance with code

None

Requirements

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

No change

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

Clarifies duct testing is not required when dut is in conditioned space

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

g. Ducts and air handlers shall be located inside both the thermal and air barrier of the home OR ~~A~~ the air leakage shall be no more than Qn=0.03 when tested per Section 403.2.2.1.

Date Proposal Submitted	3/26/2010	**Section**	402.2.5
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Joe Nebbia	**General Comments**	No
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

Establishes equivalency table for steel framed wall assemblies with stud spacing at 24 inches.

Rationale

This adds choices for steel framed walls by adding values for 24 inch stud spacing, adding flexibility and encouraging efficient framing. It also corrects a limitation in the code. The values are derived from the US DOE's RESCheck. Builders would also be able to use the U-factor tables found in the ASHRAE 90.1. See attached for further rationale.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This will increase costs of code enforcement as U-factor equivalency is already allowed by code. This table will add the benefit of a clearly referencable table for code officials and builders.

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

This will not increase the cost relative to building and property owners. It will add in design and construction.

Impact to industry relative to the cost of compliance with code

This code change will not add cost to industry relative to compliance. It will add flexibility in compliance.

Requirements

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

It enhances the flexibility of the energy code while encouraging material efficient framing, mitigating effects on the environment.

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

It enhances flexibility while encouraging material efficient framing. It corrects current limitations in the code.

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

It provides more flexibility for alternative materials (steel framing) to comply with the code.

Does not degrade the effectiveness of the code

It does not degrade the effectiveness of the code because the change is energy neutral and only established more equivalency values.

402.2.5 Steel-frame ceilings, walls, and floors. Steel frame ceilings, walls and floors shall meet the insulation requirements of Table 402.2.5 or shall meet the U-factor requirements in Table 402.1.3. The calculation of the U-factor for a steel-frame envelope assembly shall use a series-parallel path calculation method.

Exception: ~~In Climate Zones 1 and 2, the continuous insulation requirements in Table~~

~~402.2.54 shall be permitted to be reduced to R-3 for s~~Steel frame wall assemblies with studs spaced at 24 inches (610 mm) on center shall be permitted to use the equivalent insulation requirements in Table 402.2.5.(2):

TABLE 402.2.5.(2) – STEEL FRAME WALL INSULATION R-VALUE FOR 24 INCH SPACING OF STUDS

Wood frame wall R-value requirement	Steel frame wall equivalent R-value at 24 inch spacing of studs
R-13	13+3.0 or 15+2.4 or 0+9.3
R-19	13+7.4 or 15+6.8 or 19+6.0 or 21+5.6
R-20	13+7.6 or 15+7.1 or 19+6.3 or 21+5.9
R-21	13+8.3 or 15+7.7 or 19+6.9 or 21+6.5

Alternatively, steel frame wall assemblies shall be permitted to use the equivalencies established in ASHRAE/IESNA Standard 90.1 Appendix A, Tables A 3.3 and A3.4.

The objective of this proposal is to expand the current equivalency choices for steel framed walls by adding values for 24 inch stud spacing. This adds flexibility while encouraging builders to use 24 inch stud spacing, thus optimizing thermal efficiency of walls and reducing material impacts on the environment.

This change also eliminates a current limitation in the code. The current exception to Section 402.2.5 allows for reduction of continuous insulation values to R-3 for steel framed assemblies regardless of the reference wood assembly cavity insulation requirement. This table provides specific steel framed equivalencies to wood framed walls with cavity values other than R-13 – allowing flexibility in the updating of the code. The proposed equivalent insulation values in the table are derived from the US Department of Energy's RESCheck simulation program and are nationally recognized. Alternatively, builders would be allowed to use the U-factor tables found in the ASHRAE/IESNA 90.1.

Date Proposal Submitted	4/1/2010	**Section**	402.3.2.1 (NEW)
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Amanda Hickman	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	Yes

Related Modifications

Mod 4307 - add definition for "Permanent Shading".

Summary of Modification

Adds compliance paths for meeting SHGC values in table 402.1.1.

Rationale

see attached

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

There is no fiscal impact to enforcement of the code.

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

It can potentially decrease the cost of code compliance by offering multiple options to accomplish energy savings.

Impact to industry relative to the cost of compliance with code

There may be a slight increase in cost to industry in order to show SHGC equivalency with Table 402.1.1. Some of these costs may include: design guides, product specifications, marketing materials and advanced product development.

Requirements

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

The correct use of shading encourages natural daylighting (as opposed to decreasing the window to wall ration or dark glass) which has been shown to improve productivity and better sense of well being.

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

Yes, this modification encourages product options and flexibility.

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

No, this modification encourages product options and flexibility

Does not degrade the effectiveness of the code

This modification will increase the usability and effectiveness of the code for the building and design community, while ensuring that the new fenestration is energy efficient.

Alternate Language

EN4309-A1

Proponent Roger LeBrun **Submitted** 5/21/2010 **Attachments** Yes

Rationale

Revised proposal is clearer, more faithful to its intent, and more specific in its criteria.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Same as original proposal, but with clearer language.

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

No change from original proposal

Impact to industry relative to the cost of compliance with code

No change from original proposal

Requirements

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

See original proposal

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

See original proposal

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

See original proposal

Does not degrade the effectiveness of the code

See original proposal

General Comment

EN4309-G1

Proponent Brian Sernulka **Submitted** 6/1/2010 **Attachments** No

Comment

BCAP believes that the Florida Building Code should be efficient, simple, and enforceable. Any trade-offs or exceptions to code requirements should be narrowly defined so that energy efficiency is improved (or at least maintained), and building officials should not be forced to make on-the-spot decisions about component efficiency. Modifications 4307, 4309, 4317, 4327, and 4329 all fail these basic principles, and should be rejected.

Modification 4309 adds complicated, open-ended exceptions to the fenestration SHGC requirement for products that may not ensure equivalence in efficiency or durability. The modification encourages the use of products in residential and commercial

settings that are not as well-regulated or uniform as SHGC.

Language in the proposal is not appropriate for code (and would be difficult for code officials to enforce). For example, it is not clear how a code official can determine whether a “combination of adherent shading material or device and fenestration product to achieve[s] the equivalent SHGC” required by the code. SHGC is listed on fenestration NFRC labels, requiring no calculation or additional verification by building officials. By contrast, the exceptions described in modification 4309 do not specify any uniform rating method for “adherent shading materials” or “devices.” The Florida Building Code should not place a building official in the position of having to calculate (or speculate) the SHGC values of non-fenestration products.

General Comment

EN4309-G2

Proponent Garrett Stone **Submitted** 6/1/2010 **Attachments** No

Comment

Modification 4309 should be rejected because it creates several unnecessary and unenforceable exceptions to the fenestration SHGC rating that will likely save much less energy and peak demand. None of these exceptions can guarantee the same durability or the objective performance of fenestration with uniform SHGC ratings.

1. Windows are typically installed to allow occupants to see outdoors. This modification would encourage the use of laundry list of attachments to the window such as window films, louvers, shades, or other measures that would obstruct occupant views. Many of these products are not as permanent as windows, are subject to decisions by the homeowner or can be relatively easily removed or damaged so as not to work effectively, eliminating any energy savings.
2. Even if a window shade is attached with “fasteners that require additional tools,” this does not make the shading permanent. Occupants may simply roll up adjustable shades, and all perceived energy savings would be eliminated.

Modification 4309 adds ambiguity to the code without any clear energy efficiency benefit. We urge the Commission to reject this modification.

General Comment

EN4309-G3

Proponent Thomas Larson **Submitted** 6/1/2010 **Attachments** No

Comment

SACE's main interest in code revision is to advance energy efficiency as fast and as much as possible, respecting full life-cycle cost effectiveness. Fla. Energy Code should be aligned with IECC 2009 & successive revisions as closely as possible, and contribute to 20% energy improvement over 2007. We offer comment on this proposal:

• The Energy Code Workgroup carefully reviewed the IECC and the Florida Building Code and combined them in a manner that ensured a reasonable level of flexibility for builders, while reaching a 20% improvement in energy efficiency over the 2004 FBC.
• These proposals introduce a long list of alternative products that are not guaranteed to meet the same level of efficiency as the low-SHGC windows proposed in the code. The proposals also introduce a high level of ambiguity into the code and could create problems for code officials.
• Many of the products or devices listed as exceptions to the low-SHGC window requirement are either less durable than windows or can be easily removed by homeowners. There is no reason to allow trade-offs between SHGC, which is rated and labeled to a uniform standard, and products that may not be rated at all.
• It is much easier and more cost effective to install the correct glazing products in the first place. These proposals would create incentives to install windows that are not appropriate for Florida’s climate.
• While well-designed shading can bring additional benefits to buildings, credit for shading is confined to computer-simulated compliance methods in which the precise impact can be measured.
• By contrast, the proposed set of alternatives allows shading (and a long list of other practices not typically allowed as trade-offs) to be directly traded off against SHGC.
• The benefits of low-SHGC windows are well settled. They result in lower energy bills, lower peak demand, and a lower environmental impact. These benefits should not be traded away for less certain benefits.

General Comment

EN4309-G4

Proponent Eric Lacey **Submitted** 6/1/2010 **Attachments** No

Comment

The primary objectives for energy code modifications in this code cycle should be to improve the Florida code by: (1) tracking the nature, structure and provisions of the IECC, wherever possible; and (2) contributing to a 20% increase in energy efficiency compared to the 2004 Florida Building Code. Mods 4307, 4317, 4327, and 4329 should be disapproved because they defeat both of these objectives.

Mod 4309 creates SHGC exceptions for shading or overhangs have never been allowed in the IECC’s simple residential prescriptive option and should not be added to the Florida code. We are aware of no energy code that allows “adherent shading material” (whatever this means) to qualify for code compliance. Aside from over-complicating the simple prescriptive option, these mods create significant compliance problems and loopholes for no apparent energy efficiency benefit:

• The mod does not clearly define what qualifies as an exterior louver or adherent shading material or device, creating a potentially large loophole; nor does the proposal show how these approaches can provide similar long-term savings as an alternative to low solar gain windows.
• Calculation of what is “optimal” for overhangs will make code compliance and enforcement very difficult. The calculations required for shading options would make the prescriptive option confusing at best and unenforceable at worst.
• The mod does not require compliance with any national, objective rating system for any of the listed options.

Mod 4309 contains terminology that is not appropriate for mandatory code, and it would place code officials in the difficult position of determining what qualifies for the trade-off. Because window SHGC can be objectively determined, easily verified by building officials, and consistently installed by builders, there is no reason to create this loophole. Mod 4309 should be rejected.

General Comment

EN4309-G5

Proponent jeff inks **Submitted** 6/1/2010 **Attachments** No

Comment

We recommend disapproval of this proposal. Prescriptive requirements for permanent shading should be considered much more thoroughly if they are to be included in the code, if at all. Permanent shading is not a prescriptive attribute for which selecting an option from a limited set of provisions can be relied upon to implement it correctly and effectively. There are many factors that must be carefully considered in order to do so, and if implemented incorrectly, can result in less efficient building operation and greater energy consumption. Providing prescriptive permanent shading options is also not necessary to achieve the state's objective of increasing the stringency of the Florida 2010 energy code by 20%.

General Comment

EN4309-G6

Proponent Harry Misuriello **Submitted** 6/1/2010 **Attachments** No

Comment

Mod 4309 should not be approved. This is because it proposes a new requirement that has historically been rejected for inclusion in the IECC. Approval of this Mod would represent a departure from the objectives of this code development cycle which include alignment with the IECC structure and provisions. The IECC as published represents the predominant view of the nation's code officials concerning reasonable solar gain control that reduce energy usage and mitigate peak electrical demand in Florida's climate zones. The proposed Mod also has compliance and enforceability issues in interpreting its complicated requirements. We urge the Task Group and Commission to disapprove this proposed Mod.

Add new text as follows:

402.3.2.1 Permanent Shading. Where Table 402.1.1 requires a solar heat gain coefficient (SHGC), the requirements shall be met by either:

1. Installing fenestration products that have an area weighted average SHGC equal to or lower than that shown in Table 402.1.1, or

2. A permanent shading device, such as, but not limited to, an exterior louver that provides the equivalent solar heat gain coefficient as required in Table 402.1.1. Exterior shading devices must be permanently attached to the outside of the structure with fasteners that require additional tools or equipment to remove (as opposed to clips, hooks, latches, snaps, or ties), or

3. A combination of adherent shading material or device and fenestration product to achieve the equivalent solar heat gain coefficient as required in Table 402.1.1

4. For south-facing glazing by optimal overhangs constructed or installed so that the south-facing glazing is fully shaded at solar noon on August 21 and substantially exposed to direct sunlight at solar noon on December 21.

Add new text as follows:

402.3.2.1 Permanent Window Shading. Where Table 402.1.1 requires a solar heat gain coefficient (SHGC), the requirements shall be met by either:

1. Installing ~~fenestration products~~ windows that have an area weighted average SHGC equal to or lower than that shown in Table 402.1.1, or

2. ~~A~~ Utilizing a permanent shading device, such as, but not limited to, an exterior louver that provides the equivalent solar heat gain coefficient as required in Table 402.1.1. ~~Exterior~~ Such shading devices must be permanently attached to the outside of the structure with fasteners that require additional tools or equipment to remove (as opposed to clips, hooks, latches, snaps, or ties), or

3. ~~A~~ Utilizing a combination of adherent shading material or device and ~~fenestration product~~ window to achieve the equivalent solar heat gain coefficient as required in Table 402.1.1

~~4. For south-facing glazing by optimal o~~Overhangs shall be constructed or installed so that the south-facing glazing is fully shaded at solar noon on August 21 and ~~substantially~~ 80% exposed to direct sunlight at solar noon on December 21.

Reason Statement for Mod 4309:

This modification recognizes the benefits provided by the permanent shading of fenestration in residential construction. The concept of shading has been in the 2000, 2003, 2006, and 2009 IECC for commercial buildings and has been proven to be very simple to calculate, fitting well into a prescriptive approach. This language has been derived from California's new mandatory Green Building Standards Code (CALGREEN), which encourages the use of all types of shading products and devices.

This modification allows for the use of permanent shading to meet the solar heat gain coefficient requirements of Table 402.1.1. Permanent exterior shading features, such as overhang and other projections, are allowed to be used in commercial construction as a prescriptive trade-off to meeting SHGC requirements within the code.

Allowing flexibility to meet the solar heat gain coefficient requirement through the use of proven shading alternatives will increase the usability of the code for the building and design community, while ensuring that the new fenestration is energy efficient. When credit for shading is permitted in the code, it encourages an integrated approach to building designs, energy use, construction materials, renewable resources, particularly as part of urban infrastructure, site and town planning and building design to be considered holistically. It also creates the opportunity for aesthetically pleasing and ingenious designs that might not otherwise be permitted. Shading in modern construction offers many possibilities, some yet to be fully explored.

Date Proposal Submitted	4/1/2010	**Section**	402.3.6
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Amanda Hickman	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	Yes

Related Modifications

Mod 4309 - 402.3.2.1 Permanent Shading (compliance paths to meet SHGC requirements of Table 402.1.1)

Summary of Modification

The SHGC requirements for replacement fenestration in section 402.3.6 can be satisfied by new section 402.3.2.1 on Permanent Shading.

Rationale

see attached

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

There is no fiscal impact to enforcement of the code.

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

It can potentially decrease the cost of code compliance by offering multiple options to accomplish energy savings.

Impact to industry relative to the cost of compliance with code

There may be a slight increase in cost to industry in order to show SHGC equivalency with Table 402.1.1. Some of these costs may include: design guides, product specifications, marketing materials and advanced product development.

Requirements

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

The correct use of shading encourages natural daylighting (as opposed to decreasing the window to wall ration or dark glass) which has been shown to improve productivity and better sense of well being.

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

Yes, this modification encourages product options and flexibility.

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

No, this modification encourages product options and flexibility.

Does not degrade the effectiveness of the code

This modification will increase the usability and effectiveness of the code for the building and design community, while ensuring that the replacement fenestration is energy efficient.

Alternate Language

EN4317-A1

Proponent Roger LeBrun **Submitted** 5/21/2010 **Attachments** Yes

Rationale

Completes clarifications offered in EN4309-A1

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change from original proposal

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

No change from original proposal

Impact to industry relative to the cost of compliance with code

No change from original proposal

Requirements

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

See original proposal

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

See original proposal

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

See original proposal

Does not degrade the effectiveness of the code

See original proposal

General Comment

EN4317-G1

Proponent Brian Sernulka **Submitted** 6/1/2010 **Attachments** No

Comment

BCAP believes that the Florida Building Code should be efficient, simple, and enforceable. Any trade-offs or exceptions to code requirements should be narrowly defined so that energy efficiency is improved (or at least maintained), and building officials should not be forced to make on-the-spot decisions about component efficiency. Modifications 4307, 4309, 4317, 4327, and 4329 all fail these basic principles, and should be rejected.

Modification 4317 extends the same set of exceptions proposed in modification 4309, but to replacement windows. It suffers from

many of the same enforcement and compliance issues. For example, Exception 4 requires “optimal overhangs” that ensure that south-facing glazing is “substantially exposed to direct sunlight at solar noon on December 21.” The modification does not explain what qualifies as “south-facing glazing” or how a builder or code official can calculate the impact of overhangs on windows. This presents additional problems for replacement windows, because it is impossible to alter the orientation of windows after the home has been built. The language of the exceptions will also create ambiguity for code officials. Terms such as “optimal” and “substantially exposed” are open to a wide variety of interpretations. We believe that the code should not create unnecessary exceptions if they would render the code more complicated or less enforceable. This modification should be rejected.

General Comment

EN4317-G2

Proponent Garrett Stone **Submitted** 6/1/2010 **Attachments** No

Comment

Modification 4317 raises the same issues as Modification 4309, and it should be rejected for the same reasons. (Issues with Modification 4309 will not be repeated here.) In the replacement context, it is worth noting that replacement window requirements only apply if the homeowner elects to replace the window. Nothing in the current code precludes homeowners from adding shading devices or films to existing windows. However, it does not make sense that where entire windows are being replaced that the code should encourage installation of inferior windows by creating exceptions to the code requirements. As a matter of policy, the code should encourage the installation of the right windows in the first place. For the reasons above, and for the same reasons listed in Modification 4309, this modification should be rejected.

General Comment

EN4317-G3

Proponent Thomas Larson **Submitted** 6/1/2010 **Attachments** No

Comment

SACE's main interest in code revision is to advance energy efficiency as fast and as much as possible, respecting full life-cycle cost effectiveness. Fla. Energy Code should be aligned with IECC 2009 & successive revisions as closely as possible, and contribute to 20% energy improvement over 2007. We offer comment on this proposal:

• The Energy Code Workgroup carefully reviewed the IECC and the Florida Building Code and combined them in a manner that ensured a reasonable level of flexibility for builders, while reaching a 20% improvement in energy efficiency over the 2004 FBC.

• These proposals introduce a long list of alternative products that are not guaranteed to meet the same level of efficiency as the low-SHGC windows proposed in the code. The proposals also introduce a high level of ambiguity into the code and could create problems for code officials.

• Many of the products or devices listed as exceptions to the low-SHGC window requirement are either less durable than windows or can be easily removed by homeowners. There is no reason to allow trade-offs between SHGC, which is rated and labeled to a uniform standard, and products that may not be rated at all.

• It is much easier and more cost effective to install the correct glazing products in the first place. These proposals would create incentives to install windows that are not appropriate for Florida’s climate.

• While well-designed shading can bring additional benefits to buildings, credit for shading is confined to computer-simulated compliance methods in which the precise impact can be measured.

• By contrast, the proposed set of alternatives allows shading (and a long list of other practices not typically allowed as trade-offs) to be directly traded off against SHGC.

• The benefits of low-SHGC windows are well settled. They result in lower energy bills, lower peak demand, and a lower environmental impact. These benefits should not be traded away for less certain benefits.

General Comment

EN4317-G4

Proponent Eric Lacey **Submitted** 6/1/2010 **Attachments** No

Comment

For most of the same reasons, RECA finds that Mod 4317, like Mods 4309, 4327 and 4329, defeats the primary objectives for energy code modifications in this code cycle – specifically, to improve the Florida code by: (1) tracking the nature, structure and provisions of the IECC, wherever possible; and (2) contributing to a 20% increase in energy efficiency compared to the 2004 Florida Building Code. Please see the comment on Mod 4309.

Mod 4317 makes even less sense than Mod 4309, given that it would apply to replacement fenestration. It would create an unnecessary loophole for replacement fenestration that would ultimately reduce the efficiency of the Florida Building Code:

• Section 13-601 of the 2007 Florida Building Code requires that all new fenestration installed as part of a renovation meet the code’s requirement for U-factor and SHGC (without prescriptive exceptions for shading or overhangs). The current practice works and Mod 4317 represents a step backward in efficiency from that approach.

• Likewise, the IECC has contained a requirement for replacement windows since 1998, and has never allowed a prescriptive trade-off for permanent overhangs, much less all of the other, much less permanent options proposed in Mod 4317.

• Like the other similar proposed mods, this proposal is unenforceable. There is no explanation for how the code official should determine equivalence, what is an “optimal” overhang, and what qualifies as “substantially exposed” fenestration – in a replacement window context this is particularly problematic.

There is no reason to create this loophole. Mod 4317 should be rejected.

General Comment

EN4317-G5

Proponent jeff inks **Submitted** 6/1/2010 **Attachments** No

Comment

See comments on EN4309

General Comment

EN4317-G6

Proponent Harry Misuriello **Submitted** 6/1/2010 **Attachments** No

Comment

Mod 4317 should not be approved. This is because it proposes a new requirement that is inconsistent with the IECC. Approval of this Mod would represent a departure from the objectives of this code development cycle which include alignment with the IECC structure and provisions. The IECC as published represents the predominant view of the nation's code officials concerning reasonable solar gain control that reduce energy usage and mitigate peak electrical demand in Florida's climate zones. Since the current Florida code requires replacement windows to perform the same as for new construction, this Mod also represents a weakening of the code. The proposed Mod also has compliance and enforceability issues in interpreting its complicated requirements. We urge the Task Group and Commission to disapprove this proposed Mod.

General Comment

EN4317-G7

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

Original IECC language should be retained as no Florida specific reason is given for this change. If it is such a good idea, it should be submitted for national consideration and acceptance at the International Code Council.

Revise text as follows:

402.3.6 Replacement fenestration. Where some or all of an existing fenestration unit is replaced with a new fenestration product, including sash and glazing, the replacement fenestration unit shall meet the applicable requirements for U-factor and SHGC in Table 402.1.1. Where Table 402.1.1 requires a solar heat gain coefficient (SHGC), the requirements shall be met by section 402.3.2.1.

Revise text as follows:

402.3.6 Replacement fenestration. Where some or all of an existing fenestration unit is replaced with a new fenestration product, including sash and glazing, the replacement fenestration unit shall meet the applicable requirements for U-factor and SHGC in Table 402.1.1. Where Table 402.1.1 ~~requires~~ specifies a maximum solar heat gain coefficient (SHGC) for windows, the requirements shall be met by section 402.3.2.1.

Reason Statement for Mod 4317:

This modification recognizes the benefits provided by the permanent shading of fenestration in residential construction. The concept of shading has been in the 2000, 2003, 2006, and 2009 IECC for commercial buildings and has been proven to be very simple to calculate, fitting well into a prescriptive approach. This language has been derived from California's new mandatory Green Building Standards Code (CALGREEN), which encourages the use of all types of shading products and devices.

This modification allows for the use of permanent shading to meet the solar heat gain coefficient requirements of Table 402.1.1. Permanent exterior shading features, such as overhang and other projections, are allowed to be used in commercial construction as a prescriptive trade-off to meeting SHGC requirements within the code.

Allowing flexibility to meet the solar heat gain coefficient requirement through the use of proven shading alternatives will increase the usability of the code for the building and design community, while ensuring that the new fenestration is energy efficient. When credit for shading is permitted in the code, it encourages an integrated approach to building designs, energy use, construction materials, renewable resources, particularly as part of urban infrastructure, site and town planning and building design to be considered holistically. It also creates the opportunity for aesthetically pleasing and ingenious designs that might not otherwise be permitted. Shading in modern construction offers many possibilities, some yet to be fully explored.

Date Proposal Submitted	4/1/2010	**Section**	402.5
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Amanda Hickman	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

Delete entire section: 402.5 Maximum fenestration U-factor and SHGC (Mandatory).

Rationale

see attached

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

There is no fiscal impact to enforcement of the code.

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

This modification can potentially decrease the cost of code compliance. Deleting the “hard caps” will ensure that true tradeoffs are possible in the performance path, which will mitigate cost increases.

Impact to industry relative to the cost of compliance with code

There is no cost to industry due to this modification. Industry will have a level playing field through this modification.

Requirements

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

True trade-offs can now exist, thereby creating more flexible options that would benefit the general public.

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

Yes, this modification encourages product options and flexibility.

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

No, this modification encourages product options and flexibility.

Does not degrade the effectiveness of the code

This modification will increase the usability and effectiveness of the code for the building and design community, by making the code less confusing and cumbersome.

General Comment

EN4320-G1

Proponent Garrett Stone **Submitted** 6/1/2010 **Attachments** No

Comment

Modification 4320 should be rejected because it removes an essential backstop that has been integral to the IECC’s simplified prescriptive path for the past several editions of the code. Every state that has adopted the 2004, 2006, or 2009 IECC has also adopted the fenestration trade-off maximums, despite repeated unsuccessful attempts by a few opponents to remove it at the state and national level. Based on previous code cycles, it appears that the proposal cited by the proponent to delete the maximums in the 2012 IECC is unlikely to survive at the Final Action Hearing – an identical proposal lost by an overwhelming margin last year.

High solar gain through windows leads directly to many problems – particularly occupant discomfort, higher electrical peak demand, additional expense and other problems associated with oversized HVAC systems, as well as too much energy use. Occupant discomfort due to high solar gain is particularly problematic. According the Efficient Windows Collaborative and DOE’s Lawrence Berkeley National Lab, the likelihood of occupant discomfort is almost 80% with a single pane clear window. This figure drops to almost 20% with a low solar gain window. Discomfort potentially leads to substantial additional energy use as the occupant reduces the thermostat to offset the discomfort. Windows that achieve a 0.50 SHGC or lower are widely available. In fact, of the 5.3 million window types listed in the NFRC database, over 89 % would not exceed a 0.40 SHGC, and we expect that percentage to be even higher for windows with a 0.50 SHGC or less.

General Comment

EN4320-G2

Proponent Thomas Larson **Submitted** 6/1/2010 **Attachments** No

Comment

The Southern Alliance for Clean Energy's primary interest in building code revision is to advance energy efficiency as fast and as much as possible, respecting full life-cycle cost effectiveness. We support alignment of Fla. Energy Code with IECC 2009 and successive revisions as closely as possible, and would foster each measure's contributions to 20% energy improvement over 2007. To that end, we offer comment on this proposed modification:

- Because of the growing impact of air conditioning on the power grid, and the associated environmental and financial costs to Florida and its citizens, it is reasonable to require low-solar gain windows in all homes.
- Low-SHGC windows will help reduce peak electric demand during periods of the year when electricity is scarce and exponentially more expensive than during non-peak periods. Utilities typically use older or less efficient peaking units to meet demand during these times, leading to more environmental degradation. The benefits of peak demand reduction are not achieved if SHGC is traded off against other items.
- The Technical Advisory Group kept this provision of the IECC in its draft because of the benefits of an SHGC “backstop” in the code. As Florida adapts its energy requirements to mirror the flexible structure of the IECC, it is important to include the IECC’s limitations.
- While the SHGC maximum of 0.50 is important, it is not an overly stringent requirement because it is nowhere near as

efficient as the prescriptive SHGC requirement of 0.30. Technically speaking, it still allows 50% of the sun's heat to enter through the windows. However, it sends a clear signal to code users that solar gain must be controlled, even when trade-offs are used.

General Comment

EN4320-G3

Proponent Eric Lacey **Submitted** 6/1/2010 **Attachments** Yes

Comment

Modification 4320 would delete an important provision included in the IECC since 2004 (in the IECC, the provision is important enough to be designated "mandatory") and would be a substantial step backward in energy efficiency by completely removing the IECC's protections against inefficient glazing in homes. The fenestration trade-off maximum for southern climate zones currently found in Section 402.5 of the 2009 IECC and the draft 2010 Florida Building Code is a simple requirement that all new homes (regardless of the compliance method) contain windows with some degree of solar protection – specifically that the weighted average window SHGC is required not to exceed 0.50. This means that the window, including the frame, must block 50% of the solar gain compared to no window at all. This is a very modest requirement compared with the much more aggressive proposed prescriptive SHGC value of 0.30 and allows substantial flexibility for individual windows since it applies on a weighted average basis to all windows.

RECA wholeheartedly supported the Task Group's inclusion of the trade-off maximums in written and in-person comments during the drafting phase of the proposed code, and we continue to believe that this section is a crucial part of Florida's energy requirements. The proponent has not demonstrated why it is necessary (or more energy efficient) to eliminate this important backstop. We recommend that Mod 4320 be rejected. (For a more complete analysis of this modification, see the attached document.)

General Comment

EN4320-G4

Proponent jeff inks **Submitted** 6/1/2010 **Attachments** No

Comment

We recommend disapproval of this proposal. Removal of trade-off caps has not been justified. The inclusion of Section 402.5 ensures that appropriate and necessary limits are placed on trade-offs when applying them for compliance purposes and better ensures that the intended and required building energy performance is met.

General Comment

EN4320-G5

Proponent Harry Misuriello **Submitted** 6/1/2010 **Attachments** No

Comment

Mod 4320 should not be approved. This is because it eliminates an IECC requirement that has been included in at least 3 previous versions (2004, 2006 and 2009.) Approval of this Mod would represent a departure from the objectives of this code development cycle which include alignment with the IECC structure and provisions. Section 402.5 represents the predominant view of the nation's code officials concerning reasonable window limitations that reduce energy usage and mitigate peak electrical demand in Florida's climate zones. We urge the Task Group and Commission to disapprove this proposed Mod.

General Comment

EN4320-G6

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

While the change has been approved for inclusion in the 2012 I-code it should be considered in the next FBC edition until it is in the base code..

Delete without substitution:

~~**402.5 Maximum fenestration *U* factor and SHGC (Mandatory).** The area-weighted average maximum fenestration *U*-factor permitted using trade-offs from Section 402.1.4 or 404 shall be 0.48 in Zones 4 and 5 and 0.40 in Zones 6 through 8 for vertical fenestration, and 0.75 in Zones 4 through 8 for skylights. The area-weighted average maximum fenestration SHGC permitted using trade-offs from Section 405 in Zones 1 through 3 shall be 0.50.~~

Disapprove Modification 4320

Modification 4320 should be disapproved because it would take a substantial step backward in energy efficiency by completely removing protections against inefficient glazing in homes. RECA wholeheartedly supported the inclusion if the trade-off maximums in written and in-person comments during the drafting phase of the proposed code, and we continue to believe that this section is a crucial part of Florida's energy requirements. The glazing trade-off maximums currently found in Section 402.5 of the 2009 IECC and the draft 2010 Florida Building Code are simple mandatory measures that ensure that all new homes contain high-quality, cost-effective windows that save energy and block unwanted solar gain in warmer climates.

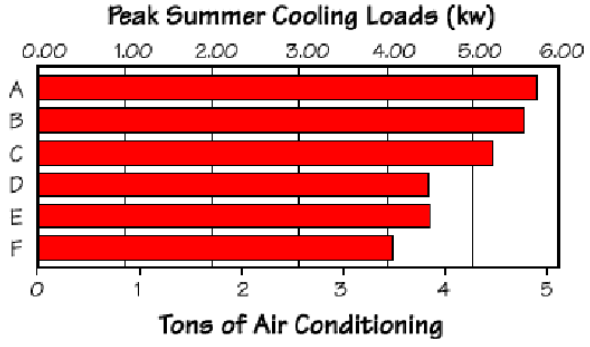
Every state that has adopted the 2004, 2006, and 2009 IECC has adopted these maximums without amendment. The maximums are seamlessly built into compliance software such as the Department of Energy's REScheck. The proponent of 4320 claims that the requirement is "difficult to explain and confuses most code users who often misinterpret it," but these simple, necessary backstops for trade-off programs are successfully being applied by builders and code officials in more than half the United States. The maximums have been repeatedly challenged over the last 10 years in the ICC process – and repeatedly upheld. Although the IECC Code Development Committee narrowly approved a proposal that would eliminate the maximums in 2012, that proposal must still go before the nation's building officials in October, 2/3 of whom voted in favor of keeping the window caps in the 2009 IECC.

Why Section 402.5 Matters in Florida

1. Quality windows, energy savings, and peak demand savings in Florida.

Efficient windows bring immediate cost savings to the builder who can downsize heating and cooling equipment, and bring long-term energy savings and greater comfort for consumers. On a larger scale, because low-SHGC windows reduce energy consumption during the peak summer months in warmer climates, high-quality windows can help reduce the strain on the electric grid and delay the need to build peak generation. Consumers also enjoy the reduced costs that come with economies of scale and market transformation. Because the proposed SHGC requirement in the Florida Building Code is 0.30 SHGC statewide, and the weighted average window maximums are set at 0.50 SHGC (over 166% of the baseline requirement), the maximums allow an enormous amount of trade-off capability. Glass block, garden windows, and other types of fenestration are not "technically illegal," as claimed by the proponent, but rather are still allowed under section 402.5, as long as the weighted average SHGC of all fenestration does not exceed a 0.50 SHGC. Fenestration maximums are a critical part of a well-functioning energy code because they discourage extreme trade-offs of windows that would result in long-term detriment to homeowners.

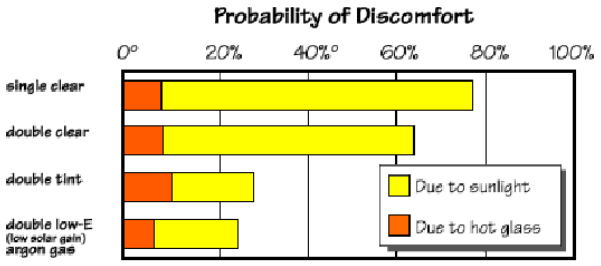
The following chart, developed by the U.S. Department of Energy's Lawrence Berkley National Laboratory (LBNL), which is found on the Efficient Window Collaborative (EWC) website (www.efficientwindows.org), shows the potential for saving peak demand for different window types. Window F is the low SHGC, low U-factor window that would satisfy the window maximums across the country (by contrast, window A is a single pane window). As is readily apparent, improved windows are crucial to lower peak cooling loads and smaller HVAC sizes (with lower costs).



2. More Comfortable Homes and Less Energy Use.

The energy code revolves around occupant comfort – any perceived energy savings will be instantly lost if an occupant is uncomfortable and adjusts the thermostat. Incremental changes in window efficiency can have a disproportionate impact on occupant comfort because even the most efficient windows are, at best, still only the equivalent of an R-3 wall. Hot spots created by high solar gain in the summer can force an occupant to adjust the thermostat to compensate (which will increase cooling loads at a time when electricity is scarce and exponentially more expensive).

The chart below, again produced by LBNL and displayed on the EWC website, shows the probability of discomfort during summer from sunlight and hot glass. The potential comfort problem from bad windows is even worse in the summer. The summertime probability of discomfort ranges from almost 80% with single clear and over 60% with double clear declining to almost 20% with windows as specified by Section 402.6.



In cooling-dominated climates, windows with low SHGC will protect against hot spots and occupant discomfort, and will make it less likely that occupants will need to adjust the thermostat and use more energy.

3. A Key Safety Net.

As shown above, the fenestration maximums serve an important role in ensuring residential energy efficiency. We recommend that Modification 4320 be rejected for the obvious negative impact it would have on the energy efficiency and quality of new homes. Without the protection of section 402.5, glazing values could be traded away to levels unacceptable in modern building practice. For example, windows with no solar protection could be used in Florida's hottest regions. Given the state's high priority for energy efficiency and the low cost (if any) of achieving these maximum values, it is imperative that Section 402.5 remain as currently written in the 2009 IECC.

Modification 4320 removes the most important restriction on fenestration trade-offs, and substantially increases the risk that a new home will be built with substandard windows to the long-term detriment of the homeowner. Given the cost of replacement windows, this is not an easy failure to remedy after the fact. Since this modification would bring about a radical change in the code, and would risk significant losses in energy efficiency statewide, we believe that the fenestration maximums should remain in the code.

Reason Statement for Modification 4320 – Deletion of "Hard Caps"

This modification was approved in Baltimore at the last ICC hearing by the energy committee. According to the committee reason statement for approving the proposal which deleted this section was: "The provisions given in this section are artificial constraints on design flexibility. Tradeoffs are limited."

Limits on fenestration U-factor and SHGC tradeoffs restrict ways by which code compliance can be achieved. By definition, trade-offs are energy neutral, and do not save energy, so this section is not necessary. This requirement is difficult to explain and confuses most code users who often misinterpret it.

The code would be better if it relied only on the U-factor and SHGC requirements in the main table. As previously reported in the last ICC code cycle, some common products, such as glass block and garden windows, never meet these "hard limits." In principle, a calculation or exemption would be required if more than a small area of these common products are used in new residences. Additions or renovations with significant areas of glass block or garden windows would be technically illegal.

Date Proposal Submitted	3/23/2010	**Section**	403.2.1
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Darrell Winters	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Requires R-2 insulation on ducts in conditioned space.

Rationale

This modification will protect uninsulated ducts from condensation.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on code enforcement.

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

Minor cost will be offset by elimination of condensation concerns within the space.

Impact to industry relative to the cost of compliance with code

Favorable impact.

Requirements

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

Improves health of public by eliminating moisture source.

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

Improves the code and provides better living environment.

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

No discrimination against any material, product or system.

Does not degrade the effectiveness of the code

Improves the code.

General Comment

EN3713-G1

Proponent Amy Schmidt **Submitted** 5/28/2010 **Attachments** No

Comment

I support this proposal. My parents are ripping out a portion of their ceiling right now because of condensation on duct work.

403.2.1 Insulation (Prescriptive). Supply ducts, including air filter enclosures, air ducts and plenums, located in attics or on roofs shall be insulated to a minimum of R-8. All other ducts shall be insulated to a minimum of R-6.

Exceptions:

1. Ducts or portions thereof located completely inside the building thermal envelope shall be insulated to a minmum of R-2 to prevent condensation.

2. Exhaust air ducts

3. Factory-installed plenums, casings or ductwork furnished as a part of tested and rated HVAC equipment.

Date Proposal Submitted	3/31/2010	**Section**	403.2.1
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Robert Volin	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

503.2.7.5

Summary of Modification

Needs to be in residential code because Manual D applies to Residential and Light commercial duct systems

Rationale

It is already in our energy code now Section 13-610.AB.1

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

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

Already in code

Impact to industry relative to the cost of compliance with code

If enforced, could save homeowners 20% -30% on energy bills
and save homeowners on costly repair cost on their A/C system

Requirements

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

None

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

Already in Florida Code

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

No

Does not degrade the effectiveness of the code

No

General Comment

EN4197-G1

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

Requirement is in Mechanical Volume of the code and does not need to be included in the Energy Code.

403.2 Ducts.

403.2.1 Insulation (Prescriptive). Supply ducts, including air filter enclosures, air ducts and plenums, located in attics or on roofs shall be insulated to a minimum of R-8. All other ducts shall be insulated to a minimum of R-6.

Exceptions:

1. Ducts or portions thereof located completely inside the *building thermal envelope*.

2. Exhaust air ducts

3. Factory-installed plenums, casings or ductwork furnished as a part of tested and rated HVAC equipment.

Air distribution system sizing and design. (Mandatory) All air distribution systems shall be sized and designed in accordance with recognized engineering standards such as ACCA Manual D or other standards based on the following:

1. Calculation of the supply air for each room shall be based on the greater of the heating load or sensible cooling load for that room.

2. Duct size shall be determined by the supply air requirements of each room, the available static pressure and the total equivalent length of the various duct runs.

3. Friction loss data shall correspond to the type of material used in duct construction.

Date Proposal Submitted	3/26/2010	**Section**	403.2.2.1
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Roger Sanders	**General Comments**	Yes
Attachments	No	**Alternate Language**	Yes

Related Modifications

Summary of Modification

Add exception per compliance with section 405

Rationale

Compliance using Section 405 gives credit for duct testing overall energy use of the building provides options for achieving code compliance- there are many ways of gaining code compliance (achieving air tight ducts) so testing should not be mandatory.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

reduces required paperwork

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

Reduces cost of delivered product

Impact to industry relative to the cost of compliance with code

simplifies compliance

Requirements

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

No effect

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

provides equivalent performance and reduces cost

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

allows for for perscriptive compliance without mandatory testing and expense

Does not degrade the effectiveness of the code

provides alternate cost effective compliance

Alternate Language

EN3892-A1

Proponent Jeff Sonne **Submitted** 5/27/2010 **Attachments** Yes

Rationale

From RESNET Formal Interpretation 2006-002: "The leakage testing procedures of ASHRAE Standard 152 were not necessarily designed for the practical application to field ratings, and some simplifications and default assumptions were necessary. There are requirements in 152 that, although appropriate for research purposes, can not always be met when testing homes in a production setting."

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Simplifies code enforcement.

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

No impact.

Impact to industry relative to the cost of compliance with code

Simplifies and lowers cost of duct testing.

Requirements

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

Procedure changes approved by RESNET.

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

Helps facilitate code compliance.

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

No impact.

Does not degrade the effectiveness of the code

Simplifies/facilitates duct testing which improves effectiveness of the code.

General Comment

EN3892-G1

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

Original IECC language should be retained as no Florida specific reason is given for this change. Just because “it’s already there” is not justification of a Florida -specific need. This potentially changes the efficiency level of the IECC as adopted.

.**403.2.2.1 Duct tightness.** Duct tightness shall be verified by testing to ~~either of the following~~

1. ~~Post construction test:~~ ~~Leakage to outdoors shall be less than or equal to 8 cfm (226.5 L/min) per 100 ft^2 (9.29 m^2) of conditioned floor area or a total leakage less than or equal to 12 cfm (12 L/min) per 100 ft^2 (9.29 m^2) of conditioned floor area when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test.~~

~~2. Rough-in test:~~ ~~Total leakage shall be less than or equal to 6 cfm (169.9 L/min) per 100 ft^2 (9.29 m^2) of conditioned floor area when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the roughed-in system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test. If the air handler is not installed at the time of the test, total leakage shall be less than or equal to 4 cfm (113.3 L/min) per 100 ft^2 (9.29 m^2) of conditioned floor area.~~

~~Exceptions:~~ ~~Duct tightness test is not required if the air handler and all ducts are located within conditioned space.~~ ASHRAE Standard 152. All ducts and air handlers shall be either located in conditioned space or tested by a Class 1 BERS rater to be "substantially leak free".

Exception: buildings complying by section 405

[Alternative text in red]

403.2.2.1 Duct tightness. Duct tightness shall be verified by testing to ~~either of the following~~

1. ~~Post construction test:~~ ~~Leakage to outdoors shall be less than or equal to 8 cfm (226.5 L/min) per 100 ft^2 (9.29 m^2) of conditioned floor area or a total leakage less than or equal to 12 cfm (12 L/min) per 100 ft^2 (9.29 m^2) of conditioned floor area when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test.~~

~~2. Rough in test:~~ ~~Total leakage shall be less than or equal to 6 cfm (169.9 L/min) per 100 ft^2 (9.29 m^2) of conditioned floor area when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the roughed in system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test. If the air handler is not installed at the time of the test, total leakage shall be less than or equal to 4 cfm (113.3 L/min) per 100 ft^2 (9.29 m^2) of conditioned floor area.~~

~~Exceptions:~~ ~~Duct tightness test is not required if the air handler and all ducts are located within conditioned space.~~ ASHRAE Standard 152 as modified by RESNET Formal Interpretation 2006-002. All ducts and air handlers shall be either located in conditioned space or tested by a Class 1 BERS rater to be "substantially leak free".

Exception: buildings complying by section 405

RESNET Residential Energy Services Network — Setting the STANDARD for QUALITY

RESNET Formal Interpretation 2006-002
Approved by the RESNET Board of Directors, February 26, 2006

Proponent:
RESNET Standing Technical Committee

Applies to:
2006 Mortgage Industry National Home Energy Rating Systems Standards
Table 303.4.1.(1), under "Thermal distribution systems"; footnote (n); and Appendix A, under "Air leakage (ducts)":

Interpretation: RESNET Duct Testing Procedure

Background
Table 2 in this document comprises a summary of a test procedure intended for use by Certified Raters in performing required field testing of the leakage of forced-air thermal distribution systems as part of a Confirmed Rating.

The *2006 Mortgage Industry National Home Energy Rating System Standards* specifies the use of ASHRAE Standard 152, with some exceptions (stated in Appendix A), for testing ducted distribution systems. The procedures outlined below and summarized in Table 2 are deemed by RESNET to be an approved implementation of the leakage testing procedures in ASHRAE 152 for the purpose of field testing of homes by Certified Raters to complete a confirmed HERS rating.

Rationale
The leakage testing procedures of ASHRAE Standard 152 were not necessarily designed for the practical application to field ratings, and some simplifications and default assumptions were necessary. There are requirements in 152 that, although appropriate for research purposes, can not always be met when testing homes in a production setting.

Buffer zones
For example, 152 requires that when pressurizing a house to 25 Pa, any unconditioned spaces containing ducts must be within 10 Pa of outside pressure. If this requirement isn't met, holes must be added between the space and outside until the requirement is met. This often can't be done in real houses. In addition it is not always possible to even measure the pressure in these spaces without cutting holes through finished surfaces. For these reasons it was decided that, whenever possible, these spaces should be opened to outside, but when not possible they should be left "as is" and no pressure measurement of these spaces would be required.

Plenum Pressure Measurements
The leakage to outside test procedure in ASHRAE 152 (Annex B) attempts to estimate the amount of duct leakage to outside and unconditioned spaces under normal operating conditions. This is done by first attempting to measure the leakage with a uniform pressure of 25 Pa across all the leaks to outside and unconditioned spaces. This leakage at 25 Pa is then adjusted for the fact that the pressure difference

Date Proposal Submitted	4/2/2010	**Section**	403.2.2.1
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jack Glenn	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

This modification reinstates the original air duct tightness provisions in the IECC.

Rationale

The current language inadvertently increases the efficiency of the code without proper hearing by the ENERGY TAC. It takes criteria that was previously a credit and makes it mandatory for all homes in Florida. Therefore, this is not a reconciliation issue between the IECC and FEC, but a true code change that should be heard by both the ENERGY TAC and full commission.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on local enforcement

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

No change

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

Makes code consistent with the base code (IECC).

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.

403.2.2.1 Duct tightness. Duct tightness shall be verified by testing to either of the following

1.. Post construction test: Leakage to outdoors shall be less than or equal to 8 cfm (226.5 L/min) per 100 ft^2 (9.29 m^2) of *conditioned floor area* or a total leakage less than or equal to 12 cfm (12 L/min) per 100 ft^2 (9.29 m^2) of *conditioned floor area* when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test.

2. Rough-in test: Total leakage shall be less than or equal to 6 cfm (169.9 L/min) per 100 ft^2 (9.29 m^2) of *conditioned floor area* when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the roughed-in system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test. If the air handler is not installed at the time of the test, total leakage shall be less than or equal to 4 cfm (113.3 L/min) per 100 ft^2 (9.29 m^2) of *conditioned floor area*.

Exceptions: Duct tightness test is not required if the air handler and all ducts are located within *conditioned spacer*.

-

~~ASHRAE Standard 152.~~ All ducts and air handlers shall be either located in conditioned space or tested by a Class 1 BERS rater to be "substantially leak free".

Date Proposal Submitted	4/2/2010	**Section**	403.2.2.1, 403.6.1.1
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Paul Savage	**General Comments**	Yes
Attachments	No	**Alternate Language**	Yes

Related Modifications

Summary of Modification

Requires certain equipment sizing and duct sealing requirements upon total replacement of the condensing and evaporator units of residential HVAC systems. The modification is the consensus language developed by the 2010 Florida Energy Code Workgroup.

Rationale

The Commission directed that this issue be studied following Energy Code amendment proposals at the October 2008 meeting. The proposed modification is the resulting consensus language developed by the 2010 Florida Energy Code Workgroup. The Building Code Act of 2008 (HB 697) requires that energy efficiency performance goals be achieved through elements such as “reduced-leak duct systems.” The proposed modification also furthers “energy demand management” required by the Act.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

For equipment sizing, the contractor can submit a nationally-recognized sizing calculation sheet at the time of permit application. For duct sealing, compliance is evidenced by a brief certification affixed to the air handler by the contractor.

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

The potential cost of a sizing calculation and sealing of “accessible ... joints and seams” is nominal as compared to the overall cost of the HVAC system being replaced and the savings to the consumer to be expected from a properly installed system.

Impact to industry relative to the cost of compliance with code

Without adding significant cost or industry implementation burdens, the proposed modification will improve HVAC system performance and deliver the improved energy savings consumers are expecting.

Requirements

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

The EPA and DOE and other agencies and industry groups have identified significant energy waste caused by improperly sized HVAC equipment and leaky ducts. The interests of the general public are well served by improvement of code language to addresses these issues.

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

This proposal effectuates legislative mandates from 2008. Requiring proper sizing and duct testing for new HVAC equipment provides the consumer with properly functioning equipment as opposed to underperforming and wasteful HVAC systems that can lead to humidity issues.

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

This proposal requires compliance with the current energy code for equipment replacement and consequently does not discriminate against any lawful material, product, method or system of construction.

Does not degrade the effectiveness of the code

The proposal strengthens the code by clarifying the code’s scope and effectuates energy savings which are required by law.

Alternate Language

EN4460-A3

Proponent Ann Stanton **Submitted** 5/17/2010 **Attachments** Yes

Rationale

HB 663 states: "It is the intent of the Legislature that all replacement air-conditioning systems be installed using energy-saving, quality installation proedures, including, but not limited to, equipment sizing analysis and duct inspection." Section 553.912, F.S., specifically covers ALL air conditioners sold or installed in the state, not just residential units less than 65,000 Btu/h. This clause belongs in Section 101.4.7 of the FBC-Energy Conservation, Building Systems, not in Ch

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Clarifies the intent of the code.

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

None. Clarifies the intent of the code.

Impact to industry relative to the cost of compliance with code

None. Clarifies the intent of the code.

Requirements

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

Stand on original impact statement. Required by HB 663.

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

Yes.

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

No.

Does not degrade the effectiveness of the code

No.

General Comment

EN4460-G1

Proponent Jeff Sonne **Submitted** 5/27/2010 **Attachments** No

Comment

There is a concern that in homes with atmospherically drafted combustion appliances, in some cases sealing ducts without also testing zone pressures after sealing may result in unsafe conditions due to zone pressure changes that affect combustion product venting.

403.2.2.1 Sealing upon equipment replacement (Mandatory). At the time of the total replacement of HVAC evaporators and condensing units, under 65,000 Btu/h, all accessible (a minimum of 30 inches clearance) joints and seams in the air distribution system shall be sealed using reinforced mastic or code approved equivalent and shall include a signed certification by the contractor that is attached to the air handler unit stipulating that this work has been accomplished.

Exceptions:
1. Ducts in conditioned space.
2. Joints or seams that are already sealed with fabric and mastic.
3. If system is tested and repaired as necessary.

* * * *

403.6.1.1 Replacement equipment sizing (Mandatory). The A/C contractor or licensed Florida PE shall submit a nationally recognized method based sizing calculation at the time of permit application for total replacement of the condensing and evaporator components of HVAC systems 65,000 Btu/h and less.

Exception: Buildings designed in accordance with Section 105.3.1.2 of the Florida Building Code.

101.4.7 Building systems. Thermal efficiency standards are set for the following building systems where new products are installed or replaced in existing buildings, and for which a permit must be obtained. New products shall meet the minimum efficiencies allowed by this code for the following systems:

- Heating, ventilating or air conditioning systems;
- Service water or pool heating systems;
- Electrical systems and motors;
- Lighting systems.

Exceptions: [no change]

101.4.7.1 Replacement HVAC equipment

101.4.7.1.1 ~~403.2.2.1~~ Duct ~~S~~sealing upon equipment replacement (Mandatory). At the time of the total replacement of HVAC evaporators and condensing units~~, under 65,000 Btu/h,~~all accessible (a minimum of 30 inches clearance) joints and seams in the air distribution system shall be inspected and sealed where needed using reinforced mastic or code approved equivalent and shall include a signed certification by the contractor that is attached to the air handler unit stipulating that this work has been accomplished.

Exceptions:
1. Ducts in conditioned space.
2. Joints or seams that are already sealed with fabric and mastic.
3. If system is tested and repaired as necessary.

101.4.7.1.2 ~~403.6.1.1~~ Replacement equipment sizing (Mandatory). An~~The~~ A/C contractor or licensed Florida PE shall submit a nationally recognized method based sizing calculation to the code official at the time of permit application for total replacement of the condensing and evaporator components of HVAC systems ~~65,000 Btu/h and less~~.in accordance with Florida law and the provisions of Section 403.6.1 or Section 503.2.1, as applicable.

~~**Exception:** Buildings designed in accordance with Section 105.3.1.2 of the Florida Building Code.~~

Date Proposal Submitted	4/2/2010	**Section**	403.5.1
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jack Glenn	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

This restores original IECC language for ventilation.

Rationale

This modification removes the language and returns the code to original IECC language. This provision was out of the purview of the Workgroup because it adds criteria to the code, rather than reconciling language from the IECC and the Florida Energy Code. Therefore it needs to be heard by the Energy Technical Advisory Committee and the full Commission before adoption.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on local enforcement

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

No change

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

Makes code consistent with the IECC

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.

403.5.1 Ventilation air. ~~Residential buildings designed to be operated at a positive indoor pressure or for mechanical ventilation shall meet the following criteria:~~

~~1. The design air change per hour minimums for residential buildings in ASHRAE 62, Ventilation for Acceptable Indoor Air Quality, shall be the maximum rates allowed for residential applications.~~

~~2. No ventilation or air conditioning system make up air shall be provided to conditioned space from attics, crawlspaces, attached enclosed arages or outdoor spaces adjacent to swimming pools or spas.~~

~~3. If ventilation air is drawn from enclosed space(s), then the walls of the space(s) from which air is drawn shall be insulated to a minimum of R 11 and the ceiling shall be insulated to a minimum of R 19, space permitting, or R 10 otherwise.~~

Date Proposal Submitted	3/29/2010	**Section**	403.6, 403.6.1, 403.6.1.1
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Robert Volin	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

None

Summary of Modification

None

Rationale

makes code easer for inspectors to understand plus already in Code

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

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

Selecting the proper size equipment will save homeowners energy

Impact to industry relative to the cost of compliance with code

None

Requirements

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

None

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

Clarifying the code in relation to equipment selection, plus already in code

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

No

Does not degrade the effectiveness of the code

No

403.6 Heating and Cooling Equipment ~~sizing~~ (Mandatory).

403.6.1 Equipment sizing. Heating and cooling equipment shall be sized in accordance with ACCA Manual S based on the equipment loads calculated in accordance with Manual J or other approved heating and cooling calculation methodologies, based on building loads for the directional orientation of the building. ~~in accordance with Section M1401.3 of the *International Residential Code*.~~ The manufacturer and model number of the outdoor and indoor units (if split system) shall be submitted along with the sensible and total cooling capacities at the design conditions described in Section 302.1. This Code does not allow designer safety factors, provisions for future expansion or other factors which affect equipment sizing. System sizing calculations shall not include loads created by local intermittent mechanical ventilation such as standard kitchen and bathroom exhaust systems.

403.6.1.1 Cooling equipment capacity. Cooling only equipment shall be selected so that its total capacity is not less than the calculated total load but not more than 1.15 times greater than the total load calculated according to the procedure selected in Section 403.6, or the closest available size provided by the manufacturer's product lines. The corresponding latent capacity of the equipment shall not be less than the calculated latent load.

The published value for ARI total capacity is a nominal, rating-test value and shall not be used for equipment sizing. Manufacturer's expanded performance data shall be used to select cooling-only equipment. This selection shall be based on the outdoor design dry bulb temperature for the load calculation (or entering water temperature for water-source equipment), the blower CFM provided by the expanded performance data, the design value for entering wet bulb temperature and the design value for entering dry bulb temperature.

Design values for entering wet bulb and dry bulb temperature shall be for the indoor dry bulb and relative humidity used for the load calculation and shall be adjusted for return side gains if the return duct(s) is installed in an unconditioned space.

Exceptions:

1. Attached single- and multiple-family residential equipment sizing may be selected so that its cooling capacity is less than the calculated total sensible load but not less than 80 percent of that load.

2. When signed and sealed by a Florida-registered engineer, in attached single- and multiple-family units, the capacity of equipment may be sized in accordance with good design practice.

~~Manufacturer's expanded performance data shall be used to select cooling-only equipment. in accordance with ACCA Manual S. The published value for AHRI total capacity is a nominal, rating-test value and shall not be used for equipment sizing.~~

Date Proposal Submitted	3/30/2010	**Section**	403.6.2.1.1
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	roger cummins	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

The DOE is expanding it's verification of efficiency ratings and increasing it's enforcement in this area. Meeting their requirements, therefore, should be acceptable for the State of Florida.

Rationale

This modification broadens the scope of the Florida Code to more closely parallel the requirements of the Department of Energy. The existing code might be interpreted to require a manufacturer to join a certification program, when in fact the DOE is now increasing their enforcement and verification requirements on a national level.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity.

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

No impact to building and property owners.

Impact to industry relative to the cost of compliance with code

No impact to industry.

Requirements

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

Does not affect health, safety and welfare.

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

Strengthens the code by insuring that equipment efficiencies are accurate.

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

No descrimination against materials, product, method or system.

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code.

403.6.2.1.1 Equipment efficiency verification. Equipment covered under the Federal Energy Policy Act of 1992 (EPACT) shall comply with U.S. Department of Energy certification requirements. For other equipment, if a certification program exists for a product covered in Table503.2.3, and it includes provisions for verification and challenge of equipment efficiency ratings, then the product shall be either listed in the certification program or, alternatively, ~~the ratings shall be verified by an independent laboratory test report.~~ the equipment efficiency ratings shall be supported by data furnished by the manufacturer. If no certification program exists for a product covered in Tables 503.2.3, the equipment efficiency ratings shall be supported by data furnished by the manufacturer. Where components such as indoor or outdoor coils from different manufacturers are used, ~~a Florida registered engineer shall specify component efficiencies whose combined efficiency meets the minimum equipment efficiency requirements.~~ calculations and supporting data shall be furnished by the designer or manufacturer that demonstrates that the combined efficiency of the specified components meets the requirements herein. Manufacturer's supporting data shall include the following statements: The efficiency is calculated using the methodology approved by the Department of Energy, the calculation procedure utilizes the test data collected in accordance with the applicable test standards, and the calculation procedure has been verified by independent testing.

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Date Proposal Submitted	4/1/2010	**Section**	403.9
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jennifer Hatfield	**General Comments**	No
Attachments	Yes	**Alternate Language**	Yes

Related Modifications

Summary of Modification

This proposal adds Florida specific energy efficiency language for pool heaters, residential filtration pumps and motors, and portable spas per the legislative directive in the 2008 energy bill (HB 7135). It also makes necessary clarifications under the cover section.

Rationale

In 2008 the legislature deemed that in order to consume less energy, certain aspects of the pool & spa filtration and heating system design and equipment are to follow certain guidelines set out in this proposal and in the Appendix D referenced material. The clarifications made under the cover section are needed to prevent misinterpretation of vague and sometimes unenforceable terms and requirements. The pump motor default circulation speed is changed to conform to current legislation.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

The AHJ will need to verify that the products being installed meet these new energy efficiency requirements. The clarifications to the cover requirements will provide clearer direction then what currently exists.

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

These energy efficient products may increase the cost of the product to the owner upfront; however, a savings will ultimately occur with the owner's utility bill that should offset the increase associated with purchasing the product.

Impact to industry relative to the cost of compliance with code

The legislatively mandated products may cost more to purchase. There are no pool covers that meet the R-12 insulation value; only applicable to portable spas. If not clarified, it will amount to an unattainable mandate that will cost industry time and dollars having to address it with every AHJ.

Requirements

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

These energy efficient pool/spa products will lower the energy consumption of a pool/spa, benefiting the general public. If the cover requirement is not removed or amended the safety of the consumer will be at risk.

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

This proposal strengthens and improves the code by requiring products, methods, and systems of construction that will result in energy savings. It also removes and clarifies unattainable requirements that will cause enforcement problems.

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

This proposal provides for a standard and method of compliance for all products to follow. Products not meeting these new requirements will not be allowed to be installed.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code; it actually strengthens and gives consistency throughout the State of Florida by providing guidance on how to meet the new energy efficiency requirements for pools and spas.

Alternate Language

EN4078-A1

Proponent Ann Stanton **Submitted** 5/14/2010 **Attachments** Yes

Rationale

This section is part of a larger proposal. Regarding this part of the proposed mod, the language in blue is redundant and needs to be deleted. General comment: HB 663 changes the normal cycle from 120 minutes to 24 hours.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None.

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

None.

Impact to industry relative to the cost of compliance with code

None.

Requirements

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

Formatting issue.

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

Yes.

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

No.

Does not degrade the effectiveness of the code

No.

Note - Changes in Red are changes to what is in the current FL Energy Conservation Code draft language. The rest of the changes were part of the oneline draft FECC document.

403.9 Pools (Mandatory). Pools shall be provided with energy-conserving measures in accordance with Sections 403.9.1 through 403.9.5~~3,~~ and compliance criteria found in Appendix D—Florida Standards, Florida Standard No. 2 (FL-2), Florida regulatory requirements for energy efficiency for residential inground swimming pools and spas, and Florida Standard No. 3 (FL-3), Florida regulatory requirements for portable spa energy efficiency.

403.9.1 Pool and spa heaters. All pool heaters shall be equipped with a readily *accessible* on-off switch that is mounted outside the heater to allow shutting off the heater without adjusting the thermostat setting.

403.9.1.1 Gas and oil-fired pool and spa heaters. All gas- and oil-fired pool and spa heaters shall have a minimum thermal efficiency of 78 percent when tested in accordance with ANSI Z 21.56. Pool heaters fired by natural gas shall not have continuously burning pilot lights.

403.9.1.2 Heat pump pool heaters. Heat pump pool heaters shall have a minimum COP of 4.0 when tested in accordance with ARI 1160, Table 2, Standard Rating Conditions-Low Air Temperature. A test report from an independent laboratories is required to verify procedure compliance.

~~**403.9.1.3 Portable spa standby power.** Portable electric spa standby power shall not be greater than 5(V2/3) watts where V = the total volume, in gallons, when spas are measured in accordance with the spa industry test protocol.~~

403.9.2 Time switches. Time switches shall be installed on swimming pool heaters and pumps that can automatically turn ~~off and on~~ the heaters and pumps off and on according to a preset schedule ~~shall be installed on swimming pool heaters and pumps~~.

Exceptions:

1. Where public health standards require 24-hour pump operation.

2. Where pumps are required to operate solar- and waste-heat-recovery pool heating systems.

403.9.3 ~~Pool c~~Covers. Heated swimming pools and spas shall be equipped with a vapor-retardant pool cover on or at the water surface or a liquid cover or other means proven to reduce heat loss. ~~Pools heated to more than 90°F (32°C)~~ Portable spas shall have a ~~pool~~ cover with a minimum insulation value of R-12.

Exception: Outdoor p~~P~~ools deriving over 70 ~~60~~ percent of the energy for heating from site-recovered energy, such as a heat pump or solar energy source, computed over an operating season.

403.9.4 ~~Pool design.~~ Residential pool pumps and pump motors. Pool filtration pump motors shall meet the following requirements, along with the compliance criteria provided for in FL-2, Appendix D:

403.9.4.1 Pool pump motors. Pool pump motors shall meet the following criteria:

1. Pool pump motors shall not be split-phase, shaded-pole or capacitor start-induction run types.

2. Pool pumps and pool pump motors with a total horsepower (HP) of = 1 HP shall have the capability of operating at two or more speeds. The low speed shall have a rotation rate of no more than ½ of the motor's maximum rotation rate.

3. Pool pumps 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 for a temporary period not to exceed one normal cycle or ~~120 minutes~~ 24 hours, whichever is less.

Exception: Solar pool heating systems shall be permitted to run at higher speeds during periods of usable solar heat gain.

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

403.9.4 ~~Pool design.~~ Residential pool pumps and pump motors. Pool filtration pump motors shall meet the following requirements, along with the compliance criteria provided for in FL-2, Appendix D:

~~403.9.4.1 Pool pump motors.~~ ~~Pool pump motors shall meet the following criteria:~~

1. Pool pump motors shall not be split-phase, shaded-pole or capacitor start-induction run types.

2. Pool pumps and pool pump motors with a total horsepower (HP) of = 1 HP shall have the capability of operating at two or more speeds. The low speed shall have a rotation rate of no more than ½ of the motor's maximum rotation rate.

3. Pool pumps 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 for a temporary period not to exceed one normal cycle or ~~120 minutes~~ 24 hours, whichever is less.

Exception: Solar pool heating systems shall be permitted to run at higher speeds during periods of usable solar heat gain

Additional Rationale for changes to section 403.9,
Chapter 4 – Residential Energy Efficiency

Background

In 2008 the Florida Legislature passed HB 7135, an all encompassing energy bill that included minimum energy efficiency requirements for commercial or residential swimming pool pumps, swimming pool heaters, and portable spas. In 2009 the Florida Building Commission formed a Swimming Pool Energy Sub-group to the Energy Workgroup to recommend language for the 2010 code that would implement these new requirements. Currently, in the 2010 legislative session, language has been proposed and amended to the 2010 building code bills (SB 648/HB 663) that would make slight clarifications to these requirements.

Section 403.9

References compliance criteria in Appendix D of the Florida Energy Conservation Code that are the draft APSP-14 (Portable Spas) and APSP-15 (Residential Inground Pools and Spas) energy efficiency standards reviewed by the FBC Swimming Pool Energy Sub-group. APSP-15, with slight changes, was recommended by the sub-group for inclusion into the 2010 code cycle in order to provide additional needed criteria to meet the new pump and pump motor requirements, and heating requirements provided in section 403.9 and the 2008 energy legislation. This standard is near completion and follows most aspects of Title 20 and 24 of the California Energy Code (CEC).

APSP-14 is the portable spa standard that provides the testing criteria required to meet the standby power formula provided in the 2008 energy legislation and in section 403.9. The draft standard was not initially approved by the sub-group; however, in order to meet the legislative mandate test protocol needs to be provided and should be considered for the appendix. Further, there are instances where a permit may be required for a portable spa and fall under the purview of the building code.

Both of these draft standards are near completion and upon ANSI approval recommendation would be to remove the Appendix D, Florida Standards and replace with these approved standards.

403.9.1 – Pool and spa heaters

The proposal moves the portable spa standby power requirements to its own separate section 403.9.5 because this should not fall under the section dealing with stand alone heating systems. It is also important to note that the 78% efficiency requirement for gas heaters is a federal Department of Energy requirement that is currently being revised. At the time of this submittal the department had not finalized the rulemaking process, once final the efficiency minimum will be higher (between 81-83% is being considered) and the Florida code will need to reflect this change.

403.9.3 – Covers

The cover requirements pose multiple problems and concerns. Requiring covers be used on pools and spas is unenforceable; after the pool or spa receives its final inspection the consumer may choose not to continue to cover the pool or spa. Most service technicians report this is the case; the reality is most homeowners want an aesthetical appearance for their backyard pool. The code is also trying to require the consumer to purchase something they may not use and could discourage them from installing a pool or spa altogether, creating a negative effect. The energy savings trying to be achieved will not be achieved and efforts should be on aspects of a pool or spa that will achieve energy efficiency.

Further and more importantly, covers that may protect against heat loss, but that are not certified to the ASTM F 1346 safety pool cover standard, can pose hazardous situations. Drownings, near drownings or injuries to people and pets have occurred. A person or pet falls into a pool or spa that is covered with a type of cover that is not ASTM F 1346 certified and gets tangled in the cover. Although energy efficiency is important to achieve, the health, welfare, and safety of our citizens and tourists should be of greater concern. There are other ways to increase energy efficiency in a pool or spa and the other aspects of this proposal take great strides in doing so.

In addition to the enforcement and safety concerns, many pools and spas are custom built with features that may eliminate the ability for covers to be used or the cost to purchase a cover for specialty pools such as infinity edge and slot edge will exceed any energy savings. Custom stand alone spas with elevated water features cannot be covered due to their function as a water feature. Most of these pools or spas are only heated occasionally and not on a daily basis. It also may not make sense for pool/spa combination pools to be covered when the spa is not heated all of the time since it is shared water except when the spa is in use.

It is also important to note that the current draft APSP energy efficient standards do not include cover requirements due to these concerns. More research on the subject is in progress within the industry and will be vetted within the development of the ICC Pool and Spa Code currently underway.

A proposal to remove the cover requirement on all pools and spas with the exception of portable spas has been submitted separately for the critical reasons just laid out. However, there are other concerns with the current language that must be addressed even if the requirement is not altogether removed and the language in this proposal makes those necessary changes:

- The addition of language allowing for a liquid cover or other approved means provides the customer with more choices. The customer may be more likely to embrace the method they choose and therefore more likely to continue using it long-term. Liquid covers are proven to reduce heat-loss and with new energy

efficient technology constantly appearing the ability for other means to be used is imperative.

- The requirement that "pools heated to more than 90 degrees shall have a cover with a minimum insulation value of R-12 is problematic, warranting the change to only "portable spas shall have a cover with a minimum insulation value of R-12" due to the following:
  - The 90 degree threshold is unenforceable; currently there are no products on the market that can be installed to limit the consumer from heating the pool or spa to a certain temperature.
  - The only covers on the market that meet the R-12 insulation value are for portable spas The current language may have been intended for portable spas, but it could be interpreted for any pool or spa that is heated over 90 degrees. No one manufacturer's a pool or nonportable spa cover that would meet the R-12 value. On average a bubble cover has less than an R-1 value, slated cover less than an R-3 value, and a tracked safety cover an R-1.5 value.
  - Additionally, there are no covers currently on the market with greater than an R-1 value for use on custom sized pools or spas.
- Heat pumps transfer heat from the air to a swimming pool or spa. They simply transfer heat rather than burn fuel to create it. Therefore, clarifying that a heat pump that derives 70% of the energy for heating from site-recovered energy also falls under the exception from a heated pool or spa having to be covered is necessary in order to provide consistent enforcement.

The current cover language has many problematic provisions and the first recommendation is to only require portable spa covers. Also note more research is currently underway to confirm the R-12 factor minimum and additional information on portable spa covers will be presented during the comment period.

403.9.4—Residential pool pumps and pump motors

Clarifies that it is only filtration pumps and pump motors that must meet these new requirements. Provides the requirements per the 2008 legislation with a clarification that the default circulation speed shall be the residential filtration speed, with a higher speed override capability for a temporary period not to exceed one normal cycle or **24 hours**, whichever is less. The original legislation has 120 minutes, but current legislation changes the override capability to 24 hours to be consistent with the APSP-15 standard and California Energy Code requirements.

Respectfully submitted,

Jennifer Hatfield
Director of Government & Public Affairs
Florida Swimming Pool Association

Date Proposal Submitted	4/1/2010	**Section**	403.9.3
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jennifer Hatfield	**General Comments**	No
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

This proposal removes the cover requirements for pools and spas and clarifies that the R-12 insulation requirement for covers is only required for portable spas (hot tubs). The current requirements are unenforceable and pose serious safety hazards.

Rationale

This proposal removes the cover requirements for pools and spas and clarifies that the R-12 insulation requirement for covers is only required for portable spas (hot tubs). Only portable spa cover manufacturers make covers that are R-12 or greater; there is no product available for pools or nonportable spas. The current requirements are also unenforceable and pose serious safety hazards. See attached support file for more information.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This eliminates the requirement the AHJ enforce a provision that is unenforceable to maintain and that can cause serious safety hazards. Further, no product exists for pools and nonportable spas that would require the R-12 insulated cover under the current language.

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

This proposal decreases the cost to building and property owners by removing a requirement that would be costly and not necessarily result in savings, rather it would become a nuisance and safety hazard.

Impact to industry relative to the cost of compliance with code

This proposal clarifies the R-12 value is only applicable to portable spas, there are no pool covers that meet the R-12 insulation value. Requiring covers may also discourage customers from purchasing a pool or spa, negatively affecting the industry if this proposal is not adopted.

Requirements

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

If the cover requirement is not removed, with the exception of portable spas, the safety of the consumer will be at risk. See supportive documentation file for further information.

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

This proposal strengthens and improves the code by removing unattainable requirements that will cause enforcement problems.

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

This proposal removes language that would discriminate against certain materials, products, methods, or systems.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code; it actually strengthens and gives consistency throughout the State of Florida by removing unenforcable and vague requirements.

403.9.3 ~~Pool c~~Covers. ~~Heated swimming pools and spas shall be equipped with a vapor retardant pool cover on or at the water surface. Pools heated to more than 90°F (32°C)~~ Portable spas shall have a ~~pool~~ cover with a minimum insulation value of R-12.

~~**Exception:** Outdoor pPools deriving over 70 60 percent of the energy for heating from site recovered energy or solar energy source computed over an operating season.~~

Additional Rationale for changes to section 403.9.3, Pool Covers, Chapter 4 – Residential Energy Efficiency

The cover requirements in section 403.9.3 of Chapter 4 of the Florida Energy and Conservation Code pose multiple problems and concerns. Requiring covers be used on pools and spas is unenforceable; after the pool or spa receives its final inspection the consumer may choose not to continue to cover the pool or spa. Most service technicians report this is the case; the reality is most homeowners want an aesthetical appearance for their backyard pool. The code is also trying to require the consumer to purchase something they may not use and could discourage them from installing a pool or spa altogether, creating a negative effect. The energy savings trying to be achieved will not be achieved and efforts should be on aspects of a pool or spa that will achieve energy efficiency.

Further and more importantly, covers that may protect against heat loss, but that are not certified to the ASTM F 1346 safety pool cover standard, can pose hazardous situations. Drownings, near drownings or injuries to people and pets have occurred. A person or pet falls into a pool or spa that is covered with a type of cover that is not ASTM F 1346 certified and gets tangled in the cover. Although energy efficiency is important to achieve, the health, welfare, and safety of our citizens and tourists should be of greater concern. There are other ways to increase energy efficiency in a pool or spa and the other aspects of this proposal take great strides in doing so.

In addition to the enforcement and safety concerns, many pools and spas are custom built with features that may eliminate the ability for covers to be used or the cost to purchase a cover for specialty pools such as infinity edge and slot edge will exceed any energy savings. Custom stand alone spas with elevated water features cannot be covered due to their function as a water feature. Most of these pools or spas are only heated occasionally and not on a daily basis. It also may not make sense for pool/spa combination pools to be covered when the spa is not heated all of the time since it is shared water except when the spa is in use.

It is also important to note that the current draft APSP energy efficient standards do not include cover requirements due to these concerns. More research on the subject is in progress within the industry and will be vetted within the development of the ICC Pool and Spa Code currently underway.

This proposal removes the cover requirement on all pools and spas with the exception of portable spas for the critical reasons just laid out. However, there are other concerns with the current language that also must be addressed:

- The requirement that "pools heated to more than 90 degrees shall have a cover with a minimum insulation value of R-12 is problematic, warranting the change to only "portable spas shall have a cover with a minimum insulation value of R-12" due to the following:

  - The 90 degree threshold is unenforceable; currently there are no products on the market that can be installed to limit the consumer from heating the pool or spa to a certain temperature.
  - The only covers on the market that meet the R-12 insulation value are for portable spas The current language may have been intended for portable spas, but it could be interpreted for any pool or spa that is heated over 90 degrees. No one manufacturer's a pool or nonportable spa cover that would meet the R-12 value. On average a bubble cover has less than an R-1 value, slated cover less than an R-3 value, and a tracked safety cover an R-1.5 value.
  - Additionally, there are no covers currently on the market with greater than an R-1 value for use on custom sized pools or spas.
- Only allowing for a vapor-retardant pool or spa cover does not provide for additional means that are on the market and that would provide the customer with more choices. Liquid covers or other approved means should be made available, but any cover requirement should be changed to a recommendation so consumers are educated about their options, but are not mandated to follow a requirement that is unenforceable and has safety concerns. The customer may be more likely to embrace the method they choose and therefore more likely to continue using it long-term if other means are made available. Liquid covers are proven to reduce heat-loss and with new energy efficient technology constantly appearing the ability for other means to be used is imperative.
- Heat pumps transfer heat from the air to a swimming pool or spa. They simply transfer heat rather than burn fuel to create it. Therefore, if exceptions are going to be included it is imperative we clarify that a heat pump that derives 70% of the energy for heating from site-recovered energy also falls under the exception from a heated pool or spa having to be covered in order to provide consistent enforcement.

The current cover language has many problematic provisions and should only be required on portable spa covers that can meet the insulation requirement and which come with a cover to not only provide for heat loss, but to also provide a required safety barrier. Also note more research is currently underway to confirm the R-12 factor minimum and additional information on portable spa covers will be presented during the comment period.

Respectfully submitted,

Jennifer Hatfield
Director of Government & Public Affairs
Florida Swimming Pool Association

Date Proposal Submitted	4/1/2010	**Section**	405
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jeff Sonne	**General Comments**	No
Attachments	No	**Alternate Language**	Yes

Related Modifications

None.

Summary of Modification

Make a modification to the EnergyGauge USA FlaRes residential energy code compliance software that will facilitate proper window overhang entry and as a result provide more accurate energy code calculations.

Rationale

Adding an overhang clarification entry to the EnergyGauge USA FlaRes Window screen will facilitate more accurate section 405 code compliance calculations.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None; only effect is on the code compliance calculation.

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

None or minor in some cases.

Impact to industry relative to the cost of compliance with code

Will facilitate quicker and more accurate window overhang entry.

Requirements

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

Public is benefited by more accurate energy code calculations.

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

Improves accuracy of energy code calculations.

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

Neutral; only concerns window component entry in code calculation software.

Does not degrade the effectiveness of the code

Improves code effectiveness by facilitating more accurate energy code calculations.

Alternate Language

EN4249-A2

Proponent Donald Beers **Submitted** 5/28/2010 **Attachments** Yes

Rationale

It is not possible to determine the energy efficiency of a structure without knowing the configuation or at least the number of stories. The unique 17 digit Property Control Number will allow the information in the form to be related to future data bases on energy, fire losses, hurricane damage and resale value.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Knowing the number of stories and the Property Control Number has a positive fiscal impact to the State in allowing more accurate determination of energy efficiency and allowing for future energy analysis of the various types of construction and materials.

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

None. The number of stories and the Property Control Number must be known in order to submit a permit at any building department in the State.

Impact to industry relative to the cost of compliance with code

None. The number of stories and the Property Control Number are additions of known information to the energy form during permitting and do not effect costruction.

Requirements

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

Allows more accurate determination of the energy use of a structure and provides extremely valuable information in the future to determine best practices to reduce residential energy cost.

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

Provides better information on what materials and methods reduce the use of energy.

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

Provides the required information to fairly compare materials, products and methods of constuction.

Does not degrade the effectiveness of the code

Increases the effectiveness of the code by providing better information at no cost.

No code text modification—internal to the EnergyGauge USA FlaRes energy code compliance software.

Changes to the EnergyGauge USA FlaRes software include a check box on the Windows entry screen asking if the "Overhang extends entire length of the wall (Yes/No)?" for each window entered. If "No" is selected, the overhang entered is only applied to that window; if "Yes" is selected, the overhang is extended to the entire length of the wall.

Make a modification to the EnergyGauge USA FlaRes residential energy code compliance software that will facilitate proper window overhang entry and as a result provide more accurate energy code calculations. Additionally, modify Forms 1100 A and 1100 B to include the number of stories and the Property Control Number for the parcel on which the structure is to be built.

Date Proposal Submitted	4/1/2010	**Section**	405
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jeff Sonne	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

None.

Summary of Modification

Makes two section 405 EnergyGauge USA FlaRes water heater changes: 1) Allow primary heat pump water heater entries and energy factor (EF) entries for primary and add-on heat pump water heaters 2) Internally modify water heater energy factors based on typical residential water draw profiles.

Rationale

Entry of primary heat pump water heater systems and energy factors for these and add-on heat pump water heaters, and internally modifying water heater energy factors in EnergyGauge USA FlaRes based on typical residential water draw profiles provide simplified and more accurate section 405 performance code compliance calculations. A publication to the U.S. DOE indicating annual test results using typical residential water draw profiles will be forthcoming from the Florida Solar Energy Center.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

In applicable cases, should simplify and assist code enforcement since these changes allow reporting to show actual systems and energy factors on compliance forms.

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

None for primary heat pump water heater and energy factor entry changes; modification of enery factors may result in some small cost impact for those selecting certain types of water heaters.

Impact to industry relative to the cost of compliance with code

In applicable cases, the new water heating entry options should decrease the time required to complete compliance calculations.

Requirements

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

Public is benefited by facilitating component entry into code calculation software and more accurate energy code calculations.

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

Improves accuracy of energy code calculations.

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

Neutral; only concerns equipment entry in code calculation software and improving accuracy of code calculation.

Does not degrade the effectiveness of the code

Improves code effectiveness by facilitating correct code calculation software inputs and providing more accurate energy code calculations.

405.6.7 Installation criteria for homes claiming the dedicated heat pump option. The dedicated heat pump option may be used for a dedicated heat pump (also known as a heat pump water heater) installed either with a tank (an integral unit) or without tank (add on to another water heater) based on the COP of the system on which it is installed or energy factor (EF). No minimum rating is required for this equipment.

This modification request also includes a non-code text modification to the EnergyGauge USA FlaRes energy code compliance software that, where applicable, internally modifies water heater energy factors based on typical residential water draw profiles.

Date Proposal Submitted	4/2/2010	**Section**	405
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jeff Sonne	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

None.

Summary of Modification

Relaxes the window area-weighed average maximum fenestration SHGC requirement for section 405 (performance) code compliance calculations in cases where the window area-weighted average overhang depth for the entire dwelling unit is 4.0 feet or greater.

Rationale

Porches provide shade for windows. Relaxing the SHGC requirement for performance compliance only for dwellings with large overhangs will help lower construction costs and typically increase visible light in these dwellings, preserving Florida vernacular architecture while still upholding energy performance.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Minimal; in applicable cases, only if this option is chosen, will require verification that minimum weighted average overhang depth is met.

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

Should lower compliance cost for qualifying dwelling units since SHGC requirements are relaxed.

Impact to industry relative to the cost of compliance with code

Minimal; in applicable cases, only if this option is chosen, will require a weighted average overhang depth calculation.

Requirements

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

Provides builders of Florida vernacular architecture more choices of how to achieve code compliance.

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

Provides builders of Florida vernacular architecture more choices of how to achieve code compliance.

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

Neutral; increases options in applicable cases.

Does not degrade the effectiveness of the code

Performance code must still be met.

General Comment

EN4382-G1

Proponent Eric Lacey **Submitted** 6/1/2010 **Attachments** No

Comment

While we do not believe it is necessary, we believe that the approach in Mod 4382 is much more reasonable and consistent than other proposed mods that create exceptions to the SHGC requirement in favor of overhangs or other materials. This proposal keeps the overhang trade-off in the performance path only, where the correct measurements and calculations can take place. Although we do not recommend exceptions to the SHGC maximum requirement, if there must be an exception, it should be simple and limited to cases in which energy efficiency is likely to be ensured on a permanent basis.

There are also a few areas in which this proposal should be more precise. For example:

• The overhang depth and width should correspond to individual windows. While it may be simple to allow area-weighted averages, it is still important to ensure that overhangs provide appropriate shading over all windows.

• It is not clear how (or whether) this proposal applies to multiple-story buildings. If a four-foot overhang is reasonable for a single-story home, it may not provide sufficient shading for windows on both floors of a two-story home.

402.5 Maximum fenestration U-factor and SHGC (Mandatory). The area-weighted average maximum fenestration SHGC permitted using trade-offs from Section 405 shall be 0.50.

Exception: If the window area-weighted average overhang depth for the entire dwelling unit is 4.0 feet or greater, the area-weighted average maximum SHGC requirement of 0.50 does not need to be met.

Date Proposal Submitted	3/26/2010	**Section**	405.2
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Eric Lacey	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

This proposal removes an exception from the mandatory minimum R-19 ceiling insulation requirement, ensuring a reasonable level of efficiency, regardless of the type of ceiling construction selected by the builder or design professional.

Rationale

(See attached file for detailed analysis.) This proposal removes an exception from the mandatory minimum R-19 ceiling insulation requirement, ensuring a reasonable level of efficiency, regardless of the type of ceiling construction selected by the builder or design professional.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This will not impact enforcement.

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

This proposal will save energy over the lifetime of the home.

Impact to industry relative to the cost of compliance with code

This proposal will only add costs in cases where a builder may have selected a specific attic assembly and reduced ceiling insulation pursuant to the exception. In all other cases, there will be no cost impact.

Requirements

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

This will improve the energy efficiency of the code.

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

The proposal strengthens the energy efficiency of the code and encourages better building practices.

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

The proposal does not discriminate against particular products or systems of construction.

Does not degrade the effectiveness of the code

The proposal does not degrade the effectiveness of the code.

General Comment

EN3953-G1

Proponent Amy Schmidt **Submitted** 5/26/2010 **Attachments** No

Comment

R-19 ceilings are contructable. There is no reason to loose energy efficiency in this area. I suppport this proposal.

405.2 Mandatory requirements. Compliance with this section requires that the mandatory provisions identified in Section 401.2 be met. All supply and return ducts not completely inside the building thermal envelope shall be insulated to a minimum of R-6.

405.2.1 Ceiling insulation. Ceilings shall have an insulation level of at least R-19~~, space permitting. For the purposes of this code, types of ceiling construction that are considered to have inadequate space to install R-19 include single assembly ceilings of the exposed deck and beam type and concrete deck roofs. Such ceiling assemblies shall be insulated to at least a level of R-10~~.

Eliminate Ceiling Insulation Exemptions

This proposal ensures that the building thermal envelope will maintain a reasonable level of efficiency, regardless of the type of ceiling construction selected by the builder or design professional. Requirements listed in the "Mandatory" sections of the code are intended to be backstops against trade-offs. For example, Section 401.2 specifies that every building must meet the air sealing requirements of Section 402.4, the programmable thermostat requirement in Section 403.1, and the fenestration trade-off caps in Section 402.5 (among others). These are all important backstops designed to ensure that regardless of the compliance method used (performance or total UA), these building elements will maintain a reasonable level of efficiency.

What makes Section 405.2.1 and 506.2.1 different from all other mandatory provisions is that both sections make a significant exception to an existing backstop for choices made by the builder or design professional. The amount of insulation required by these sections (R-19) is already significantly lower than what would be required under the prescriptive path (R-30). This is not a unique backstop. Georgia also requires R-19 (or more) as a mandatory minimum in ceiling assemblies. This decreased amount still allows considerable design flexibility without leaving ceilings unnecessarily weak.

Sections 405.2.1 and 506.2.1 go an additional step, however, and allow further decreases in attic insulation where there is "inadequate space" for insulation. The types of ceilings included in this exception include "single assembly ceilings of the exposed deck and beam type and concrete deck roofs," but these ceiling assemblies are certainly capable of being insulated to R-19 or more. There should not be an exception to the mandatory provisions unless it is physically impossible to meet the requirement. If that is the case, it should be strongly considered whether these types of ceiling assemblies are advisable or even allowable going forward.

Date Proposal Submitted	3/23/2010	**Section**	405.2.1
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Darrell Winters	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Maintains more adequate insulation levels in ceilings.

Rationale

R-10 is not sufficient ceiling insulation in Florida.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on code enforcement.

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

Any impact will be offset by energy savings and improved comfort.

Impact to industry relative to the cost of compliance with code

No impact on industry.

Requirements

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

No impact on safety. Improves the comfort of the living space.

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

Improves the code by conserving energy.

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

No discrimination against any material, product, method or system.

Does not degrade the effectiveness of the code

No degredation of the code.

General Comment

EN3715-G1

Proponent Ann Stanton **Submitted** 5/24/2010 **Attachments** No

Comment

Section 553.905, Florida Statutes, Thermal efficiency standards for new residential buildings, states, in part: "Thermal designs and operations for new residential buildings...manufacturer. All new residential buildings, except those herein exempted, shall have insulation in ceilings rated at R-19 or more, space permitting. Thermal...period."
In other words, Florida law specifically allows the "space permitting" language for new residential construction.

General Comment

EN3715-G2

Proponent Amy Schmidt **Submitted** 5/26/2010 **Attachments** No

Comment

R-19 ceilings are contructable. There is no reason to loose energy efficiency in this area. I suppport this proposal.

405.2.1 Ceiling insulation. Ceilings shall have an insulation level of at least R-19~~, space permitting. For the purposes of this code, types of ceiling construction that are considered to have inadequate space to install R-19 include single assembly ceilings of the exposed deck and beam type and concrete~~ deck ~~roofs. Such ceiling assemblies shall be insulated to at least a level of R-10~~.

Date Proposal Submitted	3/26/2010	**Section**	405.3
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Eric Lacey	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

This proposal adds clarity by repeating the most crucial element of the performance option – the 0.80 adjustment factor – in both Section 405 and Normative Appendix B.

Rationale

(See attached file for complete supporting statement.) This proposal repeats the most crucial element of the performance option – the 0.80 adjustment factor – in both Section 405 and Normative Appendix B. This will ensure that any user of the performance option will understand right away that the ultimate design must be 20% more stringent than the requirements listed in the code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This proposal will add clarity and will improve compliance and enforcement of the code.

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

There is no cost impact.

Impact to industry relative to the cost of compliance with code

Compliance and enforcement will be more consistent.

Requirements

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

This proposal will simplify code enforcement and compliance by adding clarity to the code.

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

This proposal will simplify code enforcement and compliance by adding clarity to the code.

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

This proposal does not discriminate against any products.

Does not degrade the effectiveness of the code

The proposal will only increase the effectiveness of the code.

General Comment

EN3945-G1

Proponent Amy Schmidt **Submitted** 5/28/2010 **Attachments** No

Comment

I support this proposal as it adds clarity to the performance section of the code and supports the FL goal of 20% greater efficiency.

SECTION 405

SIMULATED PERFORMANCE ALTERNATIVE (Performance)

405.3 Performance-based compliance. Compliance based on simulated energy performance requires that a proposed residence (Proposed Design) be shown to have an annual normalized, modified energy load that is less than or equal to the annual energy load of the Standard Reference Design after applying the 0.80 adjustment factor to the Standard Reference Design as specified in Normative Appendix B, Section B-1.1.1 to make the code 20 percent more stringent than the "2007" Florida energy code's Standard Reference Design (Baseline) features.

Specify Adjustment Factor in Section 405 consistent with Normative Appendix B

Reason

This proposal would add clarity and transparency to the performance path, and would reduce confusion among users of the code. The 2009 IECC groups all requirements for the Simulated Performance Alternative, including tables and software requirements, in Section 405. By contrast, the current draft of the 2010 Florida Building Code divides the performance path into two different areas of the code. Section 405 contains the general scoping and administrative criteria, along with specific details for certain credits. Normative Appendix B contains the table to be used to compare the Standard Reference Design to the Proposed Design, and it specifically lists the requirement to adjust the calculation by a factor of 0.80 to ensure a 20% more efficient building.

While we would prefer to see all performance requirements in the same chapter of the code, the above proposal repeats the most crucial element of the performance option – the 0.80 adjustment factor – in both Section 405 and Normative Appendix B. This will ensure that any builder or design professional who intends to use the performance option will understand right away that the ultimate design must be 20% *more stringent* than the requirements listed in the code. This proposal does not add a new requirement, but simply repeats the language of Normative Appendix B in Section 405 to reduce confusion. We believe that this clarifying proposal will lead to more effective compliance and enforcement, and ultimately more energy savings.

Date Proposal Submitted	4/2/2010	**Section**	405.4.1
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jack Glenn	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

This modification reinstates original IECC language.

Rationale

This is an unnecessary departure from IECC language nor conflicts with the actual language of FL State 553.995. The original IECC language will allow the use of Energy Gauge, so therefore there is no need to adapt the language.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on lcal enforcement

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

No change

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

Provides clrity consistent with Florida Statute

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.

405.4.1 Compliance software tools. ~~Documentation verifying that the methods and accuracy of t~~Documentation verifying that the methods and accuracy of the ~~Energy Gauge USA Fla/Res~~ compliance software tool~~s~~ shall ~~be utilized to~~conform to the provisions of this section. ~~shall beprovided to the code official~~. provided to the code official. Compliance software provisions and overall stringency shall be as described in Normative Appendix B.

Date Proposal Submitted	4/2/2010	**Section**	405.6
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jack Glenn	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

This modification introduces the option for approved computing software energy compliance

Rationale

This provision gives the Florida Building commission the option to approve additional software tools that can meet the provisions laid out in this appendix. Although Florida has not had yet other tools available, other manufacturers may attempt to meet these computing criteria. As with all other products associated with the code, competition is essential to meet free market requirements.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on local enforcement.

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

Provides more options to show compliance

Impact to industry relative to the cost of compliance with code

Potential to reduce cost as market will be more competitive

Requirements

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

No change

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

Improves the code by providing options.

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.

General Comment

EN4457-G1

Proponent Jeff Sonne **Submitted** 5/27/2010 **Attachments** No

Comment

Concerns with allowing additional performance compliance software include:

- Non-uniform compliance calculation results and potential for "gaming" the system by using the product that provides the lowest e-Ratio
- Additional effort and potential confusion for building departments having to keep current on new and allowed compliance products and reports
- Significant on-going state expenditures to review and approve additional software products and address reporting, technical assistance and related issues and questions
- Lack of existing standards and methodology for reviewing, evaluating and certifying software products.

B-1.2 ~~405.6~~ Calculation software tools. The EnergyGauge USA Fla/Res compliance software tools or other software tools as approved by the Florida Building Commission shall be utilized to conform to the provisions of Section 405.

Date Proposal Submitted	4/2/2010	**Section**	405.6 (Appendix B)
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jack Glenn	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

This modification introduces the option for approved computing software energy compliance

Rationale

This provision gives the Florida Building commission the option to approve additional software tools that can meet the provisions laid out in this appendix. Although Florida has not had yet other tools available, other manufacturers may attempt to meet these computing criteria. As with all other products associated with the code, competition is essential to meet free market requirements.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on local enforcement

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

Provides more options to show compliance

Impact to industry relative to the cost of compliance with code

Potential to reduce cost as market will be more competitive

Requirements

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

No change

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

Makes code consistent with the IECC

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.

General Comment

EN4461-G1

Proponent Jeff Sonne **Submitted** 5/27/2010 **Attachments** No

Comment

Concerns with allowing additional performance compliance software include:

- Non-uniform compliance calculation results and potential for "gaming" the system by using the product that provides the lowest e-Ratio
- Additional effort and potential confusion for building departments having to keep current on new and allowed compliance products and reports
- Significant on-going state expenditures to review and approve additional software products and address reporting, technical assistance and related issues and questions
- Lack of existing standards and methodology for reviewing, evaluating and certifying software products.

B-1.2 ~~405.6~~ Calculation software tools. The EnergyGauge USA Fla/Res compliance software tools or other software tools as approved by the Florida Building Commission shall be utilized to conform to the provisions of Section 405.

Date Proposal Submitted	3/26/2010	**Section**	405.6, Table B-1.1.2(1)
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Eric Lacey	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

This proposal removes trade-offs that are not allowed under the 2009 IECC performance path, including the programmable thermostat credit, the cross-ventilation and whole house fan options, and an oversimplified credit for thermal storage mass.

Rationale

(See attachment for a detailed rationale.) This proposal removes trade-offs that are not allowed under the 2009 IECC performance path, including the programmable thermostat credit, the cross-ventilation and whole house fan options, and an oversimplified credit for thermal storage mass.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This will simplify code enforcement by removing unnecessary trade-offs.

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

There should be little or no cost impact, since there are many more options for trade-offs still in the performance path.

Impact to industry relative to the cost of compliance with code

There should be little or no cost impact to industry, since there are many more options for trade-offs still in the performance path.

Requirements

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

This proposal will ensure that homes are built to a more consistent, more energy efficient standard.

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

The proposal will improve the code by eliminating unnecessary trade-off credits.

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

The proposal does not discriminate against any product.

Does not degrade the effectiveness of the code

The proposal will enhance the effectiveness of the code.

General Comment

EN3947-G1

Proponent Michael Nau **Submitted** 5/18/2010 **Attachments** No

Comment

There shouldn't be any caps added to the performance based program. The performance method in its very nature enhances creative ways of saving energy. This programs provides for inovation in energy performance and will always find the most economical method for meeting the energy budget without wasting unnecessary money on minimums that don't provide true energy savings. It would be a hardship for a builder to spend excess money on something that provides no additional return both in money and energy.

General Comment

EN3947-G2

Proponent Joe Nebbia **Submitted** 5/25/2010 **Attachments** No

Comment

The performance path, by it's nature measures the total energy performance of a building as a system. Adding energy saving options to this measurement in no way weakens the efficiency of the code as claimed in this rationale.

SECTION 405

SIMULATED PERFORMANCE ALTERNATIVE (Performance)

405.6 Requirements specific to credit options. Credit may be claimed in the software compliance calculation for technologies that meet prescriptive criteria specified below for various options.

~~**405.6.4 Installation criteria for homes using the cross ventilation option.** The cross ventilation option may be used if the following criteria have been met.~~

~~1. Operable aperture areas totaling a minimum of 12 percent of the floor area of the room shall be provided for all primary living areas and main bedrooms.~~

~~2. Insect screens shall be provided for all windows and doors to be considered operable aperture area. All screened entry doors and interior doors in the ventilated areas shall be provided with either (1) mechanically attached door stops (or similar devices) to hold the door in an open position or (2) operable louvers.~~

~~3. The total aperture area shall be provided by a minimum of two distinct windows. Each window shall provide not more than 70 percent of the total aperture area. The windows (or sliding glass doors) shall be placed in adjacent or opposite walls. The windows may be placed on a single outside wall if wing walls are used.~~

~~4. Where wing walls are included in the building design for ventilation purposes, they shall be placed between windows to create a high pressure and a low pressure zone on each window. Wing walls shall extend from the ground to eve height, be located on the windward side of the building, and extend outward from the building a distance at least equal to one half the width of the window. NOTE: This technique is effective only for areas which experience significant and continuous winds during the cooling months.~~

~~**405.6.5 Installation criteria for homes using the whole house fan option.** The whole house fan option may be used if the following criteria have been met.~~

~~1. The whole house fan has been sized to provide a minimum of 20 air changes per hour for the entire house.~~

~~2. The fan installed shall have a free air cfm rating of at least three times the square footage of the conditioned area of the house.~~

~~3. To ensure adequate air exhaust, the house attic shall have gable, ridge or wind turbine vents whose total opening area is equal to four times the ceiling cutout area for the whole house fan. Soffit vents shall not be included in the exhaust vent area.~~

NORMATIVE APPENDIX B

CRITERIA FOR COMPUTER MODELING

FOR PERFORMANCE-BASED CODE COMPLIANCE

TABLE B-1.1.2(1)

SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

Building Component	Standard Reference Design	Proposed Design
Glazing [a]	Total area[b] 18% of the conditioned floor area Orientation: equally distributed to four (4) cardinal compass orientations (N,E,S&W) U-factor: 0.75 SHGC:0.40 Interior shade coefficient Summer = 0.70 Winter = 0.85[c] External shading: none	As proposed
		As proposed
		As proposed
		As proposed

		As proposed
		As proposed
		As proposed
Thermostat	Type: manual	Type: Same As proposed
	Temperature setpoints: cooling temperature set point = 78 F; heating temperature set point = 68 F	Temperature setpoints: same as the Standar Reference Design~~, except when programma thermostats are used~~.

(c) ~~For fenestrations facing within 15 degrees of due south that are directly coupled to thermal storage mass, the winter interior shade coefficient shall be permitted to increase to 0.95 in the proposed design.~~

(Portions of table and footnotes not shown shall remain unchanged.)

Remove Excessive Trade-Offs

This proposal removes trade-offs that are not allowed under the 2009 IECC performance path and which would serve to weaken the code's overall efficiency. Our understanding of House Bill 7135 is that the Legislature intended to adopt the IECC's overall structure and stringency, and that elements carried over from previous editions of the Florida Building Code should not serve to weaken the efficiency of the 2010 code. We have identified a few credits that would not be allowed under the 2009 IECC performance path, and as such, are weakening amendments that should be rejected.

1. Programmable Thermostat Credit. Section 403.1.1 of the 2009 IECC and Section 403.1.1 of the draft 2010 Florida Building Code both already require a programmable thermostat in buildings where the primary heating system is a forced-air furnace. It does not make sense to apply an additional credit for installing a programmable thermostat in Normative Appendix B. Mandatory requirements should not be counted as trade-off credit under the performance path. If the intent is to require programmable thermostats in more scenarios, the Commission should consider the language from proposal EC101, submitted for the 2012 IECC:

> **403.1.1 Programmable thermostat.** Where the primary heating system is a forced air furnace or forced air split system heat pump, packaged unit heat pump, water boiler, or steam boiler, at least one thermostat per dwelling unit shall be capable of controlling the heating and cooling system on a daily schedule to maintain different temperature set points at different times of the day. This thermostat shall include the capability to set back or temporarily operate the system to maintain zone temperatures down to 55ºF (13ºC) or up to 85ºF (29ºC). The thermostat shall initially be programmed with a heating temperature set point no higher than 70ºF (21ºC) and a cooling temperature set point no lower than 78ºF (26ºC).

2. Cross-Ventilation Option and Whole House Fan Option. These two credits are currently not available under the 2009 IECC performance path, and should be deleted from the 2010 Florida Building Code. Efficiency in thermal building envelope components should not be traded off against building elements that require regular user operation. The energy savings from cross-ventilation and a whole house fan are questionable because they depend upon an operator that is well-informed and present during specific times of the day. While these may be good elements to incorporate into the design of the home, they should not be traded away for more constant energy savers.

3. Interior Shade Coefficient. Footnote (c) allows a substantial increase in the assumed winter shading coefficient where fenestration facing "15 degrees of due south that are directly coupled to thermal storage mass." This is an oversimplified trade-off that is not allowed by the 2009 IECC. Although "thermal storage mass" is incorporated into the Internal Mass calculation in the IECC performance path, it is not used as a uniform trade-off amount as proposed in footnote (c) of the current draft of the 2010 Florida Building Code. It is not clear just how much or what type of thermal mass is required, or whether the definition of thermal storage mass in footnote (g) even applies. (The term does not appear in the definitions.) The effect of the trade-off credit is a very specific (and substantial) increase in the amount of solar heat gain that is allowed into the building.

This is very likely to result in a *decrease* in energy efficiency, and it should be removed from the code.

Date Proposal Submitted	4/2/2010	**Section**	405.6.6
Chapter	4	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	John Borzoni	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Replace Florida standard FL1 with AHRI Standard 470; and return the net useful heat exchange effect to the 2004 Code level 0f 50%.

Rationale

The AHRI Standard is now accepted Nationally as the Performance Test Standard. The Association of Desuperheater Manufacturers (ARDM) set the minimum performance requirement of 50% net useful superheat over 20 years ago. There is no need to degrade the performance requirement to 30%; its counterproductive to allow this degradation of the performance requirement.

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

No impact

Impact to industry relative to the cost of compliance with code

May require inferior product to be redesigned; however, most commercially available product is already in compliance with the Proposed Modifications

Requirements

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

Using a National Standard assures that all Desuperheater Products sold in Florida are tested to a comparable Standard. Reversing the performance degradation incorporated in the prior Code modification will increase the energy savings arising from the use of this category of product.

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

The proposed modification brings Florida into agreement with the Nationally accepted Standard AHRI 470. Raising the performance requirement back to 50% reduces the amount of inferior or homemade product installed in Florida.

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

Using a National Standard, and re-establishing the ARDM requirement of capturing 50% of the available superheat, may require redesign of lesser performing product; but it is well within the scope of available materials and technology to comply with the more stringent performance requirement.

Does not degrade the effectiveness of the code

The proposed modification reverses the degradation of Performance incorporated in the last Code Revision

General Comment

EN4378-G1

Proponent Ann Stanton **Submitted** 5/13/2010 **Attachments** No

Comment

ARI 470-06 can be seen at www.ahrinet.org/Content/FindaStandard_218.aspx

Chapter 4:

405.6.6 Installation criteria for homes claiming the heat recovery unit (HRU) option. The heat recovery unit option may be used for installation of a waste heat recovery unit (HRU) on either an air conditioner or a heat pump where the heat recovery unit has a minimum net useful heat exchange effect of 50 ~~30~~ percent and meets the following criteria:

1. The net useful heat exchange effect shall be demonstrated by either a Form 400D prominently displayed on the unit with test results clearly visible for inspection or by an ARDM certified refrigerant desuperheater seal affixed to the unit.

2. The net useful heat exchange effect shall have been determined by an independent laboratory testing to AHRI Standard 470 ~~the standard rating conditions specified in Florida Standard FL-1 (see Appendix D)~~.

3. If more than one air conditioning system is installed in a residence and only one HRU is installed, energy load shall be based on the gallon capacity of the water heater to which it is coupled and the total capacity of the water heaters in the residence. In such case, the HRU shall be attached to the system serving the daytime primary living areas (family room, living room, kitchen, dining room and adjacent bedrooms and bathrooms).

Chapter 6:

AHRI

Air Conditioning, Heating, and Refrigeration Institute

4100 North Fairfax Drive

Suite 200

Arlington, VA 22203

Standard referenced number	Title	Reference in code section number
470-06	Performance Rating of Desuperheater/Water Heaters	405.6.6

-

Florida Codes

Building Codes and Standards Office

Florida Department of Commuity Affairs

2555 Shumard Oak Blvd.

Tallahassee, FL 32399-2100

Standard referenced number	Title	Reference in code section number
~~FL-1~~	~~Florida Standard for Desuperheater/Water Heaters (See Appendix 13-E of this code)~~	~~405.6.6~~

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APPENDIX D:

~~FLORIDA STANDARD NO. 1 (FL-1)~~

~~FLORIDA REGULATORY MODIFICATIONS TO AIR-CONDITIONING &~~

~~REFRIGERATION INSTITUTE (ARI) STANDARD 470-80~~

~~Effective April 1, 1986~~

-

~~The following regulatory modifications made to the Air-Conditioning and Refrigeration Institute (ARI) Standard 470-80 shall constitute Florida Standard FL-1 and shall be accounted for in results testing performed on heat recovery units for which credit is claimed under Section 405 Chapter 13-6 of the *Florida Energy Code, Energy Conservationfor Building Construction.* All other criteria and conditions of ARI Standard 470-80 remain in effect. Testing to the Florida regulatory modifications shall not constitute testing to ARI Standard 470-80. ARI Standard 470-80 is hereby incorporated by reference.~~

-

SECTION 1

PURPOSE

1.1.1 This standard is suggested as a guide for to be used by the industry, including manufacturers, distributors, contractors, consulting engineers, and users of desuperheater/water heaters.

-

SECTION 2

SCOPE

2.1 Scope. This standard applies to desuperheater/water heaters supplied as separate components, as defined in Section 3.1 for residential potable water heating.

2.2 Exclusion. This standard does not apply to desupereater/water heaters supplied as components of factory assembled refrigeration or air conditioning units.

SECTION 3

DEFINITIONS

3.1 Desuperheater/water heater. A factory-made assembly of elements by which the flows of refrigerant vapor and water are maintained in such heat transfer relationship that the refrigerant vapor is desuper-heated and the water is heated. A water circulating pump may be included as part of the assembly.

3.2 Total useful heat exchange effect.

3.3 Total Heat Exchange Effect. The total heat removed from the refrigerant in the heat exchanger. This is the sum of the useful heat exchange effect and the heat loss through the external surfaces of the heat exchanger to the ambient air. Total system hot gas superheat. The total heat removal required to completely desuperheat the refrigerant discharge vapor. This value is the product of the mass flow of refrigerant and the difference in enthalpy between the refrigerant vapor entering the desuperheater and the vapor at saturation leaving the desuperheater.

-

SECTION 4

STANDARD EQUIPMENT AND ACCESSORIES

4.1 The following items shall be required as standard equipment:

6. Installation manual, including owners' operating and maintenance instructions.

-

SECTION 5

TESTING AND RATING REQUIREMENTS

5.1.1 Published ratings shall state all the pertinent operating conditions and shall include the following:

d. Total useful heat exchanger effect, Btuh(W)

i. Fouling factor (water side)

Net useful heat exchange effect expressed as percent of total hot gas superheat.

j. Total system hot gas superheat.

j. [j. becomes k.]

k. [k. Becomes l.]

Note 1: If a water circulating pump is included as part of the desuperheater assembly, as value of 2545 Btu/h (746 W) per rated horsepower shall be deducted from the useful heat exchange effect (d) to arrive at actual net useful heat exchange effect, Btu/h (W). If the pump motor is rated in watts (s), such value shall be used to determine Btu/h to be deducted. For systems with no water circulating pump, the net useful heat exchange effect is equal to the total useful heat exchange effect.

5.1.2 Published ratings may also include a nominal refrigerating system capacity. The nominal system capacity in tons shall be based upon a total heat transfer effect in the desuperheater/water heater of 2000 Btuh (588 W) per ton of total system capacity at the 75 F(23.9°C) entering water temperature, air cooled conditions shown in Table 1. on a refrigerant 22 mass flow rate of 180 pounds per hour (.02268 Kg/s) per ton, and shall be given for at least one of the standard rating groups shown in Table 1. It shall be identified as to air cooled or water cooled rating.

5.2 Standard ratings. Published ratings shall include the standard rating, given for at least one of the standard rating groups shown in Table 1 and properly identified as the standard rating. Standard ratings shall include an allowance for fouling of the water side surface of 0.002 sq ft - hr - F/Btu (0.0036 m^2 - °C/W) for steel tubes or 0.001 sq ft - hr - F/Btu (0.00018m^2 - °C/W) for non ferrous tubes. Regrigerant side fouling is assumed to be 0.0000. Standards ratings shall be cleaned ratings per 5.4.1.

5.3 Application ratings. Application ratings give performance data under operating conditions other than those shown in Table 1. At least on set of application ratings shall use the fouling factor as shown in 5.2. Application ratings shall contain all information shown in Section 5.1.1, and such ratings shall be subject to the tolerances of this standard. The publication of application ratings is optional.

5.3.1 Published application ratings may also include ratings with other fouling factors or means for determining ratings with other fouling factors. If a manufacturer elects to publish application ratings with other fouling factors, these ratings shall be determined in accordance with methods described in Section 5.4.2 and 5.4.3 below. Fouling factors shall be specified.

5.3.2 Reserved. The manufacturer shall provide published information as to the maximum recommended flow rate to minimize erosion.

-

SECTION 7

MARKING

7.1 Each desuperheater/water heater shall have the following minimum information shown in a conspicuous place:

e. Water pump h.p. (watts), volts, amps

-

SECTION 8

Voluntary CONFORMANCE

8.1 Conformance. While conformance with this standard is completely voluntary, All equipment represented as being in accordance with this standard shall conform to all of the provisions thereof.

-

Table 1. STANDARD RATING CONDITIONS

APPENDIX A. METHOD OF TESTING

DESUPERHEATER/WATER HEATERS

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SECTION A2

SCOPE

A2.1 Scope. This appendix applies to desuperheater/water heaters supplied as a separate component. for residential potable water heating.

-

SECTION A3

DEFINITIONS

A3.1 Desuperheater/water heater. A factory-made assembly of elements by which the flows of refrigerant vapor and water are maintained in such a heat transfer relationship that the refrigerant vapor is desuperheated and the water is heated. A water circulating pump may be included as part of the assembly.

A3.2 Useful heat exchanger effect. The useful heat transferred shall be the product of the mass flow of water, the specific heat and the temperature difference between water entering and leaving water entering and leaving the desuperheater assembly.

A3.3 Total heat exchange effect. The total heat removed from the refrigerant in the heat exchanger. This is the sum of the useful heat exchange effect and the heat loss through the external surfaces of the heat exchanger to the ambient air.

A3.4 Total system hot gas superheat. The total heat removal required to completely desuperheat the refrigerant discharge vapor. This value is the product of the mass flow of the refrigerant and the difference in enthalpy between the refrigerant vapor entering the desuperheater and the vapor at saturation leaving the desuperheater.

-

SECTION A4

EXPRESSION OF TEST RESULTS

A4.1.1 Test results shall be expressed in the following terms.:

j. Refrigerant designation - R22

k. Useful heat exchange effect, percent of total system hot gas superheat, %.

l. Total system hot gas superheat, Btu/h.

-

SECTION A5

TEST METHODS

A5.1.1 Test shall consist of measurement of the following at specified conditions:

i. Water pump watts

j. Total system hot gas superheat, Btu/h

A5.1.2 The total useful heat transfer effect shall be determined by:

a. Multiplying the mass flow rate of water by the specific heat and temperature difference between entering and leaving water (total useful heat transfer effect) and adding to this the heat lost by the refrigerant vapor though the external surfaces of the heat exchanger (see A5.1.6).

b. Multiplying the mass flow rate of refrigerant by the enthalpy difference between entering and leaving refrigerant and adding to this the heat effect of the pump if included as part of the assembly (see NOTE 1, para. 5.1.1).

A5.1.6 Reserved. The heat lost through the external surfaces of the heat exchanger to the ambient air shall be determined by:

-

$$Q = \frac{A - t_m}{R}$$

Where:

Q = heat loss though external surfaces, Btuh (W)

A = external surface area, sq ft (m^2)

t_m = log mean temperature difference, F(^oC) calculated between entering and leaving refrigerant temperature and the average ambient air temperature)

R = x ÷ 1, hr ft^2 F/Btu (m^2 — $^oC/W$)

~~k hs~~

~~Where:~~

~~x = insulation thickness, ft (m)~~

~~k = thermal conductivity of insulation, Btu/hr ft F (W/m - °C)~~

Date Proposal Submitted	3/29/2010	**Section**	502
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Mangesh Basarkar	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Modify shell building efficiency requirements in view of return on investment

Rationale

A projection factor will not provide enough return on investment in terms of energy savings for fenestration having SHGC values as low as 0.25 and 0.19.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Expected to have no impact on enforcement relative to cost of code compliance

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

Expected to have no impact on cost to owners relative to cost of code compliance

Impact to industry relative to the cost of compliance with code

Expected to have no impact on industry relative to cost of code compliance

Requirements

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

This proposed modification does not have any connection with the 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 proposed modification does not strengthen or improve the code

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

This proposed modification does not discriminate against any materials, products or systems of construction

Does not degrade the effectiveness of the code

This proposed modification does not degrade the effectiveness of the code

General Comment

EN4059-G1

Proponent Ann Stanton **Submitted** 5/24/2010 **Attachments** No

Comment

In removing the Projection Factor requirement from this table, the language "Projection Factor (PF)" should also be removed, as should Footnote 4.

General Comment

EN4059-G2

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

Original IECC language should be retained as no Florida specific reason is given for this change nor is the ROI data that the proponent refers to included with this proposal.

Proposal:

Remove the requirement of a projection factor of 0.5 for prescriptive measures for shell buildings

TABLE 502.1.1.1 (1)

ENVELOPE PRESCRIPTIVE MEASURES FOR SHELL BUILDINGS[1,2]

Building Element	Mandatory
Roof:	
Absorptance	= 0.22
R-value (U-value)	R-40 (=U-0.025)
Wall:	
Above grade wall:	
Absorptance	= 0.3
R-value (U-value)	R-30 (= U-0.032)
Below grade wall:	No requirement
Raised Floor Insulation	
R-value (U-value)	R-30 (= U-0.032)
Window:	
U-factor	= 0.45
SHGC	
0-40% WW Ratio	0.25
40-50% WW Ratio	0.19
> 50% WW Ratio _	Not allowed[3]
Overhang Projection Factor (PF)	~~0.5~~[4]
Door:	-
U-value	

Swinging	U-0.70
Non-swinging	U-1.45
Skylights:	
SHGC	= 0.19
Skylight U-value	= 1.36

[1]Equipment and lighting shall meet the efficiencies of Section 503, 504 and 505, respectively.

[2]Per Section 101.4.9 of the FBC-EC, the building shall demonstrate compliance with Section 506 when completion of the building is permitted.

[3]Buildings with greater than 50% WW Ratio shall comply with Section 506.

[4] PF 0.5 = Projection half the distance of window height.

Date Proposal Submitted	3/29/2010	**Section**	502
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Mangesh Basarkar	**General Comments**	Yes
Attachments	No	**Alternate Language**	Yes

Related Modifications

Summary of Modification

Propose new envelope prescriptive requirements for alterations and renovations

Rationale

Roof, Wall and Raised Floor R-value change: The latest ASHRAE and IECC codes for commercial buildings have R-38 (roof) and R-19 (wall, raised floor) as the maximum recommended values. Also, during analysis conducted earlier, it was found that there are clearly diminishing returns for increasing R-value beyond this point for wall and roof envelope components.
SHGC: Very low SHGC values impede visible light transmittance (VLT) leading to curtailment of daylighting as viable energy saving measure.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Proposed modification is not expected to impact local entities relative to code enforcement

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

Proposed modification will not significantly impact property owners relative to cost of code compliance

Impact to industry relative to the cost of compliance with code

Proposed modifications is not expected to significantly impact industry relative to cost of code compliance

Requirements

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

Proposed modification has no substantial connection with the health, safety and welfare of the general public

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

Proposed modification improves the code and provides alternatives to using complicated methods of compliance for relatively simple renovations and alterations

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

Proposed modification does not discriminate against any materials, products or system of construction

Does not degrade the effectiveness of the code

Proposed modification does not degrade the effectiveness of the code

Alternate Language

EN4060-A1

Proponent Roger LeBrun **Submitted** 5/20/2010 **Attachments** Yes

Rationale

1. For consistency with latest ASHRAE prescriptive tables and NFRC terminology. 2. Skylight SHGC must be high enough to achieve sufficient lighting energy savings to exceed the associated cooling energy losses.

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

No impact

Impact to industry relative to the cost of compliance with code

No impact

Requirements

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

Natural daylight has several economic and well-being benefits and should be encouraged in occupied buildings

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

See above

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

Increases the number of available compliant product choices.

Does not degrade the effectiveness of the code

Is a net energy gainer.

General Comment

EN4060-G1

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

Proponent indicates that language is in 'latest ICC and ASHRAE", but does not cite a code or edition. Are these the editions referenced in the code? Is it in the base IECC that we are integrating? How does ASHRAE interface with that?

Proposal:

Changes to prescriptive values in table 502.1.1.1(2) are proposed as follows:

TABLE 502.1.1.1 (2)

ENVELOPE PRESCRIPTIVE MEASURES

FOR RENOVATIONS AND ALTERATIONS[1]

Building Element	**Mandatory**
Roof:	
Absorptance	= 0.22
R-value (U-value)	~~R-40 (U=0.025)~~ R-38 (U= 0.033)
Exterior Wall:	
Above grade wall:	
Absorptance	=0.3
R-value (U-value)	~~R-30 (U=0.032)~~ R-19 (U= 0.032)
Below grade wall:	No requirement
Raised Floor Insulation	
R-value (U-value)	~~R-30 (U=0.032)~~ R-19 (U= 0.052)
Window:	
U-factor	= 0.45
SHGC (by window area)	
0-40% WW Ratio	0.25
>40 WW Ratio	~~0.19~~ 0.25
Skylights:	
SHGC	=0.19

Skylight U-value	=1.36
Opaque Door U-value	
Swinging	= U-0.7
Non-swinging	= U-1.45

Skylights:	
SHGC	=~~0.19~~ 0.35
Skylight U-~~value~~ factor	=~~1.36~~ 0.75

Date Proposal Submitted	4/1/2010	**Section**	502.1.1
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Amy Schmidt	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	No

Related Modifications

4299

Summary of Modification

Adding perscriptive insulation and fenestration requirements for New Construction.

Rationale

This code change modification will assist the Florida Building Commission to achieve the 20% increase in energy efficiency in the 2010 Florida Energy Code as mandated by the Florida Legislature in The Energy Act of 2008.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

The addition of a perscriptive method of compliance will not adversely impact code enforcement. When used it will make it easier.

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

Utility bill savings can be expected due to the energy efficiency increase.

Impact to industry relative to the cost of compliance with code

Minimal increase due to higher values required to obtain 20% energy efficiency increase.

Requirements

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

Does not adversely affect any of the above. Thermal envelope efficiency serves to provide more comfort and energy savings.

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

Adds a perscriptive option for meeting thermal envelope requirements for new construction. Many methods of construction and products can be used to meet the required min. values.

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

The requirements allow for a wide variety of products methods and systems of construction.

Does not degrade the effectiveness of the code

This modification only serves to strengthen the effectiveness of the code and is consistent with proposed ASHREA 90.1 Addendum bb requirements.

General Comment

EN4286-G1

Proponent Roger LeBrun **Submitted** 5/20/2010 **Attachments** No

Comment

Please consider changing the Skylight U-factor for Climate Zone 2 to 0.60. This would increase stringency similar to how window U-factors are treated relative to their proposed Climate Zone 1 maximums.

General Comment

EN4286-G2

Proponent Joe Nebbia **Submitted** 5/25/2010 **Attachments** No

Comment

Florida has taken a forward looking approach at energy codes by using a performance-only structure for commercial buildings. As codes become more stringent, usable prescriptive codes become less realistic. This change takes the code in the wrong direction by adding prescriptive requirements and makes state goals of percent energy savings harder to achieve.

General Comment

EN4286-G3

Proponent Daniel Walker **Submitted** 6/1/2010 **Attachments** No

Comment

We agree with the concept that the Florida Building Code energy efficiency requirements should be in-line with other national codes and standards that have already debated the appropriate levels of insulation for a prescriptive path using cost justification as the basis for the requirements. In this case, the proponent has submitted the requirements from the ASHRAE 90.1-2007 Addendum "bb", which has been vetted through ASHRAE's public review process, which included an analysis for cost effectiveness.

General Comment

EN4286-G4

Proponent jeff inks **Submitted** 6/1/2010 **Attachments** No

Comment

We recommend disapproval of this proposal. Prescriptive energy provisions of the FL building code should be based on provisions included in the IECC. In addition, the fenestration requirements in the revised ASHRAE 90.1 table proposed for inclusion in Chapter 5 still permit significantly less stringent U-factor requirements for all metal framed vertical glazing assemblies than for all non-metal assemblies. Less stringent requirements for metal framed fenestration products are unjustified when all other applicable building code requirements for the fenestration can be met by either metal or non-metal products. Any prescriptive fenestration requirements included in the energy provisions of the Florida Building Code should address this issue accordingly. Furthermore, there has been no evaluation of the impact adopting the ASHRAE 90.1 values will have on the overall stringency of the Florida energy code requirements, particularly when considering other proposed amendments.

502.1.1.2 New Construction. The building thermal envelope shall meet the requirements of Table 502.1.1.2(1) or Table 502.1.1.2(2), as applicable.

(See attached files for tables)

Table 502.1.1.2(1) Building Envelope Requirements For Climate Zone 1A

	NONRESIDENTIAL			RESIDENTIAL			SEMIHEATED		
OPAQUE ELEMENTS	Assembly Maximum	Insulation Min. R-Value		Assembly Maximum	Insulation Min. R-Value		Assembly Maximum	Insulation Min. R-Value	
Roofs									
Insulation Entirely above Deck	U-0.048	R-20 c.i.		U-0.039	R-25 c.i.		U-0.218	R-3.8 c.i.	
Metal Building[a]	U-0.041	R-10 + R-19		U-0.041	R-10 + R-19		U-0.115	R-10	
Attic and Other	U-0.027	R-38		U-0.027	R-38		U-0.081	R-13	
Walls, Above Grade									
Mass	U-0.580	NR		U-0.151[b]	R-5.7 c.i.[b]		U-0.580	NR	
Metal Building	U-0.094	R-0 + R-9.8 c.i.		U-0.094	R-0 + R-9.8 c.i.		U-0.352	NR	
Steel Framed	U-0.064	R-13 + R-7.5 c.i.		U-0.064	R-13 + R-7.5 c.i.		U-0.352	NR	
Wood Framed and Other	U-0.089	R-13		U-0.089	R-13		U-0.292	NR	
Wall, Below Grade									
Below Grade Wall	C-1.140	NR		C-1.140	NR		C-1.140	NR	
Floors									
Mass	U-0.322	NR		U-0.322	NR		U-0.322	NR	
Steel Joist	U-0.350	NR		U-0.350	NR		U-0.350	NR	
Wood Framed and Other	U-0.282	NR		U-0.282	NR		U-0.282	NR	
Slab-On-Grade Floors									
Unheated	F-0.730	NR		F-0.730	NR		F-0.730	NR	
Heated	F-1.020	R-7.5 for 12 in.		F-1.020	R-7.5 for 12 in.		F-1.020	R-7.5 for 12 in.	
Opaque Doors									
Swinging	U-0.700			U-0.500			U-0.700		
Non-Swinging	U-1.450			U-0.500			U-1.450		
FENESTRATION	Assembly Max. U	Assembly Max. SHGC	Assembly Min. VT/SHGC	Assembly Max. U	Assembly Max. SHGC	Assembly Min. VT/SHGC	Assembly Max. U	Assembly Max. SHGC	Assembly Min. VT/SHGC
Vertical Glazing, 0-4030% of Wall		(for all frame types)			(for all frame types)			(for all frame types)	
Nonmetal framing (all)	U-0.51[c]		1.10	U-0.51[c]		1.10	U-0.93		NR
Metal framing, fixed	U-0.73[c]	SHGC-0.25		U-0.73[c]	SHGC-0.25		U-1.20	NR	
Metal framing, operable	U-0.81[c]			U-0.81[c]			U-1.20		
Metal framing, entrance door	U-1.10[c]			U-1.10[c]			U-1.10[c]		
Skylight, 0-3% of Roof									
All types	U-0.75	SHGC-0.35	NR	U-0.75	SHGC-0.35	NR	U-1.80	NR	NR

* The following definitions apply: c.i. = continuous insulation, NR = no (insulation) requirement.

[a] When using the R-value compliance method for metal building roofs, a minimum R-5 thermal spacer block is required.

[b] Exception to Section 5.5.3.2 applies for mass walls above grade.

[c] For locations in Climate Zone 1 with a *cooling design temperature* of 95 °F (35 C) and greater, the maximum allowed U-factors for *vertical fenestration* for all *conditioned spaces, nonresidential* and *residential*, are: U-0.32 (U-1.82) for *nonmetal framing*, U-0.50 (U-2.84) for *metal framing fixed*, U-0.65 (U-3.69) for *metal framing operable*, and U-0.83 (U-4.71) for *metal framing entrance doors*.

Table 502.1.1.2(2) Building Envelope Requirements For Climate Zone 2A

	NONRESIDENTIAL			RESIDENTIAL			SEMIHEATED		
OPAQUE ELEMENTS	Assembly Maximum	Insulation Min. R-Value		Assembly Maximum	Insulation Min. R-Value		Assembly Maximum	Insulation Min. R-Value	
Roofs									
Insulation Entirely above Deck	U-0.039	R-25 c.i.		U-0.039	R-25 c.i.		U-0.173	R-5 c.i.	
Metal Building[a]	U-0.041	R-10 + R-19		U-0.041	R-10 + R-19		U-0.096	R-16	
Attic and Other	U-0.027	R-38		U-0.027	R-38		U-0.053	R-19	
Walls, Above Grade									
Mass	U-0.151[b]	R-5.7 c.i.[b]		U-0.123	R-7.6 c.i.		U-0.580	NR	
Metal Building	U-0.094	R-0 + R-9.8 c.i.		U-0.094	R-0 + R-9.8. c.i.		U-0.162	R-13	
Steel Framed	U-0.064	R-13 + R-7.5 c.i.		U-0.064	R-13 + R-7.5 c.i.		U-0.124	R-13	
Wood Framed and Other	U-0.064	R-13 + R-3.8 c.i.		U-0.064	R-13 + R-3.8 c.i.		U-0.089	R-13	
Wall, Below Grade									
Below Grade Wall	C-1.140	NR		C-1.140	NR		C-1.140	NR	
Floors									
Mass	U-0.074	R-10.4 c.i.		U-0.064	R-12.5 c.i.		U-0.322	NR	
Steel Joist	U-0.038	R-30		U-0.038	R-30		U-0.069	R-13	
Wood Framed and Other	U-0.033	R-30		U-0.033	R-30		U-0.066	R-13	
Slab-On-Grade Floors									
Unheated	F-0.730	NR		F-0.730	NR		F-0.730	NR	
Heated	F-0.900	R-10 for 24 in.		F-0.860	R-15 for 24 in.		F-1.020	R-7.5 for 12 in.	
Opaque Doors									
Swinging	U-0.700			U-0.500			U-0.700		
Non-Swinging	U-0.500			U-0.500			U-1.450		
FENESTRATION	Assembly Max. U	Assembly Max. SHGC	Assembly Min. VT/SHGC	Assembly Max. U	Assembly Max. SHGC	Assembly Min. VT/SHGC	Assembly Max. U	Assembly Max. SHGC	Assembly Min. VT/SHGC
Vertical Glazing, 0-4030% of Wall		(for all frame types)			(for all frame types)			(for all frame types)	
Nonmetal framing (all)	U-0.40		1.10	U-0.40		1.10	U-0.93		NR
Metal framing, fixed	U-0.50	SHGC-0.25		U-0.50	SHGC-0.25		U-1.20	NR	
Metal framing, operable	U-0.65			U-0.65			U-1.20		
Metal framing, entrance door	U-0.83			U-0.77			U-0.83		
Skylight, 0-3% of Roof									
All types	U-0.75	SHGC-0.35	NR	U-0.75	SHGC-0.35	NR	U-1.80	NR	NR

* The following definitions apply: c.i. = continuous insulation, NR = no (insulation) requirement.

[a] When using the R-value compliance method for metal building roofs, , a minimum R-5 thermal spacer block is required.

[b] Exception to Section 5.5.3.2 applies for mass walls above grade.

Date Proposal Submitted	3/11/2010	**Section**	502.1.1.1
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Michael Nau	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Reinstate the IECC 2009 Table 502.3 with an overall 20% reduction in heat transfer in lieu of fenestration values contained in 502.1.1.1 (1) &(2).

Rationale

These values retain the intent of code in defining the two climate zones in Florida. The values have been modified to include a total heat transfer reduction of 20% from the IECC2009 values. This will allow for proper structural variations of fenestration in all parts of a commercial bldg.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This has no fiscal impact on the enforcement relative to the proposed Fenestration Values in Table 502.1.1.1(1) & (2)

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

This will make products that are more readily available for their specific end use. This will reduce the cost of seeking specialized framing materials with a .45 U-factor and .19 SHGC

Impact to industry relative to the cost of compliance with code

This will retain competition in the Florida glazing market and will still allow those with more energy efficient systems to move up. Not eliminating an entire local industry in favor of a select few specialty manufacturers.

Requirements

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

Table502.1.1.1 doesn't allow for variation between fenestration types to meet some of the high structural and impact requirements of Florida. IECC & ASHRAE recognized the need for metal reinforcing materials in high load condition, thus they retained these even in current ongoing proposals.

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

The proposed mod provides overall reduction in energy usage over IECC by 20% and still recognizes the two fundamental climate zones in Florida. It also provides for the broad range of fenestration types used in all commercial construction types.

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

The proposed mod provides sensitivity to the varying construction materials contained within any given type of commercial construction. It provides each fenestration type a 20% improved thermal performance in its' previously demonstrated area of installation.

Does not degrade the effectiveness of the code

The attached proposed Table retains consistency with IECC and ASHRAE, but improves the overall efficiency of each fenestration type 20% in its' given end use.

General Comment

EN3573-G1

Proponent Roger LeBrun **Submitted** 5/20/2010 **Attachments** No

Comment

Skylight U-factor should be changed to 0.75 for Climate Zone 1. This would be more consistent with ASHRAE's latest prescriptive tables.

General Comment

EN3573-G2

Proponent Garrett Stone **Submitted** 6/1/2010 **Attachments** No

Comment

Modification 3573 should be rejected. The proposed code correctly recognizes that the energy performance requirements for windows in commercial buildings, like the requirements for windows in residential buildings, should be the same regardless of the material used for window frames. For those who choose to use products that do not meet the prescriptive requirements, they have the option of trading off those requirements under the computer simulation performance compliance approach. If the code establishes two or more different sets of requirements based on construction materials, such an approach would provide an incentive to use the option with the weaker performance – this is not consistent with the objective of improving the energy efficiency under the code.

General Comment

EN3573-G3

Proponent Eric Lacey **Submitted** 6/1/2010 **Attachments** No

Comment

RECA recommends disapproval of Mod 3573 because it weakens the proposed code and creates an unnecessary (and energy-inefficient) distinction between metal and non-metal framed fenestration products. By allowing higher U-factors for metal framed fenestration, the mod will promote the use of less-efficient fenestration. While the proponent claims that the current proposal does not "allow for variation between fenestration types to meet some of the high structural and impact requirements of Florida," the mod does not demonstrate any circumstances in which the proposed uniform U-factor requirement would not meet structural requirements (which are separate from energy requirements). In fact, the proposal creates a perverse incentive for design professionals or builders to select less-efficient metal products, even where a non-metal product would provide adequate structural qualities and superior energy efficiency. This will lead to less efficient commercial buildings in Florida.

Opponents of a uniform U-factor requirement often claim that metal-framed windows are desirable because of "structural benefits," and that a reduction in energy efficiency is an appropriate trade-off. We believe that a direct trade-off between structural requirements and energy efficiency is a bad precedent, because structural requirements and efficiency requirements should each be set at optimum levels, individually. Just as it makes no sense to reduce the structural requirements of a building because it is more energy efficient, it makes no sense to reduce efficiency requirements because of perceived "structural benefits" afforded by different window frame types.

Mod 3573 also divides Florida into two zones, adding unnecessary complexity to the code. We believe that the single-zone approach taken in the current draft of the Florida Building Code will lead to more uniform and effective enforcement.

General Comment

EN3573-G4

Proponent Harry Misuriello **Submitted** 6/1/2010 **Attachments** No

Comment

Mod 3573 should be disapproved. The Task Force and Commission should retain the current uniform U-factors for both metal and non-metal framed fenestration products. It is well known in the construction marketplace that windows of both framing types are competitively available to meet currently proposed U-factors. Energy efficient windows are also available to meet structural requirements in other parts of the code. This Mod will not move the Florida energy code towards 20% energy efficiency improvement. We urge the Task Group and Commission to disapprove this proposed Mod.

TABLE 502.3

BUILDING ENVELOPE REQUIREMENTS: FENESTRATION

CLIMATE ZONE	1	2
Vertical fenestration (40% maximum of above-grade wall)		
U-factor		
Framing materials other than metal with or without metal reinforcement or cladding		
U-factor	0.96	0.60
Metal framing with or without thermal break		
Curtain wall/storefront U-factor	0.96	0.56
Entrance door U-factor	0.96	0.88
All other U-factor[a]	0.96	0.60
SHGC—all frame types		
SHGC: PF < 0.25	0.20	0.20
SHGC: 0.25 =PF < 0.5	0.26	0.26
SHGC: PF = 0.5	0.40	0.40
Skylights (3% maximum)		
U-factor	0.60	0.60
SHGC	0.35	0.35

NR = No requirement

PF = Projection factor (See Section 502.3.2).

[a]. All other includes operable windows, fixed windows and non-entrance doors.

Date Proposal Submitted	4/1/2010	**Section**	502.1.1.1
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	WILLIAM KALKER	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

101.4.10

Summary of Modification

PROPOSED CHANGE IN THERMAL ENVELOPE REQUIREMENTS FOR SPECIAL USE STRUCTURES

Rationale

PERMIT REDUCTION IN THERMAL ENVELOPE REQUIREMENTS FOR SPECIAL USE BUILDINGS WHICH BECAUSE OF THEIR USE AND SMALL AREA CANNBOT BE DESIGNED TO COMPLY WITH THE STANDARD CODE REQUIREMENTS (IE, SMALL AREA WITH CONSTANT OPENING OF DOORS AND WINDOWS EXHAUSTS CONDITIONED AIR PREVENTING COMPLIANCE WITH STANDARD ASHRAE INDOOR TEMPERATURE DESIGN CRITERIA)

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

NONE

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

REDUCE COSTS OF STRUCTURE

Impact to industry relative to the cost of compliance with code

REDUCE BUILDING COSTS WHEN COMPLIANCE IS NOT POSSIBLE

Requirements

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

NO IMPACT

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

PERMITS COMPLIANCE

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

DOES NOT DESCRIMINATE

Does not degrade the effectiveness of the code

PROVIDES ALTERNATE DESIGN CRITERIA

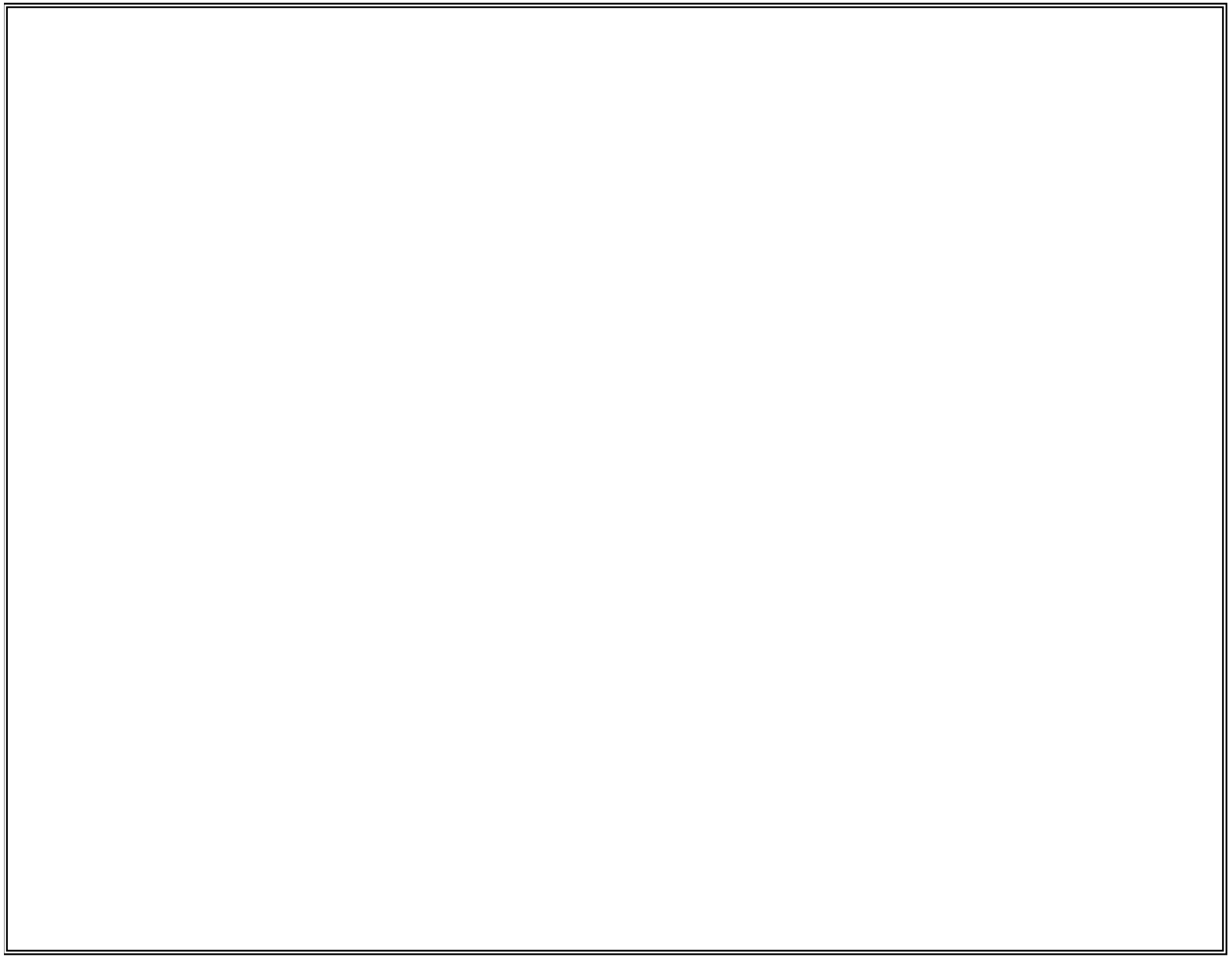
TABLE 502.1.1.1 (3)

ENVELOPE PRESCRIPTIVE MEASURES

FOR BUILDINGS NOT DESIGNED TO COMPLY WITH STANDARD

ASHRAE DESIGN CRITERIA

Building Element	**Mandatory**
Roof:	
Absorptance	=0.22
R-value (U-value)	R-19 (U=0.053)
Wall:	
Above grade wall:	
Absorptance	=0.3
R-value (U-value)	R-13 (U=0.089)
Below grade wall:	No requirement
Raised Floor Insulation	
R-value (U-value)	R-19 (U=0.051)
Window:	
U-factor	= 1.20
SHGC (by window area)	
0-40% WW Ratio	0.80
>40 WW Ratio	0.60
Skylights:	
SHGC	=0.19
Skylight U-value	=1.36
Opaque Door U-value	
Swinging	= 0.70
Non-swinging	= 1.45



Date Proposal Submitted	4/1/2010	**Section**	502.1.1.1 (1)
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Amanda Hickman	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

Changes to SHGC and U-factor in TABLE 502.1.1.1 (1)

Rationale

Reducing the SHGC below 0.25 will require the installation of dark glazing thereby reducing the natural, free, and energy efficient use of daylighting. An SHGC of 0.19 on average would require glazing to reflect roughly 70% of solar light. It is counter-productive to energy efficiency to reduce the heat gain through the window to such a low value that it would cause the room to be so dark that its occupants would have to turn on lights, thereby using more energy.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

There is no impact to local enforcement due to this modification. This is only a change in a SHGC and U-factor values.

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

If any impact, this will reduce the cost to building and property owners by allowing slightly less expensive windows to be installed, while keeping energy costs down due to the benefits of daylighting.

Impact to industry relative to the cost of compliance with code

By not reducing the SHGC and U-factor to such low values more companies are able to compete, which facilitates code compliance.

Requirements

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

As opposed to further reducing the SHGC resulting in dark glass or reducing the window to wall ratio, natural daylighting has been shown to improve productivity and better sense of well being.

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

It does not make sense to have a code requirement that users of the code will not or cannot comply with. Reduced window to wall ratios and a very aggressive SHGC will only darken the room and require more inside lights to be on during the day.

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

On the contrary, this modification will encourage product flexibility, consumer options and energy efficiency.

Does not degrade the effectiveness of the code

No, this modification does not degrade the effectiveness of the code. The code can be applied in the same way as before.

General Comment

EN4324-G1

Proponent Roger LeBrun **Submitted** 5/20/2010 **Attachments** No

Comment

Please consider changing Skylight U-factor to 0.75 for consistency with the latest ASHRAE prescriptive requirements.

General Comment

EN4324-G2

Proponent Garrett Stone **Submitted** 6/1/2010 **Attachments** No

Comment

Increasing the window U-factor substantially as proposed has not been justified and will cost substantial amounts of energy.

General Comment

EN4324-G3

Proponent Eric Lacey **Submitted** 6/1/2010 **Attachments** No

Comment

RECA recommends rejection of Mod 4324. While the proponent's reason for Mod 4324 refers to fenestration SHGC, the Mod would also implement a substantial increase in fenestration U-factors for shell buildings without any apparent justification. This would require substantially less efficient fenestration. Specifically, this mod increases the allowable fenestration U-factor by 67% (0.45 to 0.75) without any explanation. As Florida seeks reasonable improvements that will ensure at least a 20% energy savings, window U-factors are an obvious source of energy savings – even at a 0.45 U-factor the insulating value of these windows is only equivalent to about an R-2 wall. As a result, Mod 4324 should be rejected.

General Comment

EN4324-G4

Proponent Harry Misuriello **Submitted** 6/1/2010 **Attachments** No

Comment

Mod 4324 should be disapproved. The proposed Mod would allow dramatic increases in fenestration U-factors—0.75 up to 40% WWR—with little or no justification. This Mod would substantially weaken the current proposed code and will not move the Florida energy code towards 20% energy efficiency improvement. We urge the Task Group and Commission to disapprove this proposed Mod.

See attached modification. Table would not copy over correctly.

Mod 4324 – Revised TABLE 502.1.1.1 (1)

Revise table as follows:

TABLE 502.1.1.1 (1)

ENVELOPE PRESCRIPTIVE MEASURES FOR SHELL BUILDINGS[1,2]

Building Element	Mandatory
Roof:	
Absorptance	≤ 0.22
R-value (U-value)	R-40 (≤U-0.025)
Wall:	
Above grade wall:	
Absorptance	≤ 0.3
R-value (U-value)	R-30 (≤ U-0.032)
Below grade wall:	No requirement
Raised Floor Insulation	
R-value (U-value)	R-30 (≤ U-0.032)
Window:	
40% WW Ratio maximum	≤ ~~0.45~~ 0.75
U-factor	
SHGC	≤ 0.25
~~0-40% WW Ratio~~	~~0.19~~
~~40-50% WW Ratio~~	~~Not allowed~~[3]
~~> 50% WW Ratio~~	0.5[4]
Overhang Projection Factor (PF)	
Opaque Door:	
U-value	
Swinging	U-0.70
Non-swinging	U-1.45
Skylights:	
SHGC	≤ ~~0.19~~ 0.35
Skylight U-value	≤ 1.36

[1]Equipment and lighting shall meet the efficiencies of Section 503, 504 and 505, respectively.

[2]Per Section 101.4.9 of the *FBC-EC*, the building shall demonstrate compliance with Section 506 when completion of the building is permitted.

[3]Buildings with greater than 50% WW Ratio shall comply with Section 506.

[4] PF 0.5 = Projection half the distance of window height.

Date Proposal Submitted	4/1/2010	**Section**	502.1.1.1 (2)
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Amanda Hickman	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

Revision to SHGC and U-factor values in TABLE 502.1.1.1 (2)

Rationale

Reducing the SHGC below 0.25 will require the installation of dark glazing thereby reducing the natural, free, and energy efficient use of daylighting. An SHGC of 0.19 on average would require glazing to reflect roughly 70% of solar light. It is counter-productive to energy efficiency to reduce the heat gain through the window to such a low value that it would cause the room to be so dark that its occupants would have to turn on lights, thereby using more energy.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

There is no impact to local enforcement due to this modification. This is only a change in a SHGC value.

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

If any impact, this will reduce the cost to building and property owners by allowing slightly less expensive windows to be installed, while keeping energy costs down due to the benefits of daylighting.

Impact to industry relative to the cost of compliance with code

By not reducing the SHGC to such low values more companies are able to compete, which facilitates code compliance.

Requirements

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

As opposed to further reducing the SHGC resulting in dark glass or reducing the window to wall ratio, natural daylighting has been shown to improve productivity and better sense of well being.

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

It does not make sense to have a code requirement that users of the code will not or cannot comply with. Reduced window to wall ratios and a very aggressive SHGC will only darken the room and require more inside lights to be on during the day.

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

On the contrary, this modification will encourage product flexibility, consumer options and energy efficiency.

Does not degrade the effectiveness of the code

No, this modification does not degrade the effectiveness of the code. The code can be applied in the same way as before.

General Comment

EN4325-G1

Proponent Roger LeBrun **Submitted** 5/20/2010 **Attachments** No

Comment

Please consider changing Skylight U-factor to 0.75 for consistency with the latest ASHRAE prescriptive requirements.

General Comment

EN4325-G2

Proponent Garrett Stone **Submitted** 6/1/2010 **Attachments** No

Comment

Increasing the window U-factor substantially as proposed has not been justified and will cost substantial amounts of energy.

General Comment

EN4325-G3

Proponent Eric Lacey **Submitted** 6/1/2010 **Attachments** No

Comment

RECA recommends rejection of Mod 4325. Although the proponent's reason for Mod 4325 refers to fenestration SHGC, the Mod would also implement a substantial increase in fenestration U-factors for alterations and renovations without any apparent justification. Specifically, this mod increases the allowable fenestration U-factor by 67% (0.45 to 0.75) without any explanation. This would require substantially less efficient fenestration. As Florida seeks reasonable improvements that will ensure at least a 20% energy savings, window U-factors are an obvious source of energy savings --even at a 0.45 U-factor the insulating value of these windows is only equivalent to about an R-2 wall. As a result, Mod 4325 should be rejected.

General Comment

EN4325-G4

Proponent Harry Misuriello **Submitted** 6/1/2010 **Attachments** No

Comment

Mod 4325 should be disapproved for the same reasons as Mod 4324. The proposed Mod would allow dramatic increases in fenestration U-factors—0.75 up to 40% WWR—with little or no justification. This Mod would substantially weaken the current proposed code and will not move the Florida energy code towards 20% energy efficiency improvement. We urge the Task Group and Commission to disapprove this proposed Mod.

General Comment

EN4325-G5

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

Original IECC language should be retained as no Florida specific reason is given for this change. If it is such a good idea, it should be submitted for national consideration and acceptance at the International Code Council.

See attached modification. Would not copy over correctly.

Mod 4325 – Revised Table 502.1.1.1 (2)

TABLE 502.1.1.1 (2)

Revise table as follows:

TABLE 502.1.1.1 (2)

ENVELOPE PRESCRIPTIVE MEASURES

FOR RENOVATIONS AND ALTERATIONS[1]

Building Element	Mandatory
Roof:	
Absorptance	≤ 0.22
R-value (U-value)	R-40 (U≤0.025)
Wall:	
Above grade wall:	
Absorptance	≤ 0.3
R-value (U-value)	R-30 (U≤0.032)
Below grade wall:	No requirement
Raised Floor Insulation	
R-value (U-value)	R-30 (U≤0.032)
Window:	
40% WW Ratio maximum	
U-factor	≤ ~~0.45~~ 0.75
SHGC ~~(by window area)~~	≤ 0.25
~~0-40% WW Ratio~~	~~0.19~~
~~>40 WW Ratio~~	
Skylights:	
SHGC	≤ ~~0.19~~ 0.35
Skylight U-value	≤ 1.36
Opaque Door U-value	
Swinging	≤ U-0.7
Non-swinging	≤ U-1.45

[1]Equipment and lighting shall meet the minimum efficiencies of Section 503, 504 and 505, respectively.

Date Proposal Submitted	3/26/2010	**Section**	502.1.1.1(1)&(2)
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Roger LeBrun	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Coordinate Skylight U-Factor and SHGC requirements with ASHRAE 90.1-2007, in general.

Rationale

ASHRAE has recognized that the value of skylights is the light they provide. Reducing SHGC below 0.35 makes it less likely that sufficient daylight can be transmitted to allow artificial lighting to be switched off. The previous limit of 0.19 SHGC prevents unit skylights and Low-E glass skylights from being used, unless they are triple glazed.

The U-factor (U-value) change is merely to be fully consistent with the latest ASHRAE 90.1-2007 Table 5.5-1.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Should aid enforcement, since some labeled products could now be used.

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

No impact.

Impact to industry relative to the cost of compliance with code

No impact.

Requirements

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

Allows the use of more natural daylight, which many studies show has beneficial effects on humans.

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

Users would have more options when selecting complying products.

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

Removes discriminating limits that would prevent most types of skylights from use in covered structures.

Does not degrade the effectiveness of the code

In non-residential construction, potential lighting energy savings due to sufficient daylight would be more difficult to achieve unless this proposed change is adopted.

TABLE 502.1.1.1 (1)

ENVELOPE PRESCRIPTIVE MEASURES FOR SHELL BUILDINGS[1,2]

Skylights:	
SHGC	<= ~~0.19~~ 0.35
Skylight U-value	<= ~~1.36~~ 0.75

(portions not changed remain)

-

TABLE 502.1.1.1 (2)

ENVELOPE PRESCRIPTIVE MEASURES FOR RENOVATIONS AND ALTERATIONS[1]

-

Skylights:	
SHGC	<= ~~0.19~~ 0.35
Skylight U-value	<=~~1.36~~ 0.75

(portions not changed remain)

Date Proposal Submitted	4/1/2010	**Section**	502.2.1.1
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Amy Schmidt	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

None

Summary of Modification

Modifiying requirements to coincide with new tables.

Rationale

This code change modification will assist the Florida Building Commission to achieve the 20% increase in energy efficiency in the 2010 Florida Energy Code as mandated by the Florida Legislature in The Energy Act of 2008.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Eases enforcement by adding clarity.

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

Yes, does not alter any of the above.

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

Yes, does not hinder any of the above.

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

Modification will maintain or improve energy efficiency.

502.2.1.1 Shell buildings, renovations and alterations. The sum of the installed ~~minumum thermal resistance (R-value) of the~~ insulating material R-Values shall meet the minimum thermal resistance requirements ~~installed either between the roof framing or continuously on the roof assembly shall be~~ as specified in Table 502.1.1.1 ~~based on construction materials used in the roof assembly~~.

~~**Exception:** Continuously insulated roof assemblies where the thickness of insulation varies 1 inch (25 mm) or less and where the area-weighted U-factor is equivalent to the same assembly with the R-value specified in Table 502.1.1.1.~~

Date Proposal Submitted	4/1/2010	**Section**	502.2.5
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Amanda Hickman	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	Yes

Related Modifications

Mod 4327 - Adds new section 502.2.5.1.3 for SHGC compliance paths in commercial

Summary of Modification

502.2.5.1 Shell buildings, renovations and alterations can comply with related modifcation new section 502.2.5.1.3.

Rationale

This modification is a companion modification to 4327. The same reason applies here.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

There is no fiscal impact to enforcement of the code.

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

It can potentially decrease the cost of code compliance by offering multiple options to accomplish energy savings.

Impact to industry relative to the cost of compliance with code

There may be a slight increase in cost to industry in order to show SHGC equivalency with Table 402.1.1. Some of these costs may include: design guides, product specifications, marketing materials and advanced product development.

Requirements

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

The correct use of shading encourages natural daylighting (as opposed to decreasing the window to wall ration or dark glass) which has been shown to improve productivity and better sense of well being.

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

Yes, this modification encourages product options and flexibility

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

No, this modification encourages product options and flexibility.

Does not degrade the effectiveness of the code

This modification will increase the usability and effectiveness of the code for the building and design community, while ensuring that the new fenestration is energy efficient.

Alternate Language

EN4329-A1

Proponent Roger LeBrun **Submitted** 5/21/2010 **Attachments** Yes

Rationale

Revised proposal is clearer and more faithful to its intent

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change from original proposal

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

No change from original proposal

Impact to industry relative to the cost of compliance with code

No change from original proposal

Requirements

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

See original proposal

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

See original proposal

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

See original proposal

Does not degrade the effectiveness of the code

See original proposal

General Comment

EN4329-G1

Proponent Brian Sernulka **Submitted** 6/1/2010 **Attachments** No

Comment

BCAP believes that the Florida Building Code should be efficient, simple, and enforceable. Any trade-offs or exceptions to code requirements should be narrowly defined so that energy efficiency is improved (or at least maintained), and building officials should not be forced to make on-the-spot decisions about component efficiency. Modifications 4307, 4309, 4317, 4327, and 4329 all fail these basic principles, and should be rejected.

Modification 4329 extends the list of exceptions to fenestration SHGC requirements in modification 4327 to shell buildings, renovations and alterations. The modification suffers from the same compliance and enforcement problems as 4327, and those arguments will not be repeated here. In the context of renovations or alterations, it is not clear why this modification is necessary

or why it would advance energy efficiency. Because we believe it would create enforcement problems, we recommend disapproval of modification 4329.

General Comment

EN4329-G2

Proponent Garrett Stone **Submitted** 6/1/2010 **Attachments** No

Comment

Modification 4329 shares many of the same issues of Modification 4327, and we urge that it be rejected. The commercial chapter of the IECC and ASHRAE 90.1 both contain limited alternatives for designers who use projection factor for overhangs in combination with SHGC. There is no need to expand these alternatives to include the potentially limitless exceptions created by Modifications 4327 and 4329. These exceptions are particularly unwarranted in a replacement context. If the owner of an existing building determines that shading is appropriate or desirable, then overhangs, louvers, films, or other devices can simply be added to existing fenestration. However, if the building owner has determined that the entire window should be replaced, it does not make sense to promote the installation of inferior windows, then attempt to meet the SHGC requirement through one of the exceptions. Modification 4329 should be rejected.

General Comment

EN4329-G3

Proponent Thomas Larson **Submitted** 6/1/2010 **Attachments** No

Comment

SACE's main interest in code revision is to advance energy efficiency as fast and as much as possible, respecting full life-cycle cost effectiveness. Fla. Energy Code should be aligned with IECC 2009 & successive revisions as closely as possible, and contribute to 20% energy improvement over 2007. We offer comment on this proposal:

• The Energy Code Workgroup carefully reviewed the IECC and the Florida Building Code and combined them in a manner that ensured a reasonable level of flexibility for builders, while reaching a 20% improvement in energy efficiency over the 2004 FBC.

• These proposals introduce a long list of alternative products that are not guaranteed to meet the same level of efficiency as the low-SHGC windows proposed in the code. The proposals also introduce a high level of ambiguity into the code and could create problems for code officials.

• Many of the products or devices listed as exceptions to the low-SHGC window requirement are either less durable than windows or can be easily removed by homeowners. There is no reason to allow trade-offs between SHGC, which is rated and labeled to a uniform standard, and products that may not be rated at all.

• It is much easier and more cost effective to install the correct glazing products in the first place. These proposals would create incentives to install windows that are not appropriate for Florida's climate.

• While well-designed shading can bring additional benefits to buildings, credit for shading is confined to computer-simulated compliance methods in which the precise impact can be measured.

• By contrast, the proposed set of alternatives allows shading (and a long list of other practices not typically allowed as trade-offs) to be directly traded off against SHGC.

• The benefits of low-SHGC windows are well settled. They result in lower energy bills, lower peak demand, and a lower environmental impact. These benefits should not be traded away for less certain benefits.

General Comment

EN4329-G4

Proponent jeff inks **Submitted** 6/1/2010 **Attachments** No

Comment

See comment submitted for EN4327

General Comment

EN4329-G5

Proponent Eric Lacey **Submitted** 6/1/2010 **Attachments** No

Comment

RECA recommends disapproval of Mod 4329 for the same reasons as Mod 4327. Mod 4329 should be disapproved because it would defeat the primary objectives for energy code modifications in this code cycle – specifically to improve the Florida code by: (1) tracking the nature, structure and provisions of the IECC, wherever possible; and (2) contributing to a 20% increase in energy efficiency compared to the 2004 Florida Building Code.

First, there are not similar provisions to those proposed in this mod in the IECC for commercial buildings -- the IECC commercial provision is carefully limited to permanent overhangs with specified projection factors and does not include the laundry list of less permanent and less certain shading approaches proposed here. Second, these provisions would not increase energy efficiency (since they are an exception to a requirement) and, due to compliance and other issues, are likely to substantially reduce energy efficiency.

• Calculation of what is “optimal” for overhangs will make code compliance and enforcement very difficult. The calculations required for shading and window films would make the prescriptive option confusing at best, and unenforceable at worst.

• It is not clear how a code official may determine whether the SHGC is “equivalent”.

• It is also not clear how a code official is to calculate whether glazing is “fully shaded” at solar noon on August 21 and “substantially exposed to direct sunlight” on December 21.

These terms are not enforceable and will create liability issues for code officials and builders. Because window SHGC can be objectively determined and labeled, easily verified by building officials, and consistently installed by builders, there is no reason to create this loophole. Mod 4329 should be rejected.

General Comment

EN4329-G6

Proponent Harry Misuriello **Submitted** 6/1/2010 **Attachments** No

Comment

Mod 4329 should not be approved. This is because it proposes SHGC exceptions and trade-offs that are not included in the IECC. Approval of this Mod would represent a departure from the objectives of this code development cycle which include alignment with the IECC structure and provisions. The IECC as published represents the predominant view of the nation's code officials concerning reasonable solar gain control that reduce energy usage and mitigate peak electrical demand in Florida's climate zones. The proposed Mod will also be much different than the comparable provisions in ASHRAE Standard 90.1. Both the IECC and ASHRAE approached are limited to permanent overhangs with well defined projection factors and represent a good public policy solution to offer design flexibility, yet achieve energy savings. The proposed Mod's energy savings are uncertain and undocumented. The proposed Mod also has compliance and enforceability issues in interpreting its complicated requirements. We urge the Task Group and Commission to disapprove this proposed Mod.

Revise text as follows:

502.2.5 Fenestration (Prescriptive).

502.2.5.1 Shell buildings, renovations and alterations. Fenestration shall comply with section 502.2.5.1.3 and Table 502.1.1.1.

Revise text as follows:

502.2.5 Fenestration (Prescriptive).

502.2.5.1 Shell buildings, renovations and alterations. Doors and skylights shall comply with Table 502.1.1.1. Other ~~F~~fenestration shall comply with section 502.2.5.1.3 and Table 502.1.1.1.

Reason Statement for Modification 4327 – Shading Compliance Paths to Table 502.1.1.1

This modification recognizes the benefits provided by the permanent shading of fenestration in residential construction. The concept of shading has been in the 2000, 2003, 2006, and 2009 IECC for commercial buildings and has been proven to be very simple to calculate, fitting well into a prescriptive approach. This language has been derived from California's new mandatory Green Building Standards Code (CALGREEN), which encourages the use of all types of shading products and devices.

This modification allows for the use of permanent shading to meet the solar heat gain coefficient requirements of Table 502.1.1.1. Permanent exterior shading features, such as overhang and other projections, are allowed to be used in commercial construction as a prescriptive trade-off to meeting SHGC requirements within the code.

Allowing flexibility to meet the solar heat gain coefficient requirement through the use of proven shading alternatives will increase the usability of the code for the building and design community, while ensuring that the new fenestration is energy efficient. When credit for shading is permitted in the code, it encourages an integrated approach to building designs, energy use, construction materials, renewable resources, particularly as part of urban infrastructure, site and town planning and building design to be considered holistically. It also creates the opportunity for aesthetically pleasing and ingenious designs that might not otherwise be permitted. Shading in modern construction offers many possibilities, some yet to be fully explored.

Date Proposal Submitted	3/26/2010	**Section**	502.2.5.1.1
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Roger LeBrun	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Allow for higher percentage of skylight area when automatic multi-level lighting controls are utilized.

Rationale

To take better advantage of the available daylight in a cost-effective and energy-efficient manner, where appropriate. Also, enables reduction in peak power load.

This approach is consistent with efforts by the DOE to add similar language to the IECC, and with recent changes to ASHRAE 90.1-2007.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact expected.

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

Will not increase, and should decrease operating costs.

Impact to industry relative to the cost of compliance with code

No impact.

Requirements

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

Encourages the use of more natural daylight, which many studies show has beneficial effects on humans.

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

Increases energy efficiency beyond the draft language.

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

This change has no effect on the choices available for the building community.

Does not degrade the effectiveness of the code

Enhances the effectiveness of the code by reaping a larger percentage of the renewable (and costless) energy of the sun.

General Comment

EN3926-G1

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

Original IECC language should be retained as no Florida specific reason is given for this change. If it is such a good idea, it should be submitted for national consideration and acceptance at the International Code Council.

502.2.5.1.1~~3.1~~ Maximum area. The vertical fenestration area (not including opaque doors) shall not exceed the percentage of the gross wall area specified in Table 502.1.1.1 ~~502.3~~. The skylight area shall not exceed 3 ~~the~~ percent~~age~~ of the gross roof area ~~specified in Table 502.3~~.

EXCEPTION: The skylight area is permitted to be increased to a maximum of 5 percent of the gross roof area when the artificial general lighting in the daylight zone under said skylights is automatically controlled by multi-level lighting controls.

Date Proposal Submitted	4/1/2010	**Section**	502.2.5.1.3 (New)
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Amanda Hickman	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	Yes

Related Modifications

Mod 4329 - 502.2.5.1 Shell buildings, renovations and alterations can comply with this new section.

Summary of Modification

Adds a new section: 502.2.5.1.3 on Permanent Shading through different compliance paths on how to meet the requirements of Table 502.1.1.1.

Rationale

See attached

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

There is no fiscal impact to enforcement of the code.

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

It can potentially decrease the cost of code compliance by offering multiple options to accomplish energy savings.

Impact to industry relative to the cost of compliance with code

There may be a slight increase in cost to industry in order to show SHGC equivalency with Table 402.1.1. Some of these costs may include: design guides, product specifications, marketing materials and advanced product development.

Requirements

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

The correct use of shading encourages natural daylighting (as opposed to decreasing the window to wall ration or dark glass) which has been shown to improve productivity and better sense of well being.

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

Yes, this modification encourages product options and flexibility.

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

No, this modification encourages product options and flexibility.

Does not degrade the effectiveness of the code

This modification will increase the usability and effectiveness of the code for the building and design community, while ensuring that the new fenestration is energy efficient.

Alternate Language

EN4327-A1

Proponent Roger LeBrun **Submitted** 5/21/2010 **Attachments** Yes

Rationale

Revised proposal is clearer, more faithful to its intent, and more specific in its criteria.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Same as original proposal, but with clearer language.

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

No change from original proposal.

Impact to industry relative to the cost of compliance with code

No change from original proposal.

Requirements

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

See original proposal.

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

See original proposal.

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

See original proposal.

Does not degrade the effectiveness of the code

See original proposal.

General Comment

EN4327-G1

Proponent Brian Sernulka **Submitted** 6/1/2010 **Attachments** No

Comment

Modification 4327 creates three new exceptions to the fenestration SHGC requirement in commercial building. The modification is unnecessary and does not bring the benefits outlined in the supporting statement. The commercial chapter of the 2009 IECC and ASHRAE 90.1-2010 contain very narrow, calculated methods for calculating the effects of projection factor on fenestration. To the extent that the Florida Building Code uses projection factor trade-offs, this is the most reasonable way to include them. Modification 4327 goes beyond the current projection factor trade-offs by adding a list of open-ended exceptions to the fenestration SHGC requirements. Although the proponent claims that this proposal would "increase the usability of the code for

the building and design community," it actually creates the same compliance and enforcement problems as modification 4309, and it would not yield any additional energy efficiency.

The reason statement also conflicts with the likely outcome of the modification. Although the proponent argues that "the correct use of shading encourages natural daylighting," the proposal (by referencing the definition of "permanent shading device" proposed in Modification 4307) would actually encourage the use of window films that can cut substantially into the amount of daylight entering the building. While the proponent's reason statement primarily addresses overhangs, the language of the modification goes well beyond the use of overhangs and creates a long list of potential exceptions to the SHGC requirement. We recommend disapproval of Modification 4327.

General Comment

EN4327-G2

Proponent Garrett Stone **Submitted** 6/1/2010 **Attachments** No

Comment

Modification 4327 contains many of the same problems of Modifications 4309 and 4317 and should also be rejected. The long list of exceptions to the SHGC requirement makes no more sense in a commercial setting than in a residential setting.

Although the residential chapter of the IECC allows no prescriptive SHGC trade-offs for overhangs, the commercial chapter of the IECC and ASHRAE 90.1 allow a limited amount of trading between the projection factor of overhangs and SHGC in the prescriptive path. However, that alternative is narrowly limited to overhangs and the calculation is explicitly defined within the codes. The language of 4327, by contrast, establishes an extremely broad set of exceptions going well beyond overhangs that will undercut crucial SHGC requirements, and does not adequately explain how a builder or code official should determine equivalence among the various shading alternatives. What overhangs are "optimal" may vary greatly from one designer to another, unless the term is defined in the code. Similarly, "south-facing" is subject to a wide interpretation. These terms go well beyond the projection factor calculation that is rigidly defined in the current model codes for commercial fenestration, and they reduce the level of clarity in the code. For these reasons, we believe Modification 4327 should be disapproved.

General Comment

EN4327-G3

Proponent Thomas Larson **Submitted** 6/1/2010 **Attachments** No

Comment

SACE's main interest in code revision is to advance energy efficiency as fast and as much as possible, respecting full life-cycle cost effectiveness. Fla. Energy Code should be aligned with IECC 2009 & successive revisions as closely as possible, and contribute to 20% energy improvement over 2007. We offer comment on this proposal:

• The Energy Code Workgroup carefully reviewed the IECC and the Florida Building Code and combined them in a manner that ensured a reasonable level of flexibility for builders, while reaching a 20% improvement in energy efficiency over the 2004 FBC.

• These proposals introduce a long list of alternative products that are not guaranteed to meet the same level of efficiency as the low-SHGC windows proposed in the code. The proposals also introduce a high level of ambiguity into the code and could create problems for code officials.

• Many of the products or devices listed as exceptions to the low-SHGC window requirement are either less durable than windows or can be easily removed by homeowners. There is no reason to allow trade-offs between SHGC, which is rated and labeled to a uniform standard, and products that may not be rated at all.

• It is much easier and more cost effective to install the correct glazing products in the first place. These proposals would create incentives to install windows that are not appropriate for Florida's climate.

• While well-designed shading can bring additional benefits to buildings, credit for shading is confined to computer-simulated compliance methods in which the precise impact can be measured.

• By contrast, the proposed set of alternatives allows shading (and a long list of other practices not typically allowed as trade-offs) to be directly traded off against SHGC.

• The benefits of low-SHGC windows are well settled. They result in lower energy bills, lower peak demand, and a lower environmental impact. These benefits should not be traded away for less certain benefits.

General Comment

EN4327-G4

Proponent Eric Lacey **Submitted** 6/1/2010 **Attachments** No

Comment

Mod 4327 suffers from many of the same problems as Mods 4309, 4317 and 4329, but also presents issues unique to the commercial setting. Although the IECC and ASHRAE Standard 90.1 both allow a prescriptive projection factor trade-off only for commercial buildings, that trade-off only applies to overhangs and is clearly defined. If the Commission intends to incorporate a projection factor trade-off in commercial construction, we recommend that the exception stick to the more limited approach of either ASHRAE or IECC.

Mod 4327 should be rejected because it creates an almost open-ended list of SHGC trade-offs without any demonstration that the trade-offs are equivalent. Although terms like "adherent shading material or device" are not defined, we assume this is intended to include window films. No other state or national energy code that we are aware of contains SHGC trade-offs for window films or for an "adherent shading material or device." Mod 4327 contains terminology that is not appropriate for mandatory code, and it would place code officials in the difficult position of determining what qualifies for the trade-off. Terms such as "optimal," "equivalent" and "substantially exposed to direct sunlight" are not enforceable and will create liability issues for code officials and builders. Because window SHGC can be objectively determined and labeled, easily verified by building officials, and consistently installed by builders, there is no reason to create this loophole. Mod 4327 should be rejected.

General Comment

EN4327-G5

Proponent jeff inks **Submitted** 6/1/2010 **Attachments** No

Comment

We recommend disapproval of this proposal. Prescriptive requirements for permanent shading should be considered much more thoroughly if they are to be included in the code, if at all. Permanent shading is not a prescriptive attribute for which selecting an option from a limited set of provisions can be relied upon to implement it correctly and effectively. There are many factors that must be carefully considered in order to do so, and if implemented incorrectly, can result in less efficient building operation and greater energy consumption. Providing prescriptive permanent shading options is also not necessary to achieve the state's objective of increasing the stringency of the Florida 2010 energy code by 20%.

General Comment

EN4327-G6

Proponent Harry Misuriello **Submitted** 6/1/2010 **Attachments** No

Comment

Mod 4327 should not be approved. This is because it proposes SHGC exceptions and trade-offs that are not included in the IECC. Approval of this Mod would represent a departure from the objectives of this code development cycle which include alignment with the IECC structure and provisions. The IECC as published represents the predominant view of the nation's code officials concerning reasonable solar gain control that reduce energy usage and mitigate peak electrical demand in Florida's climate zones. The proposed Mod will also be much different than the comparable provisions in ASHRAE Standard 90.1. Both the IECC and ASHRAE approached are limited to permanent overhangs with well defined projection factors and represent a good public policy solution to offer design flexibility, yet achieve energy savings. The proposed Mod's energy savings are uncertain and undocumented. The proposed Mod also has compliance and enforceability issues in interpreting its complicated requirements. We urge the Task Group and Commission to disapprove this proposed Mod.

Add new text as follows:

502.2.5.1.3 Permanent Shading. Where Table 502.1.1.1 requires a solar heat gain coefficient (SHGC), the requirements shall be met by either:

1. Installing fenestration products that have an area weighted average SHGC equal to or lower than those shown in Table 502.1.1.1, or

2. A permanent shading device, such as, but not limited to, an exterior louver that provides the equivalent solar heat gain coefficient as required in Table 502.1.1.1. Exterior shading devices must be permanently attached to the outside of the structure with fasteners that require additional tools or equipment to remove (as opposed to clips, hooks, latches, snaps, or ties), or

3. A combination of adherent shading material or device and fenestration product to achieve the equivalent solar heat gain coefficient as required in Table 502.1.1.1.

4. For south-facing glazing by optimal overhangs constructed or installed so that the south-facing glazing is fully shaded at solar noon on August 21 and substantially exposed to direct sunlight at solar noon on December 21.

Add new text as follows:

502.2.5.1.3 Permanent WindowShading. Where Table 502.1.1.1 requires a window solar heat gain coefficient (SHGC), the requirements shall be met by either:

1. Installing ~~fenestration products~~ windows that have an area weighted average SHGC equal to or lower than that shown in Table 502.1.1.1, or

2. ~~A~~ Utilizing a permanent shading device, such as, but not limited to, an exterior louver that provides the equivalent solar heat gain coefficient as required in Table 402.1.1. ~~Exterior~~ Such shading devices must be permanently attached to the outside of the structure with fasteners that require additional tools or equipment to remove (as opposed to clips, hooks, latches, snaps, or ties), or

3. ~~A~~ Utilizing a combination of adherent shading material or device and ~~fenestration product~~ window to achieve the equivalent solar heat gain coefficient as required in Table 502.1.1.1

~~4. For south-facing glazing by optimal o~~Overhangs shall be constructed or installed so that the south-facing glazing is fully shaded at solar noon on August 21 and ~~substantially~~ 80% exposed to direct sunlight at solar noon on December 21.

Reason Statement for Modification 4327 – Shading Compliance Paths to Table 502.1.1.1

This modification recognizes the benefits provided by the permanent shading of fenestration in residential construction. The concept of shading has been in the 2000, 2003, 2006, and 2009 IECC for commercial buildings and has been proven to be very simple to calculate, fitting well into a prescriptive approach. This language has been derived from California's new mandatory Green Building Standards Code (CALGREEN), which encourages the use of all types of shading products and devices.

This modification allows for the use of permanent shading to meet the solar heat gain coefficient requirements of Table 502.1.1.1. Permanent exterior shading features, such as overhang and other projections, are allowed to be used in commercial construction as a prescriptive trade-off to meeting SHGC requirements within the code.

Allowing flexibility to meet the solar heat gain coefficient requirement through the use of proven shading alternatives will increase the usability of the code for the building and design community, while ensuring that the new fenestration is energy efficient. When credit for shading is permitted in the code, it encourages an integrated approach to building designs, energy use, construction materials, renewable resources, particularly as part of urban infrastructure, site and town planning and building design to be considered holistically. It also creates the opportunity for aesthetically pleasing and ingenious designs that might not otherwise be permitted. Shading in modern construction offers many possibilities, some yet to be fully explored.

Date Proposal Submitted	3/29/2010	**Section**	503
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Mangesh Basarkar	**General Comments**	Yes
Attachments	No	**Alternate Language**	Yes

Related Modifications

Summary of Modification

Modification to reference (baseline) building HVAC equipment suppy and return fan power calculation

Rationale

Contrary to earlier interpretation, the intent of the ASHRAE 90.1 Energy Cost Budget Method (ECBM) code compliance in case of fan power suggests this methodology to be the correct approach.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Proposed modification will have no impact on enforcement of code

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

There will be minimal impact to building and property owners relative to cost of code compliance

Impact to industry relative to the cost of compliance with code

There will be no impact to industry relative to cost of code compliance

Requirements

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

Proposed modification has no substantial connection with the health, safety and welfare of the general public

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

Proposed modification strengthens the existing code

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

Proposed modification does not discriminate against any materials, products, methods or system of construction

Does not degrade the effectiveness of the code

Proposed modification does not degrade the effectiveness of the code

Alternate Language

EN4061-A1

Proponent Ann Stanton **Submitted** 5/24/2010 **Attachments** Yes

Rationale

Method A become Section 506 with the change to the IECC. Baseline becomes Standard Reference Design.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None.

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

None.

Impact to industry relative to the cost of compliance with code

None.

Requirements

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

Correcting terms only.

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

Yes. Uses consistent terms.

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

No.

Does not degrade the effectiveness of the code

No.

General Comment

EN4061-G1

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

Proponent indicates that is the correct interpretation of 90.1, but does not cite an edition. Is it the version cited in the base IECC that we are integrating? If not, it should wait until the next code cycle as part of that base code. Also, what is the basis for changing the interpretation?

Proposal:

A modification to the reference building HVAC system supply and return fan power calculation when using Method A (whole building simulation) for Florida Energy Code compliance is proposed. The current code always uses the prescriptive value from Table 503.2.10.1(1) for fan power of the reference (baseline) building HVAC system regardless of the values used for the design (proposed) building HVAC system. It is proposed that this be modified to use the smaller of the fan power value from Table 503.2.10.1(1) or the equivalent design building HVAC system fan power value.

This modification can be reflected in the code in the form of foot note '2' to be added to table 503.2.10.1(1) as shown below.

Table 503.2.10.1(1)
FAN POWER LIMITATION[1,2]

	Limit	Constant Volume	Variable Volume
Option 1: Fan System Motor Nameplate hp	Allowable nameplate motor hp	Hp = CFM_S x 0.0011	Hp = CFM_{Ss} x 0.0015
Option 2: Fan System bhp	Allowable fan system bhp	Bhp = CFM_S x 0.00094 + A	Bhp = CFM_{Ss} x 0.0013 + A

[1] Where:

CFM_S = the maximum design supply airflow rate to conditioned spaces served by the system in cubic feet per minute.

Hp = the maximum combined motor nameplate horsepower

Bhp = the maximum combined fan brake horsepower

A = sum of (PD x CFM_d/4131)

Where:

PD = each applicable pressure drop adjustment from Table 503.2.10.1(1) in in. w.c.

CFM_D = the design airflow through each applicable device from Table 503,2,10.1(2) in cubic feet per minute.

[2] For Method A, the baseline building HVAC system will use the smaller value of the appropriate fan power from table 503.2.10.1(1) or the equivalent proposed (design) building HVAC system fan power for supply and return fans

[Table ok as is]

[2] For Section 506 ~~Method A~~, the Standard Reference Design ~~baseline~~ building HVAC system will use the smaller value of the appropriate fan power from table 503.2.10.1(1) or the equivalent proposed (design) building HVAC system fan power for supply and return fans

Date Proposal Submitted	3/29/2010	**Section**	503.2.1
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Robert Volin	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

None

Summary of Modification

Oversight, Reference to ACCA Manual N was left out

Rationale

Oversight, Reference to ACCA Manual N was left out

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

No

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

States equivalent method

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

No

Does not degrade the effectiveness of the code

No

503.2.1 Calculation of heating and cooling loads. Design loads shall be determined in accordance with the procedures described in the ASHRAE/ ACCA Standard 183 and ACCA Manual N shall be attached to the code compliance form submitted to the building department when the building is permitted or, in the event the mechanical permit is obtained at a later time, the sizing calculation shall be submitted with the application for the mechanical permit.. Heating and cooling loads shall be adjusted to account for load reductions that are achieved when energy recovery systems are utilized in the HVAC system in accordance with the ASHRAE HVAC Systems and Equipment Handbook. Alternatively, design loads shall be determined by an approved equivalent computation procedure, using the design parameters specified in Chapter 3.

Date Proposal Submitted	3/22/2010	**Section**	503.2.3
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Add room air conditioners and room air conditioner heat pump requirements to Table 503.2.3(3).

Rationale

Did not notice that room units were not included in the IECC tables until after the text had gone through the Work Group. These requirements have been in the code for years.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Replaces current requirements into the code.

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

None.

Impact to industry relative to the cost of compliance with code

None.

Requirements

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

Yes.

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

Returns criteria to the code omitted by oversight.

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

No.

Does not degrade the effectiveness of the code

No.

TABLE 503.2.3(3) [in part]

Electrically Operated

Packaged Terminal Air Conditioners, Packaged Terminal Heat Pumps,

Single-Package Vertical Air Conditioners, Singe-Package Vertical Heat Pumps, Room Air Conditioners, and Room Air Conditioner Heat Pumps –

Minimum Efficiency Requirements

Equipment Type	Size Category	Subcategory or Rating Condition	Minimum Efficiency[1]	Test Procedure[2]
Room Air Conditioners with Louvered Sides	<6,000 Btu/h		9.7 SEER	ANSI/AHAM RAC-1
	=6,000<8,000 Btu/h		9.7 EER	
	>8,000<14,000Btu/h		9.8 EER	
	>14,000<20,000Btu/h		9.7 EER	
	>20,000 Btu/h		8.5 EER	
Room Air Conditioners, without Louvered Sides	<8,000 Btu/h		9.0 EER	
	>8,000 Btu/h and <20,000 Btu/h		8.5 EER	
Room Air Conditioner Heat Pumps with Louvered Sides	<20,000 Btu/h		9.0 EER	
	=20,000 Btu/h		8.5 EER	
Room Air Conditioner Heat Pumps without Louvered Sides	<14,000 Btu/h		8.5 EER	
	=14,000 Btu/h		8.0 EER	

Date Proposal Submitted	3/30/2010	**Section**	503.2.3
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

Corrects treatment of "small duct high velocity" and Space constrained products and corrects the title of Table 503.2.3(2).

Rationale

The 8/17/04 Federal Register defined Space Constrained Products, set interim standards for them with an increase in efficiency for January 2010, and allowed Small Duct High Velocity systems a lower efficiency pending a later rulemaking. ASHRAE Addenda f eliminates the Small Duct High Velocity category. This proposal adds a category for SCPHP heating mode per the 8/17/04 USDOE Federal Register and changes the title of Table 503.2.3(2) to agree with Table 6.8.1B of ASHRAE 90.1-04.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Follows federal law.

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

None. Higher efficiencies are required by federal law.

Impact to industry relative to the cost of compliance with code

Industry will have to upgrade to the higher efficiencies to follow federal law.

Requirements

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

Yes, increases the required efficiency of various equipment.

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

Yes.

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

Follows federal law.

Does not degrade the effectiveness of the code

No.

TABLE 503.2.3(1)

UNITARY AIR CONDITIONERS AND CONDENSING UNITS, ELECTRICALLY OPERATED,

MINIMUM EFFICIENCY REQUIREMENTS

Equipment Type	Size Category	Sub-Category or Rating Condition	Minimum Efficiency[b]	Test Procedure[a]
Through-the Wall, Air-cooled	=30,000 Btu/h[d]	Split System	12.0 SEER	AHRI 210/240
		Single Package	12.0 SEER	
~~Small-Duct High-Velocity, Air-cooled~~	~~<65,000 Btu/h~~[e]	~~Split system~~ or ~~Single Package~~	~~11.0 SEER~~	
Space constrained products, air conditioners	<65,000 Btu/h[c]	Split system or Single Package	12.0 SEER[e]	

For SI: 1 British thermal unit per hour = 0.2931 W.

[a] Chapter 6 contains a complete specification of the reference test procedure, including the referenced year version of the test procedure.

[b] IPLVs and part load rating conditions are only applicable to equipment with capacity modulation.

[c] Deduct 0.2 from the required EERs and IPLVs for units with a heating section other than electric resistance heat.

[d]Single-phase, air-cooled air-conditioners <65,000 Btu/h are regulated by NAECA. SEER values are those set by NAECA.

[e]As granted by U.S. Department of Energy letter of exception, specific to individual companies, SDHV products without a letter of exception shall have the same efficiency as air-cooled air-conditioners.

TABLE 503.2.3(2)

UNITARY AND APPLIED ~~AIR CONDITIONERS, HEAT PUMPS, AND CONDENSING UNITS,~~ ELECTRICALLY OPERATED,

MINIMUM EFFICIENCY REQUIREMENTS

Equipment Type	Size Category	Sub-Category or Rating Condition	Minimum Efficiency[b]	Test Procedure[a]

Through-the Wall, Air-cooled cooling mode	<30,000 Btu/h[d]	Split System	12.0 SEER	AHRI 210/240
		Single Package	12.0 SEER	
~~Small Duct High Velocity,~~ ~~Air cooled~~	~~<65,000 Btu/h[e]~~	~~Split system or Single Package~~	~~11.0 SEER~~	
Space constrained products, heat pumps ~~air conditioners~~, cooling mode	<65,000 Btu/h[e]	Split system or Single Package	12.0 SEER[e]	
Space constrained products, heat pumps, heating mode	<65,000 Btu/h	Split system or Single Package	7.4 HSPF	
Through the wall (Air cooled, heating mode)	<30,000 Btu/h	Split system	7.4 HSPF	~~AHRI 210/240~~
		Single package	7.4 HSPF	

For SI: °C – [(°F) – 32]/1.8 British thermal unit per hour – 0.2931 W. db = dry-bulb temperature, °F wb = wet-bulb temperature, °F

[a] Chapter 6 contains a complete specification of the reference test procedure, including the referenced year version of the test procedure.

[b] IPLVs and part load rating conditions are only applicable to equipment with capacity modulation.

[c] Deduct 0.2 from the required EERs and IPLVs for units with a heating section other than electric resistance heat.

[d]Single-phase, air-cooled air-conditioners <65,000 Btu/h are regulated by NAECA. SEER values are those set by NAECA.

[e]As granted by U.S. Department of Energy letter of exception, specific to individual companies, SDHV products without a letter of exception shall have the same efficiency as air-cooled air-conditioners.

Therefore, for the reasons given in the interim rule and in this document, we are adopting the interim rule as a final rule without change.

This action also affirms the information contained in the interim rule concerning Executive Order 12866 and the Regulatory Flexibility Act, Executive Orders 12372 and 12988, and the Paperwork Reduction Act.

Further, for this action, the Office of Management and Budget has waived its review under Executive Order 12866.

List of Subjects in 7 CFR Part 301

Agricultural commodities, Plant diseases and pests, Quarantine, Reporting and recordkeeping requirements, Transportation.

PART 301—DOMESTIC QUARANTINE NOTICES

■ Accordingly, we are adopting as a final rule, without change, the interim rule that amended 7 CFR part 301 and that was published at 68 FR 43286–43287 on July 22, 2003.

Authority: 7 U.S.C. 7701–7772; 7 CFR 2.22, 2.80, and 371.3.

Section 301.75–15 also issued under Sec. 204, Title II, Pub. L. 106–113, 113 Stat. 1501A–293; sections 301.75–15 and 301.75–16 also issued under Sec. 203, Title II, Pub. L. 106–224, 114 Stat. 400 (7 U.S.C. 1421 note).

Done in Washington, DC, this 11th day of August 2004.

W. Ron DeHaven,

Administrator, Animal and Plant Health Inspection Service.

[FR Doc. 04–18784 Filed 8–16–04; 8:45 am]

BILLING CODE 3410–34–P

DEPARTMENT OF ENERGY

Office of Energy Efficiency and Renewable Energy

10 CFR Part 430

[Docket Number EE–RM–98–440]

RIN 1904–AB46

Energy Conservation Program for Consumer Products; Central Air Conditioners and Heat Pumps Energy Conservation Standards

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Final rule; technical amendment.

SUMMARY: The Department of Energy (DOE) is revising the Code of Federal Regulations to incorporate certain energy conservation standards that will apply to residential central air conditioners and central air conditioning heat pumps beginning on January 23, 2006. More specifically, this technical amendment replaces standard levels currently in the Code of Federal Regulations, which were established by a final rule published by DOE on May 23, 2002, with standard levels that were set forth in a final rule published by DOE on January 22, 2001. As explained in the Supplementary Information section of this notice, the U.S. Court of Appeals for the Second Circuit has ruled that DOE's withdrawal of the rule published on January 22, 2001, was unlawful, and, therefore, that certain standards promulgated in the May 23, 2002, final rule are invalid. DOE has decided not to seek further review of that ruling. Consequently, DOE is now revising its regulations consistent with the court's ruling.

EFFECTIVE DATE: February 21, 2001.

ADDRESSES: For access to the docket to read background documents or comments received, go to *http://www.eere.energy.gov/buildings/appliance_standards/residential/ac_central.html* and/or visit the U.S. Department of Energy, Forrestal Building, Room 1J–018 (Resource Room of the Building Technologies Program), 1000 Independence Avenue, SW., Washington, DC, (202) 586–9127, between 9 a.m. and 4 p.m., Monday through Friday, except Federal holidays. Please call Ms. Brenda Edwards-Jones at the above telephone number for additional information regarding visiting the Resource Room. Please note: The Department's Freedom of Information Reading Room (formerly Room 1E–190 at the Forrestal Building) is no longer housing rulemaking materials.

FOR FURTHER INFORMATION CONTACT: Michael Raymond, Project Manager, Energy Conservation Standards for Central Air Conditioners and Heat Pumps, Docket No. EERM–440, EE–2J/ Forrestal Building, U.S. Department of Energy, Office of Building Technologies, EE–2J, 1000 Independence Avenue, SW., Washington, DC 20585–0121, (202) 586–9611. E-mail: *michael.raymond@ee.doe.gov*.

SUPPLEMENTARY INFORMATION:

I. Background

The National Appliance Energy Conservation Act of 1987 (NAECA) (Pub. L. 100–12) established energy efficiency standards for various consumer products, including residential central air conditioners, and directed DOE to undertake periodic rulemakings to decide whether to amend those standards. NAECA also amended the Energy Policy and Conservation Act (EPCA) to provide, in section 325(o)(1), that when DOE reviews efficiency standards, it "may not prescribe any amended standard which increases the maximum allowable energy use * * * or decreases the minimum required energy efficiency" of a covered product (42 U.S.C. 6295(o)(1)).

On January 22, 2001, DOE published a rule in the **Federal Register** amending the efficiency standard for central air conditioners established by NAECA by increasing the standard from 10 to 13 SEER ("seasonal energy efficiency ratio"), a 30% increase in energy efficiency. 66 FR 7170. The rule stated it would become effective on February 21, 2001, but manufacturers' products would not have to meet the 13 SEER standard until January 23, 2006. On January 24, 2001, the President's Chief of Staff issued a memorandum asking Executive Branch agencies to review ongoing rulemaking proceedings and to postpone the effective dates of any new regulations already published in the **Federal Register** but not yet effective, pending completion of such review. DOE accordingly issued a rule delaying the effective date of the central air conditioner rule published on January 22, 2001, in order to conduct that review. 66 FR 8745. DOE also received a petition from the Air-Conditioning and Refrigeration Institute (ARI), an association of air conditioner manufacturers, asking DOE to reconsider the 13 SEER standard. On May 23, 2002, DOE withdrew the 13 SEER rule and promulgated a new rule establishing a 12 SEER efficiency standard, a 20% increase in energy efficiency. 67 FR 36368.

The Natural Resources Defense Council (NRDC) and various public interest groups, joined by several state Attorneys General, filed suit in federal district court, and alternatively in the U.S. Court of Appeals for the Second Circuit, challenging DOE's withdrawal of the 13 SEER rule and promulgation of the 12 SEER standard. Among other things, they alleged that section 325(o)(1) of EPCA precluded DOE from adopting the 12 SEER rule.

On January 13, 2004, the U.S. Court of Appeals for the Second Circuit decided that once DOE published the 13 SEER rule for central air conditioners in the **Federal Register**, DOE was precluded from subsequently adopting a lower standard for those products. Thus, DOE's actions of withdrawing the 13 SEER standard and promulgating the 12 SEER standard violated section 325(o)(1). *Natural Resources Defense*

Council, et al. v. *Abraham,* 355 F.3d 179 (2nd Cir. 2004). The court's written opinion disclaimed any intent to affect a challenge to the 13 SEER standard that ARI and certain manufacturers had filed in the U.S. Court of Appeals for the Fourth Circuit. Nonetheless, ARI and the manufacturers who joined it in the Fourth Circuit lawsuit subsequently withdrew their challenge to the 13 SEER rule, citing the need for regulatory certainty.

On April 2, 2004, DOE publicly announced that, in the interest of giving all affected persons regulatory certainty, DOE would not appeal or seek further review of the ruling of the U.S. Court of Appeals for the Second Circuit. As a result, the 13 SEER standard will apply to covered conventional central air conditioners and central air conditioning heat pumps manufactured on or after January 23, 2006. Today's technical amendment places those standards in the Code of Federal Regulations.

II. Summary of Today's Action

DOE is revising the energy conservation standards for split system and single package central air conditioners and central air conditioning heat pumps in 10 CFR 430.32(c)(2). The standards currently set forth in the Code of Federal Regulations are 12 SEER for split system and single package air conditioners, and 12 SEER, 7.4 HSPF ("heating system performance factor") for split system and single package heat pumps. DOE is replacing these standards with the following standards established in the January 22, 2001 final rule: 13 SEER for split system and single package air conditioners, and 13 SEER, 7.7 HSPF for split system and single package heat pumps.

The January 22, 2001, final rule also established a separate product class of "space constrained products," but it did not establish amended standard levels for those products. DOE explained in the preamble to the January 22, 2001, final rule that it was concerned that air conditioners and heat pumps intended to serve applications with severe space constraints would have difficulty in meeting the 13 SEER standard. 66 FR 7196. Therefore, DOE established a separate product class for space constrained products and reserved setting standard levels for that class pending completion of later rulemaking proceedings. Subsequently, in the rulemaking culminating in the May 23, 2002, final rule, DOE determined that 12 SEER was the appropriate standard level for all space constrained products except those with through-the-wall condensers, and the final rule established lower standards for through-the-wall products. 67 FR 36402–03, 36406. The standards established for space constrained products in the May 23, 2002, final rule are unaffected by the January 13, 2004, ruling of the U.S. Court of Appeals for the Second Circuit because the January 22, 2001, final rule set no standards for these products and, thus, section 325(o)(1) of EPCA does not affect the validity of the standards for these products that were published on May 23, 2002.

The May 23, 2002, final rule set forth a compliance date of January 23, 2006, for all of the efficiency standards promulgated in that rule, including the standards for space-constrained products. This is the same compliance date set forth in the January 22, 2001, final rule for the standards promulgated in that rule. The May 23, 2002, rule's preamble discussed why DOE was adopting the January 23, 2006, compliance date. 67 FR 36394. DOE recognized that by adopting that date, the time between publication of the May 23, 2002 rule and the compliance date would be less than the five-year interval provided in the statute (42 U.S.C. 6295(d)(3)(A)). DOE explained that when it cannot meet a statutory deadline to promulgate a rule (as was the case with the products covered by the January 22, 2001, and May 23, 2002, final rules), it generally will adjust the date such rule becomes enforceable to allow for the same amount of lead time as provided in the statute, but that in special circumstances DOE will not follow that practice. DOE stated it would set the effective date for the standards adopted in the May 23, 2002, final rule at less than five years from the date of publication because all of the participants in the rulemaking, including representatives of the manufacturers who would have to comply with the standards and who had expressed a view about the matter, had agreed that five years of lead time was not needed for central air conditioner manufacturers to come into compliance with the standards adopted in the May 23, 2002, final rule. DOE stated, however, that if, as a result of unforeseen circumstances, a particular manufacturer could show hardship, inequity, or unfair distribution of burdens, the effective date would be subject to case-by-case exception pursuant to the authority of the DOE Office of Hearings and Appeals under section 504 of the Department of Energy Organization Act (42 U.S.C. 7194), as implemented at subpart B of 10 CFR part 1003.

DOE is today adding to § 430.2 the definition of "space constrained product" that was contained in the January 22, 2001, final rule and adding the following standard levels set in the May 23, 2002, final rule: 12 SEER for space constrained air conditioners, and 12 SEER, 7.4 HSPF for space constrained heat pumps. The standards for through-the-wall air conditioners and heat pumps, which fall within the definition of "space constrained product," were set in the May 23, 2002, final rule, and are: 10.9 SEER, 7.1 HSPF for split systems and 10.6 SEER, 7.0 HSPF for single package systems. The definition of "through-the-wall air conditioner and heat pump" in § 430.2 provides that this product class exists only for products manufactured prior to January 23, 2010. After that date, the standards for space constrained products will apply to these through-the-wall air conditioners and heat pumps.

The January 22, 2001, final rule did not establish a separate product class for covered central air conditioners that are small duct, high velocity systems, and the rule did not establish separate standards for them; nor are these products "space constrained products" (*see* discussion at 66 FR 7197). Therefore, small duct, high velocity systems are covered by the 13 SEER standard. However, in the May 23, 2002, notice of final rulemaking, DOE explained that information obtained in the rulemaking proceeding indicated that the special characteristics of small duct, high velocity systems made it unlikely such systems could even meet the 12 SEER/7.4 HSPF standard established for conventional products. 67 FR 36396. As a result, DOE included the NAECA-prescribed values for small duct, high velocity systems in the Code of Federal Regulations pending a later rulemaking to establish appropriate standards for that product class. Because the Second Circuit's ruling prevents DOE from adopting a standard lower than 13 SEER for small duct, high velocity systems, despite DOE's later conclusion that it is unlikely such systems can meet even the lower 12 SEER standard, DOE has advised the two manufacturers of these systems of the procedure available to affected persons under section 504 of the Department of Energy Organization Act (42 U.S.C. 7194), which allows them to request relief from hardship or inequity caused by a regulation issued under EPCA.

Lastly, DOE is revising § 430.2 to remove several definitions that were included to implement DOE's interpretation of section 325(o)(1) of EPCA contained in the preamble of the May 23, 2002, final rule. Because its

interpretation has been rejected by the U.S. Court of Appeals for the Second Circuit, DOE is removing the definitions of "effective date," "maximum allowable energy use," "maximum allowable water use," and "minimum required energy efficiency."

III. Procedural Requirements

A. Public Comment

Section 553 of the Administrative Procedure Act (5 U.S.C. 553) generally requires agencies to provide notice and an opportunity for public comment on substantive rules. The requirement does not apply, however, if the agency determines that notice and opportunity for public comment is "impracticable, unnecessary, or contrary to the public interest." DOE finds that good cause exists for dispensing with notice and opportunity for public comment in issuing today's rule because those procedures are unnecessary where, as here, the agency has no discretion in fashioning its rule. Today's final rule simply conforms the Code of Federal Regulations to the order of the U.S. Court of Appeals for the Second Circuit, and DOE has no discretion to deviate from the court's ruling. For this reason, DOE has characterized today's rule as a "technical amendment" in the Action line at the beginning of this notice of final rulemaking.

B. Review Under Executive Order 12866

The Office of Information and Regulatory Affairs of the Office of Management and Budget (OMB) has determined that today's regulatory action is a "significant regulatory action" under Executive Order 12866, "Regulatory Planning and Review," 58 FR 51735 (October 4, 1993). Accordingly, DOE submitted today's notice to OMB for clearance under the Executive Order. OMB has completed its review.

C. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires preparation of an initial regulatory flexibility analysis for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by Executive Order 13272, "Proper Consideration of Small Entities in Agency Rulemaking," 67 FR 53461 (August 16, 2002), DOE published procedures and policies on February 19, 2003, to ensure that the potential impacts of its rules on small entities are properly considered during the rulemaking process (68 FR 7990). DOE has made its procedures and policies available on the Office of General Counsel's Web site: *http://www.gc.doe.gov*. DOE today is simply revising the Code of Federal Regulations to comply with the order of the U.S. Court of Appeals for the Second Circuit. Because the energy conservation standards in this rule were established in prior final rules that have taken effect, today's rule does not establish any new requirements for any entity. On this basis, DOE certifies that this final rule will not have a significant economic impact on a substantial number of small entities.

D. Review Under the Paperwork Reduction Act

This rulemaking will impose no new information or recordkeeping requirements. Accordingly, OMB clearance is not required under the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*).

E. Review Under the National Environmental Policy Act

DOE has determined that this rule falls into a class of actions that are categorically excluded from review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) and the Department's implementing regulations at 10 CFR part 1021. This rule is a technical amendment that reinstates, pursuant to court order, amended energy conservation standards for central air conditioners and heat pumps that were published in the **Federal Register** on January 22, 2001. DOE has therefore determined that this rule is covered by the Categorical Exclusion in paragraph A6 to subpart D, 10 CFR part 1021, which applies to rulemakings that are strictly procedural. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

F. Review Under Executive Order 13132

Executive Order 13132, "Federalism," 64 FR 43255 (August 4, 1999), imposes certain requirements on agencies formulating and implementing policies or regulations that preempt State law or that have federalism implications. The Executive Order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and carefully assess the necessity for such actions. The Executive Order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations (65 FR 13735). DOE has examined today's final rule and has determined that it does not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. State regulations that may have existed on the products that are the subject of today's final rule were preempted by the Federal standards established in NAECA. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. No further action is required by Executive Order 13132.

G. Review Under Executive Order 12988

With respect to the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, "Civil Justice Reform" (61 FR 4729, February 7, 1996), imposes on Federal agencies the general duty to adhere to the following requirements: (1) Eliminate drafting errors and ambiguity; (2) write regulations to minimize litigation; and (3) provide a clear legal standard for affected conduct rather than a general standard and promote simplification and burden reduction. Section 3(b) of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation: (1) Clearly specifies the preemptive effect, if any; (2) clearly specifies any effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction; (4) specifies the retroactive effect, if any; (5) adequately defines key terms; and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires Executive agencies to review regulations in light of applicable standards in section 3(a) and section 3(b) to determine whether they are met or it is unreasonable to meet one or more of them. DOE has completed the required review and determined that, to the extent permitted by law, this final rule meets the relevant standards of Executive Order 12988.

H. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and tribal governments and the private sector. With respect to a proposed regulatory action that may result in the expenditure by State, local and tribal governments, in the aggregate, or by the private sector of $100 million or more (adjusted annually for inflation), section 202 of the Act requires a Federal agency to publish estimates of the resulting costs, benefits, and other effects on the national economy (2 U.S.C. 1532(a),(b)). The Act also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and tribal governments on a proposed ''significant intergovernmental mandate,'' and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under the Act (62 FR 12820) (also available at *http://www.gc.doe.gov*). The rule published today does not contain any Federal mandate; it only incorporates into the Code of Federal Regulations standards set forth in rules promulgated in 2001 and 2002.

I. Review Under the Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105–277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This rule would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

J. Review Under Executive Order 12630

DOE has determined pursuant to Executive Order 12630, ''Governmental Actions and Interference with Constitutionally Protected Property Rights,'' 53 FR 8859 (March 18, 1988), that this regulation would not result in any takings which might require compensation under the Fifth Amendment to the United States Constitution.

K. Review Under the Treasury and General Government Appropriations Act, 2001

The Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516, note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (February 22, 2002), and DOE's guidelines were published at 67 FR 62446 (October 7, 2002). DOE has reviewed today's final rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

L. Review Under Executive Order 13211

Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use,'' 66 FR 28355 (May 22, 2001) requires Federal agencies to prepare and submit to the Office of Information and Regulatory Affairs (OIRA), Office of Management and Budget, a Statement of Energy Effects for any proposed significant energy action. A ''significant energy action'' is defined as any action by an agency that promulgated or is expected to lead to promulgation of a final rule, and that: (1) Is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy, or (3) is designated by the Administrator of OIRA as a significant energy action. For any proposed significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use should the proposal be implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use. Today's regulatory action would not have a significant adverse effect on the supply, distribution, or use of energy and, therefore, is not a significant energy action. Accordingly, DOE has not prepared a Statement of Energy Effects.

M. Congressional Notification

As required by 5 U.S.C. 801, DOE will report to Congress on the promulgation of today's rule prior to its effective date. The report will state that it has been determined that the rule is not a ''major rule'' as defined by 5 U.S.C. 804(2).

N. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of today's rule.

List of Subjects in 10 CFR Part 430

Administrative practice and procedure, Energy conservation, Household appliances.

Issued in Washington, DC, on August 4, 2004.

David K. Garman,

Assistant Secretary, Energy Efficiency and Renewable Energy.

■ For the reasons set forth in the preamble, Part 430 of Chapter II of Title 10, Code of Federal Regulations, is amended as set forth below:

PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

■ 1. The authority citation for part 430 continues to read as follows:

Authority: 42 U.S.C. 6291–6309; 28 U.S.C. 2461 note.

■ 2. Section 430.2 is amended by:
■ a. Removing the definitions for ''effective date,'' ''maximum allowable energy use,'' ''maximum allowable water use,'' and ''minimum required energy efficiency''; and
■ b. Adding a definition of ''space constrained product'' in alphabetical order to read as follows:

§ 430.2 Definitions.

* * * * *

Space constrained product means a central air conditioner or heat pump:

(1) That has rated cooling capacities no greater than 30,000 BTU/hr;

(2) That has an outdoor or indoor unit having at least two overall exterior dimensions or an overall displacement that:

(i) Is substantially smaller than those of other units that are:

(A) Currently usually installed in site-built single family homes; and

(B) Of a similar cooling, and, if a heat pump, heating capacity; and

(ii) If increased, would certainly result in a considerable increase in the usual cost of installation or would certainly result in a significant loss in the utility of the product to the consumer; and

(3) Of a product type that was available for purchase in the United States as of December 1, 2000.

* * * * *

■ 3. Section 430.32 of subpart C is amended by revising paragraph (c)(2) to read as follows:

§ 430.32 Energy and water conservation standards and effective dates.

* * * * *

(c) * * *

(2) Central air conditioners and central air conditioning heat pumps manufactured on or after January 23,

2006, shall have Seasonal Energy Efficiency Ratio and Heating Seasonal Performance Factor no less than:

Product class	Seasonal energy efficiency ratio (SEER)	Heating seasonal performance factor (HSPF)
(i) Split system air conditioners	13	
(ii) Split system heat pumps	13	7.7
(iii) Single package air conditioners	13	
(iv) Single package heat pumps	13	7.7
(v)(A) Through-the-wall air conditioners and heat pumps-split system [1]	10.9	7.1
(v)(B) Through-the-wall air conditioners and heat pumps-single package [1]	10.6	7.0
(vi) Small duct, high velocity systems	13	7.7
(vii)(A) Space constrained products-air conditioners	12	
(vii)(B) Space constrained products-heat pumps	12	7.4

[1] As defined in § 430.2, this product class applies to products manufactured prior to January 23, 2010.

* * * * *

[FR Doc. 04–18533 Filed 8–16–04; 8:45 am]
BILLING CODE 6450–01–P

FEDERAL RESERVE SYSTEM

12 CFR Part 201

[Regulation A]

Extensions of Credit by Federal Reserve Banks

AGENCY: Board of Governors of the Federal Reserve System.

ACTION: Final rule.

SUMMARY: The Board of Governors of the Federal Reserve System (Board) has adopted final amendments to its Regulation A to reflect the Board's approval of an increase in the primary credit rate at each Federal Reserve Bank. The secondary credit rate at each Reserve Bank automatically increased by formula as a result of the Board's primary credit rate action.

DATES: The amendments to part 201 (Regulation A) are effective August 17, 2004. The rate changes for primary and secondary credit were effective on the dates specified in 12 CFR 201.51, as amended.

FOR FURTHER INFORMATION CONTACT: Jennifer J. Johnson, Secretary of the Board (202/452–3259); for users of Telecommunication Devices for the Deaf (TDD) only, contact 202/263–4869.

SUPPLEMENTARY INFORMATION: The Federal Reserve Banks make primary and secondary credit available to depository institutions as a backup source of funding on a short-term basis, usually overnight. The primary and secondary credit rates are the interest rates that the twelve Federal Reserve Banks charge for extensions of credit under these programs. In accordance with the Federal Reserve Act, the primary and secondary credit rates are established by the boards of directors of the Federal Reserve Banks, subject to the review and determination of the Board.

The Board approved requests by the Reserve Banks to increase by 25 basis points the primary credit rate in effect at each of the twelve Federal Reserve Banks, thereby increasing from 2.25 percent to 2.50 percent the rate that each Reserve Bank charges for extensions of primary credit. As a result of the Board's action on the primary credit rate, the rate that each Reserve Bank charges for extensions of secondary credit automatically increased from 2.75 percent to 3.00 percent under the secondary credit rate formula. The final amendments to Regulation A reflect these rate changes.

The 25-basis-point increase in the primary credit rate was associated with a similar increase in the target for the federal funds rate (from 1.25 percent to 1.50 percent) approved by the Federal Open Market Committee (Committee) and announced at the same time. A press release announcing these actions indicated that:

> The Committee believes that, even after this action, the stance of monetary policy remains accommodative and, coupled with robust underlying growth in productivity, is providing ongoing support to economic activity. In recent months, output growth has moderated and the pace of improvement in labor market conditions has slowed. This softness likely owes importantly to the substantial rise in energy prices. The economy nevertheless appears poised to resume a stronger pace of expansion going forward. Inflation has been somewhat elevated this year, though a portion of the rise in prices seems to reflect transitory factors.
>
> The Committee perceives the upside and downside risks to the attainment of both sustainable growth and price stability for the next few quarters are roughly equal. With underlying inflation still expected to be relatively low, the Committee believes that policy accommodation can be removed at a pace that is likely to be measured. Nonetheless, the Committee will respond to changes in economic prospects as needed to fulfill its obligation to maintain price stability.

Regulatory Flexibility Act Certification

Pursuant to the Regulatory Flexibility Act (5 U.S.C. 605(b)), the Board certifies that the new primary and secondary credit rates will not have a significantly adverse economic impact on a substantial number of small entities because the final rule does not impose any additional requirements on entities affected by the regulation.

Administrative Procedure Act

The Board did not follow the provisions of 5 U.S.C. 553(b) relating to notice and public participation in connection with the adoption of these amendments because the Board for good cause determined that delaying implementation of the new primary and secondary credit rates in order to allow notice and public comment would be unnecessary and contrary to the public interest in fostering price stability and sustainable economic growth. For these same reasons, the Board also has not provided 30 days prior notice of the effective date of the rule under section 553(d).

12 CFR Chapter II

List of Subjects in 12 CFR Part 201

Banks, Banking, Federal Reserve System, Reporting and recordkeeping.

Authority and Issuance

■ For the reasons set forth in the preamble, the Board is amending 12 CFR Chapter II to read as follows:

Date Proposal Submitted	3/30/2010	**Section**	503.2.3
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	roger cummins	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

The DOE is expanding it's verification of efficiency ratings and increasing it's enforcement in this area. Meeting their requirements, therefore, should be acceptable for the State of Florida.

Rationale

This modification broadens the scope of the Florida Code to more closely parallel the requirements of the Department of Energy. The existing code might be interpreted to require a manufacturer to join a certification program, when in fact the DOE is now increasing their enforcement and verification requirements on a national level.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity.

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

No impact to building and property owners.

Impact to industry relative to the cost of compliance with code

No impact to industry.

Requirements

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

Does not affect health, safety and welfare.

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

Strengthens the code by insuring that equipment efficiencies are accurate.

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

No descrimination against materials, product, method or system.

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code.

General Comment

EN4115-G1

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

: US DOE usually correlates its equipment efforts with its code efforts. Submitting this provision independently undermines the use of ICC integrated codes and potentially causes code conflicts.

503.2.3 HVAC equipment performance requirements. Equipment shall meet the minimum efficiency requirements of Tables 503.2.3(1), 503.2.3(2), 503.2.3(3), 503.2.3(4), 503.2.3(5), 503.2.3(6), and 503.2.3(7), when tested and rated in accordance with the applicable test procedure. The efficiency shall be verified as follows: 1. Equipment covered under the Federal Energy policy Act of 1992 (EPACT) shall comply with U.S. Department of Energy certification requirements. 2. Through certification under an approved certification program or, if a certification program exists for a covered product, and it includes provisions for verification and challenge of equipment efficiency ratings, then the product shall be listed in the certification program or, ~~if no certification program exists,~~ the equipment efficiency ratings shall be supported by data furnished by the manufacturer. Where multiple rating conditions or performance requirements are provided, the equipment shall satisfy all stated requirements. Where components, such as indoor or outdoor coils~~,~~ from different manufacturers are used, calculations and supporting data shall be furnished by the designer or manufacturer that demonstrates that the combined efficiency of the specified components meets the requirements herein. Manufacturer's supporting data shall include the following statements: The efficiency is calculated using the methodology approved by the Department of Energy, the calculation procedure utilizes the test data collected in accordance with the applicable test standards, and the calculation procedure has been verified by independent testing.

Date Proposal Submitted	3/22/2010	**Section**	503.2.3(10)
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

3676

Summary of Modification

Add performance requirements for heat rejection equipment back into the code that were not included in the IECC.

Rationale

This table is currently in the energy code. It was left out of the code by oversight because it is not in the IECC. It also needs CTI STD-201 referenced per ASHRAE Addenda ak to 90.1-2004.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None.

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

None.

Impact to industry relative to the cost of compliance with code

None.

Requirements

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

Yes.

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

Yes.

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

No.

Does not degrade the effectiveness of the code

No.

TABLE 503.2.3(10)

Performance Requirements for Heat Rejection Equipment

Equipment Type	Total System Heat Rejection Capacity at Rated Conditions	Sub-Category or Rating Condition	Performance Required[1,2]	Test Procedure[3]
Propeller or Axial Fan Cooling Towers	All	95°F Entering Water 85°F Leaving Water 75°F wb Outdoor Air	=38.2 gpm/hp	CTI ATC-105 and CTI STD-201
Centrifugal Fan Cooling Towers	All	95°F Entering Water 85°F Leaving Water 75°F wb Outdoor Air	=20.0 gpm/hp	CTI ATC-105 and CTI STD-201
Air Cooled Condensers	All	125°F Condensing Temperature R-22 Test Fluid 190°F Entering Gas Temperature 15°F Subcooling 95°F Entering db	=176,000 Btu/hhp	AHRI 460

[1] For purposes of this table, cooling tower performance is defined as the maximum flow rating of the tower divided by the fan nameplate rated motor power.

[2] For purposes of this table, air-cooled condenser performance is defined as the heat rejected from the refrigerant divided by the fan nameplate rated motor power.

[3] Chapter 6 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

Date Proposal Submitted	3/23/2010	**Section**	503.2.3(3)
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Update minimum efficiencies for single packaged vertical air conditioners and heat pumps to the efficiencies required by Addendum b to ASHRAE 90.1-2004.

Rationale

ASHRAE 90.1 is the industry-accepted standard for minimum equipment efficiencies. Florida needs to be current with this standard.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None.

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

Cost may be higher than lower standard.

Impact to industry relative to the cost of compliance with code

Should be none because manufacturers use ASHRAE to establish minimum equipment efficiencies.

Requirements

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

Yes, it would require more efficient equipment.

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

Yes.

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

No, all manufacturers would have to meet the standard.

Does not degrade the effectiveness of the code

No.

TABLE 503.2.3(3)

Electrically Operated

Packaged Terminal Air Conditioners, Packaged Terminal Heat Pumps,

Single-Package Vertical Air Conditioners, Singe-Package Vertical Heat Pumps, Room Air Conditioners, and Room Air Conditioner Heat Pumps –

Minimum Efficiency Requirements

Equipment Type	Size Category	Subcategory or Rating Condition	Minimum Efficiency[1]	Test Procedure[2]
SPVAC (Cooling mode)	~~All capacities~~ =65,000 Btu/h	95°F db/75°F wb Outdoor air	~~8.6 EER~~ 9.0 EER	AHRI 390
	=65,000 Btu/h and <135,000 Btu/h	95°F db/75°F wb Outdoor air	8.9 EER	
	=135,000 Btu/h and <240,000 Btu/h	95°F db/75°F wb Outdoor air	8.6 EER	
SPVHC (Cooling mode)	~~All capacities~~ =65,000 Btu/h	95°F db/75°F wb Outdoor air	~~8.6 EER~~ 9.0 EER	
	=65,000 Btu/h and <135,000 Btu/h	95°F db/75°F wb Outdoor air	8.9 EER	
	=135,000 Btu/h and <240,000 Btu/h	95°F db/75°F wb Outdoor air	8.6 EER	
SPVHP (Heating mode)	~~All capacities~~ =65,000 Btu/h	47°F db/43°F wb Outdoor air	~~2.7 COP~~ 3.0 COP	
	=65,000 Btu/h and <135,000 Btu/h	~~47°F db/43°F wb~~ ~~Outdoor air~~	3.0 COP	
	=135,000 Btu/h and <240,000 Btu/h	~~47°F db/43°F wb~~ ~~Outdoor air~~	2.9 COP	

Date Proposal Submitted	3/29/2010	**Section**	503.2.3(5)
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Update efficiency requirements for gas- and oil-fired boilers to Addenda an to ASHRAE 90.1-2004.

Rationale

The US Dept of Energy requires state codes to update to ASHRAE 90.1 equipment efficiency levels. The efficiency levels proposed have been in effect sine 6/29/09.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None.

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

None; updating to current standard.

Impact to industry relative to the cost of compliance with code

Should be none. This is a national standard and will have been in effect for 2 1/2 years before this goes into effect.

Requirements

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

Yes, will improve the efficiency of boilers installed in major commercial buildings in Florida.

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

Yes, upgrades minimum standards as per national code.

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

No.

Does not degrade the effectiveness of the code

No.

TABLE 503.2.3(5)

BOILERS, GAS- AND OIL-FIRED,

Minimum Efficiency Requirements

Equipment Type[4]	Size Category (Input)	Subcategory or Rating Condition	Minimum Efficiency[b]	Test Procedure[2]
Boilers, Gas-Fired	<300,000 Btu/h	Hot water	80% AFUE	DOE 10 CFR Part 430
		Steam	75% AFUE	
	=300,000 Btu/h and =2,500,000	Minimum ~~Maximum~~ Capacity[b]	80 ~~75~~% E_t (See Note c,d)	DOE 10 CFR Part 431
	>2,500,000 Btu/h[‡]	Hot Water	82~~80~~% E_c (See Note c,d)	
	>2,500,000 Btu/h[4]	Steam	~~80%E_e~~	
		Natural draft	77%E_t	
		Other	79%E_t (See Note c,d)	
Boilers, Oil-Fired	<300,000 Btu/h		80% AFUE	DOE 10 CFR Part 430
	>300,000 Btu/h and =2,500,000 Btu/h	Minimum ~~Maximum~~ Capacity[3]	82 ~~78~~%$E_t$and 84 ~~83~~% E_c (See Note c,d)	DOE 10 CFR Part 431
	>2,500,000 Btu/h[4]	Hot Water	84 ~~83~~% E_c (See Note c,d)	
	>2,500,000 Btu/h[4]	Steam	81%E_t ~~83%E_e~~ (See Note c,d)	
Oil-Fired (Residual)	=300,000 Btu/h and =2,500,000 Btu/h	Minimum ~~Maximum~~ Capacity[3]	82 ~~78~~%E_t and 84 ~~83~~% E_c (See Note c,d)	DOE 10 CFR Part 431
	>2,500,000 Btu/h[a]	Hot Water	84~~83~~% E_c (See Note c,d)	
		Steam	81%E_t ~~83%E_e~~ (See Note c,d)	

For SI: 1 British thermal unit per hour = 0.2931 W.

[a] Chapter 6 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

[b] Minimum and maximum ratings as provided for and allowed by the unit's controls.

[e] E_c= Combustion efficiency (100% less flue losses). See reference document for detailed discussion.

[d] E_t = thermal efficiency. See reference documents for detailed information.

[e] Alternative test procedures used at the manufacturer's option are ASME PTC-4.1 for units greater than 5,000,000 Btu/h input, or ANSI Z21.13 for units greater than or equal to 300,000 Btu/h and less than or equal to 2,500,000 Btu/h input.

[f] These requirements apply to boilers with rated input of 8,000,000 Btu/h or less that are not packaged boilers, and to all package boilers. Minimum efficiency requirementsfor boilers cover all capacities of packaged boilers.

Date Proposal Submitted	4/1/2010	**Section**	503.2.6
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Amanda Hickman	**General Comments**	No
Attachments	Yes	**Alternate Language**	No

Related Modifications

NA

Summary of Modification

Change outside air supply from 70% to 30%

Rationale

see attached

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

The ERVs are attached to the HVAC unit or built in to the unit and are very easy to verify that the ERV is part of the unit as they are almost the same size as the HVAC unit.

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

The ERVs have a pay back in energy savings in less than one year and will continue to save energy as shown on the energy analysis in the rational statement of this modification.

Impact to industry relative to the cost of compliance with code

The use of ERVs to recycle 70 to 80% of the total energy contained in the exhaust air reduces the size of the HVAC unit and the cost of the ERV is offset by the reduction of cost of the HVAC equipment but the cost of the overall equipment is increased.

Requirements

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

The health of the general public has been directly linked to supplying the correct amount of ventilation air to the building. ERVs have fans to supply the correct amount of ventilation air and therefore do a better job of furnishing the correct amount of ventilation air than a unit without an ERV.

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

ERVs have been in use for over 20 years; with today energy cost it is important to use all of the tools available to save energy. ERVs lower energy cost, improve the ventilation air amount that is supplied to the building and helps control the humidity to improve the health of the occupants.

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

The ERVs are available from several sources and do not discriminate against any system that we know about.

Does not degrade the effectiveness of the code

ERVs will not degrade the effectiveness of the code and with the push to save energy this proposal is in line with the guide lines established to reduce energy consumption of buildings.

503.2.6 Exhaust air energy recovery for cooling systems. Individual cooling fan systems that have both a design supply air capacity of 5,000 cfm (2.36 m3/s) or greater and a minimum outside air supply of ~~70~~ 30 percent or greater of the design supply air quantity shall have an energy recovery system that provides a change in the enthalpy of the outdoor air supply of 50 percent or more of the difference between the outdoor air and return air at design conditions.

Reason Statement for Exhaust air energy recovery for cooling systems – Mod 4042

The reason to lower the outside air requirements for exhaust air energy recovery systems down to 30% from the 70% that the code now requires is as follows:

Outside air can represent up to 50% of the of the total HVAC building load. An energy recovery wheel recycles energy from the exhausted building air to pre-condition incoming ventilation air. By recycling 70 - 80% of the total energy contained in the exhaust air, recovery wheels lower total HVAC energy usage.

Energy recovery wheels offer a highly efficient alternative to condition the outdoor air as compared to a typical roof top DX system. Combining the two technologies can increase the total system efficiency up to 40%

At the present, the code requires a minimum of 70% outside air before an ERV is required. That represents less than 5% of the HVAC units being installed. By changing the requirement to 30%, a large percentage of new installations will be required to install ERVs and the energy savings will be amplified.

The attached energy analysis of a three cities unit with 30% outside air shows an energy cost savings of at least $1354 per year and the installed cost being $3790 less with the ERV unit due to reducing the size of the HVAC system.

Date Proposal Submitted	3/23/2010	**Section**	503.2.7.1.1
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Darrell Winters	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Eliminates the reduced insulation levels being introduced into the code.

Rationale

Eliminates reduced duct insulation levels being introduced into the code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on code enforcement.

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

Any cost impact will be offset by energy savings.

Impact to industry relative to the cost of compliance with code

No impact to industry.

Requirements

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

Does not affect health, safety and welfare.

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

Strengthens the code by saving energy.

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

No discrimination against any material, product, method or system.

Does not degrade the effectiveness of the code

Improves the code.

503.2.7.1.1 Insulation required. All supply and return air ducts and plenums shall be insulated ~~to the levels shown in Table 503.2.7.1~~ with a minimum of R-5 insulation when located in unconditioned spaces and a minimum of R-8 insulation when located outside the building. When located within a building envelope assembly, the duct or plenum shall be separated from the building exterior or unconditioned or exempt spaces by a minimum of R-8 insulation.

Exceptions:

1. When located within equipment.

2. When the design temperature difference between the interior and exterior of the duct or plenum does not exceed 15°F (8°C).

~~3.For runouts less than 10 feet (3048 mm) in length to air terminals or air outlets, the rated R-value of insulation need not exceed R-5.~~

~~4.Backs of air outlets and outlet plenums exposed to unconditioned or indirectly conditioned spaces with face areas exceeding 5 square feet (.46 m^2) need not exceed R-2; those 5 square feet (.46 m^2) or smaller need not be insulated.~~

~~5.Return air ducts meeting all the requirements for building cavities which will be used as return air plenums.~~

Date Proposal Submitted	3/23/2010	**Section**	503.2.7.2
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

3653, 3654

Summary of Modification

Revise Table 503.2.7.2, Duct system construction and sealing, to include updates to the mechanical provisions of the Mechanical code and Residential code from the 2009 I-codes. Resolve oversights of Florida-specific reqts, formatting issues.

Rationale

Keep the duct construction and sealing provisions of the Mechanical, Residential and Energy Conservation codes consistent.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Makes Energy Conservation code consistent with Mechanical and Residential codes. No impact.

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

None.

Impact to industry relative to the cost of compliance with code

None.

Requirements

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

Yes. Code consistency.

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

Yes, Code consistency.

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

No.

Does not degrade the effectiveness of the code

No.

TABLE 503.2.7.2

DUCT SYSTEM CONSTRUCTION AND SEALING

DUCT TYPE/CONNECTION	SEALING REQUIREMENTS	MECHANICAL ATTACHMENT	TEST STANDARD
Metal duct, rigid and flexible **Pressures less than 1-inch water gauge**	Closure systems as described in Section 503.2.7.3: 1. Continuous welds. 2. Snaplock seams, and grooved, standing, double-corner, single-corner and Pittsburgh-lock seams and all other rolled mechanical seams. 3. Mastic, mastic-plus-embedded fabric, or mastic ribbons. 4. Gaskets. 5. Pressure-sensitive tape. 6. Aerosol sealant	Mechanical attachments approved: 1. Continuous welds. 2. Snaplock seams, and grooved, standing, double-corner, single-corner and Pittsburgh-lock seams and all other rolled mechanical seams. Crimp joints for round metal ducts shall have a contact lap of at least 11/2inches (38 mm). Round metal ducts shall be mechanically fastened by means of at least three sheet-metal screws or rivets equally spaced around the joint.[1]	SMACNA HVAC Air Duct Leakage Test Manual
Pressures 1-inch water gauge or greater	Closure systems as described in Section 503.2.7.3: 1. Continuous welds. 2. Mastic or mastic-plus-embedded fabric systems. 3. Gaskets.	Mechanical attachments approved: Continuous welds. Round metal ducts shall be mechanically fastened by means of at least three sheet-metal screws or rivets equally spaced around the joint.[1]	
High pressure duct systems designed to operate at pressures greater than 3-inch water gauge (4-inch water gauge pressure class)	~~Shall be tested in accordance with the standard.~~ The tested duct leakage class, at a test pressure equal to the design duct pressure class rating, shall be equal to or less than Leakage Class 6. Leakage testing may be limited to representative sections of the duct system but in no case		

	shall such tested sections include less than 25 percent of the total installed duct area for the designated pressure class.		
Plastic duct	See Section 603.8.3 of the FBC-Mechanical.	Joints between plastic ducts and plastic fittings shall be made in accordance with the manufacturer's installation instructions.	**ASTM D 2412**
Fibrous glass duct, rigid.	All joints, seams and duct wall penetrations between sections of duct and between duct and other distribution system components shall be sealed with closure systems as described in Section 503.2.7.3: 1. Heat-activated tapes. 2. Pressure-sensitive tapes. 3. Mastics or mastic-plus-embedded fabric systems.	Mechanically fastened per standard to secure the sections independent of the closure system(s). Attachments of ductwork to air-handling equipment shall be by mechanical fasteners. Where access is limited, two fasteners on one side shall be acceptable.	NAIMA Fibrous Glass Duct Construction Standards. UL 181 UL 181A
Flexible duct systems, nonmetal.	All duct collar fittings shall have a minimum 5/8 inch (16 mm) integral flange for sealing to other components and a minimum 3-inch (76 mm) shaft for insertion into the inner duct core. Flexible ducts having porous inner cores shall not be used. **Exception:** Ducts having a nonporous liner between the porous inner core and the outer jacket. Fastening and sealing requirements shall be applied to such intermediate liners.	Flexible nonmetal ducts shall be joined to all other air distribution system components by either terminal or intermediate fittings. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked 181B-C. See Section 603.10.3 of the FBC-Mechanical for duct support requirements. ~~Flexible ducts shall be configured and supported so as to prevent the use of excess duct material, prevent duct dislocation or damage, and prevent constriction of the duct below the rated duct diameter in accordance with the following requirements:~~ ~~1. Ducts shall be installed fully extended. The total extended length of duct material shall not exceed 5 percent of the minimum required~~	UL 181 UL 181B ADC FDPIS

		~~length for that run.~~ ~~2. Bends shall maintain a center line radius of not less than one duct diameter.~~ ~~3. Terminal devices shall be supported independently of the flexible duct.~~ ~~4. Horizontal duct shall be supported at intervals not greater than 5 feet (1524 mm). Duct sag between supports shall not exceed ½ inch (12.7 mm) per foot of length. Supports shall be provided within 1½ feet (38 mm) of intermediate fittings and between intermediate fittings and bends. Ceiling joists and rigid duct or equipment may be considered to be supports.~~ ~~5. Vertical duct shall be stabilized with support straps at intervals not greater than 6 feet (1829 mm).~~ ~~6. Hangers, saddles and other supports shall meet the duct manufacturer's recommendations and shall be of sufficient width to prevent restriction of the internal duct diameter. In no case shall the material supporting flexible duct that is in direct contact with it be less than 1½ inches (38 mm) wide.~~ The reinforced core shall be mechanically attached to the duct fitting by a drawband installed directly over the wire-reinforced core and the duct fitting. The duct fitting shall extend a minimum of 2 inches (51 mm) into each section of duct core. When the flexible duct is larger than 12 inches (303 mm) in diameter or the design pressure exceeds 1-inch water gauge, the drawband shall be secured by a raised bead or indented groove on the fitting.	
	The reinforced lining shall be sealed to the duct fitting using one of the following sealing materials which conforms to the approved closure and		

Duct core to duct fitting	mechanical attachment requirements of Section 503.2.7.3: 1. Gasketing. 2. Mastic, mastic-plus-embedded fabric, or mastic ribbons. 3. Pressure-sensitive tape. 4. Aerosol sealants, provided that their use is consistent with UL 181.		
Duct outer jacket to duct collar fitting	The outer jacket of a flexible duct section shall be secured at the juncture of the air distribution system component and intermediate or terminal fitting in such a way as to prevent excess condensation. The outer jacket of a flexible duct section shall not be interposed between the flange of the duct fitting and the flexible duct, rigid fibrous glass duct board, or sheet metal to which it is mated.	The duct collar fitting shall be mechanically attached to the rigid duct board or sheet metal by appropriate mechanical fasteners, either screws, spin-in flanges, or dovetail flanges.	
Duct collar fitting to rigid duct	The duct collar fitting's integral flange shall be sealed to the rigid duct board or sheet metal using one of the following closure systems/materials which conforms to the approved closure and mechanical attachment standards of Section 503.2.7.3: 1. Gasketing. 2. Mastic or mastic-plus-embedded fabric systems. 3. Mastic ribbons when used to attach a duct collar to sheet		

	metal. 4. Pressure-sensitive tape. 5. Aerosol sealants, provided that their use is consistent with UL 181.		
Terminal and intermediate fittings. **Fittings and joints between dissimilar duct types**	Approved closure systems shall be as designated by air distribution system component material type in Section 503.2.7.3. **Exception:** When the components of a joint are fibrous glass duct board and metal duct, including collar fittings and metal equipment housings, the closure systems approved for fibrous glass duct shall be used.		
Terminal fittings and air ducts to building envelope components	Terminal fittings and air ducts which penetrate the building envelope shall be mechanically attached to the structure and sealed to the envelope component penetrated and shall use one of the following closure systems/materials which conform to the approved closure and mechanical application requirements of Section 503.2.7.3: 1. Mastics or mastic-plus-embedded fabrics. 2. Gaskets used in terminal fitting/grille assemblies which compress the gasket material between the fitting and the wall, ceiling or floor sheathing.		
Air-handling units.	Air-handling units located outside the conditioned space	All air-handling units shall be mechanically attached to other air	

	shall be sealed using approved closure systems described in Section 503.2.7.3 for metallic ducts.	distribution system components.	
Return plenums.	Building cavities which will be used as return air plenums shall be lined with a continuous air barrier made of durable nonporous materials. All penetrations to the air barrier shall be sealed with a suitable long-life mastic material. **Exception:** Surfaces between the plenum and conditioned spaces from which the return/mixed air is drawn. Roof decks above building cavities used as a return air plenum shall be insulated to at least R-19.		
Mechanical closets.	All joints between the air barriers of walls, ceiling, floor and door framing and all penetrations of the air barrier shall be sealed to the air barrier with approved closure systems. Through-wall, through-floor and through-ceiling air passageways into the closet shall be framed and sealed to form an air-tight passageway. **Exception:** Air passageways into the closet from conditioned space that are specifically designed for return air flow. The following air barriers are approved for use in mechanical closets: 1. One-half-inch-thick (12.7 mm) or greater gypsum wallboard, taped and sealed. 2. Other panelized materials	The following closure systems are approved for use in mechanical closets: 1. Gypsum wallboard joint compound over taped joints between gypsum wallboard panels. 2. Sealants complying with the product and application standards of Table 503.2.7.2 for fibrous glass ductboard. 3. A suitable long-life caulk or mastic compliant with the locally adopted mechanical code for all applications.	

	having inward facing surfaces with an air porosity no greater than that of a duct product meeting Section 22 of UL 181 which are sealed on all interior surfaces to create a continuous air barrier.		
Enclosed support platforms in unconditioned spaces.	Enclosed support platforms located between the return air inlet(s) from conditioned space and the inlet of the air-handling unit or furnace, shall contain a duct section constructed entirely of rigid metal, rigid fibrous glass duct board, or flexible duct which is constructed and sealed according to the respective requirements of Section 503.2.7.2 and insulated according to the requirements of Section 503.2.7.1. 1. No portion of the building structure, including adjoining walls, floors and ceilings, shall be in contact with the return air stream or function as a component of this duct section 2. The duct section shall not be penetrated by a refrigerant line, chase, refrigerant line, wiring, pipe or any object other than a component of the air distribution system. 3. Through-wall, through-floor and through ceiling penetrations into the duct system shall contain a branch duct fabricated of rigid fibrous glass duct board or rigid metal and shall extend to and be sealed by both the duct section and the grille side wall surface.		

		The branch duct shall be fabricated and attached to the duct insert in accordance with requirements for the duct type used.	

[1] Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.

Date Proposal Submitted	3/23/2010	**Section**	503.2.8
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Darrell Winters	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Eliminate proposed new Table 503.2.8 and use original Table 503.2.8 in IECC.

Rationale

Original IECC Table 503.2.8 provides for improved piping insulation levels.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on code enforcement.

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

Any minor impact will be offset by energy savings.

Impact to industry relative to the cost of compliance with code

No impact to industry.

Requirements

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

Does not affect health, safety and welfare.

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

Strengthens the code by providing improved piping insulation levels which save energy.

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

No discrimination against any material, product, method or system.

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code.

503.2.8 Piping insulation. All piping serving as part of a heating or cooling system shall be thermally insulated in accordance with Table 503.2.8.

Strike through existing Table 503.2.8 and insert Table 503.2.8 in 2009 IECC

~~TABLE 503.2.8~~

~~MINIMUM PIPE INSULATION (in.)~~[1]

~~Fluid Design Operating Temperature Range (°F)~~	~~Insulation Conductivity Conductivity Btu-in/(h-ft²-°F)~~	~~Mean Temperature Rating~~	~~Nominal Pipe or Tube Size (in.) <1~~	~~1-1 ½~~	~~1 ½ to 4~~	~~4to <8~~	~~>8~~
~~Heating Systems (Steam Condensate, and Hot Water)~~[2,3]							
~~>350~~	~~0.32–0.34~~	~~250~~	~~2.5~~	~~3.0~~	~~3.0~~	~~4.0~~	~~4.0~~
~~251–350~~	~~0.29–0.32~~	~~200~~	~~1.5~~	~~2.5~~	~~3.0~~	~~3.0~~	~~3.0~~
~~201–250~~	~~0.27–0.30~~	~~150~~	~~1.5~~	~~1.5~~	~~2.0~~	~~2.0~~	~~2.0~~
~~141–200~~	~~0.25–0.29~~	~~125~~	~~1.01~~	~~1.0~~	~~1.0~~	~~1.5~~	~~1.5~~
~~105–140~~	~~0.22-0.28~~	~~100~~	~~0.5~~	~~0.5~~	~~1.0~~	~~1.0~~	~~1.0~~
~~Domestic and Service Hot Water Systems~~[3]							
~~>105~~	~~0.22-0.28~~	~~100~~	~~0.5~~	~~0.5~~	~~1.0~~	~~1.0~~	~~1.0~~
~~Cooling Systems (Chilled Water, Brine, and Refrigerant)~~[4]							
~~40–60~~	~~0.22-0.28~~	~~100~~	~~0.5~~	~~1.0~~	~~1.0~~	~~1.0~~	~~1.0~~
~~<40~~	~~0.22-0.28~~	~~100~~	~~0.5~~	~~1.5~~	~~1.5~~	~~1.0~~	~~1.5~~

[1]~~For insulation outside the stated conductivity range, the minimum thickness (T) shall be determined as follows:~~

$$~~T=r(1+t/r)^{K/k}-1~~$$

~~Where T= minimum insulation thickness (in.), r=actual outside radius of pipe (in.), t=insulation thickness listed in this table for applicable fluid temperature and pipe size, K=conductivity of alternate material at mean rating temperature indicated for the applicable fluid temperature (Btu.in.[h.ft².°F]; and k=upper value of the conductivity range listed in this table for applicable fluid temperature.~~

[2]~~These thicknesses are based on energy efficiency considerations only. Additional insulation is sometimes required relative to safety issues/surface temperatures~~[7]

TABLE 503.2.8
MINIMUM PIPE INSULATION
(thickness in inches)

FLUID	NOMINAL PIPE DIAMETER	
	≤ 1.5″	> 1.5″
Steam	$1^1/_2$	3
Hot water	$1^1/_2$	2
Chilled water, brine or refrigerant	$1^1/_2$	$1^1/_2$

For SI: 1 inch = 25.4 mm.

a. Based on insulation having a conductivity (k) not exceeding 0.27 Btu per inch/h · ft^2 · °F.

b. For insulation with a thermal conductivity not equal to 0.27 Btu · inch/h · ft^2 · °F at a mean temperature of 75°F, the minimum required pipe thickness is adjusted using the following equation;

$$T = r[(1+t/r)^{K/k}-1]$$

where:

T = Adjusted insulation thickness (in).

r = Actual pipe radius (in).

t = Insulation thickness from applicable cell in table (in).

K = New thermal conductivity at 75°F (Btu · in/hr · ft^2 · °F).

k = 0.27 Btu · in/hr · ft^2 · °F.

Date Proposal Submitted	4/2/2010	**Section**	504.7
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jennifer Hatfield	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

This proposal removes new s. 504.7.4 that would require energy efficiency pool pump and pump motor requirements for commercial pools. The intent of the legislative directive was for these requirements to only apply for residential pools and spas. They are not feasible in commercial applications.

Rationale

The 2008 legislative directive for pool pumps and pump motors were intended for residential application only. This also follows California Energy Code pool pump and pump motor requirements and draft national standards. These devices currently cannot be used in commercial applications where turnover requirements and other circulation requirements prevent their use.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No fiscal impact.

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

No fiscal impact.

Impact to industry relative to the cost of compliance with code

If not clarified, it will amount to an unattainable mandate that will cost industry time and dollars having to address it with every AHJ and public health official.

Requirements

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

Public pools must follow certain circulation and filtration requirements, i.e. turnover requirements, for the health and safety of its public pool users. If the pump motor requirement is not removed this could prevent public pools from meeting these requirements.

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

This proposal strengthens and improves the code by removing requirements that were only intended for residential application.

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

This proposal does not discriminate.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code; it actually strengthens the code by removing a requirement that is only applicable to residential pools and spas.

Note - Changes in Red are changes to what is in the current FL Energy Conservation Code draft language. The rest of the changes were part of the oneline draft FECC document.

504.7 Pools. Pools shall be provided with energy conserving measures in accordance with Sections 504.7.1 through 504.7.~~3~~4~~3~~.

504.7.1 Pool heaters. All pool heaters shall meet the minimum efficiency listed for that type of pool heater in Table 504.2 and shall be equipped with a readily *accessible* on-off switch that is mounted outside the heater to allow shutting off the heater without adjusting the thermostat setting. Pool heaters fired by natural gas or LPG shall not have continuously burning pilot lights.

504.7.2 Time switches. Time switches that can automatically turn off and on heaters and pumps according to a preset schedule shall be installed on swimming pool heaters and pumps.

Exceptions:

1. Where public health standards require 24-hour pump operation.
2. Where pumps are required to operate solar-and waste-heat-recovery pool heating systems.

504.7.3 Pool covers. Heated swimming pools and spas shall be equipped with a vapor retardant pool cover on or at the water surface. Pools heated to more than 90°F (32°C) shall have a pool cover with a minimum insulation value of R-12.

Exception: Outdoor ~~P~~pools deriving over 70 ~~60~~ percent of the energy for heating from site-recovered energy or solar energy source computed over an operating season..

~~**504.7.4 Pool pump motors.** Pool pump motors shall meet the following criteria:~~

~~1. Pool pump motors shall not be split phase, shaded pole or capacitor start induction run types.~~

~~2. Pool pumps and pool pump motors with a total horsepower (HP) of = 1 HP shall have the capability of operating at two or more speeds. The low speed shall have a rotation rate of no more than ½ of the motor's maximum rotation rate.~~

~~3. Pool pumps 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 for a temporary period not to exceed one normal cycle or 120 minutes, whichever is less.~~

~~**Exception:** Solar pool heating systems shall be permitted to run at higher speeds during periods of usable solar heat gain.~~

Date Proposal Submitted	4/2/2010	**Section**	504.7.3
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jennifer Hatfield	**General Comments**	No
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

This proposal removes the cover requirements for pools & spas and clarifies that the R-12 insulation requirement for covers is only required for portable spas. The current requirements pose serious safety hazards and may not be enforceable or realistic in certain commercial applications.

Rationale

This proposal removes the cover requirements for pools and spas and clarifies that the R-12 insulation requirement for covers is only required for portable spas (hot tubs). Only portable spa cover manufacturers make covers that are R-12 or greater; there is no product available for pools or nonportable spas. The current requirements pose serious safety hazards and may not be enforceable or realistic in certain commercial applications. See attached support file for more information.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No fiscal impact besides eliminating time to enforce a provision that can be unenforceable and not viable, and possibly cause serious safety hazards.

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

This proposal eliminates a requirement that would be costly and impractical in some cases. Public pool rule 64E-9 allows for covers, but does not require it.

Impact to industry relative to the cost of compliance with code

This proposal clarifies the R-12 value is only applicable to portable spas and eliminates all other requirements, eliminating the time and therefore cost to the industry trying to follow a requirement that poses multiple problems.

Requirements

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

If the cover requirement is not removed, with the exception of portable spas, the safety of the consumer may be at risk. See supportive documentation file for further information.

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

This proposal strengthens and improves the code by removing unattainable requirements.

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

This proposal removes language that would discriminate against certain materials, products, methods, or systems.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code; it actually strengthens and gives consistency throughout the State of Florida by removing unenforcable and vague requirements.

504.7.3 ~~Pool c~~Covers. ~~Heated~~ swimming ~~pools~~ and spas ~~shall be equipped with a vapor retardant pool cover on or at the water surface. Pools heated to more than 90°F (32°C)~~ Portable spas shall have a ~~pool~~ cover with a minimum insulation value of R-12.

~~Exception:~~ ~~Outdoor P~~pools ~~deriving over 70 60 percent of the energy for heating from site-recovered energy or solar energy source computed over an operating season.~~.

Additional Rationale for changes to section 504.7.3, Pool Covers, Chapter 5 – Commercial Energy Efficiency

The cover requirements in section 504.7.3 of Chapter 5 of the Florida Energy and Conservation Code pose multiple problems and concerns. Requiring covers be used on pools and spas is unenforceable and unattainable in certain commercial applications. After the pool or spa receives its final inspection the pool operator may choose not to continue to cover the pool or spa. Most service technicians report this is the case. Certain commercial pools or spas may have a system, design or function that prohibits use of a cover and/or would require a specialized cover that may be out of reach monetarily.

Further, covers that may protect against heat loss, but that are not certified to the ASTM F 1346 safety pool cover standard, can pose hazardous situations. Drownings, near drownings or injuries to people and pets have occurred. A person or pet falls into a pool or spa that is covered with a type of cover that is not ASTM F 1346 certified and gets tangled in the cover. Although energy efficiency is important to achieve, the health, welfare, and safety of our citizens and tourists should be of greater concern. There are other ways to increase energy efficiency in a pool or spa and the other aspects of this proposal take great strides in doing so.

It is also important to note that the Florida Department of Health Public Pool Rule, 64E-9, F.A.C., in section 64E-9.008(4), allows for pool covers and solar blankets, but does not require it. Section 4 states "Pool covers and solar blankets shall only be used during times when the pool is closed. Unless the pool cover or solar blanket is secured around the entire perimeter and is designed to support a live load of an adult person, the pool area shall be inaccessible to unauthorized individuals during times of cover or blanket use."

This proposal removes the cover requirement on all pools and spas with the exception of portable spas for the critical reasons just laid out. However, there are other concerns with the current language that also must be addressed:

- The requirement that "pools heated to more than 90 degrees shall have a cover with a minimum insulation value of R-12 is problematic, warranting the change to only "portable spas shall have a cover with a minimum insulation value of R-12" due to the following:
  - The 90 degree threshold is unenforceable; currently there are no products on the market that can be installed to limit the consumer from heating the pool or spa to a certain temperature.
  - The only covers on the market that meet the R-12 insulation value are for portable spas The current language may have been intended for portable spas, but it could be interpreted for any pool or spa that is heated over 90 degrees. No one manufacturer's a pool or nonportable spa cover that would meet the R-12 value. On average a bubble cover has less than an R-1 value, slated cover less than an R-3 value, and a tracked safety cover an R-1.5 value.

    - Additionally, there are no covers currently on the market with greater than an R-1 value for use on custom sized pools or spas.
- Only allowing for a vapor-retardant pool or spa cover does not provide for additional means that are on the market and that would provide the customer with more choices. Liquid covers or other approved means should be made available, but any cover requirement should be changed to a recommendation so consumers are educated about their options, but are not mandated to follow a requirement that is unenforceable and has safety concerns. The customer may be more likely to embrace the method they choose and therefore more likely to continue using it long-term if other means are made available. Liquid covers are proven to reduce heat-loss and with new energy efficient technology constantly appearing the ability for other means to be used is imperative.
- Heat pumps transfer heat from the air to a swimming pool or spa. They simply transfer heat rather than burn fuel to create it. Therefore, if exceptions are going to be included it is imperative we clarify that a heat pump that derives 70% of the energy for heating from site-recovered energy also falls under the exception from a heated pool or spa having to be covered in order to provide consistent enforcement.

The current cover language has many problematic provisions and should only be required on portable spa covers that can meet the insulation requirement and which come with a cover to not only provide for heat loss, but to also provide a required safety barrier. Also note more research is currently underway to confirm the R-12 factor minimum and additional information on portable spa covers will be presented during the comment period.

Respectfully submitted,

Jennifer Hatfield
Director of Government & Public Affairs
Florida Swimming Pool Association

Date Proposal Submitted	3/24/2010	**Section**	504.8
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Add Florida-specific water flow control requirements from Florida code into IECC base.

Rationale

This section was overlooked when the FLorida-specific criteria were incorporated into the new IECC base code; it reflects Florida law.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None.

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

None.

Impact to industry relative to the cost of compliance with code

None.

Requirements

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

Yes.

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

Yes.

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

No.

Does not degrade the effectiveness of the code

No.

504.8 Water Flow Rate Controls.

504.8.1 Showers. Showers used for other than safety reasons shall be equipped with flow control devices to limit the water discharge to a maximum of 2.5 gpm (.16 L/S) per shower head at a distribution pressure of 80 psig (552 kPa) when tested in accordance with the procedures of ANSI A112.18.1M. Flow restricting inserts used as a component part of a showerhead shall be mechanically retained at the point of manufacture.

504.8.2 Lavatories or Restrooms of Public Facilities. Lavatories or restrooms of public facilities shall:

1. Be equipped with outlet devices which limit the flow of hot water to a maximum of 0.5 gpm (.03 L/S) or be equipped with self-closing valves that limit delivery to a per cycle maximum of 0.25 gallons (.95 L) of hot water for recirculating systems and to a maximum of 0.50 gallons (1.9 L) for non-recirculating systems.

Exception: Separate lavatories for physically handicapped persons shall not be equipped with self-closing valves.

2. Be equipped with devices which limit the outlet temperature to a maximum of 110°F (43°C).

3. Meet the provisions of 42 CFR 6295 (k), Standards for Water Closets and Urinals.

Date Proposal Submitted	4/1/2010	**Section**	505.5
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Correct section formatting to clarify that the Total connected interior lighting power and Interior lighting Power are general criteria while sec. 505.5.1 applies to shell buildings, renovations and alterations.

Rationale

Clarify that general lighting criteria apply to all buildings. As written, code requirements could be construed as only applying to shell buildings, renovations and alterations.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Will clarify the intent of the code.

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

None expected.

Impact to industry relative to the cost of compliance with code

Ensure that all building lighting loads meet criteria in the code.

Requirements

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

Yes, it clarifies the code.

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

Yes, it makes the code easier to understand and enforce.

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

No.

Does not degrade the effectiveness of the code

No.

505.5 Interior lighting power requirements (Prescriptive).

505.5.1 Shell buildings, renovations and alterations. A building, or part of a building, complies with this section if its total connected lighting power calculated under Section 505.5.2 ~~1.1~~ is no greater than the interior lighting power calculated under Section 505.5.3 ~~2~~.

505.5.2 ~~505.5.1.1~~ Total connected interior lighting power. The total connected interior lighting power (watts) shall be the sum of the watts of all interior lighting equipment as determined in accordance with Sections 505.5.2.1 ~~505.5.1.1.1~~ through 505.5.2.4 ~~505.5.1.1.4~~.

Exceptions: [No change to exceptions 1 – 14]

505.5.2.1~~505.5.1.1.1~~ Screw lamp holders. The wattage shall be the maximum labeled wattage of the luminaire.

505.5.2.2~~505.5.1.1.2~~ Low-voltage lighting. The wattage shall be the specified wattage of the transformer supplying the system.

505.5.2.3~~505.5.1.1.3~~ Other luminaires. The wattage of all other lighting equipment shall be the wattage of the lighting equipment verified through data furnished by the manufacturer

or other approved sources.

505.5.2.4~~505.5.1.1.4~~ Line-voltage lighting track and plug-in busway. The wattage shall be:

1. The specified wattage of the luminaires included in the system with a minimum of 30 W/lin ft. (98 W/lin. m);

2. The wattage limit of the system's circuit breaker; or

3. The wattage limit of other permanent current limiting device(s) on the system.

505.5.3 ~~1.2~~ Interior lighting power.

~~**505.5.1 .2.1 Shell buildings, renovations and alterations.**~~ The total interior lighting power (watts) shall be ~~is~~ the sum of all interior lighting powers for all areas in the building covered in the ~~this~~ permit. The interior lighting power is the floor area for each building area type listed in Table 505.5.3 ~~1.2~~times the value from Table 505.5.3 ~~1.2~~ for that area. For the purposes of this method, an "area" shall be defined as all contiguous spaces that accommodate or are associated with a single building area type as listed in Table 505.5.3 ~~1.2~~. ~~When this method is used to calculate the total interior lighting power for an entire building, e~~Each building area type shall be treated as a separate area.

505.5.3.1 ~~2.2~~ Standard reference design, interior lighting power. The lighting power densities listed in Table 505.5.3 ~~1.2~~constitute the interior lighting power Standard Reference Design for Section 506.

TABLE 505.5.3 ~~1.2~~

LIGHTING POWER DENSITIES (LPD) USING THE SPACE-BY-SPACE METHOD

[No change to table]

Date Proposal Submitted	3/25/2010	**Section**	505.5.1.2.3
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Add Florida-specific criteria for calculating luminaire wattage. Correct from Addenda i to ASHRAE 90.1-04.

Rationale

These Florida-specific criteria for calculating the wattage to be included for code compliance were inadvertently not moved to the new base code. The proposed change provides a simplification to code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Clarifies code.

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

None.

Impact to industry relative to the cost of compliance with code

Provides guidance on lighting wattage for code compliance compliance. No cost.

Requirements

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

Yes. Provides for code clarity.

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

Yes, clarifies the code requirements.

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

No.

Does not degrade the effectiveness of the code

No.

505.5.1.2.3 [B4.1.1] Luminaire Wattage. Luminaire wattage incorporated into the installed interior lighting power shall be determined in accordance with the following criteria:

1. The wattage of incandescent or tungsten-halogen luminaires with medium screw base sockets and not containing permanently installed ballasts shall be the maximum labeled wattage of the luminaire.

2. The wattage of luminaires with permanently installed or remote ballasts or transformers shall be the operating input wattage of the maximum lamp/ auxiliary combination based on values from the auxiliary manufacturer's literature or recognized testing laboratories or shall be the maximum labeled wattage of the luminaire.

3. The wattage of line-voltage lighting track and plug-in busway that allow the addition and/or relocation of luminaires without altering the wiring of the system shall be:

a. the specified wattage of the luminaries included in the system with a minimum of 30 watts per linear foot.

4. The wattage of low-voltage lighting track, cable conductor, rail conductor, and other flexible lighting systems that allow the addition and/or relocation of luminaires without altering the wiring of the system shall be the specified wattage of the transformer supplying the system.

5. The wattage of all other miscellaneous lighting equipment shall be the specified wattage of the lighting equipment.

Date Proposal Submitted	4/2/2010	**Section**	505.5.3
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Add footnotes to Table 505.5.3 from Table 5.5.2 of the IECC.

Rationale

This mod would allow shell buildings a bit more leeway when it comes to lighting compliance with the code per Addendum ai to ASHRAE 90.1-2004.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Makes criteria for additional Interior Lighting Power consistent with the I code.

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

Allows slightly more leeway in the lighting allowed for a building.

Impact to industry relative to the cost of compliance with code

Provides an avenue by which more lighting can be designed for a building.

Requirements

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

This mod would clarify the code's intent.

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

Yes, it puts an allowance allowed by ASHRAER 90.1 and the IECC back into the code.

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

Does not discriminate against materials, products, etc.

Does not degrade the effectiveness of the code

No; rather it specifies an allowed variance from the codes criteria.

TABLE 505.5.3 ~~1.2~~

LIGHTING POWER DENSITIES (LPD) USING THE SPACE-BY-SPACE METHOD

[No change to table]

For SI: 1 foot = 304.8 mm, 1 watt per square foot = W/0.0929 m2.

a. In cases where both a general building area type and a more specific building area type are listed, the more specific building area type shall apply.

b. Where lighting equipment is specified to be installed to highlight specific merchandise in addition to lighting equipment specified for general lighting and is switched or dimmed on circuits different from the circuits for general lighting, the smaller of the actual wattage of the lighting equipment installed specifically for merchandise, or additional lighting power as determined below shall be added to the interior lighting power determined in accordance with this line item.

Calculate the additional lighting power as follows:

Additional Interior Lighting Power Allowance = 1000watts + (Retail Area 1 × 0.6 W/ft2) + (Retail Area 2 × 0.6W/ft2) + (Retail Area 3 × 1.4 W/ft2) + (Retail Area 4 × 2.5 W/ft2).

where:

Retail Area 1 = The floor area for all products not listed in Retail Area 2, 3 or 4.

Retail Area 2 = The floor area used for the sale of vehicles, sporting goods and small electronics.

Retail Area 3 = The floor area used for the sale of furniture, clothing, cosmetics and artwork.

Retail Area 4 = The floor area used for the sale of jewelry, crystal and china.

Exception: Other merchandise categories are permitted to be included in Retail Areas 2 through 4 above, provided that justification documenting the need for additional lighting power based on visual inspection, contrast, or other critical display is approved by the authority having jurisdiction.

Date Proposal Submitted	4/2/2010	**Section**	505.6
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jack Glenn	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

This modification introduces the option for approved computing software energy compliance

Rationale

This provision gives the Florida Building commission the option to approve additional software tools that can meet the provisions laid out in this appendix. Although Florida has not had yet other tools available, other manufacturers may attempt to meet these computing criteria. As with all other products associated with the code, competition is essential to meet free market requirements.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on local enforcement.

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

Provides more options to show compliance

Impact to industry relative to the cost of compliance with code

Potential to reduce cost as market will be more competitive

Requirements

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

No change

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

Improves the code by providing options.

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.

General Comment

EN4467-G1

Proponent Jeff Sonne **Submitted** 5/27/2010 **Attachments** No

Comment

Concerns with allowing additional performance compliance software include:

- Non-uniform compliance calculation results and potential for "gaming" the system by using the product that provides the lowest e-Ratio
- Additional effort and potential confusion for building departments having to keep current on new and allowed compliance products and reports
- Significant on-going state expenditures to review and approve additional software products and address reporting, technical assistance and related issues and questions
- Lack of existing standards and methodology for reviewing, evaluating and certifying software products.

B-2.3 ~~506.6~~ Calculation software tools. Calculation procedures used to comply with this section shall be those included in the EnergyGauge Summit Fla/Com or other software tools as approved by the Florida Building Commission software

Date Proposal Submitted	4/1/2010	**Section**	506
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jeff Sonne	**General Comments**	Yes
Attachments	No	**Alternate Language**	Yes

Related Modifications

Section 202- add definition of vegetative roof.

Summary of Modification

Reduce heating and cooling roof heat flux rates by 45% for vegetative roofs in commercial whole building performance code compliance calculations.

Rationale

Credit is based on vegetative roof research reported in the following publication:

Sonne, J., D. Parker, "Energy Performance Aspects of A Florida Green Roof, Part 2", Florida Solar Energy Center, FSEC-PF-442-08, December 15, 2008.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Vegetative roofs are optional so no impact unless selected, in which case a vegetative roof inspection would be required.

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

Vegetative roofs are optional so no impact unless selected to improve roof energy performance.

Impact to industry relative to the cost of compliance with code

None unless the vegetative roof option is selected, in which case impact would be minimal.

Requirements

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

Vegetative roofs have been documented to save energy and provide other benefits to the general public.

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

Improves the code by allowing energy performance accounting for vegetative roofs.

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

Only adds a new code compliance option.

Does not degrade the effectiveness of the code

Improves code effectiveness by allowing energy performance accounting for vegetative roofs.

Alternate Language

EN4300-A1

Proponent Jeff Sonne **Submitted** 5/27/2010 **Attachments** Yes

Rationale

Addresses vegetative roof irrigation and clarifies that minimum roof/ceiling insulation levels must be upheld to claim credit for these roofs.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None unless optional credit is taken.

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

None unless optional credit is taken.

Impact to industry relative to the cost of compliance with code

None unless optional credit is taken.

Requirements

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

Helps insure minimum insulation levels are upheld and vegetative roof "health".

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

Helps insure minimum insulation levels are upheld and vegetative roof "health".

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

Improves code effectiveness by helping insure that minimum insulation levels are upheld and facilitating vegetative roof benefits.

General Comment

EN4300-G1

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

Publication should be made available to the public for review as it is a part of the code change.

506.3.3 Requirements specific to credit options. Credit may be claimed in the compliance calculation for technologies that meet the criteria for various options specified below.

506.3.3.1 Vegetative roofs. Credit may be claimed in whole building performance method calculations for the area of a proposed building's roof that is covered with a vegetative roof with a minimum growth media depth of 4 inches. The credit shall provide a 45% reduction in the heating and cooling roof heat flux rates for the roof area covered with the vegetative roof.

[Alternate text in red]

506.3.3 Requirements specific to credit options. Credit may be claimed in the compliance calculation for technologies that meet the criteria for various options specified below.

506.3.3.1 Vegetative roofs. Credit may be claimed in whole building performance method calculations for the area of a proposed building's roof that is covered with a vegetative roof that is designed and installed in accordance with ANSI/SPRI VF-1, with a minimum growth media depth of 4 inches. The credit shall provide a 45% reduction in the heating and cooling roof heat flux rates for the roof area covered with the vegetative roof. Minimum roof/ceiling insulation levels shall be code minimums as per Section 506.2.1.

ANSI/SPRI VF-1
External Fire Design Standard for Vegetative Roofs

This standard was developed in cooperation with Green Roofs for Healthy Cities.

Approved January 29, 2010

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411 Waverley Oaks Road
Suite 331
Waltham, MA 02452

www.spri.org.

Disclaimer

This standard is for use by architects, engineers, roofing contractors and owners of low slope roofing systems. SPRI, its members and employees do not warrant that this standard is proper and applicable under all conditions.

External Fire Design Standard for Vegetative Roofs

Approved January 29, 2010

1.0 Introduction

This design standard provides a method for designing external fire resistance for vegetative roofing systems. It is intended to provide a minimum design and installation reference for those individuals who design, specify, and install vegetative roofing systems. It shall be used in conjunction with the installation specifications and requirements of the manufacturer of the specific products used in the vegetative roofing system.

2.0 Definitions

The following definitions shall apply when designing a vegetative roofing system.

2.1 Ballast
In vegetative roofing systems; ballast consists of growing media, the trays or containers used to contain growing media, large stones, paver systems or lightweight interlocking pavers.

2.2 Border zone
The band around the edge of the vegetative plantings where no vegetation exists. It is frequently the perimeter of the roof area.

2.3 Firestops
Area capable of stopping the spread of flame.

2.4 Gravel stop
A low upward-projecting edge, usually formed from sheet or extruded metal, installed along the perimeter of a roof to prevent gravel or other small or lightweight aggregate from being blown or washed off. The gravel stop also serves as a point of termination for the roofing system.

2.5 Growing media
An engineered formulation of inorganic and organic materials including but not limited to heat-expanded clays, slates, shales, aggregate, sand, perlite, vermiculite and organic material including but not limited to compost worm castings, coir, peat, and other organic material.

2.6 Parapet
A parapet wall is a structure that rises above the roof edge to provide a wall of varying heights. The part of a perimeter wall that extends above the roof.

2.7 Penetration
A penetration is an object that passes through the roof structure and rises above the roof deck/surface. Penetrations consist of, but are not limited to, mechanical buildings, penthouses, ducts, pipes, expansion joints and skylights

2.8 Roof areas
For design and installation purposes, the roof surface is divided into the following areas:

2.8.1 Corners
The space between intersecting walls forming an angle greater than 45 degrees but less than 135 degrees.

2.8.2 Corner areas
The corner area is defined as the roof section with sides equal to 40% of the building height. The minimum length of a corner is 8.5 ft. (2.6 m).

2.8.3 Perimeter
The perimeter area is defined as the rectangular roof section parallel to the roof edge and connecting the corner areas with a width measurement equal to 40% of the building height, but not less than 8.5 ft. (2.6 m).

2.8.4 Field
The field of the roof is defined as that portion of the roof surface, which is not included in the corner or the perimeter areas as defined above.

2.9 Succulent
A plant with thick fleshy leaves and stems that can store water.

2.10 Grasses
Slow growing, narrow leaved plants. Grasses can be maintained by mowing.

2.11 Vegetative roofing system
A vegetative roofing system consists of vegetation, growing media, the trays or containers used to contain growing media, large stones, paver systems or lightweight interlocking pavers, drainage system, and waterproofing over a roof deck.

3.0 System requirements & general design considerations

3.1 Roof structure design or evaluation
The building owner shall consult with a licensed design professional such as an architect, architectural engineer, civil engineer, or structural engineer to verify that the structure and deck will support fully hydrated growing media, vegetation and other material or objects installed on the roof deck in combination with all other design loads.

3.2 Membrane requirements
The membrane specified for use in the vegetative system shall meet the recognized industry minimum material requirements for the generic membrane type, and shall meet the specific requirements of its manufacturer. When the membrane or system is not impervious to root penetration a root barrier shall be installed.

3.3 Slope
This Design Standard is limited to roof slope designs up to 2 in 12. For slopes greater than 2 in 12, a design professional experienced in vegetative roof design shall provide the design and the design shall be approved by the authority having jurisdiction.

3.4 Fire stops

3.4.1 Walls
Fire stop walls shall be of non-combustible construction complying with the applicable building code and extend above the roof surface a minimum of 36 in. (914 mm).

3.4.2 Fire break roof areas
Fire break roof areas shall consist of a class A (per ASTM E108 or UL790) rated roofing system for a minimum 6 ft. (1.8 m) wide continuous border.

3.5 Interior fire rating: steel decks: concrete decks
Interior fire resistance shall comply with the design fire penetration requirements based on use and occupancy and be determined to meet interior fire resistance requirements for the system installed beneath the soil media.

3.6 Exterior fire rating
Construct the roofing system inclusive of roof decks, vapor barriers, insulations, roofing membranes, flashings, roof drainage components, growing media and vegetation to conform to the designed fire resistance requirements as determined by the building code for the building considered.

External Fire Design Standard for Vegetative Roofs

Approved January 29, 2010

3.7 Wind design
The vegetative roofing system shall be designed for wind resistance before beginning the design process for fire resistance. Vegetative roofing systems shall be designed to the requirements of SPRI RP 14, "Wind Design Standard for Vegetative Roofing systems" or other design standards as approved by the authority having jurisdiction.

4.0 Vegetative roof design options
Fire-resistant vegetative roof designs include, but are not limited to, the generic systems described below. Other systems, when documented or demonstrated as equivalent to the provisions of this standard, are permitted to be used when approved by the authority having jurisdiction (See Commentary Section 4.0). When there is a conflict between this standard and the wind design requirements the design with the more conservative requirement shall be used.

4.1 Generic fire resistive vegetative systems

4.1.1 Succulent based systems
Systems where the vegetative portion of the roof is planted in growing media that is greater than 80% inorganic material, and the vegetation consists of plants that are classified as succulents. Non-vegetative portions of the rooftop shall be systems that are classified ASTM E108, Class A.

4.1.2 Grass based systems
Systems where the vegetative portion of the roof is planted in growing media that is greater than 80% inorganic material, and the vegetation consists of plants that are classified as grass. Non-vegetative portions of the rooftop shall be systems that are classified ASTM E108, Class A.

4.2 Fire protection for roof top structures and penetrations
For all vegetative roofing systems abutting combustible vertical surfaces, a Class A (per ASTM E108 or UL790) rated roofing system shall be achieved for a minimum 6 ft. (1.8 m) wide continuous border placed around rooftop structures and all rooftop equipment.

4.3 Spread of fire, protection for large area roofs
A firestop as described in Section 3.4 shall be used to partition the roof area into sections not exceeding 15,625 ft^2 (1,450 m^2), with each section having no dimension greater than 125 ft. (39 m). Incorporate the border zones into expansion joints or roof area dividers wherever possible.

4.4 Fire hydrants
Access to one or more fire hydrants shall be provided.

4.5 Border zones
Border zones are required when terminating at a fire barrier wall.

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5.0 Maintenance
Maintenance shall be provided as needed to sustain the system keeping vegetative roof plants healthy and to keep dry foliage to a minimum; such maintenance includes, but is not limited to irrigation, fertilization, weeding. Excess biomass such as overgrown vegetation, leafs and other dead and decaying material shall be removed at regular intervals not less than two times per year. Provision shall be made to provide access to water for permanent or temporary irrigation. The requirement for maintenance shall be conveyed by the designer to the building owner, and it shall be the building owners responsibility to maintain the vegetative roofing system.

Commentary to VF-1

This Commentary consists of explanatory and supplementary material designed to assist designers and local building code committees and regulatory authorities in applying the requirements of the preceding standard.

The Commentary is intended to create an understanding of the requirements through brief explanations of the reasoning employed in arriving at them.

The sections of this Commentary are numbered to correspond to the sections of the VF-1 standard to which they refer. Since it is not necessary to have supplementary material for every section in the standard, there are gaps in the numbering of the Commentary.

C1.0 Introduction

Green roofs, also known as vegetative roofs, eco-roofs, and rooftop gardens fall into two main categories: intensive is primarily defined as having more than 6 inches of growing media, greater loading capacity requirements, and greater plant diversity, and extensive, defined as having less than 6 inches of growing media, less loading capacity requirements and fewer options for plants.

Vegetative roofs are complex systems consisting of many parts critical to the functioning of the system. To name a few of the components that are generally found in the system, but the system is not limited to these products: insulation, waterproofing membrane, protection mats/boards, root barrier, drainage layer, filter fabric, growing media, and vegetation. A vegetative roof may consist of more than just growing media and vegetation, but include such things as walkways, water features, stone decoration, and benches.

A vegetative roof may cover the whole roof or share a portion of the surface with a conventional roofing system. They are versatile systems with many strong attributes including stormwater management, reduction of the heat island effect, and aesthetics to name a few.

VF-1 is a minimum standard. Manufactures and /or designers requirements that exceed the standards minimum requirements can be incorporated into specifications for vegetative roof fire resistance.

While the standard is intended as a reference for designers and roofing contractors, the design responsibility rests with the “designer of record.”

C2.1 Ballast

Ballast includes the growing media and the trays and containers that are used to contain growing media. The type of growing media used as ballast in vegetative roofs can influence the fire performance of the system. Stones, pavers, and concrete surfaces are often used as ballast and are non-combustible.

C2.5 Growing media

Inorganic materials used as growing media are not combustible, however media with high concentrations of organic material can support combustion. Soils with high percentages of organic material can negatively affect the fire resistance of a system. Currently data is unavailable on specific growing media blends, but it is known that media with high loadings of organic material such as peat moss can burn.

Sources for growing media specifications are as follows:

From ASTM

C549-06	Standard Specification for Perlite Loose Fill Insulation
C330-05	Standard Specification for Lightweight Aggregates for Structural Concrete
C331-05	Standard Specification for Lightweight Aggregates for Concrete Masonry Units
C332-07	Standard Specification for Lightweight Aggregates for Insulating Concrete

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Test Methods for classifying material

C117-04	Standard Test Method for Materials Finer than 75-µm (No.200) Sieve in Mineral Aggregates by Washing
C136-06	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
D5975-96 (2004)	Standard Test Method for Determining the Stability of Compost by Measuring Oxygen Consumption.
	US Composting Council: "TMECC" Test Methods for the Examination of Composting and Compost.

C2.7 Penetration

Penetrations may consist of, but are not limited to, mechanical buildings, penthouses, ducts, pipes, expansion joints and skylights. These penetrations may be combustible or fire may have a major impact on their performance. For these reasons, penetrations need to be protected from fire exposure.

C2.11 Vegetative roofing system

Vegetative roofing systems will go over both loose-laid, mechanically fastened, and fully adhered roofing systems. However, when a mechanically attached roofing system is used special precautions need to be taken to prevent damage to the membrane due to the fastener and plates below the membrane and impact damage and wear that can occur at these locations. Mechanically attached systems should not be used unless approved by the membrane supplier of vegetative roofs, and all precautions from the supplier are followed.

There are several types of vegetative roofing systems as noted below, and they can be interchanged without affecting the fire performance of the system.

Ballasted vegetative roofing system
A ballasted vegetative roofing system consists of vegetation; ballast as defined in 2.1, provides waterproofing and includes a membrane or membrane and substrate materials installed over a structural deck capable of supporting the system. Membranes are permitted to be loose laid, mechanically attached or partially adhered to the roof deck or supporting insulation.

Protective vegetative roofing system
A protected vegetative roofing system consists of vegetation, growing media, ballast as defined in 2.1, a fabric that is pervious to air and water, insulation, and includes a membrane that provides waterproofing and substrate materials installed over a structural deck capable of supporting the system. Membranes are permitted to be loose laid, mechanically attached or partially or fully adhered to the roof deck or supporting insulation.

Vegetative roofing system suing a fully adhered roof membrane system
A vegetative roofing system using a fully adhered membrane system consists of vegetation, growing media, ballast as defined in 2.1, and includes a membrane that provides waterproofing and is fully adhered to attached insulation, or adhered directly to a roof deck.

External Fire Design Standard for Vegetative Roofs

Approved January 29, 2010

C3.2 Membrane requirements

List of ASTM references for generic roofing types

EPDM	ASTM D-4637
PVC	ASTM D-4434
TPO	ASTM D-6878
HYPALON/CPE/PIB	ASTM D-5019
KEE	ASTM D-6754
SBS	ASTM D-6164, 6163, 6162
APP	ASTM D-6222, 6223, 6509
BUR	As defined by the standards referenced in the International Building code
	Fully adhered hot-applied reinforced waterproofing system ASTM D 6622

Building height

Special consideration shall be given when the building height is greater than 150 ft. (45.7 m). Vegetative roofs can be designed using reference 1, consultation with a wind design engineer, or wind tunnel studies and fire design experience of the specific building and system.

Other factors

There are other factors that affect the design of the vegetative roof for wind and fire. These include, but are not limited to, building height, building location, pressurized buildings, large openings, eaves and overhangs.

C3.5 Exterior fire rating

Building codes are specific as to the requirements for the roofing system fire resistance based on designated occupancy. Roofing systems may be required to obtain ASTM E 108 Class A, B or C. Data exists that supports the Classification of succulent based systems as Class A fire resistance. Other systems may be tested for fire resistance as installed, but the vegetation needs to be maintained in order to continue to sustain fire resistance. Provisions need to be made so the vegetation installed on the roof will have sustainable resistance to the spread of flame as required by the building code.

C3.6 Wind design

Vegetative roofs are not recommended where the basic wind speed is greater than 140 mph (225 kph). However, they can be designed using reference 1, consultation with a wind design engineer, or wind tunnel studies of the specific building and system. The "authority having jurisdiction" is the only source for approval of designs not covered in this document. ASCE 7 gives guidance on how non-standard conditions should be evaluated.

C4.0 Vegetative roof design options

The Design Options of Section 4 were developed to provide a barrier to prevent the spread of fire from the vegetative section of the roof to other parts of the building. These design options were developed from European experience, forest fire prevention, and roofing experience. Vegetative "Green Roofs" have an excellent history of resisting fire damage.

Some vegetation, such as succulents, are very fire resistive. Local code officials may consider waiving the barrier requirements when fire resistive vegetation is installed.

ASTM E-108 and UL 790 can be used to test vegetative roofing systems. Modifications of the test standards may be able to provide a meaningful test for selected conditions. However, with all the plant types that could be used in a roof design, the varying weather conditions that occur through the year, and the effects of seasons generate many variables that limit the potential to classify a roof construction. For this reason, if the roof is being

External Fire Design Standard for Vegetative Roofs

Approved January 29, 2010

designed with little or no maintenance planned; fire rated barriers are required.

Given that wind standards may often require greater areas of non-vegetative roof, the wind standard will most often determine the size of the perimeter area or border zones.

C4.2 Fire protection for roof top structures and penetrations

Pavers are often used as Class A or non-combustible separators. Care should be taken when installing pavers to avoid damaging the membrane. Some manufacturers require a separation material between the paver and the membrane.

C4.3 Spread of fire, protection for large area roofs

Spread of flame for Class A fire is limited to 6 ft. (1.8 m), if there is a 6 ft. break separating vegetative areas using Class A material or non combustible material the flame spread is not expected to ignite the nearby area. The dimensions chosen for large area roof limitations are based on FLL and FM requirements, they also coincide with the International Building Codes Area limitations for Assembly buildings.

C5.0 Maintenance

The building owner needs to properly maintain a vegetative roof. One of the important ways of preventing fires is to keep the roof adequately watered. The need for water will vary greatly due to climate and types of plants chosen. Designers should be aware that plantings are to be specific for the roof being installed and that rooftops are at best hostile places for vegetation. Removal of dead foliage should occur on a regular interval, for most roofs and that may be at least once a month. The moisture level of the growing media should be checked weekly. By regularly removing excess biomass that could become fuel for a fire on the rooftop, the risk of fire spreading beyond the 6 foot (1.8 m) Class A fire rated separation setback to combustible vertical surfaces is minimized.

Best management practices for maintenance include regular weeding, fertilization, and removal of dead/dormant vegetation in accordance with the recommendations of the green roof provider. Specific directions for the proper maintenance of the vegetative cover should be furnished by the green roof provider.

External Fire Design Standard for Vegetative Roofs

Approved January 29, 2010

References

1. Kind, R.J. and Wardlaw, R.L., Design of Rooftops Against Gravel Blow-Off, National Research Council of Canada, Report No. 15544, September 1976.
2. FM Global: Property Loss Prevention Data Sheets 1-35 Green Roof Systems
3. FM Global: Approval Standard for Vegetative Roof Systems Class Number 4477 Draft April 2009
4. FLL Standard "Guideline for the Planning, Execution and Upkeep of Green-Roof Sites", Forschungsgesellschaft Landschaftsentwicklung Landschaftsbau e.V. – FLL, Colmantstr, Bonn, Germany.

Date Proposal Submitted	3/26/2010	**Section**	506.2
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Eric Lacey	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	No

Related Modifications

3953

Summary of Modification

This proposal removes an exception from the mandatory minimum R-19 ceiling insulation requirement, ensuring a reasonable level of efficiency, regardless of the type of ceiling construction selected by the builder or design professional.

Rationale

(See attached file for detailed reason statement.) This proposal removes an exception from the mandatory minimum R-19 ceiling insulation requirement, ensuring a reasonable level of efficiency, regardless of the type of ceiling construction selected by the builder or design professional.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

There should be no impact on enforcement.

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

This proposal will yield energy efficiency benefits over the lifetime of the code.

Impact to industry relative to the cost of compliance with code

The proposal will increase costs only in cases where a builder would have selected specific roof assemblies and applied the insulation exception. In all other cases, there is no cost impact.

Requirements

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

This proposal will save energy and money over the lifetime of the home.

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

The proposal strengthens the code and encourages better building practices.

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

The proposal does not discriminate against materials or systems of construction. The mandatory requirement applies equally to all forms of construction.

Does not degrade the effectiveness of the code

The proposal does not degrade the effectiveness of the code.

General Comment

EN3954-G1

Proponent Amy Schmidt **Submitted** 5/28/2010 **Attachments** No

Comment

R-19 ceilings are constructable. There is no reason to weaken the code or loose efficiency in this area. I support this proposal.

506.2 Mandatory requirements. Compliance with this section requires that the mandatory and applicable prescriptive criteria of Sections 502, 503, 504 and 505 be met.

506.2.1 Roof/ceiling thermal envelope. The roof or ceiling which functions as the building's thermal envelope shall be insulated to an R-value of at least R-~~10~~19. Multiple-family residential roofs/ceilings shall be insulated to an R-value of at least R-19~~, space permitting~~. Where cavities beneath a roof deck are ventilated, the ceiling shall be considered the envelope component utilized in the EnergyGauge Summit Fla/Com calculation.

Eliminate Ceiling Insulation Exemptions

This proposal ensures that the building thermal envelope will maintain a reasonable level of efficiency, regardless of the type of ceiling construction selected by the builder or design professional. Requirements listed in the "Mandatory" sections of the code are intended to be backstops against trade-offs. For example, Section 401.2 specifies that every building must meet the air sealing requirements of Section 402.4, the programmable thermostat requirement in Section 403.1, and the fenestration trade-off caps in Section 402.5 (among others). These are all important backstops designed to ensure that regardless of the compliance method used (performance or total UA), these building elements will maintain a reasonable level of efficiency.

What makes Section 405.2.1 and 506.2.1 different from all other mandatory provisions is that both sections make a significant exception to an existing backstop for choices made by the builder or design professional. The amount of insulation required by these sections (R-19) is already significantly lower than what would be required under the prescriptive path (R-30). This is not a unique backstop. Georgia also requires R-19 (or more) as a mandatory minimum in ceiling assemblies. This decreased amount still allows considerable design flexibility without leaving ceilings unnecessarily weak.

Sections 405.2.1 and 506.2.1 go an additional step, however, and allow further decreases in attic insulation where there is "inadequate space" for insulation. The types of ceilings included in this exception include "single assembly ceilings of the exposed deck and beam type and concrete deck roofs," but these ceiling assemblies are certainly capable of being insulated to R-19 or more. There should not be an exception to the mandatory provisions unless it is physically impossible to meet the requirement. If that is the case, it should be strongly considered whether these types of ceiling assemblies are advisable or even allowable going forward.

Date Proposal Submitted	4/1/2010	**Section**	506.2.1
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Amy Schmidt	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

4286

Summary of Modification

Deletes requirements in Section 506.2.1 that are to be covered by proposed section 502.1.1.2.

Rationale

This code change modification will assist the Florida Building Commission to achieve the 20% increase in energy efficiency in the 2010 Florida Energy Code as mandated by the Florida Legislature in The Energy Act of 2008.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Perscriptive requirements will all be located in section 502.1.1 making enforcement easier.

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

The deletion of this section in itself does not add to the cost of compliance. Utility bill savings due to energy efficiency increases in related proposal are to be expected.

Impact to industry relative to the cost of compliance with code

The deletion of this section in itself does not add to the cost of compliance. Minimal increases may be realized due to increases in energy efficiency requirements in related proposal.

Requirements

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

Modification does not adversily affect the above but serves to increase comfort and savings for occupants.

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

Modification allows many options for meeting the requirements.

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

Modificaiton does not discriminate against any of the above.

Does not degrade the effectiveness of the code

Modification only serves to make the code more effective by offering perscriptive requirements in the same location.

506.2.1 Roof/ceiling thermal envelope. The roof or ceiling which functions as the building's thermal envelope shall be insulated to an R-value of at least R-10. Multiple-family residential roofs/ceilings shall be insulated to an R-value of at least R-19, space permitting. Where cavities beneath a roof deck are ventilated, the ceiling shall be considered the envelope component utilized in the EnergyGauge Summit Fla/Com calculation.

Date Proposal Submitted	4/2/2010	**Section**	506.2.1
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jeff Mang	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

Increase the mandatory roof R-value under section 506.2.1 from R-10 to R-17.

Rationale

[See attached file for complete rationale.]

The mandatory roof R-value, or backstop, should stay in step with recent increases in the prescriptive R-values for commercial roofs under IECC and ASHRAE.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

no impact on code enforcement.

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

any impact on building cost will be offset by energy savings.

Impact to industry relative to the cost of compliance with code

no impact on industry.

Requirements

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

will improve building comfort and save energy.

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

ensures long-term thermal performance of the building.

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

No product descrimination.

Does not degrade the effectiveness of the code

Maintains effectiveness of the code.

General Comment

EN4408-G1

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

Original IECC language should be retained as no Florida specific reason is given for this change. If it is such a good idea, it should be submitted for national consideration and acceptance at the International Code Council.

506.2 Mandatory requirements. Compliance with this section requires that the mandatory and applicable prescriptive criteria of Sections 502, 503, 504 and 505 be met.

506.2.1 Roof/ceiling thermal envelope. The roof or ceiling which functions as the building's thermal envelope shall be insulated to an R-value of at least ~~R-10~~ R-17. Multiple-family residential roofs/ceilings shall be insulated to an R-value of at least R-19, space permitting. Where cavities beneath a roof deck are ventilated, the ceiling shall be considered the envelope component utilized in the EnergyGauge Summit Fla/Com calculation.

Increase the mandatory roof R-values under section 506.2.1 from R-10 to R-17.

Rationale:

The minimum prescriptive R-value requirements under the IECC and ASHRAE Standard 90.1 for commercial roofs has increased significantly during the last two code cycles. For instance, under the 2006 IECC and 90.1-2004, a minimum of R-15 was the prescriptive requirement in climate zone 2 for insulation installed entirely above deck. This was increased to R-20 under the 2009 IECC and ASHRAE 90.1-2007 and is expected to be increased again soon. R-25 for zone 2, a 67% increase from the levels six years ago, was given preliminary approval by ASHRAE as part of the 90.1 addendum bb during its winter meeting. The increased R-values for the "above deck" roofs received no negative comments, so it is almost certain these values will receive final approval in June and will be included in the ASHRAE Standard 90.1-2010.

The mandatory minimum requirements, or backstop, under section 506.2.1 should be increased to stay in step with the increased stringency under the IECC and ASHRAE model building energy codes and the increased stringency called for under Florida law. This increase in the mandatory roof insulation to R-17 would improve the balance between the flexibility of short-term performance tradeoffs and the long-term nature of roof thermal performance.

Date Proposal Submitted	4/2/2010	**Section**	506.2.1
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jeff Mang	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

Remove the “space permitting” exception to the mandatory roof R-value for multiple-family residential roofs under section 506.2.1.

Rationale

[see attached file for complete rationale] The R-19 is a cost-effective requirement for multiple-family residential roofs. The current exception is too open ended and vague and should be eliminated or clarified.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

may improve clarity of code.

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

savings in energy costs will offset any increase in building costs.

Impact to industry relative to the cost of compliance with code

no impact.

Requirements

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

improved building comfort and energy savings.

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

will help to ensure long-term thermal performance of building.

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

no product discrimination.

Does not degrade the effectiveness of the code

improves code effectiveness.

General Comment

EN4413-G1

Proponent Ann Stanton **Submitted** 5/25/2010 **Attachments** No

Comment

Section 553.905, Florida Statutes, Thermal efficiency standards for new residential buildings, states, in part: "Thermal designs and operations for new residential buildings...manufacturer. All new residential buildings, except those herein exempted, shall have insulation in ceilings rated at R-19 or more, space permitting. Thermal...period."
In other words, Florida law specifically allows the "space permitting" language for new residential construction. This mod applies to multiple family residential.

General Comment

EN4413-G2

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

Original IECC language should be retained as no Florida specific reason is given for this change. If it is such a good idea, it should be submitted for national consideration and acceptance at the International Code Council.

506.2 Mandatory requirements. Compliance with this section requires that the mandatory and applicable prescriptive criteria of Sections 502, 503, 504 and 505 be met.

506.2.1 Roof/ceiling thermal envelope. The roof or ceiling which functions as the building's thermal envelope shall be insulated to an R-value of at least R-10. Multiple-family residential roofs/ceilings shall be insulated to an R-value of at least R-19~~, space permitting~~. Where cavities beneath a roof deck are ventilated, the ceiling shall be considered the envelope component utilized in the EnergyGauge Summit Fla/Com calculation.

Remove the "space permitting" exception to the mandatory roof R-value for multiple-family residential roofs under section 506.2.1.

Rationale:

The R-19 mandatory requirement for multiple-family residential roofs under section 506.2.1 is cost-effective and an important backstop in the code that limits certain building performance tradeoffs that can undermine a building's long-term energy efficiency. Because of the flexibility provided under the building performance compliance method, architects and building designers should be able to comply with this backstop. Also, the exception is too open ended and vague. If "space permitting" is not deleted, it should at least be clarified to prevent inappropriate use of the exception.

Date Proposal Submitted	4/1/2010	**Section**	506.3
Chapter	5	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Mangesh Basarkar	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Addition of credit for use of Energy Ventilation (ERV) Systems in performance method

Rationale

Current code software does not account for ERV systems. Studies conducted at FSEC for 7 typical building types (large and small offices, retail stores, schools, fast food restaurants, hotels & portable classrooms) show some HVAC energy savings potential using ERV systems for different climate zones in Florida. Results from the office building studies were used to determine the suggested credit.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entities relative to enforcement of code is envisioned

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

No impact to building and property owners relative to cost of compliance with code is envisioned

Impact to industry relative to the cost of compliance with code

No impact to industry relative to cost of code compliance is envisioned

Requirements

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

Proposal has no connection with health, safety and welfare of the general public

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

Proposal improves the code by encouraging industry to adopt progressive energy saving techniques like ERV systems

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

Proposed code modification does not discriminate again any materials, products, methods or systems of construction

Does not degrade the effectiveness of the code

Proposed code modification does not degrade the effectiveness of the code

Proposal:

The following credit is being proposed for buildings using Energy Recovery Ventilation (ERV) systems.

506.3.3 Requirements specific to credit options. Credit may be claimed in the compliance calculation for technologies that meet the criteria for various options specified below.

506.3.3.1 Vegetative Roofs. (separate code modification proposal is being submitted)

506.3.3.2 Energy Recovery Ventilation Systems. Credit may be claimed in the whole building performance method calculations for Energy Recovery Ventilation systems used in the proposed building. This credit is applicable for buildings in which every HVAC system has a design supply air flow of less than 5000 CFM.The credit shall also applicable to buildings where one or more HVAC system in the building has a design supply flow equal to 5000 CFM or greater but shall have minimum outdoor air supply to be less than 70% of the design supply air flow for that HVAC system.

The credit shall provide for a reduction of 6% of total HVAC annual energy use for buildings located in climate zone 1 and 4% of total HVAC annual energy use for buildings located in climate zone 2.

Date Proposal Submitted	3/22/2010	**Section**	AHAM
Chapter	6	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

3673

Summary of Modification

Add standard for room air conditioners and room air conditioner heat pump requirements to Standards chapter.

Rationale

Did not notice that room units were not included in the IECC tables until after the text had gone through the Work Group. Add referenced standard back into code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Returns current standard to code.

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

None.

Impact to industry relative to the cost of compliance with code

None.

Requirements

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

Yes.

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

Returns criteria to the code omitted by oversight.

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

No.

Does not degrade the effectiveness of the code

No.

AHAM

Association of Home Appliance Manufacturers

20 North Wacker Dr.

Chicago, IL 60606

Standard reference number	Title	Referenced in Code Section Number
ANSI/AHAM RAC1-03	Room Air Conditioners.	Table 503.2.3(3)

Date Proposal Submitted	3/25/2010	**Section**	AHRI
Chapter	6	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Update to AHRI 340/360-2004.

Rationale

Update to revised industry standard per ASHRAE Addenda r to 90.1-2004.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None.

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

None.

Impact to industry relative to the cost of compliance with code

This standard was updated in 2004. It is used by manufacturers for testing their equipment.

Requirements

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

Yes.

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

Yes.

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

No.

Does not degrade the effectiveness of the code

No.

General Comment

EN3865-G1

Proponent Robert Cochell **Submitted** 5/28/2010 **Attachments** No

Comment

We should move to the 2007 edition of AHRI 340/360. Manufacturers have already updated to the latest version of this standard. You can find a copy of AHRI 340/360-2007 at www.ahrinet.org/Content/FindaStandard_218.aspx

AHRI

AHRI 346/360-2004 ~~2000~~	Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment	Table 503.2.3(1), Table 503.2.3(3)

Text of Modification

AHRI

AHRI 340/360-2007 ~~2000~~ Pump Equipment	Commercial and Industrial Unitary Air-Conditioning and Heat Table 503.2.3(1), Table 503.2.3(3)

Date Proposal Submitted	3/24/2010	**Section**	ASHRAE
Chapter	6	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Update to most recent standard.

Rationale

Update to most recent edition of this referenced standard.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None.

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

None.

Impact to industry relative to the cost of compliance with code

None. Should have updated text as required by good design practice.

Requirements

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

Yes.

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

Yes.

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

No.

Does not degrade the effectiveness of the code

No.

ASHRAE American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

1791 Tullie Circle, NE

Atlanta, GA 30329-2305

Standard reference number	Title	Referenced in Code Section Number
ASHRAE Handbook—2008 ~~4~~	HVAC Systems & Equipment Handbook ~~---2004~~	503.2.1

Date Proposal Submitted	4/2/2010	**Section**	ASTM
Chapter	6	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

4433, 4438

Summary of Modification

Add standards into the code previously contained in the Florida energy code to reference insulation installation and thermal property testing standards.

Rationale

Standards referenced support general requirements brought forward from the current Florida energy code to ensure that insulation is installed properly and that building and assembly thermal efficiencies are determined in a consistent and accurate way.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Continues to provide standards for insulation installation.

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

Ensures that a building will perform as designed.

Impact to industry relative to the cost of compliance with code

Makes sure insulation is installed properly.

Requirements

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

Yes, ensures that buildings will be designed to meet the code and that insulation is installed correctly.

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

Continues to reference engineering tests and methods previously included in the code.

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

No. Provides a level playing field.

Does not degrade the effectiveness of the code

No.

ASTM ASTM International

100 Barr Harbor Dr

West Conshohocken, PA 19428-2959

Standard reference number	Title	Referenced in Code Section Number
ASTM C 177-04	Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus	304.2
ASTM C236-89 (1993^{el})	Test Method for Steady State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box	304.2.1
ASTM C 516-02	Vermiculite Loose Fill Thermal Insulation	Table 303.2
ASTM C 518-04	Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.	304.2.1
ASTM C 549-06	Perlite Loose Fill Insulation	
ASTM C 578-06	Rigid, Cellular Polystyrene Thermal Insulation	Table 303.2
ASTM C 665-06	Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing	Table 303.2
ASTM C 727-01	Standard Practice for Installation and Use of Reflective Insulation in Building Constructions.	Table 303.2
ASTM C 739-05b	Cellulosic Fiber Loose-Fill Thermal Insulation	Table 303.2
ASTM C 764-06a	Mineral Fiber Loose-Fill Thermal Insulation	Table 303.2
ASTM C 1015-06	Standard Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation	Table 303.2
ASTM C 1029-05a	Specification for Spray-Applied Rigid Cellular Polyurethane Thermal Insulation	Table 303.2
ASTM C 1158-05	Standard Practice for Use and Installation of Radiant Barrier Systems (RBS) in Building Construction	Table 303.2

ASTM C 1224-03 Reflective Insulation for Building Applications Table 303.2

ASTM C 1289-06 Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board Table 303.2

ASTM C 1313-05 Sheet Radiant Barriers for Building Construction Applications Table 303.2

ASTM C 1320-05 Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light-Frame Construction Table 303.2

ASTM C 1321-04 Standard Practice for Installation and Use of Interior Radiation Control Coating Systems (IRCC) in Building Construction Table 303.2

ASTM C1363-05 Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus 304.2.2

Date Proposal Submitted	3/22/2010	**Section**	CTI
Chapter	6	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

3675

Summary of Modification

Add standard for heat rejection equipment back into the code that were not included in the IECC.

Rationale

This standard is currently in the energy code. It was left out of the code by oversight because it is not in the IECC.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None.

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

None.

Impact to industry relative to the cost of compliance with code

None.

Requirements

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

Yes.

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

Yes.

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

No.

Does not degrade the effectiveness of the code

No.

CTI

Cooling Technology Tower Institute

2611 FM 1960 West, Suite H-200

Houston, TX 77068-3730.

Standard reference number	Title	Referenced in Code Section Number
CTI ATC-105-(00)2000	Acceptance Test Code for Water Cooling Towers	Table 503.2.3(10)
CTI Std. 201-2002	Certification Standard for Water Cooling Tower Thermal Performance	Table 503.2.3(10)

Date Proposal Submitted	3/26/2010	**Section**	n/a
Chapter	6	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Roger LeBrun	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

1. Update NFRC Standard referenced numbers. 2. Correct WDMA address

Rationale

General update.

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

No impact.

Impact to industry relative to the cost of compliance with code

No impact.

Requirements

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

Benign.

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

Newer NFRC procedures are refined based on state of the art.

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

Benign.

Does not degrade the effectiveness of the code

Benign.

General Comment

EN3929-G1

Proponent Ann Stanton **Submitted** 5/13/2010 **Attachments** No

Comment

Standards proposed for update can be found at www.nfrc.org/technicaldocs.aspx

NFRC

100-~~04~~10

200-~~04~~10

400-~~04~~10

WDMA

Window and Door Manufacturers Association

~~1400 East Touhy Avenue, Suite 470~~

~~Des Plaines, IL 60018~~

401 N. Michigan Ave.

Chicago, IL 60611

Date Proposal Submitted	3/31/2010	**Section**	Referenced Standards
Chapter	6	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Robert Volin	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

None

Summary of Modification

Referenced Manual in code

Rationale

To keep with code section 403.6.1

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

None

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

Referenced in code section403.6.1

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

No

Does not degrade the effectiveness of the code

No

ACCA

Air Conditioning Contractors of America

2800 Shirlington Road, Suite 300

Arlington, VA 22206

Standard referenced number	Title	Reference in code section number
ACCA Manual D-1995	Residential Duct Systems	503.2.7.5
ACCA Manual J-2003	Residential Load Calculation, Eighth Edition with posted updates/errata.	403.6.1
ACCA Manual S-1995	Equipment Selection Procedure	403.6.1
ASHRAE/ACCA 183-2007	Peak Cooling and Heating Load Calculations in Buildings Except Low-rise Residential Buildings	503.2.1

Date Proposal Submitted	3/18/2010	**Section**	Appendix A
Chapter	7	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jon Hamrick	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Corrects jurisdiction names and college names in Florida Energy Conservation Code, Appendix A, Jurisdictional Data

Rationale

Names of community colleges have been changing over the last few years. Change keeps Florida Energy Conservation Code current with college names approved through the legislative process.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

Reflects changes in Florida laws for renaming colleges.

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

Reflects changes in Florida laws for renaming colleges.

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

This change does not discriminate against materials, products, methods, or system of construction.

Does not degrade the effectiveness of the code

Reflects changes in Florida laws for renaming colleges.

Appendix A
Jurisdictional Data

Printer Friendly

PERMITTING OFFICE	JURISDICTION NUMBER	CLIMATE ZONE	REPORTING GROUP
ALACHUA COUNTY	111000	3	III
ALACHUA	111400	3	III
ALACHUA DISTRICT SCHOOLS	111100	3	III
UNIVERSITY OF FLORIDA	111200	3	III
GAINESVILLE	111300	3	III
HIGH SPRINGS	111500	3	III
NEWBERRY	111800	3	III
WALDO	111900	3	III
SANTA FE ~~COMMUNITY~~ COLLEGE	112000	3	III
BAKER COUNTY	121000	3	III
MACCLENNY	121100	3	III
BAKER DISTRICT ~~SCHOOSL~~ SCHOOLS	121200	3	III
BAY COUNTY	131000	1	III
CALLAWAY	131100	1	III
LYNN HAVEN	131300	1	III
MEXICO BEACH	131400	1	III
PANAMA CITY	131500	1	III
PANAMA CITY BEACH	131600	1	III
BAY DISTRICT SCHOOLS	131700	1	III
SPRINGFIELD	131800	1	III
GULF COAST COMMUNITY COLLEGE	131900	1	III
BRADFORD COUNTY	141000	3	III
BRADFORD DISTRICT SCHOOLS	141100	3	III
BREVARD COUNTY	151000	6	II
CAPE CANAVERAL	151100	6	II
COCOA	151200	6	II
COCOA BEACH	151300	6	II
INDIATLANTIC	151400	6	II
INDIAN HARBOR BEACH	151500	6	II
MALABAR	151600	6	II
MELBOURNE	151700	6	II
MELBOURNE BEACH	151800	6	II

MELBOURNE VILLAGE	151900	6	II
PALM BAY	152000	6	II
PALM SHORES	152100	6	II
ROCKLEDGE	152200	6	II
SATELLITE BEACH	152300	6	II
TITUSVILLE	152400	6	II
WEST MELBOURNE	152500	6	II
BREVARD DISTRICT SCHOOLS	152600	6	II
BREVARD COMMUNITY COLLEGE	152700	6	II
BROWARD COUNTY	161000	8	II
COCONUT CREEK	161100	8	II
COOPER CITY	161200	8	II
CORAL SPRINGS	161300	8	II
DANIA	161400	8	II
DAVIE	161500	8	II
DEERFIELD BEACH	161600	8	II
FORT LAUDERDALE	161700	8	II
HALLANDALE	161900	8	II
HOLLYWOOD	162100	8	II
LAUDERDALE BY THE SEA	162200	8	II
LAUDERDALE LAKES	162300	8	II
LAUDERHILL	162400	8	II
LIGHTHOUSE POINT	162600	8	II
MARGATE	162700	8	II
MIRAMAR	162800	8	II
NORTH LAUDERDALE	162900	8	II
OAKLAND PARK	163000	8	II
PARKLAND	163100	8	II
PEMBROKE PARK	163200	8	II
PEMBROKE PINES	163300	8	II
PLANTATION	163400	8	II
POMPANO BEACH	163500	8	II
SEA RANCH LAKES	163600	8	II
SUNRISE	163700	8	II
TAMARAC	163800	8	II
WESTON	163850	8	II
WILTON MANORS	163900	8	II
BROWARD DISTRICT SCHOOLS	164000	8	II
BROWARD ~~COMMUNITY~~ COLLEGE	164100	8	II
CALHOUN COUNTY	171000	1	III
CALHOUN DISTRICT SCHOOLS	171100	1	III
BLOUNTSTOWN	171200	1	III
CHARLOTTE COUNTY	181000	7	III
PUNTA GORDA	181100	7	III

CHARLOTTE DISTRICT SCHOOLS	181200	7	III
CITRUS COUNTY	191000	4	III
CRYSTAL RIVER	191100	4	III
INVERNESS	191200	4	III
CITRUS DISTRICT SCHOOLS	91300	4	III
CLAY COUNTY	201000	3	III
GREEN COVE SPRINGS	201100	3	III
ORANGE PARK	201300	3	III
PENNEY FARMS	201400	3	III
CLAY DISTRICT SCHOOLS	201500	3	III
COLLIER COUNTY	211000	7	III
EVERGLADES CITY	211100	7	III
MARCO ISLAND	211300	7	III
NAPLES	211200	7	III
COLLIER DISTRICT SCHOOLS	211400	7	III
COLUMBIA COUNTY	221000	3	III
LAKE CITY	221200	3	III
COLUMBIA DISTRICT SCHOOLS	221300	3	III
LAKE CITY COMMUNITY COLLEGE	221400	3	III
DESOTO COUNTY	241000	5	III
DESOTO DISTRICT SCHOOLS	241100	5	III
DIXIE COUNTY	251000	2	III
DIXIE DISTRICT SCHOOLS	251100	2	III
DUVAL COUNTY	261000	3	III
ATLANTIC BEACH	261100	3	III
BALDWIN	261200	3	III
JACKSONVILLE	261300	3	III
JACKSONVILLE BEAC	261400	3	III
NEPTUNE BEACH	261500	3	III
DUVAL DISTRICT SCHOOLS	261600	3	III
FLORIDA ~~COMMUNITY~~ STATE COLLEGE AT JACKSONVILLE	261700	3	III
UNIVERSITY OF NORTH FLORIDA	261800	3	III
ESCAMBIA COUNTY	271000	1	III
PENSACOLA	271100	1	III
ESCAMBIA DISTRICT SCHOOLS	271200	1	III
PENSACOLA ~~COMMUNITY~~ JUNIOR COLLEGE	271300	1	III
UNIVERSITY OF WEST FLORIDA	271400	1	III
FLAGLER COUNTY	281000	3	III
BEVERLY BEACH	281100	3	III
BUNNELL	281200	3	III
FLAGLER BEACH	281300	3	III
FLAGLER DISTRICT SCHOOLS	281400	3	III
PALM COAST	281500	3	III

FRANKLIN COUNTY	291000	2	III
CARRABELLE	291200	2	III
FRANKLIN DISTRICT SCHOOLS	291300	2	III
GADSDEN COUNTY	301000	2	III
CHATTAHOOCHEE	301100	2	III
GRETNA	301300	2	III
HAVANA	301400	2	III
QUINCY	301500	2	III
GADSDEN DISTRICT SCHOOLS	301600	2	III
GILCHRIST COUNTY	311000	2	III
GILCHRIST DISTRICT SCHOOLS	311100	2	III
TRENTON	311300	2	III
GLADES COUNTY	321000	7	III
MOORE HAVEN	321100	7	III
GLADES DISTRICT SCHOOLS	321200	7	III
GULF COUNTY	331000	1	III
PORT ST. JOE	331100	1	III
GULF DISTRICT SCHOOLS	331200	1	III
HAMILTON COUNTY	341000	2	III
HAMILTON DISTRICT SCHOOLS	341100	2	III
HARDEE COUNTY	351000	5	III
BOWLING GREEN	351100	5	III
ZOLFO SPRINGS	351300	5	III
HARDEE DISTRICT SCHOOLS	351400	5	III
HENDRY COUNTY	361000	7	III
CLEWISTON	361100	7	III
HENDRY DISTRICT SCHOOLS	361200	7	III
HERNANDO COUNTY	371000	4	III
BROOKSVILLE	371100	4	III
HERNANCO DISTRICT SCHOOLS	371200	4	III
HIGHLANDS COUNTY	381000	5	III
AVON PARK	381100	5	III
LAKE PLACID	381200	5	III
SEBRING	381300	5	III
HIGHLANDS DISTRICT SCHOOLS	381400	5	III
SOUTH FLORIDA COMMUNITY COLLEGE	381500	5	III
HILLSBOROUGH COUNTY	391000	4	II
PLANT CITY	391100	4	II
TAMPA	391200	4	II
TEMPLE TERRACE	391300	4	II
HILLSBOROUGH DISTRICT SCHOOLS	391400	4	II
HILLSBOROUGH COMMUNITY COLLEGE	391500	4	II
UNIVERSITY OF SOUTH FLORIDA	391600	4	II
HOLMES COUNTY	401000	1	III

HOLMES DISTRICT SCHOOLS	401100	1	III
INDIAN RIVER COUNTY	411000	6	III
FELLSMERE	411100	6	III
ORCHID	411300	6	III
SEBASTIAN	411400	6	III
INDIAN RIVER DISTRICT SCHOOLS	411500	6	III
INDIAN RIVER ~~COMMUNITY~~ STATE COLLEGE	411600	6	III
JACKSON COUNTY	421000	1	III
JACKSON DISTRICT SCHOOLS	421100	1	III
CHIPOLA ~~JUNIOR~~ COLLEGE	421200	1	III
GREENWOOD	421700	1	III
JEFFERSON COUNTY	431000	2	III
JEFFERSON DISTRICT SCHOOLS	431100	2	III
LAFAYETTE COUNTY	441000	2	III
MAYO	441100	2	III
LAFAYETTE DISTRICT SCHOOLS	441200	2	III
LAKE COUNTY	451000	5	III
EUSTIS	451300	5	III
FRUITLAND PARK	451400	5	III
GROVELAND	451500	5	III
HOWEY IN THE HILLS	451600	5	III
LADY LAKE	451700	5	III
LEESBURG	451800	5	III
MASCOTTE	451900	5	III
MOUNT DORA	452200	5	III
TAVARES	452300	5	III
UMATILLA	452400	5	III
LAKE DISTRICT SCHOOLS	452500	5	III
LAKE-SUMTER COMMUNITY COLLEGE	452600	5	III
LEE COUNTY	461000	7	III
CAPE CORAL	461100	7	III
FORT MYERS	461200	7	III
SANIBEL	461300	7	III
LEE DISTRICT SCHOOLS	461400	7	III
EDISON ~~COMMUNITY~~ STATE COLLEGE	461500	7	III
GULF COAST UNIVERSITY	461600	7	III
LEON COUNTY	471000	2	III
TALLAHASSEE	471100	2	III
FLORIDA STATE UNIVERSITY	471200	2	III
TALLAHASSEE COMMUNITY COLLEGE	471300	2	III
LEON DISTRICT SCHOOLS	471300	2	III
FLORIDA A&M UNIVERSITY	471400	2	III
LEVY COUNTY	481000	4	III
CEDAR KEY	481200	4	III

CHIEFLAND	481300	4	III
INGLIS	481400	4	III
OTTER CREEK	481500	4	III
WILLISTON	481600	4	III
LEVY DISTRICT SCHOOLS	481700	4	III
LIBERTY COUNTY	491000	2	III
LIBERTY DISTRICT SCHOOLS	491100	2	III
MADISON COUNTY	501000	2	III
MADISON DISTRICT SCHOOLS	501100	2	III
LEE	501200	2	III
NORTH FLORIDA COMMUNITY COLLEGE	501300	2	III
MANATEE COUNTY	511000	4	II
ANNA MARIA	511100	4	II
BRADENTON	511200	4	II
BRADENTON BEACH	511300	4	II
HOLMES BEACH	511400	4	II
LONGBOAT KEY	511500	4	II
PALMETTO	511600	4	II
MANATEE DISTRICT SCHOOLS	511700	4	II
~~MANATEE COMMUNITY COLLEGE~~ STATE COLLEGE OF FLORIDA MANATEE - SARASOTA	511800	4	II
MARION COUNTY	521000	5	II
BELLEVIEW	521100	5	II
DUNNELLON	521200	5	II
MCINTOSH	521300	5	II
OCALA	521400	5	II
MARION DISTRICT SCHOOLS	521500	5	II
CENTRAL FLORIDA COMMUNITY COLLEGE	521600	5	II
MARTIN COUNTY	531000	8	II
JUPITER ISLAND	531100	8	II
OCEAN BREEZE PARK	531200	8	II
SEWALLS POINT	531300	8	II
STUART	531400	8	II
MARTIN DISTRICT SCHOOLS	531500	8	II
MIAMI-DADE COUNTY	231000	8	III
BAL HARBOUR VILLAGE	231100	8	III
BAY HARBOR ISLANDS	231200	8	III
BISCAYNE PARK	231300	8	III
CORAL GABLES	231400	8	III
DORAL	231410	8	III
EL PORTAL	231500	8	III
FLORIDA CITY	231600	8	III
GOLDEN BEACH	231700	8	III
HIALEAH	231800	8	III

HIALEAH GARDENS	231900	8	III
HOMESTEAD	232000	8	III
INDIAN CREEK VILLAGE	232100	8	III
ISLANDIA	232200	8	III
KEY BISCAYNE	233700	8	III
MEDLEY	232300	8	III
MIAMI	232400	8	III
MIAMI BEACH	232500	8	III
MIAMI GARDENS	232510	8	III
MIAMI SHORES VILLAGE	232600	8	III
MIAMI SPRINGS	232700	8	III
NORTH BAY VILLAGE	232800	8	III
NORTH MIAMI	233000	8	III
NORTH MIAMI BEACH	232900	8	III
OPA LOCKA	233100	8	III
PALMETTO BAY	233110	8	III
PENNSUCO	233200	8	III
PINECREST	233250	8	III
SOUTH MIAMI	233300	8	III
SUNNY ISLES BEACH	233700	8	III
SURFSIDE	233400	8	III
SWEETWATER	233500	8	III
VIRGINIA GARDENS	233600	8	III
MIAMI-DADE DISTRICT SCHOOLS	233800	8	III
MIAMI-DADE ~~COMMUNITY~~ COLLEGE	233900	8	III
FLORIDA INTERNATIONAL UNIVERSITY	234000	8	III
MONROE COUNTY	541000	7	III
KEY COLONY BEACH	541100	7	III
KEY WEST	541200	7	III
LAYTON	541300	7	III
MARATON	541400	7	III
MONROE DISTRICT SCHOOLS	541500	7	III
FLORIDA KEYS COMMUNITY COLLEGE	541600	7	III
NASSAU COUNTY	551000	3	III
CALLAHAN	551100	3	III
FERNANDINA BEACH	551200	3	III
HILLIARD	551300	3	III
NASSAU DISTRICT SCHOOLS	551400	3	III
OKALOOSA COUNTY	561000	1	II
CRESTVIEW	561400	1	II
DESTIN	561200	1	II
FORT WALTON BEACH	561300	1	II
MARY ESTHER	561500	1	II
NICEVILLE	561600	1	II

VALPARAISO	561800	1	II
OKALOOSA DISTRICT SCHOOLS	561900	1	II
~~OKALOOSA WALTON COMMUNITY COLLEGE~~ NORTHWEST FLORIDA STATE COLLEGE	562000	1	II
OKEECHOOBEE COUNTY	571000	5	III
OKEECHO~~OBEE~~BEE	571100	5	III
OKEECHOBEE DISTRICT SCHOOLS	571200	5	III
ORANGE COUNTY	581000	5	II
APOPKA	581100	5	II
BAY LAKE	581200	5	II
EATONVILLE	581400	5	II
EDGEWOOD	581500	5	II
LAKE BUENA VISTA	581600	5	II
MAITLAND	581800	5	II
OAKLAND	581900	5	II
OCOEE	582000	5	II
ORLANDO	582100	5	II
WINTER GARDEN	582300	5	II
WINTER PARK	582400	5	II
ORANGE DISTRICT SCHOOLS	582500	5	II
UNIVERSITY OF CENTRAL FLORIDA	582600	5	II
VALENCIA COMMUNITY COLLEGE	582700	5	II
OSCEOLA COUNTY	591000	5	II
KISSIMMEE	591100	5	II
ST CLOUD	591200	5	II
OSCEOLA DISTRICT SCHOOLS	591300	5	II
PALM BEACH COUNTY	601000	8	I
ATLANTIS	601100	8	I
BELLE GLADE	601200	8	I
BOCA RATON	601300	8	I
BOYNTON BEACH	601400	8	I
BRINY BREEZES	601500	8	I
CLOUD LAKE	601600	8	I
DELRAY BEACH	601700	8	I
GLEN RIDGE	601800	8	I
GOLF	601900	8	I
GOLFVIEW	602000	8	I
GREENACRES CITY	602100	8	I
HAVERHILL	602300	8	I
HIGHLAND BEACH	602400	8	I
HYPOLUXO	602500	8	I
JUPITER	602700	8	I
LAKE CLARKE SHORE	602900	8	I
LAKE PARK	603000	8	I

LAKE WORTH	603100	8	I
LANTANA	603200	8	I
MANALAPAN	603300	8	I
MANGONIA PARK	603400	8	I
NORTH PALM BEACH	603500	8	I
OCEAN RIDGE	603600	8	I
PAHOKEE	603700	8	I
PALM BEACH	603800	8	I
PALM BEACH GARDENS	603900	8	I
PALM BEACH SHORES	604000	8	I
PALM SPRINGS	604100	8	I
RIVIERA BEACH	604200	8	I
ROYAL PALM BEACH	604300	8	I
SOUTH PALM BEACH	604500	8	I
TEQUESTA	604600	8	I
WELLINGTON	604650	8	I
WEST PALM BEACH	604700	8	I
PALM BEACH DISTRICT SCHOOLS	604800	8	I
PALM BEACH ~~COMMUNITY~~ STATE COLLEGE	604900	8	I
FLORIDA ATLANTIC UNIVERSITY	605100	8	I
PASCO COUNTY	611000	4	I
DADE CITY	611100	4	I
NEW PORT RICHEY	611200	4	I
PORT RICHEY	611300	4	I
ST. LEO	611400	4	I
ZEPHYRHILLS	611600	4	I
PASCO DISTRICT SCHOOLS	611700	4	I
PASCO-HERNANDO COMMUNITY COLLEGE	611800	4	I
PINELLAS COUNTY	621000	4	I
BELLEAIR	621100	4	I
BELLEAIR BEACH	621200	4	I
CLEARWATER	621500	4	I
DUNEDIN	621600	4	I
GULFPORT	621700	4	I
INDIAN ROCK BEACH	621800	4	I
INDIAN SHORES	621900	4	I
KENNETH CITY	622000	4	I
LARGO	622100	4	I
MADEIRA BEACH	622200	4	I
NORTH REDINGTON BEACH	622300	4	I
OLDSMAR	622400	4	I
PINELLAS PARK	622500	4	I
REDINGTON BEACH	622600	4	I
REDINGTON SHORES	622700	4	I

SAFETY HARBOR	622800	4	I
ST PETERSBURG	622900	4	I
ST PETERSBURG BEACH	623000	4	I
SEMINOLE	623100	4	I
SOUTH PASADENA	623200	4	I
TARPON SPRINGS	623300	4	I
TREASURE ISLAND	623400	4	I
PINELLAS DISTRICT SCHOOLS	623500	4	I
ST PETERSBURG ~~JUNIOR~~ COLLEGE	623600	4	I
POLK COUNTY	631000	5	I
AUBURNDALE	631100	5	I
BARTOW	631200	5	I
DAVENPORT	631300	5	I
DUNDEE	631400	5	I
EAGLE LAKE	631500	5	I
FORT MEADE	631600	5	I
FROSTPROOF	631700	5	I
HAINES CITY	631800	5	I
LAKE ALFRED	632100	5	I
LAKE HAMILTON	632200	5	I
LAKELAND	632300	5	I
LAKE WALES	632400	5	I
MULBERRY	632500	5	I
POLK CITY	632600	5	I
WINTER HAVEN	632700	5	I
POLK DISTRICT SCHOOLS	632800	5	I
POLK ~~COMMUNITY~~ STATE COLLEGE	632900	5	I
PUTNAM COUNTY	641000	3	III
PALATKA	641300	3	III
PUTNAM DISTRICT SCHOOLS	641400	3	III
ST JOHNS COUNTY	651000	3	I
ST AUGUSTINE	651200	3	I
ST AUGUSTINE BEACH	651300	3	I
ST JOHNS DISTRICT SCHOOLS	651400	3	I
ST JOHNS RIVER COMMUNITY COLLEGE	651500	3	I
ST LUCIE COUNTY	661000	6	II
FORT PIERCE	661100	6	II
PORT ST LUCIE	661200	6	II
ST LUCIE VILLAGE	661300	6	II
ST LUCIE DISTRICT SCHOOLS	661400	6	II
SANTA ROSA COUNTY	671000	1	II
GULF BREEZE	671100	1	II
JAY	671200	1	II
MILTON	671300	1	II

SANTA ROSA DISTRICT SCHOOLS	671400	1	II
SARASOTA COUNTY	681000	4	II
NORTH PORT	681100	4	II
SARASOTA	681200	4	II
VENICE	681300	4	II
SARASOTA DISTRICT SCHOOLS	681400	4	II
SEMINOLE COUNTY	691000	5	I
ALTAMONTE SPRINGS	691100	5	I
CASSELBERRY	691200	5	I
LONGWOOD	691300	5	I
OVIEDO	691400	5	I
SANFORD	691500	5	I
WINTER SPRINGS	691600	5	I
LAKE MARY	691700	5	I
SEMINOLE DISTRICT SCHOOLS	691800	5	I
SEMINOLE ~~COMMUNITY~~ STATE COLLEGE OF FLORIDA	691900	5	I
SEMINOLE INDIAN TRIBE	692000	5	III
SUMTER COUNTY	701000	5	II
BUSHNELL	701100	5	II
CENTER HILL	701200	5	II
COLEMAN	701300	5	II
WILDWOOD	701400	5	II
SUMTER DISTRICT SCHOOLS	701500	5	II
SUWANNEE COUNTY	711000	2	III
BRANFORD	711100	2	III
LIVE OAK	711200	2	III
SUWANNEE DISTRICT SCHOOLS	711300	2	III
TAYLOR COUNTY	721000	2	II
PERRY	721100	2	II
TAYLOR DISTRICT SCHOOLS	721200	2	II
UNION COUNTY	731000	3	II
UNION DISTRICT SCHOOLS	731100	3	II
VOLUSIA COUNTY	741000	6	I
DAYTONA BEACH	741100	6	I
DAYTONA BEACH SHORES	741200	6	I
DELAND	741300	6	I
EDGEWATER	741400	6	I
HOLLY HILL	741500	6	I
LAKE HELEN	741600	6	I
NEW SMYRNA BEACH	741700	6	I
OAK HILL	741800	6	I
ORANGE CITY	741900	6	I
ORMAND BEACH	742000	6	I

PIERSON	742100	6	I
PONCE INLET	742200	6	I
PORT ORANGE	742300	6	I
SOUTH DAYTONA	742400	6	I
VOLUSIA DISTRICT SCHOOLS	742500	6	I
DAYTONA ~~BEACH~~ COMMUNITY STATE COLLEGE	742600	6	I
WAKULLA COUNTY	751000	2	II
WAKULLA DISTRICT SCHOOLS	751100	2	II
WALTON COUNTY	761000	1	II
DEFUNIAK SPRINGS	761100	1	II
WALTON DISTRICT SCHOOLS	761200	1	II
WASHINGTON COUNTY	771000	1	II
WASHINGTON DISTRICT SCHOOLS	771100	1	II

Date Proposal Submitted	3/18/2010	**Section**	B-1.1.2(1)
Chapter	8	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jeff Sonne	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

None

Summary of Modification

Update internal gains equation for standard reference design home.

Rationale

Change is based on more accurate residential internal gains data reported in the following publication:

Parker, D., P. Fairey, R. Hendron, "Updated Miscellaneous Electricity Loads and Appliance Energy Usage Profiles for Use in Home Energy Ratings, the Building America Benchmark Procedures and Related Calculations", Florida Solar Energy Center, FSEC-CR-1837-10, January, 2010.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Negligible.

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

Negligible.

Impact to industry relative to the cost of compliance with code

Negligible.

Requirements

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

Public is benefited by improved energy code load calculations.

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

Improves accuracy of energy code load calculations.

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

Neutral-- only concerns calculation of internal loads.

Does not degrade the effectiveness of the code

Improves code effectiveness by providing more accurate load calculations.

TABLE B-1.1.2(1)

SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

Building Component	Standard Reference Design	Proposed Design
	~~IGain = 17,900 + 23.8*CFA + 4104*N_{br} (Btu/day per dwelling unit)~~	
Internal gains	IGain= 22,196 + 15.13*CFA + 8,562*N_{br} (Btu/day per dwelling unit)	Same as reference design

Date Proposal Submitted	3/26/2010	**Section**	B-1.1.2(1)
Chapter	8	**TAC Recommendation**	Pending Review
Affects HVHZ	Yes	**Commission Action**	Pending Review
Proponent	Eric Lacey	**General Comments**	Yes
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

This proposal removes the HVAC efficiency from the performance path calculation, consistent with the 2009 IECC. It will save a significant amount of energy over the lifetime of the home.

Rationale

(See attached file for detailed reason statement.) This proposal removes the HVAC efficiency from the performance path calculation, consistent with the 2009 IECC. It will save a significant amount of energy over the lifetime of the home.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This proposal will simplify enforcement.

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

The proposal will yield long-term energy savings to building and property owners.

Impact to industry relative to the cost of compliance with code

The proposal will only increase costs in cases where a building would have been constructed with high-efficiency HVAC equipment and substandard thermal building envelope components.

Requirements

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

This proposal will save energy over the lifetime of the home.

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

The proposal will improve the standard of thermal building envelope construction, which will yield energy savings over the lifetime of the home.

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

This proposal does not discriminate against any product.

Does not degrade the effectiveness of the code

The proposal will not degrade the effectiveness of the code.

General Comment

EN3951-G1

Proponent Michael Nau **Submitted** 5/18/2010 **Attachments** No

Comment

Credit for tradeoffs to more efficient systems should not be removed. This an enhancement that provides builders incentives to provide more efficient air conditioners. The temp difference between inside and outside in Florida is minimal, it is primarily for moisture removal. If a builder gains a substantial energy improvement by increasing air conditioner effeciency they should be allowed to tradeoff less efficient components elsewhere. As long as the budget is met the efficiency will be there. If more efficiency is required then reduce the energy budget, don't tie the builders hands. The market will make demands for energy savings and the builders will provide what the market demands.

General Comment

EN3951-G2

Proponent Darrell Winters **Submitted** 5/25/2010 **Attachments** No

Comment

The International Code Council recognized that the elimination of HVAC tradeoff would enhance the performance path, improve its accuracy, and increase energy efficiency. By eliminating a significant compliance loophole the stringency of the 2009 IECC was improved significantly.

States cannot set higher values in the standard reference design for certain appliances due to federal preemption concerns. These same items should not be included in the code as a basis to trade-off energy efficiency against the building envelope.

Equipment trade-offs typically result in less efficiency. The useful life of HVAC or service water heating equipment is far shorter than envelope components such as insulation or windows. When equipment fails, it may very well be replaced with less efficient equipment. For example, a builder may install a SEER 15 air conditioner in a new residence. When it fails, the homeowner may replace it with a SEER 13, which meets federal minimum standards. There is no guarantee that federal minimums will be increased on a timely basis.

General Comment

EN3951-G3

Proponent Joe Nebbia **Submitted** 5/25/2010 **Attachments** No

Comment

It is vital to maintain a complete performance path as energy codes reach for lower and lower energy use targets. HVAC and water heating efficiency is an economic and technically sound way of reaching energy saving goals. As codes become more stringent, it will become harder to draft reasonable prescriptive codes at all. As performance-based codes become more important, the code cannot ignore a major factor in a home or building's energy use. Additionally, no energy savings are achieved by eliminating mechanical efficiency. Builders will not use the performance path at all without being able to use all building components in the simulation.

General Comment

EN3951-G4

Proponent Amy Schmidt **Submitted** 5/26/2010 **Attachments** No

Comment

The option to trade off envelope performance for high efficiency equipment does not help the homeowner. High efficiency equipment in a poor thermal envelope will have to run more often. It also has a shorter lifespan than the thermal envelope. I support this proposal.

General Comment

EN3951-G5

Proponent Ann Stanton **Submitted** 5/28/2010 **Attachments** Yes

Comment

Section 327 (c) of the Energy Policy and Conservation Act (EPCA), the General Rule of Preemption for Energy Conservation Standards, reads as follows: "If the code uses one or more baseline building designs against which all submitted building designs are to be evaluated and such baseline building designs contain a covered product subject to an energy conservation standard established in or prescribed under section 325, the baseline building designs are based on the efficiency level for such covered product which meets but does not exceed such standard or the efficiency level required by a regulation of that State for which the Secretary has issued a rule granting a waiver under subsection (d)." See attached copy of the federal law.

General Comment

EN3951-G6

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

Support this changes as it appears to be consistent with the policy of DOE to not allow HVAC efficiency trade-offs.

NORMATIVE APPENDIX B

CRITERIA FOR COMPUTER MODELING

FOR PERFORMANCE-BASED CODE COMPLIANCE

TABLE B-1.1.2(1)

SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

Building Component	Standard Reference Design	Proposed Design
Heating systems [g,h,J]	**As proposed**	As proposed
	~~Fuel type: same as Proposed Design~~	~~As proposed~~
	~~efficiencies:~~	
	~~Electric: air source heat pump with prevailing federal minimum efficiency~~	
	~~Non-electric furnaces: natural gas furnace with prevailing federal minimum efficiency~~	~~As proposed~~
	~~Non-electric boilers: natural gas boiler with prevailing federal minimum efficiency~~	~~As proposed~~
	Capacity: sized in accordance with Section 403.6.1.	
Cooling systems [gh,J]	**As proposed**	~~As proposed~~
	~~Fuel type: Electric~~	As proposed
	~~Efficiency: in accordance with prevailing federal minimum standards~~	

	Capacity: sized in accordance with Section 403.6.1.	~~**As proposed**~~
		~~**As proposed**~~
	As proposed	**As proposed Gal/day=30 + (10 x N_{br})**
	~~**Fuel type:same as Proposed Design**~~	~~**As proposed**~~
Service water heating systems [g,h,I,j,k]	~~**Efficiency: in accordance with prevailing federal minimum standards**~~	~~**As proposed**~~
	Use: same as proposed design ~~(gal/day): 30*N_{du} + 10*N_{br}~~	~~**As proposed**~~
	~~**where N_{du} = number of dwelling units**~~	
	~~**Tank temperature: 120 F**~~	
		~~**As proposed**~~

(h) For a Proposed Design with multiple heating, cooling, or water heating systems using different fuel types, the applicable standard reference design system capacities and fuel types shall be weighted in accordance with their respective loads as calculated by accepted engineering practice for each equipment and fuel type present. ~~system capacities and fuel types shall be weighted in accordance with the loads distribution (as calculated by accepted engineering practice for that equipment and fuel type) of the subject multiple systems. For the Standard Reference Design, the prevailing federal minimum efficiency shall be assumed except that the efficiencies given in Table B 1.1.2(2) 405.5.2(2) below will be assumed when:~~

~~1) A type of device not covered by NAECA is found in the As-Built Home;~~

~~2) The Proposed Design is heated by electricity using a device other than an air source heat pump; or~~

~~3) The Proposed Design does not contain one or more of the required HVAC equipment systems.~~

~~**TABLE B-1.1.2(2) 405.5.2(2)**~~
~~**DEFAULT STANDARD REFERENCE DESIGN HOME**~~

~~**Heating and Cooling Equipment Efficiencies**~~ [f) (k) (m) (n)]

~~**As-Built Home Fuel**~~	~~**Function**~~	~~**Baseline Home Device**~~
~~Electric~~	~~Heating~~	~~7.7 HSPF air source heat pump~~
~~Non-electric warm air furnace or space heater~~	~~Heating~~	~~78% AFUE gas furnace~~
~~Non-electric boiler~~	~~Heating~~	~~80% AFUE gas boiler~~
~~Any type~~	~~Cooling~~	~~13 SEER electric air conditioner~~

(i) For a Proposed Design without a proposed heating system, a heating system with the prevailing federal minimum efficiency shall be assumed for both the Standard Reference Design home and Proposed Design. For electric resistance heating systems, the prevailing federal minimum efficiency air-source heat pump shall be selected.

(Portions of table and footnotes not shown shall remain unchanged.)

Section 327 (c) of the Energy Policy and Conservation Act (EPCA) reads as follows:

(c) GENERAL RULE OF PREEMPTION FOR ENERGY CONSERVATION STANDARDS WHEN FEDERAL STANDARD BECOMES EFFECTIVE FOR A PRODUCT. Except as provided in section 325(b)(3)(A)(ii) and effective on the effective date of an energy conservation standard established in or prescribed under section 325 for any covered product, **no State regulation concerning the energy efficiency or energy use of such covered product shall be effective with respect to such product unless the regulation--**

(1)-(2) NA

(3) **is in a building code for new construction described in subsection (f)(3).**

Subsection (f)(3) reads, in part, as follows:

(f) EXCEPTION FOR CERTAIN BUILDING CODE REQUIREMENTS.--

(3) Effective on the effective date of an energy conservation standard for a covered product established in or prescribed under section 325, a regulation or other requirement contained in a State or local building code for new construction concerning the energy efficiency or energy use of such covered product is not superseded by this part if the code complies with all of the following requirements:

(A) The code permits a builder to meet an energy consumption or conservation objective for a building by selecting items whose combined energy efficiencies meet the objective.

(B) The **code does not require that the covered product have an energy efficiency exceeding the applicable energy conservation standard established in or prescribed under section 325**, except that the required efficiency may exceed such standard up to the level required by a regulation of that State for which the Secretary has issued a rule granting a waiver under subsection (d).

(C) The credit to the energy consumption or conservation objective allowed by the code for installing covered products having energy efficiencies exceeding such energy conservation standard established in or prescribed under section 325 or the efficiency level required in a State regulation referred to in subparagraph (B) is on a one-for-one equivalent energy use or equivalent cost basis.

(D) **If the code uses one or more baseline building designs against which all submitted building designs are to be evaluated and such baseline building designs contain a covered product subject to an energy conservation standard established in or prescribed under section 325, the baseline building designs are based on the efficiency level for such covered product which meets but does not exceed such standard** or the efficiency level required by a regulation of that State for which the Secretary has issued a rule granting a waiver under subsection (d).

(E) If the code sets forth one or more optional combinations of items which meet the energy consumption or conservation objective, for every combination which includes a covered product the efficiency of which exceeds either standard or level referred to in subparagraph (D), there also shall be at least one combination which includes such covered product the efficiency of which does not exceed such standard or level by more than 5 percent, except that at least one combination shall include such covered product the efficiency of which meets but does not exceed such standard.

(F) The energy consumption or conservation objective is specified in terms of an estimated total consumption of energy (which may be calculated from energy loss- or gain-based codes)

Remove HVAC Trade-Offs from Performance Path

The elimination of the equipment trade-off in the 2009 IECC closes a significant compliance loophole that has been used for many years to weaken building efficiency. Higher efficiency air conditioners, furnaces, and water heating equipment can be tremendous energy savers. However, Federal Law preempts states from setting efficiency requirements any higher than the federal minimums (which typically lag behind common builder practice by years, even decades). The inability of states to set higher efficiency requirements leaves a "trade-off gap" within any code that allows equipment trade-offs – a gap that has been exploited to install low-quality fenestration and insufficient insulation in houses all over Florida (and nationwide) for many years. In short, since the code must specify an inefficient unit due to federal minimum standards (such as 78 AFUE or 13 SEER), any builder who would otherwise use a better unit automatically gets credit and reduces the efficiency of insulation, windows or other measures. This is the definition of a free-rider, and in each case, the home is less efficient than if the trade-off were not available. For example, Florida is not permitted to specify better equipment, even if the minimum level equipment (such as 78 AFUE furnace) is not even available or sold in Florida. Although some may claim that equipment trade-offs are necessary for *future* code improvements, since Florida cannot require a more efficient level of equipment *today*, the trade-off, in and of itself, does not permit any improvement at all to equipment requirements.

Proponents of the equipment trade-off often argue that the trade-off is a "cost effective means of meeting the code." What is "cost effective" from the standpoint of a builder to meet the minimal requirements of the code is not always the most "cost effective" solution for all of the homeowners who will be paying energy bills over the 70- or 100-year lifetime of the home. Even if future replacements happen to be more efficient, the claim still does not justify allowing the equipment trade-off. To demonstrate the lost energy efficiency opportunities associated with equipment trade-offs, we propose two hypothetical buildings:

- Case A: A building that meets the requirements of the 2009 IECC must meet the energy efficiency requirements without the equipment trade-off. The equipment is still likely to be more efficient than the federal minimum because of incentives and consumer expectations (providing additional energy savings). After 15 years, when the air conditioner is changed, the replacement air conditioner may be more efficient. That means the home will continue to be more efficient (because of the better insulation or windows that were required at the outset) every time the air conditioner is replaced, for the lifetime of the home. Further, a home with a highly efficient thermal building envelope requires smaller HVAC equipment. Every time the equipment is replaced, over the lifetime of the home, the homeowner will be able to use smaller (and less expensive) equipment.
- Case B: If a builder installs high-efficiency equipment and reduces insulation and window efficiency in the permanent building envelope (under the FEC), in the best-case scenario, the home will still only meet the minimum energy efficiency requirement of the code. After 15 years, when the air conditioner is changed, it will presumably have the same efficiency level as the replacement equipment in

Case A. However, the thermal envelope will always be inferior to the thermal envelope in Case A. For the remaining lifetime of the home, the thermal envelope will represent a tremendous lost opportunity for the homeowner and the state to save energy. In addition, because of the weak thermal building envelope, the equipment will also be much larger, and cost more to replace every 15 years than the home in Case A.

Many builders install and consumers demand upgraded equipment regardless of whether it is required by code. Furthermore, local utilities, states, and the federal government already offer a variety of tax credits and other incentives to install high-efficiency equipment. By definition, a trade-off is at best only an energy-neutral exchange in efficiency among components. At worst, trade-offs can create significant energy losses for the lifetime of the home, as described above. It is counter-productive to offer utility and tax incentives for efficient equipment, then use the equipment as a means of reducing efficiency elsewhere in the home. Unless the equipment trade-off can be shown to save *more* energy than the 2009 IECC (which it cannot), it should not be added back to the IECC's performance baseline.

Date Proposal Submitted	3/31/2010	**Section**	B-1.1.2(2)
Chapter	8	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jeff Sonne	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

For the Table B-1.1.2(1) cooling system section, change Standard Reference Design fuel type from “Electric” to “As-proposed”.

Summary of Modification

Include multiple space heating and cooling fuel types in section 405 simulated energy performance residential energy code compliance calculations.

Rationale

Allowing entry of multiple fuel types for heating and cooling systems in EnergyGauge USA FlaRes will provide more accurate section 405 (Performance) code compliance calculations.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Should simplify and assist code enforcement since all space heating and cooling systems will be listed on code compliance forms.

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

Not anticipated to be significant and lower cost in some cases.

Impact to industry relative to the cost of compliance with code

Negligible; only concerns equipment entry into compliance software.

Requirements

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

Public is benefited by more accurate energy code calculations.

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

Improves accuracy of energy code calculations.

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

Neutral; only concerns equipment entry in code calculation software.

Does not degrade the effectiveness of the code

Improves code effectiveness by providing more accurate energy code calculations.

General Comment

EN4181-G1

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment

It appears the code proposal takes the position to fix the code because the software can not be fixed to relate the current code requirement.

(h) For a Proposed Design with multiple heating~~,~~ or cooling~~, or water heating~~ systems using different fuel types, each system shall be included in the performance calculations. ~~the applicable system capacities and fuel types shall be weighted in~~ accordance ~~with the loads distribution (as calculated by accepted engineering practice for that equipment and fuel type) of the subject multiple systems.~~ For the Standard Reference Design, the prevailing federal minimum efficiency shall be assumed except that the efficiencies given in Table-B 1.1.2(2) below will be assumed when:

1) A type of device not covered by NAECA is found in the As-Built Home;

2) The Proposed Design is heated by electricity using a device other than an air source heat pump; or

3) The Proposed Design does not contain one or more of the required HVAC equipment systems.

Date Proposal Submitted	4/2/2010	**Section**	B-2.6.1
Chapter	8	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Ann Stanton	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Add alternative to Table B-2.6.1 regarding VAV with reheat to be consistent with Addenda am to ASHRAE 90.1-04.

Rationale

This mod would allow minimum VAV turndown to be limited by the minimum ventilation required for a zone. Without the change, a design that has required ventilaiton in excess of 0.4 cfm/s.f. (such as a laboratory or assembly space) is penalized.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None.

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

Would allow slight benefit toward necessary ventilation capability.

Impact to industry relative to the cost of compliance with code

Would allow slight benefit toward necessary ventilation design capability.

Requirements

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

Yes, allows more design versatility.

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

Yes, allows necessary ventilation while still meeting code.

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

No.

Does not degrade the effectiveness of the code

No.

NORMATIVE APPENDIX B

CRITERIA FOR COMPUTER MODELING

FOR PERFORMANCE-BASED CODE COMPLIANCE

TABLE B-2.6.1

SPECIFICATIONS FOR THE STANDARD REFERENCE DESIGN HAVAC SYSTEM DESCRIPTIONS

[No change to table]

Notes:

a. [No change]

b. VAV with reheat: Minimum volume setpoints for VAV reheat boxes shall be 0.4 cfm/ft^2 of floor area, or the minimum ventilation rate, whichever is larger. Supply air temperature shall be reset based on zone demand from the design temperature difference to a 10°F temperature difference under minimum load conditions. Design air flow rates shall be sized for the reset supply air temperature, i.e., a 10°F temperature difference.

c. – i. [No change]

[This mod would also require minor modeling changes to the EG Summit Fla/Com program.]

Date Proposal Submitted	4/1/2010	**Section**	FL Std 2
Chapter	10	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jennifer Hatfield	**General Comments**	No
Attachments	Yes	**Alternate Language**	No

Related Modifications

Summary of Modification

Provides criteria on how to comply with section 403.9 of the FECC; parts of which are legislative directive. This document is the APSP-15 Draft Standard for Energy Efficiency for Residential Inground Swimming Pools & Spas that the FBC Energy Workgroup recommended for adoption into the 2010 code

Rationale

Proposed FL-2 of Appendix D of the FECC provides the necessary criteria to the manufacturers of pool products, pool contractors, and building departments on what is required to meet the pool heating and residential pool filtration pump requirements found in section 403.9 of the Florida Building Code, Energy Conservation Code and the 2008 energy bill (HB 7135).

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

It may take extra time for the AHJ to verify the products being installed meet these new energy efficiency requirements.

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

These energy efficient products may increase the cost of the product to the owner upfront; however, a savings will ultimately occur with the owner's utility bill that should offset the increase associated with purchasing the product.

Impact to industry relative to the cost of compliance with code

These products may cost more to purchase; therefore, if the contractor does not pass on this increase in cost to the consumer then their profit margin will lessen.

Requirements

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

These energy efficient pool/spa products will lower the energy consumption of a pool/spa, benefiting the general public.

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

This proposal strengthens and improves the code by requiring products, methods, and systems of construction that will result in energy savings.

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

This proposal provides for a standard and method of compliance for products to follow. Products not meeting these new requirements will not be allowed to be installed.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code; it actually strengthens and gives consistency throughout the State of Florida by providing guidance on how to meet the new energy efficiency requirements for pools and spas.

APPENDIX D—FLORIDA STANDARDS

FLORIDA STANDARD NO. 2 (FL-2)

FLORIDA REGULATORY REQUIREMENTS FOR ENERGY EFFICIENCY FOR RESIDENTIAL INGROUND SWIMMING POOLS & SPAS

The following regulatory requirements shall constitute Florida Standard FL-2 and will provide compliance criteria for section 403.9 of the Florida Building Code, Energy Conservation Code. These requirements follow a draft national standard for energy efficiency for residential in-ground swimming pools and spas.

SECTION 1

SCOPE

1.1. Energy efficiency requirement for permanently installed residential swimming pool filtration and swimming pool and spa heating systems used for bathing and are operated by an owner. This standard is intended to cover certain aspects of the swimming pool filtration and heating system design, equipment, installation, and operation for the purpose of consuming less energy while maintaining water quality and temperature.

1.2. This standard does not cover swimming pool safety requirements, including, but not limited to, suction entrapment, structural, thermal, or electrical hazards.

1.3. This standard provides specifications for energy efficient filtration systems, but does not specify sanitizer, daily turnover flow rates, or pool-cleaning technologies needed to establish and maintain swimming pool water quality.

1.4. This standard provides specifications for energy efficient swimming pool and spa heating systems.

1.5. Other standards are referenced in this standard for items not covered.

SECTION 2

NORMATIVE REFERENCES

AHRI 1160, Standard For Performance Rating of Heat Pump Pool Heaters

APSP-4, Standard For Aboveground/Onground Residential Swimming Pools.[1]

APSP-5, Standard For Residential Inground Swimming Pools.[1]

APSP-7, Standard for Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Catch Basins.[1]

HI 1.6, Centrifugal Pump Test.[2]

IEEE 114-2001, Standard Test Procedure for Single-Phase Induction Motors.[3]

NFPA 70, National electrical code, Article 680, Swimming pools, fountains, and similar installations.[4]

NSF 50, Equipment for Swimming Pools, Spas, Hot Tubs and Other Recreational Water Facilities.[5]

SECTION 3

DEFINITIONS

Auxiliary Pool Loads. Features, functions, or devices that need higher head and flow rates than that required for pool filtration, including, but not limited to, solar pool heating systems, filter backwashing, pool cleaners, waterfalls, fountains, and spas.

Backwash Valve. A diverter valve designed to reverse the flow of water through a filter. The valve is located between the circulation pump and the filter, including, but not limited to, slide, push-pull, multi-port, and full-flow valves.

Elbow (fittings). Also called ell, el. a plumbing pipe or pipe connection having a right-angled bend.

Filtration Flow Rate. A flow rate that will turn over the pool water volume in six hours or more (must be equal to or less than the maximum filtration flow rate).

Flow Rate. Flow rate is the volume of water flowing through the filtration system in a given time, usually measured in gallons per minute (gpm).

Head. The water pressure necessary to move fluid through pipes, and inlets, push water through filters and heaters, and project it through fountains and jets.

Maximum Filtration Flow Rate. The flow rate needed to turn over the pool water volume in six hours or 36 gpm, whichever is greater.

Maximum Flow Rate. The flow rate for the auxiliary pool loads or the filtration flow rate, whichever is greater.

Multi-Speed. A motor capable of operating at two (2) or more speeds and includes two-speed and variable-speed pumps.

Nameplate Horsepower. The nameplate power is the motor horsepower listed on the nameplate and the horsepower by which a pump is typically sold (also known as rated horsepower).

NSF/ANSI 50 is the NSF International (formerly National Sanitation Foundation) Standard and American National Standards Institute document entitled “Circulation System Components and Related Materials for Swimming Pools, Spas/Hot Tubs”

Pumps. Pool and spa pumps usually come with a leaf strainer before the impeller. The pumps contain an impeller to accelerate the water through the housing. The motors for residential pumps are included in the pump purchase but can be replaced separately. The pumps increase the “head” and “flow” of the water.

Permanently Installed Swimming Pool. A pool constructed in such a manner that it cannot be disassembled for storage.

Pipe and Pipe Fittings. The PVC pipe and fittings intended for use in the transport of swimming pool filtration water. Fittings include elbows, tees, and flow control valves. Pipe and fittings do not include

backwash valves, which are addressed separately, and equipment connections, or internal equipment piping.

Rated Horsepower.The motor power output designed by the manufacturer for a rated RPM, voltage and frequency. May be less than Total Horsepower where the Service Factor is > 1.0, or equal to Total Horsepower where the Service Factor = 1.0

Residential Swimming Pools. Permanently installed residential inground swimming pools intended for use by a single-family home for noncommercial purposes and with dimensions as defined in ANSI/NSPI-5.

Return. The return refers to the water in the filtration system returning to the pool. The return lines or return side, relative to the pump, can also be defined as the pressure lines or the pressure side of the pump. Water in the returns is delivered back to the pool at the pool inlets.

Service Factor. A multiplier applied to rated horsepower of a motor to indicate the percent above nameplate horsepower at which a pump motor may operate continuously without exceeding its allowable insulation class temperature limit, provided the other design parameters such a rated voltage, frequency and ambient temperature are within limits. Full-rated pool motor service factors can be as high as 1.65. A 1.5 hp pump with a 1.65 service factor produces 2.475 hp (total horsepower) at the maximum service factor point.

Service Factor Horsepower (SFHP). The maximum continuous duty motor power output rating allowable for nameplate ambient rating and motor insulation class. Commonly, service factor horsepower = rated horsepower x service factor (also known as total horsepower).

Suction. Suction created by the pump is how the pool water gets from the skimmers and suction outlets to the filtration system. The suction side and suction lines refer to the vacuum side of the pump. It is at negative atmospheric pressure relative to the pool surface.

Sweep Elbow. Sweep elbows or a type of elbow that has a pressure drop less than the pressure drop of straight pipe with a length of 30 pipe diameters. For example, a 2 inch elbow must have a pressure drop less than a 5-foot length of 2 inch straight pipe.

Total Dynamic Head. Total dynamic head, or TDH, refers to the sum of all the friction losses and pressure drops in the filtration system from the pools suction outlets and skimmers to the returns. It is a measure of the system's total pressure drop and is given in units of either psi or feet of water column (sometimes referred to as "feet" or "feet of head").

Total Horsepower. The product of the rated horsepower nameplate power and the service factor of a motor used on a pool pump.

Turnover. A turnover is the act of filtering one volume of the pool.

Turnover Time (also called Turnover Rate). The time required to circulate the entire volume of water in the pool or spa through the filter. e.g. A turnover time of 6-hours means an entire volume of water equal to that of the pool will be passed through a filter system in six hours.

Turnover Time = Volume of the pool / Flow rate

SECTION 4

APPLIANCES

4.1 Pool filter pumps

4.1.1 Motors

4.1.1.1 Motor efficiency

Pool filter pump motors shall not be split-phase, shaded-pole, or capacitor start – induction run type.

4.1.1.2 Two-speed, multi-speed, or variable-speed capability

Pool filter pump motors with a capacity of 1 total horsepower or greater 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.

4.1.1.3 Test methods for pool filter pump motors

4.1.1.3.1 Reported motor efficiency shall be verifiable by test method IEEE 114-2001, or most recent version.

NOTE- Section 5.2.4.2.1 of IEEE 114-2001 lists formula for dynamometer correction factor. Formula inadvertently omits a component of the equation. Section 5.2.1.3.2 of the 1982 version of the standard lists formula correctly. Therefore, "corrected" shall mean using the 1982 version of the formula within the 2001 standard.

4.1.2 Pumps

4.1.2.1 Test methods for pool pumps

ANSI/HI 1.6-2000 shall be used for the measurement of pump efficiency.

4.1.2.1.1 Tests shall be conducted using unmodified, manufactured and fully assembled pump, including strainer baskets when applicable.

4.1.2.1.2 Three system curves shall be calculated:

Curve A: H = 0.0167 x F2 (Curve 2.0)
Curve B: H = 0.050 x F2 (Curve 1.5)
Curve C: H = 0.0082 x F2 (Curve 2.5)

Where:
H is the total system head in feet of water.
F is the flow rate in gallons per minute (gpm).

4.1.2.1.3 For each curve (A, B, or C), the pump head shall be adjusted until the flow and head lie on the curve. The following shall be tested and reported:

1. Motor nominal speed (RPM)
2. Flow (gallons per minute)
3. Power (watts)
4. Energy Factor (gallons per watt hour)

Where the Energy Factor (EF) is calculated as:

EF = Flow (gpm) * 60 / Power (watts)

4.1.2.1.4 For two-speed pumps, test and report each curve at both high and low speeds. For variable-speed pumps, test and report highest, lowest, and the best efficiency speed.

4.1.3 Labeling

4.1.3.1 Motors
Each pool filter pump motor shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than ¼", the capacity of the motor.

4.1.3.2 Pumps
Each pool filter pump shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than ¼", the nameplate horsepower of the pump.

4.1.3.3 Two-speed, multi-speed, or variable-speed pool filter pumps shall be marked permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than ¼", "This pump must be installed with a two-, multi-, or variable-speed pump motor controller."

4.2 Pump controllers

4.2.1 Pool pump motor controls for use with a two-speed, multi-speed, or variable-speed pumps shall have the capability of operating the pool pump at least at two speeds. The control's default filtration speed setting shall be no more than one-half of the motor's maximum rotation rate. Any high-speed override capability shall be for a temporary period not to exceed one 24-hour cycle without resetting to default settings.

4.3 Heaters

4.3.1 Energy design

4.3.1.1 Gas-fired pool heaters shall not be equipped with constant burning pilots.

4.3.1.2 All pool heaters shall have a readily accessible on-off switch that is mounted on the outside of the heater and that allows shutting off the heater without adjusting the thermostat setting.

4.3.1.3 Electric resistance hearing is prohibited.

4.3.2 Heater efficiency

4.3.2.1 Gas-fired pool heaters and oil-fired pool heaters shall have a thermal efficiency of not less than 78 percent.

4.3.2.2 There is no energy efficiency standard for electric resistance pool heaters.

4.3.2.3 Electric heat pump pool heaters shall have a coefficient of performance (COP) of not less than 4.0 at the low temperature conditions when tested in accordance with AHRI Standard 1160.

4.3.3 Test methods

4.3.3.1 ANSI Z21.56 – 1994 shall be used for the measurement of gas-fired and oil-fired pool heater efficiency.

4.3.3.2 ANSI/ASHRAE 146-1998 shall be used for the measurement of electric resistance pool heater efficiency.

4.3.3.3 ARI 1160 - 2008, Table 2, Standard Rating Conditions – Low Air Temperature, shall be used for the measurement of heat pump pool heater efficiency.

ARI 1160 – 2008: Table 2. Standard Rating Conditions

	Air Temperature Surrounding Unit		Water Temperature Entering Unit	Water Flow Rate (or Less if Specified by the Manufacturer)	
	Dry-bulb °F [°C]	Wet-bulb °F [°C]	°F [°C]	GPM	L/s
High Air Temperature -Mid Humidity (62% RH)	80.6 [27.0]	70.7 [21.5]	80.0 [26.7]	0.450 per 1000 Btu/h	0.028 per 293.1 Watts
Low Air Temperature -Mid Humidity (63% RH)	50.0 [10.0]	44.2 [6.78]	80.0 [26.7]	Same flow rate as established in High Air Temperature - Mid Humidity (62% RH)	

To comply with this standard, measured test results for Heating Capacity and Coefficient of Performance shall not be less than 95% of Published Ratings

SECTION 5

POOL SYSTEMS

5.1 General

5.1.1 All filter pumps and filter pump motors installed shall be listed in the California Energy Commission's Appliance Efficiency Database for Residential Pool Pumps, or the APSP Appliance Efficiency Pool Pump Database and shall comply with Section 4.1.

5.1.2 For maximum energy efficiency, pool filtration should be operated at the lowest possible flow rate for a time period that provides sufficient water turnover for clarity and sanitation.

5.1.3 For maximum hydraulic efficiency, sweep elbows or elbow-type fittings that have a pressure drop of less than the pressure drop of straight pipe with a length of 30 pipe diameters are recommended.

5.1.4 Auxiliary pool loads that require high flow rates such as spas, pool cleaners, and water features, should be operated separately from the filtration system to allow the maximum flow rate to be kept to a minimum.

5.1.5 Pool controls are a critical element of energy efficient pool design. Modern pool controls allow for auxiliary loads such as cleaning systems, solar heating, and temporary water features without compromising energy savings.

5.2 Maximum filtration flow rate

5.2.1 Depending on the size (volume) of the pool, the pool filtration flow rate may not be greater than the rate needed to turn over the pool water volume in six hours or 36 gpm,

whichever is greater. This means that for pools of less than 13,000 gallons the pump must be sized to have a flow rate of 36 gpm or less and for pools of greater than 13,000 gallons, the pump must be sized using the following equation:

Maximum Filtration Flow Rate (gpm) = Pool Volume (gallons) / 360

5.2.2 These are maximum flow rates. Lower filtration flow rates and longer filtration times are encouraged and will result in added energy savings.

5.2.3 Pools with auxiliary pool loads must use either a multi-speed pump or a separate pump for each auxiliary pool load. For example, if a spa shares the pool filtration system, either a multi-speed pump must be used or a separate pump must be provided to operate the spa. If the pool system can be served by one pump of less than 1 total horsepower in capacity, the pump may be single speed.

5.3 Pool filter pump sizing, flow rate, and filter pump control.

5.3.1 Filtration pump motors with a capacity of 1 total horsepower or more shall be multi-speed.

5.3.2 For pools equal to or less than 17,000 gallons, a filter pump must be chosen such that the flow rate listed for Curve A is less than the maximum filtration flow rate calculated according to Section 5.2.1 (six-hour turnover rate).

5.3.3 For pools greater than 17,000 gallons, a filter pump must be chosen such that the listed flow rate at Curve C is less than the maximum filtration flow rate calculated according to Section 5.2.1 (six-hour turnover rate).

5.3.3.1 The pool filter pump head and flow rate shall be calculated using the following system equation:

H = C X F2

Where:

H is the total system head in feet of water.

F is the maximum filtration flow rate in gallons per minute (gpm).

C is a coefficient based on the volume of the pool:

0.0167 for pools less than or equal to 17,000 gallons.

0.0082 for pools greater than 17,000 gallons.

and;

5.3.4 Filtration pumps shall be sized, or if programmable, shall be programmed, so that the filtration flow rate is not greater than the rate needed to turn over the pool water volume in 6 hours or 36 gpm, whichever is greater; and

5.3.5 Pump motors used for filtration with a capacity of 1 total horsepower or more shall be multi-speed; and

5.3.6 Each auxiliary pool load shall be served by either separate pumps or the system shall be served by a multi-speed pump; and

EXCEPTION: Filter pumps if less than 1 total horsepower may be single speed.

5.3.7 Multi-speed pumps must have controls that default to the filtration flow rate when no auxiliary pool loads are operating. The controls must also default to the filtration flow rate setting within 24 hours and must have a temporary override capability for servicing.

5.3.8 A time switch or similar control mechanism must be installed as part of the pool water filtration control system that will allow all pumps to be set or programmed to run only during the off-peak electric demand period and for the minimum time necessary to maintain the water in the condition required by applicable public health standards.

5.4 System equipment

5.4.1 Filters sizing.
Filters shall be at least the size specified in NSF/ANSI 50 for public pool intended applications based on the maximum flow rate through the filter.

5.4.1.1 The filter factors that must be used are (in ft^2/gpm):

- Cartridge 0.375
- Sand 15
- Diatomaceous Earth 2

5.4.2 Backwash valves.
Minimum diameter of backwash valves shall be 2 inches or the diameter of the return pipe, whichever is greater.

5.5 System piping and circulation.

5.5.1 Pool piping and pipe fittings shall be sized so that the velocity of the water at the maximum flow rate does not exceed 8 feet per second in the return line and 6 feet per second in the suction line. Velocity calculations for branch piping flow shall allow variations in pipe sizes.

EXCEPTION: Equipment connections and internal piping, including, but not limited to, suction safety systems, pumps, heaters, and sanitizing devices.

JPG Picture should be here, would not insert, but is in support file document.

Figure 1

5.5.2 Solar heating. At least 18 inches of horizontal or vertical pipe shall be installed between the filter and the heater or dedicated suction and return lines, or built-in or built-up connections shall be installed to allow for the future addition of solar heating equipment.

5.6 Directional inlets.
The pool shall have directional inlets that adequately mix the pool water.

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[1] Association of Pool and Spa Professionals (APSP) [formerly National Spa and Pool Institute (NSPI)], 2111 Eisenhower Avenue, Alexandria, VA 22314

[2] Hydraulic Institute, 6 Campus Drive, First Floor North, Parsippany NJ, 07054-4406, (973) 267-9700, *www.pumps.org*

[3] IEEE Corporate Office, 3 dark Avenue, 17th Floor, New York, NY 10016-5997, (212) 419-7900, *www.ieee.org*

[4] National Fire Protection Association (NFPA) 1 Batterymarch Park, Quincy, MA 02169-7471, (617) 770-3000, *www.nfpa.org*

[5] NSF International, 789 Dixboro Road, Ann Arbor, MI 48113-0140, (734) 769-8010, *www.nsf.org*

APSP
The Association of Pool & Spa Professionals™

2111 Eisenhower Avenue
Alexandria VA 22314-4695

703.838.0083
703.549.0493 fax
www.TheAPSP.org

The Global Source and Voice for the Recreational Water Industry

APSP-15 Standard for Energy Efficiency for Residential Inground Swimming Pools and Spas

1. Scope

1.1. Energy efficiency requirement for permanently installed residential swimming pool filtration and swimming pool and spa heating systems used for bathing and are operated by an owner. This standard is intended to cover certain aspects of the swimming pool filtration and heating system design, equipment, installation, and operation for the purpose of consuming less energy while maintaining water quality and temperature.

1.2. This standard does not cover swimming pool safety requirements, including, but not limited to, suction entrapment, structural, thermal, or electrical hazards.

1.3. This standard provides specifications for energy efficient filtration systems, but does not specify sanitizer, daily turnover flow rates, or pool-cleaning technologies needed to establish and maintain swimming pool water quality.

1.4. This standard provides specifications for energy efficient swimming pool and spa heating systems.

1.5. Other standards are referenced in this standard for items not covered.

2. Normative references

AHRI 1160, *Standard For Performance Rating of Heat Pump Pool Heaters*

APSP-4, *Standard For Aboveground/Onground Residential Swimming Pools.*[1]

APSP-5, *Standard For Residential Inground Swimming Pools.*[1]

APSP-7, *Standard for Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Catch Basins.*[1]

[1] Association of Pool and Spa Professionals (APSP) [formerly National Spa and Pool Institute (NSPI)], 2111 Eisenhower Avenue, Alexandria, VA 22314

HI 1.6, *Centrifugal Pump Test.*[2]

IEEE 114-2001, *Standard Test Procedure for Single-Phase Induction Motors.*[3]

NFPA 70, *National electrical code, Article 680, Swimming pools, fountains, and similar installations.*[4]

NSF 50, *Equipment for Swimming Pools, Spas, Hot Tubes and Other Recreational Water Facilities.*[5]

3. Definitions

Auxiliary Pool Loads. Features, functions, or devices that need higher head and flow rates than that required for pool filtration, including, but not limited to, solar pool heating systems, filter backwashing, pool cleaners, waterfalls, fountains, and spas.

Backwash Valve. A diverter valve designed to reverse the flow of water through a filter. The valve is located between the circulation pump and the filter, including, but not limited to, slide, push-pull, multi-port, and full-flow valves.

Elbow (fittings). Also called ell, el. a plumbing pipe or pipe connection having a right-angled bend.

Filtration Flow Rate. A flow rate that will turn over the pool water volume in six hours or more (must be equal to or less than the maximum filtration flow rate).

Flow Rate. Flow rate is the volume of water flowing through the filtration system in a given time, usually measured in gallons per minute (gpm).

Head. The water pressure necessary to move fluid through pipes, and inlets, push water through filters and heaters, and project it through fountains and jets.

Maximum Filtration Flow Rate. The flow rate needed to turn over the pool water volume in six hours or 36 gpm, whichever is greater.

Maximum Flow Rate. The flow rate for the auxiliary pool loads or the filtration flow rate, whichever is greater.

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[2] Hydraulic Institute, 6 Campus Drive, First Floor North, Parsippany NJ, 07054-4406, (973) 267-9700, *www.pumps.org*

[3] IEEE Corporate Office, 3 dark Avenue, 17th Floor, New York, NY 10016-5997, (212) 419-7900, *www.ieee.org*

[4] National Fire Protection Association (NFPA) 1 Batterymarch Park, Quincy, MA 02169-7471, (617) 770-3000, *www.nfpa.org*

[5] NSF International, 789 Dixboro Road, Ann Arbor, MI 48113-0140, (734) 769-8010, *www.nsf.org*

Multi-Speed. A motor capable of operating at two (2) or more speeds and includes two-speed and variable-speed pumps.

Nameplate Horsepower. The nameplate power is the motor horsepower listed on the nameplate and the horsepower by which a pump is typically sold (also known as rated horsepower).

NSF/ANSI 50 is the NSF International (formerly National Sanitation Foundation) Standard and American National Standards Institute document entitled "Circulation System Components and Related Materials for Swimming Pools, Spas/Hot Tubs"

Pumps. Pool and spa pumps usually come with a leaf strainer before the impeller. The pumps contain an impeller to accelerate the water through the housing. The motors for residential pumps are included in the pump purchase but can be replaced separately. The pumps increase the "head" and "flow" of the water.

Permanently Installed Swimming Pool. A pool constructed in such a manner that it cannot be disassembled for storage.

Pipe and Pipe Fittings. The PVC pipe and fittings intended for use in the transport of swimming pool filtration water. Fittings include elbows, tees, and flow control valves. Pipe and fittings do not include backwash valves, which are addressed separately, and equipment connections, or internal equipment piping.

Rated Horsepower. The motor power output designed by the manufacturer for a rated RPM, voltage and frequency. May be less than Total Horsepower where the Service Factor is > 1.0, or equal to Total Horsepower where the Service Factor = 1.0

Residential Swimming Pools. Permanently installed residential inground swimming pools intended for use by a single-family home for noncommercial purposes and with dimensions as defined in ANSI/NSPI-5.

Return. The return refers to the water in the filtration system returning to the pool. The return lines or return side, relative to the pump, can also be defined as the pressure lines or the pressure side of the pump. Water in the returns is delivered back to the pool at the pool inlets.

Service Factor. A multiplier applied to rated horsepower of a motor to indicate the percent above nameplate horsepower at which a pump motor may operate continuously without exceeding its allowable insulation class temperature limit, provided the other design parameters such a rated voltage, frequency and ambient temperature are within limits. Full-rated pool motor service factors can be as high as 1.65. A 1.5 hp pump with a 1.65 service factor produces 2.475 hp (total horsepower) at the maximum service factor point.

Service Factor Horsepower (SFHP). The maximum continuous duty motor power output rating allowable for nameplate ambient rating and motor insulation class. Commonly, service factor horsepower = rated horsepower x service factor (also known as total horsepower).

Suction. Suction created by the pump is how the pool water gets from the skimmers and suction outlets to the filtration system. The suction side and suction lines refer to the vacuum side of the pump. It is at negative atmospheric pressure relative to the pool surface.

Sweep Elbow. Sweep elbows or a type of elbow that has a pressure drop less than the pressure drop of straight pipe with a length of 30 pipe diameters. For example, a 2 inch elbow must have a pressure drop less than a 5-foot length of 2 inch straight pipe.

Total Dynamic Head. Total dynamic head, or TDH, refers to the sum of all the friction losses and pressure drops in the filtration system from the pools suction outlets and skimmers to the returns. It is a measure of the system's total pressure drop and is given in units of either psi or feet of water column (sometimes referred to as "feet" or "feet of head").

Total Horsepower. The product of the rated horsepower nameplate power and the service factor of a motor used on a pool pump.

Turnover. A turnover is the act of filtering one volume of the pool.

Turnover Time (also called Turnover Rate). The time required to circulate the entire volume of water in the pool or spa through the filter. e.g. A turnover time of 6-hours means an entire volume of water equal to that of the pool will be passed through a filter system in six hours.

Turnover Time = Volume of the pool / Flow rate

4. Appliances

4.1. Pool filter pumps

4.1.1. Motors

4.1.1.1. Motor efficiency
Pool filter pump motors shall not be split-phase, shaded-pole, or capacitor start – induction run type.

4.1.1.2. Two-speed, multi-speed, or variable-speed capability
Pool filter pump motors with a capacity of 1 total horsepower or greater 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.

4.1.1.3. Test methods for pool filter pump motors

4.1.1.3.1. Reported motor efficiency shall be verifiable by test method IEEE 114-2001, or most recent version.

NOTE- Section 5.2.4.2.1 of IEEE 114-2001 lists formula for dynamometer correction factor. Formula inadvertently omits a component of the equation. Section 5.2.1.3.2 of the 1982 version of the

standard lists formula correctly. Therefore, "corrected" shall mean using the 1982 version of the formula within the 2001 standard.

4.1.2. Pumps

4.1.2.1. Test methods for pool pumps

ANSI/HI 1.6-2000 shall be used for the measurement of pump efficiency.

4.1.2.1.1. Tests shall be conducted using unmodified, manufactured and fully assembled pump, including strainer baskets when applicable.

4.1.2.1.2. Three system curves shall be calculated:

Curve A: H = 0.0167 x F2 (Curve 2.0)

Curve B: H = 0.050 x F2 (Curve 1.5)

Curve C: H = 0.0082 x F2 (Curve 2.5)

Where:

H is the total system head in feet of water.

F is the flow rate in gallons per minute (gpm).

4.1.2.1.3. For each curve (A, B, or C), the pump head shall be adjusted until the flow and head lie on the curve. The following shall be tested and reported:

1. Motor nominal speed (RPM)
2. Flow (gallons per minute)
3. Power (watts)
4. Energy Factor (gallons per watt hour)

Where the Energy Factor (EF) is calculated as:

EF = Flow (gpm) * 60 / Power (watts)

4.1.2.1.4. For two-speed pumps, test and report each curve at both high and low speeds. For variable-speed pumps, test and report highest, lowest, and the best efficiency speed.

4.1.3. Labeling

4.1.3.1. Motors

Each pool filter pump motor shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than ¼", the capacity of the motor.

4.1.3.2. Pumps

Each pool filter pump shall be marked, permanently and legibly on an

accessible and conspicuous place on the unit, in characters no less than ¼", the nameplate horsepower of the pump.

4.1.3.3. Two-speed, multi-speed, or variable-speed pool filter pumps shall be marked permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than ¼", "This pump must be installed with a two-, multi-, or variable-speed pump motor controller."

4.2. **Pump controllers**

4.2.1 Pool pump motor controls for use with a two-speed, multi-speed, or variable-speed pumps shall have the capability of operating the pool pump at least at two speeds. The control's default filtration speed setting shall be no more than one-half of the motor's maximum rotation rate. Any high-speed override capability shall be for a temporary period not to exceed one 24-hour cycle without resetting to default settings.

4.3. Heaters

4.3.1. Energy design

4.3.1.1. Gas-fired pool heaters shall not be equipped with constant burning pilots.

4.3.1.2. All pool heaters shall have a readily accessible on-off switch that is mounted on the outside of the heater and that allows shutting off the heater without adjusting the thermostat setting.

4.3.1.3. Electric resistance heating is prohibited.

Comment: APSP-15 draft language was removed and replaced with the FBC Energy Workgroup recommended language.

Deleted: No electric resistance heating except for listed package units that has fully insulated enclosures and tight fitting covers that are insulated to at least R-6. Or if documentation is provided that at least 60 % of the annual heating energy is from site solar energy or recovered energy.

4.3.2. Heater efficiency

4.3.2.1. Gas-fired pool heaters and oil-fired pool heaters shall have a thermal efficiency of not less than xx percent. [TBD pending DOE* rule-making as it applies to pool heaters]. * Department of Energy 10 CFR Part 430 Energy Conservation Program: Energy Conservation Standards for Residential Water Heaters, Direct Heating Equipment, and Pool Heaters; Proposed Rule

4.3.2.2. There is no energy efficiency standard for electric resistance pool heaters.

4.3.2.3. Electric heat pump pool heaters shall have a coefficient of performance (COP) of not less than 4.0 at the low temperature conditions when tested in accordance with AHRI Standard 1160.

4.3.3. Test methods

4.3.3.1. ANSI Z21.56 – 1994 shall be used for the measurement of gas-fired and oil-fired pool heater efficiency.

4.3.3.2. ANSI/ASHRAE 146-1998 shall be used for the measurement of electric resistance pool heater efficiency.

4.3.3.3. ARI 1160 - 2008, Table 2, Standard Rating Conditions – Low Air Temperature, shall be used for the measurement of heat pump pool heater efficiency.

ARI 1160 – 2008: Table 2. Standard Rating Conditions

	Air Temperature Surrounding Unit		Water Temperature Entering Unit	Water Flow Rate (or Less if Specified by the Manufacturer)	
	Dry-bulb °F [°C]	Wet-bulb °F [°C]	°F [°C]	GPM	L/s
High Air Temperature -Mid Humidity (62% RH)	80.6 [27.0]	70.7 [21.5]	80.0 [26.7]	0.450 per 1000 Btu/h	0.028 per 293.1 Watts
Low Air Temperature -Mid Humidity (63% RH)	50.0 [10.0]	44.2 [6.78]	80.0 [26.7]	Same flow rate as established in High Air Temperature - Mid Humidity (62% RH)	

To comply with this standard, measured test results for Heating Capacity and Coefficient of Performance shall not be less than 95% of Published Ratings

5. Pool systems

5.1. General

5.1.1. All filter pumps and filter pump motors installed shall be listed in the California Energy Commission's Appliance Efficiency Database for Residential Pool Pumps, or the APSP Appliance Efficiency Pool Pump Database and shall comply with Section 4.1.

5.1.2. For maximum energy efficiency, pool filtration should be operated at the lowest possible flow rate for a time period that provides sufficient water turnover for clarity and sanitation.

5.1.3. For maximum hydraulic efficiency, sweep elbows or elbow-type fittings that have a pressure drop of less than the pressure drop of straight pipe with a length of 30 pipe diameters are recommended.

5.1.4. Auxiliary pool loads that require high flow rates such as spas, pool cleaners, and water features, should be operated separately from the filtration system to allow the maximum flow rate to be kept to a minimum.

5.1.5. Pool controls are a critical element of energy efficient pool design. Modern pool controls allow for auxiliary loads such as cleaning systems, solar heating, and temporary water features without compromising energy savings.

5.2. Maximum filtration flow rate

5.2.1. Depending on the size (volume) of the pool, the pool filtration flow rate may not be greater than the rate needed to turn over the pool water volume in six hours or 36 gpm, whichever is greater. This means that for pools of less than 13,000 gallons the pump must be sized to have a flow rate of 36 gpm or less and for pools of greater than 13,000 gallons, the pump must be sized using the following equation:

Maximum Filtration Flow Rate (gpm) = Pool Volume (gallons) / 360

5.2.2. These are maximum flow rates. Lower filtration flow rates and longer filtration times are encouraged and will result in added energy savings.

5.2.3. Pools with auxiliary pool loads must use either a multi-speed pump or a separate pump for each auxiliary pool load. For example, if a spa shares the pool filtration system, either a multi-speed pump must be used or a separate pump must be provided to operate the spa. If the pool system can be served by one pump of less than 1 total horsepower in capacity, the pump may be single speed.

5.3. Pool filter pump sizing, flow rate, and filter pump control.

5.3.1. Filtration pump motors with a capacity of 1 total horsepower or more shall be multi-speed.

5.3.2. For pools equal to or less than 17,000 gallons, a filter pump must be chosen such that the flow rate listed for Curve A is less than the maximum filtration flow rate calculated according to Section 5.2.1 (six-hour turnover rate).

5.3.3. For pools greater than 17,000 gallons, a filter pump must be chosen such that the listed flow rate at Curve C is less than the maximum filtration flow rate calculated according to Section 5.2.1 (six-hour turnover rate).

5.3.3.1. The pool filter pump head and flow rate shall be calculated using the following system equation:

H = C X F2

Where:

H is the total system head in feet of water.

F is the Maximum Filtration Flow Rate in gallons per minute (gpm).

C is a coefficient based on the volume of the pool:

0.0167 for pools less than or equal to 17,000 gallons.

0.0082 for pools greater than 17,000 gallons.

and;

5.3.4. Filtration pumps shall be sized, or if programmable, shall be programmed, so that the filtration flow rate is not greater than the rate needed to turn over the pool water volume in 6 hours or 36 gpm, whichever is greater; and

5.3.5. Pump motors used for filtration with a capacity of 1 total horsepower or more shall be multi-speed; and

5.3.6. Each auxiliary pool load shall be served by either separate pumps or the system shall be served by a multi-speed pump; and

EXCEPTION: Filter pumps if less than 1 total horsepower may be single speed.

5.3.7. Multi-speed pumps must have controls that default to the filtration flow rate when no auxiliary pool loads are operating. The controls must also default to the filtration flow rate setting within 24 hours and must have a temporary override capability for servicing.

5.3.8. A time switch or similar control mechanism must be installed as part of the pool water filtration control system that will allow all pumps to be set or programmed to run only during the off-peak electric demand period and for the minimum time necessary to maintain the water in the condition required by applicable public health standards.

5.4. System equipment

5.4.1. Filters sizing.
Filters shall be at least the size specified in NSF/ANSI 50 for public pool intended applications based on the maximum flow rate through the filter.

5.4.1.1. The filter factors that must be used are (in ft^2/gpm):

- Cartridge 0.375
- Sand 15
- Diatomaceous Earth 2

5.4.2. Backwash valves.
Minimum diameter of backwash valves shall be 2 inches or the diameter of the return pipe, whichever is greater.

5.5. System piping and circulation.

5.5.1. Pool piping and pipe fittings shall be sized so that the velocity of the water at the maximum flow rate does not exceed 8 feet per second in the return line and 6 feet per second in the suction line. Velocity calculations for branch piping flow shall allow variations in pipe sizes.

EXCEPTION: Equipment connections and internal piping, including, but not limited to, suction safety systems, pumps, heaters, and sanitizing devices.

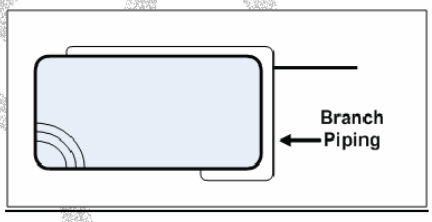

Figure 1

5.5.2. Solar heating.

At least 18 inches of horizontal or vertical pipe shall be installed between the filter and the heater or dedicated suction and return lines, or built-in or built-up connections shall be installed to allow for the future addition of solar heating equipment.

Comment: The APSP-15 straight pipe requirement was removed per FBC Energy Workgroup recommendation.

Deleted: A length of straight pipe that is at least 4 pipe diameters shall be installed before the pump

5.6. **Directional inlets.**
The pool shall have directional inlets that adequately mix the pool water.

Date Proposal Submitted	4/1/2010	**Section**	FL Std 3
Chapter	10	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jennifer Hatfield	**General Comments**	No
Attachments	Yes	**Alternate Language**	Yes

Related Modifications

Summary of Modification

Provides criteria on how to comply w/ s. 403.9.5 of the FECC; the mandatory requirement for portable spas, per legislative directive. This document is the APSP-14 draft Standard for Portable Spa Energy Efficiency that provides the test protocol manufacturers must use when determining standby power.

Rationale

This proposal provides criteria to the manufacturers of portable spas & contractors who install these products on what is required to meet the standby power requirement in s. 403.9.5 of the FECC & the 2008 energy bill. A permit may be required when installing a portable spa & the criteria includes labeling requirements to assist inspectors. The legislation & s. 403.9.5 references the portable spa test protocol, by adopting FL-3, the test protocol can be easily referenced.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

It may take extra time for the AHJ to verify the portable spa being installed meets this new energy efficiency requirement.

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

This energy efficient product may possibly increase the cost of the product to the owner upfront; however, a savings will ultimately occur with the owner's utility bill that should offset any increase associated with purchasing the product.

Impact to industry relative to the cost of compliance with code

This same requirement is in affect in other states and may soon be a federal law; thefefore, the impact to the industry has already occured for those who have complied.

Requirements

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

Portable spas meeting this energy efficient requirement will result in lower energy consumption, benefiting the general public.

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

This proposal strengthens and improves the code by requiring portable spas' standby power not be greater than 5(V2/3) watts where V = the total volume, in gallons, when spas are measured in accordance with the spa industry test protocol provided in FL-3, Appendix D, resulting in energy savings.

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

This proposal provides for a test procedure for all products to adhere to, products not meeting these new requirements will not be allowed to be installed.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code; it actually strengthens and gives consistency throughout the State of Florida by providing guidance on how to meet the new energy efficiency requirements for portable spas.

Alternate Language

EN4077-A1

Proponent Jennifer Hatfield **Submitted** 6/1/2010 **Attachments** Yes

Rationale

This section is part of a larger proposal. Regarding this part of the proposed mod, the definition of Swim Spa has been revised by the ANSI/APSP-14 portable spa drafting committee and the revised definition clarifies the differences between a swim spa from a pool or a therapy spa, avoiding any confusion.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

None

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

Provides for clarification that could result in confusion.

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

No

Does not degrade the effectiveness of the code

No

APPENDIX D—FLORIDA STANDARDS

FLORIDA STANDARD NO. 3 (FL-3)

FLORIDA REGULATORY REQUIREMENTS FOR PORTABLE SPA ENERGY EFFICIENCY

The following regulatory requirements shall constitute Florida Standard FL-3 and provide compliance criteria for section 403.9.5 of the Florida Building Code, Energy Conservation Code. These requirements follow a draft national standard for portable spa energy efficiency.

Section 1. Scope

1.1 These requirements apply to factory built residential portable spas that are used for bathing and are operated by an owner.

1.2 This standard is meant to establish minimum energy efficiency requirements for spas. This standard shall be met notwithstanding certain variations in equipment, materials, and design (Refer to ANSI/NSPI-6).

1.3 These requirements do not apply to public spas, permanently installed residential spas or other spas, such as those operated for medical treatment, physical therapy or other purposes. Swim-spas and portions of combination spas/swim-spas are included in this standard.

1.4 Other standards are referenced in this standard for items not covered.

Section 2. Normative reference

APSP-6 Standard for Portable Spas[1]

Section 3. Definitions

AMBIENT TEMPERATURE – Air temperature inside testing chamber.

ANCILLARY EQUIPMENT – Additional components used in the construction of the spa beyond pumps, heaters and control systems.

CHAMBER – Climate controlled test room.

ENERGY EFFICIENCY – Using less energy to provide the same level of energy service.

FILL VOLUME - The halfway point between the bottom of the skimmer opening and the top of the spa. If there is no wall skimmer, the spa shall be filled with water to six inches below the top of the spa.

FILTER CYCLE - The period when the control system activates a pump intended to move water through a filter media.

GALLON – Means U.S. liquid gallon

HEATING CYCLE – The period when the temperature regulating system activates the heating component for the purpose of increasing the water temperature.

HOT TUB – See Spa

INGROUND SPA - Non-portable, non-self-contained spa (Refer to ANSI -3 Permanent Inground Spas)

NORMALIZE – Calculation of power consumption to eliminate temperature bias.

NRTL – Nationally Recognized Test Laboratory

POWER FACTOR – The ratio of watts to volt-amperes of an AC circuit.

PURGE CYCLE - The period when the control system activates a pump intended to rapidly move water throughout the spa.

SKIMMER – A suction opening intended to remove floating debris from the water surface and to be installed where part of the water intake opening is open to atmospheric pressure.

SPA – A product intended for the immersion of persons in heated water circulated in a closed system, and not intended to be drained and filled with each use. A spa usually includes a filter, a heater (electric, solar, or gas), a pump or pumps, and a control, and may also include other equipment, such as lights, blowers, and water sanitizing equipment.

> Permanent Residential Spa- A spa in which the water heating and water circulating equipment is not an integral part of the product. The spa shall be intended as a permanent plumbing fixture and shall not be intended to be moved. (Refer to ANSI/NSPI-3 1999 Standard For Permanently Installed Residential Spas.)
>
> Public Spa - Any spa other than a permanent residential spa or residential portable spa which is intended to be used for bathing and is operated by an owner, licensee, concessionaire, regardless of whether a fee is charged for use. (Refer to ANSI/NSPI-2 1999 Standard for Public Spas.)
>
> Residential Portable Spa - Either Self-Contained or Non-Self-Contained (Refer to ANSI/NSPI-6 1999 Standard For Residential Portable Spas.):
>
> > Self Contained Spa - A factory built spa in which all control, water heating and water circulating equipment is an integral part of the product. Self-contained spas may be permanently wired or cord connected.
> >
> > Non-Self-Contained Spa - A factory built spa in which the water heating and circulating equipment is not an integral part of the product. Non-self-contained spas may employ separate components such as an individual filter, pump, heater and controls, or they may employ assembled combinations of various components.

STANDARD COVER – The cover that is provided or specified by the spa manufacturer.

STANDBY MODE - All settings at default as shipped by the manufacturer, except water temperature which may be adjusted to meet the test conditions. No manual operations are enabled.

SWIMSPA –Variant of a Residential Portable Spa which consists of a large unobstructed volume of water primarily designed for, and constructed with specific equipment required to produce a water flow intended to allow recreational physical activity including, but not limited to, swimming in place.

> Swim spas may include peripheral jetted seats intended for water therapy, heater, circulation and filtration system, or may be a separate distinct portion of a combination spa/swim spa with separate controls.

WATT HOUR – Energy consumed over a period of one hour.

Section 4. Test Method

4.1 Purpose: To measure the energy consumption of a portable electric spa in standby mode, using a repeatable and reproducible test procedure. The results will be used to calculate the standby power demand.

4.2 Test Equipment

Note: All equipment shall be calibrated and traceable to the National Institute of Standards and Technology (NIST). The test facility and equipment will be evaluated by a NRTL to confirm they meet the requirements of this standard. Documentation showing facility and test equipment compliance to this standard from the NRTL will be maintained on site by the test facility and made available as required.

4.2.1 Recording Watt Hour meter – Accuracy: Class-2 or better.

4.2.2 Temperature measurement system - Accuracy: +/- 1°F

4.2.3 Water meter to measure fill water in gallons – Accuracy: +/- 1.5%

4.3 Test Conditions

The test method for portable electric spas is as follows:

4.3.1 Minimum continuous testing time shall be 72 hours.

4.3.2 The spa shall be filled with water to the halfway point between the bottom of the skimmer opening and the top of the spa. If there is no wall skimmer, the spa shall be filled with water to six inches below the top of the spa.

4.3.2.1 Measure and record fill volume (V) while filling according to 4.3.2.

4.3.3 The water temperature of the spa or spa portion of a combination swim spa shall be a minimum of 100°F, for the duration of the test. The water temperature of the swim spa or swim portion of a combination swim spa shall be a minimum of 85°F, for the duration of the test.

4.3.4 The ambient air temperature shall be a maximum of 63°F for the duration of the test.

4.3.5 The standard cover that comes with the unit shall be used during the test.

4.4 Test Procedure

4.4.1 The test shall start when the water temperature has been at 102°F, ±2°F, (at 87°F, ± 2°F for swimspas) for at least a four hour stabilizing period.

4.4.2 Record water temperature.

4.4.2.1 The thermocouple shall be located three to five inches below the water level and centrally located relative to the shape of the spa.

4.4.3 Record ambient air temperature at one point located a maximum of one to one and a half feet above spa cover level and six to eight inches from the chamber wall and out of direct airflow from the chamber temperature control system and/or circulation fan.

4.4.4 Data Recording

4.4.4.1 Record temperatures at a maximum interval of 4 minutes.

4.4.4.2 Measure voltage, current, and power factor (OPTIONAL) at a maximum interval of 4 minutes.

4.4.4.3 Record watt-hours, voltage and current used during entire Test Period.

4.4.4.4 Record elapsed time during Test Record.

4.4.5 Record the total energy use for the period of test, starting at the end of the first heating cycle after the stabilization period and finishing at the end of the first heating cycle after 72 hours has elapsed.

Exception: For spas without heaters, substitute heating cycle with filter or purge cycle.

4.4.6 The unit shall remain covered and in the default operation mode during the test. Energy-conserving circulation functions, if present, must not be enabled if not appropriate for continuous, long-term use. The minimum filtration rate shall be 12 water turns within a 24 hour period. Ancillary equipment including, but not limited to lights, audio systems, and water treatment devices, shall remain connected to the mains but may be turned off during the test if their controls are user accessible.

Section 5. Formulas

5.1 The measured standby power (Pmeas) shall be determined by E/t:

Pmeas = E/t

Where:

E = total energy use during the test (Wh)

t = length of test (hr)

5.2 The measured standby power (Pmeas) shall be normalized (P_{norm}) to a temperature difference of 37°F using the equation:

P_{norm} = Pmeas (Delta Tideal / Delta Tmeas)

Where:

Delta Tideal = 37°F

Delta Tmeas = Twater avg – Tair avg

Twater avg = Average water temperature during test

Tair avg = Average air temperature during test.

5.3 The normalized standby power (Pnorm) shall not be greater than maximum standby power (Pmax):

Pmax = $5(V^{2/3})$

Where:

V = fill volume in gallons

Section 6. Label Requirements

6.1 The manufacturer shall include either on or in close proximity to the spa's product label the standby watts rating.

6.2 Wording to be in the following format:

Per ANSI-14 Measured Standby Power Consumption XXXX watts/hr

(Maximum Allowable Standby Power Consumption XXXX watts/hr)

APPENDIX A

Minimum Chamber Requirements

Chamber internal dimensions:

Minimum 7 feet high

Minimum 1 foot from spa to chamber wall or other internal barrier.

Air flow: If air circulation from the air temperature control equipment is intermittent, install 1 fan in one corner of the chamber, 6 feet from the floor. Direct toward the center of the floor. The fan should move at least 80 CFM of air, and not more than 100 CFM. If the air temperature control equipment continuously circulates air in the chamber, no fan is required.

Chamber Insulation: Walls shall be insulated adequately to maintain proper ambient temperatures.

Chamber Floor: The floor may be insulated with 2" thick R-13 polisocyanurate with radiant barrier on both sides. This insulation shall be laid directly on a level concrete floor or slab or other firm, level surface created for it. The insulating layer shall be sheeted with minimum 1/2" thick plywood to protect the insulation layer and provide a smooth surface to properly position the spas to be tested.

---

[1] Association of Pool & Spa Professionals (APSP) (formerly National Spa and Pool Institute (NSPI), 2111 Eisenhower Avenue, Alexandria, VA 22314

Proposed Appendix D - Florida Standard No. 3 (FL-3), Florida Regulatory Requirements for Portable Spa Energy Efficiency Section 3 Definitions: Delete the definition of Swim Spa and replace it with the following:

~~SWIMSPA - Variant of a Residential Portable Spa which consists of a large unobstructed volume of water primarily designed for, and constructed with specific equipment required to produce a water flow intended to allow recreational physical activity including, but not limited to, swimming in place.~~

~~Swim spas may include peripheral jetted seats intended for water therapy, heater, circulation and filtration system, or may be a separate distinct portion of a combination spa/swim spa with separate controls.~~

SWIM SPA - Variant of a factory built residential portable spa which consists of a large unobstructed volume of water that allows the 99% male/female to swim utilizing swim jets for a treadmill-like workout, primarily designed for, and constructed with specific equipment required to produce a water flow intended to allow recreational physical activity including, but not limited to, swimming in place. Swim spas may include peripheral jetted seats intended for water therapy, heater, circulation and filtration system, or may be a separate distinct portion of a combination spa/swim spa with separate controls.

APSP
The Association of Pool & Spa Professionals™

2111 Eisenhower Avenue
Alexandria VA 22314-4695

703.838.0083
703.549.0493 fax
www.TheAPSP.org

The Global Source and Voice for the Recreational Water Industry

APSP-14- Portable Spa Energy Efficiency Standard

1. Scope

1.1 These requirements apply to factory built residential portable spas that are used for bathing and are operated by an owner.

1.2 This standard is meant to establish minimum energy efficiency requirements for spas. This standard shall be met notwithstanding certain variations in equipment, materials, and design (Refer to ANSI/NSPI-6).

1.3 These requirements do not apply to public spas, permanently installed residential spas or other spas, such as those operated for medical treatment, physical therapy or other purposes. Swim-spas and portions of combination spas/swim-spas are included in this standard.

1.4 Other standards are referenced in this standard for items not covered.

2. Normative reference

APSP-6 Standard for Portable Spas[1]

3. Definitions

AMBIENT TEMPERATURE – Air temperature inside testing chamber.

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GALLON – Means U.S. liquid gallon

HEATING CYCLE – The period when the temperature regulating system activates the heating component for the purpose of increasing the water temperature.

HOT TUB – See Spa
[1]

INGROUND SPA - Non-portable, non-self-contained spa (Refer to ANSI -3 Permanent Inground Spas)

NORMALIZE – Calculation of power consumption to eliminate temperature bias.

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SKIMMER – A suction opening intended to remove floating debris from the water surface and to be installed where part of the water intake opening is open to atmospheric pressure.

SPA – A product intended for the immersion of persons in heated water circulated in a closed system, and not intended to be drained and filled with each use. A spa usually includes a filter, a heater (electric, solar, or gas), a pump or pumps, and a control, and may also include other equipment, such as lights, blowers, and water sanitizing equipment.

Permanent Residential Spa - A spa in which the water heating and water circulating equipment is not an integral part of the product. The spa shall be intended as a permanent plumbing fixture and shall not be intended to be moved. (Refer to ANSI/NSPI-3 1999 Standard For Permanently Installed Residential Spas.)

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WATT HOUR – Energy consumed over a period of one hour.

4. Test Method

4.1 Purpose: To measure the energy consumption of a portable electric spa in standby mode, using a repeatable and reproducible test procedure. The results will be used to calculate the standby power demand.

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4.2.1 Recording Watt Hour meter – Accuracy: Class-2 or better.

4.2.2 Temperature measurement system - Accuracy: +/- 1°F

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5. Formulas

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Where:

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$$P_{norm} = Pmeas\ (\Delta Tideal / \Delta Tmeas)$$

Where:

ΔTideal = 37°F
ΔTmeas = Twater avg – Tair avg
Twater avg = Average water temperature during test
Tair avg = Average air temperature during test.

5.3 The normalized standby power (Pnorm) shall not be greater than maximum standby power (Pmax):

$$Pmax = 5(V^{2/3})$$

Where:

V = fill volume in gallons

6. Label Requirements

6.1 The manufacturer shall include either on or in close proximity to the spa's product label the standby watts rating.
6.2 Wording to be in the following format:

Per ANSI-14 Measured Standby Power Consumption XXXX watts/hr
(Maximum Allowable Standby Power Consumption XXXX watts/hr)

APPENDIX A

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Chamber Insulation: Walls shall be insulated adequately to maintain proper ambient temperatures.

Chamber Floor: The floor may be insulated with 2" thick R-13 polisocyanurate with radiant barrier on both sides. This insulation shall be laid directly on a level concrete floor or slab or other firm, level surface created for it. The insulating layer shall be sheeted with minimum 1/2" thick plywood to protect the insulation layer and provide a smooth surface to properly position the spas to be tested.

Sub Code: Existing Building

Date Proposal Submitted	3/28/2010	**Section**	311
Chapter	3	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jack Glenn	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Change reference to new volume of the code.

Rationale

Correct reference to the correct volume of the code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on local enforcement of the code

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

No change.

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

Editorial change does not affect the strength of 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

Do not degrade the code.

SECTION 311

ENERGY CONSERVATION

See ~~Chapter 13 of the Florida Building Code, Building~~. Florida Building Code - Energy Conservation.

Date Proposal Submitted	3/28/2010	**Section**	612.1
Chapter	6	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jack Glenn	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Editorial to correct a code reference.

Rationale

Editorial change to correct a code reference

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on local enforcement

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

No change

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

No change

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 nt degrade the code.

612.1 Minimum requirements. Alterations subject to this chapter shall comply with the requirements of ~~Chapter 13 of~~ the Florida Building Code, ~~Building~~, Energy Conservation.

Date Proposal Submitted	3/28/2010	**Section**	711.1
Chapter	7	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jack Glenn	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Editorial to correct a code reference.

Rationale

Editorial change to correct a code reference

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on local enforcement

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

No change

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

No change

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 nt degrade the code.

711.1 Minimum requirements. Alterations subject to this chapter shall comply with the requirements of ~~Chapter 13 of~~ the Florida Building Code, ~~Building~~, Energy Conservation.

Date Proposal Submitted	3/28/2010	**Section**	808.1
Chapter	8	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jack Glenn	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Editorial to correct a code reference.

Rationale

Editorial change to correct a code reference

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on local enforcement

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

No change

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

No change

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 nt degrade the code.

808.1 Minimum requirements. Alterations subject to this chapter shall comply with the requirements of ~~Chapter 13 of~~ the Florida Building Code, ~~Building~~, Energy Conservation.

Date Proposal Submitted	3/28/2010	**Section**	913
Chapter	9	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jack Glenn	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Editorial to correct a code reference.

Rationale

Editorial change to correct a code reference

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on local enforcement

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

No change

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

No change

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 nt degrade the code.

913 Energy Conservation. ~~See Chapter 13 of~~ the Florida Building Code, ~~Building~~, Energy Conservation.

Date Proposal Submitted	3/28/2010	**Section**	1006.1
Chapter	10	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	Jack Glenn	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Editorial to correct a code reference.

Rationale

Editorial change to correct a code reference

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on local enforcement

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

No change

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

No change

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 nt degrade the code.

1006.1 Minimum requirements. Additions to existing buildings or structures shall comply with the requirements of ~~Chapter 13 of~~ the Florida Building Code, ~~Building~~ Energy Conservation.

Sub Code: Mechanical

Date Proposal Submitted	3/23/2010	**Section**	202
Chapter	2	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	J Glenn-BASF	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

3750

Summary of Modification

Revise Air Conditioning definition

Rationale

The base code language provides the same level of protection.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

None

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

No change

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

Does not discriminate against anything

Does not degrade the effectiveness of the code

Does not degrade the code

General Comment

EN3749-G1

Proponent Ann Stanton **Submitted** 5/11/2010 **Attachments** No

Comment

This mod should also be heard by the Energy TAC because the definition originally came from the energy code and needs to be returned to that code as it was inadvertently deleted.

~~**AIR CONDITIONING**. The process of treating air to control its temperature, humidity, cleanliness and distribution to meet requirements of the conditioned space.~~

AIR CONDITIONING. The treatment of air so as to control simultaneously the temperature, humidity, cleanness and distribution of the air to meet the requirements of a conditioned space.

Date Proposal Submitted	3/23/2010	**Section**	202
Chapter	2	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	J Glenn-BASF	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Definition of Air Distribution system retain the based code (IMC) language

Rationale

The base code language provides the same level of protection.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

None

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

No change

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

Does not discriminate against anything

Does not degrade the effectiveness of the code

Does not degrade the code

General Comment

EN3750-G1

Proponent Ann Stanton **Submitted** 5/11/2010 **Attachments** No

Comment

This mod should also be heard by the Energy TAC because the definition originally came from the energy code and needs to be returned to that code as it was inadvertently deleted.

~~**AIR DISTRIBUTION SYSTEM**. Include all building elements (duct systems, air handling units, cavities of the building structure and mechanical closets) through which air is delivered to or from the conditioned spaces.~~

AIR DISTRIBUTION SYSTEM. Any system of ducts, plenums and air-handling equipment that circulates air within a space or spaces and includes systems made up of one or more air-handling units.

Date Proposal Submitted	3/23/2010	**Section**	202
Chapter	2	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	J Glenn-BASF	**General Comments**	Yes
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Retain the based code (IMC) language

Rationale

The base code language provides the same level of protection.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

None

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

No change

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

Does not discriminate against anything

Does not degrade the effectiveness of the code

Does not degrade the code.

General Comment

EN3756-G1

Proponent Ann Stanton **Submitted** 5/11/2010 **Attachments** No

Comment

This mod should also be heard by the Energy TAC because the definition originally came from the energy code and needs to be returned to that code as it was inadvertently deleted.

~~**AIR-HANDLING UNIT.** The fan unit of a furnace and the fan coil unit of a split system, packaged air conditioner or heat pump.~~

AIR-HANDLING UNIT. A blower or fan used for the purpose of distributing supply air to a room, space or area.

Sub Code: Residential

Date Proposal Submitted	3/29/2010	**Section**	806.4
Chapter	8	**TAC Recommendation**	Pending Review
Affects HVHZ	No	**Commission Action**	Pending Review
Proponent	J Glenn-BASF	**General Comments**	No
Attachments	No	**Alternate Language**	No

Related Modifications

Summary of Modification

Retain base code (IRC) language.

Rationale

The base code change provides more specific direction and restores the Florida Code to the nationally accepted practice.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impacton local enforcement.

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

None

Impact to industry relative to the cost of compliance with code

None

Requirements

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

No change

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

Brings Florida in-line with nationally accepted practice.

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

Does not discriminated against anything.

Does not degrade the effectiveness of the code

Does not degrade the code.

~~**R806.4 Unvented attic assemblie**s. Unvented attic assemblies shall be permitted if all the following conditions are met:~~

~~1. The unvented attic space is completely contained within the building thermal envelope.~~

~~2. No interior vapor retarder is installed on the ceiling side (attic floor) of the unvented attic assembly.~~

~~3.Where wood shingles or shakes are used, a minimum continuous ¼ inch (6 mm) vented air space separates the shingles or shakes from the roofing underlayment.~~

~~4. One of the following: shall be met, depending on the air permeability of the insulation under the structural roof sheathing.~~

~~a. Air-impermeable insulation only. Insulation shall be applied in direct contact to the underside of the structural roof sheathing.~~

~~b. Air-permeable insulation only. In addition to air-permeable insulation installed directly below the structural sheathing, at least R-5 rigid board or sheet insulation shall be installed directly above the structural roof sheathing for condensation control.~~

~~c. Air-impermeable and air-permeable insulation. At least R-5 air-impermeable insulation shall be applied in direct contact to the underside of the structural roof sheathing for condensation control. The air-permeable insulation shall be installed directly under the air-impermeable insulation.~~

R806.4 Unvented attic assemblies. Unvented attic assemblies (spaces between the ceiling joists of the top story and the roof rafters) shall be permitted if all the following conditions are met:

1. The unvented attic space is completely contained within the building thermal envelope.

2. No interior vapor retarders are installed on the ceiling side (attic floor) of the unvented attic assembly.

3. Where wood shingles or shakes are used, a minimum $^{1}/_{4}$ inch (6 mm) vented air space separates the shingles or shakes and the roofing underlayment above the structural sheathing.

4. In climate zones 5, 6, 7 and 8, any air-impermeable insulation shall be a vapor retarder, or shall have a vapor retarder coating or covering in direct contact with the underside of the insulation.

5. Either Items 5.1, 5.2 or 5.3 shall be met, depending on the air permeability of the insulation directly under the structural roof sheathing.

5.1. Air-impermeable insulation only. Insulation shall be applied in direct contact with the underside of the structural roof sheathing.

5.2. Air-permeable insulation only. In addition to the air-permeable installed directly below the structural sheathing, rigid board or sheet insulation shall be installed directly above the structural roof sheathing as specified in Table R806.4 for condensation control.

5.3. Air-impermeable and air-permeable insulation. The air-impermeable insulation shall be applied in direct contact with the underside of the structural roof sheathing as specified in Table R806.4 for condensation control. The air-permeable insulation shall be installed directly under the air-impermeable insulation.