Mechanical

Proposed Code Modifications

Including Comments

This document created by the Florida Department of Business and Professional Regulation - 850-487-1824

TAC: Mechanical

Sub Code: Building

Total Mods for Mechanical: 21

M6770

Date Submitted	12/22/2015	**Section**	908.7	**Proponent**	scott waltz
Chapter	9	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

None

Summary of Modification

Moves exceptions to carbon monoxide protection and alarm placement from section 908.7.2 to 908.7. Exceptions are intended to apply broadly to the alarm requirements for carbon monoxide. The current code appears to limit the application of the exceptions to combination smoke/carbon monoxide alarms.

Rationale

This revision and relocation is needed because it is currently being misunderstood by code enforcing authorities and is not meeting the intent of the Florida statute chapter 553.885.
Informal Interpretation from the Building Official Association of Florida, report numbers 7572 , 7618 (see attached) provide incorrect information to the user because of the location of this exception under the combination smoke/CO detectors. Chapter 553.885 (attached) clearly states the exception for hospitals, nursing homes and inpatient hospices is a general requirement to be located under Section 907.7. The slight revision of the existing language is meant to alert the user of this exception for those occupancies as excepted in Florida statute.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code
There is no fiscal impact on the local entity relative to enforcement.

Impact to building and property owners relative to cost of compliance with code
There is no fiscal impact to building and property owners relative to cost of compliance

Impact to industry relative to the cost of compliance with code
There is no fiscal impact to industry relative to the cost of compliance

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
Strengthens or improves the code by making the code requirements clearer to the user.

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

Does not degrade the effectiveness of the code
Does not degrade the effectiveness of the code

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

1st Comment Period History 01/13/2016 - 02/25/2016

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

Comment:
Neutral

M6770-G1

908.7 Carbon monoxide protection.Every separate building or an addition to an existing building for which a permit for new construction is issued and having a fossil-fuel burning heater or appliance, a fireplace, an attached garage, or other feature, fixture, or element that emits carbon monoxide as a by product of combustion shall have an operational carbon monoxide alarm installed within 10 feet of each room used for sleeping purposes in the new building or addition, or at such other locations as required by this code.

Exceptions:

1. An approved operational carbon monoxide detector shall only be required to be installed inside or directly outside of each room or area where a fossil-fuel burning heater, engine, or appliance is located within a hospital, inpatient hospice facility or skilled nursing home facility licensed by the Agency for Health Care Administration, or a new state correctional institution. The carbon monoxide detector shall be connected to the fire-alarm system of the hospital, inpatient hospice facility, or nursing home facility as a supervisory signal.

2. This section shall not apply to existing buildings that are undergoing alterations or repairs unless the alteration is an addition as defined in Section 908.7.3.

908.7.1 Carbon monoxide alarm. The requirements of Section 908.7 shall be satisfied by providing for one of the following alarm installations:

1. A hard-wired carbon monoxide alarm.

2. A battery-powered carbon monoxide alarm.

3. A hard-wired combination carbon monoxide and smoke alarm.

4. A battery-powered combination carbon monoxide and smoke alarm.

908.7.2 Combination alarms. Combination smoke/carbon monoxide alarms shall be listed and labeled by a nationally recognized testing laboratory.

~~Exceptions:~~

~~1. An approved operational carbon monoxide detector shall be installed inside or directly outside of each room or area within a hospital, inpatient hospice facility or nursing home facility licensed by the Agency for Health Care Administration, or a new state correctional institution where a fossil-fuel burning heater, engine, or appliance is located. The carbon monoxide detector shall be connected to the fire-alarm system of the hospital, inpatient hospice facility, or nursing home facility as a supervisory signal.~~

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~~2. This section shall not apply to existing buildings that are undergoing alterations or repair unless the alteration is an addition as defined in Section 908.7.3.~~

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553.885 Carbon monoxide alarm required.—
(1) Every separate building or addition to an existing building, other than a hospital, an inpatient hospice facility, or a nursing home facility licensed by the Agency for Health Care Administration, constructed on or after July 1, 2008, and having a fossil-fuel-burning heater or appliance, a fireplace, an attached garage, or other feature, fixture, or element that emits carbon monoxide as a byproduct of combustion shall have an approved operational carbon monoxide alarm installed within 10 feet of each room used for sleeping purposes in the new building or addition, or at such other locations as required by the Florida Building Code. The requirements of this subsection may be satisfied with the installation of a hard-wired or battery-powered carbon monoxide alarm or a hard-wired or battery-powered combination carbon monoxide and smoke alarm. **For a new hospital, an inpatient hospice facility, a nursing home facility licensed by the Agency for Health Care Administration, or a new state correctional institution, an approved operational carbon monoxide detector shall be installed inside or directly outside of each room or area within the hospital or facility where a fossil-fuel-burning heater, engine, or appliance is located. This detector shall be connected to the fire alarm system of the hospital or facility as a supervisory signal.** This subsection does not apply to existing buildings that are undergoing alterations or repairs unless the alteration is an addition as defined in subsection (3).

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Informal Interpretation
Report Number 7572

Date: Thu Aug 20 2015

Report: 7572

Code: Building **Code Year:** 2010

Section: 916.1.2

Question:
Is it the intent of 916.1.2 Exception #1 to not require carbon monoxide alarm installed within 10 feet of each room used for sleeping purposes of nursing homes facility licensed by the Agency for Health Care Administration

Comment:
None

Answer:
No. The alarm is required inside or directly outside, based on agency requirements.

Commentary:
Please careful about the location of the requirement for the interpretation. The Exception is from the provision allowing a combination smoke/CO detector; not from the requirement for the CO detector. The provisions are found at Section 908.7 in the FBC-B 5th Edition.

Notice:
The Building Officials Association of Florida, in cooperation with the Florida Building Commission, the Florida Department of Community Affairs, ICC, and industry and professional experts offer this interpretation of the Florida Building Code in the interest of consistency in their application statewide. This interpretation is informal, non-binding and subject to acceptance and approval by the local building official.

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Informal Interpretation
Report Number 7618

Date: Wed Sep 16 2015

Report: 7618

Code: Building **Code Year:** 2010

Section: 916.1.2

Question:
Is it the intent of 916.1.2, Exceptions #1 to not require carbon monoxide detectors within 10 feet of rooms used for sleeping purposes within nursing home facility licensed by AHCA having no fossil-fuel burning appliances located in sleeping rooms?

Comment:
None

Answer:
The Section cited is for combination alarms. If there is no fossil fuel-burning heater, engine, or appliance, there is no code requirement for a CO detector.

Commentary:
None

Notice:
The Building Officials Association of Florida, in cooperation with the Florida Building Commission, the Florida Department of Community Affairs, ICC, and industry and professional experts offer this interpretation of the Florida Building Code in the interest of consistency in their application statewide. This interpretation is informal, non-binding and subject to acceptance and approval by the local building official.

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Sub Code: Energy Conservation

M6820

Date Submitted	12/28/2015	**Section**	402.4.1.2	**Proponent**	Joseph Belcher
Chapter	4	**Affects HVHZ**	Yes	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Modify air leakage rate.

Rationale

The sole reason for the change given by the proponent to the change from 7 ACH to 5 ACH in the base code was to make buildings tighter.

"There are four key areas of improvement in this proposal: Reduced leakage in duct systems and building envelopes, verified by testing. The proposal requires that all ductwork be inside conditioned space, sets new leakage limits on the ductwork, and adds a new requirement for testing the air tightness of the building envelope. As an alternative, homes with high-efficiency HVAC equipment are exempted from the requirement for ducts inside the conditioned space and are subject to less stringent duct and whole-house testing requirements." (Excerpt from Reason statement for ICC Code Change EC13-09/10, ICC Monograph for ICC Public Hearings October 2009)

The statement of the first "key area" is the only reference to tighter building envelopes and was the sole reason given. Florida has enacted other measures through Florida specific amendments to the foundation code that result in greater energy efficiency.

In a report on whole-house ventilation effectiveness and failure rates by FSEC, one recommendation was to not require houses to become tighter than already specified by code and to consider increasing allowed air leakage to 7 ACH50 throughout Florida. (Source: Investigation of the Effectiveness and Failure Rates of Whole-House Mechanical Ventilation Systems in Florida" FSEC-CR-2002-15, June 1, 2015.) According to a statement by a member of FSEC on an Energy TAC conference call the energy loss at a 7 ACH infiltration rate is not sufficient to be of concern in Florida's climate. Running models on Energy Gauge for a typical Florida house using 5 ACH and using 7 ACH resulted in no change.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity for code enforcement. Proposal reverts to requirement of FBC-EC 2010.

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

The proposal could result in a cost savings without a sacrifice of energy efficiency, Proposal reverts to requirement of FBC-EC 2010. Building and property owners would still have the option of requesting the builder to provide greater energy efficiency if desired.

Impact to industry relative to the cost of compliance with code

The proposal could result in a cost savings without a sacrifice of energy efficiency, Proposal reverts to requirement of FBC-EC 2010. Building and property owners would still have the option of requesting the builder to provide greater energy efficiency if desired.

Requirements

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

The proposal has a reasonable connection with the health, safety, and welfare of the general public because it recognizes that Florida has different needs in some aspects that other states using the foundation code.

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

The proposal improves the code by removing an overly restrictive requirement and reverting to a reasonable provision with no loss in energy efficiency.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not degrade the effectiveness of the code

The proposal does not degrade the effectiveness of the code.

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

Alternate Language

1st Comment Period History 01/13/2016 - 02/25/2016

6820-A2

Proponent Mike Moore **Submitted** 2/22/2016 **Attachments** Yes

Rationale

Please see the attached document for the rationale supporting the proposed change to M6820.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Reduces stringency of air tightness metric, meaning that verification of compliance will be easier.

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

By increasing the infiltration rate, operational energy costs are expected to increase slightly.

Impact to industry relative to the cost of compliance with code

May reduce the cost of compliance by increasing the acceptable leakage rate.

Requirements

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

The proposed changes to M6820 are expected to improve occupant health and recuce associated health costs by achieving the recommended minimum ventilation rate and decreasing indoor pollutant concentrations, especially in the summer when formaldehyde concentrations are expected to peak.

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

Maintains the current standard of the model code by providing for a minimum acceptable level of indoor air quality aligned with national codes and standards.

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

Builders will continue to have multiple options for products and systems to meet the current and proposed code requirements.

Does not degrade the effectiveness of the code

As submitted by the proponent, M6820 would degrade the effectiveness fo the code to provide minimum acceptable indoor air quality. This amendment to the proposal seeks to restore the effectiveness of the code at providing minimum acceptable IAQ.

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

1st Comment Period History 01/13/2016 - 02/25/2016

M6820-G1

Proponent Jay Crandell **Submitted** 2/25/2016 **Attachments** Yes

Comment:

See attached comment.

1st Comment Period History 01/13/2016 - 02/25/2016

M6820-G2

Proponent Eric Lacey **Submitted** 2/25/2016 **Attachments** Yes

Comment:

See attached comment.

R402.4.1.2 Testing.

The building or dwelling unit shall be tested and verified as having an air leakage rate not exceeding ~~five~~ 7.00 air changes per hour in Climate Zones 1 and 2, and three air changes per hour in Climate Zones 3 through 8. Testing shall be conducted in accordance with ASTM E 779 or ASTM E 1827 and reported at a pressure of 0.2 inch w.g. (50 Pascals). Where required by the code official, testing shall be conducted by an approved third party in accordance with the provisions of Section 489 or 553.99, *Florida Statutes*, or as otherwise authorized by *Florida Statutes*. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope.

Remainder of Section unchanged.

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Change the IECC as follows:

R402.4.1.2 Testing. The building or dwelling unit shall be tested and verified as having an air leakage rate not exceeding ~~five~~ 7.00 air changes per hour in Climate Zones 1 and 2, and three air changes per hour in Climate Zones 3 through 8. Testing shall be conducted in accordance with ASTM E 779 or ASTM E 1827 and reported at a pressure of 0.2 inch w.g. (50 Pascals). Where required by the *code official*, testing shall be conducted by an *approved* third party in accordance with the provisions of Section 489 or 553.99, *Florida Statutes*, or as otherwise authorized by *Florida Statues*. A written report of the results of the test shall be signed by the party conducting the test and provided to the *code official*. Testing shall be performed at any time after creation of all penetrations of the *building thermal envelope*.

R403.6 Mechanical ventilation (Mandatory). The building shall be provided with mechanical ventilation that meets the requirements of Section M1507 of the *International Residential Code* or Section 403 of the *International Mechanical Code*, as applicable, or with other approved means of mechanical ventilation. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.

Change the IRC as follows:

R303.4 Mechanical ventilation. ~~Where the air infiltration rate of a *dwelling unit* is 5 air changes per hour or less where tested with a blower door at a pressure of 0.2 inch w.c (50 Pa) in accordance with Section N1102.4.1.2, the d~~*D*~~welling units~~ shall be provided with ~~whole-house~~ mechanical ventilation in accordance with Section M1507.3.

Change the IMC as follows:

401.2 Ventilation required. Every occupied space shall be ventilated by natural means in accordance with Section 402 or by mechanical means in accordance with Section 403. ~~Where the air infiltration rate in a dwelling unit is less than 5 air changes per hour when tested with a blower door at a pressure of 0.2 inch water column (50 Pa) in accordance with Section R402.4.1.2 of the *International Energy Conservation Code*, the d~~D~~welling units~~ shall be ventilated by mechanical means in accordance with Section 403. Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407.

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M6820: Reasons to disapprove

Submitted by: Jay H. Crandell, PE, ARES Consulting (representing FSC)

Proposal EN6820 should be disapproved for lack of compelling evidence that any problem or risk is created with use of a 5 ACH requirement. In fact, the risk will likely be worsened by increasing to 7 ACH without mechanical ventilation still being required (see data provided by separate comment from Mike Moore). So, even with this proposal the risks, to the extent they actually exist, will still exist and not be solved and may be worsened by this proposal. As the referenced FSEC study indicates…people will still not maintain and operate ventilation systems properly, installers will not install them properly, inspectors not inspect them adequately, and many homes will still be built tighter than 5 ACH. Thus, this issue is not one of changing the ACH target (which comes with energy penalties and potential moisture control and IAQ problems with no guarantee of any improvement in indoor air quality or moisture control risks). The FSEC study indicates or admits a hope that moving from ACH 5 to ACH 7 "may reduce risk" but gives no risk-based evidence to support that recommendation. This subjective "hunch" does not provide adequate justification for the proposal.

Instead, the referenced FSEC study does give very actionable recommendations to improve functionality and reliability of ventilation systems including documentation, labeling, and instruction for proper operation and maintenance. Consumers receive these types of instructions and aids for TV remotes, watches, calculators, computers, cars, lawn mowers and many other things including things related to health, such as medicines and thermometers. In addition, it also is clear from the study that improved inspection and verification is needed. These are the fundamental needs recognized in the FSEC report that address the root of the problem and should be pursued, not a weakening of the energy code that will also result in the ability to use weakening trade-offs of reliable permanent energy efficiency features such as the building envelope. For example, see the proponent's proposal EN 6821 which also should be disapproved and which links this proposal to a desire to weaken the energy code with very certain impacts associated with trading-off reliable energy conservation measures (such as the building envelope) for the random chance or hope that this proposal might have an unquantified and uncertain risk reduction benefit for an uncertain quantity of homes. Is the goal of EN6820 really to improve the code or allow it to be weakened? EN 6820 should be disapproved for all of the reasons stated above.

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Responsible Energy Codes Alliance Comment on Proposal EN6820

Proposals EN6820 and EN6573 weaken the air leakage requirement in the current 5th Edition Code from 5 ACH50 to 7 ACH50 without justification. This would result in increased energy costs, additional problems with humidity, and less comfortable occupants. Both the 2012 and 2015 IECC specify that homes shall achieve a 5 ACH50 or better level of air tightness, and we see no reason why Florida should weaken its current requirement.

While we are cognizant of the ongoing debate about the air leakage test and acceptable levels at the Florida Legislature, we believe that the Commission must act consistently with the current direction given by the Florida Legislature to adopt the most recent edition of the IECC as the "foundation code," and to only modify it to the extent necessary to accommodate a state-specific need:

> "...The commission shall select the most current version of the International Energy Conservation Code (IECC) as a foundation code; however, the IECC shall be modified by the commission to maintain the efficiencies of the Florida Energy Efficiency Code for Building Construction adopted and amended pursuant to s. 553.901 ... The commission may modify any portion of the foundation codes only as needed to accommodate the specific needs of this state ..."

See Florida Statutes, Sections 553.73(7)(a) and (c). The proponents have not presented any Florida-specific justification for weakening the overall efficiency or humidity control that would be provided by a well-sealed home tested at an air leakage rate no higher than 5 ACH50. We recommend that the Commission reject this weakening amendment.

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M 6820: Rationale to Amend
Submitted by: Mike Moore, P.E., Newport

To insure that occupants are able to receive the *minimum* combined infiltration and ventilation rate promulgated by model codes and standards (i.e., 0.35 natural air changes per hour), the air leakage target should not be increased without simultaneously requiring mechanical ventilation. This comment proposes to continue to require mechanical ventilation if Florida elects to increase the air tightness target to 7 ACH50.

Following is a chart created using DOE's EnergyPlus software that shows the average daily combined infiltration and ventilation rate for a typical 2,600 ft2 three-bedroom, single-family home located in Orlando. The chart examines daily, seasonal, and annual average combined infiltration and ventilation rates for the same typical home across two scenarios:

- Scenario A: 7 ACH50 tightness; no mechanical ventilation (as proposed by M 6820)
- Scenario B: 7 ACH50 tightness; mechanical ventilation in accordance with IRC M1507 (M 6820 amended to include mechanical ventilation)

Under Scenario A (7 ACH 50 with no mechanical ventilation), the average annual air change rate is 0.24 natural air changes per hour, frequently dipping below 0.15 in the summer months. Research has shown that formaldehyde emissions from building materials increase with increasing temperature and relative humidity, and formaldehyde concentrations increase with decreasing infiltration/ventilation rates. In other words, formaldehyde emissions and concentrations are likely to spike in the summer under Scenario A when natural infiltration is at its lowest. Resultant poor indoor air quality can significantly diminish occupants' health. In fact, research suggests that poor IAQ is responsible for around $500 annually in health related costs per person in the U.S., which translates to $10 billion annually in Florida.*

Under Scenario B, as proposed by this comment, tightening the building envelope to 7 ACH50 and providing mechanical ventilation would achieve the minimum annual average combined infiltration and ventilation rate of 0.35 natural air changes per hour. Scenario B would also provide more balanced ventilation across the year, registering 0.33 natural air changes per hour in the summer and providing more protection to occupants from higher levels of formaldehyde expected to be experienced during this season.

If no amendments are made to the current language of the 2015 IRC and IECC, then the home will operate at 5 ACH50 or less with mechanical ventilation in accordance with IRC M1507. Under this scenario, the home is expected to experience a maximum annual average combined infiltration and ventilation rate of 0.32 natural air changes per hour, with an average of 0.30 natural air changes per hour in the summer. While this annual level is slightly lower than the recommended 0.35 natural air changes per hour, it provides a much more acceptable rate than the 0.24 natural air changes per hour (0.15 in the summer) that would be provided if Scenario A were to be approved without this proposed amendment.

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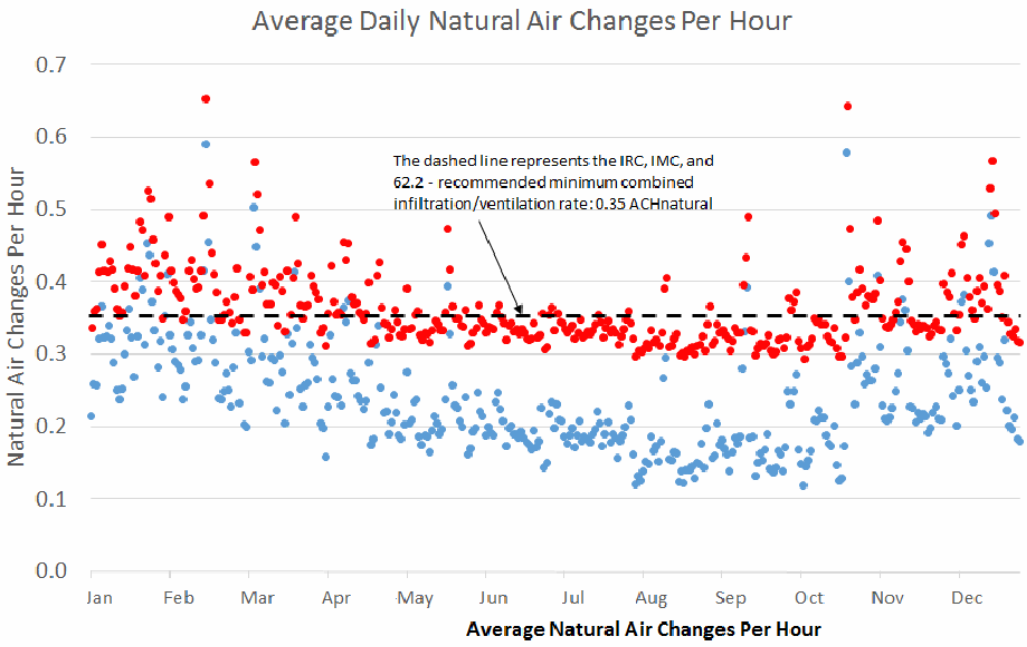
In the interest of health and reduction of costs associated with poor IAQ, the commission should either maintain the language as written or adopt the 7 ACH50 target with these proposed changes to require mechanical ventilation at or below 7 ACH50.



	Winter	Spring	Summer	Fall	Annual
7 ACH50 & NO Mech Vent	0.31	0.22	0.18	0.25	0.24
7 ACH50 & 60 CFM Mech Vent	0.41	0.35	0.33	0.37	0.36

*Assumes poor IAQ accounts for 0.01 disability adjusted life years (DALYs) per person, and that the value of a DALY is $50,000. This value is at the low end of epidemiological studies that estimate the value of a DALY between $50k - $200k.

References:

- Logue JM, Price PN, Sherman MH, & Singer BC. 2012. A Method to Estimate the Chronic Health Impact of Air Pollutants in U.S. Residences. Environmental Health Perspectives 120(2): 216-222.
- Turner WJN, Logue JM, and Wray CP. 2012. Commissioning Residential Ventilation Systems: A Combined Assessment of Energy and Air Quality Potential Values. LBNL-5969E.
- Brown DW. 2008. Economic value of disability-adjusted life years lost to violence: estimates for WHO Member States. Rev. Panam Salud Publica, 24, 203-209.
- Lvovsky K, Huges G, Maddison D, Ostro B, and Pearce D. 2000. Environmental costs of fossil fuels: a rapid assessment method with application to six cities. Washington, D.C.: The World Bank Environment Department.

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- Highfill T and Bernstein E. 2014. Using Disability Adjusted Life Years to Value the Treatment of Thirty Chronic Conditions in the U.S. from 1987-2010. U.S. Department of Commerce Bureau of Economic Analysis WP 2014-9.
- Hult EL, Willem H, Price PN, Hotchi T, Russell ML, and Singer BC. 2015. Formaldehyde and acetaldehyde exposure mitigation in US residences: in-home measurements of ventilation control and source control. Indoor Air 25:523-535.

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M68o6

Date Submitted	12/27/2015	**Section**	402.4	**Proponent**	Joseph Belcher
Chapter	4	**Affects HVHZ**	Yes	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Permit air leakage testing of low-rise R-2 as permitted for commercial.

Rationale

Current provisions for multi-family dwelling classified as low-rise residential require the testing of each unit separately. This amendment adds an exception to allow compliance to the air barrier requirements and testing as for commercial residential buildings allowing builders to test the entire building as a whole, as is permitted for commercial buildings.

Air tightness testing for single-family detached homes is very straightforward; however, it is much more difficult to accurately test attached dwelling units, including multi-family buildings. Currently the FBC-EC treats low-rise multi-family buildings of three stories or less like single-family homes and multi-family buildings of four stories or more like commercial buildings. Regardless of height, all multi-family buildings have the same air-tightness testing complications, such as: Does the entire building need to be tested at one time? What about multi-family buildings with open corridors? Does every dwelling need to be tested? Can the leakages be averaged between units? Is the leakage tested only to the “outside” or should it include leakage to adjacent units?

By approving this change, low-rise multi-family buildings and attached single-family dwellings will avoid these complications, but still held to the same level of performance as high-rise (R-2) residential as well as all commercial buildings.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity relative to code enforcement.

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

No impact to building and property owners relative to code enforcement.

Impact to industry relative to the cost of compliance with code

The impact to industry relative to the cost of code compliance is most likely a reduction in costs as the builder could schedule testing of the entire building at once or test the units individually.

Requirements

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

Yes because it offers an option for the testing of buildings containing multiple dwellings as a single building and retains the ability to test units individually. This provides an option to the builder that could result in decreased costs while ensuring compliance with the code.

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

The proposal strengthens and improves the code by providing a solution to a difficult problem.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code.

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

Alternate Language

1st Comment Period History 01/13/2016 - 02/25/2016

6806-A1

Proponent Mike Moore **Submitted** 2/22/2016 **Attachments** Yes

Rationale

The objective of EN6806 is to provide more options for air tightness testing of multiple attached dwelling units. If approved, however, EN6806 would inadvertently remove the requirement for mechanical ventilation of tight dwelling units, which is currently contingent on the results of a blower door test at or below 5 air changes per hour at 50 pascals. This comment would insure that if Florida approves EN6806, mechanical ventilation would still be required for all dwelling units in compliance with the air tightness requirements of Florida’s IECC, regardless of the testing method that is used. Please refer to the rationale submitted for my proposed amendment to EN6573 for further information regarding combined ventilation/infiltration rates and health affects.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

As proposed, EN6806 may increase the local entity's burden by referencing a section of code that does not exist (i.e., C405.5.3.4 ??). Assuming this is corrected, increasing testing options can increase compliance, thereby reducing the local entity's costs of re-verification/inspection.

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

By increasing compliance options, costs to industry may be reduced. These cost savings may be passed on to the building and property owners.

Impact to industry relative to the cost of compliance with code

Increases compliance options and likely promotes cost competitiveness.

Requirements

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

The proposed changes to EN6806 are intended to safeguard public health, safety, and welfare by maintaining the requirement for mechanical ventilation currently in the model code.

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

The proposed changes to EN6806 maintain the IAQ benefits of the model code while increasing options for compliance in verifying building air tightness.

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

The proposed changes to EN6806 maintain current options for ventilation systems that can be used to provide minimum acceptable indoor air quality.

Does not degrade the effectiveness of the code

The proposed changes to EN6806 maintain the IAQ benefits of the model code while increasing options for compliance in verifying building air tightness.

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

1st Comment Period History 01/13/2016 - 02/25/2016

M6806-G1

Proponent Jeff Sonne / FSEC **Submitted** 2/25/2016 **Attachments** No

Comment:

[This comment assumes the proposer intended to reference IECC 2015 / FL base energy code section C402.5 instead of what was actually in the mod's text: "FBC-EC Section C405.5.3.4".] Testing an entire multifamily residential building as a whole would not be able to address between unit pollution. For this reason, we are against this mod.

Note ASHRAE Standard 62.2 addresses "compartmentalization" as follows:

8.4.1 Transfer Air. Measures shall be taken to minimize air movement across envelope components separating dwelling units, including sealing penetrations in the common walls, ceilings, and floors of each unit and by sealing vertical chases adjacent to the units. All doors between dwelling units and common hallways shall be gasketed or made substantially airtight.

8.4.1.1 Compliance. One method of demonstrating compliance with Section 8.4.1 shall be to verify a leakage rate below a maximum of 0.2 cfm per ft2 (100 L/s per 100 m2) of the dwelling unit envelope area (i.e., the sum of the area of walls between dwelling units, exterior walls, ceiling, and floor) at a test pressure of 50 Pa by a blower door test conducted in accordance with either ANSI/ASTM-E779, Standard Test Method for Determining Air Leakage Rate By Fan Pressurization,1 or ANSI/ASTM-E1827, Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door. The test shall be conducted with the dwelling unit as if it were exposed to outdoor air on all sides, top, and bottom by opening doors and windows of adjacent dwelling units.

R402.4 Air leakage (Mandatory). The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Section R402.4.1 through R402.4.4.

Exception: Dwelling units of R-2 Occupancies and multiple attached single family dwellings shall be permitted to comply with FBC-EC Section C405.5.3.4

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Change the IECC as follows:

R402.4 Air Leakage (Mandatory). The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Section R402.4.1 through R402.4.4.

Exception: Dwelling units of R-2 occupancies and multiple attached single family dwellings shall be permitted to comply with FBC-EC Section C405.5.3.4.

R403.6 Mechanical ventilation (Mandatory). The building shall be provided with mechanical ventilation that meets the requirements of Section M1507 of the *International Residential Code* or Section 403 of the *International Mechanical Code*, as applicable, or with other approved means of mechanical ventilation. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.

Change the IRC as follows:

R303.4 Mechanical ventilation. ~~Where the air infiltration rate of a *dwelling unit* is 5~~ seven ~~air changes per hour or less where tested with a blower door at a pressure of 0.2 inch w.c (50 Pa) in accordance with Section N1102.4.1.2, the *d*~~*D*~~welling units~~ shall be provided with ~~whole-house~~ mechanical ventilation in accordance with Section M1507.3.

Change the IMC as follows:

401.2 Ventilation required. Every occupied space shall be ventilated by natural means in accordance with Section 402 or by mechanical means in accordance with Section 403. ~~Where the air infiltration rate in a dwelling unit is less than 5 air changes per hour when tested with a blower door at a pressure of 0.2 inch water column (50 Pa) in accordance with Section R402.4.1.2 of the *International Energy Conservation Code*, the d~~D~~welling units~~ shall be ventilated by mechanical means in accordance with Section 403. Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407.

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Sub Code: Mechanical

M6384

Date Submitted	8/4/2015	**Section**	202	**Proponent**	Amanda Hickman
Chapter	2	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

6385

Summary of Modification

Adds definition for LOCKING-TYPE TAMPER-RESISTANT CAP.

Rationale

See attachment.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Yes. Adding definition will make enforcing the requirement easier to enforce.

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

None. Only adds definition.

Impact to industry relative to the cost of compliance with code

None. Only adds definition.

Requirements

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

Yes. Helps to prevent “Sniffing” or “huffing” refrigerant gas.

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

Yes. Clarifies requirement.

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

No. Only adds definition.

Does not degrade the effectiveness of the code

No. Only adds definition.

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

LOCKING-TYPE TAMPER-RESISTANT CAP. A cap that is designed to prevent its removal by means of hand-loosening or by means of commonly available tools. Such caps can be removed only by means of a unique key that is specifically designed for the locking cap.

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RATIONAL:

Section 1101.10 is a new section in 2009 IMC and IRC that addresses the locking access of refrigerant port caps. New code sections in both the 2015 IMC and IRC require that access ports for refrigerants be contained in a secure location or, if located outside a locked, controlled area, be secured with a tamper-resistant locking cap. This code change was approved during the 2009, 2012 and 2015 cycles to help reduce unauthorized access to refrigerants, and to help AC system efficiency from the accidental mixing of refrigerant gases.

This proposal is intended to expand on intent and purpose of the new code section in the IMC and the IRC by defining the primary safeguard: the locking-type tamper resistant cap.

Refrigerant gas theft has become increasingly problematic in recent years. Some of this is due to the rising costs of these gases; however, stealing refrigerant for the act of huffing is increasing at an alarming rate. “Sniffing” or “huffing” refrigerant gas is extremely dangerous, causing brain damage or even death. Inhalants are the fourth most abused substance. According to the Inhalant Statistics and Reports "59% of children are aware of friends huffing at age 12." In the U.S., the 2006 National Survey on Drug Use and Health found that 1.1 million youths aged 12 to 17 had used inhalants in the past year. “Sniffing” and “huffing” can begin at age 10 or younger. 22% of inhalant abusers who died of Sudden Sniffing Death Syndrome had no history of previous inhalant abuse—they were first-time users.

Some port caps are designed to be removed with a set bit, Allen wrench, Schrader valve tool or screwdriver. The use of such tools to remove a cap could be considered an annoying delay by a determined thief because such port caps are not truly LOCKED. The majority of the victims of huffing are teens and pre-teens, many of whom could easily tamper with a port cap using such readily available tools.

This definition clarifies that the cap should be a truly tamper resistant lock to be effective, that is, can only be opened with a specially designed key. This clarification of the definition of a specially designed “lock and “key” will reduce theft and help to safe guard youngsters from serious injury or death resulting from the inhalation of dangerous refrigerants.

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Date Submitted	1/1/2016	**Section**	401.2	**Proponent**	Cheryl Harris
Chapter	4	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Eliminates mandatory outside air mechanical ventilation for residential dwellings based on an artificially set air exchange rate.

Rationale

Eliminates the Mandatory introduction of Outside Air into residential dwellings and avoids the need for necessary humidity control in Florida's Hot & Humid Climate. There is no scientific study that shows this is needed in current Code-built residential buildings for proper IAQ. Natural infiltration is sufficient to provide the necessary ventilation.

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

Impact would be to lower the cost to comply which could vary from $350 to $3500 depending on the building/residence.

Impact to industry relative to the cost of compliance with code

No increased cost to comply.

Requirements

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

Eliminating the mandate for mechanical form of ventilation and removing the artificial number requiring it, leaves Natural, Infiltration or Mechanical as designer's options. This may avoid raising the humidity levels inside the home and help prevent mold and IAQ problems.

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

Improves the code by eliminating an artificial, unproven air exchange number that triggers requirement for mechanical ventilation.

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

Modification does not discriminate.

Does not degrade the effectiveness of the code

Eliminating an artificial, unproven air exchange number that triggers requirement for mechanical ventilation does not degrade the effectiveness of the code.

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

Alternate Language

1st Comment Period History 01/13/2016 - 02/25/2016

6989-A1

Proponent Jeff Sonne / FSEC **Submitted** 2/25/2016 **Attachments** Yes

Rationale

This alternate language mod restores the mechanical ventilation trigger that mod 6989 removes and adds ASHRAE 62.2-2010 and 2013 as ventilation options. ASHRAE Standard 62.2-2010 and 62.2-2013 allow natural house air leakage to meet part of the outdoor air requirement (so the total outdoor air requirement is met by a combination of infiltration and mechanical ventilation). Although the current code tables for ventilation are the same as ASHRAE 62-2 2010 for the cases of no credit for infiltration, this modification allows designers to provide only that ventilation necessary according to the standards without creating potential unnecessary moisture or energy impacts. For consistency and to avoid code conflict, this modification should also be made in the residential code. The comparison table below shows that for a number of house size, bedroom, height and ach50 level combinations, the ASHRAE 62.2 options in most cases require less ventilation than the 2015 IRC and IMC requirements. Mechanical ventilation requirements of various codes and standards in the average Florida weather and shielding factor (62.2 wsf) climate Florida Home Characteristics Mechanical Vent Requirements (cfm) CFA Nbr Height 62.2 wsf ach50 IRC IMC 62.2-2010 62.2-1013 3000 3 17 0.39 5 60 60 60 62 3000 3 17 0.39 7 60 60 50 39 2400 3 17 0.39 5 60 60 54 56 2400 3 17 0.39 7 60 60 46 37 2000 3 9 0.39 5 60 60 50 58 2000 3 9 0.39 7 60 60 48 46 1600 2 9 0.39 5 60 45 39 45 1600 2 9 0.39 7 60 45 37 35

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Just being aware that the ASHRAE 62.2 ventilation options are in the code.

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

Optional, so none if not used, or similar or possibly less cost than other options.

Impact to industry relative to the cost of compliance with code

Optional, so none if not used, or similar or possibly less cost than other options.

Requirements

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

Yes, provides ASHRAE Standard level ventilation options which may reduce moisture and/or energy impacts.

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

Improves the code by providing ASHRAE Standard level ventilation options which may reduce moisture and/or energy impacts.

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

Does not discriminate; provides additional options.

Does not degrade the effectiveness of the code

Does not degrade code effectiveness; improves the code by providing ASHRAE Standard level ventilation options which may reduce moisture and/or energy impacts.

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

401.2 Ventilation required.

Every occupied space shall be ventilated by natural means in accordance with Section 402 or by mechanical means in accordance with Section 403. ~~Where the air infiltration rate in a dwelling unit is less than 5 air changes per hour when tested with a blower door at a pressure of 0.2 inch water column (50 Pa) in accordance with Section R402.4.1.2 of the *International Energy Conservation Code*, the dwelling unit shall be ventilated by mechanical means in accordance with Section 403.~~ Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407.

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401.2 Ventilation required.

Every occupied space shall be ventilated by natural means in accordance with Section 402 or by mechanical means in accordance with Section 403. Where the air infiltration rate in a dwelling unit is less than 5 air changes per hour when tested with a blower door at a pressure of 0.2-inch water column (50 Pa) in accordance with Section R402.4.1.2 of the International Energy Conservation Code, the dwelling unit shall be ventilated by mechanical means in accordance with Section 403 or in accordance with Section 4 of ASHRAE Standard 62.2-2010 or Section 4 of ASHRAE Standard 62.2-2013, as applicable. Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407.

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Mod 6989 Alternate Language A1 Rationale

This alternate language mod restores the mechanical ventilation trigger that mod 6989 removes and adds ASHRAE 62.2-2010 and 2013 as ventilation options. ASHRAE Standard 62.2-2010 and 62.2-2013 allow natural house air leakage to meet part of the outdoor air requirement (so the total outdoor air requirement is met by a combination of infiltration and mechanical ventilation). Although the current code tables for ventilation are the same as ASHRAE 62-2 2010 for the cases of no credit for infiltration, this modification allows designers to provide only that ventilation necessary according to the standards without creating potential unnecessary moisture or energy impacts. For consistency and to avoid code conflict, this modification should also be made in the residential code.

The comparison table below shows that for a number of house size, bedroom, height and ach50 level combinations, the ASHRAE 62.2 options in most cases require less ventilation than the 2015 IRC and IMC requirements.

Mechanical ventilation requirements of various codes and standards in the average Florida weather and shielding factor (62.2 wsf) climate

Florida Home Characteristics					Mechanical Vent Requirements (cfm)			
CFA	Nbr	Height	62.2 wsf	ach50	IRC	IMC	62.2-2010	62.2-1013
3000	3	17	0.39	5	60	60	60	62
3000	3	17	0.39	7	60	60	50	39
2400	3	17	0.39	5	60	60	54	56
2400	3	17	0.39	7	60	60	46	37
2000	3	9	0.39	5	60	60	50	58
2000	3	9	0.39	7	60	60	48	46
1600	2	9	0.39	5	60	45	39	45
1600	2	9	0.39	7	60	45	37	35

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Date Submitted	7/9/2015	**Section**	403.2	**Proponent**	Ippolito Michael
Chapter	4	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

FBC-Building-453.15.5

Summary of Modification

Allows for reduction in minimum Outside Airflow Rate. Creates agreement with proposed Mod to SBC-Building-453.15.5. Provides uniform method of application by Engineer and verification by Building Code Official. Complies with intent of ASHRAE 62.1.

Rationale

To reduce the Outside Air and respective Exhaust Systems Equipment cost and life cycle operating cost. To create agreement with proposed Modification to FBC-Building-453.15.5. To provide a uniform method of application by the Engineer and verification by the Building Code Official.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity relative to enforcement of code.

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

Reduction in Equipment size and cost and reduction in Life Cycle Operating costs of Outside Air Systems and their respective Exhaust Systems.

Impact to industry relative to the cost of compliance with code

No impact to industry relative to the cost of compliance with code.

Requirements

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

Provides Outside Ventilation Air for occupants.

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

Improves the Code by creating a uniform method of application by the Engineer and verification by the Building Code Official.

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

It does not discriminate against materials, products, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

It improves the effectiveness of the code by creating a uniform method of application by the Engineer and verification by the Building Code Official.

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

1st Comment Period History 01/13/2016 - 02/25/2016

Proponent Don Whitehead **Submitted** 2/3/2016 **Attachments** No

M6366-G1

Comment:

The registered design professional shall demonstrate, as oppose to determine, that the ventilation system will prevent unacceptable levels of contaminants in order to validate the approach used.

Adding the People Outdoor Air Flow Rate to the Area Outdoor Air Flow Rate is already outlined in FBC, Mechanical, 403.3.1.1 Breathing zone outdoor airflow.

Consideration of a neutral pressure condition from an Exhaust System shut down is already outlined in FBC, Mechanical, 501.4 Pressure equalization.

403.2 Outdoor air required.
The minimum outdoor airflow rate shall be determined in accordance with Section 403.3. Ventilation supply systems shall be designed to deliver the required rate of outdoor airflow to the *breathing zone* within each *occupiable space.*

Exception (1): Where the *registered design professional* demonstrates that an engineered ventilation system design will prevent the maximum concentration of contaminants from exceeding that obtainable by the rate of outdoor air ventilation determined in accordance with Section 403.3, the minimum required rate of outdoor air shall be reduced in accordance with such engineered system design.

Exception (2): For all occupancies, in accordance with Exception (1) and FBC-Mechanical-403.5, the minimum design airflow rate of Outside Air shall be permitted to be based on the rate per-person indicated in Table 403.3 (People Outdoor Airflow Rate Column). If the *registered design professional* determines that additional outside air is required, the Area Outdoor Airflow Rate (FBC-Mechanical-Table -403.3) shall be added to the People Outdoor Air Flow Rate (FBC-Mechanical-Table-403.3) for the applicable room(s).

In accordance with FBC-Mechanical-401.3, the Outside Air Systems and their respective Exhaust Systems are only required to operate when the rooms are occupied. When an Outside Air System and its respective Exhaust System are shut down, the Building shall remain in a relatively neutral pressure condition in accordance with FBC-Mechanical-403.1.

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401.3 When required.
Ventilation shall be provided during the periods that the room or space is occupied.

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M6366 Text Modification

Page: 2

SECTION 403 MECHANICAL VENTILATION

403.1 Ventilation system.
Mechanical ventilation shall be provided by a method of supply air and return or *exhaust air.* The amount of supply air shall be approximately equal to the amount of return and *exhaust air.* The system shall not be prohibited from producing negative or positive pressure. The system to convey *ventilation air* shall be designed and installed in accordance with Chapter 6.

403.2 Outdoor air required.
The minimum outdoor airflow rate shall be determined in accordance with Section 403.3. Ventilation supply systems shall be designed to deliver the required rate of outdoor airflow to the *breathing zone* within each *occupiable space.*

Exception: Where the *registered design professional* demonstrates that an engineered ventilation system design will prevent the maximum concentration of contaminants from exceeding that obtainable by the rate of outdoor air ventilation determined in accordance with Section 403.3, the minimum required rate of outdoor air shall be reduced in accordance with such engineered system design.

403.2.1 Recirculation of air.
The outdoor air required by Section 403.3 shall not be recirculated. Air in excess of that required by Section 403.3 shall not be prohibited from being recirculated as a component of supply air to building spaces, except that:

1. Ventilation air shall not be recirculated from one *dwelling* to another or to dissimilar occupancies.

2. Supply air to a swimming pool and associated deck areas shall not be recirculated unless such air is dehumidified to maintain the relative humidity of the area at 60 percent or less. Air from this area shall not be recirculated to other spaces where more than 10 percent of the resulting supply airstream consists of air recirculated from these spaces.

3. Where mechanical exhaust is required by Note b in Table 403.3, recirculation of air from such spaces shall be prohibited. All air supplied to such spaces shall be exhausted, including any air in excess of that required by Table 403.3.

4. Where mechanical exhaust is required by Note g in Table 403.3, mechanical exhaust is required and recirculation is prohibited where more than 10 percent of the resulting supply airstream consists of air recirculated from these spaces.

403.2.2 Transfer air.
Except where recirculation from such spaces is prohibited by Table 403.3, air transferred from occupiable spaces is not prohibited from serving as *makeup air* for required exhaust systems in such spaces as kitchens, baths, toilet rooms, elevators and smoking lounges. The amount of transfer air and *exhaust air* shall be sufficient to provide the flow rates as specified in Section 403.3. The required outdoor airflow rates specified in Table 403.3 shall be introduced directly into such spaces or into the occupied spaces from which air is transferred or a combination of both.

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403.3 Outdoor airflow rate.
Ventilation systems shall be designed to have the capacity to supply the minimum outdoor airflow rate determined in accordance with this section. The occupant load utilized for design of the ventilation system shall not be less than the number determined from the estimated maximum occupant load rate indicated in Table 403.3. Ventilation rates for occupancies not represented in Table 403.3 shall be those for a listed *occupancy* classification that is most similar in terms of occupant density, activities and building construction; or shall be determined by an *approved* engineering analysis. The ventilation system shall be designed to supply the required rate of *ventilation air* continuously during the period the building is occupied, except as otherwise stated in other provisions of the code.

With the exception of smoking lounges, the ventilation rates in Table 403.3 are based on the absence of smoking in occupiable spaces. Where smoking is anticipated in a space other than a smoking lounge, the ventilation system serving the space shall be designed to provide ventilation over and above that required by Table 403.3 in accordance with accepted engineering practice.

Exception: The occupant load is not required to be determined based on the estimated maximum occupant load rate indicated in Table 403.3 where *approved* statistical data document the accuracy of an alternate anticipated occupant density.

TABLE 403.3 MINIMUM VENTILATION RATES

In accordance with 401.3, the intent of the Code is that Ventilation (Outside Air) shall be provided during the periods that the room or space is occupied.

403.4 Exhaust ventilation.
Exhaust airflow rate shall be provided in accordance with the requirements in Table 403.3. Exhaust *makeup air* shall be permitted to be any combination of outdoor air, recirculated air and transfer air, except as limited in accordance with Section 403.2.

403.5 System operation.
The minimum flow rate of outdoor air that the ventilation system must be capable of supplying during its operation shall be permitted to be based on the rate per person indicated in Table 403.3 and the actual number of occupants present.

403.6 Variable air volume system control.
Variable air volume air distribution systems, other than those designed to supply only 100-percent outdoor air, shall be provided with controls to regulate the flow of outdoor air. Such control system shall be designed to maintain the flow rate of outdoor air at a rate of not less than that required by Section 403.3 over the entire range of supply air operating rates.

403.7 Balancing.
The *ventilation air* distribution system shall be provided with means to adjust the system to achieve at least the minimum ventilation airflow rate as required by Sections 403.3 and 403.4. Ventilation systems shall be balanced by an *approved* method. Such balancing shall verify that the ventilation system is capable of supplying and exhausting the airflow rates required by Sections 403.3 and 403.4.

2017 Proposed Change to 2014 FBC-Building-453.15.5

Background: The wording of 2014-Florida Building Code (FBC)-Building-453.15.5 came from ASHRAE 62-1999 and is no longer supported by ASHRAE. In 2001, ASHRAE 62 became ASHRAE 62.1. The wording of 2014-Florida Building Code (FBC)-Building-453.15.5 was not included in ASHRAE 62.1 and was removed in the 2004 Edition of FBC - Mechanical-Section 403.3 and subsequent Editions. The Proposed Code Modification deletes the current wording of FBC-Building-453.15.5 and adds new wording supported by ASHRAE 62.1 and FBC-Mechanical-Section 403. In addition, this Proposed Code Modification also includes a change to FBC -Mechanical Section 403.2-Exception to create agreement between FBC-Building Section 453.15.5 and FBC-Mechanical-Section 403.

Existing:

2014-FBC-Building-453.15.5: *"Ventilation Air Makeup for HVAC Systems: Where peak occupancies of less than 3 hours duration occur, the outside airflow may be determined on the basis of average occupancy for school buildings for the duration of operation of the air conditioning system, provided that the occupancy used is not less than one-half the maximum."*

The Proposed Change to FBC-453.15.5 is requested for the following reasons:

1. **FBC-Building 453.15.5** is based on ASHRAE 62-1999 and earlier editions for Variable and Intermittent Use Occupancies. In 2001, ASHRAE 62 became ASHRAE 62.1. ASHRAE 62.1-2001 and later editions do not include the wording and support of FBC-Building-453.15.5.

2. FBC-Building-453.15.5 does not agree with FBC-Mechanical-403.1 and 403.3.

3. An Educational Facility is a Constant and Continuous Use Occupancy, and FBC 453.15.5 should never have been considered applicable.

4. The wording and intent of FBC-Building-453.15.5 is very ambiguous. There is no uniform application of the wording of FBC-Building 423.15.5. There is no way for the Building Code Official to uniformly verify that FBC-Building-453.15.5 is applied correctly.

5. The wording of FBC-Building-Section-453.15.5 was included in 2001-FBC-Mechanical-403.3 because of ASHRAE 62-1999. The Florida Building Code caught up with ASHRAE 62.1-2001 and removed the wording of FBC-Building-453.15.5 from FBC-Mechanical-403.3 in the 2004 and subsequent Editions. The wording of FBC 453.15.5 was added in 2007-FBC-Building (in 2007 it was FBC-Building-423.15.6) even though this same wording had been removed from 2004 and 2007 FBC-Mechanical-403.3 and subsequent Editions. **Due to revisions of ASHRAE 62.1 and FBC-Mechanical 403.3, 2014-FBC-Building-453.15.5 no longer has any basis of support.**

6. The wording of 2014-FBC-Buiding-453.15.5 which states in part ***"...for the duration of operation of the air conditioning system..."*** is requiring the operation of the Ventilation (Outside) Air Systems and associated Exhaust Systems even when spaces are unoccupied. For a large School District the operating cost of Ventilation (Outside) Air Systems and associated Exhaust Systems is approximately $500,000 per hour per year District wide. 2014-FBC-Building-453.15.5 is costing large School Districts approximately $1,000,000 per year in unnecessary operating cost (See Economic Analysis attached).

7. **2014-FBC-Mechanical-401.3-When required:** Ventilation shall be provided during the periods that the room or space is occupied.

8. **2007-FBC-Mechanical-403.4 ASHRAE 62 Alternative.** In lieu of compliance with Section 403.1 through Section 403.3, mechanical ventilation may be implemented in compliance with ASHRAE 62 including approved addenda. **The above reference to ASHRAE 62 was removed in the 2010 Edition of FBC-Mechanical-Section 403. 2004 and subsequent Editions of FBC-Mechanical-Section-403 are now based on ASHRAE 62.1.**

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2017 Proposed Change to 2014-FBC-Building-453.15.5

FBC-Building-453.15.5: Delete the existing wording in its entirety.

The new wording of FBC-Building-453.15.5 should read as follows:

FBC-Building-453.15.5: In accordance with FBC-Mechanical-403.2-Exceptions (1) and (2) and FBC-Mechanical-403.5,The minimum design airflow rate of Outside Air shall be permitted to be based on the rate per-person indicated in Table 403.3 (People Outdoor Airflow Rate Column). If the *Licensed Mechanical Professional Engineer* determines that additional outside air is required, then the Area Outdoor Airflow Rate (FBC-Mechanical-Table -403.3) shall be added to the People Outdoor Air Flow Rate (FBC-Mechanical-Table-403.3) for the applicable room(s).

In accordance with FBC-Mechanical-401.3, the Outside Air Systems and their respective Exhaust Systems are only required to operate when the rooms are occupied. When an Outside Air System and its respective Exhaust System are shut down, the Building shall remain in a relatively neutral pressure condition in accordance with FBC-Mechanical-403.1.

The above should be considered acceptable for the following reasons:

1. The above complies with 2014-FBC-Mechanical-403.5 which states "The minimum airflow rate of Outside Air that the Ventilation System must be capable of supplying during its operation shall be permitted to be based on the rate per-person indicated in Table 403.3 (People Outdoor Airflow Rate Column) and the actual number of occupants present.
2. The above change creates agreement between FBC-Building-453.15.5 and FBC-Mechanical-403 and 401.3.
3. The above will reduce Outside Air and associated Exhaust Equipment size and construction cost as well as reduce the life cycle (perpetual) operating costs of the Outside Air Systems and associated Exhaust Systems by approximately $1,000,000 per year.
4. The above can be applied uniformly. The above can be uniformly verified by the Building Code Official.
5. The above complies with 2014-FBC-Mechanical-401.3-When required: Ventilation shall be provided during the periods that the room or space is occupied.
6. The above complies with the intent of ASHRAE 62.1.

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2017 Proposed Changes to 2014-FBC-Mechanical-403.2

In order to create agreement between FBC-Building-453.15.5 and FBC-Mechanical-Chapter-4, FBC-Mechanical-403.2 shall be revised as follows:

Existing:

2014-FBC-Mechanical-403.2 Outdoor air required.
The minimum outdoor airflow rate shall be determined in accordance with Section 403.3. Ventilation supply systems shall be designed to deliver the required rate of outdoor airflow to the *breathing zone* within each *occupiable space*.

Exception: Where the *registered design professional* demonstrates that an engineered ventilation system design will prevent the maximum concentration of contaminants from exceeding that obtainable by the rate of outdoor air ventilation determined in accordance with Section 403.3, the minimum required rate of outdoor air shall be reduced in accordance with such engineered system design.

New:

2014-FBC-Mechanical-403.2 Outdoor air required.
The minimum outdoor airflow rate shall be determined in accordance with Section 403.3. Ventilation supply systems shall be designed to deliver the required rate of outdoor airflow to the *breathing zone* within each *occupiable space*.

Exception (1): Where the *Licensed Mechanical Professional Engineer* demonstrates that an engineered ventilation system design will prevent the maximum concentration of contaminants from exceeding that obtainable by the rate of outdoor air ventilation determined in accordance with Section 403.3, the minimum required rate of outdoor air shall be reduced in accordance with such engineered system design.

Exception (2): In accordance with Exception (1), for all occupancies, the minimum design airflow rate of Outside Air shall be permitted to be based on the rate per-person indicated in Table 403.3 (People Outdoor Airflow Rate Column). If the *Licensed Mechanical Professional Engineer* determines that additional outside air is required, the Area Outdoor Airflow Rate (FBC-Mechanical-Table 403.3) shall be added to the People Outdoor Air Flow Rate (FBC-Mechanical-Table403.3) for the applicable room(s).

In accordance with FBC-Mechanical-401.3, the operation of the Outside Air Systems and their respective Exhaust Systems are only required to operate when the rooms are occupied. When an Outside Air System and its respective Exhaust System are shut down, the Building shall remain in a relatively neutral pressure condition in accordance with FBC-Mechanical-403.1.

The above should be considered acceptable for the following reasons:

1. The above complies with 2014-FBC-Mechanical-403.5-2014 which states "The minimum airflow rate of Outside Air that the Ventilation System must be capable of supplying during its operation shall be permitted to be based on the rate per-person indicated in Table 403.3 (People Outdoor Airflow Rate Column) and the actual number of occupants present.

2. The above will reduce Outside Air and associated Exhaust Equipment size and construction cost as well as reduce the Life Cycle (perpetual) operating costs of the Outside Air Systems and associated Exhaust Systems.

3. The above can be applied uniformly. The above can be uniformly verified by the Building Code Official.

4. The above complies with 2014-FBC-Mechanical-401.3-When required: Ventilation shall be provided during the periods that the room or space is occupied.

5. The above complies with the intent of ASHRAE 62.1.

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Economic Analysis of FBC-Building-453.15.5-2014 (423.15.5-2010)

A Typical School District utilizes separate Dedicated Outside Air Systems (DOAS) to supply fresh outside air to all occupant spaces. The purpose of the DOASs is to provide oxygen replenishment for the occupants, reduce the level of carbon dioxide exhaled by the space occupants and dissipate any odors emitted by the space occupants. Therefore, the DOASs are occupant based systems. Typically, separate chilled water air handling systems (CHWAHU) provide space cooling for each occupant space. For each school, the DOASs and CHWAHUs are connected into a chilled water system that is serviced by either air cooled or water cooled chillers. The Typical School District may also have some DOASs that utilize refrigerant instead of chilled water. The following economic analysis is also applicable for DOASs that utilize refrigerant. In addition to the DOASs, there are respective Exhaust Systems (ES) that run when the DOASs run to exhaust air from the respective spaces to main the building pressure balance.

The methodology utilized by the Typical School District is based on Florida Building Code-Building (FBC-B) 453.15.5-2014 (FBC-B-423.15.5-2010) which is based on Florida Building Code-Mechanical (FBC-M)-2001 Edition and ASHRAE 62-1999 Edition. The typical School District is currently under FBC-B-2010 and FBC-M-2010 Edition and ASHRAE 62.1-2004 Edition. FBC-M-403.3 and ASHRAE 62.1-2004 (and later Editions) have been revised and longer make any reference to the wording of FBC-B-453.15.5-2014 (FBC-B-423.15.5-2010). The wording of FBC-B-453.15.5-2014 (FBC-B-423.15.5-2010) came from ASHRAE 62-1999. In 2001 ASHRAE 62 became ASHRAE 62.1. The wording of FBC-B-453.15.5-2014 (FBC-B-423.15.5-2010) is not included in or supported by ASHRAE 62.1 Therefore, FBC-B-453.15.5-2014 (FBC-B-423.15.5-2010) is no longer has any basis of support. Due to the wording of FBC-B 453.15.5-2014 (FBC-B-423.15.5-2010), The Typical School District is operating the DOASs and respective ESs for approximately an extra 2 hours per day when the spaces are unoccupied.

The operation of the DOASs and respective ESs should be in accordance with FBC-M-401.3. The intent of FBC-M-401.3 is that all spaces are to be supplied with Ventilation (Outside) Air when they are occupied. The Typical School District schedules the Outside Air Systems and respective Exhaust Systems to run for a minimum of approximately 2 hours after the students are dismissed for the day when the spaces (e.g., classrooms) are unoccupied. This is not necessary. The need for operation of the DOASs is occupant based per FBC-M-401.3. The DOASs and respective Exhaust Systems should be turned off when the students are dismissed for the day and the spaces are unoccupied. If the DOASs and respective Exhaust Systems are turned off, their respective chillers would unload and utilize less electricity for the 2 hour period. In addition, the speed of the chilled water pumps would be reduced via the VFDs which would reduce the operating cost of the chilled water pumps. For water cooled chillers, there may also be some reduction in operating costs of the condenser water pumps. To be on the conservative side, the EER of the chillers will be assumed to include the chilled and condenser water pumps. Each DOAS has a fan motor and an electric reheat coil that utilizes electricity for the 2 hour period. The following analysis is based on an energy cost of $0.1 per Kwh. In addition to energy cost there is a peak electrical demand charge ($ per Kw) that is also levied by the Utility. This economic analysis does not include any possible savings do to a possible reduction in peak Kw demand. This economic analysis also does not include any possible savings in maintenance cost due to reduced run time of the Chillers, DOASs and respective ESs. Therefore, the actual savings may be more than what is shown. This economic analysis is for comparison purposes only and will give the an idea of how much money the unnecessary 2 hours of operation is costing a Typical School District.

For classrooms the outside air is supplied at 7.5 CFM per person. A large Typical School District serves approximately 210,000 students and 7500 teachers for a total of 217,500 people. 7.5 CFM per person x 217,500 people = 1,631,250 CFM. There are 180 school days per year.

1. **Chiller Energy Cost for DOASs:** Based on 1,631,250 CFM; a chiller EER of 9.6 Btuh/watt; 150 CFM per cooling Ton; 12,000-Btuh per Ton and $0.1 per Kwh:

   1,631,250 CFM/150 CFM per Ton = 10,875 Tons of cooling x 12,000 BTUH/ton = 130,500,000 Btuh
   130,500,000 Btuh x 1 watt/ 9.6 Btuh x 1 Kw/1000 Watts = 13,594 Kw x 2 Hrs per day = 27,188 Kwh per day
   27,188 Kwh per day x $0.1 per Kwh = $ 2,719 per day x 180 days per year = **$489,420 per year.**
2. **DOAS Fan Energy Cost:** Based on Bhp=5.2PQ/(33000 (0.6)); 5.2 PSF per inch w.g.; $0.1 per Kwh, and 3.0 inches w.g.; Bhp= Brake Horsepower. 0.6 is the Efficiency of the fan wheel.

   Bhp = 5.2 x (3) x (1,631, 250) / (33000 (0.6)) = 1285 Bhp
   1285 Bhp x 0.75 Kw per Bhp = 964 Kw x 2 Hrs per day = 1,928 Kwh per day

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1928 Kwh per day x 0.1$ per Kwh = $193 per day x 180 days per year = **$34,740 per year**

3. **DOAS Reheat Energy Cost:** The air leaves the cooling coil at 50F and has to be reheated to 72F before entering space. 72 – 50 = 22F dT; Btuh = 1.085 (CFM) (dT); 3,413 Btuh/Kw; 1,631,250 CFM and $0.1/Kwh

   Btuh = 1.085 (1,631,250) (22) = 38,937,936 Btuh x 1 Kw / 3,413 Btuh = 11,409 Kw
   11,409 Kw x 2Hr per day = 22,818 Kwh per day x $0.1/Kwh = $2,282 per day
   $2,282 per day x 180 days per year = **$410,760 per year**

4. **Exhaust Fan Cost:** Based on Bhp=5.2PQ/(33000 (0.6)); 5.2 PSF per inch w.g.; $0.1 per Kwh, and 1.0 inches w.g.; Bhp= Brake Horsepower. 0.6 is the Efficiency of the fan wheel.

   Bhp = 5.2 x (1) x (1,631, 250) / (33000 (0.6)) = 428 Bhp
   428 Bhp x 0.75 Kw per Bhp = 321 Kw x 2 Hrs per day = 642 Kwh per day
   642 Kwh per day x 0.1$ per Kwh = $64.2 per day x 180 days per year = **$11,556 per year**

5. **Total Energy Cost For 2 Unnecessary Hours of DOAS Operation: $489,420 + $34,740 + $410,760 + 11,556 = $946,476 per year or $473,238 per hour per year of unnecessary operation of the DOASs.** In addition, there might be additional savings due to a possible reduction in the peak demand Kw. There may also be some savings due to a possible reduction in maintenance cost due to reduced run time of the chillers, DOASs and respective ESs.

For conservative purposes let use 10 years. For 10 years of unnecessary operation of the DOASs and respective ESs for 2 hours per day it has cost the Typical School District approximately **10 years x $946,476 per year = $9,464,760** that could have been saved and utilized to educated students. **Until this issue is corrected, it will continue to cost the Typical School District approximately $946,476 per year.**

There is a simple solution. Program the Energy Management System (EMS) for each school to shutdown all DOASs and respective ESs for unoccupied spaces at the time of student dismissal. This would automatically cause the chillers to unload and the chilled water pumps to slow down. For schools without Energy Management Systems, there is some type of time clock system control. The time clock system can be programmed to shut down all the respective DOASs and respective ESs at the time of school dismissal.

The intent of FBC-M 401.3 is that all occupied spaces be supplied with Ventilation (Outside) Air. If the spaces are unoccupied and have Dedicated Outside Air Systems (DOAS) that do not affect other occupied spaces, then the unoccupied space DOASs and respective Exhaust Systems can be turned off. Optimizing the operation of DOASs and respective ESs to shut down when rooms are unoccupied will save the Typical School District approximately $1,000,000 per year.

It is imperative that a clear and concise interpretation by the Florida Building Code Commission be made as to the intent and application of the codes. Petitioner appreciates the due diligence of the Florida Building Code Commission and fully understands the extensive work of the Florida Building Code Commission in developing the Codes for the greater safety and improvement of the consumer. Likewise, it would seem reasonable to ensure the Codes are uniformly interpreted. Section 553.775(1) Florida Statues states: "It is the intent of the Legislature that the Florida Building Code be interpreted by the Building Officials, Local Enforcement Agencies and the Florida Building Code Commission in a manner that protects the public safety and welfare at the most reasonable cost to the consumer by ensuring uniform interpretations throughout the State by providing processes for resolving disputes regarding interpretations of the Florida Building Code that are just and expeditious."

Thank you for your time and consideration.

Respectfully Submitted,

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M7009

Date Submitted	1/1/2016	**Section**	403.3.2.1	**Proponent**	Cheryl Harris
Chapter	4	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Changes the intent of mechanical ventilation from mandatory to optional.

Rationale

Allows flexibility in design of ventilation to include natural and infiltration in addition to mechanical.

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

Modification could decrease cost of ventilation if natural and infiltration methods are allowed for ventilation in addition to mechanical.

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

The modification does not harm the public when allowing alternate methods of ventilation.

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

The modification improves the code by allowing alternate methods of ventilation.

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

There are not proprietary materials, products, methods, or systems required in the modification.

Does not degrade the effectiveness of the code

The modification increases the effectiveness of the code by allowing alternate methods of ventilation.

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

403.3.2.1 Outdoor air for dwelling units.

An outdoor air ventilation system consisting of a mechanical exhaust system, supply system or combination thereof ~~shall~~ may be installed for each dwelling unit. Local exhaust or supply systems, including outdoor air ducts connected to the return side of an air handler, are permitted to serve as such a system. The outdoor air ventilation system shall be designed to provide the required rate of outdoor air continuously during the period that the building is occupied. The minimum continuous outdoor airflow rate shall be determined in accordance with Equation 4-9.

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Date Submitted	12/31/2015	**Section**	505.2	**Proponent**	Jeff Sonne / FSEC
Chapter	5	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

6937

Summary of Modification

Modify exhaust hood makeup air requirements.

Rationale

Tighter homes result in greater pressure differentials indoors with reference to outdoors (see figure in supporting file) when mechanical fans move air across the building envelope. This modification will diminish health and safety risks associated with significant depressurization.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Will require a method of assuring the mechanical contractor has followed the code.

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

Minor differences than base code for most owners.

Impact to industry relative to the cost of compliance with code

For upscale homes may increase cost slightly for the purpose of reduced risk of health and safety issues and callbacks.

Requirements

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

Yes; diminishes health and safety risks associated with significant depressurization.

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

Yes, testing for pressure differences in homes without makeup air is a better methodology than relying on cfm limits alone. As shown, the depressurization in tight homes could be substantial.

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

No.

Does not degrade the effectiveness of the code

No; increases effectiveness of the code by diminishing health and safety risks associated with significant depressurization.

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

505.2 Makeup air required.
Exhaust hood systems capable of exhausting in excess of ~~400~~150 cfm ~~(0.19 m^3/s)~~ (0.071 m^3/s) shall be provided with *makeup air* at a rate approximately equal to the *exhaust air* rate. ~~Such *m*~~ *Makeup air* systems shall be equipped with a means of closure and shall be automatically controlled to start and operate simultaneously with the exhaust system.

Exception:

In a single-family dwelling, makeup air is not required if there are no gravity vent appliances, the range hood is rated at less than 400 cfm of exhaust and the indoor house pressure with reference to outdoors is tested (with kitchen exhaust fan running at its maximum flow rate) not to exceed 3 Pascals.

~~In a single-family dwelling, make-up air is not required for range hood exhaust systems capable of exhausting:~~

~~(a) Four hundred cubic feet per minute or less; or~~

~~(b) More than 400 cubic feet per minute but no more than 800 cubic feet per minute if there are no gravity vent appliances within the conditioned living space of the structure~~.

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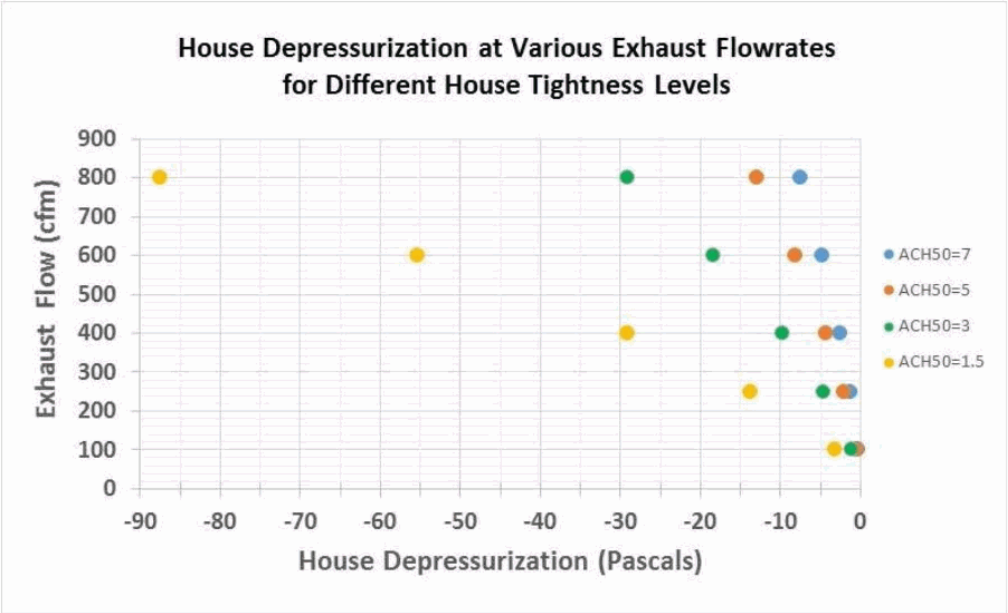

Figure above based on flow coefficient (C) calculated based upon assumed flow exponent =0.63, and specified house tightness (ACH50); C. Withers.

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Date Submitted	12/21/2015	**Section**	601.6	**Proponent**	Jeff Sonne / FSEC
Chapter	6	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

6748

Summary of Modification

Balanced return air requirement and exceptions.

Rationale

Restricted return air affects building pressures and increases air infiltration which in turn increases energy use and can cause comfort, building durability, and health and safety issues. This modification reduces restricted return air and these related issues.

Supporting publication:

Cummings, J., C. Withers, "Balanced Return Air, Duct Airtightness, and Combustion/Dilution Air Code Compliance in 40 Central Florida Homes" Florida Solar Energy Center, FSEC-CR-1789-06, Nov. 29, 2006. (http://www.fsec.ucf.edu/en/publications/pdf/FSEC-CR-1789-06.pdf)

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Some additional effort to verify compliance. Proposed language is in the 2014 Florida Building Code.

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

Some additional cost in some cases. Proposed language is in the 2014 Florida Building Code.

Impact to industry relative to the cost of compliance with code

Cost is justified since restricted return air affects building pressures and increases air infiltration which in turn increases energy use and can cause comfort, building durability, and health and safety issues. Proposed language is in the 2014 Florida Building Code.

Requirements

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

Yes. Restricted return air affects building pressures and increases air infiltration which in turn increases energy use and can cause comfort, building durability, and health and safety issues. Proposed language is in the 2014 Florida Building Code.

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

Yes. Restricted return air affects building pressures and increases air infiltration which in turn increases energy use and can cause comfort, building durability, and health and safety issues. Proposed language is in the 2014 Florida Building Code.

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

No. Proposed language is in the 2014 Florida Building Code.

Does not degrade the effectiveness of the code

Increases code effectiveness. Proposed language is in the 2014 Florida Building Code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

[Yes.] Florida is largely a ducted HVAC system state and this affects us as much or more than other states. It is important for Florida to keep its balanced return air requirement for the reasons provided above; allowing the requirement to lapse until it is included in the IMC or IRC would be confusing, potentially cause safety and health issues, provide poorer energy performance and is not in the interest of the state.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

601.6 Balanced Return Air.

Restricted return air occurs in buildings when returns are located in central zones and closed interior doors impede air flow to the return grill or when ceiling spaces are used as return plenums and fire walls restrict air movement from one portion of the return plenum to another. Provisions shall be made in both residential and commercial buildings to avoid unbalanced air flows and pressure differentials caused by restricted return air. Pressure differentials across closed doors where returns are centrally located shall be limited to 0.01 inch WC (2.5 pascals) or less. Pressure differentials across fire walls in ceiling space plenums shall be limited to 0.01 inch WC (2.5 pascals) by providing air duct pathways or air transfer pathways from the high pressure zone to the low zone.

Exceptions:

1. Transfer ducts may achieve this by increasing the return transfer 1½ times the cross sectional area (square inches) of the supply duct entering the room or space it is serving and the door having at least an unrestricted 1 inch undercut to achieve proper return air balance.

2. Transfer grilles shall use 50 square inches (of grille area) to 100 cfm (of supply air) for sizing through-the-wall transfer grilles and using an unrestricted 1 inch undercutting of doors to achieve proper return air balance.

3. Habitable rooms only shall be required to meet these requirements for proper balanced return air excluding bathrooms, closets, storage rooms and laundry rooms, except that all supply air into the master suite shall be included.

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M7010

Date Submitted	1/1/2016	**Section**	603.7	**Proponent**	Cheryl Harris
Chapter	6	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Allows for an alternative material, foil-faced fiberglass duct in garages that does not compromise fire protection or allow harmful gases to penetrate the dwelling.

Rationale

Rigid foil-faced fiberglass duct is a proven equivalent or better material than sheet steel for ducts in garages that penetrate a wall or ceiling for fire retardation or smoke/gas infiltration.

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

Allowing fiberglass duct is more cost effective in Florida than steel and would reduce cost of installation and materials up to $1,000 or more.

Impact to industry relative to the cost of compliance with code

Allowing fiberglass duct is more cost effective in Florida than steel and would reduce cost of installation and materials up to $1,000 or more.

Requirements

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

Use of rigid, foil-faced fiberglass duct in garages provides the same protection or better steel ducts.

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

Improves the code by allowing proven equivalent or better products for ductwork in Florida.

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

The original code discriminates against a proven alternative material for ductwork. Including fiberglass ductwork will eliminate that discrimination

Does not degrade the effectiveness of the code

The modification does not degrade the effectiveness of the code.

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

Duct system penetrations of walls, floors, ceilings and roofs and air transfer openings in such building components shall be protected as required by Section 607. Ducts in a private garage that penetrate a wall or ceiling that separates a dwelling from a private garage shall be continuous, shall be constructed of sheet steel having a thickness of not less than 0.0187 inch (0.4712 mm) (No.26gage)) or rigid foil-faced fiberglass, and shall not have openings into the garage. Fire and smoke dampers are not required in such ducts passing through the wall or ceiling separating a dwelling from a private garage except where required by Chapter 7 of the *International Building Code*.

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Date Submitted	1/1/2016	**Section**	606	**Proponent**	Cheryl Harris
Chapter	6	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Eliminates duplication of Smoke Detectors in both the supply and return side of air distribution systems and other changes to be in compliance with the Florida Fire Code.

Rationale

Eliminates conflicts of Smoke Detectors in both the supply and return side of air distribution systems and other changes to be in compliance with the Florida Fire Prevention Code and NFPA 90.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Simplifies enforcement.

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

Eliminates the cost of a duplicate smoke detector system and wiring to Fire Alarm systems which could save $500 to $2000 in cost per system.

Impact to industry relative to the cost of compliance with code

Reduces the cost in time and materials to install duplicate smoke detector systems and wiring to Fire Alarm systems. Savings could range from $500 to $2000 per system on average.

Requirements

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

Modification follows Florida Fire Code requirements for life and safety.

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

Modification improves the code by eliminating conflicting requirements for Fire Alarm placement in air distribution systems.

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

There are no proprietary materials, products, methods required and follows Florida Fire Code requirements.

Does not degrade the effectiveness of the code

Eliminating requirement for smoke detectors in both the return and supply side of an air distribution system does not degrade the effectiveness of the code as it follows Florida Fire Code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

Alternate Language

1st Comment Period History 01/13/2016 - 02/25/2016

7011-A1

Proponent Don Whitehead **Submitted** 2/4/2016 **Attachments** Yes

Rationale

1. The exception in 606.2 states that smoke detectors shall not be required for air distribution systems that are incapable of spreading smoke beyond the enclosing walls, floors and ceilings of the room or space in which the smoke is generated; however, this exception does not take into account the importance of student safety in educational areas. Student areas require close supervision and monitoring systems to ensure hazards are quickly identified and reported to the appropriate agencies. Therefore, smoke detectors should be required in such occupancies. 2. Smoke detectors are currently required in the supply ducts under NFPA 90A; therefore, the FBC, Building, 606 should be updated to include this requirement for smoke detectors in the supply ducts. However, smoke detectors should also be considered as necessary in the return ducts for the following reasons: a. Smoke contaminates can be more difficult to detect in the turbulent air which is discharged from the supply ducts. b. Smoke detectors in the return ducts can allow for faster recognition of the smoke's point of origin. 3. Because student areas require close supervision and monitoring, it is necessary to provide appropriate systems to prevent the oversight of hazardous conditions. Therefore when facilities are monitored by supervising stations; although it may be permissible to allow one (1) duct smoke detector signal to be reported as a supervisory signal, two (2) signals would indicate a high probability that an actual hazard exists and a fire alarm should be activated.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change from current requirement.

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

No change from current requirement.

Impact to industry relative to the cost of compliance with code

No change from current requirement.

Requirements

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

No change from current requirement.

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

No change from current requirement.

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

No change from current requirement.

Does not degrade the effectiveness of the code

No change from current requirement.

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

SECTION 606

SMOKE DETECTION SYSTEMS CONTROL

606.1 Controls required.

Air distribution systems shall be equipped with smoke detectors *listed* and *labeled* for installation in air distribution systems, as required by this section. Duct smoke detectors shall comply with UL 268A. Other smoke detectors shall comply with UL 268.

606.2 Where required. Smoke detectors shall be installed where indicated in Sections 606.2.1 through 606.2.3.

~~**Exception:** Smoke detectors shall not be required where air distribution systems are incapable of spreading smoke beyond the enclosing walls, floors and ceilings of the room or space in which the smoke is generated.~~

606.2.1

To prevent the recirculation of dangerous quantities of smoke, a detector approved for air duct use shall be installed on the Supply side of air-handling systems as required by NFPA 90A, *Standard for the Installation of Air Conditioning and Ventilating Systems.* Smoke detectors listed for use in air distribution systems shall be located downstream of the air filters and ahead of any branch connections in air supply systems having the capacity greater than 2000 cuft/min.

~~**Return air systems.**~~

~~Smoke detectors shall be installed in return air systems with a design capacity greater than 2,000 cfm (0.9 m3/s), in the return air duct or *plenum* upstream of any filters, *exhaust air* connections, outdoor air connections, or decontamination *equipment* and appliances.~~

Exception: Smoke detectors are not required in the ~~return~~ supply air system where all portions of the building served by the air distribution system are protected by area smoke detectors connected to a fire alarm system in accordance with the *International Fire Code*. The area smoke detection system shall comply with Section 606.4.

606.2.2 Common supply ~~and return air~~ systems.

Where multiple air-handling systems share common supply ~~or return air ducts or plenums~~ with a combined design capacity greater than 2,000 cfm (0.9 m3/s), ~~the~~ each supply ~~return~~ air system shall be provided with smoke detectors in accordance with Section 606.2.1.

Exception: Individual smoke detectors shall not be required for each fan-powered

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terminal unit, provided that such units do not have an individual design capacity greater than 2,000 cfm (0.9 m3/s) and will be shut down by activation of one of the following:

1. Smoke detectors required by Sections 606.2.1 and 606.2.3.
2. An *approved* area smoke detector system located in the return air *plenum* serving such units.
3. An area smoke detector system as prescribed in the exception to Section 606.2.1.

In all cases, the smoke detectors shall comply with Sections 606.4 and 606.4.1.

606.2.3 Return air risers.

Where return air risers serve two or more stories and serve any portion of a return air system having a design capacity greater than 15,000 cfm (7.1 m3/s), smoke detectors shall be installed at each story. Such smoke detectors shall be located upstream of the connection between the return air riser and any air ducts or plenums.

[F] 606.3 Installation.

Smoke detectors required by this section shall be installed in accordance with NFPA 72. The required smoke detectors shall be installed to monitor the entire airflow conveyed by the system ~~including return air and exhaust or relief air~~. **Smoke detectors shall not be required for fan units whose sole function is to remove air from the inside of the building to the outside of the building.** Access shall be provided to smoke detectors for inspection and maintenance.

[F] 606.4 Controls operation.

Upon activation, the smoke detectors shall shut down all operational capabilities of the air distribution system in accordance with the listing and labeling of appliances used in the system. Air distribution systems that are part of a smoke control system shall switch to the smoke control mode upon activation of a detector.

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[F] 606.4.1 Supervision.

The duct smoke detectors shall be connected to a fire alarm system where a fire alarm system is required by Section 907.2 of the *International Fire Code*. The actuation of a duct smoke detector shall activate a visible and audible supervisory signal at a constantly attended location. **In facilities that are required to be monitored by a supervising station, duct smoke detectors shall report only as a supervisory signal, not as a fire alarm.**

Exceptions:

1. The supervisory signal at a constantly attended location is not required where the duct smoke detector activates the building's alarm-indicating appliances.
2. In occupancies not required to be equipped with a fire alarm system, actuation of a smoke detector shall activate a visible and audible signal in an *approved* location. Duct smoke detector trouble conditions shall activate a visible or audible signal in an *approved* location and shall be identified as air duct detector trouble.

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606.1 Controls required.
Air distribution systems shall be equipped with smoke detectors *listed* and *labeled* for installation in air distribution systems, as required by this section. Duct smoke detectors shall comply with UL 268A. Other smoke detectors shall comply with UL 268.

606.2 Where required.
Smoke detectors shall be installed where indicated in Sections 606.2.1 through 606.2.3.

~~**Exception:** Smoke detectors shall not be required where air distribution systems are incapable of spreading smoke beyond the enclosing walls, floors and ceilings of the room or space in which the smoke is generated.~~

606.2.1 Return and supply air systems.
Smoke detectors shall be installed in both supply and return air systems with a design capacity greater than 2,000 cfm (0.9 m^3/s)~~, in~~ . In the return air duct or *plenum*, detectors are to be installed upstream of any filters, *exhaust air* connections, outdoor air connections, or decontamination *equipment* and appliances. In the supply air duct, detectors are to be located downstream of the air filters and ahead of any branch connections.

Exception: Smoke detectors are not required in the return and supply air system where all portions of the building served by the air distribution system are protected by area smoke detectors connected to a fire alarm system in accordance with the *International Fire Code*. The area smoke detection system shall comply with Section 606.4.

606.2.2 Common supply and return air systems.
Where multiple air-handling systems share common supply or return air ducts or plenums with a combined design capacity greater than 2,000 cfm (0.9 m^3/s), the return air and supply air system shall be provided with smoke detectors in accordance with Section 606.2.1.

Exception: Individual smoke detectors shall not be required for each fan-powered terminal unit, provided that such units do not have an individual design capacity greater than 2,000 cfm (0.9 m^3/s) and will be shut down by activation of one of the following:

1. Smoke detectors required by Sections 606.2.1 and 606.2.3.

2. An *approved* area smoke detector system located in the return air *plenum* serving such units.

3. An area smoke detector system as prescribed in the exception to Section 606.2.1.

In all cases, the smoke detectors shall comply with Sections 606.4 and 606.4.1.

606.2.3 Return and supply air risers.
Where return air and supply air risers serve two or more stories and are part of a return air and supply air system ~~serve any portion of a return air system~~ having a design capacity greater than 15,000 cfm (7.1 m^3/s), smoke detectors shall be installed at each story. Such smoke detectors shall be located upstream of the connection between the return air riser and any air ducts or plenums and between the air supply source and the first branch or take-off to the areas served.

[F] 606.3 Installation.
Smoke detectors required by this section shall be installed in accordance with NFPA 72. The required smoke detectors shall be installed to monitor the entire airflow conveyed by the system ~~including return air and exhaust or relief air~~. Smoke detectors shall not be required for fan units whose sole function is to remove air from the inside of

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the building to the outside of the building. Access shall be provided to smoke detectors for inspection and maintenance.

[F] 606.4 Controls operation.
Upon activation, the smoke detectors shall shut down all operational capabilities of the air distribution system in accordance with the listing and labeling of appliances used in the system. Air distribution systems that are part of a smoke control system shall switch to the smoke control mode upon activation of a detector.

[F] 606.4.1 Supervision.
The duct smoke detectors shall be connected to a fire alarm system where a fire alarm system is required by Section 907.2 of the *International Fire Code*. The actuation of a duct smoke detector shall activate a visible and audible supervisory signal at a constantly attended location. In facilities that are required to be monitored by a supervising station, duct smoke detectors shall report only as a supervisory signal, ~~not a fire alarm.~~ unless verified by a second signal in which case the fire alarm shall be activated.

Exceptions:

1. The supervisory signal at a constantly attended location is not required where the duct smoke detector activates the building's alarm-indicating appliances.

2. In occupancies not required to be equipped with a fire alarm system, actuation of a smoke detector shall activate a visible and audible signal in an *approved* location. Duct smoke detector trouble conditions shall activate a visible or audible signal in an *approved* location and shall be identified as air duct detector trouble.

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606.2 Where required.

Strikethrough language in conflict with FFPC, NFPA 90 and NFPA 72
Insert language directly from NFPA 90 and NFPA 72 corresponding with FFPC.

RATIONAL: Bring FBC 2014 into conformity with provisions of FFPC, NFPA 90 and NFPA 72 duct smoke detector requirements and eliminate conflicting language currently in FBC 2014.

NFPA 90 and NFPA 72 outline criteria for air distribution smoke detectors including location, air volume criteria, installation and connection to alarm systems and smoke control systems. These are the reference standards for the FFPC and they are not in conflict with any other sections of FBC 2014. Language taken directly from NFPA 90 and NFPA 72 are recommend.
Language Source Codes: NFPA90 6.4.2.1 and NFPA 72 17.7.5.3.1

606.2.1 Return air systems.

Strikethrough language in conflict with FFPC, NFPA 90 and NFPA 72
Other provisions exist in other sections of 606 ; no new language needed.

RATIONAL: Bring FBC 2014 into conformity with provisions of FFPC, NFPA 90 and NFPA 72 duct smoke detector requirements and eliminate conflicting language currently in FBC 2014.

NFPA 90 and NFPA 72 outline criteria for air distribution smoke detectors including location, air volume criteria, installation and connection to alarm systems and smoke control systems. These are the reference standards for the FFPC and they are not in conflict with any other sections of FBC 2014. Language taken directly from NFPA 90 is recommend.

606.2.2 Common supply and return air systems.

Strikethrough language in conflict with FFPC, NFPA 90 and NFPA 72
Other provisions of FFPC, NFPA 90 and NFPA 72 determine requirements for air distribution systems ; no new language needed.

RATIONAL: Bring FBC 2014 into conformity with provisions of FFPC, NFPA 90 and NFPA 72 duct smoke detector requirements. Eliminate conflicting language currently in FBC 2014.

NFPA 90 and NFPA 72 outline criteria for air distribution smoke detectors including location, air volume criteria, installation and connection to alarm systems and smoke control systems. These are the reference standards for the FFPC and they are not in conflict with any other sections of FBC 2014. Language taken directly from NFPA 90 is recommend.

606.3 Installation.

Strikethrough language in conflict with FFPC, NFPA 90 and NFPA 72
Insert language directly from NFPA 90 and NFPA 72 corresponding with FFPC.

RATIONAL: Bring FBC 2014 into conformity with provisions of FFPC, NFPA 90 and NFPA 72 duct smoke detector requirements and eliminate conflicting language currently in FBC 2014.

NFPA 90 and NFPA 72 outline criteria for air distribution smoke detectors including location, air volume criteria, installation and connection to alarm systems and smoke control systems. These are the reference standards for the FFPC and they are not in conflict with any other sections of FBC 2014. Language taken directly from NFPA 90 and NFPA 72 are recommend.
Language Source Code: NFPA90 6.4.2.3

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Date Submitted	1/1/2016	**Section**	12345678	**Proponent**	Cheryl Harris
Chapter	15	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Incorporates the National Fire Codes as referenced standards as they are referenced in the Florida Fire Code to ensure consistency between codes.

Rationale

There should be consistency between the Building Code and Florida Fire Code. The National Fire Code is a referenced standard in the Florida Fire Code but not listed as a referenced standard in the Building Code.

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

The NFPA standards have been part of our Code for many years. In specifying methods of fire and smoke control, consistency with the Fire Code is crucial. Life safety depends on this and NFPA90a, 90b are needed in Mechanical to mirror the Fire Code.

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

Makes Mechanical and Fire Prevention Code consistent with each other. Eliminates duplication of some smoke detectors which creates better system function.

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

Does not discriminate against materials, products, methods orsystems.

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1st Comment Period History 01/13/2016 - 02/25/2016

Proponent	Cheryl Harris	**Submitted**	1/18/2016	**Attachments**	No

M7022-G1

Comment:

Wording should be included that states the References NFPA 90A and 90B be the 2015 version.

Insert the following standards in alphabetical order within the list:

Chapter 15

Referenced Standards

NFPA 90A

NFPA 90B

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Sub Code: Residential

M6385

Date Submitted	8/4/2015	**Section**	202	**Proponent**	Amanda Hickman
Chapter	2	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

6384

Summary of Modification

Adds definition for LOCKING-TYPE TAMPER-RESISTANT CAP.

Rationale

See attached.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Yes. Adding the definition will make enforcement of the requirement easier.

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

None. Only adds definition.

Impact to industry relative to the cost of compliance with code

None. Only adds definition.

Requirements

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

Yes. Helps to prevent “Sniffing” or “huffing” refrigerant gas.

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

Yes. Adds definition

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

No. Only adds definition.

Does not degrade the effectiveness of the code

No. Only adds definition.

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

LOCKING-TYPE TAMPER-RESISTANT CAP. A cap that is designed to prevent its removal by means of hand-loosening or by means of commonly available tools. Such caps can be removed only by means of a unique key that is specifically designed for the locking cap.

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RATIONAL:

Section M1411.8 of the 2015 IRC addresses the locking access of refrigerant port caps. New code sections in both the 2015 IMC and IRC require that access ports for refrigerants be contained in a secure location or, if located outside a locked, controlled area, be secured with a tamper-resistant locking cap. This code change was approved during the 2009, 2012 and 2015 I-Code cycles to help reduce unauthorized access to refrigerants, and to help AC system efficiency from the accidental mixing of refrigerant gases.

This proposal is intended to expand on intent and purpose of the new code section in the IMC and the IRC by defining the primary safeguard: the locking-type tamper resistant cap.

Refrigerant gas theft has become increasingly problematic in recent years. Some of this is due to the rising costs of these gases; however, stealing refrigerant for the act of huffing is increasing at an alarming rate. “Sniffing” or “huffing” refrigerant gas is extremely dangerous, causing brain damage or even death. Inhalants are the fourth most abused substance. According to the Inhalant Statistics and Reports "59% of children are aware of friends huffing at age 12." In the U.S., the 2006 National Survey on Drug Use and Health found that 1.1 million youths aged 12 to 17 had used inhalants in the past year. “Sniffing” and “huffing” can begin at age 10 or younger. 22% of inhalant abusers who died of Sudden Sniffing Death Syndrome had no history of previous inhalant abuse—they were first-time users.

Some port caps are designed to be removed with a set bit, Allen wrench, Schrader valve tool or screwdriver. The use of such tools to remove a cap could be considered an annoying delay by a determined thief because such port caps are not truly LOCKED. The majority of the victims of huffing are teens and pre-teens, many of whom could easily tamper with a port cap using such readily available tools.

This definition clarifies that the cap should be a truly tamper resistant lock to be effective, that is, can only be opened with a specially designed key. This clarification of the definition of a specially designed “lock and “key” will reduce theft and help to safe guard youngsters from serious injury or death resulting from the inhalation of dangerous refrigerants.

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M6819

Date Submitted	12/28/2015	**Section**	303.4	**Proponent**	Joseph Belcher
Chapter	3	**Affects HVHZ**	Yes	**Attachments**	Yes

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Modify air changes triggering whole house mechanical ventilation.

Rationale

See uploaded Support File for Rationale

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to cost of code enforcement for local entity.

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

Possible reduction in costs to building and property owners not required to install whole-house mechanical ventilation system.

Impact to industry relative to the cost of compliance with code

Possible reduction in costs to industry where not required to install whole-house mechanical ventilation system.

Requirements

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

Yes, the proposal will improve the health, safety, and welfare of the general public by instituting a reasonable level for requiring whole house mechanical ventilation systems.

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

The proposal improves the code by instituting a reasonable level for requiring whole house mechanical ventilation systems.

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

No, does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

No, the provision approves the effectiveness of the code.

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

1st Comment Period History 01/13/2016 - 02/25/2016

M6819-G1

Proponent	Mike Moore	**Submitted**	2/22/2016	**Attachments**	Yes

Comment:

Please see attached rationale for disapproval of this proposal.

1st Comment Period History 01/13/2016 - 02/25/2016

M6819-G2

Proponent	Jeff Sonne / FSEC	**Submitted**	2/25/2016	**Attachments**	No

Comment:

The proponent correctly conveys that an FSEC PPT document included a slide indicating that "8,296 or 9.9% of buyers are 'priced out' of the market for every $1,000.00 increase in a house's price based on 2014 data"; however the slide in the FSEC PPT document that shows this increase is incorrect (the impact is less severe). Note that while this slide was included in the PPT document forwarded to DBPR, it was not included in the actual presentations made to the Mechanical and Energy TACs. We're sorry for any confusion this slide may have caused.

R303.4 Mechanical ventilation. Where the air infiltration rate of a dwelling unit is ~~5 air changes per hour or~~ less than 3.00 air changes per hour where tested with a blower door at a pressure of 0.2-inch w.c (50 Pa) in accordance with ~~Section N1102.4.1.2,~~ Section R402.4.1.2 of the *Florida Building Code, Energy Conservation* the dwelling unit shall be provided with whole-house mechanical ventilation in accordance with Section M1507.3.

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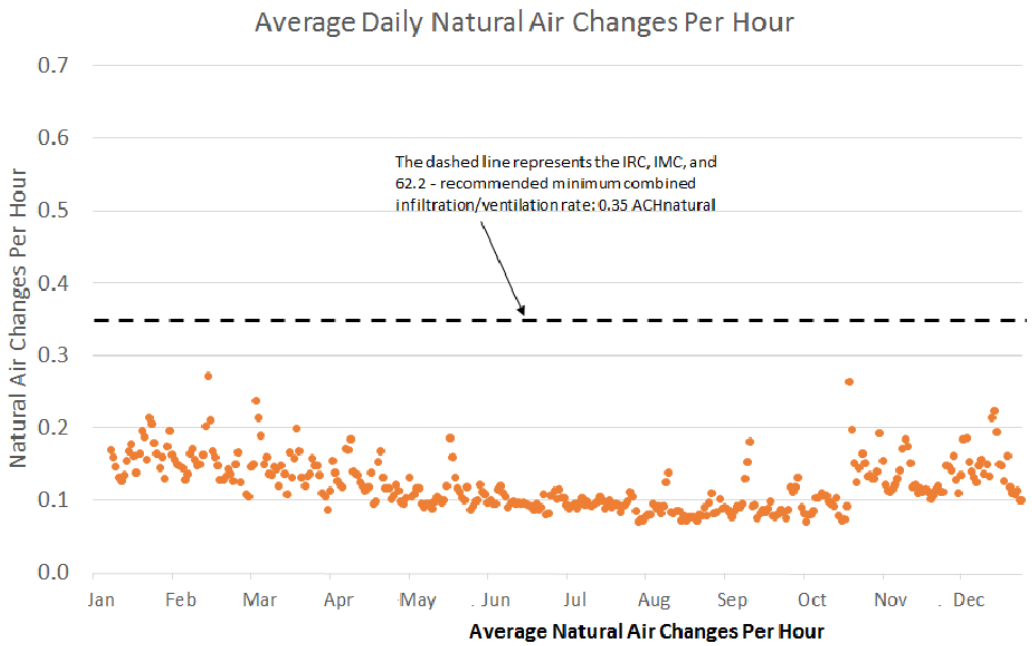
M 6819: Rationale to Disapprove
Submitted by: Mike Moore, P.E., Newport

Recommend disapproval of this proposal. The proponent makes the unsubstantiated claim that the proposal "will improve the health, safety, and welfare of the general public by instituting a reasonable level for requiring whole house mechanical ventilation systems". There is no technical basis to support this claim, which runs counter to engineering calculations and research showing that natural ventilation and infiltration are insufficient to achieve acceptable indoor air quality.

As an example, following is a chart created using DOE's EnergyPlus software that shows the average daily combined infiltration and ventilation rate for a typical 2,600 ft^2 three-bedroom, single-family home located in Orlando with a building air tightness of 3 ACH50 and *no* mechanical ventilation, as proposed by the proponent. The average annual natural air change rate for this typical home is 0.12 (roughly a third of the 0.35 air changes per hour promulgated by model codes and standards), with a seasonal low of 0.09 in the summer. Research has shown that formaldehyde emissions from building materials increase with increasing temperature and relative humidity, and formaldehyde concentrations increase with decreasing infiltration/ventilation rates. In other words, formaldehyde emissions and concentration are likely to spike in the summer when natural infiltration is at its lowest. Resultant poor indoor air quality can significantly diminish occupants' health. In fact, research suggests that poor IAQ is responsible for around $500 annually in health related costs per person in the U.S., which translates to $10 billion annually in Florida.*



	Winter	Spring	Summer	Fall	Annual
3 ACH50 & No Mech Vent	0.15	0.11	0.09	0.13	0.12

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*Assumes poor IAQ accounts for 0.01 disability adjusted life years (DALYs) per person, and that the value of a DALY is $50,000. This value is at the low end of epidemiological studies that estimate the value of a DALY between $50k - $200k.

References:

- Logue JM, Price PN, Sherman MH, & Singer BC. 2012. A Method to Estimate the Chronic Health Impact of Air Pollutants in U.S. Residences. Environmental Health Perspectives 120(2): 216-222.
- Turner WJN, Logue JM, and Wray CP. 2012. Commissioning Residential Ventilation Systems: A Combined Assessment of Energy and Air Quality Potential Values. LBNL-5969E.
- Brown DW. 2008. Economic value of disability-adjusted life years lost to violence: estimates for WHO Member States. Rev. Panam Salud Publica, 24, 203-209.
- Lvovsky K, Huges G, Maddison D, Ostro B, and Pearce D. 2000. Environmental costs of fossil fuels: a rapid assessment method with application to six cities. Washington, D.C.: The World Bank Environment Department.
- Highfill T and Bernstein E. 2014. Using Disability Adjusted Life Years to Value the Treatment of Thirty Chronic Conditions in the U.S. from 1987-2010. U.S. Department of Commerce Bureau of Economic Analysis WP 2014-9.
- Hult EL, Willem H, Price PN, Hotchi T, Russell ML, and Singer BC. 2015. Formaldehyde and acetaldehyde exposure mitigation in US residences: in-home measurements of ventilation control and source control. Indoor Air 25:523-535.

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This proposal reduces the trigger for whole-house mechanical ventilation from 5 ACH or less to less than 3 ACH. There is no argument that as houses get tighter to meet or exceed energy conservation measures, there is a potential for indoor air quality issues. However, the reasons given by the proponent of the change to the foundation code for requiring whole-house mechanical ventilation did not provide substantiation for the trigger air change level mandated. The proponent, a representative of a manufacturer of mechanical ventilation systems, did state the cost of construction would increase, but provided no estimate of the amount of the increase. (M156-09/10; ICC 2009/2010 Code Development Cycle) The increased costs associated with the trigger level of 5 ACH are not justified in the State of Florida.

Before discussing costs, a serious problem with requiring whole-house mechanical ventilation in moderately tight houses in Florida should be noted. Whole-house mechanical ventilation brings outside air into the house. The hot humid climate of Florida will result in the introduction of moisture to the interior. Once introduced, the health problems associated with excess moisture such as mold, mildew, and rotting, must be addressed which may require the installation of a dehumidification system. The overall effect could very well be an increase in energy use.

Regarding the costs, an interim progress report of a study by FSEC was presented to various Commission TACs. As part of the project a survey was developed and widely distributed to stakeholders. The survey specified an example house and asked respondents to estimate the cost of providing a whole-house mechanical ventilation system. The costs of the interim report are based on the results of the survey and range from $800.00 to $1000.00. (Interim Progress Report for Evaluating the Economic Impacts of the Legislatively Delayed Provisions of the 5th Edition (2014) Florida Solar Energy Center, FSEC-CR-2009-15, Interim Report, Nov. 13, 2015) In addition, cost estimates from other sources were provided. Other estimates of the costs from builders outside the report have ranged from $3200.00 to $3,500.00.

In addition to the estimated costs, the FSEC presentation indicates for Florida: "8,296 or 9.9% of buyers are 'priced out' of the market for every $1,000.00 increase in a house's price based on 2014 data" This "priced out" data is based on a study by NAHB "State and Metro Area House Prices: the "Priced Out" Effect Special Studies", August 1, 2014. Finally, in cases where a dehumidification system is needed, cost estimate provided by a builder for the typical sized house is $2700.00 to $3000.00. Using the low side of the estimated cost ranges above, yields a total potential cost increase for the whole-house ventilation system in a one story 2,000 ft^2 three bedroom two bath home of $3,500.00; on the high side we have a potential increase of $4,500.00. This equates to potentially denying more than 25,000 Florida citizens the opportunity to purchase a home.

Further, in another report of whole-house ventilation the operation of such system in existing buildings is shown to be woefully short of expectations. The

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Florida Building Commission engaged FSEC to conduct an investigation of the effectiveness and failure rates of existing whole-house mechanical ventilation systems. The investigation included a survey and testing of twenty-one homes built in the last fifteen years in Florida. The testing results showed only three of the homes were capable of providing a ventilation flow close to the design level and two of the three systems were turned off by the homeowner. Therefore, only one of the twenty-one systems investigated was found to be delivering the expected ventilation. The remainder of the findings are similar indicating even where whole-house mechanical ventilation systems are installed and operational they are not functioning or not functioning at near the expected level. (Report: Investigation of the Effectiveness and Failure Rates of Whole-House Mechanical Ventilation Systems in Florida" FSEC-CR-2002-15, June 1, 2015.)

While there are a number of recommendations made by the June 1, 2015, report, the following recommendation addressing allowable leakage levels, taken with the testing results reported, may be seen to support a reduction in the trigger for the requirement for mechanical ventilation:

> **"Do not require houses to become tighter than already specified by code. Consider increasing allowed leakage to 7 ACH50 in climate zones 1 and 2 (all of Florida)"**

(*Source:* Investigation of the Effectiveness and Failure Rates of Whole-House Mechanical Ventilation Systems in Florida" FSEC-CR-2002-15, June 1, 2015.)

It is understood that whole-house mechanical ventilation may well be needed in very tightly constructed homes. The proposal recognizes this need by retaining the requirement for whole-house mechanical ventilation in homes where the air changes per hour are less than 3. The potential of the unmodified provision to deny thousands of Florida residents the ability of to buy a home seems unquestionably counter to the statutorily stated intent of the code '… of providing requirements which will allow effective and reasonable protection for public safety, health, and general welfare for all the people of Florida at the most reasonable cost to the consumer." [Ch. 553.72(1)]

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M6816

Date Submitted	12/27/2015	**Section**	1401.1	**Proponent**	Joseph Belcher
Chapter	14	**Affects HVHZ**	Yes	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Adds reference to AHU in attics in FBC-EC.

Rationale

The proposal is intended to draw attention to requirements of another volume of the code addressing the installation of heating and cooling equipment to make certain it is not overlooked.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Proposed language adds a reference to an existing section of the Florida Building Code which is part of a rule challenge settlement.

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

None. Proposed language adds a reference to an existing section of the Florida Building Code which is part of a rule challenge settlement.

Impact to industry relative to the cost of compliance with code

None. Proposed language adds a reference to an existing section of the Florida Building Code which is part of a rule challenge settlement.

Requirements

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

Yes, the proposed language adds a reference to an existing section of the Florida Building Code which is part of a rule challenge settlement.

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

Yes, the proposed language adds a reference to an existing section of the Florida Building Code which is part of a rule challenge settlement.

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

No, the proposal does not discriminate.

Does not degrade the effectiveness of the code

No, the proposal does not degrade the effectiveness of the code.

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

M1401.1 Installation. Heating and cooling *equipment* and *appliances* shall be installed in accordance with the manufacturer's installation instructions and the requirements of this code. Air-handling units installed in attics shall comply with the Florida Building Code-Energy Conservation Section R403.3.6.

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M7015

Date Submitted	1/1/2016	**Section**	1411.8	**Proponent**	Cheryl Harris
Chapter	14	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Exempts locking caps on refrigerant ports on residential outside equipment if the port is inside the cabinet and not generally accessible.

Rationale

If refrigerant circuit access ports are inside a condensing cabinet they are generally not accessible to the general public who the code is intended to protect and becomes an unnecessary cost.

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

Modification will reduce the cost of installing an unnecessary lock cap. Cost savings up to $100.

Impact to industry relative to the cost of compliance with code

Modification will reduce the cost of installing an unnecessary lock cap. Cost savings up to $100.

Requirements

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

The general public is protected from the easy access of the refrigerant port if it is placed inside the equipment cabinet.

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

Improves the code by eliminating an unnecessary / redundant method of limiting access by the general public to refrigerant ports.

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

Modification does not require proprietary materials, products, methods or construction systems.

Does not degrade the effectiveness of the code

Modification does not degrade the effectiveness of the code by eliminating the unnecessary locking caps inside an equipment cabinet that requires disassembly to reach refrigerant ports.

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

RM1411.8 Locking access port caps. Refrigerant circuit access ports located outdoors shall be fitted with locking-type tamper-resistant caps or shall be otherwise secured to prevent unauthorized access.

Exemption: No locking-type tamper-resistant caps are required if ports are located inside the Condensing Unit cabinet.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_7015_TextOfModification_1.png

M7019

Date Submitted	1/1/2016	**Section**	1503.2	**Proponent**	Cheryl Harris
Chapter	15	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Changes the ground clearance for PVC outside pipe from 1" to 8" above grade to allow space for connection of a vent cap or hood when installing a downdraft range vent.

Rationale

Extension of an outside PVC pipe from 1" to 8" above grade allows space for connection of a vent cap or hood when installing a range hood.

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

May decrease the cost of installing a downdraft range vent by an estimated $100 to $200 per dwelling.

Impact to industry relative to the cost of compliance with code

Allows for standard method of installing a cap or vent hood onto the outside pipe and reduces cost to comply by an estimated $100 to $200 per dwelling.

Requirements

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

The change in ground clearance does not negatively impact 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

Improves the code by allowing a more standard method of connecting a vent hood or cap onto an outside PVC vent pipe.

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

No proprietary materials, products, methods, systems of construction are required by the modification.

Does not degrade the effectiveness of the code

The modification does not degrade the code when allowing a more standard method of connecting a vent hood or cap onto an outside pipe.

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

RM1503.2 Duct material. Ducts serving range hoods shall be constructed of galvanized steel, stainless steel or copper.

Exception: Ducts for domestic kitchen cooking *appliances*

equipped with down-draft exhaust systems shall be permitted to be constructed of schedule 40 PVC pipe and fittings provided that the installation complies with all of the following:

1. The duct is installed under a concrete slab poured on

grade.

2. The underfloor trench in which the duct is installed

is completely backfilled with sand or gravel.

3. The PVC duct extends not more than 1 inch (25

mm) above the indoor concrete floor surface.

4. The PVC duct extends not more than ~~1~~ 8" inches

above grade *outside of the building.*

5. The PVC ducts are solvent cemented

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_7019_TextOfModification_1.png

Date Submitted	12/31/2015	**Section**	1503.4	**Proponent**	Jeff Sonne / FSEC
Chapter	15	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation Pending Review

Commission Action Pending Review

Related Modifications

Summary of Modification

Modify exhaust hood makeup air requirements.

Rationale

Tighter homes result in greater pressure differentials indoors with reference to outdoors (see figure in supporting file) when mechanical fans move air across the building envelope. This modification will diminish health and safety risks associated with significant depressurization.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Will require a method of assuring the mechanical contractor has followed the code.

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

Minor differences than base code for most owners.

Impact to industry relative to the cost of compliance with code

For upscale homes may increase cost slightly for the purpose of reduced risk of health and safety issues and callbacks.

Requirements

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

Yes; diminishes health and safety risks associated with significant depressurization.

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

Yes, testing for pressure differences in homes without makeup air is a better methodology than relying on cfm limits alone. As shown, the depressurization in tight homes could be substantial.

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

No.

Does not degrade the effectiveness of the code

No; increases effectiveness of the code by diminishing health and safety risks associated with significant depressurization

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

M1503.4 Makeup air required. Exhaust hood systems capable of exhausting in excess of ~~400~~150 cubic feet per minute ~~(0.19 m^3/s)~~ (0.071 m^3/s) shall be mechanically or naturally provided with makeup air at a rate approximately equal to the exhaust air rate. ~~Such m~~ Makeup air systems shall be equipped with not less than one damper. Each damper shall be a gravity damper or an electrically operated damper that automatically opens when the exhaust system operates. Dampers shall be accessible for inspection, service, repair and replacement without removing permanent construction or any other ducts not connected to the damper being inspected, serviced, repaired or replaced.

Exception:

In a single-family dwelling, makeup air is not required if there are no gravity vent appliances, the range hood is rated at less than 400 cfm of exhaust and the indoor house pressure with reference to outdoors is tested (with kitchen exhaust fan running at its maximum flow rate) not to exceed 3 Pascals.

~~In a single-family dwelling, make-up air is not required for range hood exhaust systems capable of exhausting:~~

~~(a) less than Ffour hundred cubic feet per minute or less; or~~

~~(b) More than 400 cubic feet per minute but no more than 800 cubic feet per minute if there are no gravity vent appliances within the conditioned living space of the structure~~.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_6937_TextOfModification_1.png

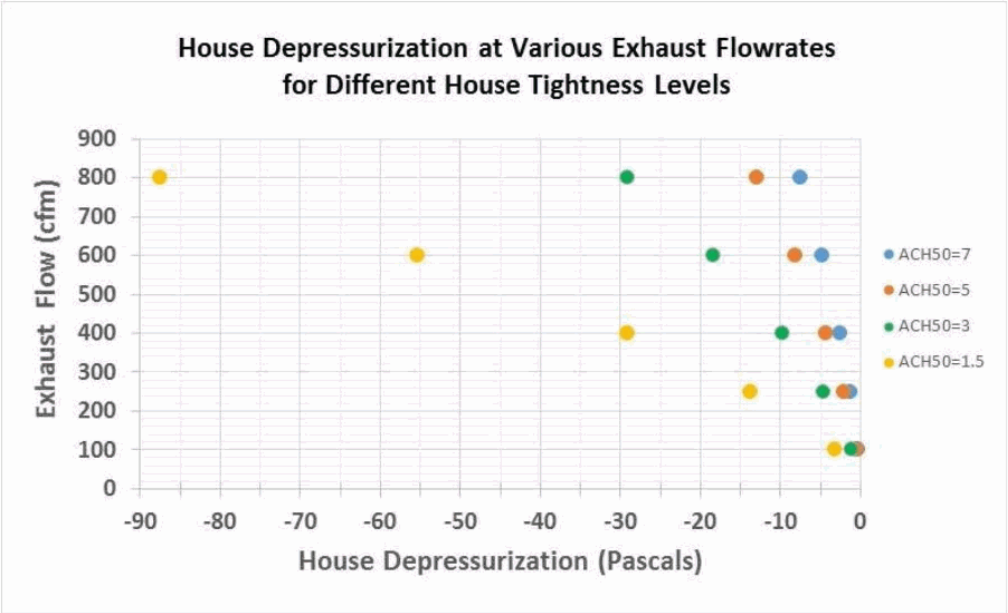

Figure above based on flow coefficient (C) calculated based upon assumed flow exponent =0.63, and specified house tightness (ACH50); C. Withers.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_6937_Rationale_Kitchen Exhaust Mod Rationale Image_1.png

M7020

Date Submitted	1/1/2016	**Section**	1506.2	**Proponent**	Cheryl Harris
Chapter	15	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

Summary of Modification

Modifies wording on sizing of duct used for ventilating equipment that allows for designer's choice of sizing method in accordance with recognized standards

Rationale

Modifies wording on sizing of duct used for ventilating equipment that allows for designer's choice of sizing method in accordance with recognized standards.

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

Cost impact is unknown as it depends on the designer and project needs. Cost could decrease if designer has more flexibility in sizing.

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

Sizing choice for ductwork does not impact the general public as sizing must still comply with known sizing standards.

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

Improves the code by allowing equivalent methods or systems of construction.

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

The modification does not require proprietary materials, products, methods, or systems of construction.

Does not degrade the effectiveness of the code

The modification does not degrade the effectiveness of the code as duct sizing must still comply with referenced standards.

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

RM1506.2 Duct length. The length of exhaust and supply

ducts used with ventilating equipment ~~shall not exceed the~~

~~lengths determined~~ shall be sized in accordance with Table M1506.2, or in accordance with ACCA Manual D or other approved methods.

Exception: Duct length shall not be limited where the duct system complies with the manufacturer's design criteria or where the flow rate of the installed ventilating equipment is verified by the installer or approved third party using a flow hood, flow grid or other airflow measuring device.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_7020_TextOfModification_1.png

Date Submitted	12/21/2015	**Section**	1602.3	**Proponent**	Jeff Sonne / FSEC
Chapter	16	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Pending Review
Commission Action Pending Review

Related Modifications

6750

Summary of Modification

Balanced return air requirement and exceptions.

Rationale

Restricted return air affects building pressures and increases air infiltration which in turn increases energy use and can cause comfort, building durability, and health and safety issues. This modification reduces restricted return air and these related issues.

Supporting publication:

Cummings, J., C. Withers, "Balanced Return Air, Duct Airtightness, and Combustion/Dilution Air Code Compliance in 40 Central Florida Homes" Florida Solar Energy Center, FSEC-CR-1789-06, Nov. 29, 2006. (http://www.fsec.ucf.edu/en/publications/pdf/FSEC-CR-1789-06.pdf)

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Some additional effort to verify compliance. Proposed language is in the 2014 Florida Building Code.

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

Some additional cost in some cases. Proposed language is in the 2014 Florida Building Code.

Impact to industry relative to the cost of compliance with code

Cost is justified since restricted return air affects building pressures and increases air infiltration which in turn increases energy use and can cause comfort, building durability, and health and safety issues. Proposed language is in the 2014 Florida Building Code.

Requirements

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

Yes. Restricted return air affects building pressures and increases air infiltration which in turn increases energy use and can cause comfort, building durability, and health and safety issues. Proposed language is in the 2014 Florida Building Code.

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

Yes. Restricted return air affects building pressures and increases air infiltration which in turn increases energy use and can cause comfort, building durability, and health and safety issues. Proposed language is in the 2014 Florida Building Code.

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

No. Proposed language is in the 2014 Florida Building Code.

Does not degrade the effectiveness of the code

Increases code effectiveness. Proposed language is in the 2014 Florida Building Code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

[Yes.] Florida is largely a ducted HVAC system state and this affects us as much or more than other states. It is important for Florida to keep its balanced return air requirement for the reasons provided above; allowing the requirement to lapse until it is included in the IMC or IRC would be confusing, potentially cause safety and health issues, provide poorer energy performance and is not in the interest of the state.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

M1602.3 Balanced Return Air. Restricted return air occurs in buildings when returns are located in central zones and closed interior doors impede air flow to the return grill or when ceiling spaces are used as return plenums and fire walls restrict air movement from one portion of the return plenum to another. Provisions shall be made in both residential and commercial buildings to avoid unbalanced air flows and pressure differentials caused by restricted return air. Pressure differentials across closed doors where returns are centrally located shall be limited to 0.01 inch WC (2.5 pascals) or less. Pressure differentials across fire walls in ceiling space plenums shall be limited to 0.01 inch WC (2.5 pascals) by providing air duct pathways or air transfer pathways from the high pressure zone to the low zone.

Exceptions:

1. Transfer ducts may achieve this by increasing the return transfer 1½ times the cross sectional area (square inches) of the supply duct entering the room or space it is serving and the door having at least an unrestricted 1 inch undercut to achieve proper return air balance.

2. Transfer grilles shall use 50 square inches (of grille area) to 100 cfm (of supply air) for sizing through-the-wall transfer grilles and using an unrestricted 1 inch undercutting of doors to achieve proper return ar balance.

3. Habitable rooms only shall be required to meet these requirements for proper balanced return air excluding bathrooms, closets, storage rooms and laundry rooms, except that all supply air into the master suite shall be included.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_6748_TextOfModification_1.png

Proposed Code Modifications
USER: Joe Bigelow, Department of Business & Professional Regulation, DBPR Personnel

Proposed Code Modifications Menu > Modification Search > Modification List > **Modification Detail**

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Modification #	M7017
Name	Cheryl Harris
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Modification Status	Verified
More Information Requested View Request History	
TAC	Mechanical
TAC Recommendation	Pending Review
Commission Action	Pending Review
Archived	No

Code Version	2017
Code Change Cycle	2017 Triennial Original Modification 07/01/2015 - 01/03/2016
Sub Code	Residential
Chapter & Topic	Chapter 15 - Exhaust Systems
Section	1502.4.1
Related Modifications	
Affects High Velocity Hurricane Zone (HVHZ)	No

Summary of Modification

Corrects description of 0.0157 inches (0.3950 mm) thickness to Galvanized Metal Duct Gauge.

Text of Modification

M1502.4.1 Material and size. Exhaust ducts shall have a smooth interior finish and be constructed of metal having a

minimum thickness of 0.0157 inches ~~(0.3950 mm) (No. 28 gage)~~. The duct shall be 4 inches (102 mm) nominal in diameter.

Date	Attached File
01/19/2016	Mod_7017_TextOfModification.pdf

Rationale

The thickness listed is for 30 Gauge galvanized duct not 28. Referenced Gauge 28 is not needed and confusing.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code (553.73(9)(b),F.S.)

Eliminates incorrect wording. No cost impact.

Impact to building and property owners relative to cost of compliance with code (553.73(9)(b),F.S.)

No cost impact.

Impact to industry relative to the cost of compliance with code (553.73(9)(b),F.S.)

No cost impact except to eliminate possible code violations for noncompliance.

Impact to small business relative to the cost of compliance with code (553.73(9)(b),F.S.)

No cost impact.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public (553.73(9)(a)2,F.S.)

Corrects numerical error. No other impact.

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

construction (553.73(9)(a)3,F.S.)

Corrects numerical error. No other impact.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities (553.73(9)(a)4,F.S.)

Corrects numerical error. No other impact.

Does not degrade the effectiveness of the code (553.73(9)(a)5,F.S.)

Corrects numerical error. No other impact.

Is the proposed code modification part of a prior code version?

No

1. The provisions contained in the proposed amendment are addressed in the applicable international code? (553.73(7)(g),F.S.)

No

2. The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state. (553.73(7)(g),F.S.)

No

3. The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process. (553.73(7)(g),F.S.)

No

History

Date Submitted	01/01/2016
Date Verified	01/04/2016
Date TAC Recommendation Set	01/01/2016
Date Commission Action Set	01/01/2016
DBPR Staff Notes	

Record of Modification

Mod #	Stage	Date Submitted	Submitted By	Code Change Cycle	Status
M7017-A1	Alternate Language	02/24/2016	Joseph Belcher	2017 Triennial First Comment Period 01/11/2016 -	VERIFY

				02/25/2016	

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Proposed Code Modifications
USER: Joe Bigelow, Department of Business & Professional Regulation, DBPR Personnel

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Alternate Language #	M7017-A1
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Alternate Language Status: Verified

More Information Requested:

Code Change Cycle: 2017 Triennial First Comment Period 01/11/2016 - 02/25/2016

Text of Modification

M1502.4.1 Material and size. Exhaust ducts shall have a smooth interior finish and be constructed of metal having a minimum thickness of 0.0157 inches ~~(0.3950 mm) (No. 28 gage)~~. The duct shall be 4 inches (102 mm) nominal in diameter.

Exception: Exhaust ducts may be 4 inches nominal in diameter Schedule 40 PVC when horizontally run beneath the slab.

Date	Attached File
02/29/2016	Mod_7017_A1_TextOfModification.pdf

Rationale

The PVC dryer exhaust duct run horizontally beneath the slab has been the standard practice in the northwest part of the state for many years for thousands of houses with no reported problems. The proposal recognizes a viable method of providing dryer exhaust without requiring penetration of the roof. In the unlikely event of a fire within the duct, the fire would be contained and prevented from entering the attic space or the building space. Duct cleaning is more easily accomplished with the system and the smoothness of the PVC resists lint build-up.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code (553.73(9)(b),F.S.)

None.

Impact to building and property owners relative to cost of compliance with code (553.73(9)(b),F.S.)

None.

Impact to industry relative to the cost of compliance with code (553.73(9)(b),F.S.)

None.

None.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public (553.73(9)(a)2,F.S.)

Improves public health, safety, and welfare by recognizing and providing a time tested and proven viable alternate to metal exhaust pipe penetrating the roof of structure.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction (553.73(9)(a)3,F.S.)

Strengthens and improves the code by recognizing and providing a time tested and proven viable alternate to metal exhaust pipe penetrating the roof of structure.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities (553.73(9)(a)4,F.S.)

Does not discriminate against materials, but provides for the use of an alternate material and method.

Does not degrade the effectiveness of the code (553.73(9)(a)5,F.S.)

Improves the effectiveness of the code by recognizing and providing a time tested and proven viable alternate to metal exhaust pipe penetrating the roof of structure.

Is the proposed code modification part of a prior code version?

No

History

Date Submitted	02/24/2016
Date Verified	02/24/2016

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