

## **Declaratory Statement Request DS2016-100**

**Issue:** The Petitioner seeks clarification in regard to use of dehumidifier units and the ability to dehumidify air taken from bathrooms and closets, which is in conflict with Residential Code M1602.2 Prohibited Sources.

### **Background:**

DS 2016-100. The Petitioner, Vince Veccharella, WCI Communities INC seeks clarification with the Florida Building Code in regard to use of dehumidifier units and the ability to dehumidify air taken from bathrooms and closets. Projects or subdivisions consist of already completed homes, homes under construction, and preconstruction. Heron Bay subdivision with more than 300 homes in different stages of construction, and Parkland Bay subdivision with 522 homes in preconstruction. Both subdivisions area located in Broward County, Florida.

The Petitioner is in the process of designing and installing a Supplemental Dehumidification System in some of these homes. To achieve the most efficient and effective system possible the Petitioner has engaged a number of experts that have been measuring and recording temperatures, moisture levels, pressures and airflows. The result from these studies show that to achieve the desired goals the most effective method is to install a Dedicated Dehumidifier operating independently of the Central Air Conditioning System along with other measures that include attic venting strategies. There are two different applications being proposed: 1. Installation of the Dehumidification System in New Homes not yet started or already under construction. 2. Installation of the Dehumidification System in Existing Homes already finished and now occupied.

The Petitioner believes that the Florida Residential Code in describing “**Return Air**” and in listing the Prohibited Sources is referring to those having to do with a **Central Air Conditioning and/or Heating System** with a large volume of airflow but do not apply to an independent Dehumidification System which uses very small airflow volume to treat the air.

### **Questions:**

#### **For New homes or homes under construction:**

1. In New Residential dwellings, can a dedicated, independent Dehumidifier draw or transfer air from a Closet to be filtered, dehumidified and introduced back into the house?
2. Likewise, can a dedicated, independent Dehumidifier draw or transfer air from a Bathroom, provided that the bathroom contains an enclosed toilet area and the air is being drawn from outside the toilet area. The air to be filtered, dehumidified and introduced back into the house?

3. Likewise, can a dedicated, independent Dehumidifier draw or transfer air from a Bathroom that includes a toilet, to be filtered, dehumidified and introduced back into the house?

**For Existing occupied homes:**

4. In Existing Residential dwellings, can a dedicated, independent Dehumidifier draw or transfer air from a Closet to be filtered, dehumidified and introduced back into the house?

5. Likewise, can a dedicated, independent Dehumidifier draw or transfer air from a Bathroom, provided that the bathroom contains an enclosed toilet area and the air is being drawn from outside the toilet area. The air to be filtered, dehumidified and introduced back into the house?

6. Likewise, can a dedicated, independent Dehumidifier draw or transfer air from a Bathroom that includes a toilet, to be filtered, dehumidified and introduced back into the house?

**REFERENCES:**

**5<sup>th</sup> Edition (2014) Florida Building Code, Residential  
SECTION M1602 RETURN AIR**

**M1602.1 Return air.**

Return air shall be taken from inside the dwelling. Dilution of return air with outdoor air shall be permitted.

**M1602.2 Prohibited sources.**

Outdoor and return air for a forced-air heating or cooling system shall not be taken from the following locations:

**1.** Closer than 10 feet (3048 mm) to an appliance vent outlet, a vent opening from a plumbing drainage system or the discharge outlet of an exhaust fan, unless the outlet is 3 feet (914 mm) above the outside air inlet.

**2.** Where flammable vapors are present; or where located less than 10 feet (3048 mm) above the surface of any abutting public way or driveway; or where located at grade level by a sidewalk, street, alley or driveway.

**3.** A room or space, the volume of which is less than 25 percent of the entire volume served by the system. Where connected by a permanent opening having an area sized in accordance with

ACCA Manual D, adjoining rooms or spaces shall be considered as a single room or space for the purpose of determining the volume of the rooms or spaces.

**Exception:** The minimum volume requirement shall not apply where the amount of return air taken from a room or space is less than or equal to the amount of supply air delivered to the room or space.

4. A closet, bathroom, toilet room, kitchen, garage, boiler room, furnace room, unconditioned attic or other dwelling unit.

**Exception:** Dedicated forced-air systems serving only a garage shall not be prohibited from obtaining return air from the garage.

5. A room or space containing a fuel-burning appliance where such room or space serves as the sole source of return air.

**Exceptions:**

1. The fuel-burning appliance is a direct-vent appliance or an appliance not requiring a vent in accordance with Section M1801.1 or Chapter 24.

2. The room or space complies with the following requirements:

2.1. The return air shall be taken from a room or space having a volume exceeding 1 cubic foot for each 10 Btu/h (9.6 L/W) of combined input rating of all fuel-burning appliances therein.

2.2. The volume of supply air discharged back into the same space shall be approximately equal to the volume of return air taken from the space.

2.3. Return-air inlets shall not be located within 10 feet (3048 mm) of a draft hood in the same room or space or the combustion chamber of any atmospheric-burner appliance in the same room or space.

3. Rooms or spaces containing solid-fuel burning appliances, if return-air inlets are located not less than 10 feet (3048 mm) from the firebox of those appliances.

6. An unconditioned crawl space by means of direct connection to the return side of a forced air system. Transfer openings in the crawl space enclosure shall not be prohibited.

**5<sup>th</sup> Edition (2014) Florida Building Code, Building**

[A] 104.11 **Alternative materials, design and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material, design or

method of construction shall be *approved* where the *building official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, *fire resistance*, durability and safety.

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## **5<sup>th</sup> Edition (2014) Florida Building Code, Residential**

### **M1602.4 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 1 1/2 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 (25 mm) undercut to achieve proper return air balance.
2. Transfer grilles shall use 50 square inches (32 258 mm<sup>2</sup>) (of grille area) to 100 cfm (of supply air) for sizing through-the-wall transfer grilles and using an unrestricted 1-inch (25 mm) 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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## **5<sup>th</sup> Edition (2014) Florida Building Code, Residential**

### **SECTION M1507 MECHANICAL VENTILATION**

#### M1507.1 General.

Where local exhaust or whole-house mechanical ventilation is provided, the equipment shall be designed in accordance with this section.

#### M1507.2 Recirculation of air.

Exhaust air from bathrooms and toilet rooms shall not be recirculated within a residence or to another dwelling unit and shall be exhausted directly to the outdoors. Exhaust air from

bathrooms and toilet rooms shall not discharge into an attic, crawl space or other areas inside the building.

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**R403.5 Mechanical ventilation (Mandatory).**

The building shall be provided with ventilation that meets the requirements of the *Florida Building Code, Residential* or *Florida Building Code, Mechanical*, as applicable, or with other approved means of ventilation. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.

**R403.5.1 Whole-house mechanical ventilation system fan efficacy.**

Mechanical ventilation system fans shall meet the efficacy requirements of Table R403.5.1.

**Exception:** Where mechanical ventilation fans are integral to tested and listed HVAC equipment, they shall be powered by an electronically commutated motor.

**TABLE R403.5.1 MECHANICAL VENTILATION SYSTEM FAN EFFICACY**

FAN LOCATION	AIR FLOW RATE MINIMUM (CFM)	MINIMUM EFFICACY (CFM/WATT)	AIR FLOW RATE MAXIMUM (CFM)
Range hoods	Any	2.8 cfm/watt	Any
In-line fan	Any	2.8 cfm/watt	Any
Bathroom, utility room	10	1.4 cfm/watt	< 90
Bathroom, utility room	90	2.8 cfm/watt	Any

For SI: 1 cfm = 28.3 L/min.

**R403.5.2 Ventilation air.**

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

1. The design air change per hour minimums for residential buildings in ASHRAE 62, *Ventilation for Acceptable Indoor Air Quality*, shall be the maximum rates allowed for residential applications.
2. No ventilation or air-conditioning system make-up air shall be provided to conditioned space from attics, crawlspaces, attached enclosed garages or outdoor spaces adjacent to swimming pools or spas.
3. If ventilation air is drawn from enclosed space(s), then the walls of the space(s) from which air is drawn shall be insulated to a minimum of R-11 and the ceiling shall be insulated to a minimum of R-19, space permitting, or R-10 otherwise.

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### **Staff Analysis:**

#### **Questions concerning new homes or homes under construction:**

**Question #1: In New Residential dwellings, can a dedicated, independent Dehumidifier draw or transfer air from a Closet to be filtered, dehumidified and introduced back into the house?**

**Answer:**

**Option #1/Petitioner:** See Petitioner's answer as noted below.

**Option #2/Staff:** The proposed dehumidification system is a proposed alternative to the prescribed requirements of Section M1602.2 (4) and M1597.2. As per Section 104.11 of the 5<sup>th</sup> Edition (2014) Florida Building Code, Building, an alternative method of construction to that prescribed in the FBC is subject to review and approval by the local building official, when the such alternative is substantiated to be equivalent of that prescribed in the FBC in quality, strength, effectiveness, durability and safety.

**Question #2: Likewise, can a dedicated, independent Dehumidifier draw or transfer air from a Bathroom, provided that the bathroom contains an enclosed toilet area and the air is being drawn from outside the toilet area. The air to be filtered, dehumidified and introduced back into the house?**

**Answer:** See answer to Question #1.

**Question #3: Likewise, can a dedicated, independent Dehumidifier draw or transfer air from a Bathroom that includes a toilet, to be filtered, dehumidified and introduced back into the house?**

**Answer:** See answer to Question #1.

#### **Questions, concerning Existing occupied homes:**

**Question #4: In Existing Residential dwellings, can a dedicated, independent Dehumidifier draw or transfer air from a Closet to be filtered, dehumidified and introduced back into the house?**

**Answer:** See answer to Question #1.

**Question #5: Likewise, can a dedicated, independent Dehumidifier draw or transfer air from a Bathroom, provided that the bathroom contains an enclosed**

**toilet area and the air is being drawn from outside the toilet area. The air to be filtered dehumidified and introduced back into the house?**

**Answer:** See answer to Question #1.

**Question #6: Likewise, can a dedicated, independent Dehumidifier draw or transfer air from a Bathroom that includes a toilet, to be filtered, dehumidified and introduced back into the house?**

**Answer:** See answer to Question #1.

**Petitioner's proposed answer:**

The Petitioner respectfully believes that the answer to all of the above questions is **YES**. It is the petitioner's desire that the Florida Building Commission expresses, through the vehicle of a Declaratory Statement, that Residential Dehumidification Systems, independent of the AC or Heating System, are able to draw small amount of air from bathrooms and closets where the biggest occupant concern is to control high humidity and avoid potential mold growth which can affect their health and cause property damage.