

## Regional Codes Coordinating Committee

### Position Paper

#### 2015 International Green Construction Code Guidelines

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The North Central Texas Council of Governments (NCTCOG) and the Regional Codes Coordinating Committee (RCCC) encourage member jurisdictions to adopt the most recently published International family of codes. NCTCOG and the RCCC typically provide regional recommended amendments as a strategy to encourage regional consistency and to facilitate the code adoption process by member governments.

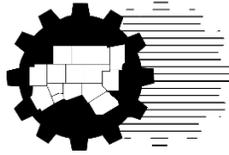
The RCCC's Energy and Green Advisory Board (EGAB) conducted an initial review of the 2015 Edition of the International Green Construction Code (IgCC). The EGAB is providing this position paper to supplement the 2015 IgCC Guidelines (presented on Page 2). The approach with the EGAB's review of the IgCC differs from the standard tri-annual review of the International family of codes and the National Electric Code. EGAB is providing the Guidelines as information for those jurisdictions that may have an interest in adopting the IgCC. However, the RCCC and EGAB strongly encourage local governments to carefully review the IgCC and consider the full impact of the adoption of the IgCC. There has not yet been a regional green code adopted or a regional recommendation and the EGAB IgCC Guidelines do not serve as regionally recommended code amendments at this time; nor is the RCCC or EGAB encouraging member jurisdictions to adopt the IgCC.

The following 2015 IgCC Guidelines are provided for those local governments considering adoption of the IgCC. The IgCC Guidelines are provide in the following format:

- Standard type is text from the IgCC. Underlined type is text inserted. ~~Lined through type is deleted text from IgCC.~~ A triple (\*\*\*) asterisk identifies an initial amendment with the 2015 code.

Additionally, the EGAB has provided extensive commentary regarding options and cautionary language for certain items to consider during the review and adoption process. The commentary will provide additional information that will enable the evaluation of potential impacts and will inform decisions based on the needs and desires for each community.

The RCCC has adopted this Position Paper and the 2015 IgCC Guidelines. Should a local government have specific questions regarding the adoption of the 2015 IgCC or questions about the 2015 IgCC Guidelines provided by the RCCC, please contact NCTCOG Environment and Development Department at 817-695-9210 or [eandd@nctcog.org](mailto:eandd@nctcog.org).



## 2015 International Green Construction Code Guidelines

Produced by the NCTCOG Regional Codes Coordinating Committee

Energy and Green Advisory Board

Published May 26, 2016

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**101.3 Scope.** The provisions of this code shall apply to the design, construction, addition, alteration, change of occupancy, relocation, replacement, repair, equipment, building site, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures and to the site on which the building is located. Occupancy classifications shall be determined in accordance with the *International Building Code*<sup>®</sup> (IBC<sup>®</sup>).

*(No amendments recommended. However, AHJs should consider the following points:*

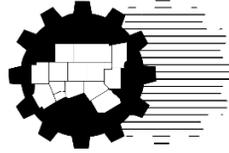
- *Section 101.3 scoping applies to all classes of work. AHJs could consider amending this section so that only new; or, new and additions; and/or include a building area threshold that would trigger compliance with IgCC code provisions.*
- *Additionally, it's important to note in section 101.3, exception #1 (items 1.1, 1.2 and 1.3) the code as published applies to commercial only unless the AHJ selects "YES" in the jurisdictional requirements of **Table 302.1, Chapter 1. Scope and Administration**, for residential buildings.)*

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**TABLE 302.1 REQUIREMENTS DETERMINED BY THE JURISDICTION**

302.1, 302.1.1, 602.1	zEPI of Jurisdictional Choice – The jurisdiction shall indicate a zEPI of 46 or less in each occupancy for which it intends to require enhanced energy performance.	Occupancy: _____ zEPI: _____
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*(No amendments recommended. However, AHJs should note that the selection of a zEPI index of 46 or less will trigger "above code energy enhancements." Triggering the "above code energy enhancements" will require compliance with Section 602.1; which then triggers SECTION 602 MODELED PERFORMANCE PATHWAY REQUIREMENTS, 608.6 Plug load controls, SECTION 609 SPECIFIC APPLIANCES AND EQUIPMENT, SECTION 610 BUILDING RENEWABLE ENERGY SYSTEMS, and SECTION 611 ENERGY SYSTEMS COMMISSIONING AND COMPLETION. Additionally the jurisdiction must select which building code occupancy classifications must comply with these requirements. The following types of buildings represent the most intensive energy use to least intensive energy use: restaurants, food stores, retail, offices, schools and warehouses.<sup>1)</sup>*



**\*\*\*TABLE 302.1 REQUIREMENTS DETERMINED BY THE JURISDICTION**

Amend Table 302.1 Exception 1.1 of 101.3 to read as follows:

<b>CHAPTER 1. SCOPE AND ADMINISTRATION</b>			
101.3 Exception 1.1	Detached one- and two-family dwellings and multiple single-family dwellings (town-houses) not more than three stories above grade plane with a separate means of egress, their accessory structures, and the site or lot upon which these buildings are located, shall comply with ICC 700-, <u>Dallas Builders Association's Green Built Texas™ or other approved programs.</u>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
101.3 Exception 1.2	Group R-3 residential buildings, their accessory structures, and the site or lot upon which these buildings are located.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
101.3 Exception 1.3	Group R-2 and R-4 residential buildings four stories or less in height above grade plane, their accessory structures, and the site or lot upon which these buildings are located.	<input type="checkbox"/> Yes	<input type="checkbox"/> No

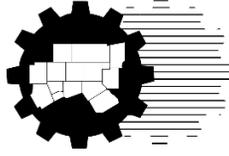
*(Reason: For 1- and 2-family dwelling this provides additional compliance options.)*

**\*\*\*TABLE 302.1 REQUIREMENTS DETERMINED BY THE JURISDICTION**

Amend Table 302.1 by adding the following row in the table immediately after CHAPTER 6. ENERGY CONSERVATION, EFFICIENCY AND CO<sub>2</sub>e EMISSION REDUCTION:

601 through 612 (Entire Chapter)	<b>CHAPTER 6. ENERGY CONSERVATION, EFFICIENCY AND CO<sub>2</sub>e EMISSION REDUCTION</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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*(Reason: This amendment allows a jurisdiction to choose to not adopt any energy requirements as part of the IgCC. However, if "Yes" is selected then note that there are additional amendments to these sections as an option to the code as published. Those options appear in Chapter 6.)*



**\*\*\*TABLE 302.1 REQUIREMENTS DETERMINED BY THE JURISDICTION**

Amend Table 302.1 by adding the following 3 rows:

603.6	Energy display	<input type="checkbox"/> Yes	<input type="checkbox"/> No
605.1.1.1	Permanent shading devices for fenestration	<input type="checkbox"/> Yes	<input type="checkbox"/> No
610.1	Renewable energy systems requirements	<input type="checkbox"/> Yes	<input type="checkbox"/> No

*(Reason: If a jurisdiction chooses to adopt Chapter 6. ENERGY CONSERVATION, EFFICIENCY AND CO<sub>2</sub>e EMISSION REDUCTION, then there are additional selections available in Chapter 6 to provide more options.)*

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**\*\*\*TABLE 302.1 REQUIREMENTS DETERMINED BY THE JURISDICTION**

Amend Table 302.1 by adding the following row:

808	Daylighting	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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*(Reason: This offers an additional choice to jurisdictions regarding the overall scope of the IgCC).*

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**\*\*\*TABLE 302.1 REQUIREMENTS DETERMINED BY THE JURISDICTION**

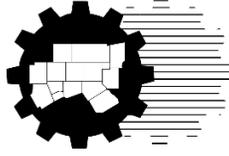
Amend Table 302.1 by adding the following two rows:

Chapter 10	Existing Buildings	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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Chapter 11	Existing Building Site Development	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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*(Reason: These two selections offer additional choices to jurisdictions regarding the overall scope of the IgCC).*

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**\*\*\*Delete SECTION 401.2 Predesign site inventory and assessment. in its entirety.**

*(Reason: These efforts are already generally accomplished by the owner/developer in various stages of the development process and would otherwise be redundant.)*

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## **SECTION 402 PRESERVATION OF NATURAL RESOURCES**

*(No amendments recommended for this section. However, this section may be redundant due to existing efforts and oversight such as FEMA, iSWM, U.S. Army Corps Wetland Regulations, TCEQ SWPPP and SWMPP regulations, municipal Parks and Recreation Departments, municipal planning efforts related to Greenfield sites, etc. and this section may impose a duplication of efforts. For this section to be triggered, Table 302.1 items 402.2.1, 402.2.2, 402.3, 402.7 and 402.8 must be answered yes.)*

## **SECTION 403 STORMWATER MANAGEMENT**

*(No amendments recommended for this section. However, AHJs may consider deleting this section as the requirements may be redundant due to existing regulations and oversight such as TCEQ, SWPPP and SWMPP regulations and this section may impose a duplication of efforts. AHJs should be mindful of the additional regulatory language regarding brownfields in Section 403.1.3 and coal tar sealants in Section 403.2.)*

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## **SECTION 404 LANDSCAPE IRRIGATION AND OUTDOOR FOUNTAINS**

*(No amendments recommended for this section. However, AHJs should note that there may be other regulations already in place for the installation and maintenance of irrigation systems and reclaimed water systems and this section may impose a duplication of efforts.)*

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## **SECTION 405 MANAGEMENT OF VEGETATION, SOILS AND EROSION CONTROL**

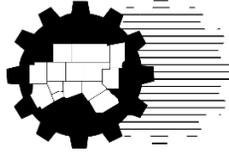
*(No amendments recommended for this section. However, AHJs should note that there may be other regulations and industry practices in place and this section may impose a duplication of efforts.)*

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**\*\*\*Delete SECTION 405.2.2 Invasive plant species in its entirety.**

*(Reason: To align with the deletion of section 406.1 Exception #3. The listing of invasive plant materials is very broad.)*

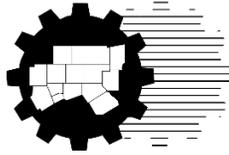
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**\*\*\*Amend SECTION 406.1 Building Site Waste Management to read as follows:**

**406.1 Building site waste management plan.** A building site waste management plan shall be developed and implemented to divert not less than ~~75~~ 50 percent of the land-clearing debris and excavated soils. Land-clearing debris includes rock, trees, stumps and associated vegetation. The plan shall include provisions that address all of the following: 1. Materials to be diverted from disposal by efficient usage, recycling or reuse on the building site shall be specified. 2. Diverted materials shall not be sent to sites that are agricultural land, *flood hazard areas* or *greenfield* sites where development is prohibited by Section 402.1 except where *approved* by the *code official*. ~~3. The effective destruction and disposal of *invasive plant species*.~~ ~~4~~3. Where contaminated soils are removed, the methods of removal and location where the soils are to be treated and disposed. ~~5~~4. The amount of materials to be diverted shall be specified and shall be calculated by weight or volume, but not both. ~~6~~5. Where the site is located in a federal or state designated quarantine zone for invasive insect species, building site vegetation management shall comply with the quarantine rules. ~~7~~6. Receipts or other documentation related to diversion shall be maintained through the course of construction. When requested by the *code official*, evidence of diversion shall be provided.

*(Reason: This amendment (50%) mirrors the City of Dallas' requirements. The reduced percentage will provide an opportunity for the industry to become proficient at the process of plan development, implementation and verification. The list of invasive plants located at [www.texasinvasives.org/ii101/ecoalert.php](http://www.texasinvasives.org/ii101/ecoalert.php) was not deemed to add sufficient value for the cost of inclusion in the waste management plan.)*



## **SECTION 409 SITE LIGHTING**

*(No amendments proposed for this section. However, AHJs should note that as written this is a relatively complex section and has the potential of significant added cost to a project. But for AHJs that do not have current regulations regarding glare and light spillover this may be a solution to consider.)*

As an alternative, an AHJ may consider the City of Dallas alternate approach to this section and amend the section in entirety as follows:

### **\*\*\*SECTION 409 SITE LIGHTING**

#### **409.1 Outdoor lighting restriction.**

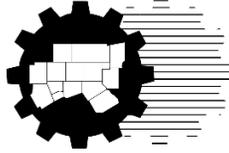
**409.1.1 Area of use.** For the lighting of predominately horizontal surfaces such as roadways, areas of vehicular and pedestrian passage, merchandising and storage areas, automotive fuel dispensing facilities, automotive sales areas, loading docks, cul-de-sacs, active and passive recreational areas, building entrances, sidewalks, paths, site entrances and parking areas, light fixtures must be aimed straight down and must be full cutoff or fully shielded, unless the aggregate wattage per fixture does not exceed the output of standard non-directional 60 watt incandescent lamp, i.e., 900 lumens, in which case non-cutoff fixtures are permitted.

**409.1. Maximum lamp wattage and required luminaire or lamp shielding.** All lighting installations must be designed and installed to be fully shielded (full cutoff). Maximum lamp wattage for commercial lighting is 250 watts. Maximum lamp wattage for residential lighting is 100 watts for incandescent bulbs, and 32 watts for compact fluorescent bulbs.

**Exception:** Lighting used for the following exterior applications is exempt where equipped with a control device independent of the control of the nonexempt lighting:

1. Luminaires for safety or security reasons.
2. Lighting for swimming pools and water features governed by the electrical code.
3. Exit signs and other illumination required by the codes.
4. Lighting for stairs and ramps as required by the codes.
5. Signs regulated by the *{insert correct language to sign ordinance}*, however all signs are recommended to be fully shielded.
6. Holiday and temporary lighting as governed by the electrical code.
7. Athletic field lighting if steps have been taken to minimize glare and light trespass.
8. Low voltage landscape lighting, but such lighting should be shielded to eliminate glare and light trespass.

*(Reason: Providing alternate language for consideration.)*



**\*\*\*Delete SECTION 505.3 WHOLE BUILDING LIFE CYCLE ASSESSMENT in its entirety.**

*(Reason: As published the WBLCA is not a mandatory code provision. There are 3 options, one of which is WBLCA. The authors of the commentary to the IgCC wrote "...because LCA can be an extremely complex issue with roots in scientific and technical areas that we are only beginning to understand, LCA was not ready for inclusion as a mandatory provision in the code. The authoring committee also expressed that LCA may be cost prohibitive. The EGAB feels that until LCA is better understood and more tools are available that even having this section as an option could pose unnecessary implementation and enforcement issues for adopting jurisdictions.)*

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**\*\*\*Amend SECTION 505.2 to read as follows:**

### **505.2 Material selection.**

Not less than ~~55~~30 percent of the total building materials used in the project, based on mass, volume or cost, shall comply with Section 505.2.1, 505.2.2, 505.2.3, 505.2.4 or 505.2.5. Where a material complies with more than one section, the material value shall be multiplied by the number of sections that it complies with. The value of total building material mass, volume or cost shall remain constant regardless of whether materials are tabulated in more than one section.

*(Reason: The lowered percentage will provide opportunity for municipalities and industry to become acclimated to the process and procedures required to satisfy these requirements.)*

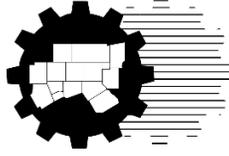
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**\*\*\*Amend CHAPTER 6. ENERGY CONSERVATION, EFFICIENCY AND CO<sub>2</sub>e EMISSION REDUCTION, Section 601.1 Scope. to read as follows:**

Section 601.1 Scope. Where this chapter is indicated to be applicable in Table 302.1, ~~the~~ provisions of this chapter regulate the design, construction, commissioning, and operation of buildings and their associated building sites for the effective use of energy.

*(Reason: To provide jurisdictions a choice regarding including or excluding energy provisions of the IgCC. If the selection is "No" then the jurisdiction is choosing to eliminate any energy requirements as part of the green code. If the selection is "Yes" then the jurisdiction is choosing to include energy provisions. Note that the additional amendments to Table 302.1 provide additional flexibility for the jurisdictions. See the amendments to 603.6, 605.1.1 and 610.1.)*

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**\*\*\*Add exception to SECTION 603.1.1 to read as follows:**

**603.1.1 Buildings with tenants.** In buildings with tenants, the metering required by Section 603.3 shall be collected for the entire building and for each tenant individually. Tenants shall have access to all data collected for their space.

**Exception:** Buildings in existence prior to the adoption of this code with existing electrical distribution systems are not required to modify the existing systems to meet this requirement.

*(Reason: It is not cost effective to rewire existing buildings)*

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**\*\*\*Amend SECTION 603.6 to read as follows:**

**603.6 Energy display.** Where this section is indicated to be applicable in Table 302.1, A<sub>a</sub> permanent, readily accessible and visible display shall be provided adjacent to the main building entrance or on a publicly available Internet web site. The display shall be capable of providing all of the following:

1. The current energy demand for the whole building level measurements, updated for each fuel type at the intervals specified in Section 603.3.
2. The average and peak demands for the previous day and the same day the previous year.
3. The total energy usage for the previous 18 months.

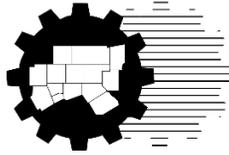
*(Reason: Not cost effective for small buildings. To offer this as an option that must be selected as jurisdictional requirement)*

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**\*\*\*Delete SECTION 605.1.1 Permanent shading devices for fenestration. in its entirety.**

*(Reason: An across the board 10% reduction in design criteria is not practical and not cost effective)*

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**\*\*\*Amend SECTION 605.1.1.1 to read as follows:**

**605.1.1.1 Permanent shading devices for fenestration.** Where this section is indicated to be applicable in Table 302.1, vertical fenestration within 45 degrees (785 rad) of the nearest west, south, and east cardinal ordinate shall be shaded by permanent horizontal exterior projections with a projection factor greater than or equal to 0.25. Where different windows or glass doors have different projection factor values, each shall be evaluated separately, or an area-weighted projection factor value shall be calculated and used for all windows and glass doors. Horizontal projections shall extend laterally beyond the edge of the glazing not less than one-half of the height of the glazing, except at building corners.

*{exceptions remain unchanged}*

*(Reason: To offer this as an option that must be selected as jurisdictional requirement)*

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**\*\*\*Delete SECTION 607.5 Waste water heat recovery system. in its entirety.**

*(Reason: Requirement is expensive and not yet fully developed in the industry)*

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**\*\*\*Delete SECTION 608.1.2 Time switch controls. and 608.8.1.3 Automatic daylight controls. in its entirety.**

*(Reason: This is better managed in the IECC by subject matter experts; redundant requirement if left in IgCC)*

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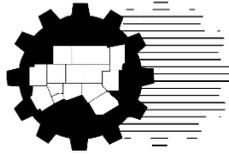
**\*\*\*Amend SECTION 608.4.1 to read as follows:**

**608.4.1 Exterior light reduction.** Exterior lighting shall be controlled by a time switch and that may be configured so that the total exterior lighting power is automatically reduced by not less than 30 percent within 2 hours after facility operations conclude.

*Exceptions remain unchanged.*

*(Reason: Turning lights down or off may create security issues)*

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**\*\*\*Amend SECTION 608.4.2 to read as follows:**

**608.4.2 Exterior lighting and signage shutoff.** The lighting of building facades, signage, and landscape features shall be controlled by a time switch control that may be configured so that the lighting automatically shuts off from within 1 hour after facility operations conclude until within 1 hour before facility operations begin or as established by the jurisdiction. Where facility operations are continuous, decorative lighting of building facades and landscape features shall automatically shut off from midnight until 6:00 a.m.

*(Reason: Turning lights down or off may create security issues)*

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**\*\*\*Amend SECTION 610.1 to read as follows:**

**610.1 Renewable energy systems requirements.** Where this section is indicated to be applicable in Table 302.1, Buildings that consume energy shall comply with this section. Each building or surrounding lot or building site where there are multiple buildings on the building site shall be equipped with one or more renewable energy systems in accordance with this section. *{remainder of section unchanged}*

*(Reason: To offer this as an option that must be selected as jurisdictional requirement)*

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**\*\*\*Delete SECTION 702.2 Combination tub and shower valves. in its entirety.**

*(Reason: Testing and field verification of the code requirements are very difficult if not impossible to reasonably achieve.)*

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**\*\*\*Section Delete SECTION 702.6 Appliances. in its entirety.**

*(Reason: Appliances are not permanently fixed in place and are easily changed out.)*

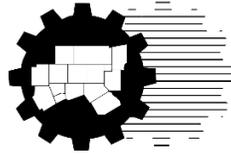
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**\*\*\*Amend SECTION 701.2 Water usage metering. to read as follows:**

**701.2 Water usage metering.** Water consumed from any source associated with the building or building site ~~shall~~ may be metered. Each potable and reclaimed source of water, and each onsite nonpotable water source, ~~shall~~ may be metered separately. *{Remainder of section unchanged->}*

*(Reason: Provides design options.)*

---



**\*\*\*Amend SECTION 701.2.1 Individual metering required. to read as follows:**

**701.2.1 Individual metering required.** All potable and nonpotable water supplied to the applications listed in Table 701.2.1 shall may be individually metered in accordance with the requirements indicated in Table 701.2.1. Similar appliances and equipment shall be permitted to be grouped and supplied from piping connected to a single meter. {Exception remains unchanged}

*(Reason: Provides design options.)*

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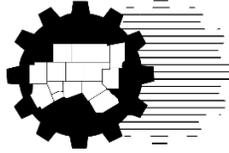
**\*\*\*Delete TABLE 804.2 MAXIMUM CONCENTRATION OF AIR POLLUTANTS and replace with the following:**

**TABLE 804.2 MAXIMUM CONCENTRATION OF AIR POLLUTANTS**

<b>MAXIMUM CONCENTRATION OF ARI POLLUTANTS RELEVANT TO IAQ</b>	<b>MAXIMUM CONCENTRATION, <math>\mu\text{g}/\text{m}^3</math> (unless otherwise noted)</b>
Carbon Monoxide (CO)	9 ppm and no greater than 2 ppm above outdoor levels
Carbon Dioxide (CO <sub>2</sub> )	1,000 ppm
Particulate (PM 10)	150 (24-hr)
Total volatile organic compounds (TVOC)	500

*(Reason: The list of individual VOCs in the existing table was developed as a research project for a chamber test for materials qualification. It is not easily applicable to a building field IAQ test. Application of the existing table may extend building construction schedule by several weeks. The tests in the replacement table can be done with hand held, real time instrument, and provide an effective, less expensive IAQ qualification test for the building. It can verify the installation of many of the IgCC code required elements. The specific tests included are:*

- 1. Carbon Monoxide – This test is a life safety issue and checks on the presence of combustion products from fuel burning equipment and other sources.*
- 2. Carbon Dioxide – This test helps to verify the installation and adjustment of outside air ventilation systems. Providing outside air to enclosed buildings is a code requirement, so this test indicates code compliance.*
- 3. Particulates – The IgCC requires the use of high efficiency filters. This test verifies the building particulate level and thus, existence of filtration and the cleanness of the building.*
- 4. TVOC – The TVOC test instrument includes the sensing of the majority of the VOCs on the original list but does not provide individual chemical levels. The existence of a high level of VOCs in the building space can cause health problems for the occupants. This test provides a summary number of many existing VOCs that has been accepted as a safe level for occupancy.)*



**\*\*\*Amend SECTION 808.1 General. To read as follows:**

**808.1 General.** Where this section is indicated to be applicable in Table 302.1, Fenestration shall be provided in building roof and walls...*{Remainder of section to remain the same}*.

*(Reason: To offer this as an option that must be selected as jurisdictional requirement)*

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**\*\*\*Amend SECTION 1001.1 Scope. to read as follows:**

**1001.1 Scope.** Where this section is indicated to be applicable in Table 302.1, ~~T~~the provisions of this chapter shall control the ...*{Remainder of section to remain the same}*.

*(Reason: To offer this Chapter as an option that must be selected as jurisdictional requirement)*

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**\*\*\*Amend SECTION 1101.1 Scope. to read as follows:**

**1101.1 Scope.** Where this section is indicated to be applicable in Table 302.1, ~~T~~the provisions of this chapter shall control the ...*{Remainder of section to remain the same}*.

*(Reason: To offer this Chapter as an option that must be selected as jurisdictional requirement)*

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## **REFERENCES**

***<sup>1</sup>Rethinking Percent Savings-The Problem with Percent Savings and zEPI: The New Scale for a Net Zero Energy Future, ML-11-029, AHSRAE Transactions***