

# Bulletin

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**Sustainability Issue**



# Highlights of the D.C. Green Construction Code

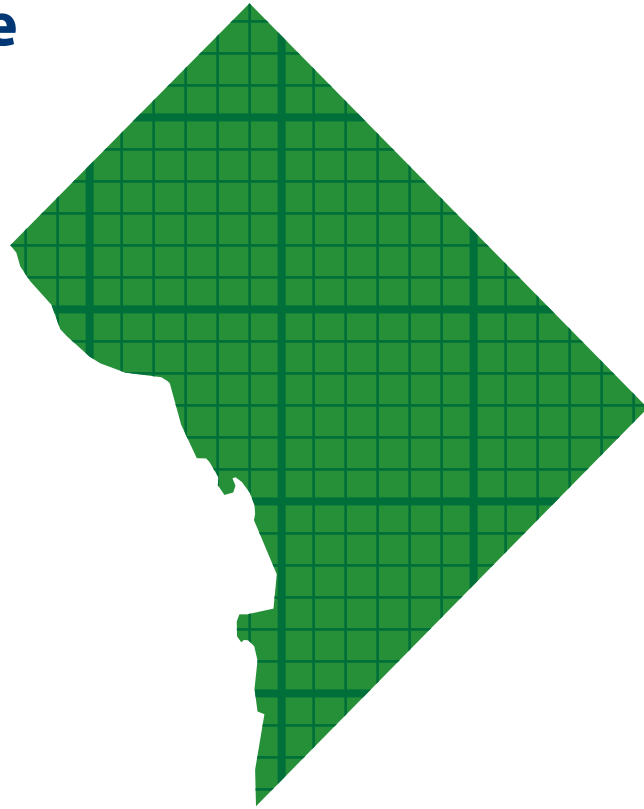
by Patrick A. Kunze, P.E.

The District of Columbia is nearing the end of its process to adopt a green construction code. I hope that you took advantage of the opportunity to comment on the proposed rulemaking. The effort has been led by the Department of Consumer and Regulatory Affairs' (DCRA) Construction Codes Coordinating Board (CCCB) Green Technical Advisory Group (TAG) subcommittee. The Green TAG, of which I was a voting member, was composed of individuals from the public and private sectors representing all types of stakeholders in the construction industry, including architects, engineers, contractors, District Department of the Environment (DDOE) officials, DCRA officials and trade association members.

The Green TAG met weekly over a period of six months to review and propose amendments to the 2012 International Green Construction Code (IgCC). Similar to other International Code Council (ICC) codes adopted by the District of Columbia in the past, the green code will be modified specifically to form the District of Columbia Green Construction Code (DCGCC). Simultaneously, the various other code TAGs were hard at work making modifications to the entire suite of 2012 ICC codes for concurrent adoption by the District. After public comments on all disciplines are reviewed and addressed by the Green TAG, the final code language will be recommended to the CCCB for adoption later in the spring.

In advance of that event, I wanted to provide insight into a few topics of the proposed green code that have sparked the most comment at public information sessions. Please consider that this article reflects known information at the time of publication. This article is by no means an exhaustive analysis and the information is subject to change. If adopted, this will be the first green construction code for the District of Columbia. It will also be based on the first edition of the IgCC. Unlike other ICC codes which have been around for many years and have had a gradual progression over time, the 2012 IgCC is the first edition and was adopted from the ANSI/ASHRAE/IESNA/USGBC Standard 189.1-2010.

The purpose of the DCGCC is to implement many of the strategies that people have gained familiarity with through the U.S. Green Building Council's LEED program into enforceable code language. On a personal note, acknowledging no code is perfect, I believe the DCGCC has been well-vetted and that the intent of the model code and ASHRAE 189.1 was preserved while many of the overly burdensome requirements were removed or lightened.

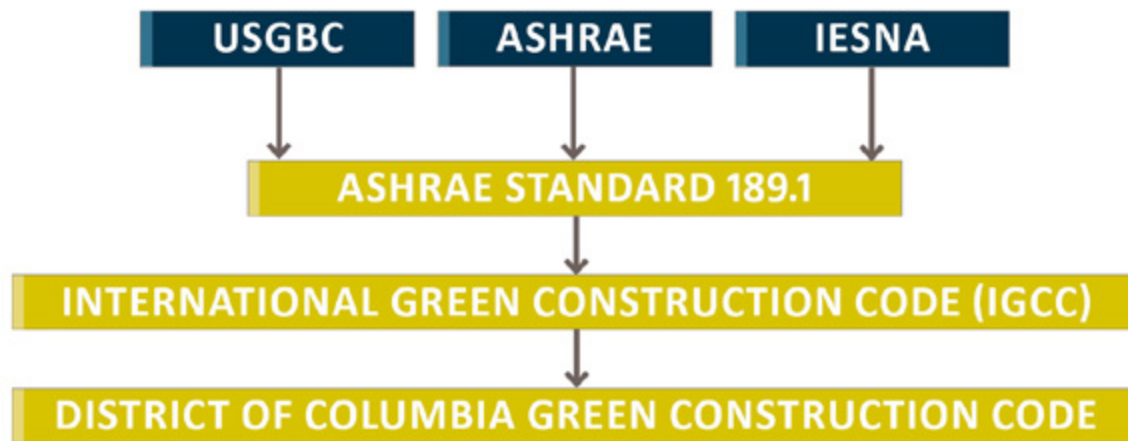


## The Fundamentals

- The DCGCC will apply to all projects 10,000 SF and larger that are classified as either New Construction or a Level 3 Alteration as defined by the Existing Building Code.
- At this time, the DCGCC does not apply specifically to small tenant fit-out projects. Though these types of projects make up a large volume of work in the District, the CCCB decided to use the New Construction and Level 3 Alteration threshold as those is clearly defined in the existing building code.
- There are four additional compliance paths if you elect not to follow the DCGCC: the DC Green Building Act of 2006 and amendments; LEED certification; Enterprise Green Communities for residential projects, or ASHRAE 189.1.
- In addition to the primary code language, Appendix A contains options for project electives. Projects must achieve 15 electives for New Construction and 13 for Level 3 Alterations. There are more than 75 potential options in Appendix A. Appendix A applies only to the DCGCC and not to ASHRAE 189.1 or other compliance paths.
- Certain commissioning documentation is required for the final inspection.

Overall, the proposed code is intended to codify the best green building practices that are already being used by leading building professionals in the District. Most language encompasses the processes you likely follow as a matter of course.





## Vegetation, Soils and Erosion Control

- Containment and removal of invasive plant species will be required
- 75% of land-clearing debris and excavated soil must be diverted

For requirements in this domain, thorough planning and documentation is critical for success. Develop a plan for planting, and make sure the area is clear of debris before you excavate so there is no rubble. Leave 6" of topsoil for planting.

## Materials and Resources

- 50% of construction waste (volume or weight) must be diverted. This is typically required in contract specs, and should be fairly easy to achieve. Many contractors are achieving 75% on a regular basis
- 40% of materials must be:
  - Used,
  - Recycled,
  - Recyclable,
  - Bio-based, OR
  - Regional

Note that materials that have more than one of these features can be counted multiple times towards the 40% – i.e. if a material is used, recyclable and regional, its value is tripled. Like in LEED, the calculation is based on cost in the amended DCGCC.

## Energy

First off, there are a handful of energy requirements that will apply to all buildings covered by the DCGCC.

- Elevators and escalators have efficiency and control requirements to reduce energy consumption.
- At least 50% of Energy Star eligible food service equipment shall be Energy Star rated.

- Energy metering and distribution requirements:
  - Energy must be metered by source type (e.g.: electricity, natural gas, district steam, etc.)
  - Energy must be distributed by use type (HVAC, lighting, plug loads, process loads, and miscellaneous). If not distributed separately, the various uses must be submetered for monitoring purposes.
  - Projects over 50,000 SF must have meters capable of metering each use type in the building.
  - Projects that utilize a Building Management System must have the capability to utilize Auto Demand Response in which HVAC power is reduced by 10% of the design load upon a signal from the utility company that peak power consumption is in effect. This is not mandate the use of Auto-DR, just that it is available for use.

Next, there are two primary compliance paths under the energy section of the Green Code: Prescriptive and Performance. The prescriptive path is a simplified approach that may be best suited for projects of smaller scale. The performance path is envisioned for larger, more complex projects that do not want to be constrained by the prescriptive requirements and will document, through building energy modeling, that the designed building exceeds certain benchmarks. This is not unlike the energy code which currently offers a prescriptive path or an alternative performance path based on ASHAE 90.1 compliance.

### PRESCRIPTIVE PATH:

- In addition to specific insulation and mechanical efficiency requirements, new electrical controls are mandated to facilitate power conservation.
  - Occupancy sensors are required for interior lighting, time clocks are required for non-emergency exterior illumination, and daylight harvesting controls are required for interior lighting near the perimeter windows and under skylights.

#### PERFORMANCE PATH:

- In order to pursue the modeled performance pathway, a building energy model must be performed demonstrating a specific level of efficiency in terms of zEPI (Zero Energy Performance Index). Unlike the EUI used in ASHRAE 90.1 modeling, the zEPI allows buildings of different use types and different code years to be compared. Currently, the DCGCC requires a building to be designed to use approximately 90% of the source energy as a building designed to the performance requirements of ASHRAE 90.1-2010.

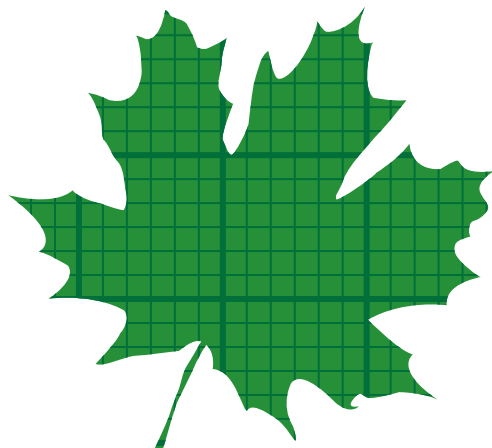
#### Water

The DCGCC sets maximum flow rates for standard plumbing fixtures. The flow rates are in line with current commercially-available products. The maximum flow rates in the District's new Plumbing Code have been aligned with the DCGCC. Additional water conservation measures found in the DCGCC include:

- Meters are required to measure water consumption based on a variety of uses outlined in the code.
- Efficiency and water saving requirements have been mandated for most common water treatment systems including water softeners and reverse osmosis systems.

#### What's Next?

After the Green TAG considers and incorporates public comments, they will present the final code language to the CCCB. The CCCB can accept, reject, or ask for clarifications on the proposed amendments to the model code. Following the CCCB's approval, the proposed new construction code will be sent to the District's City Council for a vote, which is expected to occur in May or June 2013. Monitor DCRA's web site for continued updates on the process. I hope that you find this article informative and I encourage everyone to become familiar with the DC Green Construction Code. This article represents the opinions and experience of the author and not necessarily those of the government of the District of Columbia. **B**



Patrick Kunze

#### About the author:

Patrick Kunze has impressive sustainable design credentials, having provided mechanical engineering design for 20+ projects that have achieved LEED certification. He has also worked directly with the US Green Building Council on their Platinum headquarters, the first project certified under Version 3.0, and contributed to the development of questions for the Green Building Certification Institute (GBCI) LEED AP exam. He provides design guidance to the Interiors team as Mechanical Section Head.

Patrick's project background includes commercial interiors, specialized multi-floor tenant spaces, mission critical computer and operations facilities, restaurants and food service projects, and historical renovations. A Professional Engineer registered in two states and the District of Columbia, as well as a LEED Accredited Professional, he earned a Master of Business Administration from George Mason University and a Bachelor of Science in Mechanical Engineering from Bucknell University. Patrick is an International Code Council (ICC) Certified Plans Examiner / Code Inspector and registered Peer Reviewer in Fairfax County, Virginia. He is a member of the USGBC National Capital Region Chapter, and sits on the Green Technical Advisory Group (TAG) subcommittee of Washington DC's Construction Codes Coordinating Board (CCCB). Patrick has the distinction of being the youngest person to be named Principal in GHT's history.

#### About GHT:

GHT is a leader in creating sustainable engineering solutions for base buildings and tenant spaces. We provide mechanical, electrical, and plumbing (MEP) engineering design, commissioning, building energy services, and real estate advisory services for new construction and renovations. Founded in 1965, we are one of the largest locally owned and headquartered MEP consultants in the Washington, DC metro area.

GHT's history includes serving as MEP engineers on celebrated places in Washington, DC – from storied classics such as the White House, Old Executive Office Building, and the Pentagon to new icons like 800 17th Street NW, the USGBC Headquarters, and Constitution Square. GHT has become a market leader through our continued focus on innovative design and reputation as a trusted advisor to the development community. We have proven our ability to bring our clients' visions to life during both prosperous and challenging economic cycles for nearly 50 years.