

# SUSTAINABILITY AND BUILDING CODES

Where are We Going and How Will We Get There?  
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# ALL WATCHED OVER BY MACHINES OF LOVING GRACE

by Richard Brautigan

I like to think (and  
the sooner the better!)  
of a cybernetic meadow  
where mammals and computers  
live together in mutually  
programming harmony  
like pure water  
touching clear sky.

Building Codes establish minimum levels of life-safety by prescribing design, materials and systems relative to construction, fire and egress.

The International Code Council (ICC) publishes, in addition to a building code, a mechanical code (IMC), an energy conservation code (IECC), and, most recently an International **green** Construction Code (**IgCC**).

The International **green** Construction Code was developed with partners AIA, the USGBC, the IES, ASHRAE, and ASTM, to incorporate different parameters of sustainability into a mandatory code that is flexible in certain of its contents, but enforceable in terms of traditional building code protocols like permits, inspections, and certificates of occupancy.

The stated purpose of the IgCC is to “reduce the negative impact of buildings on the natural environment...it is designed to drive green and sustainable building significantly beyond the market segment that has been transformed by voluntary rating systems.” IgCC is “consistent and coordinated with the ICC family of Codes and Standards: the I-Codes.”

The IgCC is “applicable to the construction of high performance commercial buildings, structures and systems, including existing buildings subject to alterations and additions, utilizing both traditional and innovative construction practices. It also applies to residential occupancies other than low-rise residential buildings that fall under the scope of the International Residential Code (IRC).”

## IgCC Chapters include:

- Site Development and Land Use
- Material Resource Conservation and Efficiency
- Energy Conservation Efficiency and Atmospheric Quality
- Water Resource Conservation and Efficiency
- Indoor Environmental Quality and Comfort
- Commissioning Operation and Maintenance
- Existing Building Site Development

In addition to the mandatory provisions each chapter contains “project electives”. The adopting jurisdiction establishes “jurisdictional electives” and a minimum number of “project electives” to be achieved as part of each permit submission. Like the categories of compliance reflected in the index, these “electives” bear some resemblance to the LEED system.

The IgCC is intended to function as an “overlay” code, relying on the other “I”-codes for base code compliance.

Enforcement will not require additional permits or fees. However requirements for commissioning and maintenance will extend the involvement of both designers and building officials.

When compliance with broad and measurable sustainability requirements becomes a minimum standard, concerns about liability are inevitable.

How do you ask for extra services when all you are doing is meeting the code?

Enforcement will also become significantly more complex. Building officials will be responsible for a range of enforcement items outside their current areas of responsibility, and some of these may be outside their job description or jurisdiction.

Adoption strategies have varied widely:

- RI has adopted for state-funded projects
- Keene, NH rewards compliance with incentives, including increased building height and expedited permitting.
- The Maryland Department of Housing and Community Development allows adoption of the IGCC by local governments in Maryland.

The learning curve in adopting a new code based on new dimensions of building and site construction and performance is significant, requiring:

- Phased implementation
- Training for designers and AHJ's
- A moratorium on violations and fines for non-compliance

The benefits will be significant:

- **According to a McKinsey study titled *Unlocking Energy Efficiency in the U.S.*, even if only the baseline requirements of the IECC were adopted in every state in the U.S. today, annual energy savings in 2020 would be approximately 130 trillion end-use BTUs, with cumulative savings through 2020 reaching 850 trillion end-use BTUs.**
- **If a 30 percent improved code were in adopted across the U.S. by 2012, which is available now through the IGCC and may be available in the next iteration of the IECC, 250 trillion end-user BTUs could be saved in 2020.**
- **Thus, adoption of the IGCC at minimum will save anywhere from 130 trillion end-use BTUs to 250 trillion end-user BTUs by 2020 as a baseline, with higher savings achievable through the overlay of  
individual jurisdictional options offered in the code.**

And the other dimensions of sustainability, from land use, preservation of natural resources, water conservation, life-cycle issues, heat island effect, stormwater management, materials and resources, etc., will have a consensual code standard that will become the baseline for sustainable development.

## CONCLUSIONS

- The process of “market transformation” begun by the USGBC has led to the development of sustainability requirements in mandatory code language.
- The continued transformation of the construction industry through successful implementation and enforcement lies ahead.

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