



# Code Green

## Standard 189.1 Comes at a Crucial Time

BY KENT PETERSON, P.E., FELLOW, PRESIDENTIAL MEMBER ASHRAE

It's been a little over two years since ASHRAE launched *High Performing Buildings* magazine. Our goal then, as now, was to help decision makers in the building community learn about the latest developments in innovative technologies and energy-efficient design and operation. Since that time, we've featured lessons learned from more than 50 high performance buildings from around the world.

*HPB* magazine has proven to be a valuable tool in ASHRAE's sustainability toolkit. We recently added another tool—one that goes a step further in defining high performance buildings. Published in January, Standard 189.1, *Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings*, provides a long-needed green building foundation for those who strive to design, build and operate high performing,

green buildings. From site location to energy use to recycling, Standard 189.1 will set the foundation for green buildings through its adoption into local codes.

Standard 189.1, which defines the minimum requirements for high performance, green buildings, was developed by ASHRAE, the U.S. Green Building Council (USGBC) and the Illuminating Engineering Society (IES). Discussions are underway with the International

Code Council about the relationship between their International Green Construction Code and Standard 189.1.

What does this standard mean for the readers of *HPB*? Obviously you would not be reading this magazine if you did not already have a strong interest in sustainable design. As you know, sustainable design calls for balancing environmental responsibility, resource efficiency, occupant comfort and well-being, and community sensitivity, while supporting the goal of development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Standard 189.1 provides that with minimum requirements for site sustainability, water use efficiency, energy efficiency, indoor environmental quality and the building's impact on the atmosphere, materials and

resources. It creates the foundation for all of these to come together to make a productive, safe and efficient building that is truly high performing.

Let me share a few details about the standard that I believe will make the biggest impact in sustainable design.

Standard 189.1 can lead to significant energy savings. The U.S. Department of Energy, through the National Renewable Energy Laboratory, has made a preliminary estimate based on Standard 189.1 as published. Applying the minimum set of prescriptive recommendations in the standard resulted in weighted average site energy savings of 30% when compared to Standard 90.1-2007.

The standard also provides significant water savings over current codes. The mandatory requirements provide approximately 40% water savings in buildings over U.S. EPAAct 1992.

Unique to Standard 189.1, requirements for construction and operation plans—including the commissioning process, building acceptance testing, measurement and verification, and reporting of energy use, water use and indoor air quality—are also specified to assist building owners in achieving high performance operation.

This standard could not have come at a more crucial time in our industry. The environmental impact of the building design, construction and operations industry is enormous. Development frequently alters land from natural, biologically diverse habitats to hardscape that is imperious and devoid of biodiversity.

Also, it is essential for the energy independence of the United

States—and of the world—that the marketplace continues to transform to support more energy efficient and sustainable buildings. Buildings in the United States are responsible for 39% of CO<sub>2</sub> emissions, 40% of energy consumption, 13% of water consumption and 15% of GDP per year, making green building a source of significant environmental opportunity.

Currently more than 1,400 jurisdictions are looking to adopt green building requirements either as the minimum requirements or “reach beyond code” requirements for building projects.

As an American National Standards Institute standard, Standard 189.1 provides minimum requirements for high performance, green buildings. It is not a design guide or a rating system. Rather, the standard is meant to complement green building rating programs, not compete with them. In fact, several cities across the nation—and even other nations, such as India—have already expressed interest in using the standard in some way.

What's the next step for this standard? Currently we are continuing to reach out to communities.

We also are supporting the development of educational tools to allow widespread use of the standard, including a user's manual and educational courses. Our industry has a huge impact on our natural environment. As such, we have an equally huge responsibility to promote the responsible use of our natural resources in the built environment around the world. Standard 189.1 helps ensure a greener future and bluer skies for generations to come. ●

### 189.1 AT A GLANCE

#### What It Covers

Sustainable Sites  
Water Use Efficiency  
Energy Efficiency  
Indoor Environmental Quality  
Impact on the Atmosphere, Materials and Resources  
Construction and Operations Plans

#### Benefits

**Energy** 30% savings over Standard 90.1-2007  
**Water** About 40% savings over U.S. EPAAct 1992

#### Compliance

**Prescriptive** Simple option, very few calculations  
**Mandatory** More options, but more effort

#### Who Developed

ASHRAE,  
Illuminating Engineering Society (IES),  
U.S. Green Building Council (USGBC),  
Additional expertise representing building owners, utilities, water and IAQ experts, design engineers, architects, code and compliance experts, equipment manufacturers

#### How Developed

**Process** ANSI consensus  
**Started** 2006  
**Public Reviews** Four with more than 2,500 comments

#### Resources

[www.ashrae.org/greenstandard](http://www.ashrae.org/greenstandard)  
User Manual under development

#### What Professionals Need to Know

Begin to understand the impact of these new requirements on your business and technical expertise

Identify what requisite skills and knowledge you will need once this standard and green codes are implemented

### ABOUT THE AUTHOR

Kent Peterson, P.E., chaired the committee that developed Standard 189.1. Peterson is vice president and chief engineer at P2S Engineering in Long Beach, Calif. He served as president of ASHRAE in 2007–08.