



# 189.1P

STANDARD FOR THE DESIGN OF HIGH-PERFORMANCE,  
GREEN BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS

## The High-Performance Building Model Code: Sustainability for Commercial Buildings

### **How does the standard differ from building rating systems?**

Standard 189.1P covers the key topic areas typically included in green building rating systems: site sustainability, water use efficiency, energy efficiency, indoor environmental quality and the building's impact on the atmosphere, materials and resources. However, the standard is written in mandatory language to allow for adoption within building codes. It is in a format consistent with other ASHRAE standards and uses the widely respected ANSI consensus procedures.

The standard is not a design guide or a rating system, though it is hoped that organizations responsible for the development of voluntary building rating systems will integrate this standard into their rating programs. Green building rating systems have been developed for implementation as a voluntary system and not to be implemented as mandatory requirements within a jurisdiction. They often provide a limited number of prerequisites with many optional credits to allow focus on the green building aspects most important to the user of the system. Standard 189.1P is primarily based on mandatory requirements (with some elements allowing a choice between a prescriptive or performance options for compliance) that establish baseline criteria for a high-performance green building. Also, because Standard 189.1P is a code-intended standard, it references documents that are in normative language, meaning those documents are not just for informative purposes but are required for compliance with the standard.

### **How will this standard be used and by whom?**

Standard 189.1P could be implemented by a variety of users for a range of reasons, including:

- States/Municipalities
  - their own buildings
  - reach code or basis for incentives
  - private and public construction within a jurisdiction
- Organizations with green building rating systems (such as the U.S. Green Building Council and the Green Building Initiative): incorporated as the baseline (prerequisite) in a green building rating system
- Developers: individual projects
- Corporations: corporate buildings
- Universities: campus buildings

### **Does Standard 189.1 apply to all buildings?**

Standard 189.1 covers the same group of building spaces as ANSI/ASHRAE/IES Standard 90.1, Energy Standard for Buildings except Low-Rise Residential Buildings:

- All nonresidential spaces
- All residential spaces in buildings more than three stories

Within these buildings, Standard 189.1P applies to the following elements of building projects:

- New buildings and their systems
- New portions of buildings and their systems
- New systems in existing buildings

Local jurisdictions can adopt Standard 189.1 to apply to the above buildings. In lieu of adoption as the mandatory code minimum, Standard 189.1 also can be used by local jurisdictions as a tool for starting a local green building program.

### ***How much more energy efficient is Standard 189.1P than the current minimum building energy code (ANSI/ASHRAE/IESNA Standard 90.1-2007)?***

The U.S. Department of Energy (DOE), through the National Renewable Energy Laboratory, has made a preliminary estimate based on the second public review draft of Standard 189.1P. Applying the minimum set of prescriptive recommendations in Standard 189.1P led to site energy savings ranging from 10 percent to 34 percent over Standard 90.1-2007, including plug and process loads and all other energy consumption for the building. The weighted average across all building types was 18 percent. Since the second public review, additional energy savings measures were incorporated into the standard, so the published standard is expected to yield even greater energy savings.

### ***How is renewable energy covered within the Standard?***

Standard 189.1P requires that each building project be designed to be ready for renewable energy in the future. The prescriptive energy path also requires a certain amount of annual energy to be provided by on-site renewable energy systems. This requirement is a small increment but a necessary start toward the goal of net-zero-energy buildings that has been endorsed by ASHRAE and the co-sponsors.

### ***What is the relationship between Standard 189.1P, the Advanced Energy Design Guide (AEDG) series and Standard 90.1?***

While each of these publications is related to reducing energy use of buildings, each has a different stated purpose and objective.

Standard 90.1 is published as a consensus standard to provide minimum requirements for the energy-efficient design of new and renovated buildings. The U.S. Congress and the Department of Energy require states to adopt a commercial building energy code that meets or exceeds Standard 90.1. It is written in a code intended language as minimum requirements so it does not necessarily provide exemplary or state-of-the-art design guidance. ASHRAE Standard 90.1 is on continuous maintenance and is revised on a three year cycle. The current version is 90.1-2007. As a condition of receiving money under the American Recovery and Reinvestment Act, all 50 states have certified their intent to adopt a building energy code that meets or exceeds the requirements of Standard 90.1-2007.

In contrast, the Advanced Energy Design Guide (AEDG) publications are designed to provide prescriptive recommendations for achieving at least 30 percent energy savings over the minimum requirements in Standard 90.1-1999 in eight U.S. climate zones. They show a way, but not the only way, to achieve 30 percent savings. The 1999 version of 90.1 provides the reference point to maintain a consistent baseline and scale for the AEDG 30 percent series. However, many of the energy simulation results for the AEDGs showed greater than 30 percent savings. In some climates the recommendations also exceed 90.1-2004 by 30 percent. These guides also provide a prescriptive path to achieving LEED® v2.2 and v3.0 Energy & Atmosphere credits for New Construction and Major Renovation projects.

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Additional AEDGs at 50 percent energy savings are also planned. When these 50 percent AEDG's are developed (starting later in 2009), they will use Standard 90.1-2004 as a benchmark.

Standard 189.1P is intended for buildings that wish to exceed the minimum energy requirements of Standard 90.1 and address other characteristics of high-performance green buildings. It provides minimum requirements for the siting, design and construction (including plans for operation) of high performance green buildings. The goal is not just energy efficiency but a balance of environmental responsibility, resource efficiency, occupant comfort and well being and community sensitivity, as well as support the goal of sustainable development.