

Green Design Trends: The New Green Standard

ASHRAE releases Standard 189.1 for high performance green buildings.

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A

new standard for the design of high performance green buildings is set to revolutionize the building industry. Published by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), in conjunction with the Illuminating Engineering Society of North America (IES) and the U.S. Green Building Council (USGBC), Standard 189.1, Standard for the Design of High Performance, Green Buildings Except Low-Rise Residential Buildings, is the first code intended commercial green building standard in the country.

Consensus

The new standard was developed over 3.5 years using the ASHRAE consensus process. Many federal agencies, state agencies, and local jurisdictions prefer to adopt consensus standards—those developed using ANSI procedures. (Leadership in Energy and Environmental Design, also known as LEED, is not an ANSI consensus standard.)

Standard 189.1 was controversial because of its effects on the environment and the effects on a particular organization or industry. The committee was required to reach consensus on how far to reach on any particular environmental issue and on whether the criteria were reasonable and enforceable.

Minimum Requirements

Another difference between LEED and 189.1 is that 189.1 is not a point system. Instead, it provides minimum requirements that must be met.

A frequent approach to meeting point systems is to garner as many of the least expensive points as possible. For standard 189.1, all of the mandatory requirements must be met, and then either the prescriptive or performance requirements must be met.

The prescriptive requirements specify a relatively simple method for showing compliance that generally involves little or no calculations. The performance path specifies an alternate method for showing compliance that is typically more complex than the prescriptive path.

Unlike a point system, where certain points can be avoided, standard 189.1 requires that criteria in all areas be met. The standard allows some choices and flexibility in the form of alternative paths or exceptions.

Highlights Summarized

Examples of major criteria as well as criteria based on new concepts not included in LEED are presented in the following summary.

Site sustainability. This chapter provides criteria to minimize suburban sprawl, protect environmentally sensitive areas, mitigate heat island effects, manage on-site storm water control by using pervious surfaces, retaining native plantings, and minimizing light pollution. A new criterion is a requirement for shade on a portion of east or west walls, or a minimum Solar Reflective Index (SRI) requirement for these walls.

Water efficiency. This chapter provides maximum site and building water use requirements. Some fixtures need to meet the U.S. [EPA WaterSense](#) requirements.

Measurement of large sources of water use is required. A new criterion is the requirement that 60% of altered (improved) landscape has to include plantings other than turf.

Energy efficiency. This chapter includes requirements for the building envelope, mechanical equipment, ventilation, lighting, peak load reduction, and renewable energy. New criteria include the use of [ENERGY STAR](#) equipment, when available.

Another new criterion is a requirement to turn off plug loads (e.g., televisions and lights) in empty motel/hotel guest rooms. This chapter has the goal of saving 30% energy on average (compared to ASHRAE Standard 90.1-2007 for all buildings in all climates).

Indoor environmental quality. This chapter includes minimum requirements for indoor air quality (IAQ), thermal comfort (portions of ASHRAE Standard 55), acoustical control, and daylighting (skylights) under large roofs and side lighting (windows) for classrooms and offices. Shading is required in office buildings to prevent glare.

The IAQ requirements include source control, air cleaning, and dilution. Source control is met by requiring low emitting materials and entry mats and prohibiting smoking in buildings.

Impact of materials and resources. This chapter covers construction waste, refrigerants, recyclables, and reused goods. In addition, two paths are available for reducing the impact of building materials. The prescriptive path requires a minimum recycled, regional, or certified wood content, while the performance path requires a life cycle assessment is performed and certain criteria are met. New criteria include a maximum amount of total waste per square foot of new building floor area. Also included is a requirement of a storage area for reusable goods and used fluorescent lamps.

Construction and plans for operation. These plans include commissioning, maintenance (ASHRAE/ACCA Standard 180), service life, green cleaning, and transportation management. Commissioning requirements are more stringent for buildings with greater than 5,000 square feet of floor area. Tracking and assessing water and energy use is mandatory for large sources. The service life plan ensures that materials used for site work (and to construct the building envelope) have a design or estimated service life that is reported to the owner.

Integrated design. Integrated design is not required; however, guidance is provided in the form of an informative appendix. Savings in utility costs often offset any higher initial costs, especially if these utility costs are monitored to catch spikes from faulty equipment.

Released earlier this year, this national green building standard was written in mandatory, code intended language. It is not a point or rating system but has actual minimum requirements, thus providing clearer application and guidance for its use and its adoption into local codes. Visit this [link](#) for more information on the 189.1 standard.

VanGeem, principal engineer for Skokie, IL-based [CTLGroup](#), has 28 years of consulting experience in energy efficiency, green buildings, and work on related standards (including being a member of ASHRAE SPC 189.1). CTLGroup provides engineering and scientific services to the transportation, construction materials, power, building and facilities, and legal and insurance industries.

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