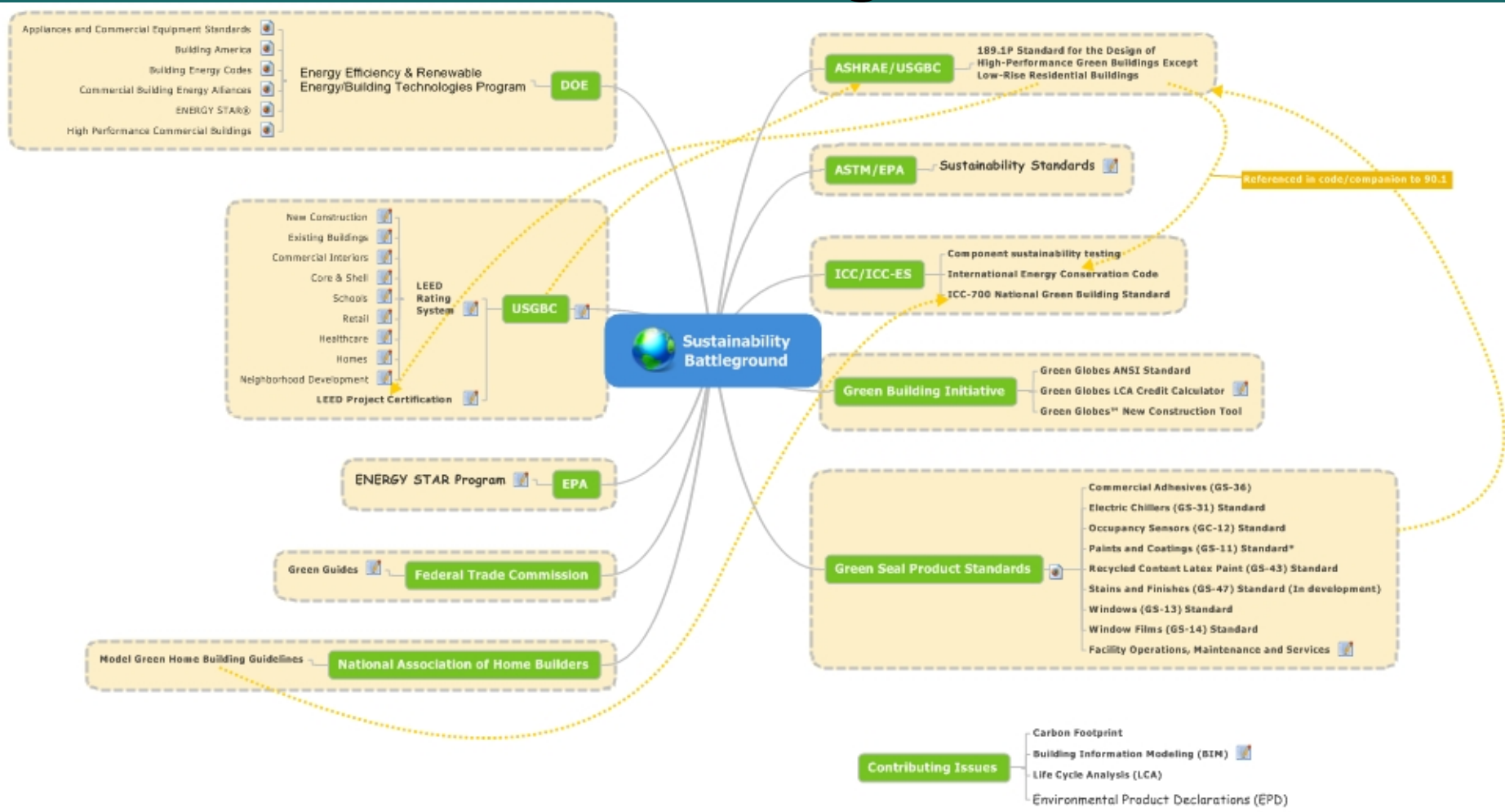


# The Path from Green to Sustainability

*Round 2*

A stylized silhouette of a mountain range in a darker teal color, located at the bottom right of the slide.

# The Battleground!





BSR/ASHRAE/USGBC/IESNA Standard  
189.1P

## Public Review Draft

ASHRAE® Standard

### Proposed Standard 189.1P, *Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings*

Second Public Review (February 2008)  
(Complete Draft for Full Review)

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed addendum, use the comment form and instructions provided with this draft. The draft is subject to modification until it is approved for publication by the ASHRAE Board of Directors and ANSI. Until this time, the current edition of the standard remains in effect. The current edition of any standard may be purchased from the ASHRAE Bookstore @ <http://www.ashrae.org> or by calling 404-636-8400 or 1-800-527-4723 (for orders in the U.S. or Canada).

The appearance of any technical data or editorial material in this public review document does not constitute endorsement, warranty, or guaranty by ASHRAE of any product, service, process, procedure, or design, and ASHRAE expressly disclaims such.

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AMERICAN SOCIETY OF HEATING, REFRIGERATING  
AND AIR-CONDITIONING ENGINEERS, INC.  
1791 Tullie Circle, NE Atlanta GA 30329-2305

# ASHRAE 189.1P

- ◆ Proposed Standard 189, *Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings*,
  - Provides minimum requirements for design of sustainable buildings balancing environmental responsibility, resource efficiency, occupant comfort and well-being, and community sensitivity.
  - Using USGBC LEED Green Building Rating System Guidelines
  - Provides a baseline that will drive green building into mainstream building practices.

# ASHRAE 189.1P

- ◆ 35 voting and 5 non voting members
- ◆ Reconstituted committee from 145 applications
- ◆ Meetings are open, documents not available until out for public comment
- ◆ Economic assessment/justification was not included in previous standard drafts, probably will not be included in this draft. Committee drew from other work that did consider economic justification for recommendations. Will use “professional expertise” of committee members for cost/economic input

# 5.0 SITE SUSTAINABILITY

## 5.3.2.3 Roofs

- ◆ This section applies to the building and covered parking roof surfaces.
- ◆ A minimum of 75% of the entire roof surface (not used for roof penetrations, renewable energy power systems (e.g. photovoltaics or solar thermal collectors), harvesting systems for rainwater to be used on-site, or green roofing systems) shall be covered with products that comply with one or more of the following:

# The Following:

- ◆ (a) have a minimum initial *SRI* of **78** for a low-sloped roof (a slope less than or equal to 2:12) and a minimum initial *SRI* of **29** for a steep-sloped roof (a slope of more than 2:12).
- ◆ (b) comply with the criteria for the USEPA's Energy Star Program Requirements for Roof Products – Eligibility Criteria.

# Exceptions to 5.3.2.3:

- ◆ *Building projects in climate zones 6, 7, and 8.*
- ◆ Building projects where an annual energy analysis simulation demonstrates that the total annual building energy cost and total annual CO<sub>2</sub>, as calculated in accordance with 7.5.2 and 7.5.3, are both 2% less for the proposed roof than with a roof material complying with the requirements of 5.3.2.3(a).
- ◆ Roofs used to shade or cover parking and roofs over semi-heated spaces provided that they have a minimum initial SRI of 29. A default SRI value of 35 for new concrete without added color pigment is allowed to be used in lieu of measurements.



## 5.3.2.4 Solar Reflective Index.

- ◆ The solar reflective index (SRI) shall be calculated in accordance with ASTM E1980 for medium-speed wind conditions. The SRI shall be based upon solar reflectance as measured in accordance with ASTM E1918 or ASTM C1549, and the thermal emittance as measured in accordance with ASTM E408 or ASTM C1371. ***For roofing products, the values for solar reflectance and thermal emittance shall be determined by a laboratory accredited by a nationally recognized accreditation organization, such as the Cool Roof Rating Council CRRC-1 Product Rating Program, and shall be labeled and certified by the manufacturer.*** For building materials other than roofing products, the values for solar reflectance and thermal emittance shall be determined by an independent third party.

# 5.4 Prescriptive Option.

- ◆ 5.4.1 Site Development. *Building projects* shall comply with 5.4.1.1 and 5.4.1.2.
  - 5.4.1.1: Effective Pervious Area for All Sites: A minimum of 40% of the entire site shall incorporate one or any combination of the following:
    - (a) shall be vegetated with a minimum depth of growing medium of 300 mm (12 in.) Such vegetated areas include bioretention facilities, raingardens, filter strips, grass swales, vegetated level spreaders, constructed wetlands, planters, or open space with plantings. At least 60% of the vegetated area shall consist of biodiverse planting of native plants or adapted plants,
    - (b) shall have a vegetated roof with a minimum depth of growing medium of 75 mm (3 in.),
    - (c) shall have porous pavers (open grid pavers),
    - (d) shall have permeable pavement or permeable pavers with a minimum percolation rate of 100 L/min·m<sup>2</sup> (2 gal/min·ft<sup>2</sup>) and a minimum of 150 mm (6 in.) of open-graded base below the pavement or pavers.

# Exceptions to 5.4.1.1:

- ◆ The effective pervious surface is allowed to be reduced to a minimum of 20% of the entire site if 10% of the annual rainfall for the entire development footprint is captured on site and reused for site water use or building water use.
- ◆ The effective pervious surface is not required if 50% of the annual rainfall for the entire development footprint is captured on site and reused for site water use or building water use.
- ◆ Locations with less than 250 mm (10 in.) of rain per year.

# 5.5 Performance Option.

- ◆ 5.5.1 Site Development: Building projects shall comply with the following:
  - (a) If the project is in an existing building envelope, a minimum of 20% of the average annual rainfall on the development footprint shall be managed through infiltration, reuse, or evapotranspiration.
  - (b) If the project is not in an existing building envelope, but is on a greyfield site, a minimum of 40% of the average annual rainfall on the development footprint shall be managed through infiltration, reuse, or evapotranspiration.
  - (c) For all other sites, a minimum of 70% of the average annual rainfall on the development footprint

# 7. ENERGY EFFICIENCY

## ◆ 7.3 Mandatory Provisions

- 7.3.2 On-site Renewable Energy Power Systems. Building projects shall contain on-site renewable energy power systems with an electrical rating not less than 1.0% of the service overcurrent protection device rating.

# 9. THE BUILDING'S IMPACT ON THE ATMOSPHERE, MATERIALS AND RESOURCES

## ◆ 9.3 Mandatory Provisions

- 9.3.1 Construction Waste Management. A minimum of 50% of non-hazardous construction and demolition waste material shall be diverted from disposal in landfills and incinerators by recycling and/or reuse. Reuse includes donation of materials to charitable organizations and salvage of existing materials on-site.

## 9.4 Prescriptive Option

- ◆ 9.4.1.1 Recycled Content. The sum of post-consumer recycled content plus one-half of the pre-consumer recycled content shall constitute a minimum of 10%, based on cost, *determined by weight* of the total materials in the building project. The recycled fraction of the assembly shall then be multiplied by the cost of assembly to determine the recycled content value. Not more than 5% (one-half of the 10%) of the recycled content for this requirement shall come from one type of material such as steel or concrete.

## 9.4.1.2 Regionally Extracted/Harvested/Recovered and Manufactured Materials.

- ◆ A minimum of 15% of building materials or products used, based on cost, shall be regionally extracted/harvested/recovered *or* manufactured.
- ◆ For a building material or product to qualify, a minimum of 80% of the mass of the building material or product shall be extracted/harvested/recovered or manufactured within a radius of 800 km (500 mi) of the project site.
- ◆ Exception to 9.4.1.2: For building materials or products shipped in part by rail or water, that portion of the distance shipped by rail or water shall be multiplied by 0.25 and added to that portion not shipped



## 9.4.1.3 Biobased Products.

- ◆ A minimum of 5% of building materials used, based on cost, shall be biobased products.

# 9.5 Performance Option

- ◆ 9.5.1 Life Cycle Assessment. Perform a life cycle assessment (LCA) according to ISO Standard 14044 of a ***minimum of two building alternatives***, both of which shall conform to the owner's project requirements. Each building alternate shall consist of a common design, construction, and materials for the locale, including building size and use, as commonly ***approved by the authority having jurisdiction***.
- ◆ **9.5.1.1 LCA Performance Metric.** The building chosen for the project ***shall have a 5% improvement*** over the other building alternate assessed in the LCA in a minimum of two of the impact categories. The impact categories are: land use (or habitat alteration), resource use, climate change, ozone layer depletion, human health effects, ecotoxicity, smog, acidification, and eutrophication.

## 9.5.1.2 Procedure.

- ◆ Perform a life cycle inventory (LCI). The LCI accounts for all the individual environmental flows to and from the products in a building throughout its life cycle.
- ◆ The LCI shall include the materials and energy consumed and the emissions to air, land, and water for each of the following stages:
  - Extracting and harvesting materials and fuel sources from nature.
  - Processing building materials and manufacturing building components.
  - Transporting materials and components.
  - Assembly and construction.
  - Operation including energy consumption, maintenance, repair, and replacement during the design life.
  - Demolition, disposal, recycling, and reuse of the building at the end of its life cycle.

# Recommendations

- ◆ Carefully track ASHRAE 189.1 as it is likely to have a significant, and quick, impact on the marketplace .
- ◆ Implement a roofing industry LCA/LCI/EPD data collection program (based on an existing LCA model) to develop generic data for a number of roof assemblies.

# The End is Not Near...

- ◆ "It ain't over 'til it's over."

Lawrence Peter "Yogi" Berra regarding the 1973 National League pennant race.

# American Recovery and Reinvestment Act

ARRA

A stylized silhouette of a mountain range in a darker shade of teal, located at the bottom right of the slide.

# States Want Money?

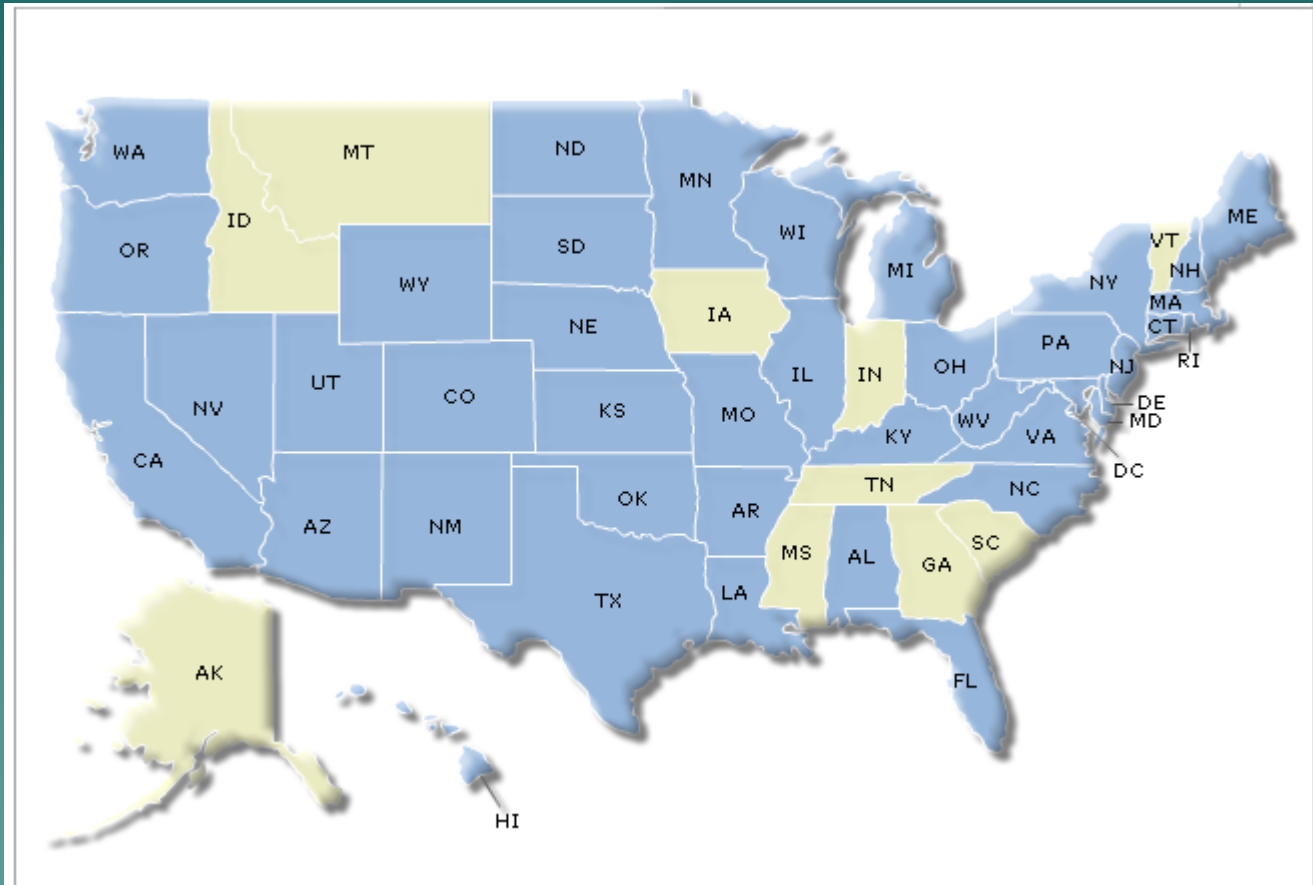
- ◆ In order to receive funds from the ARRA, governors have 45 days from February 17 to certify that they will
  - "request and use" funds from the ARRA and
  - use them to create jobs and promote economic growth.

# The Pass Governor Clause

- ◆ If a governor does not accept funds allocated to his or her state before that window expires, the state's legislature then has the option of certifying those two conditions itself.



# States Accepting Funds



# Federal Agency Recovery urls

- ◆ Agency for International Development (USAID) <http://www.usaid.gov/recovery/>
- ◆ Corporation for National and Community Service (CNCS) <http://www.nationalservice.gov/recovery>
- ◆ Department of Agriculture (USDA) <http://www.usda.gov/recovery>
- ◆ Department of Commerce (DOC) <http://www.commerce.gov/Recovery/>
- ◆ Department of Defense (DOD) <http://www.defenselink.mil/recovery>
- ◆ Department of Education (ED) <http://www.ed.gov/recovery>
- ◆ Department of Energy (DOE) <http://www.energy.gov/recovery>
- ◆ Department of Health and Human Services (HHS) <http://www.hhs.gov/recovery/>
- ◆ Department of Homeland Security (DHS) <http://www.dhs.gov/recovery>
- ◆ Department of Housing and Urban Development (HUD) <http://www.hud.gov/recovery/>

# Federal Agency Recovery urls

- ◆ Department of Justice (DOJ) <http://www.usdoj.gov/recovery/>
- ◆ Department of Labor (DOL) <http://www.dol.gov/recovery/>
- ◆ Department of State (DOS) <http://www.state.gov/recovery/>
- ◆ Department of the Interior (DOI) <http://www.doi.gov/recovery/>
- ◆ Department of Transportation (DOT)  
<http://www.dot.gov/recovery/>
- ◆ Department of Treasury (TREAS) <http://www.treas.gov/recovery/>
- ◆ Department of Veterans Affairs (VA) <http://www.va.gov/recovery/>
- ◆ Environmental Protection Agency (EPA)  
<http://www.epa.gov/recovery/>
- ◆ Federal Communications Commission (FCC)  
<http://www.fcc.gov/recovery/>
- ◆ General Services Administration (GSA)  
<http://www.gsa.gov/recovery/>

# Federal Agency Recovery urls

- ◆ National Aeronautics and Space Administration (NASA) <http://www.nasa.gov/recovery/>
- ◆ National Endowment for the Arts (NEA) <http://www.nea.gov/recovery>
- ◆ National Science Foundation (NSF) <http://www.nsf.gov/recovery/>
- ◆ Office of Personnel Management (OPM) <http://www.opm.gov/recovery/>
- ◆ Railroad Retirement Board (RRB) <http://www.rrb.gov/recovery/>
- ◆ Small Business Administration (SBA) <http://www.sba.gov/recovery/>
- ◆ Smithsonian Institution (SI) <http://www.si.edu/recovery/>
- ◆ Social Security Administration (SSA ) <http://ssa.gov/recovery/>
- ◆ US Army Corps of Engineers (USACE) <http://www.usace.army.mil/recovery>