Commercial Green Building Standards

DOE Building Energy Codes

2006 National Workshop

Denver, Colorado

ASHRAE

- 54,000 Members in 135 countries
- 99 Technical Committees
- 110 Standards Project Committees
- 45 Standing Committees
- 14 Regions, 170 Chapters
- 5000 Members in active roles
- 2000 meetings per year

ASHRAE Mission

To advance the arts and sciences of heating, ventilating, air conditioning and refrigerating to serve humanity and promote a sustainable world

2006 Strategic Plan

- Lead the advancement of sustainable building design and operation
- Become a world class provider of education and certification programs
- Position ASHRAE as a premier provider of HVAC & R expertise
- Be a global leader in the HVAC & R community

ASHRAE Activities

Research

Standards Development

Publications

Education

Certification

ASHRAE Documents

- Standards
- Guidelines
- Position Papers/Position Documents
- User's Manuals
- Handbooks
- Special Publications (e.g., Advanced Energy Design Guides)

Position Documents

- Ammonia as a Refrigerant (January 26, 2006)
- Building Sustainability (June 23, 2002)
- Climate Change (July 1, 2004)
- Energy (January 30, 2003)
- Environmental Tobacco Smoke (June 30, 2005)
- Indoor Air Quality (February 10, 2005)
- Legionellosis (June 25, 1998)
- Minimizing Indoor Mold Problems through Management of Moisture in Building Systems (June 30, 2005)
- Ozone-Depleting Substances (February 1, 2001)
- All are available for free download from web site www.ashrae.org

ASHRAE Standards

- 118 Active standard/guideline projects
  - 51 standards/guidelines proposed
  - 49 standards/guidelines under revision
  - 3 standards undergoing reaffirmation
  - 15 standards under continuous maintenance

Best-known Standards
Indoor Environment

- Standard 55 – Thermal Environmental Conditions for Human Occupancy
- Standard 90.1 – Energy Efficient Design of New Buildings
- Standard 62.1 – Ventilation for Acceptable IAQ

Standards vs. Other Documents

ASHRAE Standard:

- consensus document
- developed by balanced committee
- under ANSI and ASHRAE rules

ASHRAE Guideline:

- document that may or may not be consensus based
- balanced committee desirable but not required
- ASHRAE rules, but not ANSI rules

Some of Our Partners

- USGBC
- IESNA
- ARI
- EPA
- DOE
- NFPA
- ICC
- ACCA
- SMACNA
- Associate Society Alliance

ASHRAE Standards Activities

- ANSI Audited Designator
- Emphasis on balanced committees
- Obsession with “consensus”
- Rigorous review process

Overview of Standards Process

- Any person or organization can submit a proposal to develop a new standard
- Standards Committee approves proposal and recommends development of the standard, Board of Directors approves new standard
- Technical Committee assigned responsibility and recommends chair

Overview of Standards Process

- Project Committee formed and develops draft
- Draft undergoes 30-45 day public review, all comments answered
- After comments resolved, approval by PC, Standards Committee, Technology Council, Board of Directors

Standards vs. Other Documents

- **Other ASHRAE Documents**
  - Advanced Energy Design Guides
  - Handbooks
  - Position Papers
  - User's Manuals
  - Research Projects
- Wide-range of interests sought, but committees not required to be balanced or reach consensus
- Documents may undergo peer reviews, but changes not required and no veto power by reviewers

Code Interaction Subcommittee

- Monitors ASHRAE documents that either are or could be referenced in codes
- Submits code change proposals
- 14 “Code Intended” and 10 “Not Code Intended” documents are referenced by either ICC, NFPA, or ASME codes
- Open to non members of ASHRAE

Becoming More “Code Friendly”

- Use of mandatory language
- Moving some tabular information to informative appendices
- Extracting essential provisions from complex standards
- Scheduling releases to match code revision cycles

Recent Code Change Proposals

- ICC hearings September 2006
  - 3 proposals for Standard 62.1
  - 7 proposals for Standard 90.1

Sustainability

Definition from the ASHRAE GreenGuide:

“Providing for the needs of the present without detracting from the ability to fulfill the needs of the future”

Sustainable Buildings

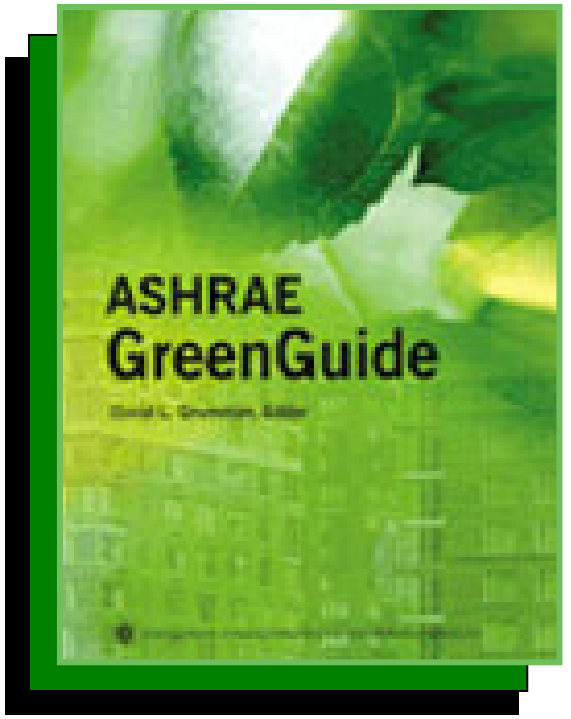
- Minimum energy and water consumption
- Utilization of renewable energy resources
- Minimum atmospheric emissions
- Minimum waste streams
- Minimum site impact
- Native materials
- Good indoor environmental quality

ASHRAE and Sustainability

- 1975 – Standard 90-75 “Energy Conservation in New Building Design”
- 2003 – ASHRAE GreenGuide
- 2005 – Engineering for Sustainability
- 2006 – Sustainability Roadmap
- 2007 – Standard 189 “Standard for the Design of High-Performance Green Buildings”

GreenGuide

- Step-by-step manual for the entire building lifecycle
- Covers construction, operation, maintenance, and eventual demolition
- Includes 29 "Green Tips," specific measures for improving sustainability



Advanced Energy Design Guides (AEDG)

- Documents that go 30%, 50%, and 70% above Standard 90.1-1999
- New Buildings (30%):
  - Small Office Buildings - published
  - Small Retail – publish in 2006
  - K-12 Schools
  - Warehouse
  - Highway Lodging
- Existing Buildings (30%)

The ASHRAE Promise – A Sustainable Future

- 2007 Presidential Theme – Terry Townsend
- Building performance metrics - 2008
  - Energy and water use
  - IEQ and acoustics
- Carbon equivalent rating system - 2008
  - Construction
  - Operation

The ASHRAE Promise – A Sustainable Future

- Standard 90.1 to be 30% more stringent by 2010
- Expedite Advanced Energy Design Guides
  - 30% Guides by 2008
  - 50% Guides by 2011
  - 70% Guides by 2016
- “Net-Zero” guidance by 2020

Sustainability Roadmap

- Foster sustainable buildings
- Conduct ASHRAE affairs sustainably
- Give research into sustainability priority
- Integrate sustainability into publications
- Partner with compatible organizations
- Educate and inspire the current and next generation of members

Walking the Talk

- 2007 Winter Meeting to conform to “green meeting” guidelines
- New headquarters facility for ASHRAE to meet LEED Gold criteria
- AHR Expo in Dallas to have section devoted to sustainable products
- Funding approved to accelerate AEDG

Why This Convergence on Sustainability

- Energy resource pressure
- Atmospheric physics
- Health concerns
- Waste stream concerns
- Need for life cycle assessment
- ASHRAE's long standing focus on energy and indoor environmental Quality

Concerns for the Code Community

- Performance based standards vs. prescriptive standards and codes
- Need for codes to describe maintenance and operation of complex systems

Standard 189

- Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings
- Partners:
  - USGBC
  - IESNA

Standard 189

1. Purpose: The purpose of this standard is to provide minimum requirements for the design of high-performance, green buildings to:

(a) Balance environmental responsibility, resource efficiency, occupant comfort and well being, and community sensitivity, and

(b) Support the goal of the development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Standard 189

2. Scope:

2.1 This standard provides minimum criteria that:

(a) Apply to new buildings and major renovation projects (new portions of buildings and their systems): a building or group of buildings, including on-site energy conversion or electric-generating facilities, which utilize a single submittal for a construction permit or which are within the boundary of a contiguous area under single ownership

(b) Address sustainable sites, water use efficiency, energy efficiency, the building's impact on the atmosphere, materials and resources, and indoor environmental quality (IEQ).

Standard 189

2. Scope (continued):

2.2 The provisions of this standard do not apply to:

(a) single-family house, multi-family structures of three stories or fewer above grade, manufactured houses (mobile homes) and manufactured houses (modular).

(b) buildings that do not use either electricity or fossil fuel.

2.3 This standard shall not be used to circumvent any safety, health or environmental requirements.

Standard 189

- Standard is to specify minimum criteria for buildings that are identified as high-performance green buildings
- Standard is not a rating system such as USGBC's LEED or GBI's Green Globes
- Standard should be suitable for adoption as code

How to Get Involved

1. Join a committee (http://www.ashrae.org/template/AssetDetail/assetid/22185)
2. Attend meetings as an observer
3. Join the committee e-mail distribution list
4. Review the standards discussion forum (http://membership.ashrae.org/template/DboardPosts/forumid/102)

How to Get Involved (cont.)

5. Submit a public review comment
   (http://www.ashrae.org/template/TechnologyLinkLanding/category/1634)
6. Submit a change proposal
   (http://www.ashrae.org/template/AssetDetail/assetid/22851)
7. Recommend a new standard or guideline
   (http://www.ashrae.org/template/PDFDetail/assetid/22895)
8. Sign up for the ASHRAE Standards Action List Server
   (http://resourcecenter.ashrae.org/store/ashrae/newstore.cgi?categoryid=367&categoryparent=215)

ASHRAE and Commercial Green Building Standards

- ASHRAE is committed to leading the advancement of sustainable building design and will include sustainability elements in all ASHRAE documents
- Standard 189 will be a consensus based document developed by a balanced committee in accordance with rigorous ANSI requirements

ASHRAE and Commercial Green Building Standards

- ASHRAE is anxious to work more closely with code professionals to make our standards “code friendly”
- ASHRAE would welcome the participation of more code professionals on our Standards Committee, Code Interaction Subcommittee, and Standards Project Committees

ASHRAE and Commercial Green Building Standards

- ASHRAE is proud to be working as partners with leading sustainability organizations throughout the world and will continue to nurture these partnerships
- ASHRAE is committed to advancing sustainable design globally