

ASHRAE's Initiatives for Sustainable Design and High Performance Buildings



The Challenge

- Buildings fundamentally impact people's lives and the health of the planet
- Building sector responsible for almost half of greenhouse gas emissions annually
- HVAC accounts for 40% to 60% of the energy used in U.S. commercial and residential buildings

(<http://www.eere.energy.gov/buildings/info/components/hvac/>)

ASHRAE Opportunities

- Clinton Climate Initiative
- Architecture 2030 Challenge
- AIA Green Building Coalition
- Globalization Roadmap
- ASHRAE Vision 20/20

Advocacy Activities

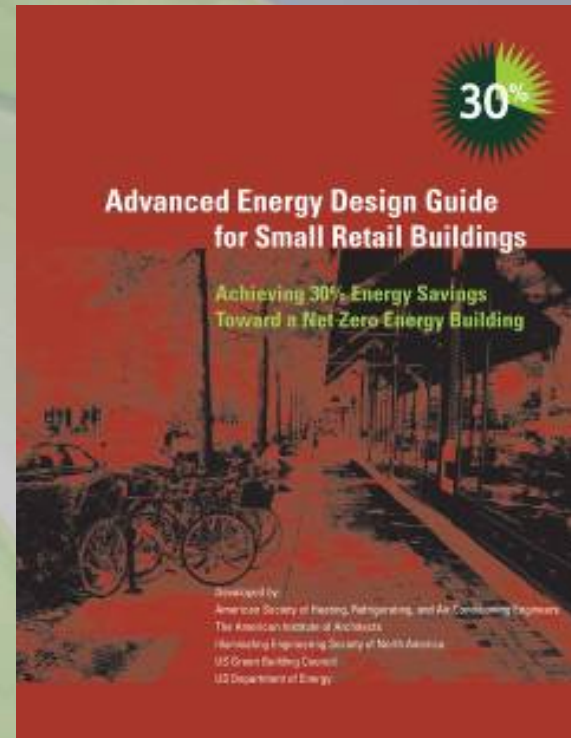
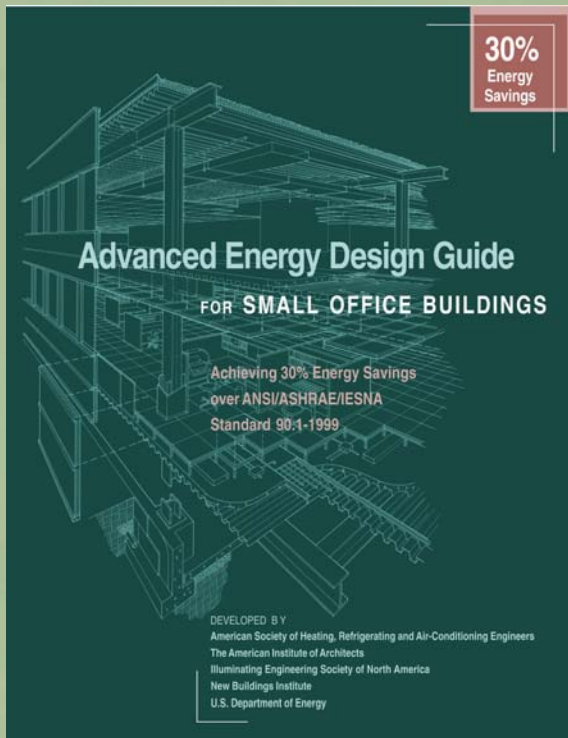


- Advocacy Briefs
- Monthly roundtable of 40 plus organization and agency reps
- Commercial Tax Incentives extended one year
- Congressional Visit Days
- Washington Fellowship

Advanced Design Guidance

- Advanced Energy Design Guides
 - Charge from 2002-03 ASHRAE President Don Colliver to develop documents that go 30%, 50%, and 70% above Standard 90.1-1999
 - 30% progress toward a net zero energy building
 - 50% and 70% documents to follow

Advanced Energy Design Guides

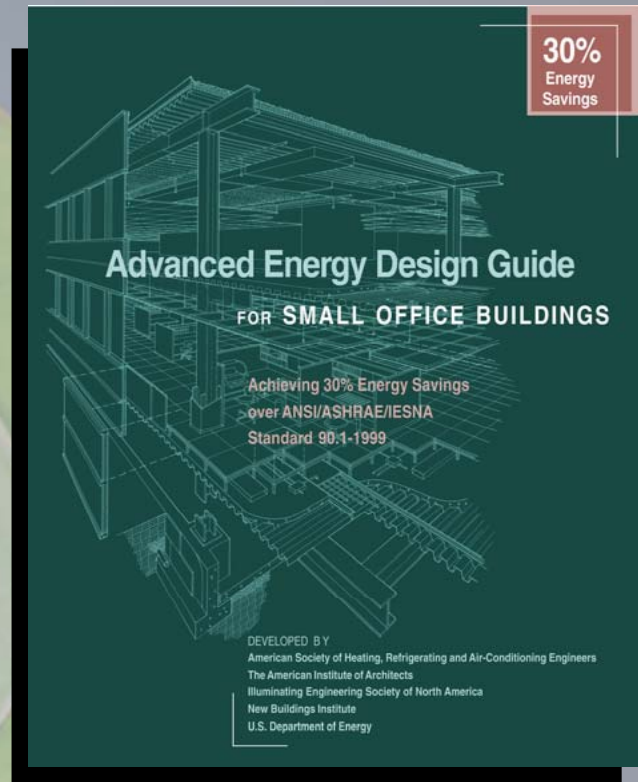


Advanced Energy Design Guides

- In development
 - AEDG for K-12 (July 2007)
 - AEDG for Warehouses (late 2007)
 - AEDG for Highway Lodging (TBD)
- 30% Guides now – 50% & 70% next
- Target – net zero energy buildings

AEDG – Small Office Buildings

- 30% savings over 90.1-1999
- New office buildings
- $\leq 20,000$ square feet
- Unitary HVAC equipment
- Envelope, lighting, HVAC, and service water heating
- Practical and commercially available

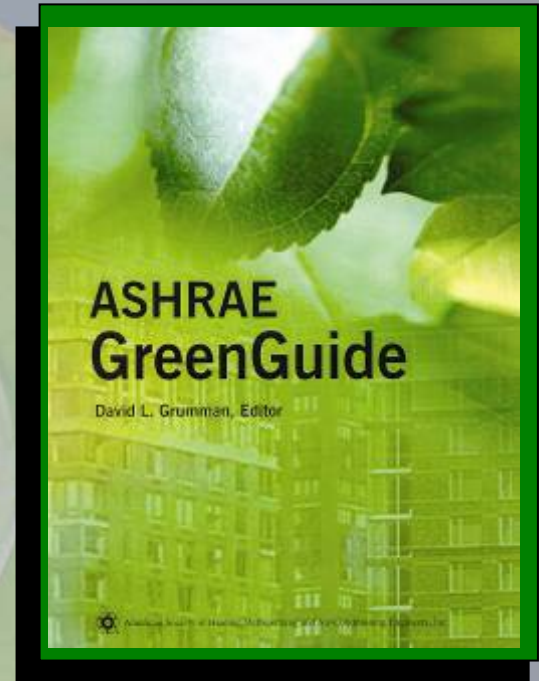


AEDG Receives Recognition

- Use of AEDG qualifies for 4 energy credit points under LEED-NC 2.2 without need for simulations
- United States Green Building Council “2005 Leadership” Award
- Alliance to Save Energy “Stars of Energy Efficiency” Award
- Sustainable Buildings Industry Council “Best Sustainable Practice” Award

ASHRAE GreenGuide

- Step-by-step manual for the entire building lifecycle
- Covers construction, operation, maintenance, and eventual demolition
- Covers green design techniques applicable to related technical disciplines, such as plumbing and lighting
- Includes 29 "Green Tips," specific measures for improving sustainability
- Includes case studies, checklists, and other practical information

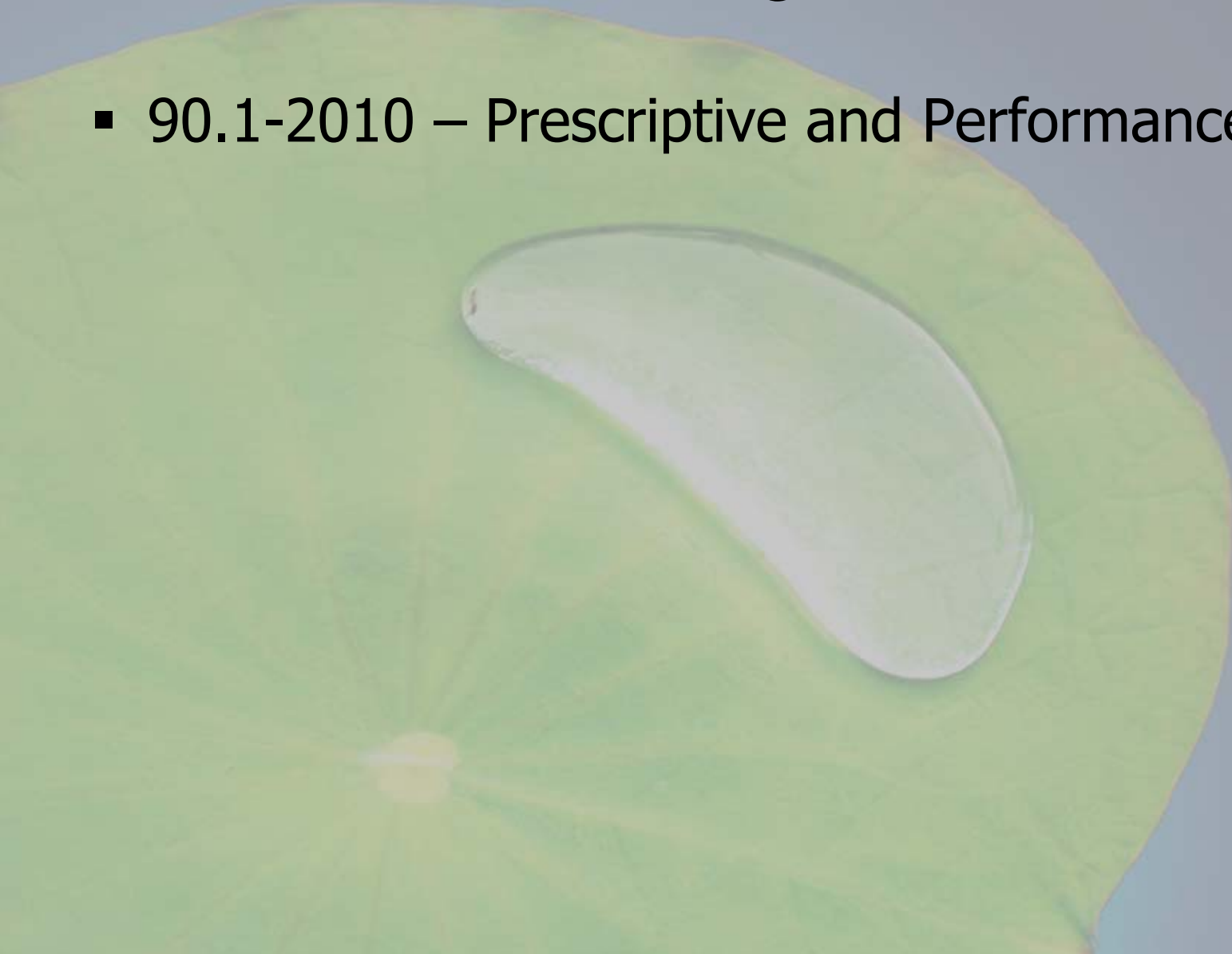


Advanced Design Guidance

- Advanced Energy Design Guides
- ASHRAE GreenGuide
- Refrigeration Systems GreenGuide
- Hot and Humid Climate Design Guide
- District Heating and Cooling Design Guide
- 90.1 Appendix G with regional data

Sustainability Standards

- 90.1-2010 – Prescriptive and Performance



Standard 189P

- Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings

Partners



USGBC



IESNA

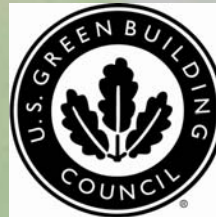
Standard 191P

- Standard for Conservation of Water Use in Building, Site and Mechanical Systems

Partners



AWWA



USGBC



ASPE

Sustainability Standards

- 90.1-2010 – Prescriptive and Performance
- 189P – High Performance Green Buildings
- 191P - Water Conservation Standard
- Healthcare Baseline Sustainability Standard
- Low-Rise Residential Baseline Sustainability Standard (Proposed)

Certification Programs

- HVAC&R for Healthcare Facilities
- Building Systems Commissioning
- Building Systems Operation and Maintenance
- Engineering for Sustainability Professional

Educational Opportunities

- eLearning Fundamentals of Standard 90.1-2004
- ASHRAE Short Courses & Programs
- Distinguished Lecturers
- IAQ2007 Healthy & Sustainable Buildings Conference
- www.engineeringforsustainability.org

Courses

Course	Dallas Jan. 2007	Long Beach June 2007	In Company	Self-Directed or E-Learning
Building Retrofit for Energy Efficiency				X
Compliance with ASHRAE Standard 90.1			X	
Complying with ASHRAE/IESNA Standard 90.1 HVAC/Mechanical	X	X		X
Complying with Requirements of ASHRAE Standard 62.1-2004	X		X	
Design and Remediation to Achieve Acceptable Indoor Air Quality			X	
Designing Residential Ventilation Systems to Meet ASHRAE Standard 62.2	X		X	
Determining Energy Savings From Performance Contracting Projects - Measurement & Verification				X
Economic Analysis of Engineering Projects: Life-Cycle Costing				
Fundamentals of ASHRAE/IESNA Standard 90.1				X
Fundamentals of Electrical Systems and Building Electrical Energy Use				X
Fundamentals of Heating and Cooling Loads				
Introduction to Green Buildings and Sustainable Construction	X	X		
Preventing Moisture and Mold Problems: Design and Construction Guidelines				
Successful Solar Applications	X		X	

*Unconfirmed

For more information, see <http://www.ashrae.org/education/page/554>

**ASHRAE
Strategic Plan**



**Research
Strategic Plan**

**Sustainability
Roadmap**

ASHRAE Strategic Plan

Mission:

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

ASHRAE Strategic Plan

- Four directions:
 1. Lead the advancement of sustainable building design and operations
 2. Become a world-class provider of education and certification programs
 3. Position ASHRAE as a premier provider of HVAC&R expertise
 4. Be a global leader in the HVAC&R community.

ASHRAE Strategic Plan

- Lead the advancement of sustainable building design and operations
 - Technology Council
 - SP2006 Subcommittee
 - 2 Task Resource Groups
 - Research Administration Committee

TRG4 Sustainable Building Guidance & Metrics

- Develop design guidance to integrate indoor environmental quality, energy efficiency and other aspects on sustainable building performance
- Develop performance metrics and rating systems to certify operational performance of buildings for energy efficiency & IEQ
- Collaborate with other organizations to integrate HVAC&R systems with other building systems to enhance the effectiveness of Total Building Design and Integrated Practice

TRG7 Tools for Sustainable Operations, Maintenance and Cost Analysis

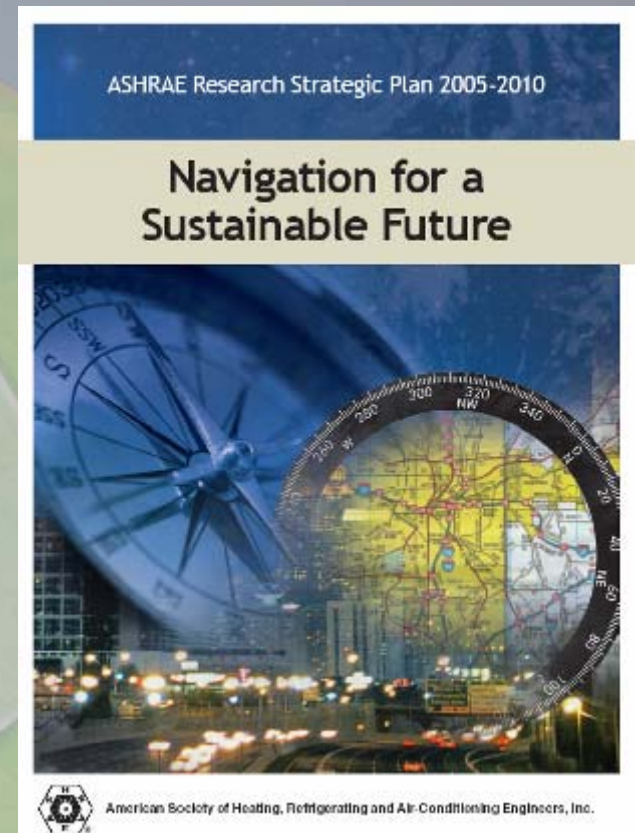
- Provide training, guidance and tools for building operators
- Conduct research and develop guidance to enhance the effectiveness of maintenance procedures
- Promote the use of life cycle analysis to building owners that will encourage sustainable building construction, operation, and renewal

Research Administration Committee

- Lead the drive toward the design, construction and operation of net-zero-energy buildings through research, publications and education
- Promote research leading to the development of equipment and systems that support sustainable buildings

ASHRAE Research Strategic Plan

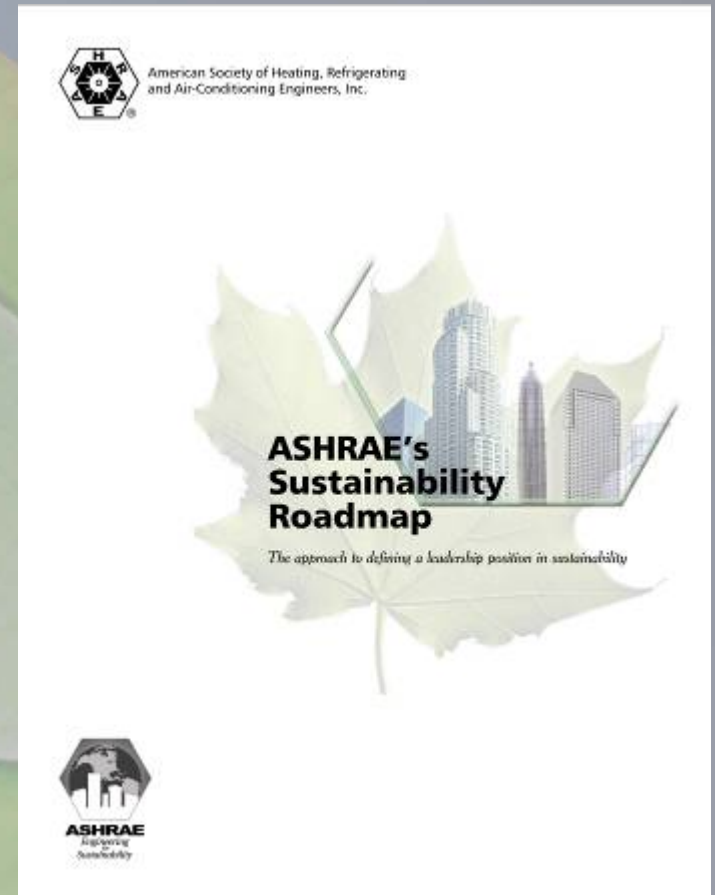
- Five broad, far reaching research opportunity themes:
 - Energy and Resources
 - Indoor Environmental Quality
 - Tools and Applications
 - Equipment, Components, and Materials
 - Education and Outreach



Sustainability Roadmap

Overarching goals:

- Expand our efforts to foster sustainable buildings
- Conduct our own affairs in a sustainable manner
- Lead in researching technologies that enable the design and application of sustainable HVAC&R equipment and systems



Sustainability Roadmap

Overarching goals (continued):

- Integrate building sustainability principles, effective practices and emerging concepts into all appropriate ASHRAE standards, guidelines, research, Handbook chapters and publications
- Partner with appropriate sustainability advocacy organizations where our strengths are complementary
- Develop materials and programs related to sustainability to educate and inspire the current and next generation of members

Roadmap Recommendations

- Develop and maintain productive relationships with other organizations in the sustainability field
- Raise public awareness of ASHRAE's contributions to sustainability
- Aggressively market ASHRAE's sustainability profile in the industry
- "Walk the talk" by practicing what we preach
- Develop educational products that assist in sustainable building design, building operation and evaluation

Roadmap Recommendations

- Implement the sustainability-oriented objectives in the Society's Research Strategic Plan
- Accelerate development of the Advanced Energy Design Guide series
- Implement sustainability certification
- Act on sustainability-related strategic directions included in the Society's Strategic Plan

Walk the Talk

- GAME Plan
- Dallas Meeting Offsets
- Headquarters Renovation

Greener Headquarters

- Incorporate ASHRAE technology
- Demonstrate commitment to sustainability
- LEED gold rating
- www.ashrae.org/building



Recap

- ASHRAE Opportunities
- Advocacy Activities
- Advanced Design Guidance
- Sustainability Standards
- Certification Programs
- Educational Opportunities
- Guiding Documents
- Walking the Talk

