



# Shaping Tomorrow's Built Environment Today

## CLIMATE CHANGE AND BUILDING ENERGY EFFICIENCY

### THE ISSUE

*Improving building energy efficiency reduces greenhouse gas (GHG) emissions.* GHGs contribute to rising global temperatures. Heating, ventilating, air conditioning, and refrigeration (HVAC&R) systems directly contribute to GHG emissions through CO<sub>2</sub> emissions associated with the energy needed to operate buildings and building systems (which account for approximately 40% of America's total energy consumption<sup>1</sup>), and to a lesser extent indirectly through the release of refrigerants, if not properly contained. Therefore, by implementing building energy efficiency, climate change can be forestalled, as indicated by the International Panel on Climate Change (IPCC), which found that the global building sector has the greatest potential for economical GHG mitigation between now and 2030<sup>2</sup>.

### ASHRAE'S ROLE

ASHRAE and its members help policymakers promote the implementation of energy efficient design practices and sustainable technologies, most notably through ASHRAE Standard 189.1, that addresses sustainability in buildings and building sites. In addition, ASHRAE's Building Energy Labeling Program, called Building Energy Quotient (bEQ), has been developed to help building owners manage their energy use via in depth performance analyses. Our expertise on GHG emissions reductions can help policymakers address climate change.

### ASHRAE'S VIEW

ASHRAE encourages policymakers to implement integrated approaches including:

- Funding for research that improves energy efficiency/utilization in HVAC&R technology to minimize energy-use CO<sub>2</sub> emissions.
- Funding for building science research leading to advanced equipment and systems, and increased understanding of how building design affects long-term operations and responds to climate change.
- Full evaluation of building climate impacts and energy performance.
- Policies that address both existing and new buildings.
- Consideration of all environmental impacts attributable to buildings.
- Opportunities to make buildings more energy efficient.
- Policies encouraging building owners and operators to optimize energy efficiency.
- Promotion of life-cycle-cost analysis to building owners to encourage sustainable building construction, operation, and renewal.
- Strategies that consider all phases of a building's life, including design, construction, commissioning, and operation; recognizing that operational energy use is a dominant factor in total impact.

### ASHRAE Resource Documents (see [www.ashrae.org](http://www.ashrae.org))

ASHRAE Position Document on Climate Change

International Green Construction Code and ANSI/ASHRAE/USGBC/IES 189.1-2014 *Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings*

ANSI/ASHRAE/IES 90.1-2013 *Energy Standard for Buildings Except Low-Rise Residential Buildings*

ANSI/ASHRAE Standard 90.2-2007 *90.2 Energy Efficient Design of Low-Rise Residential Buildings*

ANSI/ASHRAE Standard 105-2014 *Standard Methods of Determining, Expressing and Comparing Building Energy Performance and Greenhouse Gas Emissions*

ANSI/ASHRAE Standard 62.1-2016 *Ventilation for Acceptable Indoor Air Quality*

ANSI/ASHRAE Standard 62.2-2016 *Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings*

ANSI/ASHRAE Standard 34-2013 *Designation and Safety Classification of Refrigerants*

ANSI/ASHRAE Standard 15-2013 *Safety Standard for Refrigeration Systems*

ASHRAE, AIA, USGBC, IES Advanced Energy Design Guides for Buildings

*ASHRAE Energy Efficiency Guide for Existing Commercial Buildings: The Business Case for Building Owners and Managers*

*ASHRAE Energy Efficiency Guide for Existing Commercial Buildings: Technical Implementation*

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<sup>1</sup> US Department of Energy. 2011. "2011 Buildings Energy Data Book". <http://buildingsdatabook.eren.doe.gov/TableView.aspx?table=1.1.3>.

<sup>2</sup> IPCC. 2007b. Mitigation of Climate Change. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva: International Governmental Panel on Climate Change.