

## WORKFORCE DEVELOPMENT IN CANADA

There is a pressing need in the HVAC&R industry to meet employer demand for highly-skilled, well-paying jobs. In response, ASHRAE banded together with a number of organizations in the US and Canada, including HRAI and BuildForce Canada, to form the HVACR Workforce Development Foundation. The Foundation is dedicated to leading an industry effort to develop and promote educational projects, programs, and partnerships to attract committed and skilled employees to a career in HVACR.



### ASHRAE's Canadian and Global Alliances

ASHRAE works closely with several Canadian organizations, including Canadian Green Building Council, the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI), and the Building Owners and Managers Association (BOMA) of Canada. The Society also has a strong relationship with the United Nations Environmental Programme (UNEP) and works with professional organizations in over 50 countries through the ASHRAE Associate Society Alliance. The technical expertise generated by this global network helps foster innovation around the world.

### Supporting Women & Minorities

ASHRAE is focused on encouraging minorities and women to enter careers in the HVAC&R industry. ASHRAE is a supporter of Women in HVAC&R, an organization formed at the 2002 AHR Expo in Chicago, Illinois, which is cosponsored by ASHRAE and the Air-Conditioning, Heating, & Refrigeration Institute (AHRI).

### Elementary, Secondary and Post-Secondary Education: The Need for Science, Technology, Engineering and Mathematics

As professionals focused on design, construction, operation, and maintenance of Canada's buildings and infrastructure, and as educators of future generations of engineers, ASHRAE members recognize the importance of a solid foundation in science, technology, engineering and mathematics (STEM), and as a result, many are active in their local communities and national programs, bringing exciting science and engineering programs to students.

ASHRAE believes that education in STEM subjects is needed at the elementary and secondary school levels to develop the future supply of technicians, engineers, and scientists to meet future workforce needs and ensure a healthy future standard of living. We further believe that parents, educators, governments at all levels, and the private sector have important roles in ensuring that future generations possess the skills and critical competencies necessary to be successful in a highly competitive, global, and technologically sophisticated economy. We must work cooperatively to ensure that children receive the STEM training essential for future success.

[ashrae.org](http://ashrae.org)



Shaping Tomorrow's  
Built Environment Today



Canada is home to about 6,000  
ASHRAE Members, 16 Chapters  
and 39 Student Branches

### WHO ARE ASHRAE MEMBERS IN CANADA?

Consulting Engineers  
Contractors  
Manufacturers  
College Students  
University Professors



[ashrae.org](http://ashrae.org)

**ASHRAE, founded in 1894, is a global society advancing human well-being through sustainable technology for the built environment. The Society and its more than 56,000 members worldwide focus on building systems, energy efficiency, indoor air quality, refrigeration and sustainability. Through research, standards writing, publishing, certification and continuing education. ASHRAE shapes tomorrow's built environment today.**

#### ASHRAE Research Canada

Since 1959, ASHRAE has a significant research presence in Canada. These research projects are funded in large part by donations from approximately 800 Canadian members and companies.



## ENVIRONMENTAL STEWARDSHIP

### Living in Environmental Harmony without Compromise: The Promise and Reality of High-Performance, Green Buildings

High-performance, green buildings are in many ways the future of the built environment, as they bring together elements such as site sustainability, water use efficiency, energy efficiency, indoor environmental quality, and other elements that collectively take into consideration the building's full impact on the ecosystem. High-performance buildings foster better health, well-being and productivity. Such buildings currently exist, but help is needed today to pave the way to the future. ASHRAE has developed and cosponsored a number of standards, guides, and professional certifications, some of which are highlighted below:

- International Green Construction Code (IgCC) Powered by 189.1
- 2015 National Green Building Standard™ (NGBS)
- High-Performance Building Design Professional Certification

ASHRAE also promotes the use of cutting-edge best practices, practical solutions, and technologies in the building industry through case studies in High Performance Buildings Magazine, a quarterly, free publication.

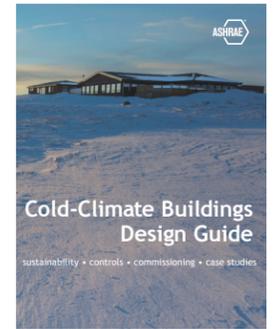
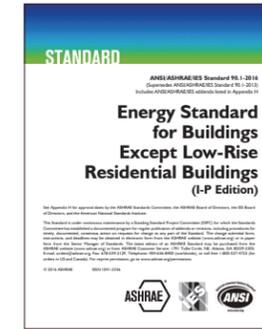


### ASHRAE's role in Canadian standards development

The national Canadian government prepares the National Model Construction Codes. In developing the codes, Canada draws heavily from ASHRAE standards, such as ANSI/ASHRAE/IES Standard 90.1-2016 Energy Standard for Buildings Except Low-Rise Residential Buildings. The model codes are then adopted, modified if desired, and enforced by provinces and territories.

### Designing for the Unique Challenges Posed by Cold Climate

ASHRAE's Cold-Climate Buildings Design Guide identifies strategies on how to meet the design challenges created by cold climate conditions, from initial planning to completion.



### ASHRAE Standards Adopted by ISO

ASHRAE develops standards which lead the advancement of sustainable building design and operations. Portions of our refrigerant standards, 15 and 34, are included in ISO 817 and ISO 5149. Other notable Standards include:

#### 135

BACnet, the ASHRAE building automation and control networking protocol, has been designed specifically to meet the communication needs of building automation and control systems for applications such as heating, ventilating, and air-conditioning control, as well as many other systems.

#### 135.1

Method of Test for Conformance to BACnet provides a comprehensive set of procedures for verifying the implementation of capabilities, including BACnet services (as initiators, executors, or both), BACnet object types (including required properties and optional properties), the BACnet network-layer protocol, data-link options, and all special functionalities.

#### 13256-1

This part of ISO 13256 establishes performance testing and rating criteria for factory-made residential, commercial and industrial, electrically-driven, mechanical-compression type, water-to-air and brine-to-air heat pumps.

## INDOOR ENVIRONMENTAL QUALITY

### Improving Building Occupant Health, Comfort, and Productivity While Increasing Building Energy Efficiency

People spend about 90 percent of their time indoors, as a result, indoor environmental quality (IEQ) has a direct impact on health, comfort, and work productivity. IEQ includes factors such as the concentrations of indoor air pollutants, temperature, humidity, lighting, and noise. Well-established research has linked poor IEQ to illnesses such as Legionnaires' Disease, lung cancer, pulmonary tuberculosis, severe acute respiratory syndrome (SARS), carbon monoxide (CO) poisoning, and asthma attacks. HVAC&R and other building systems play a central role in IEQ.

Superior indoor air quality enhances quality of life while boosting the economy by improving health (thus reducing healthcare costs and absenteeism), school and work performance. ASHRAE has developed a number of standards and guidelines to address the need for good indoor air and environmental quality. In concert with these documents, ASHRAE encourages policymakers to act on the following recommendations:

- Support the adoption of ASHRAE's ventilation and IAQ standards into codes
- Increase government and foundation support for IAQ research
- Adopt sustainable building performance codes, programs and standards based on thorough consideration of the many factors impacting IAQ
- Maintain acceptable IAQ as significant changes are made to building design and operation to reduce energy consumption

In 2015, ASHRAE consolidated with the Indoor Air Quality Association (IAQA) – a trade association of over 2,100 members and 20 local Chapters in Canada and the United States, which broadened ASHRAE's IAQ/IEQ expertise.



### IAQ Conference Held in Canada

ASHRAE held a conference in 2013 in Vancouver, British Columbia entitled "Environmental Health in Low Energy Buildings." This international conference brought together experts from a number of fields and was the 17th in the series of ASHRAE IAQ conferences that began in 1986.