

PLAN YOUR EVENT



2022 **Annual**
Conference 

Event Details

The 2022 ASHRAE Annual Conference will be a hybrid experience, offering both in-person and virtual options for attendees. The in-person conference will be held in Toronto, ON, Canada at the Sheraton Centre and Hilton Toronto. 2022 marks the Toronto Chapter's 100th anniversary! Toronto is excited to host the 2022 ASHRAE Annual Conference and the Toronto Host Committee is working hard to provide an experience ASHRAE attendees won't forget.

Schedule at a Glance

Friday, June 24

TIME	EVENT NAME	LOCATION
8:00 am-5:00 pm	Committee Meetings	Sheraton (S) and Hilton (H)
10:00 am-5:00 pm	Registration and Bookstore	Sheraton Hall (LC-S)
6:00 pm	Toronto Chapter 100th Anniversary Celebration <i>ticket required</i>	University of Toronto Hart House 7 Hart House Circle

Saturday, June 25

TIME	EVENT NAME	LOCATION
7:15 am-6:00 pm	Registration and Bookstore	Sheraton Hall (LC-S)
7:30 am-3:00 pm	ASHRAE Member Lounge	Grand Ballroom Foyer (LC-S)
7:30 am-3:00 pm	Companion Lounge	Danforth (4-S)
8:00 am-11:00 am	ALI Short Course <i>ticket required</i>	Willow Center (M-S)
8:00 am-3:00 pm	Committee Meetings	Sheraton (S) and Hilton (H)
8:00 am-3:00 pm	ALI Professional Development Seminar <i>ticket required</i>	Willow East and West (M-S)
12:00 pm-3:00 pm	ALI Short Course <i>ticket required</i>	Willow Center (M-S)
1:00 pm-3:00 pm	Speakers' Lounge	Sheraton Hall (LC-S)
3:15 pm-5:30 pm	Meeting of the Members, Plenary Session* <i>Keynote sponsored by Cancoil Thermal</i>	Grand Center/West (LC-S)
7:30 pm-9:30 pm	Welcome Party <i>ticket required</i> <i>Shuttles depart starting at 7:00 pm from Sheraton Valet Circle</i>	CN Tower 290 Bremner Blvd.

Sunday, June 26

TIME	EVENT NAME	LOCATION
7:00 am-5:00 pm	Registration, Bookstore and Speakers' Lounge	Sheraton Hall (LC-S)
7:30 am-4:00 pm	ASHRAE Member Lounge	Grand Ballroom Foyer (LC-S)

7:30 am-3:00 pm	Companion Lounge	Danforth (4-S)
8:00 am-4:45 pm	Technical Sessions <i>*livestreamed sessions</i>	Sheraton C, Grand East*, Osgoode (LC-S) Dominion North and South, Provincial (2-S)
8:00 am-5:00 pm	Committee Meetings	Sheraton (S) and Hilton (H)
9:00 am-9:30 am	Networking Coffee Break	Lower Concourse – Sheraton
1:30 pm-4:30 pm	General Tour: Distillery Walking Tour <i>ticket required</i>	Meet in the Sheraton Lobby
1:30 pm-5:30 pm	Board of Directors meeting	Grand Centre/West (LC-S)
3:00 pm-5:00 pm	Technical Tour: Sheraton Centre Toronto <i>ticket required</i>	City Hall (2-S)
3:15-3:45 pm	Sponsor Tech Talk featuring uvcPhyzx	Provincial (2-S)
3:30 pm-6:30 pm	ALI Short Courses <i>ticket required</i>	Willow Centre and East (M-S)
4:00 pm-6:00 pm	Young Engineers in ASHRAE (YEA) Hospitality Reception	City Hall (2-S)

Monday, June 27

TIME	EVENT NAME	LOCATION
6:30 am-7:30 am	Fun Run and 5K	Sheraton Valet Circle
7:00 am-10:00 am	Complimentary COVID-19 Testing <i>First come, first served</i>	City Hall (2-S)
7:00 am-12:15pm	Speakers' Lounge	Sheraton Hall (LC-S)
7:00 am-5:00 pm	Registration and Bookstore	Sheraton Hall (LC-S)
7:30 am-4:00 pm	ASHRAE Member Lounge and	Grand Ballroom Foyer (LC-S)
7:30 am-3:00 pm	Companion Lounge	Danforth (4-S)
8:00 am-12:00 pm	Technical Sessions <i>*livestreamed sessions</i>	Sheraton C, Grand East*, Osgoode (LC-S) Dominion North and South, Provincial (2-S)
8:30 am-11:30 am	ALI Short Courses <i>ticket required</i>	Willow (M-S)
8:00 am-5:00 pm	Committee Meetings	Sheraton (S) and Hilton (H)
9:30 am-11:30 am	Companion Meet and Greet	Civic North (2-S)
12:15 pm-2:00 pm	President's Luncheon <i>ticket required</i>	Grand Centre/West (LC-S)
1:30 pm-4:00 pm	Speakers' Lounge	Sheraton Hall (LC-S)
2:15 pm-3:45 pm	Technical Session	Grand East (LC-S)
2:15 pm-2:45 pm	Sponsor Tech Talks featuring ABB, Sensirion and Balmoral Advisors*	Osgoode (LC-S), Provincial (2-S) and Dominion North (2-S)
2:30 pm-5:00 pm	Technical Tour: Sheraton Centre Toronto <i>ticket required</i>	Sheraton C (LC-S)
2:30 pm-5:00 pm	General Tour: Bata Shoe Museum <i>ticket required</i>	Meet in Sheraton Lobby
2:30 pm-5:00 pm	Technical Tour: Enwave's Deep Lake Water Cooling System <i>ticket required</i>	Buses depart Sheraton Valet Circle
4:00 pm-6:00 pm	Women in ASHRAE Happy Hour <i>ticket required sponsored by Trane</i>	Waterfall Gardens (2-S)
After 5:00 pm	Regional Dinners <i>Sign up in advance</i>	Info posted in Sheraton Hall (LC-S)

Tuesday

TIME	EVENT NAME	LOCATION
7:00 am-1:00 pm	Complimentary COVID-19 Testing <i>First come, first served</i>	City Hall (2-S)
7:00 am-5:00 pm	Speakers' Lounge	Sheraton Hall (LC-S)
7:30 am-4:30 pm	Registration and Bookstore	Sheraton Hall (LC-S)
7:30 am-4:00 pm	ASHRAE Member Lounge	Grand Ballroom Foyer (LC-S)
7:30 am-3:00 pm	Companion Lounge	Danforth (4-S)
8:00 am-4:45 pm	Technical Sessions <i>*livestreamed sessions</i>	Sheraton C, Grand East*, Osgoode (LC-S) Dominion North and South, Provincial (2-S)
8:00 am-5:00 pm	Committee Meetings	Sheraton (S) and Hilton (H)
8:00 am-5:00 pm	General Tour: Niagara Falls Day Tour <i>ticket required</i>	Buses depart Sheraton Valet Circle
8:00 am-11:00 am	ALI Short Courses <i>ticket required</i>	Willow East and Willow Centre (M-S)
12:00 pm-1:30 pm	Life Members' Lunch <i>ticket required</i>	Willow West (M-S)
12:00 pm-3:00 pm	ALI Short Course <i>ticket required</i>	Willow Centre (M-S)
1:30 pm-2:00 pm	Sponsor Tech Talks featuring Trane	Provincial
2:30 pm-5:00 pm	Technical Tour: Enwave's Deep Lake Water Cooling System <i>ticket required</i>	Buses depart Sheraton Valet Circle
6:15 pm-10:00 pm	Reception and Members Night Out <i>ticket required</i>	Grand Centre/West (LC-S)

Wednesday

TIME	EVENT NAME	LOCATION
7:00 am-10:00 am	Complimentary COVID-19 Testing <i>First come, first served</i>	City Hall (2-S)
7:00 am-1:00 pm	Speakers' Lounge	Sheraton Hall (LC-S)
7:30 am-11:00 am	Registration	Sheraton Hall (LC-S)
7:30 am-1:00 pm	Bookstore	Sheraton Hall (LC-S)
7:30 am-1:00 pm	ASHRAE Member Lounge	Grand Ballroom Foyer (LC-S)
7:30 am-1:00 pm	Companion Lounge	Danforth (4-S)
8:00 am-12:30 pm	Technical Sessions <i>*livestreamed sessions</i>	Sheraton C, Grand East*, Osgoode (LC-S) Dominion North and South, Provincial (2-S)
8:00 am-2:00 pm	Committee Meetings	Sheraton (S)
2:00 pm-6:00 pm	Board of Directors meeting	Grand Centre/West (S)

Health, Safety and Testing

ASHRAE is committed to the health and safety of our members and conference attendees.

- Registration required
- Masks strongly recommended while indoors
- Color-coded lanyards available to indicate personal comfort level
- If you feel sick, [join virtually](#)

Please review ASHRAE's full Commitment to Care for the Annual Conference along with additional resources for international travelers.

>> [Commitment to Care](#)

Onsite Testing For International Travelers

Currently, some countries require proof of a negative COVID-19 test for returning travel. ASHRAE is pleased to provide complimentary, COVID-19 testing at the Sheraton Centre Toronto (headquarter hotel) in the City Hall room, 2nd floor, for registered, international attendees.

- Monday, June 27, 7:00 am – 10:00 am
- Tuesday, June 28, 7:00 am – 1:00 pm
- Wednesday, June 29, 7:00 am – 10:00 am

What you need to know:

- ✓ Know your own country of origin's testing requirements.

Rapid antigen tests are available, and results are emailed within 2-3 hours. PCR tests are available for those traveling from countries who require it. If test is taken before 1 pm, results available in 6 hours. PCR tests taken after 1 pm will have results before 1 pm the following day. **Travelers from the US DO NOT need proof of a negative test to return to the US.**

- ✓ First come, first serve. No appointment required.
- ✓ Save Time! >> [Fill out the consent form now!](#)*
* For local Ontario Address enter 123 Queen Street West, Toronto, ON, M5H 2M9
- ✓ Bring ID, Conference Badge and Mask with you for test.
- ✓ For those who require any additional documentation for their re-entry into their home country: Please send the form with their demographic information pre-filled to:
Email: inquiry@hcpdiagnostics.com
Subject Line: ASHRAE Travel Form, Date needed
Include:
 - Attached document with demographic information pre-filled
 - The date required by
 - Sample collection method (We collect an Bilateral Oral/Nasal sample)

Departing early or late? Here are other local testing facilities:

The Travel Clinic
140 Yonge Street
Suite 200
(7 min walk from hotel)

>> [Book Appointment](#)

Several [Shoppers Drug Mart Pharmacies](#) locations near the hotel offer COVID-19 Rapid Antigen Tests and PCR Tests for Traveling. The closest locations are:

- 220 Yonge Street (Eaton Center) – 0.4 km away
- 333 Bay Street (Bay Adelaide Centre) – 0.4 km away
- 66 Wellington St. We. (Toronto Dominion Centre) – 0.5 km away
- 279 Yonge Street (Dundas Square) – 0.6 km away
- 260 Queen Street West (Queen & Beverley) – 0.6 km away

>> Please review the full [ASHRAE Onsite COVID-19 Testing Plan](#) for International Travelers.

All in-person attendees of the 2022 Annual Conference in Toronto will be required to accept ASHRAE's COVID-19 Acknowledgement of Risk, Waiver and Release of Liability during the online registration process. Download a copy of the full release below.

>> [COVID-19 Waiver](#)

Committee Meetings

> The schedule of all committee meetings is [now available](#). Committee Meetings held at the Annual Conference in Toronto will be offered in two formats:

- ✓ In-Person
- ✓ Hybrid

In-Person meetings are gatherings of in-person committee members in an assigned meeting room. Meeting rooms will be set in either U-Shape or Conference style and will have the AV equipment that the chair requested for the meeting such as a screen and/or power strips on the tables. **ASHRAE does not provide projectors due to costs.**

Hybrid meetings are gatherings of in-person committee members and guests in an assigned meeting room with the committee chair (or designated member) hosting a WebEx or other virtual meeting platform to allow for remote committee members and guests to join. An ASHRAE WebEx link and/or a USB Dual Plug-in Speaker/Microphone from ASHRAE are provided for the hybrid meetings whose committee chair who submitted a request in advance. Instructions were sent in advance for how to log into an ASHAE WebEx account to start and host the hybrid meeting as well as how to set up and use the dual speaker/microphone.

Hybrid meeting committee chairs should visit ashrae.org/meetinghostresources to review important training videos, written instructions and WebEx support articles on how to login, start and host the WebEx meeting set by ASHRAE as well as how to use requested equipment in Toronto.

If an ASHRAE WebEx meeting was requested, an email with important information including login credentials will be sent to the person entered as the “Onsite Contact” the week before your scheduled hybrid meeting.

Committee members or guests who wish to join a hybrid meeting may do so by visiting the [schedule](#) and clicking on the meeting of interest and clicking “Enter Meeting” under the “Session Access and Resources” section.

ALI Courses

The ASHRAE Learning Institute will offer ten courses during ASHRAE's 2022 Annual Conference. All courses are approved for continuing education credits toward maintaining P.E. licensure.

Full Day Professional Development Seminars

Each seminar earns 6 PDHs/AIA LUs. Check with your state for their continuing education credits requirements. Each Full Day Professional Development Seminar is \$544 (\$435 ASHRAE Member) USD. Register online in advance or at the registration desk in Sheraton Hall (LC).

Saturday, June 25, 2022

Healthcare Facilities: Best Practices for HVAC Design and Operation (code 60)

8:00 am – 3:00 pm, Willow West (M), Sheraton

Based on the ASHRAE book *HVAC Design Manual for Hospitals and Clinics*, this seminar introduces many unique and up-to-date healthcare design considerations and applications. The seminar covers Chapters 1-4, 6-11, and 13-16. Common medical terminology is introduced, and terminology differences between the medical and engineering fields are examined. Infection particles and their transport mechanisms are covered, followed by infection control methods. A major emphasis is placed on the necessary considerations for various diagnostic and treatment and support areas. The second half of the seminar focuses on air-distribution designs for surgical and patient rooms. Various control and energy efficiency techniques for cooling and heating plants are presented along with O&M and other commissioning topics. Smoke control and life safety best practices and application issues finish the seminar.



Instructor: [Donald Burroughs, Member ASHRAE, BEAP, LEED® AP](#)

Interested in prepping for the [Healthcare Facilities Design Professional](#) (HFDP) certification exam?

>> See a [complete list](#) of HFDP exam task content areas this course addresses. (Note: green highlight = well addressed; yellow highlight = somewhat addressed)

Energy Modeling Best Practices and Applications (code 61)

8:00 am – 3:00 pm, Willow East (M), Sheraton

This seminar covers the fundamentals of building energy modeling and explains how to use modeling to guide design decisions, with an emphasis on HVAC. Integrating modeling into the design process from the programming stage through post-occupancy and measurements and verification will be discussed. The seminar explains modeling principles and provides modeling tips related to the building envelope, plug loads, lighting systems, and HVAC systems. Concluding with guidance on model calibration and the use of energy models for measurement and verification, this seminar also includes case studies and links to valuable modeling resources.



Instructors: [Erik Kolderup, P.E., BEMP, Member ASHRAE, LEED® AP](#); and [Sam Mason, P.E., BEMP, Member ASHRAE, LEED® AP](#)

Interested in prepping for the [Building Energy Modeling Professional](#) (BEMP) certification exam?

>> See a [complete list](#) of BEMP exam task content areas this course addresses.

Half Day Professional Development Seminars

Each seminar earns 3 PDHs/AIA LUs. Check with your state for their continuing education credits requirements. Each Full Day Professional Development Seminar is \$214 (\$159 ASHRAE Member) USD. Register online in advance or at the registration desk in Sheraton Hall (LC).

Saturday, June 25, 2022

NEW! Introduction to Building Decarbonization (code 62)

12:00 pm – 3:00 pm, Willow Centre (M), Sheraton

This course describes the primary sources for carbon emissions in buildings and explains the key drivers for decarbonization. Carbon accounting options in buildings, current offset strategies, and electrification technology applications are discussed. Case studies will be offered to demonstrate real-world applications as well as US and world statistics.

Instructor: [Drury Crawley, Ph.D., AIA, Fellow ASHRAE, BEMP](#)

NEW! Fundamentals of Decarbonization Design Systems and Equipment Applications (code 63)

12:00 pm – 3:00 pm, Willow Centre (M), Sheraton

This course provides an overview of the topic of building decarbonization with a focus on building heating systems with associated HVAC technologies in new construction. Carbon emissions associated with technologies found in various system designs in buildings are discussed. The course covers the options for low, and no carbon emissions and electrification alternatives.

Instructor: [Artorius Reyes, Member ASHRAE](#)

Sunday, June 26, 2022

Laboratory Design: The Basics and Beyond (code 64)

3:30 pm – 6:30 pm, Willow Centre (M), Sheraton

A comprehensive overview of HVAC design for laboratories is examined in the course. The course focuses on the essential elements of the design process that are unique to laboratory HVAC systems. Topics include planning steps; risk assessment; determining exhaust/supply requirements; load calculation; pressure mapping; evaluating system options; layout of ducts and rooms; sizing primary air systems; designing exhaust stacks; sustainability in laboratories and control strategies. Example problems and case studies will be presented.

Instructor: [John Varley, P.E., Member ASHRAE, HBDP, LEED® AP](#)

Updated! Energy Management Best Practices (code 65)

3:30 pm – 6:30 pm, Willow East (M), Sheraton

Buildings use 40% of U.S. energy, of which one-third can be cost-effectively saved. To achieve this goal, building professionals can utilize energy management—an orderly process in which managers use resources at their disposal to accomplish clear, energy-saving objectives. This course weaves together energy management principles from case studies and best practices of the standard ISO 50001, and the ASHRAE Handbook—HVAC Applications, ENERGY STAR® guidelines, and ASHRAE/IES Standard 100-2018, Energy Efficiency in Existing Buildings. This course will provide a gateway to applicable industry guidelines, standards, other ASHRAE ALI courses, and publicly available resources to the end-users and practitioners. It will summarize the available energy management best practices related to sustainability goals and greenhouse gas emission reduction. The course will also overview water efficiency and help establish the links between energy and water use.



Instructors: [Eric Yang, P.E., Member ASHRAE](#) and [Richard Pearson, P.E., Fellow/Life Member ASHRAE](#)

Interested in prepping for the [Building Energy Modeling Professional](#) (BEMP) certification exam?

>> See a [complete list](#) of BEMP exam task content areas this course addresses.

Monday, June 27, 2022

NEW! Operation of Buildings with Decarbonization as a Metric (code 66)

8:30 am – 11:30 am, Willow Centre (M), Sheraton

The course provides an overview of building operations where low, and no carbon emissions is a focus. The development of baseline metrics and accounting strategies to minimize carbon emissions are discussed. The course covers building performance standards and best practices within the industry. Discussion includes available rating systems, including ASHRAE's Building Energy Quotient program, for comparing and prioritizing building operational improvements.

Instructor: [Doug Cochrane, P.Eng., Member ASHRAE](#)

Tuesday, June 28, 2022

V in HVAC – What, Why, Where, How, and How Much (Includes Basic Requirements of Standard 62.1-2019) (code 67)

8:00 am – 11:00 am, Virtual

This course focuses on the basic requirements of ASHRAE Standard 62.1-2019 and covers the scope, application, and multiple compliance paths available in the standard, including the ventilation rate procedure, indoor air quality procedure, and natural ventilation procedure. Topics will include minimum requirements for cleaning outdoor air, designing HVAC systems, determining the ventilation rate quantity, commissioning, and operations and maintenance.

Instructor: [Hoy Bohanon, P.E., Member ASHRAE, BEAP, LEED® AP](#)

Updated! Air-to-Air Energy Recovery Applications: Best Practices (code 68)

8:00 am – 11:00 am, Willow East (M), Sheraton

Air-to-air energy recovery provides one of the most cost-effective and efficient ways to recycle waste energy and create superior indoor environments. This course will review real-world examples of where and how air-to-air energy recovery technologies are integrated into some of the most common, commercially available systems. Configurations that are most commonly used in high performance buildings and how they can best be used to meet stretch goals for IEQ, energy efficiency, and thermal comfort will be examined with respect to established performance metrics, peak performance results, and annual energy savings.

Instructor: [Paul Pieper, Eng., Member ASHRAE](#)

NEW! Smart HVAC Solutions for Climate Design (code 69)

12:00 pm – 3:00 pm, Willow Centre (M), Sheratonx

This course focuses onto applications in both cold and hot climates and deals with the specific issues relevant to these climates. The material covers health and safety including better ventilation to reduce airborne infection transmissions in cold and hot climates and how to achieve energy-efficient and net zero design in these environments. Also discussed are passive systems and applications (such as natural ventilation in places where external air will range from subzero to extremely hot). Hybrid passive and mechanical heating and ventilation applications will be covered.

Instructor: [Frank Mills, P.Eng., Member ASHRAE, CxA, LEED® AP](#)

Social Events

TORONTO CHAPTER 100th ANNIVERSARY CELEBRATION

Friday, June 24, 6:00 pm | \$80

ASHRAE Toronto Chapter would like to extend a warm welcome to the ASHRAE Membership that plan to attend the summer conference to celebrate Toronto chapter's 100 year anniversary. Celebrations will take place at Hart House, a beloved historic structure in downtown Toronto. This expansive outdoor and indoor space combination has a spectacular castle-like feel and view of original stonework and leaded glass windows. Join us for a couple hours of music, food and drinks and most importantly celebrating the Toronto chapter!

>> [Register Here](#)

PLENARY | Saturday, June 25, 3:15 pm

Join 2021-2022 ASHRAE President, Mick Schwedler, for a Society update. Jeff Littleton, ASHRAE's Executive Vice President, will provide the Secretary's Report and Society Honors and Awards recipients will be recognized.



The keynote speaker will be nationally recognized STEM Educator and subject of the critically acclaimed documentary, *Underwater Dreams*, the major motion picture, *Spare Parts* and the IMAX film *Dream Big*, **Fredi Lajvardi**.

Fredi Lajvardi kindles your innate sense of ingenuity with his remarkable firsthand account of how he transformed a group of high school students into a national champion robotics team.

Fredi captivated the country when he led his team of disadvantaged teenagers in a university-level underwater robotics competition, where they defeated leading schools, including top-ranked MIT. Their story inspired the acclaimed documentary *Underwater Dreams* and was also adapted into the major motion picture, *Spare Parts*, starring actor and comedian, George Lopez as Fredi. His award-winning Falcon Robotics team is also featured in the 2017 film *Dream Big*.

Honored with numerous awards for his spirited passion for teaching, Fredi continues to serve as a prominent advocate about the importance of STEM education nationwide.

With humor and compassion, Fredi brings audiences on his inspiring journey, illustrating the need to embrace diversity and invest in people to help others realize their potential. His incredible real-life tale equips you with the real life encouragement to maximize your own potential and to work together to solve complex problems.

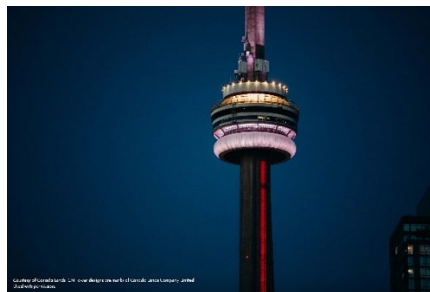
Keynote Sponsored by:



WELCOME PARTY

Saturday, June 25, 7:30 pm | \$70

Join us on Saturday June 25th at 7:30 pm for the ASHRAE Welcome Party being hosted on the Main Observation Level of the iconic CN Tower, home to the city's most awe-inspiring views. Mix, mingle and catch up with friends and colleagues while enjoying a selection of local and sustainable hors d'oeuvres and beverages as jaw-dropping as the view.



Courtesy of Canada Lands. CN Tower designs are marks of Canada Lands Company Limited. Used with permission.



YEA HOSPITALITY RECEPTION

Sunday, June 26, 4:00 pm

Attention members age 35 and younger—You are invited to visit the Young Engineers in ASHRAE (YEA) Hospitality Reception, offering social and networking opportunities. Light refreshments will be served.

FUN RUN AND WALK

Monday, June 27, 6:30 am

This fun run is organized by members, for members! Meet up at the valet lot at the Sheraton for a casual run/walk in downtown Toronto with some of your closest ASHRAE friends before the Technical Program starts at 8:00 am Multiple course distance options will be offered from 1 to 5 miles. All paces are welcome. The courses will be marked in chalk and/ or flour and maps will be available the morning of the event.

COMPANION MEET AND GREET

Monday, June 27, 9:30 am



The Meet and Greet, open to all registered companions and guests, gives companions an opportunity to meet with old friends and greet new ones. Light refreshments will be served.

The Gashkibijigan: Sacred Bundle exercise will share the worldview, history and relationships between Indigenous and non-Indigenous peoples from a unique Indigenous perspective. By using the sacred bundle, a special collection of ceremonial and sacred items, this exercise explores the truth of the complex relationship between Indigenous peoples, colonial governments, and broader society. The exercise uses storytelling, teachings, and

Indigenous knowledge to explore colonization, Indian Residential Schools, the 60's Scoop, missing and murdered Indigenous women and girls, widespread loss of identity, and associated intergenerational trauma experienced by First Nations, Métis and Inuit peoples in Canada.

This interactive experience is lead by Bob Goulais (Anishinaabe) and explores First Nation's relationship with Creation, the Spirit World, and healing. The Sacred Bundle itself represents Mother Earth, Turtle Island and Indigenous lands, the water, the treaties and elements of authentic Anishinaabe and Haudenosaunee culture. The exercise will conclude with an uplifting ceremony, led by Elders and knowledge keepers, that will contribute to Reconciliation and healing by all those participating in, and witnessing the exercise.

Bob Goulais, Nipissing First Nation. Bob is an Anishinaabe from Nipissing First Nation, is a well-known speaker, traditional teacher, facilitator and Master of Ceremonies, providing cultural context, history and traditional knowledge to diverse audiences across Canada. Bob is a second-degree member of the

Three Fires Midewiwin Lodge, a traditional society of the Anishinaabe (Ojibway, Odawa and Pottawatami) people. He is a strong advocate for the retention and proliferation of the Anishinaabemowin (Ojibway language) and Anishinaabe culture.

PRESIDENT'S LUNCHEON

Monday, June 27, 12:15 pm | \$60

2022-2023 ASHRAE President Farooq Mehboob presents the Society's theme: Securing our Future. This plated-lunch event includes the presentation of certificates of appreciation to retiring Board members and the installation ceremony for the 2022-2023 officers and Board of Directors. President Mehboob's address will be recorded and made available for anyone for on-demand viewing.



WOMEN IN ASHRAE HAPPY HOUR

Monday, June 27, 4:00 pm | \$40

Join women from around the world to share ideas and learn how to be active at the chapter, region, and/or Society level. Current ASHRAE members will share insight and experiences. This event requires pre-registration. The Happy Hour will be at the Waterfall Gardens at the Sheraton. Access the Waterfall Gardens on the 2nd floor.

Sponsored by:



REGIONAL DINNER OPTION

Monday, June 27, 7:00 pm | \$125 CAD

Take me out to the ball game. Join ASHRAE members from around the globe as The Boston Red Sox take on the hometown Toronto Blue Jays in MLB Action at 7:07 pm at the Rogers Centre located next to the CN Tower. The ASHRAE Toronto Chapter has secured 120 tickets together on the Field Level down the first baseline in Section 113. Tickets are first come, first serve and must be purchased in advance by clicking below. The ticket price of \$125 CAD includes a field level ticket and a \$25 gift card for concessions.

>> [Purchase Ticket](#)

LIFE MEMBER LUNCH

Tuesday, June 28, 12:00 pm | \$35

Enjoy lunch, share ideas about the future of technology and swap memories of the Society while dining with Life Members. This member grade is for members who have completed 30 years of continuous membership and are at least 65 years of age.



MEMBERS' NIGHT OUT

Tuesday, June 28, 6:15 pm Reception & Cash Bar | 7:15 pm Dinner & Entertainment \$70

Enjoy a special evening of fun with ASHRAE friends and Canada's premier 1960s British Invasion Tribute! The evening starts with a cocktail reception at 6:15 pm Doors open at 7:15 pm with a plated dinner and entrainment from a local band, British Invasion. Get ready to hear tunes from The Beatles, The Rolling Stones, The Who and many more of your 1960s favorites!

Tours

Tickets for tours must be purchased in advance either online or at the registration desk located in Sheraton Hall. Stand-by tour tickets will be distributed at ASHRAE registration after a tour sells out. Stand-by tickets are provided to ensure that a tour is filled in the event of last-minute cancellations. If you have a stand-by ticket, please be prepared to pay by credit card or exact cash at the bus.

All tours depart from the valet circle at the Sheraton. Please arrive at least 10 minutes before the tour is scheduled to depart.

Masks are strongly recommended on the bus and may be required at tour facilities.

TECHNICAL TOURS

Sheraton Centre Toronto Hotel | \$15

Sunday, June 26 | 2:30 – 4:00 pm

Monday, June 27 | 2:30 – 4:00 pm



Sheraton Centre Toronto Hotel consists of two main buildings — the 43-floor Queen Tower and the 11-floor Richmond Tower. These two buildings share a common lobby and a connecting concourse at the 2nd floor. The busy downtown Toronto hotel underwent an extensive \$120 million renovation of the entire property, including all guest rooms, suites, conference rooms and public areas.

Combination of water-cooled and air-cooled VRF/VRV system, 1000 Ton capacity to cater to 1373 Guest Rooms, approximately 1,500,000 sq ft and one of the largest VRF projects in North America at the time.

This will be 75 min to 90 min tour comprised of a presentation including an overview of project and a tour of the mechanical room, suite, and Q&A.

Enwave's Deep Lake Water Cooling System | \$55

Monday, June 27 | 2:30 – 5:00 pm

Tuesday, June 28 | 2:30 – 5:00 pm

Enwave's industry-leading Deep Lake Water Cooling system is the largest of its kind, harnessing the renewable cold temperature of the water at the bottom of Lake Ontario to cool hospitals, data centers, educational campuses, government, commercial and residential buildings. This innovative technology displaces 55 MW of energy a year from the grid – equivalent to powering eight hospitals.

This will be 90 min tour comprised of three parts – a presentation including an overview of Enwave Energy Corporation, district energy and Deep Lake Water Cooling, a tour of the chiller floor, piping gallery and heat exchanger floor and Q&A.



All tour attendees must wear the following to participate in the tour:

- Full sleeve shirts must be worn – No neckties,
- Long pants must be worn,
- Mask/ face covering

Tour attendees will be provided the following protective equipment at the facility:

- Steel toed boots
- Hard hats
- Safety vests
- Safety goggles
- Ear protection, if required.

>> [John Street Plumbing Illustration](#)

GENERAL TOURS

Distillery District Walking Tour | \$30

Sunday, June 26 | 1:30 – 4:30 pm

Experience the explosive history of the world's once largest Distillery – and find out how the Gooderham and Worts Distillery transformed into the modern-day Distillery District. Toronto's history is far more fascinating than many give credit. Expert guides will interpret this rich history through the lens of Gooderham and Worts – and how they became the world's largest distillery. Along the way you'll have an opportunity to see some of the best hidden Distillery District spots and photo locations and also ride TTC Streetcar to reach the venue. This tour is designed to as a fun, modern historical narrative that can be enjoyed by everyone.

Cost of TTC Streetcar (Toronto Transit Corporation) is included. Host Committee volunteers will accompany to-and-fro from Sheraton Hotel to the Distillery District.



Photo courtesy Go Tours Canada

Bata Shoe Museum | \$25

Monday, June 27 | 2:00 – 5:30 pm

Discover the treasures of North America's inspiring, charming and surprising shoe museum. Located in Toronto, Canada, the Bata Shoe Museum (BSM) regularly displays over a thousand shoes and related artifacts, chosen from a collection of over 14,000 objects. The BSM celebrates the style, development and function of footwear across four impressive galleries, with displays ranging from Chinese bound-foot shoes and ancient Egyptian sandals to chestnut-crushing clogs and glamorous platforms.

Ticket includes guided tour of "All About Shoes" exhibit, after which attendees can explore the rest of the museum that includes three exhibits "The Great Divide", "All Dolled Up: Fashioning Cultural Expectations" and "Future Now: Virtual Sneakers to Cutting-Edge Kicks". Cost of TTC Subway (Toronto Transit Corporation) is included. Host Committee volunteers will accompany to-and-fro from Sheraton Hotel to the Bata Shoe Museum.

Niagara Falls Day Tour | \$145

Tuesday, June 28 | 8:00 am – 5:00 pm

The Niagara River as is the entire Great Lakes Basin of which the river is an integral part is a legacy of the last Ice Age. Straddling the Canadian-United States International Border and both in the Province of Ontario and the State of New York, Niagara Falls attracts some 12 million tourists to her majestic awesome beauty each year.

A tour guide will be on-board and providing entertaining and relevant commentary for the 1.5-hour bus ride to Niagara Falls. Once in Niagara Falls, tour attendees will have a stopover at historic town of Niagara-on-the-Lake, a scenic drive along Niagara River Parkway and a ticket for the world famous Hornblower Niagara Boat Cruise. There will be two hours of free time at Niagara Falls for souvenirs, lunch, photos, nature, attractions, and the casino. Cost of lunch not included. Attendees will arrive back at the Sheraton Centre by 5:00 pm



Sponsor Events

Saturday, June 25, 2022

Sponsor Meet and Greet with Cancoil Thermal Corporation

2:45 – 3:15 pm | Grand Ballroom Foyer (2), Sheraton



Stop by and meet representatives of Cancoil Thermal Corporation, the keynote sponsor, right before the plenary kicks off at 3:15 pm

Sunday, June 26, 2022

Sponsor Tech Talk: High Speed Pathogen Inactivation System using UV-C technology Innovations presented by uvcPhyxx

3:15 – 3:45 pm | Provincial Ballroom (2), Sheraton



Rapid inactivation of aerosolized pathogens requires a high photon density exposure chamber and large number of attack angles. We will describe the novel system developed by uvcPhyxx Corporation and detail applications for improvement of indoor air quality and transmission reduction from infected individuals to healthy ones in a shared environment. CTO Tom Dunbar will present the scientific basis and product development history for the system. The thetaOne pilot production device will be introduced and on display during the presentation.

Tom Dunbar
Founder / CTO
uvcPhyxx Corporation
tom@uvcPhyxx.com

Tom, Professor Emeritus of Physics at SUNY Corning, founded uvcPhyxx Corp in the summer of 2020 to address the air purification problems presented by the SARS-CoV-2 virus. He has industry experience as a Development Engineer for Kodak and for Westinghouse/IST. Tom earned an MS degree in Optical Engineering from the University of Rochester and a BA in Mathematics and Physics from Susquehanna University. Recently the USPTO awarded “allowed patent” status for his Method, Apparatus, and System for Reducing Pathogens in a Breathable Airstream in an Environment US patent application with foreign Patents Pending. Tom lives on Keuka Lake in the Finger Lakes area of New York. In his spare time, he enjoys skiing, fishing, and practical physics.

Monday, June 27, 2022

Sponsor Tech Talk: ABB Motion solutions for Clean Room Environments (LIVESTREAMED!)

2:15 pm – 2:45 pm | Osgoode Ballroom (LC), Sheraton



Ensuring reliable and energy efficient clean room environment - ABB experts will guide you through air treatment requirements for semiconductor manufacturing, pharmaceuticals, operating theaters, and laboratories and explain how ABB advanced motor and drive technologies can help with that.

Speakers: Maria Fedorovicheva and Riaan Van Jaarsveld, Motion Product Manager.

Sponsor Tech Talk: Master the ‘clean air in buildings challenge’ with leading-edge air quality sensor technologies, presented by Sensirion

2:15 pm – 2:45 pm | Provincial Ballroom (2), Sheraton



The COVID-19 pandemic has demonstrated the importance of clean indoor air to public health. In direct response, several governments around the globe underlined their determination to fight bad indoor air quality with initiatives of staggering financial dimension. The recently issued ‘clean air in buildings challenge’ (USA) aims at boosting indoor air quality by improving ventilation and air filtration. HVAC and appliance businesses are tasked with providing cost and energy-efficient solutions to building owners. Performant sensors are essential for effective ventilation and air filtration systems. This talk illustrates the impact of the most relevant air quality parameters and how they can be measured. Further, recent advancements in technology are presented that reduce the cost and the integration effort of performant OEM sensor solutions.

This tech talk will be presented by Marco Gysel. Marco Gysel holds a Master’s degree in Micro and Nanosystems with distinction at the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland. He gained hands-on experience with disruptive sensor miniaturization when conducting a research project on micro glucose sensors at the Massachusetts Institute of Technology (MIT) which won several awards. Since 2018, he is working at Sensirion as a Product Manager for indoor air quality sensors.

Sponsor Tech Talk: Selling an HVAC/R Company: How to Prepare and What to Expect presented by Balmoral Advisors (**LIVESTREAMED!**)

2:15 pm – 2:45 pm | Dominion North (2), Sheraton



Well-managed HVAC/R companies continue to be in demand by potential buyers throughout North America. Market conditions are good for owners interested in selling their company at the highest value, either today or in the future. This talk will discuss what buyers are looking for, how to prepare the business for sale, and what to expect during the sale process.

This tech talk will be presented by Brooks Crankshaw, a Managing Director at Balmoral Advisors. He focuses on working with owners to sell their service companies, with an emphasis on the HVAC/R industry. Brooks earned a BA from the University of Michigan and an MBA from The Wharton School of the University of Pennsylvania.

Tuesday, June 28, 2022

Sponsor Tech Talk: Finding the Decarbonization Middle Ground presented by Trane Technologies (**LIVESTREAMED!**)

1:30 pm – 2:00 pm | Provincial Ballroom (2), Sheraton



Sustainability is a huge umbrella that spans actions such as recycling single use plastics, shutting off lights in unoccupied spaces, paperless billing, and more. Due to the broad nature of sustainable actions, it can seem difficult to tackle. Society has been laser-focused on energy efficiency as a means to drive sustainability but needs to pan out and truly address the broader problem. We often feel trapped between the big picture of sustainability and the smaller picture of energy efficiency.

Decarbonization lives in the in between. It provides four pillars, making it more actionable, offering approachable mechanisms that can be bundled and used to take tangible steps forward on individual projects, moving our way to a more sustainable future.

This session will be presented by Kandice Cohen. Kandice has spent her career focused sustainability and decarbonization in the HVAC and lighting spaces within commercial and industrial buildings. She is the Director, Electrification of Heat for Trane Technologies, focused on building and executing Trane's strategy around the megatrends of sustainability, decarbonization, and the electrification of heat. Kandice specializes in market transformation towards technologies that lead to a healthier planet, healthier buildings, and a healthier population.

Previously to this role, Kandice spent 13 years engaged in the science of illumination and controls to enhance the quality of the lit environment for the benefit of occupants, as well as to maximize energy savings that achieve the goals of building owners and efficiency programs.

Kandice was awarded the distinct honor as a 40 Under 40 Innovator by Analytics Insight in 2022, Woman on the Rise by Paradigm for Parity in 2021 and was one of three women selected by LEDs Magazine as a part of their 40 Under 40 Inaugural Class of 2020.

Companion Guide

Registered companions receive access to the Meeting of the Members Plenary Session + Keynote Presentation, Meet and Greet event on Monday, June 27 from 9:30-11:30 am and access to Companion Lounge with complimentary morning coffee, tea and snacks.

Companion Lounge

Danforth (2), Sheraton

The Companion Lounge is open daily with light refreshments available in the morning and beverages available all day. The lounge is open to all registered companions and is a great place to meet others.

- ✓ Saturday, June 25 7:30 am – 3:00 pm
- ✓ Sunday, June 26 7:30 am – 3:00 pm
- ✓ Monday, June 27 7:30 am – 3:00 pm
- ✓ Tuesday, June 28 7:30 am – 3:00 pm
- ✓ Wednesday, June 29 7:30 am – 1:00 pm

Companion Meet and Greet

Civic North (2), Sheraton | Monday, June 27 | 9:30 – 11:30 am



The Meet and Greet, open to all registered companions and guests, gives companions an opportunity to meet with old friends and greet new ones. Light refreshments will be served.

The Gashkibijigan: Sacred Bundle exercise will share the worldview, history and relationships between Indigenous and non-Indigenous peoples from a unique Indigenous perspective. By using the sacred bundle, a special collection of ceremonial and sacred items, this exercise explores the truth of the complex relationship between Indigenous peoples, colonial governments, and broader society. The exercise uses storytelling, teachings, and

Indigenous knowledge to explore colonization, Indian Residential Schools, the 60's Scoop, missing and murdered Indigenous women and girls, widespread loss of identity, and associated intergenerational trauma experienced by First Nations, Métis and Inuit peoples in Canada.

This interactive experience is lead by Bob Goulais (Anishinaabe) and explores First Nation's relationship with Creation, the Spirit World, and healing. The Sacred Bundle itself represents Mother Earth, Turtle Island and Indigenous lands, the water, the treaties and elements of authentic Anishinaabe and Haudenosaunee culture. The exercise will conclude with an uplifting ceremony, led by Elders and knowledge keepers, that will contribute to Reconciliation and healing by all those participating in, and witnessing the exercise.

Bob Goulais, Nipissing First Nation. Bob is an Anishinaabe from Nipissing First Nation, is a well-known speaker, traditional teacher, facilitator and Master of Ceremonies, providing cultural context, history and traditional knowledge to diverse audiences across Canada. Bob is a second-degree member of the Three Fires Midewiwin Lodge, a traditional society of the Anishinaabe (Ojibway, Odawa and Pottawatami) people. He is a strong advocate for the retention and proliferation of the Anishinaabemowin (Ojibway language) and Anishinaabe culture.

Things to Do in Toronto



—



TORONTO JAZZ FESTIVAL

Join as the festival celebrates it's 35th year!

Location: various venues



Learn More

MIRVISH

BROADWAY LIKE SHOWS



Learn More



Juliet

June 24, 25, 26, 28, 29, 30

@ Princess Of Wales 300 King St W

2 Pianos 4 Hands

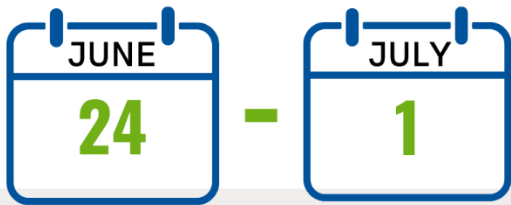
June 24, 25, 26, 28, 29, 30

@ Royal Alex 260 King St W

Harry Potter & The Cursed Child

June 24, 25, 26, 28, 29, 30

@ CAA Ed Mirvish 244 Victoria St



BUDWEISER STAGE

COVERED LAKESIDE VENUE, LAWN SEATING

The Chicks Tour
June 24 & 25 @ 7:30pm

Josh Groban
June 28 @ 7pm

Dallas Smith
June 30 @ 7pm

 [Learn More](#)

Rex Orange County
June 26 @ 8:30pm

The Doobie Bros 50th Ann
June 29 @ 7:30pm

Backstreet Boys
July 1 @ 7:30pm

SCOTIABANK ARENA

40 BAY STREET



Diljit Dosanjh
Born To Shine World Tour
June 25 @ 7pm

 [Learn More](#)



vs. Atlanta
June 25 @ 7:30pm

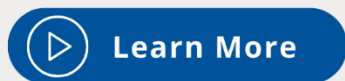


vs. Columbus
June 29 @ 7:30pm

TORONTO FC SOCCER

 [Learn More](#)

TORONTO BLUE JAYS BASEBALL



vs. Red Sox
June 27, 28, 29
@ 7:07pm



vs. Tampa Bay Rays
June 30
@ 7:07pm



TORONTO SYMPHONY ORCHESTRA



The music of ABBA
June 28 @ 8pm
June 29 @ 2pm & 8pm

EVENT LOGISTICS

Maps

Sheraton Centre Toronto

123 Queen Street West, Toronto, ON M5H 2M9

The Sheraton meeting space is on five floors: Lower Concourse (LC), Concourse (C), Mezzanine (M), 2nd Floor (2) and 4th Floor (4). Escalators in the lobby go down to Concourse and Lower Concourse Levels. Elevators in the main lobby go to the 2nd and 4th floor as well as Queen Tower guest rooms. From the lobby, take the stairs up to the Mezzanine level or take the stairs down from the 2nd floor near the Richmond Tower elevators. Guests staying in the Richmond Tower may access the Mezzanine level via the Richard Tower elevators.

See maps with call-outs on the following pages. Registration, Bookstore, Speakers Lounge, (3) Technical Session rooms, the Plenary, President's Lunch, Members Lounge and Board Meetings will take place on the **Lower Concourse** level. ASHRAE Headquarters is located on the **Concourse**

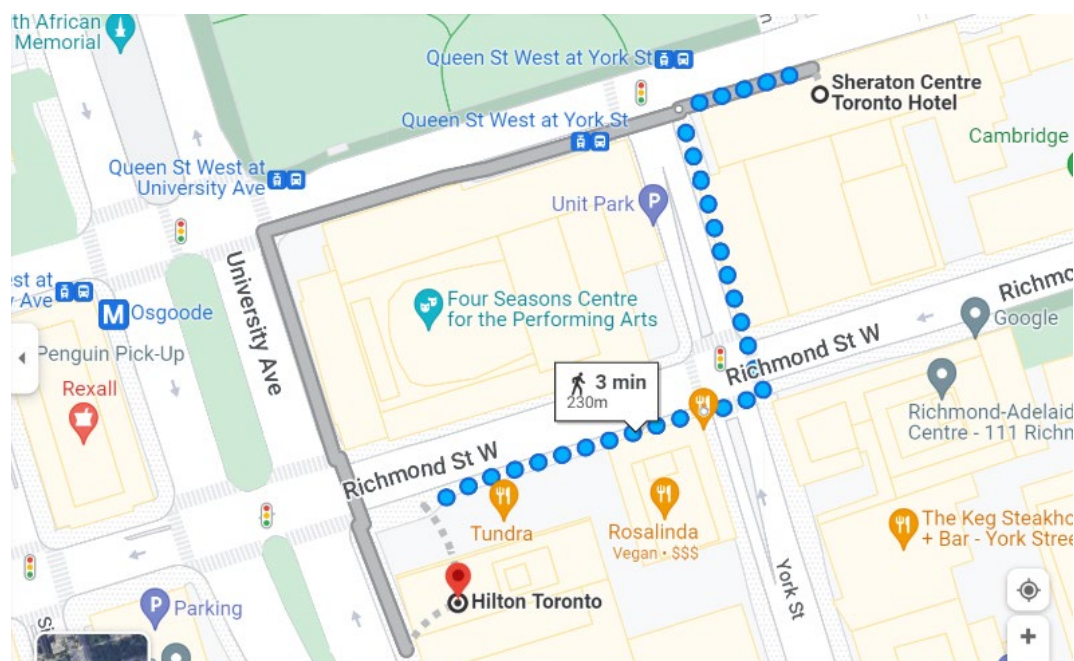
level. The remaining Technical Sessions will be held on the **2nd floor**. All Courses will be held on the **Mezzanine** level. Committee meetings will be on the Mezzanine, 2nd and 4th floors.

Hilton Toronto

145 Richmond St W, Toronto, ON M5H 2L2

The Hilton meeting space is on four floors: the Convention level (C), Lobby (L), 2nd Floor (2) and 3rd Floor. Go down the escalators in the lobby to the **Convention level**. As you enter the Hilton, go toward the back right side of the lobby to access the meeting rooms on the **Lobby (L)** level. Stairs in the lobby go up to the **2nd floor**. The elevators next to the lobby guest check-in desk go up to the **2nd and 3rd floors**. See maps on the following pages.

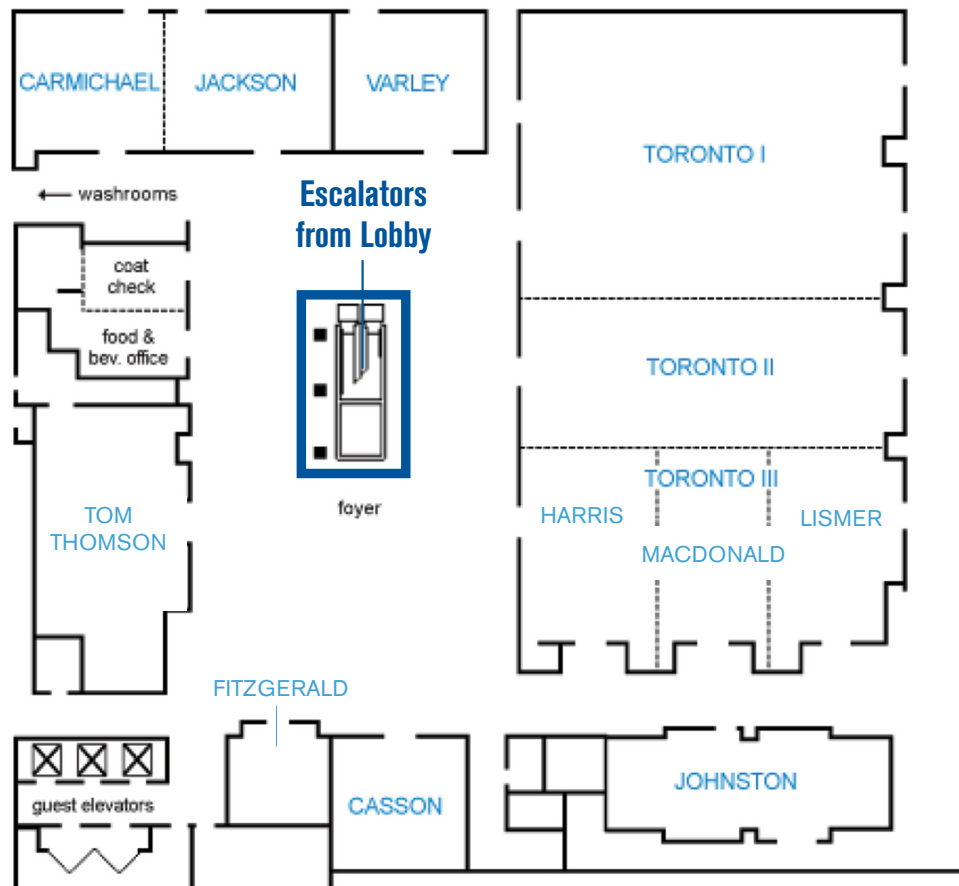
3-minute walk between the Sheraton and the Hilton



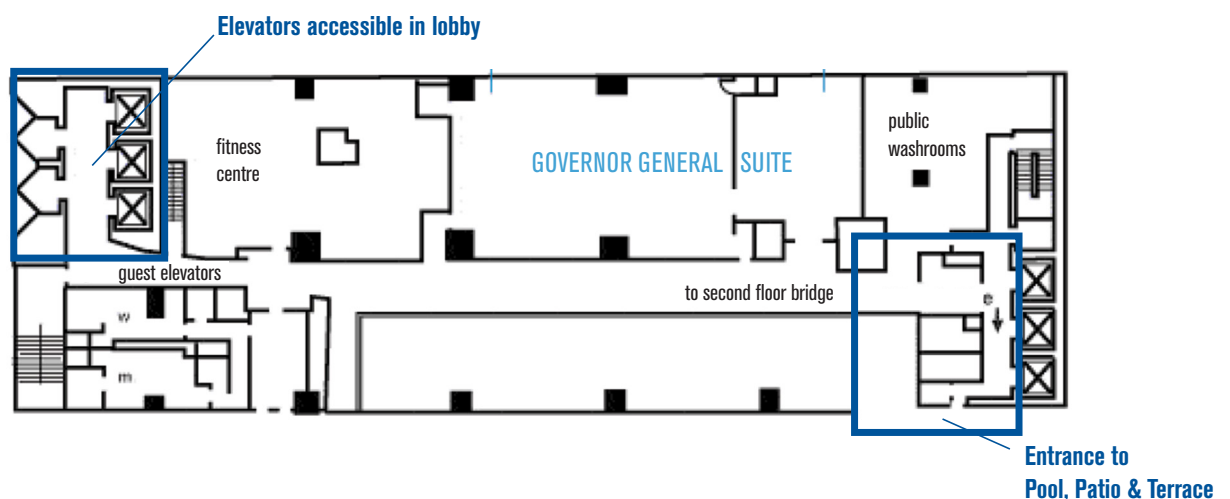
From the Sheraton's Valet circle, turn left (west) on Queen St. and take an immediate left on York Street. Walk 1 block and cross York Street and head west on Richmond Street. The Hilton will be on your left before you get to University Ave and across the street from the Four Seasons Performing Arts Center.

Hotel maps are on the following pages.

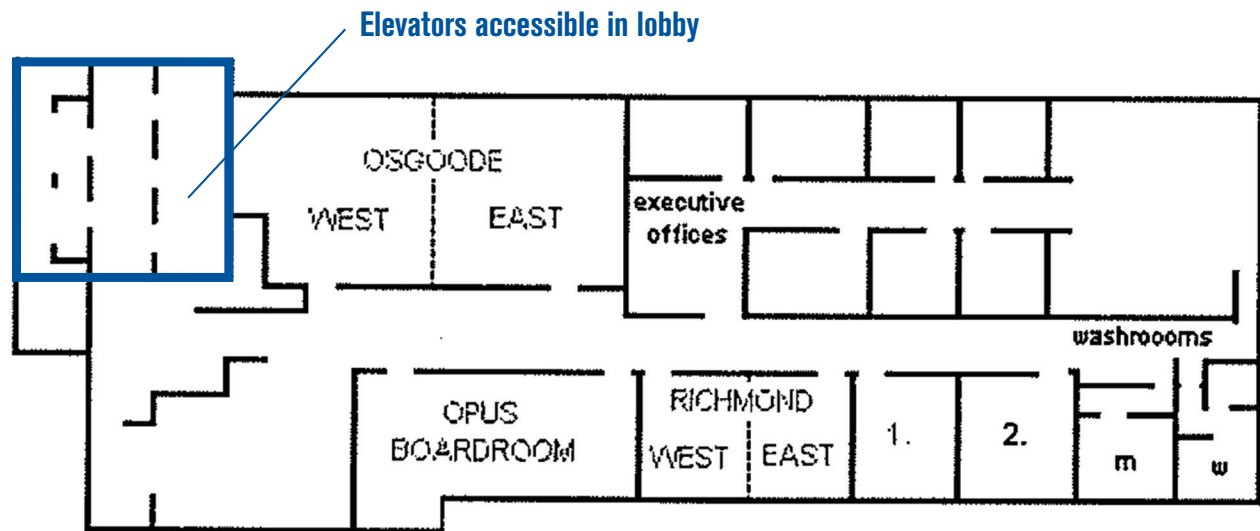
CONVENTION LEVEL



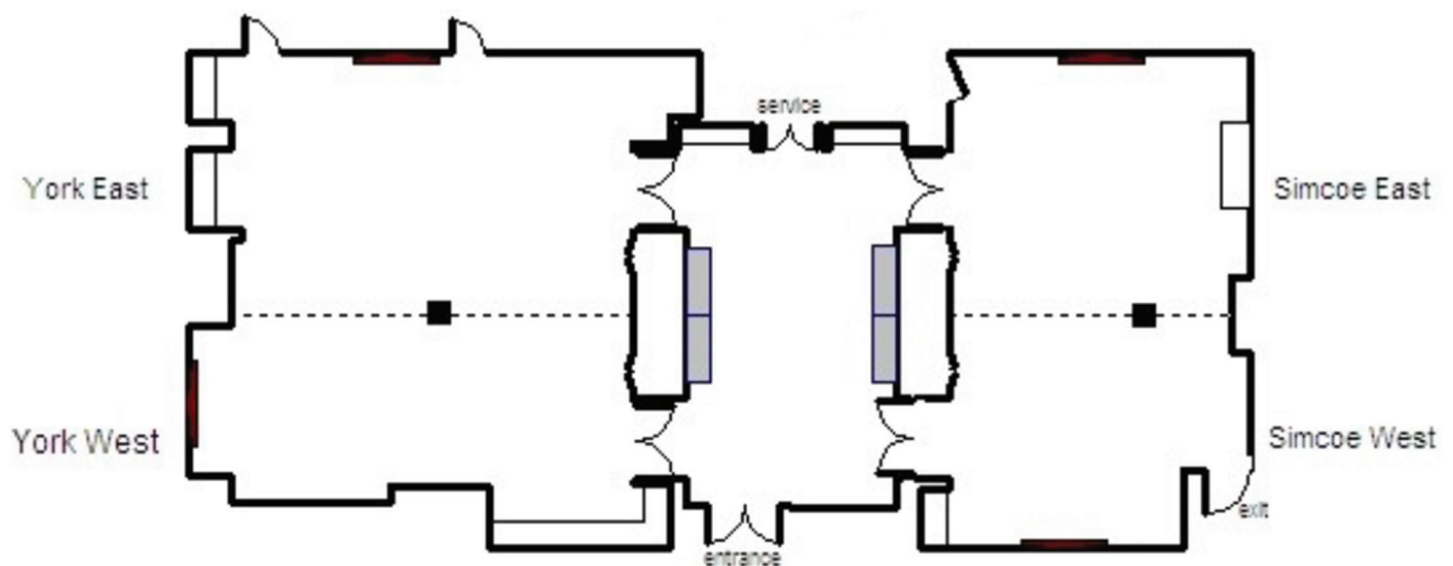
SECOND FLOOR



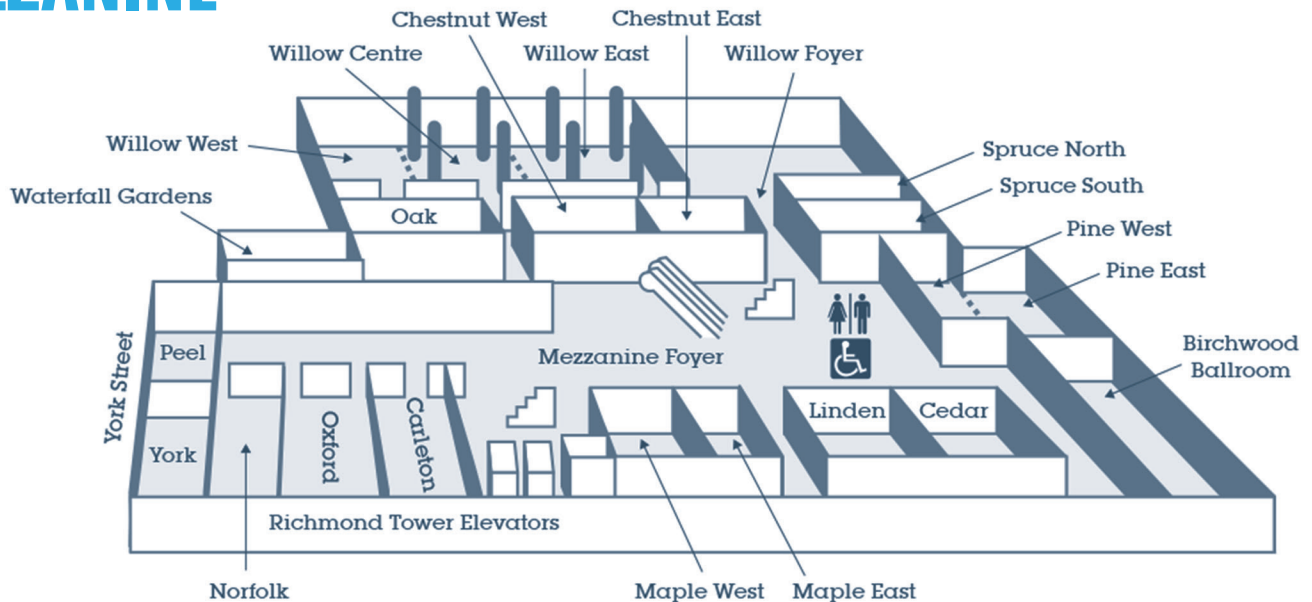
THIRD FLOOR



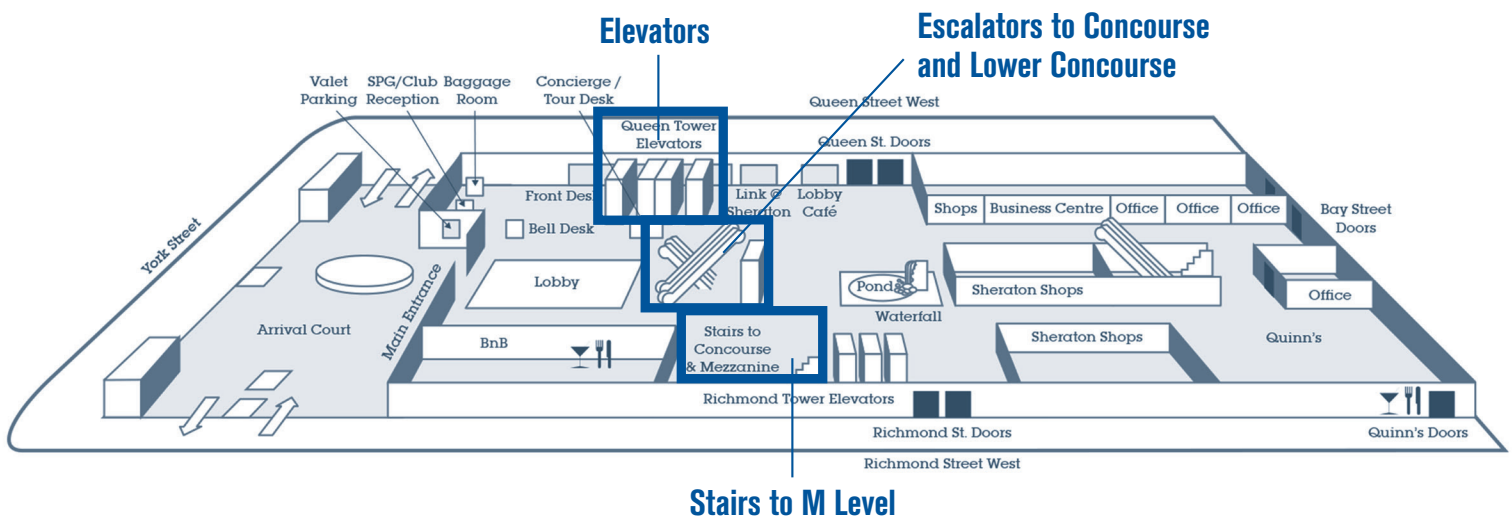
LOBBY LEVEL



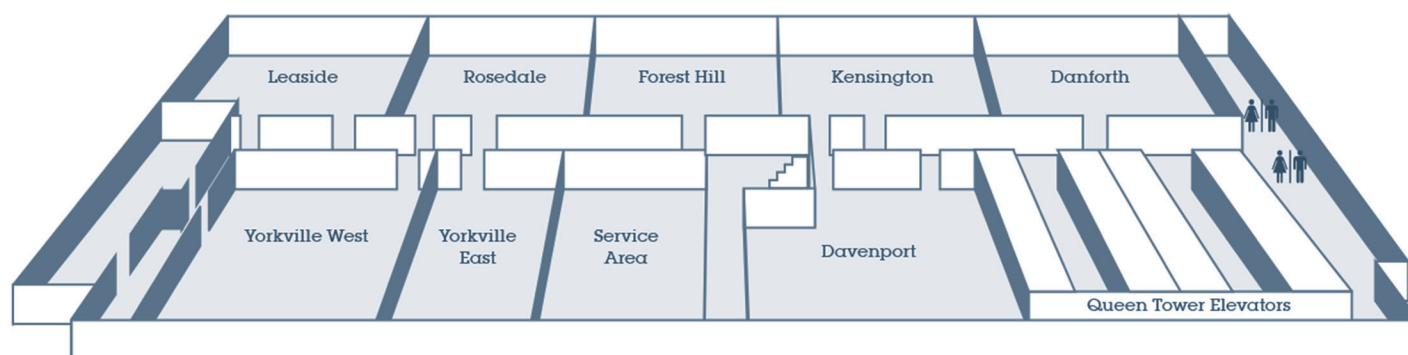
MEZZANINE



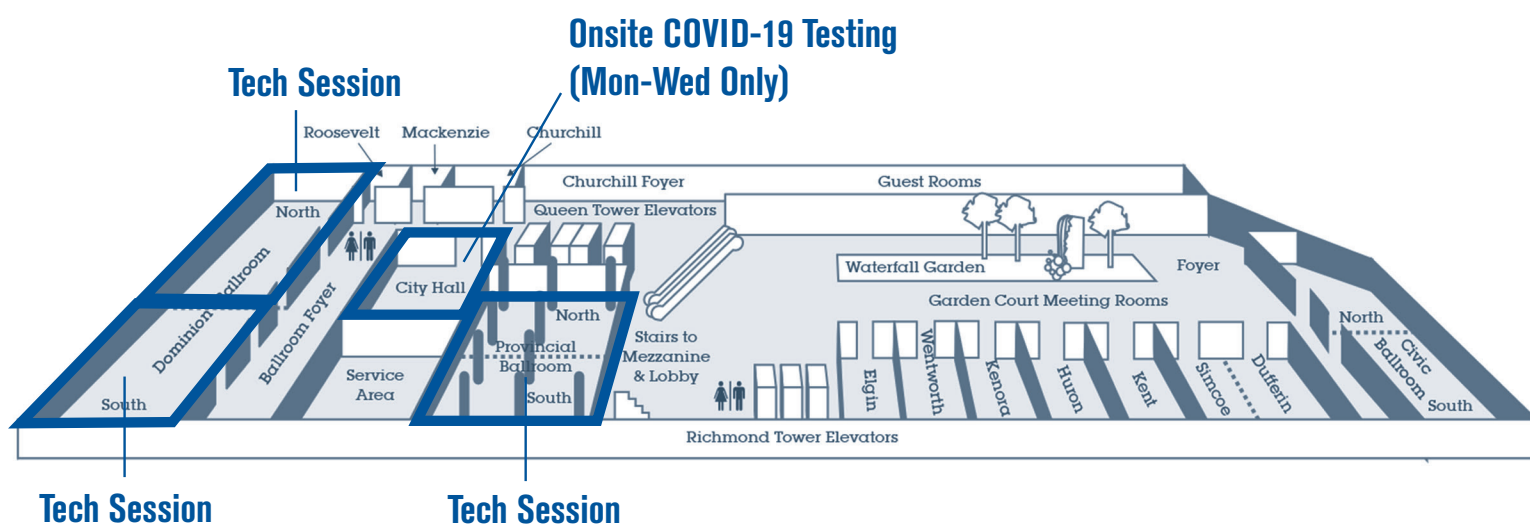
LOBBY



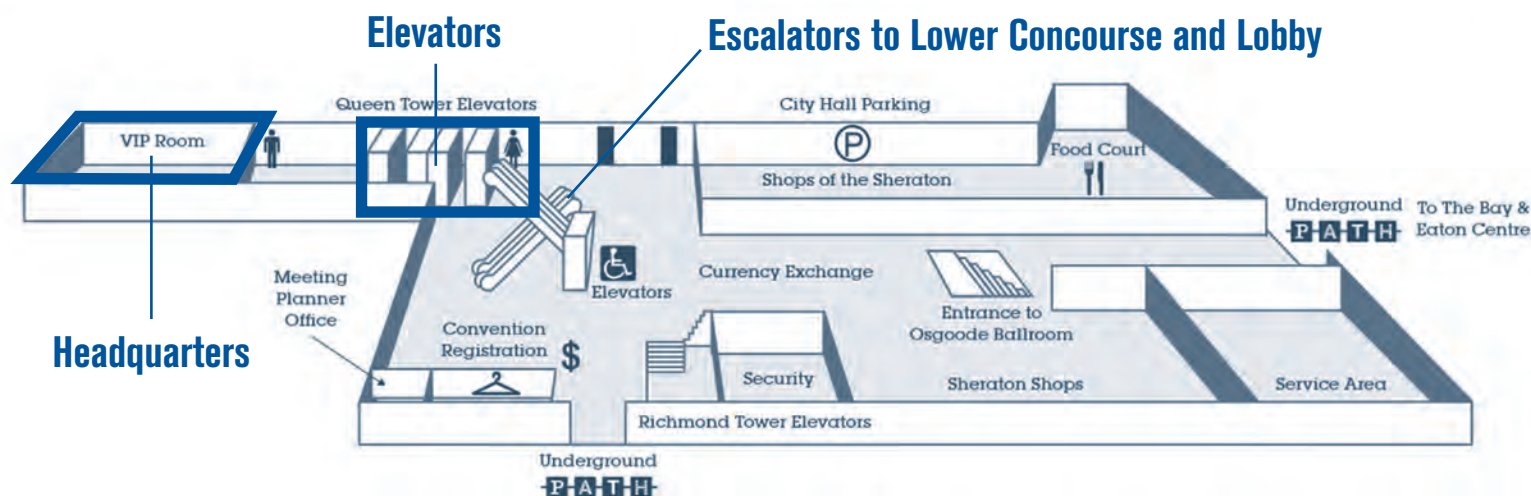
4th FLOOR



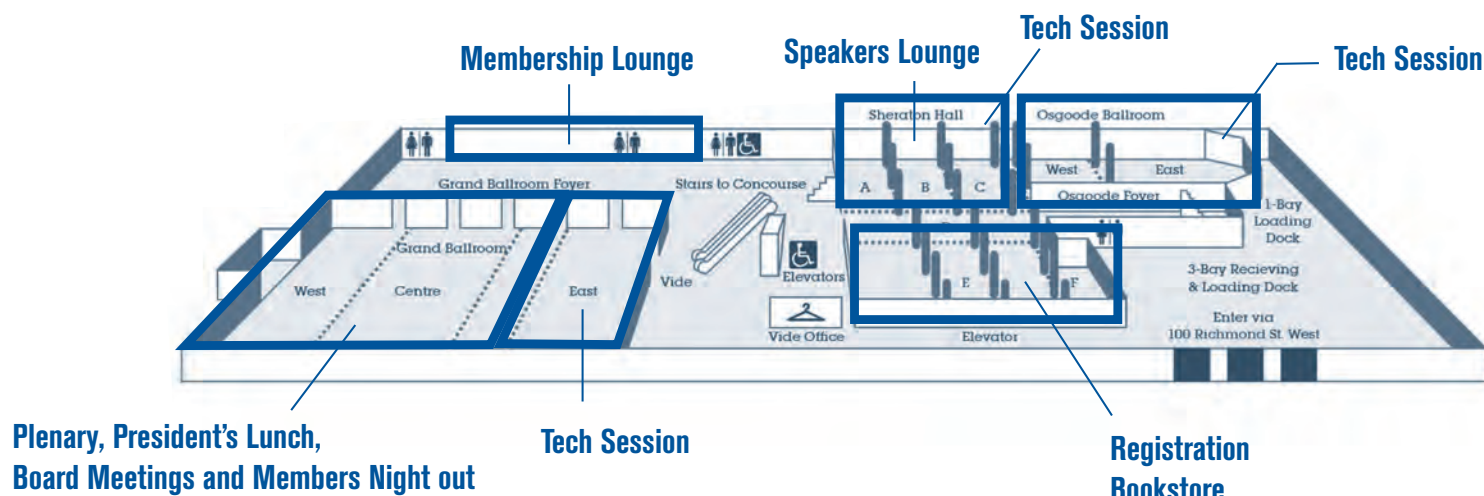
2nd FLOOR



CONCOURSE



LOWER CONCOURSE



Hilton Toronto

145 Richmond St W
Toronto, ON M5H 2L2
416-869-3456

www.hilton.com/en/hotels/torhihh-hilton-toronto/

>> **What's taking place at each:**

Sheraton	Hilton
Registration, Bookstore, Speakers Lounge	Some Technical and Project Committees
Technical Sessions	
Plenary, President's Lunch, Members Night Out	
Standing Committees	
Some Technical and Project Committees	

Wi-Fi

ASHRAE is happy to provide Wi-Fi at both hotel properties for simple web browsing and to connect to email. Streaming videos and joining virtual meeting platforms may cause disruption in internet connection. Chairs of main committees who are hosting hybrid meetings have been sent a private Wi-Fi password for dedicated bandwidth to support hosting a hybrid meeting. In-Person committee members should not join the hybrid meeting via WebEx, GoToMeeting, Teams, Zoom, etc while inside the room.

Sheraton

SSID: ASHRAE

Password: Toronto100

Hilton

Network: Hilton_Meeting

Password: Toronto100

Conference Policies

Recordings

ASHRAE regards the materials presented at these sessions to be the unique work of ASHRAE and exercises control over the dissemination and/or use of such products in the future. Accordingly, video and audio recording of this program is not allowed without ASHRAE's prior written consent.

Company-Sponsored Hospitality Suite Policy

Hospitality suite hours must not conflict with ASHRAE meetings or social functions. Product displays, literature handouts, posting of signs in hotel lobbies or hallways and commercial advertising or recruiting are not allowed in the Sheraton Centre Toronto or the Hilton Toronto.

Sale of Merchandise

Sale of merchandise, or the solicitation to sell merchandise, of any type at the Annual and Winter Conferences will only be permitted by prior approval of the Conferences and Expositions Committee and any surplus will go to the Society.

Signs/Displays of Affiliate Meeting Information

Signs and information concerning affiliate or related organizations must be approved by the Society prior to display. No signs are to be attached to walls and all signs must be professionally printed.

Photo Release

Photographs will be taken at the ASHRAE Annual Conference. By registering for this conference, you agree to allow ASHRAE to use your photo in any Society level communication, publication, or marketing material.

In case of Emergency

Plan ahead—when you reach your destination, check the location of exits. Walk to the nearest exit; learn the route, obstacles, etc.

Sheraton Centre Toronto

Dial 4977 from any hotel phone and state your name, location and nature of emergency. The operator will then notify the Security Staff and they will be dispatched to your location, as well will contact 911 if required or requested. Security Staff are trained in first aid, automatic external defibrillators and CPR. The hotel has five automatic external defibrillators (AED's) on site.

All house phones are equipped to dial '911' directly. Should you contact '911' via a house phone or mobile phone, please inform the hotel immediately by using any house phone and ext. 4977.

Located on the concourse level and is staffed 24 hours a day and can be contacted at ext. 4400.

In the event of fire alarm activation an audible tone will be activated throughout the building. After one minute this tone will be replaced by an announcement. The announcement will give the location of the alarm and notify all guests that the hotel response team is investigating and that emergency services is on their way. After the announcement the tones will continue.

During the alarm further announcements will be made notifying all guests on the situation, changes in the situation, and whether evacuation or shelter in place is required.

The "All Clear" announcement will take place once the source of the alarm has been discovered and the "All Clear" has been authorized by the Hotel and Emergency Services. Elevators are not accessible. If at any time during a fire alarm you feel you are at risk or in any danger we advise that you leave the hotel via the nearest fire exit and make your way to Nathan Phillips Square located on the north side of Queen Street.

To avoid delays should you be required to evacuate the building we ask that you make yourself aware of the nearest fire exits to your location. Please ensure that all guests staying in your room are registered to the room, especially all guests who may have mobility challenges and identify them as having mobility challenges at check in. This enables the hotel to identify those guests who may require assistance during an emergency.

Hilton Toronto

Dial #911 on any house or guest room phone in hotel to reach External Emergency Medical Services Operator and Hilton Express Operator. Hilton Express Operator will dispatch Hilton Toronto Emergency Response Team.

The Hilton's Security's team can be reached at 416-869-3456 (extension: 4110). The security office is located on the Mezzanine level north of Service Elevators. The facility follows all Federal, Provincial and Local health, safety and fire regulations.

Emergency Numbers and Addresses

Hospital	St. Michael's Hospital	30 Bond St	416-864-5094 emergency 416-360-4000 non-emergency	(0.2 mi)
Police	Toronto Police Services	52 Division 255 Dundas St. W.	911 emergency 416-808-2222 non-emergency	(0.2 mi)
Fire	Toronto Fire Services	260 Adelaide St.	911 emergency 416-338-9050 non-emergency	(0.1 mi)
Pharmacy	Shoppers Drug Mart	333 Bay St	416-304-1151	(0.1 mi)

Safety Tips

Street Safety. The streets of any city at any time can be unsafe. When you leave your hotel to go out during the day or the evening, make sure you take off your badge. Wearing a badge is an advertisement that you are a visitor to the city and that you are probably unfamiliar with your location.

Walk "smart" when you leave the convention site —know your destination and the best way to reach it. Walk along lighted sidewalks at night and don't walk alone. Trust your instincts—if you're uncomfortable with a situation, get out of it.

Hotel Safety. Don't answer the door in a hotel room without verifying who it is. If a person claims to be an employee, call the front desk and ask if a staff person is supposed to have access to your room and for what purpose. Use the hotel safe-deposit box. When you're in your hotel room, use all the locking devices provided. Don't reveal your room number or discuss plans for leaving the hotel within earshot of strangers.

Meals

Meals are not included in your conference registration.

Restaurants at the Sheraton

Dual Citizen (Grab-and-Go)

Inspired by the global traveler, Dual Citizen offers a selection of quick grab and go breakfast items for the morning commuter and a variety of all-day offerings, including barista/mixologist-crafted coffees and cocktails.

Mon-Thu	6:30 AM-11:00 PM
Fri-Sat	6:30 AM-1:00 AM
Sun	6:30 AM-10:00 PM

43 Down

A curated, intimate bar delivering perfectly on the classics through handcrafted cocktails and locally-inspired flavours from our community. This intimate mixology bar will have an exclusive feel offering small bites inspired by the diversity of Toronto.

>> [Recommended local restaurants](#)

Restaurants at the Hilton

Level Two

A sophisticated second story rooftop terrace heightens the sense of being in the heart of the city, rather than above it. Serving a small plates bar menu with creative cocktails.

Thursday	4:00 pm - 9:00 pm
Friday	11:00 am - 9:00 pm
Saturday	11:00 am - 9:00 pm
Sunday	11:00 am - 6:00 pm

Ruth's Chris Steak House

Monday	5:00 pm - 10:00 pm
Tuesday	5:00 pm - 10:00 pm
Wednesday	5:00 pm - 10:00 pm
Thursday	5:00 pm - 10:00 pm
Friday	12:00 pm - 10:30 pm
Saturday	4:30 pm - 10:30 pm
Sunday	4:00 pm - 9:00 pm

Tundra Restaurant

Inspired by fresh, locally sourced produce and protein, sustainable seafood and foraged gems from independent purveyors, our team passionately makes each dining experience unique - depending on the season and the ingredients. As a Surfrider Foundation Ocean Friendly Restaurant, Tundra Restaurant is dedicated to sustainably serving you.

Monday	5:00 pm - 10:00 pm
Tuesday	5:00 pm - 10:00 pm
Wednesday	5:00 pm - 10:00 pm
Thursday	5:00 pm - 10:00 pm
Friday	5:00 pm - 10:00 pm

Saturday 5:00 pm - 10:00 pm
Sunday 5:00 pm - 10:00 pm

Toronto’s Underground P-A-T-H

The Sheraton Centre Toronto is connected on the Concourse level to Toronto’s P-A-T-H Underground Shopping and Dining. If exiting the Sheraton on the Concourse level through the P-A-T-H turn right and proceed to the Richmond-Adelaide Centre food court for several quick service restaurants.

Mothers Room

ASHRAE is pleased to offer a private room to nursing mothers in both locations. Please visit the Registration Desk in Sheraton Hall to inquire about access.

Sheraton	Hilton
Office on Lower Concourse Level	Fitzgerald (C)

Lost and Found

Items found during the conference should be turned into the staff at the following locations:

Sheraton		Hilton
ASHRAE Lost and Found	Staff Headquarters VIP Room (C)	--
Venue Lost and Found	Any item that is turned into the Front Desk, Loss Prevention or Housekeeping they are logged by date and item by the Sheraton’s Gest Services team. Items are held for 30 days after that they are turned over to the person who found the item or discarded.	Hotel Security Check with Front Desk

Future ASHRAE Conferences

Future Winter Conferences	Future AHR Expos	Future Annual Conferences
Feb. 4-8, 2023 – Atlanta, GA Jan. 20-24, 2024 – Chicago, IL Feb. 8-12, 2025 – Orlando, FL	Feb. 6-8, 2023 – Atlanta, GA Jan. 22-24, 2024 – Chicago, IL Feb. 10-12, 2025 – Orlando, FL	June 24-28, 2023 – Tampa, FL June 22-26, 2024 – Indianapolis, IN June 21-25, 2025 – Phoenix, AZ

Future Topical Conferences

2022 Building Performance Analysis Conference and SimBuild

Co-organized by ASHRAE and IBPSA-USA

September 14-16, 2022 | Chicago, IL

>> ashrae.org/buildperform2022

International Building Decarbonization 2022 Conference

October 6 - 7, 2022 | Athens, Greece

Call for Papers and Presentations Announced – Abstracts due March 14, 2022

>> ashrae.org/decarb2022

The Fifth International Conference on Efficient Building Design

Materials and HVAC Equipment Technologies

Beirut, Lebanon | October 20–21, 2022

>> ashrae.org/beirut2022

Buildings XV Conference

December 5-8, 2022

Sheraton Sand Key Resort, Clearwater Beach, FL

Thermal Performance of the Exterior Envelopes of Whole Buildings

>> ashrae.org/buildingsXV

ASHRAE and SCANVAC HVAC Cold Climate Conference 2023

March 6-8, 2023

Marriott Anchorage Downtown, Anchorage, Alaska

March 9-10, 2023

Fairbanks, Alaska

>> ashrae.org/2023HVACColdClimate

TECHNICAL PROGRAM

Technical Program and PDH Info

The full Technical Program can be found in the [ASHRAE 365 app](#) or

>> [Download a PDF of the full program.](#)

Badge Scanning and Session Evaluations

Badges must be worn for admission to the technical program. Your badge will be scanned as you enter a technical session. ASHRAE will email you a summary of all sessions attended after the conference. To complete technical program speaker and session evaluations, please access the ASHRAE 365 app. The evaluations can be accessed by clicking on each session attended within the app. Attendees are invited to comment on Technical Papers via an online. Questions submitted will be sent to authors for reply and published with Technical Papers via an online form. If you registered as “Committee Meeting Only” you will not have access to the Technical Program. To upgrade your registration to receive access to the technical program please visit the registration desk in Sheraton Hall (LC) at the Sheraton.

Professional Development Hours (PDHs)

All of the sessions presented in the technical program are approved for professional development hours (PDHs).

In addition, some sessions have been submitted for approval for the State of New York PDHs and AIA Learning Units. All approved sessions will have a sign-in sheet located in the back of the session room. Certain sessions may be acceptable for ASHRAE certification renewal. Send questions to certification@ashrae.org.

Sign-in sheets are available in the session rooms approved for AIA licensees. Sessions are approved for 1, or 1.5 PDHs depending on the length of the session.

Conference Papers

NEW! All registered conference attendees will have free access to papers presented in the paper sessions. To access conference papers, go to the Virtual Environment and click on the individual paper presentation to view and download copies of the Conference Papers. Final papers are also published in ASHRAE Transactions. All papers published between the years 1980–1997 may be searched online in the Abstract Archive Center. Access to the Abstract Archives is a member benefit. For ordering information, contact ASHRAE Customer Service at 1-800-527-4723 or cservice@ashrae.org.

Watch Sessions Later On Demand

Don't miss the state-of-the-art concepts and latest design techniques presented in the Society's technical program available on-demand after the conference. All sessions presented live in Toronto will be recorded and available to watch on-demand until June 2023. Attendees will be able to view presentations and to interact with an online audience through a discussion board. All registered and paid conference attendees will receive an email notification when sessions are available for viewing.

>> [Access The Toronto Technical Program On-Demand](#)

Access to the Toronto Technical Program On-Demand includes:

- Synced audio and PowerPoint presentations from all, paper sessions, seminars, and workshops.
- Ability to post comments and rate presentations.
- Print presentation slides in notes format.

Presentations are available online for 12 months with the ability to post questions or answers for selected sessions through July 14.

A full slate of technical programs will be posted daily beginning Monday, June 27 through Thursday, June 30, of the sessions that were presented the previous day.

Access to the Toronto Technical Program On-Demand is free with your paid conference registration. To register for access to recordings of the livestreamed sessions, downloadable conference papers and Toronto Technical Program sessions on-demand, register online at ashrae.org/2022annual.

\$350 ASHRAE member; \$515 non-member; Company Packages available starting at \$1,170.

Livestreaming and On-Demand

ASHRAE will livestream 10 technical sessions and two sponsor tech talks during the conference. The Plenary and President's Luncheon and all other Technical Sessions will be made available for on-demand view the day after the presentation. All paid registrants, both in-person and virtual, have access to the Virtual Conference Environment and can watch and participate in livestream sessions from anywhere: your home, your office or even your hotel room!

>> [Access Virtual Conference Environment for livestreamed and on-demand sessions](#)

Some committee meetings will also be available for both in-person and virtual attendees. Anyone (paid or unpaid) can access committee meetings. Those who wish to join a committee meeting remotely can visit the online schedule, click on the meeting of choice and click "Enter Meeting" under the Resources section.

>> [Access the online schedule](#)

LIVESTREAM SESSION SCHEDULE

The following sessions will be livestreamed to virtual attendees. In-person attendees will have access to the Virtual Environment, too! Even though you are here in Toronto you can still access the Virtual Environment to:

- Watch live streamed session(s) from your hotel room
- Chat with other virtual and in-person attendees during these sessions
- Enter questions in the Q&A box for presenters during these sessions
- Watch recordings of the live streamed sessions later, take a quiz and download a PDH certificate

Sunday, June 26

TIME	EVENT NAME	Location
3:15-4:45 pm	Seminar 15: Update on the Progress of the Task Force for Building Decarbonization <i>IAQ, Energy Use, Comfort and Health of Sustainable Buildings</i>	Grand East (LC-S)

Monday, June 27

TIME	EVENT NAME	Location
9:45-10:45 am	Seminar 20: Cybersecurity, Securing Building Control Systems: Are We Meeting Industry Needs? <i>HVAC&R Systems and Equipment</i>	Grand East (LC-S)
11:00 am-12:00 pm	Seminar 25: Fundamentals of Division 25: Integrated Controls and Cyber Security <i>Connected Buildings, Connected Communities</i>	Grand East (LC-S)
2:15-3:45 pm	Debate 2: Building Performance Standards: Are They Good for ASHRAE Members? <i>IAQ, Energy Use, Comfort and Health of Sustainable Buildings</i>	Grand East (LC-S)
2:15-2:45 pm	Sponsor Tech Talk: ABB Motion Solutions for Clean Room Environments presented by ABB, Inc.	Osgoode (LC-S)
2:15-2:45 pm	Sponsor Tech Talk: Selling and HVAC/R Company: How to Prepare and What to Expect presented by Balmoral Advisors	Dominion North (2-S)

Tuesday, June 28

TIME	EVENT NAME	Location
9:45-10:45 am	Seminar 32: Climate Change Issues for Decarbonization, IAQ and Sustainable Buildings <i>IAQ, Energy Use, Comfort and Health of Sustainable Buildings</i>	Grand East (LC-S)
11:00 am-12:30 pm	Seminar 37: COVID-19 and Indoor Air Filtration <i>Buildings in the Aftermath of COVID-19</i>	Grand East (LC-S)
1:30-3:00 pm	Seminar 39: A Tool to Decarbonize Existing Buildings: An Overview of ASHRAE's Technical Resource Guide on Building Performance Standards <i>IAQ, Energy Use, Comfort and Health of Sustainable Buildings</i>	Grand East (LC-S)
1:30-2:00 pm	Sponsor Tech Talk: Finding the Decarbonization Middle Ground presented by Trane	Provincial (2)
3:15-4:45 pm	Panel 2: ASHRAE and DEI: Where Are We Now, Where Do We Want to Be Tomorrow and How Do We Get There? <i>Professional Development and Education</i>	Grand East (LC-S)

Wednesday, June 29

TIME	EVENT NAME	Location
9:45-10:45 am	Seminar 48: Why You Shouldn't Lick Your Filter <i>IAQ, Energy Use, Comfort and Health of Sustainable Buildings</i>	Grand East (LC-S)
11:00 am-12:30 pm	Seminar 52: Without Ventilation Effectiveness, Air Change per Hour is Just a Number <i>IAQ, Energy Use, Comfort and Health of Sustainable Buildings</i>	Grand East (LC-S)

HOW TO ACCESS LIVESTREAMED SESSIONS

To access using your laptop, phone or tablet, [click here](#). Login using the email address used to register for the conference. If you have used the virtual platform in the past, you can enter your password or click forgot password. If you are new to the site, you will be asked to register. Once you have entered your password/registered, you can access livestream content by clicking on the "Livestream Presentations" link located on the left-hand search bar. You can enter each livestream up to 15 minutes prior to the start time by clicking the green button labeled "enter here" under each title. You can access all on-demand content 24 hours after the live session by browsing the program and clicking each individual presentation that interests you.

Attendees who registered and paid a conference registration fee will have access to the livestreamed sessions and Virtual Environment to access recordings of all sessions for the next 12 months (June 30, 2023).

SESSION TYPES

PAPER SESSIONS

These sessions present both technical and conference papers. Conference papers are written on current applications or procedures, as well as papers reporting on research in process. These papers differ from technical papers in that they are shorter in length and undergo a much less stringent peer review. Technical papers cover current applications or procedures, as well as papers resulting from research on fundamental concepts and basic theory. Papers presented in these sessions have successfully completed a rigorous peer review. PowerPoint presentations with audio descriptions of the presentations are posted online in the Virtual Conference. Preprints of the papers are available to all attendees who have purchased a conference registration.

FORUMS

Forums are "off-the-record" discussions held to promote a free exchange of ideas. Reporting of forums is limited to allow individuals to speak confidentially without concern of criticism. There are no papers attached to these forums.

DEBATES

Debates highlight hot-button issues. Experts, either on teams or as individuals, present different sides of an issue in debate format. Each participant presents evidence for or against a specific statement or question such as "Is Sustainability Really Sustainable?".

PANELS

Panel discussions can feature a broad range of subjects and explore different perspectives on issues in the industry. A panel may feature discussions about integrated project delivery among designers, builders and facility management professionals.

SEMINARS

Seminars feature presentations on subjects of current interest. Papers are not available from the Society; however, seminar PowerPoint presentations with audio descriptions of the presentations are posted online in the Virtual Conference. Access is free for attendees who purchase a conference registration. Seminars are available as a collection via subscription to the Technology Portal online and include video files synched with audio, audio files and PDF files of the presentations.

WORKSHOPS

Workshops enable technical committees and other ASHRAE committees to provide a series of short presentations on a topic requiring specific expertise. These short presentations are provided with an increased emphasis on audience participation and training in a specific set of skills. PowerPoint presentations with audio descriptions are posted online in the Virtual Conference.

THANKS AND ROCOGNITION

Toronto Chapter and Society Officials

Thank you to our volunteers who worked hard to make the 2022 ASHRAE Annual Conference a success!

TORONTO HOST COMMITTEE

General Chair: Doug Cochrane

Vice Chairman: Abhishek Khurana

Entertainment: Beatriz Salazar

Tours: Badri Patel

Sessions: Dragos Paraschiv

Information and Publicity: Alekhya Kaianathbhatta

Sponsorships: Doug Cochrane

Hospitality: David Sinclair

Honorary Chair: David Underwood

Special Thanks To: Kajen Singham, Elias Barker, Cathy Cochrane and Jane Underwood

TORONTO CHAPTER OFFICERS

President: Abhishek Khurana

President-Elect: Kurt Monteiro

Secretary: Alekhya Kaianathbhatta

Treasurer: Beatriz Salazar

ASHRAE OFFICERS

President: Mick Schwedler

President-Elect: Farooq Mehboob

Treasurer: Ginger Scoggins

Vice President: Tim McGinn

Vice President: Don Brandt

Vice President: Sarah Maston

Vice President: Dunstan Macauley

Conferences and Expositions Committee

Chair: Vikrant Aute

Vice Chair: Christine Reinders-Caron

Conference Chair: Kristen Cetin

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George (Billy) Austin, Jr.

Nohad Boudani

Marites Calad

Andrew Cochrane

Robert Cox

Gary Debes

Brian Fronk

Lina Maged Hashem

Stephen Idem

Rupesh Iyengar

Alekhya Kaianathbhatta

Rafi Karim

Suzanne LeViseur

Maggie Moninski

Scott Peach

Anoop Peediayakkan

Bert Phillips

Erik Sanchez

Som Shrestha

Raul Simonetti

Marianna Vallejo

Davide Ziviani

Devin Abellon, BOD Ex-Officio

Farooq Mehboob, Coordinating Officer

Society Honors and Awards

LOUSE & BILL HOLLADAY DISTINGUISHED FELLOW AWARD

David Claridge

ANDREW T. BOGGS SERVICE AWARD

James Fields

DISTINGUISHED 50-YEAR MEMBER AWARD

Andrew Ask	Bernardo Hubard	George Wells
James Bushnell	Ronald Kessner	Lynn Werman
Samuel Cummings, Jr.	Anthony McGuire	
Nicholas Deschamps	John Sosoka	
William Fleming	Robert Suggs, III	

DISTINGUISHED 75-YEAR MEMBER AWARD

Thomas Barrow, Jr.
Eric Schwenker

EXCEPTIONAL SERVICE AWARD

Devin Abellon	Dunstan Macauley	Randy Schrecengost
Michael Brambley	Kashifr Nawaz	
Srinivas Katipamula	Frank Schambach	

DISTINGUISHED SERVICE AWARD

Tiffany Abruzzo	Jason Glazer	Maggie Moninski
Marites Calad	Paula Hernandez	Aakash Patel
Jason DeGraw	John House	Christopher Phelan
Pankaj Dharkar	Rupesh Iyengar	Jin Wen
Joseph Firrantello	Cameron Labunski	Christopher Williams

ASHRAE JOURNAL PAPER AWARD

Rajavel Balaguru	Thomas Bise	Paul Bauch
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DAN MILLS CHAPTER PROGRAMS AWARD

Mitchel Rohrer

DONALD BAHNFLETH ENVIRONMENTAL HEALTH AWARD

Yuguo Li

GOVERNMENT AFFAIRS AWARD

Sonya M. Pouncy

HOMER ADDAMS AWARD

Yunyang Ye

LINCOLN BOUILLON AWARD

Josh Bourbonniere

RALPH G. NEVINS PHYSIOLOGY AND HUMAN ENVIRONMENT AWARD

Thomas Parkinson

STBE BEST PAPER AWARD

David A. Rothamer

Scott Sanders

Douglas Reindl

Timothy H. Bertram

STANDARDS ACHIEVEMENT AWARD

Drury Crawley

Roger Hendrick

STUDENT ACTIVITIES ACHIEVEMENT AWARD

Muhammad Uzair

WILLIAM J. COLLINS RP AWARD

Nathan Zeigler

2021 CROSBY FIELDS AWARD

“Experimental Investigation of Induction Motor Power Factor and Efficiency Impacted by Pulse Width Modulation Power and Voltage Controls of Variable Frequency Drives” by Zhitao Han, Ph.D., Li Ding, Gang Wang, Ph.D., P.E.

2021 TECHNICAL PAPER AWARD

“Part-Load Airflow and Power Model of Multi-Speed Fan-Coil Units with Electronically Commutated Motors” by Dennis L. O’Neal, Ph.D., PE, Jessica Cramer, Peng Yin, Ph.D.

“Sizing Ducts Based on a Prescribed Friction Rate” by C. Kodali, S. Idem, Ph.D.

“Updated Database of Clothing Thermal Insulation and Vapor Permeability Values of Western Ensembles for Use in ASHRAE Standard 55, ISO 7730 and ISO 9920; Results of ASHRAE RP” by James W.

Smallcombe, Ph.D., Magdalena Młynarczyk, Ph.D, Jakob Eggeling, Simon Hodder, Ph.D., Amitava Halder, Kalev Kuklane, Ph.D., Dennis Loveday, Ph.D., George Havenith, Ph.D.

“A Simple Airflow and Power Analysis of Fan-Coil Units with Electronically Commutated Motors” by Dennis L. O’Neal, Ph.D., PE, Jessica Cramer, Peng Ying, Ph.D.

2021 WILLIS H. CARRIER AWARD

“Experimental Investigation of Induction Motor Power Factor and Efficiency Impacted by Pulse Width Modulation Power and Voltage Controls of Variable Frequency Drives” by Zhitao Han, Ph.D., **Li Ding, Gang Wang, Ph.D., P.E.**

LeadershipU

At each ASHRAE conference, the Leadership U program gives four future ASHRAE leaders the opportunity to shadow an ASHRAE Board member, providing a high-level conference experience and unique networking opportunity. This program is operated by the Young Engineers in ASHRAE (YEA) Committee, and more information can be found at ashrae.org/yea. The LeadershipU participants for the 2022 ASHRAE Annual Conference are:

Courtney Araiza, Florida West Coast Chapter, Region XII

Marelle Paas-O'Brock, Austin Chapter, Region VIII

Luiz Piccoli, Jr., South Brazil Chapter, Region XII

Jati Widiputra, Indonesia Chapter, Region XIII



Message from the Mayor

It is my pleasure to extend greetings and a warm welcome to everyone participating in the 2022 ASHRAE Annual Conference hosted by the the American Society of Heating Refrigerating & Air Conditioning Engineers (ASHRAE), and the ASHRAE Toronto Chapters.

Congratulations to the ASHRAE Toronto Chapters on the occasion of your 100th anniversary. Holding your conference in Toronto provides a wonderful opportunity to mark this milestone event while networking with friends, peers, and colleagues in a virtual and in person setting designed for professional growth. I am pleased that events like yours are taking place in our city.

As Canada's largest city and the fourth largest in North America, Toronto is a global centre for business, finance, arts and culture, and is dedicated to being a model of sustainable development. I welcome everyone to our city and encourage you to enjoy Toronto and learn about our vibrant neighbourhoods.

On behalf of Toronto City Council, please accept my best wishes for an informative and enjoyable event.

Yours truly,

John Tory
Mayor of Toronto



Premier of Ontario - Premier ministre de l'Ontario

June 25 – 29, 2022

A MESSAGE FROM PREMIER DOUG FORD

Welcome to everyone taking part in the 2022 ASHRAE Annual Conference and congratulations to the ASHRAE Toronto Chapter on celebrating its 100th anniversary!

This conference is a great opportunity for people from the HVAC&R industry to connect, discuss relevant issues, and present innovative solutions to the challenges faced by the sector.

Our government recognizes the importance of building a strong workforce, skilled in trades and technologies. Working together, we can promote excellence in trades and technologies, and help build a more resilient and sustainable future.

Best wishes for a productive and enjoyable conference.

A handwritten signature in black ink, appearing to read 'Doug Ford'.

Doug Ford
Premier