





















































2022 ASHRAE Annual Conference Tech Program Schedule

Program Tracks	SUNDAY JUNE 26th	MONDAY JUNE 27th	TUESDAY JUNE 28th	WEDNESDAY JUNE 29th			
Bldgs in the Aftermath of Covid 19	<p>Conference Paper Session 2 COVID and Healthcare, Osgoode (LC), 9:45am-10:45am  </p> <p>Seminar 4 What Happened to our Hospitals after the COVID-19 Fiasco? HVAC Design, Control and Operation, Grand East (LC), 8:00am-9:00am  </p>	<p>Seminar 11 Applying UV as Best Practices and Pandemic Preparedness to Address Air and Surfaces Disinfection within Buildings, Dominion North (2), 1:30pm-3:00pm  </p>	<p>Seminar 28 COVID-19 IAQ: Building Readiness and Resiliency in the New Age, Dominion South (2), 8:00am-9:30am  </p> <p>Seminar 37 LIVESTREAM: COVID-19 and Indoor Air Filtration, Grand East (LC), 11:00am-12:30pm </p>	<p>Seminar 43 Water Quality in Low Occupancy and Shutdown Buildings: Lessons Learned from COVID-19 Building Shutdowns, Sheraton C (LC), 8:00am-9:30am  </p>			
Operation and Resilience	<p>Seminar 3 Weather Modeling Tools for Buildings in a Changing Climate, Sheraton C (LC), 8:00am-9:00am</p> <p>Conference Paper Session 5 Cold Climate Design, Sheraton C (LC), 11:00am-12:30pm  </p>	<p>Seminar 21 Designing for Air Source Heat Pumps in Cold Climates, Dominion South (2), 9:45am-10:45am  </p>	<p>Seminar 24 Facilitating Integrated Project Delivery for Energy Efficiency: A Canadian Case Study, Dominion South (2), 11:00am-12:00pm  </p>				
Communities	<p>Seminar 5 Designing Control Systems for Net-Zero Energy Buildings and Communities, Dominion North (2), 9:45am-10:45am </p> <p>Seminar 10 Smart Buildings as a Transactive Energy Hub: Decarbonizing by Enhancing Building-to-Grid Interactions, Grand East (LC), 11:00am-12:30pm  </p>	<p>Virtual Paper Session Smart Building Operation to Support Occupants and Grid Interaction, 11:00am-12:30pm</p> <p>Poster Session 9 Occupant Behavior and Smart Buildings (Posters), Osgoode (LC), 9:45am-10:45am</p> <p>Conference Paper Session 10 Demand Control and Codes, Osgoode (LC), 11:00am-12:00pm</p>	<p>Seminar 19 Understanding and Analysis of Inter-Building Effects to Inform Decision Making on Urban Buildings, Grand East (LC), 8:00am-9:30am  </p> <p>Seminar 25 Fundamentals of Division 25: Integrated Controls and Cyber Security, Grand East (2), 11:00am-12:00pm </p>	<p>Seminar 30 The Solar Panel: Enabling Renewables' Grid Integration with Thermal Energy Storage Systems, Grand East (LC), 8:00am-9:30am  </p>	<p>Panel 3 Can Connected Buildings Save the Grid?, Provincial (2), 8:00am-9:30am</p> <p>Seminar 46 Securing BACnet Using Lessons and Techniques from the IT Industry, Provincial (2), 9:45am-10:45am</p>		
Fundamentals and Applications	<p>Seminar 9 Load Calculations for the ASHRAE Headquarters Building: The Transition to the Heat Balance Method, Provincial (2), 11:00am-12:30pm</p>	<p>Seminar 16 Case Studies of Heat Reclaim from Refrigeration Applications, Dominion North (2), 8:00am-9:30am  </p>	<p>Poster Session 13 Fundamentals and Modeling: Part 1 (Posters), Osgoode (LC), 9:45am-10:45am</p> <p>Poster Session 15 Fundamentals and Modeling: Part 2 (Posters), Osgoode (LC), 11:00am-12:30pm</p>	<p>Seminar 27 Bayesian Optimization for Building and Equipment Applications, Dominion North (2), 8:00am-9:30am  </p> <p>Seminar 38 Fundamentals of Climate Science, Part I: History and Physics, Dominion South (2), 11:00am-12:30pm  </p>	<p>Seminar 41 Optimizing Smart Building Operation with Machine Learning, Dominion South (2), 8:00am-9:30am  </p>		
HVAC&R Systems and Equipment	<p>Seminar 2 Reimagining the Old, Inventing the New: Tools and Strategies for Decarbonizing Buildings with District HVAC Systems Around the World, Provincial (2), 8:00am-9:00am  </p>	<p>Virtual Paper Session Data and Simulations to Improve HVAC and Thermal System Operations, 9:45am-10:45am</p> <p>Seminar 17 How to Select and Size HVAC Fans for Optimum Acoustical Performance, Dominion South (2), 8:00am-9:30am </p>	<p>Conference Paper Session 11 Variable Airflow Solutions and Modeling for Heating, Ventilation and Air Conditioning Systems, Sheraton C (LC), 11:00am-12:00pm  </p> <p>Seminar 20 LIVESTREAM: Cybersecurity, Securing Building Control Systems: Are We Meeting Industry's Needs?, Grand East (LC), 9:45am-10:45am </p> <p>Seminar 23 Using District Energy Ground Source Heat Pumps to Reach your Decarbonization Goals, Sheraton C (LC), 9:45am-10:45am  </p>	<p>Conference Paper Session 12 Decarbonization and Net Zero Solutions using HVAC, Osgoode (LC), 8:00am-9:30am  </p> <p>Conference Paper Session 14 Solar-Powered Solutions for Supporting Building Operations, Sheraton C (LC), 9:45am-10:45am  </p> <p>Seminar 29 Deep Savings with ASHRAE Guideline 36: Demonstrations Today and Innovations for Tomorrow, Provincial (2), 8:00am-9:30am  </p>	<p>Seminar 33 The Future of Controls: Transition from Algorithmic to Predictive Control, Dominion North (2), 9:45am-10:45am </p> <p>Seminar 34 Fundamentals of Climate Science, Part I: History and Physics, Dominion South (2), 9:45am-10:45am  </p> <p>Panel 4 Occupant-Centric Building Operation: Insights from Building Operators across the World, Provincial (2), 11:00am-12:30pm</p> <p>Conference Paper Session 18 Moisture and Humidity Management in Commercial Buildings, Osgoode (LC), 9:45am-10:45am  </p> <p>Conference Paper Session 19 Heat Pump Innovations for Building Applications, Osgoode (LC), 11:00am-12:30pm </p> <p>Seminar 40 Chiller-Heater Systems Enabled by Compressors and Ice, Dominion North (2), 8:00am-9:30am </p>	<p>Seminar 42 Turning Over a New Building Control System: Are You Smarter than a Fifth Grader?, Grand East (LC), 8:00am-9:30am  </p> <p>Seminar 44 Are all UV Wavelengths the Same: Emergence of Far UV and UV LEDs for Disinfection, Dominion North (2), 9:45am-10:45am  </p> <p>Seminar 50 Design to Commissioning in Cleanrooms for Performance and Reliability, Dominion South (2), 11:00am-12:30pm  </p> <p>Seminar 51 Thermal Energy Storage Solutions for Buildings: Materials to Applications, Sheraton C (LC), 11:00am-12:30pm  </p>	
Sustainable Buildings	<p>Seminar 6 IEQ and the Building Envelope: When Walls Talk, Dominion South (2), 9:45am-10:45am  </p> <p>Conference Paper Session 7 Sensors and Airflow Controls: Making Buildings Smarter through Data and Controls, Sheraton C (LC), 1:30pm-3:00pm  </p>	<p>Seminar 14 The Importance of O&M to Energy Efficiency, Comfort, IAQ and Energy System Decarbonization, Grand East (LC), 1:30pm-3:00pm  </p> <p>Seminar 15 LIVESTREAM: Update on the Progress of the Task Force for Building Decarbonization, Grand East (LC), 3:15pm-4:45pm</p>	<p>Debate 2 LIVESTREAM: Building Performance Standards: Are They Good for ASHRAE Members?, Sheraton C (LC), 2:15pm-3:45pm</p> <p>Forum 2 Moratorium on Evaporative Coolers: Giving a Whole New Meaning to the Energy-Water Nexus, Dominion North (2), 9:45am-10:45am</p>	<p>Forum 3 Decarbonization in Laboratory Buildings, Dominion North (2), 11:00am-12:00am</p> <p>Seminar 18 Impacts on Occupants' Experience in Grid-Interactive Efficient Building Operations, Provincial (2), 8:00am-9:30am  </p>	<p>Conference Paper Session 16 Occupants and Comfort in Buildings, Sheraton C (LC), 11:00am-12:30pm  </p> <p>Seminar 32 LIVESTREAM: Climate Change Issues for Decarbonization, IAQ and Sustainable Buildings, Grand East (LC), 9:45am-10:45am  </p> <p>Seminar 35 Indoor Environment, Thermal Comfort and Work Performance: Evidence, Models and Implications, Provincial (2), 9:45am-10:45am  </p>	<p>Seminar 36 Balancing Comfort, Energy and IAQ in Buildings: Examples from Real World Applications, Dominion North (2), 11:00am-12:30pm  </p> <p>Seminar 39 LIVESTREAM: A Tool to Decarbonize Existing Buildings: An Overview of ASHRAE's Technical Resource Guide on Building Performance Standards, Grand East (LC), 1:30pm-3:00pm</p>	<p>Conference Paper Session 17 Residential Buildings: Case Studies, Data and Modeling, Osgoode (LC), 8:00am-9:30am</p> <p>Seminar 45 Critical Ventilation in Critical Facilities: Demand Control Ventilation, Dominion South (2), 9:45am-10:45am  </p> <p>Seminar 47 The ASHRAE Headquarters Building: Ensuring a Quality Occupant Experience while Working toward Net Zero Operation, Sheraton C (LC), 9:45am-10:45am</p>
Professional Development and Education	<p>Seminar 1 ASHRAE Conference Crash Course, Dominion South (2), 8:00am-9:00am</p> <p>Conference Paper Session 3 Professional Development: Engineering, Architecture and Project Management, Sheraton C (LC), 9:45am-10:45am </p>	<p>Debate 1 College of Fellows Debate "Be Like Water: Engineers Have a Duty to Address Climate Change Adaptation and Resilience, Sheraton C (LC), 8:00am-9:30am</p>	<p>Seminar 22 From Rendering to Reality: Teaching Young Engineers to Design for Construction, Provincial (2), 9:45am-10:45am </p>	<p>Panel 1 Young Engineers in ASHRAE Mentorship Panel Discussion with College of Fellows, Provincial (2), 11:00am-12:30pm</p> <p>Panel 2 LIVESTREAM: ASHRAE and DEI: Where Are We Now, Where Do We Want to Be Tomorrow and How Do We Get There?, Grand East (LC), 3:15pm-4:45pm</p>	<p>Seminar 31 Your Ethics Tool Box: Building a Framework for Ethical Decision-Making with Case Studies, Sheraton C (LC), 8:00am-9:30am </p>		
Research Summit	<p>Conference Paper Session 1 Building Modeling Research, Osgoode (LC), 8:00am-9:00am  </p> <p>Forum 1 Roadblocks in the Expanding Use of Hydrogen for Building Decarbonization and What This Means for ASHRAE, Dominion North (2), 8:00am-9:00am</p> <p>Workshop 1 Developing an ASHRAE Standard/Guideline to Assess the Performance of Occupancy Sensor Systems in Buildings, Provincial (2), 9:45am-10:45am</p> <p>Conference Paper Session 4 Airflow and Ventilation Research, Osgoode (LC), 11:00am-12:30pm  </p> <p>Conference Paper Session 6 Building Load Research, Dominion North (2), 1:30pm-3:00pm </p>	<p>Seminar 7 Artificial Intelligence for Environmental Modeling, Grand East (LC), 11:00am-12:30pm  </p> <p>Seminar 8 Introduction to ASHRAE Global Occupant Behavior Database, Dominion South (2), 11:00am-12:30pm  </p> <p>Seminar 12 Building Envelopes as Distributed Energy Systems, Dominion South (2), 1:30pm-3:00pm  </p> <p>Seminar 13 Recent Advances in Data Center CFD simulation, Provincial (2), 1:30pm-3:00pm  </p>	<p>Conference Paper Session 8 Refrigerants and HX Research, Osgoode (LC), 8:00am-9:00am  </p>				

 = Submitted for Approval for NY PDHs, AIA LUs
 = Submitted for approval for GBCI LEED AP credits

Attn: ASHRAE Certified Professionals.
 Attendance at Tech Program sessions in a content area related to your certification, earns Professional Development Hours (PDHs) to meet recertification requirements.



All courses have been submitted for approval for NY PDHs, AIA LUs and CEUs

Register for courses individually; they are not included with the conference registration.

Networking Coffee Break
9-9:30am
Sunday June 26th, 2022
Lower Concourse Foyer

Saturday, June 25th
8:00am - 3:00pm
 - Energy Modeling Best Practices and Applications (code 61) Sheraton Centre Toronto, Willow East (M)
 - Healthcare Facilities: Best Practices for HVAC Design and Operation (code 60) Sheraton Centre Toronto, Willow West (M)

8:00am - 11:00am
 - New! Introduction to Building Decarbonization (code 62) Sheraton Centre Toronto, Willow Centre (M)

12:00pm - 3:00pm
 - New! Fundamentals of Decarbonization Design Systems and Equipment Applications (code 63) Sheraton Centre Toronto, Willow Centre (M)

Sunday, June 26th
3:30pm - 6:30pm
 - Updated! Energy Management Best Practices (code 65) Sheraton Centre Toronto, Willow East (M)
 - Laboratory Design: The Basics and Beyond (code 64) Sheraton Centre Toronto, Willow Centre (M)

Monday, June 27th
8:30am - 11:30am
 - New! Operation of Buildings with Decarbonization as a Metric (code 66) Sheraton Centre Toronto, Willow Centre (M)

Tuesday, June 28th
8:00am - 11:00am
 - Updated! Air-to-Air Energy Recovery Applications: Best Practices (code 68) Sheraton Centre Toronto, Willow East (M)
 - New! V in HVAC - What, Why, Where, How, and How Much (Includes Basic Requirements of Standard 62.1-2019) (code 67) ASHRAE Virtual Environment

12:00pm - 3:00pm
 - New! Smart HVAC Solutions for Climate Design (code 69) Sheraton Centre Toronto, Willow Centre (M)