

Session Type	Program Number	Session Title	General PDHs	NY/AIA Credits	GBCI LEED AP Credits
Conference Paper Session	1	Energy Master Planning for Resilient Public Communities: Best Practices from Europe and North America	1	1	1
Conference Paper Session	2	Defining and Quantifying the Resilience of Electrical and Thermal Energy Systems in Critical Infrastructure	1	1	1
Conference Paper Session	3	Best Practices for Building Envelopes and HVAC in Extreme Climates	1	1	1
Conference Paper Session	4	Effective Building Performance Characterization and Commissioning Using BIM and Machine Learning	1	1	1
Conference Paper Session	5	Statistical Models and Machine Learning for Minimizing Energy Costs in Buildings	1	1	1
Conference Paper Session	6	Energy Efficiency of Buildings: Code-Based Post-Installation Measurements of Control Systems for Non-Invasive Retrofits	1	1	1
Conference Paper Session	7	Energy Consumption and Potential Savings in Residential Dwellings	1	1	1
Conference Paper Session	8	Modelling to Understand and Improve the Energy Efficiency of Buildings	1	1	1
Conference Paper Session	9	Best Operation and Intelligent Control Systems to Enhance Building Energy Efficiency While Guaranteeing the Indoor Desired Conditions	1	1	1
Conference Paper Session	10	PV Panels, Phase-Change Materials and the Effects of the Related Equipment on Building Energy Performance	1	1	1
Conference Paper Session	11	Ventilation Strategies to Mitigate the Transmission and Distribution of Airborne Contaminants and Pathogens	1	1	1
Conference Paper Session	12	Novel Sensors, Control Strategies and Computational Methods for Improving Thermal Comfort	1	1	1
Conference Paper Session	13	Approaches for Maintaining Effective Ventilation and Avoiding Adverse Air Quality in Work Environments	1	1	1
Conference Paper Session	14	Applications of Computational Fluid Dynamics to Evaluate and Improve Ventilation	1	1	1
Conference Paper Session	15	Recent Developments in Vapor Absorption and Vapor Compression Systems	1	1	1
Conference Paper Session	16	Air Mixing, Energy Recovery, Duct Sizing, Fire Propagation in Railcars: Descriptions, Analyses and Solutions	1	1	1
Conference Paper Session	17	Energy Saving by Absorption Heat Pumps and from Increased Knowledge of Condensers and Evaporators	1	1	1
Conference Paper Session	18	Modelling for the Estimation of Energy Performance of Buildings and Products	1	1	1
Conference Paper Session	19	Standards and Protocols for Buildings' Energy and Water Usages	1	1	1
Conference Paper Session	20	Handling Environmental Effects on Ventilation Systems	1	1	1
Conference Paper Session	21	Air Filters and Motors in HVAC Systems	1	1	1

Conference Paper Session	22	Heat Pump Feasibility and Field Issues	1	1	1
Conference Paper Session	23	Developments in Chiller System Operations	1	1	1
Conference Paper Session	24	Superheat Regulation, Radiant Systems and District Energy Systems	1	1	1
Conference Paper Session	25	Building Design: International Perspective	1	1	1
Conference Paper Session	26	Improving Performance of Systems and Equipment	1	1	1
Seminar	1	What's in Your Toolkit? Laboratory Efficiency for Cutting Edge Labs WITH LIVE Q&A	1	1	1
Seminar	2	Air Cleaning for the Indoor Air Quality Procedure WITH LIVE Q&A	1	1	1
Seminar	3	Lessons from Managing Infrastructure through the COVID Shutdown WITH LIVE Q&A	1	1	Not Approved
Seminar	4	Limiting Humidity to Reduce Building Dampness Health Risks WITH LIVE Q&A	1	1	Not Approved
Seminar	5	Refrigeration System Design Considerations WITH LIVE Q&A	1	1	Not Approved
Seminar	6	Fighting the Unseen Killers: Gas-Phase Air Cleaners	1	1	1
Seminar	7	Building the Next Generation in Building Science: The Solar Decathlon Competition WITH LIVE Q&A	1	1	1
Seminar	8	Lubricant Properties and Their Lubrication in Compressors with Low GWP Refrigerants WITH LIVE Q&A	1	Not Approved	Not Approved
Seminar	9	Mass Transit Ventilation and Infectious Diseases: Transmission and Countermeasures WITH LIVE Q&A	1	1	1
Seminar	10	Standardizing High Performance: Guideline 36 and Beyond WITH LIVE Q&A	1	1	Not Approved
Seminar	11	Techno-Economic Comparison of Energy Storage Technologies WITH LIVE Q&A	1	1	1
Seminar	12	Thermal Storage for Grid-Friendly Refrigeration WITH LIVE Q&A	1	Not Approved	1
Seminar	13	What Have You Done for Me Lately? BAS Best Practices for O&M Success WITH LIVE Q&A	1	Not Approved	Not Approved
Seminar	14	What You Need to Know About ANSI/ASHRAE Standard 90.4: <i>The Energy Standard for Data Centers</i>	1	1	Not Approved
Seminar	15	Building Operation and COVID-19: What Is the Standard of Care and Who's Responsible WITH LIVE Q&A	1	1	Not Approved
Seminar	16	Dedicated Outdoor Air Systems: Applications, Specification and Commissioning WITH LIVE Q&A	1	1	1
Seminar	17	Hotter Cities, Hotter Climates: Modelling and Measuring Urban Heat Island Effects Around the World WITH LIVE Q&A	1	1	1
Seminar	18	New Standard: ASHRAE 221 Overview WITH LIVE Q&A	1	1	1
Seminar	19	ASHRAE HQ: From Conception to Reception WITH LIVE Q&A	1	Not Approved	Not Approved

Seminar	20	Idle Buildings are the Devil's Playground WITH LIVE Q&A	1	1	1
Seminar	21	Methods for Improving HVAC Efficiency Globally WITH LIVE Q&A	1	1	1
Seminar	22	Your Ethics Tool Box: Building a Framework for Ethical Decision-Making with Case Studies WITH LIVE Q&A	1	Not Approved	1
Seminar	23	Indoor Environment Modeling for Pandemic Resiliency WITH LIVE Q&A	1	1	1
Seminar	24	Safe Transition to Flammable Refrigerants in Commercial Refrigeration Applications WITH LIVE Q&A	1	Not Approved	Not Approved
Seminar	25	Movement and Control of Airborne Pathogens with HVAC Systems WITH LIVE Q&A	1.5	1.5	1.5
Seminar	26	Smarter Together: Integrating HVAC and Lighting Control WITH LIVE Q&A	1.5	1.5	Not Approved
Seminar	27	MERV 13, HEPA and UVC: What Did Buildings Do During this Pandemic and How to Make your Buildings More Resilient for the Next Outbreak	1.5	1.5	1.5
Seminar	28	Ammonia and Other Natural Refrigerants Standards and Guidance WITH LIVE Q&A	1	Not Approved	Not Approved
Seminar	29	Avoid the Headlines! Today's Top 10 Security Best Practices for Controls WITH LIVE Q&A	1	1	Not Approved
Seminar	30	Controls Standards, Guidelines and Codes: What YEA Need to Know! WITH LIVE Q&A	1	Not Approved	Not Approved
Seminar	31	Decouple, Optimize and Succeed with DOAS WITH LIVE Q&A	1	1	1
Seminar	32	Climate Control Solutions for What Is Next, Moving from Hyperscale to The Edge WITH LIVE Q&A	1	1	1
Seminar	33	Ground Source Heat Pump Systems: GeoMicroDistricts to the Thermal Highway and Beyond WITH LIVE Q&A	1	1	1
Seminar	34	Performance of Alternative Low GWP A2L Refrigerants in Condensers WITH LIVE Q&A	1	Not Approved	Not Approved
Seminar	35	Sensors and IAQ WITH LIVE Q&A	1	Not Approved	Not Approved
Seminar	36	A Revolution in Buildings: Prefabricated Radiant Structures	1.5	1.5	Not Approved
Seminar	37	ASHRAE Conference Crash Course	1.5	Not Approved	Not Approved
Seminar	38	Best Option for Demand Flexible, Grid Interactive Energy Efficient Buildings: Rule Based Algorithmic Controls or Model Predictive Controls?	1.5	1.5	1.5
Seminar	39	Bridging Two Worlds: Standards, Guidelines and Codes for Solar Energy Systems in Buildings	1	1	1
Seminar	40	Building-Integrated Photovoltaic Envelope for Cold Climates: Here Comes the Power of the Sun	1.5	1.5	1.5
Seminar	43	Current Understanding and Gaps of Stability and Compatibility of Low GWP Refrigerants	1.5	Not Approved	1.5

Seminar	44	Decarbonization and Electrification of the Built Environment: Designing Canada's Future Urban Communities	1	1	1
Seminar	45	Demystifying Thermal Load Calculations for New HVAC&R Engineers	1.5	1.5	Not Approved
Seminar	47	Design to Achieve Net-Zero: Data Sharing and Interoperability Between Building Asset, Design, Rating and Analysis Software Tools	1.5	1.5	Not Approved
Seminar	49	Easier Said Than Done: Controlling Air Movement in High-Rise Multifamily Buildings	1.5	1.5	1.5
Seminar	50	Elevator Noise, Vibration and Energy Efficiency	1	1	Not Approved
Seminar	51	Energy Conservation and Combined Heat and Power: New Technologies for a New World	1.5	1.5	1.5
Seminar	52	Energy Conservation with Heat Recovery Heat Pumps in New Applications or Old Applications with New Refrigerants	1.5	1.5	1.5
Seminar	53	Enhancing and Expanding Point Cloud Collaboration with a Streamlined Workflow, VR and Cloud Visualization	1	Not Approved	Not Approved
Seminar	54	From Research to Reality: Advances in Liquid Desiccant Technology	1.5	1.5	Not Approved
Seminar	55	Future Smart Building Operations for Load Flexibility	1.5	1.5	1.5
Seminar	56	Health, Humidity and Humidifiers	1.5	1.5	Not Approved
Seminar	57	Hot Topics For Secondary Coolants (Brines)	1.5	1.5	1.5
Seminar	58	How Will Climate Change Affect Standards, Guidelines and the Way We Design? Part 1: Why Climate Change May Affect the Design of Buildings and Their Systems	1.5	1.5	1.5
Seminar	59	How Will Climate Change Affect Standards, Guidelines and the Way We Design? Part 2: Application to Loads Calculations and Design Conditions	1.5	1.5	1.5
Seminar	60	How Will Climate Change Affect Standards, Guidelines and the Way We Design? Part 3: Decarbonization By Smart Grid and Adaptation to Northern Warming	1.5	1.5	1.5
Seminar	61	Hybrid Boiler Innovations and Applications for Energy and Cost Savings	1.5	1.5	1.5
Seminar	64	Integrating Renewable Energy into Residential and Commercial Air Conditioning with Thermal Energy Storage to Resolve Grid and Off-Grid Issues	1.5	1.5	1.5
Seminar	65	International Implications of ASHRAE Moisture Management Standards	1.5	1.5	1.5
Seminar	66	Lessons Learned from COVID-19 and What Engineering Measures Can be Adopted to Reduce Infection Risks in Restaurants	1.5	1.5	1.5
Seminar	67	Life Safety Dampers, Back to Basics	1	1	Not Approved

Seminar	68	Mechanical Equipment Individual Current Harmonics and Impact on the Building's Electrical Load	1.5	1.5	Not Approved
Seminar	69	Mechanical Equipment Individual Current Harmonics and Impact on the Building's Electrical Load: HVAC&R Fundamentals and Applications Track	1.5	1.5	Not Approved
Seminar	70	Modeling of Surfaces Mass Transfer in Indoor Environment	1.5	1.5	Not Approved
Seminar	71	New Dogs, New Tricks: Air Flow Control Update	1	1	1
Seminar	72	Next Generation Window Technologies for Net-Zero Energy Buildings	1.5	1.5	1.5
Seminar	73	Noise and Vibration: Commissioning and Remediation	1.5	1.5	1.5
Seminar	74	Numerical Challenges in Modeling of Vapor Compression Systems and Components	1.5	1.5	1.5
Seminar	75	Present and Future Challenges in Ventilation Unique to Tall Buildings Arising from Epidemics, Health Issues and Climate Change	1.5	1.5	Not Approved
Seminar	76	Smart Controls and Optimization for Thermal Storage Systems and Connected Communities	1.5	1.5	1.5
Seminar	77	Smart Indoor Environmental Models for Data Centers	1.5	1.5	1.5
Seminar	78	Supplementing Ventilation with Gas-phase Air Cleaning (IEA-EBC Annex 78)	1.5	1.5	1.5
Seminar	79	Sustainable Approaches for Energy Demand in the Community Scale	1.5	1.5	1.5
Seminar	80	System Analysis and Modeling of Variable Refrigerant Flow Systems	1.5	1.5	1.5
Seminar	81	The Impact of COVID-19 on Building Energy Consumption, IAQ and Occupant Behavior	1.5	1.5	1.5
Seminar	82	The Impacts and Value of ASHRAE Standards and Technology	1.5	1.5	1.5
Seminar	83	Thermal Energy Storage in Geothermal Systems	1.5	1.5	1.5
Seminar	85	Unique and Necessary Approaches and Considerations When Commissioning Commercial Kitchen Ventilation Systems	1	1	1
Seminar	86	Use of Reflective Technology in Buildings	1.5	1.5	Not Approved
Seminar	87	What Makes a Compressor a Heat Pump Compressor?	1.5	1.5	Not Approved
Seminar	88	Whole Greater Than the Sum: Coupling Building Simulation Techniques	1.5	1.5	1.5
Seminar	89	Window Shading: How to Save Energy while Improving Occupant Comfort and Visual Environmental Quality?	1.5	1.5	1.5
Workshop	1	Science and Technology for the Built Environment: Publishing and Reviewing	1	Not Approved	Not Approved
Workshop	2	Best Practices of the Mentor-Mentee Relationship	1	Not Approved	Not Approved