2024 ASHRAE Decarbonization Conference: Decarbonizing Existing Tall Buildings

Supported by:

NEW YORK STATE | NYSERDA

Monday, October 21

(All Seminars are approved for New York State Professional Development Hours (PDHs), American Institute of Architects Learning Units (LUs) and GBCI LEED AP CE Credits)

Monday, October 21, 8:30 AM - 9:30 AM

Keynote

Rohit Aggarwala

Lessons from New York City's Building Decarbonization Policies for Other Global Cities

Room: NY Ballroom

New York City Chief Climate Officer and Commissioner of Environmental Protection Rohit Aggarwala, in a fireside chat conversation with CIBSE President Fiona Cousins, will discuss the evolution of New York City's building energy and climate laws, from the Greener, Greater Buildings package or laws that his team developed in 2009 through the current implementation of the City's landmark existing building performance standard, Local Law 97 of 2019, part of the Climate Mobilization Act.

Monday, October 21, 9:30 AM - 10:30 AM

Panel 1

Decarbonization in Action: Metrics That Matter to CRE Portfolios

Room: NY Ballroom
Chair: Cody R Glavey-Weiss, Project Manager, NYSERDA, Albany, NY
Panelists: Matthew Sheridan, P.E., Tishman Speyer, Stacie Livingston, Hines and Emily Kildow, SL Green, New York, NY
Speaking the same language as your customer matters. As Commercial Real Estate (CRE) Owners in New York City, and across the country, work to prioritize decarbonization of their portfolios, all too often the common refrain is heard – "Vendors don't understand my properties, or the benefits which matter to me and my tenants".
This panel session brings together key decision makers from leading NYC CRE Portfolios to discuss the make-or-break metrics they consider when evaluating new vendor proposals, and what vendors love to say which has no impact on selection. Panelists will dive into their decision-making processes, highlighting the factors beyond just cost and payback. This session will explore how metrics like:

- Resilience and System Uptime
- Occupant Comfort and Air Quality
- Data Transparency and Reporting
- Scalability and Future-Proofing
- Alignment with Sustainability Goals

Factor into vendor and project selection. Attendees will gain valuable insights into the priorities of major CRE owners, and how to tailor their decarbonization proposals for maximum impact.

9:30 AM - 10:30 AM

Panel 2

In the Weeds with Workforce Development: Fresh Voices Shaping the Future of Building Performance

Room: Riverside Ballroom
Chair: LeAnne Harvey, Steven Winter Associates, New York, NY
Panelists: Michaela Boren, Service Employees International Union (SEIU) Local 32BJ Training Fund, New York, NY, Mike Conway, Stacks + Joules, New York, NY and Dennis Knight, P.E., Fellow ASHRAE, Whole Building Systems, LLC, Mt. Pleasant, SC
Building decarbonization demands a skilled and diverse workforce capable of implementing advanced and creative design strategies and nuanced O&M procedures. This panel discussion will explore two workforce development initiatives that prepare both current and future professionals for this critical shift. We'll hear directly from program graduates on their career journey, discuss the pivotal role of diversity in driving innovation, and explore how programs are ensuring workers are set up for success in the industry.

9:30 AM - 10:30 AM

Seminar 1

ASHRAE Standards in Advancing Decarbonization Efforts

Room: Gramercy
Chair: Stephanie Reiniche, ASHRAE, Atlanta, GA
This session highlights the critical role of consensus based ASHRAE standards in addressing decarbonization challenges. ASHRAE plays a pivotal role in advancing energy-efficient and sustainable solutions within the built environment. This session emphasizes the significance of ASHRAE standards as guiding principles for designing, operating, and maintaining systems that contribute to the reduction of both operational carbon and embodied carbon emissions. The speakers will provide state of art updates on new standards covering whole life carbon assessment, calculation of GHG emissions, and expansion of energy audit to decarbonization audit.

1.ASHRAE/ICC Standard 240P: Harmonization of Building Industry GHG Emissions
***Elizabeth K Tomlinson, PE, BCxP, Full Member**, Stantec, Calgary, AB, Canada*

2.Standard 242p
***Kimberly Cheslak, Full Member**, Pacific Northwest National Lab, RICHLAND, WA*

3.Standard 211
***Amanda L. Webb, PhD, Full Member**, University of Cincinnati, Cincinnati, OH*

9:30 AM - 10:30 AM

Seminar 2

Infiltration in Cold Climates: How it Stacks Up

Room: Bowery
Chair: Jamie Fine, P.Eng., Associate, WJS Energy, Toronto, ON, Canada
Stack effect is a phenomenon known for causing pressure and airflow issues within tall buildings and can be the most important driver of uncontrolled air infiltration during cold weather. Issues can manifest in the form of door operability issues, whistling noises, cold drafts, and poor performance of the building's ventilation system. This session will challenge many conventional theories and strategies to confront stack effect from three different perspectives: implementation, research, and operational. The first presenter will discuss how stack effect issues are analyzed and addressed in existing buildings. The second presenter will discuss the results of a coupled airflow and whole-building simulation analysis to evaluate stack effect-driven inter-zonal airflow control measures. The third presenter will discuss how enclosure airtightness and interior compartmentalization can be balanced against building pressurization to reduce energy use and associated carbon emissions.

1.Controlling Airflow: The Challenges and Benefits of Mitigating Stack Effect in Existing Tall Buildings
***Katie Reipas, P.Eng.**, RWDI, Guelph, ON, Canada*

2.Controlling Stack Effect with Interior Compartmentalization in Multi-family Buildings: A Research Perspective
***Cara Helen Lozinsky, P.Eng., Associate**, Carleton University , Ottawa, ON, Canada*

3.Balancing Interior Compartmentalization and Enclosure Air Tightness with Building Pressurization to Reduce Carbon Emissions and Maintain Indoor Environmental Quality
***Jamie Fine, P.Eng., Associate**, WJS Energy, Toronto, ON, Canada*

Monday, October 21, 11:00 AM - 12:30 PM

Panel 3

Lessons Learned from the Trenches: Delivering Resource-Efficient Decarbonization of Tall Buildings in NYC

Room: NY Ballroom
Chair: Vicki Worden, Green Building Initiative, Camden, ME
Panelists: Michael Daschle, Brookfield Properties, New York, NY, Lauren Brust Moss, Vornado Realty Trust, New York, NY, Consolato Gattuso, Piedmont Office Realty Trust, Chicago, IL and Duane Desiderio, Real Estate Roundtable, Washington, DC
This session delivers lessons learned from renowned portfolio leaders and subject matter experts on what's driving successes and failures in implementing decarbonization for tall buildings in NYC. These commercial real estate representatives are experts in sustainability, decarbonization, policy, and ESG reporting and bring direct experience from those in the trenches making incremental improvements to tall buildings within renowned portfolios. Panelists discuss the pros and cons of their experiences while outlining their research, strategies, policy concerns, and implementation successes. Topics include technical and financial feasibility issues with efforts to reduce site EUI and carbon emissions for tall buildings in NYC.

11:00 AM - 12:30 PM

Seminar 3

Advancing Zero Energy and Emissions Codes and Standards: Industry Trends and Collaborative Efforts

Room: Gramercy
Chair: Bing Liu, PE, Fellow Member, Pacific Northwest National Laboratory, Portland, OR
This session offers an in-depth exploration of the vision and industry trends surrounding zero energy and emissions codes and standards. Bringing together key stakeholders, including leaders from federal codes programs, innovative code developers, and progressive cities at the forefront of zero energy code adoption, the seminar provides a unique platform for sharing current initiatives and future plans. Participants will gain valuable insights into the collaborative efforts driving advancements in zero energy standards, with a focus on practical implementations, policy developments, and technological innovations. This session aims to foster a comprehensive understanding of the challenges and opportunities in achieving zero energy and emissions goals.
1.Successes and Challenges for Achieving NYC Building Sector Decarbonization Goals
***Emily Hoffman, CEM CPMP LEED AP PE, Full Member**, New York City Department of Buildings, New York, NY*
2.Addressing Zero Energy and Emissions in Model Energy Codes
***Ellen M Franconi, PhD, Full Member**, Pacific Northwest National Laboratory, Richland, WA*
3.Setting the Stage for Net Zero Codes through new Collaborations
***Michael Waite, P.E., Full Member**, American Council for an Energy-Efficient Economy*
4.Federal Support for Achieving Zero Energy and Emissions in Buildings
***Jeremiah Williams**, U.S. Department of Energy, Washington, DC*

11:00 AM - 12:30 PM

Seminar 4

Reusing Heat in Tall Buildings: A Circular Approach to Managing Thermal Energy

Room: Bowery
Chair: Molly Ramasamy, P.E., JB&B, New York, NY
Even the best run large buildings waste heat (i.e., thermal energy) through a variety of processes, including ventilation, cooling, and wastewater systems. By capturing and repurposing that rejected energy through heat recovery, this loss becomes a massive opportunity to reduce operating costs and lower carbon emissions. During the session, building owners and solution providers will discuss novel and effective ways to capture and reuse wasted heat, with real examples of the solutions deployed within tall buildings.
1.Wastewater Heat Recovery in Large Buildings
***Aaron Miller**, SHARC Energy, New York, NY*
2.Integrating Wastewater Heat Recovery in Decarbonization Retrofits
***Kevin Appleby**, Ruhl TecConsult GmbH, Altenbamberg, Germany*

3.Heat Recovery Opportunities in Tall Existing Buildings
***Corey D Letcher, CEM, Associate**, TRANE, Long Island, NY*
4.Using Heat Recovery to Decarbonize through Efficient Electrification
***Gregg J Fischer, Full Member**, Fischer Energy Partners, New York, NY*

Monday, October 21, 1:00 PM - 1:30 PM

Sponsor Tech Talks

Electrification with Modular Chillers

Room: Bowery

Michael Medlock, CLIMACOOL

Monday, October 21, 1:40 PM - 3:10 PM

Seminar 5

Building Blocks of Thermal Energy Networks: Sharing Heat Between Neighboring Tall Buildings

Room: Bowery
Chair: Greg Koumoullos, Con Edison, New York, NY
While neighboring buildings may have a lot in common, their thermal load profiles can vary dramatically. By sharing heat between buildings through heat recovery, buildings shift from energy consumers to prosumers. Data centers, supermarkets, and other heat sources located in and near tall buildings can become primary heating sources for other buildings, using heat capture and reuse technology. Block-scale thermal networks can serve as catalysts for much larger neighborhood-scale energy systems that access technologies and resources that are not practical or cost-effective at smaller scales, resulting in increased resiliency and the built in (thermal flywheel) storage and options it enables.
1.Sector Coupling to Share Heat and Cool
***Drew Scott Turner, Full Member**, Danfoss, Copenhagen, Denmark*
2.Data Center Heat Re-Use: Game-changing Opportunity, or a Hill Too Tough to Climb?
***Gerard MacDonald, P Eng, M Eng, LEEP**, Reshape Infrastructure Strategies, Vancouver, BC, Canada*
3.Case Study of Tall Office Building Coupling of Thermal Loads
***Charles Marino, Associate**, AKF Group, New York, NY*

1:40 PM - 3:10 PM

Seminar 6

Decarbonization by Design: Leading Guidance from ASHRAE, CIBSE, and DOE

Room: NY Ballroom
Sponsor: Center of Excellence for Building Decarbonization
Chair: Blake E Ellis, PE, Fellow Member, Burns & McDonnell, KANSAS CITY, MO
This seminar explores the forefront of building decarbonization, with a focus on the latest guides and methodologies by ASHRAE, CIBSE and the DOE. These guides provide a solid foundation of decarbonization including decarbonization retrofits, the application of heat pumps, and the tools to calculate embodied carbon values for MEP equipment in North America. Learn key elements of the guides, offering insights and practical strategies for design engineers and building operators.
The specific guides are:

- "Building Decarbonization Retrofits for Commercial and Multifamily Buildings," by ASHRAE. This guide focuses on the unique challenges of decarbonizing existing buildings, providing specific solutions, guidance, and case studies.
- "Decarbonizing Building Thermal Systems: A Guide for Applying Heat Pumps and Beyond," by DOE and ASHRAE. This guide provides comprehensive instructions on the application and operation of heat pumps, addressing items such as climate-specific sizing, system configuration, refrigerants, electrical requirements, and control strategies.
- "AM17 Heat pump installations for large non-domestic buildings" by CIBSE. This guide highlights best practices for installation, commissioning, operation, and maintenance to ensure effective, and high-quality systems.
- "TM65 for North America" by CIBSE. This guide details the methodology for assessing the embodied carbon of mechanical, electrical, and plumbing (MEP) systems.

1.How Do We Decarbonize the Existing Building Stock? What is in ASHRAE's Building Decarbonization Retrofits for Commercial and Multifamily Buildings
***David Heinzerling, PE, Full Member**, Taylor Engineering, ALAMEDA, CA*

2.Decarbonizing Building Thermal Systems: An ASHRAE/DOE Guide for Applying Heat Pumps and Beyond
***Paul A Torcellini, P.E.**, NREL, Lakewood, CO*

3.How Do I Apply Large Heat Pumps? An Overview of CIBSE's Application Manual on Large Heat Pumps (AM17)
***Michael G Edwards, BEng MSc CEng MCIBSE, Full Member**, Arup, London, United Kingdom*

4.Where is the Embodied Carbon Data? How CIBSE's Addendum for North America to Technical Memorandum (TM) 65 can Help
***Shannon Sajdak, Affiliate**, Trane, Seattle, WA*

1:40 PM - 3:10 PM

Seminar 7

Integrating Embodied Carbon in Tall Buildings: Strategies and Policy Impacts

Room: Gramercy
Chair: Ghina Annan, M.Eng Applied Energy, Associate, Stantec, Calgary, AB, Canada
This session delves into effective strategies for integrating embodied carbon reduction in high-rise constructions, with a focus on practical applications and policy implications. Key topics include the TM65 guideline, which provides a structured approach for calculating embodied carbon, and an examination of an Embodied Carbon Benchmark Report, offering real-world examples of benchmarks and data-driven insights. A featured case study will explore the conversion of office spaces to residential units, demonstrating significant reductions in whole life carbon emissions through adaptive reuse and targeted building retrofits. The session will also highlight the influence of legislative measures on carbon management, assessing their impact on compliance and sustainability objectives in high-rise projects. Attendees will gain a comprehensive understanding of the tools and policies driving carbon efficiency, equipping them with actionable insights and scalable solutions for high-rise constructions.

1.Experience with Current Directives on Carbon Management
***Ghina Annan, M.Eng Applied Energy, Associate**, Stantec, Calgary, AB, Canada*

2.Office to Residential Conversion: The Carbon Story
***Tess McNamara**, ARUP, New York*

3.Measuring Embodied Carbon Impacts in Major Construction Projects
***Rowan Louise Parris, LEED GA, WELL AP, LFA**, Turner Construction Company, New York City, NY*

4.Calculating Embodied Carbon in Building Services
***Pia Engel-Moss**[1] and Louise Hamot, M.Arch, MSc Eng[2], (1)Introba, Oakland, CA, (2)Introba, United Kingdom*

1:40 PM - 3:10 PM

Workshop 1

Let's Decarbonize! A Hands-on Building Decarbonization Assessment Workshop

Room: Riverside Ballroom
Speakers: Amanda L. Webb, PhD, Full Member[1] and Barry C Abramson, P.E., Life Member[2]
(1) University of Cincinnati, Cincinnati, OH (2) Servidyne, LLC, Atlanta, GA
Ready to learn more about how to decarbonize? This highly interactive session provides a hands-on introduction to the practice of building decarbonization assessments. First, it introduces decarbonization assessment fundamentals using the methodology from ASHRAE Standard 211 Appendix H. Then, in small groups, attendees work together to perform a mock decarbonization assessment using information from an actual building. Each group explores strategies to reduce or eliminate GHG emissions for the building and examines the impact of different external factors, such as a BPS, on the assessment results. Session attendees should come ready to engage with their peers and get to work!

Monday, October 21, 3:30 PM - 5:00 PM

Panel 4

The Retrofit Playbook: New Knowledge Sharing Platform to Support Building Owners, Operators and their Design and Engineering Teams

Room: NY Ballroom
Chair: Brett Bridgeland, CBRE, Boulder, CO
Panelists: Richard Yancey, Building Energy Exchange, New York, NY and Kara Kokernak, Urban Land Institute, Washington, DC

The Retrofit Playbook supports building owners, operators, and their design and engineering teams in planning cost-effective, long-term decarbonization of large buildings. The Playbook emerged from discussions with leading real estate partners and their consultants. Hear how real projects, through a charrette and design process that merges integrative engineering into asset management, have solved the unique challenges of large building decarbonization. Come join the Playbook's community of practice, exchanging case studies and resources to accelerate strategic decarbonization planning and implementation in large buildings. Discussion and knowledge-sharing will be encouraged in the session.

3:30 PM - 5:00 PM

Seminar 8

Emerging District Energy Solutions in Cities

Room: Bowery

Chair: Peggie Neville, New York State Department of Public Service, Albany, NY

Connecting buildings with different thermal load profiles can dramatically reduce energy waste and resulting carbon emissions. While many cities have large, centralized district energy systems, emerging smaller, newer generation thermal energy networks are being tested around the world. This session will provide insights into development and evolution of some leading, growing thermal energy network systems in North America, and an exciting new network emerging in London.

1.Expanding the Toronto District Energy System: Deep Lake Water Cooling, District Energy and Green Heat
***Cameron Leitch, Associate**, Enwave Energy Corporation, Toronto, ON, Canada*

2.Metro Vancouver Thermal Energy Networks: Platforms to Enable Renewables & Support the Grid
***Gerard MacDonald, P Eng, M Eng, LEEP**, Reshape Infrastructure Strategies, Vancouver, BC, Canada*

3.Green Smart Communities Integrated Energy Systems Energy Sharing Project in Islington (London, UK)
***Catarina Marques**, London South Bank University, London, United Kingdom*

3:30 PM - 5:00 PM

Seminar 9

Keeping Decarbonization Cool: Future of Refrigerants in Commercial Building HVAC Systems

Room: Gramercy

Chair: Paul A Torcellini, P.E., NREL, Lakewood, CO

Refrigerants are essential to keeping our buildings cool. However, their global warming potential can cause them to be a significant contributor to climate change if released to the environment through leakage or inappropriate disposal at end of life. This session will explore the role of refrigerants in tall buildings and the impacts associated with shifting HVAC systems to heat pump technologies. Speakers will discuss the coming phase down of certain refrigerants and what alternatives may be available; the impact of refrigerants to the overall emissions profile of a building; and strategies for lowering refrigerant charge in buildings. Speakers will provide a short presentation and participate in a panel discussion from their perspectives that include the state of refrigerant research and its role in carbon accounting, engineering practices, and building ownership

1.Refrigerant Management: Challenges, Opportunities, and Best Practices for the Food Sector and Beyond
***Kathleen Loftus**, Independent Consultant*

2.Refrigerant Basics, Framing the Issue for Commercial Buildings
***Heather Goetsch**, National Renewable Energy Laboratory, WASHINGTON, DC*

3.Practical Experience of Refrigerant Roles in HVAC Configurations and Designs
***Stet Allen Sanborn, AIA, Full Member**, Smithgroup, WASHINGTON, DC*

4.Practical Experiences of Reducing Emissions Associated with Refrigerants in a Commercial Building Portfolio
***Giuliana Kunkel, LEED AP, CEM**, MetLife Investment Management, Washington, DC*

5.State of Refrigerant Research
***Sarah Stubbs**, Oak Ridge Institute for Science and Education Fellow at the US Department of Energy, Washington, DC*

Tuesday, October 22

Tuesday, October 22, 8:30 AM - 9:20 AM

Breakfast Plenary Panel

Sustainability and Decarbonization Lessons from Tall Iconic Buildings

Room: NY Ballroom

Chair: Michael Reed, New York State Energy Research and Development Authority, New York, NY

The tallest buildings on the skylines of major cities are recognized symbols of those cities. Tall iconic buildings in three major cities, The Empire State Building in New York, The Willis Tower in Chicago, and 200 Clarendon and the Prudential Center in Boston, are central parts of the cities' skylines, and all have long been leaders in sustainability. Senior executives from the owners of these iconic towers will present their sustainability journey, including the history, evolution, and now decarbonization planning for these buildings. The panel will be a dynamic discussion about some of the tallest buildings in North America.

1.The Willis Tower
***Barbara Hickey**, EQ Office, Chicago, IL*

2.BXP
***Ben Myers**, BXP, Boston, MA*

3.Empire State Building/Empire State Realty Trust
***Dana Schneider**, Empire State Realty Trust, New York, NY*

Tuesday, October 22, 9:30 AM - 10:30 AM

Panel 5

BPS Part 1: Building Performance Standards (BPS) Across the U.S.

Room: Riverside Ballroom

Chair: Harry Bergmann, U.S. Department of Energy, Washington, DC

Panelists: Blake J. Shelide, PE, Full Member, Oregon Department of Energy, Salem, OR, Emily Curley, Montgomery County Department of Environmental Protection, Wheaton, MD and Beth Golub, New York City Department of Buildings, New York, NY

This session centers on Building Performance Standards (BPS) as an emerging policy aimed at decarbonizing existing buildings across the U.S. Panelists will draw from their hands-on experiences to discuss the development and execution of BPS policies at the city, county, and state levels. They will delve into the intricacies of policy design and implementation programs, highlighting the challenges encountered and the solutions devised.

9:30 AM - 10:30 AM

Panel 6

Check Your Assumptions: How Our Defaults are Derailing Decarbonization

Room: Bowery

Chair: Lane Burt, Ember Strategies, LLC, San Francisco, CA,

Panelists: Kate Turpin, Google, Mountain View, CA, Kit Milnes, KingSett Capital, Toronto, ON, Canada and Hugh Dugdale, Hines, London, United Kingdom

As architects, engineers, or building professionals, we assume that developers and building owners are the ones that need to be convinced to decarbonize - but what if we are the problem? Hear from three diverse companies about how the decarb professionals they hire create barriers to right-sized, thermally efficient, all electric building designs - even when the owners are willing to pay a premium. Speakers include a major tech firm's real estate development team, a private equity real estate investment firm, and a major global building owner. The panel will discuss how default assumptions and standard design practices lead to oversized & unnecessary equipment, higher costs, and greater carbon emissions, while sharing examples of their success and failures in rectifying these problems.

9:30 AM - 10:30 AM

Seminar 10

Multifamily Tall Building Deep Retrofit Profiles

Room: Gramercy

Chair: Katie Schwamb, Building Energy Exchange, New York, NY

Tall multifamily buildings in colder climates present a more significant challenge with deep energy and carbon retrofits, as the buildings generally are mostly occupied and gut renovations are a challenge. A recent project did a global scan of deep energy retrofits of tall multifamily buildings to identify projects with measured, whole building energy reductions, included in a forthcoming compendium of projects. This session will introduce the findings of the project compendium, and highlight two leading examples of tall residential decarbonization best practices.

1.Tall Multifamily Deep Retrofit Profiles
***Byron Stigge, P.E.**, Level Infrastructure, New York, NY*

2.Continuous Greening of 65 Story Chicago Multifamily Tower
***Amy Eickhoff**, First Service residential, Chicago, IL*

3.Passive House Retrofit Rejuvenation of Toronto Area Tower
***Mikael Sydor**, ERA Architects, Toronto, ON, Canada*

Tuesday, October 22, 11:00 AM - 12:00 PM

Panel 7

Case Studies on Tall Buildings in Cold Climates: Designing, Commissioning and Operating

Room: Bowery
Chair: Kevin J Cahill, PE, Full Member[1]
Panelists: Benjamin Skelton[2] and Kevin J Cahill, PE, Full Member[1], (1)Salas O'Brien, Chicago, IL(2)Cyclone Energy, Chicago, IL

Designing tall buildings in a cold climate has many challenges and multifamily buildings with operable openings on every floor are even more difficult. This session explores high rise multifamily buildings that are at varying heights. Design considerations for tall buildings in cold climates will be discussed based on lessons learned from previous designs. Attendees will also gain insights from the commissioning process, including strategies for managing stack effect.

11:00 AM - 12:00 PM

Panel 8

The Importance of Recalibration in Maximizing Feasibility of Upgrades to Buildings in Cold Climates

Room: Gramercy
Chair: Tristan Schwartzman, Goldman Copeland, New York, NY
Panelists: Eddie Valdez, Stahl Real Estate, New York, NY, Bob Murphy, CBRE, New York, NY and Dana Schneider, Empire State Realty Trust, New York, NY

New technologies and innovative solutions are a must to achieve long-term decarbonization goals throughout existing building stock. However, incorporating those innovations can be facilitated and optimized by minimizing current heating and cooling loads. Optimizing air flow, maximizing system operations and performance and curtain wall upgrades are pathways to reducing electrical infrastructure requirements, up-front equipment costs, and ongoing utility costs. Buildings should start by recalibrating to current code standards and ensuring they perform to a design intent that matches these standards. This is especially true for high-rise buildings dating to the early 1970s and earlier, which are common throughout the nation, particularly in cold climates. In New York City, such buildings are designed to an outdated code standard and show a massive range in annual conditioning requirements. Low-cost but relatively technical measures can be implemented to recalibrate these buildings, thus reducing pressure on capital improvements. This first step in the decarbonization process provides a win-win-win for everyone.

11:00 AM - 12:00 PM

Seminar 11

BPS Part 2: Where are We Now? Progress on BPS in the First Compliance Cycle

Room: Riverside Ballroom
Chair: Kimberly Cheslak, Full Member, Pacific Northwest National Lab, RICHLAND, WA

This session brings together three BPS early adopter jurisdictions to share progress and lessons learned so far. Buildings in New York City, Washington, D.C., and Washington State have all entered or are about to enter the first BPS compliance period. These jurisdictions will discuss their progress towards meeting BPS targets, identify areas of success, and reflect on major barriers and how they are working to overcome them.

1.Updates on Clean Buildings Implementation from Washington State
***Emily Salzberg**, Washington State Department of Commerce, Olympia, WA*

2.DC BEPS and Clean Energy DC
***Cristine Gibney, Associate**, District Department of Energy and Environment, Washington, DC*

3.Updates from NYC LL97 Implementation
***Jean Kim, RA, CEM, CPHD, LEED BD+C**, New York City Department of Buildings, New York, NY*

Tuesday, October 22, 12:00 PM - 1:00 PM

Keynote

Doreen Harris

New York: Advancing Tall Building Decarbonization

New York State Energy Research & Development Authority President Doreen Harris will discuss New York's ambitious climate policies and the efforts underway to decarbonize tall existing buildings, one of the more challenging sectors to decarbonize.

Tuesday, October 22, 1:00 PM - 1:30 PM

Sponsor Tech Talks

Bell and Gossett by Xylem: Hydronic Adaptive Reuse for Tall Buildings

Jim Nolan, Xylem, Morton Grove, IL
Room: Bowery

Tuesday, October 22, 1:40 PM - 3:10 PM

Seminar 12

Achieving Resource Efficient Decarbonization Utilizing Thermal Energy Storage

Room: Bowery
Chair: Jared Rodriguez, Emergent Group, Sleepy Hollow, NY
Large building decarbonization necessarily requires reduction and elimination of on-site fossil fuel use over time. Building owner implementation of electrification solutions includes several hurdles including electric capacity and distribution constraints, increased peaking electric demand, and other capacity constraints like hydronic riser limitations. Integrating thermal energy storage is a key decarbonization approach intended to overcome many of these hurdles. During the session, industry experts and solution providers will contemplate the various forms of thermal energy storage technology and discuss when and where it's best applied from both a design and decarbonization planning perspective.

1.Introduction
***Jared Rodriguez**, Emergent Group, Sleepy Hollow, NY*

2.Condenser Water Thermal Energy Storage for Heating Hot Water Electrification
***David Heinzerling, PE, Full Member**, Taylor Engineering, ALAMEDA, CA*

3.Using Thermal Energy Storage to Address Hurdles in Electrifying Tall Buildings
***Mark M MacCracken, PE, Life Member**, Trane Commercial - North America, Miami Beach, FL*

4.Retrofitting C&I buildings for Grid-interactivity with Thermal Energy Storage
***Douglas Poffinbarger**, Nostromo Energy, Inc., Irvine, CA*

5.Passive Thermal Energy Storage: Using Phase Change Material in Tall Buildings to Support Decarbonization
***Michael Dunn**, Armstrong World Industries, Lancaster, PA*

1:40 PM - 3:10 PM

Seminar 13

International Zero Carbon Standards & Definitions

Room: Riverside Ballroom
Chair: Hywel Davies, BSc PhD CChem MRSC CSci MASHRAE, Member, Independent Consultant, London, United Kingdom
Governments around the world are developing ambitious policies to decarbonize buildings. This session will review leading and evolving standards and definitions targeting zero emissions buildings, including the United Kingdom's Net Zero Carbon Buildings Standard, a cross-industry standard for all major building types, International Standards development supporting the European Energy Performance of Buildings Directives, and the US government National Definition for a Zero Emissions Building. These presentations will be followed by a panel discussion including a global design practitioner.

1.The United Kingdom Net Zero Carbon Standard: Development, Evolution and Use
***David John Gratiaen Partridge, RIBA**, Related Argent, London, United Kingdom*

2.The EU Zero Emission Building Requirements: Cost Optimal Primary Energy and Operational Carbon and Embodied Carbon
***Jarek Kurnitski**, Tallinn University of Technology, Estonia*

3.The US Zero Emission Building Definition
***Paul A Torcellini, P.E.**, NREL, Lakewood, CO*

4.Design Practitioner Perspective on Different Emerging Standards
***Fiona Cousins**, Arup, New York, NY*

1:40 PM - 3:10 PM

Seminar 14

Are We Delivering What We Promised? Tall Building Measured Performance

Room: Gramercy
Chair: Ginger Scoggins, PE, CEM, CxA, FASHRAE, Presidential Fellow Member, Engineered Designs Inc, CARY, NC
All-electric tall building retrofits are a journey, not a destination. As more all-electric projects are constructed, it is important to analyze post-occupancy data to address operational issues and to provide feedback to future all-electric building performance simulations. This session will focus on four all-electric retrofits and will discuss post-occupancy issues and how they were addressed. Four projects will be discussed: The Empire State Building; Miguel Angel 23 and Titania Tower, an iconic skyscraper in Madrid; 830 Amsterdam Avenue, a 1950 20-story New York City Housing Authority residential building; and ASHRAE Headquarters.

1.The New ASHRAE Headquarters Renovation Project: A Case Study
***Ginger Scoggins, PE, CEM, CxA, FASHRAE, LEED-AP PE, Presidential Fellow Member**, Engineered Designs Inc, CARY, NC*

2.Building on Miguel Angel Street in Madrid
***Maria Del Mar Serna, Mechanical engineer, Full Member**, ACIX CONSULTORIA, MADRID, Spain*

3.Decarbonizing the Empire State Building
***Daniel Bersohn, PE, Associate**, Buro Happold, New York, NY*

Tuesday, October 22, 3:30 PM - 5:00 PM

Panel 9

The Power of Partial: Electrification Strategies in Cold Climates

Track: Cold Climate Design Solutions & Challenges
Room: Riverside Ballroom
Chair: Kelly Westby, Steven Winter Associates
Panelists: Ben Milbank and Nicole Ceci, PE, (2)Ecosystem, New York, NY, (3)Steven Winter Associates, New York, NY
As we move toward a sustainable future, the decarbonization of high-rise buildings presents unique challenges and opportunities, especially in colder climates. his workshop explores the potential of partial or hybrid electrification as a pragmatic approach to reducing carbon emissions in building retrofits.
Decarbonizing our existing building stock is a formidable challenge, compounded by technical and financial constraints. This session examines the concept of partial electrification—a strategic compromise that balances immediate decarbonization gains with current constraints. By adopting a hybrid approach, building owners can achieve 80% + levels of fossil fuel reductions, contribute to overall decarbonization goals, and maintain future flexibility.

3:30 PM - 5:00 PM

Seminar 15

Large Building Decarbonization Trends and Case Studies from Japan

Room: Gramercy
Chair: Junta Nakano, Professor, Full Member, Hosei University, Tokyo, Japan
Climate, energy resources, and expected natural disasters affect HVAC design prerequisites in each region. This session will focus on decarbonization case studies of large buildings in Japan. The first presentation is on Net Zero Energy Building (ZEB) renovation approaches of tenant office buildings by optimizing heating and cooling capacities to adjust to the improved building envelope and high-efficiency equipment. The second presentation is on renovating an 18-story building through a detailed pre-analysis of the heat source and HVAC operation. Downsized heat source, high-efficiency EHP using high-temperature chilled water, dedicated outdoor air systems, and commissioning led to a 36% reduction in CO2 emission. The third presentation is on a city office building built in 1927. Introduced strategies include well water heat utilization, heat sharing between the new building and the existing annex building and precooling of outdoor air by intake through seismic isolation pits.

1.ZEB Renovation Approaches of Existing Tenant Office Buildings in Japan
***Keiichiro Cho, Chief Engineer**, Mitsubishi Jisho Desin, Inc., Tokyo, Japan*

2.Renovation of an Existing Tenant Office Building in Japan

***Yoshiaki Ishii, Sustainability & Mechanical Engineer**, Nihon Sekkei, Inc., Tokyo, Japan*

3.Decarbonization Approaches of Kyoto City Hall Buildings
***Hiromasa Tanaka, Mechanical Engineer, General Manager, Full Member**, Nikken Sekkei, Ltd., Tokyo, Japan*

3:30 PM - 5:00 PM

Seminar 16

Reaching New Heights: Harnessing the Potential of Tall Buildings as Flexible Loads in a Renewable Energy Era

Room: Bowery
Chair: Thomas Yeh, New York State Energy Research and Development Authority, New York, NY

Significant electric loads in buildings can function as fast-responding grid-support resources, with the capability of achieving a cost-effectiveness parity with battery storage, while requiring less upfront investment. In-market demonstrations from major commercial real estate and multifamily building owners show this idea is not limited to a few buildings, but may be applicable to 'many' buildings with large demand, and that real time energy management systems and strategies can quickly be provisioned using load as fast response resources if there is a business case to motivate the owners. In this session, we'll hear from building owners and their vendors who are participating in comprehensive shed/shifting techniques leveraging real-time data platforms and occupancy.

1.A National View of Tall Buildings as Critical Flexible Load Assets for the Future Grid
***Brian Walker**, DOE, Washington, DC*

2.Building Bridges to a Smarter Grid: Findings from a Connected Community Project on Flexible Load Management
***Tim Guiterman**, Edo, Spokane, WA*

3.Towering Opportunities: Lessons from NYC Tall Building Owners on Integrating Skyscrapers as Flexible Grid Assets
***Gene Boniberger**, Self-employed, New York City, NY*

4.Strength in Numbers: A Groundbreaking Strategy for Aggregating Multifamily Units as Powerful Demand Response Tools
***David Klatt**, Logical Buildings, New York City, NY*

5.From the Lab to the Grid: A University Professor's Perspective on Translating Grid-Interactive Efficient Building Research into Real-World Impact
***Bing Dong, Ph.D., S-B-a Member**, Syracuse University, SYRACUSE, NY*

Tuesday, October 22, 5:00 PM - 6:00 PM

Social Event

Decarb Discussion Networking

Room: NY Ballroom
Chair: Kelly Westby, Steven Winter Associates

Are you interested in diving deep into decarbonization strategies and don't know where to begin? Perhaps you're a new ASHRAE member and would like to expand your professional network? Then please join us for a structured networking event on Tuesday, October 22 from 5-6 PM. We will have small discussion groups led by senior ASHRAE members and industry experts on various decarbonization topics that are top of mind for our conference attendees.

Wednesday, October 23

Wednesday, October 23, 8:30 AM - 9:30 AM

Breakfast Plenary Panel

The Business Case for Large Building Decarbonization

Room: NY Ballroom
Chair: Charlotte Matthews, RMI, New York, NY
Panelists: Lauren Brust Moss, Vornado Realty Trust, New York, NY, Emily Kildow, SL Green, New York, NY and Brodie Boland, McKinsey, Washington, DC

Join us for a candid discussion with real estate owners, investment managers and their consultants to learn how various markets define "decarbonization"; how local policy and incentives influence these definitions; and what these folks look for (and from) in sustainability planning and engineering consultants.

Wednesday, October 23, 9:30 AM - 10:30 AM

Panel 10

Creative and Innovative Financing Solutions for Large Multifamily Building Retrofits

Room: Gramercy
Chair: Elizabeth Derry Kelly, NY State Energy Research & Development Authority, New York City, NY,
Panelists: Sadie McKeown, Community Preservation Corporation, New York City, NY, Leigh-Golding DeSantis, Johnson Controls, Philadelphia, PA, Elizabeth Wolfe, Loan Programs Office, US Department of Energy, Washington, DC, Tricia Baker, Pace Equity, Milwaukee, WI and Etienne Cadestin, Longevity Partners, Austin, TX
With building performance standards and other policies driving the need to retrofit large multifamily buildings for energy savings and carbon reduction, building owners often struggle to find funding sources for these retrofits. To help bridge the funding gap, a range of innovative financing tools are being developed and tested, including some supported by federal funds through the Inflation Reduction Act, and others through green banks and new financing entities. This session highlights leading new solutions to address the finance challenge.

9:30 AM - 10:30 AM

Panel 11

Many Hands Make BPS Work: Perspectives on BPS Implementation

Room: Riverside Ballroom
Chair: Laurie Gilmer, IFMA, Houston, TX
Panelists: Barry C Abramson, P.E., Life Member, Servidyne, LLC, Atlanta, GA and John Lembo, CFM, LEED, AP, RiverSpring Living, Riverdale, NY
This panel session explores BPS implementation needs from a variety of different perspectives. Panelists in different roles, including design engineer and facility manager, will discuss their approach to meeting BPS targets. This session will highlight strategies for success, identify points of collaboration, and suggest areas where improvement is needed. This interactive session invites questions from the audience.

9:30 AM - 10:30 AM

Seminar 17

Case Studies of All-Electric Tall Building New Construction

Room: Bowery
Chair: Carrie A Brown, Ph.D., Full Member, Resource Refocus LLC, Oakland, CA
While net zero emission buildings are becoming more common, achieving this in tall buildings in urban environments continues to be rare. 345 Hudson, a 100-year old building in NYC, is undergoing a major all-electric retrofit. It will share a thermal reservoir with neighboring all-electric 555 Greenwich, creating a thermal network which serves to reduce emissions and save on capital costs. 343 Madison is a new high-rise all electric office building which is implementing a state-of-the-art rooftop air source heat pump plant. A hybrid electric/steam system serves to maximize equipment utilization and improve resiliency.

1.Thermally Linking a New All Electric Office Building to a Neighboring Existing High Rise Office
***Benjamin Rodney, PE, Full Member**, Hines, New York, NY*

2.Electrification Strategies and Lessons Learned
***Daniel H Nall, PE FAIA FASHRAE CPHC, BEMP and HBDP, Fellow Life Member**, Daniel Nall, Consultant, LLC, Princeton, NJ*

3.343 Madison: A Hybrid Electrification Approach
***Christopher Colasanti, PE, Full Member**, Jaros Baum & Bolles, NEW YORK, NY*

Wednesday, October 23, 11:00 AM - 12:00 PM

Panel 12

Future Weather is More Important than You Think

Room: Bowery
Chair: Christopher Colasanti, PE, Full Member[1]
Panelists: Carrie A Brown, Ph.D., Full Member[2], Christopher Colasanti, PE, Full Member[1] and Brian McKinney[3], (1)Jaros Baum & Bolles, NEW YORK, NY(2)Resource Refocus LLC, Oakland, CA(3)Jaros Baum & Bolles, New York, NY
With the unprecedented rate of global warming in 2023 and 2024, it is becoming clear that past climate data is not a predictor of future weather. Future-looking weather will be critical for assessing building performance. Considering warming scenarios in equipment sizing and energy performance can lead to wildly increased equipment sizing and capital cost impacts. With the

useful life of new equipment extending 30-40 years into the future, how can we best plan for this changing world? This session will provide you with the critical information you need to plan for HVAC systems in a warmer, wetter, and more variable future.

11:00 AM - 12:00 PM

Panel 13

MEP 2040: Embodied Impacts While Minimizing Operational Impacts

Room: Riverside Ballroom
Chair: Ghina Annan, M.Eng Applied Energy, Associate, Stantec, Calgary, AB, Canada
Panelists: Josh Jacobs, LEED AP+ BD&C, WAP Sustainability, Seattle, WA, Luke C H Leung, PE, Fellow Member, Skidmore Owings & Merrill, CHICAGO, IL and Kayleigh Houde, Associate, BuroHappold, New York, NY
While we all strive to minimize the impact that we have on the climate, the mechanical engineering and product manufacturers have been focused on minimizing operational greenhouse gas impacts for decades and decades. They have been very successful in this endeavor and have us on the precipice of near zero operational buildings. In fact, many organizations, including MEP 2040, GSA and ASHRAE, are aiming at operational energy neutrality, at least in new buildings, by 2030. As we strive for near zero in operational carbon in our buildings, we need to remember to understand and then start to minimize the embodied impacts that our product/material selections have. These things have environmental impacts to be produced and even during their lifetime that aren't always thought of. MEP 2040 is looking to bring this concept to the forefront of design, manufacturing, and product selection. High Rise, unlike Low Rise, tend to have longer life cycles and higher embodied carbon intensities. Come hear us discuss what you can do on a High Rise to help minimize embodied environmental impacts.

11:00 AM - 12:00 PM

Panel 14

The Path to Better and Less Expensive Efficiency Measures

Room: Gramercy
Chair: James Geppner, NYSERDA, New York, NY
Panelists: James McIntyre, Inclusive Prosperity Capital, New York, NY, Chris Richardson, Realize 2050, Denver, CO, Tim Cantwell, Tailorbird, Princeton, NJ and Lindsey Burke, GreenPoint Partners, New York, NY
Any company that ever improved a product first decided to make an investment—allocating finite company resources—to make that improvement. The cost of efficiency measures and the capacity of the industry to deliver these measures are two barriers to the deployment of solutions at the pace needed to meet goals set out in New York's ambitious Climate Act and other global buildings sector targets. Since cost reduction is always the result of a company deciding to invest in developing a new product or entering a new partnership or in a technology that will make installation of an efficiency measure less expensive, what drives these decisions? How do companies that are part of the efficiency measure value chain make decisions to invest capital into a new product or a new factory? And what can we do to get them to increase the amount of capital that they invest?