

BUILDINGENERGY BOSTON

Westin Boston Waterfront

March 14-15, 2019

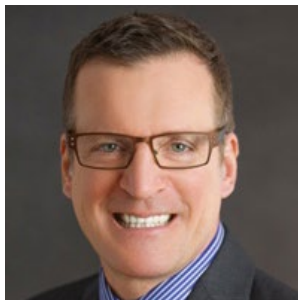
#BE19

Conference + Trade Show of the
Northeast Sustainable Energy
Association (NESEA)

WELCOME



Michelle Apigian
ICON Architecture



James Petersen
Petersen Engineering

Dear NESEA Colleagues,

We are delighted to welcome you to BuildingEnergy Boston 2019! It has been a true pleasure to work with NESEA's talented staff and many of your peers who volunteered their precious time to curate the content for this conference.

This year's session quality is a tribute to the large number of strong, thoughtful proposals submitted. Presentations have been winnowed and organized to maximize your ability to dive deep into the range of topics that we believe are important to you.

We have also focused on providing access to high quality vendors on the trade show floor, as well as a variety of opportunities to connect with old friends and to network and foster new relationships, all with the goal of advancing the work you do.

We hope you come away smarter and fired up, with an enriched commitment to the critical part you play in reversing climate change. With knowledge and collaboration, we will strengthen the health and beauty of our planet and improve conditions for all who inhabit it.

Sincerely,

Your BuildingEnergy Boston 2019 Co-Chairs,
Michelle Apigian & James Petersen

Thanks to Our 2019 Conference Co-Chairs & the 2019 Content Committee

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Sonia Barrantes, *Ripcord Engineering*
Cammy Peterson, *MAPC*

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Satpal Kaur Panesar
Shawn Gallagher, *Action for Boston Community Development*
Sisia Daglian, *City of Cambridge*
Ted Hetzel, *Petersen Engineering*

SCHEDULE AT A GLANCE

Thursday, March 14

Trade Show
Floor Open
8am–6:30pm
(Coffee Served All Day)

Keynote
8:30am–10am

Session 1
10:30am–12pm

Lunch on
Trade Show Floor
12pm–1:30pm

Session 2
1:30pm–3pm

Session 3
3:30pm–5pm

Trade Show
Reception
5pm–6:30pm

NESEA Night
6:30pm–8:30pm

Afterparty at The Social Register
8:30pm

Friday, March 15

Trade Show
Floor Open
8am–3pm
(Coffee Served All Day)

Session 1
8:30am–9:30am

Session 2
10am–11:30am

Lunch on
Trade Show Floor
11:30am–1pm

Session 3
1pm–2pm

Session 4
2:30pm–3:30pm

Closing Reception
3:30pm–4:30pm

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THURSDAY SESSION GRID

	Keynote 8:30am–10am	Session 1 10:30am–12pm	Lunch Sessions 12:15pm–1:15pm	Session 2 1:30pm–3pm	Session 3 3:30pm–5pm
Marina 1		Connecting the Dots: Aligning Policy, Programs & Funding		The Art + Science of Cost-Effective High-Performance Buildings: How Data Informs Outcomes	Next Gen Passive House: New Technologies, Strategies & Processes
Marina 2		Developing Leadership Effectiveness: The Superpower for Excellence in Design		When the Grid Goes Down: Saving Lives with Your Building's Envelope and Backup Power	Biophilia Is in Every Building We Cherish: Re-Discovering Biophilic Design
Marina 3		The Cannabis Cultivation Conundrum: Lessons & Insights from the Design Studio to the Growroom		The Race Toward Decarbonization	Quebec City's Eco-District: Low-Energy, Affordable, Sustainable & Cost-Effective
Marina 4			Diversity Caucus & Focus Group		
Harbor 1	Keynote Session: Carbon Drawdown Now! Turning Buildings into Carbon Sinks	Tools of the Trade for Building Diagnostics		Air Source Heat Pumps: Measured Performance & Best Practices	Deep Energy Retrofit with Tenants in Place
Harbor 2		Getting Schooled in Passive House (Tale of Two Schools)		Capital Improvement Plan: From Concept to Implementation	Cost & Energy Optimization for Net Zero Multifamily
Harbor 3		Affordable Multi-Family Housing Net Zero AND Passive House?	The Transmogrification of HVAC in Today's High Performance Buildings	Healthy for People & Planet: Why Smart Material Choices Are Essential for High Performing Buildings	Pull Back the Curtain! What Is Really Happening in Your Boiler Room?

BuildingEnergy Boston is a Program of NESEA

The mission of the Northeast Sustainable Energy Association is to advance the adoption of sustainable energy practices in the built environment by cultivating a community where practitioners share, collaborate and learn.

NESEA is a member-driven 501(c)(3) non-profit. Visit nesea.org for more information on programs and membership.

Free WiFi!

For your convenience, NESEA has made free WiFi available for attendees throughout the Westin.

Network: Westin_Conference
Password: BE2019

FRIDAY SESSION GRID

	Session 1 8:30am–9:30am	Session 2 10am–11:30pm	Lunch Sessions 11:45am–12:45pm	Session 3 1pm–2pm	Session 4 2:30pm–3:30pm
Marina 1	Timber's Role in Modern Urbanization	Smart Retrofits: Pathway to a Low-Carbon World		Dealing with Dust in the Wind: New EPA Guidance for Home Air Cleaners	The Power of Partnerships: How to Achieve Affordable, Net-Zero Urban Homeownership
Marina 2				Solar Access for the Underserved	
Marina 3	Energy Storage Behind the Meter in MA: New Incentives, Programs and Economics	How Can Public Policy Promote Multifamily Passive House Projects?		Smart Homes & Sustainability: Putting Data into Practice	Resilience Gaps & Clean Energy Solutions at State-Owned Medical & Residential Care Facilities
Marina 4	In Pursuit of Performance: A Multifamily Retrocommissioning Case Study	Westin Boston Waterfront Hotel Case Study: Diverting Food Waste for Energy Production		Pump It Up: Retrofitting Homes through Weatherization, PV, and Heat Pumps	
Burroughs	Carbon Drawdown Now! Prefabricated, Carbon-Storing Building Components Built Before Your Eyes		Live Demo - Detailing Continuity Building Enclosure Systems (Window and MEP Flashing Solutions)		
Harbor 1	Airtight, Cellulose-Insulated Assemblies: Simple Advice from the Woods of Maine	The Building Science of Prefabricated / Off-Site Construction		Large Scale Passive House: What's Working	Carbon Free Boston
Harbor 2	Balancing Energy and IAQ: Case Study of a LEED Home Retrofit	Air Infiltration Reduction Testing: 5 Case Studies for Proven Energy Savings		Local Wood in Practice: A Conversation across the Material Stream	How Big Is Small? Compact Presentations of More Life in Less Space
Harbor 3	A Commercially Viable Net Zero Office Building: Technology, Beauty & Meaning	Cities as Clean Energy Leaders, Innovators & Practitioners	Carbon Klatsch	Clean Energy & Resiliency for Small Towns	A Common Sense Approach to Red List Free Materials

Continuing Education Units (CEUs)

View individual session descriptions starting on page 9 for information on AIA, APA/AICP, BPI, GBCI, MA CSL, and RESNET credits. All sessions offer AIA credits. Flyers listing sessions by each credit type are also available at registration.

The full conference is accredited for 9 PHIUS CPHC credits. For info on how to self-report, visit nesea.org/be19-CEUs.



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thrive, with connections to resources
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transportation.**



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Join the Community

**Ask about NESEA Membership and programs
at the NESEA Lounge on the trade show floor.**



NESEA

NORTHEAST SUSTAINABLE ENERGY ASSOCIATION

COMMUNITY EVENTS

THURSDAY

7:30am–8:30am

Lifetime Member Breakfast

Location: Carlton

Invitation only. NESEA's Lifetime Members can enjoy breakfast and a chance to catch up. To learn more about NESEA Lifetime Membership, visit: nesea.org/lifetime-members

8:30am–10am

Keynote Session: Carbon Drawdown Now! Turning Buildings into Carbon Sinks

Location: Harbor 1 & 2

Speakers: Chris Magwood (*Endeavour Centre*), Ace McArleton & Jacob Racusin (*New Frameworks*)

"Carbon Drawdown Now" will help you *know how* buildings have the potential to become the world's fifth largest carbon sink, rather than a leading emitter, and more clearly *know why* your work is essential for climate justice and social equity. See page 9 for a full description.

Sponsored by:



12pm–1pm

Scholarship Lunch

Location: Carlton

Invitation only. Through NESEA's BE the Future initiative, sponsors directly fund scholarships that give students and emerging professionals access to NESEA programs, including day passes to BuildingEnergy Boston. This lunch is an opportunity for scholarship sponsors and recipients to meet and network.

BE the Future Scholarship Sponsors

Bruss Project Management
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Energy Balance
Fred Davis Corporation
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12:15pm–1:15pm

Diversity Caucus & Focus Group

Location: Marina 4

Facilitators: Mel Baiser (*HELM Construction Solutions*), Miriam Gee (*CoEverything*), Ace McArleton (*New Frameworks*), Maria Washington (*Byggmeister*)

Open to all people of color, indigenous people, queer, trans and gender non-binary individuals (LGBTQIA), women, and people with disabilities in the larger NESEA community. Grab your lunch and join us for an opportunity to get to know one another, share stories related to your identity and experience as a person often underrepresented in the design and construction sector. See page 10 for a full description.

12:15pm–1:15pm

The Transmogrification of HVAC in Today's High Performance Buildings

Location: Burroughs

Speaker: Barry Stephens (*Ventacity Systems*)

Bring your lunch to this sponsored session for insight into the disruptive technology that is changing the HVAC industry in North America. See page 11 for a full description.

Sponsored by:



12:30pm–5:30pm

Faces of EE Photo Booth

Location: Trade Show Floor

We're pleased to once again offer free professional head shots on the trade show floor, courtesy of E4TheFuture. This is a part of E4TheFuture's Faces of EE campaign that seeks to build support for smart energy policy by showing policymakers how strong our workforce truly is in every U.S. region. By participating, you'll also be entered to win a \$100 Amazon gift card.

5pm–6:30pm

Trade Show Reception

Location: Trade Show Floor

Everyone is welcome to mingle on the trade show floor during this reception. We highly encourage attendees to take this opportunity to learn about products and services important to their success. Cash bar and light snacks.

Sponsored by:



6:30pm–8:30pm NESEA Night

Location: Harbor 1 & 2

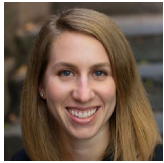
Tickets: 2-day full pass holders: \$30. All others: \$60. Inquire about waitlist status at the registration desk.

Schedule: 6:30 Doors Open; 7:15–7:45 Awards; 8:30 Event Concludes

This annual event is a great way to unwind and connect with fellow attendees and NESEA community members. Two awards will be presented to celebrate the contributions of individuals in our community. Sweet and savory appetizers. Cash bar.

Kate Goldstein Emerging Leader Award

Recognizes a NESEA Member early in their career for current engagement and demonstrated potential to continue to meaningfully affect the future of NESEA.

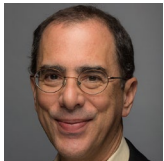


Mariel Eisenberg is the Managing Energy Engineer at EN-POWER GROUP. She has been a critical driver for the success

and growth of the company, which has grown from 3 staff members to 30 during her seven years at the company.

Distinguished Service Award

Recognizes a NESEA Member who has made a significant contribution of time and service to the organization.



Fred Davis has been a trailblazer in the field of energy efficient lighting products and an engaged NESEA participant since

the 1980s. His company, Fred Davis Corporation, is a leading supplier of efficient lighting products and is active in multi-family, weatherization, and municipal markets nationwide.

8:30pm Afterparty

Location: The Social Register (401 D St.)

2019 Conference Chairs James Petersen and Michelle Apigian and 2020 Conference Chairs Sonia Barrantes and Cammy Peterson invite you to keep the party and conversation going at The Social Register.

FRIDAY

8:30am–9:30am

Live Demo: Carbon Drawdown Now! Prefabricated, Carbon-Storing Building Components Built Before Your Eyes

Location: Burroughs

Speakers: Chris Magwood (*Endeavour Centre*), Ace McArleton & Jacob Racusin (*New Frameworks*)

Making “drawdown buildings”—buildings that store more carbon than they emit—may be much less complicated than you think. Come watch a demonstration of a prefabricated building panel being assembled live on stage, built from carbon-storing, healthy, local, and biogenic materials as an example of the immediate potential to transform buildings into carbon sinks. See page 15 for a full description.

11:45am–12:45pm **Carbon Klatsch**

Location: Harbor 3

Facilitators: John Abrams (*South Mountain Company*), Jean Carroon (*Goody Clancy*)

Klatsch (noun)—a casual gathering of people, especially for refreshments and informal conversation.

As a community, we have a gut feeling for R values, air tightness, energy metrics, and so on, but when it comes to having a sense of what is good or bad with embodied carbon, we have some work to do. Is 17kg CO₂e/m² good? What is not so good? What do we all need to know to think clearly about embodied carbon? Bring your lunch and join this informal conversation to explore these questions.

Sponsored by:

c&h architects

11:45am–12:45pm

Live Demo: Detailing Continuity Building Enclosure Systems (Window and MEP Flashing Solutions)

Location: Burroughs

Speakers: Scott Johnson & Mike Moriarty (*Huber Engineered Woods*)

Bring your lunch and join us for a live demonstration! This will be a detailed review of proper window and door and MEP flashing solutions. Watch or participate in a hands-on demonstration of flashing tapes and liquid flashing alternatives.

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3:30pm–4:30pm **Closing Reception**

Location: Harbor Foyer

Join us in celebrating the end of another inspiring conference with this final opportunity to network and discuss all that you've learned. Cash bar.

THURSDAY SESSION 1

Experience Levels

- 1 - No prior knowledge needed
- 2 - Some prior knowledge helpful
- 3 - Prior knowledge recommended

Areas of Focus

To view and sort sessions by Area of Focus, visit: nesea.org/be19-sessions

KEYNOTE SESSION

8:30am–10am

Carbon Drawdown Now! Turning Buildings into Carbon Sinks

Location: Harbor 1 & 2

Speakers: Chris Magwood (*Endeavour Centre*), Ace McArleton & Jacob Racusin (*New Frameworks*)

CEUs: 1.5 AIA LU/HSW; 1.5 BPI; 1.5 MA CSL Energy

With our BuildingEnergy Boston 2019 theme of “Know-How” in mind, we're pleased to present this year's keynote session, “Carbon Drawdown Now,” which will help you *know how* buildings have the potential to become the world's fifth largest carbon sink, rather than a leading emitter, and more clearly *know why* your work is essential for climate justice and social equity.

We'll examine the theory of embodied carbon emissions and carbon storage in materials, the wide range of carbon storing materials available now and those in R&D phase, and the global potential for carbon storage in the built environment. A section on cost analysis and the decision-making process will spotlight real-world case studies of buildings that heavily incorporate carbon-storing materials. Strategies will be identified for both residential and non-residential projects, throughout different parts of the design process, using different tools.

During the keynote, we'll show how we can advance climate justice through the

development of the built environment, and how our industry can partner with allied industries in agriculture and forestry to find solutions to social, ecological, and economic problems. You'll leave feeling reinvigorated in your work, eager to connect our community of practitioners with the wider network of change-makers, and fired up to transform our built environment and our world.

Sponsored by:



SESSION 1

10:30am–12pm

Connecting the Dots: Aligning Policy, Programs & Funding

Location: Marina 1

Speakers: Ed Connelly (*New Ecology*), Seth Federspiel (*City of Cambridge*), Eugenia Gibbons (*Green Energy Consumers Alliance*), Hank Keating, Harvey Michaels (*MIT Sloan School of Management*), Deanna Moran (*Conservation Law Foundation*)

CEUs: 1.5 AIA LU/HSW; 1.5 AICP

Comprehensive Planning

Experience Level: 1

Over the past decade, state and municipal jurisdictions have adopted increasingly ambitious climate action plans and goals for the reduction of building energy consumption. However, the devil is in the details! Regulations and policies relating to utility incentives, local zoning, building codes, and finance mechanisms often fall far short of big picture goals. This workshop will host a robust discussion and identify actionable solutions to align energy policies, programs, and funding to meet state and municipal climate goals. Various facets will be considered, such as affordable housing finance and regulation, municipal ordinances to reduce existing building energy consumption and cost implications for building owners and more.

Developing Leadership Effectiveness: The Superpower for Excellence in Design

Location: Marina 2

Speaker: Barbra Batshalom (*Sustainable Performance Institute*)

CEUs: 1.5 AIA LU; 1.5 MA CSL Business Practice

Experience Level: 1

Leadership effectiveness is the keystone to an organization's success, but not always a skillset supported in the education of design professionals. Developing your leadership capabilities begins with self-awareness of your strengths and challenges, and understanding when to apply them in different situations. In this interactive workshop, we'll explore how emotional intelligence influences how you engage people, and how to use the basic elements of change management to implement new ideas and improve communication. Whether you are at the executive level, a manager or a project team leader – or just want to “lead from the middle” and champion sustainability or other issues, improving these skills will be critical to your success.

The Cannabis Cultivation Conundrum: Lessons & Insights from Design Studio to Growroom

Location: Marina 3

Speakers: Brian Anderson (*Anderson Porter Design*), Nicholas Collins (*Energy & Resource Solutions*), Fred Davis (*Fred Davis Corp*), Sam Milton (*Climate Resources Group*)

CEUs: 1.5 AIA LU/HSW; 1.5 BPI; 1.5 MA CSL Energy; 1.5 AICP Energy

Experience Level: 1

With a growing growing industry and fresh round of local energy regulation, we'll provide new insights into actual design and just how much energy real cannabis production facilities are consuming. Sam will share highlights from the national Cannabis Energy Report and updates on

the ever-evolving nation-leading energy regulations. Brian will offer a designer's view of cultivators' decision-making, facility design, and how cleaner energy measures might be deployed. Nick will share data and trends gleaned from evaluating the effectiveness of energy efficiency measures at facilities in MA.

Tools of the Trade for Building Diagnostics

Location: Harbor 1

Speaker: Kohta Ueno (*Building Science Corporation*)

CEUs: 1.5 AIA LU/HSW; 1.5 BPI; 1.5 MA CSL Energy; 1.5 GBCI BD+C, O+M, WELL
Level: 3

How do you go about diagnosing a sick, leaky, dripping, humid, dry, or uncomfortable building? Join Kohta Ueno for an overview of the tools that he commonly uses in his diagnostic work on building enclosures and mechanical systems. We'll learn about everything from the air side (blower doors, airflow meters, flow sensors) to the moisture side (spray testing, moisture meters, hygrometers) to the heat side (infrared cameras, temperature meters) – instruments that measure things that are not easily visualized. Multiple case studies will demonstrate how these measurements provide actionable results in solving problems.

Getting Schooled in Passive House (Tale of Two Schools)

Location: Harbor 2

Speakers: Chris Briley & Harry Hepburn (*BRIBURN*), Arlen Li (*Wilson HGA*), Michael Pulaski (*Thornton Tomasetti*), Julia Tate (*Scott Simons Architects*)

CEUs: 1.5 AIA LU/HSW; 1.5 MA CSL Energy
Experience Level: 2

The New England climate put high performance building to the test for the construction of two Passive House schools in Southern Maine: new construction of the Maine Coast Waldorf

High School in Freeport, the first Passive House certified high school in the US, and an addition to the lower school (pre-K thru 5th grade) on the Waynflete Campus in Portland's historic West End. The design teams will share lessons learned during design, bidding, construction, and certification. They will explain how energy modeling and the PHIUS review process informed the evolution of the building envelope, systems, and detailing. Differences in life cycle cost analysis and integration strategies for key players (client, sustainability consultant and contractor) will be discussed along with challenges of tight construction budgets and schedules.

Affordable Multi-Family Housing Net Zero AND Passive House? Challenges, Opportunities, Mistakes & Solutions

Location: Harbor 3

Speakers: Laura Bailey & Bill Maclay (*Maclay Architects*), Karen Bushey (*Vermont Energy Investment Corporation*), Andrew Winter (*Twin Pines Housing Trust*)

CEUs: 1.5 AIA LU/HSW; 1.5 MA CSL Energy
Experience Level: 1

If high end clients can't "afford" Passive House or Net Zero Energy Certification, how can non-profit housing developers possibly afford both? Twin Pines Housing is taking on that challenge with a 29-unit affordable multifamily building in Lebanon, NH. Currently under construction and slated for completion in August 2019, this session investigates the cost-effective envelope, detailing, mechanical strategies, and renewable energy systems necessary for the project to achieve both certifications. The project addresses a challenging combination of long-term capital costs, incentives, financial requirements, and a limited budget. The panel will address the numerous uncertainties, challenges, and the reasoning behind pursuing combined NZE and Passive House certifications.

Come find out if our project is on track for dual certifications.

LUNCH SESSIONS 12:15pm–1:15pm

Diversity Caucus & Focus Group

Location: Marina 4

Facilitators: Mel Baiser (*HELM Construction Solutions*), Miriam Gee (*CoEverything*), Ace McArleton (*New Frameworks*), Maria Washington (*Byggmeister*)

Open to all people of color, indigenous people, queer, trans and gender non-binary individuals (LGBTQIA), women, and people with disabilities in the larger NESEA community. Grab your lunch and join us for an opportunity to get to know one another, and share stories related to your identity and experience as a person often underrepresented in the design and construction sector. Speak out about instances of discrimination, oppressive dynamics, and microaggressions in our industry, and share strategies, successes, and strengths of our social identities. Discuss how we can deepen the commitment to racial, gender, economic and disability justice in our high-performance building world. Brainstorm next steps our NESEA community can take to further invest in the People part of the triple bottom line, implement the commitment to diversity stated in its 2017 Strategic Plan, and continue working to create a truly inclusive conference and industry.

We Value Your Feedback!

Please take a moment at the end of each session to evaluate the speakers and overall quality of the session. Paper evaluations are available in all session rooms.

You can also evaluate sessions at:
nesea.org/be19-evaluations

Experience Levels

- 1 - No prior knowledge needed
- 2 - Some prior knowledge helpful
- 3 - Prior knowledge recommended

Areas of Focus

To view and sort sessions by Area of Focus, visit: nesea.org/be19-sessions

The Transmogrification of HVAC in Today's High Performance Buildings

Location: Harbor 3

Speaker: Barry Stephens (*Ventacity Systems*)

Bring your lunch to this sponsored session, which will provide attendees insight into the disruptive technology that is changing the HVAC industry in North America. The commercial HVAC industry is slow to adopt new technology, and engineers and architects and contractors like doing what they know. We will discuss the impact on energy efficiency, optimization, reliability and the IoT, and look at barriers to adoption of these new, better approaches to heating, cooling and ventilating our buildings of today.

Sponsored by:



SESSION 2

1:30pm–3pm

The Art + Science of Cost-Effective High-Performance Buildings: How Data Informs Outcomes

Location: Marina 1

Speakers: Dan Arons, Heather Jauregui &

Jana Silsby (*Perkins Eastman Architects*)

CEUs: 1.5 AIA LU/HSW; 1.5 MA CSL Energy; 1.5 GBCI BD+C, O+M, WELL

Experience Level: 3

Creating high-performance buildings requires a balance of art and science. Design decisions can no longer be guided by aesthetics and intuition alone; they require careful study to achieve desired outcomes. Using recent work in the Northeast, this session will show how data can be used to inform design decisions. Case studies will cover how data from both predictive analysis as well as post-occupancy evaluation was used to answer the following questions: Can we provide Harvard-recommended CO2 levels without increasing energy? How can sunshades be optimized to reduce system sizing and glare? What is the best affordable wall assembly for this climate? How does high-performance compare to code compliance in terms of cost? To what degree can we replace typical civil infrastructure with biosystems?

When the Grid Goes Down: Saving Lives with Your Building's Envelope and Backup Power

Location: Marina 2

Speakers: Katie Courtney (*CannonDesign*), Jim Newman (*Linnean Solutions*), Alex Wilson (*BuildingGreen*)

CEUs: 1.5 AIA LU/HSW; 1.5 BPI; 1.5 MA CSL Energy; 1.5 GBCI BD+C, O+M, WELL

Experience Level: 2

Storms, wildfires, heat waves, cyber-terrorism: For many reasons, there is growing interest in ensuring that our buildings will keep occupants safe and provide a reasonable level of functionality during extended power outages or loss of heating fuel. This workshop will detail two ways to address these needs: first, design strategies for buildings to ensure that reasonably safe thermal conditions will be maintained passively in the event of lost power or

heating fuel; and second, providing back up power to serve critical needs in a building. In the second half of this session, participants will work in small groups to apply these strategies for LEED Resilient Design Pilot credit IDpc100 Passive Survivability and Backup Power During Disruptions. *Please note: Capacity for this session is limited to 80.*

The Race Toward Decarbonization

Location: Marina 3

Speakers: Gina Bocra (*NYC Department of Buildings*), Elizabeth Galloway (*Payette*), Deanna Moran (*Conservation Law Foundation*), Paul Ormond (*MassDOER*), Darren Port (*NEEP*)

CEUs: 1.5 AIA LU/HSW; 1.5 MA CSL Energy; 1.5 AICP Sustainability

Experience Level: 1

Many states in the Northeast have aggressive long-term carbon reduction goals, but are we on track to get there? While energy efficiency has been critical to minimize load growth and in some cases turn the curve downward, reductions in greenhouse gases from the building sector have been glacially slow in comparison with electric generation emissions reductions in the Northeast. We need to move swiftly and steeply down in carbon emissions to reach our goals. This session will present an action plan towards decarbonization, including a focus on new construction and air source heat pumps, to help the region meet our decarbonization goals.

Air Source Heat Pumps: Measured Performance & Best Practices

Location: Harbor 1

Speakers: Bruce Harley (*Bruce Harley Energy Consulting*), Marc Rosenbaum (*South Mountain Company*), Andrew Shapiro (*Energy Balance*)

CEUs: 1.5 AIA LU/HSW; 1.5 BPI; 1.5 MA CSL Energy; 1.5 GBCI BD+C, O+M, WELL

Experience Level: 2

A cast of experienced building energy geeks discuss measured performance of air source heat pumps and best practices for installation. With so many ASHP systems going into new buildings, we keep learning new information and new ways to make mistakes. We want to share this knowledge to save at least a few stubbed toes! We have logged energy usage of several air source heat pump systems, including multi-head systems, and from the data estimated system COP under a variety of weather conditions. We will focus on the data and then zoom out to implications for best practices.

Capital Improvement Plan: From Concept to Implementation

Location: Harbor 2

Speakers: Ned Collier (*ICON Architecture*), Rebecca Hatchadorian (*Arup*), Julie Lynch (*City of Cambridge*)

CEUs: 1.5 AIA LU/HSW; 1.5 AICP Comprehensive Planning

Experience Level: 1

Planning for big goals, like becoming a Net Zero community, while attending to the smallest details of managing a diverse building portfolio, is hard. This session will explore how the City of Cambridge, MA is doing just that, using a long-term, integrated capital improvement plan. Implemented in 2015, the Cambridge Municipal Facilities Improvement Plan (MFIP) is a 43-building, 13-year program designed to achieve a low-carbon, resilient, healthy, and inclusive building portfolio, while simultaneously attending to short-term emergency and deferred maintenance needs. Representatives from Cambridge's DPW, Arup Engineering, and ICON Architecture will discuss processes used to build consensus around the MFIP and its multi-faceted goals. They will share insight into data collection and visualization methods, tools developed, initial projects implemented, and lessons learned.

Healthy for People & Planet: Why Smart Material Choices Are Essential for High Performing Buildings

Location: Harbor 3

Speakers: Lisa Carey-Moore (*Integrated Eco Strategy*), Jacob Racusin (*New Frameworks*)

CEUs: 1.5 AIA LU/HSW; 1.5 BPI; 1.5 MA CSL Energy; 1.5 RESNET

Experience Level: 2

Whether net zero, Passive House, or other certification is your objective, incorporating a healthy materials strategy is as essential as figuring out how you will design the building envelope and mechanical systems. Thoughtful selection of materials can help design teams get a better handle on the embodied carbon impact of those materials choices and thus help buildings achieve better embodied carbon outcomes. In this active, high-participation session, attendees will identify where harmful chemicals might reside in building products using the "Six Classes" approach. We'll review some of the literature on the impacts of materials choices on a building's carbon footprint. Finally, we'll discuss design strategies to increase the use of healthier materials in order to better address occupant and ecological health.

SESSION 3 3:30pm–5pm

Next Gen Passive House: New Technologies, Strategies & Processes

Location: Marina 1

Speakers: Travis Anderson & Colin Booth (*Placetaylor*), Tedd Benson (*Bensonwood*), Gunnar Hubbard (*Thornton Tomasetti*)

CEUs: 1.5 AIA LU/HSW; 1.5 MA CSL Energy

Experience Level: 2

The Passive House standard is a critical tool for reducing our carbon footprint, yet it remains largely underutilized. Our panelists have each developed strategies, over the course of their long, influential careers committed to sustainability, to make Passive House accessible to any project team. They will share examples of parametric modeling and visualization tools, advanced prefabricated product manufacturing techniques and standards, and innovative integrated business models. Attendees, whether owners, designers, or builders, will be given a road map for how to efficiently evaluate the feasibility of extreme energy efficiency on their projects.

Biophilia Is in Every Building We Cherish: Re-Discovering Biophilic Design

Location: Marina 2

Speaker: Jodi Smits Anderson (*Dormitory Authority of the State of New York*)

CEUs: 1.5 AIA LU/HSW; 1.5 MA CSL Elective; 1.5 AICP Sustainability

Experience Level: 2

Join us in a biophilic exploration of well-known buildings (focusing on the Boston area), to illuminate the natural influences that can be strengthened in design and operation of all buildings. Our session will open with a high-level review of the 14 Patterns of Biophilia as defined by Terrapin Bright Green. We will then review buildings, historic and new, to discover together what biophilia really

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Experience Levels

- 1 - No prior knowledge needed
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- 3 - Prior knowledge recommended

Areas of Focus

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is, how we are already doing it, and how we can deliberately engage with nature more in our work. In a personal work session, attendees will define 2-3 ways to amplify connections to nature in current projects—their own work or projects in their communities. We'll wrap up by sharing insights and anticipated changes to current work.

Quebec City's Eco-District: Low-Energy, Affordable, Sustainable & Cost-Effective

Location: Marina 3

Speakers: Dany Blackburn (*ABCP*), Martine Dion (*SMMA*), Martin Gougeon (*Québec International*), André Huot (*Nordic Structures*), Alejandro Montero (*TERGOS Architecture + Construction*)

CEUs: 1.5 AIA LU/HSW; 1.5 BPI; 1.5 MA CSL Energy; 1.5 AICP Energy

Experience Level: 2

This session will discuss 3 successful case studies from Quebec City with collaborative approaches: a 13-story cross-laminated timber frame eco-condo project and an energy efficient affordable townhouse style housing development, both built within the Pointe-aux-Lievres eco-district in Quebec City; and an adaptive re-use of a 17th century monastery into a healing hotel. The case studies include sustainable clean energy practices, highly insulated building enclosures, innovative heating and cooling systems, rainwater harvesting, green roofs and waste reduction. Best practices, affordability and cost-effectiveness will be addressed within

each project. An interactive discussion supported by a delegation of the projects' key players will follow.

Deep Energy Retrofit with Tenants in Place

Location: Harbor 1

Speakers: McGowan Southworth (*Brooklyn Power*), Jason Taylor (*Carbon Cutters*), David White (*Right Environments*)

CEUs: 1.5 AIA LU/HSW; 1.5 BPI; 1.5 MA CSL Energy; 1.5 GBCI BD+C, ID+C, O+M, WELL; 1.5 RESNET

Experience Level: 1

Retrofitting existing buildings with occupants in place will be key to meeting our emissions reductions targets. This session will explore how a project team planned and executed a retrofit to target net-zero energy use, improve thermal comfort and air quality, protect the building from moisture, meet historic guidelines, and stay within a realistic budget – all while keeping the building occupied. Expect hands-on insights as the project team guides you through strategies on how to leverage financing mechanisms for historic rehabilitation and solar tax credits, how to design and quality-assure enclosure and mechanical systems, and how to safely perform blower-door-guided air-sealing. You'll see that, done correctly, air-sealing flat-roofed buildings is not that hard – a lesson relevant to Boston's Triple Decker Initiative.

Cost & Energy Optimization for Net Zero Multifamily

Location: Harbor 2

Speaker: Dave Bruns (*Bruns Realty Group*), Jesse Schwartzberg (*Black Mountain Architecture*)

CEUs: 1.5 AIA LU/HSW; 1.5 BPI; 1.5 MA CSL Energy

Experience Level: 2

An owner/developer and Net Zero consultant will present lessons learned

from two Net Zero projects in Rotterdam, NY. They'll describe how an integrated process and extensive energy modeling allowed the team to optimize the design to lower energy use and control costs. Net Zero Village, 156 units completed in 2016, was one of the first large-scale, market-rate, Net Zero apartment complexes in the United States. Building on their experience, the same integrated team constructed Solara, a 248-unit Net Zero development which broke ground in early 2018. The presenters will discuss their approach to master building controls for smart ventilation, how PHPP modeling was used to optimize costs and energy use, and how this approach can be replicated.

Pull Back the Curtain! What Is Really Happening in Your Boiler Room?

Location: Harbor 3

Speakers: Marty Davey & Jonah DeCola (*New Ecology*)

CEUs: 1.5 AIA LU/HSW; 1.5 BPI; 1.5 MA CSL Energy; 1.5 GBCI O+M; 1.5 RESNET

Experience Level: 2

New Ecology, Inc. installed low-cost monitoring equipment in over 100 buildings in Massachusetts and Rhode Island in fall 2016. Over two years later, there is a wealth of information to share! The initial project goal was energy savings, and we saved a lot, but we were surprised about the numerous ways in which savings could be thwarted, and systems were not doing what they were supposed to. We will use real world examples to shed light on hidden problems, and discuss the current state (and value proposition) of low-cost, continuous, real-time monitoring of boilers and domestic hot water heaters. Bring your mechanical system woes to this session!

SESSION 1

8:30am–9:30am

Timber's Role in Modern Urbanization

Location: Marina 1**Speaker:** Ricky McLain (*WoodWorks - Wood Products Council*)**CEUs:** 1 AIA LU/HSW; 1 BPI; 1 MA CSL Energy**Experience Level:** 2

Due to their high strength, dimensional stability and positive environmental performance, mass timber building products are quickly becoming materials of choice for sustainably-minded designers. This presentation will review the environmental performance of mass timber products available, including glue-laminated timber (glulam), cross laminated timber (CLT) and nail laminated timber (NLT), and discuss applications such as seismic post-tensioned, self-centering rocking walls; tornado and blast-resistant structures; hurricane and high wind-resisting systems. We'll provide an overview of key 2021 IBC tall wood code proposals that would see an increase of up to 18 stories for mass timber buildings if approved. Topics will include new construction types, a regime of fire tests conducted to validate the proposals, and an update on the status of the changes.

Energy Storage Behind the Meter in MA: New Incentives, Programs and Economics

Location: Marina 3**Speakers:** Amy McGuire (*MassDOER*), Todd Olinsky-Paul (*Clean Energy States Alliance*)**CEUs:** 1 AIA LU; 1 AICP Energy**Experience Level:** 2

The session will present new information on the cost effectiveness of behind-the-meter energy storage; new incentives for installing storage, including rebates, performance incentives and zero-

interest loans; and a look at upcoming state policy that will further support distributed storage in Massachusetts. Presenters will share a first-in-the-nation public analysis of the cost-effectiveness of storage, including both energy and non-energy benefits (like resiliency). They will also explain how you can cost-effectively install storage using incentives from the SMART solar and energy efficiency programs. They will explain the economics of behind-the-meter storage, with case studies. They will share early results from state grant programs. And they will discuss the role of storage in the upcoming Clean Peak Standard and energy storage procurement target.

In Pursuit of Performance: A Multifamily Retrocommissioning Case Study

Location: Marina 4**Speaker:** Kimberly Vermeer (*Urban Habitat Initiatives*)**CEUs:** 1 AIA LU/HSW; 1 BPI; 1 MA CSL Energy; 1 GBCI BD+C, ID+C, O+M, WELL**Experience Level:** 2

Achieving strong building energy performance requires a virtuous cycle: Design, Measure, Analyze, Adjust, Measure Again. We explore what this means in practice through the experience at a senior housing development in Massachusetts. With efficient design and a VRF system for heating and cooling, the project achieved ENERGY STAR and LEED for Homes certifications. But energy performance did not match expectations. We will present the steps the team took to assess, analyze and address the problem, including retrocommissioning and repositioning equipment. We will compare the energy performance of the property before and after to understand the impact of these actions. Finally, we will use the case study to frame a discussion of strategies that are effective during design and operations to deliver on energy performance expectations.

Airtight, Cellulose-Insulated Assemblies: Simple Advice from the Woods of Maine

Location: Harbor 1**Speaker:** Jesper Kruse (*Maine Passive House*)**CEUs:** 1 AIA LU/HSW; 1 BPI; 1 MA CSL Energy; 1 GBCI BD+C, ID+C, WELL**Experience Level:** 2

What is the secret to designing and building foam-free, airtight and vapor-open assemblies that are super high performing? Jesper Kruse will provide a deep dive look into the Passive House wall and roof assemblies he has designed and installed in the backwoods of Western Maine over the past 10 years. His methods follow simple and accessible building science. All of Jesper's assemblies are built with readily available materials. These assemblies are foam free and insulated with dense-packed cellulose.

Balancing Energy and IAQ: Case Study of a LEED Home Retrofit

Location: Harbor 2**Speaker:** Maureen Mahle (*Steven Winter Associates*)**CEUs:** 1 AIA LU/HSW; 1 BPI; 1 MA CSL Energy; 1 GBCI BD+C, ID+C, O+M, WELL**Experience Level:** 3

For too long, the green residential buildings conversation has focused on new construction. Existing homes deserve their day in the sun. This occupied retrofit case study illustrates how homeowners

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transformed a 100-year old home in an urban setting from a HERS Index 173 resource hog into a svelte HERS 59 LEED v4 Platinum residence with emphasis on improved indoor air quality. Maureen Mahle presents a case study of the retrofit of her own 1915 home, in the spirit of learning from our mistakes. She'll highlight the tough choices when energy, indoor air quality, existing conditions and budget constraints intersect; the easiest and toughest credits for rehabs under LEED v4; building performance test results throughout renovation; and 5 years of utility data pegged to each major upgrade.

A Commercially Viable Net Zero Office Building: Technology, Beauty & Meaning

Location: Harbor 3

Speakers: Shannon Kaplan (*AKF Group*), Andrew Schuster (*Ashley McGraw Architects*), Karla Wursthorn (*TN Ward Company*)

CEUs: 1 AIA LU/HSW; 1 MA CSL Energy

Experience Level: 2

The Sustainable Energy Fund (SEF) is designing and building a Net Zero Energy office building to demonstrate that Net Zero Energy is achievable for the same cost as a conventional developer office building. The new SEF headquarters will be a model of how buildings can and should be done moving forward. In this session, the design team will immerse participants in the SEF design process, sharing how a design process rooted in regenerative thinking was used to develop design concepts, energy budgets

and specific technological solutions to create a building that embodies the vision and mission of the SEF. During the session, participants will work in small groups to share ideas on how to achieve not only Net Zero Energy, but also deep sustainability and resilience.

Carbon Drawdown Now! Prefabricated, Carbon-Storing Building Components Built Before Your Eyes

Location: Burroughs

Speakers: Chris Magwood (*Endeavour Centre*), Ace McArleton & Jacob Racusin (*New Frameworks*)

CEUs: 1 AIA LU/HSW; 1 BPI; 1 MA CSL Energy; 1 GBCI BD+C, ID+C

Experience Level: 2

Making “drawdown buildings”—buildings that store more carbon than they emit—may be much less complicated than you think. Come watch a demonstration of a prefabricated building panel being assembled live on stage, built from carbon-storing, healthy, local, and biogenic materials as an example of the immediate potential to transform buildings into carbon sinks. Cost analysis and real-world case studies that feature these materials will be referenced, and a range of strategies from drop-in replacement materials to innovative new technologies will be presented. After this demonstration, you will have actionable tools available to dramatically reduce your next building's carbon emissions, or even turn it into a carbon sink!

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SESSION 2

10am–11:30am

Smart Retrofits: Pathway to a Low-Carbon World

Location: Marina 1

Speakers: Jeremy Gregory (*MIT*), Brad Guy (*Catholic University of America*), Anne Hicks Harney (*Long Green Specs*)

CEUs: 1.5 AIA LU/HSW; 1.5 GBCI BD+C, ID+C

Experience Level: 1

Our fastest path to a low carbon world is using the billions of buildings which already exist. Smart, rapid, affordable retrofits to improve energy performance are essential, but doing so has a carbon cost of its own. This session is about questions as much as answers. How do we evaluate cost vs. return in terms of carbon? How long a payback is acceptable? Do we have to be Tally experts? Material experts? Create our own spreadsheets? Build only with straw? Travel only on foot? Give up and change professions? With case studies, data, Life Cycle Assessment tools, and thoughtful conversation, three architects will share their perspectives on low carbon retrofits and material choices to save the planet, earning LEED points and big handprints (vs. footprints) along the way.

How Can Public Policy Promote Multifamily Passive House Projects?

Location: Marina 3

Speakers: Matthew Beaton (*MA Office of Energy & Environmental Affairs*), Beverly Craig (*MassCEC*), Holly Glauser (*PA Housing Finance Agency*), Hank Keating

CEUs: 1.5 AIA LU/HSW; 1.5 AICP Housing

Experience Level: 1

The affordable multifamily housing market is leading the expansion of Passive House in large scale

construction, supported by public policy and influenced by competitive state financing. This panel of experts represents state government, state finance agencies, affordable housing developers, and advocates who will speak to their interest and experience with Passive House in multifamily construction. Each of the five panelists will offer a five-minute introduction and describe their own quandaries and challenges, followed by a moderated round-table discussion with active audience participation.

Westin Boston Waterfront Hotel Case Study: Diverting Food Waste for Energy Production

Location: Marina 4

Speakers: Heather Billings (*Center For EcoTechnology*), Jeff Hanulec (*Westin Boston Waterfront*), Chris Lucarelle (*Waste Management*)

CEUs: 1.5 AIA LU

Experience Level: 1

The Westin Boston Waterfront Hotel's comprehensive program for diverting waste from disposal includes recycling in both common spaces and guest rooms, donating surplus food, and collecting food scraps for anaerobic digestion. This session focuses on the food scraps program and provides an overview of how this material is collected by Westin staff, transformed into a slurry at Waste Management's Centralized Organic Recycling (CORE) facility in Charlestown, and finally codigested with wastewater at the Greater Lawrence Sanitary District's treatment plant to produce biogas. This session provides facility managers, sustainability coordinators, and culinary staff with best practices for implementing a comprehensive recycling and food waste diversion program, and connects attendees to free resources to improve waste diversion efforts at their own facility. The first half of this session will

be a presentation, followed by a walking tour of food recycling sites within the Westin Hotel. *Please note: walking tour is limited to 35 participants.*

The Building Science of Prefabricated/Off-Site Construction

Location: Harbor 1

Speaker: John Straube (*RDH Building Science Laboratories*)

CEUs: 1.5 AIA LU/HSW; 1.5 BPI; 1.5 MA CSL Energy

Experience Level: 2

It's been claimed that off-site construction can result in more tightly built, energy efficient buildings that cost less. What is the field experience developed using prefab components and systems? When and how do they work best? How do they compare using the metrics of building science?

Air Infiltration Reduction Testing: 5 Case Studies for Proven Energy Savings

Location: Harbor 2

Speakers: Fran Boucher (*National Grid*), Martine Dion (*SMMA*), Kristen Simmons (*ICF*)

CEUs: 1.5 AIA LU/HSW; 1.5 MA CSL Energy; 1.5 BD+C, ID+C, O+M, WELL

Experience Level: 2

In their quest for deeper energy savings, many projects expand building enclosure energy conservation measures (ECMs) opportunities beyond HVAC and lighting systems energy savings. The Air Infiltration Reduction Research demonstrates cost effective means to increase the energy savings through air infiltration reduction beyond Code. The team included National Grid's Strategy Group, SMMA's Sustainability & Energy Group and ICF. The research included application of air infiltration testing standards and methodology in support of

advanced air infiltration reduction design and construction best practices. The energy savings were measured through whole building enclosure air tightness testing on 5 multi-family facilities, while assessing the feasibility of developing an energy conservation measure [ECM], informing its potential application to utility Multi-Family, Commercial and Institutional (C&I) incentives programs supporting additional building types.

Cities as Clean Energy Leaders, Innovators & Practitioners

Location: Harbor 3

Speakers: Marie-Claude Francoeur (*Gouvernement du Quebec*), Cammy Peterson & Patrick Roche (*Metropolitan Area Planning Council*), Oliver Sellers-Garcia (*City of Somerville*)

CEUs: 1.5 AIA LU/HSW; 1.5 AICP Sustainability

Experience Level: 1

Cities and towns are leading the way on climate. This session will introduce participants to exciting clean energy work that cities and towns in Massachusetts and beyond are accomplishing to advance climate goals. Through case studies and primers on ways that cities and towns are setting ambitious net zero goals and passing the local measures to take action, reducing their peak electricity demand, and tackling heating and cooling, in particular, this session will provide tangible examples of how communities can serve as climate leaders. Attendees are invited to join the conversation, brainstorm, and provide insight into their local examples and how we can work collectively to innovate on this important community practice.

LUNCH SESSIONS

11:45am–12:45pm

Carbon Klatsch

Location: Harbor 3

Facilitators: John Abrams (*South Mountain Company*), Jean Carroon (*Goody Clancy*)

Klatsch (noun) - a casual gathering of people, especially for refreshments and informal conversations. As a community, we have a gut feeling for R values, air tightness, energy metrics, and so on, but when it comes to having a sense of what is good or bad with embodied carbon, we have some work to do. Is 17kg CO₂e/m² good? What is not so good? What do we all need to know to think clearly about embodied carbon? Bring your lunch and join this informal conversation to explore these questions.

Sponsored by:

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Live Demo: Detailing Continuity Building Enclosure Systems (Window and MEP Flashing Solutions)

Location: Burroughs

Speakers: Scott Johnson & Mike Moriarty (*Huber Engineered Woods*)

Bring your lunch and join us for a live demonstration! This will be a detailed review of proper window and door and MEP flashing solutions. Watch or participate in a hands-on demonstration of flashing tapes and liquid flashing alternatives.

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SESSION 3

1pm–2pm

Dealing with Dust in the Wind: New EPA Guidance for Home Air Cleaners

Location: Marina 1

Speakers: Terry Brennan (*Camroden Associates*), Lew Harriman (*Mason-Grant Consulting*)

CEUs: 1 AIA LU/HSW; 1 BPI; 1 MA CSL Elective; 1 GBCI ID+C, O+M, WELL

Experience Level: 1

After an extensive review of current epidemiological literature, the US EPA guidance for air cleaners in the home was updated and reissued in July 2018. The revised guidance includes major changes in recommendations for central system filter efficiency, and new guidance for assessing the effectiveness of portable air filters. These relatively low-cost portable units turn out to be surprisingly effective at reducing small particle concentration when compared to the net annual effectiveness of central HVAC filtration. And portable air cleaners can compensate for the filtration shortcomings of increasingly popular wall-mounted mini-split units.

Solar Access for the Underserved

Location: Marina 2

Speakers: Emily Basham (*Connecticut Green Bank*), Andrew Breiter-Wu (*Breiter Planet Properties*), Kelsey Read (*MassCEC*)

CEUs: 1 AIA LU/HSW

Experience Level: 1

Throughout the country, we have seen rapid growth in the residential solar space supported by a wide range of industry players and solar offerings. However, growth has been slow in our low and moderate-income communities where the benefits of solar and energy efficiency services are more impactful. The goal of this session is to showcase

Experience Levels

- 1 - No prior knowledge needed
- 2 - Some prior knowledge helpful
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Areas of Focus

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various state approaches to bringing solar and energy efficiency resources to underserved communities and educate attendees about how these innovative solutions have been effective in doing so. We will highlight programs that offer a solar lease, solar loan, and community solar offerings.

Smart Homes & Sustainability: Putting Data into Practice

Location: Marina 3

Speaker: Claire Miziolek (*Northeast Energy Efficiency Partnerships*)

CEUs: 1 AIA LU/HSW; 1 MA CSL Energy; 1 GBCI BD+C, ID+C, O+M

Experience Level: 1

Navigating the smart-home hype is a challenge, particularly when trying to decide what smart-home technologies can make meaningful contributions to sustainability. This session will help practitioners navigate the substance and pitfalls of this rapidly changing field. After discussing the current and projected future smart energy homes, we will present a vision for how smart-home technologies can contribute to low- (or no!) carbon energy homes. This includes a discussion of integrating smart-home technologies with solar PV, battery storage, and electric vehicles, and tangible steps practitioners can take to achieve this vision in their projects. Lastly, the session will explore emerging uses for smart-home data, including home energy performance assessment (EM&V 2.0).

Pump It Up: Retrofitting Homes through Weatherization, PV, and Heat Pumps

Location: Marina 4

Speakers: Beverly Craig (*MassCEC*), Richard Faesy (*Energy Futures Group*), Mark Newey (*Center For EcoTechnology*)

CEUs: 1 AIA LU/HSW; 1 BPI; 1 MA CSL Energy; 1 AICP Energy

Experience Level: 1

Come hear the results of a variety of innovative pilot programs in several states delivering deep energy savings to homeowners through access to renewable energy, heat pumps, and weatherization, while leveraging innovative financing. This session will share results from the Vermont Zero Energy Now (ZEN) Program, Hudson Valley (NY) Heat Pump Program, MA Solar Access Program, and MA Affordable Clean Residential Energy Program.

Large Scale Passive House: What's Working

Location: Harbor 1

Speaker: Lois Arena (*Steven Winter Associates*)

CEUs: 1 AIA LU/HSW; 1 BPI; 1 MA CSL Energy; 1 GBCI BD+C, ID+C, O+M, WELL

Experience Level: 2

We have much to learn from the successes and challenges faced by the first generation of large Passive House projects. This session will examine new construction and retrofits of mid-size and larger projects including office space, high-rise residential, mixed-use buildings, and factories. We will cover climate-related challenges, limitations of modeling tools, QA-QC plans for successful implementation and code challenges. This session is intended for those with Passive House experience; basics will not be covered.

Local Wood in Practice: A Conversation across the Material Stream

Location: Harbor 2

Speakers: Zac Cardwell (*Maryann Thompson Architects*), Sean Mahoney (*MA Dept. of Conservation & Recreation*), Tom Mann (*T.S. Mann Lumber*), Brad Morse (*Uncarved Block*)

CEUs: 1 AIA LU/HSW; 1 MA CSL Energy

Experience Level: 1

Building professionals have an essential role to play in forest conservation; they hold the power to shape forested landscapes through the materials they consume on behalf of their clients. Informed decisions at the lumber yard can create market forces that provide a continuous supply of green building materials, sustain rural communities dependent on working forests, and improve ecosystem resiliency in a changing climate. Join us in a unique cross-sector conversation with a sawyer, builder, and architect who each became a part of the conservation movement by incorporating local wood from New England forests into their projects. We'll share tips, tricks, and lessons learned in an effort to inspire other professionals to take an active role in improving the relationship between society and the forest.

Clean Energy & Resiliency for Small Towns

Location: Harbor 3

Speakers: Megan Aki (*Metropolitan Area Planning Council*), Sam Belknap (*Island Institute*), Jillian Wilson Martin (*Town of Natick*), Stephan Wollenburg (*National Grid*)

CEUs: 1 AIA LU/HSW; 1 AICP Sustainability

Experience Level: 1

Small towns confront different challenges than do larger, more urban communities, often in terms of density, resources, infrastructure, and connectivity to funding,

outreach, and technical assistance. This session will offer a facilitated discussion that seeks to illuminate strategies that small towns in New England are utilizing to have a big(ger) impact on the building energy sector. Come learn from a regional planning agency, an institute supporting island communities in Maine, a Massachusetts suburb, and a large electric and gas utility to gain an understanding of how an ecosystem of actors, resources, and support systems can bolster the energy efficiency and resiliency of a small town's built environment.

SESSION 4 2:30pm–3:30pm

The Power of Partnerships: How to Achieve Affordable, Net-Zero Urban Homeownership

Location: Marina 1

Speakers: MJ Adams (*City of Greenfield*), Charles Roberts (*Kuhn Riddle Architects*), Jonathan Wright (*Wright Builders*)

CEUs: 1 AIA LU/HSW; 1 MA CSL Energy; 1 AICP Housing

Experience Level: 2

Net-Zero is not that hard – but squeezing in ownership at 80% of median income is challenging and important. This presentation will lay out a planning, design, and financial platform, based on the Green River Commons project, for affordable, net-zero homeownership

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that can be replicated around the region. We will show how Green River Commons leveraged land provided by the town with CDBG funds, a streamlined regulatory process, and innovative financial products to achieve a mix of seven market and affordable, small net-zero units. Infill locations are a way for towns to repurpose property for greater density and sustainability while utilizing existing services. The developer's keen interest and the town's commitment meshed with the architect's skill and enthusiasm to create a successful project.

Resilience Gaps & Clean Energy Solutions at State-Owned Medical & Residential Care Facilities

Location: Marina 3

Speakers: Eric Friedman (*MassDOER*), Geoff Gunn (*Arup*)

CEUs: 1 AIA LU/HSW; 1 MA CSL Energy; 1 AICP Sustainability

Experience Level: 2

In 2016, the Massachusetts Department of Energy Resources contracted with Arup to conduct an Energy Resilience Assessment of 12 state-owned care facilities which house difficult-to-relocate residents who live on-site 24/7. For all sites, an extended loss of utility service could render the facility non-operational and require costly and potentially risky relocations of patients or clients. The goal of the study was to identify clean energy technologies to improve on-site energy resilience and increase the duration or effectiveness of on-site power sources, with the overall goal of avoiding relocating residents.

This session will provide an overview of the study and explore fiscal and environmental considerations and lessons learned.

Carbon Free Boston

Location: Harbor 1

Speaker: Cutler Cleveland (*Boston University*)

CEUs: 1 AIA LU/HSW; 1 AICP Sustainability

Level: 2

The City of Boston has pledged to be carbon neutral by 2050. Buildings have a key role to play as they currently account for 75% of the City's greenhouse gas emissions. Researchers in the Institute for Sustainable Energy and the Department of Earth and Environment at Boston University assessed potential technologies and policies that reduce greenhouse gas emissions across the City's energy, buildings, transportation and waste sectors. Social equity is a key cross-cutting theme. This work is a collaborative effort with the City of Boston and the Boston Green Ribbon Commission, and will inform the City's upcoming Climate Action Plan update. This presentation will summarize key results of the Carbon Free Boston study and discuss implications for decision making and action by all those involved in the building sector.

How Big Is Small? Compact Presentations of More Life in Less Space

Location: Harbor 2

Speakers: Amelia Amon (*Alt. Technica*), Chris Benedict (*Chris Benedict, R.A.*), Kristina Eldrenkamp (*Studio Gang*), David Foley (*Holland & Foley Architecture*), Miriam Gee & Declan Keefe (*CoEverything*), Scott Gibson (*Fine Homebuilding*), Mary Kraus (*Mary Kraus Architect*), Jamie Wolf (*Wolfworks*)

CEUs: 1 AIA LU/HSW; 1 MA CSL Elective

Experience Level: 2

Small is BIG for sustainability. High utility in modest space using fewer resources. Six dynamic & compact presentations: Why small? + How small? + Plan Solutions + Shared space + Urban challenges + People, Planet, & Profit. Compact is more attainable, equitable, and desirable for today's smaller households. Residential density means more living, work, services, recreation, and culture in our neighborhoods, towns, and cities. Shifting domestic expectations are provoking imaginative responses to what "home" means now and in the future. Nine NESEA Members gather to share how Small is Big in their practice, inspiring a lively, thought-provoking, and fun session.

A Common Sense Approach to Red List Free Materials

Location: Harbor 3

Speakers: Amanda Garvey & Emma Reif (*Thornton Tomasetti*), Matthew Gifford & Siiri Julianus (*Shepley Bulfinch*)

CEUs: 1 AIA LU/HSW; 1 BPI; 1 MA CSL Elective; 1 GBCI BD+C, ID+C, WELL

Experience Level: 2

Material transparency and optimization is a hot topic in the green building industry, but it can be difficult to know how to get involved in these market transformation efforts. This session will share how Smith College tackled this challenge by implementing a Healthy Materials Initiative at its Neilson Library using the Living Building Challenge Red List. Audience participation and small breakout discussions will be an integral part of this session. Why go through healthy materials research, and what (if anything) is preventing teams from vetting products or implementing healthy materials initiatives? Participants will leave with the practical guidance and tools to develop similar strategies for their projects. Together we will brainstorm ways to make a difference in expanding the demand for healthier materials.

BUILDINGENERGY PRO TOURS

Program of the Northeast Sustainable Energy Association (NESEA)



2019 BuildingEnergy Pro Tour Series Schedule

March 29 Delmar, NY	May 10 Binghamton, NY	June 21 Brooklyn, NY	September 20 Burlington, VT	November 15 Northampton, MA
April 5 Bronx, NY	May 17 Bronx, NY	August 23 Cambridge, MA	October 25 Canandaigua, NY	December 6 Cold Spring, NY
April 26 Portland, ME	June 7 Keene, NY	September 13 Westboro, MA	November 8 West Lebanon, NH	December 13 Brooklyn, NY

Join Us for the Launch Party on March 21 in NYC

NESEA will officially unveil the schedule for the 2019 Pro Tour Series at our second annual Pro Tour Launch Party! Join us for snacks and drinks as we show off the great lineup. Registration required. Cash bar. Visit nesea.org/launchparty or stop by the NESEA lounge on the trade show floor for more information.

Thank You to Our 2019 Series Sponsors

Presenting Sponsor:

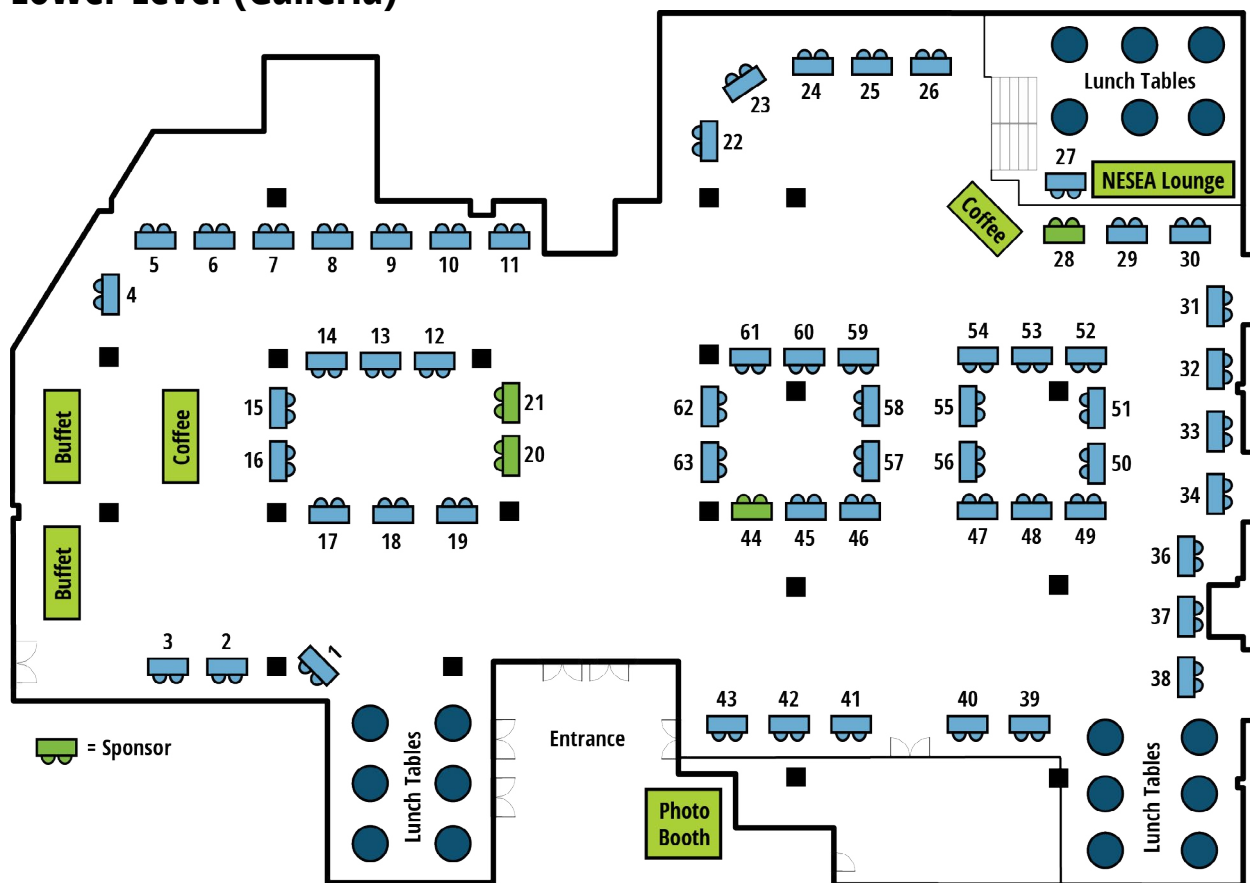


Fine Homebuilding



TRADE SHOW MAP

Lower Level (Galleria)



On Thursday, March 14, from 12:30pm to 5:30pm, we are pleased to offer free professional head shots, courtesy of E4TheFuture for their Faces of EE campaign. See page 7 for more information.

Interested in exhibiting at next year's conference or at BuildingEnergy NYC (Thursday, September 26, 2019)? Stop by exhibitor services at table 51.

Coffee is available all day on the trade show floor, courtesy of our coffee sponsors:



Petersen
Engineering

SMMA

This following lists contain exhibitors as of March 1, 2019. For the most up-to-date list, please see the signs located at the entrance to the trade show floor. Sponsors are listed in green.

#	Company Name
1	Huber Engineered Woods
2	Pinnacle Window Solutions
3	Mitsubishi Electric Trane HVAC...
4	PEMCO
5	Select Building Products
10	New England Homes/PBS
11	Sierra Pacific Windows
12	Sublime Windows
13	Energyza
14	CleanFiber
15	Eco Supply Center
16	Integrated Eco Strategy
17	Aegis Energy Services
18	Fraunhofer CSE
19	Zehnder America
20	Ventacity Systems
21	Fujitsu General America

475 High Performance Building Supply (Table 47)

NESEA Business Member

Creators of the Smart Enclosure guides, 475 provides the essential air-sealing, vapor control, insulation, ventilation, and daylight components needed to build like the future depends on it. From tiny houses, to the world's largest Passive House, foursevenfive.com is a trusted source of free knowledge, and an easy-to-use platform for purchasing the highest quality European building envelope solutions. foursevenfive.com

Aegis Energy Services (Table 17)

NESEA Business Member

Aegis Energy Services is an innovative Combined Heat and Power (CHP) company based in Holyoke, MA. Founded in 1985, and with near 1,000 CHP installations, Aegis Energy Services' modular systems are currently utilized across the Northeast, Mid-Atlantic, and Western US providing sustainable, clean power options for a wide array of industries. Recently merged with Dalkia (a subsidiary of EDF Group), Aegis has expanded its product and energy services capabilities. aegisenergyservices.com

22	Kampmann
23	Minotair
24	Whole Forest
25	Mass Save RNC Program/ICF
26	EDSL USA
27	VSECU
28	Bensonwood
29	Unity Homes
30	KSV
31	Sensi Multiple Thermostat...
32	PROSOCO
36	Zone 6 Energy
37	Marvin Windows & Doors
38	Auburndale Builders
39	World Class Supply
40	European Architectural Supply
41	Passive House Institute US
42	Foard Panel
43	SpacePak

Auburndale Builders (Table 38)

NESEA Business Member

We specialize in High Performance building and remodeling from Passive House to Net-Zero. Our staff of PHIUS trained project managers is committed to providing excellent service and fine craftsmanship to each of our clients. From the initial planning stages, through the finishing touches, every project is managed with the client's unique vision at the forefront. auburndalebuilders.com

Bensonwood (Table 28)

NESEA Business Member

Bensonwood is a design/build firm producing sustainable, energy efficient residential and commercial buildings and pre-fabricated, wood-based panelized enclosures, mass timber structures, and woodworking components. Using state-of-the-art offsite fabrication, Bensonwood maximizes quality and efficiency for our own designs and in collaboration with others. To date, Bensonwood has built over 1,400 timber frame, hybrid, and conventionally framed homes and structures across 50 states. benensonwood.com

44	MassCEC
45	Eastern Biomass
46	Johnson Controls-Hitachi
47	475 High Performance Building...
48	Sustainable Comfort
49	Greentec
51	Exhibitor Services/NESEA
52	Wythe Windows
53	ThermaXX Jackets
54	Energy Federation, Inc.
55	Cotuit Solar
56	Boston Architectural College
57	Renewable Energy Systems
58	Québec International
59	Condair
60	Global Wholesale Supply
61	Cascadia Windows & Doors
62	CertainTeed Insulation
63	Daikin North America

Boston Architectural College (Table 56)

The Sustainable Design Institute (SDI) at the BAC is dedicated to helping students learn about the practices, processes, and materials with which we can create a truly sustainable built environment. the-bac.edu/green

Cascadia Windows & Doors (Table 61)

NESEA Business Member

Cascadia Windows & Doors was founded by a collective of building science and window specialists to innovate, commercialize and produce the most energy efficient building products available. We manufacture resilient, versatile and sustainable building envelope products. Our mission is to lead North America's transition to energy efficient building design by offering products that substantially reduce CO2 emissions. cascadiawindows.com

CertainTeed Insulation (Table 62)

At CertainTeed, we believe in a higher level of comfort. We believe in Complete

MEET THE EXHIBITORS

Comfort, where your insulation system successfully controls thermal performance, air tightness, moisture management, and acoustics. That's why we offer the most complete line of insulation products that work together to ensure every building achieves Complete Comfort. **certainteed.com**

CleanFiber (Table 14)

CleanFiber™ was conceived by veteran cellulose installers in Maine, who saw dwindling supplies of newsprint as a threat to their livelihood. After working for more than 9 years to perfect the process, we launched commercial production of certified CleanFiber in 2018. Our state-of-the-art production facility in Buffalo produces upwards of 3 million bags annually, allowing us to offer our all-borate product at extremely competitive pricing. **cleanfiber.com**

Condair (Table 59)

Condair is the leading manufacturer and provider of complete solutions in the areas of humidification and evaporative cooling, with a comprehensive portfolio including products, services, experience and know-how. This enables us to create the ideal indoor climate while keeping energy consumption low and reducing impact on the environment. **conda.com**

Cotuit Solar (Table 55)

NESEA Business Member

With over 30 years of experience, Cotuit Solar has installed over 1,000 systems on Cape Cod & The Islands. We are a small, local, independent business passionate about renewable energy and sustainability. We are renowned in the community for our expertise and quality of service and make going solar easy! Conrad Geyser, principal of Cotuit Solar, is NABCEP certified for both Photovoltaic & Solar Thermal installations. We maintain memberships in ASES, SEIA, NESEA, SEBANE, and CIREC. **cotuitsolar.com**

Daikin North America (Table 63)

Daikin is a leading innovator and worldwide provider of advanced, high-quality air conditioning and heating solutions for residential, commercial

and industrial applications. With more than 90 years of operation, Daikin has sold millions of systems throughout 140 countries. But what makes us great isn't just our HVAC systems. It's our personal service, commitment to quality and technological innovations that allow us to be a leading HVAC manufacturer. **daikincomfort.com**

Eastern Biomass (Table 45)

With today's consistently rising and uncertain energy costs, Eastern Biomass provides a stable and renewable option with fully automatic Pellet Boiler & Furnace systems. Our services include; sales, installation, fuel delivery, maintenance and repairs across all of Southern New England. Through these services Eastern Biomass helps support local economies such as responsible forest management practices, local pellet manufactures, and the homes, business and municipalities that save money on heating cost every day. **easternbiomass.net**

Eco Supply Center (Table 15)

Eco Supply Center is a distributor of sustainable building materials, all of which contribute to LEED credits. Our decisions, products and initiatives are based on the ideas of a sustainable future and improving the social, economic and environmental well-being of our communities, our partners and our industry. We accomplish this by researching, vetting and educating ourselves about the highest performing, sustainable building products and practices. **ecosupplycenter.com**

EDSL USA (Table 26)

EDSL is the company behind Tas, a complete solution for the dynamic simulation and thermal analysis of buildings. We serve designers, engineers, and sustainability specialists through our continually-improving software and responsive support. Founded in 1989, our commitment to North America has never been stronger. We have recently established a New York office and support learning and research through free academic licenses and e-learning resources. **edsitas.com**

Energy Federation, Inc. (EFI) (Table 54)

NESEA Business Member

Come see the latest in lighting and ventilation technology at the EFI table. So many of you have worked with us for many years—thank you. Come by, say hello, and pick up our catalog. **efi.org**

Energyza (Table 13)

Founded in 2008, Energyza helps its customers reduce operating costs by implementing energy efficient solutions through consulting in energy consumption reduction and technology development. **energyza.energy**

European Architectural Supply (EAS) (Table 40)

NESEA Business Member

European Architectural Supply has been delivering windows of unrivaled craftsmanship & environmental sensibility for over 12 years. We specialize in high-efficiency windows & doors, custom-built in every style, from classic traditional designs to sleek modern aluminum windows & curtain wall. **eas-usa.com**

Foard Panel (Table 42)

NESEA Business Member

Foard Panel began in 1985 installing SIPs for other manufacturers. In 1993 Foard decided that it was time to start manufacturing their own SIPs; believing that better quality SIPs and an easier relationship for customers would be realized; and making Foard the only SIP manufacturer offering installation with in-house employees. Today, we offer many other unique products and services. **foardpanel.com**

Fraunhofer Center for Sustainable Energy Systems (Table 18)

Fraunhofer USA's Energy Systems team conducts applied research and development to help achieve a sustainable energy future. Our staff's expertise in smart energy-efficient buildings and grid technologies provides a platform for achieving deep energy efficiency and

integration of distributed energy resources through collaborative R&D with private companies, government entities, and academic institutions. cse.fraunhofer.org

Fujitsu General America

(Table 21)

Fujitsu has produced and shipped 3.5 million systems throughout the world annually to become one of the largest providers of ductless mini-splits in North America. Our Halcyon line of high-efficiency, eco-friendly mini-split systems provide advanced zoned comfort solutions for residential and light commercial applications. Our Airstage line of Variable Refrigerant Flow systems provides an efficient heating and cooling solution for an entire building. fujitsugeneral.com

Global Wholesale Supply

(Table 60)

NESEA Business Member

Global Wholesale Supply is the North American distributor of Steico wood fibre insulation products. Steico is the largest fiberboard manufacturer in the World and provides a full line of products from rigid insulation to flexible wood fibre batts to blown in insulation. Global Wholesale and Steico promote healthy, vapor open wall systems for healthy homes. globalwholesale.biz

Greentec (Table 49)

NESEA Business Member

Greentec, Inc. is committed to the promotion and execution of energy efficient, sustainable solutions for indoor climate management. Our goal is simple; to encourage the adaptation of practical emerging technologies while providing a healthy and comfortable living environments and reducing your overall energy footprint. greentechvac.com

Huber Engineered Woods

(Table 1)

NESEA Business Member

Huber Engineered Woods manufactures innovative, high-performance engineered flooring and sheathing panels. ZIP System panels contain integrated built-in

protective barriers, eliminating house wrap/felt and providing continuous moisture and air barriers. AdvanTech Subflooring provides superior strength and moisture resistance under the toughest conditions. huberwood.com

Integrated Eco Strategy

(Table 16)

NESEA Business Member

Red2Green, the Healthy Materials Management System from IES, makes incorporating better materials less costly and easier to manage at any level. Red2Green provides a database of more than 8,500 researched and ranked materials and products, plus an array of powerful end-to-end project management tools. Improve your specs and build better immediately with Red2Green, while leveraging the industry's leading building product healthy material screen: the LBC materials Red List. materiallybetter.com

Johnson Controls-Hitachi

(Table 46)

The interior spaces where people work, play, sleep and relax are as individual as they are and the way they are used is every bit as unique as their design. At Johnson Controls-Hitachi Air Conditioning, we understand that everyone needs their own space and comfort. So, wherever you go in the world, we have a solution to help create and maintain a perfectly balanced interior environment. jci-hitachi.com

Kampmann (Table 22)

Kampmann, based in Lingen, Germany, is an international leader in heating, cooling, and ventilation technologies and products. A pioneer and innovator for trench heating and cooling, Kampmann's products combine high-performance convector units with ultra-efficient ECM fans, which result in unmatched high capacity and low energy consumption. With offices in 14 countries, Kampmann's global hydronic products and solutions create space-saving benefits in unobtrusive, elegant, architectural designs. kampmann.ca

KSV (Table 30)

KSV is a full-service marketing and advertising agency specializing in sustainable energy. With offices in NY and VT, KSV has partnered with energy services clients for over 40 years, building effective, data-driven marketing programs that deliver on business KPI's and drive action towards a more sustainable future. KSV is a WBENC-certified women-owned BCorp. ksvc.com

Marvin Windows and Doors

(Table 37)

NESEA Business Member

As one of the nation's leading distributors for Marvin Windows and Doors, A.W. Hastings' role is to create success for our customers. Our product is not windows and doors—it is the total experience we deliver for retailers, architects, builders and homeowners. marvin.com

Mass Save RNC Program/ICF

(Table 25)

The Massachusetts Residential New Construction Program promotes the construction of energy efficient homes in Massachusetts. It offers monetary incentives for energy efficient low rise and high rise new construction and for efficient home renovations and additions. The Program encourages participating projects to meet certifications such as ENERGY STAR®, DOE Zero Energy Ready and Passive House when practical. masssave.com/en/saving/residential-rebates/new-construction

Massachusetts Clean Energy

Center (MassCEC) (Table 44)

NESEA Business Member

MassCEC is dedicated to accelerating the success of clean energy technologies, companies and projects in Massachusetts - while creating high-quality jobs and long term economic growth for the people of Massachusetts. Come talk to us about our programs and resources for high-efficiency clean heating and cooling systems, solar PV, energy storage, and microgrids. masscec.com

MEET THE EXHIBITORS

Minotair (Table 23)

NESEA Business Member

Minotair manufactures the PentaCare V12® Compact Air Treatment Unit: the most complete, all-in-one HVAC equipment for single dwellings and multifamily buildings (PHIUS and others). This quiet, self-contained unit gets installed indoor, fulfilling the duty of 4 machines: heat recovery ventilator (HRV) with Net Zero Positive+ performances in some conditions + air source heat pump + dehumidifier + high efficiency HEPA MERV15/F9 air filtration device. All to provide unrivaled levels of healthy indoor comfort. minotair.com

Mitsubishi Electric Trane HVAC US (Table 3)

NESEA Business Member

For the past 30 years, Mitsubishi Electric has enhanced people's lives by improving comfort, conserving energy, and promoting environmental sustainability. As a leading marketer of intelligent and efficient air-conditioning and heating systems for new construction or renovation, we have participated in many sustainable projects including Passive House, ZNE, and LEED projects. metahvac.com

New England Homes/Preferred Building Systems (Table 10)

We are innovators and leaders delivering high-performance modular homes. We produced the first modular Passive House in the United States. preferredbuildings.com

Passive House Institute US (PHIUS) (Table 41)

PHIUS is a non-profit 501(c)(3) organization committed to making high-performance passive building the mainstream market standard. PHIUS is focused on research, training curriculum, and technical standards. PHIUS launched Passive House Alliance US (PHAUS) in 2010 as a non-profit membership-based organization to support the growing network of passive building communities across North America. PHAUS has over 800 members across 18 regional chapters nationwide. phius.org

PEMCO (Table 4)

Pemco is a manufacturer's representative and manufacturer for HVAC equipment. We have a wide range of metering for chilled/hot water, steam and condensate. Our goal is to provide our customers with the right equipment whether it be for billing or insuring efficient equipment operation. Our 1233 multi-channel chilled/hot water energy metering system has a unique set of features unmatched by any other manufacturer. pemco1.com

Pinnacle Window Solutions (Table 2)

NESEA Business Member

Our focus at Pinnacle Window Solutions is to offer high performance window and door solutions for every application. From traditional to modern and residential to commercial, we work hard to make your window choice and ordering process simple and enjoyable. Our knowledgeable team has over fifty years of experience in the architectural window and building industry. pinnaclewindowsolutions.net

PROSOCO (Table 32)

PROSOCO is a national manufacturer of products for cleaning, protecting concrete and masonry; and making building envelopes air- and water tight. We strive to provide innovative products and services that improve the appearance and performance of our built environment. proso.co

Québec International (Table 58)

The mission of Québec International is to contribute to economic development in the Quebec City metropolitan region and enhance its international status. As a regional economic development agency, Québec International fosters business growth and development, supports key clusters and attracts talent and investment to the region. quebecinternational.ca

Renewable Energy Systems (RES Solar) (Table 57)

RES is a design/build firm specializing in Solar Thermal systems. With over a

decade of experience working in the Renewable Energy field, RES works with building owners to reduce energy use with high efficient thermal systems for DHW, space heat and pool heating. Systems include the use of heat pumps and condensing boilers for back-up energy. RES is NABCEP, WBE Certified and experienced in performing Commercial Scale Feasibility Studies. ressolar.com

Select Building Products (Table 5)

Select Building Products is a boutique, special-order building product wholesaler and distributor providing commercial and high-end residential architects and contractors a dedicated option to source, purchase, and receive special-order products with improved efficiency and transparency. selectbuildingproducts.com

Sensi Multiple Thermostat Manager (Table 31)

We know thermostats. We've been making them for more than 75 years. But we wanted the Sensi™ thermostats to be different. So, we asked homeowners what they wanted in a thermostat. The answers we received changed the way we thought about thermostats. Instead of basing it around the wall unit, we based it around a smart phone app that gives you control over everything from everywhere. Easy to install. Easier to control. Only from Emerson. sensi.emerson.com/en-us/products/multiple-thermostat-manager

Sierra Pacific Windows (Table 11)

We're the company building the most uncompromising windows and doors possible for clients with the highest expectations, a fact we're proving one beautiful project at a time. Today, Sierra Pacific products are installed in 30 countries around the globe, with a focus on residential and light commercial construction in North America. sierrapacificwindows.com

SpacePak (Table 43)

Established in 1946, SpacePak is the innovator of Small Duct High Velocity Systems and industry leader of Air-to-Water Heat Pump technology, offering a full line of high efficiency hydronic solutions. Since introducing Air-to-Water Heat Pumps to the North American market in 2011, SpacePak takes great pride in providing industry professionals with the education and equipment needed to help accelerate the shift towards a cleaner and greener future. spacepak.com

Sublime Windows (Table 12)

NESEA Business Member

Sublime Windows is making the most energy efficient European-style windows available to the Northeastern US. All of our products have been carefully designed to optimize real-life performance for our specific climate. We strive to offer superior support and service. With a solid understanding of building science, energy modeling, architectural detailing, and construction techniques related to energy efficient buildings, let us assist you in integrating Sublime window and door products into your next project. sublimewindows.com

Sustainable Comfort (Table 48)

NESEA Business Member

Sustainable Comfort specializes in the affordable multifamily development process and helps secure funding and project certifications. We make it easy to navigate the many options to meet green building and energy efficiency needs. As qualified Passive House consultants and raters, we can help you design and execute a successful project and minimize headaches along the way. greenrater.com

ThermaXX Jackets (Table 53)

Thermaxx manufactures removable, reusable insulation jackets that prevent energy loss of components that must be periodically inspected or repaired. We offer products for steam, hot water, acoustic, and chilled applications. Call us for a free heat-loss survey or utilize our expertise in insulation, wireless

monitoring, and asset management. thermaxxjackets.com

Unity Homes (Table 29)

NESEA Business Member

The mission of Unity Homes is to improve lives by transforming homebuilding for the benefit of all. Using sophisticated technology and off-site construction methods, Unity builds homes throughout the Northeast that are healthy, comfortable, energy efficient and durable. unityhomes.com

Ventacity Systems (Table 20)

NESEA Business Member

Ventacity Systems brings to the high performance building market Very High Efficiency (VHE) heat recovery and energy recovery ventilation systems, including the ONLY commercial ERVs that have achieved Passive House Institute certification. Ventacity has also introduced the HVAC2 Smarter Building Platform, the most advanced control system in the industry. ventacity.com

VSECU (Table 27)

NESEA Business Member

VSECU is a Vermont-based, member-owned credit union. When you join, you're powering a movement for cooperative finance, neighbor helping neighbor to improve all members' lives. NESEA Members can join VSECU and access solar and energy improvement loans and open a VGreen Money Market Account (MMA) to earn more on savings and support member-owned clean energy investments. vsecu.com/vgreen

Whole Forest (Table 24)

NESEA Business Member

Whole Forest's mission is to protect the last remnants of Ecuador's threatened rainforests. Our carbon-negative flooring, tables, and countertops showcase the rich diversity of hardwoods found in the forests we sustainably manage. Every product sold helps support livelihoods in the forest communities we partner with, which slows deforestation. Our unwavering standards for sustainability make it possible for our products to offset the embodied energy of your project,

ultimately lowering your impact on climate change. wholeforest.com

World Class Supply (Table 39)

NESEA Business Member

Our goal is to supply our customers with building science knowledge as well as high performance products that will help lead to a change toward zero-energy buildings. We are passionate when it comes to "Passive House" and have certified passive consultants and builders on staff to help you with your projects. worldclasssupply.com

Wythe Windows (Table 52)

High Performance, Triple Pane Tilt Turn Windows & Doors. Passive House suitable. PHI cert, NFRC, Miami-Dade Impact. Design flexibility and stock colors with fast lead times. Residential & Commercial projects. Happily made in New Jersey. wythewindows.com

Zehnder America (Table 19)

NESEA Business Member

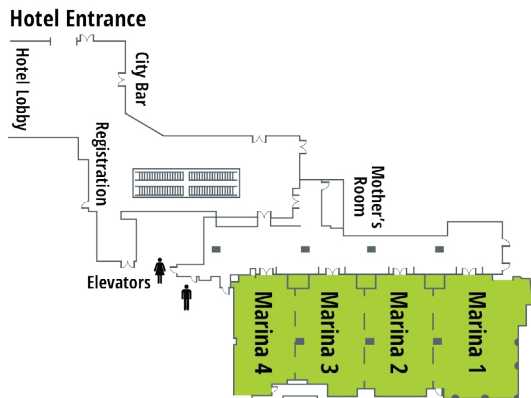
Zehnder America specializes in high-performance ventilation solutions for comfortable, healthy, and energy-efficient indoor climates. As an important component of an energy-efficient home or multi-family building, Zehnder's heat recovery ventilation systems typically recover 80-90% of the room temperature and ensure fresh, filtered air year-round. zehnderamerica.com

Zone 6 Energy (Table 36)

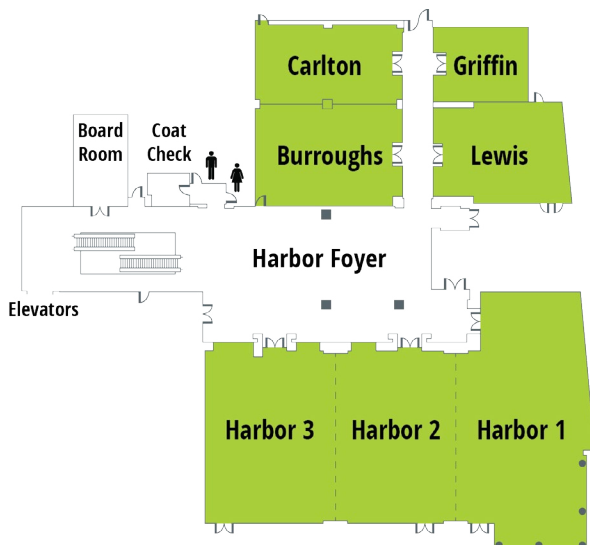
Zone 6 Energy specializes in air-sealing building envelopes in the dynamic climate of the northeast United States. We proudly install AeroBarrier, offering a single-application guaranteed air barrier with documentation of target ACH50 to ensure that your buildings meet all necessary code requirements for airtightness. Our staff have over 40 years of combined experience constructing energy-efficient homes and buildings throughout New England; we are fully equipped to take care of your air-sealing requirements quickly and efficiently. zone6energy.com

VENUE MAP + SPONSORS

Lobby Level



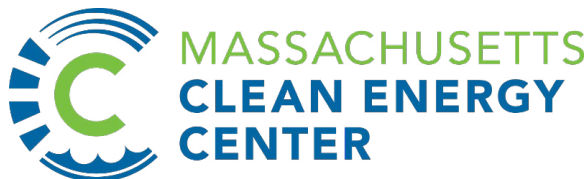
Upper Level



Lower Level

See page 21 for a detailed map of the lower level/trade show floor.

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Bronze Sponsors



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