

# BUILDINGENERGY BOSTON

Westin Boston Waterfront

March 7-9, 2018

#BE18

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



**Betsy Glynn**  
*BlueWave Solar*



**Andrew Webster**  
*c&h architects*

## Thanks to Our Conference Co-Chairs & the Entire 2018 Content Committee

### Conference Vice-Chairs:

Michelle Apigian, *ICON Architecture*  
James Petersen, *Petersen Engineering*

### Content Committee:

Cammy Peterson, *MAPC*  
Caroline Petrovick, *Elaine Construction*  
Chris Briley, *Briburn*  
Christopher Nielson, *Bruner/Cott & Associates*  
Danny Veerkamp, *Bensonwood*  
Fred Davis, *Fred Davis Corporation*  
Heather Thompson, *Thompson Johnson Woodworks*  
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Nathan Phelps, *Vote Solar*  
Robert Leaver, *New Commons*  
Satpal Kaur, *Curtis + Ginsberg Architects*  
Ted Hetzel, *Petersen Engineering*

## Welcome from the 2018 Conference Co-Chairs

Dear NESEA Colleagues,

We are honored and delighted to serve the NESEA community as co-chairs of BuildingEnergy Boston 2018. Our community anticipates and yearns for this gathering each year—to hear words of reason, of inspiration, of introductions, and of explanation. In planning the Boston conference this year, we strove to embody and advance the NESEA strategic plan and goals that were presented at last year's conference.

You can already see one exciting change we've made to BuildingEnergy Boston—a new location that provides the right spaces for encouraging collaboration and networking. Working with the NESEA staff, we've designed this year's schedule, layout, and events to be welcoming and inclusive. Immerse yourself in all the conference has to offer.

Over the next two days we hope that you recognize the traditional NESEA focus on strong programming, which is a direct result of the diligent and experienced volunteers who make up this year's Content Committee. Each of them has logged countless hours over the past six months of curation while operationalizing a new curation schedule and updated rules of conduct. Our heartfelt appreciation goes to them for their time and energy.

We hope that you will seize this day. Introduce yourself to some new members of your network. Check out the innovative products at the trade show. Play with a working model of the grid. Check out the electric school bus. Have lunch with a friend. Immerse yourself in conversations and debates.

See you on the trade show floor!

Sincerely,

Your BuildingEnergy Boston 2018 Co-Chairs,  
Betsy Glynn & Andrew Webster

# SCHEDULE AT A GLANCE

## WEDNESDAY, MARCH 7

**Emerging Professionals  
Career Forum**  
4:30pm–6pm

**Opening Reception**  
6pm–8pm

## THURSDAY, MARCH 8

**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

**Pro Tour Launch  
Party & Trade  
Show Reception**  
5pm–6:30pm

**NESEA Night**  
6:30pm–8:30pm

**Afterparty**  
8:30pm

## FRIDAY, MARCH 9

**Session 1**  
9am–10am

**Session 2**  
10:30am–12pm

**Lunch on Trade  
Show Floor**  
12pm–1:30pm

**Session 3**  
1:30pm–2:30pm

**Session 4**  
3pm–4pm

**Closing  
Challenge**  
4pm–4:30pm

### Free WiFi!

For your convenience, NESEA has made free WiFi available for all attendees throughout the conference center.

Network ID: westinbostonmeeting  
Password: BE2018

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### BuildingEnergy Boston is a Program of NESEA

The Northeast Sustainable Energy Association (NESEA) helps high-performance building, energy efficiency, and renewable energy professionals improve their practices by learning from and networking with each other.

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

**Trade Show  
Floor Open**  
8am–6:30pm

**Trade Show  
Floor Open**  
8am–4pm

# THURSDAY SESSION GRID

	Keynote 8:30am–10am	Session 1 10:30am–12pm	Lunch 12:15pm–1:15pm	Session 2 1:30pm–3pm	Session 3 3:30pm–5pm
Marina 1		How Energy Efficiency Creates Opportunities & Financing in Multifamily Housing		The New Gravity: Climate Change and the Imperative of High-Performance Housing	Comparing Three Certification Metrics That Drive Sustainability in Affordable Multifamily Housing
Marina 2		New Construction: Beyond Modeling to Real Data & Results		Unvented Roofs without Spray Foam: The Latest Building America Research	The Not-Quite-Edible House: Making Healthy Material Choices
Marina 3		Resiliency: Energy When You Need It	Sponsored Session—Be Passive(haus) Aggressive: Affordable Housing in Massachusetts	Utility Transformation: Creating a Lower-Cost, More Reliable, Carbon-Free Electricity Distribution System	Energy Storage: The Next Frontier
Marina 4		EnergyVision 2030: A Plan for Changes to our Energy System	Sponsored Session—Net Zero Schools: Start with the HVAC	Should We Stop Trying to Update to the Latest Model Building Energy Code?	Stretch Codes: Why this policy offers the best hope for rapid transformation to meet state and local climate goals
Burroughs		Signal to Noise: What Engineers See and You Miss in Products Specs	<b>Remember to Evaluate Conference Sessions at:</b> <a href="http://www.nesea.org/be18-evaluations">www.nesea.org/be18-evaluations</a>	“But I Don’t Care” (Being an Effective Communicator)	Making the Invisible Visible: A Blueprint for Seeking Real Estate Value for Energy Efficiency
Harbor 1	Keynote Panel—Building Our Community: Engaging the Emerging Workforce	How Do We Get from Passive House to Truly Low-Carbon Buildings?		Where We Went Right & Where We Went Left: Measured vs. Modeled Energy Performance	Building Inherent Value - Implementing the Passive House Building Standard
Harbor 2		The BrightBuilt Barn 10-year Anniversary: Celebrating the Birth of Affordable, Off-Site-Built Net Zero & the Industry Change It Spawned			Comparing the Business of Architecture to Construction to Development
Harbor 3		Escalating Excellence in Envelopes: Stories from Practice		Help! I'm Drowning	New or Renovated – High Performance in Higher Education

## Continuing Education Units (CEUs)

View individual session descriptions starting on page 12 for information on AIA LU|HSW, BPI, and MA CSL credits for each session. The full conference is accredited for 11.5 PHIUS CPHC credits. For information on how to self-report PHIUS and GBCI credits, please visit [nesea.org/be18-CEUs](http://nesea.org/be18-CEUs).

# FRIDAY SESSION GRID

	Session 1 9am–10am	Session 2 10:30am–12pm	Lunch 12:15pm–1:15pm	Session 3 1:30pm–2:30pm	Session 4 3pm–4pm
Outside		The Magic (Electric) School Bus (space is limited)			
Marina 1	Policy Updates: Net Metering and Fixed Charges in the Northeast	Multi-Family, Tenant-in-Place, Passive Rehab: It's Possible!		Cities as Climate Leaders: Net Zero & the Urgency of Now	What Not to Spec: How to Avoid Toxins, Endocrine Disruptors, & Carcinogens in Your Next Building Project
Marina 2	Thermal & Energy Analysis for Architects: Why, When, & How	Integrative Carbon Building: Embodied Carbon, Net Positive Carbon, and the New Carbon Architecture		KISS: A builder's perspective on... constructing a low-cost, high-performance home	PACE Financing: Scaling Commercial and Residential Net-Zero Energy Retrofits
Marina 3	Data-Driven Boiler System Design and Installation	Retrocommissioning with the Chiefs: Training Operators to Sustain the Process		Heat Pump Water Heaters for Multifamily	Real Life Air Source Heat Pumps
Marina 4	Green Gauges: A Design Methodology at Williams College	Punching Above Your Weight Class: Exceeding Client Sustainability Requirements within a Tight Budget	Sponsored Session—Robots, Vacuums, and Butterflies Build a Better Wall		
Burroughs	Getting Smarter about Smart Buildings	Meeting the Demands of Healthier Buildings: How to Navigate Building Product Certifications	<b>Remember to Evaluate Conference Sessions at:</b>  <a href="http://www.nesea.org/be18-evaluations">www.nesea.org/be18-evaluations</a>	Utility Benchmarking 101: What It Is, Why It Matters, and How It Can Benefit You	Lightning Round: Questions and Answers to Fuel Your Work
Harbor 1	Smart Parking Design as a Climate Tool	Crisis in Cannabis Cultivation: Latest Energy Developments in Data, Practice, and Policy		The Great Indoors: Green Building and Health Outcomes	Getting Solar Ready with Permitting and Inspection Processes
Harbor 2	Big Building Implications for Multifamily Passive House			Air Tightness Requirements of the Passive House Standard	The Risky Business of Integrative Pre-Design
Harbor 3	Deploying Post-Disaster Renewables	The Future City: An Integrated Ecosystem		Choices, Choices: Cladding and Climate Change	The Drawbacks of Breathing: Nighttime Carbon Dioxide Levels in New England Bedrooms

## Closing Challenge: Goals for the Year Ahead

**Time:** 4pm–4:30pm • **Location:** Marina 1

Join us in wrapping up another powerful year of networking, learning, and inspiration at the Closing Challenge.

# SPECIAL EVENTS

## WEDNESDAY

**4:30pm–6pm**

### Emerging Professionals Career Forum

**Location:** Harbor 3

This is a free, interactive event providing a venue for students and emerging professionals to gain practical strategies for building networks, navigating early career challenges, and leveraging NESEA as a professional resource. Attendees will have a chance to hone their networking skills and exchange advice while they meet one another and established members of the NESEA community in small discussion groups. Featured practice areas include architecture, construction/building, landscape, municipal/policy, energy modeling & engineering, and renewable energy. All are welcome to attend.

**6pm–8pm**

### Opening Reception

**Location:** Harbor Foyer

A networking reception open to all attendees. Join us as we celebrate the beginning of another great conference and trade show. Cash bar & light snacks.

## THURSDAY

**7:30am–8:30am**

### NESEA Lifetime Member Breakfast

**Location:** Griffin

Invitation only. NESEA's Lifetime Members and their guests can enjoy breakfast in the Griffin conference room. For more information on NESEA Lifetime Membership, visit [nesea.org/lifetime-members](http://nesea.org/lifetime-members).

**8:30am–10am**

### Keynote Panel—Building Our Community: Engaging the Emerging Workforce

**Location:** Harbor 1 & 2

**Moderator:** Dr. Tamika Jacques (*MassCEC*)

With NESEA's mission and strategic plan in mind, we are pleased to welcome our keynote moderator, Dr. Tamika Jacques, the Director of Workforce Development at the Massachusetts Clean Energy Center. Dr. Jacques has dedicated her career to workforce development initiatives that engage emerging professionals and foster inclusivity in our industry. See page 12 for a full description.

**12pm–1pm**

### Scholarship Lunch

**Location:** Carlton

Invitation only. Through NESEA's BE the Future initiative, sponsors directly fund current students' full-day passes to BuildingEnergy Boston, one-year NESEA memberships, and passes to a BuildingEnergy Pro Tour. This lunch provides an opportunity for scholarship sponsors and recipients to meet and network. Recipients of the Kate Goldstein Scholarship for Emerging Professionals are also invited to attend.

### BE the Future Scholarship: Spring 2018 Sponsors

Auburndale Builders  
Bob Irving of RH Irving Homebuilders  
Bruss Project Management  
Byggmeister Inc.  
Craig Maynard  
David Matero Architecture  
DEAP Energy Group  
Energy Balance, Inc.  
Fred Davis Corporation  
Garland Mill  
Hank Keating  
Jenna Ide  
Jim Kirby  
John Gordon | Architect

Kaplan Thompson Architects  
Kent Hicks Construction  
Landmark Services  
Max Horn  
Richard Renner Architects  
Saheel Chandrani  
South Mountain Company  
Taggart Construction  
The Pat Cooke Fund

### BE the Future Scholarship: Spring 2018 Recipients

Timothy Aduralere  
Muna Akheel  
Dylan Almeida  
Naing Aung  
Nathaniel Boggs  
Roy Cohen  
Patricio Cox  
Federico Dona Marquez  
Esteban Estrella  
Mahsa Farid Mohajer  
Soma Hajian  
Nathaniel Hoffman  
Prasad Kompelli  
Jolie Lau  
Mathew Lee  
Congke Li  
Jennifer Martin  
Luke Phaneuf  
Krisztina Pjeczka  
Melissa Rath  
Matthew Raymond  
Diego Rojas  
Laura Rosenbauer  
Matthew Sargeant  
Jake Schick  
Monika Sharma  
Safia Sheerin  
Junsoo Shinn  
Aravind Swaminathan  
Andrew Wait  
Ge Zu

### Kate Goldstein Scholarship for Emerging Professionals: Spring 2018 Recipients

Oforiwa Agyei-Boakye  
Wyatt Chingery  
Haley Mahar  
John Marino  
Nicole Moore  
Nada Tarkhan  
Bill Womeldorf

## 12pm–5pm

### Faces of Energy Efficiency Photo Booth

**Location:** Trade Show Floor

Receive a free professional headshot on the trade show floor, courtesy of E4TheFuture. By participating, you'll also be entered to win a conference pass to BuildingEnergy Boston 2019. This photo booth is a part of E4TheFuture's long-running campaign that seeks to build on the momentum of smart energy policy by showing policymakers how strong our workforce truly is in every U.S. region.

## 12:15pm–1:15pm

### Model Electric Grid

**Location:** Trade Show Floor

**Sponsored by:** National Grid

The Vermont Energy Education Program (VEEP) has developed a Model Grid kit for students (and adults) as a hands-on, engaging learning experience about the electric grid. The Model Grid is designed to give users an appreciation of the job of the electric grid operators who must keep electricity available and high quality at all times, in the face of rapid changes in usage at the far ends of the system that they cannot see.

An understanding of this pervasive and important system in our lives is critical to making good decisions about our personal use of energy as well as about larger energy policy issues.

Up to 20 people may play at once. Others can observe. A 1-hour commitment is recommended for players. Sign up at the grid, which is located on the trade show floor near the NESEA Lounge.

The grid will run at the following times:

Thursday, 3/8: 12:15pm–1:15pm

Thursday, 3/8: 5:15pm–6:15pm

Friday, 3/9: 12:15pm–1:15pm

**nationalgrid**

## 12:15–1:15pm

### Sponsored Session—Net Zero Schools: Start with the HVAC

**Location:** Marina 4

**Speakers:** Barry Stephens (*Ventacity Systems*)

**Sponsored by:** Ventacity Systems & Fujitsu

A study of HVAC systems in NYC schools sought energy-efficient alternatives for both retrofits and new construction. One alternative identified in this study promises to deliver significant energy reductions and a better path to Net Zero schools.



## 12:15–1:15pm

### Sponsored Session—Be Passive(haus) Aggressive: Affordable Housing in Massachusetts

**Location:** Marina 3

**Speakers:** Michelle Apigian (*Icon Architecture*), Beverly Craig (*MassCEC*), Mike Davis (*Local Initiatives Support Corporation*), Hank Keating, Samantha Meserve (*MassDOER*)

**Sponsored by:** MassCEC

Is it possible to use Passive House principles in affordable housing? The answer is yes. Come hear how new construction affordable housing projects are utilizing Passive House principles to get exemplary energy performance out of buildings. Panelists will highlight two real world examples and identify how Massachusetts incentives can help push affordable multi-family projects closer to Passive House standards.



## 5pm–6:30pm

### Pro Tour Launch Party

**Location:** Trade Show Floor

NESEA will officially unveil the schedule for the 2018 Pro Tour Series at the first ever Pro Tour Launch Party! Conference attendees are invited to explore a case-study gallery of the 13 projects that will be featured in this year's series. Many of the project hosts will be present, giving you a chance to ask questions as you scope out the schedule. Join us for snacks, drinks, and live music from the Headlines as we show off the great lineup we have in store.

## 5pm–6:30pm

### Trade Show Reception

**Location:** Trade Show Floor

**Sponsored by:** Fred Davis Corporation, Winn Companies

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 & light snacks.



## 5:15pm–6:15pm

### Model Electric Grid

**Location:** Trade Show Floor

**Sponsored by:** National Grid

See description at left. A limit of 20 people may play at once. Others can observe. A 1-hour commitment is recommended for players. Sign up at the grid, which is located on the trade show floor near the NESEA Lounge.

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Friday, 3/9: 12:15pm–1:15pm



Thursday, 6:30pm–8:30pm

## NESEA Night

**Location:** Harbor 1 & 2

**Schedule of Events:** 6:30pm Doors Open • 7:15pm–7:45pm Awards Ceremony • 8:30pm Event Concludes

This annual event is a great way to unwind and connect with fellow conference-goers and NESEA community members. We will be celebrating the winners of NESEA's 2018 Distinguished Service Award and Professional Leadership Award. Sweet and savory appetizers will be served. Cash bar.



### 2018 Professional Leadership Award:

Vivian Loftness, is an internationally renowned researcher, author and educator focused on environmental design and sustainability, climate and regionalism in architecture, and the integration of advanced building systems for health and productivity. Vivian is a Professor at Carnegie Mellon University where she holds the

Paul Mellon Chair in Architecture and served a decade as Head of the School of Architecture. She is a key member of Carnegie Mellon's leadership in sustainability research and education, and contributor to the ongoing development of the Intelligent Workplace - a living laboratory of commercial building innovations for performance. In addition to eight book chapters and over 100 journal articles, Vivian edited the Reference Encyclopedia Sustainable Built Environments. Her work has influenced national policy and building projects, including the Adaptable Workplace Lab at the U.S. General Services Administration and the Laboratory for Cognition at Electricity de France. She received her BS and MS in Architecture from MIT and she is a registered architect and a Fellow of the American Institute of Architects.



### 2018 Distinguished Service Award:

David Foley has worked in environmental building since 1980, as a designer, builder, teacher and researcher. Early in his career he worked for the Maine State Office of Energy Resources, the Lawrence Berkeley National Laboratory, and several architecture firms. In 1994 he joined Sarah Holland to form Holland

and Foley Architecture, a design firm emphasizing quality, beauty, efficiency, durability, and health in buildings. David was a 1996 German Marshall Fund Environmental Fellow, allowing him to travel throughout Northern Europe researching "green" building practices. He taught classes in Sustainable Design for the Boston Architectural College for 11 years. He has a Masters of Architecture from the University of California, Berkeley, a Masters of Professional Studies in Resource Economics from the University of Maine, and a Bachelor of Arts in Community Design from Dartmouth College. David lives in Northport, Maine with his wife Judy Berk, communications director for the Natural Resources Council of Maine. David enjoys gardening, music-making, and sea kayaking.

**Cost:** A NESEA Night ticket is included with a the purchase of a full conference pass. Tickets are available for those without full conference passes for \$60, or \$54 for NESEA members, at the registration desk.

## 8:30pm Afterparty

**Location:** The Social Register (401 D St.)

**Sponsored by:** BlueWave Solar

2018 Conference Chairs Betsy Glynn and Andrew Webster and 2019 Conference Chairs James Petersen and Michelle Apigian invite you to keep the party and conversation going at The Social Register.





## FRIDAY

**10:30am–11:30am**

### The Magic (Electric) School Bus

**Location:** Outside

**Speakers:** Steve Russell (*Massachusetts Department of Energy Resources*), Bethany Whitaker (*Vermont Energy Investment Corporation*)

Massachusetts is at the forefront of transportation technology with a pilot project that put the nation's first electric school buses on the road at the end of 2016. We'll hear from the pilot implementers working with public schools in Amherst, Cambridge, and Concord MA about the pilot goals and technology. From the Massachusetts Dept. of Energy Resources, we'll learn about operations and data on fuel efficiency, consumption, and costs. Together we'll consider the future impact and challenges of electric bus fleets. This session takes place on an electric school bus: walk through the hotel lobby, past the front desk, and down the escalator. The bus will be parked at the corner of Fargo Street and D Street. Seating is limited.

**12:15pm–1:15pm**

### Model Electric Grid

**Location:** Trade Show Floor

**Sponsored by:** National Grid

The Vermont Energy Education Program (VEEP) has developed a Model Grid kit for students (and adults) as a hands-on, engaging learning experience about the electric grid. The Model Grid is designed to give users an appreciation of the job of the electric grid operators who must keep electricity available and high quality at all times, in the face of rapid changes in usage at the far ends of the system that they cannot see.

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Friday, 3/9: 12:15pm–1:15pm

**nationalgrid**

**12:15pm–1:15pm**

### Sponsored Session—A German Perspective on Building Energy

**Location:** Marina 3

**Speakers:** Helmut Landes (*Consulate General of Germany to the New England States*), Susanne Gellert (*German American Chamber of Commerce*), Kevin Flynn (*Viessmann*), Chris Ford (*Schöck North America*), Stefan Goebel (*Arnold Glas*)

**Sponsored by:** The German American Chamber of Commerce in New York, the Consulate General of the Federal Republic of Germany in Boston, & the Transatlantic Climate Bridge

Germany enjoys a stellar reputation throughout the world for its high-quality technical products and practical expertise in energy efficiency. Join the German American Chamber of Commerce New York and learn about German innovation in the energy efficiency sector. This session will feature leaders from a select group of German companies who will share their expertise and present their newest solutions and projects.



**12:15–1:15pm**

### Sponsored Session—Robots, Vacuums, & Butterflies Build a Better Wall

**Location:** Marina 4

**Speakers:** Tedd Benson, Jay Lepple, & Hans Porschitz (*Bensonwood*)

**Sponsored by:** Bensonwood

Join Bensonwood for a live tour of their newly operational computer-aided manufacturing (CAM) facility in Keene, NH. Lunch and learn as we take a real-time walk through the 110,000 sf building that includes production lines for walls, floors, and roofs. See how materials and design come together and ask questions directly to the factory floor. Explore new possibilities of how these building systems can improve the built environment.



**4pm–4:30pm**

### Closing Challenge: Goals for the Year Ahead

**Location:** Marina 1

**Speakers:** Michelle Apigian (*ICON Architecture*), Betsy Glynn (*BlueWave Solar*), James Petersen (*Petersen Engineering*), Andrew Webster (*c&h architects*)

NESEA is a community of learning, innovation, experimentation, and growth. At BuildingEnergy Boston we come together to learn from each other, to share our successes and our failures, and to put this knowledge and shared experience to use once we leave. What will you take forward into your practice? Voices from across the community will share their goals for the year ahead. Conference Chairs for BuildingEnergy Boston 2019, Michelle Apigian and James Petersen, will close out this year's conference.



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# THURSDAY SESSION 1

## Areas of Focus

- S** - Single Family
- I** - Commercial & Institutional
- PC** - Policy & Codes
- ML** - Mechanical Systems & Lighting
- R** - Renewables
- C** - Cities Communities Place
- D** - Design & Construction Process
- B** - Beyond Energy
- O** - Owners
- E** - Building Envelope
- M** - Multifamily
- P** - Practice
- H** - Health & Wellness

## Levels

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

engage emerging professionals and foster inclusivity in our industry. Dr. Jacques will lead a panel that will provide data about the state of our industry, share strategies for effectively engaging and elevating the work of emerging and mid-career professionals, and present approaches for soliciting new stakeholders.

You will leave this session feeling reinvigorated in your work and fired up to join others in fostering a community of practitioners that is vibrant, resilient, and ready to transform our built environment.

## SESSION 1

**10:30am–12pm**

### How Energy Efficiency Creates Opportunities & Financing in Multifamily Housing

**Location:** Marina 1

**Speakers:** Amy Brusiloff (*Bank of America*), Sadie McKeown (*Community Preservation Corporation*), Lindsay Robbins (*NRDC*), Karyn Sper (*Fannie Mae*)

**CEUs:** 1.5 AIA LU/HSW

**Areas of Focus:** **O M**

**Level:** 1

More banks are beginning to incorporate green and high performance building into their mortgage underwriting process for multifamily properties. If leading lenders begin to encourage and provide incentives for owners to pursue energy and water efficiency and renewable energy at the time of rehab, refinance or acquisition, the results could be transformative for the industry. On this panel, three leading lenders will discuss their approaches to green underwriting and opportunities for building owners to access more financing and discounts by going green. They will discuss pathways to helping stakeholders integrate efficiency upgrades into major capital events, like refinancing, while recommending additional measures that can be done during tenant turnover.

## New Construction: Beyond Modeling to Real Data & Results

**Location:** Marina 2

**Speakers:** Steve Bluestone (*Helix Rebar/ICF Panels*), Ryan Merkin (*Steven Winter Associates*)

**CEUs:** 1.5 AIA LU/HSW; 1.5 BPI

**Areas of Focus:** **D M P**

**Level:** 2

Energy modeling has been an important tool for pushing the design & construction industry toward high efficiency buildings. However, building performance post-construction is decoupled from this process and doesn't provide a critical feedback loop. We will compare modeled results to actual utility consumption data from a set of completed and occupied ENERGY STAR certified multifamily buildings, and discuss results of recent energy audits for context on operations and maintenance practices. We'll examine major design elements (envelope, HVAC, renewables) and attempt to identify the most important factors driving electricity and fuel consumption as well as what design decisions were less influential.

## Resiliency: Energy When You Need It

**Location:** Marina 3

**Speakers:** Maeghan Lefebvre (*MassCEC*), Patrick Murphy (*Vanderweil Engineers*), Kathryn Wright (*Meister Consultants Group*)

**CEUs:** 1.5 AIA LU/HSW

**Areas of Focus:** **R C B**

**Level:** 2

The floods and hurricanes of 2017 and the winter weather of 2018 all highlight the need for buildings and communities that can withstand natural (and human-made) disasters and continue to provide critical energy needs. Changing and extreme environmental conditions illustrate immediate resiliency needs, including on-site production of energy. We'll discuss resiliency in general, how building design professionals can incorporate resiliency into their projects,

## KEYNOTE PANEL

**8:30am–10am**

### Building Our Community: Engaging the Emerging Workforce

**Location:** Harbor 1 & 2

**Moderator:** Tamika Jacques (*MassCEC*)

NESEA's mission is to advance the adoption of sustainable energy practices in the built environment by cultivating a community where practitioners share, collaborate and learn. We believe that this community is the strongest when we actively prepare new professionals for future leadership opportunities. As a result, one of the main goals of our new strategic plan is to find ways to welcome practitioners from all backgrounds who are early in their careers.

With NESEA's mission and strategic plan in mind, we are pleased to welcome our keynote moderator, Dr. Tamika Jacques, the Director of Workforce Development at the Massachusetts Clean Energy Center. Dr. Jacques has dedicated her career to workforce development initiatives that

and examples of communities that are starting to incorporate resiliency into critical infrastructure (microgrids).

## EnergyVision 2030: A Plan for Changes to our Energy System

**Location:** Marina 4

**Speakers:** Kathleen Meil & Krysia Wazny (*Acadia Center*)

**CEUs:** 1.5 AIA LU/HSW

**Areas of Focus:** R C P C

**Level:** 1

Acadia Center's EnergyVision 2030 analysis explores how the Northeast can reduce carbon emissions by 2030 to meet 80% by 2050 mandates, which exist in most states. The analysis sets numerical targets in four categories—energy efficiency, electrifying buildings and transportation, greening electric supply, and modernizing the grid. This session will examine strategies to help broader audiences envision a modernized clean energy system and understand policy changes that must be made. We'll look at a variety of tools, including presentations, digital content, and targeted messaging that can engage and excite audiences beyond policymakers, traditional stakeholders, and energy experts.

## Signal to Noise: What Engineers See & You Miss in Products Specs

**Location:** Burroughs

**Speakers:** Jordan Goldman (*ZeroEnergy Design*), David White (*Right Environments*), Jamie Wolf (*Wolfworks*)

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

**Areas of Focus:** S D M L

**Level:** 1

Spec sheets can be dense with data, graphs, acronyms, and units of measure to describe just how that material or equipment will perform. Engineers zero in on what is most important and use it to make smart choices. Their experience equips them to distinguish what is signal and what is noise. For those without that experience, a spec sheet can be baffling. We want to make smart choices, but have

trouble discerning what matters and what doesn't. In this session two experienced engineers will walk us through their day-to-day experience finding and reading spec sheet data. They'll show us which measures matter and which may confuse. There'll be stories about how specs equip us to evaluate a substitute for what was specified. We'll look at mechanical equipment and building enclosures. Then we'll go live and chase down a challenge from the audience.

## How Do We Get from Passive House to Truly Low-Carbon Buildings?

**Location:** Harbor 1

**Speakers:** Michael Hindle & Marc Stauffer (*Passive to Positive*), Mike Duclos (*DEAP Energy Group*), Dave Ransom (*Rebuilder Group*)

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

**Areas of Focus:** E M B

**Level:** 2

The PHIUS Passive House Primary Energy (PE) criteria is currently set at 6200 kWh/occupant/year. In the presenters' experience, recent multifamily Passive House projects have not met PE by passive measures alone but have required onsite renewable energy generation. Can cost-effective passive measures meet the PE goal, or is additional renewable energy effectively a necessary requirement? What are our prospects given the anticipated and much more rigorous 4200 KWhr/occupant/year PE threshold? Does the PHIUS calculation ratio of onsite renewable usage to total generation help or hinder? We'll ask for audience input as we discuss existing methods and present new strategies for effectively meeting a gradually shrinking PE criteria for multifamily Passive House projects.

## The BrightBuilt Barn 10-year Anniversary: Celebrating the Birth of Affordable, Off-Site-Built Net Zero & the Industry Change It Spawned

**Location:** Harbor 2

**Speakers:** Keith Collins, Alan Gibson (*GO*

*Logic*), Phil Kaplan (*Kaplan Thompson Architects*), Hans Porschitz (*Bensonwood*)

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

**Areas of Focus:** D P

**Level:** 1

In 2006, a group of industry leaders collaborated on an ideal for the future of homebuilding in the Northeast, focusing on affordability, sustainability, replicability, and beauty. Their project, the BrightBuilt Barn, won the LEED Innovative Project Award in 2008 and has been net-positive ever since. The concept's success has been proven by the emergence of the off-site constructed, high-performance home industry. Three of the primary team members have gone on to form successful businesses in the space: BrightBuilt Home, Unity, and GO Home. The original team reconvenes to discuss why it was so successful, how we can continue to spark innovation, and what challenges remain.

## Escalating Excellence in Envelopes: Stories from Practice

**Location:** Harbor 3

**Speakers:** Jim D'Aloisio (*Klepper, Hahn & Hyatt*), Jodi Smits Anderson (*DASNY*)

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

**Areas of Focus:** I E P C

**Level:** 2

There are five basic components of building envelopes, each of which needs increased attention to meet and exceed current Energy Code while providing comfort for building users and durability and resiliency for building owners: 1. Opaque Assemblies: Walls and Roofs 2. Fenestration 3. Air Barriers 4. Thermal Bridging 5. Foundation Insulation and Slab Edges. Jim and Jodi will share revealing and entertaining stories from their practice. Engage in a discussion on how the challenges they reveal can be addressed by applying the nine habits of sustainability. Learn about current energy codes in a way that will help you understand building science and practical applicability, so you can get to better-than-ever buildings.

# THURSDAY SESSION 2

## Areas of Focus

**S** - Single Family  
**I** - Commercial & Institutional  
**PC** - Policy & Codes  
**ML** - Mechanical Systems & Lighting  
**R** - Renewables  
**C** - Cities Communities Place  
**D** - Design & Construction Process  
**B** - Beyond Energy  
**O** - Owners  
**E** - Building Envelope  
**M** - Multifamily  
**P** - Practice  
**H** - Health & Wellness

## Levels

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

## SPONSORED SESSIONS

**12:15pm–1:15pm**

### Net Zero Schools: Start with the HVAC

**Location:** Marina 4

**Speaker:** Barry Stephens (*Ventacity Systems*)

**Sponsored by:** Ventacity Systems & Fujitsu

A study of HVAC systems in NYC schools sought energy-efficient alternatives for both retrofits and new construction. One alternative identified in this study promises to deliver significant energy reductions and a better path to Net Zero schools.

### Be Passive(haus) Aggressive: Affordable Housing in MA

**Location:** Marina 3

**Speakers:** Michelle Apigian (*ICON Architecture*), Beverly Craig (*MassCEC*), Mike Davis (*Local Initiatives Support*

*Corporation*), Hank Keating, & Samantha Meserve (*MassDOER*)

**Sponsored by:** MassCEC

Is it possible to use Passive House principles in affordable housing? The answer is yes. Come hear how new construction affordable housing projects are utilizing Passive House principles to get exemplary energy performance out of buildings. Panelists will highlight two real world examples and identify how Massachusetts incentives can help push affordable multi-family projects closer to Passive House standards.

## SESSION 2

**1:30pm–3pm**

### The New Gravity: Climate Change and the Imperative of High-Performance Housing

**Location:** Marina 1

**Speaker:** Timothy McDonald (*Onion Flats*)

**CEUs:** 1.5 AIA LU/HSW; 1.5 BPI

**Areas of Focus:** **S M**

**Level:** 1

The Pennsylvania Housing Finance Agency (PHFA) and the 17 multi-family Passive House projects they've funded are transforming the affordable housing industry toward a ZNE standard by 2030. This initiative has proved a catalyst for radical and significant market penetration of Passive House/ Net-Zero-Capable housing, inspiring 12 more state housing finance agencies to similarly incentivize Passive House through their Low-Income Housing Tax Credit programs. See cost data, effective strategies, and lessons learned, through completed multifamily affordable and market rate Passive House projects from around the country, demonstrating the radical, affordable, and scalable way the affordable housing industry is combating climate change.

### Unvented Roofs without Spray Foam: The Latest Building America Research

**Location:** Marina 2

**Speaker:** Kohta Ueno (*Building Science Corporation*)

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

**Areas of Focus:** **S E M**

**Level:** 3

Current building codes let you build moisture-safe unvented roofs using spray foam or rigid board foam. But what about just using cellulose or fiberglass instead? Our team has been studying this issue over many climate zones for years. The current Building America/DOE-sponsored research has a test hut here in MA looking at a variety of assemblies over the past 2 winters. Cellulose vs. fiberglass, diffusion vents vs. no diffusion vents, interior vapor control membranes—fixed perm or variable-perm? Effect of interior relative humidity? All things that we've examined. We'll present the latest data and share our current thoughts on what assemblies are most likely to work.

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[www.nesea.org/be18-evaluations](http://www.nesea.org/be18-evaluations)

## Utility Transformation: Creating a Lower-Cost, More Reliable, Carbon-Free Electricity Distribution System

**Location:** Marina 3

**Speakers:** Ted Kelly (*NYS Department of Public Service*), Karl Rabago (*Pace Energy and Climate Center*), Jonathan Schrag (*RI Division of Public Utilities and Carriers*), Fred Unger (*Heartwood Group*)

**CEUs:** 1.5 AIA LU/HSW

**Areas of Focus:** R

**Level:** 2

We may be on the threshold of a dramatic re-think in electricity distribution. Stakeholder processes in Rhode Island's Power Sector Transformation and New York State's Reforming the Energy Vision are revising the role of utility companies. In changing how utilities are structured and paid, these efforts promise to align utilities' priorities with those of consumer, environmental and distributed generation advocates, while changing the way producers and consumers of energy and energy services transact. These reforms should create huge opportunities for innovation, distributed energy resources, and efficiency. Leaders of the process in both states discuss developments and expected outcomes.

## Should We Stop Trying to Update to the Latest Model Building Energy Code?

**Location:** Marina 4

**Speakers:** Jamie Howland (*Acadia Center*), John Dalzell (*Boston Redevelopment Authority*), Paul Ormond (*MassDOER*)

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

**Areas of Focus:** S E P C M

**Level:** 3

States across the Northeast expend significant time and effort in the pursuit of adopting the latest model energy codes from the IECC and ASHRAE. The 2009 and 2012 model energy codes resulted in significant improvements in

the minimum building standards, but more recently national model codes have produced fewer savings at a time when the need for dramatic energy performance improvements has never been greater. We'll share leading city and state efforts to achieve Energy Positive and Passive House performance and what this means for engagement with the national model codes, and have active discussion of our future baseline codes.

## "But I Don't Care" (Being an Effective Communicator)

**Location:** Burroughs

**Speakers:** Barbra Batshalom (*Sustainable Performance Institute*), Moshe Cohen (*Negotiating Table*)

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

**Areas of Focus:** D P

**Level:** 1

Overcoming resistance and gaining buy-in are challenges faced by everyone. The education of design professionals rarely includes the critical skills of communication and negotiation. We can and should learn these valuable skills that make us more successful and less frustrated: skills that support all aspects of our life, sustainability in particular. Whether it's a typical design challenge or a conversation with your client about LEED, Living Building Challenge, or Net Zero, we can be much more successful if we learn how to approach the conversation without just trying to convince someone else of our perspective! This workshop provides fundamental skills training (such as interest-based dialogue) through exercises and applied learning that will be immediately useful in daily work situations.

## Where We Went Right & Where We Went Left: Measured vs. Modeled Energy Performance

**Location:** Harbor 1

**Speakers:** James Ortega (*PHIUS*), Marc Rosenbaum (*South Mountain Company*)

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

**Areas of Focus:** M P

**Level:** 2

Since 2013 the Passive House Institute US has seen a significant increase in the design, construction, and certification of multifamily passive buildings. Many first multifamily passive buildings, from 6- to 57-unit developments, have been completed and occupied since then. Monitored performance data are now available. We'll report on a detailed comparison of modeled performance predicted by passive design tools and actual measured performance data of four case study projects while occupied and under operation. We'll answer these questions: How well do the currently used passive modeling tools, algorithms, and underlying modeling assumptions match the measured performance in the field? Were the anticipated energy and carbon-reduction goals met?

## Help! I'm Drowning

**Location:** Harbor 3

**Speakers:** Barnaby Evans (*WaterFire Providence*), Shaun O'Rourke (*Rhode Island Infrastructure Bank*), Stephanie Zurek (*Union Studio Architects*)

**CEUs:** 1.5 AIA LU/HSW

**Areas of Focus:** C B

**Level:** 2

This session is a unique opportunity for sea-level rise to be discussed at three various scales by experts approaching this timely issue in different ways. Shaun O'Rourke, Chief Resiliency Officer for the State of Rhode Island, will discuss his on-going efforts at the state level by focusing on sea-level rise, urban heat and flooding. Barnaby Evans, founding-artist of internationally acclaimed WaterFire, will share his work at the city level by touting sea-level rise mitigation as an economic development tool. Stephanie Zurek of Union Studio Architects will highlight on-going work at the neighborhood level by sharing the impact of sea-level rise on historic Newport, RI.



# THURSDAY SESSION 3

## Areas of Focus

**S** - Single Family  
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**P** - Practice  
**H** - Health & Wellness

## Levels

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

## SESSION 3

3:30pm–5pm

### Comparing Three Certification Metrics That Drive Sustainability in Affordable Multifamily Housing

**Location:** Marina 1

**Speakers:** Darien Crimmin (*WinnCompanies*), Michael Hindle (*Passive to Positive*), Julie Klump (*Preservation of Affordable Housing*), Betsy Harper (*MA Department of Housing & Community Development*)

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

**Areas of Focus:** **O M**

**Level:** 2

In building or retrofitting affordable multifamily housing, owners and developers committed to sustainability have several certification metrics to choose from, depending on their goals, budget, and practicalities. In this moderated panel, three experts will examine the benefits and challenges of the metrics they chose for their projects: Enterprise Green Communities, Passive

House, and Zero Net Energy. Through case studies, our panelists will discuss the motivating factors behind each chosen metric, impacts on the design and construction process, and resulting performance. They will also cover lessons learned, common misperceptions, the challenge of introducing renewables into a project, and the pros and cons of obtaining full certification versus "certifiable" status.

### The Not-Quite-Edible House: Making Healthy Material Choices

**Location:** Marina 2

**Speakers:** Brian Just (*Vermont Energy Investment Corporation*), Jacob Racusin (*New Frameworks*)

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

**Areas of Focus:** **S E D H**

**Level:** 2

Homeowners, builders, and architects are taking more interest in healthier places to live in and work. Research backs this up and points towards a need for wiser material and design choices. Many decisions need to be during the design phase, while others come much later, and everyone in the project team must be on board. With so many competing product certifications and building rating systems, how does one make sense of it all? This session outlines key strategies to help your team make informed decisions around building assemblies, products, and finishes. Whether you're looking for simple, low-cost upgrades for a remodeling project or building new for a client with allergies or chemical sensitivities, you'll walk away with new ideas to put into practice.

### Energy Storage: The Next Frontier

**Location:** Marina 3

**Speakers:** Anthony Callendrello (*BayCorp Holdings*), Kavita Ravi (*MassCEC*), Steven Strong (*Solar Design Associates*)

**CEUs:** 1.5 AIA LU/HSW

**Areas of Focus:** **R PC**

**Level:** 1

Storage is happening everywhere: behind the meter, in front of the meter, and in autonomous microgrids. Already, storage is addressing the variability in renewable sources of generation, offsetting time-of-use rates and demand charges, reducing peak loads on both sides of the meter, and enabling new levels of resiliency. This session will describe the various battery technologies, their applications and pros and cons, define storage value propositions, discuss "value-stacking" and storage as a service, and present case studies on the many ways storage is now applied across the spectrum.

### Stretch Codes: Why this policy offers the best hope for rapid transformation to meet state & local climate goals

**Location:** Marina 4

**Speakers:** David Epley (*Dept. of Consumer & Regulatory Affairs, District of Columbia*), Mark Lyles (*New Buildings Institute*)

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

**Areas of Focus:** **PC**

**Level:** 3

Cities and states are using stretch codes to more rapidly transform local building stock to higher energy efficiency levels, sometimes even driving toward zero energy outcomes. Stretch codes are emerging as a go-to policy lever for cities such as Boulder, Palo Alto, Santa Monica, Vancouver, Washington, DC and states like NY, MA and VT. We'll set the stage for how jurisdictions are using stretch codes to accelerate changing practice and describe options developed for a 20% and 40% (better than ASHRAE 90.1-2015) model stretch code. You'll hear from jurisdictions planning for and implementing stretch codes and learn about zEPI Jurisdictional Scores, which will be the basis in 2018 for the ACEEE State Energy Efficiency Scorecards. The scores are a new metric for ranking cities or states based on their adopted energy policy and taking into account state-wide energy codes and local stretch codes.

## Making the Invisible Visible: A Blueprint for Seeking Real Estate Value for Energy Efficiency

**Location:** Burroughs

**Speakers:** Craig Foley (*Sustainable Real Estate Consulting Services*)

**CEUs:** 1.5 AIA LU/HSW

**Areas of Focus:** S P

**Level:** 2

In the real estate market, decisions about home purchase, construction, and upgrades suffer from lack of data and knowledge about energy efficiency or, worse, don't consider energy efficiency at all. How do we change this? This session will point the way. Attendees will learn to be proactive – to prepare clients and lenders for the mortgage application and appraisal process and make energy efficiency count. We'll share ways to be an advocate of sustainable building practices with local real estate professionals. And we'll learn about real estate market transformation efforts in the Northeast and nationally that you can use to improve the real estate market in your local community.

## Building Inherent Value: Implementing the Passive House Building Standard

**Location:** Harbor 1

**Speakers:** Michelle Apigian (*ICON Architecture*), Jesper Kruse (*Maine Passive House*)

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

**Areas of Focus:** S E M

**Level:** 1

Two certified Passive House Consultants, an architect and a builder, will talk about the tremendous benefits of the Passive House building approach, and nostalgically lament what this means for our now limited friendships with the boiler maintenance guy! They will review the design and construction principles that are employed to achieve a super-insulated, air-tight envelope

and the essential addition of continuous mechanical ventilation. Looking at both single family and multifamily construction, they will share details, testing data, and lessons learned to demonstrate how to radically reduce energy consumption and construct a super-efficient, cost-effective building that will be comfortable, highly durable, healthy to be in, and affordable to operate.

## Comparing the Business of Architecture to Construction to Development

**Location:** Harbor 2

**Speaker:** Declan Keefe (*Placetaylor*)

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

**Areas of Focus:** D P

**Level:** 2

This session offers an analysis of the business models of Architecture, Construction, and Development. We examine the similarities and differences of how each type of business functions, how design-build, architect as developer, builder as developer, and designer-builder developer models might impact the bottom line of a business or project. Once we understand the levers available to us that affect the "Profit" bottom line, we'll consider how to invest in the "People" and "Planet" bottom lines. What do People and Planet decisions cost, what are they worth, and how do they affect our employees, our neighborhoods, our planet? Declan Keefe, Strategic Director of Placetaylor, an architecture, construction and development company, will share some of Placetaylor's live company budgeting spreadsheets, development proformas and sample projects.

## New or Renovated – High Performance in Higher Education

**Location:** Harbor 3

**Speakers:** Dan Arons & Jana Silsby (*Perkins Eastman Architects*), Carolyn

Day (*Ellenzweig*), Patrick Duffy (*BR+A Consulting Engineers*)

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

**Areas of Focus:** I D

**Level:** 2

Do you want to hear how to drive energy efficiency in renovation projects and new buildings beyond expectations? Welcome. Our exceptional panel members have learned from many educational projects including high energy intensive science facilities. They have practiced from Mississippi to Upstate NY (and quite possibly in your neighborhood). They have experienced and understood the complexity of interplay between energy efficiency, building operations, health, cognitive function, up-front costs, integrative approaches and Post Occupancy Evaluations. And they are here to share their reflections of their experiences including their often different solutions to achieve the same common end goal: buildings that excite people, support learning, and excel in performance.

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## SESSION 1

9am–10am

### Policy Updates: Net Metering and Fixed Charges in the Northeast

**Location:** Marina 1

**Speaker:** Mark LeBel (*Acadia Center*)

**CEUs:** 1 AIA LU/HSW

**Areas of Focus:** R PC

**Level:** 1

Fixed utility charges and net metering policy have a major impact on the economics of rooftop solar and energy efficiency. For a long time these issues were fairly static in the Northeast, but there have been recent proposals by utilities and utility regulators to make dramatic changes to them. This session will give an overview of these proposals and other changes that are currently being discussed in the region.

### Thermal & Energy Analysis for Architects: Why, When, & How

**Location:** Marina 2

**Speakers:** Lori Ferriss & Elaine Hoffman (*Goody Clancy*)

**CEUs:** 1 AIA LU/HSW; 1 BPI

**Areas of Focus:** D P

**Level:** 1

Incorporating quantitative tools in each stage of the design process empowers architects to evaluate and understand the complex environmental implications of their design decisions and to make deliberate, informed choices. We will discuss the rapidly expanding arsenal of tools available to designers, including energy modeling, thermal modeling, LCA, and solar analyses. This session will focus primarily on how to deploy thermal and energy modeling early in the design process for both preservation and new construction projects. We'll also provide examples of effective strategies to integrate these tools into architects' design processes at critical moments and examine how in-house analyses

can complement and enhance the architect-consultant relationship to drive significant improvements in building performance and life cycle impacts.

### Data-Driven Boiler System Design and Installation

**Location:** Marina 3

**Speakers:** Neil Donnelly, Maciej Konieczny, & Emma Van Lieshout (*New Ecology*)

**CEUs:** 1 AIA LU/HSW; 1 BPI; 1 MA CSL

**Areas of Focus:** ML

**Level:** 1

New Ecology, Inc. (NEI) installed low-cost monitoring equipment in 103 multifamily buildings in Massachusetts to observe, track, and evaluate hydronic heating and domestic hot water (DHW) equipment operations, performance, and energy efficiency. The analysis identified significant discrepancies between specified and actual heating and DHW performance. NEI's results suggest that improvement in equipment performance is possible at each phase of equipment's life cycle – design, installation, and operation. See adjustments that improved performance and fixed problems including incomplete startup, poorly thought-through setpoint settings, incorrectly balanced mixing valves, improperly located sensors, and reactive maintenance emergencies. Finally, NEI will present follow-up data to show the improvement.

### Green Gauges: A Design Methodology at Williams College

**Location:** Marina 4

**Speakers:** Thomas RC Hartman (*c&h architects*), Amy Johns (*Zilkha Center for Environmental Initiatives of Williams College*), Andrew Shapiro (*Energy Balance*)

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

**Areas of Focus:** I D P

**Level:** 2

Williams College established the goal of 35% campus-wide carbon reduction of 1990 carbon emissions by 2020. The Trustees asked a simple series of questions

in this context: What specifically is the College doing to accomplish this goal? What does it cost? What are the savings? We'll present a methodology (i.e., Green Gauges) for design and construction teams to communicate strategies with owners early in the process and provide consistent information regarding operational energy and the resulting carbon savings. What is the cost per metric ton of avoided carbon over the operation life of that strategy? We'll find out.

### Getting Smarter about Smart Buildings

**Location:** Burroughs

**Speakers:** Richard Macintosh (*Brookfield Global Integrated Solutions*), Jacquelyn Henke (*TD Bank*)

**CEUs:** 1 AIA LU/HSW; 1 BPI

**Areas of Focus:** ML P

**Level:** 2

If you have difficulty getting ideas to move ahead quickly in your organization, this session is for you. We will share the journey to roll out a "smart building" controls system in the TD Bank retail network. We navigated the good, the bad, and the ugly through the major milestones: selecting the best controls package for the existing portfolio, piloting the pilot process, and turning the 10-site pilot into a 300-site program rollout. We'll share our best strategies to cut down on approval times and nimbly leap through organizational hurdles to deliver energy efficiency and cost reductions.

### Smart Parking Design as a Climate Tool

**Location:** Harbor 1

**Speakers:** Lisa Chase (*Lucky Fish Communications*), Daniel Ciarcia (*Two Willows Consulting*)

**CEUs:** 1 AIA LU/HSW

**Areas of Focus:** C B

**Level:** 1

Parking infrastructure, developed in conjunction with commercial and

residential buildings, is a frequently neglected facet of property design. However, it creates numerous environmental impacts, including excess energy consumption, urban heat island effect, stormwater runoff, traffic congestion, and pollution. See how well-designed and efficient parking structures can dramatically improve a property's carbon footprint by minimizing natural resource use and incorporating green design. Best-in-class parking sustainability standards, including the USGBC's Parksmart Certification, benefit neighborhoods and communities, while maximizing the bottom line. Topics will include low-carbon strategies, electric mobility, stormwater management, and green infrastructure.

## Big Building Implications for Multifamily Passive House

**Location:** Harbor 2

**Speakers:** Elias Dagher (*Dagher Engineering*), Jordan Dentz & Zoe Kaufman (*The Levy Partnership*), Daniel Piselli (*FXFWLE*)

**CEUs:** 1 AIA LU/HSW; 1 BPI; 1 MA CSL

**Areas of Focus:** **E D M ML**

**Level:** 2

Energy efficiency is critical to a dense urban environment as costs continue to rise. In contrast to single family homes, this session will focus on applying Passivhaus/Passive House standards to large buildings and the impacts of the internal loads that primarily determine the outcome in a city landscape. We will first examine recent research, funded by the NYS Energy Research & Development Authority, on the impacts of tall buildings, from architectural enclosure detailing, mechanical systems, zoning, code, marketability, and constructability. We'll then look at the careful management of internal loads for large buildings to control the space conditioning cooling requirements and the impact of adjacent buildings in a dense urban context.

## Deploying Post-Disaster Renewables

**Location:** Harbor 3

**Speakers:** Fred Davis (*Fred Davis Corp.*), Mike Henchen (*Rocky Mountain Institute*), Joseph Mangum (*Sunnyside Solar Store*)

**CEUs:** 1 AIA LU/HSW

**Areas of Focus:** **R C**

**Level:** 1

Months after Hurricane Maria devastated Puerto Rico, much is unsure about the future of electricity there. Hear Two perspectives on efforts to deploy renewables in the post-2017-hurricane-season landscape. Will PV make a large impact in grid-rebuilding? There's been a lot of talk and a lot of on-the-ground hard work. Clearly, islands and regions are following vastly different pathways toward resilience and sustainability. Caribbean islands already on pathways to PV may now be accelerating their efforts. Much work still lies ahead. Learn about these efforts and be emboldened to participate in ongoing deployment.

## SESSION 2

**10:30am–12pm**

### The Magic (Electric) School Bus

**Location:** Outside

**Speakers:** Steve Russell (*MassDOER*), Bethany Whitaker (*Vermont Energy Investment Corporation*)

**CEUs:** 1 AIA LU/HSW

**Areas of Focus:** **R C**

**Level:** 1

Massachusetts is at the forefront of transportation technology with a pilot project that put the nation's first electric school buses on the road at the end of 2016. Hear from the implementers working with public schools in Amherst, Cambridge, and Concord MA about the pilot goals and technology. From the MA Dept. of Energy Resources, we'll learn about operations and data on fuel efficiency, consumption, and costs. We'll consider the future impact and challenges of electric bus fleets. This session takes

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### Levels

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- 2** - Some prior knowledge helpful
- 3** - Prior knowledge strongly recommended

place on an electric school bus: walk through the lobby and down the escalator. The bus will be parked at the corner of Fargo Street and D Street. Space is limited.

### Multi-Family, Tenant-in-Place, Passive Rehab: It's Possible!

**Location:** Marina 1

**Speakers:** Chris Benedict, Justin R. Milliet R. Taylor, & David Newman (*Chris Benedict, R.A.*), Ryan Cassidy (*RiseBoro Community Partnership*)

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

**Areas of Focus:** **E D M**

**Level:** 3

Affordable housing offers a huge opportunity to refinance and rehab to the Passive House standard. The project team from Chris Benedict, R.A. and RiseBoro Community Partnership will show construction details from their ground-breaking tenant-in-place rehab project designed for Passive House. CBRA will discuss the construction challenges (and successes!) to date, and RiseBoro will outline the financing and development approaches that should motivate all stakeholders to pursue this path.

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- 3 - Prior knowledge strongly recommended

## Integrative Carbon Building: Embodied Carbon, Net Positive Carbon & the New Carbon Architecture

**Location:** Marina 2

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

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

**Areas of Focus:** **E B**

**Level:** 2

Our current framework for net-zero buildings doesn't account for embodied carbon – that is, carbon pollution created during material manufacturing and distribution. In this session, we will show how systems thinking about carbon and an integrated design approach can change building practices from a problem to a solution. We will present data on the embodied carbon impact of green buildings; address how to quantify embodied carbon in design/build practices; and discuss present-day carbon-positive construction materials and assemblies, which can reduce the carbon load in the atmosphere. This

effectively uses buildings as carbon-sequestering reservoirs, which can mitigate and even reverse climate change effects. Understanding the carbon cycle, and how we as design/build practitioners can make beneficial choices, is the next horizon for integrative green building.

## Retrocommissioning with the Chiefs: Training Operators to Sustain the Process

**Location:** Marina 3

**Speaker:** Saverio Grosso (*Edison Energy*)

**CEUs:** 1.5 AIA LU/HSW; 1.5 BPI

**Areas of Focus:** **I ML**

**Level:** 1

At the core of every successful Retro-Commissioning (RCx) project is an effective collaboration between the commissioning agent and the building's operating staff to identify and implement energy conservation measures. This session will provide guidance to commissioning agents and building operations teams about how to work together throughout the Retro-Commissioning (RCx) process to maximize the benefits of RCx. We will present examples from both the commissioning agent and building operations perspectives of how previous project collaborations have been structured, including the development of training materials, to attain significant and sustained benefits beyond energy savings.

## Punching Above Your Weight Class: Exceeding Client Sustainability Requirements within a Tight Budget

**Location:** Marina 4

**Speakers:** Stephen Feige (*Goody Clancy*), Michael Pulaski (*Thornton Tomasetti*), Charley Stevenson (*Integrated Eco Strategy*)

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

**Areas of Focus:** **I P**

**Level:** 2

This team's contract with a university client for a new 210,000 ft<sup>2</sup> student housing project required LEED v4 Silver, a worthwhile goal. But the team wanted to punch up to meet more aggressive sustainability goals – Passive House and Living Building Challenge Materials Petal – within the same design and construction budget. Did they succeed? In this session, you'll hear key findings associated with energy modeling, solar shading, water management, healthy materials, and high-performance building envelope. We'll explore the metrics employed to evaluate options and their return on investment to make it palatable to naysayers and confirm financial feasibility. Speakers will also discuss the teams' persistent approach to strive for a better building and strategies to engage the complex group of university stakeholders.

## Meeting the Demands of Healthier Buildings: How to Navigate Building Product Certifications

**Location:** Burroughs

**Speaker:** Lauren Asplen (*BlueGreen Alliance*)

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

**Areas of Focus:** **S I M H**

**Level:** 1

Health is the new frontier in the built environment. But a building or home cannot begin to be deemed healthy if its building blocks – both the material used for exterior construction and the elements used to build and decorate the interior – aren't healthy to begin with. Identifying healthy products is made easier with a wealth of new tools and certification programs that are being implemented, but that variety also creates confusion over what each program brings to the table and how that meets the needs of the user. This session will review the different product certifications in use, identify their main priorities, and show how to search for them online.



## Crisis in Cannabis Cultivation: Latest Energy Developments in Data, Practice, and Policy

**Location:** Harbor 1

**Speakers:** Fred Davis (*Fred Davis Corporation*), Anya Gordon (*GroTec Builders*), Sam Milton (*Climate Resources Group*), John Morris (*D+R International*)

**CEUs:** 1.5 AIA LU/HSW

**Areas of Focus:** I ML

**Level:** 1

The energy crisis of indoor cannabis cultivation is about to be unleashed in the Northeast. Growing marijuana indoors is extremely energy intensive, and this session highlights the latest efforts to reduce the industry's energy footprint. Attendees will hear from speakers with fingers on the pulse of trends, practices, and policies across the country. As highlighted at BuildingEnergy SRO inaugural session on the subject last year, there is a very small window for growers to coalesce around best practices, providing building energy professionals a unique opportunity. Efforts to collect profile data about cultivators' energy use will be shared, as well as latest updates about market and regulatory developments in MA & ME.

## The Future City: An Integrated Ecosystem

**Location:** Harbor 3

**Speakers:** Daniel Kelley (*Ramboll*), Robert Leaver (*New Commons*), Cammy Peterson & Patrick Roche (*Metropolitan Area Planning Council*)

**CEUs:** 1.5 AIA LU/HSW

**Areas of Focus:** C B H

**Level:** 1

This session features a series of facilitated conversations and a small-group exercise that will focus on the future city and what NESEA thinkers and practitioners can do now to create impact. The city is an important scale for holistic innovation that can play a major role in global

decarbonization. Practitioners can learn to optimize this scale to integrate building-level, streetscape-level, and community-level clean energy ingenuity. Audience members will interact with: a community psychologist who has used a whole systems approach to shape our culture and places for decades; a regional practitioner who helps to usher in smart-city innovation; and a private sector professional who guides cities to explore multi-benefit district energy systems. Each participant will leave with 3 action steps to implement a city-scale measure in their ecosystem.

## SPONSORED SESSIONS

12:15pm–1:15pm

### Robots, Vacuums, & Butterflies Build a Better Wall

**Location:** Marina 4

**Speakers:** Tedd Benson, Jay Lepple, & Hans Porschitz (*Bensonwood*)

**Sponsored by:** Bensonwood

Join Bensonwood for a live tour of their newly operational computer-aided manufacturing (CAM) facility in Keene, NH. Lunch and learn as we take a real-time walk through the 110,000 sf building that includes production lines for walls, floors, and roofs. See how materials and design come together and ask questions directly to the factory floor. Explore new possibilities of how these building systems can improve the built environment.

### A German Perspective on Building Energy

**Location:** Marina 3

**Speakers:** Helmut Landes (*Consulate General of Germany to the New England States*), Susanne Gellert (*German American Chamber of Commerce*), Kevin Flynn (*Viessmann*), Chris Ford (*Schöck North America*), Stefan Goebel (*Arnold Glas*)

**Sponsored by:** The German American Chamber of Commerce in New York, the Consulate General of the Federal Republic of Germany in Boston, & the Transatlantic Climate Bridge

Germany enjoys a stellar reputation throughout the world for its high-quality technical products and practical expertise in energy efficiency. Join the German American Chamber of Commerce and learn about German innovation in the energy efficiency sector. Leaders from a select group of German companies will share their expertise and present their newest solutions and projects.

## SESSION 3

1:30pm–2:30pm

### Cities as Climate Leaders: Net Zero & the Urgency of Now

**Location:** Marina 1

**Speakers:** Cammy Peterson (*Metropolitan Area Planning Council*), Alistair Pim (*New England Clean Energy Council*), Susanne Rasmussen (*City of Cambridge, Environmental & Transportation Planning Division*)

**CEUs:** 1 AIA LU/HSW

**Areas of Focus:** R C

**Level:** 1

With the effects of climate change at our shores, and the federal administration's decision to pull out of the Paris Agreement, the time for local action is now. In order to avoid the most damaging effects of climate change, GHG emissions must be addressed rapidly and comprehensively. This session will focus on holistic approaches to planning for net zero and tools to help cities and towns set and achieve ambitious climate goals. Learn about tools and resources to help accelerate your community toward net zero, best practices from a local practitioner about how to get there, and insights into how to engage the private cleantech sector in supporting that work.

## Areas of Focus

**S** - Single Family  
**I** - Commercial & Institutional  
**PC** - Policy & Codes  
**ML** - Mechanical Systems & Lighting  
**R** - Renewables  
**C** - Cities Communities Place  
**D** - Design & Construction Process  
**B** - Beyond Energy  
**O** - Owners  
**E** - Building Envelope  
**M** - Multifamily  
**P** - Practice  
**H** - Health & Wellness

## Levels

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

## KEISS (Keep It Simple, Smartypants): A builder's perspective on straightforward construction details for constructing a low-cost, high-performance home

**Location:** Marina 2

**Speaker:** Stephen DeMetrick (*DeMetrick Housewrights*)

**CEUs:** 1 AIA LU/HSW; 1 BPI; 1 MA CSL

**Areas of Focus:** **S E P**

**Level:** 2

Rhode Island's first PHIUS certified passive house was built for \$160/ft<sup>2</sup>. In this session, builder Steve DeMetrick of DeMetrick Housewrights will walk through the entire construction process, from excavation to finish for this 1800-square-foot home. Steve will get down to real details, like how to airseal electrical boxes in zip sheathing and what to do with all those mini split lines. Steve's approach blows away all the mystery (and \$\$\$) out of high-performance construction. Grab a cup of coffee and come learn about what's happening in Rhode Island.

## Heat Pump Water Heaters for Multifamily

**Location:** Marina 3

**Speakers:** Robb Aldrich & Robin Neri (*Steven Winter Associates*)

**CEUs:** 1 AIA LU/HSW; 1 BPI; 1 MA CSL

**Areas of Focus:** **M ML**

**Level:** 2

Looking for the best ways to use heat pump water heaters efficiently, reliably, and without compromising comfort? So are we. In multifamily buildings around the Northeast, the speakers have investigated integrated, tank-type water heaters as well as larger, central heat pumps. Both have challenges, and speakers will present many examples of how NOT to use HPWHs in multifamily buildings. We are learning, however, and the technology is evolving. Systems using CO2 refrigerant are coming from overseas that appear to offer good performance even in cold weather. This session will include a review of the range of technologies currently available, discussions of applications and challenges, and our best take on best practices for heating water with heat pumps – now and in the future.

## Utility Benchmarking 101: What It Is, Why It Matters, and How It Can Benefit You

**Location:** Burroughs

**Speakers:** Tabetha McCartney (*Jewish Community Housing for the Elderly*), David Ruggiero (*ICF*), Dan Teague (*WegoWise*)

**CEUs:** 1 AIA LU/HSW; 1 BPI

**Areas of Focus:** **M**

**Level:** 1

Utility benchmarking can be a powerful tool in a property manager's toolbox, enabling them to monitor water and energy usage, make smart decisions about repair and maintenance, and positively impact the immediate and long-term value of their property. This introductory session will explore the topic

of benchmarking, offering attendees insights into why it matters, and how it can benefit managers of properties of all sizes. A service provider, national program administrator, and property manager will present project examples and provide guidance about how to unlock the value of benchmarking. Specifically, the speakers will address multifamily benchmarking initiatives and requirements, best practices, and success stories.

## The Great Indoors: Green Building and Health Outcomes

**Location:** Harbor 1

**Speakers:** Gary Adamkiewicz (*Harvard University*), Ed Connelly (*New Ecology*)

**CEUs:** 1 AIA LU/HSW; 1 BPI; 1 MA CSL

**Areas of Focus:** **M H**

**Level:** 1

As the green building movement matures, a stronger focus is evolving on short-term and long-term occupant health impacts. The partial redevelopment of Old Colony in South Boston offered a unique opportunity to evaluate both the efficiency and health impact of the green strategies. The Harvard T.H. Chan School of Public Health evaluated the health outcomes associated with living in the new green housing, and the research revealed significant improvements in health among residents who moved from the existing housing into the green units. In this session, we will provide strong evidence that green interventions not only improve the environmental performance of housing, but also tackle major public health challenges in low-income communities.

## Air Tightness Requirements of the Passive House Standard

**Location:** Harbor 2

**Speakers:** Mike O'Donnell & Scott Pusey (*Steven Winter Associates*)

**CEUs:** 1 AIA LU/HSW; 1 BPI; 1 MA CSL

**Areas of Focus:** **E M**

**Level:** 2



The Passive House (PH) building standard is the most stringent energy efficiency standard in the world. Several affordable housing authorities in the US currently or plan to include it as a sustainability option in funding applications. Achieving the stringent air tightness requirements of the PH standard requires careful coordination through all phases of design development and construction. The team from Steven Winter Associates will take you through the steps and tools necessary – including integrated design, air barrier documents, detailed site inspections, and review testing tools and protocols. They will share successes and failures from their wide experience, from three-story low-rise buildings to 33-story high-rise structures with 300+ units.

## Choices, Choices: Cladding and Climate Change

**Location:** Harbor 3

**Speakers:** Paul Mayencourt & Caitlin Mueller (*Massachusetts Institute of Technology*), Michael Pulaski (*Thornton Tomasetti*), Stephen Tilly (*Stephen Tilly, Architect*)

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

**Areas of Focus:** **P D**

**Level:** 3

Cladding materials used in construction are critical to carbon reduction goals and loom larger as operational energy use diminishes. Architects, designers, builders and facility managers are often in the dark about environmental and especially climate change impacts as they look at exterior material choices for new construction, cyclical recladding, and overladding. Cost and appearance are important parameters that usually drive the final choice. This session will provide tools, rules of thumb, and sources of information and will look at methodologies available to sort through climate impacts of cladding choices in North American residential and commercial markets.

## SESSION 4

**3pm–4pm**

### What Not to Spec: How to Avoid Toxins, Endocrine Disruptors, and Carcinogens in Your Next Building Project

**Location:** Marina 1

**Speakers:** Lisa Carey-Moore & Charley Stevenson (*Integrated Eco Strategy*), Christopher Nielson (*Bruner/Cott & Associates*)

**CEUs:** 1 AIA LU/HSW; 1 BPI; 1 MA CSL

**Areas of Focus:** **S I H**

**Level:** 2

The products you specify—and how you structure your specs—have enduring impact on your building's occupants, the community where the product is made, and the workers who install it. We'll share lessons learned about screening and choosing products employing the most rigorous material vetting standards in green building certifications. Where do you focus and where should you not? This session will coach designers in approaches and procedures to make any project healthier through careful materials selection. And while it's not designed to get you through the LBC Materials Petal, it will undoubtedly help.

### PACE Financing: Scaling Commercial & Residential Net-Zero Energy Retrofits

**Location:** Marina 2

**Speakers:** Iain Campbell & Radhika Lalit (*Rocky Mountain Institute*), Beau Engman (*PACE Equity*), David Gabrielson (*PACENation*)

**CEUs:** 1 AIA LU/HSW

**Areas of Focus:** **S I PC**

**Level:** 2

One of the biggest market barriers to Net-Zero Energy retrofits is the incremental upfront cost. Property Assessed Clean

Energy (PACE) financing overcomes this barrier, and it's expanding with new innovations. Those innovations include resilience renovations, consumer protections, and the use of PACE to unlock Net-Zero Energy retrofits and new construction. Resilience renovations are on the rise following hurricanes, floods and power outages. Also, PACE for new construction can make Net-Zero Energy homes beat standard costs for home ownership. Come find out how to grow the market for efficiency and solar in your region from leading industry experts.

### Real Life Air Source Heat Pumps

**Location:** Marina 3

**Speaker:** Bruce Harley (*Bruce Harley Energy Consulting*)

**CEUs:** 1 AIA LU/HSW; 1 BPI; 1 MA CSL

**Areas of Focus:** **S D ML**

**Level:** 2

Learn about cold climate heat pumps from an expert in HVAC and Building Science. We'll focus on the real-world performance of Air Source Heat Pumps monitored from past projects, including the presenter's own house. We'll discuss a range of heat pump applications, installation practices that affect efficiency, and some key issues and resources to consider when specifying and sizing heat pumps. After attending this session, practitioners who use this technology will know how to use it better. If you have questions about Heat Pumps, bring them with you!

## 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/be18-evaluations](https://nesea.org/be18-evaluations)

# FRIDAY SESSION 4

## Lightning Round: Questions and Answers to Fuel Your Work

**Location:** Burroughs

**Speakers:** Michael Browne (*Advanced Building Analysis*), Benjamin Darby & Michael Frisina (*Ashley McGraw Architects*), Adrienne Stauffer (*Kaplan Thompson Architects*), Mark Sylvia (*BlueWave Solar*)

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

**Areas of Focus:** **D P**

**Level:** 1

This session packs as much information into one session as possible. Hear succinct, practical presentations on a variety of topics, including: **B-corp**, a sustainable business organization; **Iterative Daylighting** Analysis Tools using Dynamo for Revit – the design team works the energy issue; **Aerial Thermal Imaging**, 3D Modeling and Orthographic mapping – access to info to drive design excellence; **EcoFAST** - Taking it to the extreme for the environment! – making sustainability part of the day. Connect directly with speakers for the last 15 minutes.

## Getting Solar Ready with Permitting & Inspection Processes

**Location:** Harbor 1

**Speakers:** Goran Smiljic (*Inspectional Services Dept., City of Somerville*), Nicole Sanches (*SolSmart - MAPC*), Mike McAteer (*Inspectional Services Dept., City of Chelsea*)

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

**Areas of Focus:** **R PC**

**Level:** 2

This session is aimed towards building and electrical inspectors, energy managers, planners, and other municipal officials looking to explore best practices to make their permitting and inspection process for solar more efficient and consistent, saving save time and money and reducing solar soft costs. We'll cover relevant sections of

the building, electrical, and fire codes to solar energy systems; new updates to the building code; areas of priority in solar inspections; what information to ask for in a solar permit; the intersection of solar zoning and permitting; and consumer protection for residential systems.

## The Risky Business of Integrative Pre-Design

**Location:** Harbor 2

**Speaker:** John Beeson (*Catalyst Partners*)

**CEUs:** 1 AIA LU/HSW; 1 BPI

**Areas of Focus:** **D P**

**Level:** 2

The status quo of traditional project delivery requires continual review and improvement. Although the value of the Integrative Design Process (IDP) has been established, it is not widely used or fully embraced. Even its most ardent supporters make mistakes in timely team engagement and short-circuited design process, often lacking a clear path to project completion. Despite these challenges, Integrative Pre-Design empowers early collaborative and iterative techniques critical to creating ultra-high performance buildings. Learn about the value of Integrative Pre-Design as a vital component in the IDP process. Following ANSI guidance principles, we'll reinforce the basic concepts and principles of IDP and highlight how IDP provides a means to effectively explore and implement sustainable design principles on a project.

## The Drawbacks of Breathing: Nighttime Carbon Dioxide Levels in New England Bedrooms

**Location:** Harbor 3

**Speaker:** Brian Just (*Vermont Energy Investment Corporation*)

**CEUs:** 1 AIA LU/HSW; 1 BPI; 1 MA CSL

**Areas of Focus:** **S H**

**Level:** 1

Ventilation is often overlooked or inadequately designed in both existing and new homes. During the 2016-17 heating season, we tested the indoor air quality in the bedrooms of 22 Vermont homes spanning a wide range of size, age, airtightness, heating system type, and occupancy. Most exceeded twice the 1000ppm threshold for CO<sub>2</sub> often targeted by energy and ventilation standards. An investigation of cause and effect led to a clear culprit. Learn about the latest research on the impacts of CO<sub>2</sub> and other pollutants in our homes, see real-world data on the ability of centralized and distributed ventilation systems to tackle these problems, and hear about best practices for design and commissioning of ventilation in new and existing homes.

## CLOSING CHALLENGE

4pm–4:30pm

### Goals for the Year Ahead

**Location:** Marina 1

**Speakers:** Michelle Apigian (*ICON Architecture*), Betsy Glynn (*BlueWave Solar*), James Petersen (*Petersen Engineering*), Andrew Webster (*c&h architects*)

NESEA is a community of learning, innovation, experimentation, and growth. At BuildingEnergy Boston we come together to learn from each other, to share our successes and our failures, and to put this knowledge and shared experience to use once we leave. What will you take forward into your practice? Voices from across the community will share their goals for the year ahead.

Conference Chairs for BuildingEnergy Boston 2019, Michelle Apigian and James Petersen, will close out this year's conference.

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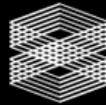
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This is a list of exhibitors as of February 26. For the most up-to-date list, please see the signs located at the entrance to the trade show floor. Sponsors are listed in green.

## 475 High Performance Building Supply (Table 52)

**NESEA Business Member**

475 High Performance Building Supply provides essential building components to professionals. As specialists on airtightness and vapor control, 475 helps optimize building comfort and health. [foursevenfive.com](http://foursevenfive.com)

## A.W. Hastings & Company (Table 40)

**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. [awhastings.com](http://awhastings.com)

## Accurate Dorwin (Table 57)

Accurate Dorwin is the originator of the fiberglass window, the leading edge technology in today's window industry that was born and bred from the harsh conditions of the Canadian prairies. Quite simply, Accurate Dorwin window products will deliver the longest most trouble free usage of any window currently on the market regardless of how tough the environment or demanding the customer. [accuratedorwin.com](http://accuratedorwin.com)

## Aegis Energy Services (Table 51)

**NESEA Business Member**

Aegis Energy Services, Inc. is an innovative Combined Heat and Power (CHP) company based in Holyoke, MA. Founded in 1985, Aegis Energy Services' modular systems are currently utilized across the Northeast and Mid-Atlantic providing sustainable, clean power options for a wide array of customers. [aegisenergyservices.com](http://aegisenergyservices.com)

## AeroBarrier (Table 43)

AeroBarrier is a first of its kind, cutting-edge envelope sealing technology for commercial, residential and multi-family applications with tested and proven results. It can help builders meet any IECC, Energy Star, or passive house requirement more consistently and more importantly, more cost-effectively than traditional envelope sealing methods. AeroBarrier is a proprietary technology that takes the guesswork out of sealing the envelope. We guarantee the results, whether you need 3ACH50 or passive house requirements! [aerobarrier.net](http://aerobarrier.net)

## Auburndale Builders (Table 24)

**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](http://auburndalebuilders.com)

## Bensonwood (Table 49)

**NESEA Business Member**

Bensonwood is a design/build firm producing sustainable, energy efficient residential and commercial buildings and pre-fabricated building components. Using state-of-the-art offsite fabrication, Bensonwood maximizes quality and efficiency for our own designs and in collaboration with others. With over 40 years of experience, Bensonwood is an established leader, nationally recognized for innovative prefabrication of building components and high quality, energy-efficient structures. To date, Bensonwood has built over 1,400 timber frame, hybrid, and conventionally framed homes and structures across 50 states. [bensonwood.com](http://bensonwood.com)

## BlueWave Solar (Table 55)

BlueWave Solar, a Certified B Corporation, is a solar energy company founded on a mission to provide Solar for Everyone, Everywhere. BlueWave enables communities to take control of

their energy production and consumers to choose local, low-cost power through our suite of consumer solar products, including the BlueWave Community Solar Share and the BlueWave Home Solar Loan. [bluwavesolar.com](http://bluwavesolar.com)

## Boston Architectural College (BAC) (Table 37)

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](http://the-bac.edu/green)

## BROAN (Table 3)

Broan is North America's leader in energy efficient, quiet fans, whole-house fresh air systems, and range hoods. For 85 years the Broan brand has been identified as the true innovation leader for ventilation products by contractors, builders and homeowners. [broan.com](http://broan.com)

## Build Equinox (Table 19)

**NESEA Business Member**

Build Equinox is a US company who designs and builds the CERV Smart Ventilation system in a 100% solar powered facility. Internet connected with CO2 and VOC sensors combined with heat pump energy recovery sets the CERV apart from the competition. [buildequinox.com](http://buildequinox.com)

## Carlsen Systems (Table 25)

Carlsen Systems distributes water/wastewater equipment and mission critical equipment. We sell quality from a range of manufacturers, including Sulzer/ABS, Grundfos, USEMCO, A3-USA, Powersmiths and Toshiba. With our expert recommendations and support, you will get the right equipment for the application as well as peace of mind that we will be there if you have a problem. [carlsensystems.com](http://carlsensystems.com)

## Cascadia Windows & Doors (Table 48)

**NESEA Business Member**

Cascadia Windows & Doors was founded in 2008 in Langley, British Columbia, by a collective of building science and

# MEET THE EXHIBITORS

window specialists with the intent to innovate, commercialize and produce the most energy efficient building products in the marketplace. Cascadia manufactures resilient, versatile and sustainable building envelope products, including windows, doors, and cladding support systems forged from high-quality pultruded fiberglass. Our mission is to lead North America's transition to energy efficient building design by offering resilient, sustainable products that substantially reduce CO2 emissions that directly affect climate change. [cascadiawindows.com](http://cascadiawindows.com)

## **Cotuit Solar (Table 42)**

### **NESEA Business Member**

Cotuit Solar (established 1988) has more than 25 years of experience with solar integration, and remains committed to a high standard of excellence. We are a full service, locally based contractor, renowned in the community for our expertise and quality of service. Conrad Geyser, principal of Cotuit Solar, is NABCEP (North American Board of Certified Energy Practitioners) certified for Solar Thermal and Photovoltaic installations. Cotuit Solar maintains memberships in ASES, SEIA, NESEA, SEBANE, and CIREC. [cotuitsolar.com](http://cotuitsolar.com)

## **e-Roof Metal Systems, LLC (Table 16)**

e-Roof Metal Systems, LLC (representing GreenCoat® colorful steel) is an independent sales rep focused on architectural sheet metal materials, profiles, and system solutions that optimize design strategies for better buildings. Premium steep-slope metal roofs can help achieve long-lasting, low-carbon, low-maintenance, recyclable, solar-ready roofs while also contributing to building resilience. The best solutions solve multiple problems. Let GreenCoat® colorful steel, MetalVent ASV, and e-Roof help you realize a better metal solution. [e-roof.com](http://e-roof.com)

## **Eco Supply Center (Table 13)**

Distributor of eco-friendly interior building materials, all of which contribute points toward LEED projects. [ecosupplycenter.com](http://ecosupplycenter.com)

## **EDOS Manufacturers' Reps. (Table 53)**

EDOS Manufacturers' Reps. Inc. has been proudly representing the finest manufacturers and marketing products to the New England plumbing and heating industry since 1975. Today EDOS continues to conduct business with the same fundamental guiding principles upon which this family owned and operated company was founded. The company's philosophy remains as strong as ever and inspires the EDOS team to continually strengthen its relationships with manufacturers and customers. [edosonline.com](http://edosonline.com)

## **Energy Federation, Inc. (EFI) (Table 34)**

### **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](http://efi.org)

## **European Architectural Supply (EAS) (Table 7)**

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](http://eas-usa.com)

## **Foard Panel (Table 28)**

### **NESEA Business Member**

Foard Panel began in 1985 as a company that installed 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 could be realized. Foard has taken decades of installation experience and allowed these experiences to integrate with a modern design department. Foard continues to modernize the panel details to incorporate sound building science practices, the most trusted engineering details, and feedback from the our crews in the field about ease of install. [foardpanel.com](http://foardpanel.com)

## **Fraunhofer Center for Sustainable Energy Systems (Table 46)**

The Fraunhofer USA Center for Sustainable Energy Systems CSE is an applied research and development laboratory dedicated to building tomorrow's energy future today. Our staff's expertise in solar photovoltaics, smart energy-efficient buildings, and grid technologies provides a platform for deeply integrating distributed energy resources through collaborative R&D with private companies, government entities, and academic institutions. [cse.fraunhofer.org](http://cse.fraunhofer.org)

## **Fujitsu (Table 10)**

For over 40 years, Fujitsu has been working hard to make the world a more comfortable place. We have 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. Fujitsu's Halcyon line of high-efficiency, eco-friendly mini-split systems have been designed to provide advanced zoned comfort solutions for residential and light commercial applications. Fujitsu's Airstage line of Variable Refrigerant Flow (VRF) systems provides an efficient heating and cooling solution for an entire building using advanced controls and simple building management integration. [fujitsugeneral.com](http://fujitsugeneral.com)

## **Global Wholesale Supply (Table 47)**

### **NESEA Business Member**

With close to 50 years of collective experience in marketing and distribution of wood fibre building products, Global Wholesale Supply is the North American Representative and Distributor for Steico, the World's largest manufacturer of wood fibre insulation. Steico wood fibre insulation products provide high permeability; excellent sound deadening and Summer heat protection; a wind tight barrier/ weather resistance (no vapor barrier needed) and all products use only FSC wood. Wood fibre insulation is the perfect product for high performance homes. [globalwholesale.biz](http://globalwholesale.biz)

## Hannah Solar (Table 41)

Hannah Solar is a full service solar integrator dedicated to providing the very best in engineering, products, installation and service of commercial and residential solar arrays, electric vehicle (EV) charging stations, energy storage systems and Generac® critical backup generators. Our team is comprised of NABCEP certified experts, licensed master electricians, service technicians, project management professionals, business development managers, designers and installers—working together to serve our clients as a reliable and experienced resource in sustainable energy integration. [hannahsolar.com](http://hannahsolar.com)

## Heat Watch (Table 39)

The only way to truly reduce fuel consumption and ultimately save money, is if people—paired with the right technology—are watching, controlling, and managing the entire boiler and heating systems of a given building. That's why Heat Watch was founded—not to sell computers, software, or monitoring services, but to own the responsibility of running boilers as an end-to-end service. [heatwatch.com](http://heatwatch.com)

## Heat-Timer Corporation (Table 56)

At Heat-Timer, our goal is to provide innovative, cost effective control solutions that enhance the comfort and efficiency of new and existing buildings. In doing so, we reduce the environmental impact of building heating systems worldwide- often within the imperfect framework of existing mechanical systems. The diversity of Heat-Timer controls, and their extraordinary fine-tuning capability, means improved performance of virtually any building's heating system- old or new, large or small, steam or hydronic. [heat-timer.com](http://heat-timer.com)

## Helix Rebar/ICF Panels (Table 32)

Helix Micro Rebar is a twisted steel micro rebar technology that replaces most rebar and creates a concrete that is stronger and less resistant to cracking. Steve Bluestone is now developing a system that uses panelized Insulated

Concrete Forms (ICFs) with Helix Micro Rebars to reduce cost/weight/material, shorten schedules, and increase the strength and quality of buildings from low- to high-rise. [icfpanels.com](http://icfpanels.com)

## Huber Engineered Woods (Table 58)

### NESEA Business Member

Huber Engineered Woods creates innovations for today's building needs. ZIP System® sheathing and tape for roofs and walls, eliminates the need for housewrap with a built-in weather-resistant barrier, to support an air- and water-tight envelope. AdvanTech® subfloors and sheathing are designed to perform above code standards for superior strength, stiffness and fastener-holding power. With advanced moisture resistance AdvanTech® panels help keep jobs on track with a 500-day no sanding guarantee. [huberwood.com](http://huberwood.com)

## Icynene Spray Foam (Table 36)

Established in 1986, Icynene brand spray foam insulation is the leading brand of spray foam, and offers a complete portfolio of high-performance spray foam insulation solutions. In the past 25 years, more than 3 billion board feet of Icynene spray foam insulation has been installed in more than 300,000 residential and commercial projects. In fact, because of its dramatic advantages over other types of insulation, spray foam insulation from Icynene has been chosen for countless prestigious residential and commercial building projects. [icynene.com/en-us](http://icynene.com/en-us)

## Kampmann (Table 14)

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](http://kampmann.ca)

## Lotik Labs (Table 35)

Lotik Labs is a portfolio company of Samsung. The company has developed and deploys a non-intrusive wireless water monitoring system to help reduce water consumption, increase water transparency, and reduce costs. [lotik.io](http://lotik.io)

## Massachusetts Clean Energy Center (MassCEC) (Table 31)

### NESEA Business Member

The Massachusetts Clean Energy Center (MassCEC) works closely with businesses, municipalities, and residents to incentivize the use of renewable and efficient energy solutions. MassCEC offers generous rebates and technical assistance for clean heating and cooling installations like heat pumps (including mini-splits) and solar systems like solar hot water and solar photovoltaics. We run internship and training programs for Massachusetts' cleantech workforce and fund tomorrow's innovative renewable energy technologies through grants and venture capital. [masscec.com](http://masscec.com)

## Minotair (Table 15)

Minotair's latest Compact Air Treatment Unit, the PentaCare V12®, is 4 machines in 1: Heat Recovery Ventilator + Heat Pump + Dehumidifier + High Efficiency HEPA Air Filtration device. It's also known as the most compact "All-in-one" HVAC solution for Passive Houses and Apartments (Passive House usable with PHIUS). Using our proprietary "3PLE HEAT Recovery System®", our PentaCare V12® broke efficiency records having the best verified heat recovery performances in America as tested on December 2017 by Exova Lab under CAN/CSA-C439-09 (the lab and standard used by HVI, pending HVI certification-Q2 2018). Built to be used in Single House, Multifamily and also for some Light Commercial Applications, the PentaCare V12® provides unrivaled levels of indoor comfort & health. [minotair.com](http://minotair.com)

## Mitsubishi Electric Heating & Cooling (Table 33)

### NESEA Business Member

For the past 30 years, Mitsubishi Electric Cooling and Heating has enhanced



# MEET THE EXHIBITORS

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, our product lines include CITY MULTI Variable Refrigerant Flow Zoning systems and Mr. Slim Split-ductless A/C and Heat Pumps. [mitsubishielectric-usa.com](http://mitsubishielectric-usa.com)

## New England Homes/Preferred Building Systems (Table 12)

We are innovators and leaders delivering high-performance modular homes. We produced the first modular Passive House in the United States. [preferredbuildings.com](http://preferredbuildings.com)

## New England Passive House Groups (Table 62)

PassivhausMAINE, Passive House Massachusetts, Connecticut Passive House, and Passive House Vermont are independent non-profit organizations working together to support the passive house industry and community in their states, the region and internationally.

## Passive House Institute US (PHIUS) (Table 29)

PHIUS is a 501(c)(3) organization committed to making high-performance passive building the market standard. PHIUS develops & promotes North American specific standards, practices, & certifications for buildings, professionals, & products to create structures that are durable, comfortable, healthy, & super energy efficient. Through its Passive House Alliance US program, a membership-based organization with 1,000+ members, 18 chapters & dozens of corporate sponsors, PHIUS is building a robust network of passive building communities across North America. [phi.us](http://phi.us)

## Pinnacle Window Solutions (Table 1)

### 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' experience in the architectural window and building industry. Our team can easily answer all of your questions and make suggestions that move your projects in the right direction. [pinnaclewindowsolutions.net](http://pinnaclewindowsolutions.net)

## PROSOCO (Table 27)

PROSOCO high-performance construction products are designed to maximize the durability and longevity of built structures. A leader in the industry since 1939, PROSOCO offers products to make building envelopes waterproof and airtight; harden and dustproof concrete floors; and clean and restore hard surfaces. Our goal is to help designers, builders, owners and others create structures that leave a positive impact on the environment. That's why many of our products are formulated to meet the industry's highest green building standards. [proso.com](http://proso.com)

## RES Solar (Table 18)

RES Solar is a full-service solar hot water design, installer and maintenance company located in Cohasset, MA. Since 2007 we have successfully installed over 400 solar hot water systems for domestic hot water, pools and radiant heat. RES Solar projects range from small single family homes to large commercial installations. All systems are custom designed to last over 30 years. Every system is guaranteed and monitored to maximize for optimum running efficiency. With Massachusetts incentives (rebates, energy credits and tax credits) a project cost can be reduced 75-85%. Now is a great time for reducing energy costs with solar hot water. [ressolar.com](http://ressolar.com)

## Retrotec (Table 60)

### NESEA Business Member

Retrotec is the world's leading manufacturer of door fans, duct testers, digital manometers and air leakage testing software. Our equipment is used around the world to conduct residential energy audits, large building air leakage measurements, duct leakage tests and clean agent integrity tests. [retrotec.com](http://retrotec.com)

## ROCKWOOL (Table 2)

### NESEA Business Member

At the ROCKWOOL Group, we are committed to enriching the lives of everyone who experiences our product solutions. Our expertise is perfectly suited to tackle many of today's biggest sustainability and development challenges, from energy consumption and noise pollution to fire resilience, water scarcity and flooding. Our product range reflects the diversity of the world's needs, while supporting our stakeholders in reducing their own carbon footprint. Stone wool is a versatile material and forms the basis of all our businesses. [rockwool.com](http://rockwool.com)

## Schöck North America (Table 4)

Schöck is the originator and world's largest producer of structural thermal breaks (STBs), with over 10 million installations in 38 countries since 1983. Their Isokorb® STBs are used to insulate balconies, canopies, steel beams, slab edges, parapets and rooftop connections of concrete and steel buildings, cutting heat loss by up to 90% and preventing the formation of condensation and mold. Uninsulated connections penetrating the building envelope create a thermal bridge. Isokorb® STBs prevent thermal bridging while supporting loads equivalent to conventional concrete and steel structures. [schock-na.com](http://schock-na.com)

## SIGA Cover (Table 59)

### NESEA Business Member

SIGA is a leading manufacturer with over 40 years of experience producing and supporting High Performance air, weather, and vapor tight tapes and membranes for the building envelope. [sigacover.com](http://sigacover.com)

## South County Post & Beam (Table 20)

Take our passion and add our design, engineering, carpentry and building skills—all under one roof—and we offer the most seamless and effortless building experience in the business. At South County Post & Beam, we build all of our frames in our onsite workshop and we can ship and erect them anywhere in the

country. For over thirty years we have created high quality, energy efficient, environmentally harmonious timber frame masterpieces. [scpb.com](http://scpb.com)

## **Stephen Turner (Table 9)**

### **NESEA Business Member**

Stephen Turner Inc. is a dedicated commissioning firm serving Massachusetts, Rhode Island & Connecticut. The firm is deeply experienced in all forms of commissioning as well as consulting for high performance systems, energy code compliance, and other sustainability initiatives. [buildingcommissioning.com](http://buildingcommissioning.com)

## **Sublime Windows (Table 54)**

### **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](http://sublimewindows.com)

## **SunBug Solar (Table 22)**

### **NESEA Business Member**

Founded in 2009 and a Certified B Corporation since 2018, SunBug has installed over a thousand solar systems across MA, from Great Barrington to Cape Cod. We design and build systems ranging in size from 1kW to over 1MW, including residential, commercial, carports, and ground-mounts. Our integrated approach—from initial education through consultative design to quality installation and ongoing support—has earned SunBug the highest reputation for customer service and a host of satisfied residential and commercial customers. [sunbugsolar.com](http://sunbugsolar.com)

## **Sustainable Comfort (Table 26)**

### **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. Our team has 20+ years combined experience in the energy efficiency and green building consulting industry. 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](http://greenrater.com)

## **Unity Homes (Table 50)**

### **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 & durable. [unityhomes.com](http://unityhomes.com)

## **USGBC Massachusetts (Table 63)**

The USGBC Massachusetts Chapter is a membership-based community advocating for green buildings at the state and local level. The USGBC MA Chapter provides green building education, networking, advocacy and leadership opportunities for the sustainable building practitioner community and beyond. Our events and programming are supported and enhanced by the volunteer efforts of our community members. [usgbcma.org](http://usgbcma.org)

## **Ventacity Systems (Table 11)**

### **NESEA Business Member**

Ventacity produces dedicated outdoor air systems (DOAS) with Very High Efficiency (VHE) HRVs and ERVs - the most efficient way to keep a building, and the people in it, healthy and comfortable. Ventacity Systems have also introduced the HVAC2 Smarter Building Platform(tm) which brings state-of-the-art IoT controls to the HVAC industry. [ventacity.com](http://ventacity.com)

## **VSECU (Table 61)**

### **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. Our special solar and energy improvement consumer loans feature discounted rates, extended terms and are available for NESEA members to invest in their energy-saving goals. [vsecu.com/vgreen](http://vsecu.com/vgreen)

## **WaterFurnace International (Table 44)**

WaterFurnace is the most recognized and respected name in geothermal. Our water-source heat pumps are American manufactured, and use the clean, renewable energy in your yard to save significantly on heating, cooling and hot water costs. It's good for the environment and great for your budget. State & Federal incentives available. [waterfurnace.com](http://waterfurnace.com)

## **Whole Forest (Table 23)**

### **NESEA Business Member**

Whole Forest is a sustainable forestry and wood products company that owns and manages forestland in Ecuador. We focus on fostering a symbiotic relationship between local communities, threatened rainforests, and green builders. Our distinctive hardwood flooring, panels, countertops, and tables are made using dozens of exotic species sustainably sourced from the rainforests we work to conserve. [wholeforest.com](http://wholeforest.com)

## **Yaro Windows + Doors (Table 45)**

We provide every client with comprehensive support from initial design concepts through finish installation. Our approach focuses on finding the best possible value by supplying custom designed solutions with supporting services of delivery and installation. [yaro-dsi.com](http://yaro-dsi.com)

## **Zehnder America (Table 6)**

### **NESEA Business Member**

Zehnder specializes in high-performance ventilation solutions to promote comfortable, healthy, and energy-efficient indoor living. As an important component of an energy-efficient home or multi-family building, Zehnder's heat recovery ventilation systems typically recover over 90% of the room temperature and ensure fresh filtered air for the inhabitants year-round. [zehnderamerica.com](http://zehnderamerica.com)

# BUILDINGENERGY NYC

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**Save the Date: October 4, 2018**

**Stop by Exhibitor Services at Table 38 to reserve your trade show table today.  
The request for session proposals will be open March 19 through April 16.**

**[nesea.org/benyc18](http://nesea.org/benyc18)**

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For general inquiries, please contact:  
Susan Farber, Conference Manager  
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# BUILDINGENERGY PRO TOURS

Program of the Northeast Sustainable Energy Association (NESEA)



## Attend a BuildingEnergy Pro Tour!

BuildingEnergy Pro Tours are accredited, half-day tours of high-performance buildings all over the Northeast. They are an opportunity for sustainable building professionals to see projects in person, share their knowledge, and learn from their colleagues. View and register for tours at: [nesea.org/pro-tours](http://nesea.org/pro-tours).

## Join us at the Launch Party during the Trade Show Reception!

NESEA will officially unveil the schedule for the 2018 Pro Tour Series at the first ever Pro Tour Launch Party! BuildingEnergy Boston attendees are invited to explore a case-study gallery of the 13 projects that will be featured in this year's series. Many of the project hosts will be present, giving you a chance to ask questions as you scope out the schedule. Join us for snacks, drinks, and live music as we show off the great lineup we have in store.

## Thanks to Our Series Sponsors

Presenting Sponsor:



## 2018 Pro Tours

March 30  
Wilder, VT

April 20  
Northampton, MA

May 4  
Far Rockaways, NY

May 18  
New Paltz, NY

June 1  
Harvard, MA

June 15  
Portland, ME

July 20  
Syracuse, NY

August 3  
Pawcatuck/Mystic, CT

August 17  
Rotterdam, NY

September 14  
Manhattan, NY

September 21  
Charlotte, VT

November 9  
Falmouth, ME

December 7  
East Boston, MA

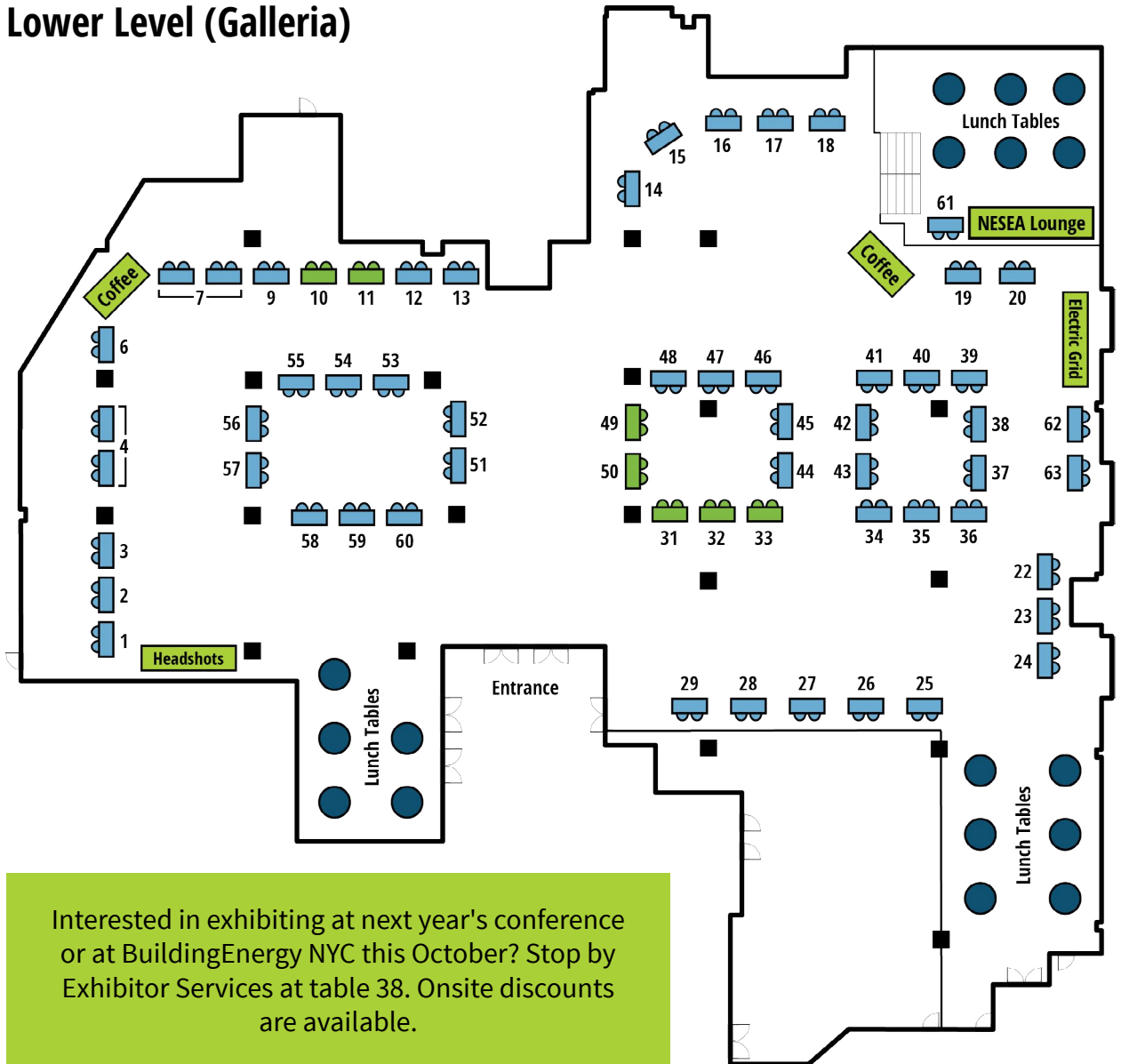
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This is a list of exhibitors as of February 28. For the most up-to-date list, please see the signs located at the entrance to the trade show floor.

## Lower Level (Galleria)



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

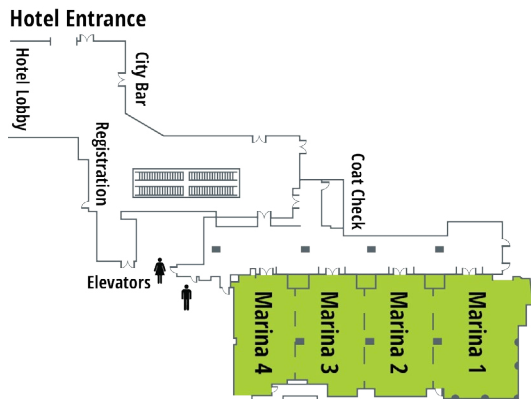


Petersen  
Engineering

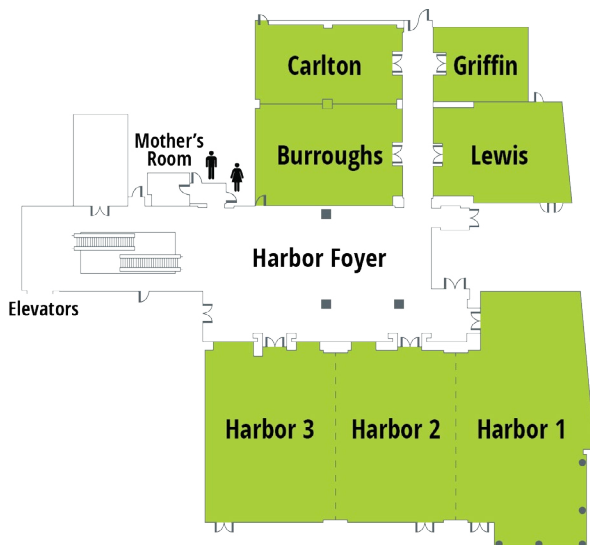
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# VENUE MAP + SPONSORS

## Lobby Level



## Upper Level



## Lower Level

See reverse page (page 35) for a detailed map of the lower level/trade show floor.

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