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# **BUILDINGENERGY 15**

CONFERENCE + TRADE SHOW FOR RENEWABLE ENERGY AND GREEN BUILDING PROFESSIONALS  
2015 HOST OF THE NET-ZERO NORTH AMERICAN LEADERSHIP SUMMIT

## **CONFERENCE PROGRAM**

MARCH 3-5, 2015  
SEAPORT WORLD TRADE CENTER  
BOSTON, MA

[NESEA.ORG/BUILDINGENERGY](http://NESEA.ORG/BUILDINGENERGY)

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BuildingEnergy15 workshops and sessions meet continuing education requirements for AIA (HSW & SD), AICP, BOMI International (RPA, FMA and/or SMA graduates), BPI, InterNACHI, NARI, NAHB and USGBC.

# COMMUNITY EVENTS

ATTEND THESE EVENTS with your Conference or Trade Show pass.

## Community Forum: A Toast to Bruce Coldham

*Tom Hartman (c&h architects)*  
Tuesday March 3 | 5:00PM-6:30PM  
HARBORVIEW LOBBY

Networking reception followed by a group toast to Bruce Coldham, NESEA icon, lifetime NESEA member and active participant in the organization for most of its past 40 years. Bruce will retire in 2015. Together we will raise our glasses to his years of good work and to the continued excellence of the firm in the realm of sustainable design and high performance building. Light appetizers and cash bar. Sponsored by c&h architects.

## Drink & Crit

*Phil Kaplan (Kaplan Thompson Architects);  
Jesse Thompson (Kaplan Thompson Architects)*  
Tuesday March 3 | 6:30PM-8:00PM  
HARBORVIEW

Do we really have to choose between design and high performance? Grab a drink and witness the Crit, a rigorous peer review of projects displayed by several courageous NESEA members. After some possibly brilliant theoretical discussion, the jury decides. Will it be laurels—or slings and arrows? It's all in good fun as your favorite NESEA architects and designers bravely step up and pin up.

## Office Hours with the Experts

Wednesday March 4 and Thursday March 5  
TRADE SHOW FLOOR

Visit booths 408 and 963 for good advice and conversation.

## Opening Plenary: Rethinking the Grid

Wednesday March 4 | 8:45AM-10:30AM  
PLENARY SPACE OFF TRADE SHOW FLOOR  
See description on p. 11

## Zero Net Energy Building Award

Wednesday March 4 | 10:00AM-10:30AM  
PLENARY SPACE/TRADE SHOW FLOOR

Following the Keynote, there will be a presentation of \$10,000 to the winner of NESEA's Zero Net Energy Building Award.

## High-Performance, Green Homes in Residential Real Estate (RE86R14)

*Craig Foley (RE/MAX)*  
Wednesday March 4 | 10:30AM-12:30PM  
WATERFRONT 1

## SEBANE Meeting

Wednesday March 4 | 12:30PM-2:00PM  
CITYVIEW 1

Solar Energy Business Association of New England gathering

## Zero Net Energy Building Award Winners' Panel

Wednesday March 4 | 12:45PM-1:45PM  
WATERFRONT 1

## Career Forum

Wednesday March 4 | 2:00PM-3:30PM  
WATERFRONT 2

Learn how to find a job in the sustainable building sector.

## Trade Show Reception

Wednesday March 4 | 5:30PM-6:30PM  
TRADE SHOW FLOOR

An open networking event with a cash bar on the trade show floor. Sponsored by Cape Light Compact.

## NESEA Night

Wednesday March 4 | 6:30PM-9:00PM  
ROSA MEXICANO, 155 SEAPORT BLVD, BOSTON  
Presentation of NESEA Distinguished Service and Professional Leadership Awards. Limited to 250 people. Tickets are \$59 and can be purchased at registration.

## Residential Energy Code—Envelope and Building Science

*Mike Schofield and Margo Valdes (Conservation Services Group)*  
Thursday March 5 | 9:00AM-12:00PM |  
WATERFRONT 2

## Best Practices for the Whole Home Heat Pump Solution

*Mitsubishi Electric*  
Thursday March 5 | 10:30AM & 1:30PM |  
WATERFRONT 1

## The Future of Homebuilding Can't Wait: Making Sustainable, Low Energy Dwellings the Norm

*Tedd Benson (Bensonwood / Unity Homes)*  
Thursday March 5 | 12:30PM-1:45PM  
BEACON HILL

As the vicious cycle of climate change accelerates, we must achieve a home quality paradigm shift now. That will mean thinking differently, acting differently, and doing differently.

## Commercial Energy Code—Envelope and Building Science

*Wagdy Anis (Anis Building Enclosure Consulting)*  
Thursday March 5 | 1:30PM-5:00PM  
WATERFRONT 2

qualifies for 3.5 AIA & BPI credits

## Closing Forum: 100 Years of Experience

Thursday March 5 | 4:00PM-5:30PM  
AMPHITHEATER

See description on p. 18

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## Full Day Workshops

9:00AM-5:00PM

### Energy Auditing 201 of Buildings Except Low-Rise Residential Buildings

**EVERSOURCE**

Scott Greenbaum (Greene Energy Consultants, LLC)  
**HARBORVIEW 1**

How to perform a cost- and time- efficient energy audit. Find out the major elements of an energy audit including: benchmarking, useful survey equipment and tools, data logging, simple calculation methodologies, project cost estimating, and common mistakes. Discuss the most common findings (Energy Conservation Measures). Separate myth from real answers. ●●●●●

### Introduction to Building Science and Diagnostics

David Keefe (VEIC)  
**HARBORVIEW 3**

This overview of residential energy efficiency is appropriate for future auditors, would-be retrofitters, and anyone else who lives in a house. It covers the basics of heat, air, and moisture flow, insulation and air sealing materials, compares heating fuels, heating systems, and hot water systems, and outlines common building performance problems and their solutions. There is a description of blower door testing and related diagnostics. Condensation, indoor air quality, and combustion safety are briefly covered. ●●●●●

### DIY Brand Camp: Branding for the Rest of Us

Mitch Anthony (Clarity)  
**SKYLINE**

Can you tell a stranger why your favorite customers choose your company over another? Clear positioning, strategic messaging and effective communications are uniquely powerful tools. But typically they are used only by those who can afford to hire a branding firm. This workshop is for you if you are an individual or a team that wants to use the tools and processes that a big budget can buy, but you want to learn to do it yourself, in-house. ●

### Electricity 101—Understanding electricity markets and regulations in the Northeast

Jerry Elmer (Conservation Law Foundation);  
Nathan Phelps (Vote Solar)  
**HARBORVIEW 2**

This workshop will explain the roles of legislatures, utility commissions, state energy offices and the Federal Energy Regulatory Commission in setting energy policy. It will explain day-ahead and real-time wholesale energy markets, capacity markets, REC markets, and the role of Independent System Operators and the New England Power Pool. We will review how retail “standard offer” energy pricing is set and how transmission, distribution, transition, demand charges and other aspects of retail pricing are established. Energy professionals who don’t yet know this stuff should. ●●

### Getting to 2030: Frameworks & Roadmaps to help you achieve portfolio-wide performance improvements

Barbra Batshalom (Sustainable Performance Institute)  
**CONGRESS BOARDROOM**

Being a truly green firm is about more than just being “able” to deliver LEED projects. It’s about aligning overall company vision, management, operations and project delivery with the demands of integrative design and collaborative relationship. If your firm has

#### Areas of Focus

- Beyond energy
- Building envelope
- Cities and communities
- Commercial and institutional
- Construction process
- Design process
- Multifamily
- Money and business
- Mechanical systems and lighting
- Renewables and the grid
- Single family

been struggling with the 2030 Commitment or hit a plateau, this session gives you the frameworks and roadmaps to overcome the barriers to your success. This workshop builds your capacity to implement these strategies in the most cost-effective way, provides tools to enable you to implement strategic initiatives in your firm, and helps you go from “random acts of sustainability” to a truly integrated approach. ●●●●●



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**efi**

2/15

# Morning Workshops

10:00AM-1:00PM

## Marc's Zero Net Energy Deep Energy Retrofit

Marc Rosenbaum (South Mountain Company)  
CITYVIEW 2

The presenter gut-renovated a small house aiming for zero net energy. We'll discuss construction assemblies, materials, windows and doors, mechanicals, and reaching Passive House air tightness. Performance data of the solar electric system, heat pump, heat recovery ventilator, and heat pump water heater will be presented and compared to the energy model. Lessons learned, opinions, and less-than-obvious observations will be shared. Both mistakes and successes will be presented, with plenty of time for discussion. ●●●●●

## Beyond Technical Measures: Big Impact Program Design

Susan Mazur-Stommen (Indicia Consulting)  
WATERFRONT 3

Dr. Susan Mazur-Stommen will lead you through a wide range of behavior-based programs and discuss how to maximize effectiveness by "stacking" strategies, drawing on research as lead author of ACEEE's Field Guide to Utility-Run Behavior Programs. We'll look at program types, discuss, "drivers" (including feedback, incentives and social norms), and review challenges in assessment. This workshop will also provide guidance in using logic models in designing programs—aligning measures, outcomes, and assessment to boost efficacy. ●

## Net Positive Energy: Power and the Living Building Challenge

Kathleen Smith (International Living Future Institute)  
CITYVIEW 1

The Living Building Challenge Energy Petal is intended to signal a new age of design, wherein the built environment relies solely on renewable forms of energy and operates year round in a pollution-free manner. Participants will gain an understanding of how to create Net-Zero Energy buildings. This interactive session will present issues, strategies and detailed case studies—identi-

fying the design and operational challenges these projects had to overcome to meet their goals. ●●●●●

## Pushing the Envelope and Air Barrier for Commercial and Institutional Cold Climate Buildings and Lessons Learned

Bill Maclay (Maclay Architects); Andy Shapiro (Energy Balance)  
AMPHITHEATER

This workshop will investigate the design process for analyzing and constructing a building envelope to meet aggressive air-sealing goals for new and renovated commercial and institutional projects in cold climates. Details from four case study buildings will be shared with a central focus on decisions, changes, best practice guidelines, thermal analysis, lessons learned and specific challenges encountered during the construction process. The final details evolve from focused scrutiny and close collaboration between the design and construction team. ●●●●●

## Managing Moisture to Achieve Long-Life and Low-Maintenance

Peter Yost (BuildingGreen, Inc.); Matthew Bronski (Simpson Gumpertz & Heger)  
WATERFRONT 2

Drawing upon decades of hands on experience, two building scientists will present the nitty-gritty of good design that embraces and understands moisture. From the tried and true water shedding techniques of century old buildings to the shocking truth about pressure-sensitive tapes and liquid sealants, participants will learn how to handle moisture with low-tech physics and high-tech materials and tools. ●●●●●

## Drivers of Building Efficiency: Learning From the Data

Barun Singh (WegoWise); Ed Connelly (New Ecology, Inc.)  
BACK BAY 2

Over years of collecting and analyzing building performance data, these experts have gained key insights into drivers of building energy and water usage. How big a problem are split incentives? What engages

owners and tenants in efficiency? Are there disparities between modeled and actual usage? How well do scoring systems reflect performance? How much can retrofits really save? The presenters will address these questions and more, and invite you to pose your own questions. ●●●●●

## The Arrival of LEED v4: Everything you Need to Know to Succeed



Jim Newman (Linnean Solutions); Andrea Love (Payette); Christopher Schaffner (The Green Engineer)  
BEACON HILL

LEED v4 is here—you can register your projects in the latest innovative rating system brought to you by the USGBC. How do you define all those new acronyms? How much will performance matter? How much will LCA and health issues matter? How can you and your team navigate the credits to find the optimal path through to a successful LEED v4 project? Come hear from seasoned LEED veterans as they present an all-new deck and an all-new script to get you up to speed and ahead of the competition. Sponsored by the USGBC Massachusetts Branch. ●

## Energy Efficiency and Green Building Technologies—Made in Germany



Kurt Roth (Fraunhofer); Ken Levenson (475 Building Supply); Todd Bachelder (Menck Windows); Alan Wall (Menck Windows); Kevin Flynn (Viessmann)  
WATERFRONT 1

Germany is known around the world for the high quality of its technical and industrial systems and products. Meet a select group of German companies and organizations from the field of energy efficiency and green building technologies who will present their latest innovative products and reference projects which incorporate energy efficiency solutions. ●

## Afternoon Workshops

**2:00PM-5:00PM**

### PV and Heat Pumps: An Affordable Net Zero Heating Solution

*Fortunat Mueller (ReVision Energy)*

**WATERFRONT 2**

As solar prices plummet and heat pump performance continues to improve, the combination of grid tied solar electric systems and cold climate heat pumps presents a remarkable opportunity on the mechanical side of net-zero building performance. Participants will learn how heat pump technology works, to perform a basic load analysis, to estimate annual electric consumption using heat pump performance specs, and how to estimate a solar system size in order to achieve zero-carbon heat. Actual results will also be compared to design phase modeling projections. ●●

### Climate Specific Passive Building Design, Standards, and Modeling

*Katrin Klingenberg (PHIUS)*

**WATERFRONT 3**

This workshop will review the new climate specific passive building standards developed by Building Science Corporation and PHIUS through a DOE grant as a possible new baseline for the Zero Energy Ready Home program. Out of all the measures that can take a building to zero energy performance, passive building measures were identified as having the best economical potential. Through case studies we will identify the sweet spot between supply (renewables) and demand (conservation) based on climate and economic conditions. ●

### Sustainable Design for Developing Countries

*Peter Temple (Keene State College); Amelia Thrall (Architecture for Humanity)*

**WATERFRONT 1**

This active-learning workshop will explore the challenges of sustainable design in developing countries. Following a brief presentation and discussion of recent projects, participants will be divided into small groups for a charrette focusing on two current projects where resilient design and energy independence are critical. We

will conclude with group presentations and an open discussion. Those who attend this workshop will learn about current projects in Asia, Africa, and the Caribbean, organizations involved in this type of work, and the fundamentals of designing for rural areas in the developing world. We will discuss renewable energy strategies, use of local materials and construction techniques, and climate appropriate design. ●●●

### Affordable Passive House Commercial Buildings—Secrets Revealed

*Adam Cohen (Passiv Science)*

**CITYVIEW 2**

Designing high performance commercial buildings will cost 10%-25% more to build than conventional buildings—right? Not so! This workshop will explain the basics of Passive House design principles specific to Commercial Buildings. It will then go into the details of how buildings like medical clinics and college dormitories can be built at market rate while achieving Passive House standards. Integrated Project Management will be discussed as will details, equipment, controls, and savings. ●●●

### Tangible Change: Materials and the Living Building Challenge

*Gregory Norris (International Living*

*Future Institute)*

**CITYVIEW 1**

The Living Building Challenge Materials Petal is intended to induce a successful materials economy that is non-toxic, transparent, and socially equitable. Participants will gain an understanding of how to meet the material-related imperatives, including: Red List, Embodied Carbon Footprint, Responsible Industry, Living Economy Sourcing, Net-Positive Waste, and the Declare Program. Successful examples of leading edge projects from around the globe will be highlighted—identifying innovative products and stories of how projects have been successful in changing the materials marketplace. ●●

### Greenest Schools: LEED v4 For Schools



*Jim Newman (Linnean Solutions); Martine Dion (SMMA); Steven Burke (SMMA)*

**BEACON HILL**

LEED v4 For Schools is the mandated rating system for new school projects in Massachusetts, according to the MSBA. Is your firm up-to-date on the new LEED? This course will enable your teammates to have confidence in approaching school projects in Massachusetts. You will learn the essential differences related to prerequisites and the new credits that are changing the game for green buildings. Come learn with experienced implementers of LEED projects in academic settings. This is a must-attend program for all practitioners in the academic realm. Sponsored by the USGBC Massachusetts Branch. ●



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# Conference Sessions

**8:45AM-10:30AM**

## OPENING FORUM

### Rethinking the Grid—How Our Changing Electrical System Will Impact the Ways We Produce, Distribute, and Use Energy

*Karl Rábago (Pace Law School Center for Energy and the Environment); Ron Binz (Public Policy Consulting); Nathan Adams (Green Mountain Power)*

#### PLENARY SPACE

Most of us take the electrical grid for granted. However, it is perhaps the most complex technological achievement in human history. After more than a century of relative stability, the grid is changing fast. The conference plenary will explore the technology and policy solutions evolving to enable a more reliable, resilient, environmentally responsible and affordable electricity grid. Some of the nation's most interesting and influential energy thought leaders will present their ideas on how the electrical distribution system and energy markets should be organized in the future and how those changes will impact the ways we all use energy. ●●●●



**11:00AM-12:30PM**

### Super Insulated Walls and Moisture: Does Bad Stuff Happen?

*Kohta Ueno (Building Science Corporation); Chris Corson (Ecocor)*

#### HARBORVIEW 2

Super-insulated walls are used in high performance housing, but in cold climates these walls run the risks of durability issues. Two practitioners have been monitoring the moisture performance of several high performance walls. Chris Corson has been examining highly vapor-open walls, without the use of plastic foams. Kohta Ueno has been monitoring double stud walls insulated with cellulose and open-cell spray foam. The two will talk about their data, and the risks of various assemblies. ●●●●●

### Putting Attention Where it is Needed Most—Building Resiliency in Multi-Family Affordable Housing

*Alex Wilson (Resilient Design Institute); Jim Newman (Linnean Solutions)*

#### HARBORVIEW 3

Multifamily affordable housing was hard-hit by Superstorm Sandy in 2012. Affordable housing organizations learned from that experience and are working to improve the resiliency—and sustainability—of their facilities. This session presents practical building-based strategies for improving resiliency (boosting envelope energy performance, reducing cooling loads, incorporating islandable solar energy systems, etc.); while also examining the social and cultural aspects of resiliency, and the importance of fostering a resilient community. ●●●●●

### Design/Build and Integrated Project Management 101—Are You Ready?

*Adam Cohen (Passiv Science)*

#### HARBORVIEW 1

For many teams, it is an almost impossible challenge to simultaneously deliver high-performance and cost-efficient buildings while maintaining high customer satisfaction and profitability. Integrated design/build delivery providing single responsibility, from schematic design to construction through commissioning and monitoring, has proved

to be a viable model for successful delivery of cost-efficient high-performance buildings. This session will examine aspects of planning, marketing, estimating, system development, project management, human resources, accounting, and legal concerns. ●●●●●

### A Place in the Sun: Why We (Still) Need Solar Optimized Design

*Rachel Wagner (Wagner Zaun Architecture)*

#### WATERFRONT 3

As low-energy, super-insulated enclosures become more prevalent, some industry leaders question the continued relevance of passive solar design. Should we use the sun to help meet our heating needs, or have newer design tools, construction techniques and materials rendered passive solar strategies obsolete? This session's speaker believes that solar optimized design remains important and will show how an integrated approach to solar design can and should support optimal performance and occupant comfort. ●●●●

### Recent Research in Behavior: Boosting Energy Performance in Buildings

*Susan Mazur-Stommen (Indicia Consulting)*

#### CITYVIEW 2

Why does occupant behavior matter? A building can meet the highest efficiency specifications, but once it's occupied, what happens to affect the baseline? Deep retrofits and ZNEB projects can be undermined if occupant behavior is not addressed. Occupant engagement should ideally address several stakeholder groups, including landlords, facilities management, lessons, and tenants/employees. This presentation will serve as an introduction across several sectors (commercial, multi-family residential and single-family residential) and will discuss energy-related and non-energy benefits. ●●

### Getting to Zero: High Performance Mechanical Systems and Other Strategies for Commercial Buildings in Cold Climates

*Kathleen Smith (International Living Future Institute); John Swift, Jr. (Burro Happold); Robert Diemer (In Posse); Charley Stevenson (Integrated Eco Strategy)*

#### CITYVIEW 1

Significantly reducing energy use in commercial buildings is a challenge. This panel will describe key strategies for greatly reducing

energy consumption in commercial buildings in cold climates with a focus on smart choices for building design, high performance mechanical systems and the tenant's role. Specific strategies and systems will be discussed with pros, cons, and application advice. Several Net Zero Energy commercial buildings in cold climates will be highlighted to show the theory in practice. ●●●

## Rethinking The Grid Q&A

*Karl Rábago (Pace Law School Center for Energy and the Environment); Ron Binz (Public Policy Consulting); Nathan Aams (Green Mountain Power)*  
**BEACON HILL COMPLEX**

Intrigued by the plenary speakers and their visions for the future? The plenary speakers will dig deeper into the conversation in this session and focus on answering your questions about our emerging energy future. ●●●

## Building Community Resilience in Cities

*Robert Leaver (New Commons)*  
**SKYLINE**

In the face of extreme weather conditions, the practice of building energy must undergo two transformations: (1) What we do differently to alter the built environment; (2) how we better connect people in neighborhoods. We have learned in the past 2 years that community resilience is as important as resilience of the built environment. In the face of disaster, it's community that directs those in need to refuge with resources and organizes learning and recovery. ●●

## Net-Zero Summit Value, Cost & Financing Trends

*Caitriona Cooke (CSG); Jason Stringer (WECC); Rick Gilles (Barnraisers); Shaun O'Neill (City of Concord); David Carolan (Solid Green Systems); Dave Ramsile (Integral Group); Fran Boucher (National Grid)*  
**FEDERAL COMPLEX**

Do ZNE buildings deliver more value, improved performance, a better occupant experience? And if so, is there a cost premium for those benefits? Are there special financing vehicles for ZNE and other advanced projects? Our speakers will provide insights into the latest research findings, as well as their professional observations about the significance of emerging cost, valuation, and financing trends related to ZNE buildings.

## Net-Zero Summit Educating the Industry

*Barbra Batshalom (Sustainable Performance Institute); John Morton (SoCal Edison); Marc Rosenbaum (South Mountain Company); Nadav Malin (BuildingGreen Inc); Shawna Henderson (Blue House Energy); Katrin Klingenberg (PHIUS); Ann Edminster (Design AVenues)*  
**CAMBRIDGE COMPLEX**

Speakers will address program design, workforce sectors, topical focus areas, outreach strategies, funding sources, and other relevant issues, including a sneak peek at a forthcoming Integrated Design & Delivery Guide from the Commission for Environmental Cooperation (CEC.org). We will also discuss how far we can get to ZNE via advances in education, vs. by advances in technology.

## Net-Zero Summit Residential Project Highlights

*Karla Donnelly (Steven Winter Associates); Sean Armstrong (Redwood Energy); Chris Laumer-Giddens (L-G Squared Inc); Barry Stephens (Zehnder America); Peter Amerongen (Habitat Studio); Chris Williams (Avalon Master Builder); Carter Scott (Transformations Inc); Sy Safi (GCCM Construction Services)*  
**AUDITORIUM**

Showcasing a range of ZNE residential projects, including new single-family homes, existing homes retrofitted to achieve ZNE, and multifamily buildings, presenters will discuss the roles and relative importance of team, process, design, and technology as well as energy use data in achieving their results..

## Net-Zero Summit How We Build

*Bruce King (Ecological Building Network); Peter Yost (BuildingGreen Inc); Frank Baker (Plasti-Fab Ltd); Bill Reed (Regenesis Group); Greg Norris (International Living Future Institute)*  
**BACK BAY COMPLEX**

Leaders in the realm of low-carbon materials are drawing attention to the increasing significance of the front-end carbon loading associated with the materials with which we build our supposedly ZNE buildings. Given the urgency of addressing climate change in the next two decades, this front-end carbon investment must be addressed. Our speakers will describe the emerging thinking about this important topic, along with the tools available to assist building professionals in making carbon-savvy material decisions.

## 2:00PM-3:30PM

## Is It All Hot Air: Ventilating Homes, Why? How Much? How?

*Robb Aldrich (Steven Winter Associates); Paul Francisco (University of Illinois)*  
**HARBORVIEW 2**

Why do we need to ventilate homes? How much air do we need to do it? Once we've figured that out, what systems should we install? These are big questions, but this session will provide useful answers. We'll begin with a discussion of health impacts of ventilation and different ventilation rates, then we will explore various ventilation systems: pros and cons, costs and benefits, and tips for installing the best systems for your project. ●●●

## Enlightened Structures: Reducing Material-Based Carbon Emissions

*Jim D'Aloisio (Klepper, Hahn & Hyatt); Mark Webster (Simpson, Gumpertz & Heger); Russ Miller-Johnson (Engineering Ventures, PC); Kara Peterman (Johns Hopkins)*  
**HARBORVIEW 3**

Do carbon emissions of building structures matter? The "bloomage" from construction of concrete, masonry, and steel structures equates to years of operational emissions. Let's quantify this—and let's consider structural design choices that can minimize CO<sub>2</sub>e emissions. Also, the "leakage" of energy through structural thermal bridges can be significant, and can be reduced by proper detailing. Finally, if structures are designed for deconstruction and repurposed, the carbon expended serves double duty. Let's explore! ●●●●●

## Resiliency: The Cynical Optimist's Path to a Better World

*Jodi Smits Anderson (DASNY)*  
**SKYLINE**

Resiliency has come down to inches and feet, frequency of storm events, and number of degrees of temperature—it's truly a data driven discussion. But numbers are limiting. How about we design, build and live for true resiliency by making decisions with which we create no new problems, and even solve several issues at once? Come learn ways to reconnect to nature's systems, and to re-engage our common sense. ●●

## Islands of Power—Microgrids Enabling Technology for Energy Resiliency

Henry Misas (*Bright Power*); Amy McGuire (*Massachusetts Department of Energy Resources*); Kristie Deluliis (*DNV GL*)

### BEACON HILL COMPLEX

The concept of microgrids generates a lot of hype, but there are few guidelines for best practices in planning and implementation. Microgrids must function in island mode and often integrate intermittent generation from renewables. This session will dive into the nitty-gritty details of what it's like to plan, design, and build microgrids. Speakers will discuss microgrids for multi-family buildings in New York City and for municipalities in Massachusetts under the state's Community Clean Energy Resiliency Initiative. ●●

## Balancing Historic Preservation and Energy Performance

Benjamin Haavik (*Historic New England*); Colleen Chapin (*Historic New England*)

### CITYVIEW 1

Historic New England's approach to weatherization emphasizes preservation over intervention. But as shown by an energy retrofit that achieved an over 60% reduction in energy usage at the Lyman House, a National Historic Landmark, energy performance and preservation can co-exist. This session will discuss HNE's preservation philosophy and how it guides the organization's energy conservation projects. We will share an energy usage analysis of all 36 HNE properties and discuss how that information is used to prioritize actions. ●●●●●●●●

## It Takes A City: Lessons from Somerville's Residential Energy Efficiency Program

Russell Koty (*City of Somerville*); Brian Bowen (*Ecovent Systems*); William Stack (*Eversource*); Harrison Grubbs (*CSG*); Craig Foley (*RE/MAX*)

### HARBORVIEW 1

In 2011, Somerville launched a city-wide residential energy efficiency program aimed at a difficult-to-reach demographic: middle income rental properties. Efforts to reduce residential energy consumption with its dense population required numerous alliances: utility leaders, a banking institution, and consultants worked closely together. Over 60% of Somerville households are occupied by tenants. This presentation will

examine municipality, utility and resident relationships and other collaborations necessary to make such a program succeed. ●●

## Beyond Utility Bills: Energy Data Collection

Toby Ast (*Preservation of Affordable Housing*); John Snell (*Peregrine Energy Group*); Julie Klump (*Preservation of Affordable Housing*)

### CITYVIEW 2

The use of utility bills to benchmark building performance is a critical first step in any approach to energy conservation. However, utility bills can only tell you so much about how to improve building performance. Five multifamily buildings received circuit level electricity, temperature, and CO<sub>2</sub> monitoring equipment. The data identified inefficient mechanical designs, incorrect installations, poor maintenance, and individual apartments with high energy use. We will review what we measured and what we learned, including energy savings as a result of this monitoring strategy. ●●●●●

## Solar Air Heating 2.0

Mick Dunn (*Shift Energy LLC*)

### WATERFRONT 3

You think trombe walls are a relic of the 70s, right? Using extensive data from multiple case studies throughout Maine, New Hampshire & Massachusetts, this session will review the potential of modern commercial and industrial solar air heating in the Northeast. We will examine cost and performance viability with live and historical energy, temperature and air flow data, as well as explore the impacts of design variations such as collector types, air flow rates, system sizes and HVAC design. ●●●●●●●●

## Net-Zero Summit Better Than Zero

Fiona Cousins (*Arup*); Marianna Grossman (*Sustainable Silicon Valley*); John Dalzell (*Boston Redevelopment Authority*); Jill Kaehler (*Behnisch Architekten*); Kathleen Smith (*International Living Future Institute*); Alexis Karolides (*Point Energy Innovations*); Gil Friend (*City of Palo Alto*); Coliesha Turner (*Artists for Humanity*)

### CAMBRIDGE COMPLEX

Net-zero is so yesterday! Futurists are moving ahead to visions of net-positive buildings and communities. How far can we go? Where should we be focusing our efforts—on individual buildings, neighborhoods, or whole

communities? Our speakers will offer several perspectives, ranging from hard quantitative analysis to aspirational program building.

## Net-Zero Summit Non-Residential Project Highlights

Paul Torcellini (*NREL*); Chip Fox (*San Diego Gas & Electric Company*); Dan Arons (*Architerra*); John Weale (*Integral Group*); Dave Ramslie (*Integral Group*); Dave Hewitt (*Dave Hewitt Consulting*)

### AMPHITHEATER

This session will showcase a range of ZNE non-residential projects—office buildings, institutional buildings, retail, and others. The presenters will discuss the roles and relative importance of team, process, design, and technology in achieving their results. They will also present energy use data.

## Net-Zero Summit Products & Design Innovations

Danny Parker (*Florida Solar Energy Center*); Kohta Ueno (*Building Science Corp*); Paul Savage (*Nextek*); Gary John (*Panasonic*); Chris Williams (*Avalon Master Builder*)

### BACK BAY COMPLEX

This session will feature a cross-section of promising ZNE-supportive products and technologies that have been included in recent ZNE projects, both residential and non-residential. The dialogue will be focused on the role of technologies in advancing the state of the art of ZNE building design. How essential are the technologies? How far can we go with off-the-shelf technologies? How much farther will emerging technologies enable us to go?

## Net-Zero Summit Utility Perspectives

Kurt Hurlley (*Clean Coalition's Community Microgrid Initiative*); Steve Kihm (*Energy Center of Wisconsin*); Peter Turnbull (*PG&E*); Carlos Nouel (*National Grid*)

### FEDERAL COMPLEX

The world of the grid is rapidly changing—with evolution of the grid as we know it, new roles and concerns for utilities, the emergence of microgrids, and new approaches to providing power to communities. We will hear a variety of perspectives on this increasingly complex realm, and begin to envision a more diverse and complex future for grid-connected projects.



4:00PM-5:30PM

## Footprinting Our Projects & Operations

Paul Eldrenkamp (Byggmeister, Inc); John Abrams (South Mountain Company); Marc Rosenbaum (South Mountain Company); Trevor Romich (Byggmeister, Inc); Jim Newman (Linnean Solutions)

### CITYVIEW 2

High-performance building standards and goals typically focus on operating energy. But how much energy does it take to build (or retrofit) that high performance building, or operate your company in the first place? We'll try to answer this question by examining the South Mountain Company carbon footprint project and a Byggmeister analysis of the embodied energy of several retrofits. Finally, we'll discuss what we can do to reduce our footprints, in both areas. ●●●●●

## The Building Science of Multifamily Passive House

Katrin Klingenberg (PHIUS)

### HARBORVIEW 3

This session will explore the building science implications of achieving the Passive House metrics for larger buildings and will highlight the difference in design strategies compared to single family Passive House homes. Multifamily professionals of all types, but especially affordable housing developers, appreciate the benefits of achieving Passive House, such as increased durability, low operating and maintenance costs, assured comfort, and superior indoor air quality. ●●●●●

## Making the Financial Case for Net-Zero Buildings

Bill Maclay (Maclay Architects); Andy Shapiro (Energy Balance); Laura Bailey (Maclay Architects); Craig Simmons (Efficiency Vermont)

### CITYVIEW 1

This presentation illustrates the financial prudence of net zero buildings today. From the outset of design through construction and operation, Maclay Architects and Energy Balance utilize comparative energy modeling and cost estimating to determine financial benefits of net zero buildings compared to code compliant or intermediate building solutions. Commercial and institutional case studies illustrate the detailed and interwoven financial/energy analysis

process, metrics, and templates used to guide net zero projects from initiation to completion. ●●●●●

## Sustainable Solar Policy

Karl Rábago (Pace Law School Center for Energy and the Environment); Nathan Phelps (Vote Solar); Janet Besser (New England Clean Energy Council)

### WATERFRONT 3

With net metering and clean energy policy being challenged across the country, the solar community needs to develop more sustainable solutions that reflect the real cost and benefit impacts that distributed energy resources have on the grid and society. This session will address efforts to create a better economic model for distributed generation throughout the Northeast. Among the issues discussed will be efforts to create value based rate structures to encourage solar, storage, security, smarts, and savings on the electrical grid. ●●●

## Building Science Puzzles

Peter Yost (BuildingGreen, Inc)

### HARBORVIEW 2

At BuildingGreen, I spend about one-fifth of my time doing building investigations, mostly residential. In this session, I will present the building assessment information for a series of investigations (one or two commercial/institutional buildings), we will work to identify the problem(s) and possible solution(s), and then I will present the actual solution (right, wrong, in between). Come ready to quip, throw jabs and darts, but, please, no suits (law or three-piece, although there is overlap, of course). ●●●●●

## Urban Food Production, Distribution and Energy Recovery

George Mokray (Solar IS Civil Defense); Rebecca Rahmlow (Shepley Bulfinch); Viraj Puri (Gotham Greens)

### BEACON HILL COMPLEX

As architects, engineers, and municipal planners, how can we rethink the built environment to install urban food production and distribution in the city? Urban permaculture will frame the session, discussing practices such as: green roofs, pink houses, vertical growing walls, a farm-in-a-box, and vertical farms. We will mix short presentations with facilitated conversation about how we, as

urban practitioners, can shape the next iteration of the built environment to include food. ●●●●●

## Creating a Culture of Energy Responsibility: How to Move Americans to Make the Right Moves

Suzanne Shelton (Shelton Group)

### SKYLINE

Shelton Group's research shows Americans' propensity to act on nearly every energy generation and efficiency option is in a three-year decline. This session will address what we need to do to overcome the apathy and move Americans forward. ●●●

## How to Heat Water in All-Electric Homes and Apartments

Robb Aldrich (Steven Winter Associates)

### HARBORVIEW 1

With the drop in envelope loads and the rise in efficient heat pumps (even in cold climates), quite a few homes are moving away from fossil fuels towards electric HVAC. One recurring question is: what to do about water heating? This session covers various options—simple electric tanks, tankless electric heaters, solar thermal, heat pump water heaters, etc.—and presents real cost and energy data from several research and evaluation projects. ●●●●●

## Net-Zero Summit District & Community-Scale Project Highlights

Suzanne Russo (Pecan Street); Gary John (Panasonic); Travis Sheehan (Boston Redevelopment Authority); Carter Scott (Transformations Inc); Susanne Rasmussen (City of Cambridge); Kathleen Smith (International Living Future Institute); Candice Luck (buildABILITY)

### AMPHITHEATER

This session will showcase a range of ZNE district- and community-scale projects, including residential and mixed uses. The presenters will discuss the roles and relative importance of team, process, design, and technology in achieving their results. They will also present energy use data. An additional focus of this session will be the ways in which project scale influenced the project's development and its performance.

## Net-Zero Summit Market Intel: Perceptions & Adoption

Lloyd Alter (*TreeHugger*); Marian Goebes (*TRC Solutions*); Derek Jones (*CES Measurement & Evaluation*); Susan Mazur-Stommen (*Indicia Consulting*); Dave Hewitt (*Dave Hewitt Consulting*); Richard Willingham (*motumb2b*)

### BACK BAY COMPLEX

This session will pose the question, "What do we know about the market for ZNE projects?" Who is making the decision to pursue ZNE, what are the drivers or motivators behind that choice, and how do we influence more stakeholders (and which ones) to make that choice?

## Net-Zero Summit Policy & Programs

Eric Friedman (*MDOER*); Iram Farooq (*City of Cambridge*); Jennifer Amman (*ACEEE*); Peter Amerongen (*Habitat Studio*); Cathy Fogel (*CA Public Utilities Commission*)

### CAMBRIDGE COMPLEX

The ZNE & energy efficiency community has a wealth of knowledge and tools that foster the design and construction of highly energy-efficient buildings. How can government policies leverage this "toolkit" to encourage building highly efficient and ZNE buildings? How can we engage the efficiency community to encourage adoption?

## Net-Zero Summit Solar's Changing Economics

Chris Calwell (*Four Core*); Matt Brost (*SunPower*); Malcolm Bliss (*Next Step Living*); Martin LaMonica (*Independent Journalist*); Sara Ross (*Sungage Financial*)

### FEDERAL COMPLEX

Is the rapidly declining cost of solar turning the loading order on its head? Our speakers will describe the latest developments in solar technology, and the effects of a variety of innovations on solar economics.

#### Areas of Focus

- Beyond energy
- Building envelope
- Cities and communities
- Commercial and institutional
- Construction process
- Design process
- Multifamily
- Money and business
- Mechanical systems and lighting
- Renewables and the grid
- Single family

# Conference Sessions

## 8:30AM-10:00AM

### Efficient Cities: Are Ordinances, Competitions, and Planning Efforts Helping?

Barun Singh (*WegoWise*); Carl Spector (*City of Boston*); Cliff Majersik (*Institute for Market Transformation*); Patrick Love (*New York City Mayor's Office*); John Bolduc (*City of Cambridge*)

#### CITYVIEW 2

Over a dozen cities across the country have enacted, or are likely to enact, energy disclosure policies. Municipal governments have also been organizing carbon challenges, and engaging in centralized planning toward ambitious emissions targets. Amidst all of these efforts, what is working, and what isn't? In this session, we will discuss whether existing policies are meeting expectations, what long-term visions tie these efforts together, and how we might measure success. ●●●●●

### Dematerialization Applied

Mark Loeffler (*Atelier Ten*); Howard Brown (*dMASS SKYLINE*)

Driven by energy and environmental concerns, some projects are now quantifying the material savings and embodied carbon reduction resulting from lightweighting strategies. The speakers will describe the progress of dematerialization and its real impact on design, engineering, and construction. This will include case studies of technologies that have gained market acceptance and projects that have actively embraced them. Attendees will be encouraged to engage in an interactive discussion of techniques for incorporating resource-efficient products to improve building performance, durability, and resilience. ●●

### Applying Passive House Principles to 160 Units of Affordable Housing—Lessons Learned

Hank Keating (*Trinity Financial Inc.*); James Petersen (*Petersen Engineering Inc.*); Lauren Baumann (*New Ecology Inc.*)

#### HARBORVIEW 3

Fairfax Gardens was a 150 unit, dilapidated public housing development in Taunton, MA. To meet funding commitments, the

development team had to work collaboratively through the design process to develop systems and details that would produce one of the most energy efficient affordable housing developments in the country. Emphasis was put on simplicity for operation and maintenance, affordability, constructability at scale, dependability, and very low energy bills for residents. In addition, the project had to negotiate the myriad of regulations governing allowable rents and utility charges. ●●●●●

### Community Energy Footprints: Taking Residential Efficiency to Scale

Henry MacLean (*Timeless Architecture*); Keith Burrows (*Resynergy Systems*); JB Clancy (*Albert, Righter and Tittman*); Brian Butler (*Boston Green Building*)

#### HARBORVIEW 1

For all the non net-zero homes out there, how can energy tracking at the community level help achieve 2030 goals? Four diverse building pros share lessons learned from their experience tracking the energy use of a typical Boston suburb using several benchmarking methods, and discuss how cross referencing tools and technologies can help create community buy-in for achieving CO<sub>2</sub> reduction targets. The session will close with an open discussion of how to scale up expertise at the community level. ●●●●●

### Lies, Damned Lies and Green Building Standards

Paula Melton (*BuildingGreen, Inc.*); Tristan Roberts (*BuildingGreen, Inc.*)

#### CITYVIEW 1

Never get the R-15 wool insulation pulled over your eyes again! Separating green from greenwash is getting harder as standards proliferate. Tristan and Paula from BuildingGreen bring you the latest in clever greenwash with this lively and interactive chat on what makes a label truly green. Even if you come knowing nothing about green building labels, you'll leave with new knowledge and new wisdom. We'll show you how to ask the right questions and make your own judgment next time a company tries to convince you that its pet metric or label is the greenest of them all. ●●●●●

## Renewable Energy Powering Local Self-Reliance: Case Studies from Germany

Andrew Dey (Andrew Dey Consulting)

### BEACON HILL COMPLEX

Over 150 villages in Germany produce all of the electricity and most of the heat they consume. In these so-called “bioenergy villages,” renewable energy systems are driving economic growth. This session will provide an overview of the growing movement in Germany toward communally-developed and owned energy systems, focusing particularly on two villages in northern Germany. The development process for these villages will be explored, as will the factors contributing to their success. ●●●●●

## The All-Glass Building—Is Energy Efficiency Possible?

John Hannum (Vidaris); Andrea Love (Payette);

Daniel Nauman (Gensler)

### WATERFRONT 3

While glass buildings continue to rise throughout our cities, the question of their sustainability remains. The market is demanding high glazing percentage, which can present a hurdle in promoting energy efficiency in modern buildings. During this session, two speakers with varying views will discuss the all-glass building. Specific examples with different methodologies will be presented. We will see if it is possible for the design community as a whole to align on a viewpoint relative to glass and sustainability. ●●●●●

## H<sub>2</sub>-Uh-Oh: Moisture Risks and How to Manage Them

Terry Brennan (Camroden Associates)

### HARBORVIEW 2

Do you understand moisture dynamics? Do you have a comprehensive plan to control moisture in your buildings? If you answered no to either question, then you run the risks of occupant discomfort, mold growth, excessive maintenance and/or premature building failure. This session will help you avoid these risks. A veteran building scientist and co-author of the EPA Moisture Control Guide will share key measures—from design through operations—for controlling water and moisture in buildings. ●●●●●

## 10:30AM-12:00PM

## Efficiency Financing: The Current Landscape and Future Possibilities

Barun Singh (WegoWise); Ben Healey (CEFIA); Christopher Diamond (NYCEEC); Elizabeth Glynn (LISC)

### BEACON HILL COMPLEX

Energy efficiency financing is a complex topic. There are numerous options available to borrowers, from traditional loans to experimental programs. On the lending side, there is no single consistent approach to loan risk assessment, which presents market challenges. In this session, we will unravel this topic to discuss how efficiency financing works today. We will also consider how increased access to data-driven tools might improve lending practices in the future. ●●●●●

## Responding to the Buckminster Fuller Challenge

John Todd (Ocean Arks International); Ryan Chin (MIT City Science Initiative); Greg Watson (Schumacher Center for a New Economics)

### SKYLINE

Buckminster Fuller’s teachings restore our optimism and encourage us to strive for progress. The Buckminster Fuller Challenge invites today’s practitioners to answer his call “to make the world work for 100% of humanity, in the shortest possible time, through spontaneous cooperation, without ecological offense or the disadvantage of anyone.” Challenge winners John Todd (2008) and Ryan Chin (2009) join Greg Watson to share their transformative projects and explore Fuller’s unique perspective on energy and resources. ●●●●●

## LEDing the Lighting Revolution Part 1: How Many Light Bulbs Will it Take?

Fred Davis (Fred Davis Corp); Taylor Jantz-Sell (EPA Energy Star); Jim Gaines (Philips Lighting)

### HARBORVIEW 1

The general-purpose light bulb: it’s the most accessible, yet possibly the most frustrating, LED application for efficiency professionals. Expectations are huge, but until recently, any advantage was marginal and expensive. The best LED bulbs are now finally advancing significantly in efficiency, but some are still less efficient than CFLs. Is the technology up to its promise? Rather, shouldn’t we be



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favoring advantageous LED fixtures? What are industry leaders doing to speed adoption of LED technology? ●●●●●

## Lessons From Scandinavia (1 of 2)

*Thomas Hartman (c&h architects); Paul Eldrenkamp (Byggmeister, Inc); Chris Benedict (R.A.); Andy Shapiro (Energy Balance)*

### CITYVIEW 2

Paul, Chris, Andy, Tom and Heather went to Scandinavia to learn about what the Swedes and Danes are doing about climate change. In two sessions, we'll present what we learned in visiting buildings, building professionals, city officials, and researchers in these two countries, and how it may or may not relate to our efforts here at home. ●●

## Sensible Solutions to Latent Problems: Managing Humidity in High Performance Homes

*David White (Right Environments); Aubrey Gewehr (Zehnder America)*

### CITYVIEW 1

Low-load homes struggle with summertime humidity more than conventional homes, and the Northeast isn't getting any less tropical. Let's get ready. We will consider how latent and sensible loads differ for low-load homes, how to calculate required equipment performance, and what our equipment options are. We'll take the mystery out of the psychrometric chart, and show how to make it your valued accomplice in managing indoor humidity. We will also present monitoring from recently built low-load homes. ●●●●

## Reinventing the Water Grid Part 1: Science, Behavior & Dollars

*Curt Spalding (EPA); Abe Noe-Hays (Rich Earth Institute); Kim Nace (Rich Earth Institute); Ken Mirvis (The Writing Company); Nadav Malin (BuildingGreen Inc); Robert Leaver (New Commons)*

### HARBORVIEW 2

Systems for both fresh and waste water are vulnerable. Water standards are increasingly stringent. Water and energy are inextricably intertwined—"water grid" provides a unique frame for exploring how to operate a more closed-loop system of water production and use. Session one examines present and emergent conditions regarding both fresh and waste water. It also provides an overview

of what is being done to change conversation, policy, and practice about water use in the built environment. ●●●●●

## Installing Windows and Curtainwalls Without Thermal Bridging and Leaks in Commercial Buildings

*John Straube (Building Science Laboratories)*

### HARBORVIEW 3

This session will look at the basic shapes of aluminum and fiberglass products used for frames, and identify the basic principles to be used to develop functional details for both new and retrofit construction. We will isolate the heat, air, and water control layers in windows and connect those in precast, solid masonry, and framed walls. Issues of structural support, construction sequencing, building movement, and high humidity interiors will be addressed. Numerous examples and case studies rich with photographs and drawings will be used. ●●●●●

## Close the Windows! Changing Occupant Behavior with Heat Pumps and Individual Metering

*Steven Bluestone (The Bluestone Organization)*

### WATERFRONT 3

This session will report on two related items: a three year performance study of an air source heat pump system using hourly measurements (done with Henry Gifford and built above Steve's garage) and the design and construction of a new 101 unit high performance rental building in NYC utilizing the same technology. Energy consumption, impacts of individual metering, and regulatory hurdles will be covered. The goal? To get tenants to pay for their own heat, decrease their rents by a fair value, and see the windows stay closed throughout the winter. ●●●●●

## 2:00PM-3:30PM

## Tiny Bubbles: The Deal With Spray Foam

*Ken Levenson (475 Building Supply); Tristan Roberts (BuildingGreen Inc); John Straube (Building Science Laboratories); Priya Jain (Goody Clancy)*

### CITYVIEW 1

"Is Foam Evil?"—that's how this session was originally titled before saner heads prevailed. Foam is so highly insulating, so airtight, so

slick on the jobsite, how could we ask such a question? Wait—it's just those wonderful features that suck us in and make us love foam and forget about those toxic chemicals, occupational hazards, climate impacts, and faulty installations. Is that evil? Come discuss design choices, material options, and building science with our panel. ●●●●●

## Multifamily Ventilation 302

*Marc Zuluaga (Steven Winter Associates); Tom Holmes (Remdiation Specialists)*

### HARBORVIEW 3

Central ventilation systems in multifamily buildings are a vital building system that often compromises overall building performance (i.e. they don't perform to code almost 100% of the time). Correcting ventilation problems can produce significant energy savings in multifamily buildings while also improving occupant comfort and health. Central ventilation system restoration is an emerging energy retrofit that has had its bumps along the way. This session explores the lessons learned from projects that encountered a variety of design and implementation problems, but ultimately achieved good performance results. ●●●●●

## LEDing the Lighting Revolution Part 2: Advanced Strategies both Efficient and Smart

*Fred Davis (Fred Davis Corp); Brian Chemel (Digital Lumens); George Woodbury (SolLux Consulting)*

### HARBORVIEW 1

What is the ultimate in LED lighting today? In certain applications, the top LED fixtures are providing 40-60% efficiency savings. But our speakers are now combining the best fixtures with the smartest controls to drive total energy savings to 80-90% or more, indoors and outdoors. Paying close attention to task and time, these strategies introduce a whole new way of looking at lighting, and may require the recruitment of a whole new generation of technicians. ●●●●●



## Reinventing the Water Grid Part 2: Nutrient Recycling and Other Opportunities for Fun & Profit

*Curt Spalding (EPA); Abe Noe-Hays (Rich Earth Institute); Kim Nace (Rich Earth Institute); Ken Mirvis (The Writing Company); Nadav Malin (BuildingGreen Inc); Robert Leaver (New Commons)*

### HARBORVIEW 2

Session 2 will dig deeper into fresher paths forward. First, a look at Atlanta, where the cost of water and wastewater have soared but the system and the treatment technologies are working. Second, the promising practice of source-separating urine for fertilizer production. A pilot in Falmouth, MA is demonstrating cost-effective alternatives to building a new treatment plant. In closing, we'll identify nuggets from both sessions for reflection on policy, design, technology & practice, and behavioral change. ●●●●●●

## Lessons From Scandinavia (2 of 2)

*Thomas Hartman (c&h architects); Paul Eldrenkamp (Byggmeister, Inc); Chris Benedict (R.A.); Andy Shapiro (Energy Balance)*

### CITYVIEW 2

Paul, Chris, Andy, Tom and Heather went to Scandinavia to learn about what the Swedes and Danes are doing about climate change. In two sessions, we'll present what we learned in visiting buildings, building professionals, city officials, and researchers in these two countries, and how it may or may not relate to our efforts here at home. ●●

## Minisplit Heat Pumps: Lessons From the Field

*Marc Rosenbaum (South Mountain Company); Kohta Ueno (Building Science Corporation)*

### BEACON HILL COMPLEX

Minisplit heat pumps are now used in most high performance homes in New England. Kohta monitored eight homes built by Transformations and Marc has over sixty homes and non-residential buildings with minisplits. After a brief overview of system types, we'll share energy use data as well as comfort and distribution studies, and cover issues with installation, sizing, setbacks, and some of the quirks of this nifty technology. Have fun with two MIT nerds! ●●●●●●

## Inside and Out: Integrated Building Façade and HVAC Design

*Robert Goossens (WSP); Roselin Osser (WSP)*

### WATERFRONT 3

This session provides an overview of the interactions between building façade and HVAC systems in commercial buildings, highlighting what is needed to achieve a high performing system. Successful integration is particularly critical when designing to the trend of highly glazed buildings required to meet stringent energy targets. Using relevant project examples, we will explore different HVAC and façade system strategies, highlighting the role of construction management, commissioning, measurement, and verification in successful operation. ●●●●●●

## Inspiring Change: Campus Mission and the Living Building Challenge

*Jason Jewhurst (Bruner/Cott & Associates); Charley Stevenson (Integrated Ecostrategy); Jonathan Wright (Wright Builders Inc); Beth Hooker (Hampshire College)*

### SKYLINE

The R.W. Kern Center is designed to embody Hampshire College's mission of fostering positive change in the world—and to meet the Living Building Challenge. This new “gateway” building creates an opportunity for a powerful transformation of Hampshire's 1960's vehicle-dominated, Brutalist campus core into a pedestrian friendly naturalistic landscape. The Kern Center will “operate as cleanly, beautifully and efficiently as nature's architecture,” and contribute to Hampshire community values of active inquiry, creativity, social justice, entrepreneurship, and the sustainable future. ●●●●●●



4:00PM-5:30PM

## CLOSING FORUM 100 Years of Experience

*John Abrams (South Mountain Company); Chuck Silver (Hudson River Design); Terry Brennan (Camroden Associates); Declan Keefe (Placetaylor); Ace McArleton (New Frameworks Natural Design/Build, LLC); Stephanie Horowitz (ZeroEnergy Design); Matt Root (Conservation Services Group)*

### CITYVIEW 1 & 2

The closing forum will feature 6 Pecha Kucha presentations (20 slides, each for 20 seconds) followed by a discussion moderated by Matt Root. Participants will include three sages and three rising stars. In 90 minutes, this session will teach you more about building, design, business, and life than you could learn in 10 years on your own. ●●●●●●

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