



2018 GREEN BUILDING UNITED NEW GRAVITY HOUSING CONFERENCE



August 2 - 3, 2018

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Pre-Conference Workshops August 1st

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Welcome

Welcome to New Gravity: Climate Change and the Imperative of High Performance Affordable Housing! We are thrilled to welcome presenters and attendees, and to express a warm thank you to our host, Temple University, as well as our event sponsors and vendors for helping make this conference possible for a second year.

New Gravity embodies Green Building United's mission to improve quality of life in our communities through green building education and advocacy. We recognize that climate change is already fundamentally changing the way buildings are designed, built, and operated, and this change will need to be more rapid in the coming decades. At the same time, the need for quality affordable housing that can withstand increasingly extreme and volatile weather continues to grow. Building healthy, safe, and accessible places to live that will both limit and adapt to climate impacts is a key challenge for the 21st century.

This conference will explore the tools, techniques, and practices that the building community is using to address this challenge. New Gravity offers 16 education sessions from 40+ presenters and four pre-conference workshops, as well as important messages from four keynote speakers. We are very pleased that the program includes presenters from our local community as well as those who have traveled from across the country and overseas.

This conference is notably informed by the PHFA Project, an effort to scale the adoption of high performance affordable housing in the United States. Green Building United is tremendously grateful to Tim McDonald of Onion Flats, and David Salamon of Re:Vision Architecture for all their work in helping make this conference a reality.

Thanks,



Alex Dews and Green Building United Team

Top Left to Right:
Leah Wirgau, Education & Engagement Manager
Megan Sloomaker, Operations Director
Katie Bartolotta, Policy & Programs Manager
Bottom Left to Right:
LeAnne Harvey, Program & Communications Manager
Alex Dews, Executive Director
Margaret Salamon, Development Director



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Awards -- Conferences -- Networking -- Climate Resilient Communities

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August 2nd Conference Schedule

7:30 - 8:30 am	Registration, Breakfast, and Expo
8:30 - 8:50 am	Welcome
9:00 - 10:00 am	Session I
10:00 - 10:30 am	Coffee Break and Expo
10:30 - 11:30 am	Session II
11:30 am - 12:00 pm	Lunch and Expo
12:00 - 12:45 pm	Keynote (and Lunch)
1:00 - 2:00 pm	Session III
2:15 - 3:15 pm	Session IV
3:30 - 4:15 pm	Keynote
4:15 - 6:00 pm	Happy Hour on the Expo Floor

Continuing Education

Conference attendees must sign into each session in order to receive credit.

Entire Conference:

- 7 AIA LU-HSWs
- 7 PHIUS CPHC CEUs (code will be provided for self-reporting)

Select sessions worth GBCI CE hours (noted by * in schedule below and along session descriptions)

	Room 110A	Room 110B	Room 108
Session I 9:00 - 10:00 am	How Do We Get from Passive House to Truly Low-Carbon Net-Zero Buildings?*	The Battery: Multifamily Passive House ready for MARKET RATE*	Federal Opportunity Zones and the Potential for Affordable Housing
Session II 10:30 - 11:30 am	Resilience in Multifamily Housing: From assessment to implementation*	Stealth Passive House: Boring, invisible, and everywhere	Lessons Learned from Passive Project Monitoring
Keynote 12:00 - 12:45 pm	Chris Benedict, Architecture for a Changing World		
Session III 1:00 - 2:00 pm	Hard Lessons Learned: Architects, engineers, and achieving high performance buildings*	Net Zero in Multifamily New Construction Utilizing Passive House Modeling Strategies*	Designing for Change in Canada: Low energy/ Passive House in multi-residential affordable housing projects in Ontario
Session IV 2:15 - 3:15 pm	Multifamily Construction Verification: Planning for success*	Real-time Performance Monitoring: Are we getting what we designed?*	Air Tightness Testing in Multifamily Passive House Buildings*
Keynote 3:30 - 4:15 pm	Steve Bluestone, Passive Dwellings and The Bluestone Organization		

August 3rd Conference Schedule

7:30 - 8:30 am.....Registration, Breakfast, and Expo
 8:30 - 9:30 am.....**Session V**
 9:45 - 10:45 am.....**Session VI**
 10:45 - 11:15 am.....Coffee Break and Expo
 11:15 am - 12:30 pm.....**Keynote and Closing**

	Room 110A	Room 110B
Session V 8:30 - 9:30 am	Energy Efficiency and Qualified Application Plan Scoring Systems for Affordable Housing	Local Lessons Learned: Two big affordable housing retrofits in Pittsburgh*
Session VI 9:45 - 10:45 am	Cost-Effective Engineering and Design for Large Passive House Buildings*	Navigating Green Building Rating Systems for Affordable Housing: Achieving multiple ratings for a single project
Keynote 11:15 am - 12:30 pm	Holly Glauser, Pennsylvania Housing Finance Agency Hank Keating, AIA	

Keynote Speakers

Chris Benedict, Architecture for a Changing World



Chris is a registered architect with 30 years of professional experience. Her office, Chris Benedict, R.A., was founded in 1995 and specializes in the design of exceptionally energy efficient buildings. A leader of the Passive House movement in the United States, Chris has designed over 80 apartment buildings in New York City.

Steve Bluestone, The Bluestone Organization and the Founder of Passive Dwellings



Steve has worked as a developer, general contractor, and property manager, producing thousands of units of housing and tens of thousands of square feet of retail space. Whether working on single-family homes or very large mixed-use apartment buildings, he has helped produce structures that have reduced energy consumption by 90% and more, others that are net-zero, and some that are energy-positive.

Holly Glauser, Pennsylvania Housing Finance Agency



Holly is the Director of Development for the Pennsylvania Housing Finance Agency. Having been with PHFA since 1990, she is currently responsible for the development and administration of the Agency's multifamily loan programs including Low Income Housing Tax Credits, PennHOMES, and taxable and tax-exempt bond financings.

Hank Keating, AIA



Hank is a registered architect with more than 30 years of experience in the design and construction of residential developments. Recently retired from Trinity Financial (but consulting back on select projects), Hank completed over nine affordable housing developments totaling over 1500 units in Massachusetts, Rhode Island, Connecticut, and New York City. For the last 10 years, he has been engaged with the Passive House movement.

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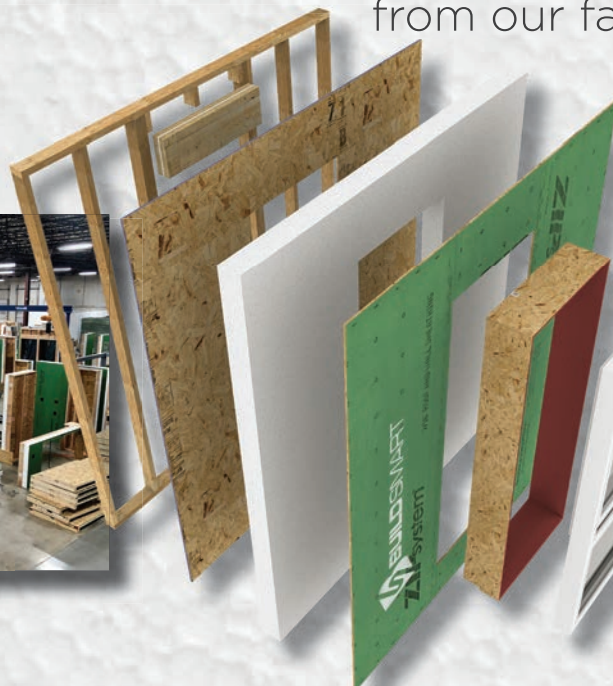
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Session I | 9:00 - 10:00 am

How Do We Get from Passive House to Truly Low-Carbon Net-Zero Buildings? - Room 110A Learning Level 300: Application/Implementation | *Worth 1 GBCI CE hour*

The PHIUS Passive House Primary Energy (PE) criteria is currently set at 6200 kWh/occupant/year, but is slated to change to 3840 kWh/occupant/year under the proposed PHIUS+ 2018 standard. In the presenters' experience with recent affordable multifamily passive house projects, passive measures alone have often not been sufficient to meet the PHIUS+2015 PE criteria, resulting in on-site renewable energy generation being added. With the more rigorous PHIUS+ 2018 target, is active renewable energy effectively a requirement of Passive House under PHIUS? Does the "anything goes" approach of eliminating the coincident usage fraction (counting all renewable energy generation as equal with respect to PE, whether used on-site or fed into the grid) and allowing off-site renewables amount to too much of a "free pass" and result in less carbon reductions? How would on-site energy storage increase the percentage of RE used on site, and therefore reduce the PE impact of grid energy and help even out peak load generation problems associated with widespread PV use?

Using Weinberg Commons, the 2017 PHIUS Affordable Project of the year, and Gilford Village Knolls III, the first affordable multifamily Passive House project in New Hampshire as examples, the presenters evaluate Primary Energy reduction strategies through both passive and active measures and discuss the benefits of energy storage for resiliency and operational carbon emission reductions.

Michael Hindle, Passive to Positive

Dave Ransom, ReBuilder Group

Moderator | Jeremy Avellino, Bright Common

The Battery: Multifamily Passive House ready for MARKET RATE - Room 110B Learning Level 200: Understanding/Comprehension | *Worth 1 GBCI CE hour*

This presentation will articulate the strategies taken in the design and construction of the Battery, A 25 unit certified PHIUS + apartment building in Philadelphia, completed in October 2017. It will focus on the project's prefabricated envelope, centralized geo-thermal heating/cooling/hot water system, centralized ventilation system, energy monitoring/visualization system, 77 kW photovoltaic array, electric car bi-directional storage system, as well as what the developers would and would not do again. The lecture will also introduce Onion Flats' newest Passive House, Net Zero Energy, 28 unit "attainable housing" project in the developing Kensington section of Philadelphia: Bank Flats, currently under construction. Simplified strategies for all mechanical systems have lowered costs between The Battery and Bank Flats and a building integrated solar PV facade will demonstrate Onion Flats' latest attempt at creating cost-effective, multifamily, NZE projects.

Timothy McDonald, Onion Flats

Federal Opportunity Zones and the Potential for Affordable Housing - Room 108B Learning Level 100: Awareness

Can Opportunity Zones that now exist in all 50 states be the panacea for affordable housing investment we are all hoping for – what are they, where are they, how can they be used to drive investment in affordable housing – or is this just another governmental mirage?

Joseph Scalio, KMPG

Andrew Frishkoff, LISC Philadelphia

Brad Molotsky, Duane Morris, LLP



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Session II | 10:30 - 11:30 am

Resilience in Multifamily Housing: From assessment to implementation - Room 110A

Learning Level 300: Application/Implementation | *Worth 1 GBCI CE hour*

Extreme weather events in recent years have disproportionately affected low-income communities and multifamily housing. Given limited resources for assessment and implementation of resilience strategies in such sectors, decision-making requires streamlined tools that enable evaluation and prioritization of building-specific climate change hazards. The speakers will discuss a resilience assessment protocol that assesses multifamily buildings' vulnerability to weather hazards and develops solutions that support resilience. The assessment tool provides concrete, actionable recommendations, which often complement energy and healthy housing initiatives, so building owners and operators can make targeted improvements to resist damage from severe weather and to bounce back more quickly when damage occurs. Speakers will discuss property- and community-scale engagement in projects in New York City, New Orleans, and Washington, DC.

Tom Chase, New Ecology, Inc.

Jared Lang, National Housing Trust

Shelby O'Neill, Enterprise Community Partners, Inc.

Moderator | Bahareh van Boekhold, New Ecology, Inc.

Stealth Passive House: Boring, invisible, and everywhere - Room 110B

Learning Level 200: Understanding/Comprehension

Early-stage high-profile Passive House projects often launch with integrated teams, lots of fanfare, and extensive lists of (expensive) consultants. That is all good for the pilot projects, but how do all of us take this to mainstream multifamily construction projects when we are not allowed all these special resources? We will lay out the path we have followed on multifamily projects where Passive House was either frowned upon or actively off the table. What are the most critical elements of Passive House for a team to focus on when making cost and value judgements in project meetings? What is the proper balance of improved ventilation, air tightness, and insulation?

Jesse Thompson, Kaplan Thompson Architects

Matt Peters, Elysian Enterprises

Lessons Learned from Passive Project Monitoring - Room 108B

Learning Level 200: Understanding/Comprehension

Advances in building and information technologies mean stakeholders across the building sector can gain exceptional visibility into project performance. Private developers, financial intermediaries, and public agencies such as Housing Finance Agencies have all given preference to projects developed under green rating standards. Are the promised benefits being delivered in project operation? This presentation and discussion will feature a collaboration between PHIUS and project teams to develop metrics, deploy monitoring equipment, and interpret results around key indicators of building performance. We will discuss the why, what, and how of diagnostics and analytics, sharing results from existing and planned projects, and discussing implications for market and policy development.

Lisa White, PHIUS



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Session III | 1:00 - 2:00 pm

Hard Lessons Learned: Architects, engineers, and achieving high performance buildings - Room 110A

Learning Level 200: Understanding/Comprehension | *Worth 1 GBCI CE hour*

Through an analysis of code, above code standards, and case studies, this presentation will share key insights gleaned from the presenters' work on high performance building projects. Architects can inadvertently drive the mechanical design process by not optimizing the building envelope and relying too heavily on architectural energy conservation measures (ECMs) to achieve sustainability goals. Conversely, engineers could help steer projects towards cost effective sustainability solutions by beginning mechanical design earlier and establishing envelope benchmarks for the architect. This presentation takes a critical look at several case studies and poses provocative questions about re-engineering the architectural design process.

Scott Kelly, Re:Vision Architecture

Stephen Finkelman, Kitchen and Associates

Net Zero in Multifamily New Construction Utilizing Passive House Modeling Strategies - Room 110B

Learning Level 300: Application/Implementation | *Worth 1 GBCI CE hour*

Westville senior housing is designed to achieve net-zero on-site electricity consumption. Many designers and developers have considered this push to zero annualized consumption to be impossible for mid-size multifamily affordable projects, given the physical and regulatory constraints on a 64 unit, LIHTC funded project. Under construction with an opening date of 11/1/2018, the project team will share challenges and strategies used to overcome them relating to metering structure, utility company support and opposition, and first costs. The panelists will explore the selection of modeling software to guide net zero analysis and walk through some of the key decisions such as distributed common domestic hot water systems, and how to optimize Photovoltaic production.

Anthony D'Agosta III, Inglese Architecture + Engineering

Jon Jensen, MaGrann Associates

Designing for Change in Canada: Low energy/Passive House in multi-residential affordable housing projects in Ontario - Room 108A

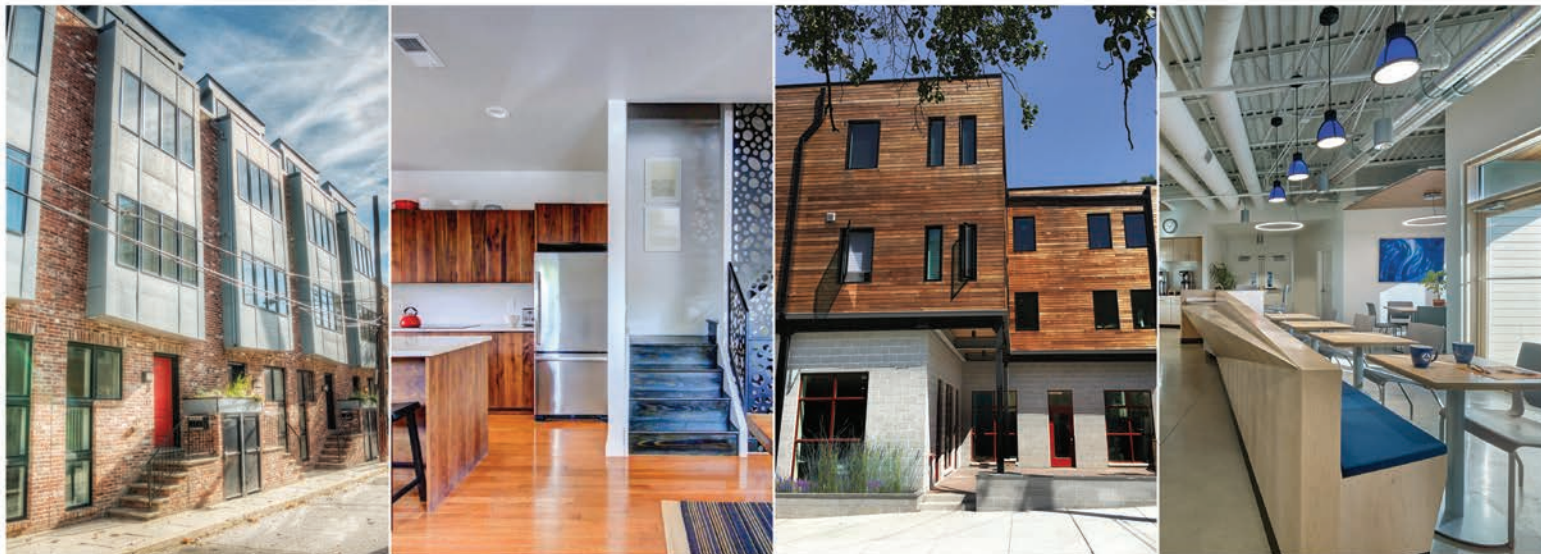
Learning Level 300: Application/Implementation

Passive House low-energy design only makes sense in a northern climate like Canada. This session will include the stories behind three different multi-residential affordable housing projects in Ontario, all currently under construction. Each building is mixed-use: a church, restaurant, retail, and other amenities are designed alongside the rental apartments to meet the needs of diverse communities. These projects have highlighted the significant challenges and solutions faced by design teams, constructors, and owners in creating very low energy/net zero projects. This is helping to demystify Passive House and show what is possible towards making this type of construction the norm in Canada.

Emma Cubitt, Invizij Architects

Graham Cubitt, Indwell

Andrew Peel, Peel Passive House Consulting



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Session IV | 2:15 - 3:15 pm

Multifamily Construction Verification: Planning for success - Room 110A

Learning Level 300: Application/Implementation | *Worth 1 GBCI CE hour*

Passive House projects are a highly coordinated effort. A comprehensive project team including the Passive House Consultant (PH Consultant), Passive House Verifier (PH Verifier), Architect, MEP Engineer, General Contractor, owner/developer, window installer, insulation installer, and mechanical, electrical, and plumbing subcontractors all must be on the same page and understand their individual impact on the project. As construction begins, it is critical that the general contractor name a responsible individual on their team to appropriately schedule inspections and provide regular updates to the PH Verifier. With all hands on deck required for a successful project, a team-oriented approach, excellent communication, careful installation, and incremental testing and verification throughout the construction process are critical elements for successful Passive House certification. The presentation will review and discuss the process utilized during construction with a focus on whole building air tightness accompanied by case studies.

Mike O'Donnell, Steven Winter Associates

Thomas Moore, Steven Winter Associates

Real-time Performance Monitoring: Are we getting what we designed? - Room 110B

Learning Level 200: Understanding/Comprehension | *Worth 1 GBCI CE hour*

Newer high-efficiency heating and hot water equipment offers great potential, but its complexity can result in improper installation and operation, especially in affordable multifamily properties with tight construction and maintenance budgets. These challenges can lead to wasted energy, higher costs, and potentially premature equipment replacement. Advanced building energy management systems are available, but out of reach for most affordable multifamily properties. Yet a low-cost, real-time monitoring system can be created. New Ecology, Inc. created a system that combines new equipment's on-board sensors with analog sensors to push data to the cloud. These data, combined with technical expertise, enables optimized performance and provides critical feedback to building operators, designers and installers. This monitoring system was deployed in over 100 affordable multifamily buildings in New England. Preliminary results find boiler energy savings between 5 and 20 percent of gas use beyond the savings achieved simply through more efficient, technologically advanced equipment.

Jonah Decola, New Ecology, Inc.

Joshua Sklarsky, New Ecology, Inc.

Michael Frazier, Maloney Properties

Marty Davey, New Ecology, Inc.

Air Tightness Testing in Multifamily Passive House Buildings - Room 108A

Learning Level 300: Application/Implementation | *Worth 1 GBCI CE hour*

The desire to achieve the Passive House standard in multifamily buildings has prompted the need to plan for and perform whole building, blower-door testing. Performing a blower-door test on a large multifamily building however, is dramatically different than the single or small multifamily tests we are all generally familiar with. Multifamily buildings come in all shapes, layouts, and sizes, often presenting unique challenges with regard to air leakage testing such as: Interior partitions and floors dividing the interior space, making establishing a single zone challenging; Stack effects on taller buildings causing a range of pressure differentials from the top to the bottom of the building; Fluctuating wind speeds creating issues with test accuracy; And the involvement of a large amount of equipment, manpower, and coordination needed to set up the building in proper test configuration in order to be able to run the test. This session will provide an overview of the benefits of controlling air infiltration and the testing protocols used to qualitatively determine air leakage pathways through in-progress guarded blower-door testing, and how to quantify the air permeability of multifamily building enclosures. Examples will be provided from two passive house projects: The HANAC Corona Senior Residence and The House at Cornell Tech.

Adam Romano, Association for Energy Affordability

Kevin Brennan, Brennan Insulation and AirTightness

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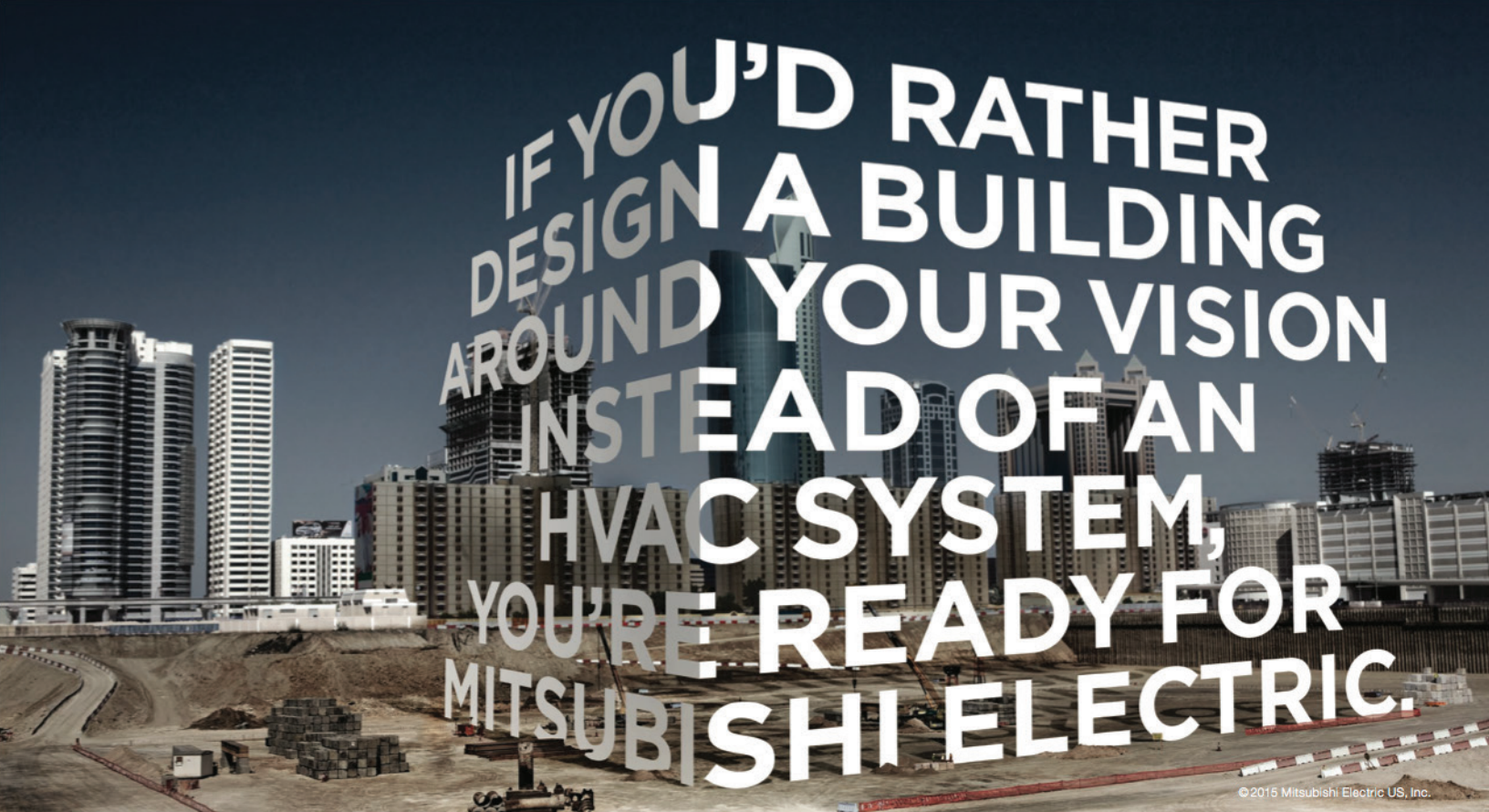


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Session V | 8:30 - 9:30 am

Energy Efficiency and Qualified Application Plan Scoring Systems for Affordable Housing - Room 110A

Learning Level 200: Understanding/Comprehension

In this session leading advocates and national developers will discuss the real impact cost wise on projects of including mandates within the qualified application process and what this does for moving ESG and sustainability along the event horizon – both the good and the unintended consequences.

Jonathan Lubonski, The Michaels Organization

Anne Fadullon, City of Philadelphia

Owen McCabe, Volunteers of America

Moderator | Brad Molotsky, Duane Morris, LLP

Local Lessons Learned: Two big affordable housing retrofits in Pittsburgh - Room 110B

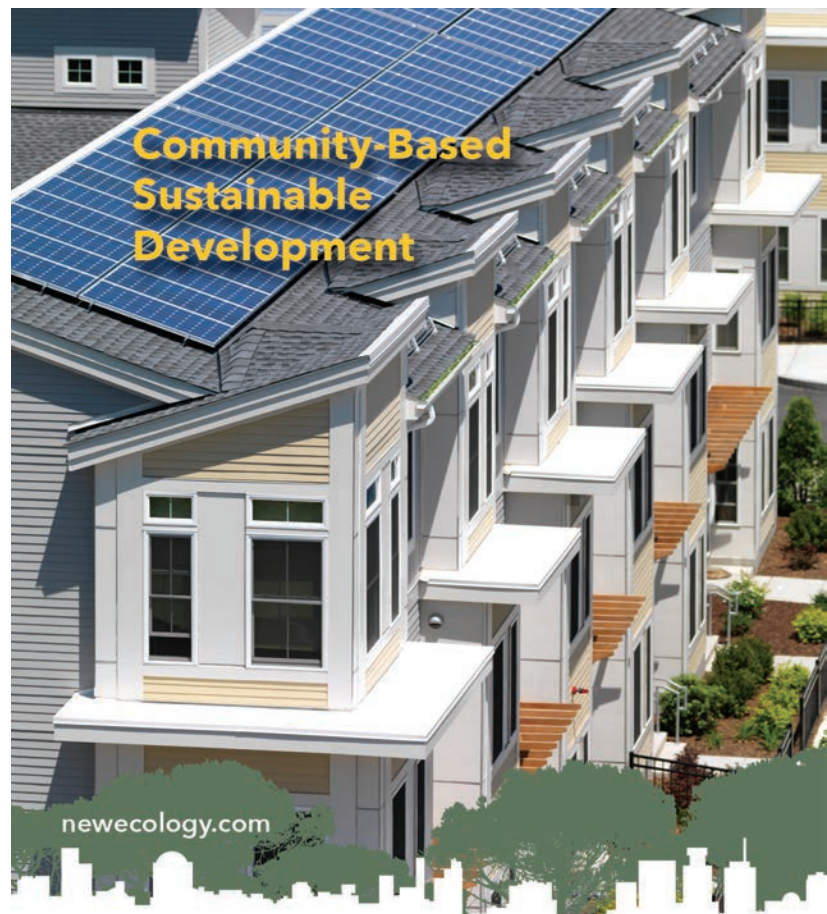
Learning Level 300: Application/Implementation | *Worth 1 GBCI CE hour*

Two affordable housing Passive House retrofits in Pittsburgh are proof that revolutionary energy performance, indoor air quality, and comfort are not confined to market rate new buildings. Retrofit projects can be cost-effective and practical. They are also full of surprises, require lots of creativity, and generate more lessons-learned than one can count! Morning-side Crossing and Glassport Retirement Residence are two, Pennsylvania Housing Finance Agency-funded, Passive House projects that will be completed this summer. Both will provide affordable housing to seniors in working class neighborhoods, involving a Passive House retrofit of an abandoned elementary school with the addition of a new Passive House wing. Both will be delivered at or near construction cost parity with conventional affordable housing. How did the project team accomplish all this, not once, but twice? This presentation will explain, providing lessons for practitioners of Passive House retrofits, multifamily buildings, and affordable projects.

Laura Nettleton, Thoughtful Balance

Rebecca Griffith, Nicholson Kovalchick (NK) Architects

Galen Staengl, Staengl Engineering



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Session VI | 9:45 - 10:45 am

Cost-Effective Engineering and Design for Large Passive House Buildings - Room 110A

Learning Level 400: Mastery | *Worth 1 GBCI CE hour*

To deliver cost-optimized Passive House buildings, our industry needs a paradigm shift in how we approach the engineering and design of building mechanical systems. Project teams need to think differently, re-envisioning how systems come together in a new low-load paradigm. Fortunately, this shift is underway. Learn how, through a system-by-system tour of proven, low-cost engineering solutions for larger Passive House buildings. Drawing on real world design of multifamily and commercial Passive House projects across North America the speaker will share NK Architects' low-cost engineering solutions for Passive House buildings. The presentation will highlight field-tested approaches to the building systems that are key to the energy performance and cost optimization of larger Passive House projects: from envelope design, glazing and shading, to ventilation, heating/cooling, elevator integration, and more. The session will show how these strategies are applied to a 530-unit Passive House project near Washington, DC.

Dave Parker, Nicholson Kovalchick (NK) Architects

Navigating Green Building Rating Systems for Affordable Housing: Achieving multiple ratings for a single project - Room 110B

Learning Level 200: Understanding/Comprehension

Pursuing multiple green building rating systems may initially seem challenging and complex for project teams. This session will focus on different green building rating systems and their standards, to help project teams understand how they can achieve more than one rating system simultaneously for affordable housing projects. These ratings include: LEED, Enterprise Green Communities, and ENERGY STAR. During the session, real life project experiences will be shared as examples from the engineers' and sustainability consultants' perspectives. There will also be a discussion on the upcoming NYC Local Law 33, in which buildings will soon be graded A-F on their federal ENERGY STAR energy efficiency scores.

Carter Membrino, Warren Energy Engineering, LLC
Ece Ersoz, R3 Energy Management Audit & Review, LLC



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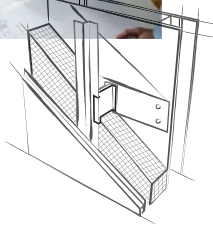


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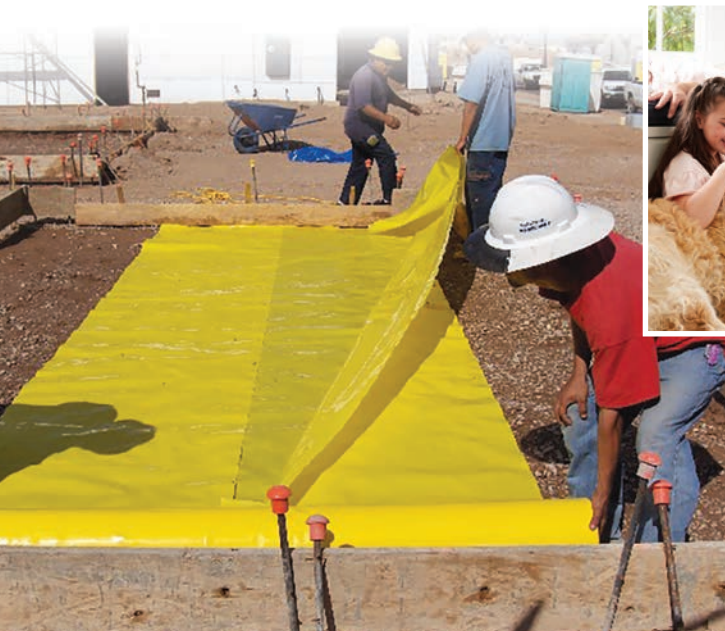
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