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## 2015 Annual Conference

### PHnw6: Beyond Passive House

Online registration is now CLOSED. Last minute registrations will be accepted at the door.

All Presentation and Workshops are eligible for AIA/CES HSW Learning Units! [View full schedule for additional information.](#)

Passive House Northwest presents PHnw6, our most ambitious event yet, on March 26 & 27, 2015, at [Bell Harbor International Conference Center](#), on Seattle's downtown waterfront.

Experts, professionals, and officials from across the region and around the world will gather to learn, build relationships, share experience and expertise, and shape the future of high-performance building.

*The PHnw6 conference has been approved by PHIUS as meeting the criteria to satisfy Continuing Education Units required by PHIUS to maintain CPHC status. Please click [HERE](#) for more details regarding the number of CEU's required. For the main conference day, 7 CEU's will be granted as self-reported after the conference. Self-report your hours at <http://www.phius.org/get-professional-training/cphc-ceu-program/self-report-ceus>.*

**Please join us!**

ADVANCED HALF-DAY WORKSHOPS  
 Thursday, March 26, 2015 ([view full schedule](#))

Two tracks of morning and afternoon 4-hour workshops for experienced professionals

EVENING RECEPTION, TRADESHOW, AND PRESENTATIONS  
 Thursday, March 26, 2015 (No registration required. \$10 suggested donation for non-conference/workshop attendees.)

Keynote address featuring [Lloyd Alter](#), architect and managing editor of [TreeHugger](#)  
 Light hors-d'oeuvres and no-host bar  
 High-performance building products and services tradeshow  
 Why Passive House? Because Buildings Can Restore Lecture by [Zachary Semke](#) of [Hammer and Hand](#)

CONFERENCE AND TRADESHOW  
 Friday, March 27 ([view full schedule](#))

Two keynote addresses featuring:

[Gunter Lang](#), CEO at [Lang Consulting](#) and head of [Passivhaus Austria](#)

[Steve Hallett](#), of Purdue University, author of [The Efficiency Trap](#) and co-author of [Life Without](#)

[Oil](#)

#### Quick Links

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[PHnw 2016 Book](#)

#### Our Sponsors



Three presentation tracks on low-energy-use building and related topics  
High-performance building products and services tradeshow

SELF-GUIDED TOURS (free)

*Saturday, March 28, 2015 (download the **Tour Guide** in PDF form [here](#))*

9:00 am - 1:00 pm: Visit local Passive House and other high-performance, low-energy-use projects to see and experience them first hand.











Registration fees:	Members	Non-members
<b>Early registration</b> through March 2	Pre-conference Workshops: \$135  Conference: \$150	Pre-conference Workshops: \$170  Conference: \$180
<b>Standard registration</b> through March 23	Pre-conference Workshops: \$200  Conference: \$220	Pre-conference Workshops: \$240  Conference: \$250
<b>Late registration</b> after March 23	Pre-conference Workshops: \$285  Conference: \$285	Pre-conference Workshops: \$285  Conference: \$285

### **Register now!**

If you're not a member yet, consider [joining now](#) to receive the reduced registration rate!

**Business Members:** In order to receive your allotted number of additional discounted registrations, please [click here to receive your discount code](#) (only visible to Business Members).

**Our kind thanks to our generous PHnw6 event sponsors:**

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**Full Conference Schedule:**

<b>Thursday Workshops</b>		
8:00 am	Workshop registration & light breakfast	
	<b>Hall 1</b>	<b>Hall 2</b>
8:30 am	<b>Morning Workshop 1</b>	<b>Morning Workshop 2</b>
	<a href="#">Dylan Lamar</a> : Best Practices in Passive House Modeling: DesignPH & PHPP_IP (4 AIA/CES HSW LU)	<a href="#">Dan Whitmore</a> : The Passive House Builder: At the Desk, In the Dirt and Done (4 AIA/CES HSW LU)

10:30 am	Break	
10:40 am	Morning Workshop 1 (continued)	Morning Workshop 2 (continued)
12:40 pm	Lunch	
1:20 pm	<b>Afternoon Workshop 1</b>	<b>Afternoon Workshop 2</b>
	<u>Bronwyn Barry</u> : The PHPP's 5th Gear: Simplified Thermal Bridge Calculations (4 AIA/CES HSW LU)	<u>Gary Klein</u> : Where is Hot Water in High Performance Buildings? (4 AIA/CES HSW LU)
3:20 pm	Break	
3:30 pm	Afternoon Workshop 1 (continued)	Afternoon Workshop 2 (continued)

### Thursday Evening Reception and Expo

5:30 pm	Reception Registration and Expo	
6:00 pm	<u>Zack Semke</u> and <u>Skyler Swinford</u> : Why Passive House? Because Buildings Can Restore (1 AIA/CES HSW LU)	
7:00 pm	Exposition	
8:00 pm	<u>Lloyd Alter</u> : In Praise of the Dumb Home (1 AIA/CES HSW LU)	

### Friday Presentation Program

	7:30 am	Registration, Exposition, & Light Breakfast		
		<b>(A) Hall 1: Business &amp; Policy</b>	<b>(B) Hall 2: Theory &amp; Practice</b>	<b>(C) Hall 3: Beyond Passive House</b>
	8:00 am	Welcome, <u>Alex Boetzel</u>		
<b>Keynote</b>	8:30 am	Morning Keynote <u>Günter Lang</u> : Sustainable Cities Go Passive – Passive House High & Wide: From Passive Skyscrapers to All-Passive City Districts (1 AIA/CES HSW LU)		
	9:30 am			

1	9:40 am	<u>Julie Kriegh, Mike Fowler, Russ Weiser</u> : Agile + Elegant + Passive House (1 AIA/CES HSW LU)	<u>Hammer &amp; Hand</u> : 5 Years, 6 Walls, 7 Projects (1 AIA/CES HSW LU)	<u>Graham Wright</u> : Design for Comfort (1 AIA/CES HSW LU)
	10:40 am	Break		
2	10:50 am	<u>Joe Giampietro</u> : Eco Proforma; <u>Molly McCabe</u> : Market Realities / High-Performance Buildings (1 AIA/CES HSW LU)	<u>Graham Irwin</u> : Thermal Time Constant – A Basis for a Simplified Passive House Standard? (1 AIA/CES HSW LU)	<u>Andrew Michler</u> : Decarbonize your Passive House (1 AIA/CES HSW LU)
	11:50 am	Break		
3	12:00 pm	<u>Duane Jonlin &amp; Mark Frankel</u> : Policies, Codes and the Proliferation of Net Zero Energy Buildings (1 AIA/CES HSW LU)	<u>Bronwyn Barry</u> : Transforming Your PHPP with PDT (1 AIA/CES HSW LU)	<u>Ken Levenson</u> : Toward Safe and Natural High-Performance Enclosures (1 AIA/CES HSW LU)
	1:00 pm	Lunch & Expo		
<b>Keynote</b>	2:20 pm	Afternoon Keynote: <u>Steve Hallet</u> : Passive Houses, Efficiency Traps, and Some Unexpected Comments on Carbon (1 AIA/CES HSW LU)		
	3:20 pm	Break		
4	3:30 pm	<u>Fiona Douglas-Hamilton</u> : The Future for Passive House / Net Zero Energy Building Evaluation (1 AIA/CES HSW LU)	<u>ZEHNDER</u> : Multi-Family Ventilation (1 AIA/CES HSW LU)	<u>Tom Marseille &amp; David Mead</u> : Water Versus Energy – Taking a Balanced Approach (1 AIA/CES HSW LU)
	4:30 pm	Break		
5	4:40 pm	<u>John Hickey</u> : The United States Armed Forces Energy and High Performance Building Initiatives (1 AIA/CES HSW LU)	<u>Passive House Case Studies</u> : Roy Passivhaus, Owl Haven Passive, and View Haus 5 (1 AIA/CES HSW LU)	<u>Shawn Oram</u> : Design for Off (1 AIA/CES HSW LU)

	5:40 pm	Refreshments & Exposition
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### **Additional Speaker Information**

**Dylan Lamar** is among the leading Passivhaus consultants in the country, having designed Passivhauses since 2004 from Illinois, to New Mexico, to Oregon. He has translated the PHPP into IP-units, in 2008 and 2014. He has also worked on many Passivhaus first's in the nation including office/educational buildings, affordable single-family and the largest multifamily Passivhaus (currently under construction).

Program Description: This will be an interactive workshop introducing and guiding participants through use of the designPH Sketchup plugin and how to best integrate with the PHPP-IP v2.0. We will review best practices in the use of these tools for planning and certification purposes. Participants should bring a laptop installed with registered versions of Sketchup, designPH and the PHPP-IP v2. Sketchup and PHPP experience are strongly recommended to get the most from the workshop.

**Dan Whitmore** has worked in the construction industry since 1987 as a carpenter, general contractor, builder, and consultant with additional stints as a designer and FEMA Inspector. His introduction to high-performance building came at an early and impressionable age when, in 1977, his family built an award-winning Solar Home in Oklahoma, where he grew up. As designer, builder and Certified Passive House Consultant in 2010 he completed one of the first Passive Houses in Washington State. As a part of the Hammer and Hand, Inc. team he concentrates on project development and implementation in the Seattle market in addition to energy and building consulting throughout the region. Additionally he is an Instructor for the Passive House Institute US, co-developer of the PHIUS Builders' Training program, Board Member of the Passive house Alliance US and a founding Board Member of Passive House Northwest.

Program Description: At the helm of any construction project is the builder, interpreting the intents of the architect, engineer, and client to bring vision to reality. While Passive House methodology is not rocket science, it does add complexity and nuance throughout the construction process, often in ways new to the North American builder. Dan's workshop will pull from his experience building and consulting on twenty Passive House projects as well as the insights of countless Passive House builders from across North America. Session participants will come away with an understanding of the various components that go on into Passive House buildings with special focus on those developed for the Pacific Northwest, how those components differ from standard construction, and how they go together into a holistic solution that delivers durability, efficiency, comfort, and health.

**Bronwyn Barry** designs buildings, products, organizations, marketing campaigns and events - and prefer sto play in the high performance sandbox with the bold and adventurous. Her diverse skills are optimized by a love of collaboration, a startup mindset and a formidable work ethic. An international background and unconventional training have fostered a creative mind and ability to problem solve. Her specialty is achieving results through relationship and team building. She has strong connections across a broad spectrum of disciplines, from policy makers and researchers, to contractor and energy modeling communities. These relationships span the globe. Her fascination with structure extends to systems and organizations. She is a disciple of 'Bright Spot' theory and enjoys using that technique to rapidly scale and replicate systems that are already working. When not focused on buildings, she can be found on Twitter, mining new information, making new friends or simply enjoying a bit of global banter. Bronwyn currently enjoys working as the Design Director at One Sky Homes - a Silicon Valley Net Zero and Passive House Design|Build company. She periodically consults to window manufacturers on high performance profile design. Her volunteer time is spent in service to Passive House California and the North American Passive House Network.

Program Description: There is an increasing need for optimization tools in the Passive House community. Running hundreds of PHPP iterations is not only complicated, but time consuming – unless this process is automated. Fortunately for us all, this is exactly the task that computers are good at.

**Gary Klein**, President of Gary Klein & Associates has been intimately involved in energy efficiency and renewable energy since 1974. One fifth of his career was spent in the Kingdom of Lesotho, the rest in the United States. Mr. Klein has a passion for hot water: getting into it, getting out of it and efficiently delivering it to meet customer's needs. After serving 19 years with the California Energy Commission, he has provided consulting on sustainability since 2008. Mr. Klein

received a BA from Cornell University in 1975 with an Independent Major in Technology and Society with an emphasis on energy conservation and renewable energy.

**Program Description:** Once we build a very high performance building from the perspective of heating, cooling and ventilation and install high efficiency lighting and plug loads, we are left with what to do about hot water. Hot water is a system: heater, distribution piping, plumbing fixtures and appliances, waste heat that runs down the drain. This session will discuss practical measures you can incorporate into your next project that result in high performance hot water systems and very satisfied customers. Bring your floor plans and your questions. We will demonstrate the principles, not just discuss them!

**Zack Semke:** Zack is director of business development and chief evangelist with Hammer & Hand, a Portland and Seattle-based construction company dedicated to inciting evolution in building through service, craft, and science. <http://hammerandhand.com> Founded in 1995, the firm specializes in high performance building in the commercial and residential realms, with projects like Karuna House, the first in the world to achieve the triple crown of Passive House, Minergie, and LEED Platinum certifications. After graduating from Stanford University with a degree in Human Biology: Human Ecology, Zack began his career with the then-fledgling Coalition for a Livable Future, supporting its work in the '90s to advance progressive planning policy in the Portland region. By 1998, Zack's passion for beating on huge drums beckoned and he devoted himself fulltime to co-directing Portland Taiko, leading the group's organizational development, fundraising, and artistic programming, and performing for half a million people across the US. In 2005 Zack returned to his interest in the built environment, enrolling in the design program at the Landscape Institute in Boston. It was through his subsequent work as a designer at Shapiro Didway Landscape Architecture that he was introduced to Hammer & Hand. He joined H&H in 2010.

**Lloyd Alter:** Writer / Toronto. Lloyd Alter is managing editor of TreeHugger. He has been an architect, developer, inventor and prefab promoter. He contributes to The Guardian, Azure and Corporate Knights magazines, and is Adjunct Professor teaching sustainable design at Ryerson University School of Interior Design. Lloyd is a Past President of the Architectural Conservancy of Ontario. In the course of his work developing small residential units and prefabs, Lloyd became convinced that we just use too much of everything- too much space, too much land, too much food, too much fuel, too much money, and that the key to sustainability is to simply use less. And, the key to happily using less is to design things better.

**Program Description:** The smart home is the hot subject in the news these days, with technology becoming embedded in everything in our homes and offices. Much of this technology is being developed as add-ons to our existing building stock, in attempts to provide better control, comfort and energy efficiency. The presenter will make the case that this is the wrong approach, that it is counterproductive and possibly dangerous, and that it is usurping the role and responsibility of the architect, replacing good efficient and effective design with technological band-aids.

**Günter Lang:** Since 2001, LANG Consulting's intensive passive house networking, research and consulting work have made it a world-renowned passive house expert. In close cooperation with the Passivhaus Institut, Günter Lang has made a major contribution to networking passive house stakeholders worldwide and publicizing the passive house standard. In 2013 the Passivhaus Institut together with Günter Lang formed Passivhaus Austria – an expert networking group led by Günter Lang. Prior to leading Passivhaus Austria, Günter Lang was the manager of IG Passivhaus Oberösterreich for ten years. LANG Consulting conducts theoretical research and pioneering demonstration projects. Günter Lang presents his findings promptly and widely in numerous congresses and technical meetings worldwide. Günter Lang suggests that if you really want to get understand passive house, you must experience it for yourself. This is why Günter Lang has shown his own passive house – Austria's first certified passive house - to thousands of visitors and conducts expertly-guided excursions to other passive houses for visitors from all over the globe.

**Keynote Summary:** Europeans are redeveloping entire city districts with passive buildings. Travel with us to the Bahnhof district in Heidelberg completed in 2015 with \$2.6B US in new passive house apartments (5,000 dwelling units) and commercial buildings (7,000 work spaces). And see the Eurogate district in Vienna – the first passive house district worldwide. With every building meeting the Passive House Standard, the world's most rigorous energy-standard. And Brussels, Belgium, where every new building constructed or substantially remodelled since January 1, 2015 must meet the Passive House Standard. See 10- and 20-story skyscrapers, both new and retrofitted, that meet the Standard, and learn how their energy intensity is a fraction of comparable US buildings. Gunter Lang, an Austrian Passive House researcher and leading expert on large-scale Passive House developments, will present these developments and explain why developers, building owners/investors, and government officials decided these skyscrapers, districts, and cities

must meet the Passive House Standard.

**Julie Kriegh:** KRIEGH ARCHITECTURE STUDIOS, founded in 2000, focuses on high performance residential buildings and neighborhoods. Julie Kriegh, AIA, LEED AP, and international CPHC advocates strategies that are Aggressively Passive, using high performance building, sustainable site, and community design modeling to achieve low-energy demand and low-impact site design community wide. She holds degrees from Duke University and University of Washington (Master of Architecture) and is currently pursuing a PhD researching occupant behavior.

**Mike Fowler:** Mike is an Architect at Mithun, a design firm working to inspire a sustainable world for people and the planet through leadership, innovation, and integrated design. His 25+ years of experience on award-winning projects includes two net-zero energy designs and six LEED projects. He has served on two Technical Advisory Groups for the Washington State Building Code Council (Green Building and the Energy Code) and chairs the Codes and Planning Policy Committee for AIA Washington Council. Recently, Mike managed the Multifamily New Construction and the Residential New Construction energy efficiency financial incentive programs at Puget Sound Energy. There he created the first and only whole-building residential measure in the country with an incentive for predicted low-energy-use design and a bonus incentive for actual metered energy use hitting the design target. Mike has authored a peer-reviewed outcome-based energy budget code proposal (original 2012 proposal and current 2015 proposal to Washington State) that sets an energy use budget for eleven occupancies/uses, establishes a road map to achieve 70% energy use reduction compared to 2003 baseline by 2030, incorporates site and building design with the future ability to generate 40% of the energy budget with renewable energy, and sets the stage for buildings with low energy use to participate in a future state cap and trade program.

**Russ Weiser:** Russ has a background in Science and worked as an Assistant Professor at Virginia Tech before becoming an Architect. Russ studied Architecture at University of Oregon and worked at the Energy Studies in Buildings Laboratory (ESBL). Working at HKP Architects since 1999, Russ is familiar with all phases of sustainable design and has a keen interest in reducing barriers to Passive House Construction.

Program Description: High performance new construction residential buildings strive to meet their predicted energy use targets as modeled. However, meeting stringent targets can remain elusive due to: development cost hurdles, funding sources, delivery methods, construction quality, and occupant behaviors. To address this issue, the authors take a deep look into an iterative project delivery process (Agile) designed to target high performance quality construction (Passive House) and leverage strategic financial incentives (Elegant) for an early investment of time and resources leading to better outcomes with greater transparency and assurance of success. The Agile project delivery method was developed in 2001 by the Software industry to increase the success rate of innovative product delivery. Applied to the construction industry, the Agile process necessitates the assessment of the project iteratively to promote innovation and accountability focusing on people and values as well as project performance goals through feedback and flexibility. Agile accomplishes projects with lower risk by structuring financial incentives that reward project goals at discrete intervals in the process. Elegant energy efficiency financial incentives from local utilities or statewide programs assist with reducing early project cost hurdles. Incentives open the door to a powerful marketing message that emphasizes increased project value. A groundbreaking example is the new 2014 Whole Building Target EUI and Actual-Use incentive from the Residential New Construction program at Puget Sound Energy. This unique incentive provides higher financial incentives to lower energy use targets and it rewards projects that prove actual energy performance over a full year with additional dollars. Passive House buildings fit this incentive perfectly. Passive House examples will show how projects can leverage energy savings and incentives into increased financing opportunities, how projects can offer more value for less cost, and how a cash positive project can be achieved using the Agile project delivery method.

**Sam Hagerman:** For 30 years Sam has worked as a builder, business owner and high performance building proponent. In 1995 he co-founded the contracting firm Hammer & Hand, emphasizing sustainability in the built and work environments. He is active in the national and local policy arenas, recently completing a three-year term as inaugural president of the national Passive House Alliance US, for which he continues to serve as board member. In 2012, Sam completed the first commercial Passive House retrofit in the US, the Glasswood Building in Portland. In 2013, he finished the Pumpkin Ridge Passive House (one of six super-efficient "demonstration homes" recognized by NW Energy Star) and the Karuna House (the first green building in the world to earn LEED, Passive House, and Minergie certifications). His current Passive House and other high performance building projects stretch from Yamhill County, Oregon to Seattle, Washington.



Program Description: This presentation will share the evolution in Hammer & Hand's construction of wood framed Passive House envelopes in the Pacific Northwest. Drawing on seven built projects in Portland and Seattle, the session will examine how each assembly aimed to optimize performance, cost, land use, and durability. The presentation will also chart Hammer & Hand's move toward developing details that are more familiar to the building community and easy to assemble, moving from unique practice to common practice. A series of detailed, 3D color renderings of the various wall assemblies will illustrate the presentation. The six case studies are: 1. Courtland Place – A fun carpenter's puzzle with minimal budget; 2. Karuna House – A high design, high performance showcase; 3. Glasswood – Passive House retrofit of a commercial building; 4. Pumpkin Ridge – "Let's do all cellulose!"; 5. Maple Leaf – Solve problem of walk-out basement; 6. Puget – Move toward standard practice; 7. Madrona – Add mineral wool (life's good between a rock and a hard place). Discussion of each wall assembly will be organized into three categories, Air Barrier, Moisture Management, and Insulation, as follows: 1. Sheet goods with tape: Glasswood, Courtland Place; 2. Sheet goods or OSB with liquid applied membrane at seams: Pumpkin Ridge, Maple Leaf, Madrona; 3. Liquid applied membrane applied as continuous layer: Karuna, Puget. Moisture Management; 1. Liquid applied membrane applied as continuous layer: Karuna, Puget; 2. Liquid applied membrane at punched openings with integrated membrane WRB: Glasswood, Courtland Place; 3. Liquid applied membrane at punched openings with Agepan (integrated sheet good) as WRB: Pumpkin Ridge; 4. Liquid applied membrane at punched openings and panel edges, with ZIP Sheathing (structural sheet good with factory applied WRB): Maple Leaf (extra credit: mineral wool at Madrona). Insulation 1. Cellulose cavity fill with exterior foam: Glasswood, Karuna; 2. Cellulose cavity fill with exterior mineral wool: Madrona; 3. Dense fiberglass with exterior foam: Puget, Maple Leaf; 4. Larsen Truss with cellulose: Pumpkin Ridge; 5. Wall truss with dense blown fiberglass: Courtland Place; This climate-specific examination of Passive House envelope strategies will share construction details, cost-effective strategies, site management considerations, code issues, and how to coordinate Passive House construction practice with existing conventions.

**Graham S. Wright** earned a Ph.D. in electrical engineering from the University of Illinois with thesis work related to ink-jet printing, and worked ten years for Eastman Kodak on development toner-based printing technology. In 2007 he decided to devote the rest of his career to energy efficiency and renewable energy, joined Americorps VISTA and moved to Minnesota, where he helped the Rural Renewable Energy Alliance develop a durable and efficient solar air heat panel. In 2008 he served as a permaculturalist for the Hunt Utilities Group and discovered Passive House. In 2009 he moved to Portland Oregon where he is currently the principal of Wright On Sustainability, a pre-certifier for PHIUS and chair of the Technical Committee, and a hygrothermic analyst for Small Planet Workshop.

Program Description: Passive house buildings are characteristically designed for low peak or annual heating and cooling loads ("very small furnace size".) One of the selling points is that thermal comfort is improved (and/or that there is less need of distribution systems for heating and cooling.) But to the extent that comfort is a primary concern, it would be better to design for it directly using human comfort metrics, rather than using energy metrics as proxies. For one thing, the benefit of ceiling fans can then be modeled. Also, the fully mixed single-zone building energy models that are usually used for passive design may not be granular enough especially for large buildings. This presentation will introduce the Predicted Mean Vote and Predicted Percent Dissatisfied metrics, review the comfort standards ASHRAE 55, ISO 7730, and EN 15251, and explore how we might use them for comfort focused design, and to make tradeoffs between passive measures and distribution systems, and to quantify the comfort benefits of passive design in normal operation and in outage situations.

**Joe Giampietro** - Joe joined NK in 2012 with more than 30 years of experience in real estate development, land use planning, and architecture. In his role, Joe oversees all projects during the production of construction documents and throughout the construction phase, helping project managers provide high-quality design services to NK's clients. He has a passion for designing high-performance, low-energy buildings. Joe earned a bachelor's degree in architecture from the Catholic University of America and dual master's degrees in architecture and landscape architecture from the University of Pennsylvania. He is also a Certified Passive House Consultant. Joe is a founding member of Passive House NW and an active member of the Sunset Hill Community Association and the Seattle chapter of the Northwest EcoBuilding Guild. Aside from his professional interests, he enjoys sailing small sailboats, playing basketball, and woodworking.

**Molly McCabe** is an pioneer in the field of finance & sustainability. Through her company HaydenTanner, she acts as a management consultant and strategic advisor to NGO's, governmental agencies and global organizations. With more than 25 years of experience in commercial real estate, finance, and business consulting, she is a groundbreaker in the monetization of resource efficiency. Molly has a comprehensive and quantitative understanding of the triple bottom line. Molly's company, HaydenTanner, cultivates practical solutions and strategies to accelerate the emergence of

resilient buildings and vibrant, sustainable cities. Her work centers on game changing innovation – innovation that will change how we live and work and the resources we use. Utilizing a systems approach, her company focuses on identifying future trends in order to recognize technological and cultural shifts, as well as new patterns that can dynamically alter markets. As these themes are charted, risks are proactively managed with an eye on the big picture and the bottom-line. Through thoughtful questions, intuitive listening and active partnering, she crafts bold and creative solutions to enhance resiliency, community vibrancy and livability while meeting economic objectives.

**Graham Irwin** has worked in the construction industry for over twenty years. He has a degree in physics with additional studies in engineering and architecture, and an extensive background in software development. Graham recognized the potential of Passive House immediately and was one of the first Passive House Consultants certified in the US, as well as a founding board member of the Passive House Alliance, US (PHAUS), and Passive House California. He was subsequently trained by the Passivhaus Institut in Darmstadt, Germany as a Passive House project certifier. Graham is also a USGBC LEED AP, a Build It Green Certified Green Building Professional, an NCBDC Certified Professional Building Designer, and a professional member of the American Institute of Building Design (AIBD). Graham is actively involved in Passive House advocacy, promotion and education. In addition to project-based work, he advises government agencies on energy policy and lectures regularly. He has presented at the International and North American Passive House Conferences, West Coast Green, numerous Green Building Professionals' Guilds, the Affordable Comfort Institute's Home Performance Conference and JLC Live. Graham teaches Passive House courses for Pacific Gas and Electric (PG&E) and trains Passive House Consultants for the Passive House Institute, US (PHIUS).

Program Description: There have been numerous revisions, and proposals for revision, to the "Passive House Standard," by both PHI and PHIUS. These changes are intended to extend and enhance the feasibility and scope of Passive House, but they have also resulted in increased complexity. The "thermal time constant," a hidden calculation within PHPP, measures a building's ability to resist changing outdoor conditions. Might this be key to a simplified, yet robust, definition of "Passive?" This presentation will explore this issue and illustrate the environmental and economic benefits of buildings with long thermal time constants.

**Andrew Michler**: Owner Baosol LLC consulting, writer of *Hyperlocalization of Architecture | Sustainable Building Archetypes* released April 2015 by eVolo Publishing. Born in Oakland, California Andrew found his way to a pine forest in the Colorado Rockies where he has lived off grid for 20 years. Blending his long time experience in design/construction, art, and sustainable building research into the written word he began exploring contemporary buildings for the environmental design website *Inhabitat*, *eVolo Magazine* and other publications in 2010. His newly released book *Hyperlocalization of Architecture* explores firsthand new environmental contemporary architecture movements around the world including the passive house chapter [Germany Maintains] available for free at [www.hyperlocalarch.com](http://www.hyperlocalarch.com).

Program Description: As our building become much more efficient the importance of what we build with becomes a core design consideration. The emerging understanding of the impact of materiality in construction, while still imprecise has a deep and lasting environmental impact. The carbon footprint of a conventional building may be an important but small percentage of its lifetime impact, with Passive House the environmental impact of materials can notably go up as the energy consumption goes down. This is a particularly salient objective when investing in fabric first design and the resulting demand for more raw materials. The goal is to merge the revolution of Passive House and the evolution of low impact healthy construction from the standpoint of the envelope system. Using foam free Passive House construction methodologies Andrew will explore the impact of material selection from an environmental and building perspective. The first project is a small off grid retreat that merges Passive House with Cradle to Cradle inspired methodology to select materials based on environmental impact, health, and life use assessments. This inspired a second foam free mainstream three bedroom Passive House in a typical suburban neighborhood. Material selection and incorporation is examined for the environmental attributes with a focus on mineral wool, cotton batt, and cellulose and to de-emphasize concrete, foams, and plastics. The results are lower cost and more robust wall systems. Other mainstream and fungible low carbon envelope systems will highlighted as well including heavy timber large construction to emphasis the synergies of scale, material, and energy efficiency.

**Mark Frankel** is the Technical Director for the New Buildings Institute. NBI develops programs, policy, training, and research on high performance buildings and energy efficiency for organizations all over the country. Currently Mark is involved in national coalitions to improve building performance feedback, market adoption strategies for net zero energy and deep energy retrofits, and in the development and

implementation of innovative codes and programs focused on building performance outcome and benchmarking. Mark has been consulting on energy efficiency and sustainable design for over 20 years. Mark has consulted on hundreds of capital projects, ranging in scale from single and multi-family residential projects to large commercial buildings and portfolio strategies. Mr. Frankel is a LEED Fellow and a licensed architect, and serves on the board of the Seattle 2030 District.

**Duane Jonlin** serves as the Energy Code and Energy Conservation Advisor for Seattle's Department of Planning and Development, and is the primary author of the Seattle Energy Code. He has been appointed by two Governors to the Washington State Building Code Council and chairs its Energy Code Technical Advisory Group. In addition, he was recently appointed by ICC to the International Energy Conservation Code committee. Prior to joining the City, he was a principal at NBBJ, where he led regulatory compliance and quality management initiatives. Duane is a professional member of AIA and ASHRAE, with 30 years' experience designing civic and institutional work, and has architectural degrees from the University of Washington and University of Michigan. He is active in national code development through ICC, and lectures extensively on energy efficiency and construction technology in the Pacific Northwest. [duane.jonlin@seattle.gov](mailto:duane.jonlin@seattle.gov)

Program Description: "Progress toward Net Zero is accelerating around the country, with more projects being completed, and more aggressive codes and policies being adopted to encourage net zero energy buildings. In this session Mark Frankel and Duane Jonlin will discuss what kinds of net zero projects are being delivered, and how policies and codes are influencing this market. NBI has been involved in the development of net zero strategies and policies at the local, regional and national level, and Mark will provide context on how the market and the policy goals are interacting to support more broad scale adoption of net zero. Seattle has adopted a range of leading policies and code language that encourage progress toward net zero through various strategies, and Duane will describe these mechanisms and discuss how other jurisdictions are also demonstrating leadership in these areas."

**Ken Levenson** graduated from Pratt Institute in 1989 and has been a registered architect in New York State since 1993. Ken is a Certified Passive House Designer, a founding board member of New York Passive House, the National Passive House Alliance and the North American Passive House Network. Ken is a founding partner at 475 High Performance Building Supply.

Program Description: There is a growing demand for building materials that meet low-energy goals while maintaining the health, safety, and wellness of building occupants for the life the building. Many products going into high performance and Passive House buildings today are falling short: particularly spray foam. Foam has come to dominate high performance building by claiming a high insulating value, air tightness, and vapor control all in one product. When practitioners are seeking more environmentally friendly alternatives, they are often left scratching their heads about the options, the details, and the possible results. This presentation will cover the basic building science of high performance enclosures. A wide range of material options such as wood fiberboard, sheathings, membranes, mineral wool, straw bale, cellulose and other insulations will be considered. Airtightness goals will be analyzed, looking at ground, wall, and roof conditions as well as the design, construction, and testing of the assemblies.

The presentation will demonstrate that one can achieve higher performance, greater sustainability, resilience, and building health without foam. We also show how to do it with practical examples, details, and assemblies that make sense for the Pacific Northwest.

**Steve Hallett** is an associate professor in the Department of Horticulture and Landscape Architecture at Purdue University. He is the faculty lead on the university's student farm and sustainable agriculture degree programs. Originally trained as an ecological and agricultural scientist, Steve has recently delved deeper into research that address sustainability from a broader perspective and has published two books: *Life without Oil: Why we must Shift to a new Energy Future* (Prometheus Books, Amherst, NY: 2011), and *The Efficiency Trap: Finding a Better Way to Achieve a Sustainable Energy Future* (Prometheus Books, Amherst, NY: 2013).

Program Description: The concept of the passive house is one of the most enlightened and progressive in the sustainability arena. Passive houses have extremely low energy demands, are more easily made

independent of the grid, and are highly functional. Passive building can also be an excellent antidote to efficiency traps that promise to conserve resources but actually increase resource consumption. It would be hard to criticize the passive house movement for a failure to address environmental concerns. Nonetheless, in the spirit of striving to improve our focus and effectiveness I will discuss efficiency traps that could affect the passive housing movement. I will also discuss the passive house movement in terms of the twin crises of fossil fuel depletion and global climate change.

**Fiona Douglas-Hamilton** is the founder of SEEC LLC, a green valuation consulting and education firm located near Olympia, WA. SEEC is a licensed real estate school offering green building continuing education courses to appraisers and real estate brokers. In addition, SEEC partners with regional and national organizations to develop targeted market value transformation initiatives. In 2007, Fiona established the Green Building Value Initiative's steering committee and speaks regularly at the national level on green valuation and real estate initiatives, most recently at the Appraisal Summit in Las Vegas. Fiona is a faculty member for the EMERGE Leadership Project and is a regular contributing author for NAR's Appraisal Insight. Fiona has a background in commercial development and residential green building that spans twenty years.

**Robbi Currey** is a certified residential appraiser and accredited green appraiser and has been appraising residential and small income properties in the five central counties of Western Washington since 2003. She established her competency in high performance properties early on and was contracted under the Green Building Value Initiative, the 2007-2009 Cascadia region initiative to investigate the hypothesis of a premium for green. Robbi is a partner within SEEC LLC and co-manages its appraisal initiatives and trainings. She holds her WA Real Estate Instructor license as well as being a Certified Distance Education Instructor and has been instructing on green valuation topics since 2009. Her interest and education in alternative energy and sustainable building spans approximately 20 years and includes the national Sustainable Building Advisor certification. Robbi currently is serving as Subject Matter Expert to the Appraisal Practices Board on their Residential Green Building Valuation Guidances.

Program Description: The session will be presented by Fiona Douglas-Hamilton and Robbi Currey, principals of SEEC LLC and will explore the realities and future for advanced appraisals of passive house and net zero energy homes through three regional case studies. SEEC is considered one of the national leaders in the development of high performance home valuation education and case studies. Attendees will learn the latest thinking around high performance home valuation that is supported by The Appraisal Foundation.

**Shawn Oram's** work at Ecotope since 2002 focuses on energy efficiency and its relationship to building systems design. Mr. Oram has a deep knowledge of buildings, systems and energy use gained through field studies, research, energy audits, code compliance analysis, extensive energy modeling, commissioning, and design of HVAC and plumbing systems. He assisted in creation of the guidelines for the Design for Off™ approach to creating low energy buildings. Mr. Oram stays current in the latest emerging technologies, product and building trends and is active in local and national ASHRAE and ASPE chapters. He specializes in resource efficient HVAC and plumbing systems for a diverse array of commercial buildings constructed under California, Oregon, Washington and Alaska building codes. He has developed construction documents delivering over 1,000,000 dollars in utility incentives for his projects. Mr. Oram leads a team of highly specialized engineers to deliver the most cost effective and energy efficient buildings while meeting clients' budget, project and timeline goals. He has played key roles in the design of innovative mechanical and plumbing systems.

Program Description: The last 30-years have seen some significant changes in the technologies and techniques used in creating new commercial buildings. While this has included significant strides in the energy efficiency and performance of lighting systems, window glazing, building insulation, and HVAC equipment efficiencies, this has not translated to consistently high performing buildings. Typical new buildings are using nearly the same energy use per square foot as buildings built in the 1980s. This presentation seeks to demonstrate how it is possible to meet the ambitious goals of the 2030 Challenge in commercial buildings - Net Zero Energy by the year 2030. To do this we will present lessons from our experience auditing typical new buildings as well as from our successful design experience producing buildings that are meeting the 2030 Challenge. From these case studies of real buildings we will pull out the essential ingredients to produce highly energy efficient buildings. This points to a new approach to building systems design which we call "Design for Off".

**Aubrey Gewehr** has been working on buildings since he was a kid growing up in the trades. After a long stint as a cabinetmaker he decided to pursue a career in renewable energy, went back to school, and earned a degree in

mechanical engineering at Cal Poly, San Luis Obispo. Shifting focus to efficient mechanical systems and building load reduction, he has worked as a consulting mechanical engineer - designing high efficiency HVAC and plumbing systems. Currently technical sales engineer for Zehnder America he specializes in high performance energy recovery ventilation systems. Aubrey is a licensed professional engineer and a certified Passive House consultant.

**Program Description:** In an increasing market for multifamily - energy efficient - high performance building shells, efficient ventilation strategies become paramount in maintaining human health and comfort without sacrificing high level project such as Passivhaus Certification. So what is the best approach to creating a well-ventilated multifamily building? As with most issues in design, it depends... This workshop will discuss ventilation approaches to be considered from large central air handlers, to individual systems in each dwelling, to options in between. The pros and cons of several strategies will be presented with ample time to pose questions and debate methods. How important is distribution? Is heat recovery necessary? Should occupants have control? How much air is enough? These questions and more will be addressed through outlining general concepts and presenting case studies. Bring your own questions or a specific problem you are struggling with for discussion.

**Tom Marseille, PE, MSME, Hon AIA, LEED BD+C,** is Director for WSP Seattle and is Director of Sustainability for WSP USA. Mr. Marseille strives to deliver creative high performance building solutions to clients: solutions that are practical, maintainable and resource-responsible. Tom focuses on sustainable design consulting, HVAC design, delivery of best-in-class building performance outcomes, system simulation modeling, LCCA, capital asset assessment and planning, and renewable energy applications. Tom sits on the Cascadia Green Building Council Board of Directors and the Seattle Living Building Pilot Program TAG, was a past board member for the ILFI, and served on the Seattle Mayors Green Building Task Force.

**David Mead:** David is an architect, researcher and high performance building consultant who helps integrate engineering and architectural solutions into unified designs. His experience has included façade optimization for daylight harvesting, minimal heat loss and optimized solar gains. In addition to façade optimization, he has extensive experience with passive ventilation, low carbon HVAC system designs and post occupancy verification of high performance buildings. He is a committed advocate for net-positive buildings and is currently a co-chair for the Seattle AIA Committee on the Environment striving to advance the performance of the built environment towards a carbon neutral future.

**Program Description:** When looking at sustainability metrics the building industry has typically focused on energy and water independently. This is reflected in standardized metrics like energy use intensity (EUI) and water use intensity (WUI) but in practice water and energy use in a building is more complex than this. Water and energy are interlinked in intricate and often overlooked ways. This presentation works to show how water use and energy use are interlinked from source to site. This includes the water use intensity of electrical production, building system.

**John Hickey:**

**Program Description:** The United States Armed Forces have a colossal "boot print" in terms of real estate owned and buildings operated. They consume tremendous amounts of energy, and they are working hard on energy efficiency, renewable energy and high performance buildings. Here are some of the highlights: The US Navy, for example, is working aggressively to reach its goal of having 1 GigaWatt of renewable energy by the end of 2016. The DoD will invest approximately \$1B in energy efficiency through performance contracting by the end of 2016. All of the services have adopted the LEED Rating Criteria, and several net zero buildings have been completed. The services are focused on missions, and this has led them to implement micro grid solutions at some bases. The micro grids will integrate distributed generation assets such as PV and on site power plants with building automation systems and industrial controls to provide power reliability, energy efficiency, and cyber security in order to support their missions. (this is an area where the DoD is leading, and therefore, I find this the most interesting.)

**Skylar Swinford, Hammer & Hand:** Skylar graduated with a degree in Environmental Science from Willamette University in 2007 and has worked in the high performance building industry since. Skylar is a CPHC, PHIUS+ Rater, and a BPI-certified Building Analyst and Envelope Professional, and has played a key role in supporting Hammer & Hand's ongoing development as a leader in high performance building and Passive House praxis. This ranges from his work on highly visible projects like the Karuna House, Glasswood Commercial Passive House Retrofit, and Pumpkin Ridge House to the behind-the-scenes development of Hammer & Hand's quality assurance procedures that help guide the application of high performance building principles in the field.

Program Description: We know that the energy consumption of our buildings is a big contributor to the biggest environmental crisis of our time: global climate change. But what if our buildings could produce more energy than they consume? "Zero Energy Building" presents an enticing vision, but one that depends on a revolutionary reduction in the energy our buildings demand for heating and cooling. The Passive House approach to design and construction achieves this revolution, reducing by 90% the heating energy consumed by our buildings. Zack will present an overview of Passive House, how the building approach provides a practical path to Zero Energy Building, and discuss an important but often overlooked benefit of high performance building: the health and happiness it brings to building occupants.


**Passive House Case Studies:** By George Ostrow, Architect, Ryan Lurie, Builder – Roy Passivehaus, Robert Moore, Architect, Kenneth Dickey, Owner – Owl Haven Passive, Sloan Ritchie, Builder – View Haus 5

Program Description: A comprehensive look into three projects utilizing green building science in the Pacific Northwest. Two single family residences and one town home project, each demonstrating distinctive high performance, Passive House standards.

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