



What Will It Take?

Designing Carbon-Free Buildings

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SPEAKERS



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Vice President, Director of Building Engineering Physics, HKS

The Hub and Clark Construction Group kicked off its series, “What Will It Take? The Path To 2050 And Carbon-Free Buildings,” with a panel focused on the role design and design professionals play in building sustainability, energy efficiency, and carbon emissions reduction. The robust discussion is worth watching in its entirety, but here are some of the key takeaways:

1. Focusing on building performance gives us a tremendous opportunity to address multiple societal challenges simultaneously.

Landreneau emphasized that by investing in existing buildings, we can save an enormous amount of embodied carbon by using existing infrastructure investments while also preserving historical and cultural heritage. Wackerle seconded this notion and argued that since many older buildings are blighted, there is an opportunity to engage community members and correct historic inequities while building stronger local economies. Finally, Zakrzewski highlighted the opportunities for smart buildings to integrate with the grid.

We have to figure out how to design spaces that engage occupants in being efficient and simultaneously create a sense of delight in being there.

— ANICA LANDRENEAU

In the next 10, 20 years, there isn't one discipline that's not going to be thinking deeply about decarbonizing the entire economy, so we need to help everyone realize that and invest accordingly.

— ARATHI GOWDA

2. The greenest materials are the ones we don't use.

Landreneau and Wackerle pointed out that even the greenest building project uses additional embodied carbon, so the solution should be to reuse buildings and materials as much as possible. Landreneau emphasized that designers should first focus on designing intelligently, for example, supporting future reconfigurations to avoid later use of virgin materials. Wackerle discussed the need for a secondary market of building materials, which is so far nascent and localized but could become more far-reaching and sophisticated.

3. Human behavior will determine the success or failure of building decarbonization.

To fully decarbonize, both building occupants and the building industry need to shift behavior. The only way to do so is to change the way people think about their interactions with the built environment. Landreneau argued that we need to figure out how to design spaces that engage occupants in being efficient. People don't understand how buildings relate to the environment or know how to read a building for efficiency or other measures. Similarly, Wackerle stressed the need for more practitioners to utilize simulation tools that demonstrate the value of passive building techniques and the ways buildings respond to nature. These simulations also need to factor in the human element into the design so that high-performing spaces genuinely feel better. "If a building is too hot or people are wearing sunglasses indoors, then that is a failure," said Landreneau.

4. Change is coming rapidly, and we need to be ready.

While sustainability professionals have been pushing for change for decades, the coming years are likely to produce a sea change in how companies and clients prioritize climate action. Gowda stressed the need to prepare for this opportunity by talking to clients now about what's coming. Zakrzewski called for more cohesive higher education programs that enable graduates to execute immediately on low- and zero-carbon buildings and building materials.

5. If we care about building decarbonization, we need to become activists for it.

Zakrzewski emphasized that we need to cultivate a carbon-reduction mindset by helping everyone understand how carbon plays into design decisions and talking about it at every opportunity. Gowda added that more organizations need to move from benchmarking toward advocating for more robust policies. In particular, Zakrzewski called out building performance policies as particularly powerful for incentivizing industry-wide shifts.

You have the potential to lift a whole community by reusing buildings. Through engagement processes, you can ensure the building responds to community needs as well as the needs of the owner. So now you're not only getting carbon reduction, you're also growing your economy and supporting communities that need investment.

— MELISSA WACKERLE

One way that we can begin to reduce the carbon intensity of materials is to think about the regionality and the availability of materials by focusing on shortening the distances of those materials being delivered and potentially extracted from project sites. This would significantly reduce the carbon intensity embodied in materials while also sustainably stimulating regional economies.

— FERNANDO ARIAS

We have to start thinking about preparing the next generation of designers and construction professionals, and scientists who make materials so they can execute all the things we're confronted with right now.

— TOMMY ZAKRZEWSKI

SPEAKERS PROFILES

FERNANDO ARIAS

Director of Sustainability, Clark Construction Group

Fernando Arias is Clark Construction Group's Director of Sustainability and draws from over 20 years of experience in architecture, operations, and construction to shape the company's sustainability strategies.

Arias is an architect and former military mechanic that became passionate about solving massive global challenges centered around health and the built environment. He has recently been recognized for his leadership in Advancing Health and Wellness in the Built Environment by the U.S. Green Building Council, along with his government appointments to the U.S. General Services Administration Green Building Advisory Committee, and the District of Columbia Green Building Advisory Council.

MELISSA WACKERLE

Senior Director, Sustainable Practice & Knowledge, The American Institute of Architects (AIA)

Melissa Wackerle, LEED AP BD+C, ND, is Senior Director Sustainable Practice & Knowledge with the American Institute of Architects. Melissa has 20+ years of experience in the design and construction industry and a Master's degree in Sustainability and Development. Her expertise ranges from green building certification management to enterprise and community consulting, Carbon Disclosure Project reporting, energy and water efficiency recommendations, and green construction practices. In addition, Wackerle directs programming for the AIA's Sustainability initiatives.

ANICA LANDRENEAU

Senior Principal, Global Director of Sustainable Design at HOK

Anica Landreneau leads HOK's global sustainable design practice, serving on the firm's board of directors and design board, and leading the firm's AIA 2030 carbon-neutrality commitment. She also serves on the LEED Advisory Committee, the AIA National Codes and Standards Committee, and the AIA Blue Ribbon Panel on Codes. Locally, Landreneau is serving her second term on the District of Columbia Green and Energy Codes TAG and her second term on the Mayor's Green Building Advisory Council. Landreneau is a graduate of the University of Houston, a frequent author and speaker, and has testified before Congress on climate issues.

TOMMY ZAKRZEWSKI, PH.D.

Vice President, Director of Building Engineering Physics, HKS

Dr. Tommy Zakrzewski is Director of Building Engineering Physics at HKS. He leads the integration of sustainable development goals with building engineering physics and analytics as a primary practice focus. Dr. Zakrzewski completed his Ph.D. in Architectural Engineering at the Illinois Institute of Technology advancing design sizing and performance optimization methods for building integrated thermal and electrical energy generation systems. He believes that a low carbon future is forged by integrative architecture and engineering and our purpose is to reimagine the built environment as an opportunity to be regenerative and adaptive for a more sustainable tomorrow.

ARATHI GOWDA

Associate Director, Team Leader Performative Design Group, SOM

Gowda is a team leader for SOM's High Performance Design Group, which spearheads the firm's sustainability work. As an educator, she is committed to training the next generation of sustainable practitioners and she has taught coursework on sustainable urbanism at multiple universities. She is an advocate for collective climate action, and she serves as the co-chair of AIA Chicago's 2030 Commitment Working Group and one of 20 Steering Committee members for U.S. Architects Declare. In 2019, she was named one of ten recipients of Green Building & Design's Women in Sustainability Leadership Award.

THERESA BACKHUS

Associate Director, Building Innovation Hub

Theresa Backhus is the Associate Director of Outreach and Engagement for the Building Innovation Hub within the Institute for Market Transformation. She has over 15 years of experience designing, measuring, and improving the performance of buildings, landscapes, and communities. Her past work includes roles at Sustainable Building Partners and the U.S. Green Building Council, as well as planning, design, and construction observation in both the public and private sectors. Theresa holds a BLA from Virginia Tech, and a Master of Environmental Management from Duke. She is a Registered Landscape Architect, LEED AP BD+C and ND, and SITES AP.

