

HOLLY W. SAMUELSON

Associate Professor of Architecture
Harvard Graduate School of Design
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May 3, 2024

ACADEMIC POSITIONS

- 2020-Present **Associate Professor of Architecture**
Harvard Graduate School of Design
- 2017-2022 **Co-Head, Master of Design, Energy & Environment**
Harvard Graduate School of Design
- 2013-2020 Assistant Professor of Architecture
Harvard Graduate School of Design
- 2012-2013 Lecturer in Architecture
Harvard Graduate School of Design
- 2008-2012 Teaching Assistant/Fellow
Harvard Graduate School of Design

PROFESSIONAL POSITIONS***Full-Time Positions***

- 2007-2008 **Sustainable Building Consultant, Green Roundtable**
Boston, MA. Technical consultant to architects, owners, and engineers on commercial building projects. Managed five staff members.
- 2001-2007 **Registered Architect, ADD Inc**
(now Stantec) Cambridge, MA. Designer for multiple commercial, retail, & multi-family projects. Environmental task force committee chair & in-house sustainability consultant.
- 2000-2001 **Graduate Architect, CelentoHenn Architecture**
Pittsburgh, PA. Boutique firm lead by two Harvard Graduate School of Design alumni/Carnegie Mellon Faculty.

Part-Time Positions

- 2011-2012 **Workshop Instructor, Green CE**
Ridgefield, WA. Part-time during graduate school. Taught LEED (Leadership in Energy and Environmental Design) workshops nationally. With Green CE and Sustainable Performance Institute below, taught over 300 hours of professional workshops.
- 2007-2011 **Workshop Instructor, Sustainable Performance Institute**
(formerly Green Roundtable), Boston, MA. Part-time during graduate school. Developed and taught professional workshops nationally on sustainable design, LEED, and daylighting buildings.
- 1999 **Summer Intern, The Design Alliance** Pittsburgh, PA
- 1997 **Summer Intern, Wasilowski Architects** Natrona Heights, PA

EDUCATION

- 2013 **Doctor of Design, Harvard Graduate School of Design**
- 2009 **Master of Design, Harvard Graduate School of Design**
Advanced placement. Graduated with distinction and highest GPA of over 200 graduates
- 2000 **Bachelor of Architecture, Carnegie Mellon University**
Tied highest GPA in history of School of Architecture. University & department honors

- 1999 Denmark International Study Program
Semester study abroad in Copenhagen, Denmark
- 1994-1995 Allegheny College
Biology and Chemistry dual major

SELECTED HONORS

- 2023 **Best Paper Award, *Energy and Buildings*** journal, selected as one of top ten papers in the past five years, 2018-2022
- 2021 **Nomination: VinFuture Prize**, nominated by the dean as the junior faculty candidate for female innovators, from the Harvard Graduate School of Design
- 2021 **Third Place: Solar Decathlon Design Competition**, faculty advisor, office division
- 2020 **Nomination: Andrew Carnegie Fellows Program**, nominated by the dean as the junior faculty candidate from the Harvard Graduate School of Design
- 2020 **Paper Commendation: Passive and Low-Energy Architecture Conference (PLEA)**, Coruña, Spain
- 2017 **First Place: International Building Performance Simulation Association Student Competition**, faculty advisor, biennial international competition. San Francisco
- 2014 **Outstanding Young Contributor Award: International Building Performance Simulation Association USA**, biennial national recognition for significant contributions to the field of building performance simulation. Atlanta, GA
- 2014 **Most Innovative Award: Better Buildings Case Competition, U.S. Department of Energy**, faculty advisor. Washington, DC
- 2013 **First Place: International Building Performance Simulation Association Student Competition**, faculty advisor, biennial international competition. Chambéry, France
- 2011 **Travel Award: International Building Performance Simulation Association conference**, for meritorious papers by student authors. Travel expenses to Sydney, Australia
- 2009 **Gerald M. McCue Medal: Harvard Graduate School of Design**, for the highest academic achievement of graduating students. Cambridge, MA
- 2009 **Best Paper Prize: ARUP Engineering**, [first author] for the best paper on simulation and design at the biennial International Building Performance Simulation Association Conference. Glasgow, Scotland
- 2009 **Travel Award: International Building Performance Simulation Association conference**, for the six best student papers of the conference. Glasgow, Scotland
- 2007 **Honor Award for Design Excellence: Boston Society of Architects**, Carmax Home Office project. Project role: designer, co-project architect, and sustainable design coordinator. Boston, MA
- 2007 **Award of Distinction for Sustainable Design: American Institute of Architects New England**, Carmax Home Office project. Project role: designer, co-project architect, and sustainable design coordinator. Boston, MA (For other awards, see project under “Selected Architecture Projects” above.)
- 2002/
- 2005 **Employee Honor Award**, ADD Inc (now Stantec), monetary award made annually to 1-3 employees out of 150 for exceptional contribution to a team working environment
- 2000 **Henry Adams Medal: American Institute of Architects**, for the top-ranking architecture graduate at Carnegie Mellon University. Pittsburgh, PA

PROFESSIONAL ACCREDITATION

- 2006 **Architecture Registration**, Massachusetts
- 2005 **Architecture Registration**, National Council of Architecture Registration Boards
- 2005 **Architecture Registration**, Texas
- 2002 **Leadership in Energy and Environmental Design (LEED) Accreditation**, Among the first accredited professionals

MEDIA

- 2024 **Women's Health**. "Toxic Mold... Climate Change Might Be Making It Worse", Pelly, V. <https://www.womenshealthmag.com/health/a60291591/toxic-black-mold-illness-climate-change/>
- 2024 **STAT**. Quote. "Older adults are vulnerable in a warming climate. Better buildings could help protect them" (Biography of Samuelson's post-doc researcher who was named a 2023 STAT Wunderkind, hero of Science and Medicine), DiCorato, A. <https://www.statnews.com/2023/10/19/amir-baniassadi-heat-older-adults-risks-climate-change/>
- 2023 **Washington Post**. Cited expert for "The Inequality of Heat," Gowen, A., Kommenda, N., Ducroquet, S., Anant, G. <https://www.washingtonpost.com/climate-environment/interactive/2023/india-deadly-extreme-heat-poverty/>
- 2023 **Boston Globe**. Quote. "Cambridge Enacts Ambitious Building Emissions Reduction Standards," Ellis, M.
- 2023 **Harvard Gazette**. Interview. "Struggling to Design Green Buildings Amid Shifting Legal, Tech Landscape," Pazzanese, C. <https://news.harvard.edu/gazette/story/2023/05/the-struggle-to-design-green-buildings-amid-shifting-legal-tech-landscape/>
- 2023 **Harvard Center for Green Buildings and Cities**. Interview. "How Designers Can Keep our Air Breathable," Smith, W. <https://harvardcgbc.org/how-designers-can-help-keep-our-air-breathable/>
- 2023 **Harvard Graduate School of Design**. Interview. "How Designers Can Keep our Air Breathable," Smith, W. <https://www.gsd.harvard.edu/2023/06/holly-samuelson-interview-about-air-quality-and-architecture/>
- 2023 **Harvard Center for Green Buildings and Cities**. Interview. "Center Spotlight: Holly Samuelson" <https://harvardcgbc.org/center-spotlight-holly-samuelson/>
- 2022 **Urban Land: Journal of the Urban Land Institute**. Featured academic project. "ResilientHub: A Study in Getting Office Buildings to Net Zero," Gibbs, A. and Peiser, R. <https://urbanland.uli.org/sustainability/resilienthub-a-study-in-getting-office-buildings-to-net-zero>
- 2020 **The Wall Street Journal Video**. Interview. "The Office Redesign Has Only Just Begun," Falk, A. <https://www.wsj.com/video/the-office-redesign-has-only-just-begun/93CDF89A-AA8B-4784-802C-F55F92EB618A.html>
- 2020 **The Wall Street Journal Video**. Cited contribution. "Ventilation is Key to Battling COVID. Here's Why" Hernandez, D. <https://www.wsj.com/video/series/wsj-explains/ventilation-is-key-to-battling-covid-heres-why/EC6274D1-B4F0-40DF-A8EC-F9BDA7C5D1A1>
- 2020 **Vogue**. Quote. "What Will Your Office Look Like After Lockdown?" Taylor, E.
- 2020 **New York Times**. Interview on air quality and disease transmission in theaters. Nevins, J. *unpublished*.
- 2019 **BBC**. Quote. "Why indoor air quality matters to our bodies and our brains," Greenwood, V., <https://www.bbc.com/worklife/article/20190724-why-indoor-air-quality-matters-to-our-bodies-and-our-brains>
- 2018 **Harvard Gazette**. Quote. "Your building might be making you sick," Walsh, C. <https://news.harvard.edu/gazette/story/2018/02/>
- 2007 **Architecture Boston**. Featured design project: Carmax Home Office. January/February 2007. chrome-

extension://efaidnbmnnnibpajpcglclefindmkaj/https://usmodernist.org/AIABOS/AIABOS-2007.pdf

2002 **Urban Land: Journal of the Urban Land Institute.** Featured design project: Carmax Home Office. Macht, W.P. "Building Green in the Woods," Vol 66, No. 8 pp. 150-151

2002 **Boston Globe.** Featured design project: Art Interactive gallery. McQuaid, C. "At this gallery viewers become part of the art," October 18, 2002 pp. C18, 21, <https://bostonglobe.newspapers.com/newspage/442743693/>

INVITED LECTURES & PRESENTATIONS

2024 **Maryland General Assembly, Maryland Department of the Environment, Workgroup on Mold Standards and Remediation.** Upcoming

2024 **Norman Foster Institute, Madrid, Spain, Public Lecture.** June and September, upcoming

2024 **IE University, Madrid, Spain, Public Lecture.** IE Architecture and Design Lecture Series, upcoming

2024 **Urban Redevelopment Authority Singapore, Public Lecture.** Singapore **over 450 in attendance**

2024 **National University of Singapore, Graduate School of Intelligent Eco-Science, Public Lecture.** Singapore

2024 **Seoul National University, Seoul, Korea, Public Lecture.** Department of Architectural Engineering undergraduates and graduates

2024 **Hanyang University, Seoul, Korea, Public Lecture.** Department of Architectural Engineering undergraduates and graduates

2024 **Syracuse University School of Architecture, Lecture.** Integrated Design Studio, online

2023 **University of Hong Kong Department of Architecture, Public Lecture.** "Buildings, Climate, and Health," Hong Kong

2023 **University of Hong Kong Department of Urban Planning and Design, Public Lecture.** "Cities, Climate, and Health," Hong Kong

2023 **International Building Performance Simulation Association USA, Emerging Professionals and Students Group, Panelist.** "Career Advancement Webinar," online

2023 **Boston Society of Architects, Sustainable Education Committee, Lecture.** Boston, MA

2023 **MIT Center for Global Change Science, Joint Program on Science and Policy of Global Change, Lecture.** "On Buildings, Climate, and Health in a Changing Climate" Cambridge, MA

2023 **Inframeet, Keynote.** "Architecture as Infrastructure" Paris, France, moved online

2023 **Hoyt Institute Lecture.** "Green Buildings, Retrofits, and Sustainability" West Palm Beach, FL

2023 **Specification Summit Lecture.** "Trends in Green and Healthy Buildings" San Antonio, TX

2023 **Harvard Center for Green Buildings and Cities, Faculty Presentation.** "The Role of Building Design in Aiding a Transition to a Carbon-Free Grid: Case Study of Glass Properties" Cambridge, MA

2023 **Harvard GSD, Books and Looks, Interviewer.** with Camilo Restrepo, Cambridge, MA

2023 **Syracuse University School of Architecture, Lecture.** Integrated Design Studio, online

2022 **Carnegie Mellon University School of Architecture, Public Lecture.** Research overview. Pittsburgh, PA

2022 **Harvard Business School, Panelist.** Climate Symposium. Boston, MA

2022 **Norman Foster Foundation, Energy Workshop, Public Talk and Panel Discussion.** Madrid, Spain

2022 **Harvard Center for Green Buildings and Cities, Faculty Presentation.** "Benefits of Building-Level Heat Mitigation and Adaptation Strategies" Cambridge, MA

2022 **International Building Performance Simulation Association Boston Chapter, Educational Session.** "Visualizing and Evaluating Views from Existing and Proposed Buildings." online

2021 **International Conference on Quality in Research, Keynote.** Universitas Indonesia, Indonesia, online

2021 **Harvard GSD Executive Education Reunion, Lecture.** Online

2021 **Four C Challenge, Keynote.** sponsored by the Shanghai Jiao Tong School of Design, China, online

2021 **Universidad de Sevilla, Workshop.** sponsored by the School of Architecture, Sevilla, Spain, moved online

2021 **U.C. Berkeley CBE, Symposium on Research and Design Practice Related to Window Views, Lecture.**

- “Visualizing and Evaluating Views from Existing and Proposed Buildings.” online*
- 2021 **Syracuse University School of Architecture, Lecture.** Integrated Design Studio, online
- 2021 **Southern Alberta Institute of Technology, Lecture.** Civil Engineering Technology, online
- 2020 **Hanyang University, Seoul, Korea, Keynote.** Occupant, Built Environment, and Building Performance Symposium, *delayed due to pandemic*
- 2020 **American Institute of Architects (AIA) and Association of Collegiate Schools of Architecture (ACSA),** Intersections Research Conference, Carbon. **Plenary Speaker.** online
- 2020 **University of Hartford. Public lecture.** “Architecture, Health, and Well-Being,” sponsored by Department of Psychology, *delayed due to pandemic*
- 2020 **University of Victoria and University of British Columbia. Public lecture.** sponsored by both Civil Engineering Departments, Vancouver Canada. moved to online.
- 2020 **Harvard Joint Center for Housing Studies. Public Lecture.** “Could Climate Change Increase the Risk of Mold in Housing?” online
- 2020 **Harvard Alumni Association. Public Lecture.** “Buildings, Energy, & Health in a Changing Climate” online
- 2020 **University of Pennsylvania. Architecture PhD Talks. Public Lecture.** “On Buildings, Health, and Energy: From COVID to Climate Change” online
- 2020 **Northeastern University. Public lecture.** “On Buildings, Energy, and Health in a Changing Climate”
- 2019 **Ryerson University. Public lecture.** “On Buildings, Energy, and Health in a Changing Climate”
- 2019 **Roger Williams University. Public lecture.** sponsored by the School of Architecture, Art and Historic Preservation, “On Buildings, Energy, and Health in a Changing Climate”
- 2019 **Universidad de Sevilla, Spain. Keynote,** International Conference on Courtyard Performance and Thermal Modelling
- 2019 **U. C. Berkeley College of Environmental Design. Public lecture.** “Bridging Design & Research”
- 2019 **Carnegie Mellon University School of Architecture. Public lecture.** “Bridging Design & Research”
- 2019 **University of Hawaii School of Architecture. Public lecture.** “Bridging Design & Research”
- 2018 University of Toronto, “Climatic Design Strategies”
- 2017 **Massachusetts Institute of Technology. Public lecture.** sponsored by the MIT Building Technology Program, “Toward More Effective Energy Simulation” <https://architecture.mit.edu/building-technology/lecture/towards-more-effective-building-energy-simulation>
- 2017 Harvard Graduate Consortium of Energy and Environment, “Battle of the Consortium: A Low-Energy Building Design Competition”
- 2016 **WSP/MM Future of Buildings Conference. Keynote.** Toronto, Ontario “Calibration of Design-Phase Energy Models”
- 2016 Harvard Business School, “The Empire State Building and State of the Art Energy Savings”
- 2015 **Harvard University. Public lecture.** sponsored by: Harvard Brain Science Initiative, Harvard Art Museums, Harvard Museums of Science and Culture, “In and Out of Sync: How Does Light Impact Health?” Location: Harvard University Science Center, Approx. 200 attendees
- 2014 Harvard Graduate Consortium of Energy and Environment, “Energy Efficiency in Early Architectural Design”
- 2013 Massachusetts Institute of Technology, “Models and Measurements”
- 2012 **Lawrence Berkeley National Laboratory. Public lecture.** “Bridging Simulation & Practice”
- 2012 **U. C. Berkeley College of Environmental Design. Public lecture.** “Bridging Research & Practice”
- 2012 **University of Pennsylvania Department of Architecture. Public lecture.** “Building Simulation: From Drawing Board to Reality”
- 2012 **Northeastern University College of Engineering and School of Architecture. Public lecture.** “Simulation and the Built Environment”

- 2012 **University of Southern California School of Architecture. *Public lecture.*** “Bridging Practice, Research, & Architecture Education”
- 2011 **U. C. Berkeley College of Environmental Design. *Public lecture.*** “Bridging Practice, Research, and Architecture Education”
- 2008 Massachusetts Institute of Technology, Center for Real Estate. “Real World Sustainability Strategies: The Unsexy Lecture”

PUBLICATIONS

Peer-Reviewed Journal Articles

Under Review

- 2024 “Understanding Healthy buildings and cities: A review of design strategies, health issues and applications.” Ang, Y.Q., Chew, L.W., **Samuelson, H.**, under review at the *Journal of Building Engineering*

Published

- 2024 “Impact of Workplace Design on Perceived Work Performance and Well-Being: Home versus Office.” Srivastava, C., Murnane, E., Billington, S., **Samuelson, H.**, *Journal of Environmental Psychology*, March 2024
- 2023 “Decoupling awake and asleep thermal comfort: Impact on building design optimization.” Salimi, S., Estrella Guillen, E., **Samuelson, H.**, *Journal of Building Engineering*, November 2023
- 2023 “Improving Building Resilience in the Face of Future Climate Uncertainty: A Fast Framework for Enhancing Building Life Cycle Performance.” Chen, R., Ren, C., **Samuelson, H.**, Zou, Y., Zheng, X. *Energy and Buildings*, November 2023
- 2023 “Learning Building Occupants’ Indoor Environmental Quality Complaints and Dissatisfaction from Text-Mining Booking.com Reviews.” Ma, N., Zhang, Qi., Murai, F., Braham, W., **Samuelson, H.**, *Building and Environment*, June 2023
- 2022 “Urban Heat Mitigation through Improved Building Energy Efficiency” Baniassadi, A., Heusinger, J., Meili, N., Izaga Gonzalez, P., **Samuelson, H.**, *Energy and Climate Change*, December 2022
- 2022 “Window View Quality: Why It Matters and What We Should Do.” Ko, W.H., Schiavon, S., ... **Samuelson, H.**, ... Wienold, J. (position paper with 55 total authors) 2022. *LEUKOS*, May 2022
- 2022 “Co-Benefits of Energy Efficiency in Residential Buildings,” Baniassadi, A., Heusinger, J., Izaga Gonzalez, P., Weber, S., **Samuelson, H.**, *Energy*, January 2022
- 2022 “Thermal comfort modelling and empirical validation of predicted air temperature in hot-summer Mediterranean courtyards,” López-Cabeza, V., Diz-Mellado, E., Rivera Gomez, C., Galán Marín, C., **Samuelson, H.** *Journal of Building Performance Simulation*, January 2022.
- 2021 “Exceedance Degree-Hours: A new index for assessing long-term thermal conditions,” Salimi, S., Estrella Guillen, E., **Samuelson, H.** *Indoor Air*, May 2021
- 2021 “Using recurrent neural networks for localized weather prediction with combined use of public airport data and on-site measurements,” Han, J.M., Ang, Y.Q., Malkawi, A., **Samuelson, H.** *Building and Environment*, April 2021
- 2020 “The Impact of Cultural Assumptions on Simulated Energy, Comfort, and Investment Returns,” Estrella Guillen, E., Vohringer, C., **Samuelson, H.**, *Building Simulation*, Oct. 2020
- 2020 “Health and Climate Benefits of Heat Adaptation Strategies in Single-Family Residential Buildings,” Williams, A., Baniassadi, A., Izaga Gonzalez, P., Buonocore, J., Cedeno Laurent, J. G., **Samuelson, H.**, *Frontiers in Sustainable Cities*, September 2020
- 2020 “Dynamic Metric of Natural Ventilation Performance for Interactive Modeling—Ventilation Cooling

- Effectiveness (NVCE)," Yoon, N., Norford, L., Malkawi, A., Piette, M. A., **Samuelson, H.**, *Building and Environment*, June 2020
- 2020 "Beyond Energy Savings: Investigating the Co-Benefits of Heat Resilient Architecture," **Samuelson, H.**, Baniassadi, A., Izaga Gonzalez, P., *Energy*, May 2020
- 2020 "Transfer learning with deep neural networks for model predictive control of HVAC and natural ventilation...," Chen, Tong, Zheng, **Samuelson, H.**, Norford, *Journal of Cleaner Production*, May 2020
- 2020 "Housing as a Critical Determinant of Heat Vulnerability and Health," **Samuelson, H.**, Baniassadi, A., Lin, A., Izaga Gonzalez, P., Brawley, T., Narula, T., *Science of the Total Environment*, February 2020
- 2020 "A New Method for Visualizing and Evaluating Views in Architectural Design," Li, W., **Samuelson, H.**, *Developments in the Built Environment*, January 2020
- 2019 "Comparing Energy and Comfort Metrics for Building Benchmarking," **Samuelson, H.**, Estrella Guillen, E. (co-first authors), Cedeno Laurent, J. G., *Energy and Buildings*, Oct. 2019
- 2019 "Achieving natural ventilation potential in practice: Control schemes and levels of automation," Chen, Y., Tong, Z., Wu, W., **Samuelson, H.**, Malkawi, A., Norford, L., *Applied Energy*, February 2019
- 2019 "Realizing natural ventilation potential through window control: The impact of occupant behavior," Chen, Y., Tong, Z., **Samuelson, H.**, Wu, W., & Malkawi, A. *Energy Procedia*, February 2019
- 2018 "Optimal Control of HVAC and Window Systems for Natural Ventilation Through Reinforcement Learning," Chen, Y., Norford, L., **Samuelson, H.**, Malkawi, A., *Energy and Buildings*, March 2018
Awarded Best Paper Award, Selected as one of top ten papers in Energy and Buildings in the past five years, 2018-2022
- 2017 "The Impact of Window Opening and Other Occupant Behavior on Simulated Energy Performance in Residence Halls," Cedeno Laurent, J. G., **Samuelson, H.**, Chen, Y., *Building Simulation*, Dec. 2017
- 2016 "Integrated Design Workflow and a New Tool for Urban Rainwater Management," Chen, Y., **Samuelson, H.**, Tong, Z., *Journal of Environmental Management*, September 2016
- 2016 "Parametric Energy Simulation in Early Design: High-Rise Residential Buildings in Urban Contexts," **Samuelson, H.**, Clausnitzer, S., Goyal, A. Chen, Y., Romo-Castillo, A., *Building & Environ.*, May 2016
- 2015 "Analysis of a Simplified Building Energy Model Calibration Procedure for 18 Real-World Case Studies," **Samuelson, H.**, Ghorayshi, A., Reinhart, C., *Journal of Building Performance Simulation*, January 2015
- 2012 "Non-Technical Barriers to Energy Model Sharing and Reuse," **Samuelson, H.**, Lantz, A., Reinhart, C., *Building and Environment*, July 2012
- 2012 "Learning by Playing – Teaching Energy Simulation as a Game," Reinhart, C., Dogan, T., Ibarra, D., **Samuelson, H.**, *Journal of Building Performance Simulation*, August 2012

Peer-Reviewed Conference Papers

Under Review

- 2024 "Quantifying Thermal Resilience with Energy Efficiency in Residential Building Stock Models." Kharbanda, K., **Samuelson, H.**, *Proceedings of IBPC (International Building Physics Conference)*, Toronto, Canada, July 2024 (under review)

Published

- 2024 "County-Level Assessment of Building Stock Thermal Resilience During Heat Waves and Power Outages." Belyamani, M., Kharbanda, K., Ma, N., **Samuelson, H.**, *Proceedings of PLEA (Passive and Low-Energy Architecture)*, Wrocław, Poland, June 2024 (accepted)
- 2024 "Convex Partition Zoner: A New Algorithm for Automated Thermal Zoning," Xiang, J., Cerezo, C., Dang, Q., **Samuelson, H.**, *Proceedings of SimBuild the International Building Performance Simulation Association (IBPSA) USA Conference*, Denver, CO, May 2024 (accepted)

- 2023 "Coupling CFD and BES simulation for the energy certification of buildings in Spain," López-Cabeza, V., Moreno-Lopez, D., Diz-Mellado, E., Rivera-Gómez, C., **Samuelson, H.**, Galán Marín, C., ***Proceedings of Building Simulation the International Building Performance Simulation Association (IBPSA) International Conference***, Shanghai, China, September 2023
- 2023 "Towards a Decision Framework Integrating Physics-Based Simulation and Machine Learning in Conceptual Design," Xu, M.Q., Garcia del Castillo Lopez, J. L., Samuelson, H. *Proceedings of Conference for Computer-Aided Architectural Design Research in Asia (CAADRIA)*, Ahmedabad, India 2023
- 2022 "Proposed Nomenclature for Net Zero and Electrified Buildings: A Residential Case Study," Moghaddasi, H., Culp, C., Vanegas, J., **Samuelson, H.** ***Proceedings of the 2022 ACEEE Summer Study on Energy Efficiency in Buildings***, Pacific Grove, CA, August 2022
- 2021 "Too Hot to Stay at Home: Residential Heat Vulnerability in Urban India," Agarwal, A., **Samuelson, H.** ***Proceedings of the International Building Physics Conference (IBPC)***, Copenhagen, Denmark, 2021
- 2021 "A New Method for Comparing Long-Term Thermal Conditions in Buildings," Salimi, S., Estrella Guillen, E., **Samuelson, H.** ***Proceedings of Building Simulation the International Building Performance Simulation Association (IBPSA) International Conference***, Bruges Belgium September 2021
- 2020 "Hygrothermal Performance Modeling of Building Envelopes under Future Climate Conditions," Tepfer, S. **Samuelson, H.**, ***Proceedings of Passive and Low-Energy Architecture (PLEA)***, Coruña, Spain, September 2020. **Awarded commendation.**
- 2020 "Comparison and validation of two simulation workflows for courtyard microclimates," López-Cabeza, V., Galán Marín, C., Rivera Gomez, C., **Samuelson, H.** ***Proceedings of Passive and Low-Energy Architecture (PLEA)***, Coruña, Spain, September 2020
- 2020 "Fast Adaptation of Thermal Dynamics Model for Predictive Control of HVAC and Natural Ventilation Using Transfer Learning with Deep Neural Networks," Chen, Y., Yang Z., Samuelson, H. ***Proceedings of American Control Conference (ACC)***. IEEE, July 2020
- 2019 "Simulating Mold Risks under Future Climate Conditions," Cabrera, H., **Samuelson, H.**, Kurth, M., ***Proceedings of Building Simulation the International Building Performance Simulation Association (IBPSA) International Conference***, Rome, Italy, September 2019
- 2019 "Tempering the Temporary: Improving Thermal Safety & Comfort in Relief Shelters," Tuladhar, S., Jahn, J., **Samuelson, H.**, ***Proceedings of Building Simulation the International Building Performance Simulation Association (IBPSA) International Conference***, Rome, Italy, September 2019
- 2017 "Improving Window Selection: A New Workflow and Tool for Architects/Engineers," He, H., Wang, R., **Samuelson, H.**, Michalatos, P., ***Proceedings of Building Simulation the International Building Performance Simulation Association (IBPSA) International Conference***, San Francisco, CA, US, Aug 2017
- 2015 "Toward Pre-simulated Guidelines for Low-Energy High-Rise Residential Design in Megacities," **Samuelson, H.**, Goyal, A., Romo-Castillo, A., Claussnitzer, S., Chen, Y., Bakshi, A., ***Proceedings of Simulation for Architecture and Urban Design (SimAUD)***, Washington, DC, April 2015
- 2015 "Integrated Workflow and a New Tool for Urban Rainwater Management," Chen, Y., **Samuelson, H.**, ***Proceedings of Building Simulation the IBPSA International Conference***, Hyderabad, India, Dec. 2015
- 2014 "Post-Occupancy Evaluation and Partial-Calibration of 18 Design-Phase Energy Models," **Samuelson, H.**, Ghorayshi, A., Reinhart, C., ***Proceedings of SimBuild the IBPSA and American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE) Conference***, Atlanta, Georgia, September 2014
- 2011 "Identifying Non-Technical Barriers to Energy Model Sharing and Reuse," **Samuelson, H.**, Lantz, A., Reinhart, C., ***Proceedings of Building Simulation the IBPSA International Conference***, Sydney, Australia, November 2011
- 2011 "Learning by Playing – Teaching Energy Simulation as a Game," Reinhart, C., Dogan, T., Ibarra, D., **Samuelson, H.**, ***Proceedings of Building Simulation the IBPSA International Conference***, Sydney,

Australia, November 2011

- 2009 "Modeling an Existing Building in DesignBuilder/EnergyPlus: Custom vs. Default Inputs," **Wasilowski, H.** [maiden name], Reinhart, C., *Proceedings of Building Simulation the IBPSA International Conference*, Glasgow, Scotland, July 2009. **Awarded Arup Engineering Best-Paper Prize**

Research Reports/Book Contributions

- 2018 "Green Cities: Energy and Urban Form", Funded report for Office for Urbanization, Harvard GSD, 2018, **H. Samuelson**, P. Cabrera, K. Carmody.
- 2018 "Tall, Hot, and Zero," Lead editor for funded 170-page research report for Harvard Center for Buildings and Cities, 2018. Ed. **H. Samuelson**, with fifteen contributors
- 2015 "House Zero: Research Report," Lead editor for funded 60-page executive report and 200+ page extended report for Harvard Center for Buildings and Cities, 2015. Ed. **H. Samuelson**, with twenty contributors
- 2015 "Comparing Modes of Operation for Residential Ceiling Fans to Achieve Thermal Destratification," **Samuelson, H.**, 2015
- 2010 "Investigating the Importance of Customized Energy Model Inputs," **Samuelson, H.**, & Reinhart, C., in *Ecological Urbanism*, Eds. Mohsen Mostafavi & Gareth Doherty, Baden Switzerland, Lars Muller Publishers, pp. 472-475, 2010

OTHER CONFERENCE/SYMPOSIA PRESENTATIONS

- 2024 "Designing for Air Quality: Boosting Accessibility and Zero-Emission Goals." *AIA24 Conference on Architecture and Design*. American Institute of Architects. Washington, DC, June 2024.
- 2023 "Aligning Building Design with Future Energy Generation: Case Study of Solar Heat Gain Coefficient." *ASHRAE Building Performance Analysis Conference and SimBuild*. Austin, TX, September 2023.
- 2023 "The Role of Building Design in Aiding a Transition to a Carbon-Free Grid: Case Study of Glass Properties," *Climate Change 2023 Conference*. Online, September 2023.
- 2022 "Aligning Building Design with Future Energy Generation: Case Study of Solar Heat Gain Coefficient." *ASHRAE/IBPSA Building Performance Analysis Conference and SimBuild*. Chicago, IL, September 2022.
- 2022 "Voluntary Energy Efficiency Program." *International Conference on Climate Change: Impacts & Responses*. Vancouver, Canada, April 2022. (Advisor of student presenter.)
- 2021 "Top Barriers to Low-Carbon Cooling." *Cooling, Climate, and COVID, Symposium*. Online. December 2021
- 2021 "Visualizing and Evaluating Views from Existing and Proposed Buildings." *Symposium on Research and Design Practice Related to Window Views*. Berkeley Center for the Built Environment. Online. October 2021
- 2021 "Advanced Research Topics in Building Simulation." IBPSA Boston. Public lecture, August 2021
- 2019 "Highly Energy-Efficient Buildings to Net-Zero." *ABX Conference*, Boston, Massachusetts, November 2019
- 2019 Think Tank Expert. Captains of Innovation, Strategic Brainstorming with Daikin Corporation, October 2019.
- 2019 "Indoor Exposure to Heat in the Age of Mechanical Air Conditioning." *ASHRAE Building Performance Analysis Conference*, (work presented by co-author) Denver, Colorado, September 2019
- 2018 "Innovation 2030: Next Generation" Presentation, *American Institute of Architects Conference*, June 2018. One of 12% of session proposals accepted.
- 2018 "Clima[c]tic Design Game" *Society for Building Science Educators Symposium*, Iowa, July 2018
- 2017 "Simulating Window Operation" Conference Presentation OB-17 *Symposium on Occupant Behavior and*

Adaptive Thermal Comfort, Technical University of Denmark, May 2017

- 2017 Moderator. "Next Generation Tools" *Building Simulation, the IBPSA International Conference*, San Francisco, CA, USA, August 2017
- 2016 Invited Speaker/Panelist, "Capturing the Carbon Dividend, Implementing Cobenefits" *Harvard Global Health Institute*
- 2016 Invited Speaker, "Using Parametric Simulation to Design for Future Contexts", *Heliomorphism Conference*, Harvard Graduate School of Design
- 2014 "Post-Occupancy Evaluation and Partial-Calibration of 18 Design-Phase Energy Models," *SimBuild the IBPSA and ASHRAE Conference*, Atlanta, Georgia, September 2014
- 2014 "Energy Vernacular: A Simulation-Based Framework for Climate-Responsive Design", *Syracuse Center of Excellence Symposium on Advanced Building Systems*, Syracuse, NY, September 2014
- 2014 "The Energy Optimization Challenge: Teaching Climate-Responsive Design as a Game," *Society for Building Science Educators Symposium*, Tucson, Arizona, June 2014
- 2013 Panelist, *Resilience, Adaptability + Sustainability in the Built Environment*, Real Estate Academic Initiative Harvard University, April 2013
- 2013 "Save Shaheen! An Academic Daylight Retrofit Project." *DIVA (Design Iterate Validate Adapt) Day*, New York 2013
- 2011 "New Life for Existing Energy Models." U.S. Green Building Council's *GreenBuild Conference*, Toronto Canada, 2011. One of 130 sessions accepted out of 1,200+ submissions.
- 2011 "Identifying Non-Technical Barriers to Energy Model Sharing and Reuse," *Building Simulation, the IBPSA International Conference*, Sydney, Australia, November 2011
- 2009 "Modeling an Existing Building in DesignBuilder/EnergyPlus: Custom vs. Default Inputs," *Building Simulation the IBPSA International Conference*, Glasgow, Scotland, July 2009
- 2008 "Daylight Simulation," U.S. Green Building Council's *GreenBuild Conference*, 2008. Off-site education session taught with four other students. Drew 400+ attendees, the largest session of the conference.

SELECTED PROFESSIONAL PROJECTS

Selected Consulting Projects

- 2007-2008 **Isabella Stewart Gardner Museum Expansion**, Boston, MA
Role: Sustainability consultant to owner (solo consultant from Green Roundtable). Performed design review of Renzo Piano Building Workshop and BuroHappold 50% Design Documents. (Later left project to enter graduate school.)
- 2007-2008 **Suffolk University Residence Hall**, Boston, MA
Staples and T. J. Maxx Prototype Stores, Design standards for multiple stores (with Green Roundtable). Led project teams in healthy building design, energy and water conservation strategies, lighting, daylighting, material selection, LEED certification and envelope design.

Selected Architecture Projects

- 2007 **321 North**, Plantation, FL
33 acres, urban and architectural design, 550,000sf retail, 610,000sf office, 590 residential units, 5000 structured parking spaces. Managed design team through approvals phase for retail and parking portion of project (with ADD Inc, now Stantec). Led LEED for Neighborhood Development pilot project coordination. (Unbuilt)
- 2003-2005 **Carmax Home Office**, Richmond, VA

Co-project architect and sustainable design coordinator for 270,000sf Fortune 500 corporate headquarters (with ADD Inc, now Stantec). LEEDv2.1 Silver certification. Boston Society of Architects Honor Award for Design Excellence 2006, Mid-Atlantic Construction Magazine – Best Office Project of 2005, US Green Building Council James River Chapter – Award of Merit, Virginia Sustainable Building Network – Best Commercial Project of 2006

2002 **Art Interactive**, Cambridge, MA
Personal project (with some coaching from ADD Inc, now Stantec). A 2,500sf exhibition space for interactive art in a historic Jose Luis Sert building in Cambridge, MA. Role: Lead designer, project manager, and construction sub-contractor. Published with architecture credits in Boston Globe October 2002.

2001 **100 Acres Master Plan**, Boston, MA
Designer (with ADD Inc, now Stantec). Established urban design and architectural guidelines for 1,600,000sf residential and 2,600,000sf office space in the Fort Point Channel district of Boston

TEACHING EXPERIENCE

Environmental Systems I/GSD 6121 Fall, 2022, '23
Role: Solo Instructor. This half-semester course, required for first-year Master of Architecture students introduces building science and passive environmental strategies.

Environmental Systems II/GSD 6122 Fall 2018, '19, '20, '21, '22, '23
Role: Solo Instructor. This half-semester course, required for first-year Master of Architecture and Master of Design in Energy and Environment students introduces architectural daylighting, acoustics, and active building systems such as HVAC.

Building Simulation/ GSD 6125 Spring 2018, '19, '20, '21, '22, '23
Role: Co-Instructor. This half-semester course, required for first-year Master of Architecture students introduces energy simulation and computational fluid dynamics in architectural design.

Advanced Applications in Sustainable Architecture/ GSD 6374 Fall '20, Spring '23
Role: Solo Instructor. This elective course dives deeper into issues of environmental sustainability and analysis techniques, and students apply these concepts/skills in a semester-long project.

Environment, Economics, & Enterprise/GSD 5370 Spring '14, '15, '16, '17, '18, '19, '20, '21, '22
Role: Co-Instructor. This cross-disciplinary course challenges students to create projects in the built environment that are both economically effective and environmentally impactful.

Buildings and Health (formerly Building [/] Human Interaction)/ GSD 6361 Spring 2019, '20, '21
Role: Solo Instructor. This course investigates the interactions between humans and buildings with a focus on environmental sustainability and health.

Environmental Systems in Architecture/ GSD 6125 (old curriculum) Spring 2013, '14, '15, '16, '17
Role: Solo Instructor. This required course for first-year Master of Architecture students introduces energy and environmental considerations in architecture.

Energy Simulation for Design/GSD 6470 Fall 2012, '13, '14, '16
Role: Solo Instructor. This course provides an in-depth introduction to the use of energy simulation in the

architectural design process. [In 2012 it was called Simulation for Design and also included daylighting.]

Daylighting/ GSD 06479

Fall 2013, '14, '16

Role: Solo Instructor. This half-semester course investigates daylight as a form-generator in architecture and advances students' analog and digital analysis skills.

3rd Semester Core Architecture Studio/ GSD 1201

Fall 2011, '12, '13

Role: Consultant for six design studios. Provided lectures, desk critiques, and design reviews to ~70 students.

Parental Leave

Fall 2015, '17

Executive Education

Class: Energy and Energy Simulation in Buildings 2013, '14, '15, '16, '17, '18, '19, '20, '21, '22, '23

Harvard Business School and Graduate School of Design *Advanced Management Development Program*

Class: Energy and Energy Simulation in Buildings 2013, '14, '15, '16, '17, '18, '19, '20, '21, '23

Harvard Business School and Graduate School of Design *Real Estate Management*

Class: Light and Health 2020, '21

Harvard Graduate School of Design *Healthy Buildings Program*

ACADEMIC ADVISING

Doctoral Dissertations Supervised/Co-Supervised: 12 completed (5 in-progress)

Master's Theses Supervised/Co-Supervised: 43

Undergraduate Theses Supervised: 2

PROFESSIONAL SERVICE

Leadership Positions

2023-present Advisory Board: Mass General Brigham Health Design Lab

2023-present Advisory Board: Boston Metropolitan Planning Area Cool Roofs Advisory Group

2023-present Faculty and Senior Researcher: Harvard China Project

2023-present Advisory Member: Lethal Humidity Global Council

2023-present Advisory Group Member: Metropolitan Area Planning Council (Metro-Boston) Cool Roofs

2022-present Faculty Advisory Committee: Harvard GSD Gund Hall Renovation

2021-present Board Member: Harvard GSD Review Board (policies on personal and academic conduct and harassment)

2020-present 2050 Goal Subcommittee: Harvard U. Presidential Committee on Sustainability,

2017-present Core Faculty Leader: Harvard Center for Green Buildings and Cities

2020-present Board of Advisors: VEL work cafes start-up

2018-2022 Executive Board Member: Simulation in Architecture and Urban Design (SimAUD) organization

2017-2022 Co-Head: Master of Design in Energy and Environment Program, Harvard Graduate School of Design. Set requirements, develop curriculum, organize lectures/events, recruit and advise students

2016-2021 Faculty Advisor: Harvard GSD Executive Education Program

2018 Task-Force Committee Member: Executive Education Task Force, Harvard Graduate School of

- Design. Developed a new strategic plan for the future of all non-degree programs at the school.
- 2015 Co-Chair: *Simulation in Architecture and Urban Design Conference (SimAUD)*, Washington, DC
- 2014 Chair: Scientific Advisory Sub-Committee ASHRAE/IBPSA USA *Building Simulation* Conference
- 2011-2013 President: International Building Performance Simulation Association (IBPSA) USA, Boston Chapter. Founding member and first elected president. Set a precedent for all local chapters. Hosted multiple technical symposia on energy modeling, attended locally and by virtual participants on five continents
- 2013 Board of Advisors: New Generation Energy, Not-for-profit organization achieving energy efficiency and energy generation projects for other not-for-profit organizations
- 2007-2008 National Council of Architecture Registration Boards (NCARB) Pre-Test Committee: Provided quality control for architecture registration exams
- 2007-2008 Director: GreenBuild Conference Sub-Committee, Organized 13 events for a conference of 30,000+ attendees. Led approximately 50 volunteers

Competition/Award Juries and Peer-Reviews

- 2023 Belle Fellowship, Harvard GSD
- 2023 Clifford Wong Prize in Housing Design, Harvard GSD
- 2023 Gund Hall Renovation Committee
- 2022-present Editorial Board, *Buildings and Cities* journal
- 2021 National Science Foundation, Grant Review Panelist
- 2014-2021 Harvard University Climate Change Solutions Fund Grant
- 2018 Project StaSiO (Standard Simulation Outputs) graphic competition with the International Building Performance Simulation Association, online
- 2017 American Institute of Architects Committee on the Environment, Student Competition, Washington DC USA
- 2013 US Green Building Council MA Green Building Awards, Boston, MA USA
- 2012-present **External Reviewer** for: Applied Energy journal, ASHRAE Transactions journal, Buildings and Cities journal, Building and Environment journal, Building Simulation Journal, Energy and Buildings journal, Energy and Built Environment journal, Journal of Building Engineering, National Science Foundation grants, Architectural Engineering Institute Conference, ASHRAE/IBPSA Building Simulation Conference, GreenBuild Conference, Passive and Low Energy Architecture (PLEA) International Conference, SimBuild Conference, Routledge book submissions, Springer book submissions, Carnegie Mellon, Catholic University, MIT, Roger Williams, RISD, Universidad de Sevilla, University of Oregon, Wentworth
- Example: 9 peer-reviewed journal articles in 2023