

Jared Langevin, PhD
Research Scientist
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EDUCATION

2009-2014 **Drexel University** Philadelphia, PA
Doctor of Engineering, College of Engineering (Advisor: Dr. Jin Wen)

2003-2008 **Carnegie Mellon University** Pittsburgh, PA
Bachelor of Architecture, College of Fine Arts

RESEARCH EXPERIENCE

2022-Present **Buildings Strategy and Analysis Advisor (Detail)**
U.S. Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy (EERE), Washington, D.C.
Assistant Secretary's Outstanding Achievement Award, 2023

- » Advise Deputy Assistant Secretary for Buildings and Industry on building decarbonization strategy across federal government based on latest research insights
- » Primary author of National Blueprint for U.S. Building Decarbonization (Spring 2024)
- » Support new EERE initiatives (e.g., Affordable Homes Earthshot), scope new EERE analysis projects (e.g., Buildings Standard Scenarios, Annual Technology Baseline)

2016-Present **Research Scientist**
Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA
Director's Award Exceptional Achievement Early Scientific Career, 2021

- » Lead development/communication of Scout, a building stock energy model for rapid assessment of building decarbonization solutions and scenarios (scout.energy.gov)
- » Model regional/national impacts of U.S. building efficiency, flexibility, and electrification on energy use, CO₂ emissions, consumer costs, and the power system
- » Investigate consumer technology adoption and demand flexibility behaviors
- » Contribute to emerging human-building interaction research community

2014-2016 **EERE Science & Technology Policy Fellow**
U.S. DOE, Building Technologies Office (BTO), Washington, D.C.
DOE Exceptional Service Award and EERE Energy Rock Star, 2016

- » Co-created Scout, a software program that estimates the national energy savings and CO₂ impact potential of emerging building energy efficiency technologies
- » Led BTO Catalyst, a virtual accelerator for building efficiency software startups
- » Expanded R&D focus of the BTO Sensors & Controls program to include occupant-centered sensing and control technologies, developed related funding opportunities

2011-2014 **Human Behavior and Low Energy Architecture: Linking Environmental Adaptation, Personal Comfort, and Energy Use in the Built Environment**
Drexel University, Philadelphia, PA (Funding Source: National Science Foundation)
Outstanding Dissertation Award, Mathematics and Engineering, 2014

- » Developed toolkit to integrate occupant behavior in building performance simulation
- » Developed/validated agent-based model of office occupants' energy-related behaviors
- » Collected and analyzed one year of field data on office occupant comfort and behavior
- » Devised new statistical models of individual-level thermal comfort responses

PUBLICATIONS & PRESENTATIONS

Citations: 2637; h-index:19; i10-index: 26 (Google Scholar, 04/19/2024)

Peer-Reviewed Journal Publications *corresponding author

- 2023
1. Langevin J*, Satre-Meloy A, Satchwell AJ, et al. Demand-side solutions in the US building sector could achieve deep emissions reductions and avoid over \$100 billion in power sector costs. *One Earth*. 2023;6(8):1005-1031.
- 2022
2. Becerik-Gerber B, [and 24 others, incl. Langevin J]. The field of human building interaction for convergent research and innovation for intelligent built environments. *Scientific Reports*. 2022;22092.
 3. Becerik-Gerber B, [and 24 others, incl. Langevin J]. Ten questions concerning human-building interaction research for improving the quality of life. *Building and Environment*. 2022;226:109681.
 4. Camarasa C, [and 20 others, incl. Langevin J]. A global comparison of building decarbonization scenarios by 2050 towards 1.5-2°C targets. *Nature Communications*. 2022;13:3077.
 5. Dong, B, [and 56 others, incl. Langevin J]. A Global Building Occupant Behavior Database. *Nature Scientific Data*. 2022;9:369.
 6. Nägeli C, [and 10 others, incl. Langevin J]. Best practice reporting guideline for building stock energy models. *Energy and Buildings*. 2022;260:111904.
 7. Luo N, Langevin J*, Chandra-Putra H, Lee SH. Quantifying the effect of multiple load flexibility strategies on commercial building electricity demand and services via surrogate modeling. *Applied Energy*. 2022;309:118372.
- 2021
8. Langevin J*, Harris, CB, Satre-Meloy, A, et al. U.S. building energy efficiency and flexibility as an electric grid resource. *Joule*. 2021;5(8):2102-2128.
- 2020
9. Langevin J*, Reyna, JL, Ebrahimigharehbaghi, et al. Developing a common approach for classifying building stock energy models. *Renewable and Sustainable Energy Reviews*. 2020;133:110276.
- 2019
10. Langevin J*, Harris CB, Reyna JL. Assessing the potential to reduce U.S. building CO₂ emissions 80% by 2050. *Joule*. 2019;3(10):2403-2424.
 11. Langevin J*. Longitudinal dataset of human-building interactions in U.S. offices. *Nature Scientific Data*. 2019;6(288):1-10.
 12. Satre-Meloy A, Langevin J. Assessing the time-sensitive impacts of energy efficiency and flexibility in the US building sector. *Environmental Research Letters*. 2019;14(12):1-12.
- 2018
13. Hong T, Langevin J, Sun K. Building simulation: Ten challenges. *Building Simulation*. 2018;1-28.
 14. Wang N, Phelan P, Harris C, Langevin J, Nelson B, Sawyer, K. Past visions, current trends, and future context: A review of building energy carbon, and sustainability. *Renewable and Sustainable Energy Reviews*. 2018;82(1):976-993.
 15. Foldvary V, [and 64 others, incl. Langevin J]. Development of the ASHRAE Global Thermal Comfort Database II. *Building and Environment*. 2018;142:502-512. *Best Paper 2018
- 2017
16. D'OCa S, Hong T, Langevin J. The human dimensions of energy use in buildings: A review. *Renewable and Sustainable Energy Reviews*. 2017;81:731-742.

17. Wang N, Phelan P, Gonzalez J [and 11 others, including **Langevin J**]. Ten questions concerning future buildings beyond zero energy and carbon neutrality. *Building and Environment*. 2017; 119:169-182.
- 2016 18. **Langevin J***, Gurian PL, Wen J. Quantifying the human-building interaction: Considering the active, adaptive occupant in building performance simulation. *Energy and Buildings*. 2016;117(1):372-386.
- 2015 19. **Langevin J***, Wen J, Gurian PL. Simulating the human-building interaction: Development and validation of an agent-based model of office occupant behavior. *Building and Environment*. 2015;88:27-45. *Best Paper 2015, Invited submission*
20. **Langevin J***, Gurian PL, Wen J. Tracking the human-building interaction: A longitudinal field study of occupant behavior in air-conditioned offices. *Journal of Environmental Psychology*. 2015;42:94-115.
- 2013 21. **Langevin J***, Wen J, Gurian PL. Modeling thermal comfort holistically: Bayesian estimation of thermal sensation, acceptability, and preference distributions for office building occupants. *Building and Environment*. 2013;69:206-226.
22. **Langevin J***, Gurian PL, Wen J. Reducing energy consumption in low income public housing. *Applied Energy*. 2013;102:1358-1370.
23. Cuéllar G, **Langevin J***. Space *per se*. *interpunct*. 2013;1:60-75. *Invited submission*
- 2012 24. **Langevin J***, Wen J, Gurian PL. Relating occupant perceived control and thermal comfort: Statistical analysis on the ASHRAE RP-884 database. *HVAC&R Research*. 2012; 18(1-2):179-194. **Invited submission*
- 2011 25. **Langevin J***. Reyner Banham: In Search of an Imageable, Invisible Architecture. *Architectural Theory Review*. 2011;16(1):2-21.

Peer-Reviewed Reports

- 2024 1. **Langevin J**, Wilson E, [and 9 others]. Decarbonizing the U.S. Economy by 2050: A National Blueprint for the Buildings Sector. U.S. Department of Energy, Washington, DC. 2024.
- 2021 2. Nubbe V, Lee K, Valdez A, Barbour E, **Langevin J**. Grid-Interactive Efficient Building Technology Cost, Performance, and Lifetime Characteristics. Lawrence Berkeley National Laboratory, Berkeley, CA. 2021.
- 2020 3. Sofos M, **Langevin J**, [and 30 others]. Innovations in Sensors and Controls for Building Energy Management: Research and Development Opportunities for Emerging Technologies. U.S. Department of Energy, Washington, DC. 2020.

Peer-Reviewed Book Chapters

- 2021 1. Hong T, **Langevin J**, O'Brien W, Yan D, Mahdavi A, Wang Z. Energy Estimating and Modeling Methods, Section 10: Occupant Modeling. In: *2021 ASHRAE Handbook-Fundamentals*. Atlanta, GA: ASHRAE; 2021.
- 2020 2. Hong T, **Langevin J**, and Luo N. Developing quantitative insights on building occupant behaviour: Supporting modeling tools and datasets. In: Lopez M, Antunes, HC, Janda KB, eds. *Energy and Behaviour: Towards a a Low-Carbon Future*. Cambridge, MA: Academic Press; 2020.
- 2019 3. Hong T, Dong B, **Langevin J**, Luo N. Occupant-centric Sensing and Controls. In: *2019 ASHRAE Applications Handbook*. Atlanta, GA: ASHRAE; 2019.

Peer-Reviewed Conference Proceedings * *corresponding author*

- 2023 1. **Langevin J***, [and 6 others]. Building Efficiency and Flexibility Can Avoid Up to \$100 Billion in Power Sector Decarbonization Costs. In: 2023 ACEEE National Conference on Energy Efficiency as a Resource, October 16-18, 2023, Philadelphia, PA.
- 2021 2. Luo N, **Langevin J***, and Chandra Putra H. Quantifying the effect of multiple demand response actions on electricity demand and building services via surrogate modeling. In: Building Simulation 2021; September 1-3, 2021; Virtual.
- 2020 3. **Langevin J***, Satre-Meloy A, and Fadali L. Attaching public health benefits to building efficiency measures at the national and regional scales. In: 2020 ACEEE Summer Study on Energy Efficiency in Buildings; August 17-21, 2020; Virtual.
- 2019 4. Salzman M, Satre-Meloy A, **Langevin J**, Bergmann H, Specian M. Grid-interactive, Efficient Buildings: Expanding Value Streams through Optimised Control of Flexible Building Technologies. In: European Council for an Energy Efficient Economy Summer Study; June 3-6, 2019; Presqu'île de Giens, France.
- 2018 5. **Langevin J***. Modeling the Adoption of Building Efficiency Technologies: A Review of Methods and Datasets. In: 2018 ACEEE Summer Study on Energy Efficiency in Buildings; August 12-17, 2018; Pacific Grove, CA.
6. Podkaminer K, **Langevin J**, Nubbe V, King B, Ma O, Mayernik J, Harris C, Wilson E. kWh or CO₂? How do energy efficiency measures stack up? In: 2018 ACEEE Summer Study on Energy Efficiency in Buildings; August 12-17, 2018; Pacific Grove, CA.
7. Sofos M, **Langevin J**. An R&D Roadmap of Cyber-Physical Systems for Building Energy Management. In: 2018 ACEEE Summer Study on Energy Efficiency in Buildings; August 12-17, 2018; Pacific Grove, CA.
8. Fares R L, Sofos M, **Langevin J**, Hosbach R, Meier A, Butzbaugh J, Ehrlich P. Improving Characterization of Miscellaneous Energy Loads in Energy Demand Models. In: 2018 ACEEE Summer Study on Energy Efficiency in Buildings; August 12-17, 2018; Pacific Grove, CA.
- 2016 9. Harris C, **Langevin J**, Roth A, Phelan P, Parker A, Ball B, and Brackney L. Scout: A Portfolio Impact Analysis Tool for Building Energy-Efficiency Technologies. In: 2016 ACEEE Summer Study; August 21-26, 2016; Pacific Grove, CA.
- 2014 10. **Langevin J*** and Wen J. Including occupants in building performance simulation: Integration of an agent-based occupant behavior model with EnergyPlus. In: 2014 ASHRAE/IBPSA-USA; September 12-14, 2014; Atlanta, GA.
11. **Langevin J***, Wen J and Gurian P L. Simulating the human-building interaction: Development and validation of an agent-based model of office occupant behaviours. Presented at: Windsor Conference 2014; April 10-13, 2014; Windsor Great Park, UK.
- 2013 12. **Langevin J***, Wen J and Gurian P L. Tracking Long-Term Occupant IEQ Outcomes: A Longitudinal Survey Tool. Presented at: IAQ 2013; October 15-18, 2013; Vancouver, CAN.
- 2012 13. **Langevin J***, Wen J, Gurian P L, Hsieh S and Novosel D. Behaviour in the Built Environment: Findings from a Survey of Occupants in Twenty Air-Conditioned Office Buildings. Presented at: Healthy Buildings 2012; July 08-12, 2012; Brisbane, AUS.
- 2011 14. **Langevin J***, Wen J, Hsieh S, Novosel D and Waring M S. Occupant Comfort, Productivity, and Personal Control in Twenty Air Conditioned Office Buildings. Presented at: Indoor Air 2011; June 05-10, 2011; Austin, TX.

Invited Seminars and Poster Presentations

- 2024
1. **Langevin J** and Wilson E. Decarbonizing the U.S. Economy by 2050: A National Blueprint for the Buildings Sector. Presented at: IRA, BIL, and the Future of Energy; April 18, 2024.
 2. **Langevin J** and Wilson E. Decarbonizing the U.S. Economy by 2050: A National Blueprint for the Buildings Sector. Presented at: Better Buildings, Better Plants Summit; April 2, 2024.
- 2023
3. Harris CB, Satre-Meloy A, and **Langevin J**. Development and Application of Building Decarbonization Pathways with Scout. Poster presented at: BTO Peer Review; April 24, 2023; Arlington, VA.
 4. Narayanamurthy R, Wilson E, and **Langevin J**. BTO strategy, goals, and vision for national building decarbonization. Presented at: BTO Peer Review; April 24, 2023; Arlington, VA.
 5. **Langevin J**. State Roundtable on Building Decarbonization. Moderated panel at: BTO Peer Review; April 24, 2023; Arlington, VA.
- 2021
6. **Langevin J**. FlexAssist: A risk-based framework for dynamic prioritization of flexible building loads. Presented at: BTO Peer Review; August 25, 2021; Virtual.
 7. **Langevin J**. Modeling nationwide building stock for energy efficiency, flexibility, and decarbonization. Presented at: 2021 ASHRAE Summer Conference, Jun. 28-30, 2021; Virtual.
- 2020
8. **Langevin J**. Grid-Interactive Efficient Buildings: Potential Impacts on Regional Utility Loads. Presented at: 2020 ASHRAE Summer Conf., June 29-July 2, 2020; Virtual.
 9. Luo, N and **Langevin J**. Collecting Real-Time Occupancy and Comfort Feedback. Presented at: 2020 ASHRAE Winter Conference, Seminar 15: Overview of the New Chapter 65 in 2019 HVAC Applications Handbook: Occupant-Centric Sensing and Controls; February 2, 2020; Orlando, FL.
- 2019
10. **Langevin J**. Grid-interactive buildings: Assessing the potential for energy flexibility alongside energy efficiency. Presented at: 2019 ACEEE National Conference on Energy Efficiency as a Resource; October 15-17, 2019; Minneapolis, MN.
 11. **Langevin J**. Planning energy efficiency and flexibility at the individual building and whole city scales. Presented at: 2019 Building Blocks for Smarter Cities Workshop; July 29, 2019; Arlington, VA.
 12. **Langevin J**. The role of occupant-centric control technologies in achieving national energy and emissions impacts. Presented at: ARPA-E SENSOR Program Annual Meeting; July 11, 2019; Denver, CO.
 13. **Langevin J**. Establishing a research community around human-building interaction: Supporting policy frameworks, datasets, and methods. Presented at: CENTIENTS Workshop; May 30, 2019; Los Angeles, CA.
 14. **Langevin J**. Scout: Software for rapid assessment of U.S. building efficiency impacts on energy use, emissions, and costs. Presented at: ENERCONF; June 19, 2019; Cork, IRL.
 15. **Langevin J**. Developing prospective technology targets for BTO Sensors and Controls: Methods and assumptions. Presented at: BTO Peer Review; April 15-18, 2019 ; Washington, D.C.

- 2018
16. **Langevin J.** Developing Prospective National Technology Goals for Occupant-Centric Measures. Presented at: 2019 ASHRAE Winter Conference; Jan. 12-16, 2019; Atlanta, GA.
 17. **Langevin J.** Scout-Software For National Building Energy Efficiency Impact Assessment. Presented at: INFORMS Annual Meeting; November 4-7, 2018; Phoenix, AZ.
 18. **Langevin J.** Projecting the Adoption of Building Efficiency Technologies: An Introduction to Interdisciplinary Modeling Approaches. Seminar session presented at: 2018 ASHRAE Annual Conference, June 23-27, 2018; Houston, TX. **Chairing role*
 19. **Langevin J.** Envisioning the resilient building: A research perspective. Presented at: 2018 Danfoss EnVisioneering Symposium, June 12, 2018, Washington, D.C.
- 2017
20. **Langevin J.** Scout: A tool for estimating the national impacts of building energy efficiency. Presented at: IEA Annex 70 Expert Meeting, August 11-12, 2017, Berkeley, CA.
 21. **Langevin J, Harris C, Roth A.** Scout: An Impact Analysis Software for Building Energy Efficiency. Presented at: Building Simulation 2017, August 7-9, 2017, San Francisco, CA.
 22. **Langevin J.** Occupant Behavior Modeling and Building Performance Simulation: Integration Challenges and Opportunities. Presented at: Beyond Visualization NSF Workshop, May 10-12, 2017, New Orleans, LA.
- 2016
23. **Langevin J, Harris C.** Scout: A Framework for Prospective Evaluation of Energy Efficiency R&D. Presented at: 2016 AAAS Annual Meeting; February 11, 2016; Washington, DC.
- 2015
24. **Langevin J.** Framing human-centered measures relative to other building efficiency technologies: Key challenges and opportunities. Presented as keynote for: The First International Symposium on Sustainable Human-Building Ecosystems, October 5-6, 2015; Pittsburgh, PA. **Keynote presentation*
 25. **Langevin J.** Building Technologies Office: An Overview and Areas of Interest. Presented at: ARPA-E DELTA Program Kickoff Meeting, May 21-22, 2015; Portland, OR.
- 2014
26. **Langevin J.** Human Behavior and Low Energy Architecture: Linking Environmental Adaptation, Personal Comfort, and Energy Use in the Built Environment. Presented at: 2014 CERC-BEE Workshop on Human Behavior in Buildings, August 28, 2014; Berkeley, CA.
 27. **Langevin J, Wen J, Gurian P L.** Human Behavior and Low Energy Architecture: Linking Environmental Adaptation, Personal Comfort, and Energy Use in the Built Environment. Posted presented at: Drexel Graduate Research Symposium, February 28, 2014; Philadelphia, PA. **Best poster overall*

Published Datasets and Websites

- 2023
1. **Langevin J, Satre-Meloy A, Satchwell AJ, et al.** Demand-side solutions in the US building sector could achieve deep emissions reductions and avoid over \$100 billion in power sector costs. *Mendeley Data*. DOI: 10.17632/sc4jxrn9nh.1
 2. **Langevin J, Satre-Meloy A, Satchwell AJ, et al.** U.S. Building Sector Decarbonization Scenarios to 2050. Online: buildings2050.lbl.gov. Accessed 01/02/24
 3. **Langevin J, Harris, CB, Satre-Meloy, A, et al.** U.S. building efficiency and flexibility as an electric grid resource (Data and Code, v2.1). *Zenodo*. DOI: 10.5281/zenodo.4602369
 4. **Satre-Meloy A, Langevin, J, Harris, CB, and Putra, HC.** Scout Benchmark Scenarios for U.S. Building Energy and CO2 Emissions to 2050 (v5). *Zenodo*. DOI: 10.5281/zenodo.3158929.

5. Harris CB and **Langevin J.** Scout. Online: scout.energy.gov. Accessed 01/02/24
- 2021 6. Nubbe, V, Lee, K, Valdez, A, Barbour, E, and **Langevin, J.** Grid-Interactive Efficient Building Technology Cost, Performance, and Lifetime Characteristics (v1). *Zenodo*. DOI: 10.5281/zenodo.4425061
- 2020 7. Hosbach R, Butzbaugh J, Meier A, Langevin, J. Miscellaneous Electric Loads: Dataset of Unit Energy Consumption (v1.1). *Zenodo*. DOI: 10.5281/zenodo.4012692.
- 2019 8. **Langevin J.** Longitudinal dataset of human-building interactions in U.S. offices (v1). *Zenodo*. DOI: 10.5281/zenodo.3351509.
9. Satre-Meloy A, **Langevin J.** Hourly U.S. Building Electricity Use, Cost, and Emissions Baselines to Support Time-Sensitive Analyses of Energy Efficiency and Flexibility Measures. *Zenodo*. DOI: 10.5281/zenodo.3473478.

SELECTED AWARDS

- 2023 **Assistant Secretary's Outstanding Achievement Award** U.S. DOE, Washington, DC
» *For authorship of National Building Decarbonization Blueprint*
- 2022 **Emerging Contributor 2022** IBPSA-USA
» *For demonstrated potential for significant contributions to field of building simulation*
- 2021 **Berkeley Lab Director's Award for Exceptional Achievement, Early Scientific Career** LBNL, Berkeley, CA
» *For innovative modeling and analysis of U.S. building decarbonization*
- 2020 **Assistant Secretary's Outstanding Achievement Award (Group)** U.S. DOE, Washington, DC
» *For analysis support of Grid-interactive Efficient Buildings Initiative*
- 2018 **Best Paper 2018, Building & Environment** LBNL, Berkeley, CA
» *Selected as one of 3 Best Papers out of ~3000 submissions*
- 2016 **Exceptional Service Award** U.S. DOE, Washington, DC
» *For work on BTO Scout, Catalyst, and occupant behavior R&D support*
- EERE Rock Star Award** U.S. DOE, Washington, DC
» *Recognizes 'above and beyond' activities; awarded for work on BTO Scout*
- 2015 **Best Paper 2015, Building & Environment** Drexel University, Philadelphia, PA
» *Selected as one of 3 Best Papers out of ~1900 submissions*
- 2014 **Outstanding Dissertation, Math and Engineering** Drexel University, Philadelphia, PA
» *Competed across all doctoral students graduating in Mathematics and Engineering*

GRANTS & FELLOWSHIPS

LBNL Funding

- 2022-2024 M&O Detail, Analysis Advisor (Award: \$640K; Role: PI; Sponsor: DOE-BTO)
- 2016-2024 Scout (Award: \$3.8M; Role: PI; Sponsor: DOE-BTO)
- 2019-2024 IEA-EBC Annex 82 (Award: \$340K; Role: PI; Sponsor: DOE-BTO)
- 2022-2023 DECARB (Award: \$180K; Role: Co-PI; Sponsor: DOE-SA)
- 2021-2023 Decarbonization Pathways (Award: \$420K; Role: Co-PI; Sponsor: DOE-BTO)
- 2021-2022 EcoBlock (Award: \$180K; Role: PI; Sponsor: CA Public Utilities Commission)
- 2019-2021 FlexAssist (Award: \$1.2M; Role: PI; Sponsor: DOE-BTO)
- 2017-2021 IEA-EBC Annex 70 (Award: \$250K; Role: PI; Sponsor: DOE-BTO)
- 2019-2020 GEB Technology Characteristics (Award: \$200K; Role: PI; Sponsor: DOE-BTO)

Doctoral and Postdoctoral Funding

2014-2016	EERE Science & Technology Policy Fellowship DOE, Washington, DC
2011-2014	NSF Graduate Research Fellowship Drexel University, Philadelphia, PA
2013-2014	ASHRAE Grant-In-Aid, Member Club Designation Drexel University, Philadelphia, PA
2009-2011	GAANN Fellowship Drexel University, Philadelphia, PA
2009-2011	Dean's Fellowship Drexel University, Philadelphia, PA
2009	Drexel Green Grant Drexel University, Philadelphia, PA
2009	Kling-Lindquist Scholarship Drexel University, Philadelphia, PA

PROFESSIONAL SERVICE

Research Community Participation

IEA-EBC Annex 82 (Building Energy Flexibility), IEA-EBC Annex 79 (Occupant-Centric Controls), IEA-EBC Annex 70 (Building Energy Epidemiology), IEA-EBC Annex 66 (Occupant Behavior Simulation), ASHRAE (Member TC 7.10, TC 2.10), Stanford University Energy Modeling Forum (EMF37); U.S. EIA Annual Energy Outlook Buildings Working Group, IPCC Sixth Assessment Report (Mitigation of Climate Change), CPUC EPIC Policy + Innovation Coordination Group

Peer Reviewer

Joule, Nature Communications, Nature Climate Change, Environmental Science and Technology, Environmental Research Letters, Applied Energy, Renewable and Sustainable Energy Reviews, Energy and Buildings, Building and Environment, Journal of Architectural Engineering, ASHRAE Transactions, Indoor and Built Environment, Indoor Air, Building Simulation, ACM BuildSys (program committee), DOE ARPA-E

SKILLS

Proficient

Python, Git, R Computing, Sphinx, Adobe Creative Suite (Photoshop, Illustrator, InDesign), MS Office Suite, GSuite

Familiar

EnergyPlus, Matlab, Rhino, SPSS, Building Controls Virtual Testbed, Netlogo, SurveyGizmo, HOBOWare, WattsUp plug load metering and software, AutoCAD, SolidWorks (CNC Milling, Laser Cutting, 3D Printing)

REFERENCES

Professional references are available upon request.