



BUILDING TECHNOLOGY & URBAN SYSTEMS ENERGY TECHNOLOGIES AREA



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Guest Editor Message

How Efficient Is Your Office Building?

As California and other states look to save energy and reduce demand on the grid, retrofits to commercial buildings will be an important part of the solution.

This month, my colleagues and I published a report on how high-performance façade systems with advanced insulation, ventilation, lighting and other features could boost energy efficiency and cut electricity costs and reduce carbon emissions for such buildings in California—the places we work, shop and create.

And across our division, researchers are hatching award-winning technologies (congratulations to our R&D 100 Award winners) and valuable, science-based insights that aim to make all buildings smarter and even healthier—how's that for a New Year's resolution? Check out [the new report here](#) and read on for what we've been up to.

— Christian Kohler, Department Head, Building Technology

Attaching Dollar Figures to Energy Efficiency Savings



By 2040, the commercial real estate sector is expected to consume 27 percent of all U.S. energy. Berkeley Lab, led by staff scientist Paul Mathew, is overseeing academic research on how energy efficiency changes building valuation. The goal is to develop insights that will drive further energy efficiency investment in the sector.

Learn more:

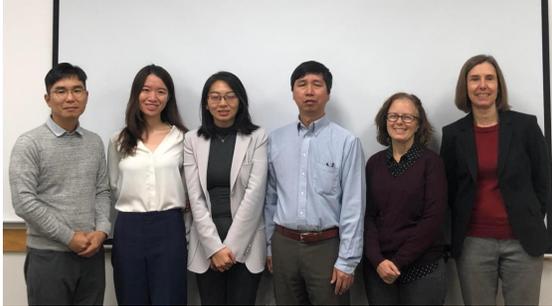
www.energy.gov/eere/buildings/articles/lbnl-partners-advance-empirical-research-energy-efficiency-and-building

Story at EIN: www.einnews.com/pr_news/499427745/lbnl-partners-to-advance-empirical-research-on-energy-efficiency-and-building-valuation

Read the reports: betterbuildingsolutioncenter.energy.gov/alliance/market-solutions/financial-performance

Commercial Building Energy Saver Wins R&D 100 Award

The Commercial Building Energy Saver (CBES), a



software toolkit that enables equitable access to building deep retrofit and zero-net energy strategies, has been honored with an R&D 100 Award by *R&D World* magazine. CBES was one of three Berkeley Lab technologies recognized.

Pictured from left to right: team members Sang Hoon Lee, Xuan Luo, Kaiyu Sun, Tianzhen Hong, Cindy Regnier and Mary Ann Piette.

Learn more: buildings.lbl.gov/news/article/lab-innovations-win-rd-100-awards

Prakash Rao Featured in CNBC Video



A recent CNBC story on ocean desalination technologies, one of several options being explored to address world water shortages, featured Prakash Rao. The BTUS research scientist talks about the pros and cons of the technology in the video, which has gotten more than 2 million views.

Watch the video: www.youtube.com/watch?v=bfr82RB72U8&feature=youtu.be

Jessica Granderson Provides an Expert Voice on Efficiency



The clean energy group E4TheFuture recently asked Jessica Granderson, BTUS deputy of research programs, and three other experts to be part of a panel interview on emerging efficient technologies. She answered questions about her work, new technologies and ways to support innovation.

"One path to continued innovation is to ensure a thriving and sustained pipeline of diverse, inspired talent in our field," she said. "To that end, we can all endeavor to shine a bright light on the difficult problems that our field presents and the rewarding careers that can be built upon solving them."

Read more: e4thefuture.org/blog/smarter-energy-savings-technologies-expert-voices/

Researchers Receive Lab Director's Award



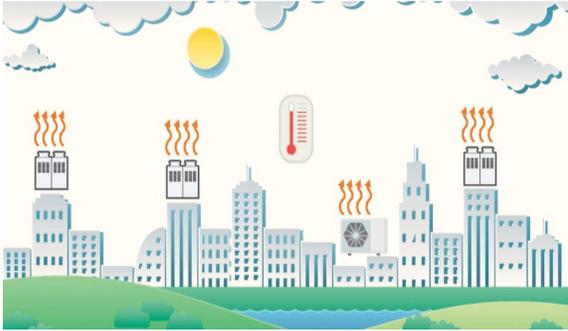
The Residential Ventilation Team, which includes BTUS researchers Iain Walker, Brett Singer, and Brennan Less, recently received a 2019 Director's Award in the Societal Impact category. The award cited the team, which also included mechanical engineer Woody Delp, for "scientific research and development of technologies, practices, and standards for residential ventilation that have made millions of homes healthier and more comfortable."

Pictured from left to right: Delp, Singer and Walker receive the award from Associate Lab Director Ravi

Prasher.

See all the laureates: recognition.lbl.gov/laureates/

How the Urban Systems Group Brought Science Solutions to Cities in 2019



Last year marked the beginning of operations for the Urban Systems Group, and the year was an eventful one. Research ranged from developing community action plans that improve clean energy equity and air quality in disadvantaged communities in California, to creating a computational framework that supports cities' energy and environmental goals in urban planning and operation of urban infrastructure.

here: buildings.lbl.gov/urbansystems-2019-annualreport

The group's 2019 report captures it all. Read

Vi Rapp Speaks at D.C. Congressional Briefing



Vi Rapp was selected by the University of California (UC) to represent Berkeley Lab at a UC congressional briefing on artificial intelligence research this past December in Washington.

The briefing was open to congressional staff, members of Congress, and the public — including agency officials. Rapp presented an overview of artificial intelligence research at Berkeley Lab and highlighted her own work on how machine learning is used to identify innovative solutions to replace or substitute petrochemical intermediates, fuels, chemicals and food ingredients.

Read more about machine learning at Berkeley Lab: <https://ml4sci.lbl.gov/>

Annual Report Shows FLEXLAB® Is Thriving



The 2019 fiscal year was one of the busiest yet for FLEXLAB, Berkeley Lab's advanced integrated building and grid technologies testbed. The facility recently marked its fifth anniversary, supporting a wide range of projects, from testing emerging technologies to developing and validating new strategies to integrate with the electric grid.

Read more: flexlab.lbl.gov/news/article/five-years-flexlab-thriving

Recent Publications

- [Culture, conformity, and carbon? A multi-country analysis of heating and cooling practices in office buildings](#) by Tianzhen Hong, et al.
- [Ten questions on urban building energy modeling](#) by Tianzhen Hong et al.
- [Accelerating the Deployment of Advanced Energy Communities: The Oakland EcoBlock A Zero Net Energy, Low Water Use Retrofit Neighborhood Demonstration Project.](#) by Norm Bourassa, Richard Brown, Leo Rainer, et al.
- [Agricultural demand response for decarbonizing the electricity grid](#) by Peter Therkelesen et al.
- [Assessment of occupant-behavior-based indoor air quality and its impacts on human exposure risk: A case study based on the wildfires in Northern California.](#) Na Luo, Tianzhen Hong, Kaiyu Sun, et al.
- [High-Performance Integrated Window and Façade Solutions for California.](#) by Eleanor Lee, et. al.

See more:
buildings.lbl.gov/publications

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See also: Department of Energy [Building Technologies Office](#)

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Lawrence Berkeley National Lab (Berkeley Lab) is located in the Berkeley Hills near UC Berkeley and conducts scientific research on behalf of the United States Department of Energy (DOE). It is managed and operated by the University of California (UC). The Laboratory overlooks the University of California, Berkeley.

Berkeley Lab addresses the world's most urgent scientific challenges by advancing sustainable energy, protecting human health, creating new materials, and revealing the origin and fate of the universe. Founded in 1931, Berkeley Lab's scientific expertise has been recognized with 13 Nobel prizes. The University of California manages Berkeley Lab for the U.S. Department of Energy's Office of Science. For more information, visit www.lbl.gov.

DOE's Office of Science is the single largest supporter of basic research in the physical sciences in the United States, and is working to address some of the most pressing challenges of our time. For more information, see science.energy.gov.
