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Dear Colleagues,

I hope this newsletter finds you well and that you are enjoying the weather as spring moves closer to summer. As we all continue to adjust our life and work to the current situation, we can be hopeful that positive change is on the horizon. Berkeley Lab, and ESDR, is working hard during this transition to move toward normal Lab operations. Regardless, ESDR researchers remain productive, taking great strides to further advances in their chosen field. Part of ESDR's continued growth is our commitment to Inclusion, Diversity, Equity and Accountability (IDEA) and the [ESDR IDEA committee](#), led by Marca Doeff, is actively implementing these principles.



Interest in hydrogen fuel cells as a sustainable source of clean energy is on the rise. Our colleagues from the Energy Conversion Group continue to play an essential role in leading these R&D efforts in DOE's [Million Mile Fuel Cell Truck \(M2FCT\)](#) and [H2@Scale](#) consortia of 5 National Laboratories to leverage the potential opportunity for fuel cells in the transportation sector, and for clean and affordable hydrogen across multiple sectors in the U.S. economy.

The Thermal Energy Group, together with our partners from the Building Technologies and Urban Systems Division, have teamed up with the National Renewable Energy Laboratory and Oak Ridge National Laboratory to develop a technology roadmap for the thermal energy storage (TES) in buildings.

Below you will find more notable highlights and recent accomplishments.

Wishing you well,  
Robert Kosteki  
Division Director, Energy Storage and Distributed Resources

## Latest News

### Focus: Energy Storage Center at Berkeley Lab



The future of energy depends on our ability to store it reliably, cheaply, and safely — whether to power electric vehicles, our buildings and factories, or to contribute to the clean grid of the future.

Researchers at Lawrence Berkeley National Laboratory (Berkeley Lab) -- including three lead scientists recently profiled by the Department of Energy (DOE) -- are working on [next-generation energy storage technologies](#) at the new Energy Storage Center, launched in late 2020.

Their work contributes to DOE's [Energy Storage Grand Challenge](#), a comprehensive program aimed at sustaining American global leadership in energy storage. That challenge comes with an aggressive goal: to develop and domestically manufacture energy storage technologies that can meet all U.S. market demands by 2030.

Read more: <https://appliedenergyscience.lbl.gov/news/article/focus-energy-storage-center-berkeley>

## Hydrogen Offers Promising Future for Long-Haul Trucking Industry

Interest in hydrogen fuel cells as a sustainable source of clean energy is on the rise globally, and hydrogen fuel cells are widely seen as a viable, zero-emission option to power trucks, trains, ferries, and passenger vehicles.

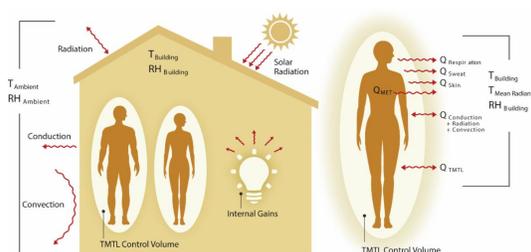


The heavy-duty vehicle (HDV) market could prove to be ideal for fuel cell development and deployment. Hydrogen fuel cells are well-suited for this market because of their fast refueling time and long driving range. They also contain a higher amount of energy-per-unit mass than a lithium battery or diesel fuel. By increasing the size of the hydrogen tank, a truck can have a higher amount of energy available without significantly increasing the weight – an important consideration for long-haul trucks that have strict weight penalty policies.

Last year, the Department of Energy's (DOE's) Hydrogen and Fuel Cell Technologies Office (HFTO) launched the [Million Mile Fuel Cell Truck Consortium \(M2FCT\)](#) to leverage the potential opportunity fuel cells in the HDV market and to align with the [H2@Scale](#) vision for clean and affordable hydrogen across multiple sectors in the economy. M2FCT will work on fuel cells for heavy-duty fuel cell trucks that can meet all of the efficiency, durability, and cost requirements of the trucking industry. With \$50 million funded by DOE HFTO over five years, a team of five national labs co-led by Lawrence Berkeley National Laboratory (Berkeley Lab) and Los Alamos National Laboratory (LANL) have set out with a 2030 goal of demonstrating systems that have a 25,000-hour, or 1-million mile, lifetime for long-haul trucks.

Read more: <https://newscenter.lbl.gov/2021/04/08/hydrogen-offers-promising-future-for-long-haul-trucking-industry/>

## Pioneering Framework Could Reduce Thermal Energy Demand in Buildings



Heating and cooling buildings is a large part of global energy demand and a significant source of CO<sub>2</sub> and greenhouse gas emissions, and in the coming decades the energy demand for heating and cooling – also known as thermal energy – is expected to grow considerably. Scientists and engineers have made many advances in lowering building energy demand by improving energy efficiency in building technologies and reducing energy loss through the building walls and windows.

Now, researchers are concerned that simply tackling the problem through energy efficient technology and design will reach its practical limits, and they are pioneering a new framework that determines the minimum thermal energy required to keep building occupants comfortable.

Researchers from Lawrence Berkeley National Laboratory (Berkeley Lab), the National Renewable Energy Laboratory and UC Berkeley recently published a [study](#) in the journal *Joule* that makes the case for calculating the theoretical minimum thermal load in order to dramatically lower the energy required for heating and cooling buildings.

Read more: <https://appliedenergyscience.lbl.gov/news/article/pioneering-framework-could-reduce>

# Inclusion, Diversity, Equity and Accountability (IDEA) in the Division

Great science is achieved through diversity, inclusion, and equity. At our core, we believe in treating everyone with respect and dignity. Our goals are to ensure that our Division's processes for hiring, discussing science, and developing proposals are fair, promote our core values, and allow everyone a voice.

The ESDR IDEA committee was formed in August 2020 to communicate and promote the principles of Inclusion, Diversity, Equity, and Accountability to the Division. To this end, we will inform the Energy Storage and Distributed Resources Division of resources that are available at the Lab and elsewhere, investigate and recommend best practices in hiring, management of personnel, administration, and research, as well as sponsor activities promoting IDEA. We will coordinate and harmonize our efforts with those of the ETA IDEA committee, the Diversity, Equity, and Inclusion Program Office at LBNL, and analogous entities at the University of California at Berkeley campus.

Learn more about IDEA at ESDR: <https://appliedenergyscience.lbl.gov/diversity-and-inclusion>

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## Energy Storage and Distributed Resources Energy Technologies Area | Berkeley Lab

**Robert Kostecki**, Division Director  
**Marca Deoff**, Deputy Division Director  
**Kate Britton**, Program Manager

1 Cyclotron Road, Berkeley, CA 94720

### [Energy Storage and Distributed Resources](#)

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](http://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](http://science.energy.gov).