BERKELEY LAB

BUILDING RESILIENCE TO EXTREME HEAT

Heat is the #1 cause of weather-related U.S. deaths in heat waves, which are especially dangerous for vulnerable populations, and families, including low-income and elderly residents.

THE PROJECT

Berkeley Lab researchers worked with the City of Fresno and other stakeholders to develop the California Toolkit for Heat Resilience in Vulnerable Environments, or CAL-THRIVES. This heat-resilience toolkit is designed to provide protection from extreme heat for those most in need; to prioritize low-cost, zero-energy, in-home measures — such as cool walls, cool roofs, and natural ventilation — to keep vulnerable residents cooler; and to ensure that cooling centers can provide accessible and effective refuge from heat waves.

FEWER
heat-related deaths

BETTER
health

LOWER
healthcare costs

+ WE PARTNERED WITH +

City of FRESNO

CALIFORNIA STRATEGIC GROWTH COUNCIL

USC

West Fresno family resource center
Empowering the Community

INDICIA Consulting

STATE OF CALIFORNIA ENERGY COMMISSION

BACKGROUND

As a National Laboratory funded by the U.S. Department of Energy, Berkeley Lab is committed to a just and equitable energy transition. We strive to ensure that the impacts of our research benefit all communities, as well as future generations. To meet these goals, we partner with community-based organizations, public, and private agencies to help make clean energy technologies and resources accessible to all.

In this project, Berkeley Lab researchers worked with the City of Fresno and other stakeholders to clarify the heat-resilience needs of disadvantaged communities and build the CAL-THRIVES software tool, which prioritizes action for individual households and helps ensure that community cooling centers are effective and available. Extreme heat events are expected to become five to ten times more frequent by century's end. As the danger to vulnerable communities increases, the need for resilience tools like CAL-THRIVES will grow, as well.

Visit Berkeley Lab's Equitable & Just Energy Transition Website ▸

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ABOUT THE PRINCIPAL INVESTIGATOR

Max Wei is a Staff Scientist in the Sustainable Energy & Environmental Systems Department in the Energy Analysis and Environmental Impact Division at Lawrence Berkeley National Lab. His expertise is in energy system modeling for deep decarbonization, residential sector energy modeling, extreme heat resilience, energy equity, and techno-economic analysis of emerging technologies including fuel cells systems and cooling systems with low global warming refrigerants. A frequent writer and speaker on climate change mitigation issues, policies, and pathways, Max earned his M.B.A. and his Ph.D. in Electrical Engineering and Computer Sciences from UC Berkeley.

Max Wei, et. al. **Passive cooling designs to improve heat resilience of homes in underserved and vulnerable communities**. *Energy and Buildings* 252 (2021)

Max Wei, et. al. **Heat Vulnerability Index Development and Mapping**. *SimAUD 2021* (2021).