

Climate Change in Los Angeles County: Grid Vulnerability to Extreme Heat

The Issue

Due to the extraordinary geographic diversity of Los Angeles County, climate change will impact neighborhoods differently across the region. Anticipating and measuring these localized climate events and the corresponding community impact has proven challenging. Research predicts the Los Angeles region will be warmer by 3-5 °F annually by mid-century, and will experience an increase in the number of “extreme heat days” varying regionally, with some cities experiencing up to 5-6 times their current levels. What is unknown and remains to be studied is how and where these increases in temperature will impact the electric grid.

Project Innovation + Advantages

This project will develop a projection of future electric grid demand, response, and vulnerability due to increased (and prolonged) heat events in Southern California Edison territory under current and future climate scenarios. It will enable innovative grid management and operation strategies and will identify adaptation guidance. Ultimately, researchers will provide the information to local governments, regional and state agencies, utilities, and the general public in tangible, easy-to-understand formats to enhance local and state capacity to respond to potential disruptions in transmission due to climate change.

Contacts:

Project Manager: David Stoms
Phone: 916-327-2381
Email: dstoms@energy.ca.gov

Contractor: The Regents of the University of California, Los Angeles
Phone: 310-825-2421
Email: hmojtabai@ioes.ucla.edu

Program: EPIC
Agreement Number: EPC-15-007
Award: \$500,000
Co-funded Amount: \$183,753
Project Location: Los Angeles, CA
Project Term: 12/1/2015 to 9/30/2018
Project Status: ACTIVE

Identify communities vulnerable to climate change-related heat events that could strain the electricity grid.

BENEFITS

Local and regional governments and utilities will gain an understanding of the capacity of substations and transmission lines and how those capacities might be impacted by extreme heat events. This project provides a greater level of understanding on where the grid is most vulnerable, which neighborhoods are served by these vulnerable points, and what types of adaptation measures need to be taken by the utility as well as state, regional, and local actors. This project can equally help guide investments in distributed generation.

Lower Costs: The study will provide information to support decisions that would result in lowered costs for ratepayers, by providing utilities and policymakers with further information on where and how they can prioritize investments in the grid moving forward.

Greater Reliability: By evaluating the vulnerability of critical substations and transmission lines during future projected heat scenarios, the study will identify problem spots in the grid in Los Angeles County. This research in turn provides a greater understanding of localized risk, enabling utilities to plan for a more reliable energy system.

Increase Safety: Identifying grid vulnerabilities can help utilities and decision-makers better plan for potential outages and resultant ratepayer safety risks. These vulnerabilities will be mapped out geographically in order to facilitate the identification of, and planning for, communities at greatest risk.

Public Health: Extreme heat events can worsen numerous health problems, which can be exacerbated by grid outages. This project will identify vulnerable segments of the grid to guide decisions about adaptation measures to minimize these health risks.