

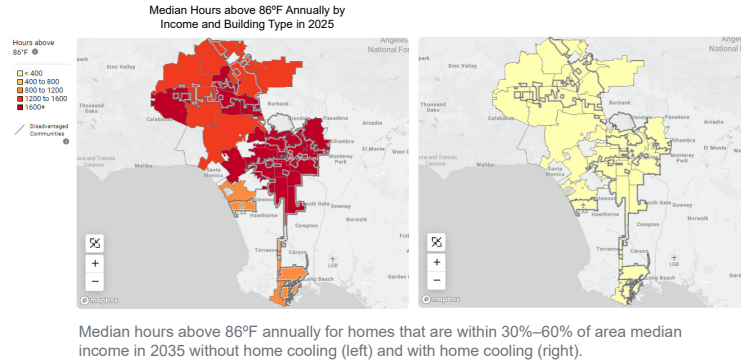
How Heat Pumps Can Bring Relief to Households

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Many Los Angeles Households Don't Have Cooling—Heat Pumps Can Help

An estimated **230,000 low-income households in Los Angeles lack access to cooling** and are projected to experience more than two months of dangerous indoor temperatures (above 86°F) by 2035. Multifamily building residents are at much higher risk of dangerous heat exposure.

Through robust modeling and analysis in the LA100 Equity Strategies project, the National Renewable Energy Laboratory (NREL) identified strategies that could save lives and maintain safe home temperatures for low-income households during heat waves, including the installation of whole-home heat pumps.



Heat Pumps Deliver Cooling and Savings

Heat pumps deliver cooling with similar or lower total purchase and operational costs than room air conditioning and are eligible for the widest selection of federal rebates among cooling options.

Heat pumps provide up to 29% more energy-efficient cooling for equivalent total life cycle costs to window-unit air conditioning. While whole-home heat pumps provide the most energy-efficient cooling, they have high initial purchase costs of \$5,700–\$12,000 for minimum efficiency systems in low-income households. However, Inflation Reduction Act (IRA) funds can help alleviate these costs.

Modeling and Analysis Tailored to the Community

NREL created a **detailed model of 50,000 representative Los Angeles homes** and explored different cooling upgrade scenarios.

A present-day baseline scenario was compared with seven upgrade scenarios. Five of these upgrade scenarios cool the entire household and feature cooling systems at different efficiency levels with various improvements to the envelope, roof, and shading. Two upgrade scenarios cool one room in a household without cooling by using either a room air conditioner or mini-split heat pump system. This analysis found that:

- Currently, **more than 27% of low-income households lack access to cooling.**
- **Multifamily building residents**—who comprise 56% of the Los Angeles population and 95% of low-income renters—are projected to experience many more days of **dangerous indoor temperatures** compared to single-family home residents.
- **Heat exposure can be reduced at the lowest cost in multifamily buildings compared to single-family buildings.**
- Providing cooling through heat pumps dramatically improves access to safe and comfortable whole-home temperatures.
- **Heat pumps nearly eliminate dangerous temperature exposures for low-income, multifamily households.**

Strategies to Expand Cooling and Heat Pump Access

- Expand direct installation of cooling in extremely low-income households without cooling, prioritizing multifamily buildings.
- Provide heat pump rebates in the Cool LA Program and auto-enroll low-income rebate recipients in bill assistance programs to mitigate energy burdens.
- Combine IRA or Weatherization Assistance Program funding with Los Angeles Department of Water and Power (LADWP) rebates to augment LADWP's Home Energy Improvement Program (HEIP), Cool LA, and other programs to lower heat pump and envelope efficiency upgrade costs for low-income households. Expand LADWP's HEIP to include funding for electrical upgrades needed to install heat pumps.



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