ISSUE BRIEF

Colliding Crises

The Dangers of Extreme Heat in Affordable Housing

HIGHLIGHTS

The housing crisis and climate change–fueled extreme heat are increasingly colliding. Among those at greatest risk: people living in affordable housing, many of whom have the lowest incomes, are older, or live with disabilities.

To assess this risk, the Union of Concerned Scientists analyzed the exposure of affordable housing to county-level National Weather Service heat alerts in 2024 across the United States, Puerto Rico, and the Virgin Islands. We found that people living in affordable housing experienced several days' to several weeks' worth of heat alerts each year, with households headed by people of color facing disproportionately high risks. The largest shares of affordable housing exposed are in the Northeast and Southeast, with Texas, California, and New York leading in total numbers of homes exposed.

In order to protect people, UCS recommends increasing investments to make both new and upgraded affordable housing resilient to climate change—particularly extreme heat. A robust Low-Income Home Energy Assistance Program that expands access to both energy-efficient cooling and broader building efficiency upgrades is essential, as are steps to ensure state and local support for heat protections and affordable housing.

Technical Appendix

Juan Declet-Barreto

Amanda Fencl

Rachel Cleetus

Zoe Middleton

Avery Kaplan

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Data Sources

This analysis includes calculated frequencies of federally-assisted housing including public bousing, project-based subsidized housing, and Low-Income Housing Tax Credit (LIHTC) units, and manufactured housing, and the people who live in these homes that were under heat alerts during the 2024 Danger Season.

Heat alerts

To characterize heat exposure, we modified the existing Danger Season daily alerts tracker codebase (Union of Concerned Scientists 2025) to extract only heat alerts issued by the National Weather Service during the 2024 Danger Season. For each day, between May 1 and October 31, we extracted newly issued heat warnings, excluding alerts with a "continued", "cancelled", or "expired" status, and excluding alerts with a "watch" or "advisory" significance. Geospatially referenced polygons representing areas for which alerts were active were extracted and assigned to counties based on the Danger Season methodology (UCS 2025).

Federally subsidized housing developments

We downloaded federally subsidized housing data from the Picture of Subsidized Households (PoSH) for 2024 (HUD Office of Policy Development and Research 2024). The data contain information on subsidized housing developments across five different HUD programs (202/PRAC, 811/PRAC, Project Based Section 8, S236/BMIR, and Public Housing). The PoSH data include the number of dwelling units in each development, number of residents, and socio-demographic descriptors of people and households (HUD 2024). The PoSH data include socio-demographic descriptors for approximately 3,687,000 tenants. Some demographic data were suppressed or otherwise unavailable. We calculated each descriptor's data completeness and included/analyzed those with at least a 70% completeness rate.

We mapped developments based on their latitude and longitude coordinates. All but 93 developments had valid coordinates (completion rate of 99.7%). To fill in missing data, we conducted Internet searches to then extract coordinates from Google Maps. We were able to fill in location data for 89 of the 93 developments, for a final completion rate of 99.9%.

We divided the PoSH data into two different categories of affordable housing: 1) public housing and 2) project-based subsidized housing, i.e. all other types of subsidized housing (developments with units participating in one of the five programs listed above). Like previous UCS work on public housing (Dahl et al. 2024) and because this type of affordable housing warrants separate policy recommendations we analyze public housing in its own category.

Final N: 872,000 public housing and 1.48 million project-based dwelling units

Low Income Housing Tax Credit housing units

We obtained data from the Low-Income Housing Tax Credit (LIHTC) database (HUD 2025). The LIHTC database contains data on 53,032 projects and nearly 3.7 million housing units placed in service between 1987 and 2023. These data also contain latitude and longitude coordinates that we used to map the LIHTC units in GIS. The latitude and longitude data included valid coordinates for all but 2,320 LIHTC units (a location data completion rate of

95.5%). To fill in the missing data, we used the Geocodio geocoding service to extract coordinates based on address data. We were able to fill in location data for 2,085 of the 2,320 units with coordinates, for a final completion rate of 96.1%.

Final N: 3.62 million housing units

Manufactured housing data

We obtained data on manufactured housing from the Mapping Manufactured Housing dataset (Durst et al. 2025; Durst 2025). This 2025 dataset represents the first national, subregional, and systematic effort to map manufactured housing buildings in parks and (in)formal subdivisions. Durst et al. used building footprints, neighborhood morphology, and machine learning to reliably predict the locations of both manufactured housing buildings and communities. These data do not cover *all* manufactured homes in the country, but rather manufactured housing buildings located in any neighborhood type and other buildings located in mobile home parks (also called manufactured housing parks): less than two-thirds of manufactured housing buildings nationally (Durst and Sullivan 2019).

Final N: 1.93 million manufactured homes (1.3 million manufactured housing buildings and 615,000 "other" buildings in manufactured housing parks)

Data Processing

We used GIS to identify the frequency of heat alerts to which the population in affordable housing were exposed to using counties or county equivalents as the unit of analysis. We conducted a spatial join using a "within" rule to identify the county where each housing development is located. Due to spatial mismatches between the county boundary and the PoSH data (HUD Office of Policy Development and Research 2024), 331 housing developments were not spatially matched to any county by the "within" rule. This occurred mostly along coastal areas and international borders. To assign a county to these unmatched developments, we conducted a spatial join with a "nearest" spatial join rule to assign the nearest county to each of these subsidized housing developments.

We then summarized the frequency of total subsidized housing developments, dwelling units, the people living in those developments, and average values of socio-demographic variables. We grouped the data by frequency of heat alerts—separately for each of the four housing types—binned into the following step increments:

- Zero days with heat alerts
- Between one and six days with heat alerts
- At least seven days with heat alerts (one or more weeks' worth)
- At least 21 days with heat alerts (three or more weeks' worth)

In our analysis, we used two threshold frequencies: the count of affordable homes in counties that experienced at least seven heat alerts (we refer to this threshold as one or more weeks' worth of alerts), and separately, affordable homes in counties that experienced at least 21 heat

alerts (which we refer to as three or more weeks' worth of heat alerts). The thresholds of zero days with heat alerts and 1-6 days with heat alerts were kept for data completeness to keep a total count of all affordable home counts regardless of level of heat exposure. These thresholds allow us to capture levels of heat exposure that reflect many people's experiences in May-October of 2024. In our analysis, we captured repeated (i.e., multiple non-consecutive events) though not necessarily prolonged (i.e., lasting multiple consecutive days) exposure to extreme heat events, and do not assume alerts were consecutive.

Data are available from the UCS Data Repository: https://doi.org/10.7910/DVN/X9HZDW.

Limitations

Due to lack of precise figures for residents in LIHTC housing and manufactured homes, we assume at least one person in each unit in our dataset, conservatively estimating the combined total population in affordable housing in this study at 9.231 million. In addition, there were no socio-economic descriptors of the residents in either of these housing types, compared to data analyzed for public housing and project-based subsidized housing. Previous studies have shown the prevalence of extremely low-income households in LIHTC housing (Emmanuel and Aurand 2024) and among manufactured homes residents (Durst and Sullivan 2019).

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