Societal Ramifications of Funding California's Wildfire Adaptation Costs through Electricity Rates

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Climate change is worsening disasters globally, increasing structural damage to electricity infrastructure, as well as increasing secondary economic and social losses.[1] In western North America, in combination with greater human habitation in wildland-urban interfaces, climate change has decreased precipitation levels and increased warmer conditions, which has increased fire activity, including acreage of burned areas and the severity of wildland fires.[2] In addition, increasingly hot and arid conditions have contributed to increasing incidents of wildfires ignited by electric utility equipment, including the 2018 Camp Fire (153,336 acres burned), 2017 Thomas Fire (281,893 acres burned) and the 2021 Dixie Fire (963,309 acres burned), all which rank among the top 20 largest and most destructive wildfires in California's history.[3] These rising disaster risks are creating a new economic demand for social adaptation and recovery investment.

This growing disaster risk is also increasing the cost of owning, building and maintaining utility infrastructure. Regulated utilities, including California's investor-owned utilities (IOU), are subject to a social and legal obligation to serve all customers who request a utility service without discrimination and at reasonable rates.[4] In California, this obligation means that existing utility infrastructure bears a rising risk of being involved with or causing damage, and new wildfire-prone IOU distribution and transmission lines have increasingly been built within the wildland-urban interface, mirroring human land use and development. Fires caused by utility infrastructure are more likely to occur under high wind conditions when suppression is more

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[1] Vanesa Broto, "IPCC Chapter 6: Cities, Settlements and Key Infrastructure," (2022). https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter06.pdf
[2] Jackie Dawson et al., "IPCC Chapter 14: North America" (2022). https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter14.pdf
[3] CalFIRE, "Top 20 Largest California Wildfires," (accessed Oct 2025). https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/top-20-largest-ca-wildfires.pdf?rev=fba7bfc52eab4d5d87fbee5bd9416ed8&hash=270E810A7FCF091122EE2A18EB24ACB6; CalFIRE, "Top 20 Most Destructive California Wildfires" (accessed Oct 2025). https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/newtop20_destruction.pdf?rev=a12fe8cd105b4df8bf479beba79cb692&hash=E70B3C80C15C2B9024F719D2C12F6E3F
[4] Roger D. Colton (Office of Economic, Electricity and Natural Gas Analysis US Department of Energy, "The Obligation to Serve and a Competitive Electric Industry," (1997).

difficult, which increases the potential for damage.[5] Utilities are also spending more money each year to trim trees to mitigate wildfire risk.

Nationwide, in the last half decade, utility spending on disaster infrastructure recovery and preventive resilience is a driving factor of rising electricity prices.[6] In California, electricity bills have spiked primarily due to wildfire prevention costs. NRDC's analysis found that PG&E residential electricity rates increased 40% above inflation (or 80% with inflation) between 2018-2024, primarily due to wildfire-related spending.[7] Of the $0.11 per kWh increase above inflation, $0.06 per kWh (55%) is attributable to vegetation management and grid hardening, mostly within the category of distribution spending.

While the increased level of utility investment to reduce wildfire risk is important, the means for funding and ensuring this adaptation matters. Funding from electricity rates can be regressive and distortionary because increases in electricity rates fall disproportionately on low- and middle-income Californians due to the structure of rates, the patterns of usage in California, and the impacts of energy prices on the cost of goods.[8] Increases in utility costs that raise the residential price of electricity fall onto the highest electricity users, among which low-income Californians are overrepresented.[9] Rising costs of electricity are also a driver of grocery store costs of fruits, vegetables, nuts and animal products. To illustrate, spending among California farm operations on electricity bills has increased by 32% above inflation between 2019 and 2023.[10] Electricity costs are inflationary to food prices, reducing purchasing power for low-income households.

These utility wildfire adaptation costs are usually funded via a volumetric charge on electric rates, which is distortionary for at least two reasons. First, electricity in California is increasingly cleaner and cheaper to generate.[11] Adding a surcharge on the price of electricity makes clean electricity more expensive relative to polluting fossil fuels, which is detrimental at a time when substituting polluting fuels with zero-emission alternatives is a policy priority. Second, if the

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[5] Eric Macomber et al., "Wildfire: Assessing and Quantifying Risk Exposure and Mitigation Across the Western Utilities," (2024). https://woodsinstitute.stanford.edu/system/files/publications/Woods_CEPP_Wildire_White_Paper_FINAL.pdf

[6] Ryan Wiser at al., "Factors Influencing Recent Trends in Retail Electricity Prices in the US," (2025). https://www.sciencedirect.com/science/article/pii/S1040619025000612#sec0020

[7] Mohit Chhabra, "Powering Change" (2025). https://www.nrdc.org/sites/default/files/2025-03/PGE_Rates_Report_R_25-03-A_03.pdf

[8] Severin Borenstein, "Should 'Energy Hogs' Should More of the Utility Cost Burden?" (2024). https://kleinmanenergy.upenn.edu/research/publications/should-energy-hogs-shoulder-more-of-the-utility-cost-burden/

[9] Severin Borenstein, "Should 'Energy Hogs' Shoulder More of the Utility Cost Burden?" (2024). https://kleinmanenergy.upenn.edu/research/publications/should-energy-hogs-shoulder-more-of-the-utility-cost-burden/

[10] NRDC Calculation. Data source: CDFA, "2023-2024 California Agricultural Statics Review," (2025), table 'Farm Income Indicators 2019-2023', pg. 11, originally sourced from USDA Economic Research Service. https://www.cdfa.ca.gov/Statistics/PDFs/2023-2024_california_agricultural_statistics_review.pdf

[11] CPUC, "2024 California Renewables Portfolio Standard," (2024). https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/documents/energy/rps/2024/2024-california-renewables-portfolio-standard-rps-annual-report.pdf

electric sector continues to fund costs related to wildfire mitigation and damage, relevant actors, including the insurance industry and related regulators, are less likely to adapt their own planning, budgeting processes, and financial services to reflect the growing risks of climate change.

The costs of adapting the state's existing electric infrastructure to rapidly changing wildfire risk are very high and growing. Like most of the built environment, this infrastructure was never designed for the conditions the state is now facing and those the state will face in the future. The long-term effects could include more damage and even more reliance on electricity sector funding, which could put the electric utility business model at risk. [12]

Low-income households are also indirectly harmed by expensive electricity. Higher electricity prices lower adoption rates of zero-emission vehicles,[13] and decrease the affordability of heat pumps, particularly for inland households dependent on air conditioning.[14,15] Vehicles are a core driver of air pollution in California, which has some of the worst air quality in the nation.[16] Transitioning California vehicles to zero emissions, in addition to the state's transition to zero-emission energy, would result in $169 billion in health benefits, 15,300 premature deaths avoided, 440,000 asthma attacks avoided and 2.16 million avoided lost workdays through 2050.[17] Indoor fuel-burning appliances — such as gas stoves, furnaces, water heaters and wood burning stoves — also contribute significantly to outdoor and indoor air pollutants.[18] The concentration of indoor pollution exposure from these appliances depends on the appliance's age, maintenance, and proper ventilation, which may be more difficult to manage for lower-income households and renters. Additionally, preliminary data suggests that Californians in hot inland areas may be under-consuming and under-adopting new air conditioning due to electricity costs.[19] Climate change driven extreme heat can cause heat exhaustion and heat stroke, worsen pre-existing health conditions, and increase emergency room visits, and is linked with adverse

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[12] Jay Barlow et al., " Wildfire Risk: Review of Utility Industry Trends," (2025). https://www.pnnl.gov/sites/default/files/media/file/Wildfire%20Risk%20Review%20of%20Utility%20Industry%20Trends_PNNL_July%202025.pdf

[13] James Bushnell et al, "Electricity Prices and Electric Vehicle Adoption," (2022). https://www.nber.org/system/files/working_papers/w29842/w29842.pdf

[14] Ryan Shea et al, "Heat Pumps Can Lower Energy Bills for Californians Today," (2025). https://rmi.org/heat-pumps-can-lower-energy-bills-for-californians-today/

[15] Twilight Greenaway, "Do Heat Pumps Save You Money? In California, It Depends on Your Electricity Utility," (2025) https://insideclimatenews.org/news/15042025/california-expensive-electricity-affects-heat-pump-savings/

[16] American Lung Association, "2025 State of the Air Report," (2025). https://www.lung.org/getmedia/5d8035e5-4e86-4205-b408-865550860783/State-of-the-Air-2025.pdf

[17] American Lung Association, "Zeroing in on Healthy Air," (2021). https://www.lung.org/getmedia/13248145-06f0-4e35-b79b-6dfacfd29a71/zeroing-in-on-healthy-air-report-2022.pdf

[18] Anna Belova et al, "Literature Review on the Impact of Residential Combustion Final Report," (2022). https://www.lung.org/getmedia/2786f983-d971-43ad-962b-8370c950cbd6/ICF_Impacts-of-Residential-Combustion_FINAL_071022.pdf

[19] Lauren Kim et al, "Beat the Heat: Extreme Heat Risk Perceptions & Air Conditioning Ownership in California," (2021). https://climatecommunication.yale.edu/publications/beat-the-heat-extreme-heat-risk-perceptions-air-conditioning-ownership-in-california/

pregnancy and birth outcomes.[20] Further adoption and use of AC throughout California is a necessary adaptation need.

This paper will describe the ways that paying the cost of rising climate adaptation needs and climate damage through electricity bills is borne disproportionately and inequitably by low- and middle-income Californians, and discourages California's attempts to mitigate anthropogenic greenhouse gas emissions by achieving net-zero emissions.

Building on NRDC's previous work on the drivers of California's electricity costs, this paper will provide key metrics on the cost consequences of wildfire-related spending through electricity rates. The analysis will provide data and explanation about the impacts of rising electricity costs to residential customer bill impacts for a sample of key target customers demographics (e.g., CARE/FERA customer impacts, inland AC customer impacts), as well as the impact of wildfire-related costs on key industrial customers. Additionally, this paper will provide a comparison of total spending estimates between IOU ratepayers for wildfire prevention to state budget-sourced spending on wildfire prevention over the last half decade.

[20] EPA, "Extreme Heat," (2025). https://www.epa.gov/climatechange-science/extreme-heat#:~:text=Heat%2C%20especially%20when%20made%20worse,lead%20to%20hospitalization%20or%20death.&text=Heat%20can%20worsen%20pre%2Dexisting%20health%20conditions.