



August 31, 2022

United Nations Special Rapporteur on the Right to Adequate Housing
to the 52nd session of the Human Rights Council

Re: The Right to Adequate Housing and Climate Change

Dear Special Rapporteur Rajagopal:

Earthjustice appreciates this opportunity to submit comments to the United Nations Special Rapporteur on the Right to Adequate Housing regarding the right to adequate housing and climate change. Earthjustice is the leading nonprofit public interest environmental law organization in the United States. We wield the power of law and the strength of partnership to protect people's health, to preserve magnificent places and wildlife, to advance clean energy, and to combat climate change. We work to establish, strengthen, and enforce national and international legal protections for the environment and human health, and to transition off fossil fuels to reduce pollution and combat climate change, primarily in the United States but also internationally, alongside partner organizations in places like Australia, Indonesia, Latin America, and South Africa. This comment focuses on our work related to the intersection of climate change and the right to healthy, stable, and affordable housing in the United States.

In the United States, affordable, safe, and healthy housing remains out of reach for many despite the country's wealth, and climate change is inextricably intertwined with this housing health and affordability crisis. Housing and buildings are a major source of greenhouse gas (GHG) emissions due to the widespread use of fossil fuels for heat, hot water, and appliances. Gas combustion in homes for cooking and heating not only emits GHGs, but also releases harmful air pollutants that contribute to poor indoor air quality and respiratory problems. Aging and poorly maintained housing, including much of the country's public and subsidized housing serving low-income households, tends to be less energy efficient, leading to higher energy bills for those who can least afford it. Climate disruptions such as storms, sea level rise, fires, heat and drought have damaged the homes of millions of people in the U.S. and temporarily or permanently displaced many, and disruptions and displacement will only get worse in the coming decades. And the U.S., including its housing sector, is a major source of GHGs that are causing these climate impacts across the world, displacing many people in countries whose GHG emissions are minimal compared to this country's.

With investment and political will, there is a clear and feasible path to eliminating GHG emissions and air pollution from housing while improving housing quality and creating livable wage jobs. The U.S. is, hopefully, on a trajectory to greatly reducing the GHG emissions from housing, although continued advocacy is needed to ensure this happens in an equitable way that maintains affordability while incorporating additional healthy housing upgrades. Dealing with inevitable climate change disruptions that threaten housing stability, on the other hand, is much more complex and will require creative planning at the local and regional level, significant federal investment, deep community engagement, and a careful mix of managed retreat and resiliency projects. The U.S. should also act in anticipation of housing needs of future climate refugees, both internal and from countries around the world.

A. The Climate Crisis Impacts Housing Stability and Access in the U.S. in Many Ways, Particularly for Lower-Wealth Households and People of Color

Climate change has led to increased frequency and intensity of natural disasters, such as hurricanes and floods, which can destroy or damage homes and lead to short or long-term displacement. Sea level rise from climate change also threatens housing and can lead to climate gentrification. The effect of climate change on housing access and stability is not felt equally amongst the population of the United States. Low-wealth people and communities of color are more likely to have their housing affected by climate change, while government disaster recovery funds are more likely to go to white, higher-wealth individuals. Different types of climate disruptions affect housing stability in different ways; below are several examples.

Hurricanes

Hurricanes have always hit communities along the Gulf of Mexico and the southern Atlantic Ocean, but as they've gotten more frequent and more intense, hurricanes cause more destruction in those communities than before. Hurricane Harvey, which hit Houston and Harris County, Texas in 2017, damaged more than 300,000 homes, including 25% of Houston's affordable housing stock. In Port Arthur and Beaumont, in Harris County, almost 80% of all housing was damaged, which meant that low-wealth families had very few options to stay in the area while waiting for funds to repair their homes.¹ Because of a history of racist housing policies throughout the United States, communities of color are often hit harder by hurricanes than white communities.² The neighborhood most devastated by Hurricane Harvey was 49% nonwhite, and Hurricane Katrina caused the most damage to southeast Louisiana's Black neighborhoods—of the seven zip codes that suffered the costliest flood damage from Katrina, four of them had populations that were at least 75% Black.³

¹ Disaster Housing Recovery Coalition, "Impact of Hurricane Harvey," www.nlihc.org.

² Emily Pontecorvo, "Hurricanes disproportionately harm communities of color. TV news ignores that fact." Grist, June 5, 2020, <https://grist.org/justice/hurricanes-disproportionately-harm-communities-of-color-tv-news-ignores-that-fact/>.

³ Thomas Frank, "Flooding Disproportionately Harms Black Neighborhoods," E&E News, June 2, 2020, <https://www.scientificamerican.com/article/flooding-disproportionately-harms-black-neighborhoods/>.

In the Northeast in 2012, Superstorm Sandy impacted 10% of New York City’s public housing developments, knocking out power to over 400 buildings and leaving 386 buildings without heat and hot water. Some of these buildings were without power, heat, or hot water for about two weeks.⁴ All told, Sandy caused over \$3 billion in damages to New York City’s public housing.⁵ While New York City moved fairly quickly to find funding to fix the damage, it couldn’t obtain disaster relief funding to do so until December 2015—over three years after Sandy.⁶ Nearly ten years post-Sandy, New York City still has not finished fixing the damage caused to public housing by the storm, and doesn’t expect to until December 2023.⁷ This has led to gas line issues that leave residents without cooking gas for long periods of time, recurring water shutoffs, including for entire weeks, and the use of temporary boilers.⁸

In general, renters in the United States face the greatest risk from climate-related disasters striking their homes. Nationwide, 40% of the country’s rental stock (almost 18 million units) is at risk of being destroyed or severely damaged by climate disasters.⁹ Because renters tend to be less wealthy than homeowners, according to a Harvard report, in an emergency, renters are more than three times less likely to be able to flee. And those who can flee are at greater risk of being evicted from their homes if they become damaged.¹⁰

Flooding

Urban flooding, exacerbated by climate change, can damage housing, threaten lives, and exacerbate racial inequality. The United States’ flood risk is concentrated in metro areas, and the residents who are most vulnerable because they live in low-lying areas or neighborhoods without green space (which absorbs water) also tend to be low-wealth and people of color.¹¹ For example, in Houston, Texas, the poorest residents are most likely to live on the lowest-lying land, and in Chicago, Black residents say they get less protection from floods and are given lower priority for adaptation infrastructure.¹² Urban flooding leads to economic loss, social

⁴ “The New York City Housing Authority Has Restored Power, Heat and Hot Water to 100 percent of Its Buildings Affected by Hurricane Sandy,” November 18, 2012, <https://www1.nyc.gov/site/nycha/about/press/pr-2012/nycha-has-restored-heat-hot-water-power-to--buildings-affected-by-sandy.page>.

⁵ NYCHA, Sandy Recovery History (accessed August 30, 2022), <https://www1.nyc.gov/site/nycha/about/recovery-history.page#:~:text=In%20October%202012%2C%20Superstorm%20Sandy,without%20heat%20and%20hot%20water.>

⁶ Id.

⁷ Id.

⁸ Ellie Quinlan Houghtaling, “Coney Island public housing still struggling with repairs, broken cooking gas 10 years after Sandy,” Gothamist, August 1, 2022, <https://gothamist.com/news/coney-island-public-housing-still-struggling-with-repairs-broken-cooking-gas-10-years-after-sandy>; Claudia Irizarry Aponte and Greg B. Smith, “NYCHA’s Post-Sandy Rebuild Mired in Delays and Dubious Contracts,” The City, October 29, 2019, <https://www.thecity.nyc/special-report/2019/10/29/21210733/nycha-s-post-sandy-rebuild-mired-in-delays-and-dubious-contracts>.

⁹ Joint Center for Housing Studies of Harvard University, “America’s Rental Housing 2022,” https://www.jchs.harvard.edu/sites/default/files/reports/files/Harvard_JCHS_Americas_Rental_Housing_2022.pdf.

¹⁰ Id.

¹¹ Thomas Frank, “Flooding Disproportionately Harms Black Neighborhoods,” E&E News, June 2, 2020, <https://www.scientificamerican.com/article/flooding-disproportionately-harms-black-neighborhoods/>.

¹² Id.

disruption, and housing inequality because communities most affected often don't have the resources to repair the damage or recover quickly from the disruption to their homes. Sometimes the consequences of flooding can be deadly: in the summer of 2021, eleven people living in basement apartments in New York City died when the remnants of Hurricane Ida hit New York City with unprecedented rainfall and flooding. About 100,000 New Yorkers, most of them lower-wealth families who can't afford safer, legal apartments, live in illegal basement apartments that lack emergency exits or appropriate windows.¹³

An additional environmental risk to housing during flooding is posed by the many contaminated sites around the country that are in flood zones close to residential areas. Stormwater and flooding at these sites risk carrying toxic chemicals via stormwater into the homes of hundreds of thousands of people. The U.S. Government Accountability Office found that 60% of all nonfederal Superfund National Priorities List sites, which have serious hazardous contamination, are in areas susceptible to climate impacts including sea level rise, flooding, and storm surge.¹⁴ Approximately 70% of the hazardous sites on the National Priorities List are located within one mile of federally assisted housing.¹⁵

Climate Gentrification

A [recent study](#) from the Harvard Graduate School of Design found that as climate change threatens communities, properties become more or less valuable based on their capacity to accommodate conditions like rapid sea level rise. This price volatility drives development that displaces existing populations, a phenomenon being referred to as climate gentrification.¹⁶ Little Haiti, a neighborhood in Miami, Florida, is a good example of this. Little Haiti is ten feet above sea level, which is high ground in Miami, giving the neighborhood more protection from flooding and sea level rise than other parts of the city. Little Haiti is home to approximately 30,000 residents, about 75% of whom are Black or African American and 47% of whom live in poverty.¹⁷ Because of Little Haiti's elevation and diversity, the neighborhood has begun attracting higher-wealth households, which has devastating impacts on current residents. Little Haiti is the fastest gentrifying neighborhood in South Florida. Between 2016 and 2020, home

¹³ Mihir Zaveri, Matthew Haag, Adam Playford and Nate Schweber, "How the Storm Turned Basement Apartments Into Death Traps," New York Times, September 14, 2021, <https://www.nytimes.com/2021/09/02/nyregion/basement-apartment-floods-deaths.html>.

¹⁴ U.S. Government Accountability Office, "Superfund: EPA Should Take Additional Action to Manage Risks from Climate Change Effects," Testimony before the Subcommittee on Environment and Climate Change, Committee on Energy and Commerce, House of Representatives, May 13, 2021, <https://www.gao.gov/assets/gao-21-555t.pdf>.

¹⁵ Shriver Center on Poverty Law and Earthjustice, *Poisonous Homes: The Fight for Environmental Justice in Federally Assisted Housing*, June 2020, https://www.povertylaw.org/wp-content/uploads/2020/06/environmental_justice_report_final-rev2.pdf.

¹⁶ Jesse M. Keenan, Thomas Hill and Anurag Gumber, "Climate Gentrification: from theory to empiricism in Miami-Dade County, Florida," Environmental Research Letters, April 23, 2018, <https://iopscience.iop.org/article/10.1088/1748-9326/aabb32#erlaabb32bib20>.

¹⁷ Elizabeth Santiago, "Weathering the Storm: Climate Gentrification in Miami's Little Haiti," University of Michigan School of Public Health, February 10, 2020, <https://sph.umich.edu/pursuit/2020posts/weathering-the-storm-climate-gentrification-in-miami.html>.

values increased by about 19%.¹⁸ This pushes out current residents who cannot afford the increased prices and forces them to move to a different neighborhood, potentially one that is less resilient to climate change-related disasters.

The other form of climate gentrification is post-disaster heavy investment leading to gentrification, or the shift of largely lower-wealth neighborhoods to the middle-and higher wealth bracket. Disaster speculators come into disaster-damaged neighborhoods and buy up property (aided by the influx of funding), pricing out many of the earlier residents. A researcher at Columbia University found signs of land speculation post-Sandy in the heavily damaged areas of Queens' Broad Channel, Arverne and Edgemere, and Brooklyn's Coney Island neighborhoods. In these areas, the average loan amount jumped by almost 300 percent — far above the city-wide average of about 150 percent — between 2010 and 2015. This dramatic increase in loan size implies the occurrence of land speculation, and therefore gentrification.¹⁹

Climate adaptation and mitigation measures may also lead to gentrification, pushing out the very residents cities are attempting to shield from climate impacts. For example, Atlanta, Georgia, a city with higher income inequality than any other large American city and with one in 10 households earning less than \$10,000 a year, may lose its water supply to drought and will face an increase in heat-driven wildfires as climate change worsens. Researchers also estimate that hundreds of thousands of climate refugees will move into the city by 2100, swelling its population and further stressing its infrastructure. Atlanta has started bolstering its defenses against climate change, but in some cases this has only exacerbated divisions. When the city converted an old Westside rock quarry into a reservoir, part of a larger greenbelt project to expand parkland, clean the air and protect against drought, the project also fueled rapid upscale growth, driving the poorest Black communities further into impoverished suburbs.²⁰

Disasters also lead to housing shortages. Since 2020, about 25,000 homes in Louisiana have been destroyed by storms. Combined with inflation, this has caused the average sale price of a home in Louisiana to rise by 22%, and rents have risen 18% on average.²¹ In Lake Charles, LA, which was hit by both Hurricane Laura and Hurricane Delta in 2020 and is 50% Black, more residents have left than anywhere else in the country.²² In March 2022, the city of Lake Charles forced residents to leave a public housing complex due to the need for repair but there is uncertainty over whether the city will do the repairs or will tear down the complex.²³

¹⁸ Id.

¹⁹ Earth Institute, "Hurricane Sandy May Have Worsened Gentrification in Brooklyn and Queens," Columbia Climate School: State of the Planet, October 3, 2019, <https://news.climate.columbia.edu/2019/10/03/hurricane-sandy-gentrification-nyc/>.

²⁰ Abraham Lustgarten, "How Climate Migration Will Reshape America," The New York Times Magazine, September 15, 2020, <https://www.nytimes.com/interactive/2020/09/15/magazine/climate-crisis-migration-america.html>.

²¹ Adam Mahoney, "Black Louisianans Still Haven't Recovered from 2020's Storms," Capital B News, August 3, 2022, <https://capitalbnews.org/louisiana-fema-private-insurance-housing-crisis-hurricane-season/>.

²² Id.

²³ Theresa Schmidt, "Residents of Jones Manor must leave for repairs of government housing," KPLC News, March 24, 2022, <https://www.kplctv.com/2022/03/25/residents-jones-manor-must-leave-repairs-government-housing/>.

Additionally, after hurricanes, landlords commonly evict tenants under the guise of remodeling and rebuilding and then after the work is done, the landlords jack up the rents to attract wealthier tenants.²⁴ Because federal money takes so long to get to people who need it—more than two years after Hurricane Laura, Lake Charles residents are still waiting for federal relief money to be disbursed—people who need that money to rebuild are more likely to simply pack up and leave.²⁵

Disaster Relief Funding

According to Tasha Guidry, a resident of Lake Charles, Louisiana, “While natural disasters do not ever discriminate, recovery always does. This happens in every city across the nation; it doesn’t matter big or small. When it comes to recovering, everybody’s traumatized — we’re all going through the same thing, but recovery will always come first to the areas where the higher tax base is.”²⁶ Research shows that FEMA, the federal government agency responsible for disaster recovery, often provides more funding to white disaster victims than to people of color, even when the amount of damage is the same.²⁷ This is true both at the individual and the community level.²⁸ A researcher found racial disparities at every stage of the process in obtaining money from FEMA.²⁹ Applicants from zip codes with higher percentages of Black residents were less likely to get an inspection, which is generally required for FEMA to fund repairs. Even when those residents were able to get an inspection, 11% had their requests denied for no stated reason. Only 4% of homeowners in white neighborhoods were denied for no stated reason. For the applicants in Black neighborhoods whose requests were granted, FEMA awarded them between 5 and 10% less money on average than applicants in white areas.³⁰ The disparity in federal relief leads to an increase in the wealth gap—white people who lived in counties with at least \$10 billion in disaster damage between 1999 and 2013 gained nearly \$126,000 in overall wealth, while people of color in counties with at least \$10 billion in damage during the same time period lost between \$10,000 and \$29,000.³¹ Renters also lose wealth after a disaster, while homeowners gain wealth, increasing the inequality between renters and homeowners.³²

²⁴ Adam Mahoney, “Black Louisianans Still Haven’t Recovered from 2020’s Storms,” Capital B News, August 3, 2022, <https://capitalbnews.org/louisiana-fema-private-insurance-housing-crisis-hurricane-season/>.

²⁵ Jake Bittle, “How the US government left Lake Charles in limbo after Hurricanes Laura and Delta,” Grist, April 4, 2022, <https://grist.org/extreme-weather/lake-charles-hurricane-recovery/>.

²⁶ Adam Mahoney, “Black Louisianans Still Haven’t Recovered from 2020’s Storms,” Capital B News, August 3, 2022, <https://capitalbnews.org/louisiana-fema-private-insurance-housing-crisis-hurricane-season/>.

²⁷ Christopher Flavelle, “Why Does Disaster Aid Often Favor White People?” The New York Times, October 27, 2021 <https://www.nytimes.com/2021/06/07/climate/FEMA-race-climate.html>.

²⁸ Id.

²⁹ Ethan J. Raker, “Climate Change and Inequality in the U.S.: Sociological Analyses of Big Data,” Doctoral dissertation, Harvard University Graduate School of Arts and Sciences, May 11, 2021, https://dash.harvard.edu/bitstream/handle/1/37368356/Raker_DAC_Final.pdf?sequence=1&isAllowed=y.

³⁰ Id.

³¹ Rice University, “Natural disasters widen racial wealth gap: Study also finds FEMA aid increased inequality,” ScienceDaily, August 20, 2018, <https://www.sciencedaily.com/releases/2018/08/180820164234.htm>.

³² Id.

Furthermore, renters are ineligible for most relief funds and have to rely on their landlords to rebuild.³³

States may also discriminate when they are allocated federal funds for disaster recovery and climate resilience to distribute to individuals and communities. In 2022, the U.S. Department of Housing and Urban Development (HUD) found that the state of Texas discriminated against people of color, particularly Black residents, when distributing HUD relief funding for Hurricane Harvey.³⁴ Texas excluded the areas HUD had designated as “most impacted and distressed” from competing for half of the funds, even though almost 90% of the eligible population lived in those areas.³⁵ Because of how Texas set up funding allocation, Black residents were eligible, on average, to benefit from 72 cents for every dollar that white residents were eligible to benefit from.³⁶ Without the discriminatory criteria Texas used, almost four times as many Black residents and more than twice as many Latinx residents would have benefitted from the HUD funds.³⁷ HUD is still in the process of resolving their investigation with Texas, but any resolution would require Texas to address the discriminatory outcomes and adopt enhanced fair planning and monitoring.³⁸

B. The U.S. Housing Sector Contributes Significantly to Climate Change and Poor Air Quality, but a Zero-Emissions Housing Sector Is Possible

1. Fossil fuel use in housing is a key contributor to climate change and air pollution

The United States is the largest historical contributor of GHG emissions and remains among the highest-emitting countries, and emissions from buildings make up a significant portion of emissions. In the United States, the residential and commercial sectors now account for about 40% of total energy consumption³⁹ and 14% of net GHG emissions.⁴⁰ EPA’s 2021 Inventory of Greenhouse Gas Emissions and Sinks shows that residential fossil fuel combustion accounted for 5.1% (336.8 MMT) of total CO₂ emissions in 2019.⁴¹ Emissions from U.S.

³³ Adam Mahoney, “Black Louisianans Still Haven’t Recovered from 2020’s Storms,” Capital B News, August 3, 2022, <https://capitalbnews.org/louisiana-fema-private-insurance-housing-crisis-hurricane-season/>.

³⁴ Christina Lewis, Letter Finding Noncompliance with Title VI and Section 109, Office of Fair Housing and Equal Opportunity, U.S. Department of Housing and Urban Development, March 4, 2022, *available at* https://texashousers.org/wp-content/uploads/2022/03/HUD-Letter-Finding-Noncompliance-with-Title-VI-and-Section-109-.pdf?itid=lk_inline_enhanced-template.

³⁵ Id.

³⁶ Id.

³⁷ Id.

³⁸ Id.

³⁹ U.S. Energy Information Administration (EIA), Uses of Energy Explained, <https://www.eia.gov/energyexplained/use-of-energy/> (last visited Aug. 18, 2022).

⁴⁰ EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019, Table 2-10 (Apr. 2021), EPA 430-R-21-005, <https://www.epa.gov/sites/default/files/2021-04/documents/us-ghg-inventory-2021-main-text.pdf>.

⁴¹ Id. at 2-31.

residential fossil fuel use alone exceed the total GHG emissions of 168 countries on Earth, including Spain, Nigeria, Ukraine, Venezuela, and the Philippines.⁴²

The majority of U.S. buildings rely on fossil fuels to power heating appliances like water heaters and furnaces, with over two-thirds of GHG emissions from U.S. residential and commercial sectors resulting from fossil fuel combustion.⁴³ Nearly half of U.S. homes rely on gas as their primary heating fuel.⁴⁴ Gas heating appliances such as water heaters, furnaces, boilers, stoves, and clothes dryers represent about 80% of fossil fuel-fired heating appliances and emit the majority of appliance pollution, including both climate-disrupting GHG emissions and pollutants that directly impact human health.⁴⁵ Oil- or propane-burning appliances, which make up most of the remaining 20%, emit carbon dioxide, nitrogen oxides, and sulfur dioxide at markedly higher rates than gas appliances.⁴⁶

Burning fossil fuels in buildings contributes not only to climate change, but also to dangerous air pollution including nitrogen oxides, carbon monoxide, fine particulate matter, ultrafine particles, and formaldehyde.⁴⁷ Cooking with gas, for example, can create spikes in nitrogen dioxide and carbon monoxide within a home to levels that would violate U.S. pollution standards if they occurred outdoors.⁴⁸ Nitrogen dioxide poses threats to respiratory health; short-term exposure can aggravate respiratory disease, and long-term exposure can *cause* respiratory disease.⁴⁹ A study by the Rocky Mountain Institute found that children living in homes with a gas stove are 42% more likely to experience asthma symptoms and 24% more likely to be diagnosed with asthma by a doctor.⁵⁰ Moreover, communities of color are disproportionately harmed by the indoor and outdoor air pollution emitted by gas-fired appliances, and the

⁴² This figure reflects country-by-country emissions data from 2018 derived from the WRI/CAIT data set. See World Resources Institute (WRI), Climate Watch: Data Explorer, https://www.climatewatchdata.org/ghg-emissions?end_year=2017§ors=total-excluding-lucf&source=CAIT&startyear=1850 (last visited August 29, 2022).

⁴³ EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019, Table 2-10 (Apr. 2021), EPA 430-R-21-005, <https://www.epa.gov/sites/default/files/2021-04/documents/us-ghg-inventory-2021-main-text.pdf>.

⁴⁴ EIA, U.S. households' heating equipment choices are diverse and vary by climate region, (Apr. 6, 2017), <https://www.eia.gov/todayinenergy/detail.php?id=30672>.

⁴⁵ See EIA, Residential Energy Consumption Survey (RECS) (2020), <https://www.eia.gov/consumption/residential/data/2015/>; EIA, Commercial Buildings Energy Consumption Survey (CBECS) (2012), <https://www.eia.gov/consumption/commercial/data/2012/>; EPA, National Emissions Inventory (NEI) (2017), <https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data>.

⁴⁶ EPA, Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment. Residential Clothes Dryers and Room Air Conditioners, Appendix 15A. Emissions Factors for Fuel Combustion from Natural Gas, LPG, and Oil-fired Residential Appliances, Table 15-A.1.1 (Apr. 2011), https://downloads.regulations.gov/EERE-2007-BT-STD-0010-0053/attachment_42.pdf. (CO₂ emissions from household fuel combustion of distillate oil, liquefied petroleum gas, and natural gas are 68.6, 58.7, and 50.6 kg/GJ, respectively; NO_x emissions are 55, 66, and 40 g/GJ, respectively; and SO₂ emissions are 218, 7, and 0 g/GJ, respectively).

⁴⁷ Yu Ann Tan et al., Rocky Mountain Inst., *Decarbonizing Homes* 16 (2021).

⁴⁸ *Id.* at 17.

⁴⁹ *Id.* at 16.

⁵⁰ *Id.* at 17.

cumulative impacts of this pollution paired with other exposures produces poor health outcomes.⁵¹

2. Building electrification and energy efficiency improvements can reduce and eventually eliminate GHGs and air pollution from housing

Shifting from fossil fuels to electric appliances for cooking, heating and cooling reduces GHG emissions in the short term and, as the electric grid shifts to renewable energy, becomes a zero-emissions solution. Technology exists now to shift all homes off fossil fuels, which has significant GHG reduction effects even without a zero-emissions electric grid. For example, estimates show that a geothermal heat pump is up to three times more efficient than an oil-fueled system, and an air source heat pump is up to 50% more efficient than an oil-fueled system.⁵² Moreover, phasing out fossil fuel combustion appliances eliminates the harmful air pollutants they emit inside and outside the home. Ambitious energy efficiency and building shell improvements are also a critical part of the strategy to reduce building emissions and will benefit both communities and residents by reducing electricity bills and improving air quality.

Replacing fossil fuel equipment with electric alternatives can deliver specific benefits, including lower costs to utility customers and better management of the electric grid.⁵³ Beneficial electrification of housing entails a combination of installing highly efficient electric equipment and appliances, reducing energy load by improving building envelopes, and using demand controls to manage the amount and timing of energy consumption.⁵⁴ Done properly, electrification of housing should lower housing cost burdens and improve housing quality to create a safe and healthy indoor environment. Moreover, when paired with demand controls and well-insulated building envelopes—and onsite renewable energy and/or battery storage—building electrification can be leveraged to reduce and manage the timing of electric energy consumption, decreasing overall strain on the electric grid.⁵⁵

Switching to electric heat pumps from fossil fuel-based heating has climate resilience benefits too, because these systems provide both heating and cooling. Some low-income households, particularly in older housing, public housing, or in areas of the country that historically have not experienced high summer temperatures, lack any air conditioning, which leaves household members at severe risk during extreme heat events. For example, approximately 46% of single-family homes in Seattle do not have air conditioning, but the region endured a serious heat wave in the summer of 2021, creating hazardous heat conditions inside homes.⁵⁶ Ensuring the lowest-income households are able to install heat pumps will ensure

⁵¹ *Id.* at 10.

⁵² NYSERDA, NYS Clean Heat, *Keep Your Home Comfortable All Year Long* 3, https://cleanheat.ny.gov/assets/pdf/CHC-SFR-HP-buyingguide-br-1-v3_acc.pdf.

⁵³ Yu Ann Tan et al., Rocky Mountain Inst., *Decarbonizing Homes* 9 (2021).

⁵⁴ *Id.* at 10.

⁵⁵ *Id.*

⁵⁶ Lacey Tan and Mohammad Hassan Fathollahzadeh, “Why Heat Pumps Are the Answer to Heat Waves,” Rocky Mountain Institute, August 12, 2021, <https://rmi.org/why-heat-pumps-are-the-answer-to-heat-waves/>.

access to efficient heat and cooling; cooling from heat pumps is more energy and cost-efficient as well, saving consumers money overall.⁵⁷

3. Barriers to electrification of home heating and cooking

a. Cost and confusion

Replacing the heating systems and major appliances in many existing homes in the U.S. is not a simple task, particularly given the existing housing affordability crisis, the cost of upgrading and replacing existing systems, and confusion on the part of homeowners, landlords, renters and contractors about non-fossil fuel appliances. As many as 70% of breaker boxes in the U.S. homes will need to be upgraded to handle the increased load of electric heating and vehicle charging.⁵⁸ Low- and moderate-income utility customers and tenants already face significant obstacles to paying their utility bills and enjoying the benefits of building electrification. Renters in particular face significant obstacles to enjoying the benefits of building electrification when the landlord is responsible for decisions about appliance replacements and the tenant is responsible for paying the energy bills.

It is critical that electric appliances—heat pumps and induction cooktops—are consistently the least expensive option for consumers, not only in terms of the expected total lifetime cost to own but also in terms of upfront costs. The presence of well-known and available rebates will help time-crunched consumers avoid making a rushed decision to replace a fossil fuel appliance with another fossil fuel appliance. Contractors and dealers should be knowledgeable of the financial incentives and rebates and should also encourage replacement of fossil equipment that is nearing the end of its useful life and likely to fail. Finally, most people have still never heard of a heat pump and most people do not know about State and utility efficiency programs.

Even with significant rebates and subsidies for heat pumps, electric water heaters and stoves, a house-by-house approach to weatherization and electrification will not get us to scale at the pace necessary and will be inequitable. Policies must be put in place to make electrification the default, cost-effective, automatic option for homeowners. Utilities and their workforces must be engaged and required to help plan and scale the investments and conversions necessary to meet the efficiency and electrification goals; through utility programs like Heating Electrification Make-Ready, which involves making significant upgrades to electrical boxes, breaker boxes, and fuse boxes to accommodate electric appliances and climate-forward technologies.

b. Gas utilities

Utilities that provide gas to residential customers through pipeline-based distribution systems view the transition off fossil fuels as a threat to their business; their labor force is also concerned about the future of their jobs. Rather than planning for a transition to truly zero-

⁵⁷ *Id.*

⁵⁸ See *Residential Energy Consumption Survey (RECS)*, U.S. Energy Information Administration, <https://www.eia.gov/consumption/residential/> (last visited May 31, 2022).

emission utility-run systems such as district geothermal heating, many gas utilities are standing in the way of a transition off fossil fuels.

Some gas utilities are suggesting they can keep their business and gas pipeline infrastructure by replacing gas for home heating and cooking with hydrogen or with “renewable” natural gas (RNG). However, these alternative fuels are not truly feasible or zero-emissions and are primarily serving as rhetoric for gas utilities to delay electrification. A growing body of research indicates that blending hydrogen with natural gas for use in buildings is highly inefficient and does little to reduce GHG emissions.⁵⁹ Because of the difference in chemical properties between hydrogen and methane, it is not feasible to use the existing natural gas infrastructure to combust hydrogen in buildings.⁶⁰ Natural gas pipelines can only handle low hydrogen blends before creating safety risks.⁶¹ Relying heavily on hydrogen to power appliances would therefore require utilities to retrofit or replace most pipelines, a huge capital investment, whereas electrification is significantly less disruptive because equipment and appliance replacements can occur incrementally using existing electrical infrastructure.⁶² Similarly, production and use of other non-fossil fuels such as RNG also results in harmful environmental impacts and can increase net GHGs.⁶³ Indeed, because RNG is chemically identical to fossil gas, its combustion emits the same level of GHGs.⁶⁴ Additionally, RNG cannot provide a meaningful source of energy: the supply of true, capturable waste methane (e.g., from uncontrolled landfills and wastewater treatment plants) amounts to less than 1% of current gas demand.⁶⁵

Moreover, any strategy built around continued reliance on the gas pipeline system necessitates massive investments in replacement of leak-prone pipes. Utilities are collectively planning to invest billions of dollars in pipe replacement over the next several decades. These costs are grossly disproportionate to their climate benefits and most of these costs could be avoided through a more surgical, safety-based approach to focusing instead on the most hazardous and environmentally significant leaks.

C. A Just Transition to Affordable, Climate-Resilient and Zero-Emissions Housing

While there are many barriers, with political will and meaningful investment the climate crisis could be an opportunity to invest in safe, affordable, and resilient housing for all. Transitioning homes off fossil fuels while increasing their climate resilience can improve indoor air quality, remediate other health hazards in housing such as lead paint, and create millions of

⁵⁹ Sara Baldwin et al., Energy Innovation Policy & Tech., *Assessing the Viability of Hydrogen Proposals: Considerations for State Utility Regulators and Policymakers 2* (2022), <https://energyinnovation.org/wp-content/uploads/2022/04/Assessing-the-Viability-of-Hydrogen-Proposals.pdf>.

⁶⁰ *Id.*

⁶¹ *Id.* at 7

⁶² *Id.* at 10.

⁶³ *See generally id.*

⁶⁴ *Alternative Fuels Data Center*, U.S. Dep’t of Energy,

https://afdc.energy.gov/fuels/natural_gas_basics.html#:~:text=RNG%20qualifies%20as%20an%20advanced,liquefied%20for%20use%20in%20vehicles (last visited May 31, 2022).

⁶⁵ Sasan Saadat et al., Earthjustice & Sierra Club, *Rhetoric v Reality: The Myth of “Renewable Natural Gas” for Building Decarbonization 9* (July 2020), https://earthjustice.org/sites/default/files/feature/2020/report-decarb/Report_Building-Decarbonization-2020.pdf.

well-paying jobs. Investments to prevent damage from natural disasters may be costly, but disaster recovery is far costlier. Below are some recommendations for the Special Rapporteur to consider:

- New housing should be all-electric, efficient and climate-resilient while maintaining affordability: Some cities in the U.S. have passed laws requiring newly constructed housing to be all-electric. Building and zoning codes can also require higher efficiency standards and climate resiliency measures such as solar or green roofs, permeable surfaces and elevated electrical systems. Public subsidies, low-cost financing, as well as policies requiring multifamily housing and new housing developments to include a mix of affordable and market-rate units should be established to ensure affordability for middle and low-income households.
- New housing should be built away from floodplains and investments should be made to fortify against flooding where possible: Housing development continues to occur in floodplains without adequate flood protection. Meanwhile, aging stormwater and drainage systems, particularly in lower-income areas, are not equipped to handle the types of storms and rainfall events predicted to occur more frequently due to climate change. Investment in hardening infrastructure and other steps to prevent flooding, such as protecting naturally absorbent wetland areas and green space, are also critical.
- Public investment must pay for electrification and upgrades of older homes where low-income tenants and homeowners reside: Public housing in the U.S. faces a major capital investment crisis, and urgently needed investments should be leveraged to replace aging fossil-fuel systems with electric and zero-emission systems. Lower-income homeowners should also be able to access public funds and accessible, low-interest financing – including on-bill financing – to upgrade homes for electrification while at the same time conducting weatherization and efficiency upgrades and remediation of hazards such as mold, lead, or asbestos. Combining energy efficiency and electrification programs with public health programs and initiatives could have both climate and health benefits. For example, braiding efficiency, weatherization, and building shell improvements into lead and mold remediation would address environmental and health concerns. Finally, policies should address the split incentives that often disincentivize landlords of rental housing from investing in efficiency upgrades that save tenants money on energy bills, and also ensure that landlords’ investments in upgrades are not passed on to renters as increased housing costs.
- Energy costs should be capped for low-income households and rates for electric home appliance use should be affordable for all: Some households have to make difficult choices between paying utility bills and paying rent or putting food on the table; these households can also face devastating and sometimes life-threatening utility shutoffs for unpaid bills. Instead of cutting off electricity when a household may need air conditioning to prevent dangerously high temperatures indoors, utility assistance programs should be expanded for lower-income households and utility shutoffs should be

banned. Policies can be put in place to ensure no household pays more than 6% of their income on energy costs, the level above which a family in the U.S. is considered “energy burdened.” In addition, public assistance programs should ensure eligible households are automatically enrolled in home upgrade programs, and electrification and weatherization programs should be coordinated with other affordable housing programs to streamline the upgrade process for consumers. And in utility rate-setting proceedings, regulators should ensure electricity rates for home appliances are affordable for all.

- Disaster recovery must be revamped to ensure equity and non-discrimination: Given the dismal record of racial discrimination and disparities in the distribution of FEMA and other disaster recovery funds, safeguards should be established within these programs to guard against intentional discrimination as well as disparate impacts. Agencies should be required to screen criteria and systems in advance to catch any potential for disparate impacts by race. Disaster relief funding should also go directly to renters and not just landlords. In addition, policies should be established to prevent undue land speculation and protect against long-term displacement during the post-disaster recovery period.
- Job training and wage provisions should be established for electrification careers: Policymakers should invest in electrification and weatherization training programs as well as apprenticeship programs which will create long-term middle-class careers with livable wages for people facing barriers to competitive employment opportunities. In addition, policies to ensure prevailing wages and project labor agreements should be incorporated into public and utility investments in efficiency and electrification programs.

As a leading contributor to climate change, the United States must urgently reduce emissions from its housing sector while also ensuring equity and affordability and investing in climate resilience. These are necessary steps to mitigate climate change and protect the right to adequate housing in the face of climate disruptions. Earthjustice thanks the Special Rapporteur for the opportunity to submit these comments.

Sincerely,



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