

CASE STUDY

## Health and Climate Impacts of Methane Gas in Buildings

**Most homes and buildings in the United States (U.S.) burn gas, oil, or other fossil fuels for heating, cooking, and hot water.** Gas stoves and appliances produce harmful levels of indoor air pollution that can lead to respiratory diseases and other health harms, especially for children.

Most homes and commercial buildings in the United States (U.S.) burn gas, oil, or other fossil fuels indoors for heating, cooking, and hot water. The U.S. Environmental Protection Agency estimates that fossil fuel use in these buildings accounts for 13% of U.S. greenhouse gas (GHG) emissions.<sup>1</sup> However, this excludes contributions from methane emissions, a powerful GHG that can leak from distribution lines<sup>2</sup> and home appliances, including gas stoves that are not in use.<sup>3</sup>

Gas stoves produce high levels of indoor air pollutants — including nitrogen dioxide, formaldehyde, carbon monoxide, particulate matter, and benzene<sup>4,5</sup> — leading to exacerbation of asthma and other respiratory diseases, especially in children.<sup>6,7</sup> Pollution concentrations are higher in small areas and homes without properly vented stove hoods or other ventilation.<sup>3</sup> Energy-burdened households that use gas stoves as a source for warmth have even greater exposure.<sup>8</sup> These exposures add to the disproportionate, cumulative pollution exposure that burdens low-wealth communities and communities of color. In addition, gas extraction is linked to a number of adverse health effects, including asthma and other respiratory diseases, adverse pregnancy outcomes, and cancer risk (Case Study on Health Impacts of Pollution Along the Oil and Gas Lifecycle).<sup>9-11</sup>

Through policy action, U.S. cities are leading the charge in protecting health by reducing harmful indoor air pollution. Such policies work to electrify homes and buildings, including replacing gas appliances with efficient, zero-emission alternatives like electric or induction stoves, electric dryers, and heat pumps that provide highly efficient space heating and cooling.

Nearly 80 cities across 10 states have adopted plans to phase out gas use in buildings by adopting all-electric codes

for new construction or building performance standards.<sup>12</sup> For instance, New York City plans to phase out gas in all new buildings by 2027, which will eliminate emissions equivalent to taking 450,000 cars off the road for a year.<sup>13</sup> Neighborhood researchers in Washington, D.C. found nearly 400 methane gas leaks on D.C. streets.<sup>14</sup> The research helped generate momentum for new legislation passed in July 2022 that will phase out all gas use in new buildings and retrofits in the city by 2026. The Los Angeles city government used a community engagement process to design a policy requiring all-electric new residential and commercial construction starting in 2023. In May 2022, Washington became the first state to require electric heat pumps for space heating and cooling in new commercial and multi-family buildings.<sup>15</sup>

However, many states are now advancing laws that prohibit cities from taking action to phase out gas in buildings, so-called preemption laws, often with the support of the oil and gas industry. These laws have now passed in 20 states, hindering local action.<sup>16</sup>

At the federal level, the Inflation Reduction Act will expand electrification tax credits, which will support cities and states seeking to set new building codes or performance standards. There is, however, more work to be done at the federal level. The Environmental Protection Agency should list gas appliances as a source category under the Clean Air Act, enabling the agency to set strong pollution standards for indoor appliances to ensure better protection for people in the entire U.S.<sup>17</sup> At the same time, the Consumer Product Safety Commission can set standards limiting emissions from stoves, set ventilation standards, and require gas stoves to have warning labels.<sup>18</sup> Together, action at the local and national level can protect children and families from harmful indoor air pollution.