

Equitable Building Decarbonization through Electrification

Karma Sawyer, Pacific Northwest National Laboratory

Electrification of space and water heating is now widely discussed in the clean energy community as a critical solution to decarbonizing the US building stock. There is little research available around the potential positive and negative impacts of electrification, especially on marginalized groups. On one hand, building electrification strategies provides opportunities to reduce exposure to indoor pollutants, which are often 2 to 5 times higher than typical outdoor concentrations and have disproportionate impacts on people who are often most susceptible to the adverse effects of pollution. Most heat pump demonstrations have not been done in underserved communities in which people may live in more dense conditions, changing the performance metrics needed to meet basic energy services. Many buildings, especially in underserved communities, are not insulated properly, limiting the cost and energy savings from heat pump technologies. Decarbonization through electrification is a relatively new strategy that has grown in popularity only since the recent rapid increase of solar and wind generation. Underserved communities that would benefit from building electrification may also be affected by an unreliable and expensive energy system. The current body of research on equity and environmental justice in the power grid is underdeveloped and not broadly adopted. Moreover, the voices of minority, low-income, and protected populations are often not present in conversations regarding grid planning and resource allocation. This paper will describe some of the gaps in research and recommendation for analyses and case studies that will be necessary for building electrification to be an impactful decarbonization tool for everyone.