

SUMMARY: CLEAN HEAT POLICY EFFICACY IN THE US NORTHEAST



Overview

We conclude that policies allowing for and promoting the decarbonization of fuels currently used to heat homes and businesses can offer a cost-effective means to meet interim GHG reduction goals while electrification advances. Promoting emissions reductions from existing fossil-fuel based heating systems can accelerate the meeting of GHG goals while utilizing existing infrastructure, which limits the cost of achieving policy objectives.

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Key Summary Points

- Incremental costs of new generation capacity needed to meet demand from electrification of heating will require investment on the order of \$40 billion in New England alone, and additional costs for required upgrades to the transmission and distribution systems in excess of \$10 billion. Though there is substantial uncertainty in such cost estimates, the uncertainty is not that costs will in reality be very low, but that they will be substantially greater, particular considered over the entire Northeast region.
- In addition to electrification-focused objectives, decarbonizing the fuels presently utilized for heating homes and businesses can provide a cost-effective approach to achieving interim greenhouse gas (GHG) reduction goals. This strategy can help alleviate the difficulties associated with rapid electrification and the substantial development of renewable generation, transmission, and distribution infrastructure that is required.
- Based on data from California's successful Low Carbon Fuel Standard (LCFS) Program, we can estimate that incorporating renewable diesel and biodiesel for heating in the Northeast could result in net emissions reductions of around 7 million metric tons of CO₂ annually. This reduction is equivalent to the emissions reduction achieved by adding 1.6 million heat pumps, effectively tripling the current share of residential heat pumps in the Northeast. This highlights the significant potential emissions reduction value of adopting low-carbon fuels for heating purposes in the region.
- The electrification of heating, achieved by transitioning from fuel combustion to electric heat pumps, represents a promising strategy to achieve emissions reduction goals. However, its effectiveness is contingent upon the scale and timing of decarbonizing electricity generation. To successfully decarbonize energy use, substantial investments in renewable generation and storage resources will be necessary, aimed at significantly reducing carbon emissions stemming from electricity generation.
- Exclusive reliance on electrification, combined with electric grid decarbonization, presents significant challenges for a rapid transition. Large scale electrification of heating – for example of 60% of households – would entail more than a 14-fold increase in the number of installed heat pumps, totaling more than 11 million units in the Northeast U.S.
- Large scale electrification will also require significant additional infrastructure to generate and deliver low-carbon electric power, including 10,000 to 20,000 megawatts (MW), and potentially much more, generation capacity, and likely significant upgrades to feeders, substations, and the transmission system. The challenges of such large-scale modifications to the electric system may constrain the ability of electrification to achieve emissions reduction goals quickly.

More research is available in the full report. [Click here](#) or scan the QR code on the right to access it.

