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Household actions can provide a behavioral wedge to rapidly reduce US carbon emissions

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Abstract

Most climate change policy attention has been addressed to long-term options, such as inducing new, low-carbon energy technologies and creating cap-and-trade regimes for emissions. We use a behavioral approach to examine the reasonably achievable potential for near-term reductions by altered adoption and use of available technologies in US homes and nonbusiness travel. We estimate the plasticity of 17 household action types in 5 behaviorally distinct categories by use of data on the most effective documented interventions that do not involve new regulatory measures. These interventions vary by type of action and typically combine several policy tools and strong social marketing. National implementation could save an estimated 123 million metric tons of carbon per year in year 10, which is 20% of household direct emissions or 7.4% of US national emissions, with little or no reduction in household well-being. The potential of household action deserves increased policy attention. Future analyses of this potential should incorporate behavioral as well as economic and engineering elements.

climate mitigation | climate policy | energy efficiency | household behavior | energy consumption

Footnotes

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* Multiple targets can create community-level effects that enhance behavioral change above what can be achieved with a single target. We do not include “spillover” savings from businesses and other organizations in our calculations, so we are underestimating the overall impact of the approach we propose.

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↵† Our estimates are not corrected for potential “takeback” (i.e., a portion of achievable reductions from improved technical efficiency that consumers forgo to gain other benefits, such as increased thermal comfort).

↵‡ More efficient lighting is omitted from our analysis because the 2007 Energy Independence and Security Act mandates phaseout of incandescent lighting and forces a shift to compact fluorescents, yielding PER of 30.2 MtC or 4.8% of household sector emissions in year 10. Further savings can be obtained by voluntary shifts to solid-state (light-emitting diode) lighting, but this technology is new to consumers and we have no basis for estimating plasticity.