Energy Efficiency Can Deliver for Climate Policy Evidence from Machine Learning-Based Targeting

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Date:2022-09-01

Keyword:NA

Attachment:[Link](https://www.nber.org/system/files/working_papers/w30467/w30467.pdf)

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Building energy efficiency has been a cornerstone of greenhouse gas mitigation strategies for decades. However, impact evaluations have revealed that energy savings typically fall short of engineering model forecasts that currently guide funding decisions. This creates a resource allocation problem that impedes progress on climate change. Using data from the largest U.S. energy efficiency program, we demonstrate that a data-driven approach to predicting retrofit impacts based on previously realized outcomes is more accurate than the status quo engineering models. Targeting high-return interventions based on these predictions dramatically increases net social benefits, from $0.93 to $1.23 per dollar invested.