

Wherever the sun shines: Bringing solar to low- and middle-income communities

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A new guidebook from Yale outlines the barriers and potential benefits of bringing rooftop solar to more low- and middle-income (LMI) households.

This guidebook is based on research by Kenneth Gillingham, associate professor of environmental and energy economics at the Yale School of the Environment, and Bryan Bollinger, associate professor of marketing at New York University, who convened a team of scholars and practitioners to generate insights on accelerating solar adoption in LMI communities.

Funded by the U.S. Department of Energy's Solar Energy Technologies Office (SETO), this resource offers a roadmap for installing rooftop [solar panels](#) in communities that are often overlooked when it comes to promoting renewable energy solutions.

The guidebook includes insights derived from field studies conducted during a series of Yale-led "Solarize" campaigns run by the nonprofit SmartPower. Solarize is a proven mechanism that brings together solar installers, environmental nonprofit groups, community-based volunteers,

local officials, and residents to accelerate adoption of rooftop solar systems. Previous research by Gillingham details the effectiveness of these campaigns and messages, which, he said, can lead to an average 1,000-percent increase in local installations.

"The research underlying this guidebook provided new insights into how to reach LMI households to help them reduce energy costs and the negative environmental impacts from building energy use," said Gillingham.

The more recent phase of the research focused on LMI communities, and how different messages can resonate differently with different communities. One first finding is that Solarize campaigns were proven to be effective among LMI communities. But the messaging field experiment provided further nuances on how to reach potential solar customers across all income groups. While self-interest, financially-oriented messages work best among high-income households, evidence suggests that community-focused—or "pro-social" messages—resulted in more satisfied customers who were more likely to tell their friends and neighbors about the positive experience.

Key findings from the research include:

- 1. It is critical to assess and remove key barriers. A starting point is to make sure that the policy environment is conducive to LMI solar adoption. It is especially important to have financing options that are tailored to the needs of these customers. When capital is available, solar can be much more attractive and accessible to LMI households. Shared community solar options also hold great promise for LMI adoption of solar.
- 2. Solarize programs work in LMI communities. Households in these communities are open to the

idea of installing solar, and grassroots campaigns to encourage adoption can succeed. A major reason for this is that trust matters, so community volunteer "solar ambassadors" can be very influential.

3. Getting the word out is critical. In LMI communities, customers are equally likely to adopt solar as a result of either a community-based or individual-based message; The researchers find that messaging does not matter for the number of adoptions. This suggests simply that engaging in messaging at all is critical.

4. Messaging matters for who adopts. Households that install solar after receiving community-based messages are happier with their installations and are more likely to recommend solar to their friends and neighbors, even if the installations tend to be somewhat smaller and less financially lucrative to the household. So, if the goal is to deliver happy adopters who continue to tell their peers about solar, community-based messaging is the preferred approach for LMI communities.

This guidebook aims to identify the best ways to connect with potential LMI customers and understand what makes them interested in purchasing rooftop solar systems. The authors hope that policymakers, once armed with this information and tools that they can use, will continue to develop programs making solar attractive for as many customers as possible. A forthcoming paper by Gillingham, Bollinger and Marten Ovaere digging deeper into the effects of self-interest messages will be published in the *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*.

Provided by Yale School of Forestry & Environmental Studies

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