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### Authors

O'Shaughnessy, Eric

Barbose, Galen

Kannan, Sudha

et al.

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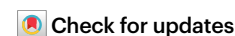
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# Community solar reaches adopters underserved by rooftop solar

Eric O'Shaughnessy, Galen Barbose, Sudha Kannan & Jenny Sumner



Community solar, a business model where multiple customers buy output from shared solar systems, has expanded solar access among multifamily housing occupants, renters, and low-income households. Policies to enable community solar could be expanded and benefits of access augmented through targeted measures to support community solar adoption in underserved communities.

BASED ON O'Shaughnessy, E. et al. *Nat. Energy* <https://doi.org/10.1038/s41560-024-01546-2> (2024).

## The policy problem

Rooftop solar has enabled millions of households to reduce electricity bills and participate in the renewable energy transition. However, rooftop solar adoption remains largely out of reach for households in certain communities, especially multifamily building occupants, renters, and low-income households. In addition to reducing the deployment potential of rooftop solar, inequitable solar access generates political opposition to rooftop solar policies. Policymakers are responding through measures to provide more equitable solar access. One such approach is to enable and support community solar, a business model wherein multiple households buy solar output from a single shared system. Proponents argue that community solar does not carry the same adoption challenges that have resulted in inequitable rooftop solar access. However, the impacts of community solar on solar access have not yet been empirically evaluated.

## The findings

Using household-level data from 11 US states, we find that community solar adopters in 2023 were about 6.1 times more likely to live in multifamily buildings than rooftop solar adopters, were about 4.4 times more likely to rent, and earned about 23% less annual income (Fig. 1). These results suggest that community solar has expanded solar access to households that would or could not otherwise have adopted solar. We also find that policies have been effective in further expanding solar access, such as programmes that reserve community solar shares for low-income customers. We estimate that income-targeted community solar policies explain around 70% of differences in income levels between community and rooftop solar adopters in our sample, around 40% of differences in renter rates, and around 20% of differences in

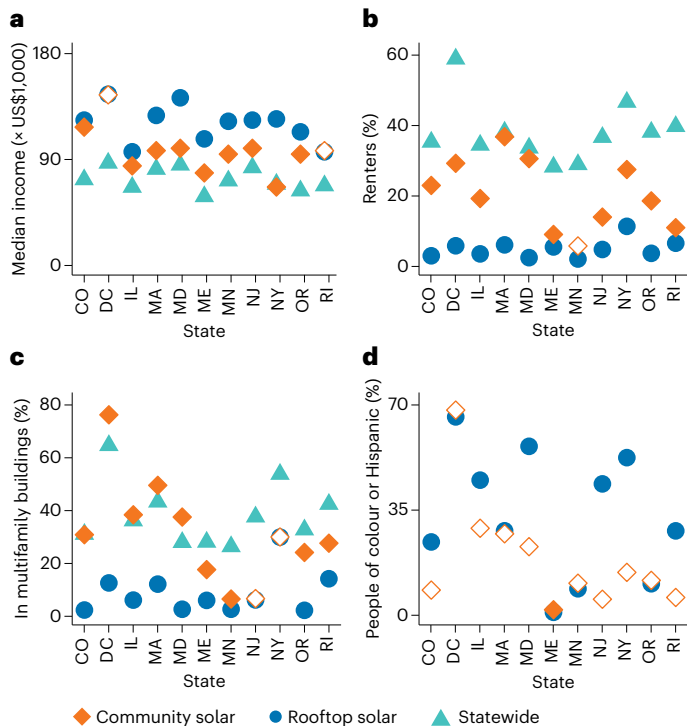
housing type. The impacts of community solar on solar access may vary from the results of this study in other jurisdictions with distinct policy and socioeconomic contexts.

## The study

Household-level adopter data were compiled from the Lawrence Berkeley National Laboratory's Tracking the Sun data set (rooftop solar), the National Renewable Energy Laboratory's Sharing the Sun research project (community solar), and directly from state community solar programmes. Household-level solar adopter data were matched to household-level demographic data for income, housing type (for example, single versus multifamily), housing tenure (for example, own versus rent), and race/ethnicity. We then selected a subset of data from 11 US states with at least 100 rooftop and community solar adopters with available data for key variables. We analysed the demographic characteristics of rooftop and community solar adopters to identify statistically significant differences between the two adopter groups. Demographic differences were relatively consistent and generally significant across all states in terms of income, housing type, and housing tenure, but not in terms of race/ethnicity. We used additional statistical modelling to estimate the impacts of community solar policies on community solar adoption trends.

## Messages for policy

- Community solar expands solar access by eliminating barriers associated with rooftop solar adoption, especially for multifamily housing occupants and renters.
- Policy can augment the access benefits of community solar, such as by reserving community solar shares or providing adoption incentives for low-income households.
- Community solar does not yet achieve equitable access relative to the general population. Policymakers could identify and aim to resolve remaining barriers to community solar adoption in underserved communities.
- Alternative business models that enable shared adoption of clean energy technologies could support equitable clean energy access in other domains.



**Fig. 1 | Comparisons of demographic characteristics of community and rooftop solar adopters in 11 US states.** **a**, Median income levels ( $N=181,688$ ). **b**, Percentage of renters ( $N=147,881$ ). **c**, Percentage of multifamily building occupants ( $N=181,672$ ). **d**, Percentage of people of colour or Hispanic ( $N=181,688$ ). Solid diamonds indicate statistically significant ( $p < 0.05$ ) results based on one-sided Wilcoxon tests (income) or Pearson Chi-squared tests (all other variables). Figure adapted from *Nat. Energy* <https://doi.org/10.1038/s41560-024-01546-2> (2024); Springer Nature Ltd.

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## Further Reading

- Carley, S. & Konisky, D. M. The justice and equity implications of the clean energy transition. *Nat. Energy* **5**, 569–577 (2020). **This review summarizes equity challenges in the clean energy transition.**
- Haynes, B. *Community Solar: Expanding Access and Safeguarding Low-income Families* (National Consumer Law Center, 2024). **Explores emerging issues with community solar as a measure to expand solar access.**
- Michaud, G. Perspectives on community solar policy adoption across the United States. *Renew. Energy Focus* **33**, 1–15 (2020). **This study explores challenges associated with enabling policies for community solar.**
- Welton, S. & Eisen, J. Clean energy justice: Charting an emerging agenda. *Harv. Environ. Law Rev.* **43**, 307–371 (2019). **This study explores how inequitable solar access could pose policy problems.**

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## Competing interests

The authors declare no competing interests.

Eric O'Shaughnessy<sup>1</sup>, Galen Barbose<sup>1</sup>, Sudha Kannan<sup>2</sup> & Jenny Sumner<sup>2</sup>

<sup>1</sup>Lawrence Berkeley National Laboratory, Berkeley, CA, USA.

<sup>2</sup>National Renewable Energy Laboratory, Golden, CO, USA.

✉ e-mail: [eoshaughnessy@lbl.gov](mailto:eoshaughnessy@lbl.gov)