

MICROGRIDS

A microgrid is a localized grouping of distributed electricity generation technologies, paired with energy storage or backup generation and tools to manage demand. A microgrid can operate as a standalone grid or it can be tied into the macrogrid, where it acts as a semi-autonomous grid unit. Microgrids may provide the biggest benefits to regions not currently served by centralized grids, such as in sub-Saharan Africa and Asia, but they can provide energy resilience even in developed areas served by the macrogrid.

Microgrids provide less than 0.2 percent of U.S. electricity, but their capacity is growing rapidly.¹ There are 160 microgrids in the U.S., with most located in Alaska, California, Georgia, Maryland, New York, Oklahoma, and Texas.² Many microgrids in the U.S. are installed at educational institutions, military bases, medical facilities, and on islands.

A central challenge to microgrid development is that each grid is unique, making it difficult to forecast energy supply and costs and to attract investment. Microgrids can be promoted through clearer legal frameworks that set forth the rights and obligations of the microgrid owner with respect to customers and the larger utility grid operator, adoption of public-private partnerships as a way to overcome financial hurdles, creation of clean energy banks, funds, or other funding opportunities for microgrids (for example, New York has a \$40 million grant program to create community microgrids), and linear programming models that help forecast savings and emissions reductions from potential microgrid projects.³

- Fishery friendliness: Microgrids on their own do not have any fishery impacts, but the mix of renewable energy and storage technologies that comprises each microgrid may have implications for fisheries.
- Co-benefits: Microgrids can provide energy resilience and can bring electricity to areas that currently lack access.
- Environmental externalities: Microgrids on their own do not have any environmental impacts, but the mix of renewable energy and storage technologies that comprises each microgrid may have environmental implications.
- Policy catalysts: Microgrids can be promoted through clear legal frameworks (enabling legislation), grants, loans, public-private partnerships, carbon pricing, and renewable energy portfolio standards.
- More information:
 - [Drawdown: Microgrids](#)
 - [Center for Climate and Energy Solutions: Microgrids](#)

¹ C2ES. "Microgrids." <https://www.c2es.org/content/microgrids/>

² C2ES. "Microgrids." <https://www.c2es.org/content/microgrids/>

³ Center for Climate and Energy Solutions. "Microgrids." <https://www.c2es.org/content/microgrids/>

- [Department of Energy: The role of microgrids in helping to advance the nation's energy system](#)
- [Roberts, David and Chang, Alvin \(May 24, 2018\). "Meet the microgrid, the technology poised to transform electricity." Vox.](#)

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