

MICROGRIDS

According to the National Renewable Energy Laboratory (NREL), a microgrid is “a group of interconnected loads and distributed energy resources that acts as a single controllable entity with respect to the grid. It can connect and disconnect from the grid to operate in grid-connected or island mode. Microgrids can improve customer reliability and resilience to grid disturbances.”¹

Key Technologies

Microgrids can generate power via renewables, fuel cells, or internal combustion engines, among others. Today’s microgrids use intelligent energy management software to enable an efficient system that meets demand flexibility needs, and also contain energy storage technology or electric vehicle charging infrastructure.

Potential Market Size & Timing

Microgrids have been used at military installations and at facilities like university campuses for decades. The market for microgrids is expected to expand as the costs for distributed energy resources improve and concerns related to reliability grow as a result of severe weather and cyber security.

- According to IMARC Group, “the North America microgrid market size reached US\$10.8 billion in 2021. Looking forward, IMARC Group expects the market to reach US\$19.8 billion by 2027, exhibiting a growth rate (CAGR) of 10.5% during 2020-2027.”² While the total global market will approach \$40 billion by 2028.³
- Global microgrid capacity is projected to reach nearly 20 GW by 2028, up from just over 3 GW in 2019.^{4,5}
- Microgrids can be an attractive option to companies committed to reducing their carbon emissions, as it enables control over generation source, emissions, and energy use.

Barriers

- Limited availability of capital
- Regulatory uncertainty and outdated energy policy
- Microgrids are viewed as a public utility in some service areas
- Uncertain utility support
- High technical and financial risk

Accelerators

- Global trends towards decarbonization
- Financial incentives from the government (ex. Inflation Reduction Act)
- Updated energy policy and regulatory action

Relevant NEMA Technologies

- Power electronics
- Switchgears
- Transformers
- Utility & product systems
- Electrical measuring equipment

1 <https://www.nrel.gov/grid/microgrids.html#:~:text=A%20microgrid%20is%20a%20group,and%20resilience%20to%20grid%20disturbances>

2 <https://www.imarcgroup.com/north-america-microgrid-market>

3 Guidehouse Research. *Q 2019 Microgrids Overview: Market Drivers, Barriers, Business Models, Innovators, and Key Market Segment Forecasts*

4 Guidehouse Research. *Q 2019 Microgrids Overview: Market Drivers, Barriers, Business Models, Innovators, and Key Market Segment Forecasts*

5 <https://doe.icfwebservices.com/microgrid>