

What are microgrids and how do they work?

Natural disasters like Hurricane Maria in Puerto Rico and Hurricane Harvey in the United States have exposed the fragility of our power structures – and the damaging effects of being disconnected for too long. [Microgrids](#) have emerged as an attractive option to keep the lights on when disaster strikes.

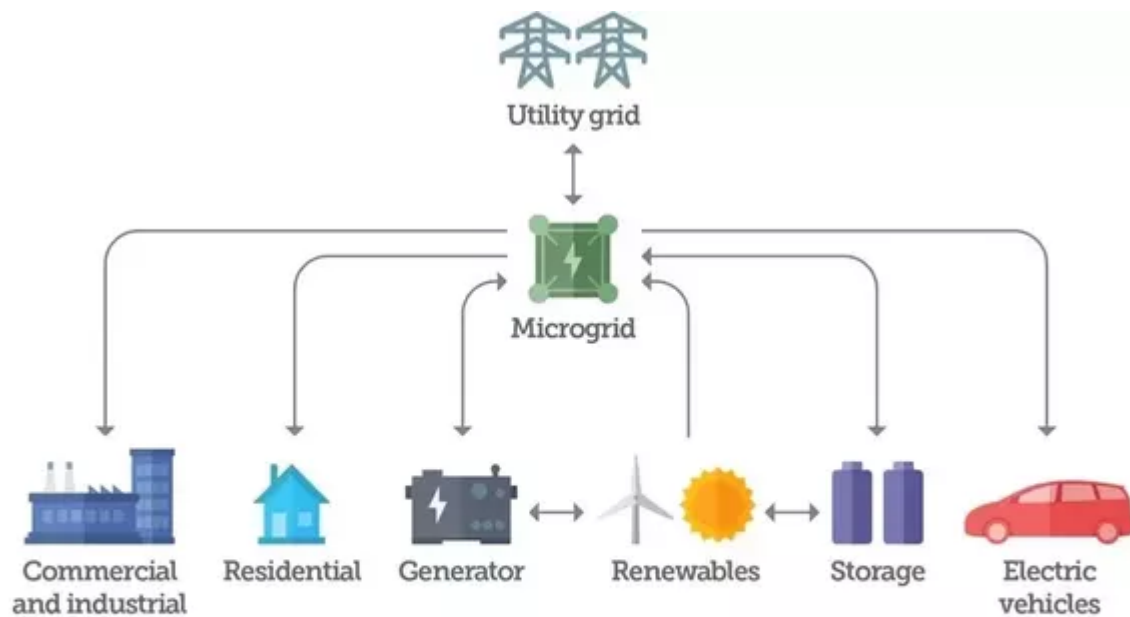
What is a microgrid?

The clue is in the name – a microgrid is a small-scale version of a power grid. Instead of power being distributed to consumers from large, distant sources, local grids combine smaller power sources and consumers into an independent network. The microgrid can function alone, or connect to the larger power grid as a back-up.

How do microgrids work?

When part of the main power grid goes down, large numbers of electricity users can be affected – consider a single downed transmission line knocking out power to an entire town. If a network can operate independently, generating its own power, it can be much more resilient. This is especially important for remote and isolated communities.

Any combination of connected small-scale consumers and power generating sources – solar panels, batteries, wind turbines, diesel generators, steam turbines – can be classed as a microgrid, so long as the network can operate independently. However, the clean energy possibilities of renewable-only microgrids are causing the biggest buzz.



Source: LG CNS

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Solar, energy storage and smart technology: Modern microgrids

Microgrids in some form have been around for years – some small islands are microgrids by default. Other examples could be extremely isolated outposts or communities, or military bases. Renewable options such as solar panels are frequently preferred due to the difficulty or expense of fuelling traditional generators.

However, two crucial factors have been game changers for microgrid technology – energy storage and smart technology. With battery energy storage, there is no longer the need to rely on polluting fossil fuel generators when the wind stops blowing or the sun doesn't shine. This is an essential step towards lowering carbon emissions everywhere.

Smart technology is equally important. In traditional power grids and microgrids alike, electricity demand and supply must stay closely matched or risk destabilising or damaging grid infrastructure. Tracking these second to second changes in usage, directing excess generated power to storage and feeding electricity from batteries back to the grid is the role of smart grid controllers.

The advances in solar technology, energy storage and smart grids have finally reached a point where truly flexible, responsive and efficient local grids are possible. As the sector matures, we could see an entirely new way of organising our electricity infrastructure.

