

Microgrids and Resiliency

Overview

Optimization, efficiency, and reducing peak energy demand are key concerns when planning your zero-emission fleet infrastructure.

There are an array of technologies which may reduce costs and improve efficiencies of your infrastructure, including microgrids. Many opportunities exist in the State of California to pursue incentives aimed at accelerating the adoption of this technology.

Installation

There are generally three main pieces to a microgrid:

Generation: This where or how energy enters the microgrid, besides a utility connection (e.g., solar panels).

Controls: This is the central brain of your microgrid, managing where and how energy flows.

Grid Automation: These may include sensors and equipment to monitor and execute commands determined by the controller.

Though installation can be costly, it can be completed in phases to decrease upfront costs according to your fleet needs. If reliability is a priority, then there must be an isolated circuit with simple controls present.

What are Microgrids?

A microgrid is a decentralized technology which removes your fleet from being entirely reliant upon the electrical grid. It is a local, on-site energy system which may produce and store energy when pricing is high, or otherwise substantiate the energy use associated with your site.

For some fleets whose charging or fueling site is located in an area where utility distribution of energy does not meet the needs of your infrastructure, a **microgrid may reduce the magnitude of interconnection necessary from one's utility.**

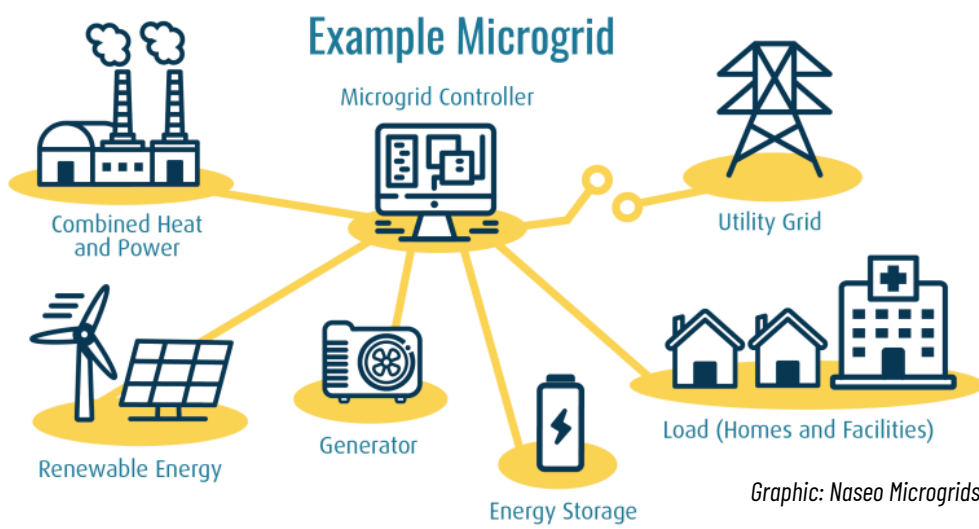
Where utility infrastructure to a given site is inadequate, fleet operators have made up this shortfall by generating electricity from alternative resources and storing energy on-site using a battery. This not only gives you control of when to operate and avoid peak charging times, but also keeps energy reserved for instances of grid constraint or emergencies.

Microgrids often consist of many components known as "distributed energy resources" which may include solar panels, power generators, and battery electric storage systems. The core resources of microgrids are software management systems aimed at enabling automated management of fleet charging times and capacities, and dictate when power is drawn from the electrical grid.

Generation:
e.g, solar panels

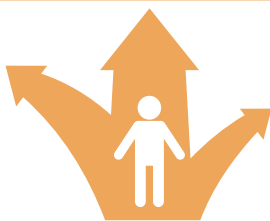
Controls:
The central brain of the system which manages those batteries and generators to meet your energy goals.

Grid Automation:
The sensors and other equipment which monitor and execute according to the input of the controllers.



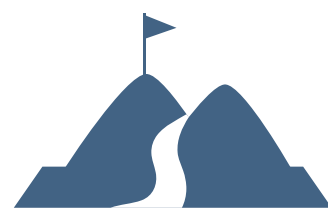
Opportunities & Challenges

OPPORTUNITIES



- Reliability through unexpected regional outages will prioritize your power needs.
- Intelligent control and optimization which can meet your energy cost savings needs.
- Potential for increased revenue through Low Carbon Fuel Standard (LCFS) credits.

CHALLENGES



- Lack of clear regulatory standards for microgrids.
- Requires critical utility engagement.
- Relatively new technology with smaller network of experts.



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