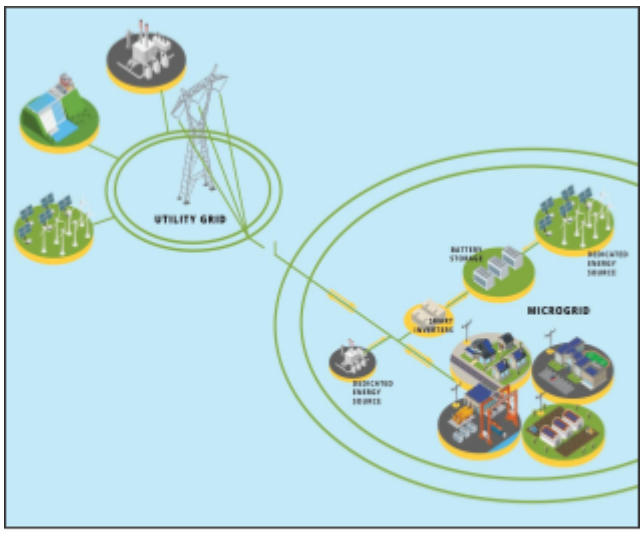
Community Microgrids Overview
For San Mateo County Schools

Environmental Literacy and Sustainability Initiative (ELSI) • Last Updated June 2022

What is a Community Microgrid?

A community microgrid is a localized energy grid that has the ability to operate independently of the main utility grid. A microgrid can be powered by distributed generators, batteries, and/or renewable resources, like solar panels (U.S. Department of Energy). Microgrids are designed by the communities to serve facilities and infrastructure that are critical or directly impact the health and welfare of the population.



A Community Microgrid has a decentralized dedicated energy source from the Utility Grid, enabling customers to access power independently during emergencies.
Source: Edison international

Unlike a traditional grid, a microgrid utilizes sources closer to where the electricity is being consumed and is characterized by the ability to be able to disconnect from the main grid and operate independently during emergencies. In addition to a concentration on energy, some community microgrid projects also include water sourcing as a form of water resiliency alongside generating and storing energy via hydroelectric power generation.

Why might a Microgrid be Important for K-12 Schools to be "*Climate Ready*"?

Schools increasingly need back-up power sources for essential operations such as lighting, running refrigeration units, and heating/ventilation. Loss of power disrupts learning, and can cause schools to need to close temporarily during Public Power Shut-offs (PPS) of main utility grids. Public Power Shut-offs are becoming increasingly common due to increases in climate-related emergencies. Schools in San Mateo County have been most directly impacted by PPS's to reduce the risks of wildfires. As climate disasters worsen schools may also experience PPS's due to storms or flooding. By investing in a community microgrid, schools become more resilient and ready for these projected disruptions to operations and learning.

Having a microgrid at a school site, or in the community the school belongs to, bridges the gap between relying on a traditional centralized and vulnerable energy system and a more flexible, resilient and sustainable power supply.

How Can Schools Get Funding for a Microgrid?

Schools can look for funding through government or private institution grants. Funding will typically be in the form of grants that allow for a community to build and establish a microgrid within the existing frameworks in the community. Funding programs are being developed and will be available for communities within the coming years.

The resources listed below are the most relevant funding sources for San Mateo County school programs:

- Community Microgrid Enablement Program - Will cover the cost of certain PG&E equipment necessary to enable the safe islanding - the ability for a microgrid to operate independently of the main grid - of an eligible community microgrid, up to a cap of $3 million per project. PG&E also has a tariff that allows customers to share power within the community grid.
- Electric Program Investment Charge Program - EPIC - In order to meet the state's climate goals the EPIC program invests more than $130 million annually to help fund research that is helping to expand the use of renewable energy. This funding helps build safe and resilient electricity systems, advance electric technologies for buildings, schools, businesses, and transportation. It enables a more decentralized electric grid to help improve the affordability, health, and comfort of California's communities. Under this program, the CA Energy commission funded the Fremont microgrid to provide energy to "essential and emergency services running during power outages".
- Microgrid Incentive Program - The program is intended to provide funding for community, local and tribal government-driven, reliability and resilience projects with benefits for an increase in electricity reliability and resiliency for communities that may be at higher risk of electrical outages. The funding will address reliability for critical infrastructure facilities to reduce the impacts of power outages and minimize disruptions for low-income households, individuals who rely on uninterrupted power, utilize assistive and/or medical equipment, or experience other access and functional needs.

Resources To Learn More

Resources for San Mateo County Schools to learn more about community microgrids:

- Peninsula Clean Energy: San Mateo County's Community Choice Aggregate has ongoing opportunities to partner with schools to meet their energy needs.
- Clean Coalition is the leading nonprofit promoting community microgrids in the Silicon Valley area. Check here for updates and proposed projects in San Mateo County such as:
    - Peninsula Advanced Energy Community - Provides an overview of the proposed plan to implement microgrids in San Mateo County.
    - Deployment Plan - is the proposal document which presents **Hoover Elementary School** as the main center of a microgrid for its neighborhood in Redwood City.
    - Survey Summary - summarizes the results and identifies lower cost and higher value renewable resource opportunities reflecting characteristics of all available sites in relation to existing loads and grid infrastructure.
- Sustainable San Mateo County - Provides an overview of major energy proposals in San Mateo County, and has a brief overview of what microgrids are, and how they help local communities.
- Proterra and VTA - Provide an example of how a microgrid can power a transportation system and its benefits to the users and community.