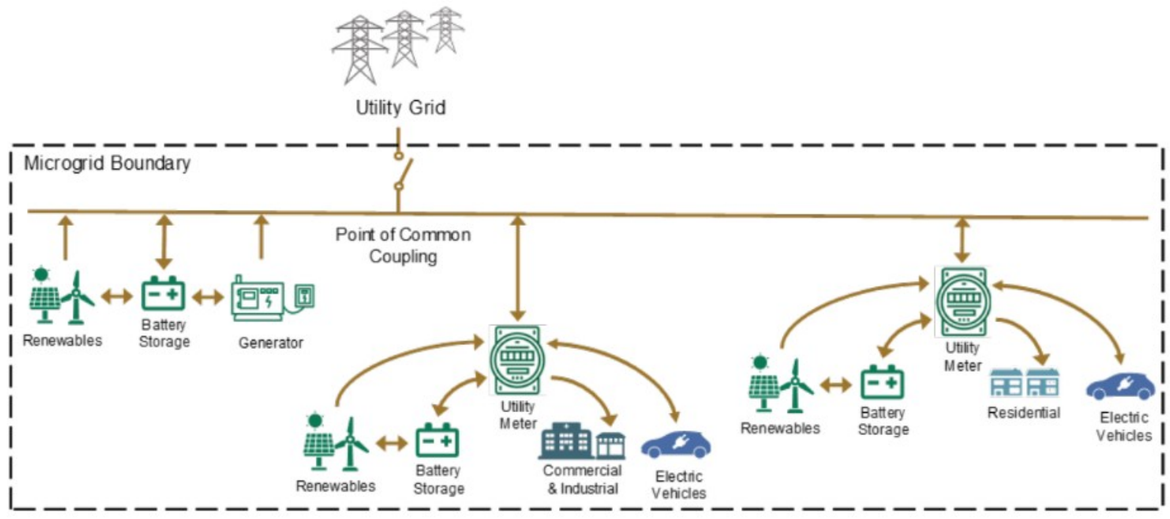
GRID MODERNIZATION CASE STUDY: Community Microgrid



A community college in New Mexico partnered with the local electrical cooperative to develop plans for a community microgrid that would provide power for essential services in the event of an interruption. The feasibility and engineering study took 8 months and the cost was $220, 000.00 most of which was supported by the Grid Modernization Grant Program.

Community College Goals

Three goals were identified by the community college:

1. Achieve greater energy reliability and resilience. The campus and surrounding community are at risk for extended electric service interruptions due to being located at the end of a single radial feeder at the edge of the electrical cooperative's territory. This feeder traverses mountainous fire prone areas for miles until reaching this community. Damage to the wires or equipment along it's length would likely lead to an extended outage for the whole community. In the event of an interruption the community would be without medical services, emergency communications and power for local homeowners.

2. Introduce microgrid concepts and training for students. There is an initiative to bring a workforce training program to this campus and expand training for trades.

3. Support research and entrepreneurial development. As a pilot project the microgrid would serve as a place to test out new technologies.

Opportunities to Achieving Goals

An existing 1.5-megawatt PV system is located on the campus in partnership with the local coop and energy development company. Coupling the PV system to the microgrid will provide elevated community and economic by utilizing the PV system as a clean energy source to charge the batteries for dispatch when the sun isn't shining.

Connection to Grid Modernization

In the event of an interruption the microgrid would provide power for the campus, community medical center and emergency operation facilities. If the interruption is cause by a fire then these facilities would have enough daytime and battery storage resources to power communication and coordinate activities for managing the emergency. During non-emergency times the microgrid will assist with New Mexico's workforce development and research in building and managing modern grid technologies such as controllers, batteries and their interface with the distribution grid.

Technical Solution

The microgrid design included the existing 1.5 MW PV system, 2 MW battery storage, 100kW propane generator, and microgrid controllers. Along with these generating resources and storage components the cooperative would upgraded their system with AMI Meters, a step up transformer, reclosers and higher capacity conductors that would work in concert with the community microgrid.