

Climate Adaptations and Futures Webinar Series:

San Miguel County Clean Energy Projects

San Miguel County has taken on ambitious clean energy projects that include energy efficiency, renewable solar energy, and battery storage. Together, these projects will allow the County to reduce greenhouse gas emissions (GHGs) and create a microgrid.

To complete these projects, San Miguel County is leveraging State funding from two major sources:

1. [Renewable and Clean Energy Initiative](#), which is a set-aside from the [Energy/Mineral Impact Assistance Fund Grant \(EIAF\)](#), administered by the Colorado Department of Local Affairs (DOLA). This \$750,000 award covers the installation of onsite solar panels at several county locations including a new building in Norwood and existing County and Sheriff's buildings.
2. [Energy Performance Contracting](#) (EPC) with the Colorado Energy Office (CEO). This award supported a review of the project, which led to some changes in scope and additions including adding battery systems for backup and resiliency. An Energy Services Company completed an investment grade audit that led to energy efficiency projects across a number of County facilities, ultimately reducing utility and GHG savings by 20-25%.

What is a Microgrid?

A microgrid is a local energy grid that can operate separately from the traditional utility and provides backup power during emergencies or power interruptions. Microgrids allow communities to be more energy independent and are more environmentally friendly when fueled by renewable energy, as in the case of San Miguel's solar system.

Key Takeaways

- **Goal Setting:** Local Governments should understand their goals when they pursue a project. Make sure the project is meeting those goals because there are multiple ways to structure solar projects depending on the desired goals and outcomes. In San Miguel County, their goals were:
 - Be carbon neutral ASAP;
 - Save taxpayer dollars;
 - Increase resiliency for mission critical services (e.g., providing backup power for an Emergency Operations Center and broadband)
 - Align with the [Colorado Climate Action Plan](#) (passed in 2019).
- **Partnerships:** Engage the local utility early for technical support and potential funding opportunities. To achieve the project, San Miguel County worked with community partners including San Miguel Power Association (the local utility), the Sheriff's Office, municipalities, Telluride Foundation, and EcoAction Partners (a local sustainability organization that helped track GHGs for this project). Getting San Miguel Power Association (SMPA) involved early in the process was key to the success of this project, although often the utility is only brought on when the solar panels are ready to be grid-tied. SMPA was able to provide rebates that added up to ~\$25,000 in savings.

Balancing Energy Efficiency and Energy Generation:

San Miguel County balanced both energy efficiency and renewable energy generation through solar energy to optimize funding and maximize GHG reductions.

Energy Efficiency: Buildings produce 50% of the GHGs generated by San Miguel County. To combat these GHGs, San Miguel County Energy Project first addressed energy efficiency opportunities through the EPC program. Part of this process identified propane and natural gas appliances (water heaters, boilers, furnaces, and radiant heaters) that were replaced/converted to electric appliances so that they could run on solar energy (this is called “beneficial electrification”). Replacing lighting with newest generation LEDs, replacing windows, doing building envelope improvements, and putting heating/cooling systems onto a timed thermostat.

Solar Energy: The County first became a designated SolSmart community. The [SolSmart Program](#) provided no-cost technical assistance for the County to understand and remove barriers to installing solar in their region. Then, the County is installing on-site solar photovoltaic systems at County facilities. The on-site solar PV will provide:

- 50% of the County electricity generated by Solar;
- A carrier-neutral broadband location for Norwood to serve the community and provide redundancy and resiliency;
- A reduction of 7,704 tons of carbon dioxide;
- \$2.371 Million in cash savings to the County General Fund over 25 years.

The project will see solar panels installed on key county facilities, including the Historic County Courthouse, proving that with the right design it is possible to add solar panels onto a flat, membrane roof that is part of a National Historic Landmark District. Solar will also be added to Sheriff Office facilities such as the new Annex in Norwood, and the Ilium jail facility.

Challenges

- How to measure the cost-benefit of resiliency. The expensive batteries provide valuable but immeasurable benefits from the redundancy/resiliency of the microgrid.
- Although “beneficial electrification” reduces GHGs and propane/natural gas bills, it also increases electric utility bills (due to the conversion of appliances from propane/natural gas to electricity). Because the aim of the CEO EPC program is to reduce utility bills, the benefits of the GHG savings and conversion are hard to capture for the State EPC Program.
- The County had to estimate the size of the solar array for the DOLA funding and based their estimates on NREL modeling. During the engineering and design phase, the size of the solar array changed (reduced from 26 kW to 12.6 kW; this change did not impact funding).