

# Creating Clean Energy Independence and Reliability for Underserved Communities



CASE STUDY  
**San Pasqual Band  
of Mission Indians**

# More than 75% of the unelectrified homes in the US are located on tribal lands.

- American Public Power Association

Tribal communities suffer from higher costs of service, higher interconnection fees, more black-outs and remote or distant service locations. Several tribal communities in California are in both tier-two and tier-three high fire threat zones where Public Safety Power Shut Offs (PSPS's) are taking place, leaving these communities in the darkness literally.

Power shut-offs by California's major utility companies have pushed the communities to become more energy resilient and rely less on the main power grid.

## Why local sustainable power plants (microgrids) make sense for underserved communities:

CEC is the state's primary energy policy and planning agency. Created by the Legislature in 1974; its responsibilities include forecasting energy needs, promoting energy efficiency, supporting the renewable energy market etc. Within the last two years, the most important development in California's energy policy has been two landmark pieces of legislation for energy policy that focus on climate change and transportation.





## Benefits of local sustainable power plant:

- 1. Energy reliability:** The grid has “control capability,” which means it can disconnect from the larger power grid and operate on its own to generate needed power for emergency services such as police and fire.
- 2. Energy accessibility & affordability:** Access to energy at a reasonable cost, when very far from the main grid or totally remote. This also economically benefits the local community by keeping the energy savings within the tribal communities.
- 3. Energy resiliency:** In case there’s a public safety power shutoff or an extreme weather event leads to any power outage, the entire community is without electricity for the duration of the event. Tribal microgrids can provide the resilience needed to power critical infrastructure during outages. Tribes are using microgrids to power police, fire and health care facilities.
- 4. Local benefits and job opportunities:** Microgrids provide financial, social benefits, improve quality of life, creates local employment opportunities, creates awareness, lowers carbon footprint.
- 5. Savings:** Since most underserved communities are always working under strict budgets; a local sustainable power plant can get them affordable electricity & help them meet their climate action plan.

## Local sustainable power plant is the answer:

A microgrid is a self-contained power system that supplies electricity to a specific geographic area, such as a college campus, medical complex, shopping mall, or neighbourhood.

One or more types of distributed energy (solar panels, wind turbines, cogeneration, generators) are used to generate electricity within microgrids. Furthermore, many new microgrids have energy accumulators, which are often batteries. Electric vehicle charging stations are also available.

# About the PROJECT

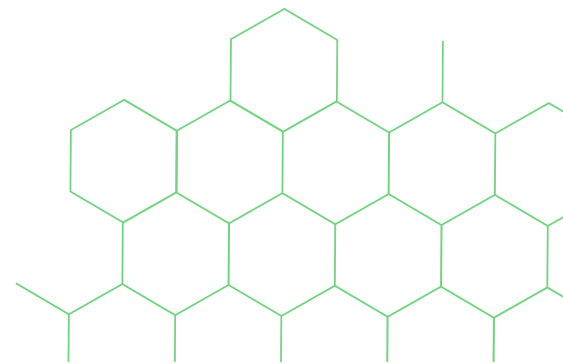


SPBMI is a thriving community of over 1,500 residents. The region, however, is notoriously affected by wildfires and the devastation reaches far beyond the loss of homes and businesses. The community gets hit often due to the reoccurring forest fires and this affects every aspect of life here from power disruption to infrastructural damage. This unreliable power supply here at SPBMI creates an opportunity for a decentralized system; a local sustainable power plant can give resiliency, reliability, savings and above all, safety to the community.

A microgrid will increase the administration's ability to provide essential services including first response, emergency sheltering, administration command and control. Furthermore, the project execution and the annual maintenance will be done locally which will create employment opportunities for the tribe and benefit the local economy. Microgrid in communities offer local balancing of supply and demand, while also integrating the community as an active part of the energy system.

SDG&E has been serving this and few other tribal areas for a long time on an aging 12kV feeder line, which breaks frequently. The SPBMI tribe suffered 180+ hour outages in 2019. The project team includes Gridscape (Lead), Industria Power (EPC), Prosper Sustainably, and a team of many other subcontractors and vendors.

The goals of this project are (A) Economic Cost Savings, (B) Resilience, and (B) Environmental (100% renewables and emissions reduction). The microgrid provides 100% energy and cost offset to the SPBMI tribe.







## The project site includes

1. 181kW Solar PV Carport System
2. 480kWh Microgrid BESS System
3. Gridscape EnergyScope™ Microgrid Control System
4. 6 EV Charging Stations
5. 480V/3ph Interconnection with SDG&E on a master meter
6. Software-driven Load Control and Management
7. Integration with Google Nest Cloud for HVAC load Control

This DOE-sponsored \$2.5M project was commissioned in January 2022 and has been operational since then. The project team is waiting for final interconnection approval from SDG&E. Gridscape provided the microgrid technology and EV charging infrastructure. Industria Power was the EPC on the project.

## Additional benefits:

1. The project will save approx. \$78,286 in energy costs annually.
2. The project will also offset 112 MT of GHG annually.
3. The project will reduce the peak demand and will contribute to additional cost savings.

## Innovation

Technical Innovation: This project includes following technical innovations

- a. Integration with Google Nest Cloud Management System for load control
- b. EV charging integration with the microgrid
- c. Single Microgrid Box design to reduce in-field installation and engineering costs
- d. Replicable, scalable microgrid design

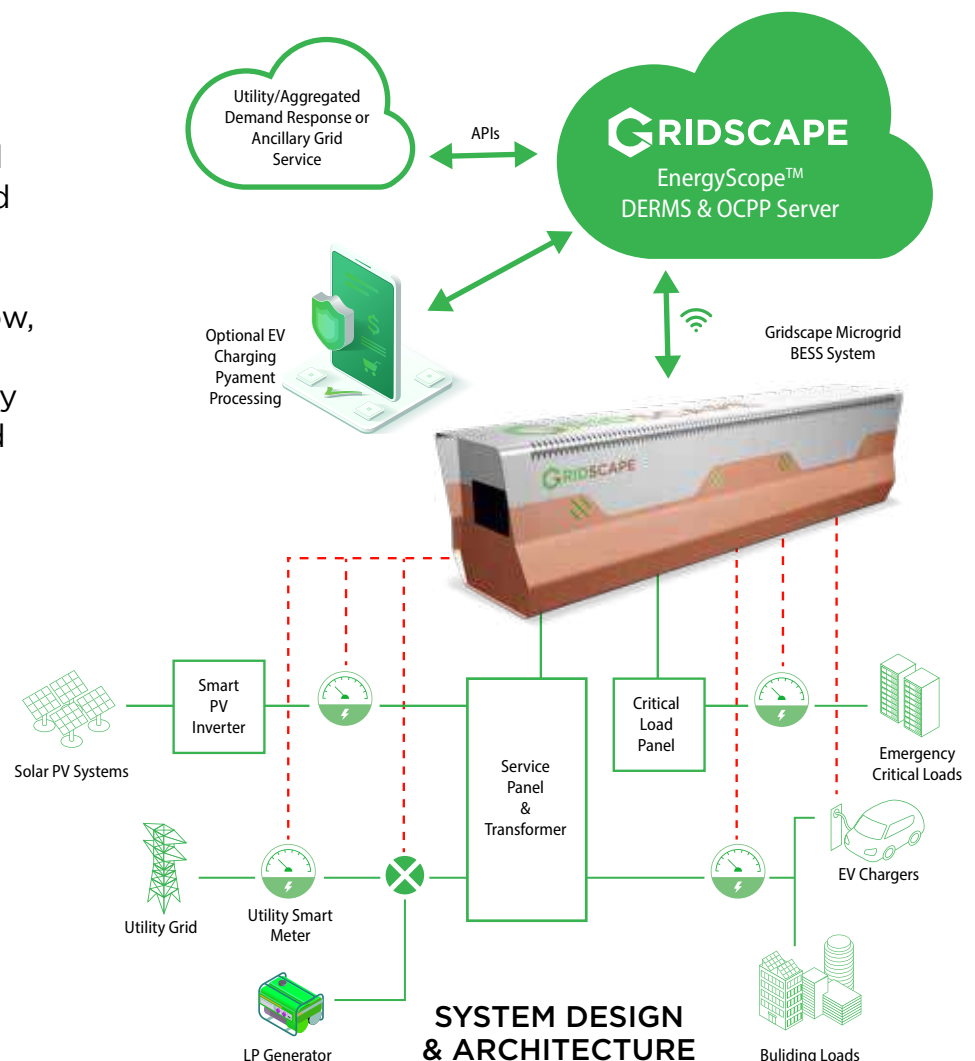
# DESIGN

The project will be based on the system design and architecture with minor alterations as shown in following figure. As of now, the project is in design phase, and it will be ready for permitting by the end of December 2021.



### EnergyScope™ Dashboards

- Load Management & Analysis
- Renewable Self Consumption
- Demand Charge Mgmt
- Demand Response
- OCPP Charger Management
- Public EV Driver Payment Mgmt
- Battery Life Performance
- Extensive Reporting





## About

# GRIDSCAPE

Gridscape is the largest and a well-established name specializing in developing and deploying standards-compliant future-proof products and solutions for renewable energy microgrids and fleet charging. Intended to serve as a locally produced sustainable power plant, these microgrids allow sites to become less reliant on the grid by using local sources of energy. They can provide as much as 90% independence from the grid energy, and thus reduce overall energy cost & provide backup clean emergency power during PSPS or other power disruption events. Gridscape with its 'Product Centric' approach to microgrids integrated with fleet EV charging solutions allows for lower cost of installation and reduces the time for deployment by substantially lowering integration issues. It expects to deploy and operate over 35 microgrids in California public and commercial facilities over the next 12 months. The list of Gridscape's microgrid and EV charging customers and partners is as follows:

Unlike traditional microgrid developers, Gridscape employs a holistic product-centric, artificial intelligence (AI) based software-driven approach to designing, deploying, and managing microgrids. It also integrates Electric Vehicle (EV) charging and other controllable loads into its solution. Through its broad partnerships with various Tier 1 and Tier 2 financiers, design engineering firms, energy storage manufacturers and other renewable energy product providers, it leverages the best-in-class mix of technology and finance to provide maximum return on investment to customers.

Gridscape's solution is unique, and it differentiates from traditional systems in following manner.

- Product Centric Approach (vs Project Centric Methodology) for scalability, maintainability, and longevity of microgrid assets
- Software driven architecture resulting into no technology obsolescence and ability to adapt to changing PG&E tariffs and distribution grid conditions.
- Dynamically configurable with an ability to change the microgrid operational modes on demand
- Energy Information System: A cloud-based distributed energy resource management system (DERMS) that includes
  - Smart AI-based energy management and optimized load and generation dispatch; and
  - Very powerful visualization dashboard for accessing real time and historical data about PV, Storage and EV charging stations.
- Inherently Integrated with EV charging infrastructure
- Full Energy Management including demand charge reduction, TOU arbitrage, grid services
- Integration with various Cloud platforms such as Google, Amazon for grid services and load management

# Gridscape ENERGYSCOPE™ Dashboards



## Other PROJECTS:

Site Name	Number of Microgrids	Solar Size in KW	Microgrid BESS size in kWh	EV Chargers
City of San Diego	8	980	2,250	12
Chabot College	1	1,060	3000	25
San Jose City College	1	1,440	2600	35
City of Fontana	5	1,418	1,560	6
San Pasqual Band of Mission Indians, San Diego County- Community Microgrid	1	175	480	6
Imperial Westen Products (IWP)	1	842	1,300	
SMUD ( Sacramento), EV ChargingInfrastructure	1	100	112	15
Lancaster Advanced Energy Community	5	2,500	3,750	65
Holiday Inn Hotels, Milpitas	2	450	500	20
Hayward Fire Station/FS6	1	225	240	
City of Fremont- Fire Stations	3	122	360	
Affordable Hosuing Unit, Willowbrook	2	124	240	
American Red Cross, San Leandro	1	62	60	
<b>Total</b>	<b>32</b>	<b>9,498</b>	<b>16,452</b>	<b>184</b>

\*Image credit- California Energy Commission