

Local sustainable
power plant
helping San Diego
achieve its 100%
renewable energy
goals by 2035.

CASE STUDY
San Diego

Cities are at the forefront of the national conversation about climate change. Increasingly, cities are looking for ways to deploy more clean energy to reduce their carbon footprints and increase overall savings.


Moving forward with local sustainable power plant (microgrid):

City of San Diego will soon be operating eight microgrids, saving an estimated \$6 million over 25 years in avoided energy costs. Construction is moving out of engineering into mobilization and is set to conclude in December 2022. San Diego is always looking for solutions to support its goal of 100% renewable energy by 2035.

This project was initiated and led by Gridscape in 2019 who worked with City of San Diego Sustainability Division, City Council members/staff, Mayor's office, California Energy Commission (CEC), Groundworks San Diego-Chollas Creek, Shell New Energies, IBEW569, and Green Realities (EPC).

About the California Energy Commission

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.



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Why local sustainable power plant (microgrid) make sense for cities?

Microgrids can provide several benefits to the environment, utility operators, and customers. These benefits are particularly important to cities, which strive to create safe, livable communities with thriving economies.

1. The global electricity demand will increase dramatically in the years to come (by 44% in 2030 in comparison with 2012 - IEA), cities need to provide access to energy but also keep the carbon footprint low.
2. Aging grids and infrastructure- Climate change and increasing frequencies of natural disasters are putting a lot of pressure on the traditional grids.
3. Cities need to accommodate the massive pressure coming from EV.
4. Microgrids Provide Financial, Resilience, and Social Benefits

Microgrid benefits for San Diego:

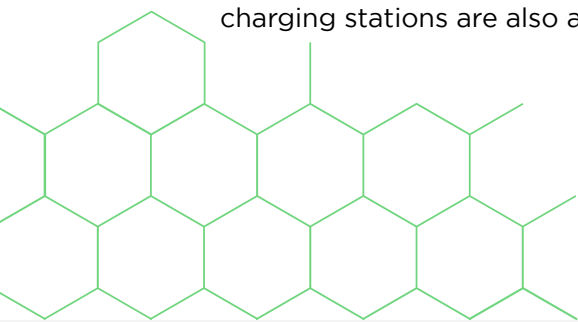
- 1. Community Benefit and Renewable Energy Equity:** In this time and age, it is crucial to strengthen our green energy equity.
- 2. Climate Action Plan and SB 100:** Significant progress towards meeting the City's Climate action plan and States GHG emission goal by 2045. The deployment will provide a roadmap to how San Diego could deploy a large number of microgrid in meeting its Climate Action goals and resiliency needs.
- 3. City's Leadership role in California:** No other city in California has deployed 8 "small" microgrids across police stations, fire stations and community centers. Once the project is deployed, it will serve as a model for microgrid deployment across California. Microgrid deployments are key to California meeting its SB100 goals. It will also position City of San Diego favourably with CEC for future grants.
- 4. Resiliency and Grid Stability:** PSPS events and other power shut offs events create huge disruptions across San Diego and California. All these microgrids will provide backup power to the sites in case of a power shut off event due to wildfire, Earthquake and other unforeseen circumstances.
- 5. City fleet electrification:** EV Charging Infrastructure at each site, powered by clean renewable power, will pave-way for future electrification of the city fleet of emergency and maintenance vehicles.



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.



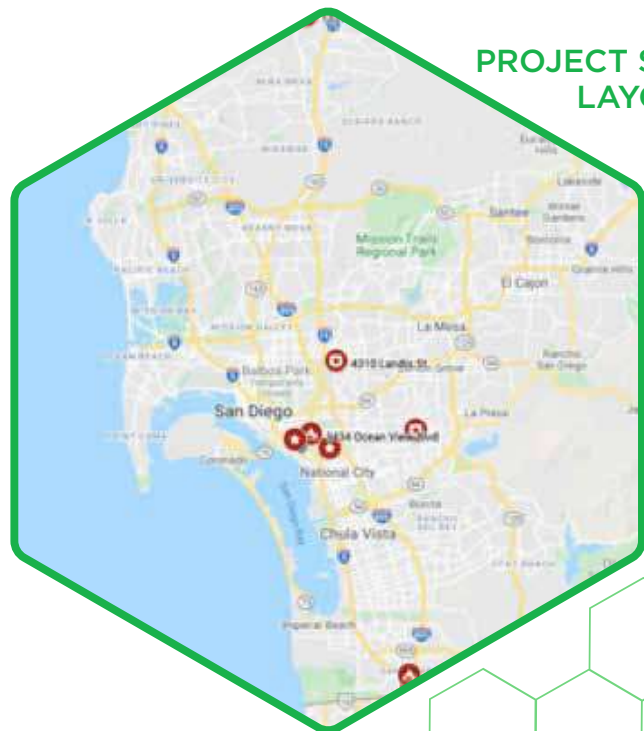


the PROJECT

Our project in San Diego is a prominent one and holds value in many ways. The city expects to prioritize eight binding sites: three recreation centers, a fire, and three police stations. These eight microgrids will improve the city to decrease electricity use by 25% below 2010 levels by 2035. The solar emergency microgrids to be installed in the town are financed and owned by Shell New Energies. The result expecting from this project is a saving of energy cost approx. \$420,854 annually.

The project consists of 960 kW of solar PV systems in various rooftop and carport configurations, 2175 kWh of battery energy storage systems and twelve EV charging stations.

1. **The project will save approx. \$420,854 in utility costs annually.**
2. **Year 1 (FY23) avoided energy costs (savings) are estimated at \$57,000. The project is expected to generate cumulative 25-year avoided energy costs of \$6,000,000**
3. **The project will also offset 2175 MT of GHG annually.**
4. **The project will reduce the peak demand and will contribute to additional cost savings.**

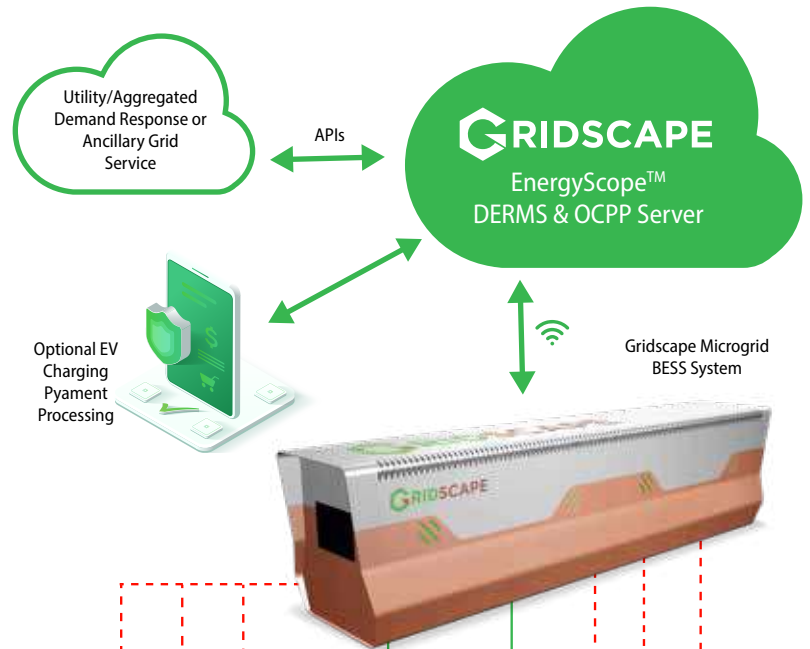


PROJECT SITE LAYOUT



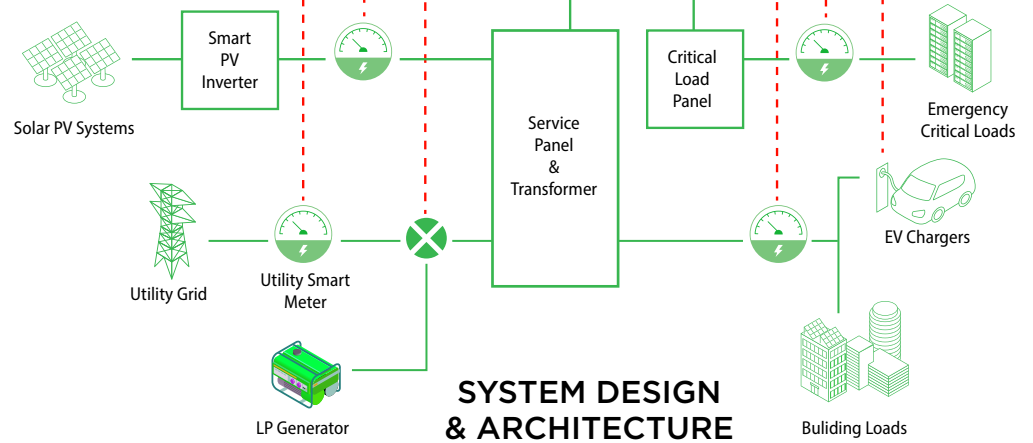
DESIGN

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



the

SITES

Currently eight community solar microgrids are being designed deployed for the City of San Diego at the following sites.

Low Income (Community of concern) Neighborhood sites

1. Dolores Magdaleno Memorial Recreation Center, 2902 Marcy Ave, San Diego, CA 92113 (District 8)
2. Cesar Chavez Recreation Center/ Larsen Field, 455 Sycamore Road, San Ysidro CA 92113 (District 8)
3. Southcrest Recreation Center, 4149 Newton Ave, San Diego, CA 92113 ((District 9)
4. Fire Station #19, 3434 Ocean View Blvd, San Diego, CA 92113 (District 9)

Emergency (First Responder) Sites:

1. Fire Station #29, 198 W San Ysidro Blvd, San Ysidro, CA 92173 (District 8)
2. Police Station – Mid-City, 4310 Landis Street, San Diego, CA 92105 (District 9)
3. Police Station – Southeastern Division, 7222 Skyline Drive, San Diego, CA 92114 (District 4)
4. Police Station – Northeastern Division, 13396 Salmon River Road, San Diego, CA 92129 (District 5)

FINANCING

Project

Four of the eight sites are disadvantaged communities (DAC sites). Financed by Shell New Energies, Gridscape is the project developer and OAM provider of the project with partial funding coming from California Energy Commission (CEC) under EPIC grant.



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	
Total	32	9,498	16,452	184

*Image credit- California Energy Commission