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# Goleta Load Pocket Community Microgrid (GLPCM) Renewables-driven Resilience for the Santa Barbara Region



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Making Clean Local Energy Accessible Now

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# <u>Mission</u>

To accelerate the transition to renewable energy and a modern grid through technical, policy, and project development expertise.

# **Renewable Energy End-Game**

100% renewable energy; 25% local, interconnected within the distribution grid and ensuring resilience without dependence on the transmission grid; and 75% remote, fully dependent on the transmission grid for serving loads.

## **Community Microgrids are the grid of the future**



#### A Community Microgrid is a new approach for designing and operating the electric grid, stacked with local renewables and staged for resilience.

#### Key features:

- A targeted and coordinated distribution grid area served by one or more substations – ultimately including a transmissiondistribution substation that sets the stage for Distribution System Operator (DSO) performance.
- Ability to utilize existing distribution grid infrastructure to serve the Community Microgrid during broader grid outages
- High penetrations of local renewables and other distributed energy resources (DER) such as energy storage and demand response.
- <u>Staged capability</u> for indefinite renewables-driven backup power for critical community facilities across the grid area achieved by 25% local renewables mix.
- A solution that can be readily extended throughout a utility service territory and replicated into any utility service territory around the world.





## **Goleta Load Pocket (GLP)**

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- GLP spans 70 miles of California coastline, from Point Conception to Lake Casitas, encompassing the cities of Goleta, Santa Barbara (including Montecito), and Carpinteria.
- GLP is highly transmission-vulnerable and disaster-prone (fire, landslide, earthquake).
- 200 megawatts (MW) of solar and 400 megawatt-hours (MWh) of energy storage will provide 100% protection to GLP against a complete transmission outage ("N-2 event").
  - 200 MW of solar is equivalent to about 5 times the amount of solar currently deployed in the GLP and represents about 25% of the energy mix.
  - Multi-GWs of solar siting opportunity exists on commercial-scale built-environments like parking lots, parking structures, and rooftops; and 200 MW represents about 7% of the technical siting potential.
  - Other resources like energy efficiency, demand response, and offshore wind can significantly reduce solar+storage requirements.

### **Community Microgrid key stakeholders**





## **Solar Microgrids coming to Santa Barbara schools**



## Clean Coalition helps Santa Barbara Unified School District start massive solar microgrid initiative

#### By Kelsey Misbrener | December 18, 2019

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The Santa Barbara Unified School District (SBUSD) has unanimously approved an ambitious initiative with the Clean Coalition, a nonprofit organization, and Sage Energy Consulting to stage solar-driven microgrids and electric vehicle charging infrastructure (EVCI) at schools throughout the District. The microgrids will feature solar and energy storage that can provide long-duration resilience, along with EVCI that supports District staff and students during the day — and provides overnight charging options for neighbors who have challenges installing electric vehicle chargers where they live.

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#### Goleta Substation has eight feeders, all 66kV, that serve the entire GLP



### **Core load area of the GLP**





## Target 66kV feeder area of the GLP

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## Core target 66kV feeder area of the GLP





### Target 66kV feeder grid area block diagram





## Core GLP with SCE grid layout & outage zones





## Full GLP with SCE grid outage zones







# **Backup Slides**

# Core target 66kV feeder area of the GLP – Uniform Generation values

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## **Uniform Generation values – narrower view**

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- Proposed 160-240 MWh Battery
- University of California Santa Barbara
- Deckers Outdoor Corporation

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**Direct Relief** 

**Fire Stations** 

**Substations** 

11 to 35

6 to 11

2 to 6

0 to 2

# Full GLP with SCE substations, low voltage distribution circuits, and grid outage zones







# Core GLP with SCE substations, 220 kV transmission path, and 66 kV distribution circuits



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## SBAM grid area – flow diagram



