Clean Coalition

Community Microgrid Initiative

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Mission

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

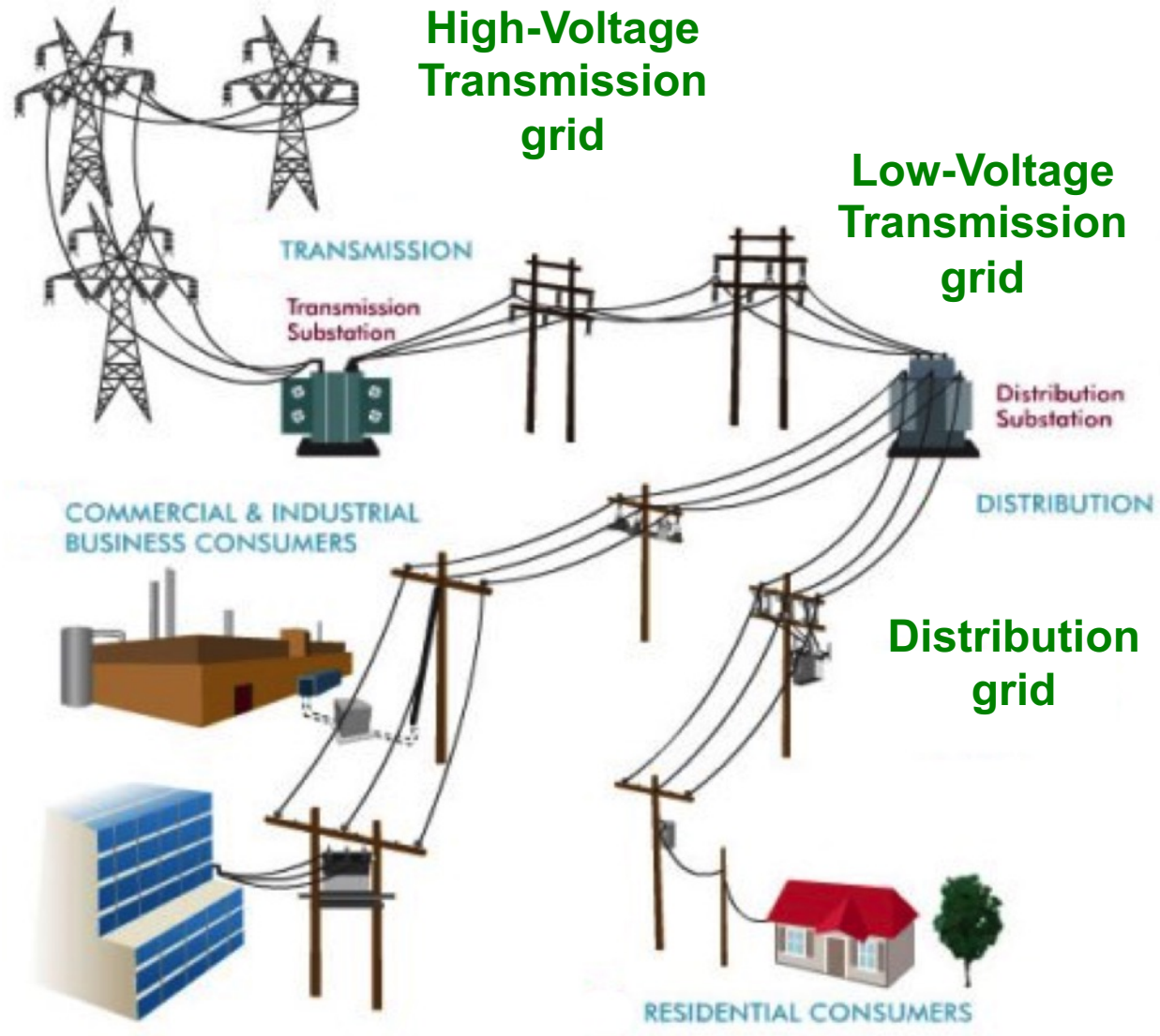
Renewable Energy End-Game

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.

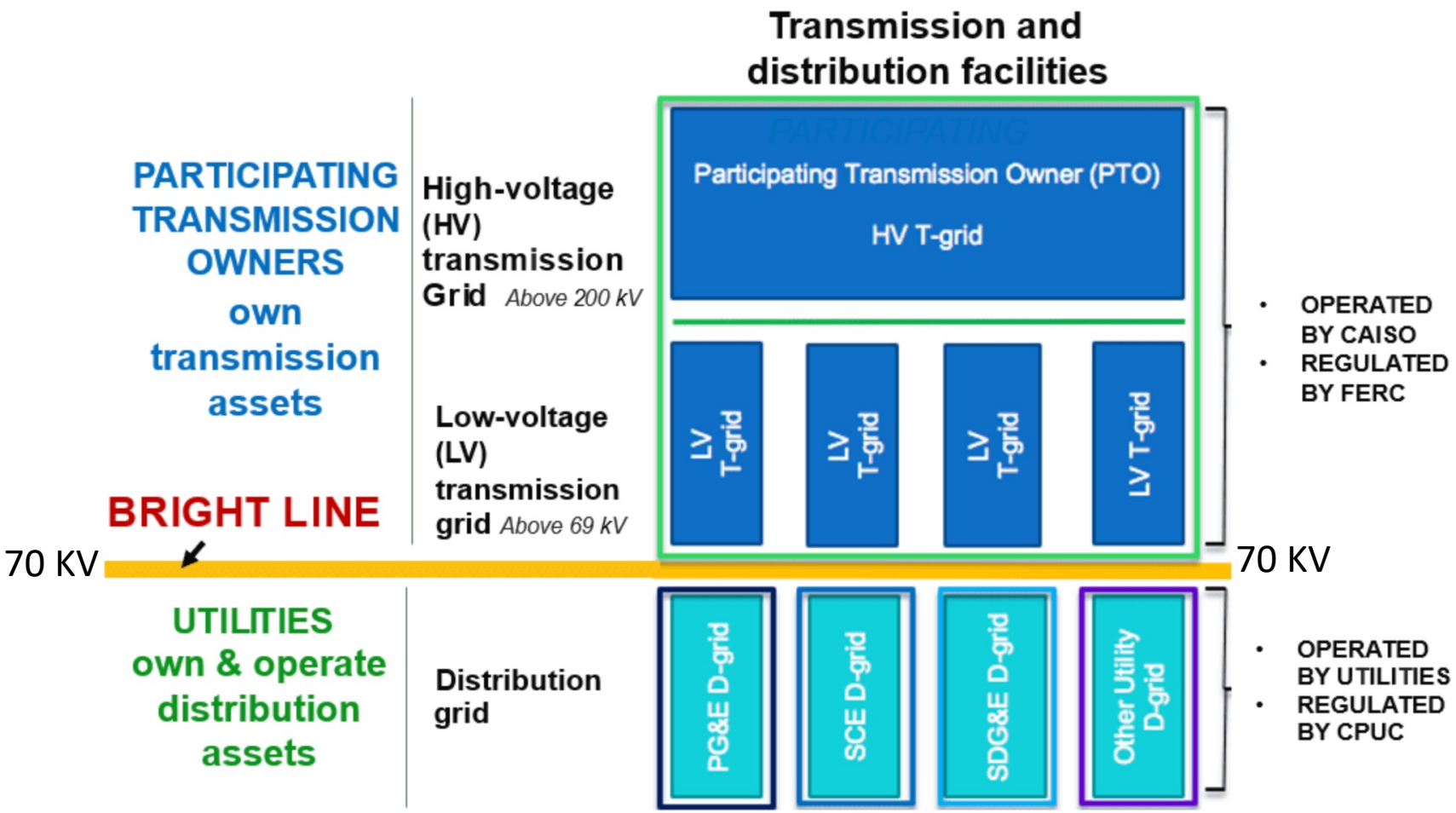
Types of microgrids

- A microgrid is a combination of energy resources, definitely including generation, that are coordinated to serve specified loads, including in an islanded fashion.
- A Solar Microgrid is a behind-the-meter (BTM) microgrid that solely relies on solar for energy generation when islanded. A Solar Microgrid relies on energy storage to time-shift solar and ensure energy availability at night etc.
- A Hybrid Solar Microgrid is a Solar Microgrid that includes additional sources of energy generation, beyond just solar.
- A Community Microgrid a microgrid that covers a target grid area and relies on existing distribution feeders (ie, power lines) to operate when islanded. Community Microgrids typically include both front-of-meter (FOM) and BTM resources, including Solar Microgrids, and require effective participation from utilities, which have mostly erected barriers to date.

Community Microgrids within Distribution grids



Transmission & Distribution grids are different

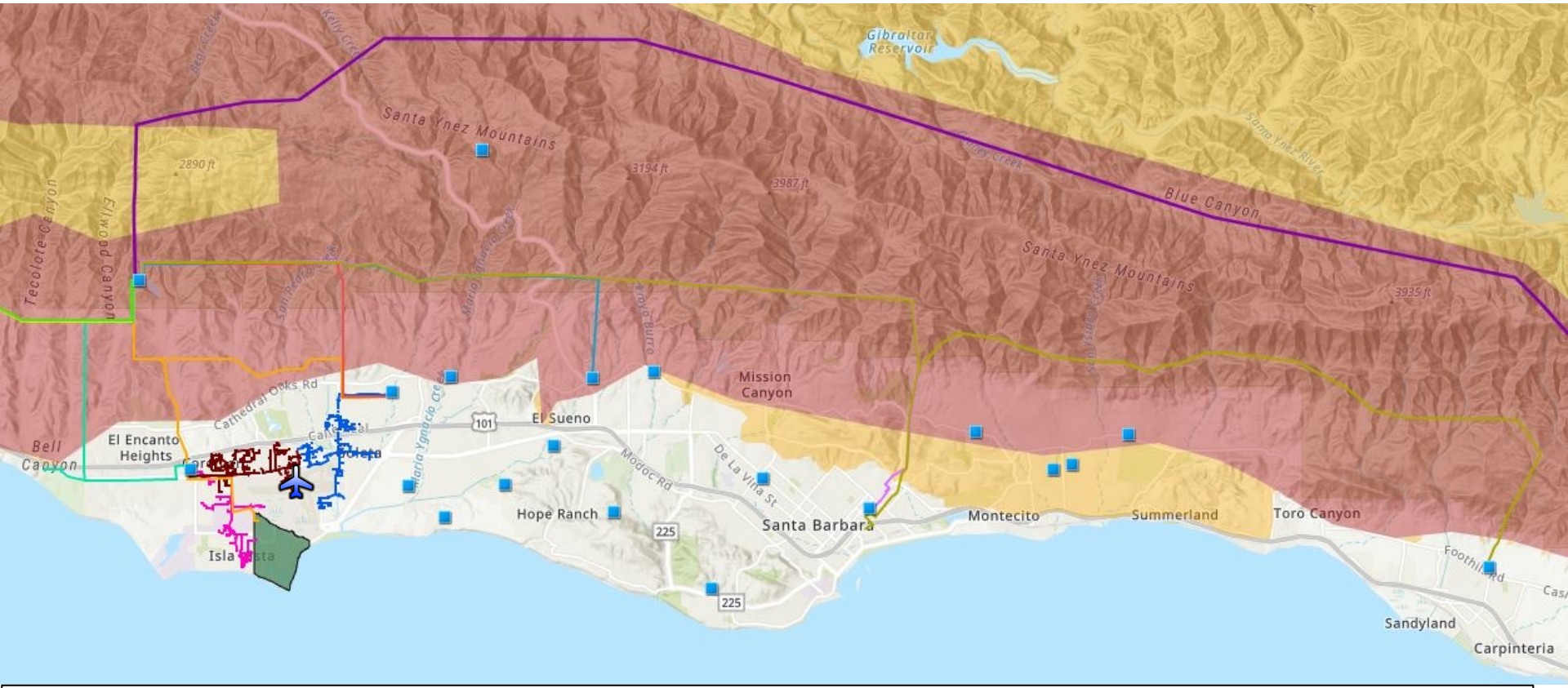


Goleta Load Pocket (GLP)

The GLP is the perfect opportunity for a comprehensive Community Microgrid

- 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.

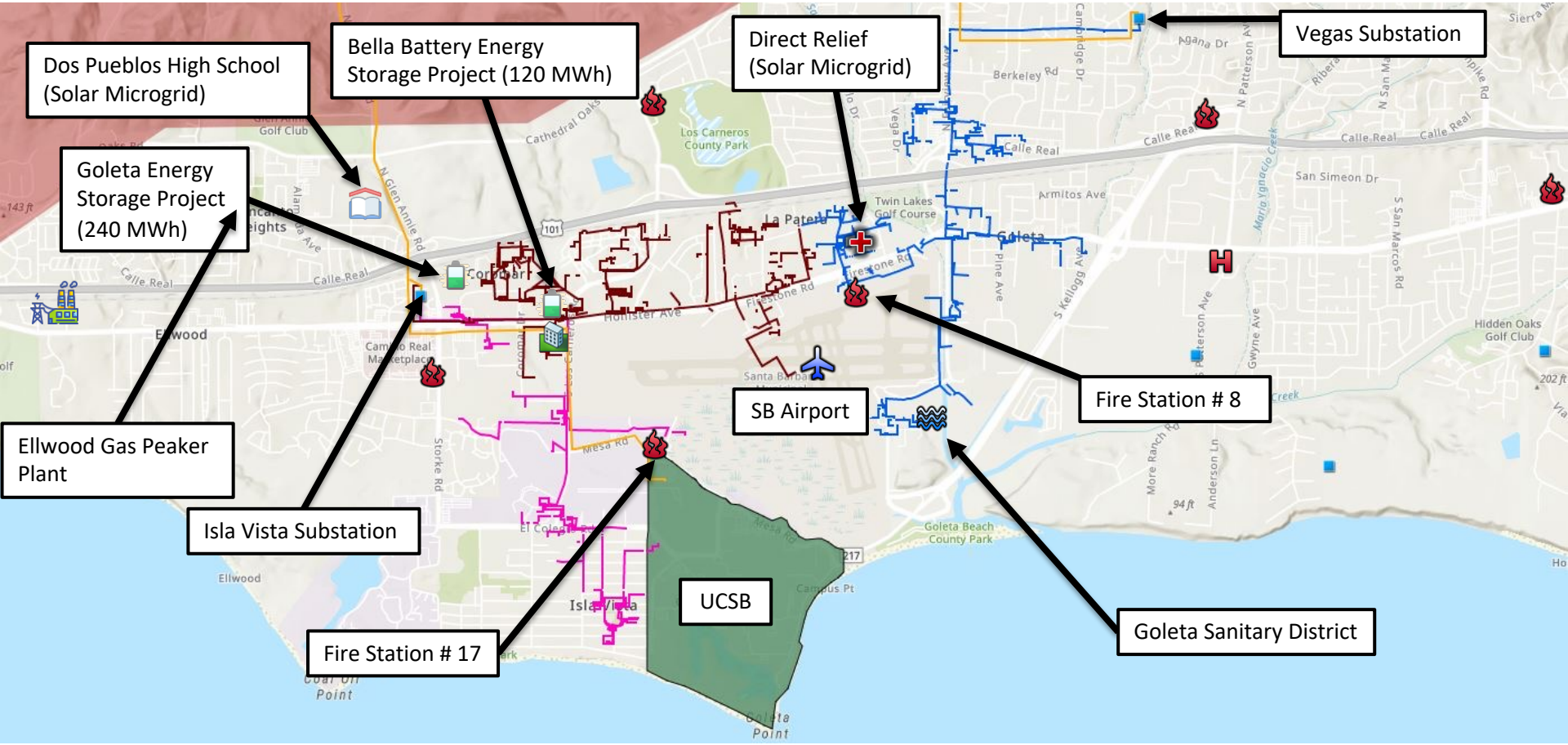
Core load area of the GLP



Legend

- 220 kV Transmission
- Santa Barbara Airport
- Substations
- Tier 3 Fire Threat
- Tier 2 Fire Threat
- UCSB
- 16kV Gladiola Feeder
- 16kV Gaucho Feeder
- 16kV Professor Feeder
- Feeder #4157
- Feeder #3556
- Feeder #4311
- Feeder #3559
- Feeder #4169
- Feeder #4227
- Feeder #3565

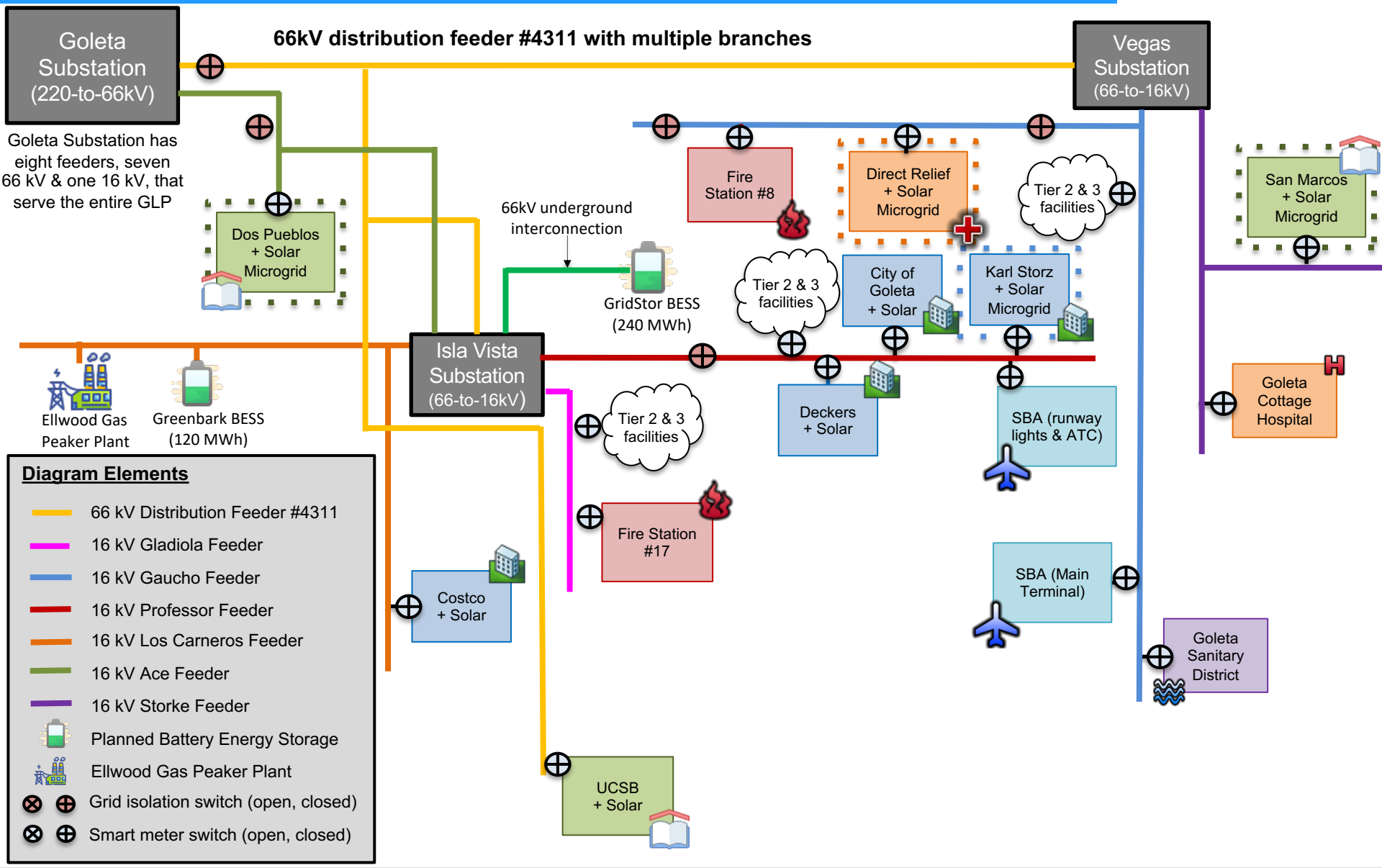
Target 66kV feeder serves critical GLP loads



Legend

- 66 kV Feeder #4311
- Substations
- Tier 3 Fire Threat
- 16kV Gladiola Feeder
- 16kV Gaucho Feeder
- 16kV Professor Feeder
- Santa Barbara Airport
- University of California Santa Barbara
- Dos Pueblos High School
- Fire Stations
- Goleta Sanitary District
- Goleta Valley Cottage Hospital
- Direct Relief
- Deckers
- Planned Battery Energy Storage

Target 66kV feeder grid area block diagram



Community Microgrid Initiative

The Clean Coalition established the Community Microgrid Initiative in 2010 to harness local solar and energy storage to deliver an unparalleled trifecta of economic, environmental, and resilience benefits to communities.

https://clean-coalition.org/community-microgrid-initiative/

Long history of Community Microgrids

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Hunters Point Community Microgrid (San Francisco, CA)

Long Island Community Microgrid (East Hampton, NY)

Valencia Gardens Energy Storage (San Francisco, CA)

Redwood Coast Airport Microgrid (Humboldt County, CA)

Montecito Community Microgrid (Montecito, CA)

Goleta Load Pocket Community Microgrid (Santa Barbara County, CA)

Berkeley Efficient Mixed-Use Showcase (Berkeley, CA)

Orcas Community Microgrid (San Jaun Islands, WA)

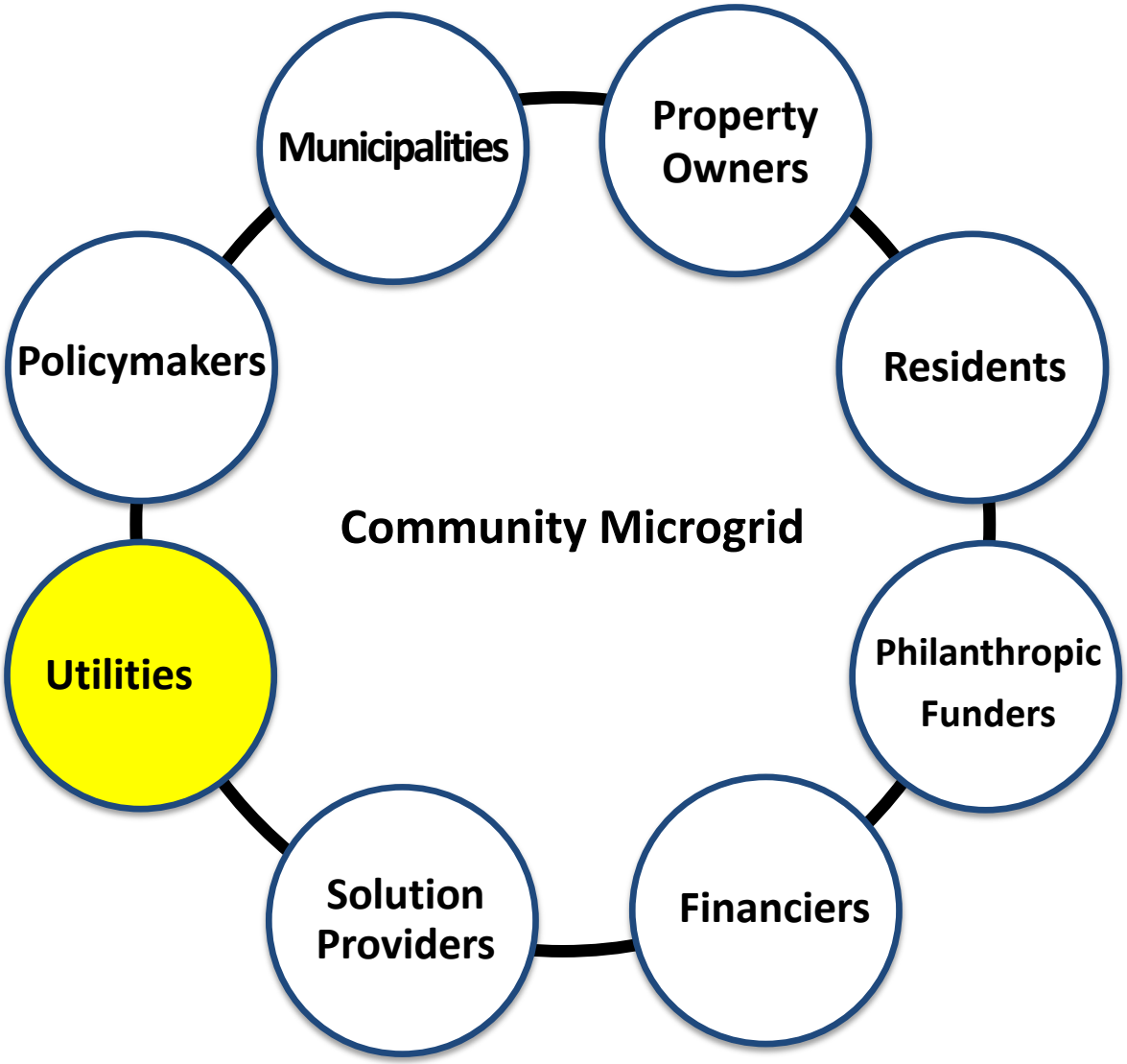
Sierra Blanca Community Microgrid (La Quinta, CA)

Tomales West Community Microgrid (Marin County, CA)

East LA Community Microgrid (Los Angeles County, CA)

Kapalama Container Terminal Community Microgrid (Honolulu, HI)

Community Microgrid stakeholders



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VOR123

VOR123 is the value-of-resilience (VOR) from Solar Microgrids methodology that the Clean Coalition has developed to normalize VOR across all types of facilities & geographies. The VOR normalization is founded in tiering loads into three categories: Tier 1 (critical), Tier 2 (priority), and Tier 3 (discretionary). Since each Tier has its own resilience requirement and VOR, this methodology is called VOR123.

VOR123 webinar

https://clean-coalition.org/news/webinar-valuing-resilience-solar-microgrids-thursday-5-nov-2020/

Resilient Energy Subscription

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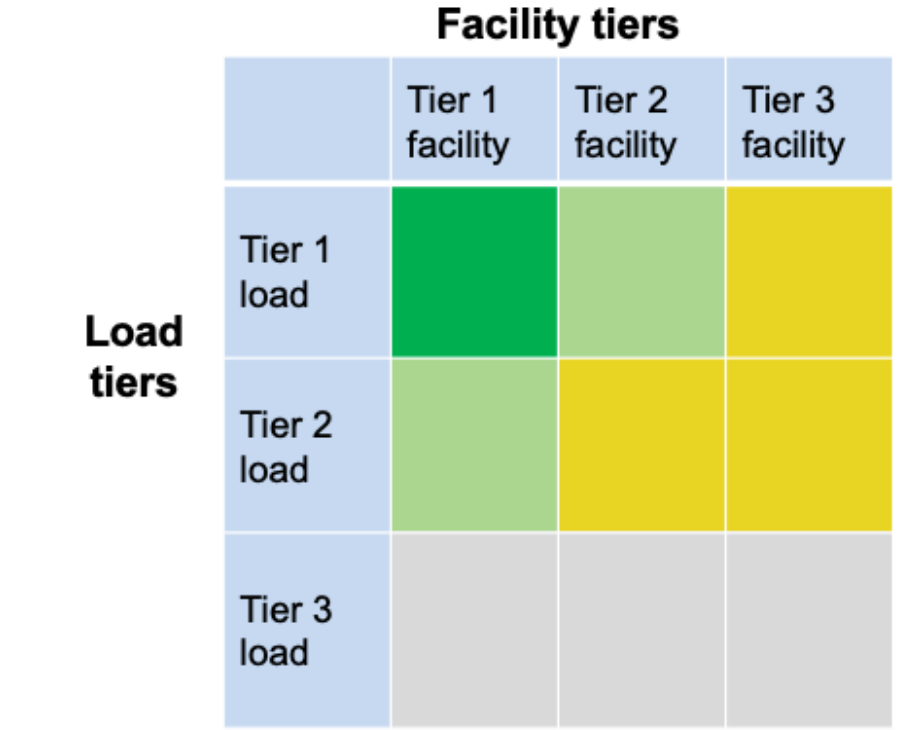
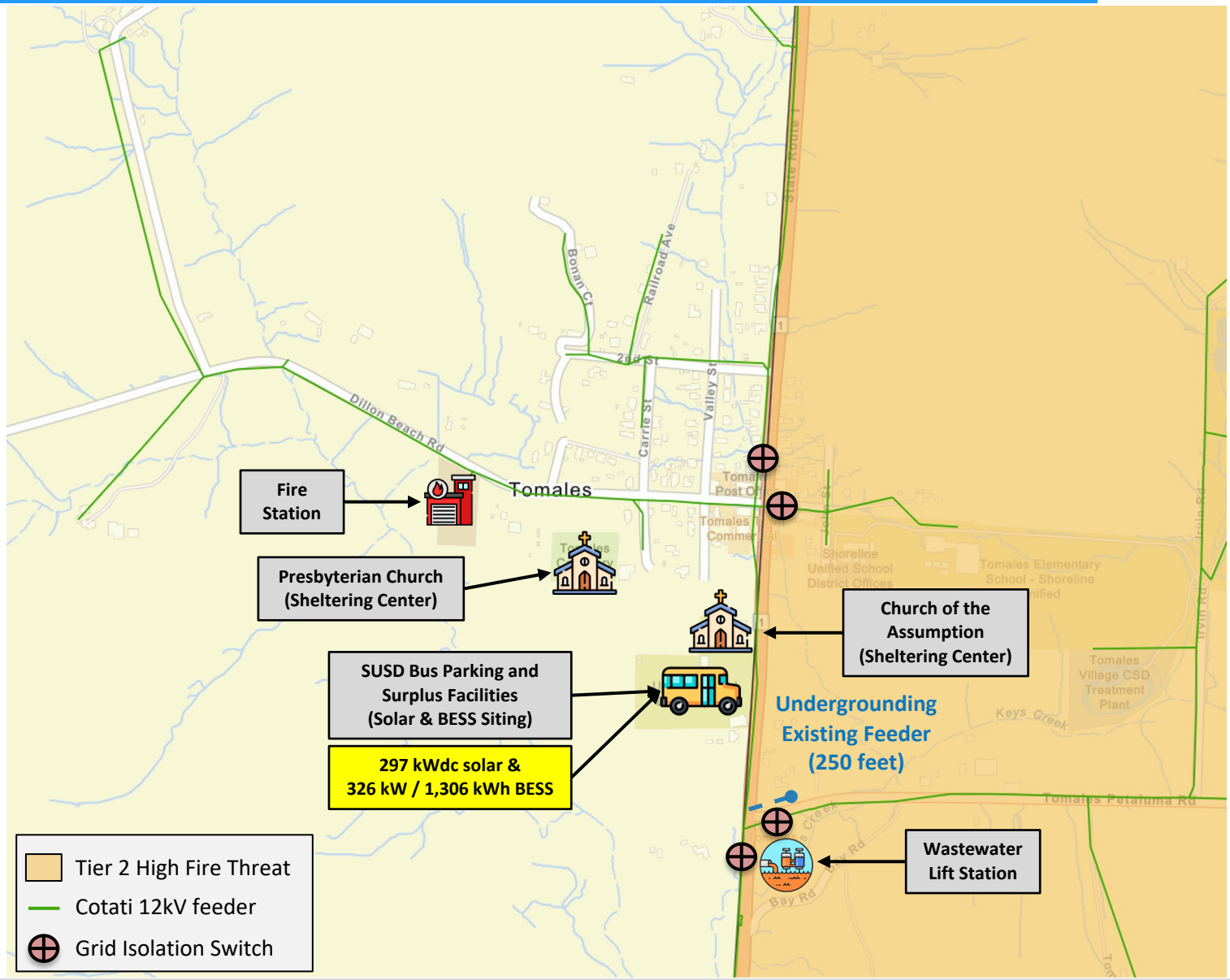
Resilient Energy Subscription is a market mechanism designed to ensure that facilities can subscribe to guaranteed levels of daily energy generation while the associated fees maximize Community Microgrid proliferation.



https://clean-coalition.org/resilient-energy-subscription-res/

Community Microgrid examples in focus

Tomales West Community Microgrid (TWCM) project area



534 kW solar siting potential on SUSD parcels (only need 300 kW to satisfy MIP resilience requirement)

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Tomales West Community Microgrid diagram

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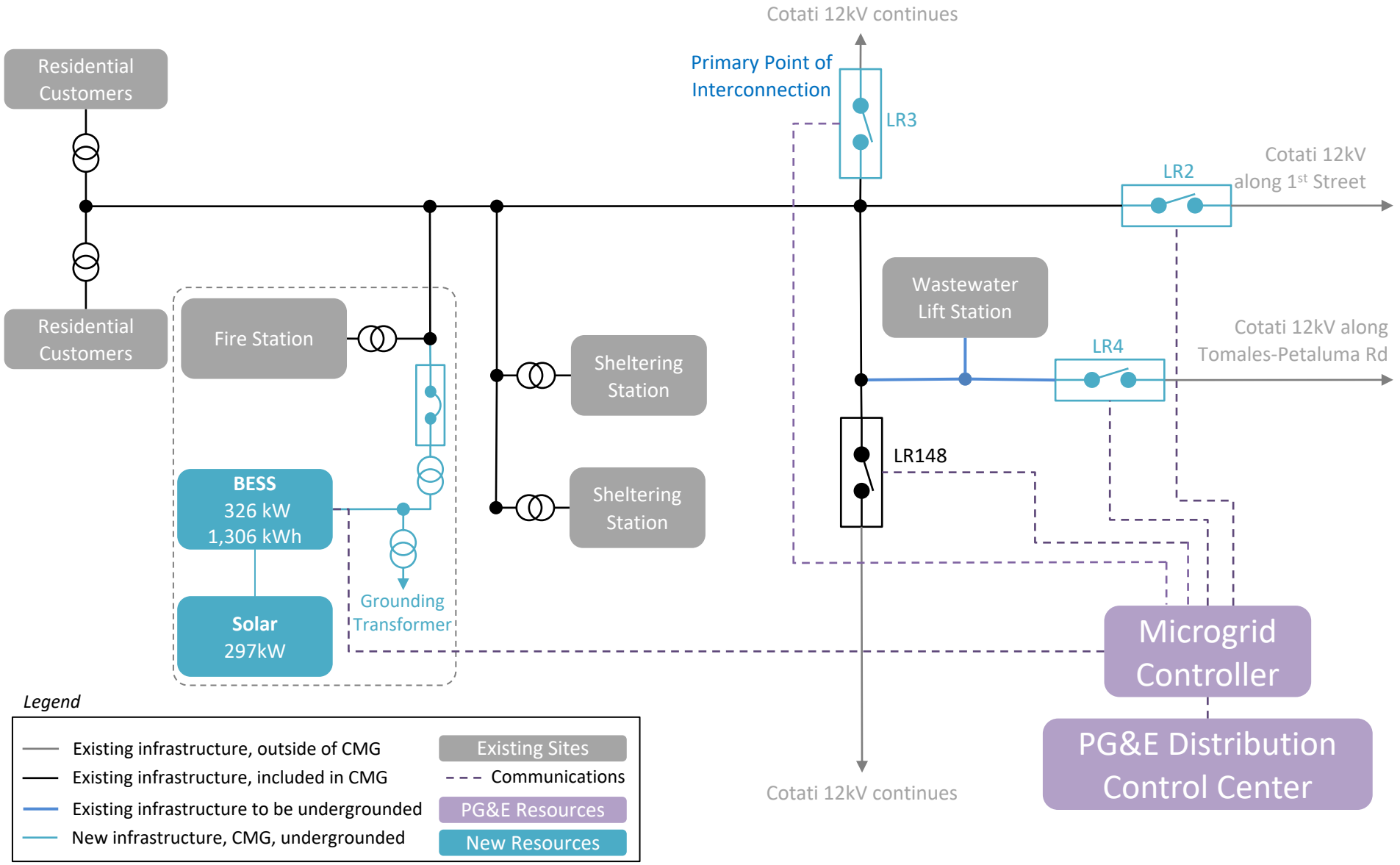
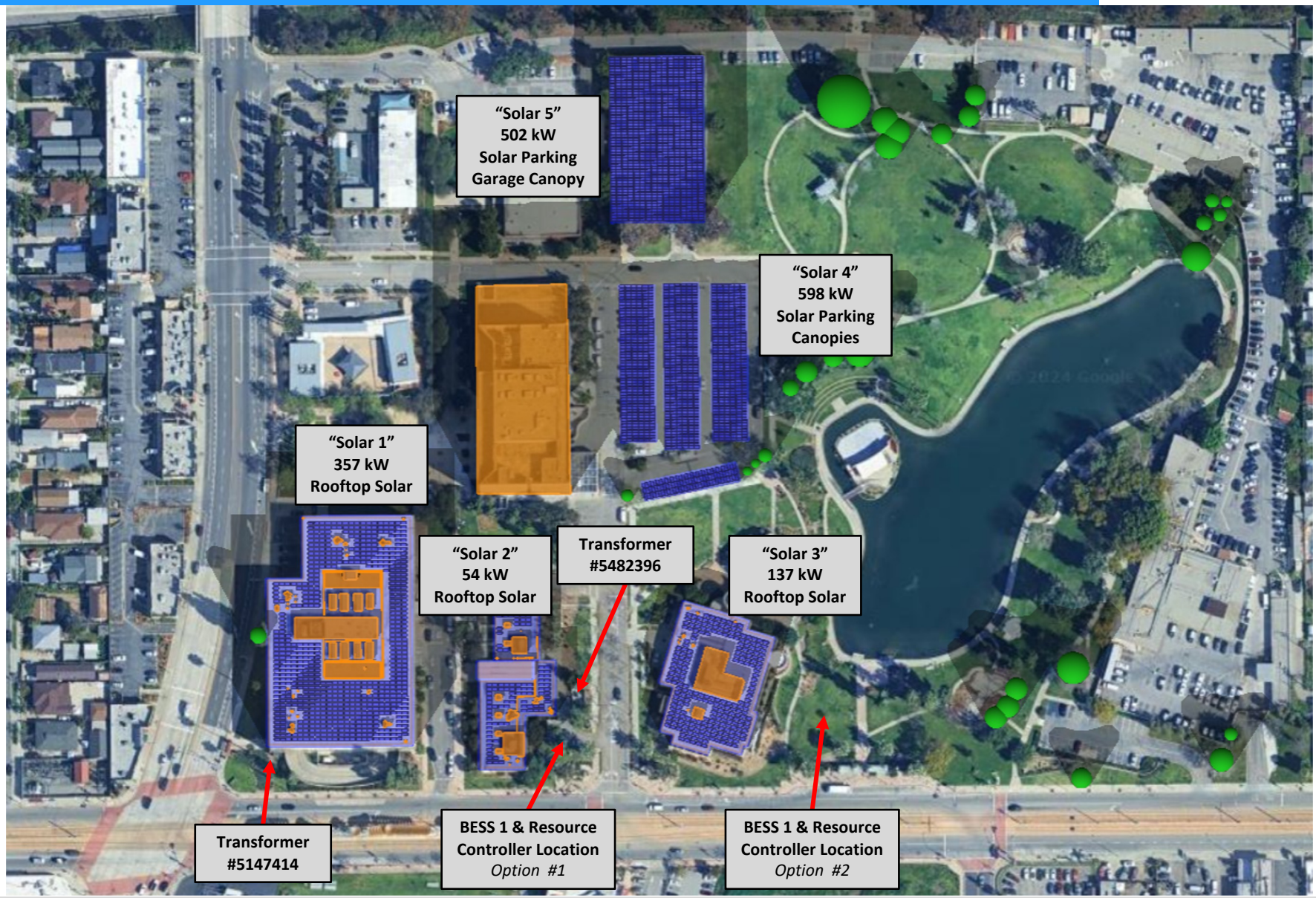


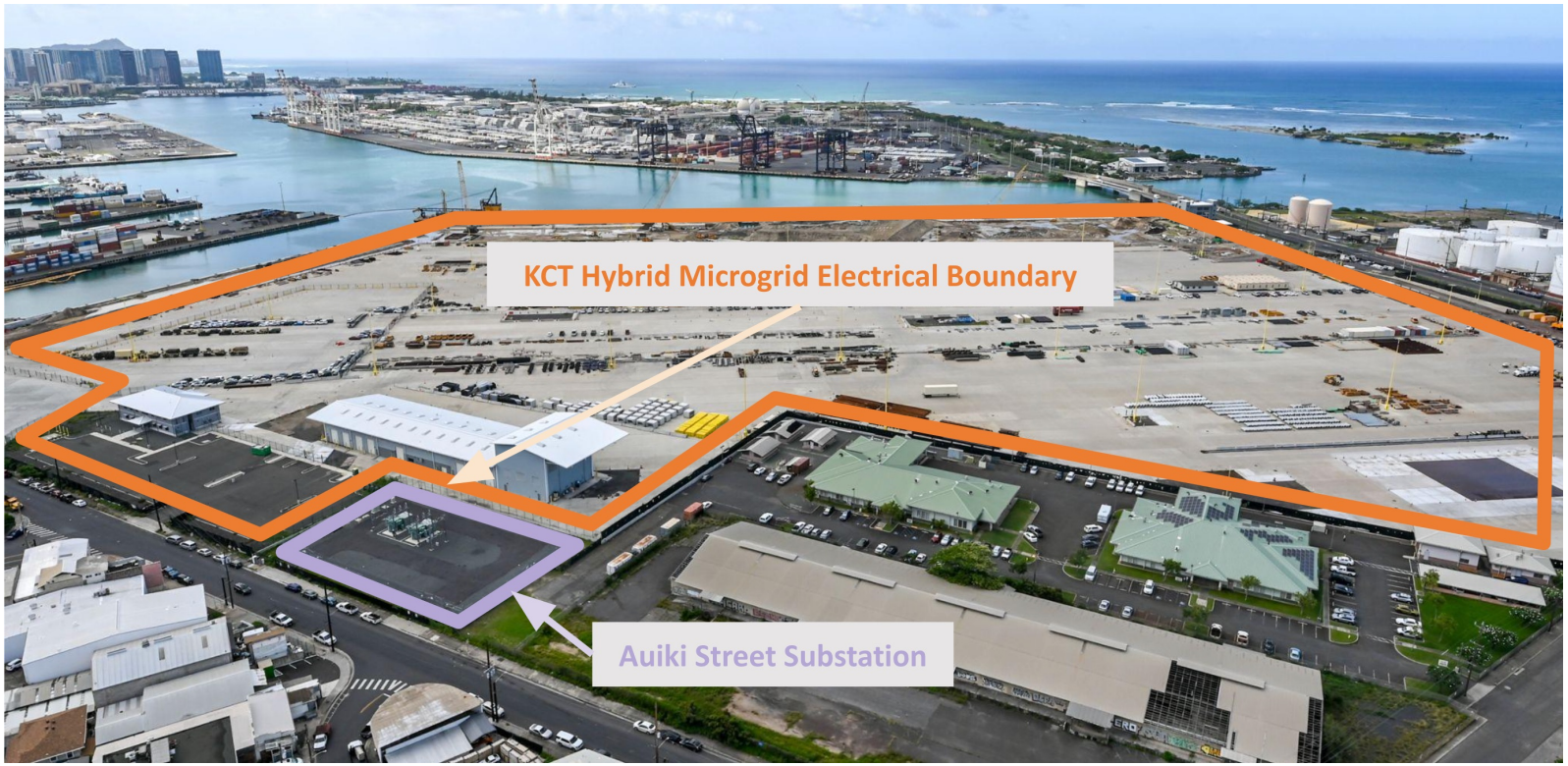
Preliminary design pending PG&E approval

East LA Community Microgrid layout



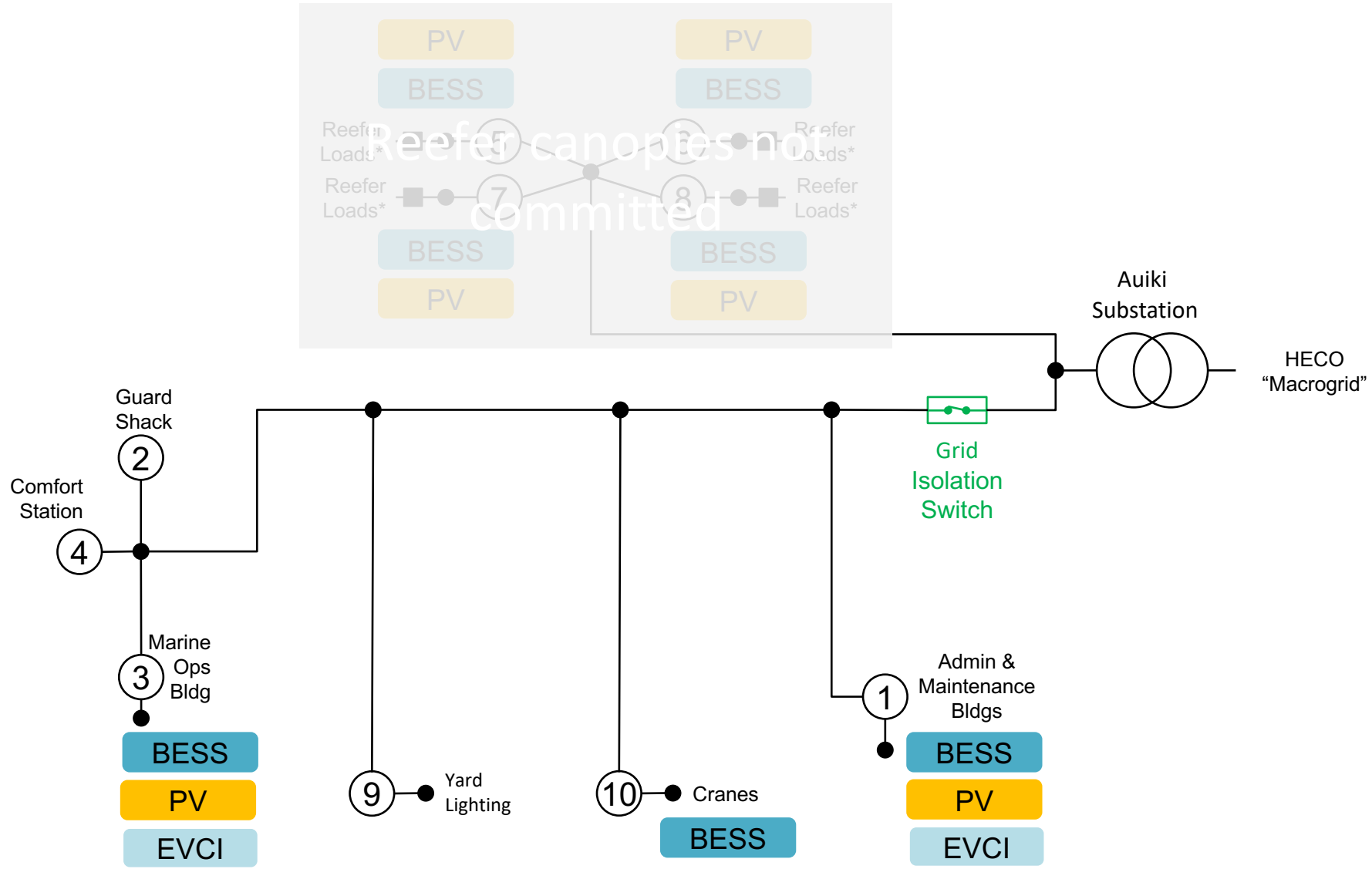
MIP application pending final SCE approval

KCT Community Microgrid



Kapalama Container Terminal is fully electrified and under construction in Honolulu, HI.

KCT Community Microgrid diagram



"Hybrid Microgrid" application pending HECO approval

KCT site overview (7MW solar siting potential)

Pasha Kapalama Container Terminal
19 Sand Island Access Rd, Honolulu
Full Site Overview

- SUB — Auiki Substation
- Potential EVSE (<20 kW, 150+ kW)
- Meter locations
- 14,453 kW / 28,905 kWh BESS

Total Solar Siting Potential: 7,000 kWdc

- R-1 — Admin building (58 kWdc)
- R-2 — Maintenance building (398 kWdc)
- R-3 — Marine Ops rooftop (15 kWdc)
- C-1 — Admin parking canopy (482 kWdc)
- C-2 — Reefer canopies x8 (5,491 kWdc)
- C-3 — Marine Ops north canopy (122 kWdc)
- C-4 — Marine Ops parking canopies (430 kWdc)

Baseline Load Profile: 48,409,206 kWh
Adjustment Load Profile: 1,497,393 kWh
Master Load Profile: 49,906,599 kWh
Annual Solar Generation: 12,488,963 kWh