12th Annual CCEC Forum: Webinar 9

August 17, 2021 | 10:00 - 11:00 am

Planning for Energy Reliability Solutions That Do More Than Keep the Lights On

Guidehouse

ZERO CITY

Clean Coalition

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SGVCOG San Gabriel Valley Council of Governments

SJVCEO Clean Energy Organization

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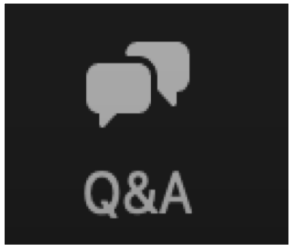
Zoom Features

Q&A

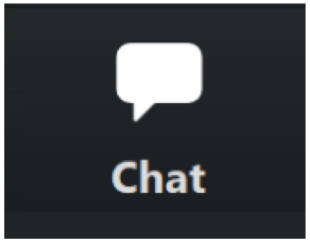
Submit questions for panelists through the Q&A module at any point during the webinar.

Upvote questions that you are interested in.



Chat

Communicate with other participants or reach out to LGC staff if you encounter technical issues.



Meet our Speakers!

Moderator
Peter Asmus
Associate Director,
Guidehouse

Alelia Parenteau
Energy and Climate Manager,
City of Santa Barbara

Martin Carver
Managing Partner,
ZeroCity LLC

Craig Lewis
Founder and Executive Director,
Clean Coalition

SUSTAINABILTY & RESILIENCE DEPARTMENT

ENERGY & CLIMATE DIVISION

BUILDING ENERGY RELIABILITY AND RESILIENCE IN SANTA BARBARA

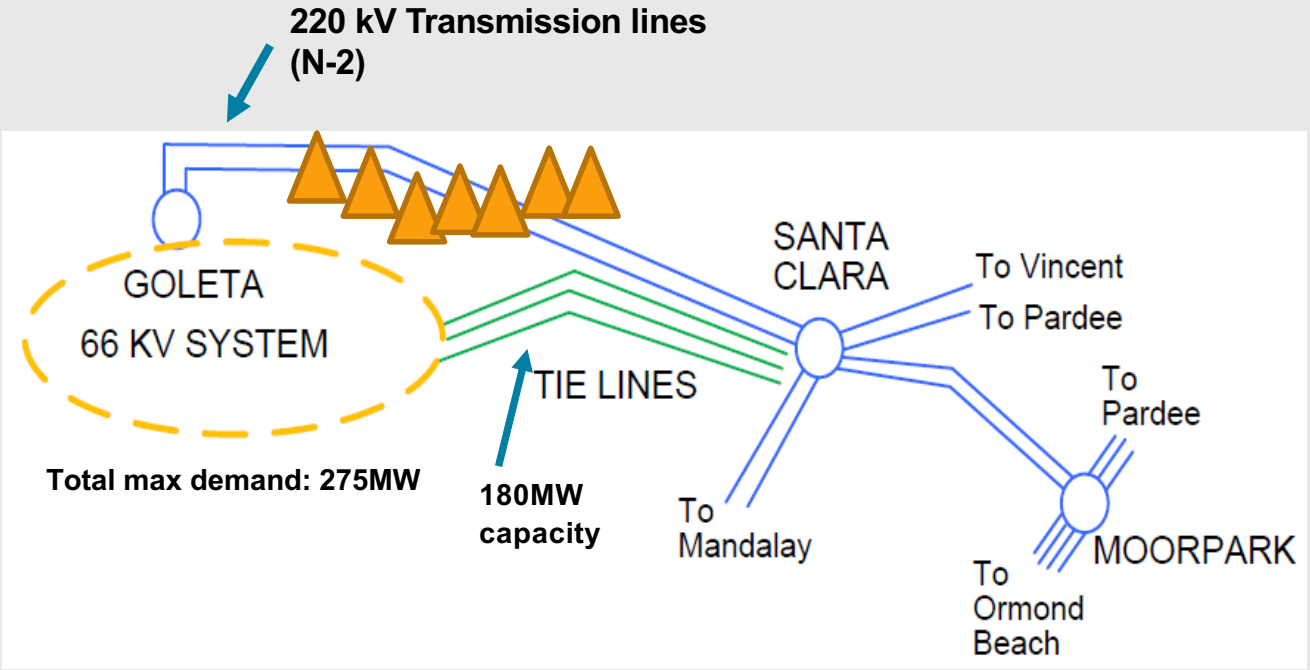
Alelia Parenteau – Energy & Climate Manager

Defining resilience:

- The ability to respond, absorb, and adapt to, as well as recover in a disruptive event

THE PROBLEM

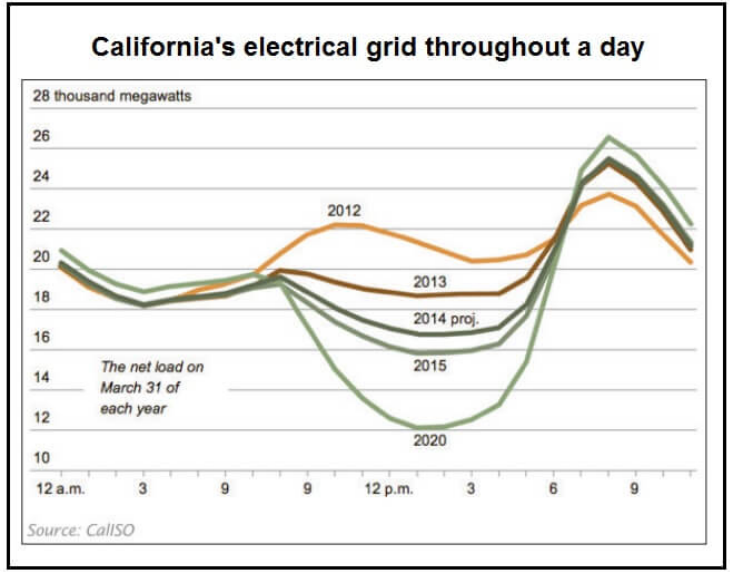
Local Grid Constraints



- End of the Line
  - N-2 Event
- PSPS
- Old infrastructure

Plus, We've Got Goals

- Carbon Neutrality by 2035
  - *Transitioning away from Natural Gas*
  - *Electrifying buildings*
- Building local energy resources
  - *Helps with local energy reliance*
  - *Localized NEM rate as incentive*
  - *Duck curve*



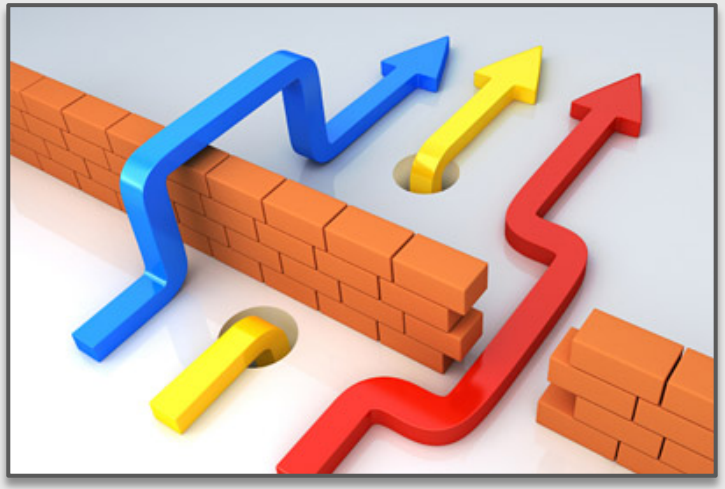
GATHERING THE INFO

What are the priorities?

- Critical facilities
  - *What are they?*
- Community assets
  - *Information sources*
  - *Resilience hubs*
  - *Trusted locations*
- Feasibility

Where to Start:

- Strategic Energy Plan
  - *Identified community and municipal DER potential*
- ZNE Roadmap
  - *Audit all occupied City-owned buildings with concept level DER assessments*
- Work with Emergency Managers to create a streamlined definition of “critical” facility



Get it Done: How we're paying for it…

- Power Purchase Agreements
- Self Generation Incentive Program
- Community Choice Energy
- Grants

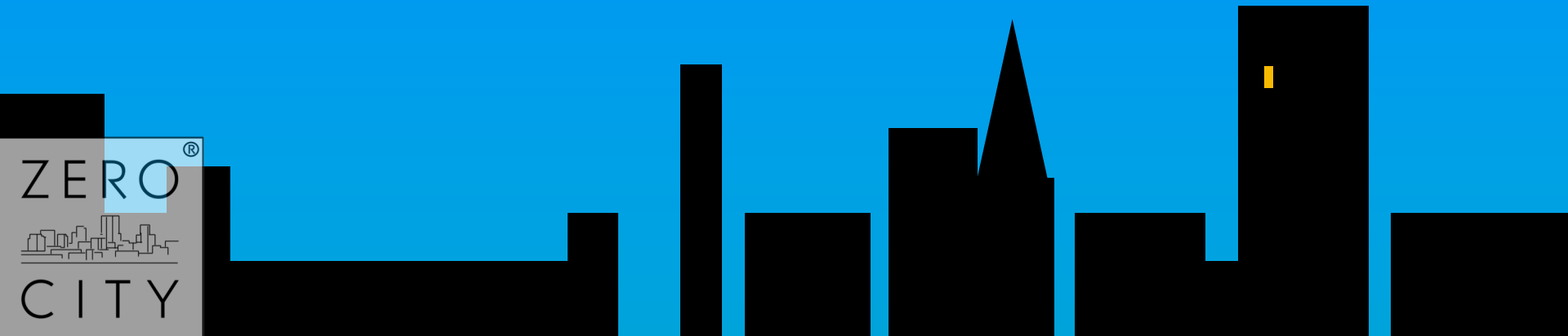
Building Energy Assurance: Next Steps

- Build off of existing plans to be ready as funding comes up
- Transition to concerted regional approach
  - *Focusing projects where there is the greatest concentration of critical needs (as opposed to funding only)*
- Good time to evaluate buildings for electric transition

The Gonzales Microgrid

Lessons Learned Developing the Gonzales Model

Martin Carver, Managing Partner
ZeroCity LLC

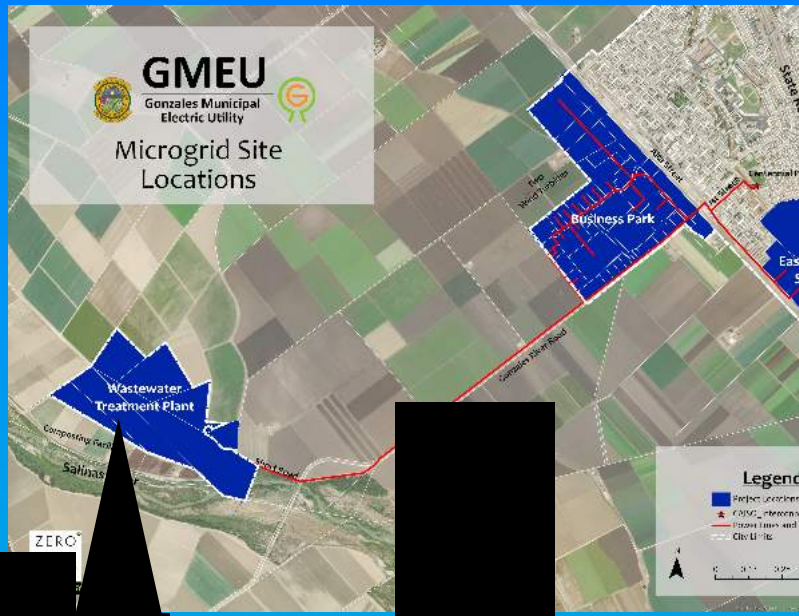


Rethinking the Electric Utility

- Progress on renewables, but grid modernization needs attention
- Time to rethink the electric utility model
- SDG&E was founded in 1881; SCE in 1896; PG&E in 1905
- Local government in a position to take lead

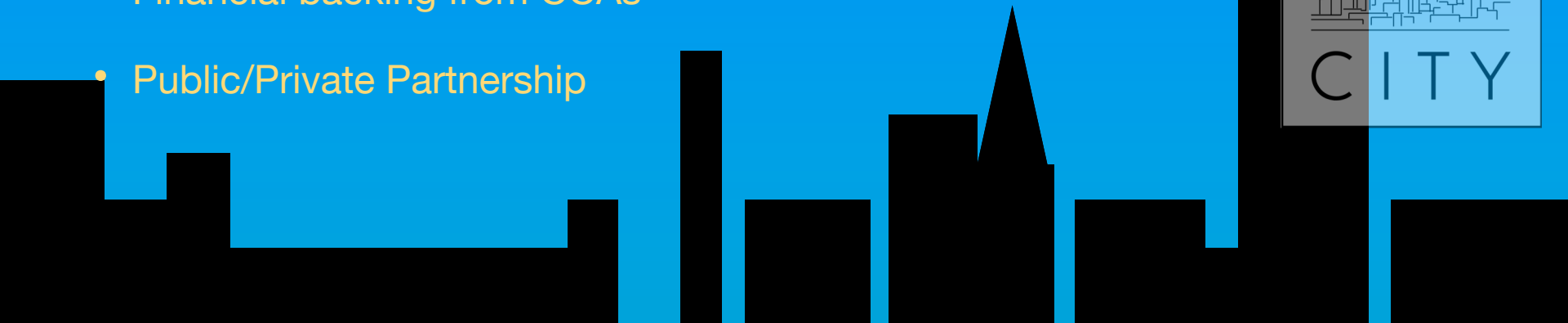
Energy Security Begins Locally

- Local Government has natural advantages
  - Public utility experience
  - Land resources
  - Independence from CPUC
- Progressive City Manager
- Climate Action Planning



Developing the Gonzales Model

- Project concept (turn-key)
- Financial approach
  - Public financing has advantages (EIFDs)
  - Financial backing from CCAs
  - Public/Private Partnership



GMEU
Gonzales Municipal Electric Utility

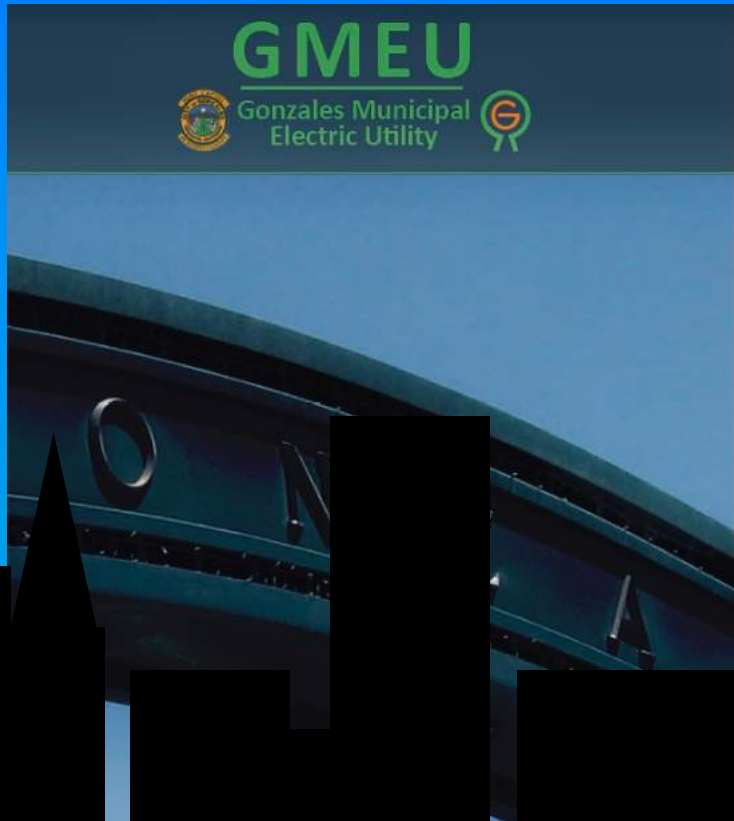
ZERO CITY®

Selecting a Private Partner

- Request for Information process
  - ENGIE
  - Ameresco
  - Concentric Power (selected)
- Memorandum of Understanding
- Energy Services Agreement

Lessons Learned

- Avoid sole sourcing your private partner
- Establish equity position (poles and wires)
- Retain specialized legal counsel
- Take the lead on ESA Drafting
- Consider setting price targets in MOU



The Gonzales Microgrid

- The concept of a limited municipal microgrid is groundbreaking
- The real innovation came from city hall
- Rebuilding the nation’s power grid one small step at a time

Social Equity thru Local Energy

- Meaningful equity for disadvantaged communities
- Powerful economic development tool
- Support for climate action programming
- Bolster fiscal health of municipal utilities

Clean Coalition

Community Microgrids & Solar Microgrids

Economic, environmental & resilience benefits

Craig Lewis
Executive Director
Clean Coalition
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Mission

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

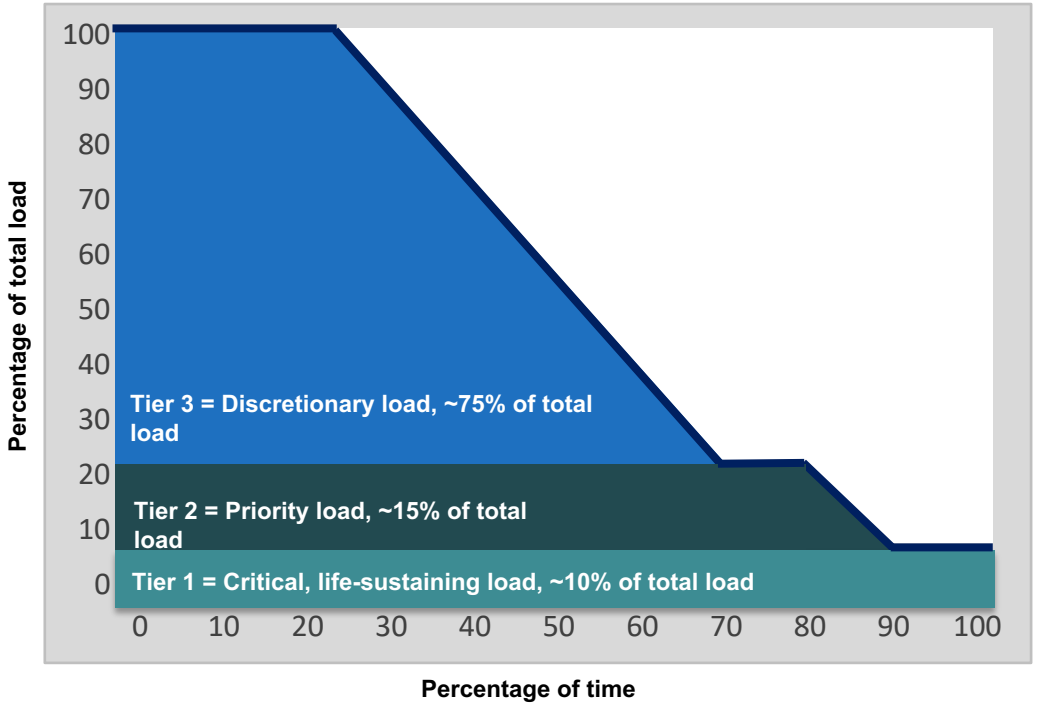
100% renewable energy end-game

- 25% local, interconnected within the distribution grid and facilitating resilience without dependence on the transmission grid.
- 75% remote, dependent on the transmission grid for serving loads.

Value-of-resilience (VOR) depends on tier of load

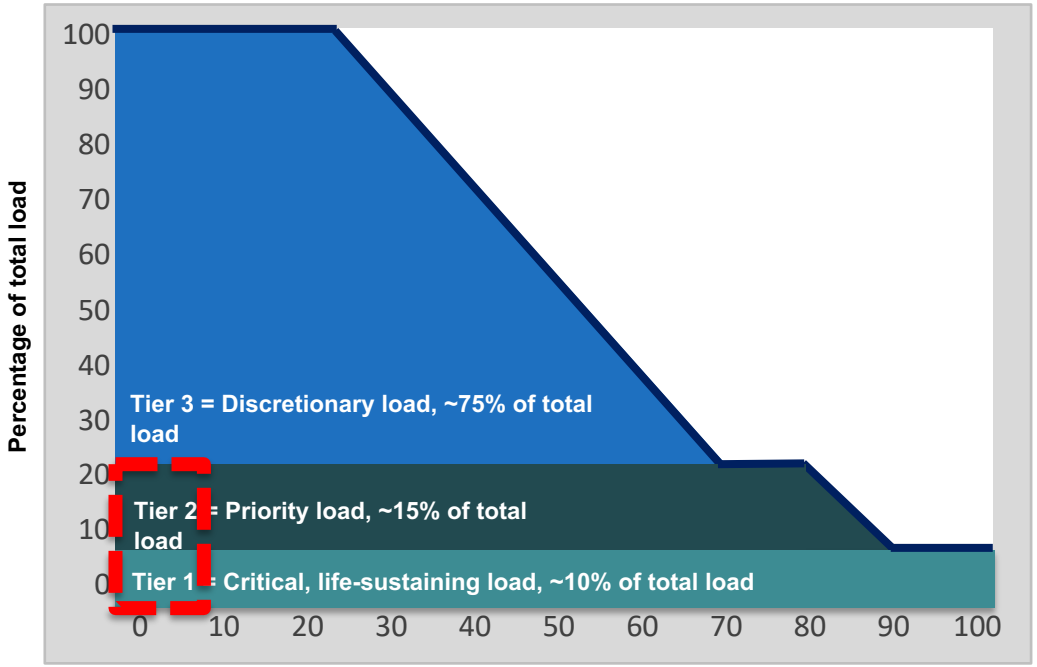
- Everyone understands there is significant value to resilience provided by indefinite renewables-driven backup power, especially for the most critical loads
  - But, nobody has quantified this value of unparalleled resilience.
  - Hence, there is a substantial economic gap for renewables-driven microgrids.
- The Clean Coalition aims to establish a standardized value-of-resilience (VOR) for critical, priority, and discretionary loads that will help everyone understand that premiums are appropriate for indefinite renewables-driven backup power to critical loads and almost constant backup power to priority loads, which yields a configuration that delivers backup power to all loads a lot of the time
- The Clean Coalition's VOR approach aims to standardize resilience values for three tiers of loads:
  - Tier 1 are mission-critical & life-sustaining loads and warrant 100% resilience. Tier 1 loads usually represent about 10% of the total load.
  - Tier 2 are priority loads that should be maintained as long as long as doing so does not threaten the ability to maintain Tier 1 loads. Tier 2 loads usually represent about 15% of the total load.
  - Tier 3 are discretionary loads make up the remaining loads, usually about 75% of the total load. Maintained when doing so does not threaten Tier 1 & 2 resilience.

Typical load tier resilience from Solar Microgrids



Percentage of time online for Tier 1, 2, and 3 loads for a Solar Microgrid designed for the University of California Santa Barbara (UCSB) with enough solar to achieve net zero and 200 kWh of energy storage per 100 kW solar.

Diesel generators are designed for limited resilience



A typical diesel generator is configured to maintain 25% of the normal load for two days. If diesel fuel cannot be resupplied within two days, goodbye. This is hardly a solution for increasingly necessary long-term resilience. In California, Solar Microgrids provide a vastly superior trifecta of economic, environmental, and resilience benefits.

Goleta Load Pocket (GLP)

Community Microgrid

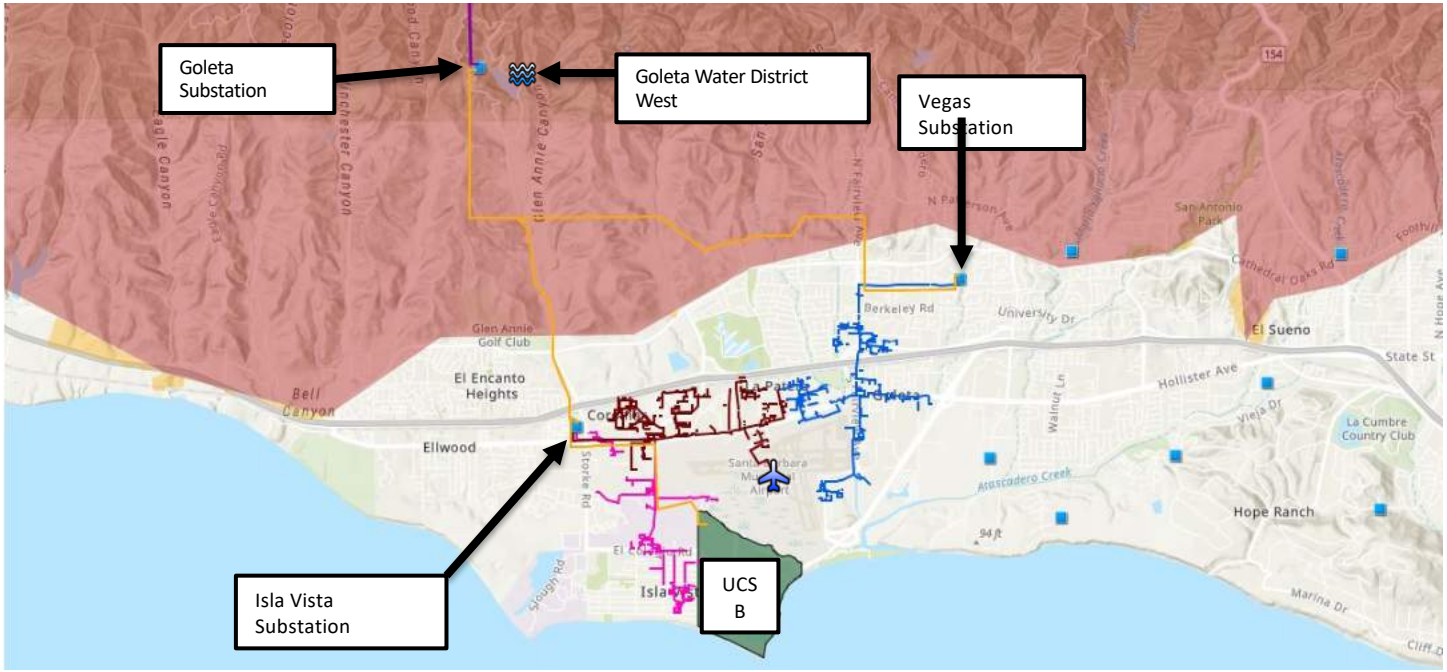
case study

Goleta Load Pocket (GLP) and attaining resilience

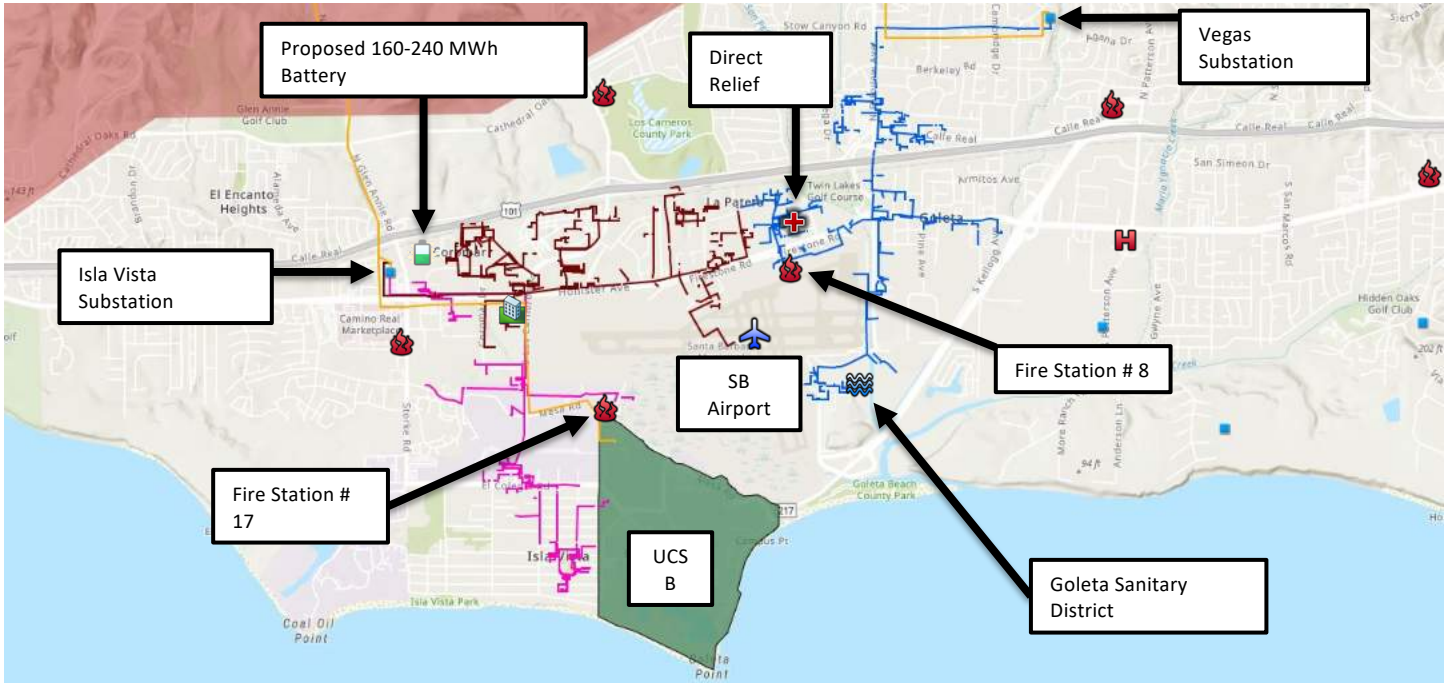
The GLP is the perfect opportunity for a comprehensive Community Microgrid

- 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.

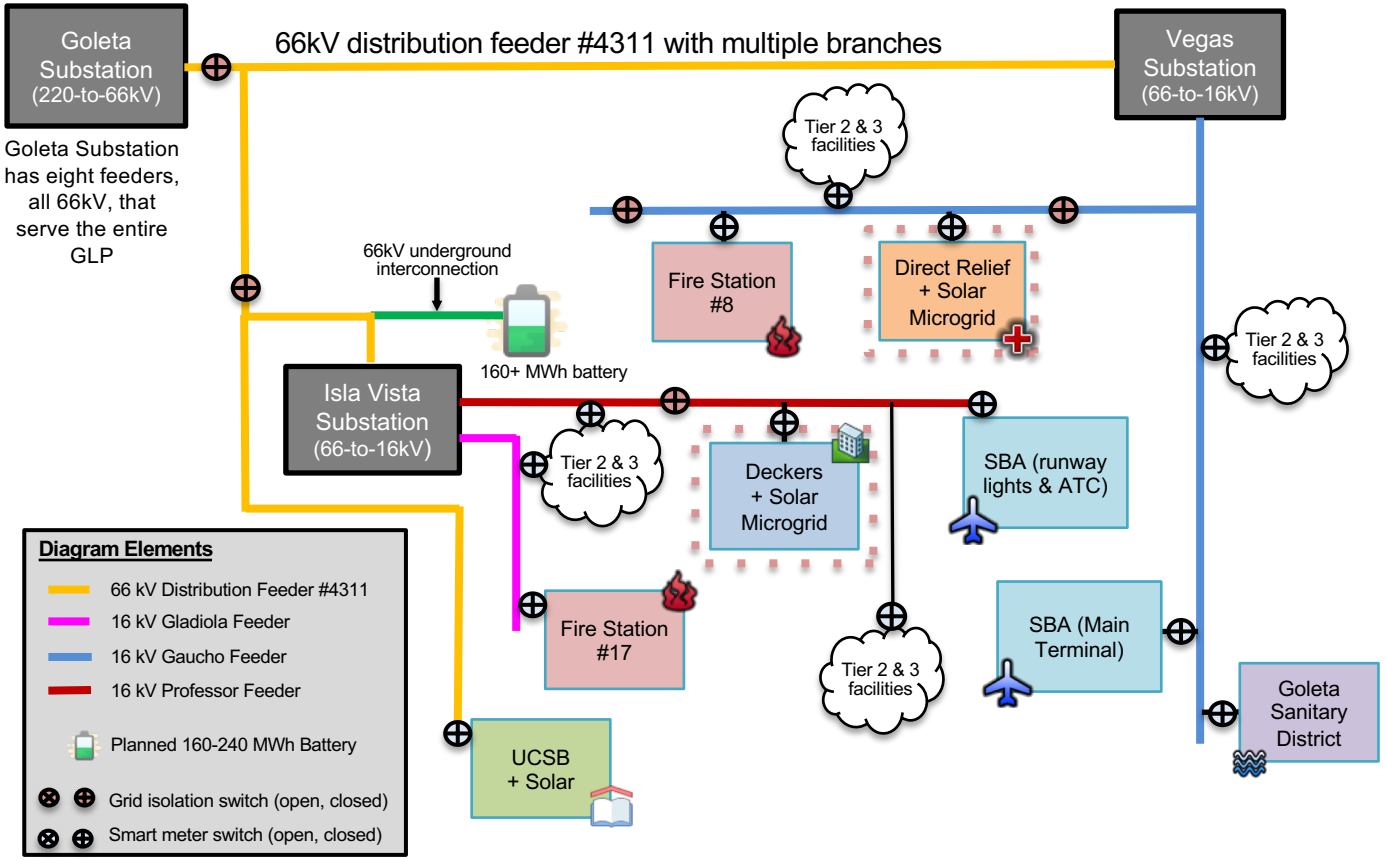
Target 66kV feeder at the core of the GLP



Target 66kV feeder serves critical GLP loads

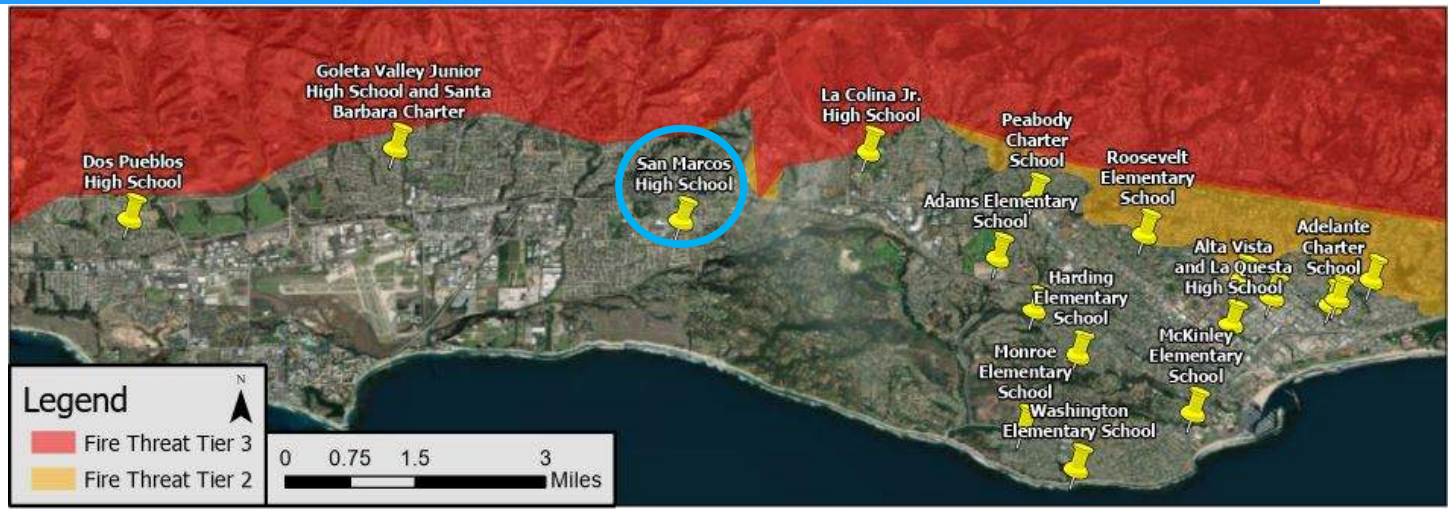


Target 66kV feeder grid area block diagram



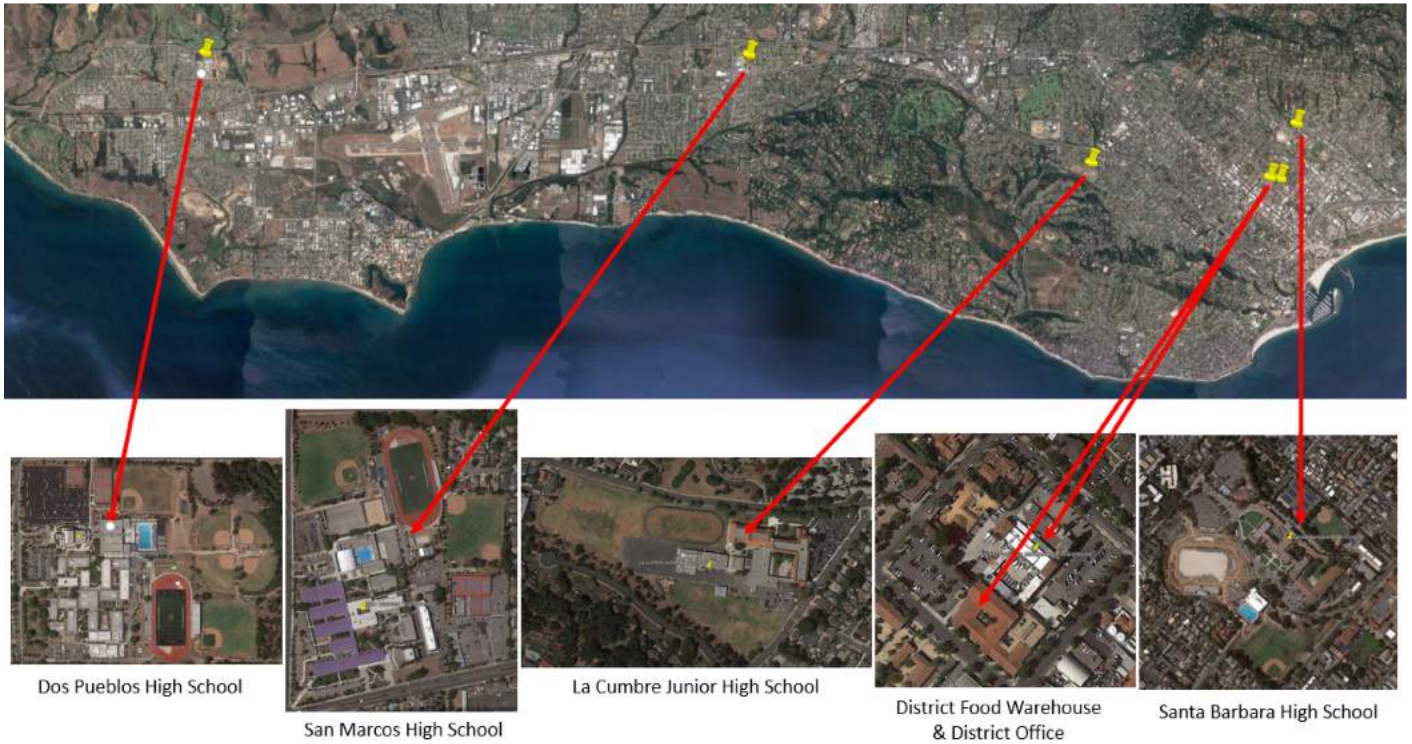
Santa Barbara Unified School District (SBUSD)
case study

Santa Barbara Unified School District (SBUSD)

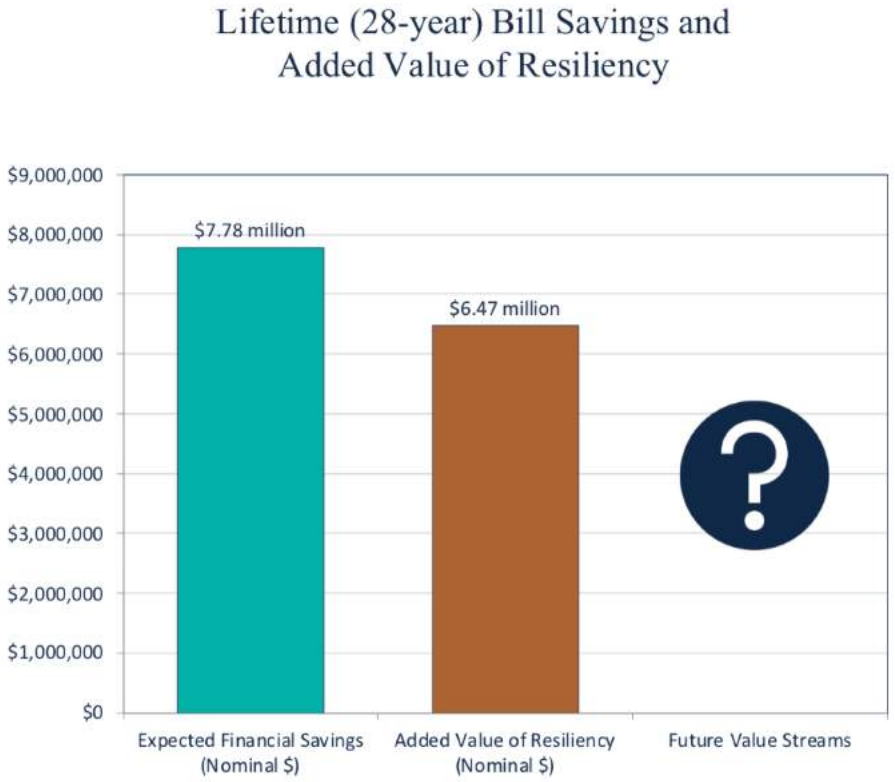


- The entire Santa Barbara region is surrounded by extreme fire risk (earthquake & landslide risk too) and is extremely vulnerable to electricity grid outages.
- The SBUSD is a major school district that increasingly recognizes the value-of-resilience (VOR) and has embraced the Clean Coalition's vision to implement Solar Microgrids at a number of its key schools and other critical facilities.
- SMHS is in the middle of the extensive SBUSD service area.

Six SBUSD Solar Microgrid sites



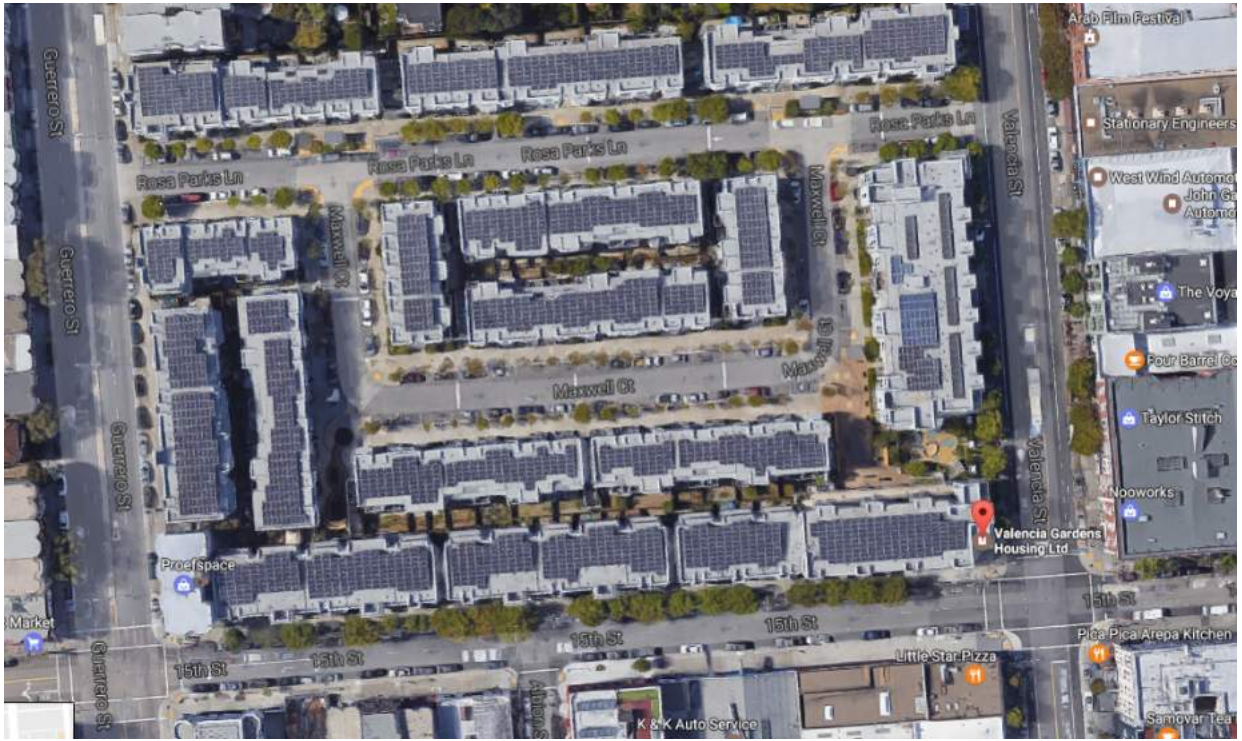
Guaranteed SBUSD bill savings and free VOR



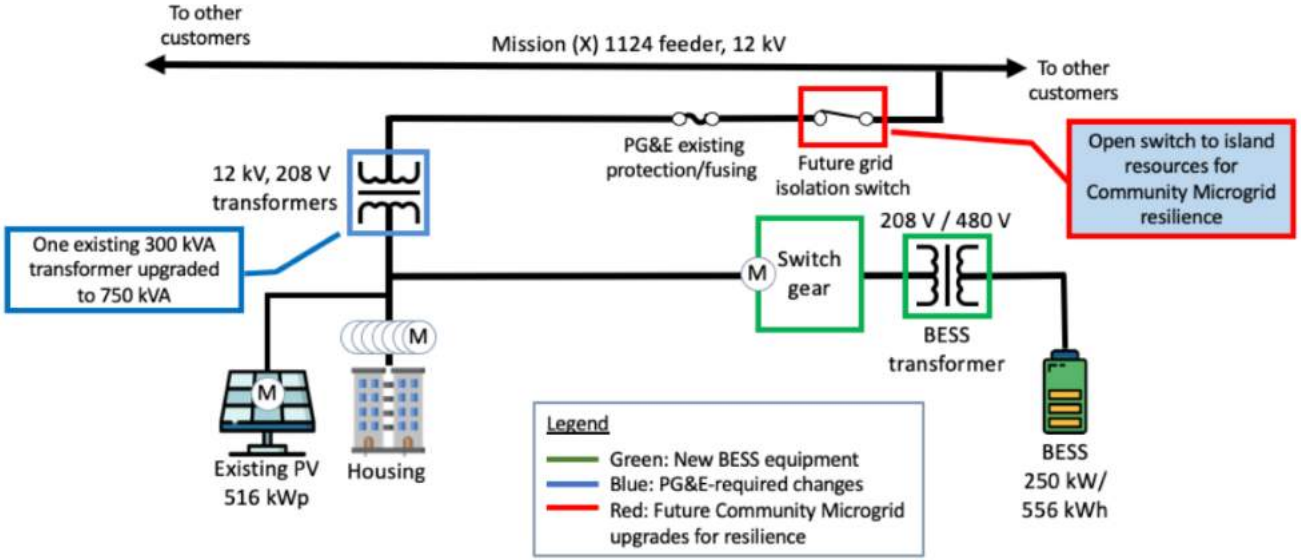
Valencia Gardens Energy Storage (VGES)
case study

Valencia Gardens Apartments in San Francisco

Lots of solar on the Valencia Gardens Apartments

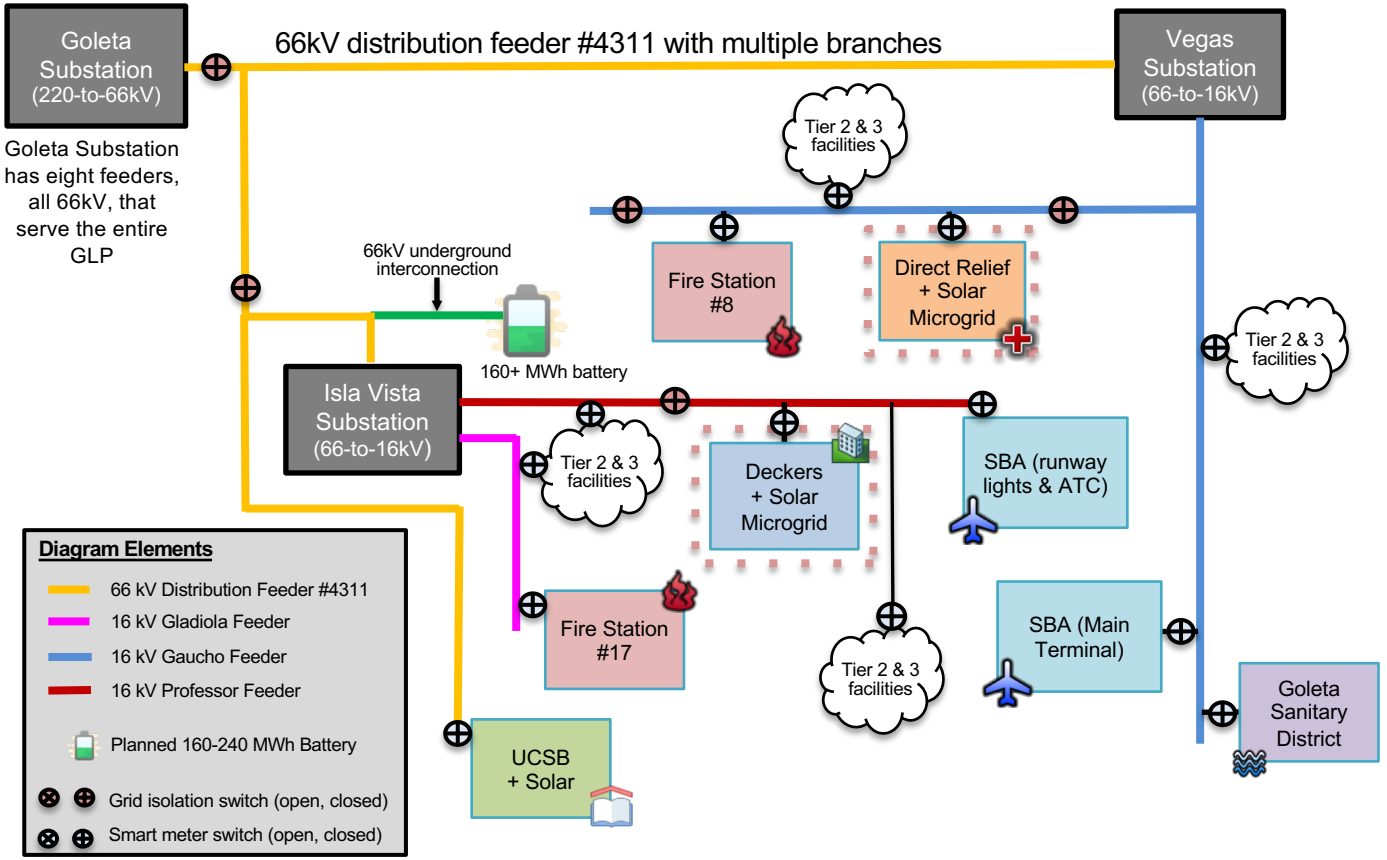


Future VGES Community Microgrid opportunity

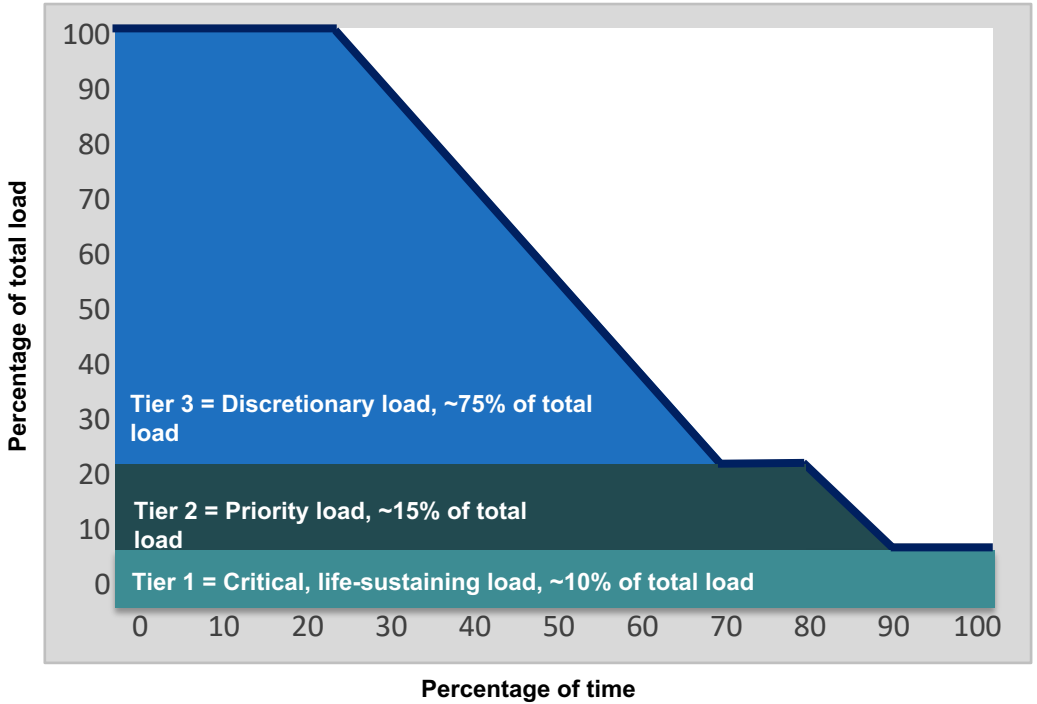


Planning for resilience begins with tiering

Target 66kV feeder grid area block diagram

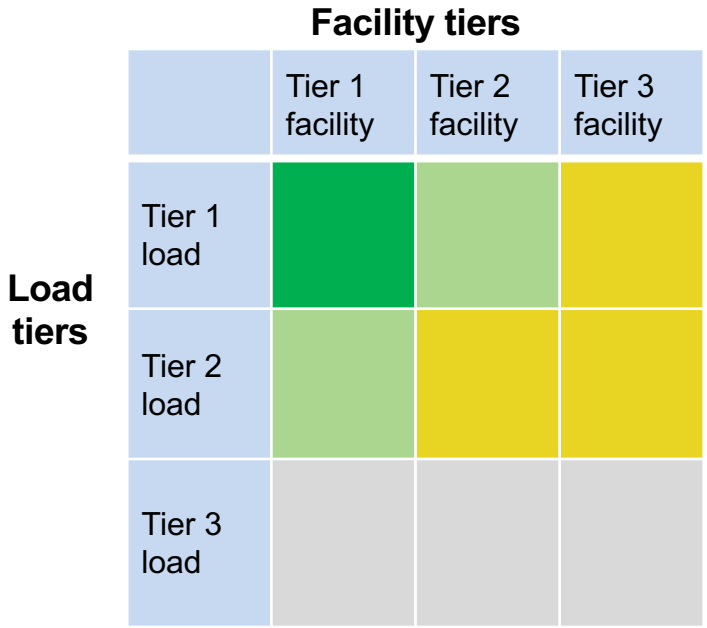


Typical load tier resilience from Solar Microgrids



Percentage of time online for Tier 1, 2, and 3 loads for a Solar Microgrid designed for the University of California Santa Barbara (UCSB) with enough solar to achieve net zero and 200 kWh of energy storage per 100 kW solar.

Facility & Load tiers of a Community Microgrid



= Critical for the entire community, such as Tier 1 loads at Tier 1 facilities like fire stations

= Priority for the entire community, such as Tier 2 loads at Tier 1 facilities and Tier 1 loads at Tier 2 facilities like multi-unit housing facilities that can provide safe and easy sheltering in place

= Priority for individual facilities but not the entire community

= Discretionary loads that are not impactful to the community, whether on or off

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Upcoming Events

12th Annual California Climate & Energy Forum

Transforming Tomorrow Together

August 3 - 19, 2021

Post-Session Survey:
bit.ly/CCEC-Post-Session-Survey

WEEK 3

- ***8/17 Lunch 5:***
  Local Government Electrification: Opportunities and Challenges
- ***8/17 Webinar 10:***
  Speeding Decarbonization Efforts with Reach Code Development Tools
- ***8/18 Lunch 6:***
  The State of Local Climate Planning – a Needed Evolution
- ***8/18 Webinar 11:***
  Next Generation Building Decarbonization: Policy Evolution in California & Washington

To view the entire program visit ***eecoordinator.info/forum-program/***