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LWV LEAGUE OF WOMEN VOTERS

CA Action on Climate

Impacts on Local Resiliency

Presented by CEC and LWVSB
May 2, 2024

LEADING ENVIRONMENTAL ACTION ON THE CA CENTRAL COAST SINCE 1970


Photo by Rory Campbell on Unsplash

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Thank you!

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Personal Care

Restrooms

- Located at the back of house
- Four individual stalls
- Enter via the conference room - hallway beyond kitchen

Water

- Water bottle refill tap at the kitchen sink
- Light refreshments, still and sparkling water at the hospitality table

Self-Care

- Feel free to step out whenever you need to.
- Please silence cell phones when program begins

Who We Are

Community Environmental Council
Bold Climate Action
Acción **Climática Audaz**

CEC builds **on-the-ground** momentum to reverse the threat of the climate crisis.
We **transform** the systems that fuel it.
We **safeguard** the community from its impacts.
We **lead**, we **partner**, we **act**.
And every day, we **inspire people** to create a more resilient California Central Coast.

Our community hub in downtown Santa Barbara is available to rent!

To learn more about using the space for your next event or meeting, visit envirohubsb.org

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Upcoming Events

Housing Forum - SBCC and CEC

Thursday, May 9, 6:00-7:30pm
CEC Hub
1219 State Street

UnCharitable Screening & Panel

Tuesday, May 14, 6:30-9:30pm
CEC Hub
1219 State Street

Dr. Flavia Maia Returns

Thursday, May 30, 6:30pm
CEC Hub
1219 State St.

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Tonight's Agenda

- Introduction
- Speakers
  - Em Johnson, Moderator
  - Colin Jones, LWV SB
  - Ben Schwartz, Clean Coalition
  - Jefferson Litten, City of SB
- Panelist Presentations
- Q&A

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Tonight's Moderator

Em Johnson

Director of Climate Resilience, CEC

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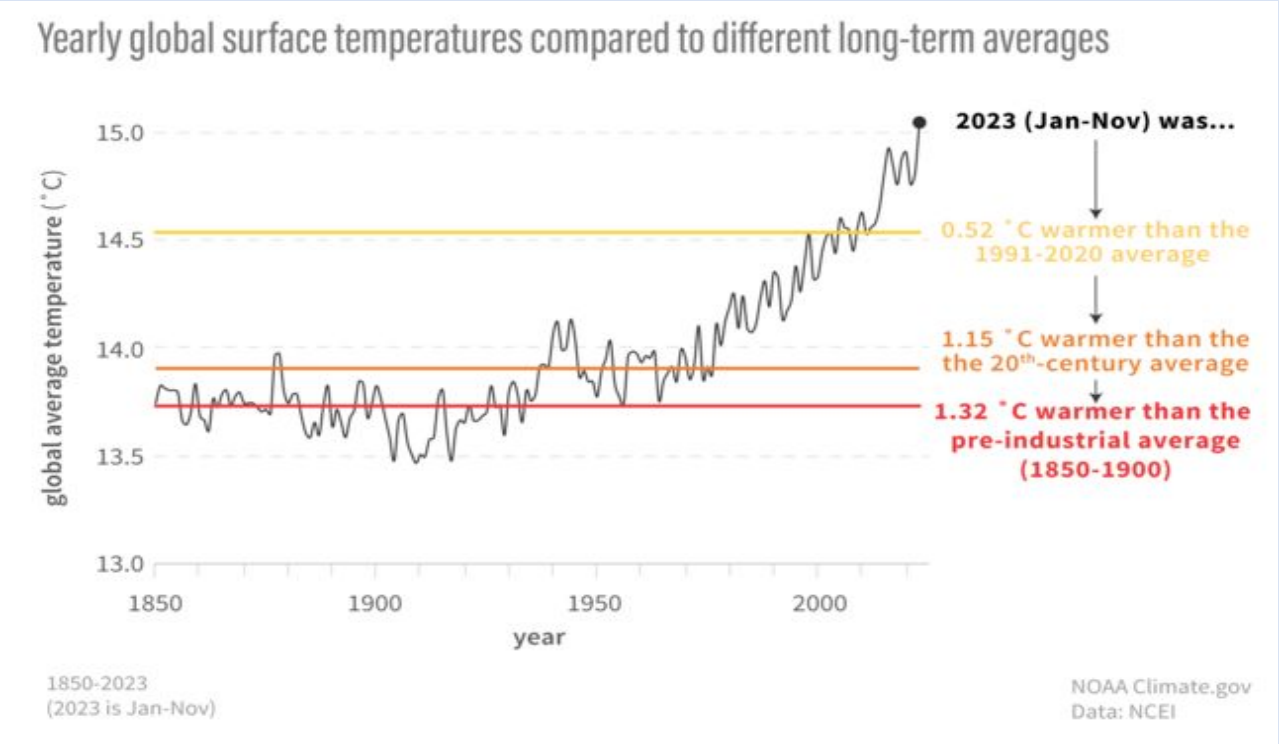
SPEAKER

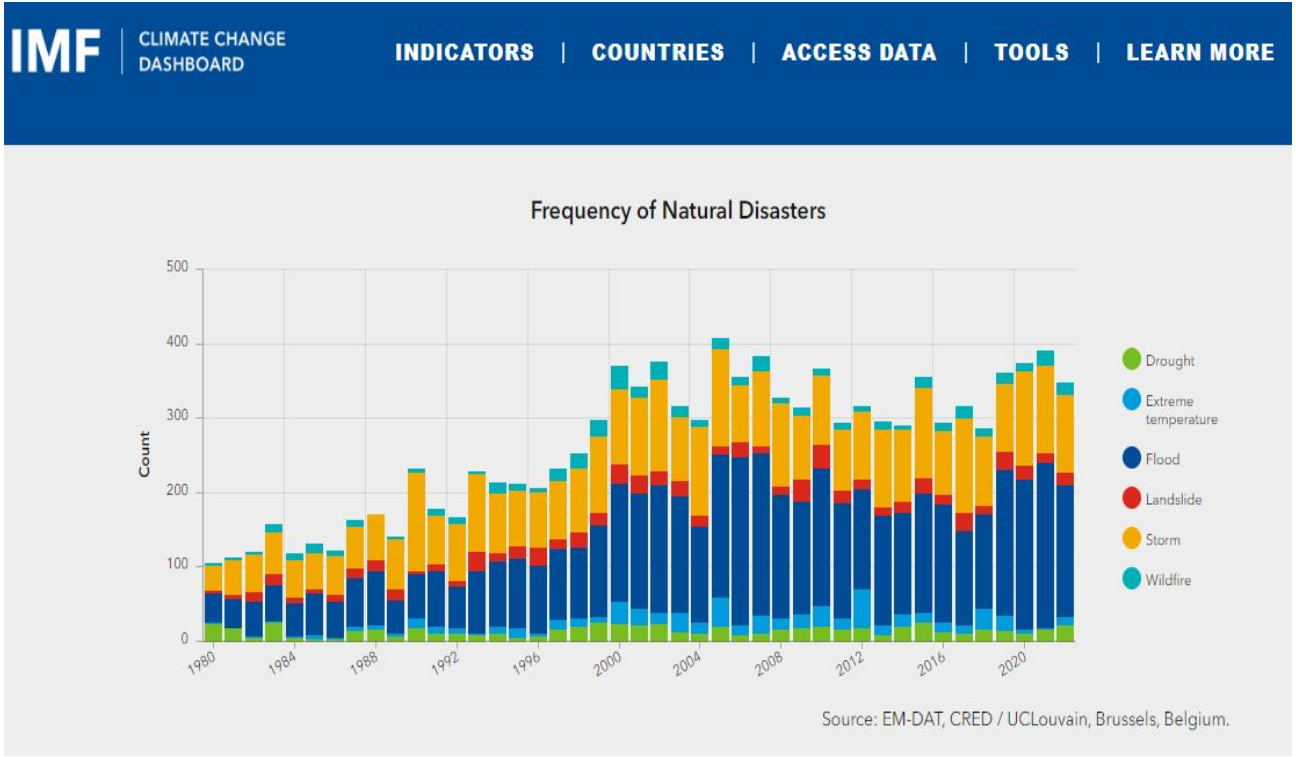
Colin Jones

League of Women Voters Environmental Action Committee

2023 Was the Hottest Year on Record



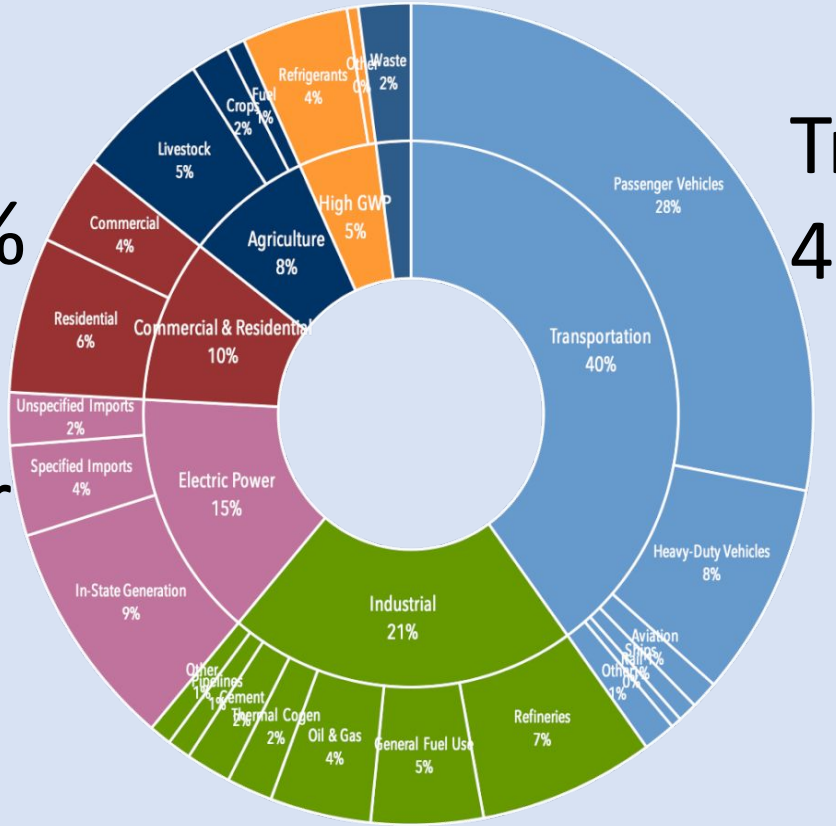
Natural Disasters Up 4X vs 1975



California Greenhouse Gas Emissions by Sector 2017

Buildings 10%

Electric Power 15%



Transportation 40%

Industry 21%

Center for Climate and Energy Solutions

CA Greenhouse Gas Reduction Goals

- Greenhouse gas emissions to 1990 Levels by 2020
- 40% below 1990 levels by 2030
- 80% below 1990 levels by 2050
- 100% carbon free electricity by 2045
- Economy-wide carbon neutrality by 2045

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CA is using Cap and Trade as a major means to reduce Greenhouse Gases (GHGs)

- For major industry emitters, the GHG emissions are reported and required to be reduced by increasing amounts each year.
- For industries that do not meet the goal, credits can be bought at auction from industries who had excess reductions or from GHG reduction projects.
- The cost of credits goes up each year as the goals get harder to meet

  incentivizing action to reduce GHG emissions
- Money from the auctions goes to fund Climate action projects. $13B so far

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Recent data shows CA Greenhouse Gases (GHGs) going up not down

- If we continue up at the present +3.4%/year, we will miss the 2030 goal by 19 years to 2049

- To meet the 2030 goal would mean a 3 times increase in effort.
  (1.5% decrease/year to 4.4%/year)

Greeninovationindex.org/2023-edition, 15th yearly report

Reasons For CA's Greenhouse Gas Rise

- **Light Vehicle Emissions Up 10.6%**
  Why -The Economy is Up, and Mass Transit Has Not rebounded

- **Electric Power Emissions are Up.**

Why – Producing more utility power that is only 1/3 clean and has been slow to introduce renewables

Small now but worrying is the large Increase in the Non-CO_2 GHGs Used as Refrigerants

CA has 3 Issues hindering action

1) 2024 CA BUDGET DEFICET

- More GHG action is needed but there is a budget deficit
- Currently Newsom has saved about 90% of the climate funding at $48B.

But climate funding cut $2.9B and $1.9B is delayed

US NRWS Tran Nguyen, April 2024 - LA Times Hayley Smith, Ian James 01/11/2024

2) A rate lowered for power sent to the grid Net Energy Metering - NEM2 changed to NEM3

- Rebate lowered 80% and the rate of new CA solar dropped about 70%
- Local job loses in the solar installation industry in the first months of 2024 17,000 and growing
- Nevada tried this in the 1990s, saw the same results, and 2 years later replaced the original rebates. Solar installations went back up

NEM3 (Net Energy Metering) Issues

- We need more clean energy, but NEM3 drastically lowered new clean CA rooftop solar.
- Solar alone is a problem. It gives a glut of energy to the grid in the afternoon and provides no power help in the evening when demand is high.

- Utilities have increased the rebates for power supplied in the evening. This should increase the sale of solar plus a battery but the NEM rate may still be too low to do this.

3) DISTRIBUTED ENERGY RESOURCES (DERs) COULD HELP

- DERs -Think home solar/battery, local micro grids, renter's solar, bidirectional eV connections , a meter in front of grouped meters for a school or government facilities. DERs are Clean Energy!

- DERs could be very important in GHG control, in local resilience from power outages, and in lowering electric power costs

- However the CA Public Utility Commission (CPUC) last Fall voted to confirm their opposition to front of meter systems important for some of the DER systems. Especially those increasing local resiliency

There is a DER Battle In the Legislature

- AB3111 – Calderon - Bill classifies DERS as electric corporations. A DER killer due to the regulations and reporting required. Status amended to a DER reporting bill - Passed Committee
- SB1148 – Blakespear, Wahab- To allow a meter in front of grouped meters to cover renters, schools, government facilities - Status Dead
- AB2619 – Connolly - Repeal NEM3 - Status watered down to non effective.
- SB1374 – Becker- Allows electricity produced on site to pass through the grid at no cost to other sites on the property - Status Pending
- AB2256 – Friedman- Requires the CPUC to find the full value of local solar in setting rates - Watered down by amendments to noneffective - Passed

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SPEAKER

Ben Schwartz

Clean Coalition

Clean Coalition

Distributed Energy Resources (DER) and the Goleta Load Pocket

An unparalleled trifecta of economic, environmental, and resilience benefits

Ben Schwartz
Policy Manager
Clean Coalition
626-232-7573 mobile
ben@clean-coalition.org

Clean Coalition (non-profit)

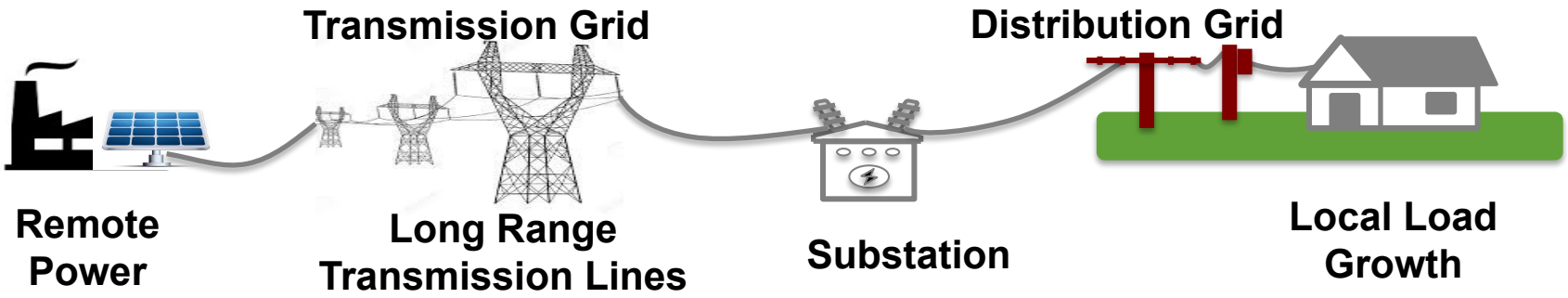
Mission

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.

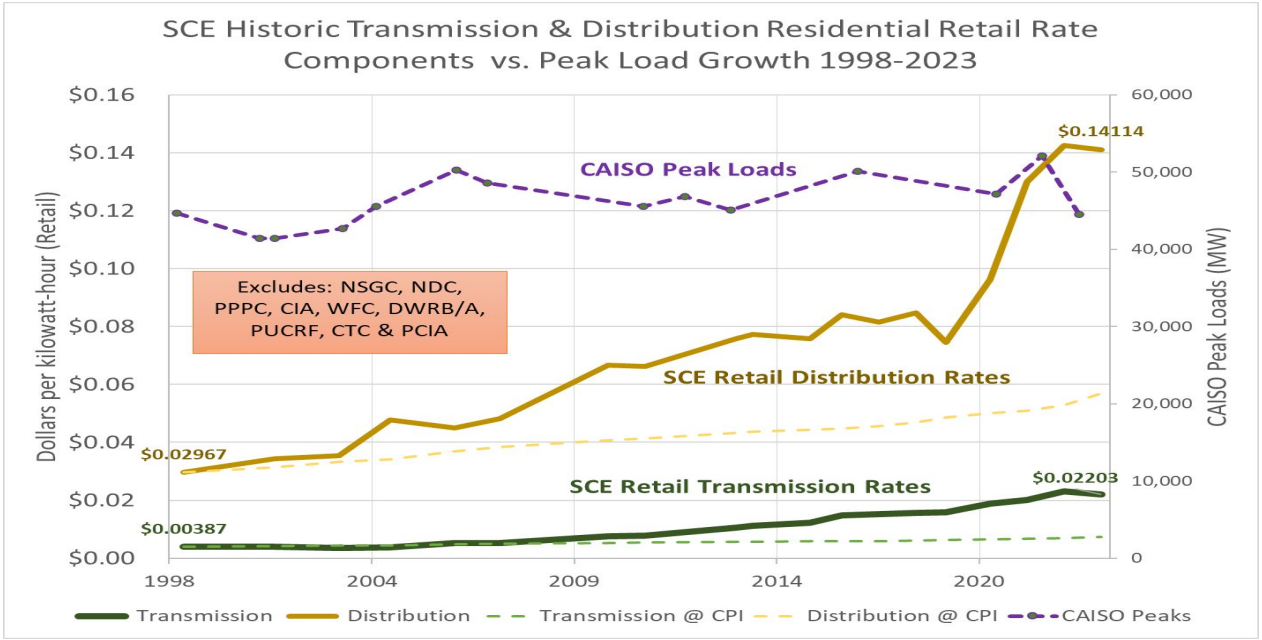
The existing system is not designed to achieve California's energy and climate goals cost-effectively



The electric grid was designed with 20th century principles based on a one-way flow of energy. Remotely-generated energy is transmitted across long distance transmission lines and delivered to end users located in load centers (on the distribution grid). Problems include:

- Generating energy remotely is inefficient and results in a more complicated grid.
- Building out the grid with new transmission infrastructure is extremely expensive.
- A larger grid is hard to maintain, especially with infrastructure transversing areas at high risk of wildfires.
- Local residents don't benefit from installations of huge solar farms in the desert.

Rate increases are outpacing inflation



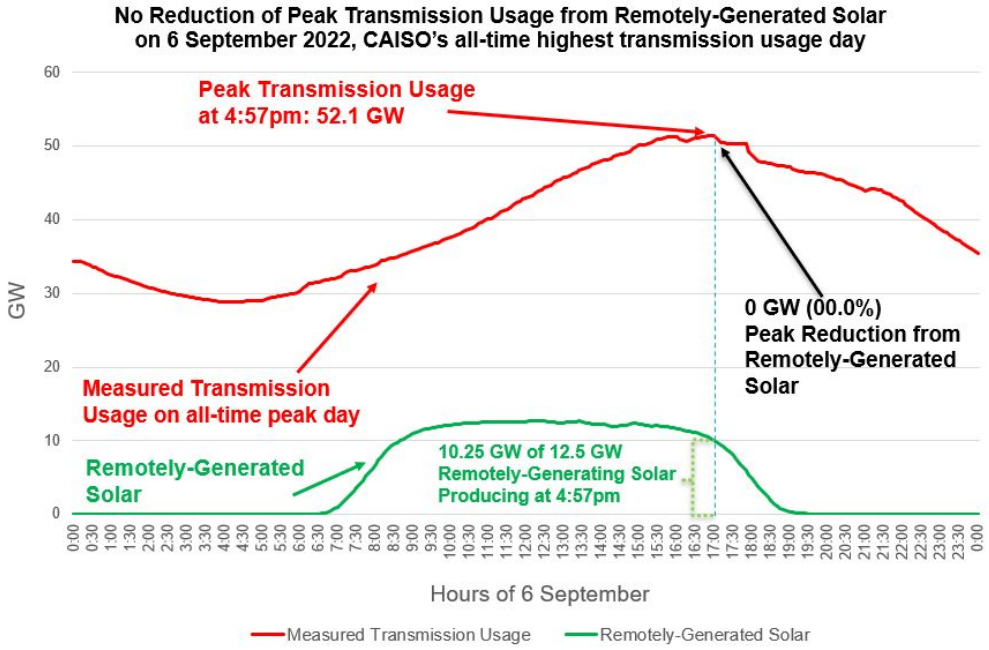
Over the past decade utility rates have increased by:

- PG&E: 127%
- SCE: 91%
- SDG&E: 72%

Meanwhile, the overall cost of living, as measured by the Consumer Price Index, has only increased by 28%.

Types of DER

- Solar
- Energy Storage
- Wind turbines
- Fuel Cells
- Electric Vehicles
  - Includes batteries and managed charging
- Demand Response
  - Appliances like air conditioning can be controlled to reduce energy usage at key times.
  - Load flexibility includes shifting energy usage away from times when the grid is congested.
- Microgrids
- Energy Efficiency
- Virtual Power Plants
- Time-of-use arbitrage



DER Benefits

Ratepayers are footing the bill to achieve California's ambitious energy/climate goals. We deserve to share in the benefits as well.

- Economic savings from lower-cost energy.
- Investment in the local economy (jobs and wages).
- Creation of carbon-free energy (and less reliance on carbon-intensive energy from the grid).
- Reduced local air pollution.
- Promoting community-scale resilience.
- Deployments occur far faster than remote projects (CEQA exemption for built environments).
- Increased grid efficiency due to reduction in demand for transmission-interconnected resources.
  - Less energy is wasted, and less grid congestion results in a system that functions more effectively.
- Reduces the need to build the grid out further, limiting skyrocketing rate increases.

Direct Relief Microgrid limited by existing Net Energy Metering size constraints

A Microgrid that only serves Direct Relief leaves:

- 70% of roof and 100% of massive parking area solar potential is unused.
- Additional storage not able to be considered due to policy prohibitions around exporting energy from a battery to the grid – even though the energy is 100% stored solar.

Ready to do way more:

- 1,133 kW in total solar siting potential, 427 kW more rooftop and 386 kW in parking lots.
- Existing switchgear is already sized for the expansion and is just awaiting the policy innovation!

Solar Microgrid located at Direct Relief headquarters in Goleta, CA

Wholesale Distributed Energy Resources defined

Clean Coalition

Project Size

50+ MW

500 kW

5 kW

Central Generation

Serves Remote Loads

Wholesale DER

Serves Local Loads

Retail DER

Serves Onsite Loads

Behind the Meter

Distribution Grid

Transmission Grid

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SPEAKER

Jefferson Litten

City of Santa Barbara,
Sustainability & Resilience
Dept.

City of SANTA BARBARA

City of Santa Barbara
SUSTAINABILITY & RESILIENCE

SUSTAINABILITY & RESILIENCE DEPARTMENT

LEAGUE OF WOMEN VOTERS FORUM
LOCAL RESILIENCY IN THE CITY OF SANTA BARBARA

May 2, 2024

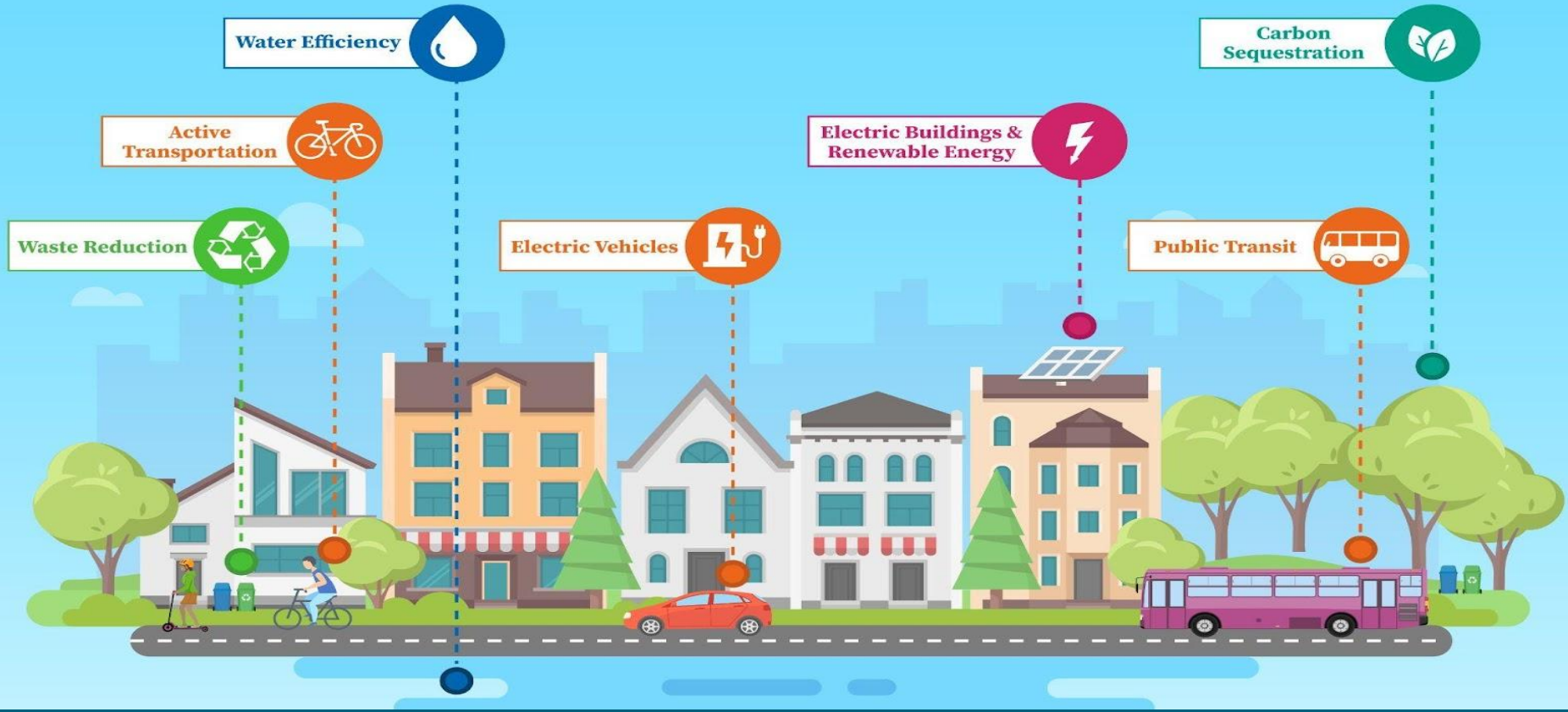
TONIGHT'S TOPICS

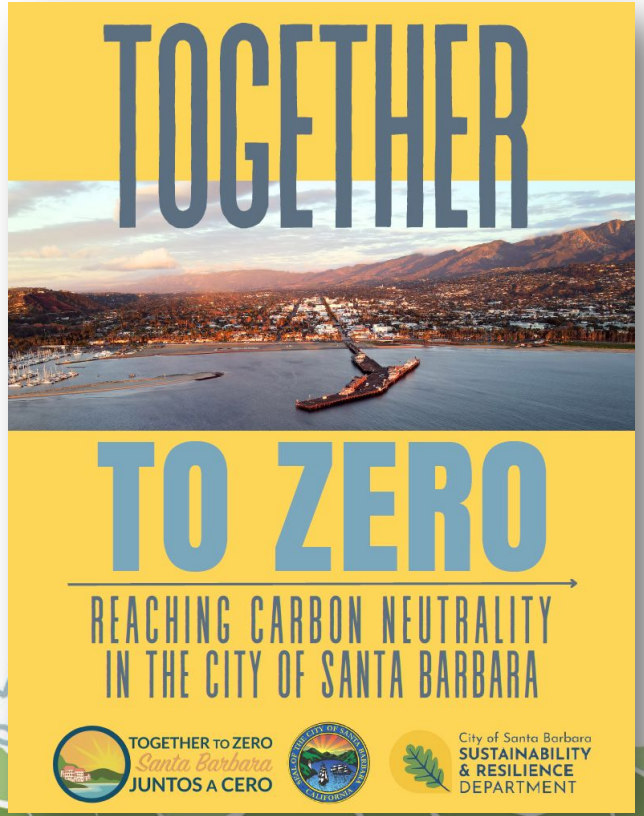
- Santa Barbara's Climate Goals
- Climate Action Plan and Resilience
- City Resilience Projects
- Resilience in the Community

SANTA BARBARA'S CLIMATE GOALS

100% Renewable Electricity by 2030
Currently 100% Carbon Free

Carbon Neutrality by 2035
10 Years Faster Than the State

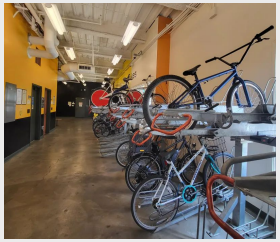

Water Efficiency
Carbon Sequestration
Active Transportation
Electric Buildings & Renewable Energy
Waste Reduction
Electric Vehicles
Public Transit



CAP And Resilience

- Implement all feasible microgrid projects at municipal facilities
- Plan, fund and direct resources for energy storage, and distributed energy resources.
- End Goal: All electric-buildings that are powered by on-site renewable energy and storage.

The Granada Garage



Cater Water Treatment Facility Battery Storage

SANTA BARBARA POLICE STATION

601 SANTA BARBARA STREET

Resilience in The Community

Simpliphi

Keep your home or business running in the event of a planned or unplanned outage with a energy storage!

Brighten Solar & Battery Discount

Brighten Solar Co. offers exclusive discounts on solar and batteries for Santa Barbara Clean Energy residential customers.

Home Power

PoweredUP Network's Home Power Program aims to offset 100% of participating homes' electricity consumption, leading to more energy resilience for the community and protection against potential grid outages and rising electricity costs for homeowners.

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SPEAKER

Ben Schwartz

Clean Coalition

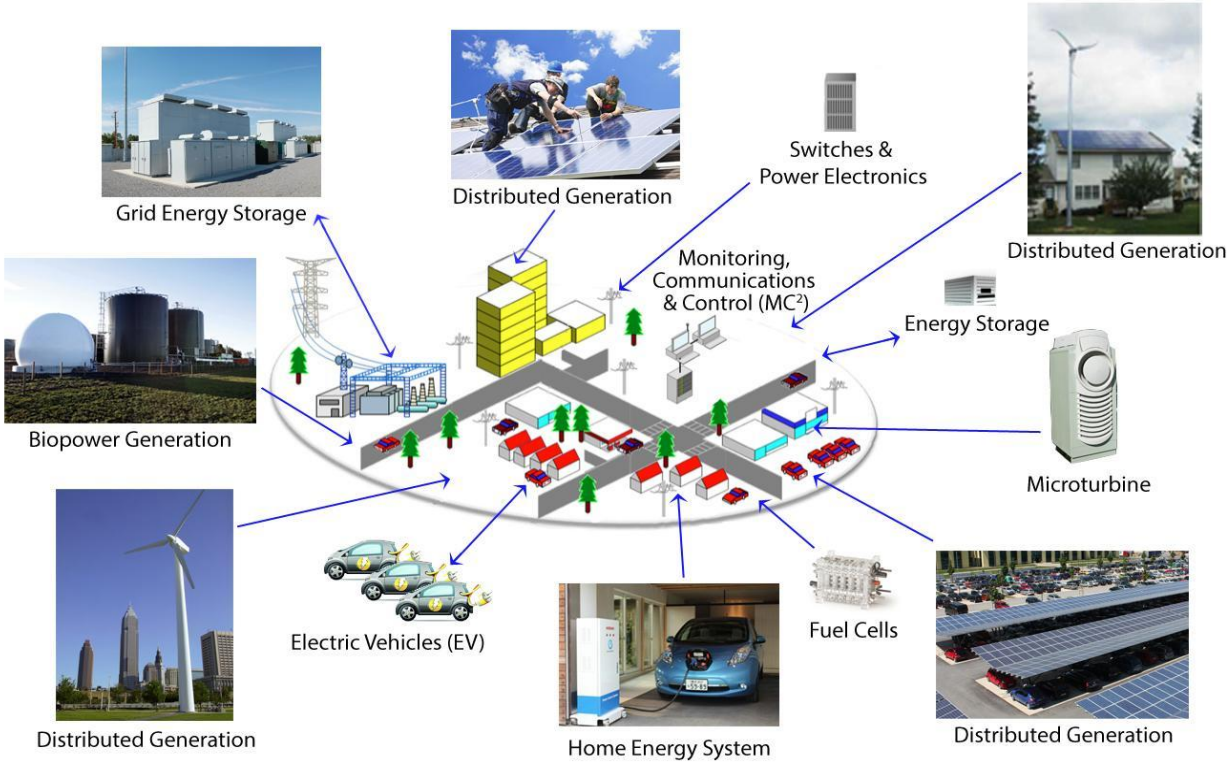
Goleta Load Pocket (GLP)

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.

The Grid of the Future

- Community Microgrids: generation, storage, & controls enabling resilience for a section of the grid.
- Solar Microgrids: Community Microgrid building blocks. These are microgrids for individual facilities.



What is Needed to Commercialize Microgrids?

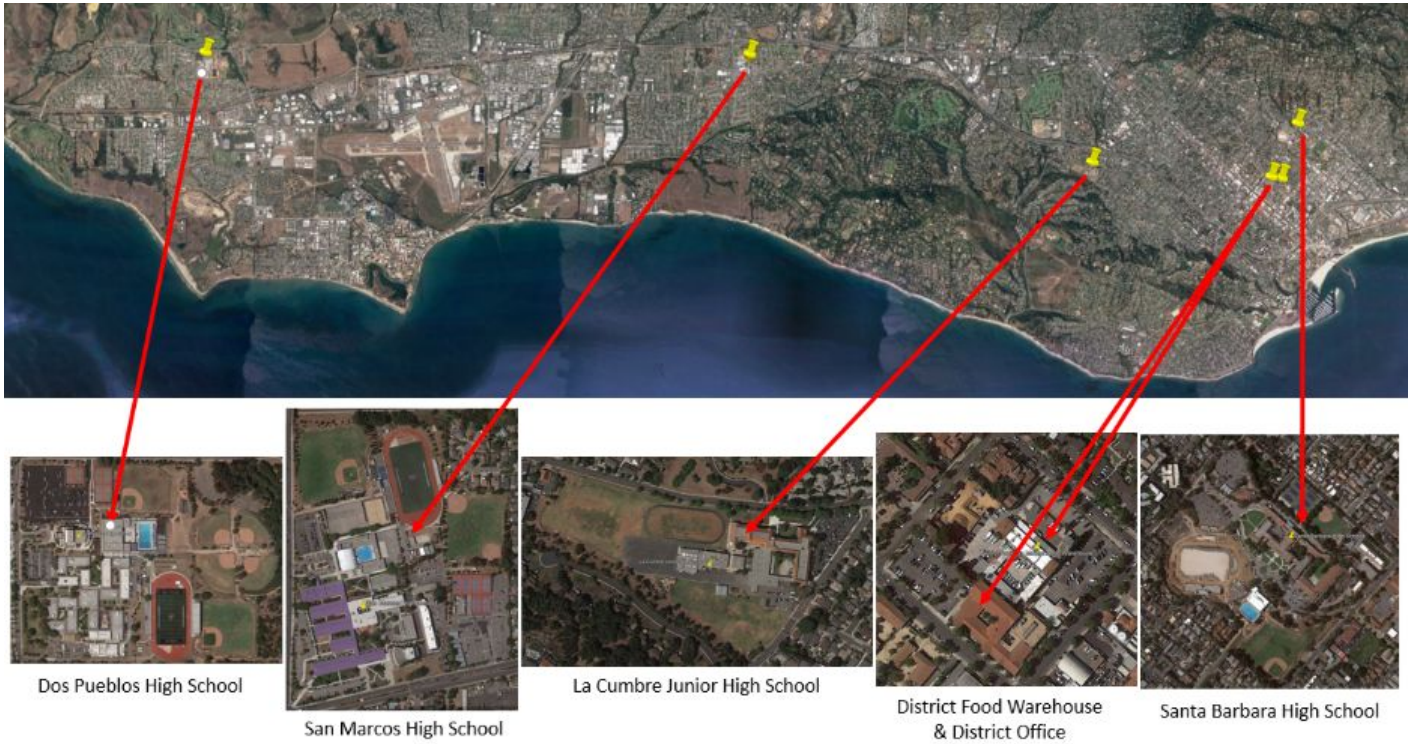
When it comes to commercializing microgrids, the state needs to create pathways to enable swift deployments at sites that can be considered low hanging fruits. Distributed Energy Resources and microgrids are tools that can help us achieve multiple goals simultaneously.

- Schools
- Emergency Shelter Sites
- Multi-family homes
- Government buildings
- Disadvantaged communities
- Load Pockets (areas that are geographically isolated and/or difficult to deliver electricity to)
- Rural areas, particularly those that are in High Fire Threat Districts.
- Areas that are reaching limits in hosting capacity.
    - Locations where transmission upgrades will take multiple years to complete (such as Humboldt County).

Provisioning Resilience for the Santa Barbara Unified School District (SBUSD)

- All 14 sites chosen to move forward with these projects at the SBUSD will have solar carports.
- 6 sites are contracted for Solar Microgrids and another 8 sites for solar only, with an approximate total over all the sites of 5 MW of solar and MWh of energy storage.
- 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.

Six SBUSD Solar Microgrid sites

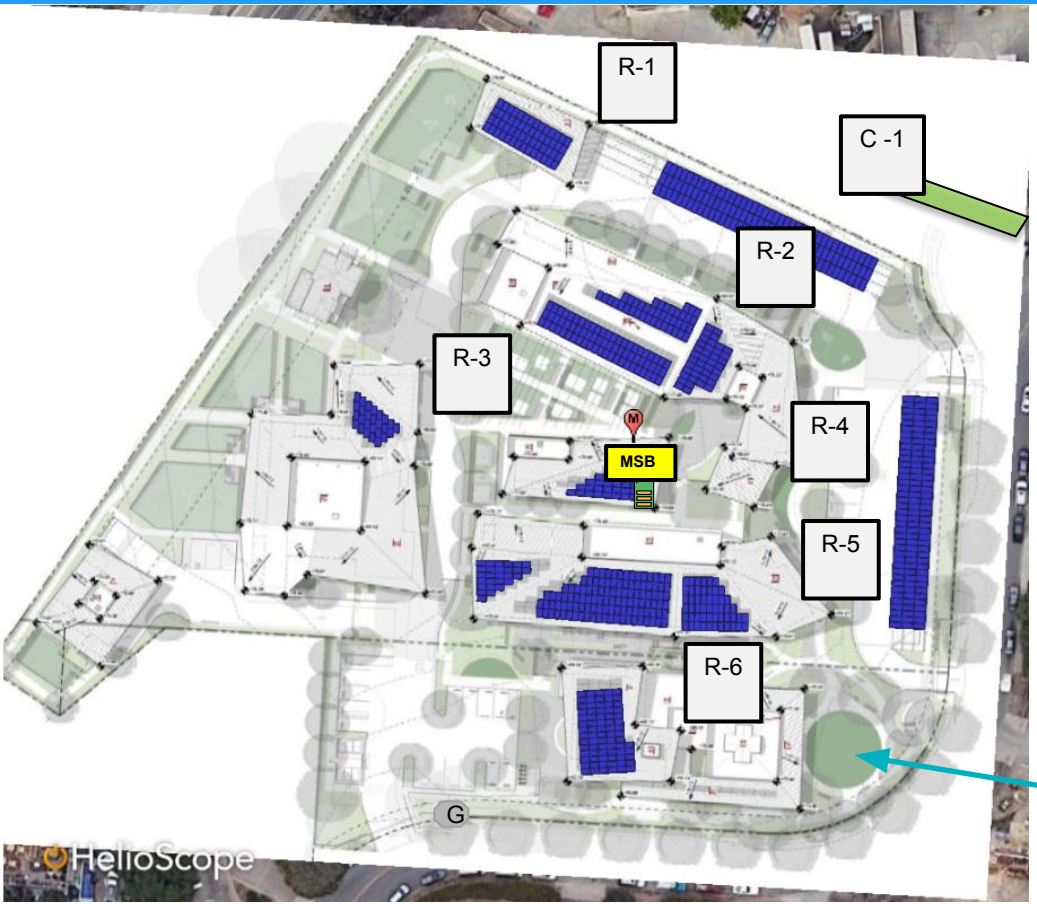


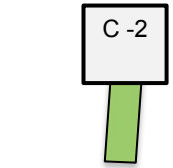
Facilitating Battery Projects in the GLP

- Deploying energy storage is critical to meet the goal for 200 MW of generation and 400 MWh of energy storage needed for resilience in the GLP.
- We work to build coalitions of support for local battery energy storage systems that will benefit the region.
- The Vallecito Energy Storage Resilience project is a 40 MWh project located in Carpinteria.
- The project is a building block for a Community Microgrid in Carpinteria. We've also done the preliminary design for solar+storage at Carpinteria High School.
- At least 50 MWh of energy storage is needed to replace the Ellwood Peaker Plant.
- The area near the Ellwood plant is an ideal location for a battery project because the grid is already designed to handle the energy.

Puente Peaker Plant in Oxnard

Resilience for SB Humane (Reference Solar layout)





MDF & MPOE (current location)

N

SB Humane

5399 Overpass Rd, Goleta, CA

Service Meter

MSB — Main Service Switchboard 1600A, 480/277V, 3PH 4W

G — 350 kW Generac diesel generator

22 potential level-2 EV ports (dual ports)

326 kW/1,305 kWh BESS location

Total Solar Siting Potential: 339 kW

- Total Annual Solar Generation: 548,145 kWh
- 41% NZE of Master Load Profile
- 32% NZE of Baseline Load Profile

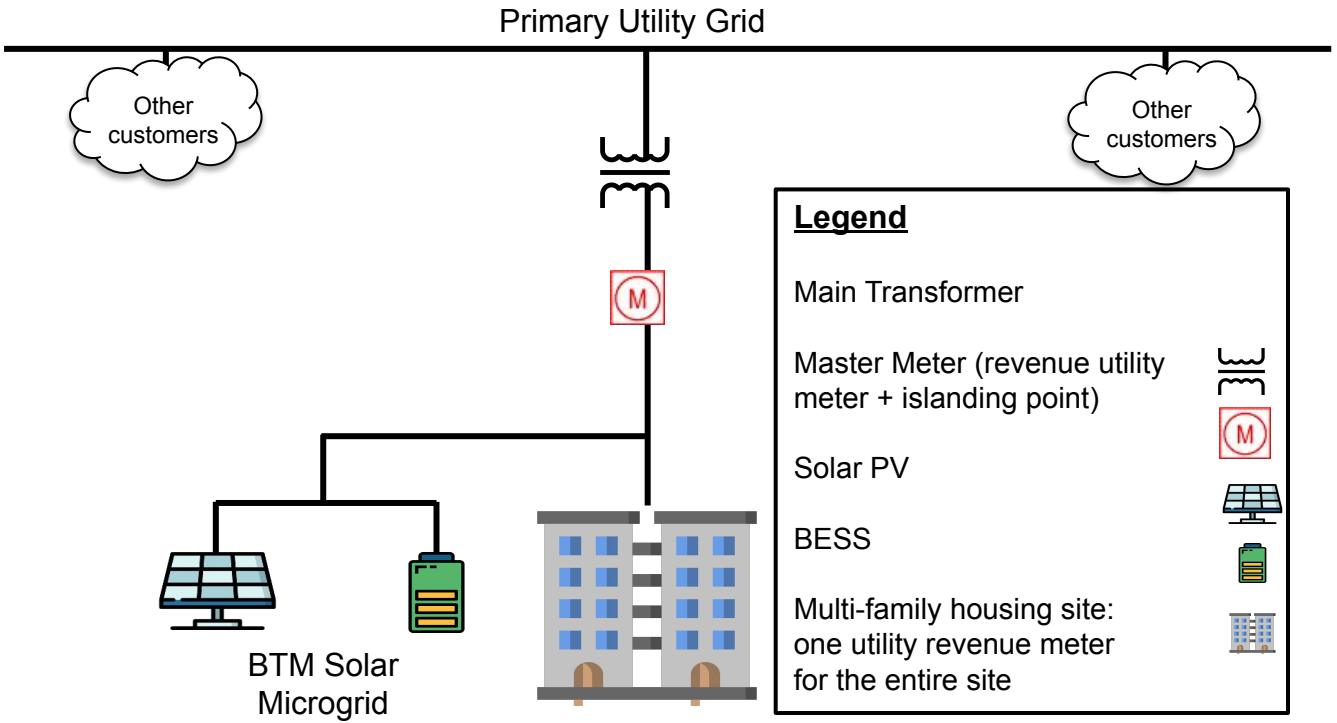
C-1	63.2 kW Solar Parking Canopy
C-2	63.2 kW Solar Parking Canopy
R-1	22.1 kW Service Bldg I rooftop solar
R-2	59.3 kW Dog Bldg A rooftop solar
R-3	10.3 kW Intake Bldg F rooftop solar
R-4	15.4 kW Cat & Rabbit Bldg B rooftop solar
R-5	75.4 kW Clinic Bldg C rooftop solar
R-6	29.6 kW Admin & Education Bldg D & E rooftop solar

Total Annual Loads:

- Baseline Load Profile: 1,341,232 kWh
- EV Load Profile: 368,879 kWh
- Master Load Profile: 1,710,111 kWh

Critical Loads: Critical Loads Profile: 872,988 kWh

Resilience for Apartments Using a Master Meter



Resilience is possible at apartments in a streamlined/standard fashion using a master meter.

Get involved in the GLP Community Microgrid

- Contribute to the funding requirements of the GLP Community Microgrid Initiative, which should be staffed with several full-time equivalent experts to fulfill the vision.
- Bring properties into play for near-term NEM installations and to stage for Wholesale Distributed Energy Resources as policies and market mechanisms are innovated.
- Bring solutions to the GLP, including Demand Response, Electric Vehicle Charging Infrastructure, and Energy Efficiency.
- Share the GLP Community Microgrid as a game-changing showcase for delivering renewables-driven resilience to communities.
- Subscribe to the Clean Coalition newsletter to stay informed.

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Emission Reduction Estimates

Table 3 Targets Versus GHG Emissions Reductions

Target/Forecast	2030 GHG Emissions (MT CO_2e)	2035 GHG Emissions (MT CO_2e)
Business-as-usual Forecast	698,596	734,467
GHG Emission Reductions from State Laws/Programs	(112,176)	(201,046)
State Legislative Adjusted Forecast	586,420	533,421
GHG Emission Reductions from SBCE	(75,608)	(19,586)
GHG Emission Reductions from ReSource Center[1]	(44,690)	(46,210)
GHG Emissions after implementation of State legislation, SBCE, and ReSource Center	466,122	467,625
GHG Emissions Reductions from Full Implementation of Measures (excluding ReSource Center reductions)[2]	(87,615)	(169,936)
GHG Emissions after Implementation of State Laws/Program, SBCE, ReSource Center, and remaining Measure Reductions	378,507	297,687
City of Santa Barbara Target	486,949	0.0
Target Met?	Yes	No – Additional actions will be needed to meet the aspirational 2035 target

Emission Reduction Pathway

Figure 3 Targets Versus GHG Emissions Reductions