

Clean⚡Coalition



RGLM Community Microgrid Informational Meeting

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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.

Creating Groundbreaking Models

The Clean Coalition designs and stages cutting-edge Community Microgrid & Solar Microgrid projects that can be replicated in any utility service territory. By showcasing the value and feasibility of these projects, and the vast potential for siting distributed energy resources in the built environment, we're helping proliferate clean local energy and community resilience.

Facilitating Real-World Projects

At the Clean Coalition, we base our work on concrete project experience. The projects we design highlight the regulatory and policy issues that are impeding the development of clean local energy projects, and the tools and best practices needed to overcome those barriers.





Grid Titans is a California based clean energy contractor specializing in engineering, procurement and construction of solar, battery storage, and microgrid installations, with a strong track record delivering large scale commercial projects.



Surya is an energy development firm founded to bring clean energy to nonprofits, municipalities, campuses, and communities.

We believe energy infrastructure is community infrastructure. Every project is an opportunity to build a more resilient, equitable grid.

Background

Electrification opportunities

Community Microgrid opportunity

Solar Microgrid opportunities for individual homes

Recommendations, survey, Q&A

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1. Economic

- Provides electricity costs savings compared to buying electricity from the utility.
- Provides value-of-resilience (VOR) compared to implementing & operating a fossil-fueled generator.
- Provides a fixed cost of electricity compared to rapidly rising utility costs.

2. Environmental

- Provides solar electricity, a pure renewable energy resource.
- Reduces peak usage of the grid when it is most stressed during the peak periods, which throughout California are 4-9pm.
- Eliminates energy losses associated with traversing transmission & distribution grids, typically 15%.

3. Resilience

- Provides 100% ride-through during grid outages of limited durations – **you won't notice when the grid goes down.**
- Provides indefinite resilience for at least critical loads, with cost correlated to the percentage of load being served with 100% resilience.

Goleta Load Pocket (GLP) & Resilience



- GLP is highly transmission-vulnerable and disaster-prone (fire, landslide, earthquake).
- Our region faces frequent power outages, up to 8.5 per year. **Our outage rate is more than three times worse than the least reliable electrical utility in the country.**¹
- Our region ranks **second-worst in the lower 48 states for the value received by electrical service customers**, measured by the Price-Reliability Index (PRI).¹

New York Times article on 18 August 2026: [What if America Went Completely Dark?](#) highlighting severe grid vulnerability to natural disasters – and human malfeasance.

Solar-driven microgrids at RGL are the key pathway to delivering resilience to the RGL community overall – and to individual homes as well.

¹ “Roadmap to Recovery: Power On.” Santa Barbara South Coast Chamber of Commerce.

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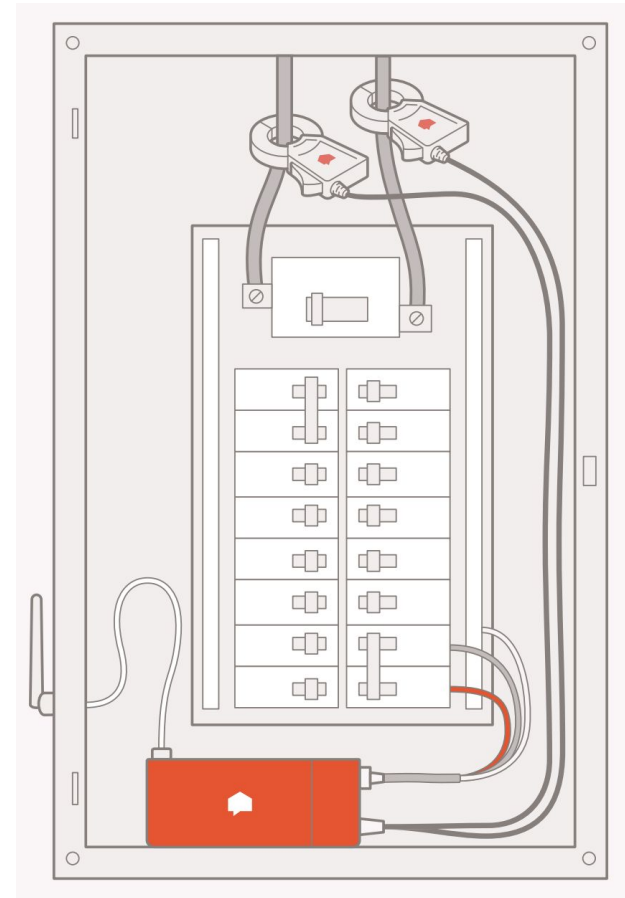
Individual homes can procure Solar Microgrids that specifically provide substantial energy cost savings and resilience at the household level, while providing carryover benefits to the overall RGLM community.

Regardless of configuration, **Solar Microgrids allow the adoption of EVs and electrification of appliances without the exorbitant cost of upgrading RGLM's private grid, which is expected to otherwise cost an average of about \$10,000 per home.**

Electrification includes:

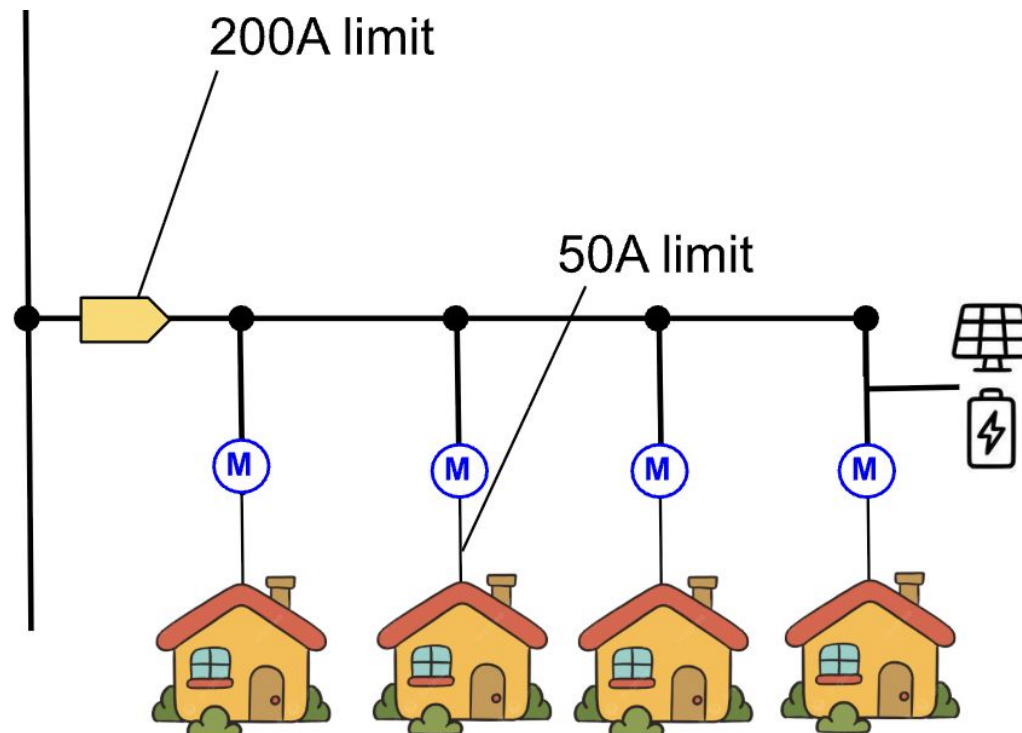
- HVAC heat pumps
- hot water heat pumps
- induction cooktops
- electric dryers
- EV charging infrastructure

On average, **HVAC and hot water heat pumps are 3-4x more efficient** than their gas counterparts, lowering associated energy usage by 70%. Financial incentives exist for these measures, and more are on the way to ensure that the economics are attractive.

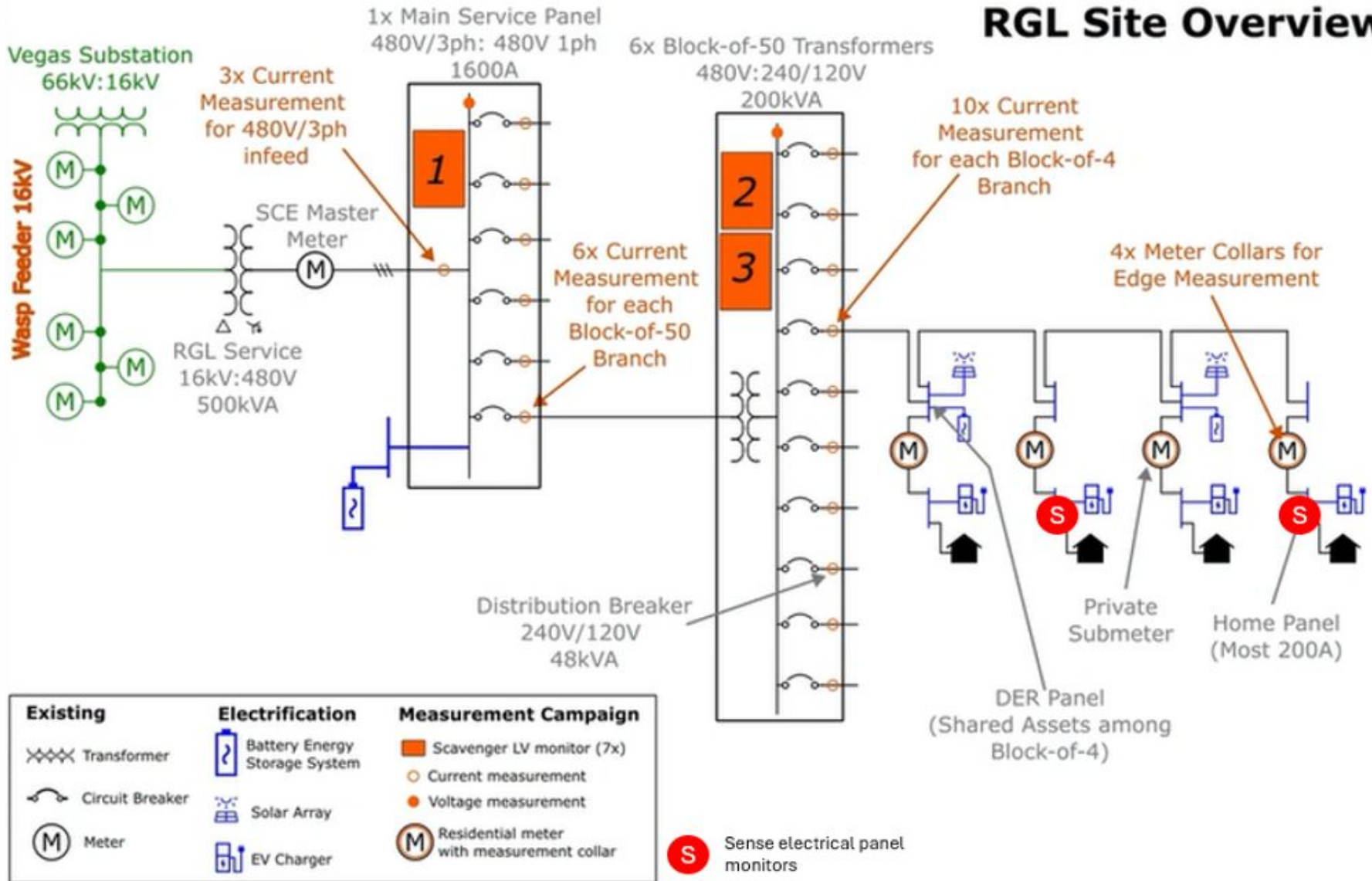


Mobile homes are connected in blocks-of-4, with a 200A usage limit, via undergrounded feeders. Each individual home has a 50A limit, which is very easy to upgrade to 200A.

Solar & storage interconnected on a block-of-4 feeder will ensure that the 200A limit is maintained, without having to upgrade any undergrounded wiring.

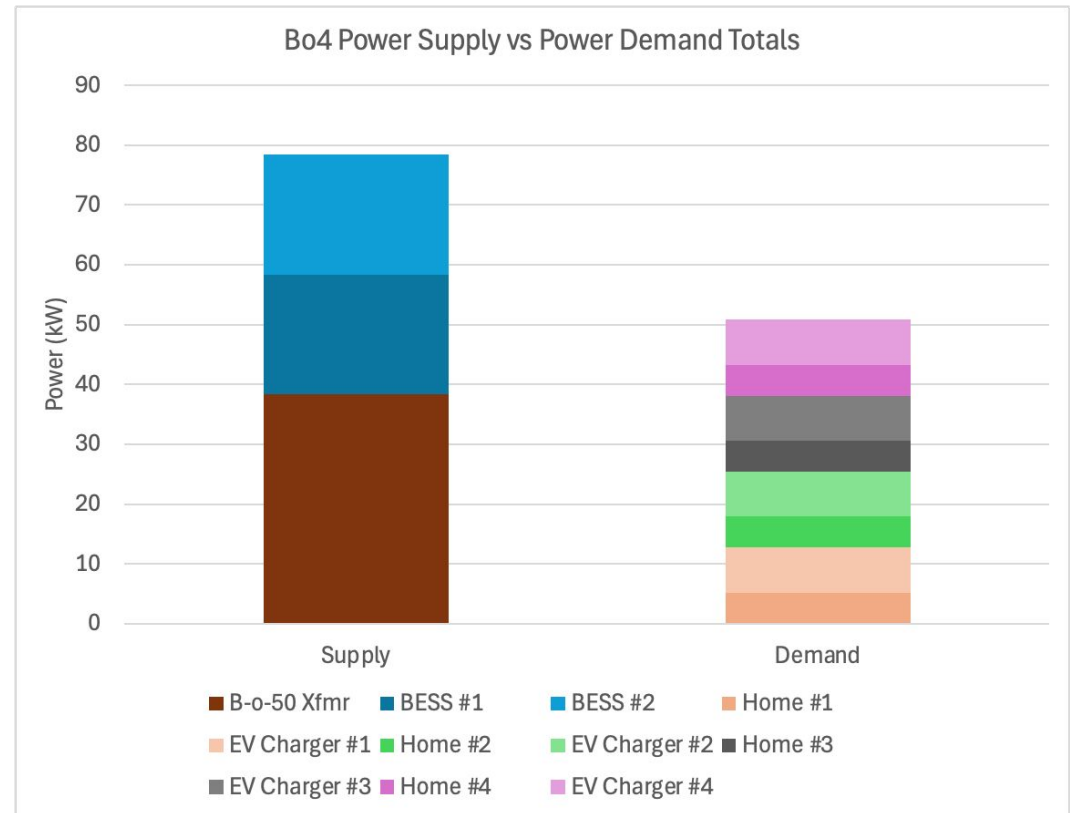
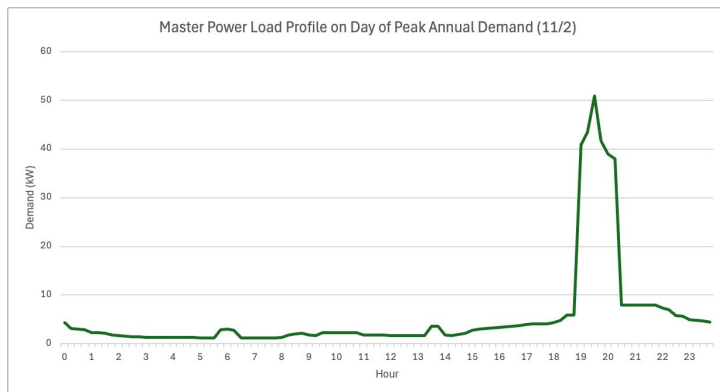
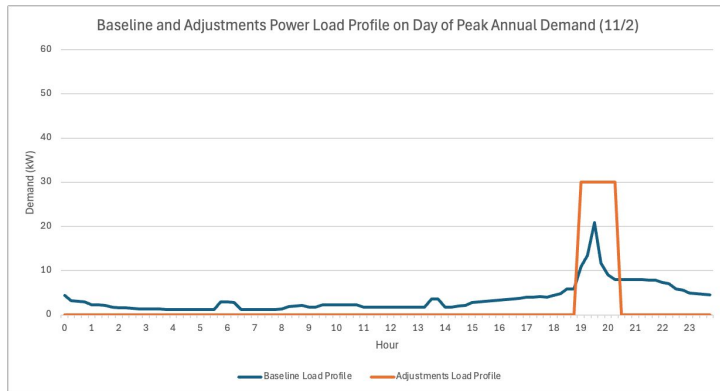


RGL Single Line Diagram



Power capacity analysis of Block-of-4 homes

- The load profiles were aligned so that the Bo4's maximum possible power demand of 51 kW would occur due to added EV loads.
- A maximum of 38.4 kW of power can be supplied by the Block-of-50 (Bo50) transformer, assuming its circuit breakers are upgraded from 175A to 200A.
- Each Bo4 is daisy chained together in series (see single-line-diagram on slide 3).



Background

Electrification opportunities

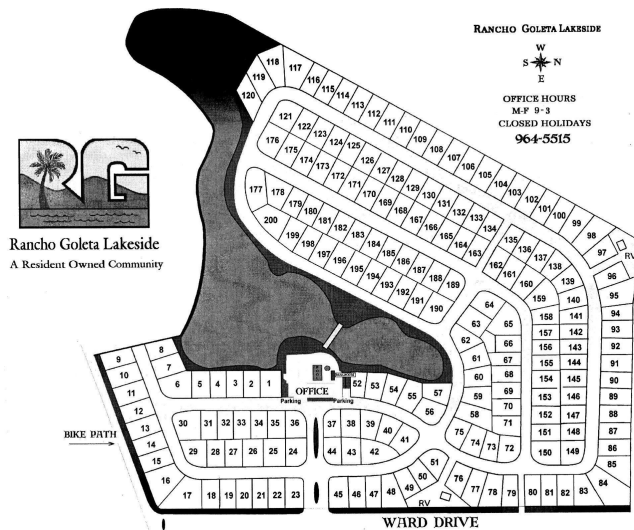
Community Microgrid opportunity

Solar Microgrid opportunity for individual homes

Recommendations, survey, Q&A

RGLM Community Microgrid opportunity

- 200 mobile homes, many ready for replacement, in disadvantaged area of Goleta.
- Single master meter with SCE and privately submetered at each home.
- Private underground distribution grid that is significantly constrained with upgrades needed to enable significant electrification, including EV adoption.
- Solar to be distributed across the homes and combined with a single central battery to create a solar-driven microgrid to deliver a trifecta of economic, environmental, and resilience benefits.
- Perfect opportunity to showcase the importance of Master Metering for optimizing economics from solar and resilience from microgrids.



RGLM layout of 200 mobile homes



Typical RGLM mobile home

Community Microgrid solar & storage layout



Rancho Goleta Lakeside

945 Ward Dr, Santa Barbara

25 homes receive:

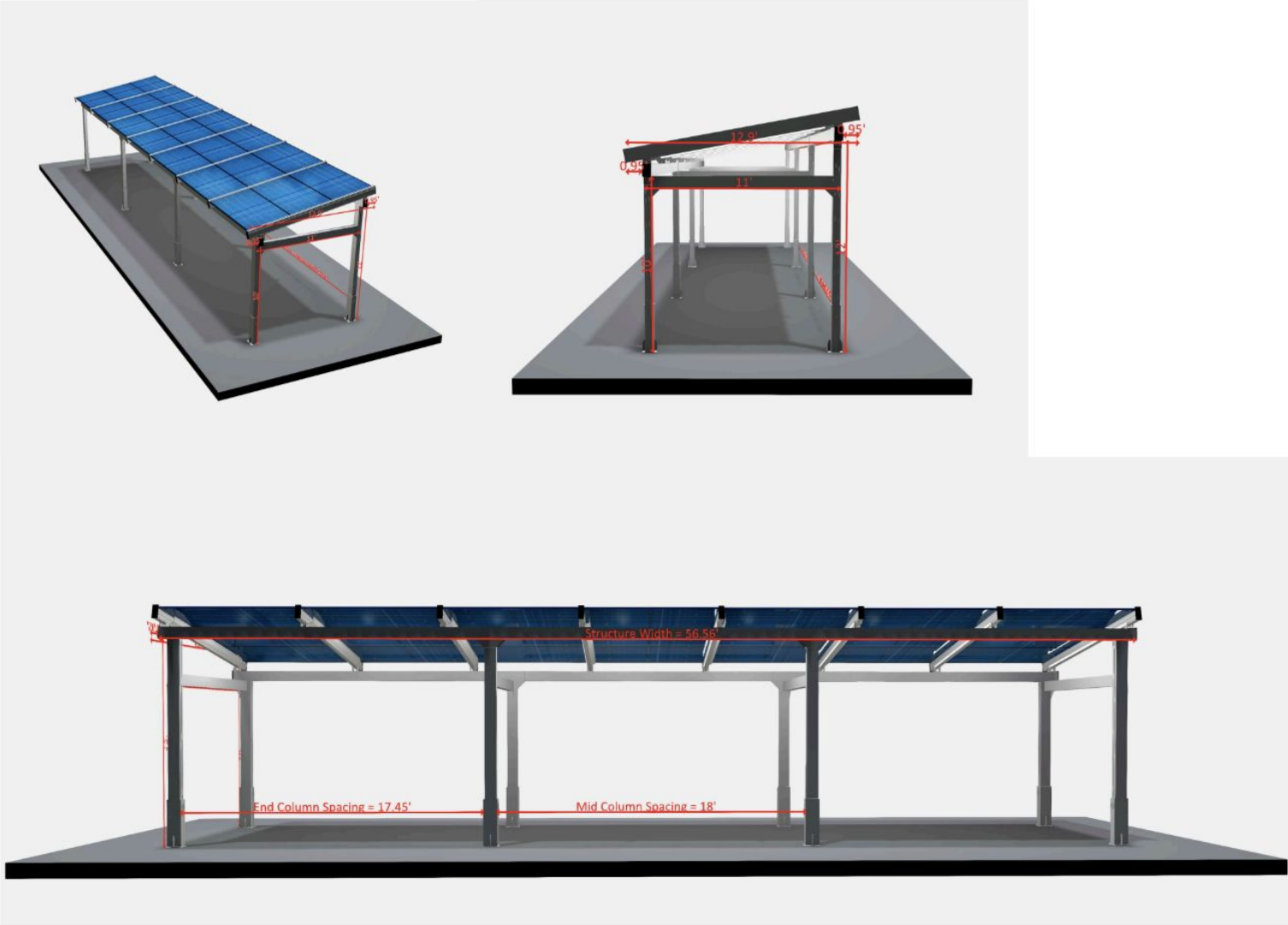
- **12.6 kWdc solar**
(average) via 21x 600W panels
- **23 kW / 27 kWh storage**
via 2x Tesla Powerwall 3s

 Potential BESS location

 New BTM solar

PLOT PLAN: SCALE:- NTS

TYPICAL SOLAR VERANDA CARPORT RENDERING



Rancho Goleta Lakeside Mobileers, Inc.
A Resident Owned Community



RANCHO GOLETA LAKESIDE
SOLAR MICROGRID

945 WARD MEMORIAL BOULEVARD
GOLETA, CA 93111
APN # 071-190-031

REVISION		
DATE	DESCRIPTION	BY
01/20/24	PERMIT PLAN	A
PROJECT INFORMATION		
NAME: RANCHO GOLETA LAKESIDE		
ADDRESS: 945 WARD MEMORIAL BOULEVARD GOLETA, CA 93111		
34.42632456383, -119.8239966103		
APN: 071-190-031		
AID: SANTA BARBARA COUNTY		
UTILITY: SCE		
PEN NUMBER:		
ELEVATION		
DESIGNER/CHECKED BY:		
SCALE: AS NOTED		REV: A
DATE: 01/23/24		S-2



- 383.4 kWdc solar (78% net zero energy of all of RGLM's electricity usage)
- 1,184.5 kW / 1,390.5 kWh via 50x Tesla Powerwall 3 batteries & 1x larger battery

Cash flow - distributed option

Years	Cash		Total Cash Flow	Cumulative Cash Flow
	PPA Payments	Electric Bill Savings		
Upfront	-	-	-	-
1	-\$191,863	\$217,175	\$25,313	\$25,313
2	-\$190,903	\$222,648	\$31,745	\$57,057
3	-\$189,944	\$228,211	\$38,267	\$95,324
4	-\$188,985	\$233,862	\$44,878	\$140,201
5	-\$188,025	\$239,601	\$51,575	\$191,777
6	-\$187,066	\$245,424	\$58,358	\$250,135
7	-\$186,107	\$251,330	\$65,224	\$315,359
8	-\$185,147	\$257,316	\$72,169	\$387,528
9	-\$184,188	\$263,379	\$79,191	\$466,718
10	-\$183,229	\$269,515	\$86,286	\$553,004
11	-\$182,269	\$275,720	\$93,450	\$646,455
12	-\$181,310	\$281,990	\$100,680	\$747,135
13	-\$180,351	\$288,321	\$107,971	\$855,105
14	-\$179,391	\$294,708	\$115,316	\$970,422
15	-\$178,432	\$301,144	\$122,711	\$1,093,133
16	-\$177,473	\$307,623	\$130,150	\$1,223,283
17	-\$176,514	\$314,139	\$137,625	\$1,360,908
18	-\$175,554	\$320,683	\$145,129	\$1,506,038
19	-\$174,595	\$327,249	\$152,654	\$1,658,692
20	-\$173,636	\$333,827	\$160,192	\$1,818,883
21	-\$172,676	\$340,408	\$167,732	\$1,986,615
22	-\$171,717	\$346,981	\$175,264	\$2,161,879
23	-\$170,758	\$353,535	\$182,777	\$2,344,656
24	-\$169,798	\$360,058	\$190,260	\$2,534,916
25	-\$168,839	\$366,537	\$197,698	\$2,732,614
Totals:	-\$4,508,769	\$7,241,383	\$2,732,614	-

Centralized solar & storage layout



- 383.4 kWdc solar (78% net zero energy of all of RGLM's electricity usage)
- 367.2 kW / 1,468.8 kWh via 1x Tesla Megapack 2 XL (4hr) battery

Cash flow - centralized option

Years	Cash		Total Cash Flow	Cumulative Cash Flow
	PPA Payments	Electric Bill Savings		
Upfront	-	-	-	-
1	-\$191,864	\$222,125	\$30,261	\$30,261
2	-\$190,905	\$227,641	\$36,736	\$66,996
3	-\$189,946	\$233,243	\$43,297	\$110,294
4	-\$188,986	\$238,929	\$49,942	\$160,236
5	-\$188,027	\$244,696	\$56,669	\$216,905
6	-\$187,068	\$250,543	\$63,475	\$280,380
7	-\$186,108	\$256,466	\$70,357	\$350,738
8	-\$185,149	\$262,462	\$77,313	\$428,050
9	-\$184,190	\$268,527	\$84,337	\$512,387
10	-\$183,230	\$274,657	\$91,427	\$603,814
11	-\$182,271	\$280,848	\$98,577	\$702,391
12	-\$181,312	\$287,095	\$105,784	\$808,175
13	-\$180,352	\$293,393	\$113,040	\$921,216
14	-\$179,393	\$299,735	\$120,342	\$1,041,557
15	-\$178,434	\$306,115	\$127,681	\$1,169,238
16	-\$177,474	\$381,533	\$204,059	\$1,373,297
17	-\$176,515	\$390,727	\$214,212	\$1,587,509
18	-\$175,556	\$400,046	\$224,490	\$1,811,999
19	-\$174,596	\$409,486	\$234,889	\$2,046,888
20	-\$173,637	\$419,040	\$245,403	\$2,292,291
21	-\$172,678	\$428,704	\$256,026	\$2,548,317
22	-\$171,719	\$438,470	\$266,752	\$2,815,069
23	-\$170,759	\$448,332	\$277,573	\$3,092,641
24	-\$169,800	\$458,281	\$288,481	\$3,381,123
25	-\$168,841	\$468,309	\$299,468	\$3,680,591
Totals:	-\$4,508,810	\$8,189,401	\$3,680,591	-

WITHOUT a Community Microgrid:

On average, RGLM pays **\$0.35/kWh**.
Considering average electricity use of a
mobile home (5,000 kWh) → **annual bill
of \$1,750.**

Electricity prices escalate at an estimated
5% annually. **Conservatively, in just 5
years, your annual bill would raise to
\$2,234.** That's an increase of almost \$500!

When the power goes out,
you can't serve any of your
loads.

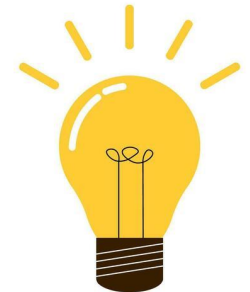


WITH a Community Microgrid:

RGLM pays **\$0.30/kWh for all solar
generation and \$0.35/kWh for
remaining electricity from the grid.**
Considering average electricity use of a
mobile home (5,000 kWh) → **annual bill
of \$1,575.**

Electricity costs are **frozen** for 25 years.

When the power goes
out, your critical loads
(fridge, Wi-Fi, some
lighting) stay on.



With a Community Microgrid, the average mobile home would save \$1,795 in electricity costs in the first 5 years, in addition to benefiting from resilience. As electricity prices escalate, savings will increase.

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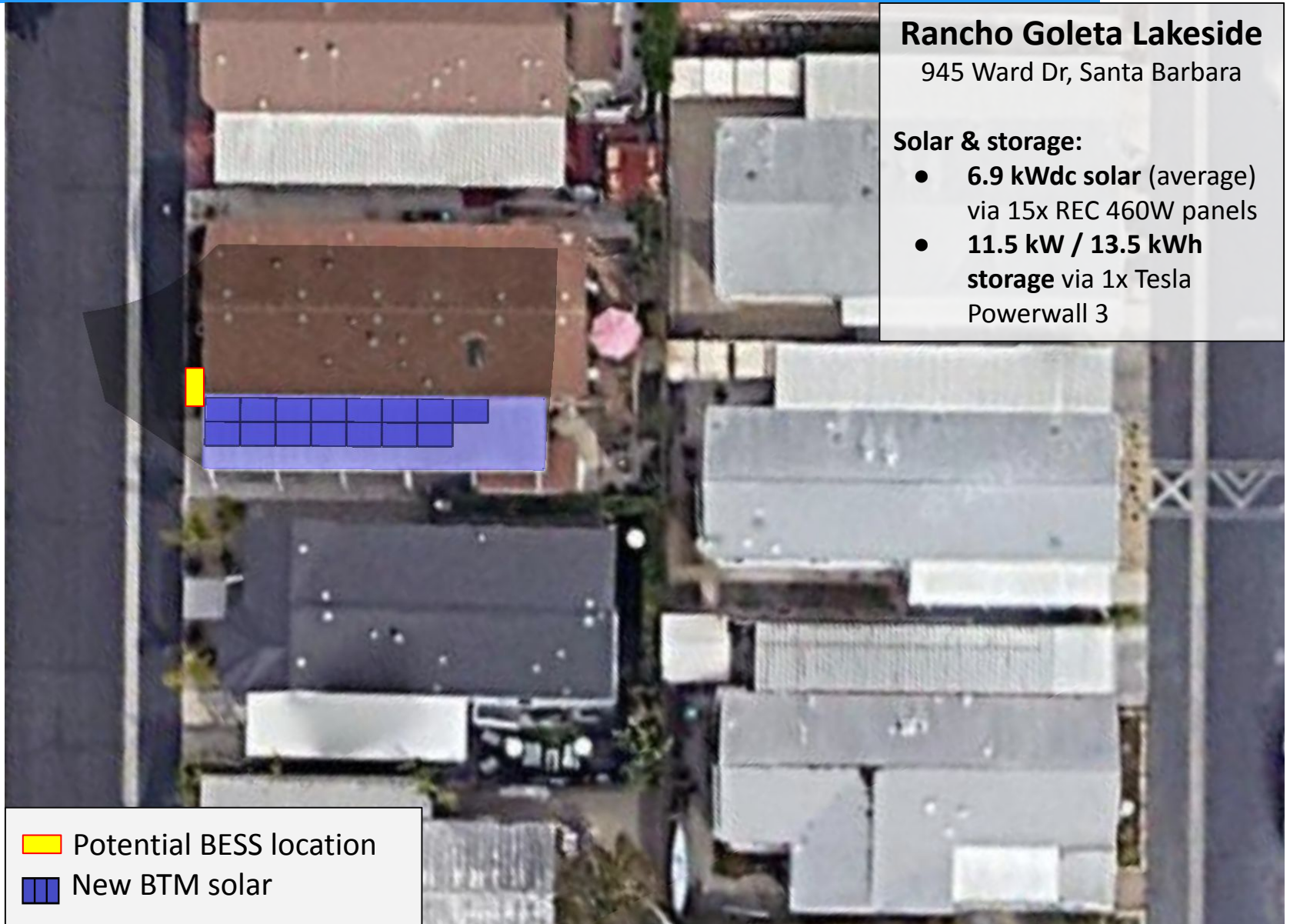
Recommendations, survey, Q&A

Rancho Goleta Lakeside

945 Ward Dr, Santa Barbara

Solar & storage:

- **6.9 kWdc solar** (average) via 15x REC 460W panels
- **11.5 kW / 13.5 kWh storage** via 1x Tesla Powerwall 3



 Potential BESS location

 New BTM solar

Individual Solar Microgrid Costs	
6.9 kWdc solar with 15x REC460 panels:	\$23,700
13.5 kWh storage with 1x Tesla Powerwall 3:	\$14,500
Total:	\$38,200

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We recommend that RGLM moves forward with a Community Microgrid to take advantage of the trifecta of economic, environmental, and resilience benefits.

In addition, residents should consider moving forward with an individual solar microgrid for their home.



The CC would like to do metering on households that will potentially be sites for solar + storage.

- How many households would be interested in installing solar and storage at their homes?
- How many households are interested in heavy electrification? This includes EV charging, HVAC heat pumps, and hot water heat pumps.

Reach out with any questions: stella@clean-coalition.org

Backup slides

Step 1

Load Profiles

- Baseline: Historic site energy use
- Adjustment: Future anticipated loads (EVs, electrification)
- Master: Baseline + Adjustment Profiles
- Critical: Mission-critical, life-sustaining loads that warrant 100% resilience

Tools:

- Clean Coalition's Solar Microgrid Analysis Platform (SMAP)
- UtilityAPI

Step 2

Resource Scenarios

- Design & size solar and Battery Energy Storage Systems (BESS)
- Run shading analyses + energy modeling
- Determine resilience based on different resource scenarios

Tools:

- Helioscope
- Clean Coalition's SMAP

Step 3

Site Layouts

- Best practices when performing site walks
- Identifying critical load pathways
- Mapping site layouts

Tools:

- Clean Coalition's site walk checklist and photo instructions
- Site layout templates
- Google Slides/PowerPoint

Step 4

Economic Analysis

- Analyze cash purchase vs. PPA economic transactions
- Apply financial incentives such as the Investment Tax Credit (ITC), Self Generation Incentive Program (SGIP), and depreciation.
- Assess the Value of Resilience

Tools:

- Energy Toolbase Developer
- Clean Coalition's SMAP

Step 5

Reporting & Recommendations

- Create final reports with key visuals and summary tables
- Present findings and propose next steps

Tools:

- Energy Toolbase Developer
- Google Slides/PowerPoint

<u>Load Type</u>	<u>Definition</u>
Baseline load profile	The historical annual usage of electrical loads per site that forms the basis for creating the master load profile.
Adjustment load profile	Adjustments for anticipated EV Charging Infrastructure (EVCI), electrification, energy efficiency, and new facilities.
Master load profile	The forecasted annual load profile used for this study's analysis, created from the baseline load profile plus adjustments for anticipated EV Charging Infrastructure (EVCI), electrification, energy efficiency, and new facilities.
Critical load profile	Annual load profile of the critical loads.
Critical loads	Electrical loads that are necessary to be provided with 100% energy resilience during grid outages
Total Critical Load Required (TCLR)	Total amount of energy required to serve the critical loads over the specified time period.