Advanced Energy Communities Symposium

February 19, 2026

CEER RESOURCES | ciee California Institute for Energy and Environment | CITRIS AND THE BANATAO INSTITUTE | MCE | ZNE/Alliance | the Energy Coalition | the climate center

Housekeeping and Reminders

- Sessions will be recorded and shared with attendees afterward.
- Members of the press are in attendance today.
- Bathrooms are available on the first and second floors.
- Wifi: “TCEGUEST” – no password | Upon connecting, open a browser to www.calendow.org to accept “Use Policies.”
- Lactation Room: Located on the 2nd floor, off of the elevator, across from the Lake Merritt room.
- *Please silence your cell phone and if needed, take calls in Elmhurst, Eastmont, Uptown, Business Center, or outside of the building.

Welcome and Agenda Overview

Ellie Cohen, The Climate Center

Richard Schorske, ZNE Alliance

Agenda

https://bit.ly/aec-agenda

Advanced Energy Communities – *Design, Results, & the Way Forward*

Erik Stokes, CEC Senior Advisor to Commissioner Gallardo

AEC Project Highlights & Lessons Learned

Moderator: Anthony Ng, Manager, Technology Innovation and Entrepreneurship Branch, CEC

Panelists:

- **Bassett – Avocado Heights Advanced Energy Community** (Los Angeles County) – The Energy Coalition (Genaro Bugarin, TEC)
- **Oakland EcoBlock** – California Institute for Energy and Environment at UC Berkeley (Therese Peffer, CIEE)
- **Lancaster Advanced Energy Community** – ZNE Alliance with City of Lancaster (Richard Schorske, ZNEA)
- **Richmond Advanced Energy Communit**y – ZNE Alliance with MCE (Chris Sentieri, CEER)

Project Highlights and Lessons Learned

A Team Effort

Public Agency Partners

CPA CLEAN POWER ALLIANCE

Los Angeles County Supervisor HILDA L. SOLIS First District

Implementation Partners

ACTIVE SGV

GRID ALTERNATIVES Greater Los Angeles

Haven

acLima.

Mobility Development

Pivot Energy

COMMUNITY electricity.io

EVCS

URBAN US

perlstreet

QCS QUALITY CONSERVATION SERVICES

SCT SENSORCOMM TECHNOLOGIES IoT Solutions for Transportation and Healthcare

TreePeople

UC RIVERSIDE

UCLA California Center for Sustainable Communities

enso Building Solutions

WATER HEATER WAREHOUSE

EVmatch

greencommuter It's how we roll.

veic

Complementing Funding Partners

LACI

TECH CLEAN CALIFORNIA

Technical & Community Advisory Committees (TAC/CAC)

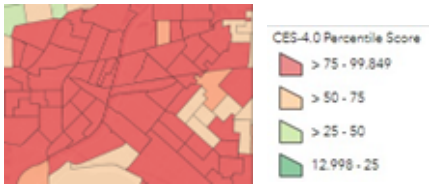
Bassett Avocado Heights (and adjacent cities) Advanced Energy Community (BAAEC)

Aug 2020 - June 2026

A team of local nonprofits, community organizations, and energy technology leaders bringing equity to the clean energy transition of low-income and disadvantaged communities

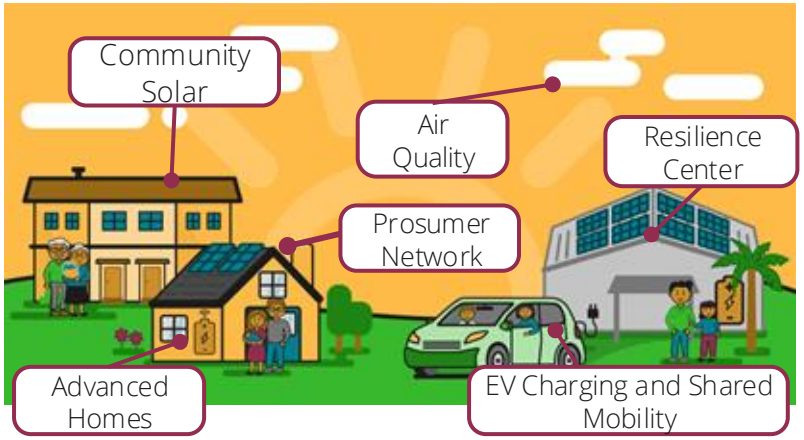
Eastern Los Angeles County

Pollution Burden



Median Household Income

Project Components



Goals:

- Meet local demand with equitable energy strategies
- Use portfolio-of-strategies approach to energy community transformation
- Focus on low income households and DACs
- Develop replicable models to scale

BAAEC Strategies/Technologies and Results

Advanced Homes

46 Homes with solar (192KW)

45 homes with batteries **1 MWh**

$359K SGIP bridge financing

78 Electrification upgrades across **53 homes**

Incentive Stacking

- CEC
- DAC SASH
- SGIP
- TECH Clean CA
- LACI/QSGa

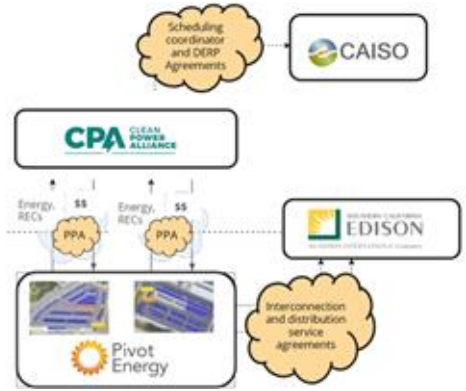
Prosumer Network

Our simulation showed a 9% bill savings when prosumers met supply / demand within the community.

Community Solar

Two sites and 670 KW FOM rooftop solar, serving 360 households with 20% bill savings

First CAISO DER Aggregation



BAAEC Strategies/Technologies and Results

36 EV Chargers

30 at 3 local schools

6 at homes, publicly accessible

Zero-Emissions Mobility from Vanpool and Fixed Route Microtransit

175 signups, 36 enrolled, 11 participants

SGV CARSHARE
CLEAN MOBILITY

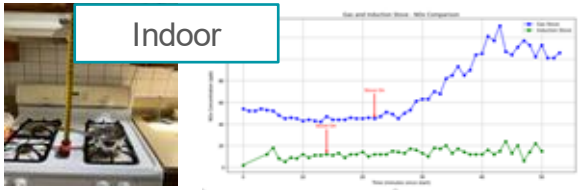
Resilience Center (Design)

Site selection, 60% design, stakeholder sign-off, design/cost vetting, agreement signed-off

Air Quality Monitoring

NOx (NO & NO_2)

PM2.5, NO2, CO, O3, and Black Carbon



PM2.5, NO2, CO, and formaldehyde

Community Outreach

151
outreach activities

Authentic community-led outreach with wraparound customer support

1. Partnerships - **early and throughout** - with community organizations and public agencies
2. Provide **turnkey, wraparound** support around health, safety, social, and economic concerns
3. **Diverse strategies**: presentations, workshops, demos, pop-ups, canvassing, digital, mailers.

	Advanced Homes	Community Solar	EV Charging/ Shared Mobility
Interested	700+	400+	175
Served	67	360	11

Customer/Partner Experience

Watch the BAAEC Video!

Challenges and Lessons Learned - #1

Challenge

Diverse and extensive outreach and partnership building was required

- Multigenerational households
- Local government endorsements

Lesson Learned

Necessary differentiation & trust building; endorsed portfolio of strategies

Replicability Recommendation

- Increase funding for outreach and community engagement, CBO/community capacity building
- Foster cross-sector collaboration
- Invest in root-cause solutions

Challenges and Lessons Learned - #2

Challenge

- Free is not enough
- Positive net present value (NPV) is not enough

Lesson Learned

- Not transactional, concierge-type support
- Buy-in process is often iterative rather than linear
- Need for turnkey and wraparound services

Replicability Recommendation

- Education-led outreach and community empowerment
- Non-technology solution first: what are we solving for?
- Stakeholder mapping is key: who delivers the solution? Who decides what?
- Fund wraparound support services

Challenges and Lessons Learned - #3

Challenge

Tension created by for-profits' focus on short-term gains that couldn't be realized

- 10 partner changes
- 3 business closures

Lesson Learned

- Mission-aligned private partners are a must
- The right business partner for the project
- Business misalignment similar to bad actors

Replicability Recommendation

- Focus on long-term solutions, supported by peer learning, with mission aligned partners

Challenges and Lessons Learned - #4

Challenge

- Reimbursable rebates
- Extensive site remediation costs

Lesson Learned

- Avoiding the hard-to-reach, serving the low-hanging fruit, does not help our inclusive and equitable clean energy goals

Replicability Recommendation

- Develop shared infrastructure
  - SGIP bridge financing facility
- Fund remediation costs with creative solutions
  - Partial re-roofs

Challenges and Lessons Learned - #5

Challenge

Lack of data access & DER interoperability
- Whole-home load management challenges
- Device API vs. edge device

Lesson Learned

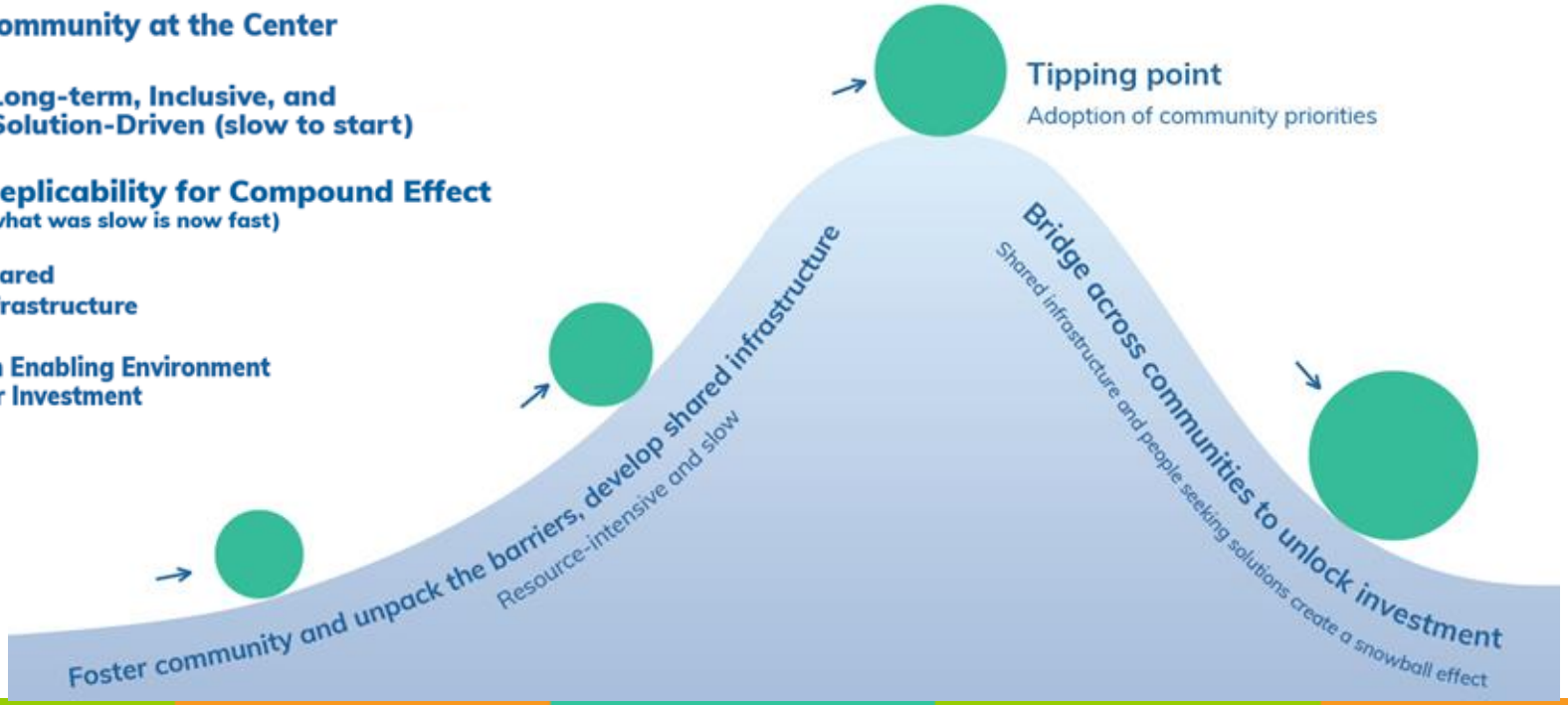
- Standards are only the beginning
- Elusive grid services value

Replicability Recommendation

- Strengthen data access policies that demonstrate the value of local power to meeting grid/market needs

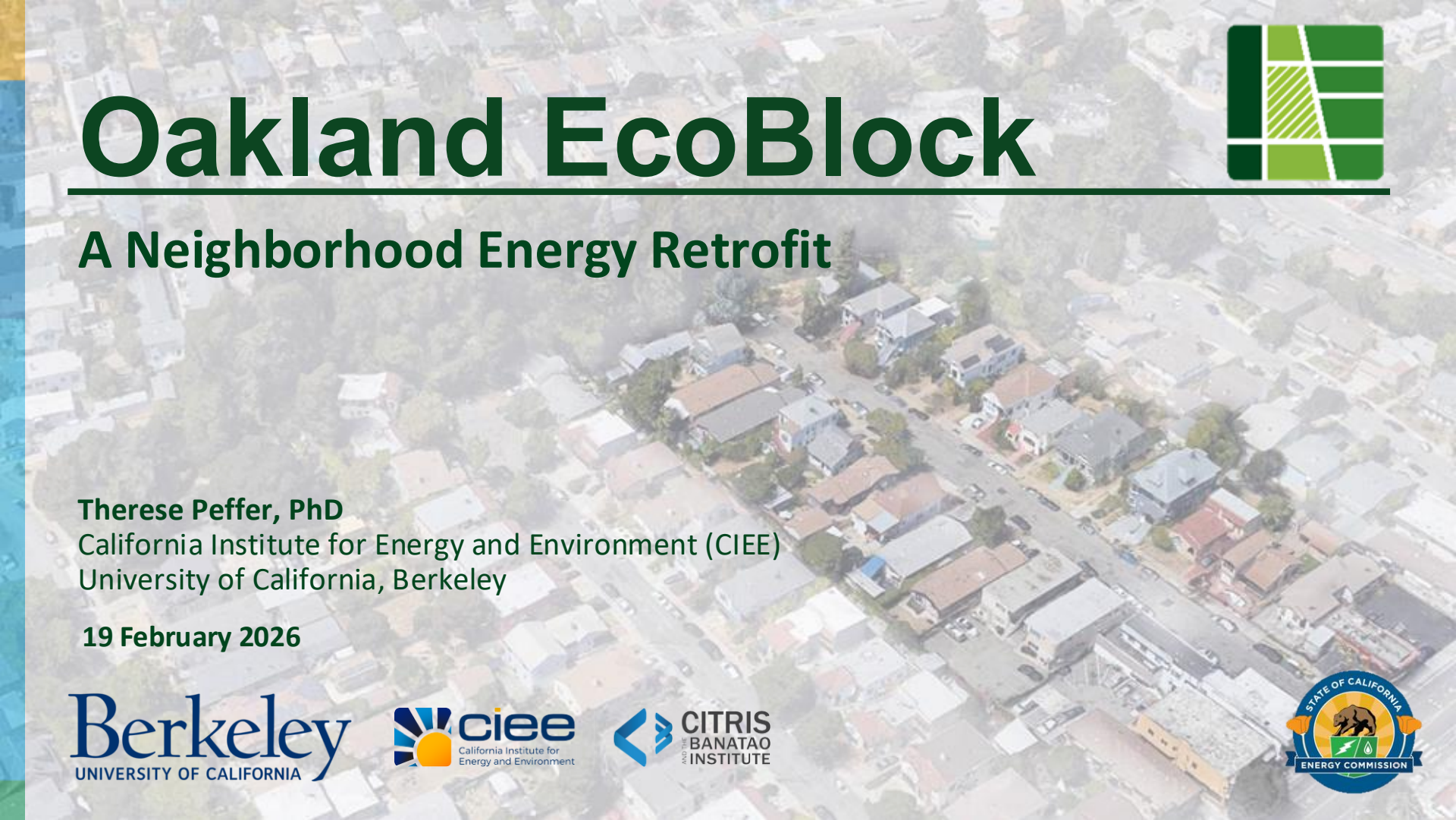
BAAEC Guiding Principles for Replication

- **Community at the Center**
- **Long-term, Inclusive, and Solution-Driven (slow to start)**
- **Replicability for Compound Effect**
  (what was slow is now fast)
- **Shared Infrastructure**
- **An Enabling Environment for Investment**



Oakland EcoBlock

A Neighborhood Energy Retrofit



Therese Peffer, PhD
California Institute for Energy and Environment (CIEE)
University of California, Berkeley

19 February 2026

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STATE OF CALIFORNIA ENERGY COMMISSION

Oakland EcoBlock Team

Partners

City of Oakland

Technical Advisory Committee

U.S. Green Building Council USGBC

Bassett | Avocado Heights advanced energy community

NISSAN

it's electric

ZNE/Alliance

EcoBlock Community Association

ecoblock™

Sponsors

State of California Energy Commission

EPA United States Environmental Protection Agency

Oakland Fund for Public Innovation

Anonymous Donor

Utilities

PG&E

Ava Community Energy

EBMUD

Research

Berkeley University of California

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CITRIS Banatao Institute

Renewable & Appropriate Energy Laboratory RAEL

tsrc

Berkeley Law Center for Law, Energy, & the Environment

Berkeley Lab

Implementation

one Oakland Neighbors for Equity

Sun Light & Power

Eco Performance Builders

Heila

Sherwood Design Engineers

MIG

Siegel & Strain Architects

SmartBlock communities

Perkins Coie

Introba

Tuttle Law Group

Association for Energy Affordability

UTILITY

Morgan Lewis

David Taussig & Associates

CDL Civic Design Lab

MGL Microgrid Labs

Goals

- Reduce greenhouse gases
  - Focus on **existing older urban** homes
  - Provide solar/energy upgrades
  - Shared e-mobility
- Leverage **economies of scale** by aggregating homes in a block
- Activate and strengthen **community**
  - Community-owned rooftop solar
  - Education
  - Quality of life (comfort, safety, resilience)
- Improved Sustainability
  - Trees, reduced concrete in sidewalk strips
  - Reduced water use/waste water/storm water
- Develop a path to **scale**

Often LMI-owner
Built before energy code
Save embodied carbon

Lower construction costs,
Bulk purchasing,
Peer adoption

Strategies

Block self-nominated
Hire a community liaison
Hold block meetings
Provide tangible benefits
Community-owned solar

Social

Technical

Home energy upgrades
Stormwater mitigation & street planting
Design Microgrid
Design curbside EV charger & EV car share

Developed business models
Detailed plan (O&M, insurance)
How to scale

Financial

$

Regulatory & Legal

Work with PG&E on microgrid
Create HOA
Improved permitting

Community Engagement

- Activate neighbors
  - Blocks self-organize and self-nominate
  - Build trust
  - Tangible projects: tree planting
  - Opportunities for community to volunteer and lead!
- Work with community liaison or CBO
  - Foster two-way discussion
  - Educate
  - Provide translation and interpretation
  - Used consensus method to understand objections
- Provide opportunities for neighbors talk to each other—especially about new technologies!

More in breakout

Drawing by Nora Scully

Oakland EcoBlock Overview

- Of the 25 properties total on the block, 15 properties participated (25 units)
- 40% single family, 60% 2-4 family
- Lot size ~4000 sf (372 m2)

Finance/Business Models

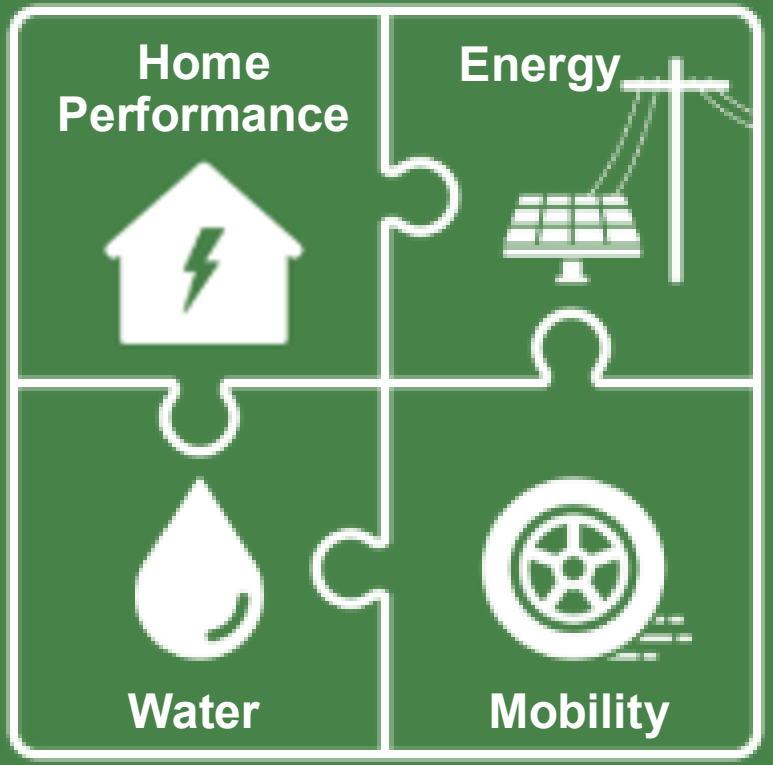
- Grant money funded energy upgrades
- Loans may not be appropriate for LI HH
- Developed potential business models
  - Leverage economies of scale/rebates
  - Tariffed on-bill financing for within homes
  - Third party “Energy as a Service”
- Community ownership/governance
  - Microgrid (design with fees offsetting operation, maintenance and insurance)
  - Curbside EV charger & car share (design with separate submeter, third parties)
  - Rooftop solar on 15 structures
    - Working with Ivy Energy to share solar credits & figure fees to cover insurance costs

Kate Ringness in Business Model breakout

Rich Brown in Microgrid breakout

Rich Brown in Affordability breakout

Technology



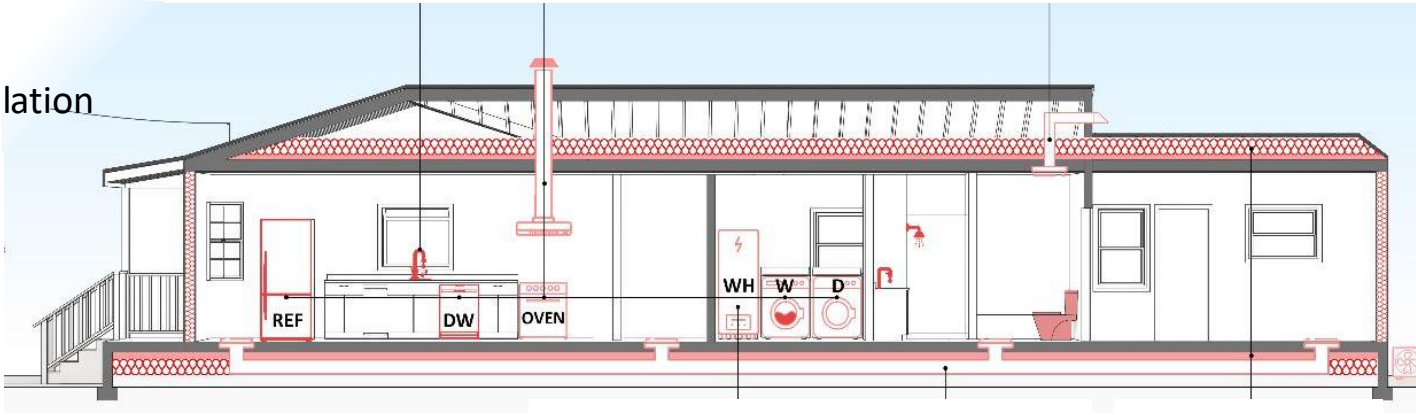
Energy Home-Based Improvements

- Improved **air quality**
  - Fuel switching
  - Exhaust fans
- Improved **comfort**
  - *Air sealing & insulation
  - Heat pump space conditioning
  - Balanced air flow/ new ducts
- Upgraded service
  - New electric panel
  - Upgraded service/meter

**where possible*

Fuel switching cooking and clothes dryers

Mechanical ventilation (fans)



Heat pump water heater

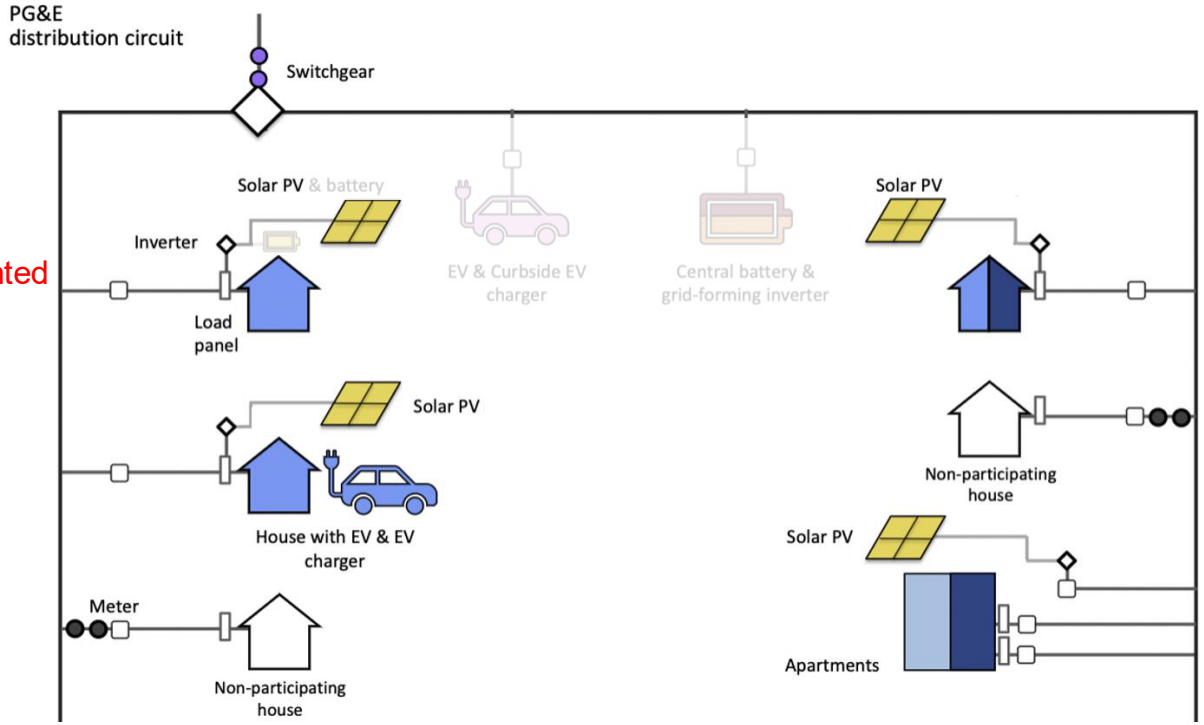
Heat pump space conditioning

Air sealing and insulation

Community Microgrid (design)

- **PG&E** owns & operates overhead wires, transformers & protective devices
- ~100 kW solar on 15 roofs
- 125 kW/250 kWh LiFeP battery
- Grid forming inverter and grounding transformer
- Shared curbside EV charger charges **shared EV**
- FOM and BTM solar and BESS
- Not all houses need to join

implemented



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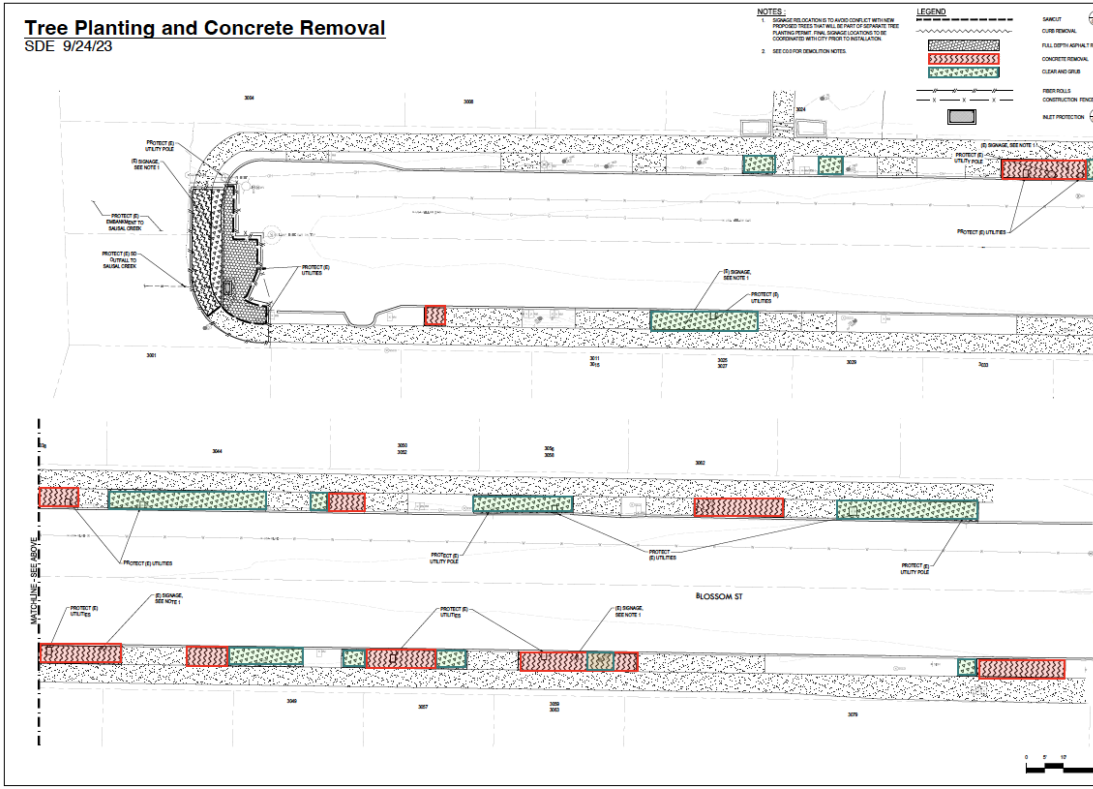
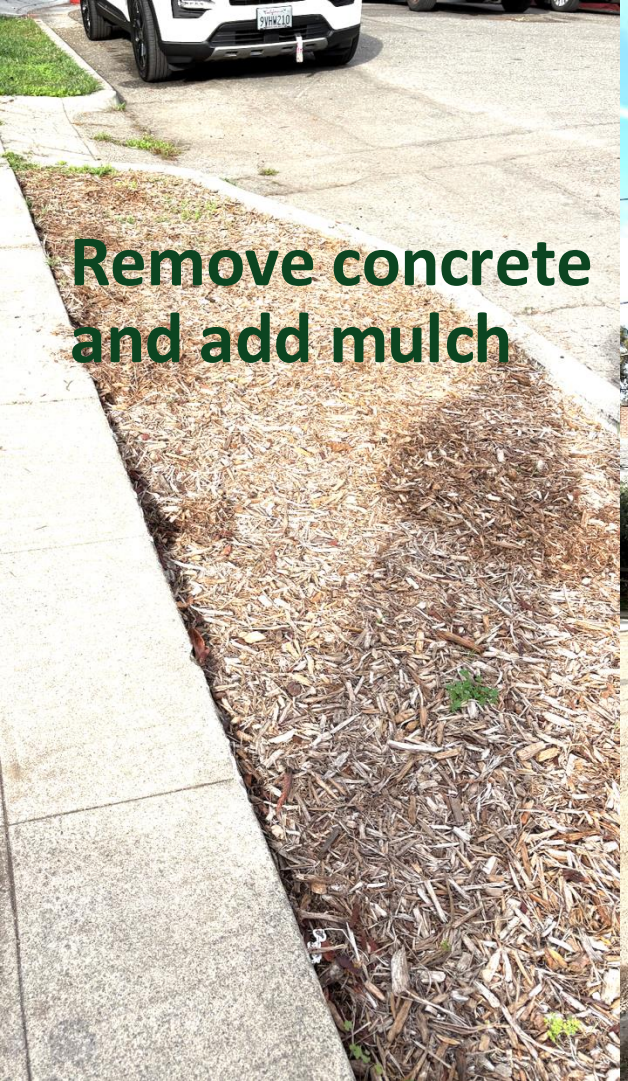
Water conservation and reuse; stormwater mitigation

- Low flow water fixtures (design only)
- Laundry to landscape irrigation workshop
- Biodetention swale at end of block before creek to slow & clean water
- Removed concrete in sidewalk planting strips
- Planted swale, planted trees, added mulch




Remove concrete
and add mulch


Trees


Plants

Mobility (design)

- **Curbside Electric Vehicle (EV) charger**
  - Company: It's Electric
    - Work with homeowner
    - Submeter from house for charger
    - Cord stays with the car
  - City: major encroachment permit
  - Not open to public, so City would not dedicate the parking spot for EV

- **EV car share** for block participants
  - Majority responded they would get rid of a second car if they had access to car share!
  - Difficult to find car share company that works with private group

Challenges/Barriers (1)

Social

- Engaging participants—decarbonization is a hard sell!
- Language barriers

Technical

- Home Energy Management Systems—technology/usability is not there
  - Reliance on WiFi (renters? Power outages?)
- Reliability of heating and cooking after fuel switching w/o battery
- Old systems
  - knob and tube wiring expensive to replace, but can't insulate broken windows

Challenges/Barriers (2)

Financial

Microgrid was expensive in this location, not valuable for resilience

Rebate programs change, run out of money, hard to keep track

Some people's bills increased

uninsulated homes, after electrification, before solar

Regulatory/Legal/policy

Nonconforming existing conditions: unpermitted work

Legal documents (NEM) not available in languages other than English

Potential rent increase after improvements

Aggregation of applications—systems not ready for this

Homeowners nervous about property tax increase

Fire suppression and land use issues for Energy shack battery shed

"Own use" rule for sharing energy

Lessons Learned

It is easier and cheaper to electrify together rather than by yourself

- Engage the Community!
  - "Change moves at the speed of trust" - Stephen M.R. Covey
  - Tangible projects: tree planting, share recycling
  - Address quality of life
  - Provide education and provide opportunities for **neighbors to talk to each other**
- Conduct home performance along with electrification! (and solar)
- Low cost across the board
  - Low-power electrification when possible: 120V systems, smart switching
- Leverage economies of scale!
  - Bulk purchases, coordinated installation
- Preserve existing housing stock!
  - Address equity, support lower embodied carbon

Questions?

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Lancaster Advanced Energy Community

Project Overview & Lessons Learned

AEC Symposium | 02.19.26

Richard Schorske, Executive Director, ZNE Alliance

California Energy Commission
50 YEARS OF ENERGY LEADERSHIP

LANCASTER ENERGY

ZNE/Alliance

CEER
COMMUNITY ENERGY & EQUITY RESOURCES

SERIOUS CONTROLS

GOALS

- **Deploy community microgrids & DERs** to enhance resilience, reduce customer costs
- **Establish a Green District** program to model innovative tariffs, share VPP revenue, & provide turn-key DER/Microgrid project development for customers
- **Develop a VPP / DER Management System** to lower costs, strengthen grid, and demonstrate CCA capacity to implement DR programs & access CAISO market revenue

CONTEXT - Lancaster Clean Energy Leadership

Demographics: population: 170,000; diverse; $29K per capita; high growth

- 2013 -- **First solar mandate** in US, highest PV production in CA per capita
- 2014 -- **BYD e-bus & battery factory**, first US city with 100% electric bus fleet
- 2019 -- **Achieved ZNE** by producing more clean energy than the City consumes
- 2023 -- **Statewide licensee for CCA Virtual Power Plant** platform licensing
- 2025 -- **Founded statewide public hydrogen energy authority**

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Creating a better tomorrow. Together.

TEAM

- **ZNE Alliance:** prime contractor to CEC
- **City of Lancaster Energy:** CCA partner
- **Community Energy & Equity Resources** (CEER): strategy & facilitation
- **Serious Controls:** VPP developer & DER deployment
- **TRC:** Measurement & Verification
- **Tierra Resource Consultants & Climate Center:** Knowledge Transfer
- **Mynt Systems:** Microgrid developer
- **Gridscape Solutions:** Microgrid developer
- **Re-Imagine Power:** Microgrid policy

Why Do AECs, VPPs and CCAs Matter?

- **State could save $5 B/year**+ by 2035 with scaled VPP deployment
- **Optimization opportunity**
  - Resi battery growth: 240 MW in 2020 to 1800+ MW in 2025
  - VPPs needed to optimize these assets for community & customer benefit -- including flex loads, all DER types, and EV charging
- **VPPs must be affordable & ubiquitous** – third party for-profit aggregator model is <u>not</u> achieving this goal
- **Our thesis: CCA ownership & control of VPPs** will enhance economic & resilience benefit for communities and ratepayers

STRATEGIES: Community Microgrids & Green District DERs

- **Create scalable resilience** with solar+storage projects, microgrids, and flex load assets integrated with VPP – the Lancaster "Green District"
- **Provide backup for key facilities** – e.g., Police Station & City's largest church (9000 members)
- **Build foundation of community-wide Microgrid network** by concentrating microgrids & batteries in City core (City Hall, Police Station, Toyota Dealership, & Baptist Church)
- **Incentivize VPP integration with flat rate tariff:** 11 cents/kW incentive for VPP participation

Police Department

Lancaster Toyota Dealership

Lancaster Baptist Church

STRATEGIES: Microgrid Network for Affordable Housing

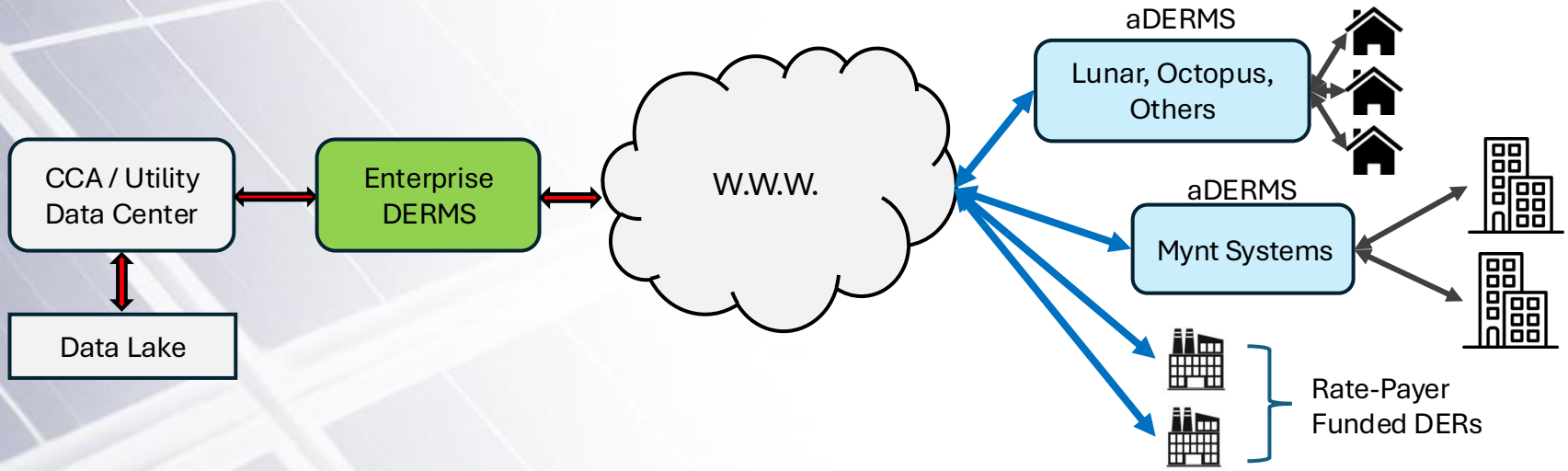
- **224 unit affordable development** contracted by City to Bridge Housing
- **Two years+ of planning** for “HNR-1” Project on City-owned parcel
- **Initial concept:** integrated microgrids at multiple buildings & sites
- **SCE cited PUC Rule 218** to block “over-the-fence” connections -- after initial encouragement
- **CPUC Track 4 Proceeding for Microgrids** failed to provide relief for Rule 218, a Multi-meter Microgrid Tariff or Interconnection reform
- **Bridge Housing pulled out of project** due largely to COVID, interest rates
- **Lessons learned & policy concepts** in *Community Microgrid White Paper*
- **Next Steps:** Advance policy recommendations with AEC stakeholders, *Grid for the Future Coalition,* Re-Imagine Power, et. al.

LESSONS -- Microgrid Network & Green District

- **Bill savings** can be robust with VPP incentives and active load management
- **Turnkey project design & delivery** is essential for customer engagement
- **CCAs and project developers need to better integrate:**
  - Customer and grid analytics (capacity, upgrade needs, etc.)
  - Incentives & finance
  - Customer engagement
  - Installation and O&M
- **Distributed Capacity Procurement with AEC model** has potential to accelerate scale up by aligning core processes in a turn-key approach
- **More stable incentives** needed for scale economies & process streamlining
- **Permitting & interconnect delays** require CPUC action

Strategy: CCA Enterprise DERMS and Aggregator DERMS

- Enable multiple **Aggregator DERMS** to connect customers and load into CCA programs
- Aggregator DERMS integrates through CCA-operated **Enterprise DERMS** to manage program rules, market participation, and settlement at the enterprise level
- This structure ensures **fairness, transparency, and interoperability** across providers



Lancaster eDERMS Use-Cases

- **Custom use cases developed for CCA's portfolio, market position, & community goals**
- **Lancaster investment in a perpetual site license enables all CCAs to affordably procure and maintain an Open-ADR compliant VPP/DERMs and *operate under CCA control***

Monitoring for Situational Awareness

- Both Controlled & Uncontrolled DERs
- Informs DER Capacity Forecasting & Dispatch Planning
- Supports Value Optimization

Operational Cost Avoidance

- RA Forecasting and Mitigation
- NEM Customer Load-Shift
- Congestion Price Mitigation
- Respond to prices & positions (Day ahead, etc.)

Soft Cost Savings

- MIDAS Dynamic Rate Participation
- Track and Report Renewable Energy Credits
- Replace Call Options or Use the VPP as a Call Option
- New VPP Hedging Strategy

Knowledge Transfer – Key Elements

- **Community Microgrid White Paper & Policy Strategy**
  - **Revise Rule 218** to enable "over-the-fence" connections for community MGs
  - **Create a Community Microgrid Operator** (CMO) designation to enable "light touch" regulatory framework that streamlines Community MG deployment
  - **Encourage utilities to enter contracts with CMOs** for capacity and other services
  - **Mandate reductions in interconnect costs and timelines** for MG projects
- **"Grid of the Future Coalition"** facilitated by Climate Center with support from AEC partners – legislative strategy and potential ballot measure in development now
- **AEC Acceleration White Paper** in development for distribution to key stakeholders
- **Scaled Finance strategy** in process with Energy Coalition and other stakeholders to develop regional climate and resilience bonds in LA, Bay Area, & Central Valley

Richmond Advanced Energy Community

PRIMARY GOALS for the RICHMOND AEC

Demonstrating Innovative Community Energy Programming

01

Provide Equitable Solutions in a DAC

Creating accessible pathways to beneficial energy systems for underserved customers in a severely disadvantaged community

02

Demonstrate a Community-focused VPP

Implementing a comprehensive, heterogeneous VPP program that produces measurable value for a diversity of stakeholders at the community level

03

Enhance Local Resiliency to Grid Outages

Incorporating battery energy storage systems and smart controls, along with real time system monitoring to provide verifiable resiliency benefit

04

Share Value Created with Participants

Exploring incentive and tariff structures, performance evaluation methodologies, & viable approaches to pay-for-performance for vendors

KEY AEC STRATEGIES AND INNOVATIONS

CCA as Demand Response Provider

CCAs are uniquely positioned to provide the necessary leadership & innovation to produce valuable grid services, decarbonization, resiliency, & community level cost saving and rate stability

Enterprise-level DERMS

A highly flexible & powerful platform for creating & optimizing VPP value that was purpose-built for CCA applications using open communication standards & that comes with a novel Perpetual User License

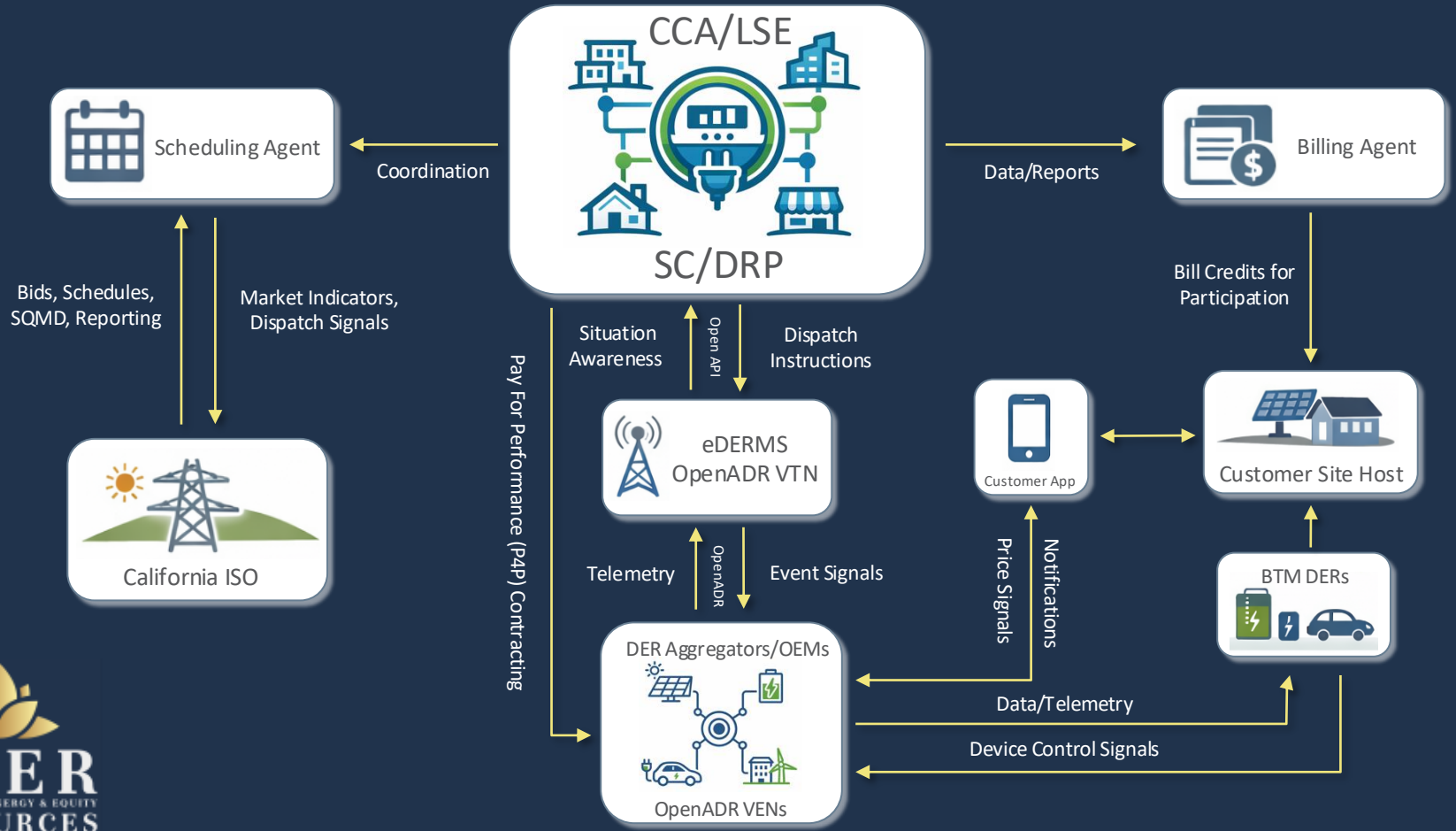
VPP Value Sharing Incentives

A first-of-its-kind VPP Tariff was developed to compensate participating residential & commercial customers through a simple monthly bill credit structure, including annual M&V & true-up for C&I

Innovative Financing Structures

The project leveraged two important financing mechanisms to help customers access capital, including a Social Impact Bonds for the ZNCR Homes & a Revolving Loan Fund with below-market rates

CONCEPTUAL VPP DESIGN



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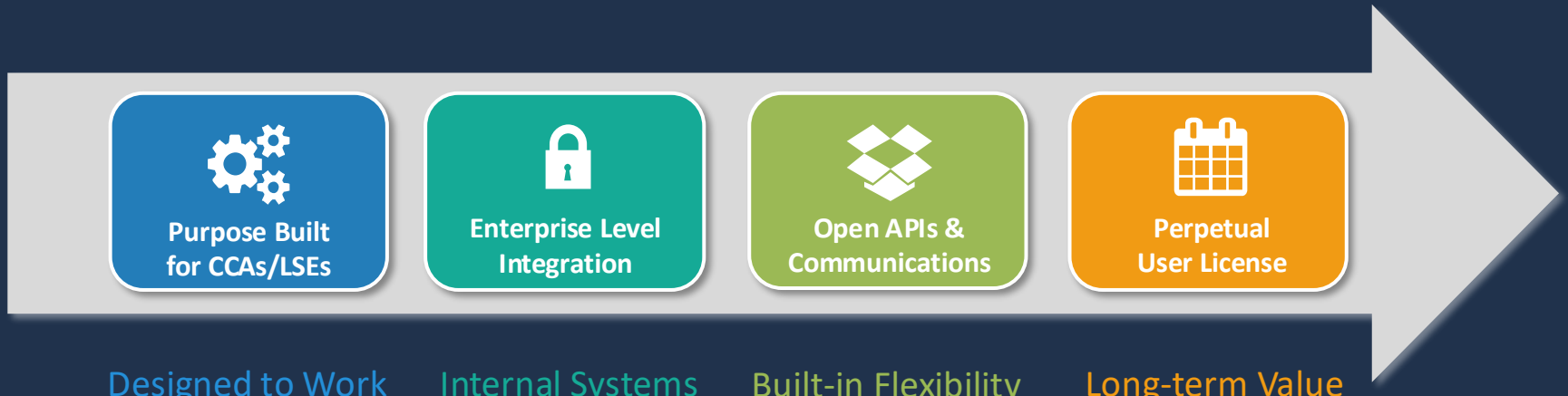
COMMUNITY ENERGY & EQUITY RESOURCES

Key AEC Technology Innovation

AN ENTERPRISE-LEVEL DERMS

SERIOUS CONTROLS



Designed to Work

- Uses Common CCA Data
- Supports P4P Contracting, Dynamic Rates, & Tariffs
- Supports ISO Participation

Produces

- RT Situational Awareness
- Pathways to Revenue & Cost Savings

Internal Systems

- Full Visibility & Control
- Operational Integration
- Robust Cybersecurity
- Measurable & Verifiable Value Creation

Protects

- Intellectual Property
- Data Security

Built-in Flexibility

- Utilizes Open-source Code Packages
- OpenADR Communication
- Vendor Agnostic
- Mitigates Vendor Lock-in

Provides

- Interoperability
- Expandability

Long-term Value

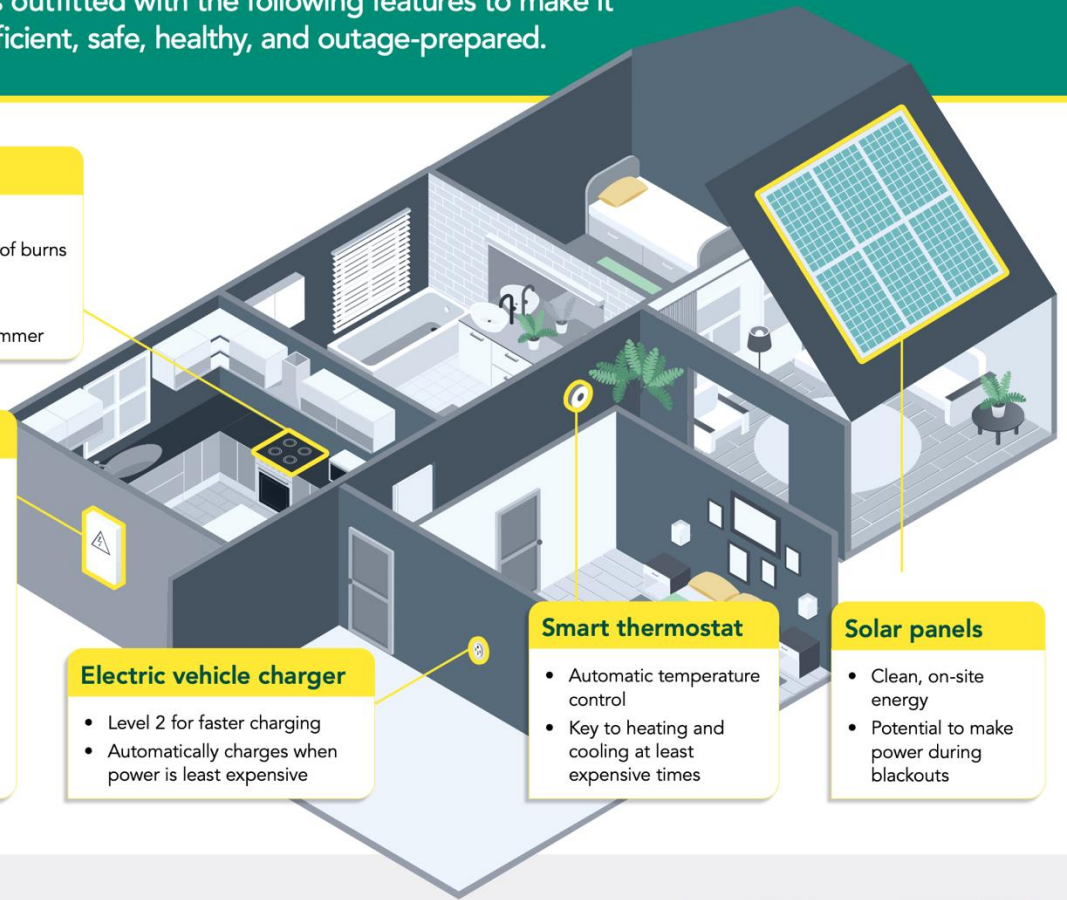
- Low-cost Implementation
- Enables ROI
- Automatic Updates & Enhancements
- Reliable Internal Resource

Promotes

- CCA Co-Development
- Sustainable CCA VPPs

CONCEPTUAL ZNCR HOME DESIGN

This home is outfitted with the following features to make it optimally efficient, safe, healthy, and outage-prepared.



Induction stove

- Faster heating
- Safer cooking—lower risk of burns
- Reduces risk of home fire
- Cleaner indoor air
- Keeps homes cooler in summer

Battery

- Automatically charged from solar panels to store energy for use during outages and at specified times
- When grouped with other batteries in the VPP, can provide power to the grid at critical times to improve reliability
- Homeowner gets monthly bill credits for providing battery access to MCE

Electric vehicle charger

- Level 2 for faster charging
- Automatically charges when power is least expensive

Smart thermostat

- Automatic temperature control
- Key to heating and cooling at least expensive times

Solar panels

- Clean, on-site energy
- Potential to make power during blackouts

MCE

ZNE/Alliance

SERIOUS CONTROLS

City of Richmond

GRID ALTERNATIVES

RCF Connects

CEER COMMUNITY ENERGY & EQUITY RESOURCES

SO MANY CHALLENGES AND BARRIERS

AFFORDABILITY
Scaling these solutions depends on constraining costs & reaching sufficient economies of scale

ACCESS TO CAPITAL
Funding for DER and EE projects is not readily available to many motivated customers

ACCESS TO DATA
CCAs/DRPs have limited access to data needed to implement and manage VPP and DR programming

CONNECTIVITY & COORDINATION
Effective orchestration of a network of DERs depends on connecting and integrating hardware & software (ie, eDERMS)

PROJECT SITE SECURITY
Theft and vandalism are not uncommon and can be significant drivers of cost for DER projects, as can bonding & insurance

GLOBAL PANDEMIC
Created widespread market and supply chain disruptions, increased costs, labor shortages, & various project delays

AND SO MANY LESSONS LEARNED

COSTS ARE INCREASING

Many beneficial DER projects are prohibitively expensive & inaccessible for the customers that need them most

EQUITABLE FINANCING IS KEY

Programs like Revolving Loan Funds and Tariffed On-bill Financing are needed for AEC solutions to scale rapidly

DATA ACCESS IS CRITICAL

CCAs & DRPs need increased access to granular grid & load data to effectively optimize VPP/DR program performance

STANDARDIZATION IS NEEDED

Embracing simple open standards like OpenADR and OpenAPI reduces cost & complexity & improves overall usability

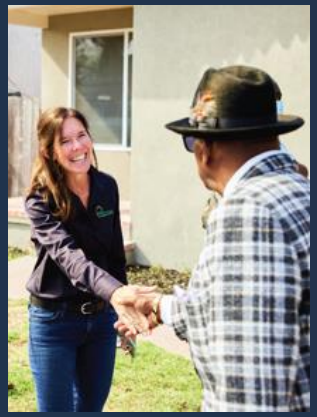
SECURITY & INSURANCE

Protecting these investments sufficiently to prevent theft and vandalism losses is essential, but also difficult & expensive

UPDATING RULES & REGS

Many of the structures governing VPP & DR are outdated and/or ineffective in creating a robust market for DER services

KEY RICHMOND AEC OUTCOMES AND FINDINGS



New Business Model

CCAs can leverage their roles as Load-serving Entities & Scheduling Coordinators to create value through new business models that leverage DER & DSM programming

Powerful New Software

An enterprise-level DERMS with Perpetual User License can help CCAs overcome data access limitations, increase security & control, & ensure equitable distribution of value

Customer Interest in VPPs

There is broad and diverse customer interest in DER installation & VPP participation, including in low-to-moderate income & disadvantaged communities

Community Revitalization

AEC solutions can be integrated with community revitalization efforts to reinvigorate blighted neighborhoods, increase first-time home ownership, & enhance resiliency

Robust Finance Options

Access to affordable capital is a critical barrier for many customers, & well-structured financing can ameliorate inequities and support widespread adoption of DERs

KEY RICHMOND AEC OUTCOMES AND FINDINGS

FlexCalc Methodology

An Advanced NMEC Performance Evaluation Methodology capable of providing accurate & reliable settlement grade measurement of load flexibility & grid services

Dynamic Tariff for Large Loads

Larger Commercial & Industrial Customers indicated a desire for different tariff structures that offer higher & more dynamic rates of compensation for fewer load shifts

Flat Tariff for Smaller Loads

Simple flat tariffs that compensate customers for VPP participation with clear and simple terms are compelling for many residential and small-to-medium businesses

Modified Proxy Demand Resource

Current rules for PDRs limit the value that can be delivered to the grid from resources like energy storage, but a Modified PDR can help to accelerate DER deployment

EVSE w/BESS for Multifamily

Pairing solar PV, energy storage, and EV charging equipment with smart controls and VPP Tariff incentives can help property owners achieve mandates cost-effectively

QUESTIONS?

CEER
COMMUNITY ENERGY & EQUITY
RESOURCES

Audience Input

Raise your hand & we'll bring the mic around.

LUNCH

Please return by 12:45 PM.


Ch ni

MCE'S VIRTUAL POWER PLANT

Welcome Back!

We will resume the Agenda at 12:45 PM.

AEC Strategies and the Affordability Challenge

Moderator: Ram Narayanamurthy, CEC

Panelists:

- Richard Schorske, ZNEA
- Laurel Rothschild, TEC
- Rich Brown, CIEE
- Alexandra McGee, MCE

AECs and the Affordability Challenge

AEC Symposium – 02.19.26

Richard Schorske

Executive Director, ZNE Alliance

ZNE/Alliance

Scale of the Problem

- **79–104% rate increases** in IOUs (2015–2025)
- **Over 2M households in arrears** ($2B shortfall)
- **Electric bills rising faster** than wages & inflation
- **Multi-family renters** hit hardest
- **Electrification increases** rate exposure
- **Structural rate design** amplifies pressure (cost shifts/NEM/CARE)
- **CCAs hit hard** – competitiveness threatened
- **No easy one-off fixes** – despite urgency
- **Integrated package** of solutions needed

Why Rates Are Rising

- Wildfire & outage risk mitigation
  - Insurance and liability exposure
  - Mitigation costly & endless (veg. management, undergrounding, hardening, redundancy, backup)
- T&D expansion: load growth, DERs, renewables
- Guaranteed ROR for capex & gold plating
- Prioritizing investors over customers
- IOU dominance at CPUC

Strategic & Bold Response Needed

- Policy reform must focus on:
- Financing, cost control (CPUC/IOUs)
- Equity, EE, & DERs – ***AEC agenda*** (CCAs, Cities, Advocates)
- Because of fragmented governance & IOU + Labor power, legislative & regulatory reform may get strangled
- Ballot initiative/s that lead with safety and affordability may be best route to change
- Experience with PG&E vs. CCAs is that voters can reject weak IOU case even when IOUs outspend on advertising

Financing + Tech Strategies

- Reduce wildfire cost & invest in resilient microgrids via **new public financing structures** and non-IOU management
  - Community Choice Aggregators
  - Community Microgrid Operators
  - Regional Finance Facilities
- **Public oversight** for performance auditing, procurement transparency, least-cost pathways, workforce strategy
- **Deploy innovative on-bill payment** with “meter survivability” e.g. the Metered Energy Efficiency Transaction Structure (MEETS) – to increase EE and DER investment behind the meter
- **Create new VPP compensation approaches to** capture RA & T&D offset
- **Deploy VPPs under CCA control** for cost-efficient DER optimization
- **Market opportunity: turn-key AEC / Distributed Capacity Procurement** approach for LSEs that package customer/grid analytics, finance, CRM, installs, DERMS, O&M

Conclusion

- Affordability challenge is structural & systemic & responses must be scaled to the challenge
  - Financing and governance reform (non-IOU mg't) is essential to drive cost discipline
  - Innovative rate design & biz models required to scale & optimize DERs, EE, and VPP
  - CCAs can play a lead role via AEC + VPP strategies
  - Ballot measures may be essential

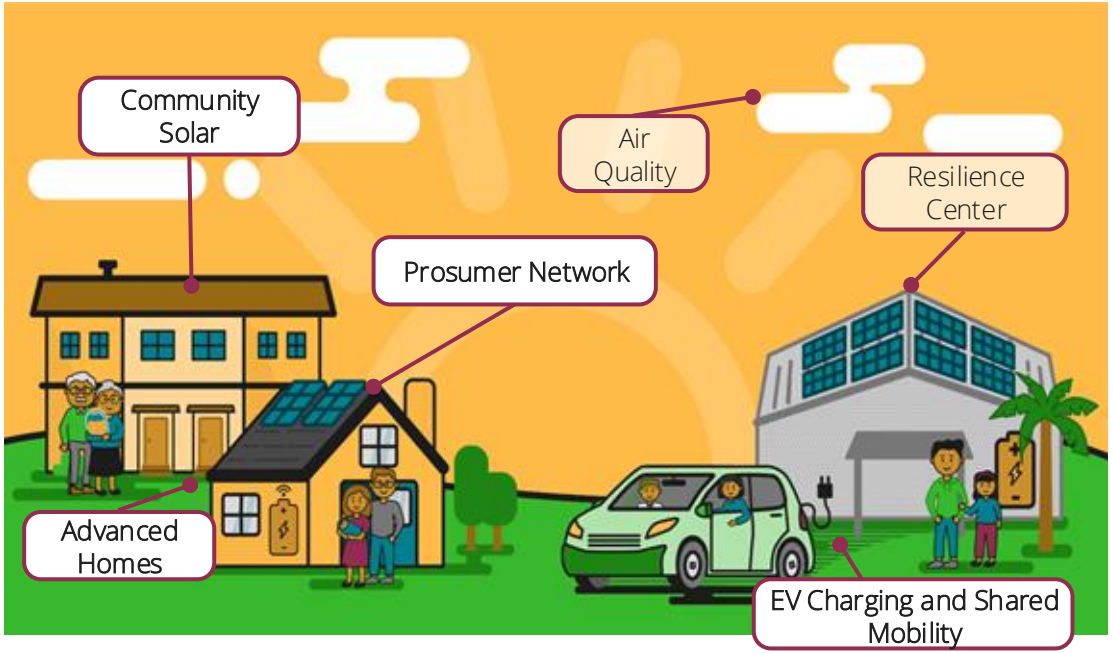
Bassett Avocado Heights Advanced Energy Community (BAAEC)

Aug 2020 - June 2026

A team of local nonprofits, community organizations, and energy technology leaders bringing equity to the clean energy transition of low-income and disadvantaged communities

BASSETT | AVOCADO HEIGHTS advanced energy community

Project Components



BAAEC Affordability Impacts

Program Element	Activity	Customer Affordability Impact	Macro affordability impact
 Advanced Homes	Low-income single-family home upgrades: solar + storage, electrification, EE/weatherization, & education	35% average reduction to combined energy bills	Load flexibility with battery and programmable appliances → reduced coincident peak for the utility
 Community Solar (CS)	Local solar generation for low-income multifamily customers	20% reduced bill for participants, including renters	Local generation with less system loss for greater efficiency
 Prosumer network	Simulated opportunity for Advance Home participants to buy/sell energy	Simulated avg. 9% bill savings on electric bills	A submarket that accounts for local power can reduce long-term procurement of utility-scale power

BAAEC Affordability Impacts

Program Element	Activity	Customer Affordability Impact	Macro affordability impact
 EV Chargers	Level 2 chargers in previous charging desert	Supports switch to lower-operating cost EV	Grid benefits from daytime charging
 Carsharing	Low-cost EV short-term car rentals for low-income residents; L2 home charger at their home	Opportunity for EV adoption to reduce transportation costs & potential of revenue from sharing charger with community/neighbor	Less internal combustion cars on the road → better air quality → reduced healthcare costs

EcoBlock Affordability Strategies
(Rich Brown, CIEE)

- Reduce capital costs
  - Scaled deployment, low-power electrification
- Mitigate bill impacts post-electrification
  - Energy efficiency, shared-ownership rooftop solar
- Improve operation
  - Resident education, proper rate plan
- Reduce transport costs
  - Shared EV, micro-mobility

MCE: Addressing Affordability with Innovative Financing (Alexandra McGee, MCE)

- Not-for-profit Community Choice Aggregation programs reinvest funds into **community programs**
- City-secured **Social Impact Bonds** to finance home restoration with private equity to recycle funding and maximize all-electric homes
- **Revolving loans** for battery storage through financing partnerships with National Energy Improvement Fund
- Unique **VPP Tariff** offering direct on-bill credits, creating new value propositions to replace aging NEM benefits

BREAK

Please return by 2:00 PM.

Pathways to AEC Deployments

Breakout Room Assignments

- Community & Customer Engagement - **Elmhurst Room (second floor)**
- Microgrid & DER Network Barriers & Opportunities – Technology, Policy, and Regulation - **Eastmont Room (second floor)**
- Business Models & Community Value Creation – Advanced Demand Side Management & Distributed Energy Resource Strategies - **Uptown Room (first floor)**

AEC Symposium - Breakout Session

Community & Customer Engagement

February 19, 2026

Elmhurst Room

Community & Customer Engagement

Moderator: Anna Tackabery, MCE

Panelists:

- **Customer & Partner Engagement Lessons Learned** (Alexandra McGee, MCE)
- **Opening Doors to Partnership: Lessons from Low-Income Home Decarbonization** (Natalie Espinoza, TEC)
- **Block Engagement and Association Formation** (Therese Peffer, CIEE)
- **Zero Net Carbon Ready Homes and Social Impact Bonds** (Jim Becker, RCF)

Your Dollars at Work

Energy Efficiency

Audits, Rebates, Usage Reduction

- $10M in rebates
- Over 5,000 customers served

Electric Vehicles

Vehicle and Charging Station Rebates

- 2,000+ EV chargers
- 1,100+ EVs

Energy Resiliency

Distributed Resources, Demand Response, Virtual Power Plant, and Behavioral Programs

- 33 facilities
- $300,000+ in bill credits
- $1.7M in SGIP incentives

Electrification

Heat Pump Installs and Contractor Training

- 25+ contractors engaged
- 300 heat pump water heaters

Equity, Health & Safety

Health, Safety, and Resiliency Upgrades

- 200 portable batteries distributed
- $750,000 in solar rebates

Richmond At Glance:

- Historic Industrial hub in the San Francisco Bay Area
- Legacy contamination in residential neighborhoods
- High rates of vacancy and abandonment
- Ongoing need for affordable housing
- Refinery built before city incorporated in 1905
- WWII temporary housing still in use; 71% built before 1980
- 99th percentile for asthma
- CARB designated AB 617 community - high air pollution
- Built on long-term relationship with GRID for low-income residential

Engagement takeaways

Be creative (ex: leveraged HES and GRID to fill gaps)

Be flexible (ex: neighbor referrals; turnover with contractor partners)

Be responsive (ex: technical contact vs emotional support; “broke my leg”)

Be patient (ex: “I started NASA!”; “scalding shower”; entitled CARE with Teslas on waterfront)

Set customer expectations appropriately (ex: ZNCR flyer; shorten timelines)

Understand customer needs (ex: fixed income bias > lonely; health concerns > indoor emissions)

Listen and pivot (ex: electric panel upgrades for older housing stock)

Secure multilingual resources (ex: team translators vs children)

Have expectations challenged (ex: increased costs > health issues)

Establish clear contractor requirements (ex: close out packages with warranties and serial numbers; CEC retention; expected cost ranges; bankruptcies or disruptions)

*This home needed a full renovation to become an **all-electric** home. It had gas appliances for heating and water heating, and no cooling or ductwork—but that would all soon change.*

Zero Net Carbon Ready (ZNCR) Homes

- Neglected, abandoned homes are getting face-lifts! Funded in part by the California Energy Commission, this project combines **innovative affordable housing** and low-income strategies with clean energy technology to **modernize existing housing stock** while saving households money.
- It tackles many challenges– **poor air quality, a strained power grid, displacement**, blighted neighborhoods, and a critical lack of affordable housing.
- Due to its military and industrial history leading to **environmental contamination and increased health problems**.

Quiet, clean, invisible pockets of power

Virtual Power Plant

- 2022: MCE joins California Energy Commission grant to build a Virtual Power Plant (VPP) pilot in Richmond with a suite of customer-owned distributed energy resources (DERs) by 2025
- Rooftop solar, heat pump water heaters, smart thermostats, smart plugs, electric vehicles, batteries
- MCE can directly send digital signals to remotely shift & operate DERS for demand response and grid support; participants save money & get bill credits
- mceCleanEnergy.org/virtual-power-plant

Opening Doors to Partnership: Lessons from Low-Income Home Decarbonization (Natalie Espinoza, TEC)

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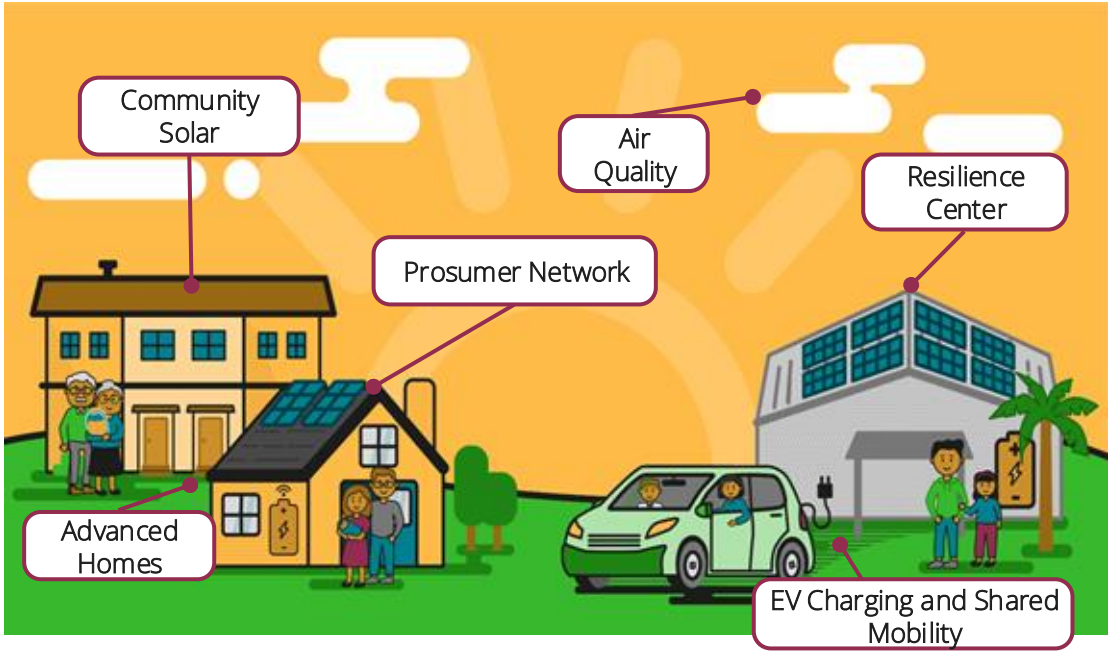


Community Outreach

151
outreach activities

Authentic community-led outreach with wraparound customer support

1. Partnerships - **early and throughout** - with community organizations and public agencies
2. Provide **turnkey, wraparound** support around health, safety, social, and economic concerns
3. **Diverse strategies**: presentations, workshops, demos, pop-ups, canvassing, digital, mailers.

	Advanced Homes	Community Solar	EV Charging/ Shared Mobility
Interested	700+	400+	175
Served	67	360	11

The Assumption

We assumed that free home upgrades would drive enrollment

→

Instead, we learned:

- Enrollment is an exercise in trust building and community empowerment

53 households enrolled across two phases, but only after redesigning how we partnered with the community

Trust in Infrastructure?

Before technology, before incentives, before savings

What We Faced:

- General distrust of energy programs
- Confusion about funding sources
- Skepticism about in home upgrades

What We Learned - Trust Requires

- Legitimate messengers: School Districts, Local Government
- Funded Community Based Organizations
- A visible community presence
- Case management, not just well thought out written documentation

Takeaway: programs must invest in trust the way they invest in technology

Simplicity Drives Engagement

We offered:

- Heat pumps
- Panel upgrades
- Weatherization
- Induction stoves
- Multiple pathways

…It became overwhelming.

What We Learned:

- Too many offerings discussed all at once diluted the message
- Unfamiliar technology creates hesitation
- Tangible, relatable upgrades (stoves) increase initial interest

Takeaways:

★ Simplify first, expand later.
★ Meet residents where they are, not where policy wants them to be.

Energy is Competing with Life

- Inflation
- Fires
- Medical emergencies
- Housing instability

Energy upgrades were important, but rarely urgent.

What We Learned:

- Drop-offs were often due to life instability
- Rigid timelines do not work in vulnerable communities

We:

- Secured a grant extension
- Right-sized scope
- Built flexibility into delivery

Takeaway: programs must be designed for instability, not ideal conditions.

Geography Shapes Participation

BAAEC being located in unincorporated LA County meant:

- No central civic hub
- Limited city-led communications
- Fewer organic gathering spaces

What worked:

- Field-based outreach
  - “old school” repeat mailers
  - Program announcement banners on heavily trafficked streets in BAAEC area for program name recognition
- Strong County Supervisor partnership
- Expanding to adjacent cities

Takeaway: outreach strategy must reflect local governance structure.

The Community Factor

In BAAEC there are:

Intergenerational Households

- Grandchildren attended events
- Children took over and paid the bills
- Grandparents owned the homes and ultimately made decisions

Referrals Didn't Scale

Long customer journey = hard to "champion."

Multiple Implementers = Confusion

What Worked

✓ Direct mail to homeowners

✓ Clear single point of contact

✓ Transparent and in language explanation of risks & funding

Takeaway: design for real household dynamics. *Not assumed ones.*

Case Management is Not an Add-on

Participants consistently needed:

- Financial clarity
- Risk transparency
- Installation coordination
- Reassurance

A centralized, multi-channel case manager became essential.

Takeaway: high-touch service delivery is core infrastructure for equitable decarbonization.

Build CBO Capacity for the Long Term

CBOs were trusted messengers, but building energy technology was new territory.

Program success requires:

- Technical fluency training
- Long-term partnership investment
- Shared learning infrastructure

Takeaway: equitable decarbonization requires institutional capacity building not just program deployment.

What Opening Doors to Partnership and Engagement really takes

Opening doors required:

- Trust before technology
- Flexibility before efficiency
- Simplicity before scale
- People before policy

The future of low-income decarbonization is relational, not transactional.

Block Engagement and Association Formation
(Therese Peffer, CIEE)

Oakland EcoBlock

A Neighborhood Energy Retrofit

Block Engagement & Association Formation

Therese Peffer, PhD
California Institute for Energy and Environment (CIEE)
University of California, Berkeley

19 February 2026

Berkeley UNIVERSITY OF CALIFORNIA

ciee California Institute for Energy and Environment

CITRIS BANATAO INSTITUTE

STATE OF CALIFORNIA ENERGY COMMISSION

What is the right scale for decarbonization efforts?

- Global
- Continent

Too abstract

- Country
- Region
- City
- District

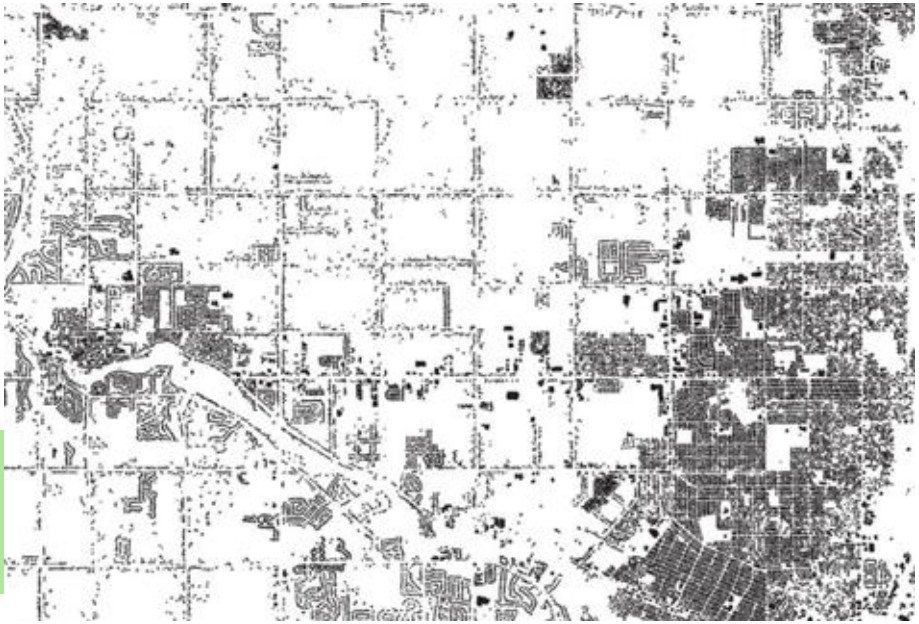
Too big

- Neighborhood
- Block

Sweet spot

- Family
- Individual

Too small



The New York Times

www.ecoblock.berkeley.edu

Block Engagement—ask blocks to self-nominate

Goal: Select host block for EcoBlock

1. Define requirements and eligibility
2. Release Opportunity Notice for block self-nomination
3. Hired community liaison for outreach
4. Neighborhoods self-organized and applied
5. Review top four blocks
    a. Meeting with team lead
    b. Meeting with block residents
6. Review energy and bill data
7. Letter of Intent signed by neighbors

Messaging: What are the community concerns?

- Security (stolen vehicle dump, drug deals)
- Trash dumped
- Not enough parking
- Old inefficient, leaky homes, poor air quality
- High energy bills
- Susceptible to heat events & power outages
- Can't afford upgrades, don't know what to do

- Connect to local police beat
- Connect to bulky trash pickup
- More comfortable homes
- Improved air quality
- Keep the lights on and lower energy bills
- Neighbors working together in picking up trash, sharing Ridwell, talking about new clean tech

Block meetings—build trust

- Consider representation of project team in diverse communities
- Woman of color as community liaison
- Music & food at meetings
- Small group discussions, listen not lecture
- Provide interpretation (Chinese & Spanish)

Connecting Neighbors

- Tangible benefits:
  - Street tree planting/mulch
  - Bulky trash/recycling pickup
  - Planting biodetention swale
  - Laundry to Landscape irrigation workshop
- Education through meetings, newsletter
- Block leadership
- Created a Home Owners' Association to co-own solar

Newsletter

ecoblock™

AUGUST 2023 | ISSUE NO. 27

AROUND THE BLOCK

ECOBLOCK'S COMMUNITY NEWSLETTER

From the team

Dear Neighbors,

Happy summer! We apologize for the long silence, and hope you are well. Things have been busy with EcoBlock behind the scenes, and we're excited to share the latest project updates with you:

- **Construction** is starting this month, **PG&E service upgrades** are delayed, and **permitting for the block-level upgrades** is underway. (pg. 2-3)
- Blossom Street residents: Interested in being part of the EcoBlock recycling group? **Nick Corlett** shares his experience using **Ridwell**, an innovative community recycling service, with fellow neighbors on the block. (pg. 4)
- The **San Francisco-Oakland Bay Bridge** is is a remarkable feat of engineering with a secret guardian: the Bay Bridge troll. Learn about this mysterious figure who has added intrigue and bit of magic to the Bay Bridge for decades. (pg. 5)

With appreciation,

Therese Peffer
Principal Investigator
tpeffer@berkeley.edu

Cathy Leonard
*Community Liaison**
cleonardecoblock@gmail.com
(510) 927-1574
**Primary contact*

CREDIT: HAIXIN GUO

A greener future: The Oakland EcoBlock is paving the way for more sustainable and climate-resilient communities.

General announcements

All participants: Homeowners & Renters

- Recently, PG&E notified the team that given the current electrical load issues on the block, the service upgrades will require them to **replace the existing overhead distribution lines**. This will reduce the cost of the microgrid but will delay the project by about **six months**. The first step in the process is to submit the **service upgrade contracts**—the team is working with all participating PG&E customers to sign the contracts, which the project will pay for.
- Given PG&E's new policy, Eco Performance Builders is planning to **conduct construction in phases**, and is **starting work on the block this month**. They will be in touch with this new schedule.

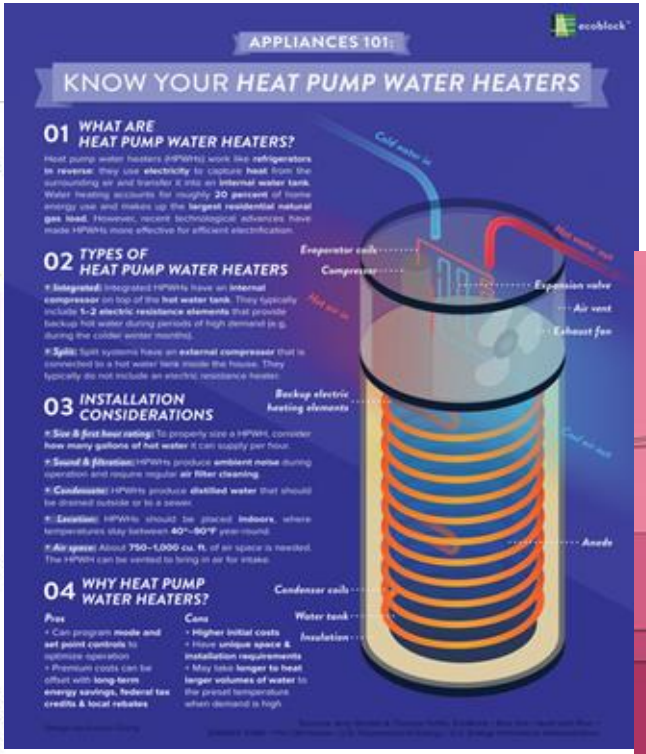
All Homeowners

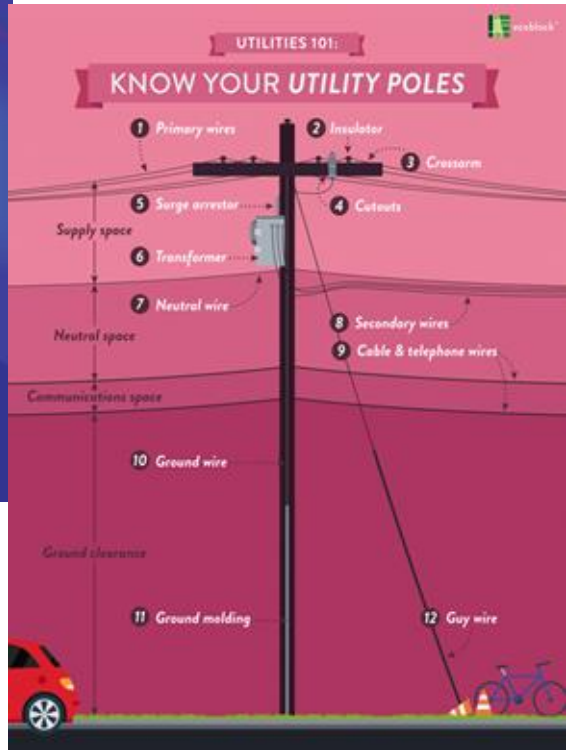
- The Blossom Street Association (BSA) Board of Directors has hired a **Homeowners Association (HOA) manager** to oversee the day-to-day legal, budgeting, administration, and maintenance issues for the Oakland EcoBlock.

Upcoming events

Try induction cooking—for free!

East Bay Community Energy (EBCE) and Actenn are offering all East Bay residents—both EBCE and non-EBCE customers—the chance to "test drive" induction cooking in their home for free! Apply to reserve your Induction Lending Kit today: ebce.org/induction-cooking





Monthly Community Newsletter

Economies of scale: neighbor or peer effect

- Solar adoption is contagious in neighborhoods regardless of income.
- These new technologies–heat pumps, induction stoves—are hard to understand
- Trusted source of information: Neighbors talk to each other about new technologies and can reduce the burden

Illustration: Thoka Maer

Association Formation

- Five neighbors stepped up to take leadership (first Board)
- Tuttle Law (specializes in cooperatives), decided on HOA and guided the Board to develop the Bylaws & Membership Agreement
- Consensus decision-making process
- 5-year depreciation schedule & equitable fee structure for co-ownership of solar
- Make legal writing easy to understand

Image credit: People Power Solar Collective

Challenges

- Worry about unpermitted work
- Energy bills went up in some homes
  - Uninsulated homes
  - Customer didn't work with PG&E to move to electric heat baseline
  - Occupant didn't know how to use new thermostat, system on all the time
- Upgrade permits trigger County Assessor letters to homeowners regarding property tax increase
  - Not applicable for solar or like-for-like replacements, but homeowners don't know that
- Renters worried about rent increases after upgrades complete
- Solar Interconnection application (NEM) documents not available in Spanish or Chinese!

Engage the Community!

- Activate neighbors
  - “Change moves at the speed of trust” - Covey
  - Tangible projects: tree planting, share recycling or plant starts
  - Opportunities for community to volunteer and lead!
- Work with community liaison or CBO
  - Foster two-way discussion
  - Educate
  - Provide translation and interpretation
  - Used consensus method to understand objections
- Neighbors talk to each other—especially new technologies!

Drawing by Nora Scully

Questions?

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Therese Peffer
tpeffer@berkeley.edu
510-289-4278

Berkeley UNIVERSITY OF CALIFORNIA

ciee California Institute for Energy and Environment

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Zero Net Carbon Ready Homes and Social Impact Bonds

(Jim Becker, RCF)

Program Overview

Reduce amount of vacant and blighted properties

Promote homeownership amongst local homebuyers

Attract private investment in the community

Finance home restoration program using private equity, to recycle funding and maximize units in the program

Equitable Local Hiring and Contracting

Build Sustainably

Reduce Code Enforcement Costs

Keep Pinoleans in Pinole

Reduce Property Crimes

Social Impact Bond Roles and Responsibilities

City

- Issue Bond
- Provide legitimacy to the program
- Expedite permitting where possible
- Does not incur any risk, and has no obligation to repay the bond

Site Team

- Provide program oversight
- Integrate program into City infrastructure
- Identify target properties
- Prioritize local and BIPOC contractors and developers

RCF

- Program facilitators
- Acquire/ rehab properties.
- Sell to first-time homebuyers through existing support programs
- Portion of properties to be sold below market rate

Capital Partner

- Purchase bond
- Gain CRA credit and obligation fulfillment
- Holds risk

Affordable to Purchase and Maintain

Construction

Zero-net emissions building design

Low water usage

Low embodied carbon construction

Indoor environmental quality

ZNE Features

Solar Panels

Battery Storage

EV Charging

Appliances

Smart Features

High Efficiency Home Benefits

Reduces living cost to homeowners by reducing utility and maintenance costs

Strengthen green development market in Pinole

Programs

Energy Efficiency

Audits, Rebates, Usage Reduction

- $10M in rebates
- 5,000+ customers served

Electric Vehicles

Vehicle and Charging Station Rebates

- 2,000+ EV chargers
- 1,100+ EVs

Energy Resiliency

Distributed Resources, Demand Response, **Virtual Power Plant**, and Behavioral Programs

- $1.7M in SGIP incentives
- $300,000+ in bill credits
- 33 facilities

Electrification

Heat Pump Installs and Contractor Training

- 300 heat pump water heaters installed
- 25+ contractors engaged

Equity, Health & Safety

Health, Safety, and Resiliency Upgrades

- $750,000 in solar rebates
- 200 portable batteries distributed

What's Inside?

- ✔ Smart, high-efficiency washer & dryer
- ✔ Smart, high-efficiency dishwasher
- ✔ Smart, high-efficiency refrigerator
- ✔ Induction range
- ✔ Smart heat pump water heater
- ✔ Smart mini-split HVAC system
- ✔ Smart plugs
- ✔ 7.15 kW (DC) solar system
- ✔ Battery with 5.2kWh storage

ZNCR Homes

- With support from **EPA Brownfields Assessment and Cleanup grants**, RCF addresses some of the city's most challenging blighted properties and help Richmond residents overcome barriers to local homeownership.
- Using funds from a **social impact bond**, RCF bought and rehabilitated this abandoned property into an all-electric home. It generates and stores its own solar energy for the home's high-efficiency appliances. These appliances and battery are connected to MCE's Virtual Power Plant (VPP) to shift energy usage during high-use times to provide grid support.
- Partners led the first-time homebuyer on a two-hour walkthrough of the devices that explained how the **VPP shifts load** during critical times so they understand how batteries provide backup power during an outage.
- Homeowners enjoy cleaner, safer homes, while saving money on their electric bill and **getting paid up to $50/month** for connecting their batteries and smart appliances to the VPP.

AEC Symposium - Breakout Session

Microgrid & DER Network Barriers & Opportunities *– Technology, Policy, and Regulation*

February 19, 2026

Eastmont Room

Microgrid & DER Network Barriers & Opportunities – Technology, Policy, and Regulation

Moderator: Richard Schorske, ZNEA

Panelists:

- **Community Solar Aggregation and Microgrid Challenges** (Genaro Bugarin, TEC)
- **Community-Owned Neighborhood Microgrids** (Rich Brown, CIEE)
- **Community Microgrid Operator Framework – Legislative vs. Ballot Approaches** (Allie Detrio, Re-Imagine Power)

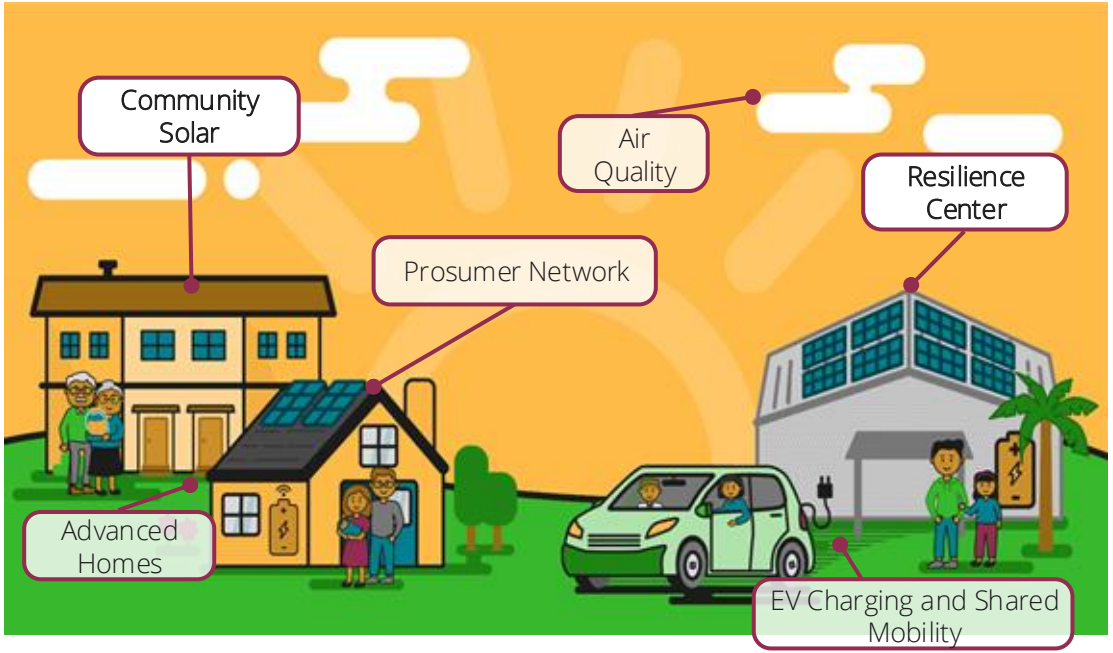
Bassett Avocado Heights Advanced Energy Community (BAAEC)

Aug 2020 - June 2026

A team of local nonprofits, community organizations, and energy technology leaders bringing equity to the clean energy transition of low-income and disadvantaged communities

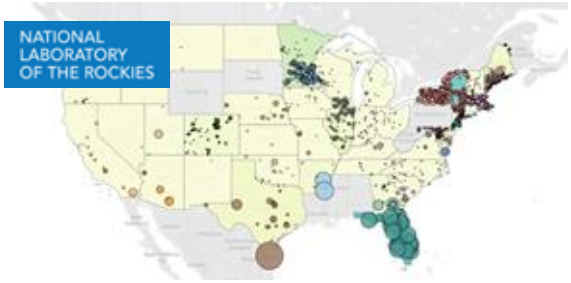
BASSETT | AVOCADO HEIGHTS advanced energy community

Project Components



Community Solar Aggregation

- CA is way behind on community solar
- Community Solar Green Tariff (CS-GT)
  - Approved in 2018; 41MW capacity; discontinued in 2024, delivered 3.37 MW (8% of goal)
  - Funds utility, cover project's above market costs, and provides a 20% customer bill discount
    - New: May '22 Community Renewable Energy; proposed decision *anticipated* July '26
- BAAEC achieved the first CA DER aggregation
  - **Two** sites (400 kW & 270 kW) **one** wholesale market resource and **~360** households served
- 4-year project timeline
  - Develop: Feb '21 to Dec. '22 awarded PPA
  - Deliver: Dec. '22– Feb '25 achieved COD



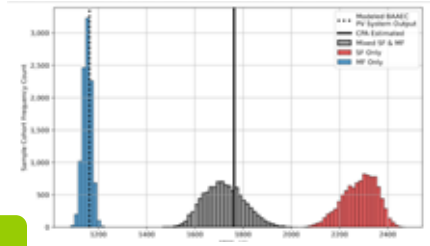
California ISO

"The aggregation […] provides key lessons learned and serve as a template for bigger distributed energy aggregations."

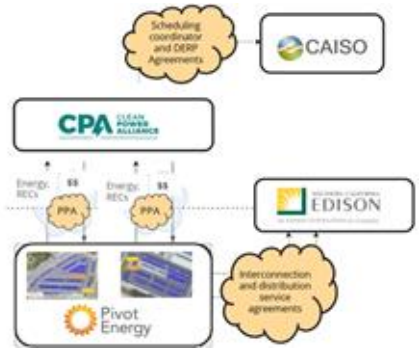
Opportunity ***$6.5bn*** *system /* ***$4.2bn*** *electricity savings over 20 years with 5.6GW*

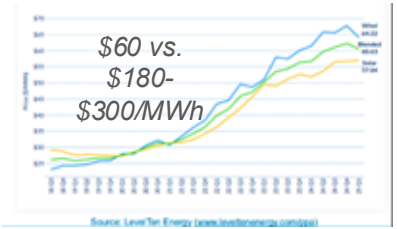
Community Solar Challenges/Lessons Learned

- Site hosts and property type/location
  - Enhance the host value proposition
  - Understand site readiness, IX capacity/costs
- CAISO's wholesale market
  - Small size Development risks, financing
  - Lengthy New Resource Integration (NRI)
- Community Outreach/Sponsorship
  - Local energy: local planning/support
  - Data/mapping tool: grid needs/electrification
  - Add batteries: grid reliability/local resilience
- State policy recommendations
  - Increase program size and funding certainty
  - Improve how we value distributed assets



First CAISO DER Aggregation





Resilience Center (Microgrid Design)

- Site Identification
  - Lost original site
  - New site feedback: CAC, TAC, community survey
  - Concerns around privacy, safety, and operations
- Buy-in, Design, Economics
  - Found a viable option at a County park
  - Community-serving site, complex economics
  - Stakeholder management, community concerns
- Approvals
  - Early ‘23: Secured NEM 2.0 & SGIP, equipment
  - April ’22 – Feb. ‘24 lengthy contract review
  - Feb. ‘24 lost developer due to infeasible timeline
  - April ‘24 - change of scope with CEC

Resilience Center Challenges/Lessons Learned

- Siting
  - Community perspective
  - Facility assets/liabilities
  - Site host bandwidth, mission alignment
- Design
  - Costs/delays of design choices
- Operations and Services
  - Managing expectations: site host & community
  - Role of local government in energy resilience
- Stakeholders
  - Prioritize contracts and legal staff
  - Economics: good on paper is insufficient

USDN | urban sustainability directors network

1. Resilient Services & Programming
2. Resilient Communications
3. Resilient Buildings & Landscape
4. Resilient Power
5. Resilient Operations

SoCalREN
Energy Resilience Action Plan (ERAP)

Provide a comprehensive roadmap for near-term to long-term energy resilience strategies.

Leverage data-driven and technical analysis to develop customized recommendations for capital projects that will strengthen the energy resilience of each community.

Empower agencies to be energy resilience leaders by leveraging accurate, reliable data and engaging with community stakeholders to inform planning decisions.

CPA CLEAN POWER ALLIANCE

Power Ready program

Community-Owned Neighborhood Microgrids

(Rich Brown, CIEE)

Oakland EcoBlock

Community-Owned Neighborhood Microgrid

Rich Brown
California Institute for Energy and Environment (CIEE)
University of California, Berkeley

19 February 2026

Berkeley UNIVERSITY OF CALIFORNIA

ciee California Institute for Energy and Environment

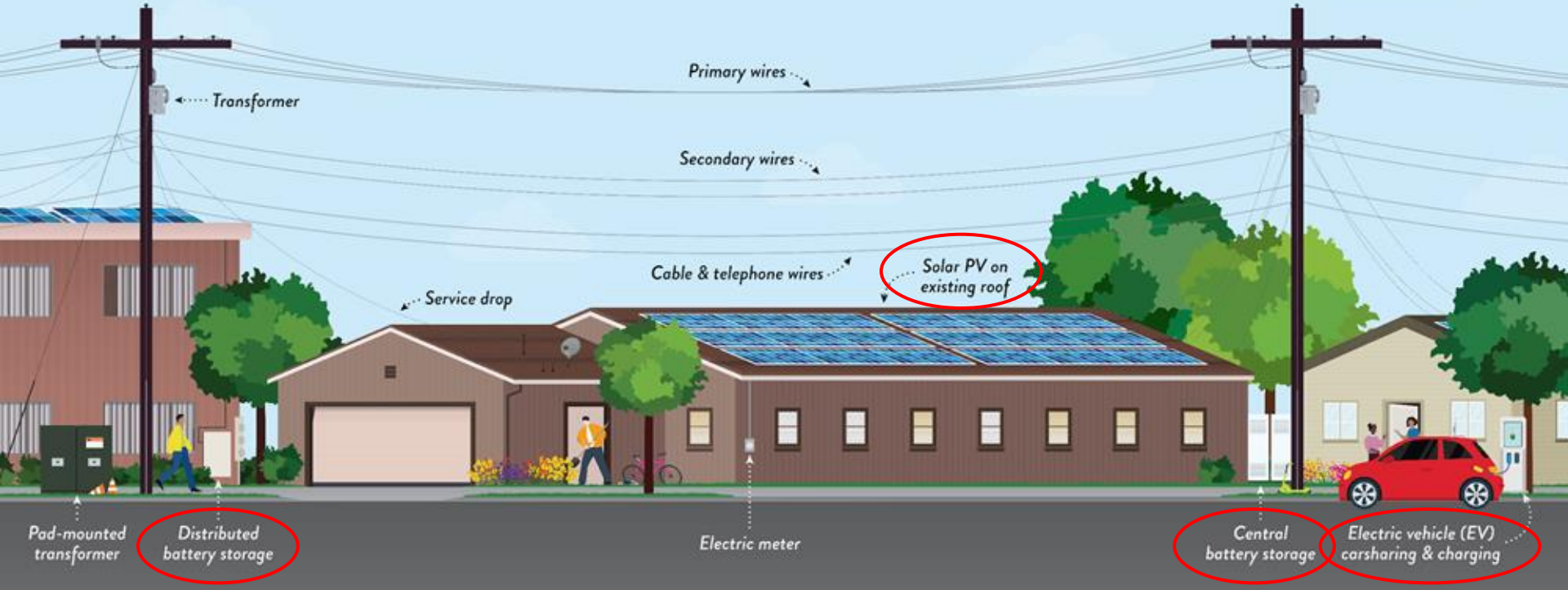
CITRIS BANATAO INSTITUTE

STATE OF CALIFORNIA ENERGY COMMISSION

What is the EcoBlock Community Microgrid vision?

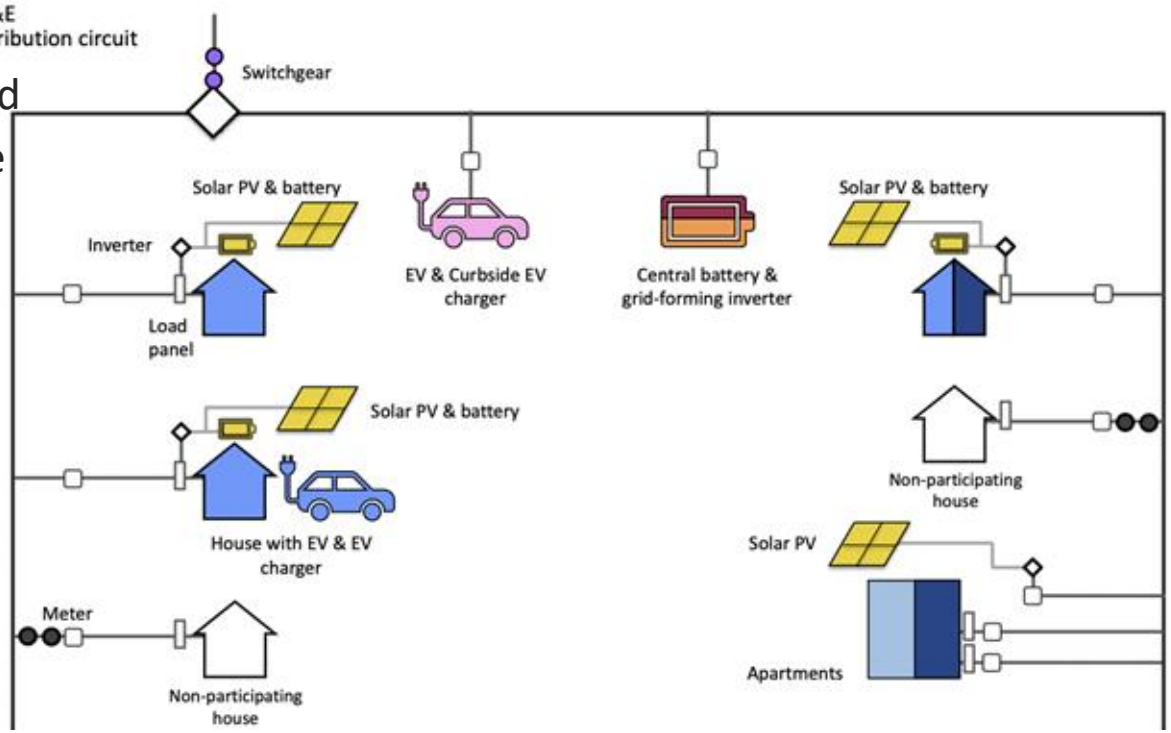
Distribution: utility overhead lines*
Generation: rooftop solar + central front-of-meter battery

Loads: retail customers + shared EV
Shared Ownership: solar/battery/EV
Tariff: Community Microgrid Enablement*



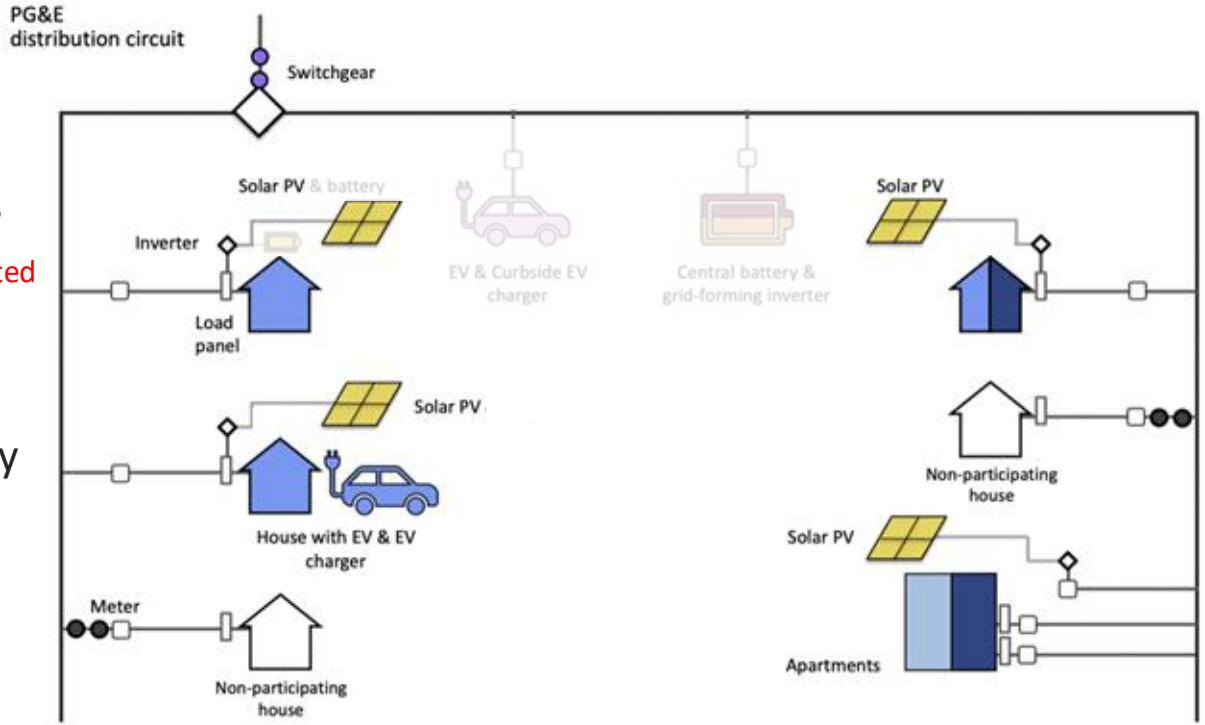
Community Microgrid (schematic design)

- **PG&E** owns & operates overhead wires, transformers & protective devices
- ~100 kW BTM solar on 15 roofs
- 125 kW/250 kWh FTM battery w/ grid forming inverter and grounding transformer
- Microgrid controller and HEMS manage energy in island mode
- Shared curbside EV charger powers shared EV
- Not all houses need to join



Community Microgrid (what we implemented)

- **PG&E** owns & operates overhead wires, transformers & protective devices implemented
- ~100 kW solar on 15 roofs, owned by block association
- 125 kW/250 kWh BTM battery
- Grid forming inverter and grounding transformer
- Shared curbside EV charger powers shared EV
- Not all houses need to join



Challenges/Barriers

Financial

- Required grid improvements costly in this location; didn't qualify for Microgrid Incentives
- CMET tariff only provides value during outage, not justified for residential
- EV-share restricted to block residents not profitable for private vendor

Regulatory/Legal/policy

- Not clear if sharing energy over community-owned wires falls under “Own use” rule
- Central battery required expensive "Energy Shack" for fire suppression and land use permits
- EV charger required major encroachment permit from city; expensive and lengthy

Social

- Residents hesitant to dedicate parking space to EV
- Microgrid operation requires ongoing management by community organization

Questions?

www.ecoblock.berkeley.edu

Rich Brown
richbrown@berkeley.edu
510-502-5968

Berkeley UNIVERSITY OF CALIFORNIA

ciee California Institute for Energy and Environment

CITRIS BANATAO INSTITUTE

Community Microgrid Operator Framework – Legislative vs. Ballot Approaches

(Allie Detrio, Re-Imagine Power)

REIMAGINE POWER

Policy Pathways for Community-Driven Microgrids in California and Beyond…

Informed by history lessons, notes from the field, negotiating table tales, hearings going off the rails, capitol chaos & midnight controversy on the floor..
… & ALL the blood, sweat & tears that were poured!

Allie Detrio

Chief Strategist

Reimagine Power

Advanced Energy Communities (AEC) Symposium

Oakland, CA

February 19, 2026

Microgrid Resources Coalition

Microgrids & Decentralization Achieves Core Policy Objectives

AFFORDABILITY	**RELIABILITY**	**RESILIENCY**
Decarbonization **Clean Energy Sustainability**	**Democratization** **Community Empowerment**	**Digitization** **Cleantech Innovation**

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Microgrids & Distributed Energy Resources

Clean, Affordable, Reliable, Equitable, and Safe

CMG Policy Recs from AEC Project Experiences (1.0)

Looking for local govt and customer members to join Community Microgrid Coalition (CMC)

- Change PUC 218 to exempt microgrids owned and controlled by communities
- Create a Community Microgrid Operator (CMO) designation and framework under "microutilities" statute
- Allow CMOs to develop microgrids with master metering that cross rights of way and serve multiple customers
- Develop tariffs that promote local electron sharing between neighbors and within communities
- Develop value-based compensation rates for grid services and load flexibility for customers
- Create interconnection procedures to streamline development and ease admin for applicants

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Original Update From 2021:
Multi-customer microgrids scoped for 2022

R.19-09-009 Track 4 Phase 2 Decision likely to slip to 2023

UPDATE as of 2026 –

Final CMET & MIP implemented very poorly several years later…

Always meant to be a red herring & were designed to fail from the beginning !!!

…and CPUC R.19-09-009 was officially closed at end of 2024

Track 4 Phase 2 Schedule

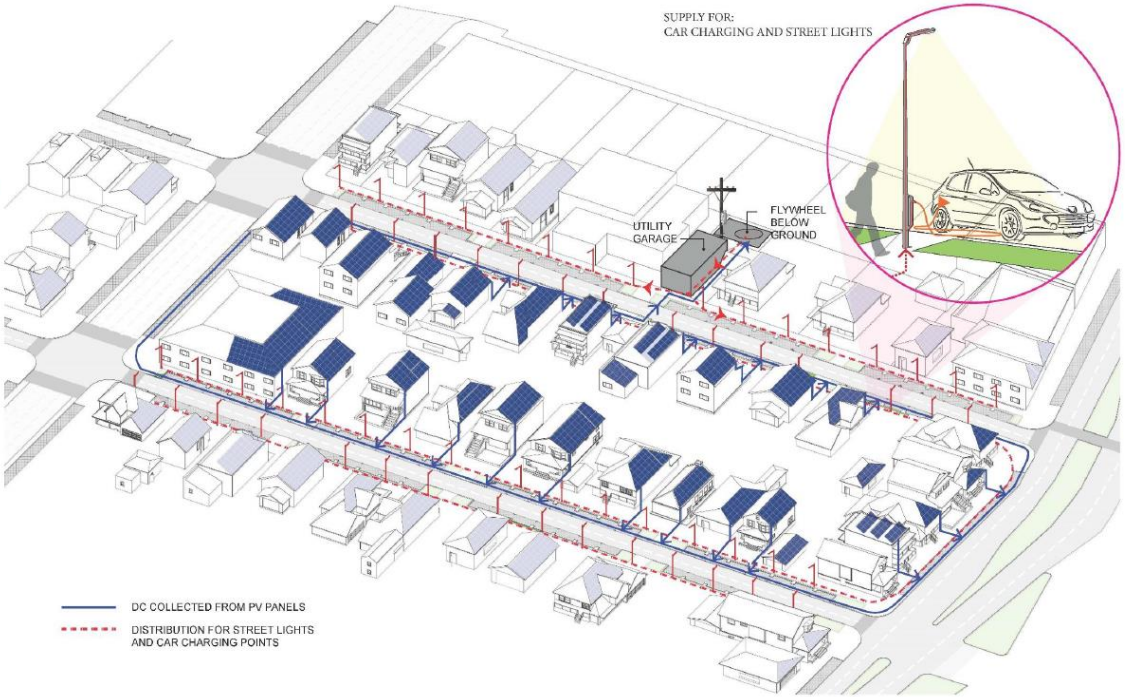
Event	Date
Microgrid Incentive Program Implementation Plan, Public Workshop	October 26, 2021
Joint IOU Microgrid Incentive Program Implementation Plan, filed and served	December 3, 2021
Opening Comments on the Joint IOU Microgrid Incentive Program Implementation Plan, filed and served	January 14, 2022
Reply Comments on the Joint IOU Microgrid Incentive Program Implementation Plan, filed and served	January 28, 2022
ALJ Ruling with Staff Proposal, filed and served	February 2022
Comments on the Staff Proposal, filed and served	March 2022
Reply Comments on the Staff Proposal, filed and served	March/April 2022
Proposed Decision	Released in accordance with the Rules
ALJ Ruling: Draft Multi-Property Microgrid Tariff Guiding Principles	June 2022
Opening Comments on Multi-Property Microgrid Tariff Guiding Principles, filed and served	July 2022
Reply Comments on Multi-Property Microgrid Tariff Guiding Principles, filed and served	July 2022
ALJ Ruling: Guidance to Parties on Submittal of Microgrid Multi-Property Tariff Proposals	August 2022
Stakeholder Proposals for Microgrid Multi-Property Tariff, filed and served	August 2022
Public Workshop: Stakeholder Presentation on Microgrid Multi-Property Tariff Proposals	September 2022

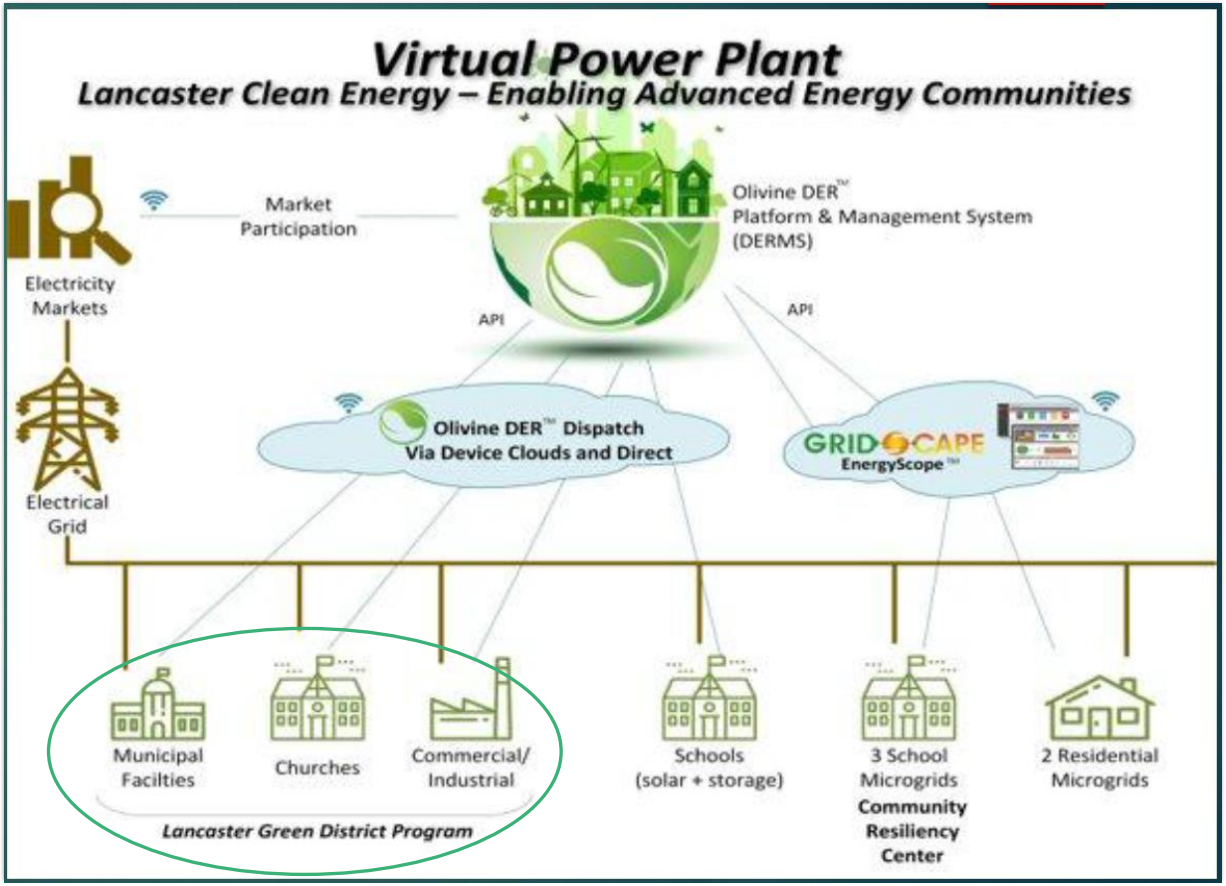
EcoBlock Vision: A Multi-Customer Microgrid Solution

Electrical system combines DER

- Communal rooftop solar PV
- Communal energy storage system (flywheel and/or battery)
- Intelligent loads and electric demand response
- Shared Electric vehicle (EV) charging
- Smart controls in a direct-current (DC) microgrid infrastructure

behind a single interconnection with PG&E





Community Microgrid at Blue Lake Rancheria

Microgrid Design

Solar: 420 kW AC PV ground-mounted array

Energy Storage: 500 kW / 950 kWh lithium-ion battery storage

Software & Controls: Siemens Spectrum Power 7 Microgrid Management System and Schweitzer Engineering Laboratories Protection Relays

Other Infrastructure: Purchased distribution system infrastructure to create a new point of common coupling with the grid, integrating six buildings into the microgrid behind one electric meter

Technology Integration: The Schatz Energy Research Center at Humboldt State University

UNIQUE PROJECT ASPECTS

- ✓ American Red Cross shelter
- ✓ Successfully islanded during several unplanned utility outages due to weather and nearby wildfires
- ✓ Can deploy five levels of load shedding depending on the outage and system conditions
- ✓ Achieving cost savings: 58% overall energy

SCHATZ ENERGY RESEARCH CENTER

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This is the ideal community microgrid design framework

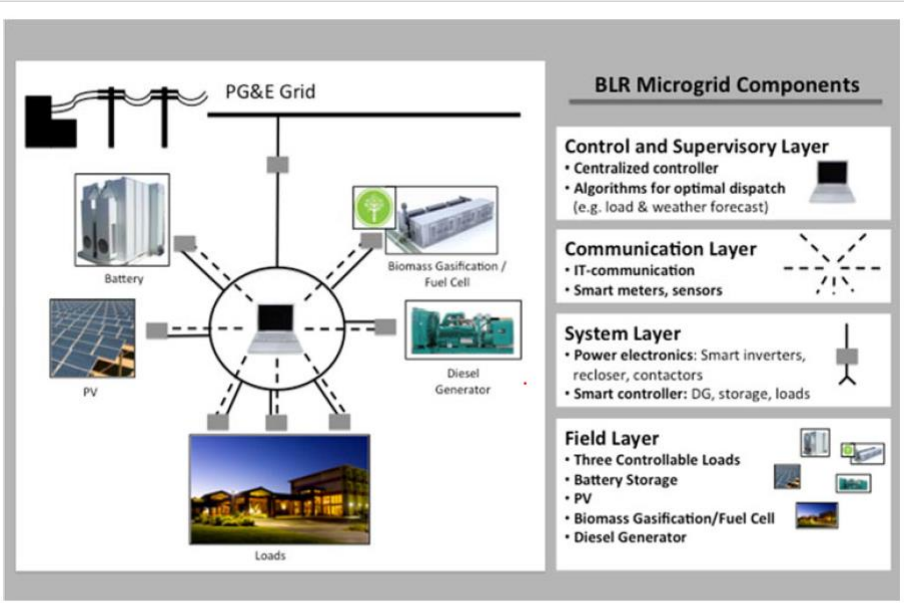


Figure 2. Blue Lake Rancheria low-carbon microgrid components.

Public Utilities Code 218

"Over the Fence" Rule

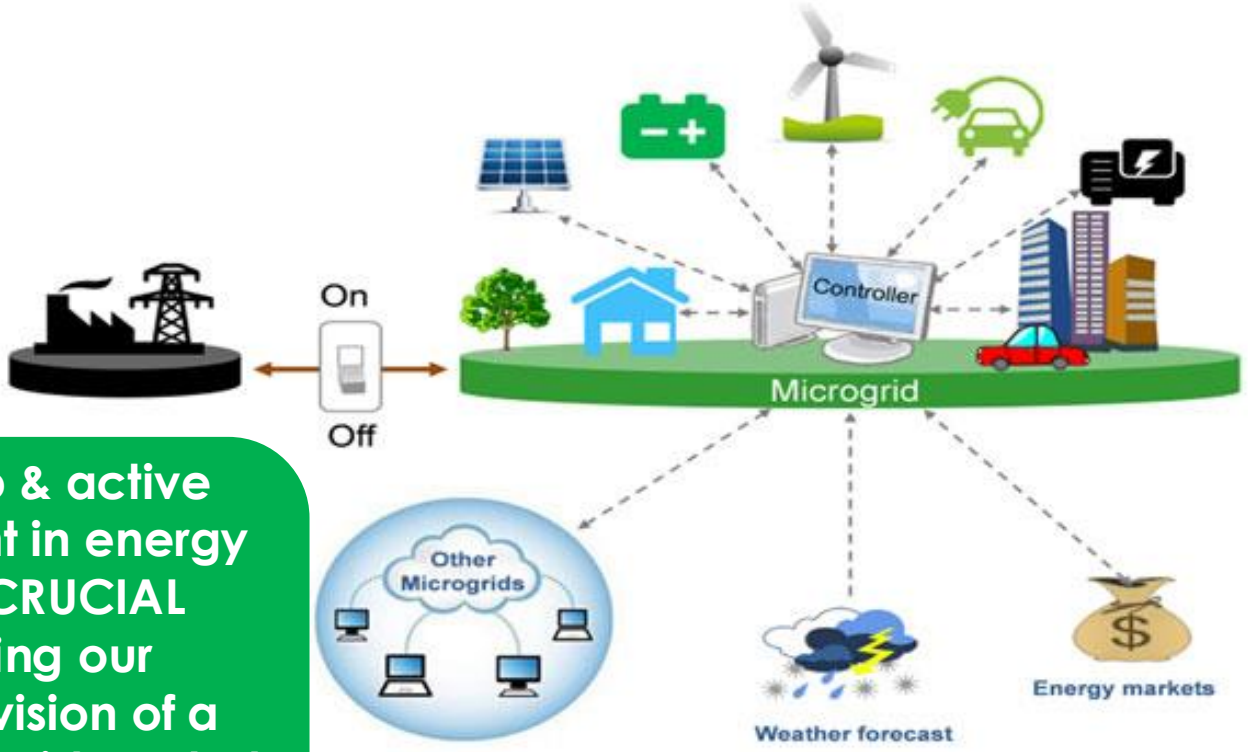
- Defines what is and is not an "Electrical Corporation"
  - Any entity wishing to distribute power to more than 2 contiguous properties or across a public street for compensation must become an electrical corporation subject to regulation and oversight by the CPUC
- Exemptions:
  - Cogeneration (SB 1773 in 1984)
  - Independent Solar Energy Producer (AB 2863 in 2008)
  - Electric Vehicle Charging Facilities (AB 631 in 2011)
  - EVSE (other recent legislation provides a carve out)
- CEC Pilot Projects Facing Challenges
  - Oakland EcoBlock
  - Lancaster Advanced Energy Community
  - Port of Long Beach – Rule 18 issues

PUC 218 will likely need to be changed to realize the full potential and benefits of community microgrids !!!

CMG Policy Recs from AEC Project Experiences (2.0)

Seeking to put CMG recommendations into policy action this year in California!! And also happening in other states!!

- Change PUC 218 to exempt microgrids that are owned and controlled by customers & communities (from overly onerous CPUC regulation & oversight)
- Create a Community Microgrid Operator (CMO) designation in statute &implement accompanying regulatory framework
- Allow CMOs to develop microgrids with master meter/submetering tech & local distribution infra that can cross rights of way & serve multiple customers
- Create option & formal process for enabling the buy out of end-of-line utility distribution infrastructure by customers and communities (or CMO on behalf)
- Develop tariffs that promote local electron sharing between neighbors and within communities to maximize energy optimization opportunities & benefits
- Develop value-based rates/compensation for grid services & load flexibility to support broader system needs & maximize cost savings for all ratepayers
- Create streamlined interconnection process to smooth pathways for project development and ease admin burden for applicants with multiple customers
- Create Distribution System Operator (DSO) with Open Access Model and Performance Based Regulation (PBR)– SYSTEMIC ENERGY POLICY CHANGE



Leadership & active engagement in energy policy is CRUCIAL to realizing our collective vision of a robust microgrid market & community-centric energy system for ALL

Policy Pathways for Community-Driven Microgrids–

21st Century Modernization of Grid For the Future

Community Power System Evolution

Create an open access Distribution System Operator (DSO) with Performance Based Regulation (PBR)

Create a clear regulatory framework that expressly permits the development of microgrids – with flexibility for customers to pursue a variety of configurations

Develop tariffs and interconnection processes that promote local electron sharing between neighbors and within communities

Develop value-based compensation mechanisms and price signals for customers to provide grid support and load management services to the electric system

Consider incentives or public benefit payments to critical, essential, and community-designated facilities for microgrids that provide resiliency

Promote an interconnected, community-centric, transactive energy future for all

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Q&A – Thank You!

Allie Detrio
Chief Strategist
Reimagine Power

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415.825.0133

Senior Advisor
Microgrid Resources Coalition

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Microgrid Resources Coalition

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Appendix

Designing the Grid for the Future

Energy Market Evolution

- Diversification of market participants, technologies, and solutions
- Performance-based regulation
- Value-based compensation
- Incentivize facilitation of many transactions at the grid edge

Strategic Decentralization and Grid Modernization

- Microgrid/DER optimization and digital transformation
- Energy affordability and infrastructure cost management
- Climate and wildfire risk mitigation
- Increase points of interconnection and creation of a nodal network of microgrids

Embracing Consumer Investment and Empowering Communities

- Grid services revenue = customers and communities building wealth
- Finance resiliency at the community level
- Acknowledge intrinsic benefits of localization and maximize value of customer investments

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Reimagining the Power Sector

- Boutique consulting firm specializing in microgrids, advanced clean energy technology, resiliency and sustainability policy in the West
- Headquartered in San Francisco, offices in Sacramento, East Bay, LA & Raleigh
- Founded in 2019, currently has team of 9 full and part-time consultants
- Clients include microgrid and clean energy developers, cleantech startups, trade associations, sustainability nonprofits, public agencies, private entities

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Reimagine Power Services

Advocate

Energy Policy Education

Stakeholder Engagement & Community Relations

Lobbying & Advocacy

Advisor

Specialized Clean Energy Expertise

State Gov Affairs

Regulatory Affairs

Energy Markets

Tariffs & Rate Design

Navigator

Project Development

Interconnection

Monetization Opportunities

Customer Engagement

Strategy

Business & Market Development

Growth Initiatives

Marketing & Communications

Outreach & PR

Intelligence

Boots on the Ground Expert Insights

Customized Policy Tracking

Research & Analysis

Executive Briefings

Thought leadership

Presenter

Author

Facilitator

Public Speaker

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About the MRC:

Founded in 2013, the MRC is a national association of leading microgrid owners, operators, developers, suppliers, and investors seeking to advance microgrids through:

- Education and stakeholder engagement
- Policy advocacy
- Market development activities

MRC mission:

- Ensure market access
- Fair compensation for services
- Level playing field for deployment and operations
- Empower customers and communities

Microgrid Resources Coalition

Microgrids & Distributed Energy Resources

Clean, Affordable, Reliable, Equitable, and Safe

Oregon Snapshot

- **NEW Community Microgrid Legislation Package – Successfully PASSED in June 2025 !!!**
  - **HB 2066:** Directs the Oregon Public Utilities Commission (OPUC) to establish a regulatory framework for the development, ownership, and operation of microgrids for third party customers and communities
  - **HB 2065:** Allows 3rd party consultants to conduct microgrid interconnection studies
- **Community Renewable Energy (CREP) Grant Program**
  - **HB 2021 (2021):** Supports planning and construction of new community renewable energy and resilience projects, including microgrids
  - **$64.7M** total budget for program - $40.5M has been reserved as of June 2025
  - **$12M** available for Round 4 Summer Grant Opportunity – now open with applications due August 2025
- **County Energy Resilience (CER) Grant Program**
  - **HB 3630 (2023):** provides each County with up to $50k to develop community energy resiliency plan
  - **19 out of 36 total counties** have applied and received funding; CER Plans due in August 2025
- **Oregon Department of Energy (ODOE) State Energy Strategy**
  - **HB 3630 (2022):** Directs ODOE to develop a comprehensive strategy to meet state energy needs
  - **Final State Energy Strategy Report due November 2025** - Stakeholders advocating for microgrids to be included as key solution to enhance electric system reliability and local energy resilience

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Colorado Snapshot

- **HB 22-1249 (2022) - Electric Grid Resilience & Reliability Roadmap**
  - Directed the Colorado Energy Office, in partnership with other state departments, to develop a roadmap for improving the electric grid's resilience and reliability through microgrid deployment
  - Colorado Microgrid Roadmap – Final Version Published January 2025
- **SB 24-218 (2024) – Energy Distribution Modernization - PASSED**
  - Creates process for single application interconnection and energization for DER customers, as well as other directives to enhance distribution system capacity including expanding VPP and DER aggregation
  - Directs creation of VPP and DER aggregator program for Xcel customers, including a performance-based compensation tariff, by February 2025
- **HB 22-1013 (2022) – Microgrids for Community Resilience Program**
  - Establishes a grant program to support utilities, anchor institutions, and local governments establish microgrid resources for community resiliency
  - Has awarded ~$14 million in funding to over a dozen projects across the state

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California Snapshot

- **CEC Distributed Energy Backup Assets (DEBA) Program**
  - **DEBA:** Grant funding opportunity pending for DERs and Microgrids – CEC awaiting guidance
  - $50M allocated in Prop 4 Climate Bond for DEBA – Budget Trailer Bill pending in Legislature
- **CEC Demand Side Grid Support (DSGS) Program**
  - **DSGS:** Compensates existing electric customers for demand reduction & load shifting performance
  - Budget for new program funding has been cut, destabilizing future program certainty
- **CEC Community Energy Reliability & Resiliency Investment program (CERRI)**
  - **$170M** available over next 5 years in coordination with Federal DOE & IIJA funding guidelines for community resilience and grid hardening investments
  - Round 2 Funding Now Available – Deadline for Applications is August 29th
- **CPUC Microgrid Incentive Program (MIP)**
  - **$200M** funding available – split between 3 IOUs for "Front of Meter" Multi-Property Microgrids
  - SB 453 (Stern) - Requires CPUC to review IOU MIP funding allocations and redirect funds if necessary

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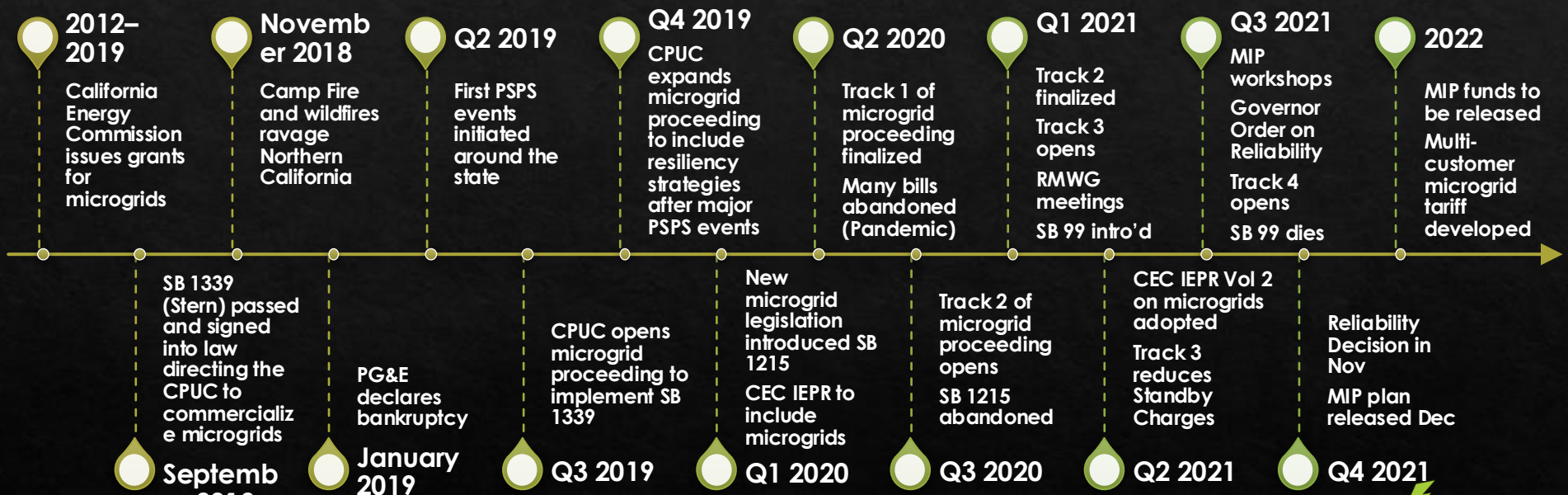
SB 1339 Defines Microgrids in California

- **"Microgrid"** means an interconnected system of loads and energy resources, including, but not limited to, distributed energy resources, energy storage, demand response tools, or other management, forecasting, and analytical tools, appropriately sized to meet customer needs, within a clearly defined electrical boundary that can act as a single, controllable entity, and can connect to, disconnect from, or run in parallel with, larger portions of the electrical grid, or can be managed and isolated to withstand larger disturbances and maintain electrical supply to connected critical infrastructure.
  - Stern, 2018

Microgrid Policy History in California



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R. 19-09-009 Microgrids & Resiliency

Track 1

- Approval of temporary diesel generation at substations
- Minor interconnection fixes for small solar + storage systems
- Directive for better utility - local government collaboration
- PG&E Community Microgrid Enablement Program

Track 2

- Minor existing tariff fixes (Rule 2 and Rule 18)
- Creation of ministerial "tariff" for single customer microgrids
- Approval of $200M Microgrid Incentive Program
- Clean generation substation pilots that the utilities later determined were "infeasible"

Track 3

- Reduction in Standby Charges
- Only relevant for certain microgrids that utilize generation
- Creation of demand assurance payment to utilities for microgrids that fail

Track 4

- Phase 1
- Microgrid Reliability Decision
- Approves more PG&E diesel and SDG&E owned batteries
- Phase 2
- Multi-property microgrid tariff proposals scoped for 2022

REIMAGINE POWER

CPUC Interpretation of Microgrid Tariff Mandate & Needed Legislative Fixes

CPUC Track 2 Decision:

- "Now, we turn to the timely and efficient implementation of the new, dedicated microgrid tariff. In the interests of time, economies of scale, and practicality, the IOUs shall fashion the new microgrid tariff by incorporating by reference the existing tariffs that are applicable to the individual resources that comprise the eligible customer-facing microgrids. This new microgrid tariff will create a regulatory identity for microgrids that will serve as a foundation for any future microgrid policy development that the Commission finds to be in the public interest. **Since the new tariff does not change the compensation available to microgrid component technologies but instead creates a simplified tariff,** this approach balances our need to expeditiously develop a microgrid tariff while meeting our broader constitutional and statutory mandates to ensure safety, just and reasonable rates, and the promotion of a diverse energy portfolio that supports customer choice."

Need to Fix PUC 8370 (d)

- "Without shifting costs between ratepayers, develop separate large electrical corporation rates and tariffs **that provide compensation for microgrid services and energy resilience~~, as necessary,~~** to support microgrids, while ensuring that system, public, and worker safety are given the highest priority."

AEC Symposium - Breakout Session

Business Models and Community Value Creation – Advanced DSM & DER Strategies

February 19, 2026

Uptown Room

Business Models and Community Value Creation –

Advanced Demand Side Management & Distributed Energy Resource Strategies

Moderator: Chris Sentieri, CEER

Panelists:

- **CCAs as Demand Response Providers** (Sam Irvine, MCE)
- **Enterprise DERMS Platforms for CCA-operated VPPs** (Mark Lane, Serious Controls)
- **Value of Transactive Energy: Under The Hood of a Prosumer Network** (Marc Costa, TEC)
- **Advanced Performance Evaluation for Dynamic Demand Flexibility** (Colman Snaith, TRC)
- **Affordably Delivering Whole-Home Retrofits and Solar** (Kate Ringness, Former Senior Advisor to the Secretary of the US Department of Energy)

CCA as DRPS

AEC Symposium

Share

Respond at
pe.app/aec

Poll Everywhere

Think about the place you live. Create a mental list of all the brands of appliances you interact with. Think about things like thermostats, EVs/Solar/Batteries if you have them, dishwashers, water heaters etc. Check the box that best matches how many unique brands you were able to identify.

B I Tт Formatting

1-3 0%

4-5 0%

6+ 0%

Add Choice

When Presented

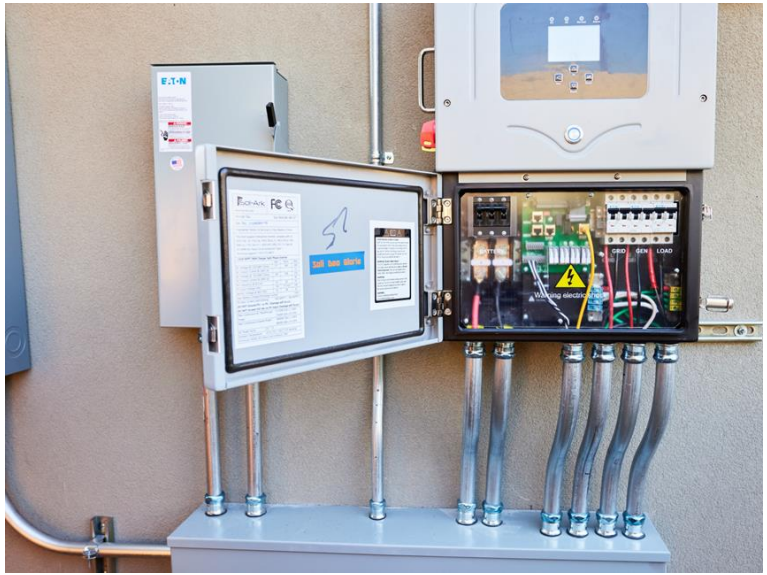
A Growing Symphony of DERS

Diverse Equipment & Ownership Models

- Residential, commercial, public facilities
- Owned, leased, financed
- Often under existing contracts

Today: These systems act as individuals

- Disconnected goals without unified coordination
- Load flexibility remains fragmented
- = Missed grid and market value



Without coordination, flexibility becomes **discordance** instead of value.

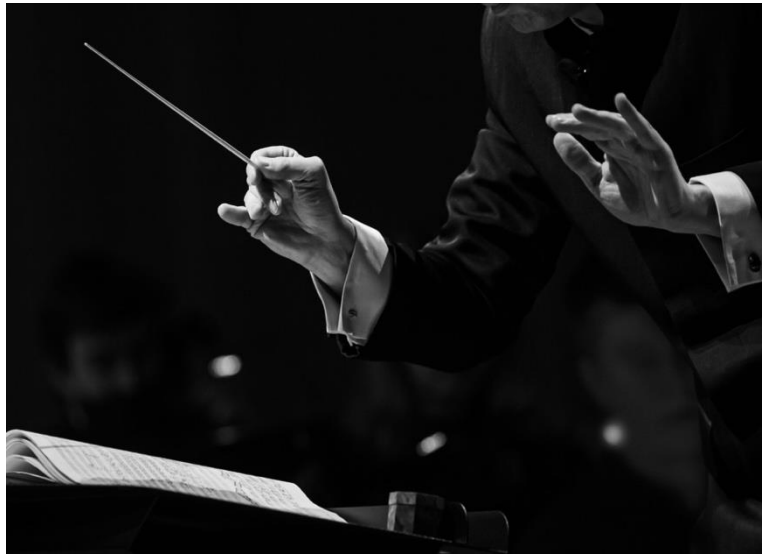
Need for a Conductor

1. Private Aggregator

- Often homogonous technology – sorted by brand
- Proprietary code/software and controls
- Walled gardens arise

2. Device by Device Model

- Requires a functioning price signal and market
- “transactive energy”
- Data noise = difficult Measurement and Verification
- Each device left to their own devices
- Customer lock-in



3. Community Choice Aggregator as Provider

CCAs: Orchestrating Demand Response Plant

Existing customer relationships

- Trusted community presence
- Insight into usage patterns (data)

Active power procurement

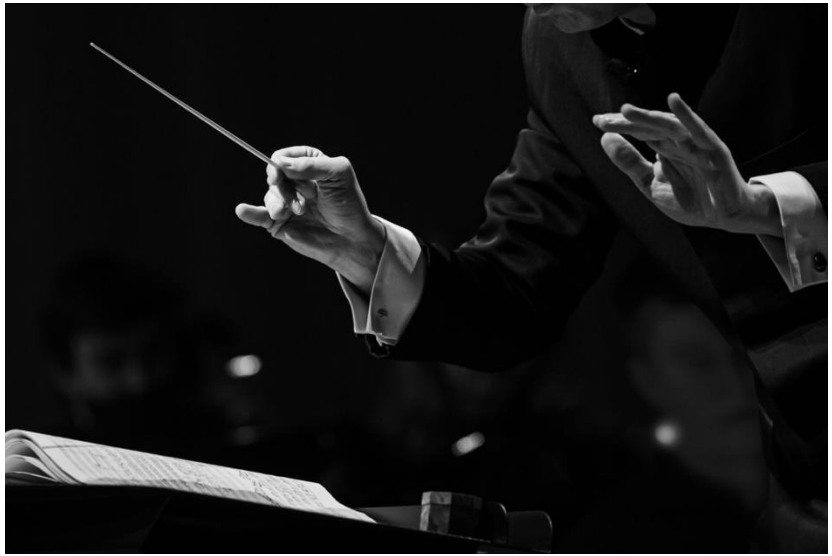
- Direct responsibility for supply portfolio
- Natural alignment of supply and demand
- Optimize cost, carbon, and reliability

Ratemaking authority

- Ability to design dynamic tariffs
- Incentivize participation at scale

Non-profit model & mission alignment

- Community benefit over shareholder return
- Focused on local reliability and affordability



When CCAs act as demand response providers **standards** and **equity** come to the forefront

Enterprise DERMS Platforms for CCA-operated VPPs

(Mark Lane, Serious Controls)

Purpose Built CCA eDERMS

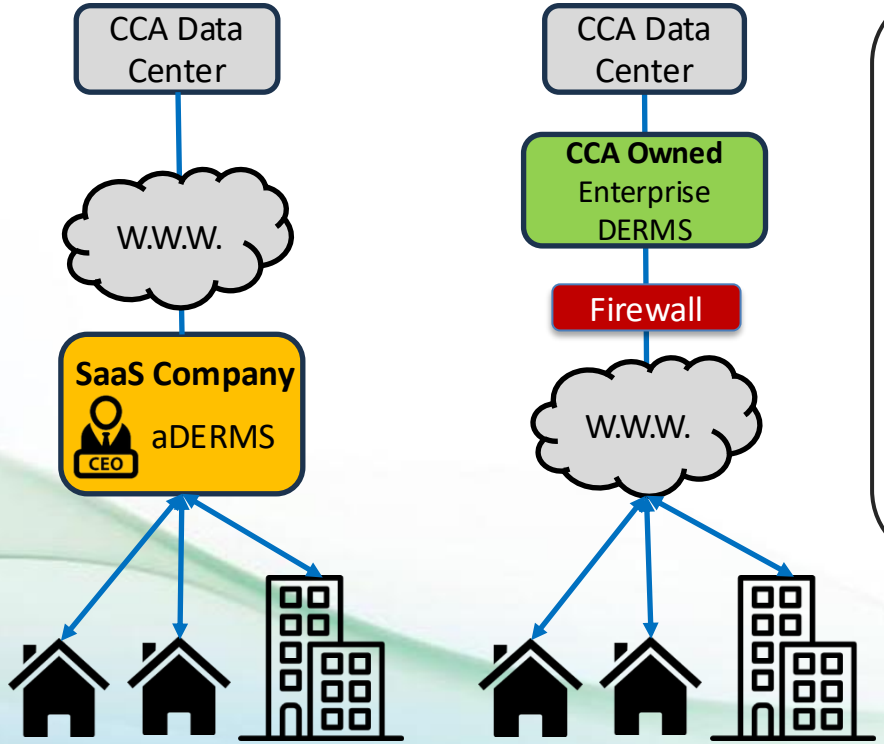
Enterprise DERMS Designed for CCA Use-Cases
and Rapid VPP Growth

SERIOUS CONTROLS

Why Selecting a DERMS for Your VPP Is Complex

- Long-Term Provider Stability
- Ability to Support Custom Use Cases
- Protection of Customer Data and PII
- Continuity of Operations at Contract End
- Vendor Lock-In

What is an Enterprise DERMS vs Aggregator/SaaS Based DERMS

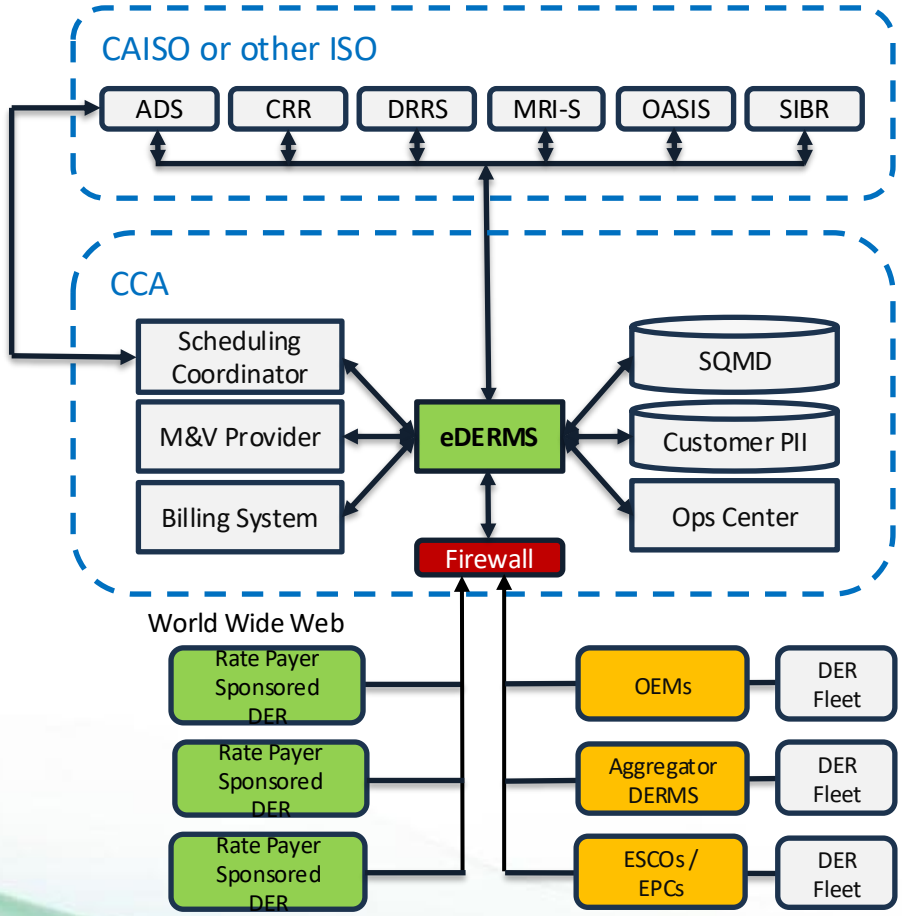


Key Points:

- Licensed to the CCA for Perpetuity.
- Protection of customer PII
- Protection of Rate-Payer Funded DERs.
- No Stranded Assets
- No One Between You and Your Customer

Enterprise DERMS a more Integrated Approach

- Allows multiple SaaS based DERMS to participate, helping the VPP get to scale quickly.
- CCA Specific Use-Case
- Allows the CCA to operate as their own DRP
- Single pane of glass to view and manage DER Fleet.



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Poll Everywhere

With the emergence of new DERMS categories such as Grid DERMS, Utility DERMS, Aggregator DERMS, and Grid-Edge DERMS, what term do you feel best describe the CCA purpose built DERMS?

0

0%
CCA DERMS

0%
Grid DERMS

0%
Grid-edge DERMS

0%
Enterprise DERMS

B I Formatting

Add Choice

When Presented

Value of Transactive Energy:
Under The Hood of a Prosumer Network

(Marc Costa, TEC)

Value of Transactive Energy: Under The Hood of a Prosumer Network (Marc Costa, TEC)

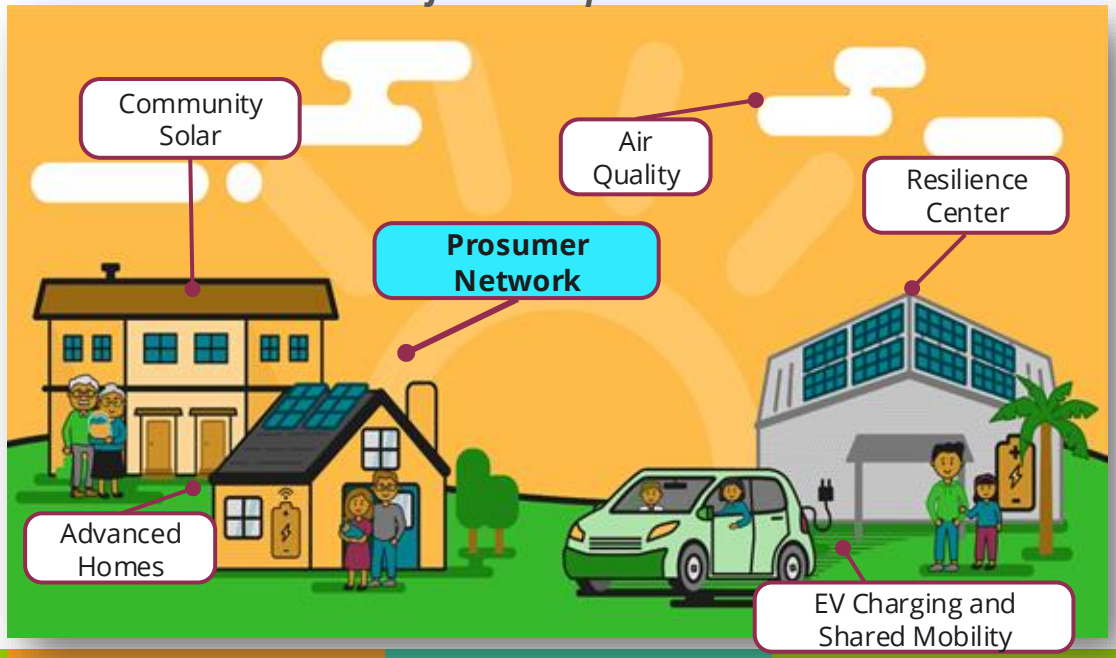
Bassett Avocado Heights (and adjacent cities) Advanced Energy Community (BAAEC)

A team of local nonprofits, community organizations, and energy technology leaders bringing equity to the clean energy transition of low-income and disadvantaged communities

BASSETT | AVOCADO HEIGHTS advanced energy community

Start: Aug 2020
End: June 2026

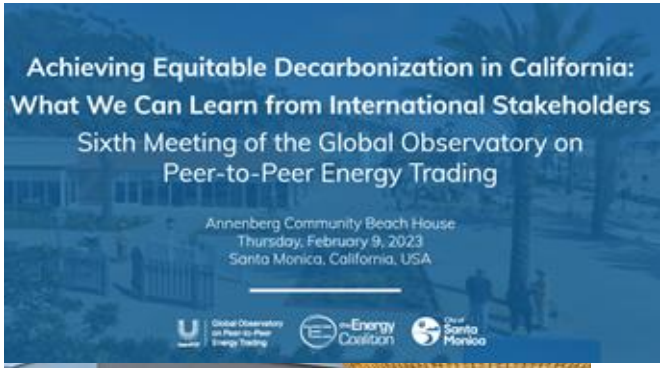
Project Components



Prosumer Network:

A downscaled version of the CAISO open access transmission network: one that allows prosumers to transact energy in new distribution system operator day-ahead futures markets, using dynamic pricing tariffs to reflect customer and local grid needs simultaneously

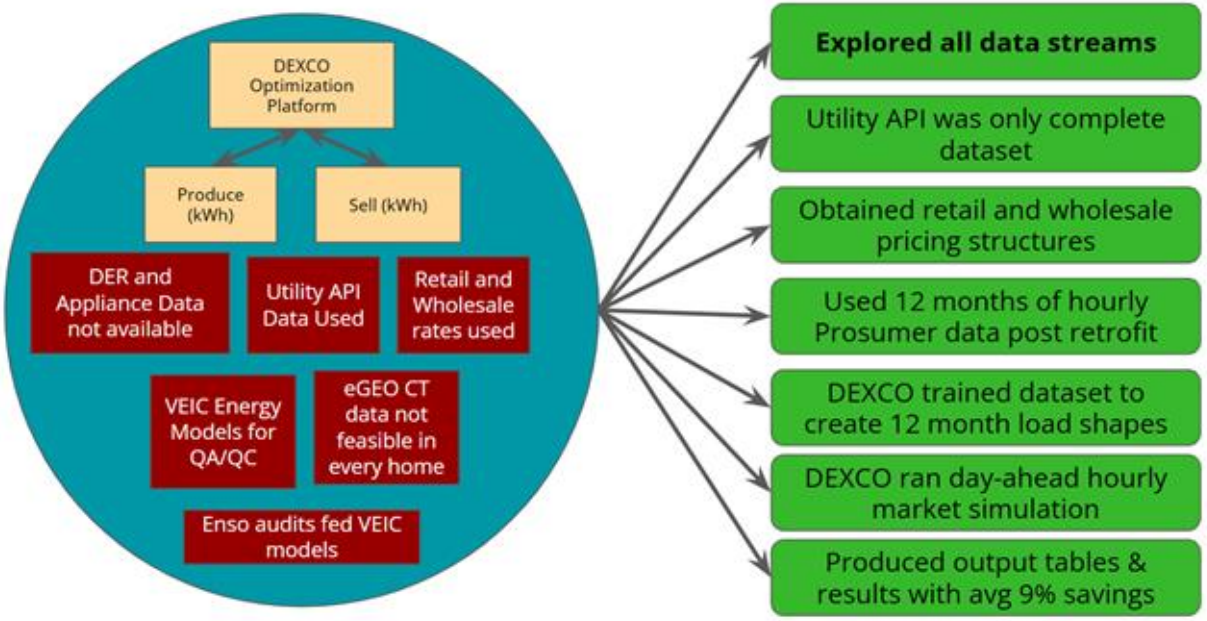
Prosumer Network Context



- BAAEC Prosumers: 11 homes with DERs, EE, weatherization and electrification measures
- Transactive energy and prosumer networks had few examples world-wide
- Researched and engaged international experts
  - Int'l Energy Agency
  - GridWise Architecture Council
  - California Dynamic Rate Pilots
  - EU and South America Pilots
- A single solution did not exist in one firm
- Equity focused pilots were even less common

Challenges in Implementation

1. Limited device API Access
2. Submetering with current transformers
3. Utility data instability
4. Access to electric distribution grid data



Delivered Result

- DEXCO, from Rotterdam performed the simulation
- Historic 15-min interval data
- Minimized customer bill
- Set a price corridor between wholesale and retail
- Settled in day-ahead market
- Average 9% bill savings

Figure 13: Seasonal Comparisons for 3 actual weeks of LMP Price, ACC, ACC+DAC adder (NBT), and retail TOU-D-Prime rates

Looking Ahead

- Transactive energy (TE) lowers bills & system costs
- Customer needs, load and generation shapes vary widely (see figure)
- Value to customers, LSEs, and DSOs is not fully captured in regulatory planning
- Regulations and industry standards are needed for data access and interoperability
- Community-scale planning for smart local energy markets is needed for LSE and DSO activities
- Distribution-level TE markets, equitable retrofits, and price optimization are all needed for scalability

Figure 18: Annual load shape vs trades with summary insights

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Poll Everywhere

What are the biggest barriers to scaling Prosumer Networks in California? (Select up to 3. Note- you may click each selection up to 3 times to increase priority.)

B I Tт Formatting

Lack of standardized device-level APIs

0%

Agile utility data access (MFA, consent flows)

0%

Tariff misalignment (NBT vs wholesale vs retail signals)

0%

Lack of distribution-level grid data (volt-VAR, hosting value)

0%

Planning framework limitations (IRP/DRP/IEPR)

Add Choice

When Presented

Advanced Performance Evaluation for Dynamic Demand Flexibility

(Colman Snaith, TRC)

Advanced Performance Evaluation for Dynamic Demand Flexibility

A Bayesian Non-Parametric M&V Approach

02.19.26

TRCCOMPANIES.COM

Quantifying Community Value

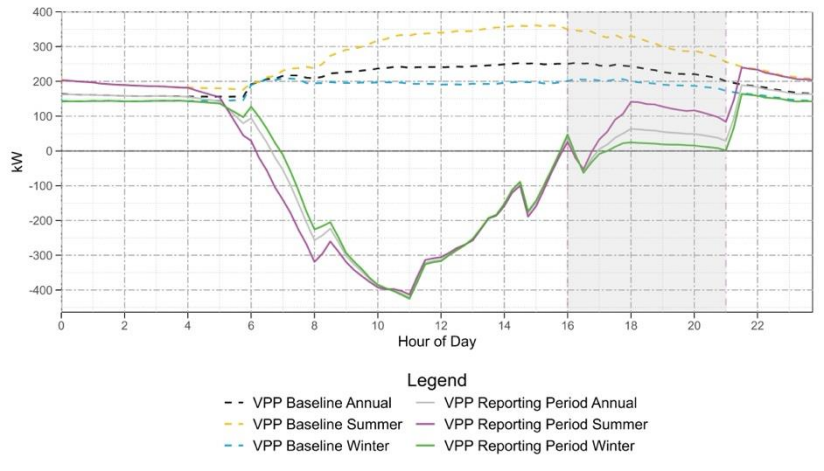
The Richmond AEC DER Community M&V Team was tasked with quantifying the value of the MCE VPP during core modes of operation

- Dynamic VPP formation
- Daily Load Shifting
- CAISO Event Participation

Key objectives of the evaluation approach

- Quantify the value of daily load shifting at individual participant level
- Accommodates BESS, EV Charging, HPWH, HVAC, IoT
- Maximize participation, while minimizing holdout (calibration) days
- Maintain accuracy year over year

Assessing Existing CAISO PEM



Common CAISO approved performance evaluation methodologies (PEM)

- 10-in-10
- 5-in-10
- Weather matching
- CalTRACK TOWT with Comparison Groups

We identified several disconnects between current CAISO approved PEM and the objectives of the MCE VPP

- Design for a small number of dispatch events annually
- Require significant non-participation days

CAISO recognizes there are issues in existing PEM formed DDEMI WG

The Solution

Bayesian non-parametric kernel smoothing

TRC's lead data scientist (PhD statistician) identified methods commonly used for projections in financial markets

… we are applying the same method to energy settlement

Non-parametric Modeling

- Each hour is related to every other hour in the year
- 3pm Wednesday is closer to 2pm Tuesday than 8am Saturday
- Higher accuracy than current CAISO PEM

Bayesian Statistical Approach

- Staggered holdout periods validate model and provide feedback loop
- Maximizes participation with fewer holdouts

Facilitates equitable value sharing between all participants

	Monday	Tuesday	Wednesday	Thursday	Friday
1:00	0.013	0.032	0.077	0.032	0.013
2:00	0.046	0.114	0.278	0.114	0.046
3:00	0.167	0.408	1.000	0.408	0.167
4:00	0.046	0.114	0.278	0.114	0.046
5:00	0.013	0.032	0.077	0.032	0.013

Question

What other value streams, that typical M&V methods have difficulty quantifying, are of the most interest to you?

a) Simultaneous overlapping event signals
b) Quantifying facility sub-system operation at the utility meter
c) Behind the meter EV fleet charging
d) Quantifying individual customer volt and/or freq support impact
e) Value of individual load flex devices at individual customers

Thanks!

Write any extra information here.

Call Us:

Colman Snaith
415.845.7742

Email Us:

CSnaith@TRCcompanies.com

Visit Us:

TRCcompanies.com

Respond at
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Poll Everywhere

What are large value streams that typical Measurement and Verification (M&V) methods have difficulty quantifying or can not quantify?

0

Awaiting first audience response..

When Presented

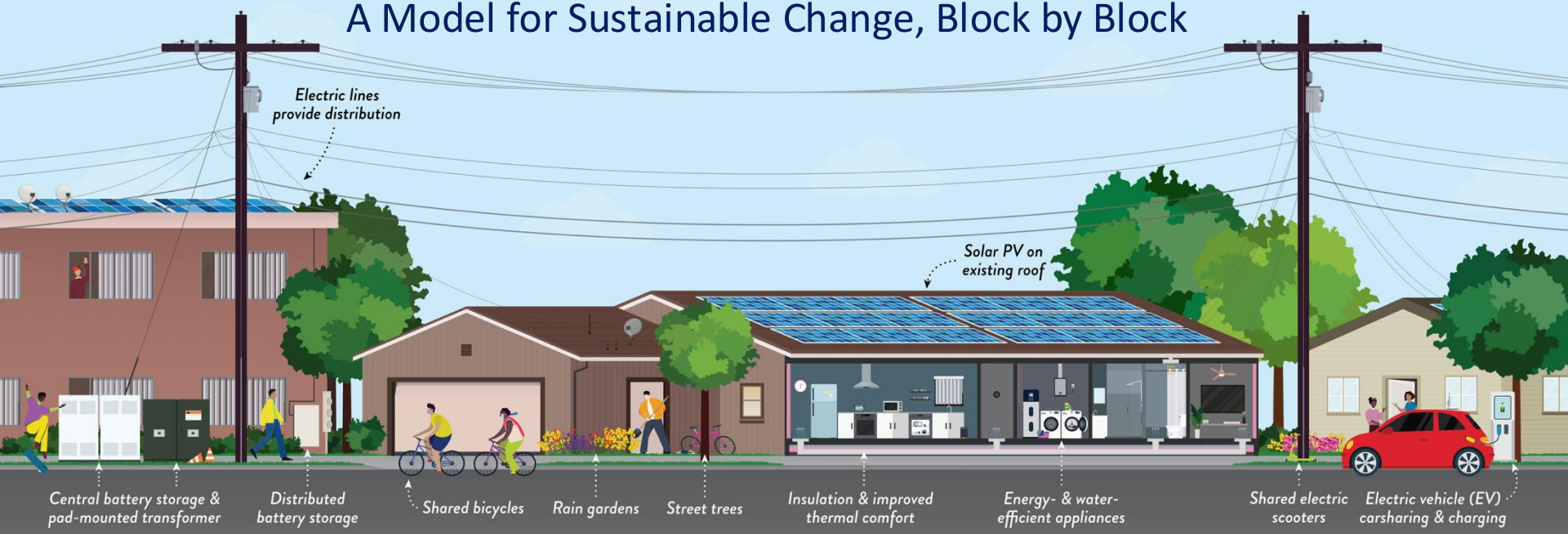
Affordably Delivering Whole-Home Retrofits and Solar
(Kate Ringness, Former Senior Advisor to the Secretary of the US Department of Energy)

ecoblock™

Kate Ringness
Business Model and Finance

The Oakland EcoBlock:

A Model for Sustainable Change, Block by Block



Support the community to be stronger together

How EcoBlock Creates Community Value

- Strengthens Community
- Improves Air Quality – local and indoor
- Improves indoor comfort
- Grows community wealth through asset ownership
- Provides access for hard-to-reach communities
- Facilitates faster and more wide-spread adoption of energy efficiency and electrification technologies

Illustration: Thoka Maer

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EcoBlock: Taking Advantage of Economies of Scale

Reduction of Transaction Costs and Soft costs

- Customer engagement and recruitment
- Half-Day Labor Problem for Contractors
- Permitting
- Zonal Decarbonization
- System Efficiencies: education, program infrastructure, modeling
- Supporting efficient access to low-cost capital and subsidies

Maximize Available Revenue Streams

- Solar NEM credits
- DER Aggregation
- Grid Support
- Demand Response
- VPP
- Unbundled RECs
- Carbon Offsets

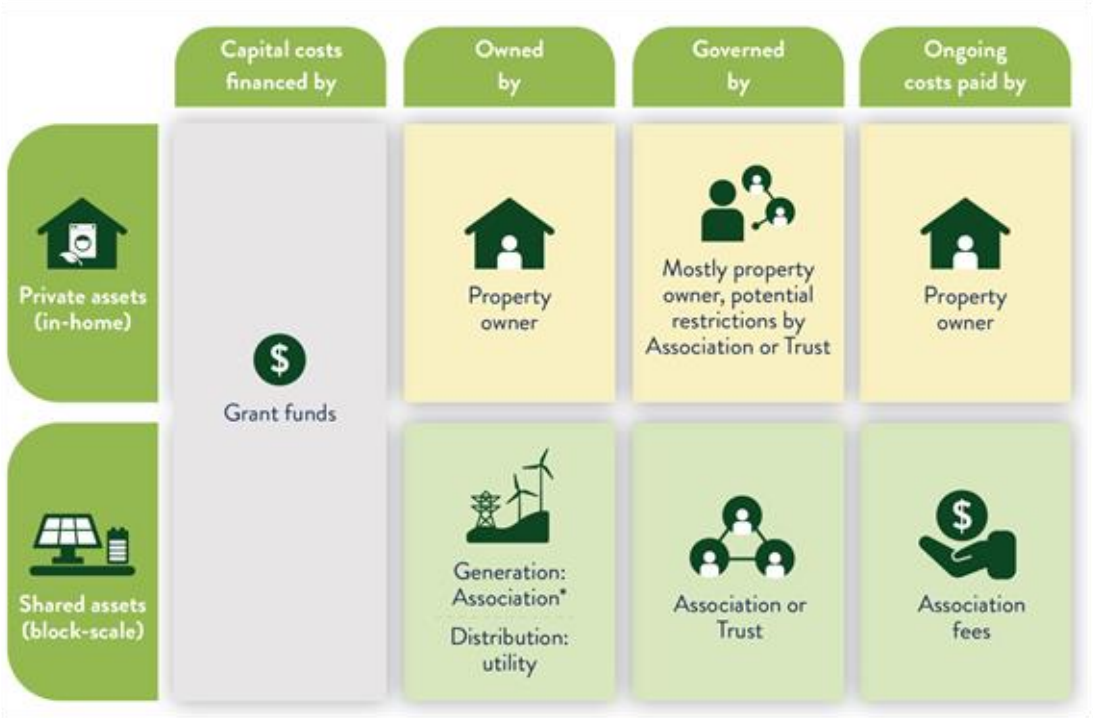
EcoBlock: Solving Community Ownership Problems

- Billing – NEM savings need to be distributed equitably
- Ownership Structure
- Operation, Maintenance, and Management Costs

Getting to Scale: Business & Financial Model

Grant-Funded Research Project

- Capital costs are covered externally
- Focus is on recurring costs/savings for participants



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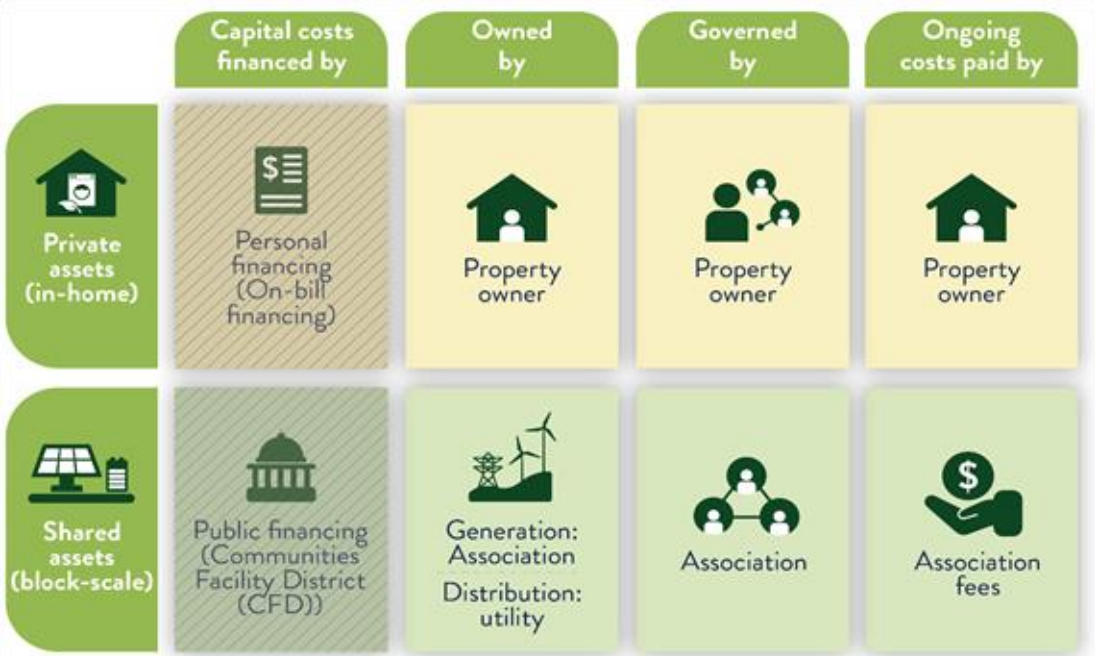
Business & Financial Model: Option 1

HOA + Utility Collaboration

- On-bill financing for in-home upgrades
- Public financing or nonprofit lender for shared assets



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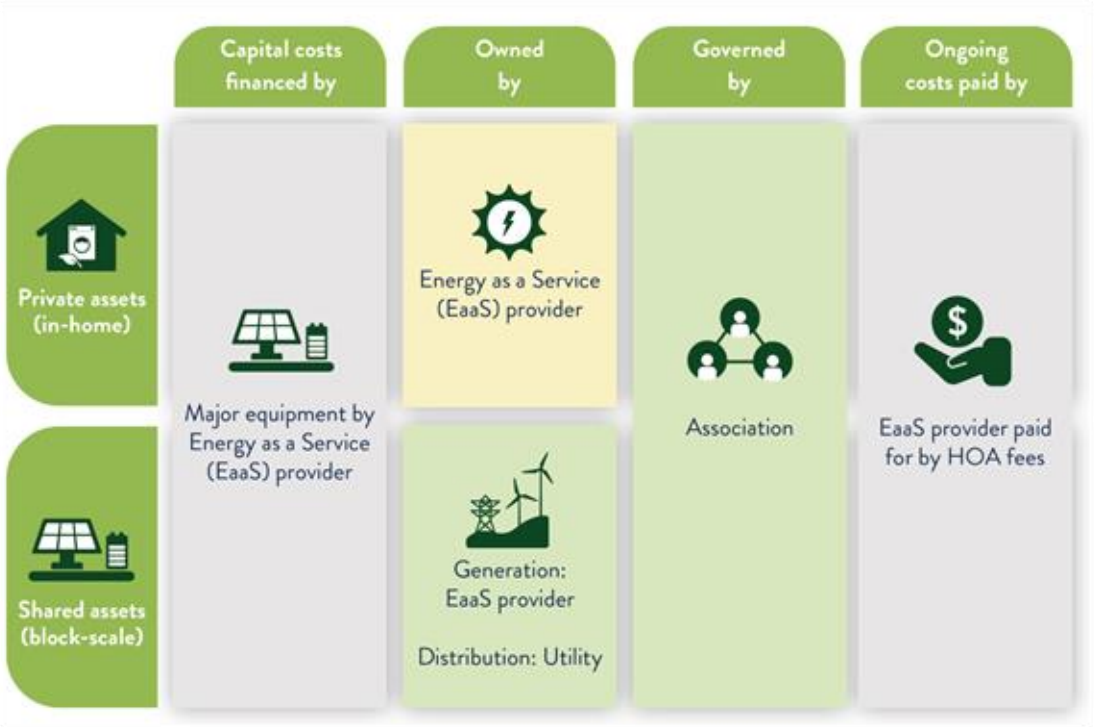
Business & Financial Model: Option 2

HOA + Utility + Third Party (EaaS) Collaboration

- Third party finances & owns major in-home upgrades; energy generation, storage & controls
- Utility owns & maintains distribution infrastructure



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Removing Barriers to Scaling EcoBlock

- Expand low-cost financing options
- Institutionalize support for planning and development
- Reform regulations to remove barriers
- Improve revenue streams
- Encourage utilities to engage communities productively

Respond at
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Poll Everywhere

If California were to create a new program with the goal of enabling the growth of Advanced Energy Communities, what should the priorities of the program be? (Select up to 3 choices . Note- you may click your choices up to 3 times each to increase the priority.)

B I Tт Formatting

Identifying policy reforms 0%

Enabling technology innovation and commercialization 0%

Educating the public 0%

Expanding affordable finance mechanisms 0%

Changing social Structures 0%

Add Choice

When Presented

ecoblock™

A Model for Sustainable Change, Block by Block

If California were to create a new program with the goal of enabling the growth of Advanced Energy Communities, what should the priorities of the program be? (rank your answers)

A. Identifying policy reforms
B. Enabling technology innovation and commercialization
C. Educating the public
D. Expanding affordable finance mechanisms
E. Changing social Structures
F. Other (write in your answer)

BREAK

Please return by 3:45 PM.

AEC Policy & Program Deployment Strategies
- The Road Ahead

Moderator: Kurt Johnson, The Climate Center

Panelists:

- **Putting it All Together: Thoughts on AEC Acceleration** (Richard Schorske, ZNEA)
- **Project Teams Perspectives on AEC**: Chris Sentieri (CEER); Therese Peffer (CIEE/UC Berkeley); Genaro Bugarin (TEC)
- **Audience Input** on AEC Policy, Program Development, and Deployment Strategies

Advanced Energy Community Acceleration

AEC Symposium – 02.19.26

Richard Schorske

Executive Director, ZNE Alliance

ZNE/Alliance

What challenges can AECs help solve?

- Affordability
- Resilience & Decarbonization
- Equity

Affordability

Strategy

- **Integrated DER, EE, and VPP deployment** optimizes BTM asset performance via demand response and CAISO integration to achieve customer and CCA savings

Actions

- **Deploy purpose-built OpenADR DERMs** for CCAs to build efficient in-house VPP capability
- **Develop innovative tariffs** that attract VPP participation and equitably share savings
- **Align CCA and other incentives** to ensure that DER assets can be integrated into VPPs without DER vendor & aggregator business model conflict
- **Address C&I market barriers** with innovative models address the split incentive problem -- whereby C&I owners and tenants are not incentivized to adopt DERs and EE (e.g. the Metered Energy Efficiency Transaction Structure (MEETS) or Powertree BTM approach to solar, storage, and EVSE deployment in multi-family housing)

Resilience & Decarbonization

Strategy

- **Holistic approach to DERs & EE:** AECs that combine DERs, EE, Microgrids, VPP, and Vehicle-Grid-Integration are -- in principle -- THE most efficient approach to displacing fossil generation
- **Smart AEC/DER orchestration:** boosts effective load carrying capacity (ELCC) - making most efficient use of the T&D system
- **CCA/DSO interface:** Ideally, CCA-operated VPP/DERMS integrate with IOU-operated Advanced Distribution Management Systems (ADMS) to embed DER / VPO deployments in DSO planning

Actions

- **Deploy grid-level analytics** (e.g. Kevala) and building level analytics (e.g. Helios Exchange) to ID "best fit" of comprehensive DER & EEM tech stack for specific grid and building conditions
- **Automate proposal generation and streamline DER installation** to accelerate deployment and unlock scale efficiencies (e.g., Treehouse & Base Power)
- **Contract or build vertically integrated capability** to deliver turn-key DER Aggregation with VPPs – combining analytics (grid+buildings), finance, CRM, installs, VPP/DERMS, and O&M

Equity

Strategy

- Recognize that real equity is not just “fairness” – it enables ownership of revenue-generating or cost-saving assets

Actions

- **Deploy low-cost pools of large capital** – e.g. utility and city/regional bonds, insurance pools, pension funds, endowments – to establish local/regional, state, or utility-wide AEC finance facilities (e.g., LA Vision 2026 & Bay Area regional bonds)
- **Focus on multi-family market** with finance innovations (e.g. on-bill payment with MEETS / Powertree) that leverage private investment (moving beyond incentives!)
- **Accelerate commercial V2G ecosystem development** using”coalitions of willing” automakers, EVSE OEMs, and utilities – to move immediately from pilots to programs
- **Target incentives** to lower-cost V2G EVs via cash for clunkers and “feebate” approaches that enable lower-income residents to access V2G EVs that pay for batteries + power

Interested in Accelerating AECs?

- Join the AEC Accelerator Coalition to advance collaborative strategies!

Contact: Richard Schorske, ZNE Alliance

Richards@znealliance.com | 415.310.2407

Audience Input

Polling Questions & Final Discussion

Share

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Poll Everywhere

Thank you for participating in the AEC Symposium. Please rate your experience after today's session:

0

0%
Excellent, Valuable, and Actionable

0%
Informative, but I wanted more details about some of the items presented

0%
Repetitive and tedious

Add Choice

When Presented

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Poll Everywhere

Reflecting on the presentations & discussions today, what issue was of most interest to you or needs the most work and attention?

0

Responses Hidden

Save Question Settings

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Poll Everywhere

1. Which AEC strategies can most effectively accelerate rapid decarbonization in your region? (Select up to 3. Note- you may click each selection up to 3 times to increase priority.)

0

Transactive Energy 0%

Community-scale Microgrids 0%

Whole Home/Building Retrofits 0%

Community Solar+ Storage 0%

Community Engagement and Education 0%

Virtual Power Plants 0%

Add Choice

When Presented

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1. Would you support amending California Public Utilities Code 218 to provide a pathway to exemption for community microgrids that meet or exceed standard interconnection requirements (i.e., for public safety)?

0

0%
Yes

0%
No

0%
Not certain

Add Choice

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Which strategy for accelerating the deployment of beneficial community-scale microgrids will be most effective? (Select one)

0

0%
Legislative Amendment of PUC 218 (i.e., a new bill from the California Senate or State Assembly)

0%
Amendment of PUC 218 by Ballot Measure

0%
Create a certified Community Microgrid Operator (CMO) designation

0%
Develop a clear and robust interconnection tariff for Community-scale Microgrids to reduce cost and increase successful interconnection rates

Add Choice

When Presented

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Poll Everywhere

Which AEC funding/financing strategies do you believe can be scaled cost-effectively to ensure equitable & affordable access to beneficial clean energy technologies? (Select up to 3. Note- you may click each selection up to 3 times to increase priority.)

0

Social Impact Bonds 0%

Revolving Loan Funds Programs 0%

Municipal Bond Financing Programs 0%

Robust Equipment Incentives 0%

Tariffed On-bill Financing 0%

Dynamic Retail Rate and Tariff Designs 0%

Community Ownership of Clean Energy Systems 0%

Add Choice

When Presented

Join us at DREXL!

382 19th St, Oakland, CA 94612

Thank you for your attendance & participation today!