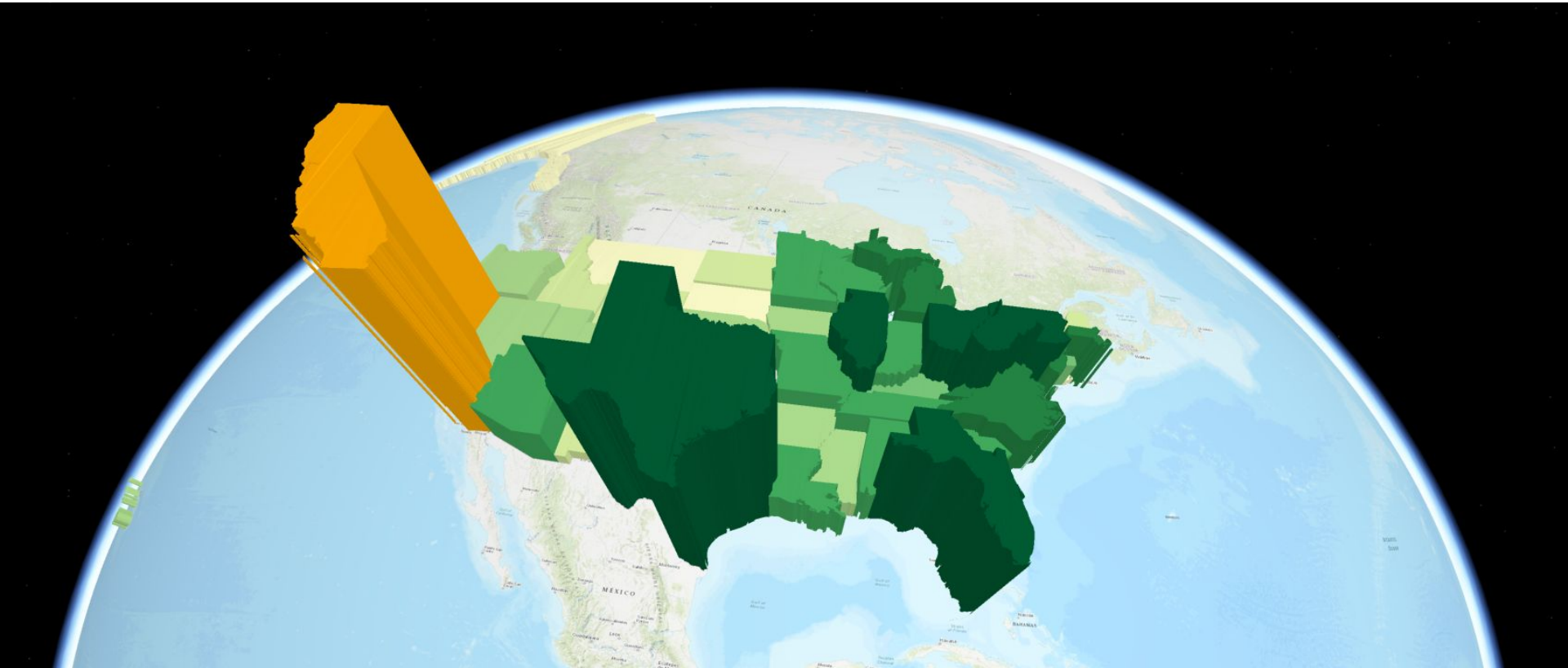




Achieving Equitable Decarbonization: Lessons from International and Local Government Perspectives

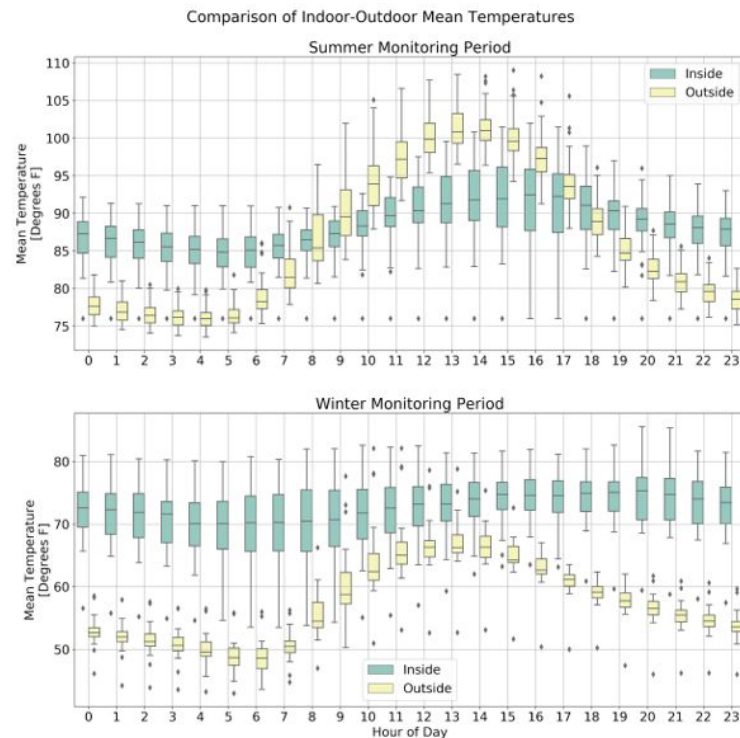
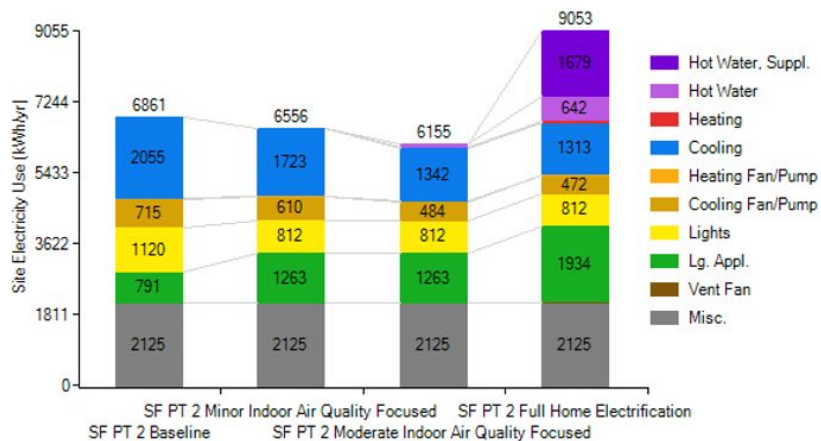
Marc Costa, The Energy Coalition
CCEC - Santa Rosa, CA
June 2023



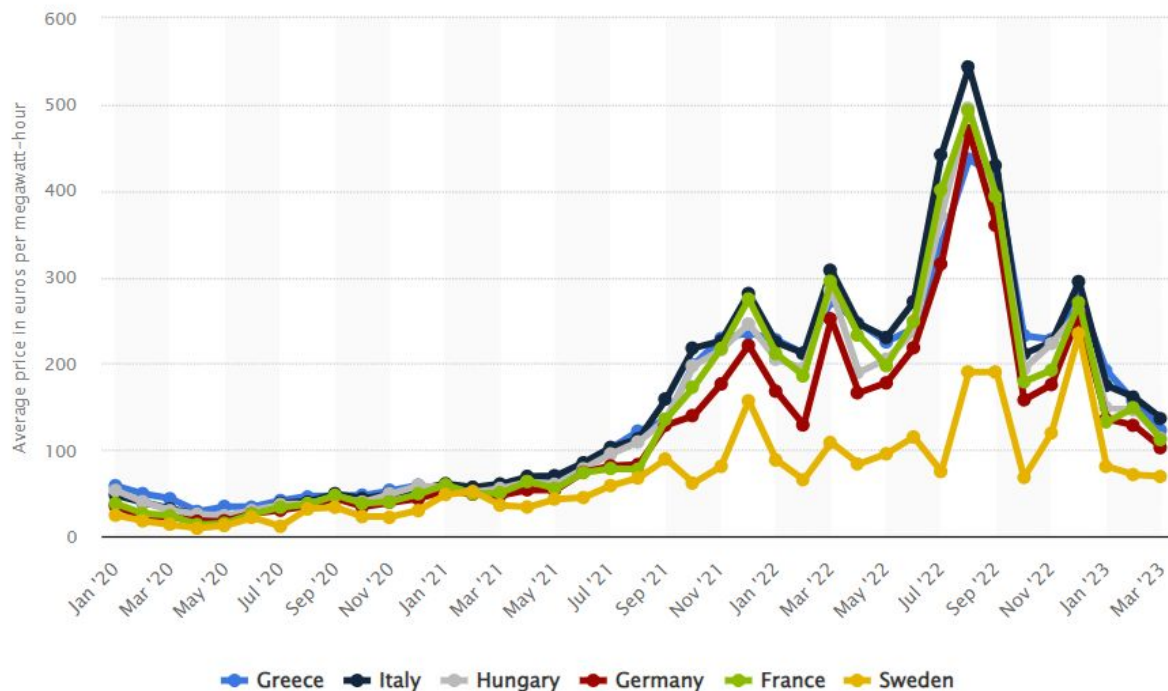
>\$48 Billion Dollars in Total Revenue from CA Retail Electricity Sales
(U.S. Energy Information Agency, 2021)

California Homes and People Need Help

- High tolerance for thermal discomfort
- >85F inside homes



At the same time, a sharp rise in EU wholesale electricity markets (January 2020 to March 2023)

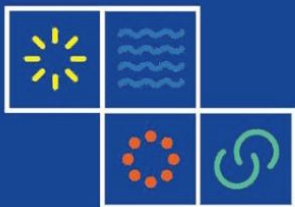


Lessons from a Continent: Regulatory Framework in the EU



- EU Winter Package 2019: [Directive on RES](#) (2018/2001), Directive on internal electricity market (2019/944) - EU Parliament & Council of the EU
 - 'Renewable energy communities', 'Citizen energy communities'
 - 'Peer-to-peer renewable energy trading'
 - 'Active customer', Collective self-consumption
 - Larger part of the European Green Deal
- Members can produce, consume, store, or share energy within
- Each European Union Member State's implementation differs by:
 - Energy sharing and responsibilities
 - System boundaries and limits
 - Network tariffs and taxes

"By supporting citizen participation, energy communities can help provide flexibility to the electricity system through demand response and storage - [European Commission Energy Communities](#)



NEW: "Digital tools for energy communities, a short guide"

[Browse the guide](#) >

ENERGY COMMUNITIES REPOSITORY

#EUenergycommunities

Energy communities are one of the key elements for achieving the EU's energy transition: by 2050, half of Europe's citizens could be producing up to half of the EU's renewable energy

Who is helping launch these Citizen & Renewable Energy Communities?

→ The Global Observatory On Peer to Peer Markets (GO-P2P)

- The Global Observatory is a forum for international collaboration to understand the policy, regulatory, social and technological conditions necessary to support the wider deployment of peer-to-peer, community self-consumption and transactive energy models.
- 200 experts; ~9 countries
- userstcp.org/task/peer-to-peer-energy-trading/
- Launch in 2019; Funded by various national/subnational governments; UCL staffs



GO-P2P Meeting in the U.S.

Achieving Equitable Decarbonization in California: What We Can Learn from International Stakeholders

Sixth Meeting of the Global Observatory on Peer-to-Peer Energy Trading

Annenberg Community Beach House
Thursday, February 9, 2023
Santa Monica, California, USA



Global Observatory
on Peer-to-Peer
Energy Trading



the Energy
Coalition



City of
Santa
Monica

Meeting Recap

- 2 days
- 50 attendees
- 8 countries
- 10 sessions
- 18 speakers
- 3 generations of VPPs
- 3 flavors of smart local energy markets (SLEMs)

Evaluating Transactive Energy for Rural America – Post Road Foundation

- Where - Maine and New Hampshire, USA
- Who - 200 to 300 participants in each of three "Connected Communities"
- What - Auction and/or orderbook energy and storage markets with heterogeneous DERs participating (HVAC, batteries, EVs, heat-pump H2O, solar PV)
- Who - utility / wholesale market / electricity consumers
- Why - Evaluate transactive in a rural context – results in 4 to 5 years
- Barriers – DER interoperability, regulatory structure in Maine, utility / consumer caution



Website for more info:
<https://connectedcommunities.lbl.gov/>
<https://postroad.energy>



Bassett Avocado Heights Advanced Energy Community (AEC)

- Where - East Los Angeles County, California USA
- Who - Low-income and Disadvantage community
- What - Solar plus battery storage, weatherization, heat pump water heater (HPWH), induction stove, and home energy management system.
- How- virtual power plant (VPP): Community Choice Aggregation (CCA), Investor-Owned Utility (IOU), and/or CA Independent System Operator (CAISO)
- Why - Equitable electrification. How do we get DERs to low-income homeowners?
- Barriers – Condition of building stock. Financing / business models; compelling reason for the customer



Website for more info:
advancedenergycommunity.org



100 villages project - Portugal



Challenge

- Fight **energy poverty** in rural communities in **Portugal**, through access to locally produced clean electricity at more affordable prices and with no upfront investment needed.

Solution

- CW deployed **energy communities** in 100+ villages partnering with local organizations (Parish Council, Social Institutions, Associations, Industries etc.)
- Members gained to **access clean energy at a lower cost** and had exemption of part of the network fees.
- CW handled the entire process with **0 upfront investment** and used local installers and energy technicians.

100+
Energy communities created

17.5+ MWp
Total capacity

1500+
Community members

30%
Average abatement of energy costs



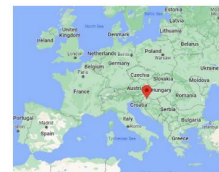
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25

City of Križevci, Croatia

- Where - Croatia, City of Križevci (cca. 20 000 people)
- Who - public institutions and commercial sector - Kindergarten, City Library, Tech Park
- What - solar, energy storage, EV charging station - energy sharing within an energy community
- Why - decrease cost for the participants and improve conditions in local grid
- Barriers – technical, regulatory, economic, social



Website for more info:
<https://doi.org/10.1016/j.renene.2022.04.044>





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Municipalities' Role - Guidebook



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	Chapter 05: Developing Supporting Platforms, Tools and Programmes

	Chapter 06: Facilitating dialogues between local stakeholders page 78-87
	Chapter 07: Giving access to public sites page 88-90
	Chapter 08: Buying community power or heat
	Chapter 09: Co-investing in a jointly owned local project page 98-97
	Chapter 10: Becoming a direct member of an energy community page 98-105
	Complementary resources

Index of examples

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“The energy transition must be a just and social transition that benefits all citizens, local communities, and the local economy in the first place.” - SCALE Guidebook

Highlight Video



Presented by



Marc Costa, LEED AP BD+D, CGBP, BOC II
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Social

[@_TECtweets](https://twitter.com/_TECtweets)
[@theenergycoalition](https://twitter.com/theenergycoalition)

The Future is Electric

Steven Moss, Partner, M.Cubed

14th Annual California Climate & Energy Forum

June 13 – 14, 2023 • Santa Rosa, California



Public Policy Pressure to Phase-Out Fossil Fuels Without Triggering Other Disruptions

Half of all garbage trucks, tractor-trailers, cement mixers and other heavy vehicles sold in California must be all-electric by 2035.

New gasoline-powered cars banned in the state beginning with 2035 models.

Electric vehicles (EVs) require new charging infrastructure, including large scale facilities for fleets and trucks.

Even with rebates, EV adoption will start with the rich and trickle down to the poor, with robust used fossil fuel market likely to linger for lengthy period.

Bay Area Air Quality Management District prohibits sale of NOx-emitting natural gas water heaters in 2027; outlaws NOx-emitting furnaces in 2029 and large commercial water heaters in 2031.

Expanding household electricity capacity may require costly panel and wiring upgrades; or could spur battery revolution.

Growing demand for electrical skills in workforce.



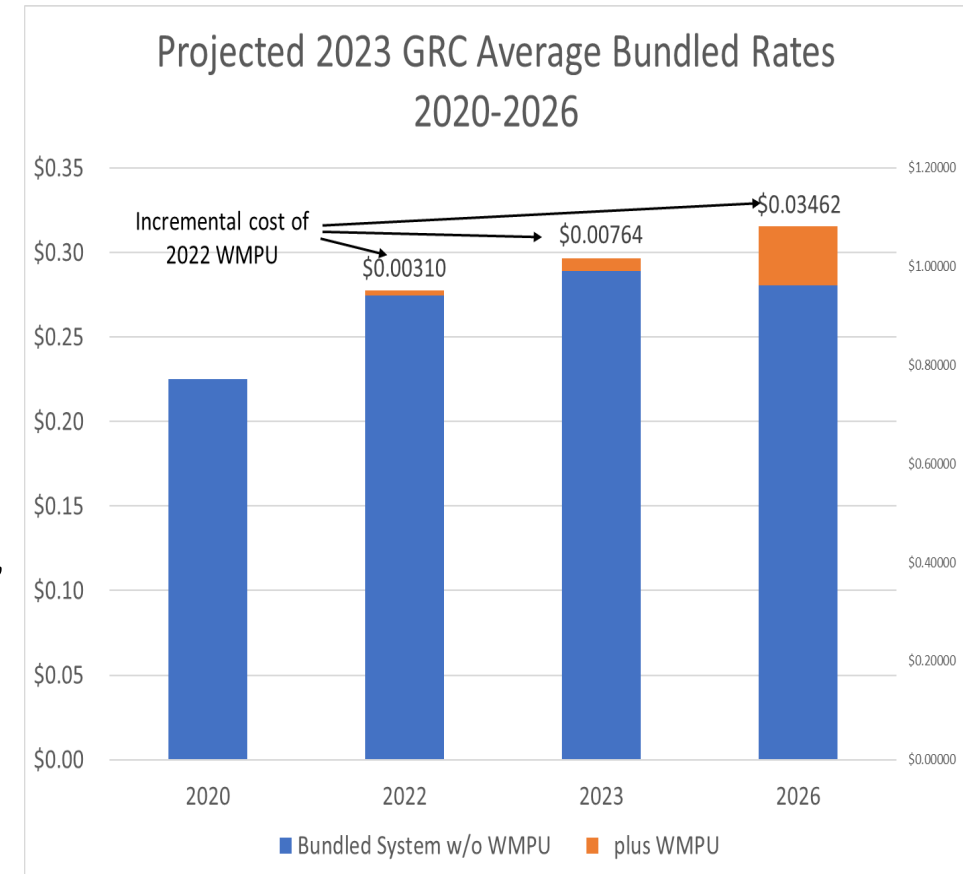
Electricity Rates Unlikely to Go Down in Long-run

Pacific Gas and Electric Company recently filed for residential rate *decreases*, due to expiration of emergency collections and lower fossil gas prices; however, General Rate Case (GRC) application proposes substantial *increases*.

Threats include **potential for large-scale stranded gas assets; possibility that up to \$50 billion investment in grid infrastructure needed by 2035 to accommodate transportation electrification (TE) and distributed energy resources (DER)**, assuming reliance on investor-owned utilities, *more than double the roughly \$33 billion present IOU revenues*.

Reliability risks associated with extreme weather and wildfires.

Potential for electrification backlash; policy goals \neq market outcomes.



What's a Local Government to Do?

At minimum, need to manage land use consequences associated with TE, including large charging stations, which may rely on DERs.

Pivot from assumed high energy intensity future, encouraging electric pathways that're low weight, nimble and appropriate to urban communities: electric bicycles and motorcycles, and safer transportation circulation.

Truck/warehouse facilities become electricity nodes, providing localized pollution relief. Lend electrical hand to neighbors?

Municipal parking lots morph into municipal batteries?

Expedited DER permitting?

EV deserts.

Electrified gas stations reimagined as lonely laundromats or fun places to hang.



Local Control?

Batten down the building hatches.

Net-zero the new normal? Or net-positive?

Muster microgrids

Resiliency centers everywhere, including at home.

Neighbor-to-neighbor.

Shadow fossil fuel backup generators presently dominate; reliability and renewable divide.

Lean on levers

Regional Energy Networks and Community Choice Aggregators could become even more important to address affordability and neighborhood needs.

Municipalize

Seamless valuation will require state action or ballot initiative.





Workforce Development

Training and work preparedness the most challenging aspect of the transition, and potentially the most meaningful.

Low-income families will have lingering dependence on declining fossil fuel repair and maintenance industry.

**The End of the
World As we Know it
or Same as it Ever
Was?**

steven@moss.net



Thank you!



Contact us:
contact@lgsec.org



Achieving Equitable Decarbonization: A Perspective from Local Government



Councilwoman Arlis Reynolds
City of Costa Mesa | 2023 CCEC Forum

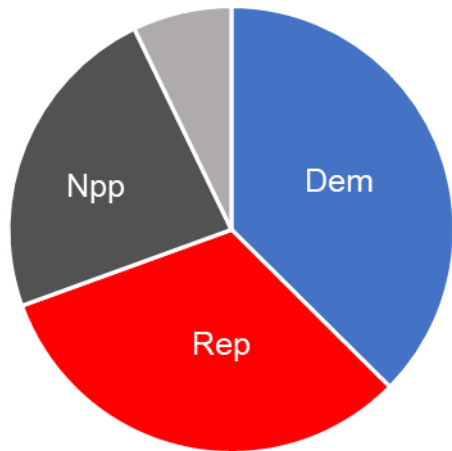
“Local government is not the lowest level of government, but the highest level of collaboration for strong citizens working to build a prosperous place.”

Strong Towns

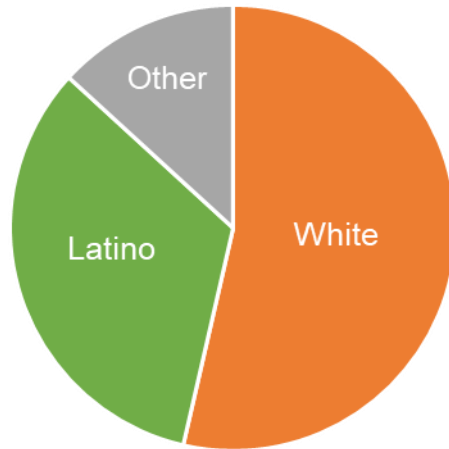
City of Costa Mesa

Orange County, CA

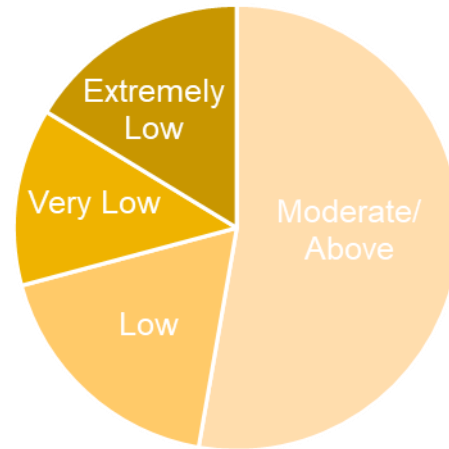
Population ~ 114,000



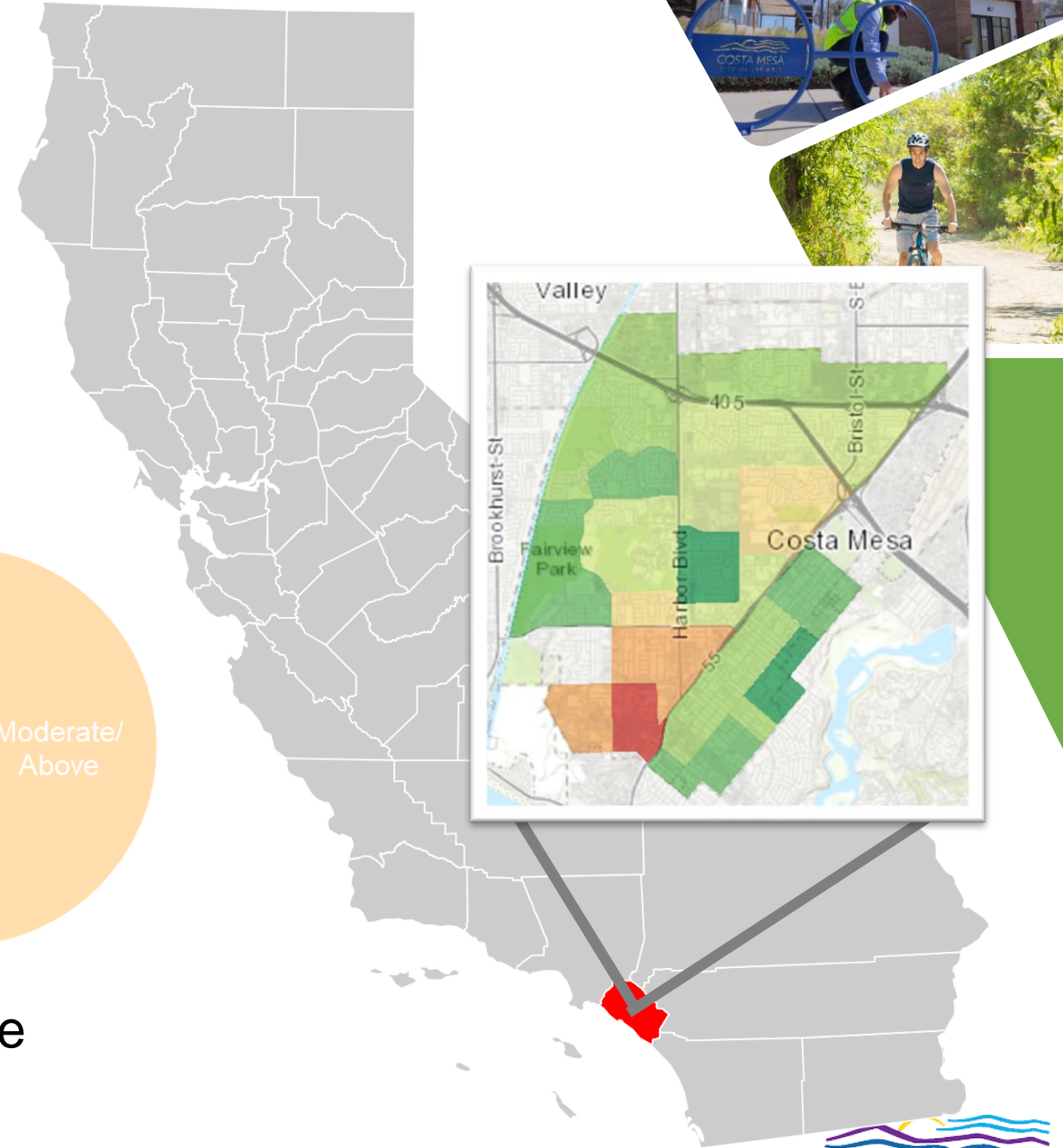
Politics



Ethnicity



Income



A “Full Service” City

Management,
HR, Legal, IT,
Finance

Planning &
Buildings

Public Works

Parks &
Community
Services

Police

Fire

Water

Waste &
Wastewater

Power

Health

Sustainability Actions



Energy and
Sustainability
Manager



Active
Transportation
Coordinator



Sustainable
Planning
Manager



Municipal “Green
Team”



Council Strategic
Goal on
Sustainability &
Resiliency



Streetlights
Retrofit



Electric Vehicles
and Chargers (in
process)



LEED Cities Gold
Certification,
“Tree City”
Certification



Funded: Climate
Action and
Adaptation Plan



Challenges



Local government
structure and silos



Capacity:
technical, staffing,
funding



“Not my job” and
Risk Aversion



Politics &
performance



The “E” word



The squeaky
wheel

Strategies and Wishlist



Rubrics and scorecards



Regional support and coordination



Redefine public safety



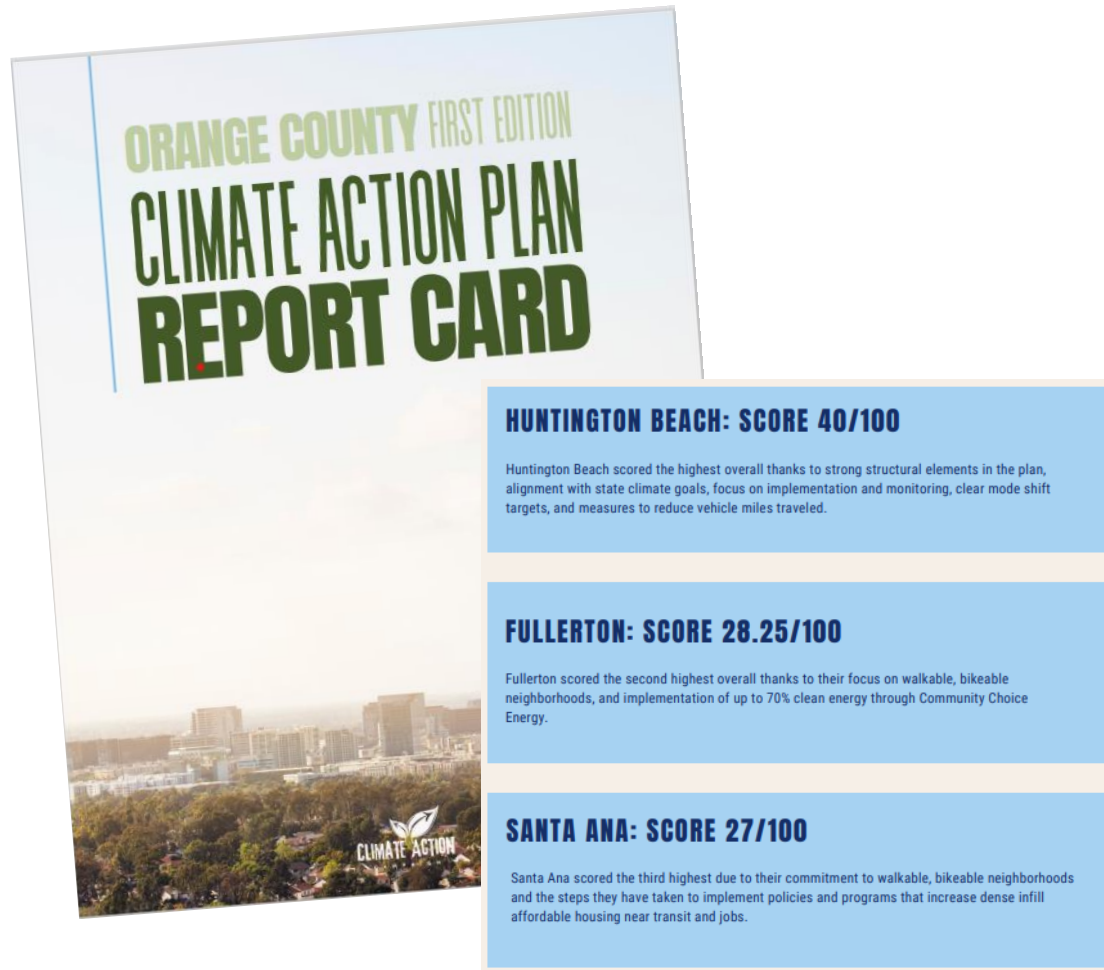
Training and model policies/ordinances across local government functions



Funded mandates (w/ technical assistance and reporting requirements)



Rubrics & scorecards



Regional support and coordination

technical assistance

regional studies

shared tools & resources

climate “strike team”

success stories

Blue Zones: Life Radius

sustainable zoning
building code reform
complete streets
green alleys
tree canopy index
equity & engagement

building code reform

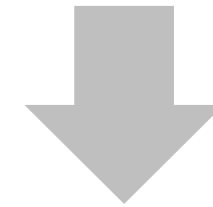
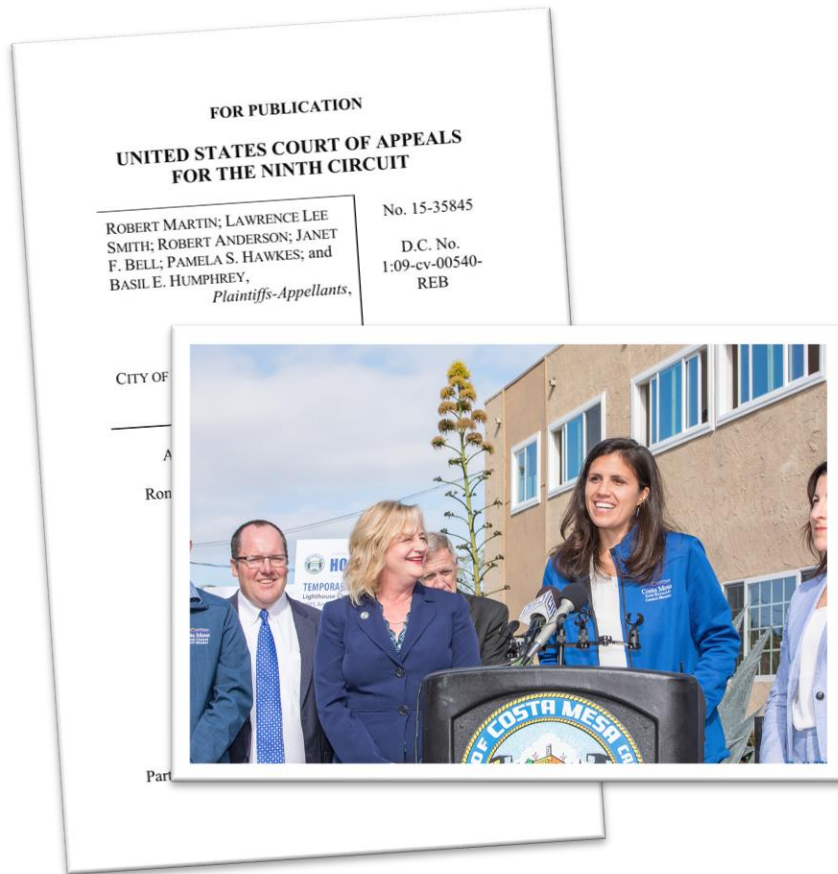
complete streets

green alleys

tree canopy index

equity & engagement

Funded mandates (w/ technical assistance and reporting requirements)



Walking, cycling,
public transport,
rail, parking

Electric cars

ПРОКУРАТУРА

АВТОМОБІЛНОЇ
РЕСПУБЛІКАН
КРМ



Thank You

Councilwoman Arlis Reynolds

City of Costa Mesa

Arlis.Reynolds@costamesaca.gov

@arlis4costamesa | @arlisreynoldscm



Building California's Clean Energy Future From The Bottom Up

California Climate & Energy Forum, June 14, 2023

**Lorenzo Kristov, PhD, Principal Market Architect
Electric System Policy, Structure, Market Design**

Decarbonization is not enough — resist tunnel vision

Sustainability => **Stop making climate chaos worse**

- Decarbonize, electrify, reduce & displace fossil fuels throughout society

Resilience => **Prepare for imminent impacts** of climate disruption

- Power essential municipal & community functions during grid outages

Energy Justice => **Prioritize environmental, social & economic justice**

- Energy is a key determinant of neighborhood health, not just a commodity
- Maximize clean energy benefits for ALL communities
- Mitigate historic harms & inequities from energy practices
- Ensure a just transition to a clean energy economy

Non-energy Benefits

We need to pursue all three goals in parallel, with urgency

All three goals require local solutions

Sustainability & Decarbonization — reduce emissions at the sources

- Zoning & land use; building codes; development strategies
- Housing — affordable, densified, transit-oriented, electrified
- Mobility strategies, public spaces, habitat, urban agriculture & forestry
- Climate Action & Adaptation Plans; City/County General Plans

Resilience — maintain power during grid outages

- Build carbon-free microgrids to power critical services & resilience hubs

Energy Justice, Equity — locally owned energy assets

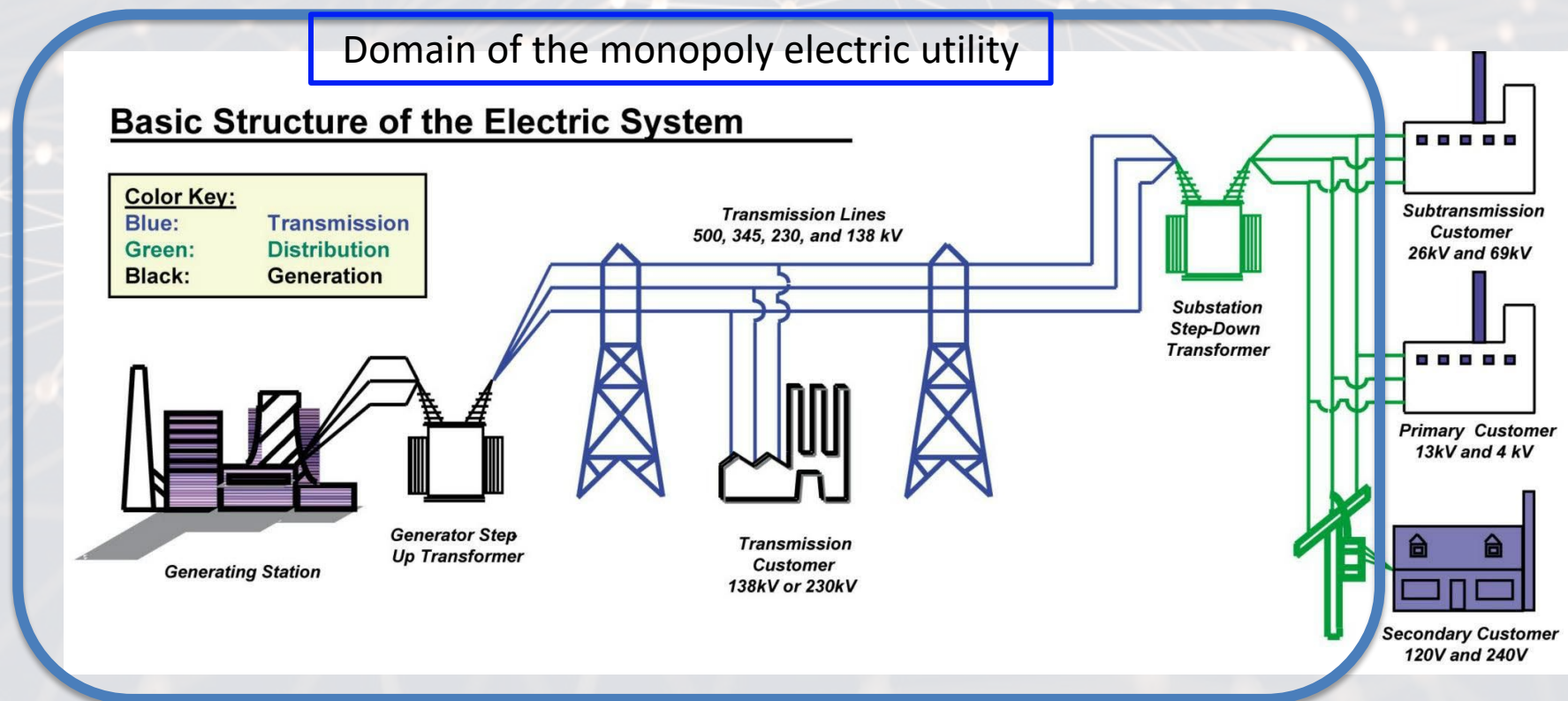
- Locally energy supply businesses build local wealth & economic vitality
- Target vulnerable neighborhoods — health, economic & resilience benefits

**Local energy systems are essential to meet today's urgent needs
but existing policies & industry structure present major barriers.**

Today's electricity system favors large-scale assets

- Large-scale generation & transmission assets; lucrative capital investment
- Regulated monopoly structure; centrally planned, owned & operated
- Does not advance Climate Resilience or Energy Justice — non-energy benefits

The 20th-century power system is not suited for today's needs



DER technologies offer competitive local solutions

DERs now challenge the utility system to compete to retain customers

- DER cost-effectiveness trends are rapidly surpassing the grid
- Customers who can afford DERs no longer need the grid
- Policies to suppress DERs increase incentives for grid defection
- Grid defection by affluent customers will worsen energy inequities

Performance/Cost, Versatility, Resilience



The need => Implement a policy framework to realize the greatest total benefits from DERs, facilitating & leveraging local, non-utility DER investment.

Some local energy possibilities

- **Compensate individual customers** to over-size rooftop solar+battery systems to provide energy to their neighbors
- **Enable locally-owned businesses & co-ops** to supply electricity & electric vehicle charging to support the local economy
- **Deploy municipal electrification projects** — public mobility fleets & school buses, powered by publicly-owned local renewable energy assets
- **Retrofit neighborhood “resilience centers”** to provide emergency shelter, warmth or cooling, food, medical care, phone/internet service, & zero energy costs year-round
- **Build local energy planning capacity** to co-optimize local power production with tree canopy, land use, public space, stormwater capture at neighborhood level.

Local electricity systems are needed, feasible & cost-effective

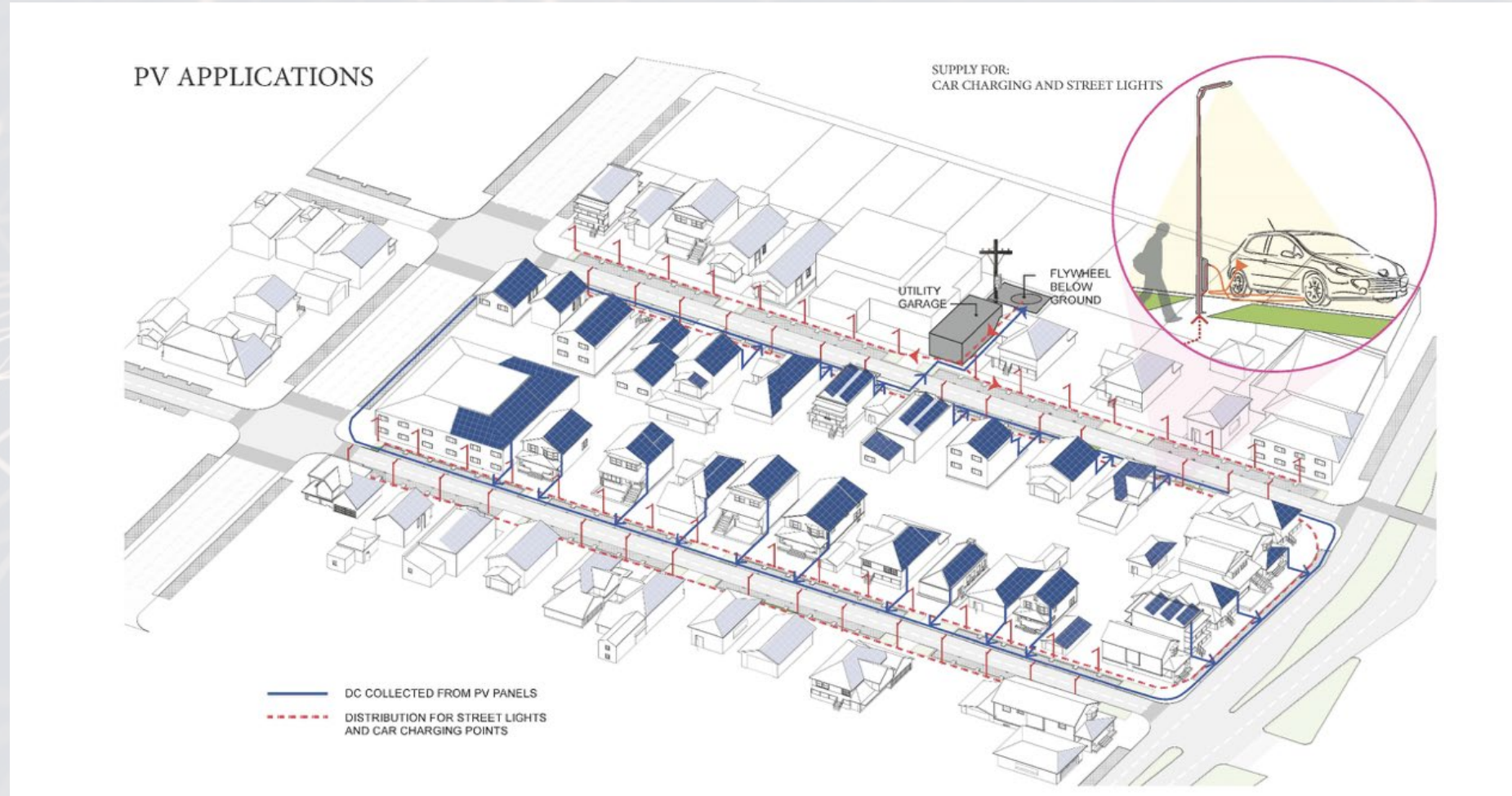
We need policy & planning frameworks to enable them.

Oakland EcoBlock: retrofit model for urban neighborhoods

Community microgrid serves all customers on the block; integrated with grey water, stormwater capture, EV charging, food production, broadband ...

- **Multi-property microgrid**

- Community & rooftop solar
- Community energy storage (flywheel + battery)
- Dynamic load management
- Shared EVs & coordinated charging
- Seamless islanding during utility grid outages
- CEC-funded demo project by UC Berkeley & Berkeley Lab
- **Existing laws & regulations stifle commercial viability & prevent replication**



A policy framework for a bottom-up energy transition

1. Adopt a Community Energy Bill of Rights (CEBOR)

- Right to deploy DERs to meet local needs & interconnect/transact with the grid

2. Reform the distribution utility as an open-access network

- Provide the electric network to enable the CEBOR; support local entities to design & implement DER projects; compensate based on performance

3. Adopt rules to allow local electricity transactions

- Allow community DERs to serve local customers without going through the transmission system & wholesale market — the way power physically flows

4. Invest in local energy planning capability

- State funding & support to integrate energy planning into urban/county planning

5. Dedicate agency staff to ongoing collaboration with LGs, Tribes, CBOs

- Permanent staff maintain ongoing relationships with local leaders on energy

A surreal landscape featuring several power line towers. The towers are shaped like question marks, with the largest one on the right and smaller ones receding into the distance. Power lines sag between the towers. The background shows a city skyline on the horizon under a sunset sky with orange and blue clouds. The foreground is a dry, rocky field.

Thank you!

Lorenzo Kristov
LKristov91@gmail.com

Electric System Policy, Structure, Market Design