Panel One: Can We Afford the Future?

Moderator: Dorothy Duda, Manager, CPUC Energy Division

Panelists:

- Mike Campbell, Manager, Public Advocates Office
- Mad Stano, Senior Legal Counsel, Greenlining Institute
- Michael Colvin, Director of Reg. Affairs, Environmental Defense Fund
- David Rapson, UC Davis Professor of Economics, Director of Davis Energy Economics Program
- David Wells Roland-Holst, UC Berkeley Professor of Economics

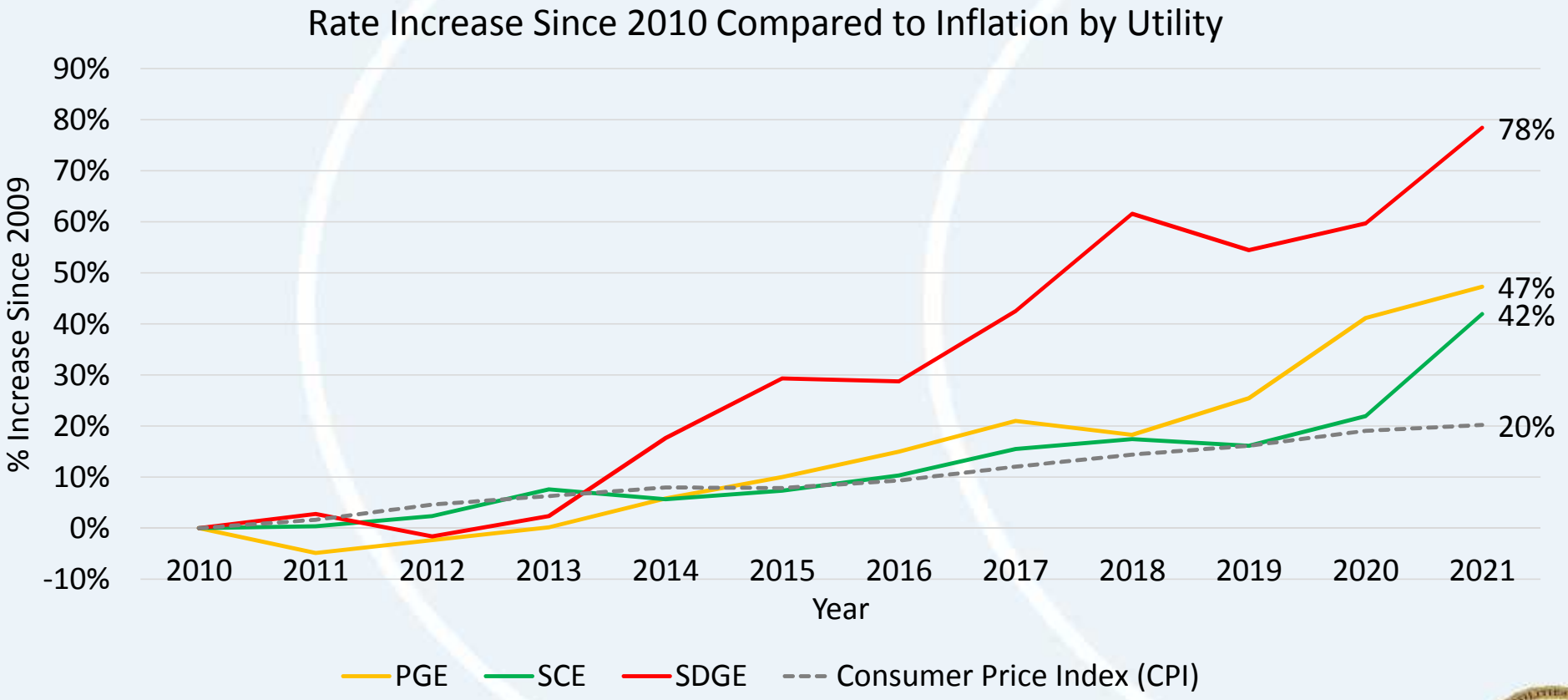
Increasing Rates Threaten California's Equity and Environmental Goals

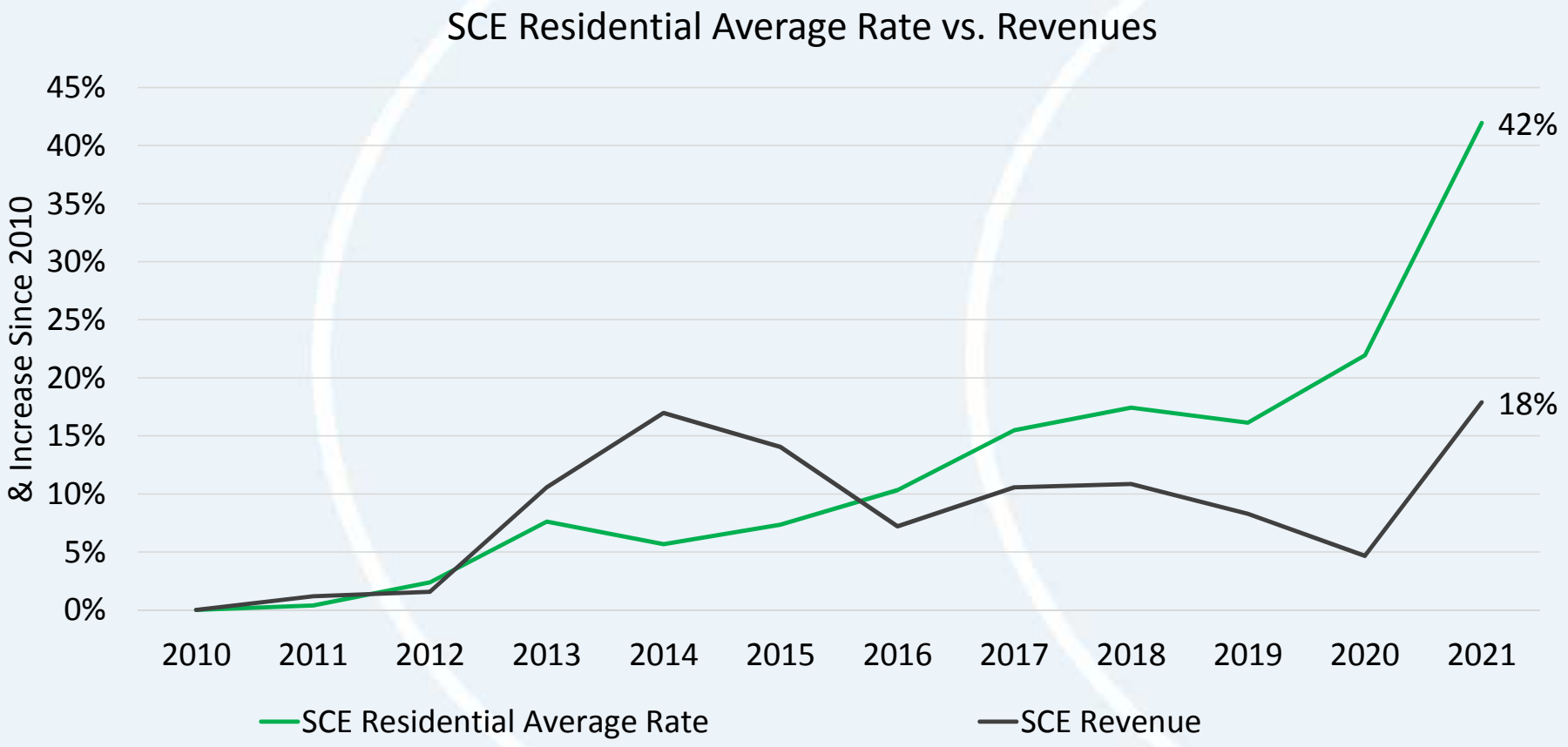
Mike Campbell

Program Manager

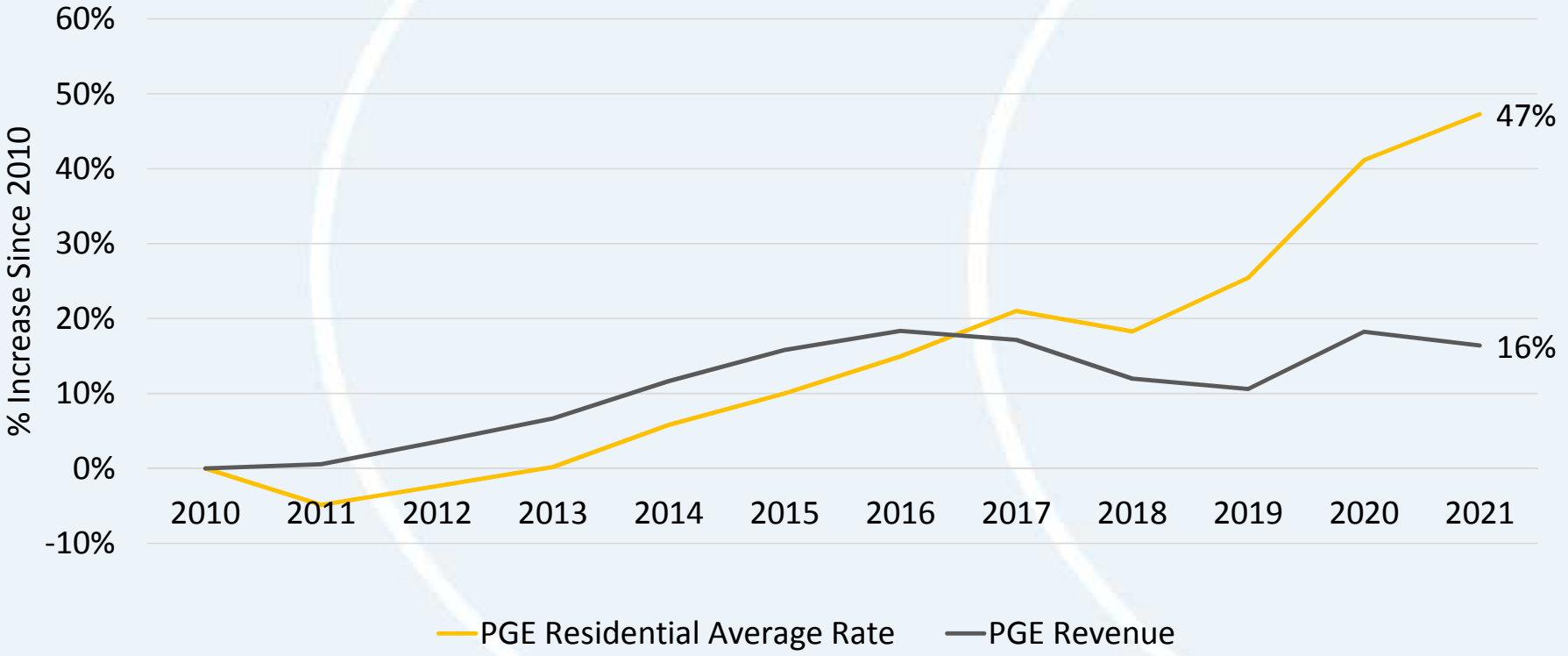
Electricity Pricing & Customer Programs

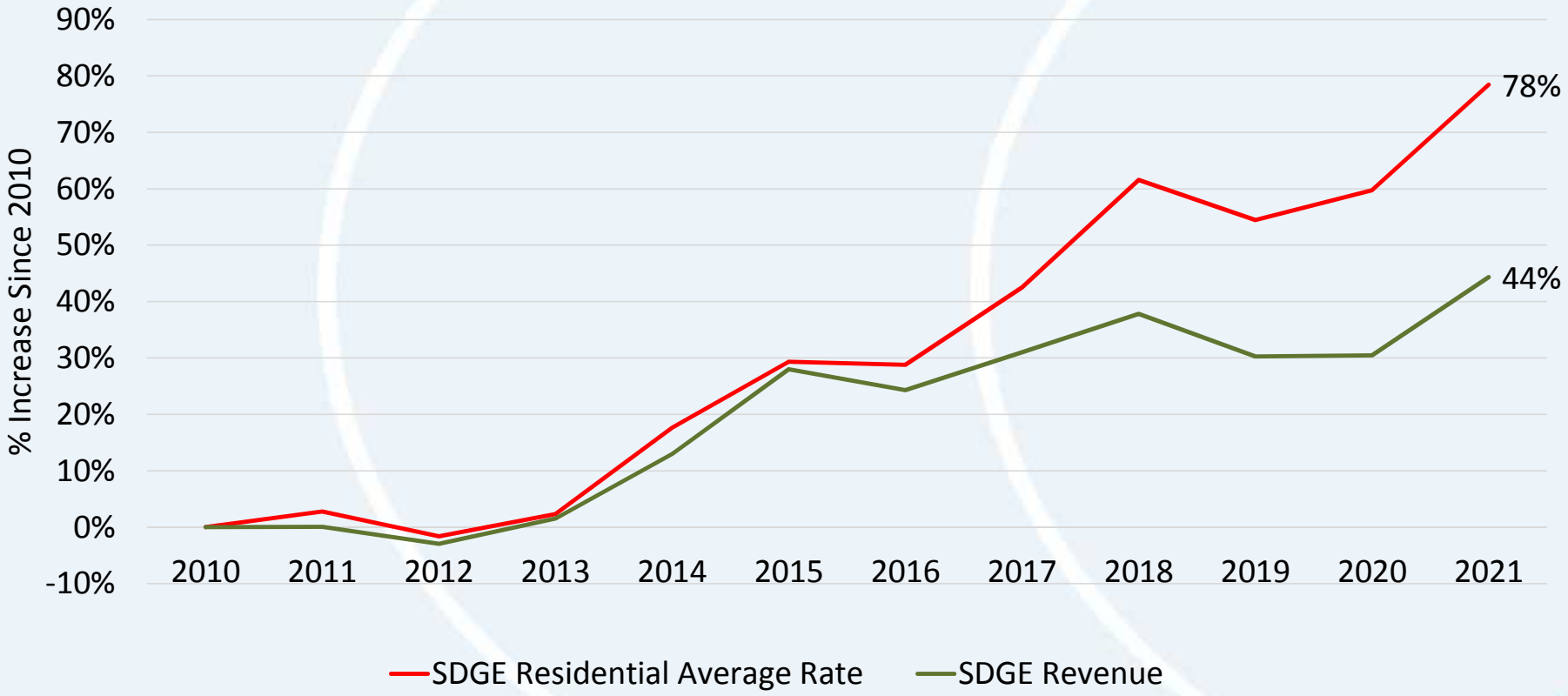
CPUC Rates En Banc – February 24, 2021


Rate Increase Since 2010 Compared to Inflation by Utility
% Increase Since 2009
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
-10%
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Year
78%
47%
42%
20%
PGE
SCE
SDGE
Consumer Price Index (CPI)

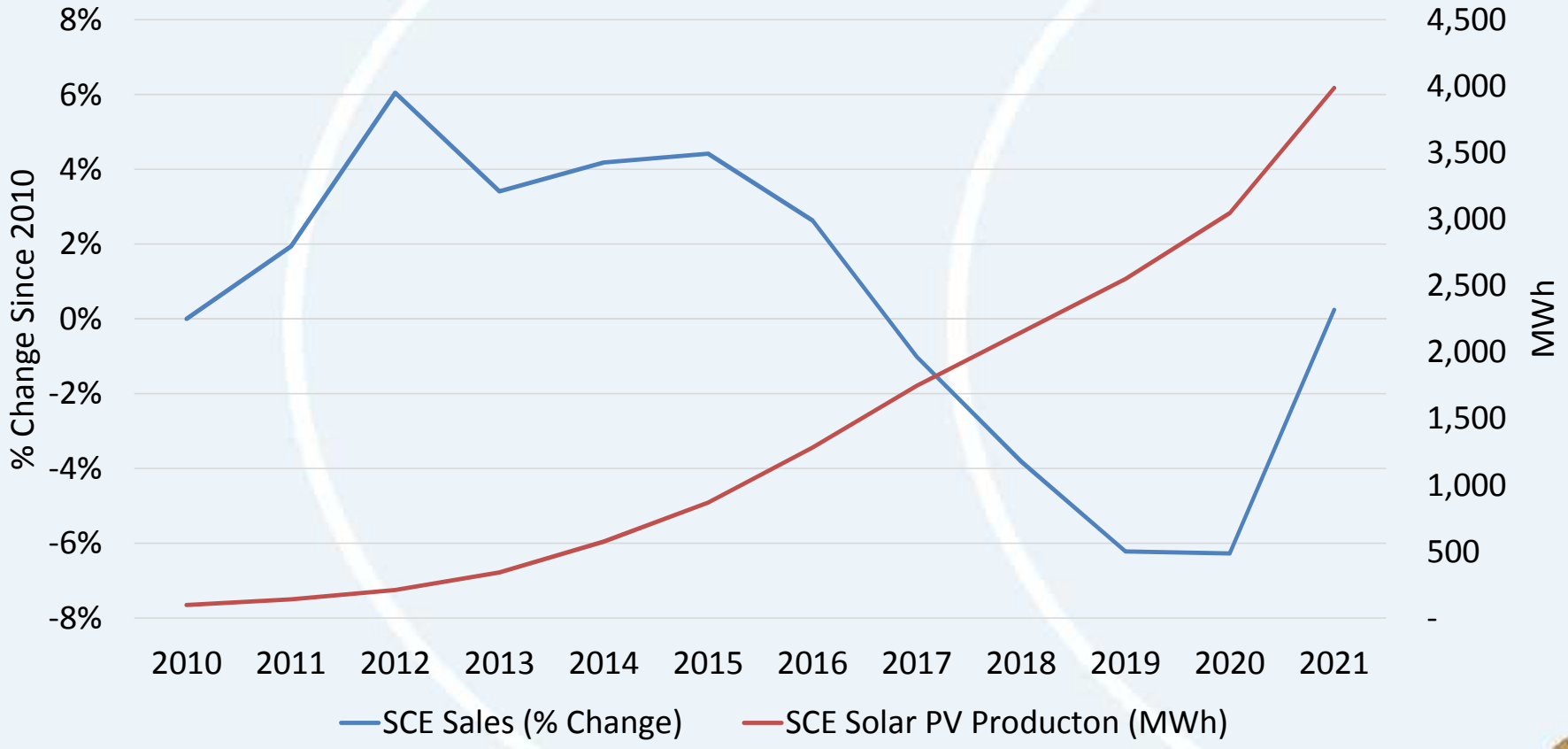

SCE Residential Average Rate vs. Revenues
& Increase Since 2010
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
42%
18%
SCE Residential Average Rate
SCE Revenue

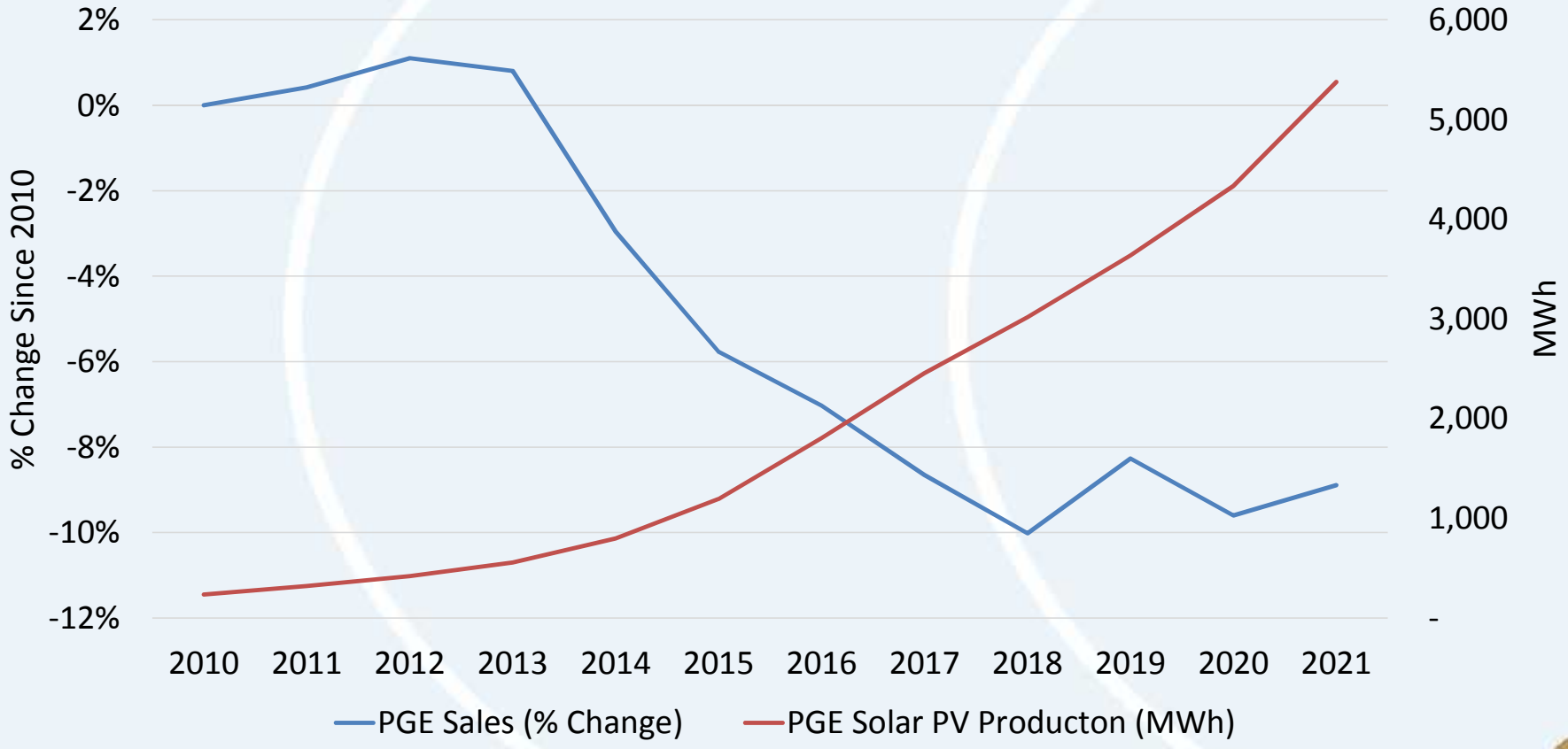
PG&E Residential Average Rate vs. Revenues

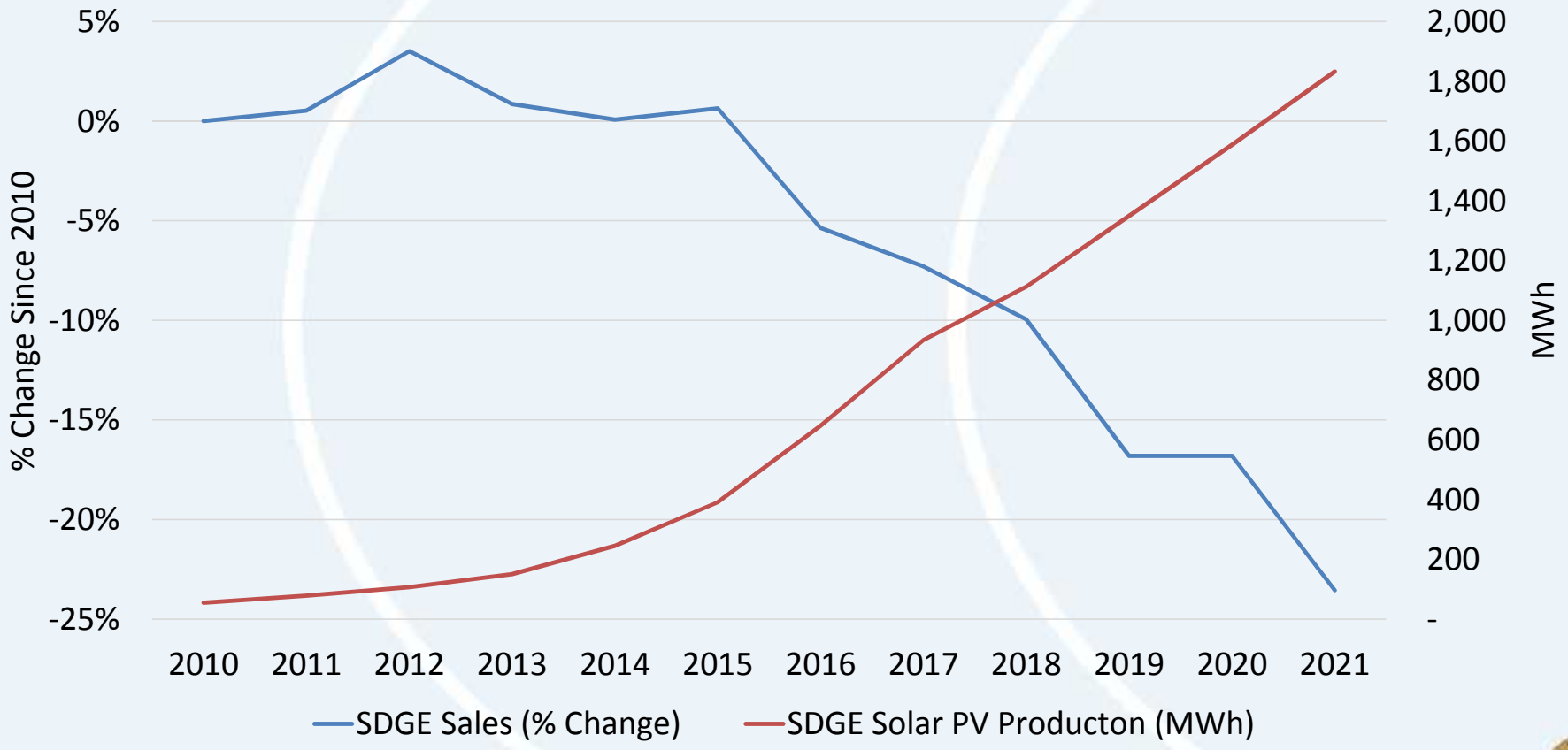



SDG&E Residential Average Rates vs. Revenues
% Increase Since 2010
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
-10%
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
78%
44%
SDGE Residential Average Rate
SDGE Revenue

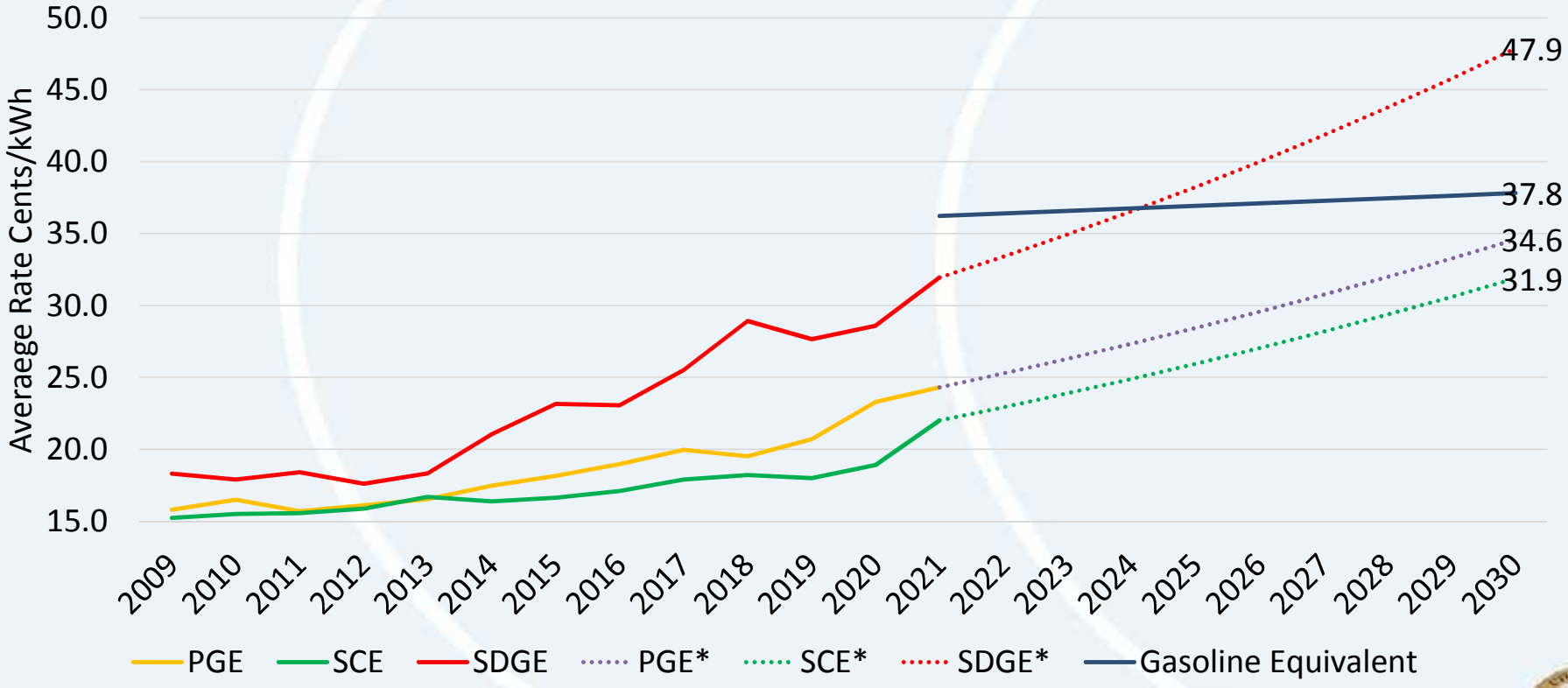
SCE Residential Sales vs. Residential Rooftop Solar Production



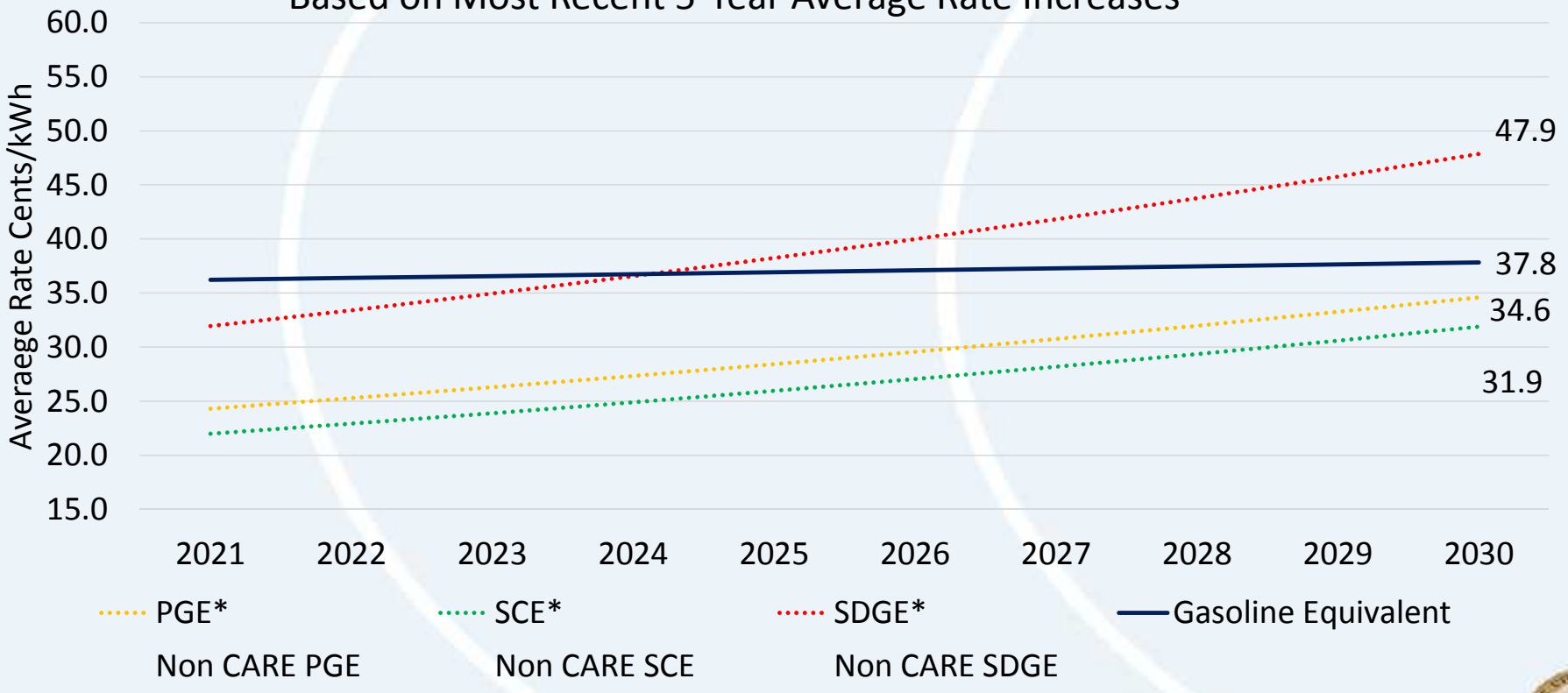

PG&E Residential Sales vs. Residential Rooftop Solar Production
% Change Since 2010
2%
0%
-2%
-4%
-6%
-8%
-10%
-12%
6,000
5,000
4,000
3,000
2,000
1,000
-
MWh
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
PGE Sales (% Change)
PGE Solar PV Producton (MWh)


SDG&E Residential Sales vs. Residential Rooftop Solar Production
% Change Since 2010
5%
0%
-5%
-10%
-15%
-20%
-25%
MWh
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
-
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
SDGE Sales (% Change)
SDGE Solar PV Producton (MWh)

Historic and Forecasted Residential Average Rates Based on Most Recent 5-Year Average Rate Increases

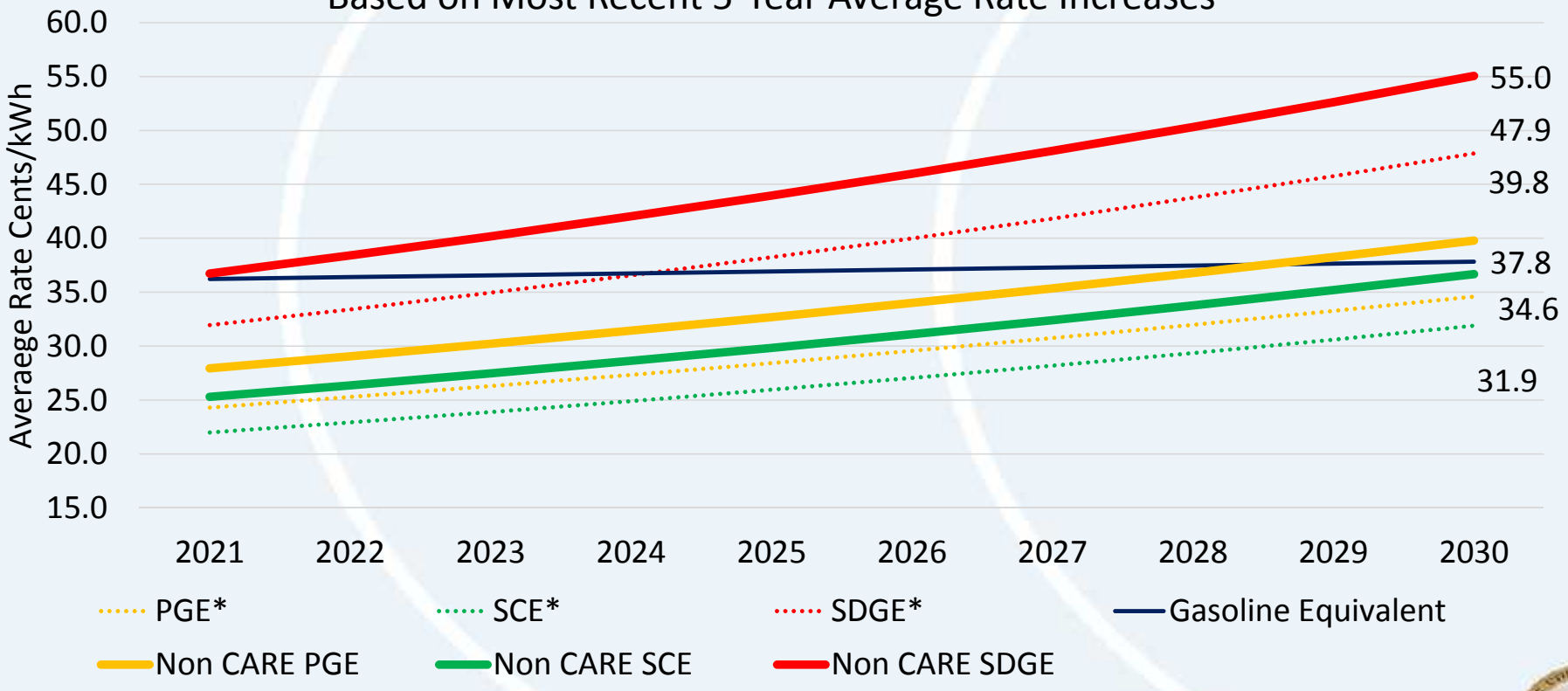


Forecast of Residential Average Rates
Based on Most Recent 5-Year Average Rate Increases



Low-income customers that are enrolled in the California Rates for Energy (CARE) program receive a 30-35 percent discount off their electricity bills. Participants qualify through income guidelines or if enrolled in certain public assistance programs.

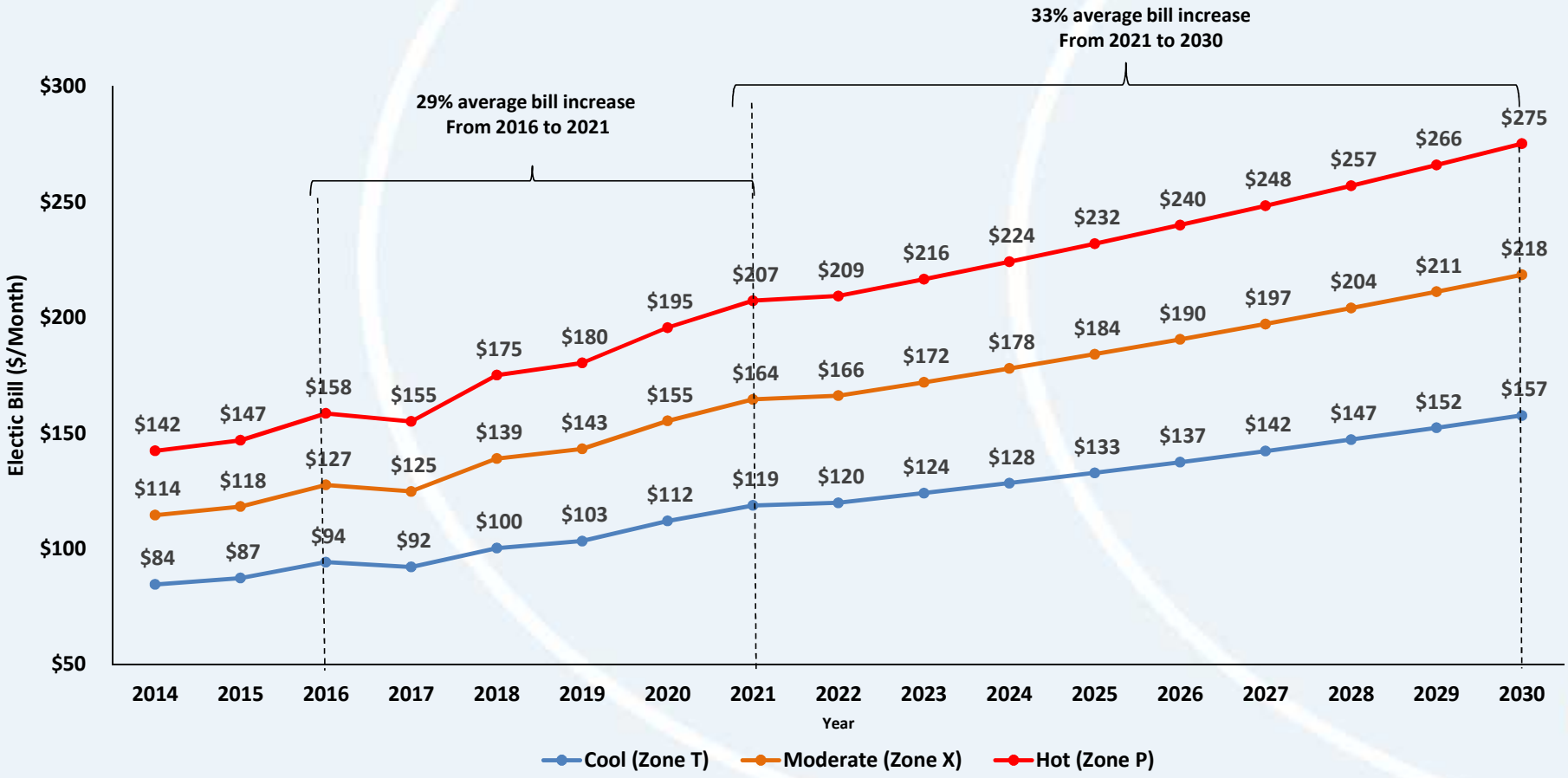
Forecast of Residential Average Rates Vs. Non-CARE Rates Based on Most Recent 5-Year Average Rate Increases



Low-income customers that are enrolled in the California Rates for Energy (CARE) program receive a 30-35 percent discount off their electricity bills. Participants qualify through income guidelines or if enrolled in certain public assistance programs

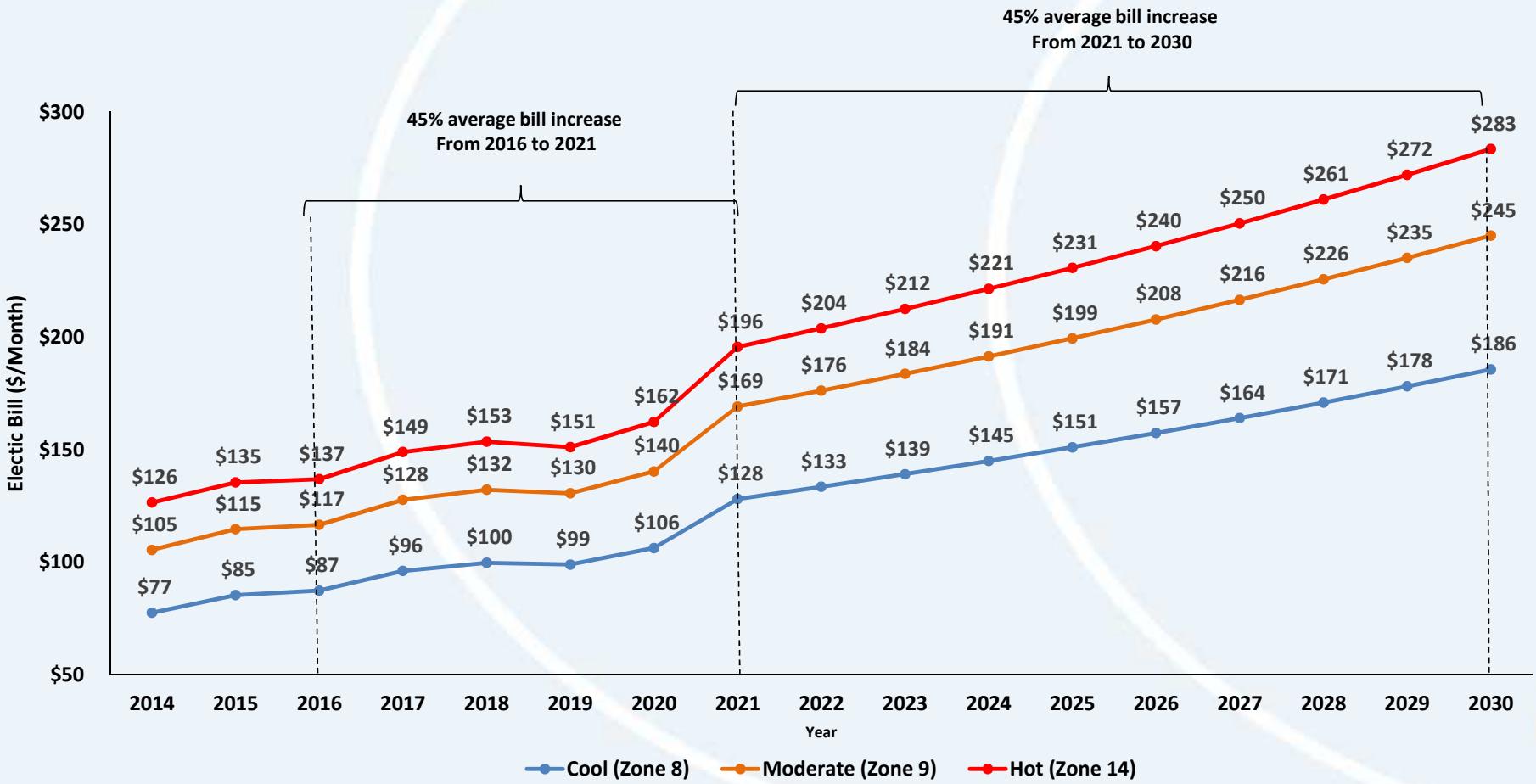
PG&E Forecasted Bill Increases

Average Monthly Bills (non-discounted bills) by Climate Zone (Constant Usage)



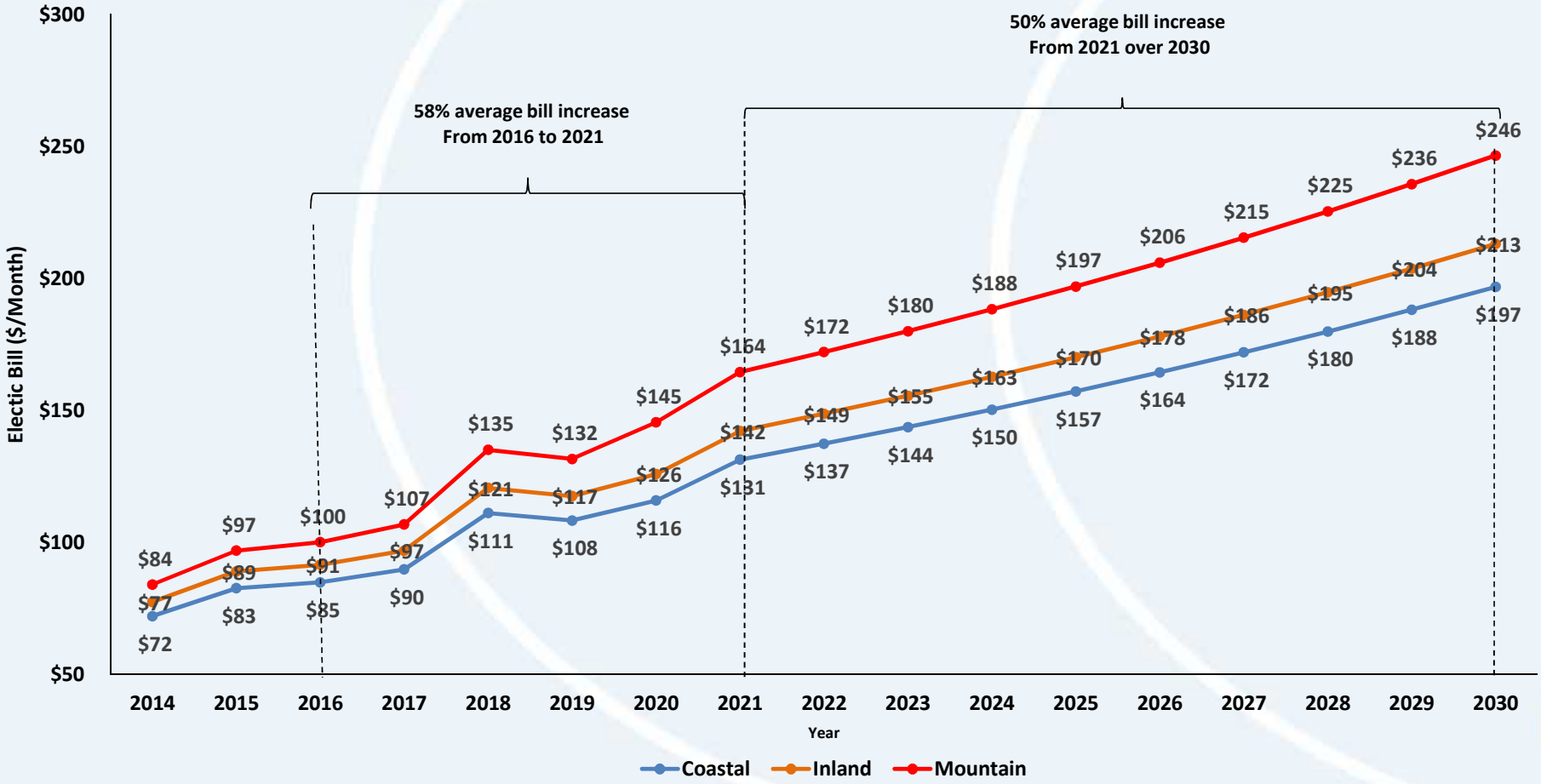
SCE Forecasted Bill Increases

Average Monthly Bills (non-discounted bills) by Climate Zone (Constant Usage)



SDG&E Forecasted Bill Increases

Average Monthly Bills (non discounted bills) by Climate Zone (Constant Usage)



Can We Afford the Future?

California Public Utilities Commission

February 24, 2021

Mad Stano

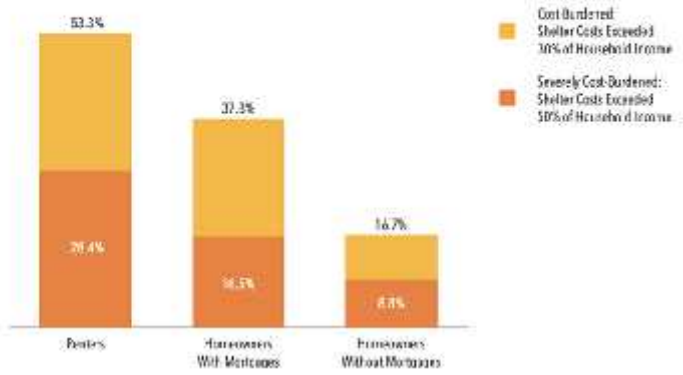
THE GREENLINING INSTITUTE

ROAD MAP

- **The rate crisis is *now* with existing + <u>disproportionate</u> + <u>devastating</u> impacts.**
    - There is an inequitable distribution of costs + benefits: rates, non-energy benefits, social costs (e.g. pollution), access to services/programs/technologies.
- The **promise**, the **benefits**, and the **material shifts** required for energy decarbonization will not occur under inequitable financing + rate schemes.

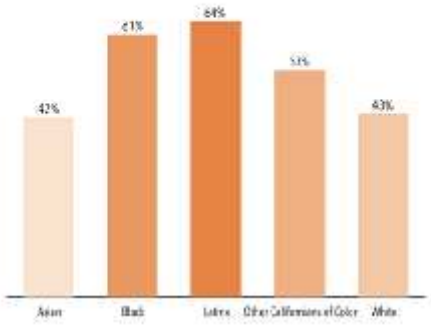
More Than 1 in 2 Renters and More Than 1 in 3 Homeowners With Mortgages Were Cost-Burdened Before COVID-19

Percentage of California Households With Housing Cost Burden, 2018



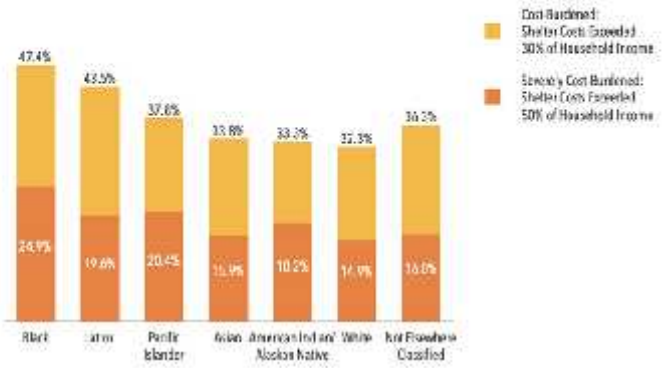
About 3 in 5 Latinx and Black Households in California Lost Earnings During the Pandemic

Percentage of Households That Have Lost Employment Income Since March 13, 2020



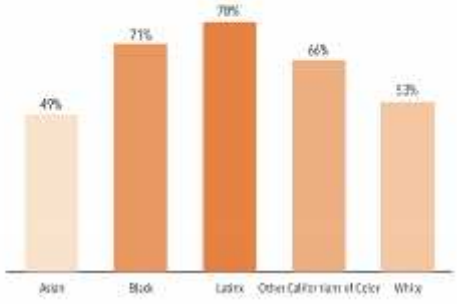
Black and Latinx Californians Were Most Likely to Have Unaffordable Housing Costs Before COVID-19

Percentage of Individuals With Housing Cost Burden by Race/Ethnicity, 2018



Most Latinx and Black Households With Children Are Having Difficulty Paying for Basic Expenses

Percentage of California Households With Children Reporting Any Difficulty



California Budget & Policy Center

COVID-19 Impacts on Customers in the Energy Sector

Four Trends Since March 2020

1. Residential customer energy use has increased
2. Enrollment in bill payment assistance programs has increased
3. Customers have larger and older arrearages
4. Number of customers with bill payment arrangements has decreased overall

CPUC Workshop on COVID Impacts on Customers in the Energy Sector November 12, 2020

Table 1. Increases in Residential Arrears by Utility and Customer Class, February–December 2020

	PG&E	SCE	SDG&E	SoCalGas	Total
Non-CARE	$123,4	$137,5	$37,50	$28,73	$327,2
	07,137	69,182	5,532	0,414	12,265
CARE/FERA	$151,2	$107,5	$36,04	$29,17	$324,0
	37,389	51,068	8,779	8,390	15,626
Total	$274,6	$245,1	$73,55	$57,90	$651,2
	44,526	20,251	4,311	8,500	27,588
Per Customer (Non-CARE)	$32.85	$32.07	$32.97	$7.82	$24.71

Order Instituting Rulemaking to Address Energy Utility Customer Bill Debt Accumulated During the COVID-19 Pandemic

California Energy Commission

COMMISSION FINAL REPORT

Low-Income Barriers Study, Part A: Overcoming Barriers to Energy Efficiency and Renewables for Low-Income Customers and Small Business Contracting Opportunities in Disadvantaged Communities

December 2016 | CEC-300-2016-009-CMF

Structural Barriers Limiting Access to Clean Energy for Low-Income Customers

Structural barriers limiting access to clean energy for low-income customers include:

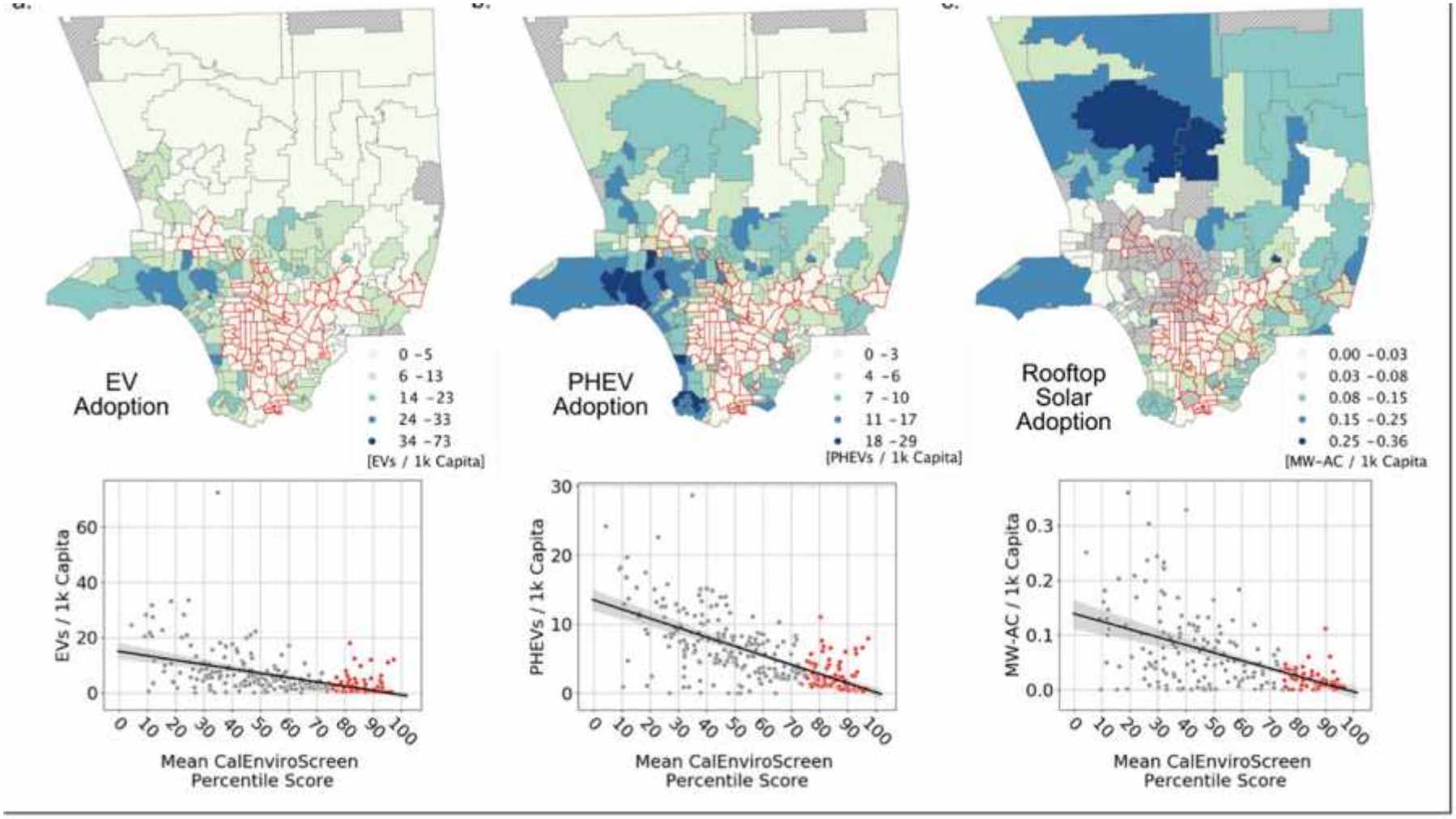
- Low home ownership rates
- Complex needs, ownership, and financial arrangements for low-income multifamily housing
- Insufficient access to capital
- Building age
- Remote or underserved communities

Policy Barriers:

- Market Delivery
- Program Integration
- Data Limitations
- Unrecognized Non-Energy Benefits (NEBs)

Additional Burdens:

- Energy Burden
- Disconnections
- Access to Services + Technologies



Elementa: Science of the Anthropocene (2020) 8: 24.

Thank you!

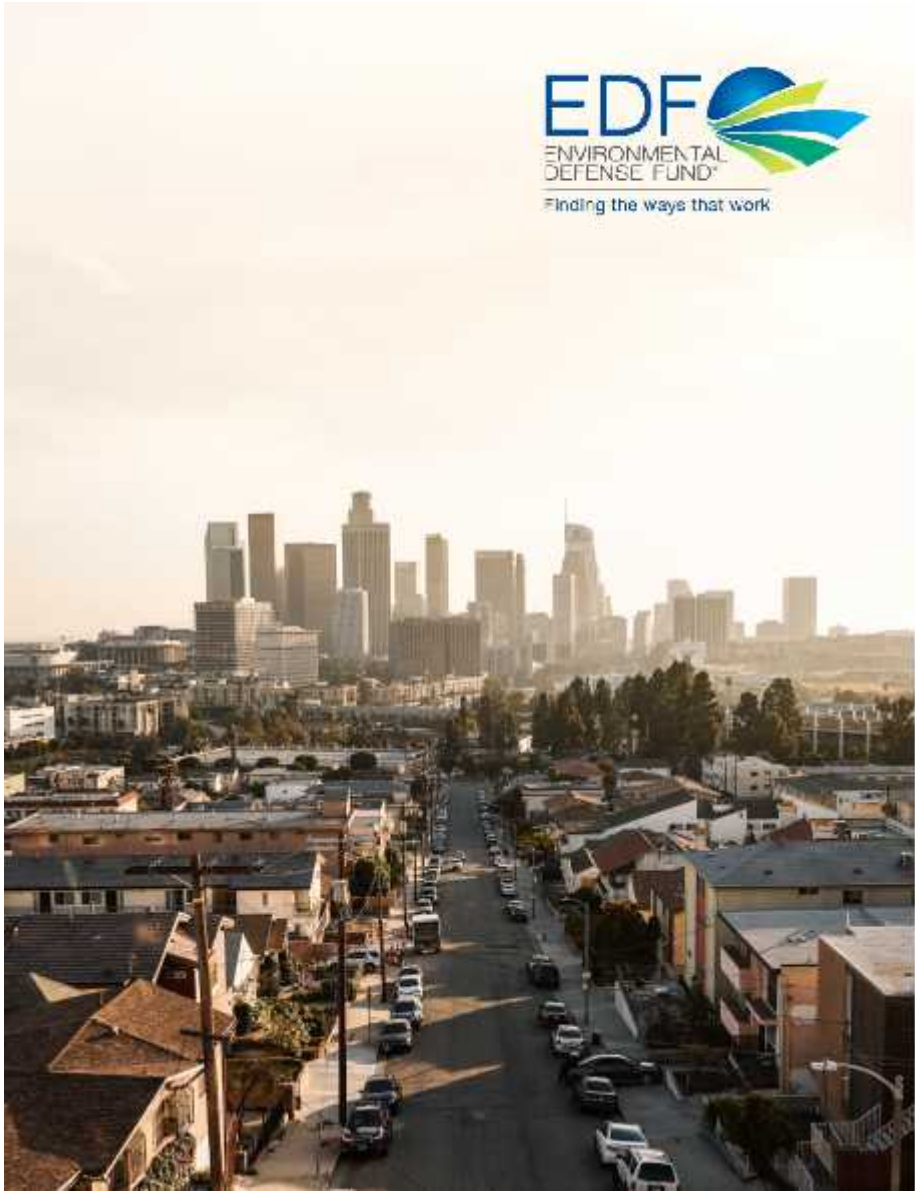
Mad Stano

THE GREENLINING INSTITUTE

Charging forward with good rates

Ensuring access to an affordable, clean and safe energy system

Michael Colvin
Director, Regulatory and Legislative Affairs
California Energy Program
mcolvin@edf.org | (415) 293-6122



EDF: How we work

To forge the most effective solutions, EDF approaches the biggest environmental challenges from these angles:

Science

Rigorous science is our bedrock. It drives everything we do.

Economics

We examine every environmental problem through an economic lens.

Partnerships

With our partners, we achieve what no environmental group can do alone.

Advocacy

With our allies, we shape strong, bipartisan policy and fight for great environmental laws.

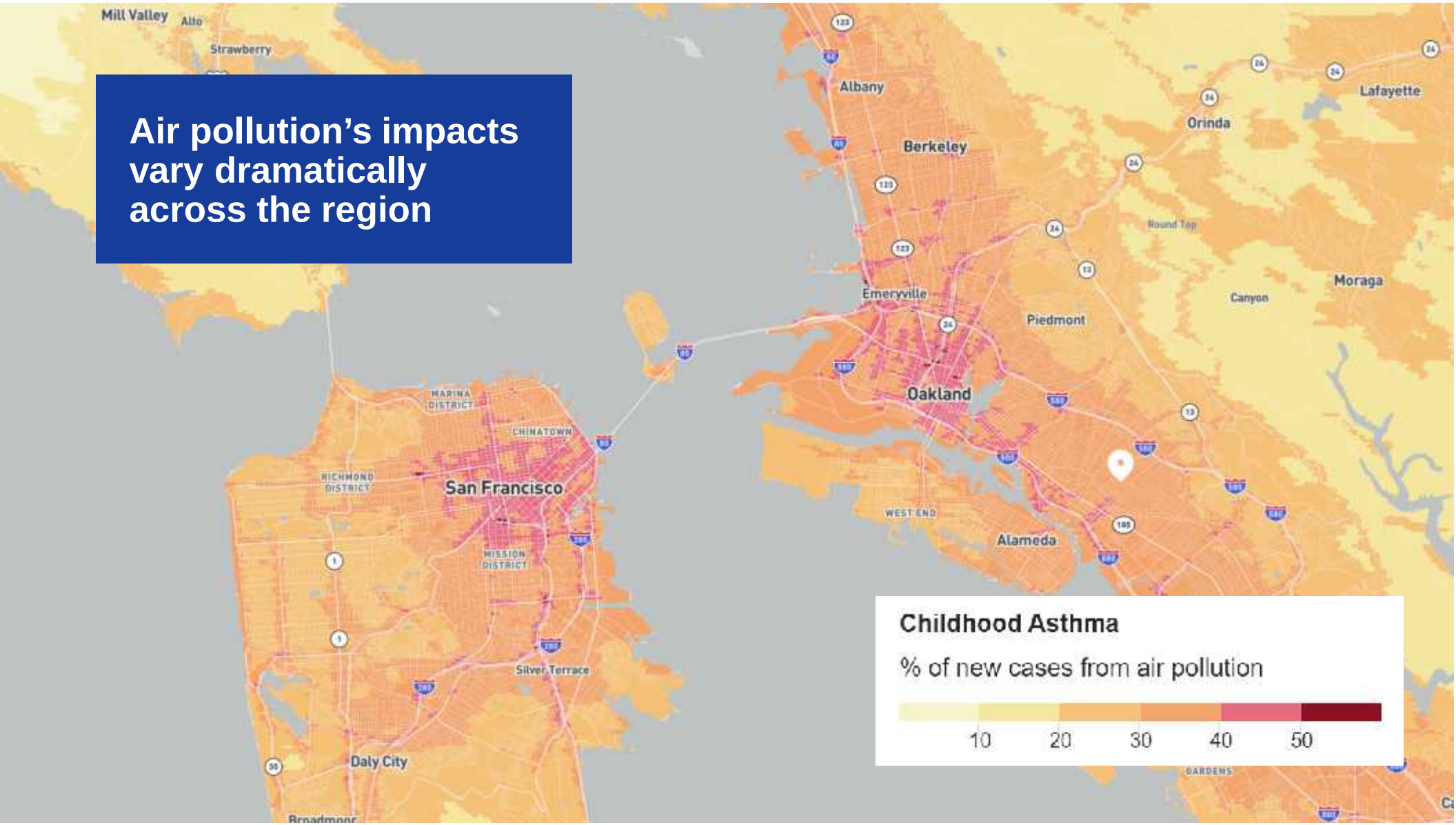
In California, EDF has approximately 65,000 members across each utility service territory

Different solutions for different scales

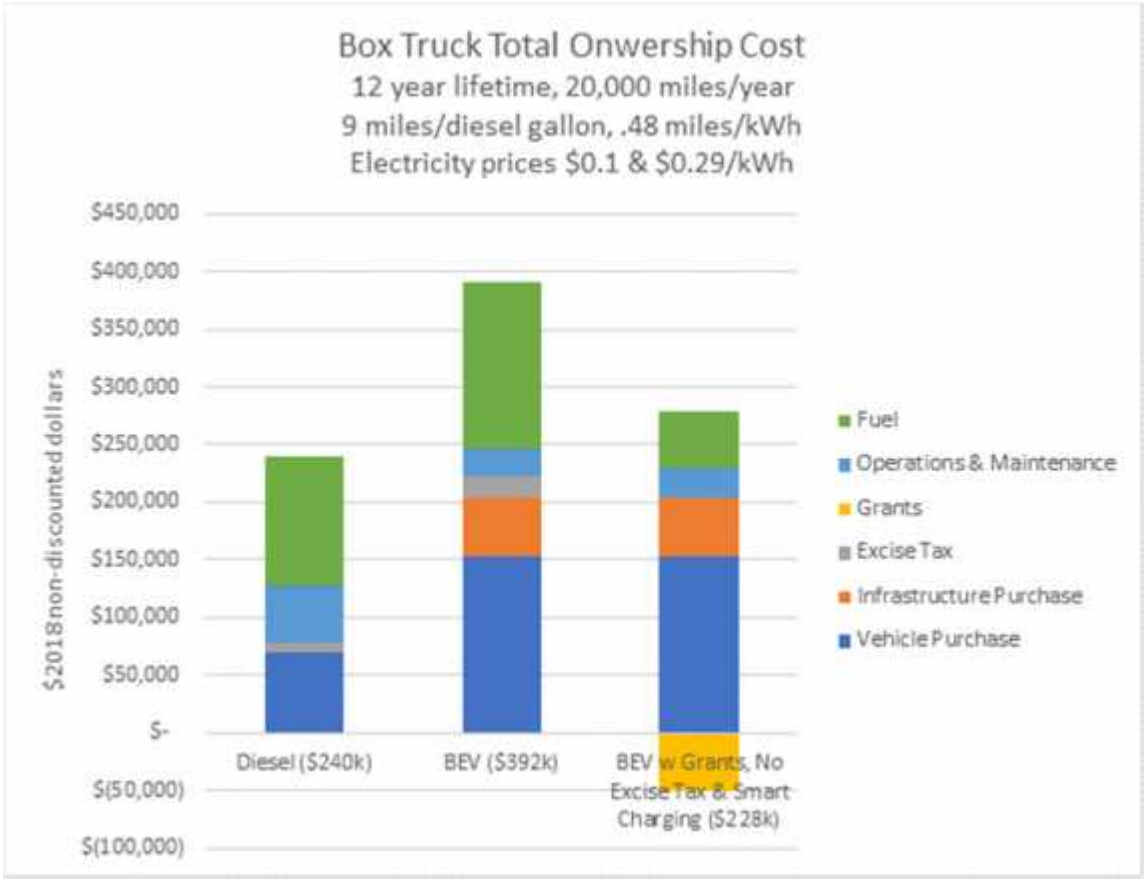
Buildings

Vehicles

Air pollution's impacts vary dramatically across the region



ZEV charging could be planned for as a solution to reduce emissions



Adopting a new vehicle has multiple financial factors.

Lower electric costs will yield more operational savings (and faster payback).

ZEV goals requires attention on all aspects

Need for Targeted Marketing Education and Outreach

We need to rethink about how we communicate infrastructure and rates to different commercial customers.

Size of the fleet and operational use is very different

We can determine that the public interest means that we could prioritize early adoption where it will provide the most good – target vulnerable communities and accommodate a variety of charging models.

Can we start putting the pieces together?

We need to prioritize (and potentially subsidize) charging where it would be cost-effective for the grid AND yield larger health benefits

Strategic Investments

- Use clean generation assets more frequently.
- MD/HD vehicles can provide grid support services but we need to adequately compensate them based on operational profile – predictability should be rewarded.
- Connect that with environmental benefits means a more affordable grid
- Include non-energy benefits such as reduced air pollution in cost effectiveness determinations

Michael Colvin
Director, Regulatory and Legislative Affairs
California Energy Program

mcolvin@edf.org | (415) 293-6122

EDF
ENVIRONMENTAL DEFENSE FUND
Finding the ways that work

ELECTRIC VEHICLES: DEMAND AND USAGE

CPUC EN BANC
FEBRUARY 24, 2021

DAVID S. RAPSON
UNIVERSITY OF CALIFORNIA, DAVIS
ECONOMICS DEPARTMENT
DAVIS ENERGY ECONOMICS PROGRAM

UCDAVIS
UNIVERSITY OF CALIFORNIA

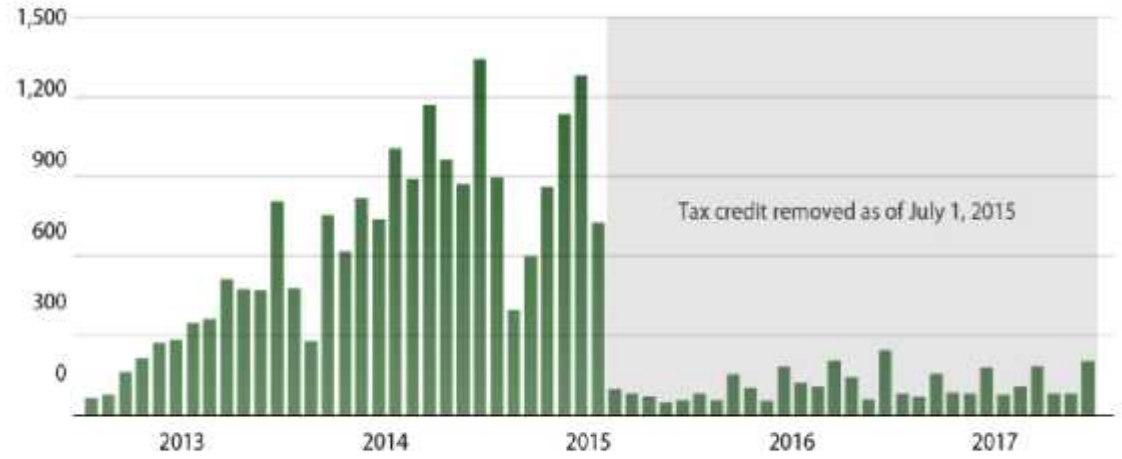
Understanding EV demand and the role of energy prices

- How effective are EV subsidies?
  - And what do we learn from this?
- Do energy prices affect EV demand?
- How much electricity do EVs consume?

Increasing EV adoption requires large subsidies

Battery electric vehicle (BEV) sales in Georgia fell dramatically when tax credits were removed

BEV sales in Georgia, 2013–2017



Source: Alliance of Automobile Manufacturers, "Advanced Technology Vehicle Sales Dashboard," available at https://autoalliance.org/energy-environment/advanced-technology-vehicle-sales-dashboard/ (last accessed April 2018).

CAP

- **CA required $15,000-$25,000 in CA + federal subsidies for each incremental EV purchased**
- **It will likely cost at least $12-18 billion dollars in CA + federal subsidies to reach the 2025 CA target of 1.5 million EVs**

Muehlegger & Rapson (2018, 2021)

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Energy prices affect EV demand

- **High electricity prices inhibit EV demand**

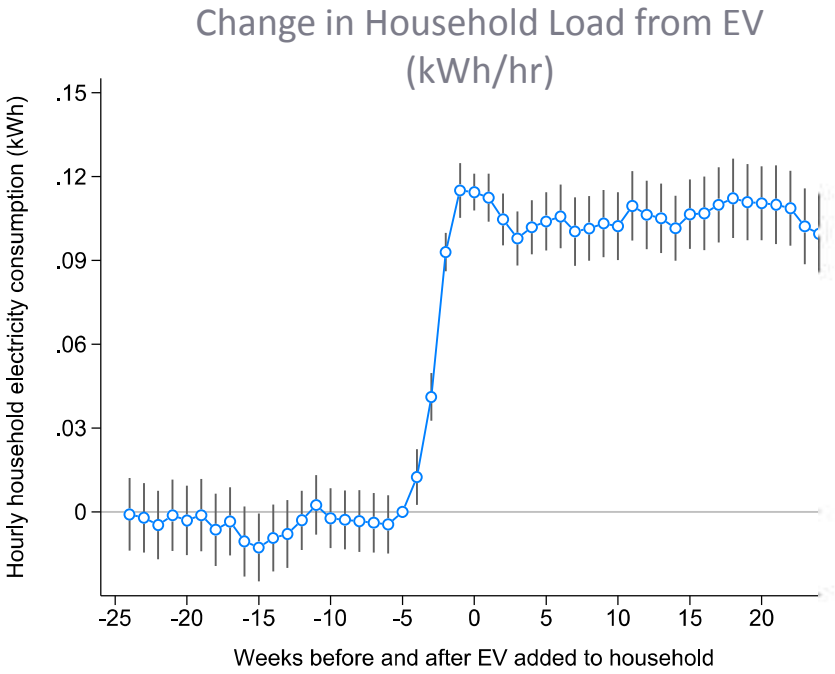
Each $0.10/kWh increase in electricity prices → **15% *decrease* in EV demand**

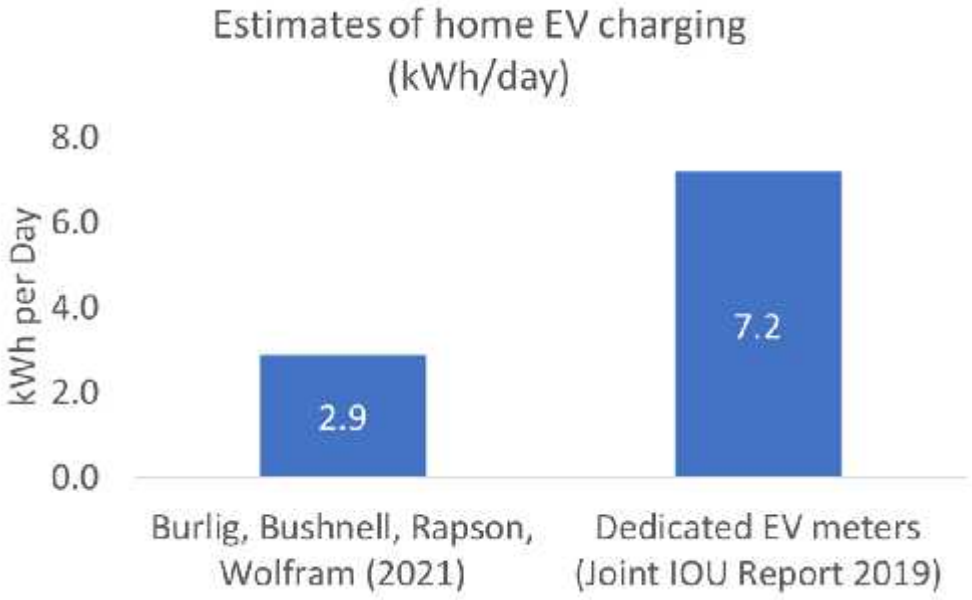
- **High gasoline prices encourage EV demand**

Each $0.50/gallon increase in gasoline prices → **30% *increase* in EV demand**

Bushnell, Muehlegger & Rapson (2021)

EVs are charging less than we thought





Burlig, Bushnell, Rapson & Wolfram (2021)

There are many potential explanations for low EV load

- Battery range was lower during our sample period (2014-2017)
- Drivers may prefer other attributes of conventional cars
- Early adopters drive less than future adopters
- EVs may (in some cases) be complements to gasoline cars, not substitutes

There is still much to learn

- **Effect of charging station proximity/density on adoption decision**
- **Effect of electricity prices on EV usage decisions**
- **Potential for vehicle-to-grid services**
- **Risks of relying on the same energy source for transportation and other electricity services**
- **…**

Questions and comments

David Rapson

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CPUC En Banc Session on Energy Rates and Costs: Panel 1

David Wells Roland-Holst
UC Berkeley

Prepared for the California Public Utilities Commission
February 24, 2021

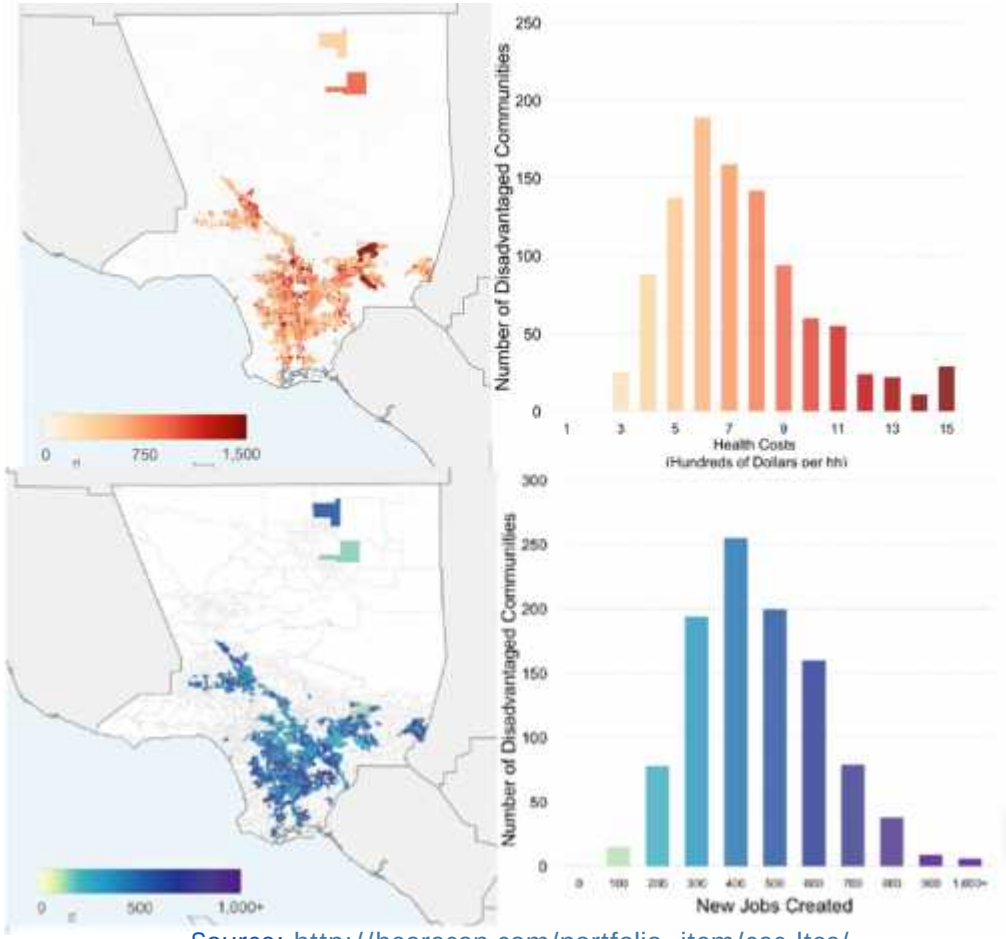
Contents

1. Affordability/Equity Issues
2. Policy Coherence
3. Investing in Assessment Capacity

Affordability - Heterogeneity

- California's diversity is a great asset, but it poses challenges for policy makers
- In times of dynamic change, it is essential to identify detailed patterns of incidence on both sides of energy/climate policy balance sheets (costs as well as benefits).
- Otherwise, we risk missing many benefits of complementary policies and anticipating adjustment needs for underrepresented groups.

California's Renewable Portfolio Standard in 2030
Averted Health Costs and Job Creation in Disadvantaged Communities, LA County



Source: http://bearecon.com/portfolio- item/cec-ltes/

Affordability - Rates and Equity

- Energy equity and efficiency are both laudable policy goals, but rate structure is a relatively inefficient instrument to advance either of them.
- From the equity perspective, energy affordability is part of a larger agenda of social protection.
- The CARE program, would in many advanced economies be an incomes policy managed by fiscal authorities, not sector price regulation.
- The Food Stamp, program, for example, is not administered by USDA, nor is it financed directly by food sector consumers or producers.
- Energy price subsidies also risk being capitalized into rents, effectively being captured by landlords.

Affordability - Rates and Efficiency

- The residential community is divided between property owners and tenants.
- For the owners, higher rates might promote efficiency investment, for tenants it is more likely to ration energy services.
- Among lower income groups, this rationing may also extend to other necessities.
- Standards and ownership incentives are more effective ways to promote technology adoption for welfare-neutral energy savings.

Policy Coherence

The CPUC's regulatory mission is clearly defined, but inevitably linked to actions and goals of other state agencies. These linkages can be complementary or competing, yielding opportunities and challenges for coherent state policy.

Agencies can help each other achieve their individual and collective goals. Both the executive and legislative branches can play essential roles to facilitate this.

Examples:

1. Wildfire poses risks for electricity costs and rates, yet these are significantly linked to other policies (policies toward forestry, insurance, etc.).
2. Timing of low carbon energy deployment affects not only electric power costs, but many, widespread anticipated co-benefits of renewable and EV deployment.
3. Fiscal intervention can smooth system costs and accelerate benefits from complementary policy trends (e.g. EV deployment). Multi-agency dialog can facilitate this.

Investing in Capacity for Evidence-based Policy

1. Objectives
   - Decision support
   - Policy dialog
   - Effective stakeholder engagement and policy targeting
2. Immediate Capacity Challenges
   - Time Horizon
     - Reconcile short, medium, and long-term planning
   - Uncertainty
     - More numerous and diverse data sources
     - Expanded risk, scenario, and sensitivity analysis
     - Historical and cross sector assessment

Thank you