

Electricity Prices, Infrastructure, and Climate Policy

James Bushnell

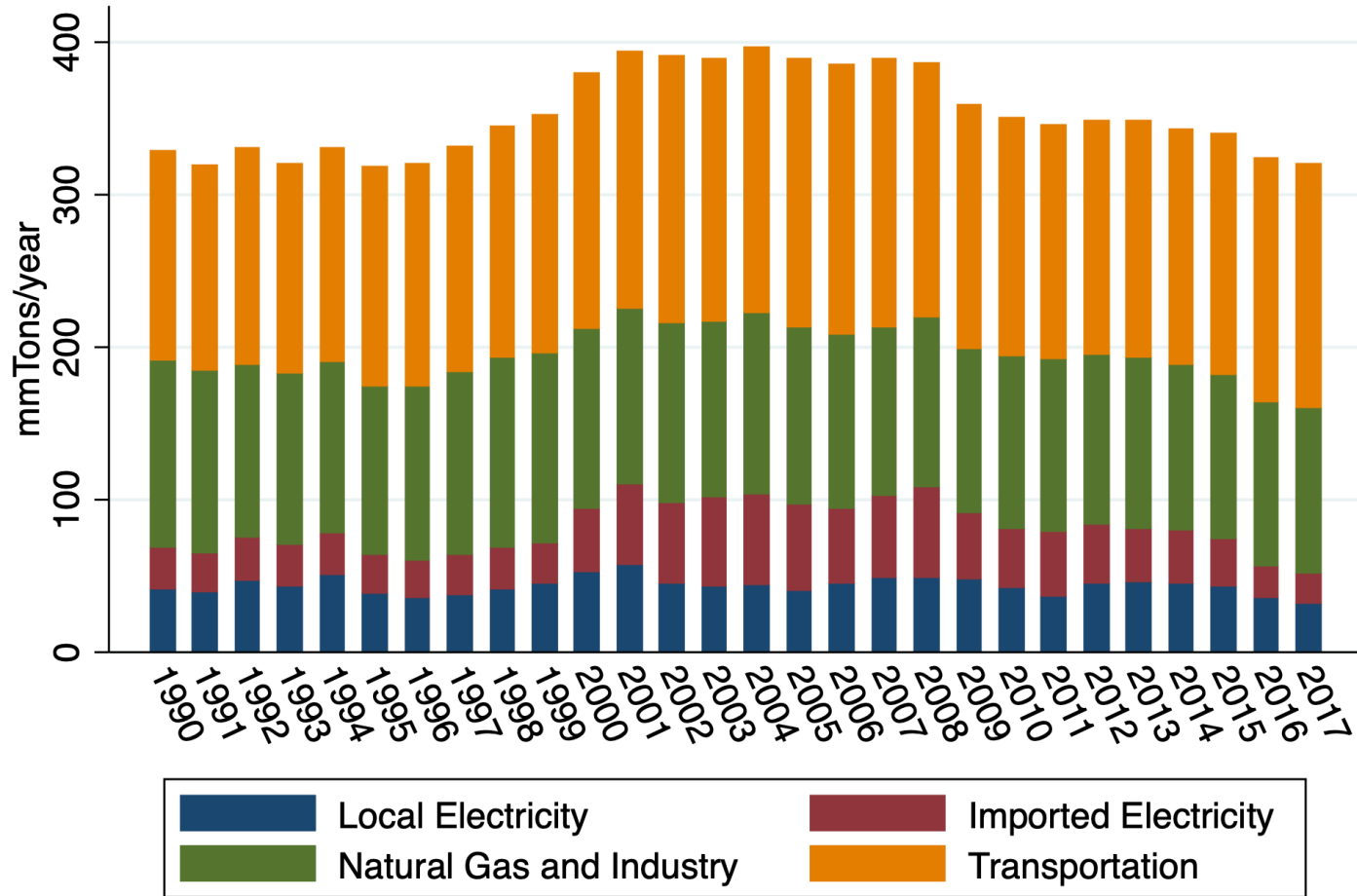
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California's Climate Strategy

- Step 1: Take electricity sector to zero (or near-zero) carbon emissions
- Step 2: Transition other sectors (transportation, home heating) to electricity

Step 1 is well underway

Annual GHG Emissions by Sector

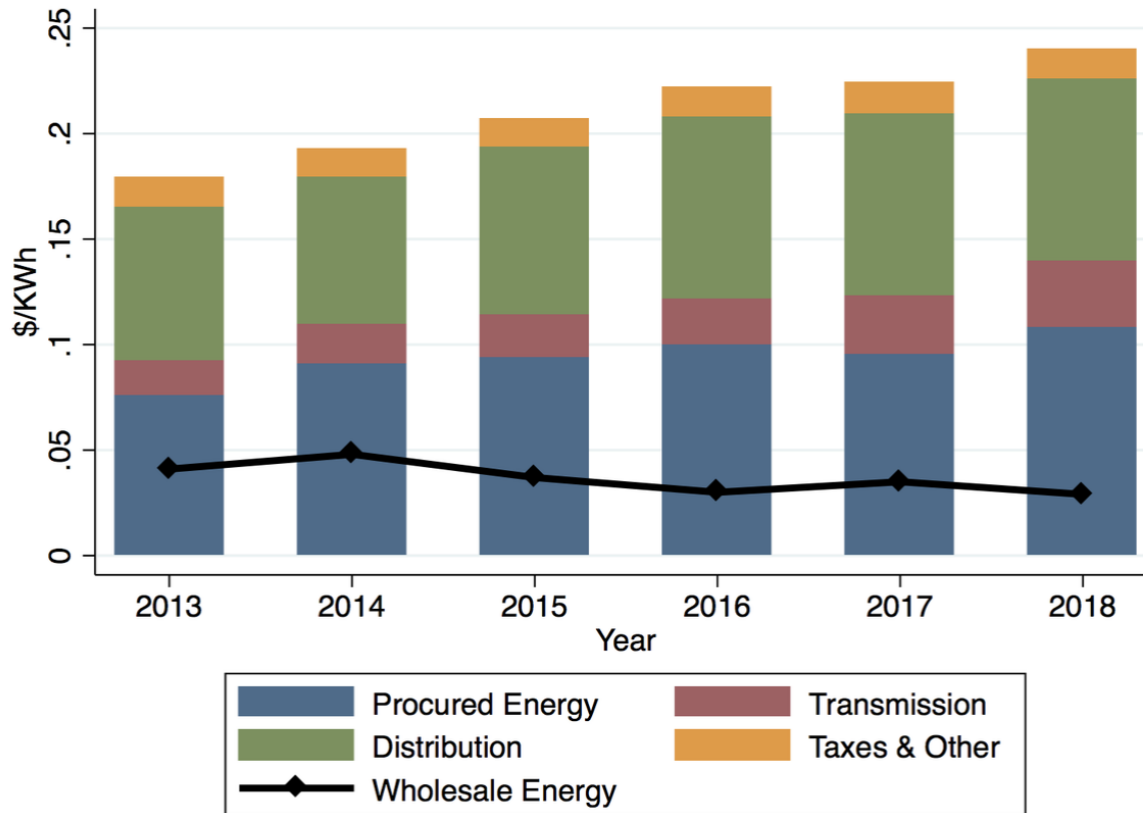


Source: California Air Resources Board Emissions Inventory.

The Challenge

- Environmental, and many other, policy choices have continued to increase California electricity prices.
 - Electricity is much “cleaner”
 - But also much more expensive than the alternatives

Why are Electricity Prices Rising?

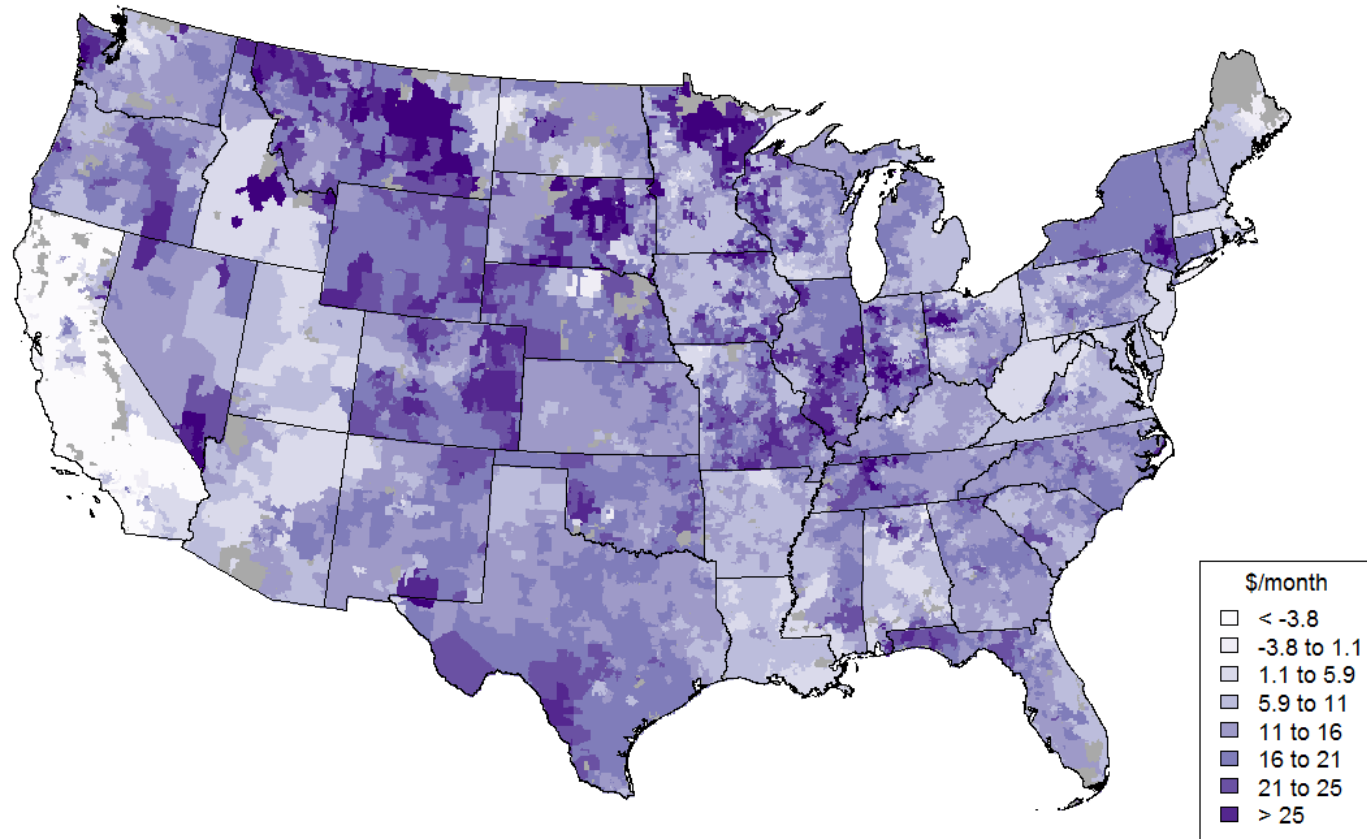


Cost Breakdown from a Representative PG&E Residential Customer

Electricity Tariff Structures

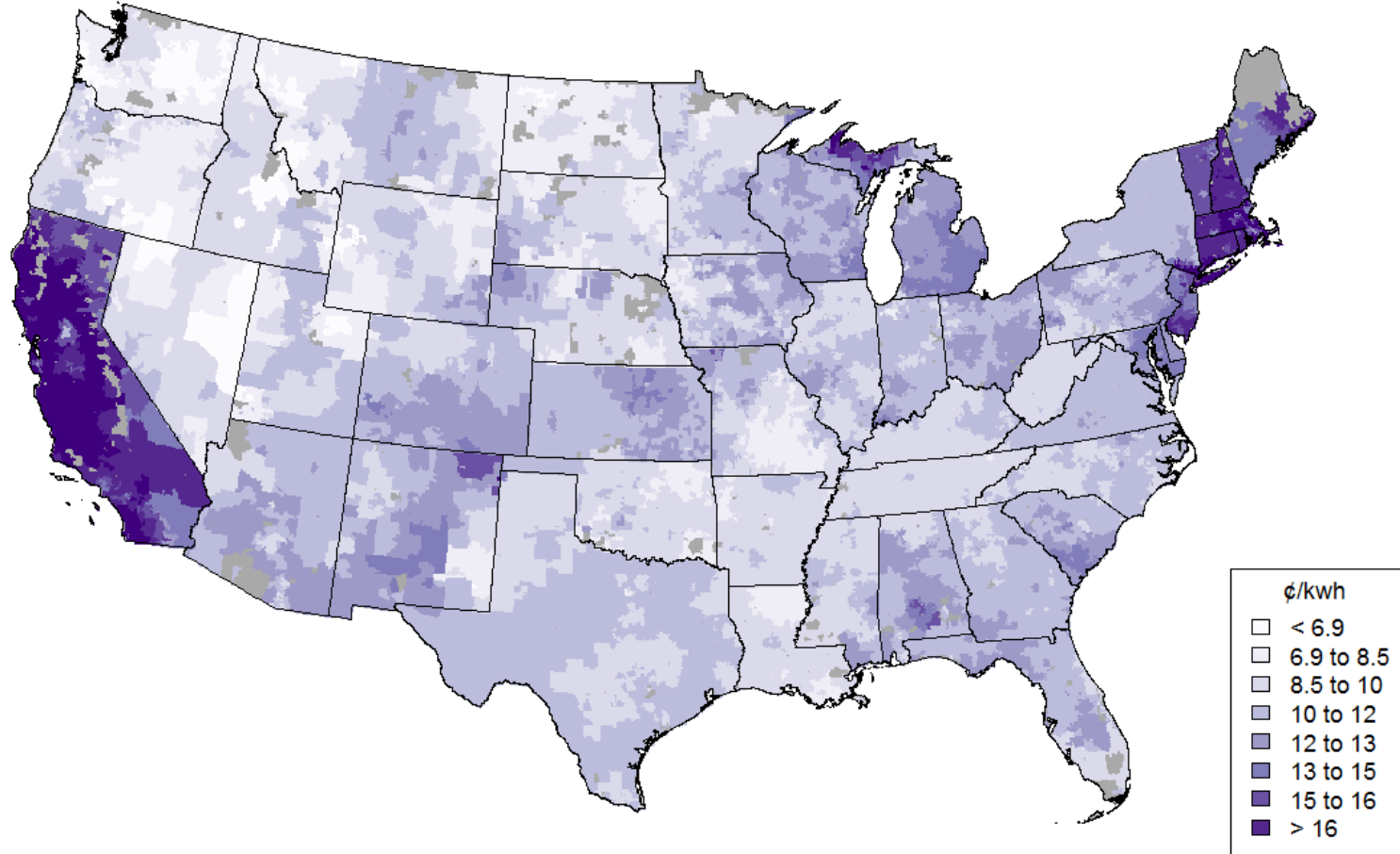
- Most electric (and gas) utilities charge a combination of a fixed (per-month) fee plus a variable fee per unit of energy
- The large California electric utilities recover all their costs through the variable fee, and have no fixed charge
 - This increases the variable price

California Electricity Tariffs have the Lowest Monthly Fixed Charges in the U.S.



Source: Borenstein and Bushnell, (2018) "Do Two Electricity Pricing Wrongs Make a Right? Cost Recovery, Externalities, and Efficiency"

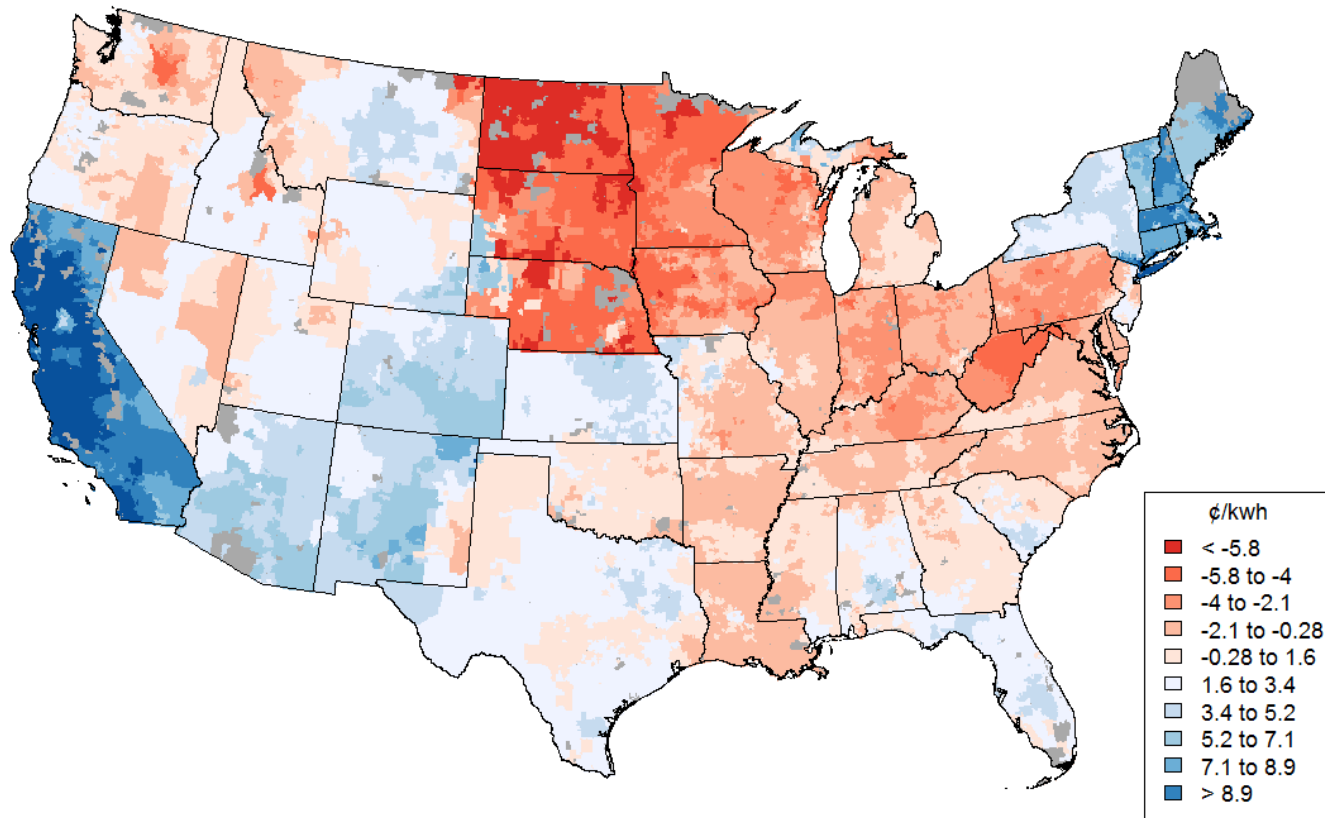
California Electricity Tariffs have the Highest Variable (per kWh) rates



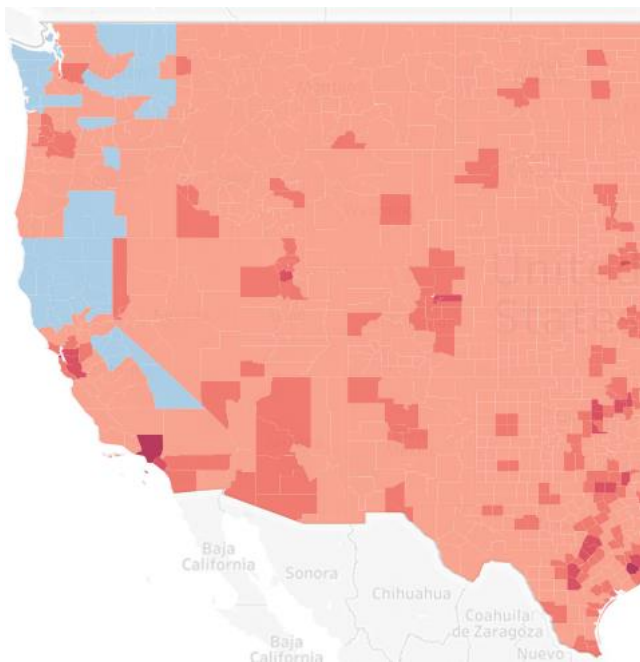
Aren't high electricity prices good for the environment?

- If so, how high is *too high*?
- One metric: compare prices to the *social marginal cost (SMC)* of supplying electricity
 - Marginal generation cost + environmental cost
- California power is both “cheap” (but capital intensive) to produce and clean

California Variable Electricity Prices are Well Above Social Marginal Cost (including air pollution/carbon cost)

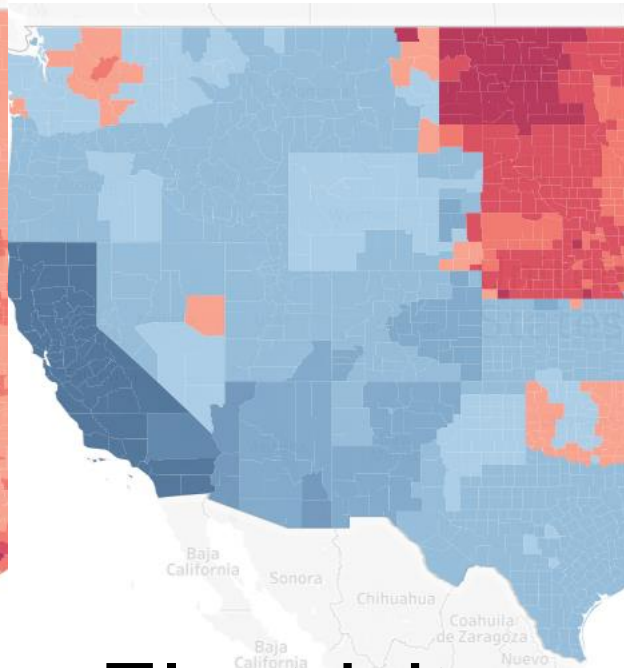


Electricity is by far the most “over-priced” source of energy in California



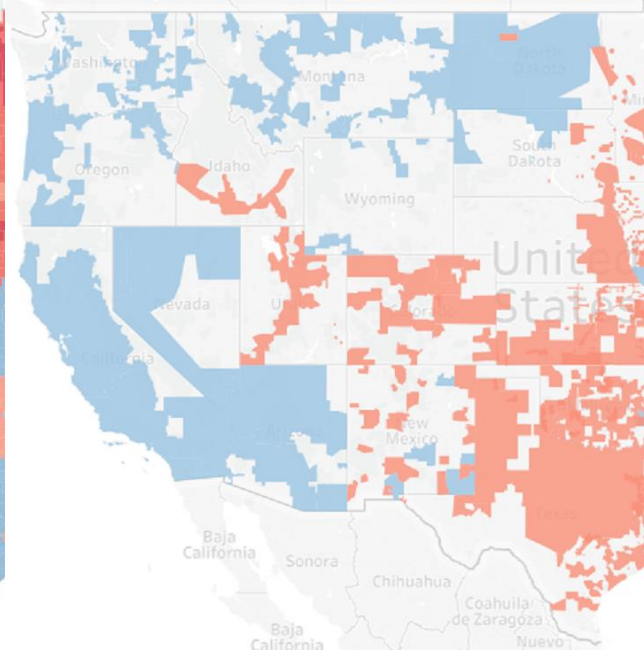
Gasoline

$3 \times (\text{Price Minus SMC})$ [cents/kWh]
-7.60 11.40



Electricity

Price Minus SMC (cents/kWh)
-7.60 11.40



Natural Gas

Price Minus SMC (cents/kWh)
-7.60 11.40

Steps that would help

- Stop adding costs of State policies to electricity bills
 - And shift away some existing ones
- Redesign tariffs to better align with costs
 - Recover some costs from means-tested fixed charges
- Support climate policies that allow more flexibility in achieving climate goals
 - Focus on the goal (reducing emissions) not the means

Thank you

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