

Volumetric Residential Rates: Socially Regressive or Progressive

HARVARD ELECTRICITY
POLICY GROUP

PREPARED BY

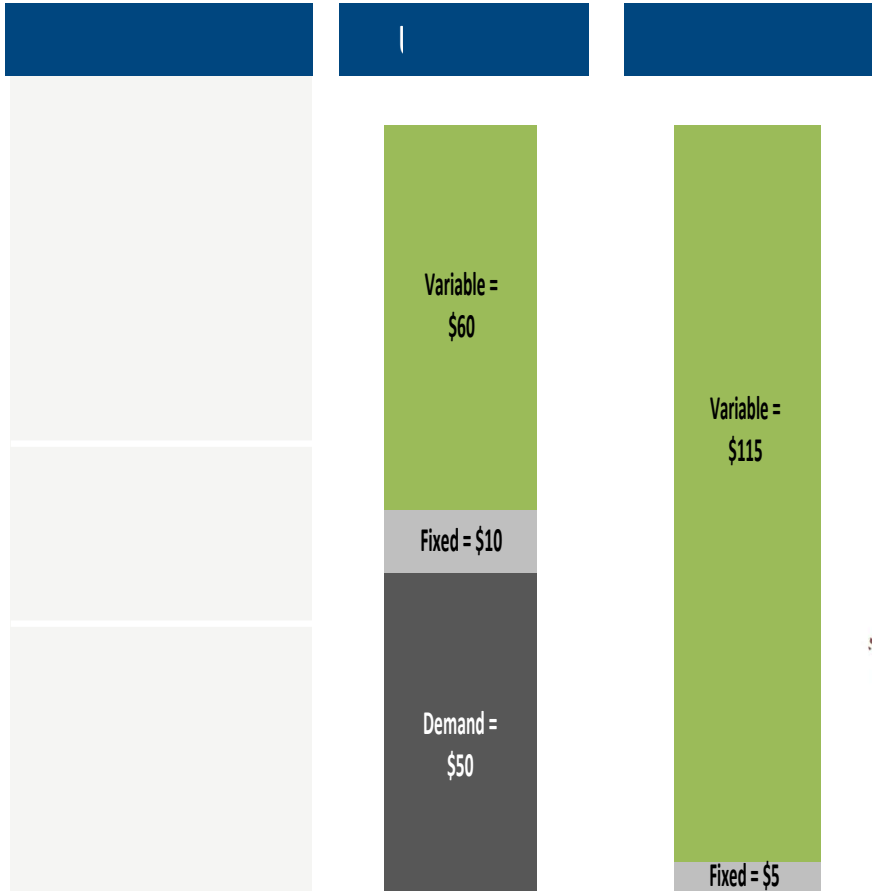
Agustin J. Ros

June 13, 2019

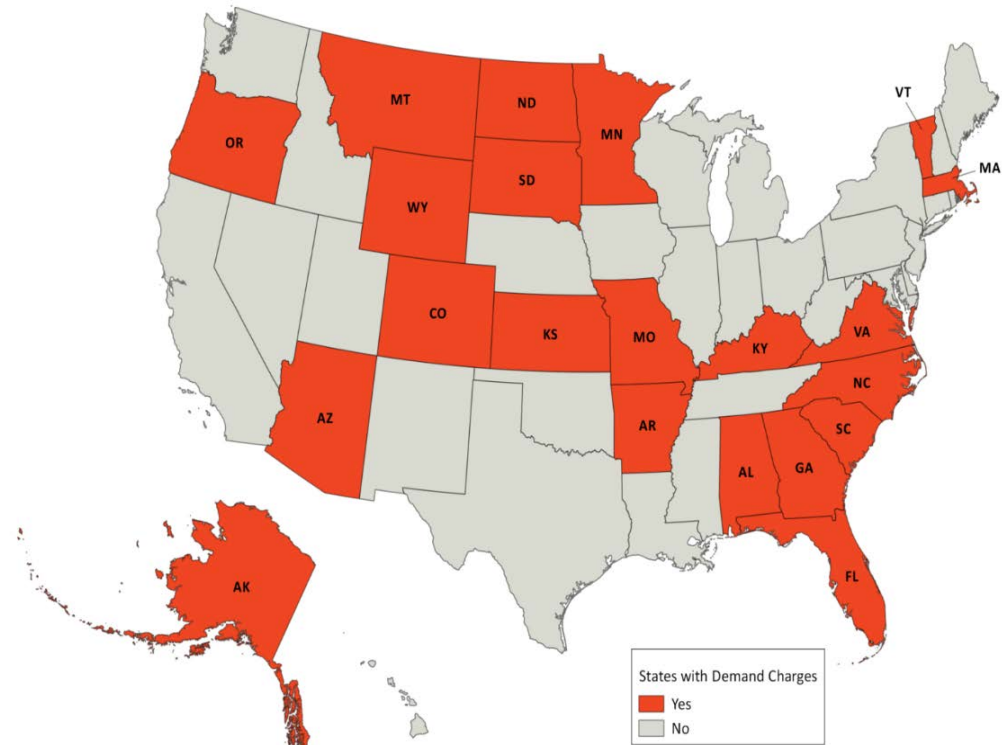
THE **Brattle** GROUP

Background

Misalignment of Rates and Costs...



...has led to Rate Design Reform
(43 utilities in 21 states offer residential demand charges)



What is Rate Design Reform Impact on Low-Income Customers?

What is a progressive/regressive electricity rate?

Inspiration from tax policy

- **Progressive tax:** imposes a lower tax rate on lower income consumers compared to higher income
- **Regressive tax:** tax applied uniformly taking a larger percentage of income from low-income earners than from high income earners

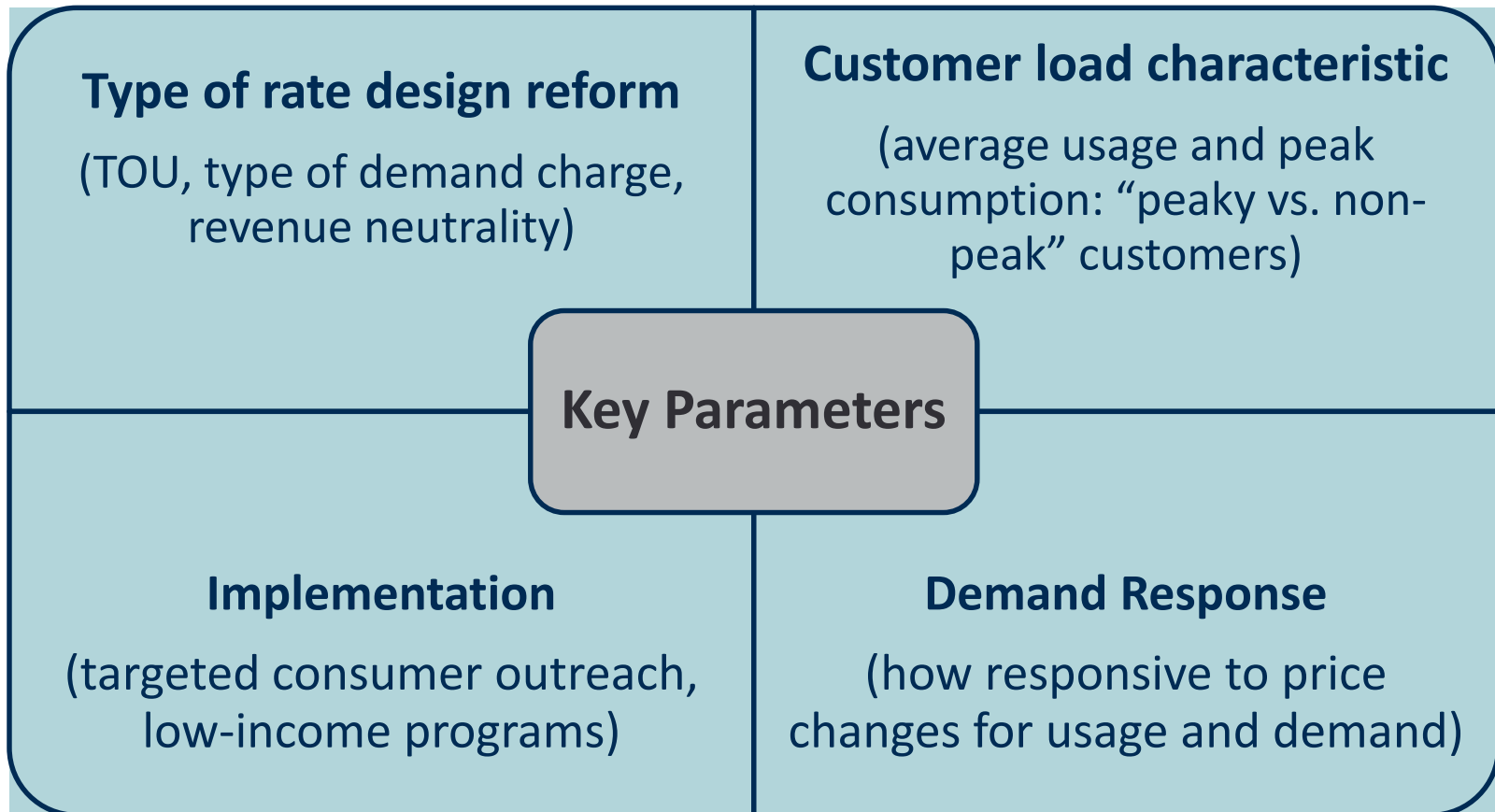
Electricity Rates

- A Progressive electricity rate, therefore, would have an effective rate (whether volumetric, demand or customer-related) that is lower for lower income customers and higher for higher income customers
- **Not common** (Inclining block rates? Low-income assistance programs)

Implications

- Instead, the relevant exercise is what is the effect of rate design reform on low-income customers from a **consumer surplus perspective**?
- Acknowledging that an ideal three-part rate design tariff where prices are the same, irrespective of income is as regressive/progressive as a purely volumetric rate where the rate is the same for all customer income categories.

Can we estimate the impact on low-income customers *ex-ante*? (Yes, but...)



Economic and consumer behavior theory cannot predict unambiguous impact on low-income consumers, need to examine effects of reform *ex-post*

Literature on the impact of rate design reform

Study	Impact on Low-Income Customer
Faruqui et. al, (2010) IEE WhitePaper (the Brattle Group) “The Impact of Dynamic Pricing on Low Income Customers”	“Our core finding is that low income customers are responsive to dynamic rates and that many such customers can benefit even without shifting load.”
Hledik and Greenstein (2016) <i>The Electricity Journal</i> “The distributional impact of residential demand charges ”	“On average, demand charges did not affect the bills of low-income customers differently than they affected the bills of non-low-income customers”
Cappers et. al. (2016) Lawrence Berkeley National Laboratory “Experiences of Vulnerable Residential Customers Subpopulations with Critical Peak Pricing ”	“When taken together, low-income customers fared no better and no worse than other customers when it came to the bill impacts of CPP...”

Illustrative results from a utility case study

Bill Impact analysis of several different types of demand charges, 9MKD is a 9-hour daily peak window

Overall, 53% of customers experience a bill decrease

Average bill change for low-income customer was -0.6% compared to 0.1% for non-low income customers

Distribution of Bill Impacts Across Customers for 9MKD Rate

