

The Brattle Group

A Conversation about Dynamic Pricing

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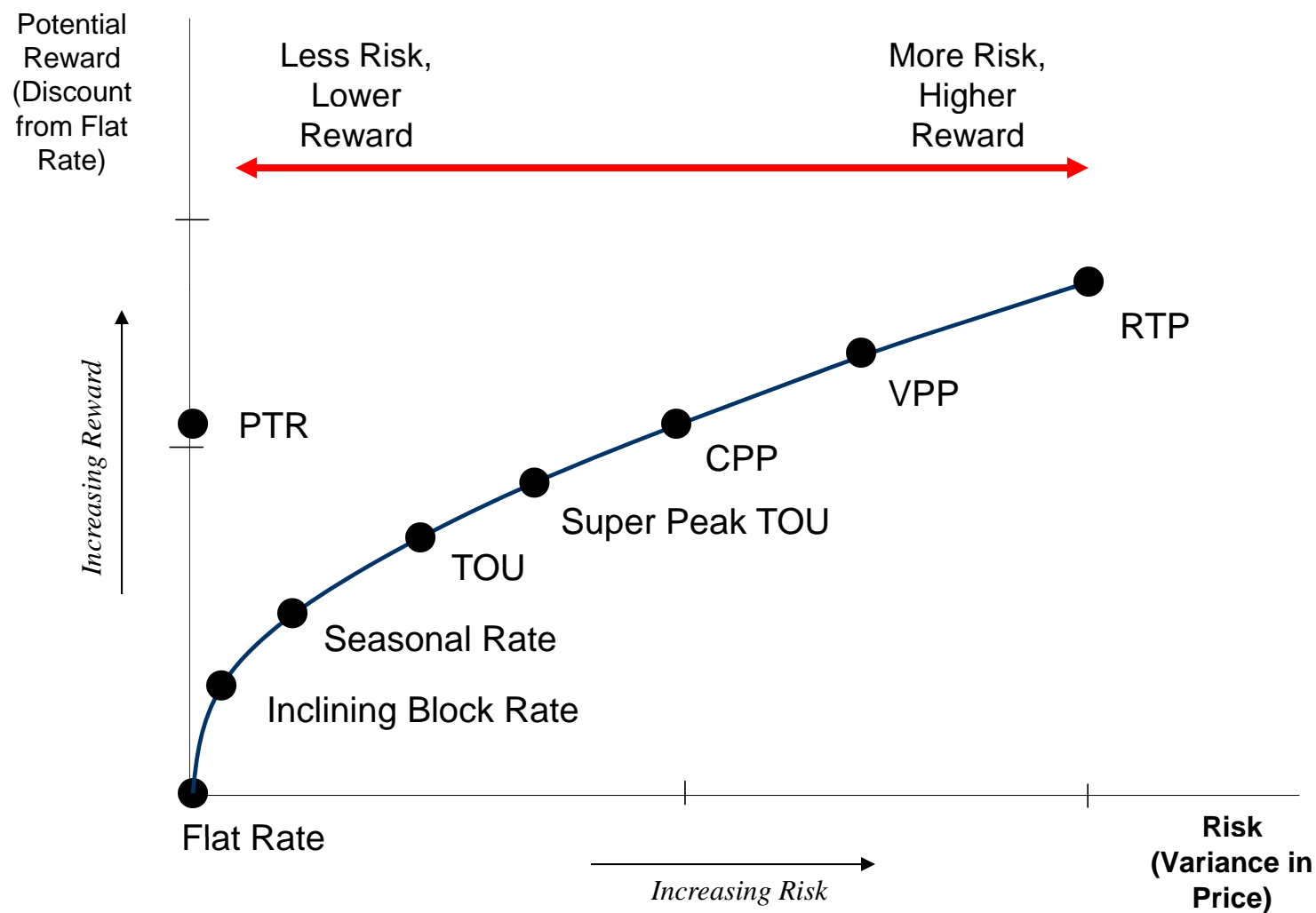
Outside of our industry, dynamic pricing is ubiquitous

- It is widely practiced in all capital intensive industries such as airlines, hotels, car rentals, sporting events and concerts
- Lately, it is also being applied to fast lanes on freeways, tolls on bridges, entrance to central cities, and parking in central cities
- *Why? Because* it improves load factors, lowers average costs and ensures that supply is available for high valued uses

Benefits of dynamic pricing

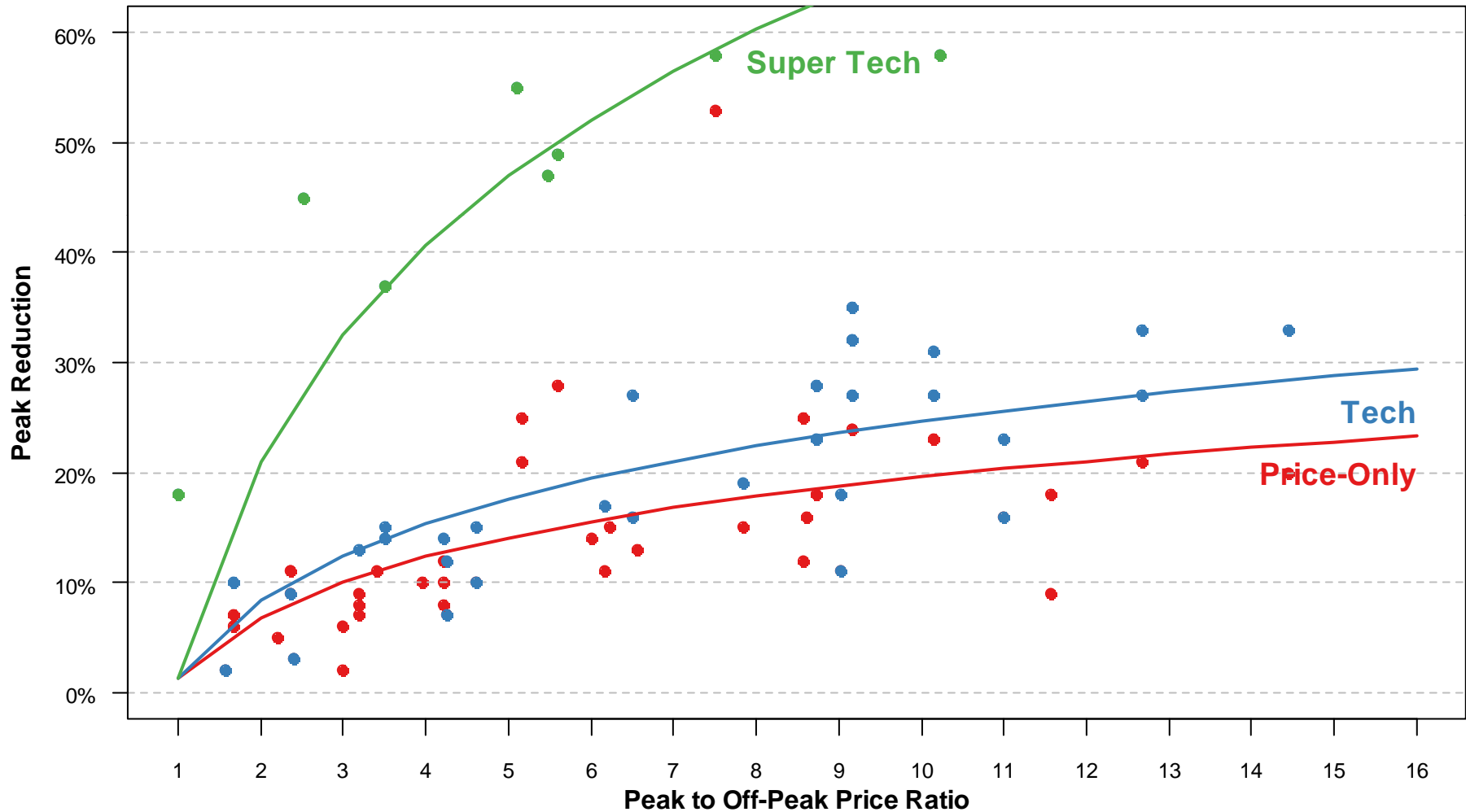
- It eliminates inter-customer subsidies that have existed for a century between customers with flatter-than average load shapes and peakier-than average load shapes
- In the evolving energy economy, dynamic pricing can help integrate renewables and plug-in electric vehicles into the electric grid

Dynamic pricing facilitates customer choice



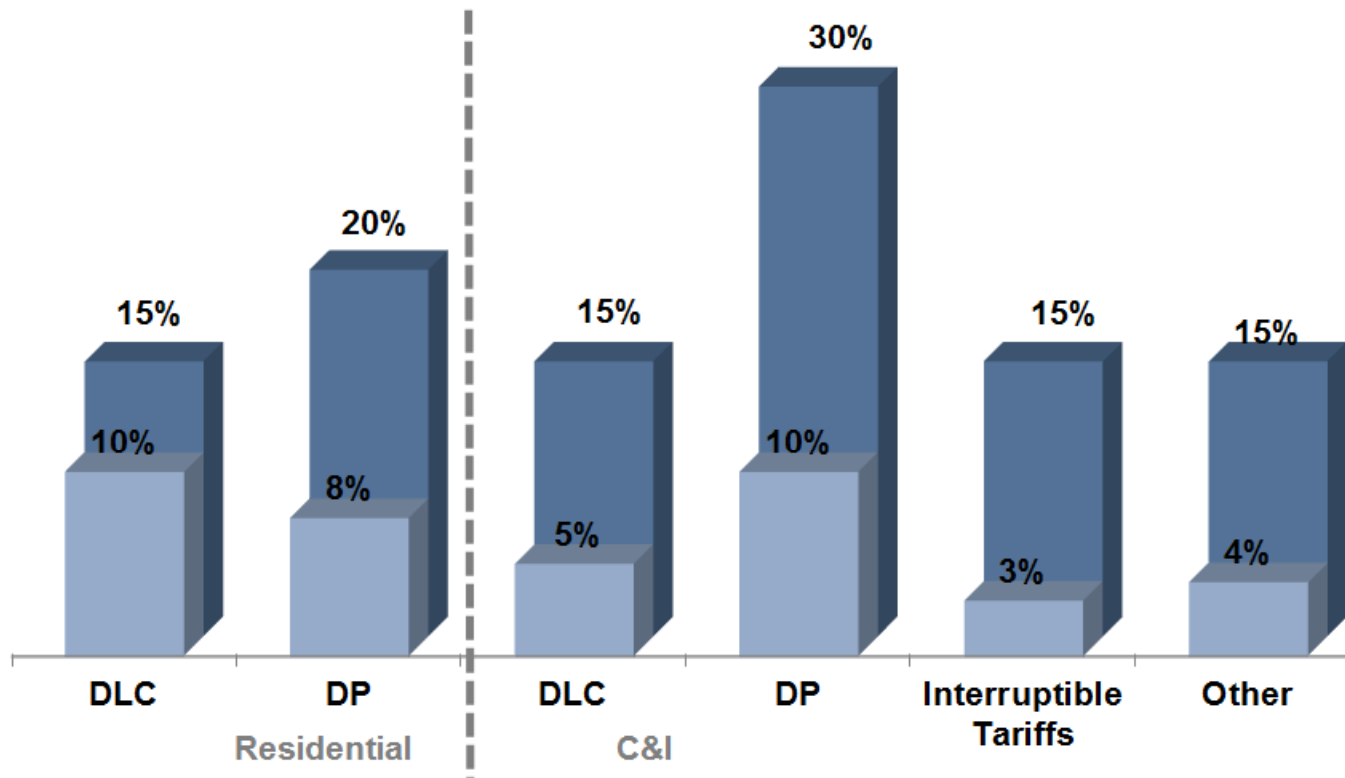
With enabling technology, customer response is even greater

The Arc of Price Responsiveness,
Price-Only (n=43), Enabling Technology (n=33), Super Enabling Technology (n=8)



Dynamic pricing is expected to play a significant role in the future – survey of 50 experts

Forecasted Customer Engagement in DR Programs

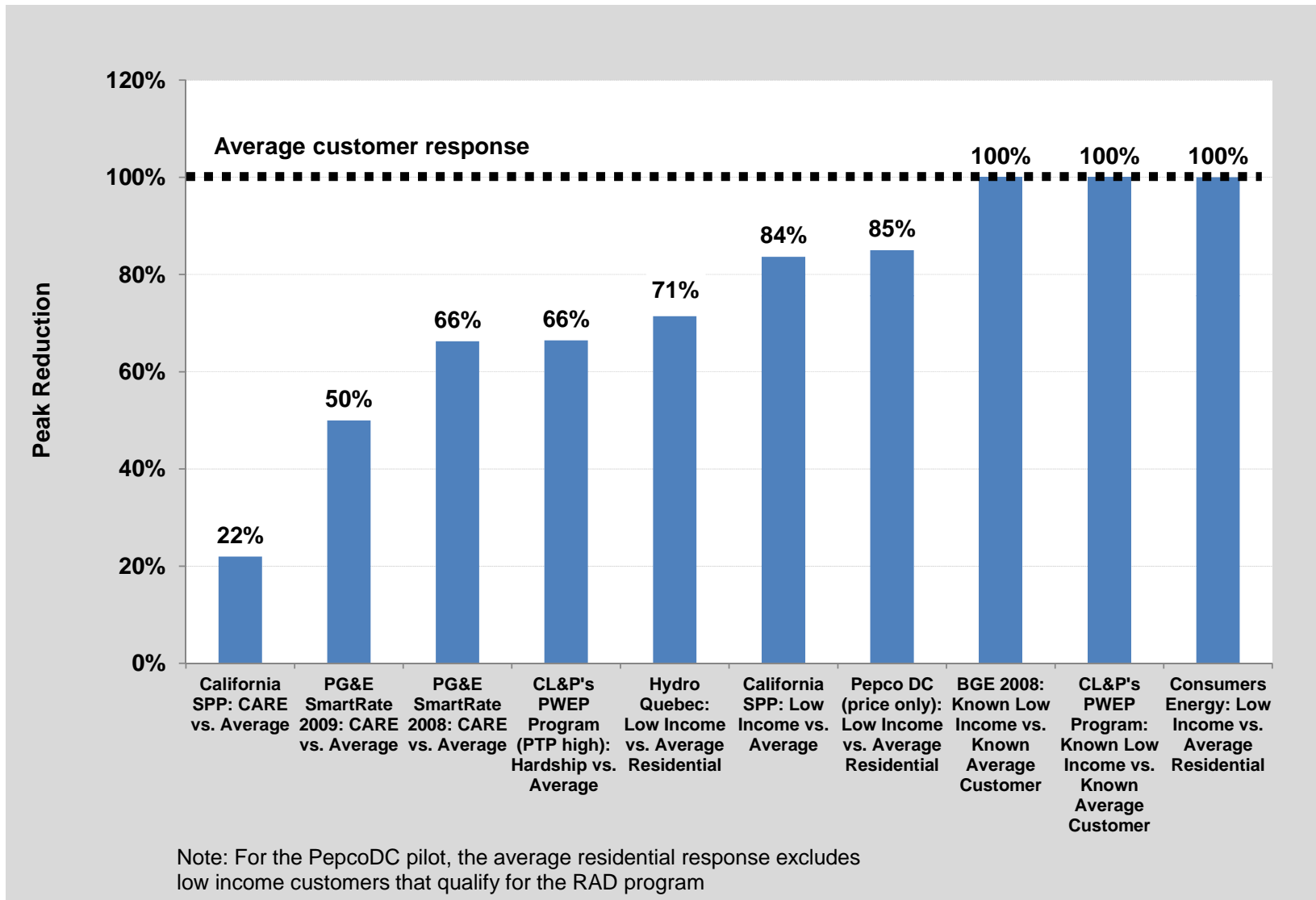


Median Low and High Estimates
10 Years From Now

However, less than 1 percent of customers are on dynamic pricing today

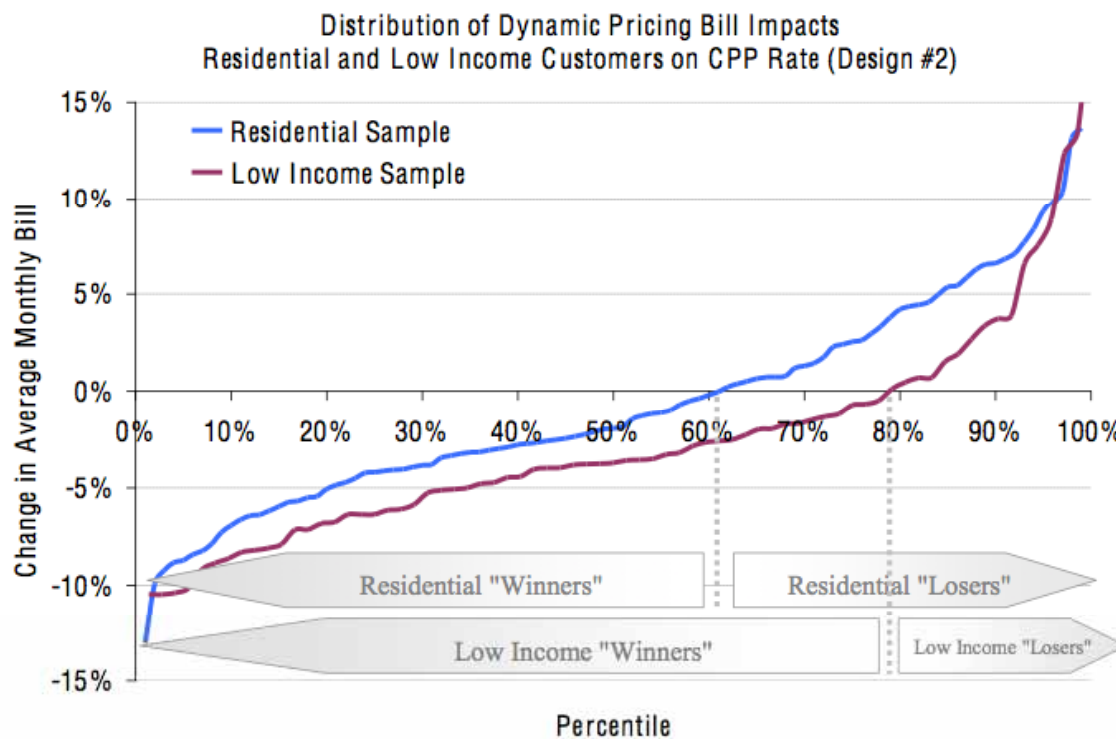
- The opponents of dynamic pricing argue that customers cannot respond to higher prices since electricity is a necessity
- They contend:
 - Unlike other goods and services sold in the marketplace, demand for electricity is not price responsive
 - This is specially so for low income customers, senior citizens and people with disabilities

The response of low income customers is about two-thirds of the average customer's response



Most low income customers are instant winners

They benefit without changing behavior, even if they stay at home all day. All receive advantages of better reliability and lower operating costs.



Opportunity to win via simple behavior changes.

Protections can be kept in place for medically frail.

Success lies in how choices are framed

- Should it be opt-in?
 - What if there are no takers?
- Should it be opt-out?
 - Will people riot in the streets?
- Should it be mandatory?
 - Commercial and industrial customers are on such tariffs in most states

Ways of doing opt-in

- Simple opt-in with existing flat rates
 - It will be difficult to get much customer participation since customers are risk averse and there is a large amount of inertia in customer decision making
- Opt-in to dynamic pricing with higher-cost flat rates as the default rate
 - The flat rate may be set based on individual customer load profiles or the class load profile
 - This method is likely to yield higher adoption rates than the first one

Ways of doing opt-out

- Opt-out a la Ontario, Canada. Make dynamic pricing rates the default tariff and let customers opt-out to other offerings from competitive retailers if they so desire.
- Modified Ontario. Introduce an additional regulated option featuring flat rates that reflect the higher cost of serving peakier loads.

Still other ways of doing opt-out

- The default tariff is dynamic but in the first year customers have full bill protection, in the second year this drops to 75%, in the third year to 50%, in the fourth year to 25%; by the fifth year, customers are trained and it is removed
- The default tariff is dynamic but consumers can limit their exposure by buying forward a certain quantity and buying the remainder on the spot market; initially, the amount bought forward can be set based on their historical load profile

Conclusions

- Dynamic pricing works not just in the class room but also in the field
 - While there are unknowns, they are exceeded by the knowns
 - There is enough evidence to move forward, even though for some issues piloting may still be needed
- It is important to frame the choices in such a way that consumers are protected but societal benefits are maximized

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Biography

Ahmad Faruqui is a principal with *The Brattle Group* who specializes in the strategy and tactics of smart energy use. He has helped design, monitor and evaluate customer-side investments for a wide range of electric and gas utilities and independent system operators. Dr. Faruqui has testified or appeared before a dozen state and provincial commissions and legislative bodies in the United States and Canada. He has also advised the Alberta Utilities Commission, the Edison Electric Institute, the Electric Power Research Institute, the Federal Energy Regulatory Commission, the Institute for Electric Efficiency, the Ontario Energy Board and the World Bank. His work has been cited in publications such as *The Economist*, *The New York Times*, and *USA Today* and he has appeared on Fox News and National Public Radio. The author, co-author or editor of four books and more than 150 articles, papers and reports on efficient energy use, he holds a Ph.D. in economics from The University of California at Davis and B.A. and M.A. degrees in economics from The University of Karachi with the highest honors.

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