IS DYNAMIC PRICING A ZERO SUM GAME?

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The problem with flat rates

Different customers impose different cost on the power system yet, if they are on a flat rate, they all pay the same rate.

Customers with poor load factor (large homes with central air conditioners and swimming pools) are subsidized by those with high load factor.

Dynamic pricing would do away with unfair system of inter-customer taxation which only survives because it is invisible.

Under the right regulatory and market conditions, dynamic pricing can create win-win outcomes.
So why do we have so little dynamic pricing?

Distribution of Dynamic Pricing Bill Impacts
- Residential Critical Peak Pricing -

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<th>Change in Monthly Bill</th>
<th>Percentile of Customers</th>
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"Flat" customer
"Average" customer
"Peaky" customer

Instant "winners" Instant "losers"
Of course, load shapes are likely to change in response to dynamic pricing.

Customers will have an incentive to reduce peak loads by curtailing and/or shifting these loads to off-peak periods.

This is not just a theoretical conjecture but backed by the results of 70 tests carried out in 18 pilot programs in North America, Europe and Australia/New Zealand which involved tens of thousands of customers.
Customer Response in Recent Pricing Pilots

- Time-of-use (TOU)
- Critical peak pricing (CPP)
- Peak time rebate (PTR)
- RTP

Percent Reduction in Peak Load

Pricing Pilot

ConnectivityWeek 2010
As customers shift usage to lower priced hours, the percentage of “winners” will increase.

Distribution of Dynamic Pricing Bill Impacts
- Before and After Customer Response -

Change in Monthly Bill

"Winners" "Losers"

Percentile of Customers
Crediting dynamic pricing participants for the hedging cost could make 90 percent better off.

Distribution of Dynamic Pricing Bill Impacts
- With Customer Response and Hedging Premium -

[Graph showing the distribution of changes in monthly bills before and after customer response, with and without credit for 5% hedging premium.]
Most low income customers would automatically benefit from dynamic pricing.
Low income customers have demonstrated significant price responsiveness.

- Low income customer response ranges from 50% to 200% of the average customer.
Making the transition – seven ideas

1. Using two-part rates
2. Offering peak-time rebates
3. Offering temporary bill protection
4. Creating demand subscription products
5. Crediting customers for the hedging premium
6. Crafting a menu of tariffs anchored around dynamic pricing
7. Creating customer buy in through education and provision of tools


Ahmad Faruqui is a principal with *The Brattle Group*. He has led major engagements involving the customer-facing side of the smart grid space for the Federal Energy Regulatory Commission, the Electric Power Research Institute and the Edison Electric Institute.

He has worked on fostering economic demand response for ISO New England, the Midwest ISO, the New York ISO and PJM. He has assisted the California Energy Commission in the evaluation of load management standards. Since the year 2000, he has been assisting utilities and commissions throughout North America assess the economics of the smart grid with an emphasis on dynamic pricing, demand response and advanced metering. This has often involved the design and evaluation of innovative pilot programs.

The author of several books and more than a hundred papers, he holds a doctoral degree in economics from the University of California at Davis. He is based in *Brattle’s* San Francisco, California office and can be reached via email at ahmad.faruqui@brattle.com or by phone at (925) 408-0149.