

Does dynamic pricing of electricity eliminate the need for demand charges?

PRESENTED TO

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PRESENTED BY

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Rate design should promote economic efficiency

To promote economic efficiency, some speakers at a CPUC Rate Design Forum in December argued for pricing electricity based on short run social marginal costs.

They also said that any discrepancy between dynamic pricing revenues and revenue requirements should be covered by fixed charges.

Further details can be found at these links:

<https://www.utilitydive.com/news/could-rate-design-help-californias-struggle-with-flat-demand/513234/>

<http://www.cpuc.ca.gov/general.aspx?id=6442455548>

<http://www.adminmonitor.com/ca/cpuc/other/20171211/>

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But rate design also has to promote several objectives besides economic efficiency

Equity

Customer satisfaction

Bill stability

Revenue stability

Gradualism

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2 | brattle.com

The cost of delivering electricity has a capacity component and an energy component

Power is generated at the power plant, but it is the grid which delivers electricity to the customer.

The grid consists of transmission lines, substations, circuits, feeders, transformers, lines from the last pole to the customer's premises, and the meter.

When customers connect to the grid, they buy a 24/7 call option on the grid.

What happens when customers don't consume any energy?

The grid still stands and has to be paid for.

Even if customers consume no energy during the peak period, they still have to pay for being connected to the grid.

The payment can be made through a connection charge, or a non-coincident demand charge, or a fixed charge.

Dynamic pricing and demand charges are complements, not substitutes

But there is no easy way to differentiate fixed charges by customer size; non-coincident demand charges provide a more feasible option.

Energy can be priced dynamically, but grid costs are best recovered through demand charges.

Smart meters have been around for a long time for large commercial and industrial customers who have taken service on three-part rates; their presence does not alter the principles of rate design.

Real time pricing (RTP) in Georgia

Georgia Power has 2,300 C&I customers (representing some 20% of retail revenues) on two-part hourly RTP pricing

In the first part, their “baseline” usage is billed on embedded costs, which include a demand charge

In the second part, deviations from baseline usage are billed primarily on marginal costs, as measured by system lambda.

- Customers >5 MW are on hour-ahead RTP pricing; customers >250 kW are eligible for day-ahead RTP pricing.
- For 300 hours a year, hourly prices are >75 cents/kWh; customers are provided a variety of price protection products.

RTP in Illinois

Commonwealth Edison has 16,000 residential customers and 9,000 C&I customers on hourly RTP.

Residential customers are on a 4-part rate: fixed charge, kW for coincident peak generation capacity (PJM), RTP for energy, and flat kWh price for transmission and distribution.

C&I customers are on a 5-part rate: fixed charge for distribution, non coincident peak demand charge for distribution, demand charge for generation capacity, RTP for energy, flat price per kWh for transmission and other elements such as renewable portfolio standards and energy efficiency.

The ideal rate design

It would include demand charges for recovering capacity costs and energy charges for recovering energy costs, and a fixed monthly charge to recover costs of billing, metering, and customer service.

The demand charges could be based on a combination of non-coincident peak and coincident peak concepts.

The energy charges could be based on varying forms of dynamic pricing

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Ahmad Faruqui's consulting practice is focused on the efficient use of energy. His areas of expertise include rate design, demand response, energy efficiency, distributed energy resources, advanced metering infrastructure, plug-in electric vehicles, energy storage, inter-fuel substitution, combined heat and power, microgrids, and demand forecasting. He has worked for nearly 150 clients on 5 continents. These include electric and gas utilities, state and federal commissions, independent system operators, government agencies, trade associations, research institutes, and manufacturing companies. Ahmad has testified or appeared before commissions in Alberta (Canada), Arizona, Arkansas, California, Colorado, Connecticut, Delaware, the District of Columbia, FERC, Illinois, Indiana, Kansas, Maryland, Minnesota, Nevada, Ohio, Oklahoma, Ontario (Canada), Pennsylvania, ECRA (Saudi Arabia), and Texas. He has presented to governments in Australia, Egypt, Ireland, the Philippines, Thailand and the United Kingdom and given seminars on all 6 continents. His research has been cited in *Business Week*, *The Economist*, *Forbes*, *National Geographic*, *The New York Times*, *San Francisco Chronicle*, *San Jose Mercury News*, *Wall Street Journal* and *USA Today*. He has appeared on Fox Business News, National Public Radio and Voice of America. He is the author, co-author, or editor of 4 books and more than 150 articles, papers, and reports on energy matters. He has published in peer-reviewed journals such as *Energy Economics*, *Energy Journal*, *Energy Efficiency*, *Energy Policy*, *Journal of Regulatory Economics* and *Utilities Policy* and trade journals such as *The Electricity Journal* and the *Public Utilities Fortnightly*. He holds B.A. and M.A. degrees from the University of Karachi, an M.A. in agricultural economics and Ph.D. in economics from the University of California at Davis.

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