

The Five “Immortal Objections” to Time-of-Use Rates

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Rate design never fails to stir up an argument

“There has never been any lack of interest in the subject of electricity tariffs. Like all charges upon the consumer, they are an unfailing source of annoyance to those who pay, and of argument in those who levy them. There is general agreement that appropriate tariffs are essential to any rapid development of electricity supply, and there is complete disagreement as to what constitutes an appropriate tariff.”

- D.J. Bolton, *Costs and Tariffs in Electricity Supply* (1938)

And nothing stirs up controversy better than a plain old time-of-use rate



The state of play

While there is a mountain of empirical evidence that customers accept and respond to TOU rates, skeptics continue to assert the contrary. That's the primary reason why only 4% of the customers in the US are on TOU rates while nearly 80% of them are on smart meters.

Recently, a very respected and seasoned regulator wrote to me that TOU rates are “an exercise in modifying human behavior with little chance of success. Even if successful, they will not yield any tangible reduction in electricity costs.”

I have been keeping track of frequently voiced objections to TOU rates since I joined the EPRI Rate Design Study in 1979. The first one used to be the lack of metering technology. That one is no longer in my diary. Here are the five that are in my diary. They have endured for so long that I call them Immortal Objections.

Objection 1

Objection: While TOU rates might reduce peak load, they will not lower customer bills.

Response: Well-designed TOU rates will yield savings to customers even in the short term as customer reduce peak loads and shift their peak usage to off-peak periods. In the long run, the savings will be even greater as customers install new digital devices such as smart thermostats. Additionally, as peak demands are lowered, there will be less need to invest in peaking capacity and that will further reduce costs to customers over the long run.

Objection 2

Objection: Lower peak demand will not lower transmission and distribution costs since they do not depend on load.

Response: Congestion is rising on distribution circuits and that can be relieved by targeted TOU pricing. In addition, TOU pricing can lower the need for T&D investments in the long run. Most ISOs/RTO's would welcome the demand response created by TOU rates.

Objection 3

Objection: On-going pilots with TOU rates and other time-varying rates show minimal customer reaction to price signals in changing their load profiles

Response: There is a world of contrary evidence on this topic. Customers do respond to TOU rates and lower peak demands while shifting some of that load to off-peak periods.

Objection 4

Objection: Residential customers are busy with seeing off kids to school in the morning, commuting to work, returning home to have dinner with the family and then making time to watch TV and perhaps do the laundry. Customers have little time or interest in becoming a home energy manager. They just want the lights to come on when they flip the bill and get an affordable bill at the end of the month.

Response: While that is true of the vast majority of customers, sound scientific research has shown that, on average, TOU pricing motivates customers to modify their lifestyle and save money. In OGE's case, they have signed up a fifth of their customers onto dynamic pricing, often enabled with a smart thermostat. On average, these customers are reducing their peak demand by 40% and lowering their bills by 20%. SMUD deployed default TOU rates without any hitch last year. Fort Collins in Colorado instituted mandatory TOU pricing last year. Consumers Energy will begin deploying default TOU rates in June. Xcel Energy in Colorado has filed for deploying default TOU rates this year. SDGE has already done that and PG&E and SCE will begin deploying TOU rates from October onwards.

Objection 5

Objection: In the developing world, people eke out a meager existence, living from hand to mouth. They are so focused on making ends meet that they don't have time to focus on responding to TOU rates.

Response: Even in the developing world, people are seeking to lower their energy bills and modify their lifestyle to improve the climate of the planet. While we don't have a lot of evidence from developing countries on the efficacy of TOU rates, there is no reason to think they won't work there.

Presenter Information



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Ahmad Faruqi is an internationally recognized authority on the design, evaluation and benchmarking of tariffs. He has analyzed the efficacy of tariffs featuring fixed charges, demand charges, time-varying rates, inclining block structures, and guaranteed bills. He has also designed experiments to model the impact of these tariffs and organized focus groups to study customer acceptance. Besides tariffs, his areas of expertise include 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, including electric and gas utilities, state and federal commissions, governments, independent system operators, trade associations, research institutes, and manufacturers.

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, Saudi Arabia, and Texas. He has presented to governments in Australia, Egypt, Ireland, the Philippines, Thailand, New Zealand and the United Kingdom and given seminars on all 6 continents. He has also given lectures at Carnegie Mellon University, Harvard, Northwestern, Stanford, University of California at Berkeley, and University of California at Davis and taught economics at San Jose State, the University of California at Davis, and the University of Karachi.

His research 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 is a member of the editorial board of The Electricity Journal. He holds BA and MA degrees from the University of Karachi, both with the highest honors, and an MA in agricultural economics and a PhD in economics from The University of California at Davis, where he was a research fellow.

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