Published on *Fortnightly* (https://www.fortnightly.com)

Price Responsive Demand [1]

Deck:
Economic Experiments

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Fortnightly Magazine - March 2018 [2]

In my native Midwest, people spend a good deal of time discussing the weather. It dominates conversations with friends and strangers alike, because it so impacts everyday life.

Those of us who relocate to the Washington, D.C. region quickly realize that automobile traffic and daily commutes are the Washington versions of Midwest weather small-talk. Chatting about traffic conditions, potholes, work slow-downs, metro malfunctions and the nightmare of commuting is a staple of life for people residing near the Capital Beltway.

A recent traffic tempest on the Virginia side of the Potomac has caused me to ponder an issue that has long vexed electricity regulators at both FERC and the states; the matter of price responsive demand (PRD). Let me explain.

The Virginia Department of Transportation (VDOT) recently implemented a congestion pricing program on Interstate 66, one of the few main arteries carrying Virginia commuters to D.C.

High Occupancy Vehicles (HOV) may use the roadway for free during high volume times, and solo drivers have the opportunity to use the roadway for a toll, based on dynamic pricing. The more congested the road becomes, the higher the toll goes, incenting solo drivers to choose to abandon the road once their own personal price tolerance is exceeded.

It's been a grand experiment for economists, because the plan proves you can successfully use upward pricing to ease congested networks, but it has become a major headache for the region's political leadership.

Both mainstream and social media are now regularly filled with stories of angry commuters facing forty dollar-plus one-way tolls to complete the last few miles of their trip. The program has come to be known derisively as the "Lexus Lane," since the few people who can afford to use it are the well-heeled. As I write this, nervous lawmakers in Richmond are scurrying to pass legislation to modify the program before surly constituents next head to the polls.

Watching the unfolding drama has me considering what we can learn from this experiment in the context of one of the holy grails of electricity policy: PRD. Like many others, I have long looked favorably towards the idea of PRD as an effective way to break down the wall between FERC-regulated wholesale markets and state-regulated retail rates.

Yet Virginia's real-world traffic experiment exposes the potential political limits of what can be achieved when dealing with infrastructure that benefits the general welfare - even when privately owned, as is often the case with energy infrastructure.

As a former FERC commissioner, I have the perspective of a wholesale market regulator who desires better real time price responsiveness to create a demand-side market signal. Yet as a former state commissioner, I have a keen appreciation for the pressures retail regulators face.

It is one thing to be a market designer desiring more efficient price signals. It is another to be a retail regulator telling a parent they will pay an arm and a leg for electricity if they want a clean soccer uniform for their kid in time for the afternoon game, just because mom or dad forgot to start the laundry at eleven p.m. the night before.

The Virginia toll experiment is instructive as to the limits of pure market signals in accommodating goods with a heavy political overlay. The question for Virginia political leaders will be this: should government intervene and cap the toll and/or reduce high volume transit hours?

Capping the toll at a politically tolerable number would undermine congestion pricing's goal of limiting congestion and likely result in the worst of both worlds: relatively high tolls combined with relatively high traffic congestion.

Seen in this light, it is little wonder why so many state utility commissions continue to prefer a regulatory model that shields most consumers (especially residential) from real time market volatility. The tradeoff is slightly higher average prices, in return for the stability and predictability that many consumers value.

If you need any further convincing that stability and predictability are attributes valued by consumers, look no further than the wireless communications industry where metered and time-of-use pricing is vanishing in favor of fixed-price "unlimited" voice, text and data plans.

Applied to the electricity world, the Virginia toll experiment and its backlash offer some helpful lessons for those of us who admire PRD in theory, but are fully aware of its pitfalls in practice.

First, make certain expectations are properly set. When first described to commuters, VDOT explained average tolls were expected to be around nine dollars. While still an expensive toll in most people's opinion, it obfuscated the difference between average tolls throughout the entire pricing period and the expected peak tolls when the most people, by definition, would be experiencing them.

When stories of forty-dollar tolls began circulating, it was viewed as a bait-and-switch by those who sold the plan. In the electricity world, it would be the equivalent of selling PRD as a tool to efficiently price "average" bills over the course of a year, without explaining potentially dramatic day-to-day volatility and increases for individuals failing to alter their usage patterns.

Second, rates should be designed with an appreciation for how people use the product in the real world. Prior to I-66 dynamic pricing, commuters could realistically get around the HOV restrictions that had existed for years because they were only in effect for a limited number of hours.

Many commuters beat the rush by going to the office early, before HOV restrictions applied. But when VDOT moved to dynamic pricing, it instituted new, expanded high volume hours that made it

infeasible for most people to avoid either the occupancy restrictions or the tolls.

Effectively, a whole group of early commuters were forced to change their established routine. Similarly, a poorly designed PRD program that makes consumers feel like they have lost flexibility and options is destined for difficulty in acceptance.

The Virginia experience also may give credence to the notion that new rate designs may be accepted by the public more easily when a new option is being added, rather than when old patterns are being disrupted. It suggests that PRD might find a more favorable audience when applied to an emerging product, like electric vehicles, than to well-established routines, such as completing the family laundry.

Finally, the entire VDOT case study reinforces something I have long believed. As powerful as the purely economic case is for PRD, public acceptance and politics still play an outsized role in energy, just as in transportation.

It leads me to suspect regulators and elected officials in most states will continue to shy away from fully exposing consumers to real time market volatility. Rather, the most likely uses for PRD may well be interfacing with those automated technologies that are unobtrusive to the consumer.

Things like smart water heaters, thermostats, and appliances, working behind the scenes to interact with the grid in ways that are nearly unnoticeable are the easiest and most promising way to expand the benefits of PRD.

These integrated technologies can not only improve the functioning of markets, but do it in a way that limits the potential for customer "road rage" along the journey.

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