BEFORE THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC UTILITIES

Investigation by the Department of Public Utilities)
Upon Its Own Motion into Time Varying Rates) D.P.U. 14-04

COMMENT OF THE STAFF OF THE FEDERAL TRADE COMMISSION[1]

March 10, 2014

I. Introduction

The staff of the Federal Trade Commission (FTC) welcomes this opportunity to submit a comment on the Order Opening Investigation (Order)[2] that the Commonwealth of Massachusetts Department of Public Utilities (Department) issued regarding its investigation of time-varying retail rates for electric power (part of the Department's broader investigation of modernization of the electric grid).[3] As the Department's Working Group on grid modernization reported, several significant technical developments – including advanced-technology meters, often called "smart meters" – have made it timely to consider the contributions that electricity pricing incentives at the retail level can make to the achievement of substantial power system efficiencies and improvements in the reliability of the electric system. Achievement of these efficiencies can create benefits for all electricity customers.

The Order states the Department's interest in developing an approach to maximizing the benefits of time-varying rates. It is particularly appropriate to provide incentives (in the form of bill savings) to customers who trim their electricity consumption from the grid when it is stressed

[1] This comment expresses the views of the FTC's Office of the General Counsel, Office of Policy Planning, and Bureau of Economics. The comment does not necessarily represent the views of the FTC or of any individual Commissioner. The Commission, however, has voted to authorize the filing of this comment.

[2] Order Opening Investigation, *available at* http://www.env.state.ma.us/dpu/docs/electric/14-04/12314dpuord.pdf (Jan. 23, 2014).

[3] We use the terms "time-varying rates" and "dynamic pricing" interchangeably to denote a rate structure in which customers pay differing prices for units of electricity obtained at different times from the transmission grid. Real-time retail electricity prices most closely match the balance of supply and demand conditions on the grid because they are based in large part on moment-to-moment wholesale energy prices and transmission congestion conditions at each node of the grid.

by unusually high demand. Customers who trim their power consumption in these circumstances help utilities and grid operators to meet the challenge of continuously balancing supply and demand on the electric system, to the benefit of all customers. The Department notes that several medium and large commercial and industrial (C&I) electricity customers in the Commonwealth are already on time-varying rates offered by marketers. By contrast, most residential customers remain on basic service[4] with flat rates.

The Department seeks comments on (1) whether to transition some or all basic service to dynamic pricing; (2) how to educate residential and small commercial customers about dynamic electricity pricing; and (3) how dynamic pricing of basic service is likely to affect the Department's efforts to maximize the overall benefits of dynamic pricing. The Department specifically asks about the peak-time rebate (PTR) program of time-varying rates operated by Baltimore Gas & Electric (BG&E).[5]

As a general matter, when retail time-varying rates are in place, customers who respond to incentives to trim demand for electricity from the grid during peak demand periods – *i.e.*, who provide demand response (DR) – can save money, diminish harmful environmental impacts, and reduce the costs and improve the reliability of the electric system. Lowering the costs and improving the reliability of the electric system work to the benefit of all electricity customers, not just those who respond to these incentives.[6] During critical peak demand periods, wholesale electricity costs – and thus wholesale electricity prices – greatly exceed flat-rate retail prices. Dynamic pricing gives retail customers economically efficient incentives to reduce demand

[4] In Massachusetts, "basic service" is the electricity that the distribution utility provides to a customer who has not chosen an alternative supplier. Other jurisdictions – as well as comments submitted in those jurisdictions by the FTC and its staff – often refer to this arrangement as "provider of last resort" (POLR) service.

[5] A description of BG&E's Smart Energy Rewards program is available at http://www.bge.com/smartenergy/smart-energy-rewards/pages/default.aspx. Pepco proposed a similar approach to the District of Columbia Public Service Commission (DC PSC), as we discussed in the recent Reply Comment of the Staff of the Federal Trade Commission Before the District of Columbia Public Service Commission Concerning a Proposed Program for Dynamic (Variable) Pricing of Electricity for Residential Customers, Formal Case Nos. 1086 and 1109 (Jan. 13, 2014), *available at* http://www.ftc.gov/policy/policy-actions/advocacy-filings/2014/01/ftc-staff-reply-comment-district-columbia-public.

[6] As we discuss elsewhere in this comment, our overall view is that it is critical for all customers to migrate to dynamic pricing as soon as practicable.

during peak load periods, dramatically reducing wholesale costs and prices and thus average *retail* prices for customers generally.[7]

The Department raises important questions about the interaction between dynamic pricing for basic service and the evolution of effective competition in the Commonwealth's approach that allows retail electricity customers to select from among several electricity marketers. To answer these questions, one must analyze time-varying electric rates within the broader context of product and service differentiation in retail electricity markets – a context that differs from the way in which electricity market technologies and regulation traditionally have been viewed. Traditional electricity technologies and regulation evolved to adopt a "one-size-fits-all" approach toward rate variability, reliability, generation diversity, supply resiliency after storms, and environmental sustainability. Recent technological developments and regulatory innovations, however, have increasingly made a one-size-fits-all approach obsolete.

Differentiation in electric service can unleash increased benefits by allowing customers to better match their preferences for many different electricity service characteristics with the offers available to them.[8] But maintaining flat-rate regulation would stifle such innovation and the benefits that flow from it. By averaging large, but brief, increases in electric system costs with long periods of off-peak, lower system costs, flat-rate regulation massively dilutes incentives to cut back electricity consumption in peak demand period. Once retail prices reflect the jumps in wholesale prices during critical peak demand periods, customers have strong incentives to provide DR, and the whole electric system can become less costly. Consequently, innovations associated with DR flourish under time-varying rates. Similarly, when time-varying rates are in place, there is greater differentiation in electric services aimed at facilitating DR.

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[7] BG&E's PTR approach is an improvement over flat-rate electricity pricing, because it creates economic incentives to trim demand in critical periods when the savings to the electric system are greatest, although it falls short of the system savings that real-time pricing (RTP) can create. As a transitional rate design, PTR allows many customers to benefit through the rebates while leaving nominal rates unchanged, so that no customers are likely to be worse off than before the plan took effect. Non-responding customers, however, will pay higher bills and may pay more per unit of power consumed than they would if they trimmed consumption during critical periods.

[8] Differentiated services (stemming from differences in consumer preferences) may entail higher or lower per-unit costs than homogeneous services. As in many markets, some customers may prefer to pay high per-unit prices for power if they value certain characteristics that involve higher costs (for instance, greater reliability). Customers may well also prefer to pay higher per-unit prices if the higher price includes equipment or services that allow them to reduce their total power bills through efficiencies or conservation, or if it enables the customer to purchase electricity generated by a preferred resource (such as wind or other renewables).

More generally, increased innovation regarding DR and new end uses for electricity – such as electric vehicles (EVs) – may become more difficult to achieve under any form of prescriptive rate regulation for basic service.[9] When the pace of innovation accelerates and service differentiation increases, as is foreseeable in retail electric services, the ratemaking process is unlikely to be able to keep pace. A particularly difficult challenge for cost-based rate regulation in retail electricity markets stems from the fact that electricity services involving time-varying rates, such as assistance in automating responses to these rates, often are most effective when various types of equipment are bundled with the electricity service. In addition, learning curves associated with producing high volumes of products that incorporate an innovation often result in cost changes so rapid that rate regulation cannot keep abreast. In the long run, prescriptive rate regulation of basic service may hinder the development of differentiated electricity services that, by means of innovative time-varying rate structures, would provide the greatest consumer benefits.

Although a full-blown transition to dynamic real-time pricing for all electricity customers would lead to the most efficient power system, a more limited transition to PTRs for basic service customers in the near term will nonetheless generate consumer benefits because it may well smooth customers' adaptation to DR incentives, thus accelerating the process of maximizing the benefits of dynamic rates in the long run. The experience of switching large and medium-sized C&I customers' basic service from flat rates to time-varying rates suggests that marketers can offer attractive alternatives to residential customers in this context.[10] It also suggests that residential customers are interested in selecting differentiated offers that include varying degrees of bundling with equipment and other services, and that they also are interested in various price-hedging services provided by retail electricity marketers. We encourage the Department to introduce time-varying rates into basic retail electric service in order to speed the achievement of such rates' maximum benefits.

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[9] There is a large literature describing incompatibilities between rate regulation and innovation or product differentiation. For a recent summary of some of this literature, see Nancy L. Rose, "After Airline Deregulation and Alfred E. Kahn," 102:3 Am. Econ. Rev. 376 (2012). An early, detailed study of how rate regulation discouraged innovation in the railroad industry is included in *Improving Railroad Productivity: Report of the Task Force on Railroad Productivity* (Exec. Office of the President, 1975).

[10] Maryland, New Jersey, and New York, among other states, converted POLR service for large C&I customers to RTP early in their restructuring efforts. Large C&I customers in these three states switched to electricity marketers in 2013 at rates of 93.8, 85.7, and 83.1 percent, respectively. Distributed Energy Financial Group, *Annual Baseline Assessment of Choice in Canada and the United States* (Jan. 2014), *available at* http://www.competecoalition.com/files/ABACCUS-2014-vf.pdf.

The PTR approach is a reasonable initial candidate for incorporating time-varying rates into basic service. It creates more efficient price signals to customers (stemming from the benefits of helping the grid balance demand and supply) but does not impose additional risk on customers who are just learning about this source of bill savings. If the Department adopts a PTR approach, we see no reason why any customers should be denied the opportunity to save money and help grid operators meet the challenges of balancing supply and demand on the grid. Over time, as customers become familiar with time-varying rates, we encourage the Department to transition to increasingly timely and accurate price signals for all electricity customers, so as to maximize the benefits of time-varying rates. Because real-time rates provide the most accurate pricing incentives to customers, they promote the efficient use of electricity and eliminate deadweight losses.

Consumer protection and consumer education issues are likely to arise when basic residential service is made subject to (or includes an option for) time-varying rates. For example, there may be concerns about how public efforts to raise consumer awareness and understanding of time-varying rates will affect retail electricity competition. In this vein, the National Energy Marketers Association (NEM) apprised the DC PSC of its concerns over the competitive neutrality of the consumer education programs that might follow from Pepco's proposal for time-varying rates.[11] We agree that competitive neutrality should be a priority in the design of public consumer education programs about time-varying rates and about the alternatives that marketers offer to customers. NEM's comment also discussed equal access to meter data for marketers and basic service providers. We agree that marketers offering alternative time-varying rate options to retail customers need access to such data at least sufficient to operate their alternative time-varying rate offers, although we also urge the Department (as we did the DC PSC) to ensure that appropriate safeguards are in place for the privacy and security of customer information.

In the remainder of this comment, we elaborate on the timeliness of the Department's investigation, discuss some of the tradeoffs inherent in the PTR approach, and elaborate our views concerning the competitive impact of public consumer awareness and education campaigns.

II. Interest and Experience of the FTC

The FTC is an independent agency of the United States Government responsible for maintaining competition and safeguarding the interests of consumers. The FTC does so through

[11] Comments of the National Energy Marketers Association (Dec. 19, 2013), *available at* http://dcpsc.org/edocket/docketsheets_pdf_FS.asp?caseno=FC1086&docketno=57&flag=D&show_result=Y. *See* note 5, *supra*, regarding our recent comment to the DC PSC.

law enforcement, policy research, and advocacy. For example, in the field of consumer protection, the FTC enforces Section 5 of the Federal Trade Commission Act, which prohibits unfair or deceptive acts or practices. In its competition mission, the FTC enforces antitrust laws regarding mergers and unfair methods of competition that harm consumers. In addition, the FTC often analyzes regulatory or legislative proposals that may affect competition, allocative efficiency, or consumer protection. It also engages in considerable consumer education through its Division of Consumer and Business Education.[12] In the course of all of this work, the FTC applies established legal and economic principles as well as recent, innovative developments in economic theory and empirical analysis.

The energy sector, including electric power, has been an important focus of the FTC's merger review and other antitrust enforcement, competition advocacy, and consumer protection efforts.[13] The FTC and its staff have filed numerous comments advocating competition and consumer protection principles with state utility commissions, state legislatures, the Department of Energy (DOE), and the Federal Energy Regulatory Commission (FERC).[14] In particular, we have filed a number of advocacy comments concerning DR, dynamic pricing, and their interactions with retail competition.[15] The FTC's competition advocacy program also has issued

[12] For an overview of the FTC's education efforts, see the FTC staff's comment to the Consumer Financial Protection Bureau concerning "Request for Information on Effective Financial Education," Docket No. CFPB-2012-0030 (Nov. 2, 2012), *available at* http://www.ftc.gov/os/2012/11/1211cfpb.pdf.

[13] *See, e.g.*, Opening Remarks of the FTC Chairman at the FTC Conference on *Energy Markets in the 21st Century: Competition Policy in Perspective* (Apr. 10, 2007), *accessible at* http://www.ftc.gov/news-events/events-calendar/2007/04/energy-markets-21st-century-competition-policy-perspective. FTC merger cases involving electric power markets have included *DTE Energy/MCN Energy* (2001) (consent order), *accessible at* http://www.ftc.gov/enforcement/cases-and-proceedings/cases/2001/05/dte-energy-company-and-mcn-energy-group-inc; and *PacifiCorp/Peabody Holding* (1998) (consent agreement), *available at* http://www.ftc.gov/sites/default/files/documents/cases/1998/02/9710091.agr_.htm.

[14] A listing, in reverse chronological order, of FTC and FTC staff competition advocacy comments to federal and state electricity regulatory agencies is available at http://www.ftc.gov/policy/advocacy/advocacy-filings?combine=&field_matter_number_value=&field_advocacy_document_terms_tid=5290&field_date_value%5Bmin%5D%5Bdate%5D=2013-10&field_date_value%5Bmax%5D%5Bdate%5D=&=Apply.

[15] For example, the FTC or its staff discussed electricity dynamic pricing, DR, and competition issues in the Reply Comment Before the District of Columbia Public Service Commission, *supra*

two staff reports on electric power industry restructuring issues at the wholesale and retail levels.[16] In addition, the FTC staff (along with staff from FERC, the Department of Justice, the

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note 5; Comment Before the Public Service Commission of the State of Delaware In the Matter of the Adoption of Rules and Regulations To Implement the Provisions of 26 DEL. C. CH. 10 Relating to the Creation of a Competitive Market for Electric Supply Service, PSC Regulation Docket No. 49 (Nov. 13, 2013), *available at* http://www.ftc.gov/sites/default/files/documents/advocacy_documents/ftc-staff-comment-public-service-commission-state-delaware-concerning-its-proposal-revised-its-rules/131114delawareretailelectric.pdf; Comment Before the Public Utility Commission of Texas in the Rulemaking Regarding Demand Response in the Electric Reliability Council of Texas (ERCOT) Market, Project No. 41061 (Mar. 11, 2013), *available at* http://www.ftc.gov/sites/default/files/documents/advocacy_documents/ftc-staff-comment-public-utility-commission-texas-concerning-rulemaking-regarding-demand-response/1303texaspuccomment.pdf; Comment Before the New York State Public Service Commission in the Proceeding To Assess Certain Aspects of the Residential and Small Non-residential Retail Energy Markets in New York State, Cases 12-M-0476, 98-M-1343, and 06-M-0647 (Jan. 24, 2013), *available at* http://www.ftc.gov/sites/default/files/documents/advocacy_documents/ftc-staff-comment-state-new-york-public-service-commission-ny-psc-concerning-ny-pscs-review/130125nypsccomment.pdf; Comment Before the Federal Energy Regulatory Commission in Matter of Demand Response Compensation in Wholesale Energy Markets, Docket No. RM10-17-000 (Oct. 13, 2010), *available at* http://www.ftc.gov/sites/default/files/documents/advocacy_documents/ftc-comment-federal-energy-regulatory-commission-concerning-demand-response-compensation-organized.rm10-17-000/1010wholesaleenegrymarkets.pdf; Comment Before the Federal Energy Regulatory Commission in the Matter of Discussion Draft of Possible Elements of a National Action Plan on Demand Response, Docket No. AD09-10-000 (Dec. 11, 2009), *available at* http://www.ftc.gov/sites/default/files/documents/advocacy_documents/federal-trade-commission-comment-federal-energy-regulatory-commission-concerning-possible-elements/v100002ferc.pdf.

[16] FTC Staff Report, *Competition and Consumer Protection Perspectives on Electric Power Regulatory Reform: Focus on Retail Competition* (Sept. 2001), *available at* http://www.ftc.gov/reports/competition-consumer-protection-perspectives-electric-power-regulatory-reform-focus-retail; FTC Staff Report, *Competition and Consumer Protection Perspective on Electric Power Regulatory Reform* (July 2000), *available at* http://www.ftc.gov/reports/competition-consumer-protection-perspectives-electric-power-regulatory-reform (containing edited compendium of excerpts from previous comments that the FTC and its staff provided to various state and federal agencies).

Department of Agriculture, and DOE) contributed to the work of the Electric Energy Market Competition Task Force, which issued a *Report to Congress* in the spring of 2007.[17]

III. Electricity Industry Innovations Warrant Consideration of Retail Dynamic Pricing To Benefit Customers through Lower Costs, Increased Innovation, and Expanded Variety of Services

One of the most significant technological developments in the electricity industry over the past 25 years has been the wide deployment of smart meters that measure and report power use in small time intervals and also can communicate price and power system status information to customers.[18] Dynamic pricing – offered either by utilities or by retail electricity marketers – can present many benefits to power customers, including enabling them to better match their preferences for bill savings and increasing power system reliability. For example, under dynamic pricing, customers can lower their electricity bills by shifting power use away from periods when the power system depends on more costly generation resources or faces challenges to its reliability.

When technological developments and economically appropriate dynamic pricing incentives are adopted, customers are in a position to help address the challenges of balancing supply and demand in the power industry, either locally or on a wider geographic scale. When customers are compensated for providing this help, the response is often substantial.[19] Customer responses to higher power prices or equivalent credits for reducing power use can be automated through equipment that cuts back or delays power use at pre-set price points or credit levels.[20] In

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[17] That report is available at http://www.ferc.gov/legal/fed-sta/ene-pol-act/epact-final-rpt.pdf.

[18] Other important developments in the industry have included (1) a trend toward smaller, highly efficient generation units; (2) the increased use of wind, solar, biofuel, and geothermal renewable energy sources for generation (some at the utility level and some on the customer's side of the meter); (3) the automation of generator dispatch and of transmission and distribution operations; and (4) advances in energy storage technology.

[19] For a bibliography of papers on DR prepared by Brattle Group, *see* Toni Enright and Ahmad Faruqui, "A Bibliography on Dynamic Pricing and Time-of-Use Rates, Version 2.0" (Jan. 1, 2013), *accessible at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2178674. Dr. Faruqui (together with colleagues Sanem Sergici and Eric Shultz) summarized several reviews of DR projects in "Consistency of Results in Dynamic Pricing Experiments – Toward a Meta Analysis" (Jan. 29, 2013), *available at* http://www.brattle.com/system/publications/pdfs/000/004/400/original/Consistency_of_Results_in_Dynamic_Pricing_Experiments_Faruqui_et_al_DistribuTECH_012913.pdf?1378772104.

[20] Robert Letzler, "Using Incentive Preserving Rebates to Increase Acceptance of Critical Peak Electricity Pricing," Univ. of Cal. Energy Inst. Working Paper 162R (rev'd May 31, 2010),

the alternative, customers can manually adjust their air conditioners or other heavy power uses when meters (or other communication sources) alert them either that rates are going up or that they can earn credits for reducing power consumption.

Customer responses to retail price signals that accurately reflect wholesale market conditions reduce system costs, support reliability, and provide environmental benefits.[21] For example, a DR program that entails reduction of power use during periods of high wholesale prices can reduce overall system costs by utilizing lower-cost generation units and reducing the need for high-cost peaking generators to meet demand spikes. It can support reliability by cutting power consumption when the system is at greatest risk of blackouts or is recovering from a service interruption. It can provide environmental benefits by facilitating integration of renewable energy sources and avoiding the use of older, higher-cost generators with higher pollutant emissions during peak demand periods. This DR process is a critical justification for grid modernization. Collectively, the term "smart grid" encompasses systems that support DR and the sophisticated monitoring of conditions on many components of the power grid.

Some recent developments appear to underscore the importance of gaining customer assistance in balancing the power system. EVs illustrate this point well.[22] Recharging EVs off peak (overnight) helps flatten load profiles (reduce peaks and fill troughs in consumption), so that the fixed costs of more fully utilized generation and distribution assets are spread over more power volume, at a lower per-kilowatt unit rate. Conversely, recharging EVs during peak demand periods could cause significant demand increases during the most costly time of day for power generation and could stress the grid, to the detriment of reliability. These harmful effects could occur either on a local distribution line or over a larger area. Consequently, all consumers benefit if EV owners respond to incentives to avoid recharging their EVs during peak demand periods, even if that is not always convenient for EV owners. Both EV owners and electricity customers in general could obtain even more benefits if EV owners schedule their vehicle

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available at http://www.ucei.berkeley.edu/PDF/csemwp162r.pdf; *see also* Baltimore Gas & Elec., "MADRI: All About Peak-Time Rebates" (Feb. 2, 2012) (presentation to the Mid-Atlantic Distributed Resources Initiative Working Group), *available at* http://sites.energetics.com/MADRI/pdfs/Hindes_MADRI_Feb_2_2012.pdf.

[21] *See*, *e.g.*, Charles J. Black, "Dynamic Pricing Evaluation for Washington" (Jan. 2011), *available at* http://www.naruc.org/Publications/SERCAT_Washington_2010.pdf; Ahmad Faruqui, "The Case for Dynamic Pricing" (Aug. 23, 2010), *available at* http://www.brattle.com/system/publications/pdfs/000/004/517/original/The_Case_for_Dynamic_Pricing_Faruqui_SG_Latin_America_Aug_23_2010.pdf?1378772111.

[22] *See*, *e.g.*, Ahmad Faruqui, Ryan Hledik, Armando Levy, and Alan Madian, Brattle Group Discussion Paper, "Will Smart Prices Induce Smart Charging of Electric Vehicles?" (July 2011), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1915658.

charging to coincide with abundant supply and uncongested transmission conditions. For example, an EV owner could set the recharging equipment to draw power only (or primarily) when the rate net of credits is below a specified level.

Flat-rate electricity pricing at the retail level – in the face of volatile generation and transmission prices at the wholesale level – in effect results in large subsidies for customers consuming power in peak demand periods and large penalties for customers consuming power in demand troughs. Without price signals that reflect the cost of consumption to the power system, retail electric power customers frequently make consumption decisions that result in inefficiencies in the power system, to the detriment of all electricity consumers. An approach like BG&E's can be an important step toward helping customers make informed consumption decisions and reducing inefficiencies caused by flat-rate pricing of electricity.

Further, flat rates – which cause all customers to face higher average system costs and lower system reliability – distort incentives to invest in methods to improve energy efficiency or in devices to shift consumption to off-peak periods (when system costs and wholesale electricity prices are lower). As with any market, pricing electricity closer to marginal cost improves the overall efficiency of the consumption of the good and reduces deadweight losses.[23] When a customer with distributed generation (DG) facilities (*e.g.*, solar panels on the roof) faces flat rates, the rates discourage investment in energy storage devices that could help balance supply and demand, especially when the power system is under stress and close to shedding load or allowing a voltage sag in order to prevent a larger blackout.[24]

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[23] For further discussion of opportunities to improve the performance of the electricity sector, see Executive Office of the President, National Science and Technology Council, *A Policy Framework for the 21st Century Grid: Enabling Our Secure Energy Future*, esp. § 4.2 (Demand Management) (June 13, 2011), *available at* http://energy.gov/sites/prod/files/oeprod/DocumentsandMedia/nstc-smart-grid-june2011.pdf. (In "Key Action 5," this report (at 31) states: "Federal, state, and local officials should strive to reduce the generation costs associated with providing power to consumers or wholesale providers during periods of peak demand and encourage participation in demand management programs. Innovative rate designs will be more feasible as smart grid technologies become more widely available.") *See also* Paul L. Joskow and Catherine D. Wolfram, "Dynamic Pricing of Electricity" (Jan. 2012), *available at* http://faculty.haas.berkeley.edu/wolfram/Papers/AEA%20DYNAMIC%20PRICING.pdf.

[24] For example, wind DG units generally produce power most abundantly during off-peak, windier hours. If retail prices are flat, there is less incentive for a wind DG owner to store power produced in the off-peak hours (in order to sell it during peak hours) than there would be if peak-hour prices considerably exceeded, and prices in off-peak hours were less than, flat-rate prices.

IV. Tradeoffs in Designing Dynamic Pricing Systems

Economists who study differences in retail electricity pricing regimes evaluate how closely time-varying rates reflect the current wholesale market prices. They also evaluate the impact of time-varying rates on customers' consumption patterns and on their incentives to invest in devices that will allow them in the future to respond more effectively to changes in power prices. In these evaluations, RTP and various other forms of time-varying rates have been found to offer benefits to customers in the form of lower average power bills if customers are willing to experience greater potential fluctuations in rates over short time periods.

The Brattle Group discussed the risk/return tradeoffs associated with several variable rate alternatives (dynamic prices) in its independent presentation to a technical conference of the Ohio Public Utilities Commission.[25] Brattle's study examined these tradeoffs by graphing them in terms of risk on one axis (measured as volatility of short-term prices) and rewards on the other axis (measured as expected bill savings). Brattle's review included nine rate designs.[26] The appendix to this comment (which is page 10 of the Brattle paper cited in note 25, *supra*) reproduces this graphic representation of these alternative forms of dynamic pricing, showing the

[25] Ahmad Faruqui, "Dynamic Pricing for Residential and Small C&I Customers" 9-13 (Mar. 28, 2012), *available at* http://www.brattle.com/system/publications/pdfs/000/004/451/original/Dynamic_Pricing_for_Residential_and_Small_C_I_Customers_Faruqui_Mar_28_2012.pdf?1378772106.

[26] The nine rate designs in Brattle's presentation to the Ohio PUC were:

> **Time-of-Use (TOU)**: Charges a higher price during all weekday peak hours and a discounted price during off-peak and weekend hours.
> **Super Peak TOU**: Similar to TOU, except that the peak window is shorter in duration (often four hours), leading to a stronger price signal.
> **Inclining Block Rate (IBR)**: Customer usage is divided into tiers, and usage is charged at higher rates in the higher tiers. IBR is meant to encourage conservation.
> **Critical Peak Pricing (CPP)**: Customers are charged a higher price during a few hours and a discounted price during the remaining hours.
> **Variable Peak Pricing**: CPP with added rate variability.
> **CPP-TOU Combination**: A TOU rate in which a moderate peak price applies during most peak hours of the year, but a higher peak price applies on limited event days.
> **Peak Time Rebate (PTR)**: Customers can earn a discount by reducing usage during critical hours.
> **Real Time Pricing (RTP)**: A rate with hourly variation that follows locational marginal prices (LMPs), but with capacity costs allocated equally across all hours of the year.
> **Critical Peak RTP**: A rate with hourly variation based on LMPs and with a capacity cost adder focused only during event hours.

tradeoffs between potential benefits from lower power bills and risks from greater, short-term price volatility.

The BG&E program falls within the PTR category in Brattle's analysis. The appended graph shows that PTRs provide potential benefits for customers who cut power use in the designated periods, but PTRs do not increase the risks for other customers (in the form of increased volatility in the rates). For this reason, the BG&E program is an attractive model among the various forms of dynamic pricing regimes and represents a clear improvement over flat-rate pricing. If the Department approves the offering of PTRs to any basic service customers, we see no reason why consumer education or consumer protection concerns would counsel against offering PTRs to all basic service customers.

The Department asks whether competitive suppliers can be expected to develop time-varying products – and to effectively market these products and educate the public about the use and benefits of time-varying rates – even if basic service remains a flat-rate product. We believe they would. Competitive suppliers have incentives to develop and market time-varying products, including the provision of consumer education about the benefits. As we observed above, retail competition can help in a voluntary transition away from flat-rate pricing, particularly for residential customers.[27] Suppliers will compete by offering customers choices, such as time-varying rates. Several pilot programs have shown that residential customers typically have lower power bills under time-varying rates and generally prefer such pricing after experiencing it in a pilot program.[28] Ideally, under retail competition, some retail electricity marketers will publicize these findings and use them to grow consumer interest in retail electric service offers featuring time-varying rates.

Under retail competition, marketers also will seek new customers by offering added services, such as energy management, mixes of various types of renewable energy, and assistance in recognizing and implementing opportunities for energy efficiency, onsite power generation, and onsite energy storage. Some of these enhance a customer's ability to provide a larger DR more frequently.

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[27] Time-varying rates are not inherently infeasible in the context of an electric power monopoly. Nevertheless, under the cost-based regulation that has been traditional in the electric power industry, it appears administratively difficult to customize time-varying rates to match widely varying customer circumstances and risk preferences.

[28] Ahmad Faruqui & Jennifer Palmer, "Dynamic Pricing and Its Discontents," *Regulation* 16 (Fall 2011), *available at* http://www.cato.org/sites/cato.org/files/serials/files/regulation/2011/9/regv34n3-5.pdf.

Moreover, if the innovations associated with retail competition reduce reliance on flat-rate pricing, then such competition is likely to enhance reliability by enrolling customers to help balance supply and demand on the power system. By trimming demand peaks and filling in demand troughs, DR eases the challenges that grid operators face. Further, retail competition allows marketers to offer improved reliability as a specific service. For example, marketers could offer installation and maintenance of energy storage devices or onsite generators that allow customers to have electric power when the grid is experiencing a blackout or local distribution lines are down.

An open question remains the timing of initiatives to provide education and otherwise raise customer awareness about the benefits of time-varying rates. A reason to move away from the regime of basic service provided by traditional distribution utilities is that basic service may hinder efforts to educate customers about the benefits of time-varying rates.[29] Switching basic service to include PTRs is one way to jump-start this consumer education initiative, while keeping in place the protections of a regulated rate for customers who lack adequate information or have difficulty deciding whether to switch providers.

With respect to consumer education about time-varying rates, it is important for preservation of competition that consumer education programs authorized by the Department be competitively neutral. Thus, we urge the Department to guard against authorizing public consumer education programs that focus exclusively on the virtues of any distribution utility's time-varying rates and may provide consumers with incomplete or misleading information about offers from competing marketers. With respect to demand curtailments, it is also important for preservation of competition that marketers have sufficient access to the data from smart meters to operate their alternative time-varying rate offers. Relative to distribution utilities offering basic service, marketers should not be competitively handicapped by discriminatory access to the smart meter data needed to operate their alternative time-varying rate offers.

At the same time, however, we urge the Department to ensure that appropriate safeguards are in place with respect to the personal information that smart meters generate about customers and make available to marketers. Such information can be highly sensitive, including potentially indicating when customers are at or away from home and when they are awake. All entities that receive such personal information should protect it appropriately. We also encourage the

[29] *See*, *e.g.*, Harold Gruber & Pantelis Koutroumpis, "Competition Enhancing Regulation and Diffusion of Innovation: The Case of Broadband Markets," 43 J. Reg. Econ. 168 (2013); Richard Schuler, "The Dynamics of Customers Switching Suppliers in Deregulated Power Markets" (presentation at the Bulk Power Systems Dynamics and Control Conference, 1998), *available at* http://e3rg.pserc.cornell.edu/files/Schuler_Santorini.pdf.

Department to ensure that distribution utilities inform their basic service customers that they are using their data for purposes of implementing time-varying rates.

We encourage the Department to revisit over time whether technology and customer sophistication have increased enough to consider moving toward a system of time-varying rates in which basic service customers receive price signals that even more closely resemble actual wholesale prices in real time. As indicated by the appended Brattle graph, RTP provides the most accurate price signals and applies them in all periods. Intermediate steps between the BG&E approach and RTP include (1) adjusting the level of the credits to fit the specific circumstances of each critical event and (2) adding classes of events that are less critical, but as to which increased DR could improve system costs, efficiency, and reliability and could lower customers' bills.

V. Conclusion

The FTC staff appreciates the opportunity to submit this comment. If you have any questions or comments, please feel free to contact John H. Seesel, Office of the General Counsel, at (202) 326-2702.

Dynamic pricing facilitates customer choice