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VIA ELECTRONIC FILING

May 23, 2014

Ms. Brinda Westbrook-Sedgwick
Commission Secretary
Public Service Commission of the District of Columbia
1333 H Street NW
2nd Floor, West Tower
Washington, D.C. 20005

Re: Formal Case No. 1114

Dear Ms. Westbrook-Sedgwick:

The Office of the People's Counsel for the District of Columbia ("OPC" or "Office") submits for filing an electronic copy of the final comments prepared by the Office's witnesses, Rick Hornby and Nancy Brockway, in the above-referenced proceeding. An original and three (3) copies will be forwarded to your office by courier.

Please contact me if you have any questions regarding this filing. Thank you for your assistance.

Sincerely,

Nicole W. Sitaraman
Assistant People's Counsel

Enclosure

cc: Parties of record

Time-Varying Rates in the District of Columbia

Prepared for the Office of the People's Counsel for the District of Columbia

May 23, 2014

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1. EXECUTIVE SUMMARY

In Formal Case 1056 the Potomac Electric Company ("PEPCO" or "Company") identified the introduction of new rate designs as one of the benefits that would result from the deployment of an advanced metering infrastructure (AMI), often referred to as smart meters. In his testimony in that case, Mr. Gausman, PEPCO Senior Vice President for Asset Management and Planning, stated that the "smart grid" would provide customers numerous benefits including "...the option of selecting from a number of rate structures" and supporting "the incorporation of various forms of distributed generation". PEPCO has recently completed the deployment of its AMI and all customers now have, and are paying for, their new smart meters. Unfortunately residential and small commercial customers are not yet receiving the full benefits of those smart meters, in part because neither PEPCO nor competitive electricity suppliers are offering services to those customers at rate designs that reflect the variation in their costs of providing those services by time period during the day, for example between peak periods and off-peak periods .[1]

The Public Service Commission ("Commission") of the District of Columbia has invited interested parties to present their positions on a range of rate design issues in the form of responses to four major questions. This report provides responses to those questions prepared by Synapse Energy Economics and NBrockway & Associates, (Synapse/Brockway team) prepared on behalf of the Office of the People's Counsel for the District of Columbia ("OPC"). These responses present general recommendations on how PEPCO should proceed in terms of developing specific rate design proposals. We recognize that approval of any specific proposals PEPCO ultimately develops will hinge upon Commission review of a PEPCO filing in a future proceeding.

The Commission's questions refer to "dynamic pricing" rate designs. Our responses discuss a broader family of rate designs known as time-varying rates (TVR). TVR designs encompass time-of-use (TOU) rates, various types of dynamic pricing (i.e., critical peak pricing (CPP), critical peak rebates (CPR), hourly dynamic pricing) and combinations of these designs.

The overarching theme underlying our responses is a recommendation that the Commission require PEPCO to develop a comprehensive plan for the implementation of a menu of TVR designs for the services and programs it provides to residential and small commercial customers. Absent a comprehensive plan PEPCO will continue to implement new rate designs in a piecemeal manner. In contrast, a comprehensive plan would permit the Commission to evaluate the entire menu of TVR designs that PEPCO proposes to offer to ensure they are consistent with the Commission's ratemaking principles, policies and precedents. With a comprehensive plan PEPCO, with Commission approval, should be able to offer its customers the ability to choose from a menu of reasonable TVR designs. The comprehensive plan should present the facts and analyses supporting its proposed rate designs. In

[1] PEPCO currently defines its peak period as noon to 8 pm on weekdays, intermediate period as 8pm to midnight and 8 am to noon weekdays, and off-peak period as midnight to 8 weekdays and all hours on weekends. (SOS Market Price Service, Eighteenth Revised Page R-41.7)

particular, it should identify the incremental costs and incremental benefits to each rate class of implementing the proposed rate designs. The plan should also present PEPCO's proposed path for rolling-out those rate designs. PEPCO need not roll out all its new rate designs at the same time, but it should indicate what rate designs it intends to roll-out over time and in what order. PEPCO would ultimately file the plan with the Commission for its review and approval.

QUESTION 1. In a restructured market, which of these companies should provide dynamic pricing programs and why: the distribution company only, the standard offer service provider only, third party suppliers only, or some combination of the listed companies?

The distinct services and programs companies could potentially offer residential and small commercial customers at TVR are distribution service, supply service and demand response (DR) programs.

PEPCO, as the distribution utility, is the sole provider of distribution service to customers in all rate classes. It should evaluate whether to offer TVR for distribution service as part of its analyses in developing a comprehensive plan.

As the retail agent for Standard Offer Service (SOS), PEPCO should offer that supply service to residential and small commercial customers at one or more TVR designs. PEPCO should enter into wholesale power agreements with the rates, terms and conditions it needs in order to offer SOS at TVR. In addition, PEPCO should evaluate whether to offer a DR program to residential and small commercial customers at a CPR design as part of its analyses in developing a comprehensive plan. The Commission does not regulate the rate designs at which competitive electricity suppliers offer their supply services and demand response programs. However, the Commission should encourage competitive electricity suppliers to offer those supply services and DR programs to residential and small commercial customers at TVR designs. In addition PEPCO should establish protocols to provide competitive electricity suppliers with the customer electricity use data they require, while protecting customer privacy and control of customer data.

Our response to Question 2 addresses the additional sub-parts of question 1 regarding the application of TVR to services for various rate classes, implementation via opt-in versus opt-out, and costs of implementing TVR designs.

QUESTION 2. What type or types of dynamic pricing should be offered in the district and why?

Rate designs PEPCO should consider. PEPCO should evaluate the applicability of TVR to distribution service, SOS and DR in light of its capability to meter and record the electricity use of residential and small commercial customers by time period within the day throughout the year. In particular we recommend that PEPCO evaluate the following rate design to achieve the ratemaking goals of economic efficiency and fairness in allocation of costs:

- A demand charge or a TOU rate for distribution service. These rate designs are potentially applicable to distribution service because customer maximum demand during peak periods causes distribution capacity-related costs whereas customer use in off-peak periods does not.

- A TOU rate option for SOS. This rate design is applicable because the cost of wholesale supply varies between peak periods and off-peak periods. (PEPCO obviously has the latitude to offer additional TVR options for SOS services, such as flat rate plus CPP, TOU plus CPP or hourly pricing.)

- A CPR option as a financial incentive for a DR service. This rate design is potentially applicable to the extent it can cause customers to reduce demand during "critical events", i.e., time periods when electricity demand and/ or wholesale electric energy prices are extreme. These events only occur a very few hours each summer, e.g., between zero and 60 hours.

These designs have the potential to provide more accurate price signals than current flat rates. More accurate price signals are important to residential customers considering investments in improving the efficiency of their homes and appliances as well as investments in new technologies such as distributed generation (DG) and electric vehicles.

Based on the results of its evaluations PEPCO should develop a comprehensive plan for implementing those new rate designs, including customer information, metrics for evaluating impacts, and a proposed time-line for implementation

*Implementing PEPCO rates on an opt-in basis versus opt-*out. In developing its comprehensive plan PEPCO should evaluate implementing a TVR design for SOS on an opt-out basis, as well as a menu of TVR designs on an opt-in basis. Depending on the level and distribution of bill impacts, and the support provided to customers, an opt-out approach may be represent a reasonable balancing of the generally accepted ratemaking goals of economic efficiency, fairness in allocation of costs simplicity, public acceptability, and stability as discussed in response to Commission Question 3.

Costs to ratepayers of PEPCO implementation of new rate designs, including components such as shadow billing and in- home devices. PEPCO's comprehensive TVR plan should provide estimates of the incremental benefits to each rate class of implementing each proposed rate design, i.e. incremental to current flat rates, as well as the incremental costs to each rate class of implementing the proposed rate designs. The filing should recommend which, if any, rate designs should include shadow billing components and/or additional hardware such as in-home displays to help customers take advantage of the granular data and two-way communication functionality afforded by AMI. Finally the filing should present PEPCO's proposed rate mechanism(s) for recovering these incremental implementation costs, if different from distribution service base rates.

Rate designs competitive electricity suppliers should consider. As previously noted, while the Commission does not regulate the rate designs at which competitive electricity suppliers offer their supply or DR services, the Commission nevertheless should encourage competitive electricity suppliers to offer their services to residential and small commercial customers at TVR designs. PEPCO should establish protocols to provide competitive electricity suppliers the customer electricity use data they require to do so, while protecting customer privacy and control of customer data. In addition, PEPCO should provide a platform which enables competitive suppliers to provide services to residential and small commercial customers at TVR.

QUESTION 3. What are the goals of an effective dynamic pricing rate design?

When evaluating PEPCO's proposed TVR rate designs the Commission should consider the rate design goals it has traditionally considered when reviewing PEPCO rate design proposals. Those specific goals should include simplicity, public acceptability, and feasibility of application; stability, with a minimum of unexpected changes seriously adverse to existing customers; effectiveness in yielding total revenue requirements under the fair return standard; fairness in the allocation of total costs among different customers; and economic efficiency.

Customers who opt-in to a new TVR design should continue to be covered by all existing Commission - approved ratepayer protections and programs. These include customer rights established by the District's Consumer Bill of Rights, as well as access to service (e.g., credit terms), notice of and basis for termination, and access to payment arrangements. In addition, low income customers must continue to have recourse to the protections provided by the Residential Aid Discount.

QUESTION 4. How should dynamic pricing be determined?

PEPCO should develop specific values for each of the rate designs it proposes for each service and program as part of the comprehensive plan it will submit to the Commission for its review and approval. PEPCO should develop those specific values based upon the cost causation and other factors specific to each service.

In response to question 2 we recommended that PEPCO evaluate whether to offer distribution service to residential and small commercial customers at either a demand charge or a TOU rate. If PEPCO decides to offer distribution service at either of those new rate designs, it should determine the proposed values for that rate design based on both an embedded cost of service study and a marginal cost of service study.

PEPCO should determine the specific values of TVR options for SOS based on an analysis of several major factors. Those factors include the major capacity and energy costs wholesale SOS providers incur to provide wholesale full requirements service, the wholesale full requirements service agreements wholesale SOS providers are willing to offer and the peak periods over which the wholesale capacity costs should be recovered.

PEPCO should base the specific values of a CPR for a DR program on an analysis of the costs and benefits of the program relative to other DR programs. That analysis should consider the costs of implementing the program, the projected revenues PEPCO could recover from PJM for demand reductions it bids into PJM wholesale markets, the value to DC ratepayers of the reduction in wholesale prices in those markets projected to result from those demand reductions and the retail rate surcharge PEPCO proposes to impose in order to collect (refund) the net costs of the DR program.

2. INTRODUCTION

PEPCO has traditionally had the ability to meter and record the electricity use of customers in its large commercial rate classes by time period throughout the day. As a consequence, PEPCO has had the ability to bill those customers for its services using rate designs such as demand charges ($/kW), and energy charges ($/kWh) that vary between peak periods and off-peak periods each day. Having recently completed its deployment of advanced metering infrastructure (AMI) throughout the District, PEPCO now has the same capability with respect to residential and small commercial customers. Thus it can now support new rate designs for services to all residential and small commercial customers under which prices can vary by hour or by peak and off-peak periods each day, and usage can be recorded for those same granular time periods.

Since 2009, PEPCO has submitted two separate dynamic pricing program proposals to the Commission, one in 2010 and one in 2013. In its 2013 submission PEPCO asked the Commission to approve implementation of a residential dynamic pricing program effective June 1, 2014. Under this program PEPCO would offer residential customers a Peak Energy Savings Credit ("PESC") of $1.25/kWh as a financial incentive to reduce his or her electricity use during "Peak Savings" events. PEPCO proposed a minimum of four Peak Savings event days each year, and a maximum of fifteen, with the duration of each event limited to a maximum of eight hours. PEPCO proposed to notify customers of anticipated Peak Saving days by 9 p.m. of the preceding day.

On February 6, 2014, the Public Service Commission of the District of Columbia issued an Order stating its approval of "...the concept of dynamic pricing in general," but rejecting Pepco's request. The Commission expressed concerns regarding the financial impacts on ratepayers, the proposed funding mechanism, the omission of small commercial customers, and several technical and economic issues. In that Order the Commission invited interested parties to present their positions on a range of rate design issues. The Commission issued a subsequent Order on March 28 asking the parties to address four major questions:

1. In a restructured market, which of these companies should provide dynamic pricing programs and why: the distribution company only, the standard offer service provider only, third party suppliers only, or some combination of the listed companies?
2. What type or types of dynamic pricing programs should be offered in the District and why?
3. What are the goals of an effective dynamic pricing rate design?
4. How should dynamic pricing be determined?

The DC Office of the People's Counsel retained Synapse Energy Economics and NBrockway & Associates, (Synapse/Brockway team), to help them respond to each of the Commission's four questions. The responses present general recommendations on how the Commission should direct PEPCO to proceed in developing specific rate design proposals for Commission review and approval. Obviously,

Commission approval of any specific proposals that PEPCO develops will hinge upon their review by the Commission after PEPCO files them in a future proceeding.

The report begins by describing the background to, and context of, the Commission's consideration of dynamic pricing in this proceeding. The report interprets the Commission's four questions as addressing the broad issue of rate designs that PEPCO can now offer based upon its deployment of advanced metering infrastructure (AMI). Thus our answers consider the application of a range time varying rates (TVR), both time-of-use (TOU) and dynamic pricing, to distribution service and supply service. They also discuss CPR for a DR program.

3. BACKGROUND

This section describes the context within which the Commission is considering changes in rate designs for distribution and supply services as well as the implications of that context for the Commission's approach to introducing changes in rate design for those services.

PEPCO has completed the deployment of advanced metering infrastructure (AMI) throughout the District of Columbia. As a result PEPCO now has the ability to support new rate designs for services to all residential and small commercial customers under which prices can vary by hour, or by peak and off-peak periods each day and usage can be recorded for those same granular time periods. This proceeding is examining whether PEPCO should offer any new rate designs for either or both of the two distinct services it currently provides to customers in those rate classes, i.e., distribution service and SOS, and what role competitive energy suppliers should play in offering TVR. In addition, the proceeding is examining whether PEPCO should offer a DR program in which one or more of these rater designs would provide the financial incentive to participants.

i. Context for potential changes in rate design in District of Columbia

The changes in rate design the Commission is considering in this proceeding are especially relevant to residential and smaller commercial customers. The potential changes in rate design are particularly relevant to customers in those rate classes, as opposed to customers in the large commercial classes, because of key differences in their existing rate designs and understanding of their electricity costs. The major differences between residential and small to medium commercial customers on the one hand, and large commercial customers on the other, are particularly relevant to the choice and implementation of new rate designs in the District.

The District, like most states, has a bifurcated electricity market consisting of a large number of relatively low-use residential and small commercial customers[2] , and a relatively few very high-use customers in the large commercial rate classes. The customers in each of those two broad groups differ in terms of their annual energy use per customer as well as in their financial incentive and opportunities to adjust their energy use in response to price signals. (Within those two broad groups there is a similar difference between customers rate class by rate class, as well as from segment to segment within each rate class.)

For example, in 2012, only 10 % of PEPCO customers were in its commercial rate classes, yet that ten percent accounted for approximately 80 % of annual electricity use that year. In contrast, 90% of

[2] In reports on retail competition this large number of low-use residential and small commercial customers is sometimes referred to as "mass market" customers, to distinguish them from the relatively few large-use customers in the commercial and industrial rate classes.

PEPCO's customers were in the residential rate classes, yet they accounted for only 20% of annual electricity use that year. Thus, in that year an average commercial customer used about 40 times as much electricity as an average residential customer. There is a corresponding dramatic difference in customers' understanding of their electricity usage, costs, and options. Medium and large commercial customers may have staff or consultants who specialize in this area, as well as vendors who actively market such energy services to them. In contrast, residential customers often know little if anything about their electricity use and options. Residential and small commercial customers can be further segmented into sub-groups according to more granular differences in usage per customer, understanding, and consumer behavior.

Residential and small commercial customers are facing potentially more changes in rate design than medium and large commercial customers, and a potentially more difficult transition.

- Large commercial customers have many years of experience with meters that record their hourly electricity use. Residential and small commercial customers have only received meters with that functionality in the past few years, and thus are still learning about them.
- Large commercial customers have many years of experience with rate structures that include demand charges ($ per month per kW of peak demand in a month) and energy charges ($ per kWh of energy use) that vary by time period, i.e., TVR for energy. Residential and small commercial customers do not have experience with demand charges or with energy charges that vary by period during the day.

ii. Changes in rate design should be identified through a comprehensive analysis and based upon traditional ratemaking principles

As outlined in the preceding discussion, the introduction of new rate designs and DR programs represents a major transition for residential and small commercial customers, PEPCO, wholesale SOS providers and competitive electricity suppliers.

Residential and small commercial customers face the possibility of significant changes in the design of rates for their distribution and supply services in addition to the opportunity to participate in new price responsive DR programs. Most, if not all, customers in these rate classes will require some level of information on how to understand, and how to take greatest advantage of, the new menu of rate designs and DR program options.

- Although it should have already completed significant analyses of TVR options, PEPCO will need some reasonable time to design and request approval for new rate designs for distribution service, SOS and DR programs. A key component of those designs should be the development of customer information. In order to offer SOS at TVR options PEPCO will very likely need to change the specifications for the wholesale full requirements services it acquires to supply that service.
- Competitive Electricity Suppliers will have to determine whether to offer supply services and/or DR programs to residential and small commercial customers at TVR, and if so

how to design and market those rates They will also have to make arrangements with PEPCO and customers for obtaining the granular billing usage data of customers. They may also have to negotiate new billing arrangements with PEPCO to accommodate the new granular data and rate designs. These new and/or revised arrangements with PEPCO would have to be submitted to the Commission for its review and approval.

Given the extent of those changes the basic theme of our responses to the Commission's four questions is a recommendation that the Commission require PEPCO to develop a comprehensive plan for the implementation of a menu of TVR designs for the services and programs it provides to residential and small commercial customers. By a comprehensive approach we mean one that considers rate designs for all of PEPCO's services and programs. The purpose of this recommendation is to ensure that the rate changes that are implemented will send customers a relatively simple and internally consistent set of price signals.

Absent a comprehensive plan PEPCO will continue to present new rate designs to the Commission in a piecemeal manner which does not provide the Commission a clear picture of the full scope of options that PEPCO ultimately proposes to offer nor of PEPCO's analyses of that full range of options. With a comprehensive plan, PEPCO should be able to offer for Commission consideration a menu of TVR designs that make optimal use of PEPCO's AMI in a manner consistent with the Commission's ratemaking principles and precedents. The comprehensive plan should present the facts and analyses supporting its proposed rate designs. In particular it should identify the incremental costs and incremental benefits to each rate class of implementing the proposed rate designs. The comprehensive plan should also present PEPCO's proposed path for rolling-out those rate designs. It need not roll out all its new rate designs at the same time, but it should indicate what rate designs it intends to roll-out over time and in what order.

Development of a comprehensive plan for the implementation of new rate designs is supported by proponents of dynamic pricing, as indicated in Chapter 6 of the July 2012 report, "Time-Varying and Dynamic Rate Design", by the Regulatory Assistance Project (RAP) and the Brattle Group. The closing paragraph from the foreword to that report highlights the importance of a comprehensive, but gradual, approach to the implementation of these new rate designs:

> *There is much yet to learn. A number of pilots have been conducted and more will follow. Pricing will evolve over the coming years. The movement toward new forms must be deliberate and considered, calculated to yield the greatest long-term benefit for all. This will be especially challenging in a system that does not allow all the costs of production to be reflected in price and in which the consequences of this failure are not immediately felt. But even this ideal, were it achievable, would not be enough to effect the hoped-for ends. Economics is too uncomplicated a construct to provide sure solutions for so complicated a problem. Anyway, there are at our disposal less expensive means to drive investment and encourage new-shaped behavior. For these reasons and others besides, pricing must remain within the province of thoughtful public policy. Our intent with these papers is to expose to the reader the many and varied approaches to energy pricing that practice and technology afford us, and to sound too a gentle note of caution. All that glitters, as the old saw goes, isn't gold.*

PEPCO will ultimately file its comprehensive plan with the Commission for its review and approval. As it reviews PEPCO's proposed changes in rate design we recommend that the Commission be guided by the ratemaking principles it has traditionally applied to rate design proposals in the past. The application of those principles should ensure the resulting rates will reflect a reasonable balancing of the goals of rate continuity, rate simplicity and economic efficiency.

4. COMMISSION QUESTIONS 1, 2 AND 3: SERVICE PROVIDERS, SERVICES, RATE DESIGN OPTIONS AND IMPLEMENTATION

Commission Questions 1, 2 and 3 address rate design issues regarding the companies who should offer TVR rate designs, the services for which those companies should offer TVR rate designs, the types of rate designs they should offer, the approach they should use to implement those rate designs and the costs of implementing those TVR designs.

Since several of those issues are inter-related, this section provides responses to those aspects of Questions 1, 2 and 3 under four broad headings:

- Companies who should offer TVR rate designs
- Rate designs PEPCO should consider for its services and programs;
- Implementing rates on an opt-in basis versus opt-out;
- Costs to ratepayers of PEPCO implementation of new rate designs, including components such as shadow billing and IHD

i. Companies who should offer TVR rate designs (service providers and services)

QUESTION 1. In a restructured market, which of these companies should provide dynamic pricing programs [time-varying rates] and why: the distribution company only, the standard offer service provider only, third party suppliers only, or some combination of the listed companies?

Response

The distinct services and programs companies could potentially offer residential and small commercial customers at TVR are distribution service, supply service and DR programs.

PEPCO, as the distribution utility, is the sole provider of distribution service to customers in all rate classes. It should evaluate whether to offer TVR for its distribution service as part of its analyses in developing a comprehensive plan.

As the retail agent for Standard Offer Service (SOS), PEPCO should offer that supply service to residential and small commercial customers at one or more TVR designs. PEPCO should enter into wholesale power agreements with the rates, terms and conditions Pepco needs in order to offer SOS at TVR. In addition, PEPCO should evaluate whether to offer a DR program to residential and small commercial customers at a CPR design as part of its analyses in developing a comprehensive plan.

The Commission does not regulate the rate designs at which that competitive electricity suppliers offer for their supply services and demand response programs. However, the Commission should encourage

competitive electricity suppliers to offer those supply services and DR programs to residential and small commercial customers at TVR designs. In addition, PEPCO should establish protocols to provide competitive electricity suppliers which offer such services with the customer electricity use data they require to do so, while protecting customer privacy and control of customer data.

Discussion

During the April 23, 2014 hearing, representatives of competitive electricity suppliers and their trade association expressed interest in offering supply services and DR programs to residential and small commercial customers at TVR designs. Some of those representatives took the position that, because supply services and DR programs were not monopoly functions of PEPCO, the Commission should prohibit PEPCO from offering SOS or DR at TVR. We disagree with that position.

The experience in the District to date indicates that competitive electricity suppliers have not offered supply services and DR programs to residential and small commercial customers at TVR designs. Other jurisdictions with retail competition comparable to the District have had the same experience to date. For example, a March 2014 report by Dr. Ahmad Faruqui submitted in a Massachusetts generic proceeding on TVR states: "However, for reasons that are not always well understood, regardless of whether or not default service is offered, competitive retail offerings have tended to shy away from time-varying rates." [3] That report goes on to state "We believe that the range of rate offerings from the competitive retail supply market will multiply if basic service becomes a TVR."[4] We believe, therefore, that to bring the benefits of TVR pricing to District consumers, and to maximize the value of the AMI investment those consumers pay for, PEPCO should offer its services to District residential and small commercial customers at a menu of reasonable TVR designs.

ii. Rate designs PEPCO should consider for its services and programs

QUESTION 1. In a restructured market, which of these companies should provide dynamic pricing programs [time-varying rates] and why: the distribution company only, the standard offer service provider only, third party suppliers only, or some combination of the listed companies?

a) If it is a distribution rate program, to which classes of distribution customers should it apply?

c) If dynamic pricing (TVR) is also best implemented as an energy supply program, what is the best design for SOS customers (since those are the only customers whose supply rates we have any control over) and should it be "opt-in" or "opt-out" for SOS customers?

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[3] Faruqui, Ahmad and Lessem, Neil. *Comments on Massachusetts Department of Utilities Notice DPU 14-04 Investigation by the Department of Public Utilities into its own motion on Time Vary Rates*. Brattle Group. March 10, 2014. Page iii.

[4] Ibid, page 15

QUESTION 2. What type or types of dynamic pricing should be offered in the district and why?

a) *Should an opt-in program offer critical-peak pricing or hourly-pricing or both?*

b) *Should an opt-in- program offer critical-peak pricing or hourly-pricing or both?*

c) *Should [time-varying rates] be restricted to residential customers, or should non-residential customers who do not have access to time-varying rates offered by competitive suppliers also be included?*

QUESTION 3. What are the goals of an effective dynamic pricing rate design?

b) *Should time varying rates be adopted as a part of an effective dynamic pricing rate design?*

Response

PEPCO should evaluate the applicability of TVR for its distribution services, SOS and a DR program in light of its capability to meter and record the electricity use of residential and small commercial customers by time period within the day and throughout the year.

- PEPCO should evaluate both demand charge and TOU rate designs for distribution service. Customer maximum demand during peak periods causes PEPCO to incur distribution capacity-related costs whereas customer use in off-peak periods does not. For example, if a large number of customers acquire electric vehicles and decide to charge those vehicles during peak periods, demand during peak periods will increase dramatically and PEPCO will need to meet that increased peak demand by increasing the capacity of its distribution system at significant incremental capital cost. PEPCO may be able to minimize that increase in peak demand by implementing a rate design that provides customers a strong price signal to charge their electric vehicles in off-peak periods rather than peak periods. PEPCO needs to determine which new rate design for distribution service will be most effective for this purpose, a demand charge or a TOU energy charge.

- PEPCO should evaluate a menu of TVR options for SOS. TVR designs are applicable to this supply service because the costs of the wholesale supplies acquired for SOS vary between peak periods and off-peak periods. PEPCO should evaluate a TOU rate as well as additional options such as flat rate plus CPP, TOU plus CPP or hourly pricing. (CPP can only be a component of a rate structure for SOS because it only applies in a very limited number of hours of the year, e.g. 60 hours)

- PEPCO should evaluate CPR options as a financial incentive for a DR program. This rate design is potentially applicable to the extent it can cause customers to reduce demand during "critical events", i.e., time periods when electricity demand and/ or wholesale electric energy prices are extreme. These events only occur a very few hours each summer, e.g., between zero and 60 hours.

Discussion

PEPCO provides distribution service and SOS service to three major rate classes – residential, small commercial and large commercial. As the distribution utility it is the sole provider of distribution service to all customers in those classes, and as retail agent for SOS it provides that service to the customers who do not acquire their supply from a competitive electricity suppliers.

The rates PEPCO charges for its services and programs are expressed in one of three forms -- as customer charges ($ per month per customer meter), as demand charges ($ per month per kW of customer maximum demand experienced during peak periods during a year) or as energy charges ($/kWh of customer electric use).

The forms of rates that PEPCO currently charges customers in those three rate classes for distribution and SOS services are indicated by "x" in the relevant rows and columns of Table 1. That table indicates that existing demand charges and energy charges for certain services vary between the summer period and the winter period. Rates with those differences are typically categorized as "seasonal" rates rather than TVR. Any form of rate can be seasonal, e.g., CPP, demand charge, flat energy charge. (Energy charges do not vary between peak periods and off-peak periods within a day are typically referred to as "flat"). In contrast, TVR usually refers to energy charges whose level changes during a day, either between peak and off-peak periods, or more frequently such as hourly.

It is interesting to note that although PEPCO has traditionally billed large commercial rate classes by time period throughout the day, it does not currently offer those customers a TVR energy rate for either distribution or SOS service. However, it does include a demand charge in its rate structure for distribution service.

Table 1 - PEPCO Rate Schedules

Experience with Interval Metering	Smart Meters Recently Deployed										Traditionally Interval-Metered					
	Residential					Small Commercial					Large Commercial					
	R	AE	RAD	RAD-AE	R-TM	GS ND	T	TS	SL and SL-TN	TN	GS 3A	GS LV	GT 3A	GT 3B	GT LV	RT
Distribution Service																
Customer Charge ($/Month)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Energy Charge - Summer ($/kWh)	x	x	x	x	x	x	x			x	x	x	x	x	x	
Energy Charge - Winter ($/kWh)	x	x	x	x		x	x				x	x				
Demand Charge - Summer ($/kW)											x	x	x	x	x	
Demand Charge - Winter ($/kW)											x	x				
Standard Offer Service																
Minimum Charge ($/Month)	x	x	x	x												
Energy Charge - All Seasons								x	x		x	x	x	x	x	x
Energy Charge - Summer	x	x	x	x		x	x			x						
On-Peak					x											
Intermediate Peak					x											
Off-Peak					x											
Energy Charge - Winter	x	x	x	x		x	x			x						
On-Peak					x											
Intermediate Peak					x											
Off-Peak					x											
Demand Charge ($/kW)											x	x	x	x	x	x
Transmission service																
Energy Charge ($/kWh)	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x
Demand Charge - ???? ($/kW)													x	x	x	x
Demand Charge, On-Peak ($/kW)													x	x	x	
Energy Charge, hourly																

Rate Acronyms and Full Names

R = Residential
AE = Residential All Electric
RAD = Residential Aid Discount
RAD-AE = Residential Aid Discount All Electric
R-TM = Residential Time Metered Service

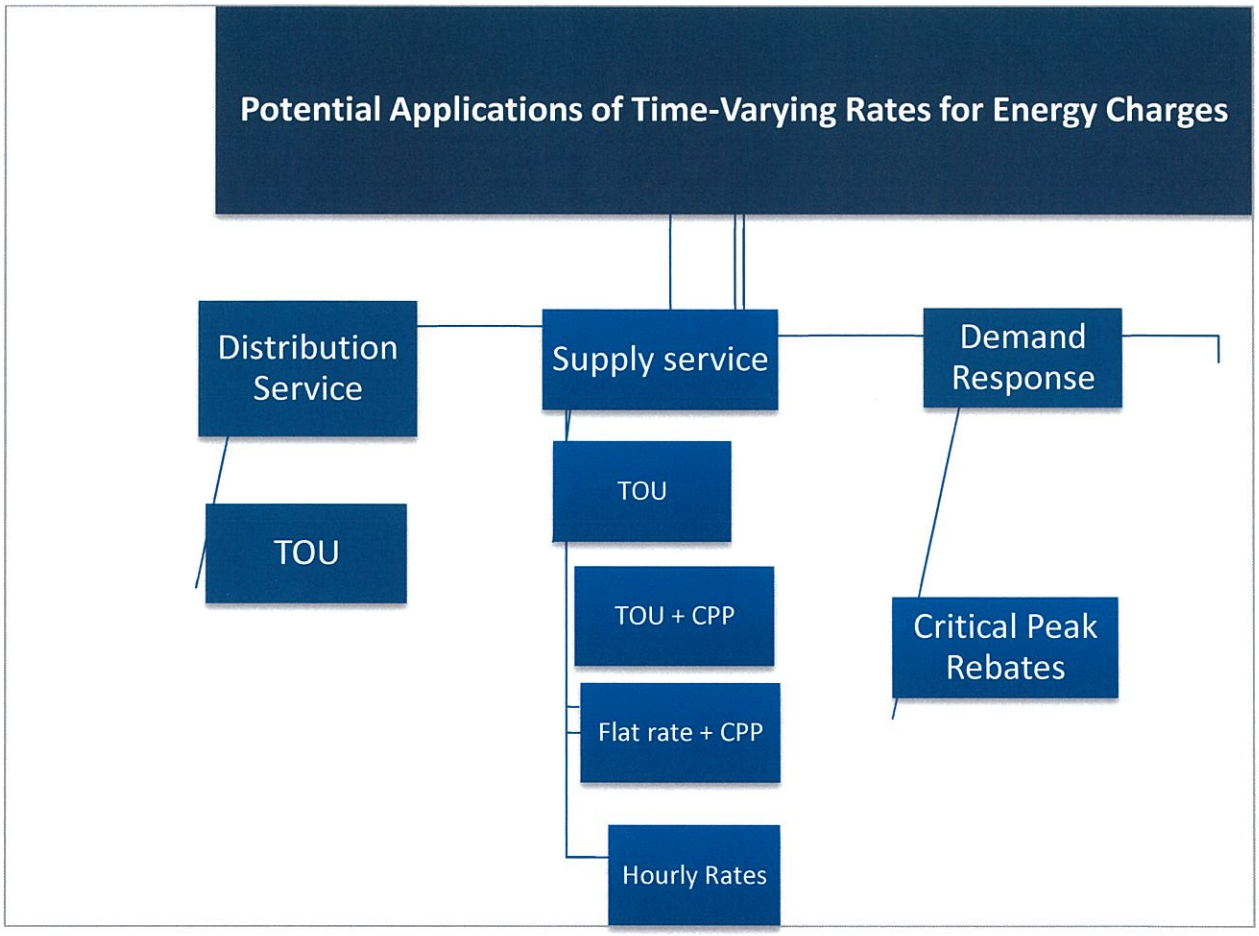
GS ND = General Service NonDemand
T = Temporary or Supplemental Service
TS = Traffic Signal
SL = Street Lighting
SL-TN = Street Lights with Attached Telecommunications Network Devices
TN = Telecommunications Network

GS 3A = General Service - Primary Service
GS LV = General Service - Low Voltage
GT 3A = General Service - Primary Service-Time Metered
GT 3B = General Service - High Voltage - Time Metered
GT LV = General Service - Low Voltage - Time Metered
RT = Rapid Transit

PEPCO now has the capability to offer TVR rates for its distribution and SOS services to customers in its residential and small commercial rate classes. To date it has proposed offering a residential dynamic pricing plan, essentially a DR program with a CPR as a financial incentive.

The Commission's four questions in this proceeding focus on potential new TVR designs for energy charges ($/kWh). PEPCO could offer those new designs either as rate options in addition to existing flat energy rates or as replacements for those existing rates. The rate designs potentially relevant to PEPCO's services and programs are illustrated in Figure 1.

Figure 1. Potential Applications of TVR



The rate designs potentially relevant to PEPCO's services and programs are:

- distribution services -- TOU
- supply services (e.g. SOS) –TOU, TOU + CPP, flat rate + CPP, hourly or real-time pricing
- DR program -- CPR

Our position regarding the potential applicability of those rate designs to those services and programs is based on the following facts:

- TOU rates are applied in every hour of the year. In contrast, critical-event-based rate designs, such as CPR and CPP, as their name implies, are only applied during extreme system conditions which only occur a very few hours each summer. PEPCO's residential dynamic pricing proposal implied a minimum of 32 hours per year and a maximum of 120 hours year, but its cost-benefit analyses assumed 20 hours per year on average. For that reason a CPR can be applied as a financial incentive for a DR program and a CPP can be applied as a supplement to a flat energy rate or a TOU rate, but neither a CPR nor a CPP is appropriate for collecting the cost of a distribution service or SOS throughout the year. In contrast TOU rates are applied in every hour of the year, and therefore appropriate for collecting distribution service and SOS costs.
- Applying TOU rates to collect distribution service and/or SOS costs is consistent with the generally accepted ratemaking principle that costs should be allocated and recovered on the basis of cost causation. Customer maximum demand during peak periods causes distribution capacity-related costs whereas customer use in off-peak periods does not. Customer maximum demand during peak periods causes the generation capacity-related costs of SOS whereas customer use in off-peak periods does not. In addition, energy-related supply costs of SOS vary between peak periods and off-peak periods.
- Hourly dynamic pricing is applicable as a potential rate design for pricing supply service because wholesale energy-related supply costs vary by hour. Under this rate design customers know there will be a different rate in each time period, e.g., in each hour but do not know what that rate will be until immediately prior to the hour. Thus, under this design it is the hourly prices that are "dynamic", since they vary from hour to hour according to changes in market conditions.

iii. Implementing rates on an opt-in basis versus opt-out

QUESTION 1. In a restructured market, which of these companies should provide dynamic pricing programs [time-varying rates] and why: the distribution company only, the standard offer service provider only, third party suppliers only, or some combination of the listed companies?

b) If it is a distribution rate program, should it be mandatory or voluntary for the distribution customers in the class to which it applies?

c) If dynamic pricing is also best implemented as an energy supply program, what is the best design for SOS customers (since those are the only customers whose supply rates we have any control over), and should it be "opt-in" or "opt-out" for SOS customers?

QUESTION 2. What type or types of dynamic pricing should be offered in the district and why?

a) Should an opt-in program offer critical-peak pricing or hourly-pricing or both?

b) Should an opt-in- program offer critical-peak pricing or hourly-pricing or both?

Response

PEPCO should evaluate implementing a TOU rate for SOS on an opt-out basis, as well as a menu of TVR designs to offer on an opt-in basis. Depending on the level and distribution of bill impacts, and the support provided to customers, implementing a TOU rate for SOS on an opt-out approach may represent a reasonable balancing of the generally accepted ratemaking goals of economic efficiency, fairness in allocation of costs simplicity, public acceptability, and stability discussed in response to Commission Question 3

Discussion

For distribution and SOS services where PEPCO can justify offering a TOU rate, we are recommending that it do so on a voluntary (opt-in) basis. We are proposing that approach because it represents a reasonable balancing of the goals of rate design discussed in response to Commission Question 3.

A TOU rate provides a more accurate price signal than a flat rate, and thus is better at promoting economic efficiency. It should be relatively easy to understand (simplicity goal), and allowing customers to opt-in satisfies the goals of rate continuity and public acceptability.

The issue of whether new TVR rate designs should be implemented on an opt-in or an opt-out basis has been one of, if not the, most contentious, issues associated with the implementation of those rates in conjunction with deployment of AMI. Under the opt-in approach TVR designs for supply services such as SOS are implemented as menu of options in addition to the existing flat rate. Customers then have the ability to "opt-in" to the rate design of their choice. Under the opt-out approach the "default" rate for the SOS type service is changed from the existing flat rate to a specific TVR rate. Customers on that new default rate design then have the ability to "opt-out" and revert back to a flat rate design. (Ontario[5] is the only jurisdiction in North America of which we are aware that has changed the default rate for supply service from a flat rate to a TOU rate without an opt-out provision.[6])

The problem with an opt-in approach is that most utilities have found it very difficult and time-consuming to encourage a large percentage of customers to "opt-in", i.e., voluntarily enroll in new rate designs, often simply due to customer inertia. For example, a survey of 26 U.S. utilities who received

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[5] See, e.g. Table 4-10: TVR and Metering in Other Restructured States, from the Working Group Report.

[6] Except those without AMI and those taking service from a competitive electricity supplier – about 10% of Ontario residential customers in total.

funding for smart grid installations through the Recovery Act Smart Grid Investment Grant program found that only 8% of their customers enrolled in TOU rates on an opt-in basis.[7]

The problem with an opt-out approach is the possibility that some customers may feel they are being forced to take service under a rate design which will cause them to experience an unreasonable increase in their bills over which they have no control.

We believe the PEPCO can avoid those perceptions by drawing upon the experience of utilities in other states to implement a menu of TVR designs for SOS in a manner that will be generally acceptable to residential and small commercial customers. In particular PEPCO should evaluate how best to implement a TOU rate design to replace the existing flat energy charge as the default rate for SOS on an opt-out basis. Under that approach we envision that customers would have the option to "opt-out" of the TOU rate and revert back to a flat rate.

In preparing this evaluation PEPCO should begin by preparing illustrative bill comparisons for customers with common load characteristics, e.g. customers in apartments with window air conditioners, customers in homes with central air conditioning. PEPCO now has hourly usage data for customers with these common load characteristics. The results from this analysis will provide the foundation for advising customers of whether their bills will be higher or lower under the new TVR if they make no change in their usage, and by how much. It will also provide a basis for advising customers on the actions they could have to take under the new TVR in order to have a lower bill under that new rate design.

In addition, PEPCO should evaluate customer engagement practices that have proven successful in other similar jurisdictions. For example, adult learners absorb and act on new information best when there is an immediate practical application they can try. Salt River Project, which has deployed TVR since 1980 in Arizona, has adopted new methods as they become available, to reach out to its members/customers. One of the most successful approaches introduced in recent years is an easy-to-use on-line calculator where a customer can quickly find out which of the several available rate options will produce the lowest bill. http://www.srpnet.com/prices/home/rightprice/ Salt River Project also allows customers to try out a different rate and return to their former rate at any time with no penalty, for up to 2 switches. In any event, customers who feel they are worse off have the option to opt-out and revert back to the traditional flat rate. Experience in other jurisdictions suggests that, except in extreme situations like those prevailing in the Western markets during the market melt-down over a decade ago, customers defaulted to TOU are satisfied enough that they do not opt-out in great numbers.

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[7] "Advanced Metering Infrastructure and Customer Systems", www.smartgrid.gov/recovery_act/deployment_status/ami_and_customer_systems##EnrollmentInTimeBasedRatePrograms.

iv. Costs to ratepayers of PEPCO implementation of new rate designs, including components such as a shadow billing component and in-home devices

QUESTION 2. What type or types of dynamic pricing should be offered in the district and why?

d) Should a [time-varying rate] program include additional hardware, such as an in home display device?

e) Should a dynamic pricing program include a "shadow billing" component?

QUESTION 3. What are the goals of an effective dynamic pricing rate design?

a) What are the most cost-effective options for achieving these goals based on other states' experiences?

Response

PEPCO's comprehensive TVR plan should provide estimates of the incremental benefits to each rate class of implementing each proposed rate design, i.e. incremental to current flat rates, as well as the incremental costs to each rate class of implementing the proposed rate designs. The filing should recommend which, if any, rate designs should include shadow billing components and/or additional hardware such as in-home displays to help customers take advantage of the granular data and two-way communication functionality afforded by AMI. Finally the filing should present PEPCO's proposed rate mechanism(s) for recovering these incremental implementation costs, if different from distribution service base rates.

Discussion

We expect that PEPCO will propose some amount of incremental capital and operating costs in order to offer TVR rates for the distribution services and SOS it provides to residential and small commercial rate classes. For example, in its October 2013 filing requesting approval for a residential dynamic pricing program PEPCO projected a budget of $2.7 million for customer education and program delivery in 2014 and $1.7 million per year thereafter. (On February 6, 2014, the Commission rejected Pepco's proposal.) That request for additional funds to implement TVR designs is consistent with our experience with utility proposals for implementation of new rate designs enabled by AMI in other states.

PEPCO may face incremental costs to implement TVR rates associated with modifications to existing billing system hardware and software, additional in-house devices, a shadow billing component and customer engagement.

There are a range of initiatives and in-house devices available to empower customers to respond to the price signals they receive from TVR by helping them understand and control their electric use in peak and off-peak periods. Those devices include in-home displays, programmable communicating thermostats, and customized feedback tools. However, there is a question as to whether it should be up to individual customers to purchase, and pay for, these devices or whether PEPCO should offer any of them to individual customers using funds collected from all ratepayers. If PEPCO proposes a ratepayer

funded approach for certain initiatives and devices PEPCO's comprehensive TVR filing should include an analysis of the cost-effectiveness of those proposals.

An essential component of protecting customers from increased bills is providing adequate education. Shadow billing can be an effective form of customer education, because it provides timely customer-specific information. As with additional in-home devices, the question is whether the incremental cost of PEPCO including a shadow billing component with certain of its rate designs is justified by the benefits of that feedback. Again, PEPCO's comprehensive TVR plan should include an analysis of the cost-effectiveness of shadow billing relative to other customer education and engagement tools .

Effective customer engagement is critical to overcoming customer inertia and encouraging customers to opt-in to new rate designs. That engagement should include the provision of information tailored to the individual customer's particular appliance ownership and usage patterns. To be successful that customer engagement should occur once the customer has the ability to choose a new rate design, as opposed to a program that tries to educate the public about new rate design concepts in general and in the abstract. In addition, as the Salt River Project example makes clear, new and innovative methods, such as an easy-to-use on-line calculators can greatly assist in the acceptance and penetration of TVR with consumers. A similar web-based tool with tailored tips may be beneficial for the District, and customers should maintain the ability to switch back to a flat rate at any time. This protection from being ensnared in an undesirable rate reduces customer concerns about opting in to a new rate.

PEPCO's comprehensive TVR plan should indicate the impacts on rates of the incremental costs it will incur to implement its proposed set of TVR and CPR designs. It should also present the rate mechanism(s) it proposes to recover those incremental implementation costs, if different from distribution service base rates.

6. COMMISSION QUESTION 3: RATE DESIGN GOALS

QUESTION 3. What are the goals of an effective dynamic pricing rate design?

a) *What are the most cost-effective options for achieving these goals based on other states' experiences?*

b) *Should time varying rates be adopted as a part of an effective dynamic pricing (TVR) rate design?*

Response

The rate design goals the Commission has traditionally considered when reviewing PEPCO rate design proposals should continue to apply to the TVR rate designs it proposes for distribution and SOS services, and to its DR program. Those specific goals should include simplicity, public acceptability, and feasibility of application; stability, with a minimum of unexpected changes seriously adverse to existing customers; effectiveness in yielding total revenue requirements under the fair return standard; fairness in the allocation of total costs among different customers; and economic efficiency.

Customers who opt-in to a new TVR design should continue to be covered by all existing Commission-approved ratepayer protections and programs. These include customer rights, such as those in the Consumer Bill of Rights and those regarding access to service (e.g., credit terms), notice of and basis for termination, and access to payment arrangements. In addition, regardless of the rate structure chosen customers must continue to have recourse to the protections provided by the Residential Aid Discount. The structure of the discounts and billing details may have to be adjusted to accommodate TVR options and make it equivalent to the benefit of the present discount, but these are technical issues that can readily be resolved.

Discussion

Our approach to Commission question 3 is guided by our characterization of the application of TVR designs to distribution service, supply service and DR programs. The basic goals of effective TVR designs for those services and programs should be the same goals the Commission has always sought to achieve in its ratemaking decisions, i.e., reliable service at reasonable rates.

One of the generally accepted principles of ratemaking is that costs should be allocated to customers according to cost causation. According to that principle all costs that are caused by the number of customers would be recovered through customer charges, all costs are caused by peak demand would be recovered through demand charges and all costs that are caused by energy use would be recovered through energy charges. However, the allocation of costs to customers, and the design of rates to collect those costs, is not that simple in practice. As indicated in, Table 1, utilities such as PEPCO have typically collected costs caused by peak demand of residential and small commercial customers through energy charges rather than through demand charges. In reality, setting rates involves the consideration

and balancing of several different and often conflicting goals. The criteria that Bonbright identified for establishing a sound rate structure are a classic, and generally accepted, set of goals for ratemaking.[8]

When making its decisions regarding how new rate designs are to be implemented for distribution service and SOS it is particularly important that the Commission balance the different goals we have cited. For example, if economic efficiency and fairness in the allocation of costs among customers were the only two goals, one could make a case for replacing existing flat energy charges for SOS with some form of mandatory TVR. That case would be based upon an economic argument that flat rates do not reflect the variation in the costs of providing SOS by time period within a day, and a fairness argument that customers who use relatively little energy during peak periods are subsidizing customers who use a lot of energy in peak periods (e.g., during peak periods customers who are not using central air conditioning are subsidizing customers who are using central air conditioning). However, those are not the only goals that need to be achieved; instead the Commission needs to consider other goals such as simplicity, public acceptability, stability and the goals of the Residential Aid Discount.

In recognition of the need to balance all of those goals, our responses to Commission question 2 recommend that the Commission begin by requiring PEPCO to offer TVR options on an opt-in basis, which will allow customers who wish to do so to remain on their existing flat rates. This gradual approach will enable the Commission and all parties to gain experience with the new rate designs.

[8] Phillips, Charles F. Jr. The Regulation of Public Utilities, Public Utilities Reports, Arlington, VA, 1993, 434

7. COMMISSION QUESTION 4: DETERMINING SPECIFIC RATE LEVELS OR VALUES

QUESTION 4. How should dynamic pricing be determined?

a) If a rebate program is used, how should the appropriate level of rebate be determined?

b) To what extent should distribution customers pay the cost of [time-varying rate] programs?

Commission Question 4 addresses the determination of specific levels or values of TVR for distribution service, SOS and a CPR for DR. This section begins by discussing design concepts that are common to the determination of specific levels of TVR for each of those three applications. It then provides responses on the determination of specific levels of TVR for each application.

i. Design concepts for determining TVR levels across services and programs

Several design concepts are common to the determination of specific levels of TVR for distribution service, SOS and a CPR for DR. Those concepts are the definition of the peak and off-peak periods, the choice of peak period duration, and the choice of the capacity costs (e.g. embedded/ average versus marginal) to be reflected in peak period rates. PEPCO will need to exercise judgment in applying each of those concepts, as the combined effect of all those choices will drive the level of differential between TOU rates in the peak and off-peak periods, and the level of CPR for DR programs. These concepts are discussed in two reports on rate design prepared by the Regulatory Assistance Project in 2012.[9][10]

Choosing peak and off-peak periods. PEPCO should try to use standard definitions of peak and off-peak periods for TVR rates for all services and rate classes. Standard definitions will simplify the price signals to customers and should reduce billing system costs. PEPCO currently defines its peak period as noon to 8 pm on weekdays and its off-peak periods as 8 pm to noon on weekdays and all hours on weekends. PEPCO should determine whether those definitions are appropriate going forward. As part of that determination PEPCO will need to determine the duration of the peak period. The shorter the peak period the greater the differential between peak and off-peak rates, and the easier it will be for customers to react to those higher prices. However, the duration must be long enough to cover the time period during which peak demand occurs.[11]

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[9] Lazar, Jim. *Rate Design Where Advanced Metering Infrastructure Has Not Been Fully Deployed*. The Regulatory Assistance Project, April 2013.

[10] Faruqui, Hledik, and Palmer; *Time-Varying and Dynamic Rate Design*, The Regulatory Assistance Project and the Brattle Group, July 2012.

[11] *Ibid*. page 18

Choosing the type of capacity costs to be reflected in peak period rates. PEPCO can choose between three types of capacity costs when setting TVR levels for the peak period – embedded capacity costs, near-term avoidable capacity costs or long-run marginal capacity costs. Embedded capacity costs are the capacity related component of PEPCO's revenue requirements that it will not "avoid" if a sub-set of customers reduce their demand. Instead PEPCO will want to shift recovery of those costs to its remaining customers, and thus could increase the rates of those customers in the near-term. Near-term avoidable capacity costs are those that PEPCO can avoid, or not continue to incur immediately or over the next few years if a sub-set of customers reduce their demand and thus that reduction in demand will increase rates of other customers in the near term. Long-run marginal capacity costs (LRMC) are the costs PEPCO projects it will avoid in the long-term, i.e. over the next three to ten years, if a sub-set of customers reduce their demand. The value of encouraging reductions in demand to avoid LRMC is the prospect of lowering rates in the long-term.[12]

ii. Determining specific levels of demand charge or TVR for distribution service

Response

In response to question 2 we recommended that PEPCO evaluate whether to offer distribution service to residential and small commercial customers at either a demand charge or a TOU rate. If PEPCO decides to offer distribution service at either of those new rate designs, it should determine the proposed values for that rate design based on both an embedded cost of service study and a marginal cost of service study.

Discussion

Rates for regulated utility services are typically designed to balance the achievement of several different goals, as discussed in the response to Commission Question 3. The general process through which the specific levels of those rates are determined usually consists of a cost allocation step followed by a rate design step.

In the cost allocation step the utility allocates the total revenue requirements of its service among its rate classes, in PEPCO's case this would be an allocation of the revenue requirements of its distribution service among its residential, small commercial and large commercial rate classes. An embedded "cost-of-service" study is a common method used to make this allocation. The components of the revenue requirements are grouped into three principal classifications according to the primary independent variable that is considered to drive or cause those costs. The three classifications are customers, demand and energy. The costs in each classification are then allocated among the rate classes according to the number of customers in each rate class, the aggregate demand of each rate class and the annual aggregate electric energy used by each class.

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[12] Lazar, Jim. Rate Design Where Advanced Metering Infrastructure Has Not Been Fully Deployed. The Regulatory Assistance Project, April 2013. Page 17.

In the rate design step the utility chooses a rate structure to collect the revenue requirements that have been allocated to each rate class, and determines the level of each of the rates in that rate structure. For example, PEPCO currently uses a three part tariff structure for its distribution services to large commercial customers as illustrated in Table 1. The three parts are a customer charge ($/month), a demand charge ($/kW) and an energy charge ($/kWh). The level of each of those rates can be determined mathematically using the results of the cost of service study, e.g. the customer charge could be determined from the amount of customer related costs allocated to the rate class divided by the number of customers in the rate class in the test year. However, since rates have to be designed to balance the achievement of several different goals, the determination of specific levels is not always a simple mathematical exercise but instead requires the exercise of judgment.

A marginal cost of service study is a valuable analysis to inform this determination. PEPCO should prepare a marginal cost study to identify the incremental distribution costs it will incur if the peak demand of its customers continues to grow. That estimate of incremental distribution costs will help PEPCO determine specific values for either new demand charge or TVR designs for distribution service for its residential and small commercial rate classes.

In developing specific levels for these new demand charges or TVR designs for distribution service PEPCO may need to exercise of judgment in terms of determining the level of differential between TOU rates in the peak and off-peak periods. In particular, the level of differential will be higher if PEPCO only recovers those demand related costs over energy use in the summer peak period, as opposed to energy use in the summer and winter peak periods. In addition, the level of differential could be higher still if PEPCO chooses to base that differential on a marginal cost of distribution system capacity that is higher than its embedded cost of distribution capacity.

iii. Determining specific levels of TVR for SOS

Response

PEPCO should base the specific values of TVR options for SOS on an analysis of the major capacity and energy costs wholesale suppliers incur to provide products for that service, an analysis of the pricing options those wholesale suppliers are willing to offer, and an analysis of the peak periods over which the wholesale capacity costs should be recovered.

Discussion

The basic conceptual calculations PEPCO would use to determine specific values for new TVR designs for SOS are essentially the same as for distribution service. However the inputs are somewhat different because the wholesale energy-related costs vary by time period. In addition, to apply those concepts PEPCO, as retail agent for SOS, will likely need to enter new wholesale full requirements service agreements with its wholesale SOS suppliers.

The level of a TOU rate for SOS in the peak period for a rate class could be equal to the wholesale energy related costs of SOS for the peak period allocated to that rate class divided by the annual energy used by the rate class (with seasonal distinctions as appropriate) plus the wholesale demand related costs allocated to each rate class divided by the energy used during the summer and winter peak periods. The level of the corresponding TOU rate for the off-peak period would be equal to the wholesale energy related costs of SOS allocated to each rate class divided by the annual energy used by the rate class (with seasonal distinctions as appropriate). Again, the level of differential between TOU rates for SOS in the peak and off-peak periods would be driven by the amount of wholesale demand related costs recovered over energy used during the peak period.

However, we expect the SOS "product" PEPCO currently acquires from wholesale SOS suppliers is, as the name implies, a full requirements electricity supply priced at a flat energy charge. In order to calculate TOU rates for summer peak and off-peak periods, and winter peak and off-peak periods, PEPCO will need to buy new SOS products for those seasonal peak and off-peak periods. Thus, PEPCO, as retail agent for SOS, will likely need to enter new wholesale full requirements service agreements with new product specifications.

As with distribution service, in developing specific levels for these new TVR designs for SOS, PEPCO may, subject to Commission review and approval, need to exercise judgment in terms of determining the level of differential between TOU rates in the peak and off-peak periods. In particular, the level of differential will be higher if PEPCO chooses to recover annual wholesale demand related costs over energy use in the summer peak period, as opposed to energy use in the summer and winter peak periods. In addition, the level of differential could be higher still if PEPCO chooses to base that differential on a forecast marginal cost of wholesale capacity that is higher than the cost of generating capacity incorporated within its Wholesale Full Service Agreements.

iv. Determining specific levels of a CPR for DR programs

Response

PEPCO should develop the specific values of a CPR for a DR program based upon the same type of cost – benefit analysis it used to justify its existing DR programs. That analysis should consider the costs of implementing the program, the projected revenues PEPCO could recover from PJM for demand reductions it bids into PJM wholesale markets, the value to DC ratepayers of the price reduction in those markets projected to result from those demand reductions and the retail rate surcharge PEPCO will require to collect (refund) the net costs of the DR program.

Discussion

PEPCO has been offering a Residential Air Conditioner Direct Load Control (DLC) program since March 30,2012. Under this DR program PEPCO gives participating customers a financial incentive in exchange for the right to control the load of their central air conditioning units during critical events. (The financial incentive is an annual bill credit that ranges between $30 and $60 depending on the level of control the participant gives PEPCO.) PEPCO maintains that the program has a benefit to cost ratio of 1.9 under the Total Resource Cost test.[13] Two thirds of the projected benefits are from projected "Capacity Price Mitigation" and approximately one quarter from projected "Capacity Earnings". PEPCO is booking the costs of the program, including the financial incentive to participants, in a regulatory asset for recovery in a base rate case.[14] There is concern that the actual Capacity Earnings PEPCO receives from bidding demand reductions from the program into the PJM wholesale market may prove to be much less than the revenues PEPCO projected. If so PEPCO will be seeking to recover the shortfall as a component of any increase it requests in its next base rate case.

PEPCO's experience with its Residential Air Conditioner Direct Load Control (DLC) program should guide its development of specific values of a CPR for a dynamic pricing DR program. For example, In October 2013 PEPCO requested approval to implement a residential dynamic pricing plan under which it would offer residential customers a Peak Energy Savings Credit ("PESC") as the financial incentive to reduce their electricity use during Peak Saving events. PEPCO proposed to recover the net cost of that program, including the financial incentive to participants, from residential customers via a special surcharge. PEPCO's proposed residential dynamic pricing plan is essentially a new, alternative DR program in which participants receive a CPR if they (rather than PEPCO) take some action to reduce their electricity use during critical events.

PEPCO apparently chose the level of the PESC it proposed for that program, i.e., $1.25/kWh, based upon its projection of the wholesale capacity costs it will avoid in the long-term if a sub-set of customers reduce their demand and on the magnitude by which average participants in the program will reduce their demand in response to that level of incentive. (This relationship is referred to as price elasticity). However, that is not a sufficient analysis or justification.

PEPCO presented a cost-benefit analysis of its proposed residential dynamic pricing plan from a Total Resource Cost perspective that indicates, based upon all of the assumption values PEPCO used in that analysis, that the benefits would exceed the costs by 3.888 to 1. It is important to note that approximately 70 per cent of the projected benefits in that analysis are Capacity Price Mitigation, i.e. reductions in the projected price of wholesale capacity multiplied by the total capacity of all retail customers in the PEPCO DC service territory. Thus, they are benefits that would accrue to all retail customers in the PEPCO DC service territory.

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[13] PEPCO, Formal Evaluation report, April 2, 2014. Page 5.

[14] Order 16602 in FC 1086, page 4.

PEPCO did not prepare a rate impact analysis of its proposed residential dynamic pricing plan. However, PEPCO's response to OPC data request 2-8 indicates that the program would impose a cumulative net cost on ratepayers, i.e., gross cost minus projected revenues from PJM, for more than ten years. That cumulative net cost arises from the fact that the revenues PEPCO is projecting to receive from bidding reductions in demand into PJM wholesale capacity and energy markets are not large enough to completely offset the direct costs that PEPCO projects it will incur to implement the program. The costs of the residential dynamic pricing program include hardware, software, customer information and financial incentive costs. PEPCO proposed recovering those net costs from residential customers via a PESC Rider.

These two examples, i.e. the Residential Air Conditioner Direct Load Control (DLC) program and the proposed residential dynamic pricing program, highlight the importance of developing specific values of a CPR for a dynamic pricing DR program based not only on a cost – benefit analysis but also on an analysis of the allocation of those costs and benefits among rate classes and on the impact on retail rates.

CERTIFICATE OF SERVICE

I hereby certify on behalf of the Office of the People's Counsel for District of Columbia that a copy of the foregoing comments entitled, *Time-Varying Rates in the District of Columbia*, was served this 23th day of May 2014, on all parties in Formal Case No. 1114, as listed below, by electronic mail, hand delivery or first class mail, postage prepaid.

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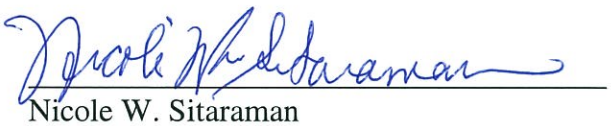

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