COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC UTILITIES

Investigation into Time Varying Rates	)	**D.P.U. 14-04**

INITIAL COMMENTS OF THE
DEPARTMENT OF ENERGY RESOURCES

The Massachusetts Department of Energy Resources (DOER) is the Massachusetts executive agency generally responsible for establishing and implementing the Commonwealth's energy policies and programs. Pursuant to General Laws c. 25A, § 6, DOER is directed to develop and administer programs relating to energy conservation, demand-side management, alternative energy development, non-renewable energy supply and resources development. In accordance with that role, DOER respectfully provides the following response to the solicitation of comments by the Department of Public Utilities ("DPU" or "Department") in this investigation.

I. Introduction

In its October 2, 2012 notice opening an Investigation into Modernization of the Electric Grid, DPU 12-76 ("Grid Modernization"), the Department identified time varying rates as an important issue to be addressed in the context of grid modernization. DPU 12-76, at pp. 9-11. As part of that investigation, the Department created a stakeholder working group, which submitted a report, including proposed principles and recommendations on the design of time varying rates. Report to the DPU from the Steering Committee, DPU 12-76 ("Report") at pp. 31-37 and 53-56. On December 23, 2013, the Department issued a straw proposal for advancing

grid modernization, including a plan for each distribution company to achieve advance metering functionality. DPU 12-76-A. Thereafter, the Department issued an order on January 23, 2014, opening this investigation to develop an approach to maximizing the benefits of time varying rates. DPU 14-04.

II. Time Varying Rates Provide a Multitude of Benefits

DOER fully supports the Department's move to grid modernization, as well as the implementation of time varying rates ("TVR"). DOER agrees with the Department that time varying rates will (1) allow customers, assisted by new technologies, to respond to the actual varying costs of electricity; (2) enable individual customers to save money by altering usage based on price signals that reflect these actual costs; (3) benefit all customers by reducing peak energy and capacity market costs; (4) increase system efficiencies and support the distribution system by reducing peak demand; and (5) provide appropriate incentives for distributed resources such as solar photovoltaic generation, storage, electric vehicles, and targeted energy efficiency and demand response. Order Opening Investigation, DPU 14-04, p. 1.

Regarding point 3 above, all retail customers in Massachusetts will receive some amount of benefit if the state can reduce its aggregate peak demand, though the specific amount of benefit that each individual customer receives will vary from customer to customer depending on its specific usage level and patterns, and local electric distribution company. The benefits from reductions in peak demand result from avoiding or delaying future investments in distribution service capacity, transmission service capacity and generating capacity that would otherwise be required to meet increased peak demand.

Avoided Energy Supply Costs in New England: 2013 Report (AESC 2013) provides a recent projection of those avoided capacity costs, as well as other types of avoided costs.[1] The amount of avoided distribution service capacity costs varies by electric distribution company and hence those estimates are calculated by each company. AESC 2013 has developed projections of avoided generating capacity and energy costs for Massachusetts, and each of the New England states, through a comprehensive stakeholder process.

Benefits in the form of reductions in monthly bills are expected to flow to the sub-set of customers who reduce their peak demand – their bills will be lower because they have reduced the quantity of electricity they are using during peak periods. However, customers who do not reduce their peak demand may also see somewhat lower bills in the future as long as a significant sub-set of customers reduces their peak demand. The customers who do not reduce their peak demand will still benefit from lower future prices for generating capacity and energy, because the wholesale market prices of those supplies will have been mitigated, or suppressed, by the overall reduction in aggregate peak demand.

For example, AESC 2013 estimates that customers in central Massachusetts who reduce their use in summer season peak periods will avoid capacity costs of 2 cents/kWh and energy costs of 7.6 cents/kWh for a total of 9.6 cents/kWh for each kWh of reduction in use.[2] AESC 2013 also estimates that all Massachusetts customers, including those who do not reduce their use in summer peak periods, would pay somewhat lower prices for the electricity they do use because of the suppression of wholesale capacity and energy prices. It estimates the price mitigation benefit to all customers to be 3.4 cents for every kWh reduction in summer peak electric use.

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[1] Hornby, Rick et al. *Avoided Energy Supply Costs in New England: 2013 Report* (AESC 2013). Synapse Energy Economics, July 12, 2013. Available at www.synapse-energy.com

[2] Ibid., Exhibit 1-2.

An additional benefit of TVR that is not identified by the Department above is the potential air quality benefits of reducing electricity demand peaks. These benefits occur for similar reasons to the cost savings: The fleet of generators that are called on to provide power during peak demand episodes is different on average than the larger plants that provide the vast majority of power through the year. They are less efficient on average and are also much less likely to include the most effective types of emission controls. At the extreme, diesel generators with emission rates much higher than the grid average are deployed. The effects are exacerbated because such episodes tend to occur on the hottest days of the year, when sunlight converts oxides of nitrogen to ozone most effectively. This issue is documented in the case of CT in the report available at http://www.nescaum.org/documents/high-electric-demand-day-and-air-quality-in-the-northeast/, and certainly occurs, at least to some degree, in Massachusetts. TVR has the potential to reduce the frequency with which "peaking" generators are utilized, and to improve air quality on the days when health effects are most serious.

To achieve these many benefits, DOER believes that the Department should work closely with the distribution companies and stakeholders to comprehensively educate consumers on the dynamics and related costs of the electricity market and distribution system. Simultaneously, the Department should aggressively implement a transition to TVR that is timed to allow each distribution company to develop advanced metering functionality in the most cost-effective manner allowed by each company's existing grid-facing and customer-facing infrastructure.

As the Department has noted, this investigation is especially relevant to residential and smaller commercial and industrial customers (C&I).[3] The major differences between residential and smaller C&I customers on the one hand, and medium and large C&I customers on the other,

[3] D.P.U. 14-04, Footnote 1.

are particularly relevant to developing an approach to maximizing the benefits of TVR in Massachusetts.

First, Massachusetts, like most states, has a bifurcated electricity market consisting of a large number of relatively low-use "mass market" customers in the residential and small C&I classes, and a relatively few very high-use customers in the medium and large C&I 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 3% of all Massachusetts customers were in the medium and large C&I group, but they accounted for approximately 47% of all electricity used in the state that year. In contrast, 97% of the state's customers were in the mass market, but they accounted for only 53% of all electricity in the state. Thus, in that year an average medium to large C&I customer used 42 times as much as an average mass market customer.[4]
- There is a corresponding dramatic difference in customers' understanding of their electricity usage, costs, and options. Medium and large C&I 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, mass market customers often know little if anything about their electricity use and options. Mass market customers can be further segmented into sub-groups according to more granular differences in usage-per-customer, understanding, and consumer behavior.

[4] Massachusetts Department of Energy Resources Electric Customer Migration Data for 2012, available at http://www.mass.gov/eea/docs/doer/electric-deregulation/2012-electric-migration.pdf

Second, those two broad groups of customers differ in terms of the transition they face in moving from their current rate design to some form of TVR. Those differences include the functionality of their existing meters, their source of electricity supply, and their existing rate design.

- Most if not all medium and large C&I customers already have meters capable of recording their hourly electricity use and hence of supporting rates that vary by hour. Most residential and smaller C&I customers do not.
- In 2012, approximately 50% of medium and large C&I customers acquired their electricity from competitive retail suppliers rather than from basic service. In contrast, only 16% of residential and smaller C&I customers acquired their electricity from competitive suppliers in that year.[5]
- Most medium and large C&I customers pay a demand charge under their distribution service tariff. Most residential and smaller C&I customers do not.

It is important for both the Department and the distribution companies to recognize these differences in designing its communications and implementation of TVR.

III. RESPONSE TO SOLICITATION OF COMMENTS

In its order opening this investigation, the DPU posed ten questions regarding the implementation of TVR for basic and distribution service, as well as which entities should be responsible for marketing TVR to customers and educating them about it. This section provides responses to each of those ten questions.

[5] Ibid.

1. Should basic service be offered at a TVR?

Customers who do not select their generation source receive their electricity by default as a basic service offering from their distribution service provider. DOER believes that this basic service should be offered at a TVR for all of the reasons identified above and by the Working Group Report in D.P.U. 12-76. DOER shares the Department's view that time-varying rate structures provide valuable signals to customers regarding the costs of service at different times of the day, week, and year. DOER also expects that differential pricing will incent many customers to alter their time of use.

2. How should TVR be implemented for basic service?

TVR should be implemented for basic service as well as for distribution service. Implementation should be as aggressive as allowed by each distribution company's existing metering capabilities and Departmentally-approved Comprehensive Advanced Metering Plan (CAMP). However, implementation must also allow time to educate customers about TVR and their ability to respond to TVR, and enable utilities to make optimal use of their existing capital investments.

a. Should basic service have a single TVR or a menu of options?

Basic service should be offered as a menu of rate design options. That menu could begin with just two rate designs – a flat rate and a simple time-of-use (TOU) rate. A simple TOU rate would have rates for peak and off-peak periods each day and, depending on wholesale price differences, could also have different TOU rates for the winter and summer seasons. For ease of customer education, communication, and responsiveness, it is important for these time periods to be consistent across all distribution companies.

Most distribution companies should be able to support a simple TOU rate with either their existing meters or a modest change to those meters. The menu of design options could be expanded to include additional, more complex design options, such as a TOU rate that includes critical peak pricing (CPP), concurrent with the implementation of the advanced metering required to support more complex designs. Arizona Public Service is one example of a utility that offers a complex menu of rate options for its equivalent of basic service – it offers residential customers five different rate designs, only two of which require an AMI meter. The five rates offered to residential customers are: a standard rate that varies by season, a peak/off-peak TOU rate, a peak/off peak TOU rate with a demand charge, a TOU rate with a super peak period in summer months (in addition to peak and off-peak), and critical peak pricing.[6]

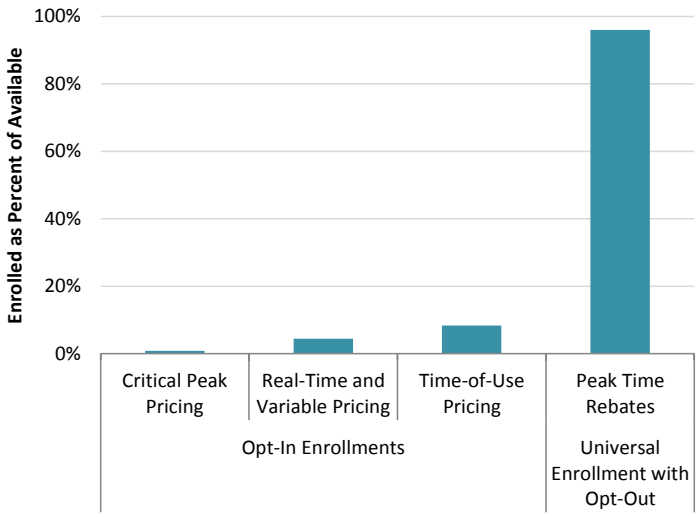
DOER recommends that the Department avoid this complex menu and begin with a simple TOU rate for several reasons.

- First, a TOU rate is superior to a flat rate in terms of satisfying the Department's traditional ratemaking principles. It provides a better price signal than a flat rate (economic efficiency), yet it is still relatively easy to understand (simplicity) and represents only modest change from the existing flat rate (continuity).
- Second, experience in other jurisdictions indicates that a higher percentage of customers have chosen to enroll in TOU rates than real-time pricing, variable pricing or critical peak pricing designs. For example, Figure 1 below shows the percent of customers who enrolled in a TVR relative to the number of customers to whom the TVR was made available, as calculated from data on 26 projects across the United States funded through the Recovery Act Smart Grid Investment Grant program. (Note that this figure depicts

[6] www.aps.com/en/ourcompany/ratesregulationsresources/serviceplaninformation Last accessed March 7, 2014.

enrollment in the peak time rebate programs as close to 100 percent, simply because a utility typically enrolls all customers automatically. This highlights a key point – just because a customer is *enrolled* in some form of TVR does not mean that customer actively *participates* in that rate by reducing load in response to its price signals.[7])

Figure 1. Customer Enrollments in TVR in 26 utilities



Source: Adapted from SmartGrid.Gov, "Advanced Metering Infrastructure and Customer Systems", https://www.smartgrid.gov/recovery_act/deployment_status/ami_and_customer_systems##EnrollmentInTimeBasedRatePrograms. Real-time pricing customers were combined with variable pricing customers due to negligible enrollment levels in real-time pricing.

As a result, although an individual customer on TOU may not reduce its peak use as much as an individual customer on CPP, TOU has the potential to produce a much larger aggregate reduction in peak demand, because more customers are likely to actively participate in TOU than in CPP. For example, if 40% of residential customers participate

[7] There is limited data on what percent of customers enrolled in each type of TVR actually actively participate by changing their use in response to its price signals. For example Dr. Robert D. Levin, a proponent of TOU rates, cites a recent study suggesting that only 10 % of residential customers on CPP actively respond to its price signals. Presentation to the 2012 Western Conference of the Center for Research in Regulated Utilities. https://www.pge.com/.../RateDesignWindow2 Last viewed March 1, 2014

in TOU and reduce their peak demand by an average of 4%, their aggregate reduction in demand will be 1.60%. In contrast, if 1% of residential customers participate in CPP, and reduce their peak demand by an average of 16%, their aggregate reduction in demand will be 0.16% – ten times less.

- Third, NSTAR and Unitil each conducted pilot programs testing customer willingness to opt-in to TOU prices offered in conjunction with a critical peak pricing (CPP) component. NGRID is conducting a pilot testing customer acceptance of being placed on TOU prices, and having the opportunity to opt-out. The NGRID pilot, which runs January 2014 through December 2015, already provides important information on customer acceptance of this opt-out approach to implementation of a TOU rate.
- Fourth, as noted above, it appears that most MA electric distribution companies could support the implementation of a simple TOU rate, with either their existing meters or a modest change to those meters, and without major new investment to revise their billing systems or implement two-way communication.

b. Should Default Service Be a Flat Rate or a TVR?

One of the most critical issues regarding implementation of TVR for basic service on a menu of options is whether the default rate for basic service should be changed from the existing flat rate to a TVR rate. The problem with an opt-in approach is that can be very difficult and time-consuming to encourage a large percentage of customers to voluntarily enroll in any new rate design, often simply due to customer inertia. The problem with an opt-out approach is that some parties view it as forcing customers to take service at a rate that will lead to an unreasonable increase in their bills. One major reason for this perception, and resulting opposition, has been the failure by TVR proponents to provide examples of customer bills under

the proposed TVR compared to the existing flat rate. In general, proponents have failed to provide these bill comparisons for individual customers, or even for customers representative of a given load shape and usage.[8] As a result, customers facing the prospect of being moved from their current flat rate to a new TVR do not know whether their bills will be higher, or lower, under the new TVR if they make no change in their usage. They also do not know what types of responses they would have to take under the new TVR in order to have a lower bill under that new rate. In the absence of any such information, customers have been naturally resistant to being moved to a new TVR.

Recognizing that there are advantages and disadvantages to each approach for individual customers, the overall benefits identified by the Department and further elaborated on by DOER in Section II above demonstrate the need for the Commonwealth to adopt a comprehensive change. DOER strongly recommends that the Department change the default rate for basic service from the existing flat rate to a simple TOU rate, accompanied by both broad-based and individualized consumer education, but still allow customers the choice to "opt-out" and revert back to a flat rate that is appropriately designed to include the price premium of the on-peak rate. Note that once the majority of customers are on the TOU rate, the flat rate for opt-out customers will likely look different from, and could be less attractive than, the existing flat rate because of the lower quantity of supply being acquired for that service and the change in the average load factor of that supply.

This approach, combined with the retention of all existing consumer protections (e.g. health- and safety-related use, low-income discounts) and bill protection measures, could be implemented in a manner acceptable to most customers. Customers on the new default TOU

[8] Brockway, Nancy and Hornby, Rick. *The Impact of Dynamic Pricing on Low-Income Customers: An Analysis of the IEE Whitepaper. A report to the Maryland Office of the People's Counsel*. November 10, 2010. http://www.synapse-energy.com/Downloads/SynapseReport.2010-11.MD-OPC.IEE-Low-Income-Customer-Report.10-042.pdf

rates would retain rights regarding access to service, notice of and basis for termination, access to payment arrangements, and recourse to the low-income discounts. The structure of the consumer protections may have to be adjusted to accommodate the TOU option, but these are technical issues that can readily be resolved in the pending proceeding.

Moving to default TOU basic service will be a major change in how electricity is billed in Massachusetts, and public education will be necessary to explain what the changes are, why they are being made, and how customers can benefit. As discussed below in response to Questions 6 and 8, dissemination of such information will be the responsibility of many entities, including government and the utilities. The most successful customer engagement will occur during the marketing of specific rates that customers can choose, rather than trying to educate the public in time-of-use concepts in the abstract. Adult learners absorb and act on new information best when there is an immediate practical application. 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.[9] 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. DOER recommends that Massachusetts distribution companies develop a similar on-line calculator for individual customers to identify potential bill-impacts from each rate structure.

Based on its investigation into Grid Modernization, the ongoing Massachusetts Smart Grid Pilot programs, a thorough Benefit/Cost Analysis, and comprehensive consumer education, the Department can identify the concrete value and benefits of various TOU rates for

[9] http://www.srpnet.com/prices/home/rightprice/

Massachusetts customers, and require that basic service provide default TOU rates and include an optional flat rate for each class of distribution customers.

3. Should the Department consider peak time rebates?

The Department has asked whether it should consider an approach similar to the "Smart Energy Rewards" program offered by Baltimore Gas Electric, whereby the distribution company runs a peak-time rebate program (PTR) for all distribution customers, regardless of whether they are on basic service or competitive supply. DOER recommends that the Department view PTR as a demand response program rather than a rate design. Implementation of PTR is complex for several reasons – frequency of critical events, measurement of individual customer demand reductions during critical events, and funding of the PTR.

Customers are eligible for a PTR during a critical event, i.e. on a day with exceptionally high demand and correspondingly high wholesale energy prices. However, in any given summer the number of critical events can vary depending on the weather and the electric market conditions. This variation in demand may require the utility to run "test" critical event drills to simply remind customers of their existence, even if conditions do not warrant them.

Measurement of customer reductions is complex because it requires the utility to establish a baseline level of use for each individual customer in order to determine the level of reduction, if any, each customer made during the critical peak. That measurement requires a meter capable of measuring demand during designated peak periods each day, as well as hardware and software to process the data for each customer.

Funding the PTR is also complex. In theory the utility would bid the reductions anticipated from PTR into the forward capacity market and be compensated in return. In practice this is difficult to accomplish, because the reduction would need to be bid in 3 years in advance, there is no experience with the quantity of reduction to expect, and one has to forecast the capacity price to reflect in the PTR. Also, the utility will likely incur various hardware, software and marketing costs to implement PTR, in addition to the costs of funding the rebates themselves.

For all of these reasons, DOER recommends that the Department not adopt a peak time rebate.

4. What is the likely impact on the competitive retail supply market of implementing TVR for basic service?

The implementation of TVR for basic service will likely have no material impact on the competitive retail market, though DOER is interested to hear if competitive suppliers provide additional information on this subject. Aside from the retail supply market, the implementation of TVR for basic service will have a beneficial impact on technology vendors, such as those that provide appliance and control mechanisms that can respond to TVR.

5. What impact might the recent increase in municipal aggregations have on the Department's ability to maximize the benefits of time varying rates?

The recent increase in municipal aggregation pursuant to G.L. c. 164, §134 will have no material impact on the Department's ability to maximize the benefits of TVR. Municipal aggregators retain the same distribution service as other customers, but collectively choose a competitive supplier instead of basic service. Therefore, these customers retain the ability to

adopt a TVR for their distribution service or a TVR for their generation source from a competitive supplier.

6. What role should distribution companies have in reaching, marketing to, and educating customers about TVR?

It is universally acknowledged that the vast majority of small-usage customers have little or no understanding that the cost of their electricity varies greatly with the time of day, day of the week, or time of year. However, it is also understood that a core group of engaged consumers can and will take control over the timing of their electricity usage to the extent such rates reduce their bills. The need for customer education arises as a response to these barriers to TVR. The Working Group acknowledged this reality, noting that "Certain Grid Modernization investments may require considerable customer education to inform and engage customers on various attributes of grid modernization programs."[10] DOER and others further observed that:

1. Resources should be committed within rates to educate and engage customers on TVR,
2. Customers should be educated and engaged for the purpose of controlling energy use and supporting the state's clean energy goals, and
3. New rate structures and information from advanced metering should foster customer education, behavioral changes and participation in energy efficiency and demand response programs.[11]

As a general rule, the primary responsibility for education and marketing belongs with the entity whose product or rate is being offered. In the case of basic service, then, the distribution utility has the primary responsibility. Two examples of utilities that have actively promoted opt-in TOU rates with great success are Arizona Public Service and Salt River Project

[10] Working Group Report, p. 9

[11] Working Group Report, p. 56

cooperative in Arizona.[12] This active promotion, which has persisted twenty or more years by now, is an important reason why both utilities have moved roughly half their customers to a TOU rate. Both utilities are enthusiastic promoters to their customers of their TVR options. As noted in response to Question 2, they reach out to customers with entrepreneurial zeal to educate customers about their potential to save money (by helping reduce system peak demand), and include information about the rates and customer options in their mass media outlets.

State government can also frame the issues for the public. Ontario's quiet and non-controversial introduction of TOU default rates was aided by the unity of the government's policy goals and the choice of TOU rates to help meet those goals. The website of the Ontario Energy Board, in addition to those of the distribution utilities, has charts and information that help explain why TVR is beneficial and how customers' own situation is likely to be affected by the change.[13]

In Massachusetts, customers in NSTAR's smart grid pilot program have expressed a strong desire to better understand TVR – both how they will be impacted and the purpose of the program. A technical performance report prepared by Navigant Consulting noted that the program's communications and information were one of the primary areas of concern for participants and a common theme among former participants' reasons for dropping out of the program.[14] Likewise, National Grid learned through its smart grid pilot program in Worcester that their customers required different terminology to understand the potential benefits of their program. DPU 12-76, Transcript 2/27/14, p.847.

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[12] http://www.srpnet.com/prices/home/tod.aspx Last accessed March 7, 2014.

[13] http://www.ontarioenergyboard.ca/OEB/Consumers/Electricity/Electricity+Prices

[14] Navigant Consulting, Inc., *NSTAR Smart Grid Pilot Technical Performance Report #1, AMR Based Dynamic Pricing DE-OE0000292, prepared for US Department of Energy on behalf of NSTAR Gas and Electric Corporation, March 19, 2013, p.33.* *https://www.smartgrid.gov/sites/default/files/NSTAR%20Smart%20Grid%20TPR1_Final%203-19-13.pdf* Last accessed March 7, 2014.

At the Department's panel hearings on Grid Modernization, there was a general consensus among the distribution companies that their customers would benefit from a coordinated approach of multiple messages through multiple channels by both the state and the utilities to educate consumers about the benefits of grid modernization. Id. pp. 834-857.

7. Will competitive suppliers develop time varying products and effectively market to and educate the public regarding their use and benefits?

As noted in response to Question 4, the implementation of TVR for basic service will likely have no material impact on the competitive retail market. However, comparable to any other competitive offering, to the extent that a competitive supplier chooses to offer a TVR, that competitive supplier will likely effectively market to and educate its targeted customer base.

8. What role should distribution companies have in reaching, marketing to, and educating customers about TVR offered by competitive suppliers?

The regulated distribution company should not have the primary role in marketing competitive suppliers' TVR rates or other rates. Deciding what specific messages, media, and budget should be devoted to drawing the public's interest to a competitive product [in this case, supply at a TVR rate] is best done by the entity seeking to "sell" the product. In addition, electricity vendors offering TVR rates will know their own rate structure and contractual nuances far better than the distribution company.

Having said that, education must be done by entities that have a public interest in seeing customers take the marketed option, e.g. TVR. Basic education about TVR will continue to be a responsibility for distribution utilities even if they do not offer such a rate as part of basic service. Distribution utilities are still seen by the public as their primary source of electricity, even where they have chosen to obtain supply from the market. This is especially the case where, as in Massachusetts, the distribution company generally handles the billing.

As noted above in the answer to Question 6, the Commonwealth, through agencies such as DOER and the DPU, also has a role to play in providing information about TVR and grid modernization. If the TVR rate and the introduction of smart meters are public policy, government agencies can help to provide information about the initiatives. Education and marketing will be key to the success of new TVR offerings. Utilities, competitive suppliers and government agencies will each play a role.

9. Should the distribution rate become a time varying rate?

Yes, the rate for distribution service should reflect the difference between providing service during different times of usage. DOER recommends that the Department require utilities to establish consistent peak and off peak periods across the state, and also consistent time periods for the basic service TOU rate.

10. Is there a cost basis for time varying distribution rates?

The cost basis for different rates for distribution service on-peak and off-peak arises from the costs the company incurs, or avoids, due to customer use during peak periods. Both National Grid and NSTAR offer TOU rates with distribution charge that differ between on-peak and off-peak periods. NSTAR's distribution charges also vary by season. However, it is unclear if the on-peak and off-peak delivery rates are based on specific cost studies submitted by the utilities.

Distribution companies already conduct an analysis of components of their transmission and distribution system that would be avoided through energy efficiency, which are then incorporated into the DPU approved energy efficiency plans. These studies may be refined and expanded upon. If not already known, DOER recommends that the utilities determine the

components of their distribution systems that are static or invariant to changes in load and those components that are impacted by changes to load. Those studies would help answer the question whether there is a cost basis for time varying distribution rates.

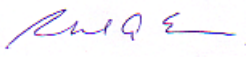
IV. CONCLUSION

DOER fully supports the Department's move to grid modernization, as well as the implementation of time varying rates for both distribution service and basic service. To achieve the multitude of benefits available to individual consumers and the Commonwealth as a whole, DOER believes that the Department should work closely with the distribution companies and stakeholders to comprehensively educate consumers on the dynamics and related costs of the electricity market and distribution system. An effective consumer education strategy must involve the collaboration of the Department, DOER, distribution companies and other stakeholders, with a specific sensitivity for the potential impacts and benefits to low-income and other sensitive customer classes. Then, the Department should aggressively implement a transition to TVR that is timed to allow each distribution company to develop advanced metering functionality in the most cost-effective manner allowed by each company's existing and soon-to-be modernized grid-facing and customer-facing infrastructure.

Respectfully submitted,

MASSACHUSETTS DEPARTMENT OF ENERGY RESOURCES

By its attorney:



Rachel Graham Evans, Deputy General Counsel
Department of Energy Resources
100 Cambridge Street, Suite 1020
Boston, MA 02114
Tel: 617-626-7300

March 10, 2014