



# The Commonwealth of Massachusetts

## DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

D.T.E. 07-6

March 23, 2007

Investigation by the Department of Telecommunications and Energy on its own motion into standby rates and alternative rate structures that will promote efficient deployment of distributed generation.

---

VOTE AND ORDER OPENING INVESTIGATION

## I. INTRODUCTION

In 2002, the Department of Telecommunications and Energy (“Department”) opened an investigation into (1) interconnection standards and practices that reduce barriers to installation of distributed generation (“DG”),<sup>1</sup> (2) standby rates and other charges associated with DG, and (3) the appropriate role of DG in distribution company planning. Distributed Generation, D.T.E. 02-38, at 2 (2002). The Department worked with all interested participants through the Massachusetts Distributed Generation Interconnection Collaborative (“DG Collaborative”), which developed interconnection standards, policies, and procedures for DG.<sup>2</sup> Distributed Generation, D.T.E. 02-38-A (2002); Distributed Generation, D.T.E. 02-38-B (2004); Distributed Generation, D.T.E. 02-38-C (2005); Distributed Generation, D.T.E. 02-38-D (2007).

The DG Collaborative’s final report in those proceedings indicated that a broader investigation is necessary in order to consider fully the appropriate implementation of DG (Massachusetts Distributed Generation Collaborative 2006 Report at 38–39 (“2006 Report”). The initial focus of the investigation in D.T.E. 02-38 had been on the value of distribution investment deferral provided by DG; but based on the conclusions of an economic analysis submitted with the 2006 Report, the DG Collaborative recommended further investigation into

---

<sup>1</sup> General Laws c. 164, § 1 defines DG as “a generation facility or renewable energy facility connected directly to distribution facilities or to retail customer facilities which alleviate or avoid transmission or distribution constraints or the installation of new transmission facilities or distribution facilities.”

<sup>2</sup> The Department excluded standby rates and the role of DG in distribution company planning from the DG Collaborative’s scope. D.T.E. 02-38-A at 2–3.

other areas of potential value that may be provided by DG such as capacity relief to constrained transmission load pockets, reduced energy price volatility and lower market clearing prices, environmental benefits, and economic benefits both to the customer and to the general economy (*id.* at 36–38, *citing* Navigant Consulting, Inc., Distributed Generation and Distribution Planning: An Economic Analysis for the Massachusetts DG Collaborative at 98–148, 203–219 (January 20, 2006) (“Navigant Report”)).<sup>3</sup>

The Department’s long-term objective with respect to DG is to lower the cost of electric service for retail ratepayers through the establishment of a regulatory environment that facilitates the optimal level of investment in DG. As discussed in further detail below, this Order opens an investigation into a broad range of potential benefits provided by DG. The Department also will consider the necessary elements of a regulatory framework to encourage the optimal deployment of DG, including appropriate ratemaking treatment or other mechanisms that capture and share the identifiable, tangible, and quantifiable net benefits of DG (*cf.* 2006 Report at 39).

## II. SCOPE OF INVESTIGATION

### A. Overview

The Department commends the efforts of the DG Collaborative in developing interconnection standards and procedures for DG. We recognize, however, that certain issues, such as standby rates and the role of DG in distribution company planning, were not amenable

---

<sup>3</sup> The Navigant Report, submitted as Attachment G to the DG Collaborative’s 2006 Report, is available in docket D.T.E. 02-38. *See* <http://www.mass.gov/Eoca/docs/dte/electric/02-38/63006mdgcrahd.pdf>.

to the collaborative process and that the Department ultimately will need to resolve these issues. See D.T.E. 02-38-A at 2, 5. The Department intends to engage all interested persons in a broadly-represented stakeholder process to address these issues. Although the resolution of all issues by consensus of the stakeholders is preferred, if the stakeholders reach an impasse at any decision point throughout this process, the Department will decide any unresolved issues. Stakeholders must be cognizant of this and be prepared to present the Department with evidence and argument that will inform our decision-making process.

In order to establish a regulatory framework that will promote the optimal deployment of DG, the Department proposes three areas of investigation : (1) identifying and quantifying ratepayer costs and benefits provided by DG facilities; (2) considering the appropriate ratemaking treatment; and (3) determining the appropriate role of distribution companies in facilitating the installation of DG resources.

B. Quantifying Costs and Benefits

1. Introduction

In order to facilitate an optimal level of investment in DG resources, the Department will investigate how to compensate DG hosts in a manner that causes them, in their decision whether to deploy DG, to consider the net benefits that their resources provide to other electricity consumers. We propose to do so through a three-step process. First, we will identify the costs and benefits. Second, we will determine the value, or a range of values, of these costs and benefits. Third, we will develop the appropriate methods by which the net

benefits will be monetized and provided to the DG hosts. The Navigant Report provides a good starting point in the effort by identifying numerous types benefits and costs and quantifying several of those and benefits and costs. The Department draws upon the information included in the Navigant Report in the sections below.

2. Identification of Benefits and Costs

The table below lists the DG-related benefits and costs that the Department proposes to investigate in this proceeding.

DG-Related Benefits and Costs

		Delivery Service	Power Supply Service
DG Host Consumers	Benefits	<ul style="list-style-type: none"> <li>increased reliability</li> <li>improved power quality</li> </ul>	<ul style="list-style-type: none"> <li>reduced wholesale market costs (energy, capacity, ancillary services)</li> <li>renewable portfolio standards revenue</li> <li>state and federal incentives</li> </ul>
	Costs	<ul style="list-style-type: none"> <li>interconnection costs</li> <li>equipment and installation</li> </ul>	<ul style="list-style-type: none"> <li>annual O&amp;M expenses</li> <li>increased natural gas consumption</li> </ul>
All Electricity Consumers	Benefits	<ul style="list-style-type: none"> <li>deferred distribution system investment</li> <li>increased reliability</li> <li>improved power quality</li> </ul>	<ul style="list-style-type: none"> <li>reduced distribution system losses</li> <li>reduced wholesale market prices (energy, capacity, ancillary services)</li> <li>reduced energy price volatility</li> <li>potential emissions reduction</li> <li>increased fuel and resource diversity</li> <li>improved security of power supply</li> </ul>
	Costs	<ul style="list-style-type: none"> <li>none identified</li> </ul>	<ul style="list-style-type: none"> <li>none identified</li> </ul>

Consistent with our role as economic regulators, we have included only those benefits and costs that may directly affect the prices that consumers pay for electricity. We have distinguished between those benefits and costs that affect only the DG host and those that affect all electricity consumers. Because the benefits and costs that directly affect DG hosts are internalized by those consumers in their decision whether to invest in DG resources, the Department does not propose to investigate these costs and benefits any further in this proceeding. In contrast, the costs and benefits that affect all electricity consumers are external to the DG hosts' investment decisions. It is these benefits and costs that the Department proposes to quantify to ensure that DG hosts are appropriately compensated for the net benefits that their resources provide to other electricity consumers. We anticipate that by doing so, we can facilitate the optimal level of investment in DG resources and realize the full potential of DG.

Finally, the Department has distinguished between those benefits and costs that apply to consumers' delivery service and those that apply to consumers' power supply service. This distinction has been made to better understand the underlying nature of the benefits and costs and, thus, to assist in the valuation process.

### 3. Valuation of Benefits and Costs

The Department recognizes that some of the identified benefits can be more easily quantified than others. Even for those benefits that can be quantified, it is likely that a variety of assumptions will need to be made to do so. In light of this, the Department seeks to develop

a range of values, rather than a single value, for each benefit. Those benefits that are not easily quantified may still provide significant value to electricity consumers in Massachusetts.

In determining this range of values, we must reach a reasonable balance between benefits that we expect to realize in the near-term and benefits that may be realized in the longer-term. This, in turn, requires taking both a near-term and longer-term perspective on factors such as the level of DG installed on the system and the level of loading on distribution circuits. Focusing on near-term benefits alone may underestimate the benefits that DG resources can provide, thus undercutting our efforts to realize the full potential of these resources. In addition, a near-term perspective may result in the quantification of benefits that are inappropriately location-specific and whose value fluctuates often over time.

#### 4. Monetization of Benefits and Costs

The final step in ensuring that DG hosts are appropriately compensated for the net benefits that their resources provide to other electricity consumers is to develop the appropriate methods by which the net benefits will be monetized and provided to the hosts. The Department will address this issue once we have made sufficient progress on the identification and valuation issues discussed above.

### C. Ratemaking Treatment

#### 1. Introduction

The Legislature has stated that “long-term rate reductions can be achieved most effectively by increasing competition and enabling broad consumer choice in generation service, thereby allowing market forces to play the principal role in determining the suppliers

of generation for all customers.” St. 1997, c. 164, § 1(k). DG has been identified as a potentially cost-effective and environmentally sensitive supplier of generation. For example, according to the 2006 Report at 38:

In sum, the potential of DG should be investigated in a broader sense than it has been in this collaborative if the [Department] wants to fully explore the potential role of DG in Massachusetts. The region will ultimately need additional capacity and DG is poised to provide at least a portion of this need. The environmental benefits of DG, if demonstrated through factual analysis, must also be a consideration.

In NSTAR Electric, D.T.E. 03-121, at 49 (2004), the Department approved a settlement establishing standby rates for the NSTAR Electric companies.<sup>4</sup> The Department addressed a number of issues: (1) the absence of cost of service studies for standby customers; (2) consistency with qualified facilities regulations; (3) demand ratchet; (4) undue discrimination; (5) exemptions from standby tariffs; (6) non-firm service and contract demand; and (7) DG customers on standby service. Id. at 38–49. The Department also stated that it intended to continue to investigate the issues involved in rates for standby service, including, but not limited to, whether: (1) standby rates ensure that customers operating their own on-site generation facilities pay an appropriate share of distribution system costs; (2) a distribution company should recover standby-related costs through fixed or variable charges; (3) standby rates should be designed to recover embedded or incremental costs; and (4) whether a distribution company should offer firm and non-firm standby service. Id. at 50–51.

---

<sup>4</sup> The settlement states that NSTAR Electric may not alter the availability terms of the standby tariffs before August 1, 2008. D.T.E. 03-121, at 18.

## 2. Cost Recovery Methods

Distribution companies are unlikely to embrace the installation of DG resources as long as these installations result in lost revenues to the companies caused by lost sales. We have identified three potential rate mechanisms that could be applied to distribution company revenues to help address this issue: (1) lost revenue recovery (through standby rates); (2) monetary incentives for meeting reliability or congestion goals; and (3) decoupling utility revenues from sales volume.<sup>5</sup>

The Department's goal is to create a regulatory environment in which distribution companies encourage the installation and operation of DG in their service territories, where appropriate. A properly designed ratemaking approach will result in DG owners being compensated for a portion of the benefits that they provide to the distribution system, distribution companies receiving compensation for the costs of serving the DG customer, and other ratepayers receiving electric service at a lower cost as a result of the installation of the DG facility.

The Department will consider, through the stakeholder process, the appropriateness of a ratemaking approach that will remove any disincentive that currently may exist for distribution companies with regard to DG resources. To develop such an approach, the Department expects to draw on our experience and those of other states with regard to the

---

<sup>5</sup> Although revenue decoupling may be identified as one potential solution, it clearly would need to be addressed in a broader context than DG. The design and implementation of revenue decoupling measures are beyond the scope of this proceeding.

treatment of lost revenues associated with energy efficiency. The Department could also draw on the experiences from other states regarding the variety of ratemaking treatments that are in place.

Pricing policies for the design of standby charges and other related forms of services should consider the role of DG in a modernized distribution grid. Such an approach is supportive of and consistent with our primary objective in this proceeding, namely the establishment of a regulatory environment that facilitates an optimal level of investment in DG. Accordingly, the Department requests that the participants in this proceeding identify, from the broadest perspective, all potential rate design issues related to standby rates or other ratemaking methods.

### 3. Standby Rate Policies

The existence of correct price signals is a critical requisite for market forces to foster dynamic and vigorous competition. Such competition, over time, could overcome barriers to the development of the market for DG and help resolve technical problems through innovation.<sup>6</sup>

Under current market conditions, distribution companies typically provide DG hosts a number of services. These include: (1) supplemental service consisting of power in excess of that supplied by on-site generation; (2) services needed during scheduled maintenance for on-site generation; (3) standby services for unscheduled on-site generation outages; and

---

<sup>6</sup> For example, the 2006 Report at 21, noted that “[d]uring the discussions it became clear that there are real technical problems and issues to be addressed, not just ‘barriers,’ in considering interconnection of DG on networks.”

(4) economic replacement when the grid power is less expensive than the power produced by the on-site generator.

As the deregulated electricity generation market evolves and the tracking of real-time load data become less costly and, thus, more readily available, new services could be offered by distribution companies to customers with on-site generation. Similarly, the availability of real-time load data on transmission and distribution grids and substation networks provides existing DG owners with better and more timely information that could enable them to use their generation resources more efficiently. In addition, the availability of real-time load data provides potential DG investors the needed information to optimize the siting of their DG facilities, package innovative forms of generation services, and maximize returns to their investments.

Given the types of services typically provided by distribution companies to customers with DG facilities, it is reasonable to hypothesize that customers with DG facilities would have load patterns different from the non-DG customers who are classified within a given rate class. Accordingly, all electric distribution companies will be required to collect the appropriate information needed to determine whether such a rate design is appropriate. Such information also will serve as a basis for determining and allocating costs and designing rates for standby

and related services.<sup>7</sup> The scope, structure, and specification of data that are necessary and sufficient for these purposes will be addressed early in this proceeding.

D. Role of Distribution Companies

Distribution companies are essential in facilitating the optimal level of investment in DG resources. Distribution companies are uniquely poised to be a facilitator at numerous stages of the installation of DG. Given the appropriate regulatory structure, distribution companies can determine where on their systems a DG installation could have the greatest effect on the potential for deferral or avoidance of investments in additional transmission and distribution infrastructure. Distribution companies also could develop “DG-friendly” strategies to leverage the future value of DG resources by: (1) installing DG-friendly equipment when upgrading their systems, particularly in areas that the distribution companies have identified as having potential for significant levels of DG; and (2) recommending to DG hosts the use of “utility-friendly” equipment that would be capable of providing distribution

---

<sup>7</sup> The Department precedent on rate structure goals is well-settled. Rate structure is the level and pattern of prices charged to customers for their use of utility service. Rate structure for each rate class is a function of the cost of serving that rate class. Rate structure also considers the design of rates so that the cost to serve a rate class is recovered in the rates charged that class.

There are two steps in determining rate structure: cost allocation and rate design. The cost allocation step assigns a portion of a utility’s total costs to each rate class in a cost of service study. Rate design is the pattern of prices in the rate structure which produces the level of revenues assigned to that class. Bay State Gas Company, D.T.E. 05-27, at 304–307 (2005). The Department’s rate structure goals are the same for electric and gas utility companies. Fitchburg Gas and Electric Light Company, D.T.E. 02-24/25, at 252, 267 (2003).

system support. Distribution companies also must ensure that the interconnection process results in the installation of equipment that will serve all the needs of the DG host.

Further, distribution companies can assist in educating customers. Through energy audits, bills inserts to larger customers, and other activities, customers could learn more about the potential benefits of DG.

As noted above, for the distribution company to undertake some of these processes, disincentives may need to be addressed. In addition to investigating what actions distribution companies should take to facilitate deployment of DG in Massachusetts, we will consider appropriate strategies for distribution company involvement.

### III. THE STAKEHOLDER PROCESS

With the issuance of this Order, the Department identifies the issues that we seek to resolve in the first phase of what may need to be a multi-phase process of establishing a regulatory environment that facilitates the optimal level of investment of DG resources in Massachusetts. The Department will begin the stakeholder process with a technical conference at a date to be announced. During that conference, the Department will: (1) identify all interested participants in this proceeding; (2) receive input regarding the issues that we have identified in this Order; (3) establish subgroups to work on the individual issues; and (4) establish a schedule for the process.

### IV. ORDER

Accordingly, the Department

VOTES: To open an investigation into distributed generation, and it is

ORDERED: That the Secretary of the Department shall publish notice of this investigation in a statewide paper of daily circulation within the Commonwealth, and it is

FURTHER ORDERED: That the Secretary of the Department shall serve a copy of this Order upon all persons on the Department's official service list in D.T.E. 02-38.

By Order of the Department,

/s/

---

Judith F. Judson, Chairman

/s/

---

James Connelly, Commissioner

/s/

---

W. Robert Keating, Commissioner

/s/

---

Soo J. Kim, Commissioner