The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

D.P.U. 09-33 March 15, 2010

Petition of NSTAR Electric Company for approval pursuant to St. 2008, c. 169, § 85 of a Smart Grid Pilot Program.

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I. INTRODUCTION

On July 2, 2008, Governor Patrick signed into law Chapter 169 of the Acts of 2008, an Act Relative to Green Communities ("Green Communities Act" or "Act"). Section 85 of the Green Communities Act requires each electric distribution company to file with the Department of Public Utilities ("Department") a smart grid pilot program no later than April 1, 2009. St. 2008, c. 169, § 85 ("Section 85"). On March 31, 2009, NSTAR Electric Company ("NSTAR Electric" or "Company") filed with the Department its smart grid pilot program ("Pilot") in accordance with Section 85. The Department docketed this matter as D.P.U. 09-33.

The Company initially proposed two separate programs for its Pilot, with a total program budget estimated at $5 million: (1) AMR-based dynamic pricing ("Dynamic Pricing"); and (2) distribution automation ("Distribution Automation"). Pursuant to 220 C.M.R. § 1.04(3), on July 28, 2009, NSTAR Electric filed a motion for leave to amend ("Motion to Amend") its Filing to include an urban grid monitoring and renewables integration ("Urban Grid") project in its Pilot.[1] The Urban Grid program will increase NSTAR Electric's overall Pilot budget to an estimated $16 million. On September 2, 2009, the Department granted the Company's motion to amend. NSTAR Electric Company, D.P.U. 09-33, Hearing Officer Ruling at 4 (September 2, 2009).

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[1] The Company first announced the proposed inclusion of the Urban Grid project in its response to information request dated June 8, 2009, where it initially was called the Area Networking project (Exh. DPU-1-1).

On October 26, 2009, the United States Department of Energy ("DOE") announced that it had selected NSTAR Electric to receive 50 percent funding for the Distribution Automation program of its Pilot through the Smart Grid Investment Grant Program, provided through the American Recovery and Reinvestment Act of 2009 ("federal stimulus funding") (Exh. AG-1-11) (Supp. 3)). On November 24, 2009, DOE announced that NSTAR Electric was selected to receive additional federal stimulus funding through the Smart Grid Demonstration Program Funding Opportunity for 50 percent of the cost of its Urban Grid Dynamic Pricing programs (Exh. AG-1-11 (Supp. 4)).

The Attorney General of the Commonwealth ("Attorney General") intervened pursuant to G.L. c. 12, § 11E. The Department granted the following petitions to intervene: Commonwealth of Massachusetts Department of Energy Resources; and Low Income Weatherization and Fuel Assistance Program Network and the Massachusetts Energy Directors Association (collectively, "LEAN"). The Department granted limited participant status to the Cape Light Compact, Environment Northeast, the Retail Energy Supply Association ("RESA"), and to joint petitioners Associated Industries of Massachusetts and The Energy Consortium.

Pursuant to notice duly issued, the Department conducted evidentiary hearings at its offices on December 2, and December 4, 2009. The Company sponsored the testimony of the following witnesses: Lawrence J. Gelbein, vice president of engineering for NSTAR Electric; Christine L. Vaughn, director of regulatory requirements for NSTAR Electric; Henry C. LaMontagne, director of regulatory policy and rates for NSTAR Electric; and Peter A.

Barsamian, director of energy services for NSTAR Electric. The Attorney General sponsored the testimony of Barbara Alexander, consumer affairs consultant. LEAN sponsored the testimony of Nancy Brockway, principal of NBrockway & Associates.

The Company, the Attorney General, and LEAN filed initial briefs. The Company, the Attorney General, LEAN, RESA, and the Cape Light Compact filed reply briefs. The record includes 178 exhibits, and responses to seven record requests.

II. GREEN COMMUNITIES ACT

Section 85 of the Green Communities Act states that each smart grid pilot program shall include, but not be limited to, advanced smart meters that provide real-time measurement and communication of energy consumption, automated load management systems embedded with current demand-side management programs and remote status detection and operation of distribution equipment. Section 85 requires that any pilot program include time-of-use or hourly pricing for commodity service for a minimum of 0.25 percent of a company's customers. Further, Section 85 requires that a specific objective of any smart grid pilot program shall be to reduce by a minimum of five percent the peak and average loads of those customers who actively participate in the pilot program. A company that designs a program that includes a larger number of customers and demonstrates bill savings in excess of the minimum required is eligible to earn incentives.

Section 85 requires the Department to review and approve or modify the smart grid pilots by August 1, 2010. Section 85 of the Act also requires the Department to work with the electric distribution companies to identify specific areas of study and the Department may

incorporate and use information from past relevant studies and pilot programs. Section 85 requires the electric distribution company to include in its filing the proposed rate treatment for incremental program costs.

III. OVERVIEW OF PROPOSED SMART GRID PILOT

NSTAR Electric's proposed Pilot includes the following three programs:

- a Dynamic Pricing program, in which the Company proposes to test the extent to which new time-differentiated rate structures, in combination with (1) in-home technologies that provide customers with near real-time information on their energy consumption and, costs and (2) automated load management technologies, enable customers to shift consumption away from high-cost hours (Exh. NSTAR-LJG (Rev.) at 7-10);

- an Urban Grid program, in which the Company proposes to install equipment to enhance monitoring, in near real-time, one of its twelve secondary area network grids in the Boston metropolitan area, in order to better understand and facilitate integrating distributed energy resources into its urban grids (Exh. NSTAR-2, at 2); and

- a Distribution Automation program, in which the Company proposes to install equipment and test techniques to improve the energy efficiency of a series of distribution circuits (id. at 4-5).

Table 1, below, summarizes the costs for each of the pilot programs.

TABLE 1: NSTAR ELECTRIC SMART GRID PROGRAM BUDGET [2]

Smart Grid Pilot Programs	Cost
Dynamic Pricing Program	$4,724,000
Urban Grid Monitoring and Renewables Integration Program	$10,535,000
Distribution Automation Program	$350,000
TOTAL	$15,510,000

Because it has been selected to receive a grant from DOE for up to 50 percent of the cost of its smart grid Pilot, the Company proposes to recover 50 percent of the costs listed in Table 1 from ratepayers (Exh. NSTAR-CLV-1 (Rev.) (Supp. 2) at 1).

IV. DYNAMIC PRICING PROGRAM

A. Overview

NSTAR Electric proposes to offer the Dynamic Pricing program to approximately 2,800 residential basic service customers residing in two communities, Newton and Hopkinton (Exh. NSTAR-1, at 11).[3] The proposed program includes: (1) two types of dynamic (i.e., time-differentiated) pricing structures; (2) metering and communications technology that allow for two-way communication between the Company and program participants; (3) customer information technology that allows participants to view, in near real-time, their energy

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[2] Source: Exh. NSTAR-CLV-1 (Rev.) (Supp. 2) at 1.

[3] Subsequent to its initial filing, the Company indicated that it may expand its Dynamic Pricing program to include customers in the Jamaica Plain section of Boston (Exh. NSTAR-LJG (Rebuttal) at 4).

consumption and costs, and other relevant information; and (4) automated load management technologies (Exh. NSTAR-LJG (Rev.) at 8-9). The Company proposes to establish four participants groups that will be provided different combinations of the above features. The hourly consumption of participants in each group will be compared to that of a control group or other research segments to determine the net savings produced by each approach (Exh. NSTAR-1, at 25).

The Company states that, in addition to meeting the technology and load reduction requirements of Section 85, the Dynamic Pricing program is intended to provide sound technical, economic, and marketing information that can be used by the Company in its future smart grid investment decision- making processes by, among other things, assessing the extent to which currently deployed metering infrastructure and customers' existing broadband internet service can be used in smart grid deployment (Exh. NSTAR-LJG (Rev.) at 8-9).

B. Dynamic Pricing Structures

1. NSTAR Electric Proposal

a. Introduction

NSTAR Electric proposes to include two pricing structures in its Dynamic Pricing program: (1) time-of-use rates with critical peak pricing ("TOU-CPP"); and (2) a critical peak rebate ("CPR") (Exh. NSTAR-1, at 11). The Company states that its program will test how these pricing structures, in combination with customer information and automated load management technologies, might provide benefits to customers and produce the energy savings targets identified in Section 85 (Exh. NSTAR-HCL (Rev.) at 4).

b. Time-of-Use Rates with Critical Peak Pricing

NSTAR Electric's TOU-CPP pricing structure will include three unique rates for consumption occurring during on-peak, off-peak, and critical peak periods (Exh. NSTAR-HCL (Rev.) at 5). The on-peak period will consist of non-holiday weekday hours from 12:00 p.m. to 5:00 p.m. during June through September, and from 4:00 p.m. to 9:00 p.m. during October through May (Exh. NSTAR-1, at 13). The off-peak period will consist of all hours not included in the on-peak period (id.). A subset of on-peak hours will be deemed critical peak hours, based on events called by the Company (id. at 12-13). The Company states that it plans to call critical peak events in conjunction with demand response events initiated by Independent System Operator - New England ("ISO-NE"), with the caveat that it will not call more than twelve critical peak events, each with a maximum duration of five hours, during a year (id. at 12).[4] NSTAR Electric states that it will provide customers with notification of critical peak events no later than 5:00 p.m. on the day prior to the day of the declared event (Exh. NSTAR-HCL-1, at 1).

NSTAR Electric states that it will determine TOU-CPP rates using a three-step process based on (1) prices in the wholesale energy and capacity markets administered by ISO-NE, and (2) its current residential basic service rate (Exh. NSTAR-HCL (Rev.) at 6). First, the Company will calculate load-weighted wholesale energy market prices for the off-peak, on-peak, and critical peak periods (id.). Second, the Company will allocate 65 percent of its

[4] The Company states that it may use its own discretion to call events so that it can test the technology and reach its goal of having twelve critical peak events (Exh. DPU-2-21; Tr. 1, at 27-28).

estimated annual wholesale capacity costs to peak period hours, with the remaining 35 percent of costs allocated to critical peak period hours (id.). Third, the Company will calculate the rate for each period as the product of (1) the ratio of the period's wholesale commodity price (calculated pursuant to steps one and two, above) to the load weighted average of the three periods' wholesale commodity prices, and (2) the Company's residential basic service rate (id.). Table 2, below, provides an illustrative example of the TOU-CPP rates, based on a residential basic service rate of $0.127 per kilowatt hour ("kWh"), the rate in effect for January 2009 through June 2009.

TABLE 2 [5]

Off-Peak ($/kWh)	On-Peak ($/kWh)	Critical Peak ($/kWh)
$0.08	$0.28	$1.35

c. Critical Peak Rebate

The Company proposes to offer the CPR program only to those customers who: (1) have central air conditioning; and (2) allow the Company to remotely adjust their thermostat setting during critical peak events (Exh. NSTAR-HCL (Rev.) at 6-7).[6] Participants in the CPR program will continue to be charged the Company's basic service rates (id. at 6). During critical peak events, however, participants will receive a rebate of $5 per event,

[5] Source: Exh. NSTAR-HCL-3.

[6] The Company states that it will provide CPR program participants with either a smart thermostat or a load control switch that enables the Company to remotely increase temperature settings between one and six degrees (Exh. NSTAR-HCL (Rev.) at 6-7).

provided that they do not override the Company's adjustment to their thermostat settings (Exh. NSTAR-1, at 13). Customers who do override the adjusted settings during a critical peak event will not receive a rebate for that event but will be eligible for rebates during subsequent events (id.).

NSTAR Electric states that it determined its rebate amount of $5 per event based on: (1) the assumption that its adjusted thermostat settings will reduce the critical peak period demand of participants in the CPR program by an average of one kilowatt ("kW");[7] and (2) its calculation that the value of a one kW reduction for a period of five (critical peak) hours is approximately $5, using the differential between the peak and critical peak period prices established in the TOU-CPP program (Exhs. NSTAR-HCL-3; NSTAR-HCL (Rev.) at 7).

2. Positions of the Parties

a. NSTAR Electric

The Company recommends that the Department not adopt the Attorney General's recommendation to offer a single $60 rebate to CPR program customers who participate in all critical peak events (NSTAR Electric Reply Brief at 3). The Company explains that if a customer overrides the thermostat controls during any one critical peak event, that customer would receive no payment for any critical peak events that the customer had participated in, which would provide customers a disincentive to participate in the program pilot (id.). The

[7] The Company states that it based its assumed one kW reduction in consumption on the expectation that the average participant in the CPR program will reduce peak demand by approximately 25 percent during critical peak events (Exh. NSTAR-HCL (Rev.) at 7; Tr. 2, at 245-248).

Company contends that the Attorney General's proposed approach would make it less likely that the program would achieve load reduction, which would harm the Company's ability to collect valuable information (id.).

NSTAR Electric also opposes LEAN's recommendation that it expand the range of pricing points used in its TOU-CPP and CPR programs (NSTAR Electric Reply Brief at 17). NSTAR Electric notes that:(1) there are an infinite variety of pricing points that could be tested in its Dynamic Pricing program but that the Company attempted to establish rebate levels and price differentials that are cost-based; and (2) other utilities are using different price points in their pilots, so the Department will be able to draw on results from across the state (id. at 17, citing Tr. 1, at 153-156). Also, the Company argues that LEAN's proposal would materially alter both the scope and cost of the Pilot, potentially jeopardizing the funding it has secured from DOE (NSTAR Electric Reply Brief at 17).

Finally, the NSTAR Electric opposes LEAN's recommendation that the Company eliminate the air conditioning requirement from the CPR program, stating that (1) it developed the amount of the fixed rebate for this program based on usage characteristics of customers with central air conditioning, and (2) removal of this requirement would represent a significant shift in the design of the program and could thus jeopardize its DOE funding (NSTAR Electric Reply Brief at 15).

b. Attorney General

The Attorney General states that overall she supports NSTAR Electric's proposed dynamic pricing structures (Attorney General Brief at 12). However, the Attorney General

opposes the Company's proposed $5 per critical peak event payment in the CPR program, arguing that it: (1) will not be viewed by customers as valuable; and (2) will not adequately compensate customers for allowing NSTAR Electric to monitor and change the temperature settings on their thermostat, whether or not the Company actually calls twelve critical peak events (id.). The Attorney General recommends that the Company modify its proposal so that participants in the CPR program receive a $60 rebate or credit at the end of the summer (regardless of the number of critical peak events NSTAR Electric calls), provided that they do not override the Company's controls during any event (id. at 13).

c. LEAN

LEAN recommends two modifications to the Company's Dynamic Pricing program. First, LEAN recommends that the Company expand its CPP-TOU and CPR programs to include a greater number of pricing points (LEAN Brief at 4). LEAN argues that by establishing only a few pricing points for these programs, and by relying exclusively on a cost-based method to establish these pricing points, the Company is missing an opportunity to study how customers may respond to alternative (and perhaps more cost-effective) price signals (id.).[8] Second, LEAN recommends that the Company eliminate the requirement that participants in the CPR program have central air conditioning, stating that the removal of this requirement would permit more low-income persons to participate (id. at 4).

[8] LEAN contends that, for example, a CPR incentive of $4 per event might induce the same level of participation as a $5 incentive, but the program's limited scope of price points will not permit the Company to evaluate this scenario (LEAN Brief at 4).

3. Analysis and Findings

a. Compliance with the Green Communities Act

Section 85 of the Green Communities Act requires that each electric distribution company include in its smart grid pilot, among other things, "time of use or hourly pricing for commodity service. . . . A specific objective of the pilot shall be to reduce, for those customers who actively participate in the pilot, peak and average loads by a minimum of five percent."

NSTAR Electric's proposed Dynamic Pricing program includes two time-of-use basic service pricing structures, TOU-CPP and CPR. The proposed TOU-CPP program establishes significant price differentials, based on wholesale market prices, between its off-peak, on-peak, and critical peak periods. Under the Company's proposal, on-peak prices would be approximately 3.5 times greater than off-peak prices, while critical peak prices would be approximately 17 times greater than off-peak prices and five times greater than on-peak prices (see Table 2, above). These price differentials are intended to provide the incentive for participants to reduce consumption during both on-peak and critical peak hours, consistent with Section 85.

The CPR program is a "risk-free" approach for allowing customers to participate in a program aimed at reducing consumption during high-priced critical peak hours.[9] If participants do not reduce their consumption during a critical peak event (i.e., the participant overrides the

[9] Unlike the TOU-CPP program, the CPR program provides the incentive for participants to reduce consumption only during the subset of on-peak hours that are deemed by the Company to be critical peak hours (Exh. NSTAR-HCL (Rev.) at 6-7).

Company's adjusted load control settings), they would continue to pay the prevailing basic service rate for kWhs consumed during the critical peak hours; as such, the participant would not be exposed to the high prices in effect during critical peak hours.[10] However, if participants do reduce their consumption during a critical peak event (based on the Company's adjusted settings), they would receive similar benefits (through the $5 per event payment) to the benefits that would result from participation in the TOU-CPP program.[11] Based on the above, the Department finds that the Company's proposed dynamic pricing structures satisfy the Section 85 requirement that a pilot include time of use or hourly pricing for commodity service, a specific objective of which is to reduce participants' peak and average loads by a minimum of five percent.

b. Intervenors' Proposed Modifications

i. Attorney General

The Attorney General recommends that the Department direct NSTAR Electric to modify its proposed CPR pricing structure so that customers who participate in all critical peak events would receive a single payment of $60 because the Company's proposal to offer participants a payment of $5 per event is an insufficient incentive to change customer behavior (Attorney General Brief at 13). The Attorney General's proposed modifications would

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[10] In contrast, a participant in the TOU-CPP program would pay the critical peak rate for kWhs consumed during those hours (Exh. NSTAR-HCL-1, at 3; M.D.P.U. No. 124). As illustrated in Table 2, above, this rate will be approximately eleven times greater than the prevailing basic service rate.

[11] The actual benefits that a TOU-CPP participant would realize from reduced consumption during critical peak hours depends on the extent to which the participant either reduces overall consumption or shifts consumption to on-peak or off-peak hours.

introduce a significant difference between the CPR and TOU-CPP, which would be counterproductive to the objective of evaluating the effectiveness of each program in achieving peak period reductions. Under the Company's proposal, both CPR and TOU-CPP participants have the incentive to reduce consumption during all critical peak events regardless of their behavior during previous events. By contrast, under the Attorney General's proposed modification, CPR participants who override the setback during an event would no longer have the incentive to reduce consumption in subsequent events. Introducing this significant difference in incentives would make side-by-side comparisons of the two pricing structures difficult. Further, unlike the Company's proposal, the Attorney General's proposed modification is not cost-based in that it would not compensate a participant for the value of his or her reductions during any critical peak events unless the participant reduced consumption in all such events. Based on the above, the Department will not adopt the Attorney General's proposed modification to the CPR pricing structure.

ii. LEAN

LEAN recommends that the Department require the Company to include a greater number of pricing points in the TOU-CPP and CPR programs to provide additional information regarding the willingness of customers to reduce consumption of load in response to different price signals (LEAN Brief at 4). While LEAN's proposed modification may provide useful information, it is but one of many ways in which the Company's proposed Dynamic Pricing program could be expanded to provide additional information on customers' electricity consumption behavior. Because the proposed modification would require the

Company to materially alter the scope (and likely the cost) of the program, adoption of the modification could potentially jeopardize the federal stimulus funding the Company has secured from DOE. LEAN also recommends that the Department direct the Company to eliminate the requirement that CPR participants have central air conditioning, stating that such modification would permit more low- income persons to participate in the program. The primary objective of the CPR program is to test the extent to which this type of pricing structure, in combination with the installation of automated load management technology, can produce reductions in peak consumption in relation to a TOU-CPP approach.[12] Removing the central air conditioning requirement (on which the automated load management technology acts) from the CPR program would run counter to this objective. In addition, as discussed above, requiring the Company to materially alter the scope of the Pilot could potentially jeopardize its federal stimulus funding grant.

Based on the above, the Department will not adopt LEAN's proposed modifications to the Company's proposed Dynamic Pricing program. However, when analyzing future smart grid opportunities the Company should investigate options to apply automated load management technologies to additional electric end-uses (beyond central air conditioning), in order to be able to offer such technologies to a broader range of customers, including a broader range of low-income customers.

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[12] As discussed in Section IV.D, below, a subset of TOU-CPP program participants will receive the same automated load management technologies that CPR participants receive.

C. Smart Grid Technology Platform

1. NSTAR Electric Proposal

a. Introduction

NSTAR Electric proposes to use a variety of smart grid technologies in its Dynamic Pricing program that, in conjunction with the dynamic pricing structures discussed above, will allow it to evaluate the effectiveness of different approaches in producing the reductions in customers' peak and average consumption called for in Section 85 of the Green Communities Act. These technologies include (1) metering and communications technologies, (2) customer information portals, (3) automated load management technologies, and (4) information and billing system technologies (Exh. NSTAR-LJG (Rev.) at 6, 13). NSTAR Electric has identified Tendril Networks, Inc. ("Tendril") as the vendor to provide the smart grid technologies (Exhs. NSTAR-LJG at 13; NSTAR-1, at 8).[13]

b. Metering and Communications Technologies

NSTAR Electric proposes to use customers' existing automated meter reading ("AMR") meters and broadband Internet connections,[14] in combination with electronic receiver transmitter ("ERT") bridges and home area networks ("HAN") installed in the homes of all Pilot participants, to enable two-way communication between participants and the Company

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[13] As discussed below, Tendril will provide the following equipment for the Pilot: (1) an internet gateway; (2) electronic receiver transmitter bridges; (3) an in-home display; (4) a smart thermostat or load control switch; and (5) web portal (Exh. NSTAR-LJG (Rev.) at 13).

[14] Customers must have a functioning, full-time broadband Internet connection that they commit to maintain in order to participate in the pilot (Exh. NSTAR-PAB at 3).

(Exh. NSTAR-1, at 5). The meter will transmit a customer's consumption wirelessly to the ERT Bridge every 15 seconds. The ERT bridge then transmits the data to the HAN, and the HAN then transmits the consumption data to: (1) NSTAR Electric offices, via the customer's broadband Internet connection; and (2) in-home information displays and automated load management technologies installed in participants' homes (id. at 7-8, 13; Exh. NSTAR-LJG (Rev.) at 10, 14).

a. Customer Information Portals

All program participants will have the ability to monitor their energy usage and other relevant information via two information portals: (1) an in-home energy display, a digital wireless (ZigBee protocol)[15] device that shows near real-time consumption and cost data; and (2) the Tendril Vantage web portal, a browser-based Internet portal that enables monitoring, management, and control of energy consumption on ZigBee enabled devices in the home (Exhs. NSTAR-1, at 14; NSTAR-LJG (Rev.) at 14-15). These information portals will allow customers to: (1) view, in near real-time, their electricity consumption as well as time-of-use electricity price information; (2) compare their energy consumption to other households with similar demographics; (3) program automated load management technologies installed as part of the Pilot (see discussion below); and (4) receive messages from NSTAR Electric regarding critical peak events (Exh. NSTAR-LJG (Rev.) at 14-15). The in-home energy display will provide updated information every 20 seconds, while the web portal will provide updated information every 15 minutes (id. at 10).

[15] The Zigbee protocol is a proprietary standard for wireless networking.

b. Automated Load Management Technologies

The Company proposes to install, for a subset of program participants, smart thermostats that will allow the Company to send an automated load-control signal during a critical peak event that will change the participants' thermostat settings to a new set point that the customer will have selected either manually or via the web portal (Exh. NSTAR-LJG (Rev.) at 14).[16] NSTAR Electric explains that the smart thermostats will display current TOU-CPP prices, as well as indicate when a critical peak event will occur (Exh. NSTAR-LJG (Rev.) at 14).

c. Information and Billing System Technology

NSTAR Electric proposes to make some modifications to its information technology and billing systems in order to accommodate its Dynamic Pricing program (Exhs. NSTAR-CLV-1 (Rev.) (Supp. 2); DPU-1-5; DPU-1-8; DPU-1-9 (Supp.)). The Company, however, does not propose to modify its billing system in a manner that would allow it to present the TOU-CPP rates in the supply portion of participants' bills (RR-DPU-1; Tr. 1, at 186-187). Instead, the Company states that it has developed a system that allows it to show the TOU-CPP rates in the delivery portion of the bill, using the same format in place for those customers who take distribution service under time-of-use ("TOU") rates (RR-DPU-1; Tr. 1, at 186-187).

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[16] NSTAR Electric states that, for customers who want to participate in the program but do not want the Company to replace their existing thermostats, it will install load control switches that will directly cycle loads such as air conditioner compressors (Exh. NSTAR-LJG (Rev.) at 14; Tr. 1, at 137-138).

The Company states that it has previously considered implementing changes to its billing system to enable it to present TOU rates in the supply portion of the bill (RR-DPU-1). The Company states that such changes would require significant modifications to its customer information system ("CIS")/billing system and would not be cost-effective given the program's small size and the Company's objective of testing a low-cost smart grid solution that employs existing infrastructure (id.).

At the Department's request, the Company identified four ways it could show the TOU-CPP rates in the supply rather than the delivery portion of Pilot participants' bills: (1) a modification to its CIS/billing system at an estimated cost of $12 million; (2) use of the Oracle 3-Business Suite (Oracle financials Accounts Receivables Module), in conjunction with its CIS, at an estimated cost of $1.6 million; (3) an automated approach to using the voucher capabilities in its CIS to provide the "appearance" of the TOU-CPP rates in the supply portion of the bill at an estimated cost of $300,000; and (4) a manual approach to using the voucher capabilities in its CIS, again to provide the appearance of the TOU-CPP rates in the supply portion of the bill at an estimated cost of $1.7 million per year (id.). The Company states however, that, because these options were developed quickly, it would need to further analyze them to ensure that the solutions will work and that the cost estimates are accurate reflections of what actual costs might be (id.).

2. Positions of the Parties

a. NSTAR Electric

NSTAR Electric argues that it should not be required as LEAN recommends to provide broadband to low-income customers who lack such access but wish to participate in the Pilot, because this will add significant costs and detract from the purpose of the Pilot (NSTAR Electric Reply Brief at 13-14). NSTAR Electric argues that LEAN's proposed modification would undermine the Company's ability to determine whether its method is an effective way to give customers access to smart grid technology and reduce load at a cost less than other smart grid solutions (id. at 13). In addition, NSTAR Electric contends that because its Pilot proposal was selected for a DOE grant that does not include costs for providing broadband access to Pilot participants, changing the Pilot to include broadband could jeopardize the federal stimulus funding (id. at 13-14). The Company notes that the broadband component of its Pilot should not exclude many customers as 90 percent of Massachusetts households have access to broadband service (id. at 14). The Company acknowledges, however, that it does not have specific data regarding how many low-income households in Massachusetts have access to or have subscribed to broadband service (id. at 13-14).

b. Attorney General

The Attorney General contends that the sample bill provided by the Company is confusing and could influence customers' understanding of and satisfaction with the program (Attorney General Brief at 22). The Attorney General recommends that NSTAR Electric's

Pilot evaluation should include an analysis of the limitations of the proposed bill format, which the Company should pay for without adding to the costs of the Pilot (id. at 22-23).

c. LEAN

LEAN recommends that the Department direct NSTAR Electric to modify its Dynamic Pricing program to provide broadband access to low-income customers who wish to participate in the program, but have no such access (LEAN Brief at 3-4). LEAN contends that, absent such access, the program will be severely hampered by its reliance on customers' existing broadband subscriptions (id.). LEAN contends that providing the hardware for the broadband connection to low-income customers is no different from providing other pieces of in-home equipment necessary for participation in the Pilot (id.).

3. Analysis and Findings

a. Compliance with the Green Communities Act

Section 85 of the Green Communities Act requires that each electric distribution company include in its smart grid pilot advanced meters that provide real- time measurement and communication of energy consumption, and automated load management systems. As discussed above, NSTAR Electric proposes to use customers' existing meters and broadband Internet connections, in conjunction with the Tendril smart grid technologies, to provide participants with near real-time information regarding their electricity consumption, TOU prices, critical peak events, and other relevant information. Energy consumption information will be updated every 20 seconds on the in-home energy display and every 15 minutes on the web portal. In addition, the Company proposes to provide a subset of Pilot participants with

automated load management technologies that allow the Company and participants to establish pre-specified temperature settings during critical peak events. With the implementation of such program elements, the Department finds that the Company has complied with Section 85 with regard to these matters.[17]

b. Communications Technology

NSTAR Electric proposes to limit participation in the Dynamic Pricing program to customers who have existing broadband Internet service. LEAN recommends that the Department require NSTAR Electric to provide broadband service to low-income customers who wish to participate in the pilot, but have no such service (LEAN Brief at 3-4).

While it is important to have low-income customers participate in the Pilot, we do not accept LEAN's recommendation on broadband for two reasons. First, requiring the Company to provide broadband service to customers (whether low-income or not) in order to allow them to participate in the Pilot would increase the costs of the Pilot. While we do not have data on the broadband usage for low-income customers in Massachusetts (or specifically in NSTAR Electric's service territory), we do know that broadband access is widely available to households in Massachusetts.[18] It is preferable to leverage the broadband connections from

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[17] The Department notes that, while the Company did not engage in a competitive bidding or solicitation process for its technology vendor, the Company will be required to engage in such a process for any future roll out of smart grid programs.

[18] The Company references a report by the Massachusetts Institute of Technology, "Measurement and Assessment of Broadband Availability," January 2009, which indicates that more than 90 percent of Massachusetts households in the state have access to broadband and nearly two-thirds of all households in the state have high-speed broadband lines (Exh. NSTAR-1, at 23, n. 3).

those low-income households having access in NSTAR Electric's designated pilot territory rather than have the Company provide broadband service for any customer(low-income or not)who would like to participate in the pilot. Second, as noted by the Company, such a significant modification and cost could possibly complicate or jeopardize the Company's DOE grant. However, we direct the Company to take reasonable steps to enroll a significant portion of low-income customers with broadband service for this component of the program- ideally including a representative sample that corresponds to the percentage of low-income customers in each of the communities included in the Dynamic Pricing program.

c. Bill Presentation

Because of limitations in its billing system, NSTAR Electric proposes to show the TOU-CPP rates in the delivery portion of participants' bills.[19] The Company asserts that the billing system modifications necessary to show the TOU-CPP rates in the supply portion would not be cost-effective given the small size of the Pilot and its objective of testing a low-cost smart grid solution.

Providing customers with relevant information regarding consumption and prices is a cornerstone of the Company's proposal, as evidenced by the fact that all participants in the Dynamic Pricing program will receive near real-time information on their energy consumption and TOU prices via their in-home energy display and web portal. For the TOU-CPP program, however, the Company's proposed bill presentation will not provide information for either the

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[19] The Company states that it would use the same bill format that it currently uses for customers taking distribution service under its three-period TOU distribution tariff (RR-DPU-1).

supply or delivery portions of the bill that is transparent or useful to participants. Under the Company's proposal, the participant's bill would display (1) the current single-tiered basic service rate in the supply portion of the bill, rather than the three-tiered TOU-CPP structure on which the bill is actually calculated, (2) a three-tiered rate in the delivery portion of the bill, rather than the single distribution rate on which the bill is actually calculated. This type of bill presentation would make it extremely difficult for a participant to understand the impact of the TOU-CPP structure on the bill total and, indeed, to verify the accuracy of the bill. This would lead to confusion among participants and would likely have a negative impact on the Pilot results. If NSTAR Electric were to embark on a wider-scale deployment of smart grid technology that includes a TOU-CPP pricing structure, it would need to provide customers a bill that shows their energy supply charges in a transparent and accurate format. Thus, as proposed, there would be little useful information to be gained from the Company's proposed billing approach.

The Department must take into consideration the Company's costs of amending its CIS/billing system for a Pilot of the scale proposed by the Company. The Company estimates that, at a cost of $300,000, it could devise an "automated" approach to using the voucher capabilities in its CIS/billing system so that the TOU-CPP rates could appear in the supply section of participants' bills. The Department concludes that the benefits of providing participants with useful and accurate supply information on which participants can assess their energy usage and costs outweighs the estimated costs of this approach. Therefore, the Department directs NSTAR Electric to implement an automated approach to using the voucher

capabilities in its CIS/billing system as set forth above. The Department directs the Company to submit a report, within 30 days of this Order, that includes a full description, cost estimate, and timeline of the work required to enable the TOU-CPP rates and customers' energy usage to be displayed appropriately and accurately on the participants' bills.

D. Customer Marketing and Education

1. NSTAR Electric Proposal

NSTAR Electric states that it intends to market its Dynamic Pricing program to approximately 60,000 customers (Exh. NSTAR-PAB at 2). The Company states that, in order to be eligible to participate in the Pilot, a customer must (1) reside in the communities of Newton or Hopkinton,[20] (2) take service under the R-1, R-2, or R-3 delivery service rates, and (3) have a functioning broadband Internet connection that they commit to maintaining for the duration of the Pilot (id. at 3). The Company states that it intends to: (1) enroll approximately 3,000 customers in the program's four participant groups; and (2) establish additional recruitment criteria based on multiple profiles that are likely to include specific demographic, geographic, and usage (e.g., use of central air conditioning),[21] identity information (id.; Exh.

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[20] Subsequent to its initial filing, the Company indicated that it may expand its Dynamic Pricing program to include customers in the Jamaica Plain section of Boston (see Section IV.D) (Exh. NSTAR-LAG (Rebuttal) at 4).

[21] The Company states that it may establish a quota for customers with central air conditioning in order to ensure that the Pilot includes a sufficient number of such customers to assess load impacts that can be extrapolated to the population of the service territory (Exh. NSTAR-PAB at 3-4).

NSTAR-LAG (Rebuttal) at 2-3). [22] The Company states that, because of these specific eligibility criteria, its marketing campaign will likely consist of direct mail, local marketing, electronic mail and/or bill messages, sent only to those customers meeting the initial eligibility criteria (Exh. NSTAR-PAB at 3). The Company has allocated $300,000 for marketing expenses (Exh. NSTAR-CLV-1, at 1).

The Company indicates that, in marketing to customers, it will emphasize the benefits of program participation, including:

- reducing energy consumption and lowering electric bills through installation of customer information technology that provides real time information on energy usage and costs;
- installing, for some customers, smart thermostats that allow consumers to pre-set and remotely program temperature settings to meet household needs and to conserve energy when the home is not occupied;
- reducing rates for 85 percent of all hours, when on time-of-use rates;
- providing automated load control for some customers to reduce usage during critical peak times; and
- helping to improve reliability of the electric grid and avoid the need to build new power plants by reducing energy usage during times of the highest system energy demand.

(Exh. NSTAR-PAB at 4). The Company will select a vendor to perform customer recruitment following Departmental approval of the Pilot (Exh. NSTAR-1, at 26).

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[22] For example, the Company states that, for programs in which it installs automated load management technologies, it may require that participants meet minimum summer electricity usage requirements to ensure that they represent customers capable of contributing significant load reductions to the system (Exh. NSTAR-PAB at 3).

The Company states that it will educate its staff at its call center about the Dynamic Pricing program and will provide them with protocols for responding to customer calls about the program (Exh. NSTAR-PAB at 7). Calls that cannot be immediately addressed by call center personnel will be re-directed to a toll free number dedicated solely to smart grid inquiries. Personnel answering this smart grid number will be trained in program details and how to respond to common questions (Exh. NSTAR-1, at 26).

2. Positions of the Parties

a. NSTAR Electric

The Company contends that its marketing effort is consistent with the requirements of Section 85 with respect to size, design, and pricing options (NSTAR Electric Brief at 5). The Company indicates that it has no objection to filing with the Department a complete marketing plan prior to its implementation, provided that this would not delay approval of the Pilot and thus deleteriously affect DOE funding (NSTAR Electric Reply Brief at 6). The Company states that parties having questions about the marketing plan could address them at that time (id.).

b. Attorney General

The Attorney General states that the Department should require NSTAR Electric to demonstrate that its proposed $300,000 marketing budget is necessary for the proper implementation of the Dynamic Pricing program, noting that the Company acknowledged that its marketing plan is still being developed (Attorney General Brief at 14-15, 47, citing Tr. 2, at 295). The Attorney General states that the Department should require NSTAR Electric to

submit its proposed marketing plan to the Department and other parties for review and comment prior to its implementation (Attorney General Brief at 47).

3. Analysis and Findings

The Company acknowledges that it will not finalize its marketing plan until it receives Department approval of its Pilot. Lack of a final marketing plan does not affect our assessment of the Pilot. Indeed, as discussed in Section IV.E, below, the Department intends to convene a statewide smart grid evaluation process for the purpose of attaining uniformity, to the extent reasonable, in the pilot evaluation efforts undertaken by each company. Because a company's marketing strategy for enrolling potential pilot participants plays a key role in the determination of the participant groups upon which pilot evaluation will be based, it is appropriate to address the Company's marketing plan, as well as the marketing plan that may be implemented by the other distribution companies in their smart grid pilots, in the context of the statewide collaborative.

E. Pilot Evaluation

1. NSTAR Electric Proposal

a. Treatment Groups

NSTAR Electric states that it plans to recruit approximately 2,870 residential basic service customers residing in the communities of Hopkinton, Newton, and potentially Boston to participate in its Dynamic Pricing program (Exh. NSTAR-PAB at 2; NSTAR Electric Brief at 6). Pilot participants will be placed in one of the following four treatment groups, as summarized in Table 3, below.

TABLE 3: DYNAMIC PRICING TREATMENT GROUPS [23]

Treatment Group	# of Participants
TOU-CPP with Automated Load Management Technologies	700
TOU-CPP without Automated Load Management Technologies	700
Critical Peak Rebate	700
Customer Information Technology Only	770
Total	2,870

The Company explains that it will establish recruiting quotas for each of these Pilot customer test segments that may be based on demographic, geographic, and usage identify information (Exh. NSTAR-PAB at 3).

The Company states that it will compare participants in the different treatment groups to a control group to evaluate average and peak period reductions in consumption (Exh. NSTAR-1, 27). Data for the 320 customers who comprise the control group will be obtained from the Company's existing load research data; such customers will not be recruited to join the program (Exhs. NSTAR-PAB at 5; NSTAR-LJG (Rebuttal) at 5). To expand the research data it gathers on low-income customers, the Company states that it will: (1) make every effort to ensure no fewer than 100 low-income customers participate in the customer information technology only treatment group; (2) attempt to increase the number of low-income participants in the CPR treatment group; (3) report separately on the load

[23] Source: Exh. NSTAR-LJG (Rebuttal) at 5.

characteristics of its low-income customers in the control group to provide more information on low-income usage characteristics; (4) consider expanding the program to include Jamaica Plain section of its service territory; (5) conduct a survey of at least 300 low-income customers (including both program and non-program participants) to understand the usefulness and interest in smart grid technologies and dynamic pricing options for low-income customers; and (6) develop and administer pre and post-pilot surveys to low-income participants (Exh. NSTAR-LJG (Rebuttal) at 3-5, NSTAR Electric Brief at 9).

b. Evaluation Plan

The Company indicates that in the early stages of program implementation, it will develop a detailed evaluation plan that will guide its ongoing evaluation of the Dynamic Pricing program (Exh. NSTAR-1, at 27). The Company explains that the three core elements of its evaluation plan will include impact evaluation, technology assessment, and process evaluation (id.). The Company states that the impact evaluation will analyze changes in total energy consumption, peak demand, and customer bills for customers participating in the program (id.). The Company states that it will calculate changes in these variables by comparing meter data from the four participant groups to the control group, performing statistical regression modeling, and analyzing usage patterns to estimate the impact of individual program elements (id.).

The Company explains that its technology assessment will analyze the reliability and customer acceptance of the various customer-facing equipment as well as back-end systems that form its smart grid architecture (Exh. NSTAR-1, at 27). Finally, as part of its process

evaluation, the Company will evaluate how well the Company is administering the Dynamic Pricing program and how customers perceive the program (id.). The Company states that it will: (1) assess program delivery by interviewing Company staff, vendors and participating customers on the program's strengths and weaknesses; and (2) seek customer feedback on the Dynamic Pricing program by developing and conducting a variety of surveys including recruitment surveys, non-participant surveys, post-installation surveys, participant drop-out surveys, ongoing program participant and end-of-program participant satisfaction and feedback surveys (id.).

The Company states that the evaluation plan will enable it to determine if it meets the following key research objectives: (1) achieves load reduction goals; (2) confirms functionality of smart grid technologies for two-way communications and distribution automation; and (3) provides technical, economic and marketing information to inform the Company's future smart grid investment decisions (Exh. NSTAR-1, at 27). The Company proposes a budget of $360,000 for activities related to its evaluation plan (Exh. NSTAR-CLV-1 (Rev.) (Supp.2) at 1; Tr. 1, at 40).

2. Positions of the Parties

a. NSTAR Electric

i. Introduction

The Company contends that the Pilot's set of offerings will test rate and technology combinations that (1) might provide benefits to customers, (2) produce the energy savings targets for peak and average peak load identified in Section 85, and (3) assess potential future

program elements in terms of customer acceptance, load impact and cost effectiveness (NSTAR Electric Brief at 8). The Company asserts that the Department need not require anything further with respect to the Pilot evaluation plan as the Company has provided the Department an adequate outline of its evaluation process (NSTAR Electric Reply Brief at 11). The Company states that it will file a formal detailed evaluation work plan with the Department for informational purposes once it is developed (id.).

ii. Treatment Groups

The Company argues that the Attorney General's recommendation that NSTAR Electric create a "smart thermostat only" treatment group should be rejected because: (1) any alteration of the proposed Pilot and budget could jeopardize DOE funding; and (2) the Green Communities Act requires real-time measurement and communication of energy consumption, which would not occur under a smart thermostat only approach (NSTAR Electric Reply Brief at 4-5).

The Company argues that the Pilot will include sufficient numbers of customers from all groups to ensure statistically valid data and, therefore, the Company does not support LEAN's request to increase the sample size of the low-income control group customers (NSTAR Electric Reply Brief at 16).[24] NSTAR Electric contends that to increase the number

[24] NSTAR Electric claims that the sample size for the customer information technology-only treatment group and the control group is large enough to accommodate up to 100 low-income customers for each segment while maintaining statistical validity of the balance of customer data (Exh. NSTAR-LJG (Rebuttal) at 5).

of low-income customers in the control group,[25] it would need to recruit additional customers outside of its existing load research sample, install additional interval meters at the customer locations and remove these meters at the end of the Pilot, which would increase its Pilot costs (id.).

In addition, the Company argues that the Department need not address the issue of persistence before the Pilot begins, stating that this issue would be more appropriately addressed if the Company files a plan for a wider-scale deployment of a dynamic pricing approach (NSTAR Electric Reply Brief at 18). [26]

iii. Statewide Evaluation Process

With regard to a statewide evaluation collaborative, the Company asserts that it is willing to participate in such a collaborative if one is ultimately formed (NSTAR Electric Reply Brief at 11). The Company states that such a collaborative could provide a means or forum for all interested entities to discuss the implementation of the pilots as they begin (id. at 11, citing Exh. NSTAR-LJG (Rebuttal) at 10).

b. Attorney General

i. Introduction

The Attorney General contends that the Company presents conflicting information on the status of its evaluation plan. The Attorney General argues that the Company states that it

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[25] NSTAR Electric notes that all control group customers, including the low income customers, participating in the Pilot will be taken from the Company's existing load research sample (Exh. DPU 2-18; NSTAR Electric Reply Brief at 16).

[26] Persistence measures how long energy savings are expected to last (or persist) once an energy efficiency or smart grid technology has been implemented.

intends to develop a formal evaluation plan while, during evidentiary hearings, the Company stated that the Summit Blue report included in its filing represents its evaluation plan (Attorney General Brief at 19-20, citing Tr.1, at 41; Tr. 2, at 295, 347).[27] The Attorney General argues, however, that the Summit Blue report does not contain an evaluation plan but rather a list of issues that the evaluation consultant will attempt to explore (Attorney General Brief at 20). Accordingly, the Attorney General recommends that the Department require the Company to develop and submit a detailed evaluation plan for public review and comment prior to the commencement of the Pilot (id. at 24).

ii. Treatment Groups

The Attorney General recommends that the Department require the Company to include a "smart thermostat only" group in addition to the four treatment groups it has proposed, in order to test a low-cost option that does not rely on expensive in-home equipment (Attorney General Brief at 14). The Attorney General contends that Baltimore Gas and Electric's Peak Rewards program has demonstrated that relying on smart thermostats without new metering infrastructure or time-of-use pricing models can be a cost-effective approach that creates significant capacity load reductions that could lead to lower customer bills (id.).

iii. Statewide Evaluation Process

The Attorney General argues that the purpose of the Section 85 pilot programs is to evaluate whether dynamic pricing programs will achieve peak load and average usage

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[27] The Summit Blue Report, prepared by Summit Blue Consulting, LLC with Utility Integration Solutions, Inc. summarizes NSTAR Electric's evaluation plan for the proposed Pilot (see Exh. NSTAR-1, at 27).

reductions of a minimum of five percent and, more generally, how customers change usage patterns based on pricing alternatives (Attorney General Brief at 20). In order to evaluate the results of a pilot program and ultimately estimate full-scale implementation costs, the Attorney General contends that a pilot program must include: (1) a statistically valid sample of customers in the treatment groups; (2) a valid sample of a control group; and (3) a random assignment of customers to the treatment and control groups (id. at 20-22). In addition, the Attorney General contends that a pilot must track the following data: (1) pre-treatment data on customers in the treatment groups and the control group; (2) individual customer hourly usage data for all pilot participants; (3) customer socio-economic characteristics and attitudes about the pilot; and (4) calculation of impacts of future commodity prices due to load reduction or peak load shaving that results from the pilot (id. at 21).

The Attorney General recommends that the Department require that all of the smart grid pilot programs implemented pursuant to Section 85 employ uniform evaluation criteria to ensure that each pilot obtains statistically valid results (Attorney General Brief at 23). As such, the Attorney General recommends that the Department consider the creation of a statewide collaborative to develop, review and monitor the evaluation of the approved Section 85 pilot programs, possibly under the leadership of the Department of Energy Resources (id.). The Attorney General argues further that the Department should condition approval of any Section 85 pilot program on the requirement that distribution companies collaborate in the development of evaluation plans and evaluation methods to ensure that comparable information is obtained (id.).

c. LEAN

i. Treatment Groups

LEAN asserts that the Company's proposal does not ensure that the number of low-income customers participating in the Pilot will be sufficient to produce statistically significant and robust results (LEAN Reply Brief at 3). LEAN suggests that there is a risk that the Pilot will not develop sufficient information to understand the likely impacts of the various dynamic pricing options on low-income customers (id. at 2-4). To remedy this deficiency, LEAN recommends that the Department require the Company to: (1) ensure that no fewer than 100 low-income customers participate in the customer information technology only treatment group; (2) increase the number of low-income customers enrolled in the "critical peak rebate" segment of the program, committing to a minimum number of low-income participants; (3) ensure that no fewer than 100 low-income customers are included in the control group; and (4) expand the geographic area to include Jamaica Plain or an equivalent urban community (id. at 2). Finally, with respect to the issue of persistence, LEAN argues that no rollout of technology that depends on the value of persistent response should be permitted without further knowledge about persistence (LEAN Brief at 5).

ii. Statewide Evaluation Process

LEAN states that it supports the Attorney General's recommendation to condition Department approval of the Company's and other smart grid pilot programs on participation in a statewide evaluation collaborative (LEAN Brief at 3). LEAN asserts that a statewide evaluation collaborative will ensure uniform inputs and comparable results, create the

advantage of economies in the development effort across the four distribution companies, and ensure that all important research topics are covered without requiring each distribution company to cover every topic (id.).

3. Analysis and Findings

a. Treatment Groups

The Company proposes to establish four treatment groups and a control group, as summarized in Table 3, above. The Attorney General recommends that the Department require the Company to include an additional "smart thermostat only" group in order to test a low-cost option that does not rely on expensive in-home equipment (Attorney General Brief at 14). Under such an approach, participants would not receive any of the in-home technologies (in-home display or HAN) that enables two-way communication and information required for the Tendril smart thermostat to operate and provide notice of critical peak events.

The Department will not require the Company to implement the Attorney General's proposed modification, for two reasons. First, under the Company's approach (using the Tendril smart thermostat) it is not technically feasible without installing the in-home technologies. Second, a smart thermostat only group would not sufficiently comply with the objective of Section 85, which is to examine the effectiveness of dynamic pricing structures, in conjunction with providing customers with real-time electricity consumption and cost data, in producing reductions in customers' consumption.

LEAN recommends that the Department require the Company to: (1) ensure that the control group and the customer information technology only treatment group each include no

fewer than 100 low-income customers; (2) commit to include a minimum number of low-income customers in the CPR program; and (3) expand the geographic area of the Dynamic Pricing program to include Jamaica Plain or an equivalent urban community. In response, the Company states that it will: (1) report separately on the load characteristics of low-income customers in the control group, though it will not agree to increase the number of low-income customers in the control group; (2) ensure that no fewer than 100 low-income customers participate in the "customer information technology" treatment group; (3) attempt to increase the number of low-income customers in the CPR treatment group though it cannot commit to a minimum number of low-income participants in this group because of the air-conditioning requirement; and (4) consider expanding the Pilot to include Jamaica Plain.

The Department fully supports LEAN's objective of ensuring that the Company's Dynamic Pricing program provide useful information regarding how low-income customers may respond to the price signals, customer information, and automated load management technologies included in the Pilot. The Department concludes that the Company can better achieve this objective by: (1) reporting separately on the load characteristics of low-income customers in the control group; (2) expanding the pilot to include the Jamaica Plain section of Boston; (3) including no fewer than 100 low-income customers in the customer information technology only treatment group; and (4) conducting a survey of 300 low-income customers. Therefore, the Department directs NSTAR Electric to implement all of the above actions as part of its Dynamic Pricing program. The Department also directs the Company to take all reasonable steps to increase the participation of low-income customers in the CPR treatment

group. The Department intends to further address the issues of how smart grid technologies and dynamic pricing rate structures may impact low-income customers in the context of the statewide smart grid pilot evaluation process, as discussed below.

b. Statewide Evaluation Process

Section 85 requires each electric distribution company to implement a smart grid pilot program to better understand how providing customers with dynamic pricing structures, customer information, and automated load management technologies may result in customers changing their energy consumption behavior. Implementation of the pilot programs will provide the most value if it is possible to examine the effectiveness of different approaches across all companies in eliciting the types of overall and peak reductions specified in Section 85.

Pursuant to the requirements of Section 85, each distribution company has filed with the Department a proposed smart grid pilot.[28] While the proposals differ in terms of their specific designs, each proposal includes the following elements: (1) dynamic pricing structures; (2) metering and communications technology; (3) customer information technology; (4) automated load management technologies; (5) information and billing system technologies; and (6) customer marketing and education. Allowing the companies to implement pilot programs that differ in terms of the specific application of these elements should provide a wealth of information regarding the effectiveness of different approaches in eliciting reductions

[28] See Fitchburg Gas and Electric Light Company, d/b/a Unitil, D.P.U. 09-31; Massachusetts Electric Company and Nantucket Electric Company, d/b/a National Grid, D.P.U. 09-32; Western Massachusetts Electric Company, D.P.U. 09-34.

in consumption. In addition, having each company conduct a separate smart grid pilot presents a unique opportunity to compound the learning potential and increase the depth of the research questions that the pilots will investigate. To fully leverage the valuable information that will come from each individual pilot, it is important that the pilots be conducted and evaluated in a coordinated manner.

Consequently, in order to maximize the value of the smart grid pilots as a whole, the Department concludes that it is necessary to establish a framework that provides for the ability to compare results across all pilot programs proposed in the state. With this goal in mind, the Department will convene a smart grid pilot evaluation working group in which the Department, the Attorney General, the electric distribution companies and other interested persons can work together to develop, to the extent reasonable, uniform statewide evaluation approaches and standards. The Department expects that this group will address each of the Company's three evaluation plan components: impact evaluation; process evaluation; and technology assessment. For example, in terms of impact evaluation, information gathered from the different pilots can be more readily compared if there is a degree of consistency across the representative customer groups included in the pilot, in addition to the manner in which these customers are selected. Similarly, in terms of process evaluation, inter-utility coordination will ensure a level of consistency across customer surveys. With input from the working group, the Department will determine whether it is appropriate to engage an independent consultant to make recommendations on coordinating the evaluation of the four smart grid pilots.

F. Conclusion

Based on the above, the Department finds that the Company's proposed dynamic pricing structures, smart grid technology platform (with the exception of its billing system technology), and treatment groups are reasonable and consistent with the requirements of Section 85 of the Green Communities Act. With regard to its billing system, the Company shall, within 30 days of the Order, submit a report that includes a full description and cost estimate of the work that will be required to show the TOU-CPP rates in the supply portion of the bill, as discussed in Section IV.C, above. Finally, the Department will further address the Company's proposed marketing and evaluation plan in the context of the statewide smart grid pilot evaluation process. With the modifications identified herein, the Department approves the Company's proposed Dynamic Pricing program.

V. DISTRIBUTION INFRASTRUCTURE PROGRAMS

A. NSTAR Electric Proposal

1. Introduction

NSTAR Electric's proposed Pilot includes two distribution infrastructure components: (1) the Urban Grid program, which is intended to enhance the Company's capability to monitor its secondary area network grids in the Boston metropolitan area, to assist in the integration of distributed resources such as solar generation and electric vehicles; and (2) a Distribution Automation program, which is intended to allow the Company to implement and test a technique to improve the efficiency of a series of distribution circuits (Exh. NSTAR-LJG (Rev.) at 5). Table 4, below, summarizes the costs of these two programs.

TABLE 4: DISTRIBUTION INFRASTRUCTURE PROGRAM COSTS [29]

Distribution Infrastructure Programs	Cost
Urban Grid Monitoring and Renewables Integration	$10,535,000
Distribution Automation	$350,000
TOTAL	$10,885,000

2. Urban Grid Monitoring and Renewables Integration Pilot

a. Introduction

NSTAR Electric proposes to implement the Urban Grid program in the Back Bay neighborhood of Boston, where one of its twelve underground secondary area networks in Boston is located (Exh. NSTAR-LJG (Rev.) at 20-21; Tr. 1, at 65-68). The Company explains that secondary area network grids, which provide high reliability in urban areas such as Boston, are designed for one-way power flow from utility substations to customers' premises, which is problematic in terms of the interconnection of distributed resources (Exh. NSTAR-LJG (Rev.) at 18-19). The Company states that the Urban Grid program will provide it with vital, near real-time information on the conditions of the grid to assess the impact that inverter-based distributed resources, such as solar generation and electric vehicles, would have on its secondary area networks (id. at 5). [30]

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[29] Source: Exh. NSTAR-CLV-1 (Rev.) (Supp. 2).

[30] The Company explains that the program is limited to assessing the impact of inverter-based, as compared to "rotating" generation machines. Rotating machines differ from inverter-based machines in that: (1) they can send out far more power than their

Under its proposal, the Company will: (1) install sensors and monitoring instrumentation on underground cables; (2) deploy advanced meters at customer-owned solar photovoltaic ("solar-PV") locations; and (3) enhance its substation supervisory and data acquisition control ("SCADA") capabilities (Exh. NSTAR-LJG (Rev.) at 22-26). The Company states that it will analyze the information provided by the sensors, advanced meters, and SCADA data in order to (1) take appropriate actions to improve the safe operation of the grid, and (2) improve its understanding of the system dynamics and planning of the electricity network (id. at 24-25). The Company states that it is conducting this program in the context of an Institute of Electrical and Electronics Engineers ("IEEE") working group that is focused on addressing the issue of integrating distributed resources onto secondary area networks, and that it plans to submit the results of this Pilot to IEEE for review and comment (id. at 20).

b. Underground Sensors and Monitoring Instrumentation

The Company proposes to install sensors and monitoring instrumentation on 500 grid points (or nodes) on its Back Bay secondary area network grid (Exh. NSTAR-LJG (Rev.) at 21-23; Tr. 1, at 65-68). The Company classifies approximately 250 of the nodes as "major" nodes (those closest to the network transformers and power exchanges) on which it will install: (1) digital grid technology, which provides current sensing on a real-time basis; and (2) power line carrier technology, which allows near real-time monitoring at the Company's control

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nameplate power listing; and (2) in the event of a short circuit, they send out current instantaneously (conversely, inverter-based machines will shut themselves down in such an instance). According to the Company, addressing these problems falls outside the scope of the Urban Grid program (Tr. 1, at 210-211).

center (Exh. NSTAR-LJG (Rev.) at 25-26). The Company classifies the remaining nodes as "minor" nodes (because they are located on secondary lines between the major nodes and customers), on which it will install low cost sensors that will: (1) collect current and temperature data (which will indicate when secondary mains are open or overloaded); and (2) transmit that data to drive-by trucks equipped with receivers (id.). The Company states that the information collected from these monitoring nodes will provide the Company with visibility and operational status awareness of its underground networks (id. at 22).

c. Advanced Meters

The Company proposes to install advanced meters that can provide real-time measurement and communication of energy consumption at customer-owned, solar-PV installations (Exh. NSTAR-LJG (Rev.) at 7). The Company states that these meters will provide critical information needed to monitor, control, and provide for the safe integration of solar-PV resources (id. at 23-24).[31] NSTAR Electric explains that the information gathered from the customer's solar-PV site would be correlated and analyzed with information from the monitoring nodes to provide a better picture of the grid and to help the Company monitor, control, and ensure the safe operation of the grid and solar-PV integrated resources that are linked to the grid (id.). The Company notes that additional distributed resource applications,

[31] The Company notes that, during implementation of the Pilot, it will continue to limit the capacity of a solar-PV installation to less than 1/15 of the load of the host facility, in order to ensure safe operation of the secondary area network (Exh. NSTAR-LJG (Rev.) at 28-29).

such as electric vehicles, could be integrated in the future, leveraging the monitoring infrastructure and knowledge from this project (id. at 28).[32]

d. Enhanced Substation SCADA

The Company proposes to enhance the capability of its substation SCADA system by upgrading existing remote terminal units in the substations with programmable logic controllers ("PLC"). The PLCs will improve monitoring of the feeders by storing network feeder information on phase voltage and current, providing continuous analysis of data and enabling operators to take action when required (Exh. NSTAR-LJG (Rev.) at 24).

3. Distribution Automation Program

The Company proposes two initiatives in the Distribution Automation program. First, the Company proposes to install equipment to monitor the load on each of the three phases of distribution circuits in real time and to develop strategies for load balancing (Exh. NSTAR-LJG (Rev.) at 32). This monitoring will lead to action plans such as reconnecting primary lateral taps from a heavily loaded phase to a lightly loaded phase and/or reconnecting individual single phase transformers from a heavily loaded phase to a lightly loaded phase (id.). NSTAR Electric proposes to implement this load balancing capability on five circuits serving approximately 25,000 customers (id.).

Second, the Company proposes to retrofit 20 fixed capacitor banks to enable wireless communications and allow them to be automatically controlled by SCADA (Exh. NSTAR-LJG

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[32] The Company is not proposing such additional applications at this time (Exh. NSTAR-LJG (Rev.) at 28).

(Rev.) at 33). According to the Company, this investment will reduce the amount that reactive power generators would have to produce to support the electrical system, thus increasing the efficiency of the system (id.).

B. Positions of the Parties

1. NSTAR Electric

The Company argues that its proposed Urban Grid and Distribution Automation programs are consistent with Section 85 (NSTAR Electric Brief at 10). NSTAR Electric asserts that its Urban Grid program furthers the development of smart grid, addressing the key challenge of integrating inverter based distributed resources in urban areas with secondary area networks (id. at 11). The Company states that its proposal will provide it with the necessary data to safely test and fully understand such integration (id. at 11-12).

NSTAR Electric states that, while the primary purpose of its existing distribution automation infrastructure is to sectionalize affected parts of the circuits to reduce customer outages, its distribution automation capabilities can be extended to improve grid efficiency, consistent with the goals of smart grid development (NSTAR Electric Brief at 10, citing Exh. NSTAR-LJG (Rev.) at 31). NSTAR Electric states that its distribution automation proposals to improve power factors and balance circuit loading will further the smart grid and enhance system reliability (NSTAR Electric Brief at 10).

2. Attorney General

The Attorney General presumes that the technical issues identified by NSTAR Electric regarding the existing secondary area networks in Boston are correct and that the Company

correctly describes its current inability to safely integrate renewable and other distributed generation (Attorney General Brief at 12).

3. RESA

RESA states that it supports reasonable distribution system investments to facilitate data gathering during the Pilot as well as the goals of the Urban Grid component (RESA Reply Brief at 3). Nevertheless, RESA takes no position on the appropriateness of the proposed investments or the Company's proposed $10.5 million investment for the Urban Grid project (id.).

C. Analysis and Findings

1. Compliance with the Green Communities Act

Section 85 of the Green Communities Act states that each smart grid pilot program shall use advanced technology to operate an integrated grid network communication system in a limited geographic area and include remote status detection and operation of distribution equipment. St. 2008, c. 169, § 85. The Company's Urban Grid and Distribution Automation programs include: (1) installing sensors (and other equipment) on an underground secondary area network in Boston; (2) installing load balancing equipment on distribution circuits; and (3) retrofitting fixed capacitor banks to enable radio communications and automatic SCADA control to reduce the requirement of reactive power. With the implementation of these elements, the Department finds that the Company has complied with Section 85 with regard to its proposed Urban Grid and Distribution Automation programs.

2. Evaluation

The Company states that it intends to develop a formal evaluation plan for its Urban Grid and Distribution Automation programs after it receives Department approval to conduct the Pilot (Exh. AG-1-7). Further, in its application materials submitted to DOE, the Company described its plans to measure, report on, evaluate, and assess the results, including costs and benefits, of these programs (see, e.g., Exh. AG-1-11 (Supp. 2) (b) at 64-66, 91-99). The Department directs the Company to submit copies to the Department of all such evaluation materials regarding its Urban Grid and Distribution Automation programs, providing additional description and context where necessary.

3. Conclusion

Based on the above, and with the directives included herein, the Department approves the Company's proposed Urban Grid and Distribution Automation programs.

VI. PERFORMANCE INCENTIVE

A. NSTAR Electric Proposal

NSTAR Electric initially proposed a performance incentive mechanism whereby, if the Company exceeds the threshold criteria established in Section 85 regarding pilot program participation and reductions in consumption,[33] it would collect a payment of $780,450, equal to five percent of total forecasted program spending (Exh.AG-3-19 (Supp.2) at 1). The Company proposed that it would earn this incentive if: (1) Pilot participation exceeded 2,750 customers

[33] Section 85 requires that a smart grid pilot program provide time of use or hourly pricing for commodity service: (1) for a minimum of 0.25 percent of a distribution company's customers; and (2) be designed to reduce participants' peak and average loads by a minimum of five percent.

(0.25 percent of its customers); and (2) participants reduce both average and peak load[34] by greater than five percent (id.). The Company states that it based its proposed five percent incentive level on the incentive level included in the statewide three year energy efficiency plans submitted by the electric distribution companies to the Department (Exh. AG-3-19 (Supp. 2) at 1).

The Company subsequently revised its proposal to exclude from the calculation of its incentive the costs of the Urban Grid and Distribution Automation programs, in light of the fact that Section 85 links the incentive with load reduction and customer participation in the Dynamic Pricing program (NSTAR Electric Reply Brief at 9). Accordingly, the Company revised its incentive payment to $231,250, calculated as five percent of its forecasted spending of $4,624,000 in the Dynamic Pricing program of the Pilot (id.).

B. Positions of the Parties

1. NSTAR Electric

The Company argues that its proposed incentive mechanism is straightforward in that it is only triggered if the Company exceeds the threshold criteria outlined in Section 85 (NSTAR Electric Brief at 15-16). The Company explains that, for simplicity, it proposes to collect an incentive of five percent of forecasted smart grid program spending which is consistent with its energy efficiency incentive mechanism (id.). The Company contends, however, that its smart

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[34] The Company defines "average load" as its average load from June through September on non-holiday weekdays between noon and 5:00 p.m. (Exhs. NSTAR-LJG (Rev.) at 6, AG-3-19 (Supp. 2) at 2). The Company defines "peak load" as a customer's peak energy consumption from June through September on non-holiday weekdays between noon and 5:00 p.m. (Exhs. NSTAR-LJG (Rev.) at 6, AG-3-19 (Supp. 2) at 2).

grid Pilot incentive mechanism should not be designed in the same way as its energy efficiency incentive mechanism because the objective of the Pilot is not only to achieve a reduction in load but also to gather important information about the effectiveness of different approaches to achieve load reduction (id. at 15). In addition, in order to remove any incentive to over spend, the Company proposes to cap the incentive at forecasted costs and not on actual spending (id. at 16, citing Exh. AG-3-19 (Supp. 2); Tr. 1, at 176).

The Company accepts the Attorney General's and RESA's argument that, because Section 85 links incentives with load reduction and customer participation in the Dynamic Pricing program, the Company should exclude the costs of the Urban Grid and Distribution Automation programs from the calculation of its incentive (NSTAR Electric Reply Brief at 9). Accordingly, the Company revised its initial incentive proposal to limit its incentive to a percentage of forecasted spending on the Dynamic Pricing program (id.). However, the Company disagrees with the Attorney General's and RESA's recommendation to restrict its incentive payment to five percent of costs actually incurred by the Company and funded by ratepayers. The Company argues that excluding the DOE funds from the incentive calculation would penalize it for successfully taking actions to save customers money (id. at 10). NSTAR Electric states that the Department previously has approved incentives that encourage companies to take action designed to lower customer costs (id. at 10, citing Petition of Boston Edison Company, pursuant to G.L. c. 164,§ 76 and 220 C.M.R. 1.00 et seq., for Review of its Electric Industry Restructuring Proposal, D.P.U./D.T.E. 96-23 (1998), Cambridge Electric

Light Company, Commonwealth Electric Company, and Canal Electric Company for Approval of Revised Mitigation Incentive Proposal, D.P.U./D.T.E. 97-111 (1998)).

2. Attorney General

The Attorney General recommends that the Department reject the Company's initial incentive proposal because the payment is based on Pilot costs that include: (1) amounts that will be funded by DOE, instead of amounts that the Company actually spends; and (2) spending on both the Dynamic Pricing and Urban Grid components of the Pilot, while the actual incentive will be based on the results of the Dynamic Pricing program alone (Attorney General Brief at 17-18). The Attorney General recommends that, if the Department allows NSTAR Electric to earn a performance incentive, the payment should be based only on a percentage of its costs incurred by the Company for its Dynamic Pricing program, net of those costs funded by DOE (id. at 18).

3. RESA

RESA questions why the Company should be allowed to earn an incentive for its smart grid Pilot, as NSTAR Electric is able to recover all of its costs in full plus earn a return on its capital investment in smart grid equipment (RESA Reply Brief at 8). RESA opposes the Company's proposed incentive mechanism, asserting that it is flawed because: (1) contrary to sound utility industry and Department practices, the mechanism is not symmetrical as it rewards the Company if it achieves its goals but does not penalize the Company for poor performance; and (2) it rewards the Company for customer behavior, as compared to its own behavior (id. at 8-9). RESA also avers that the size of the incentive is too large as it is based

on projected spending which includes: (1) the costs of the Distribution Automation and Urban Grid programs; and (2) funds supplied by DOE grants (RESA Reply Brief at 9). RESA states that if the Department allows the Company to earn an incentive, the payment should be based only on (1) the costs of the Dynamic Pricing program, and (2) NSTAR Electric's costs net of DOE funds (id. at 9). Finally, RESA argues that any incentive mechanism should also apply to competitive suppliers, as they have the ability to develop products that send price signals and generate savings for the benefit of customers and the distribution system (id. at 10).

C. Analysis and Findings

a. Introduction

As noted above, Section 85 requires each distribution company to develop a smart grid pilot program for a minimum of 0.25 percent of its customers with a specific objective to reduce peak and average loads of participating customers by a minimum of five percent. Companies that exceed these thresholds are eligible to earn incentives.

NSTAR Electric initially proposed an incentive mechanism in which it would receive a payment equal to five percent of its total forecasted smart grid Pilot costs if it exceeds the Section 85 thresholds for participation and average and peak reductions. Responding to the comments of the Attorney General and RESA about the appropriateness of basing its incentive level on spending for the Distribution Automation and Urban Grid programs, the Company modified its proposal so that its incentive payment will be calculated as five percent of its projected spending on the Dynamic Pricing program. The Company, however, continues to propose to include funds to be provided by DOE in the calculation of the incentive payment,

while the Attorney General and RESA argue that the spending on which the incentive is based should be limited to the amount of funds paid by customers, excluding funds from DOE (Attorney General Brief at 17-18; RESA Reply Brief at 9).

Section 85 contemplates that incentive payments will be available to a distribution company upon exceeding certain thresholds. Specifically, Section 85 states that a distribution company shall be eligible to earn a performance incentive, but does not specify the design of the mechanism. Accordingly, the Department must determine if NSTAR Electric's proposed incentive mechanism is reasonable and appropriate.

2. Pilot Costs to be Included in Calculation of Incentive Payment

Section 85 links the ability to earn incentives with load reduction and customer participation in the Dynamic Pricing program. Accordingly, we find that the Company's proposal to exclude the cost of the Urban Grid and Distribution Automation programs from the calculation of its incentive is appropriate. As noted above, the Attorney General and RESA recommend that the Department further modify the Company's incentive calculation to exclude those Pilot costs funded by DOE (Attorney General Brief at 17-18; RESA Reply Brief at 9). We find, however, that such a limit would provide a disincentive for the Company to pursue federal grants in order to lower ratepayer costs. Accordingly, the Department will not require the modification proposed by the Attorney General and RESA. The Company shall calculate its incentive payment based on the full costs of the Dynamic Pricing program, including those funds provided by DOE.

3. Incentive Percentage

The Company states that its proposed incentive payment of five percent of Dynamic Pricing program is based on the incentive mechanism included in the three-year statewide energy efficiency plans (NSTAR Electric Brief at 15-16).[35] The Department has found that, with consideration of the particular policy goals an incentive mechanism is intended to achieve, the amount of funds available for a performance incentive mechanism should be kept as low as possible in order to minimize the costs to customers. Electric Three-Year Energy Efficiency Plans for 2010 through 2012, D.P.U. 09-116/ 09-117 /09-118/ 09-119 at 111 (2010) at 111-112 ("Electric Three-Year Plans Order"), citing Energy Efficiency Guidelines, D.P.U. 08-50-B, Guidelines § 3.6.3 (2009). The Department finds that an incentive payment equal to five percent of NSTAR Electric's forecasted spending on the Dynamic Pricing program is reasonably designed to incent the Company to achieve good performance with respect to its smart grid Pilot for the benefit of its ratepayers, while low enough to minimize the costs to customers. Consistent with our treatment of energy efficiency incentives, the Department directs the Company to calculate its incentive payment on a pre-tax basis. Electric Three-Year Plans Order at 111.

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[35] The Department has approved a five percent incentive level for electric distribution company energy efficiency programs, most recently as part of the three-year energy efficiency plans required by the Green Communities Act. The Department approved NSTAR Electric's three-year energy efficiency plan on January 28, 2010. Electric Three-Year Energy Efficiency Plans for 2010 through 2012, D.P.U. 09-116/ 09-117/ 09-118/ 09-119 at 111 (2010).

The Company proposes to calculate its incentive payment based on forecasted Dynamic Pricing spending levels, in order to avoid the incentive to overspend. The Department finds it appropriate to set a cap for the Company's incentive payment based on its forecasted spending level. If the Company's actual spending is less than forecasted levels, however, the incentive payment shall be based on the Company's actual spending level. The Department concludes that this approach strikes an appropriate balance between (1) providing an incentive for the Company to achieve good performance with respect to its smart grid Pilot program, and (2) minimizing costs to customers.

4. Incentive Mechanics

The Company proposes to earn its entire incentive payment if it exceeds the minimum threshold criteria enumerated in Section 85 (Exh. AG-3-19 (Supp.2) at 1). The Company asserts that its proposed mechanism appropriately differs from that used to calculate energy efficiency incentive payments because, unlike the energy efficiency plans (where the objective is to maximize cost effective savings), an important component of the Pilot is to garner information about the effectiveness by which different approaches increase the level of energy and cost savings for Pilot participants (NSTAR Electric Brief at 15-16).

In accordance with Section 85, the Company shall be eligible to receive an incentive payment when it exceeds the Green Communities Act's thresholds for participants and savings. However, we find that the Company should not receive the maximum payment for performance that simply meets these thresholds, particularly the five percent reduction thresholds set for average and peak consumption. The record indicates that, based on the

results of similarly-designed programs, exemplary performance for the Company's programs in terms of achieving average and peak reductions would yield approximately ten percent for average reductions, and 27 percent for peak reduction, significantly greater than the Section 85 thresholds (Exh. DPU-1; RR-DPU-3, at 1-2; RR-DPU-3(a)). The Department concludes that, consistent with our approach regarding the calculation of energy efficiency incentives: (1) the Company should receive 100 percent of its Pilot incentive payment when its performance reaches specified target levels regarding average and peak reductions; (2) the target levels should be set at the midpoint of the Section 85 threshold levels and the exemplary levels identified above; and (3) the incentive earned should increase linearly from 0 percent of the incentive at the threshold performance levels to 100 percent of the incentive at the specified target performance levels.[36]

As noted by the Company, unlike energy efficiency plans for which the primary purpose is to maximize cost-effective savings, the primary objective of the Section 85 pilots is to examine the effectiveness of different smart grid approaches in terms of consumers reducing their consumption. As such, it would be counterproductive to set an exemplary performance

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[36] The energy efficiency incentive mechanism is based on a "design" or expected level of performance, which, if achieved, would result in the Company earning 100 percent or the "design" level of the incentive. Electric Three Year Plans Order at 94-95. In order to be eligible to earn any incentive, the Company must achieve a minimum "threshold" level of 75 percent of expected savings, at which point it receives 75 percent of the design incentive level. Electric Three Year Plans Order at 94-95. The level of the incentive is capped at a maximum "exemplary" level of 125 percent of the design level. Electric Three Year Plans Order at 94-95.

level as is included in the energy efficiency incentive mechanisms. Therefore, the Department finds it reasonable to cap the Company's incentive payment at the target level.

Based on the above, and in accordance with Section 85 of the Green Communities Act, the Department directs the Company to calculate its smart grid incentive based on the following criteria:

- Greater than 0.25 percent of its customers must participate in the Dynamic Pricing program (i.e., be included in the four treatment groups) for the Company to be eligible to earn an incentive payment.
- The maximum incentive payment shall be equal to (on a pre-tax basis) five percent of its actual spending on the Dynamic Pricing program, to be capped at five percent of its forecasted spending level.
- The maximum incentive payment shall be divided equally into an average savings and a peak savings component.
- For each component, the Company will earn an incentive payment only if its average and peak reductions exceed a threshold level of five percent of total average and peak consumption, respectively.
- For each component, the Company will calculate its *target* performance level as the average of the Section 85 threshold levels and the identified exemplary levels of average and peak reductions of ten percent and 27 percent, respectively.
- For each component, the incentive payment will increase linearly from 0 percent of the payment incentive at the threshold performance levels to 100 percent of the payment incentive at the target performance levels.
- The actual incentive payment shall not exceed the maximum incentive payment.

The Department directs the Company to submit a compliance filing, within 30 days of this Order, which includes a revised incentive mechanism for the Pilot.

VII. COST RECOVERY

A. NSTAR Electric Proposal

NSTAR Electric estimates that its smart grid Pilot will cost $15,509,000 (Exh. NSTAR-CLV-1(Rev.) (Supp.2) at 1). Because the Company has secured funding from DOE through the American Recovery and Reinvestment Act of 2009 for up to 50 percent of the cost of its Pilot, NSTAR Electric seeks to recover 50 percent, or $7,754,500, of its estimated Pilot costs from ratepayers. The estimated costs for each program within NSTAR Electric's Pilot are shown in Table 1, above.

In its Funding Opportunity Announcement for the Smart Grid Demonstration Project, DOE required, inter alia, all grant applicants to submit a funding plan that identifies: (1) all sources of project funds; (2) when the funds will be committed; and (3) a commitment letter from all third parties that are expected to contribute to cost sharing for the proposed project (DOE-FOA-0000036, at 34-25 (June 25, 2009)). On November 24, 2009, DOE selected NSTAR Electric's Dynamic Pricing and Urban Grid programs to receive up to 50 percent funding pending further negotiations with DOE on final terms and conditions. Following the conclusion of evidentiary hearings and the submission of briefs, the Company submitted a January 29, 2010 executed Assistance Agreement with DOE ("DOE Agreement") that sets forth the terms and conditions of the funding award (Exh. AG-1-11(Supp.8)(a)).[37]

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[37] In accordance with the DOE Agreement, either party may declare the award terminated if at the end of 120 days the parties cannot mutually agree on an estimated project cost and/or NSTAR Electric is unable to demonstrate that it has secured a matching financial commitment (Exh. AG-1-11(Supp.8)(a) at 23-24).

NSTAR Electric proposes to recover the incremental costs of its Pilot as a component of its basic service rates (Exh. NSTAR-CLV at 5; Tr. 1, at 51-52). The categories of costs the Company seeks to recover from basic service customers are as follows: (1) program setup and design costs; (2) marketing costs; (3) equipment installation costs; (4) Pilot operation costs; (5) evaluation, data collection and analysis costs; (6) equipment costs; (7) carrying charges on the net balance of the deferred asset account; and (8) any incentives earned by the Company (Exh. NSTAR-CLV at 4-5). NSTAR Electric proposes to apply a carrying charge of 12.52 percent (the Company's weighted average cost of capital, grossed up for taxes) to the outstanding balance of these costs (id. at 6).

NSTAR Electric proposes to determine the costs to be recovered each year in October for recovery beginning the following January (Exh. NSTAR-CLV at 6). The Company will calculate the amount to be recovered based on the current year's ending balance, which includes actual and forecasted expenditures for the current year, plus forecasted expenditures through December of the following year (id.). The Company will true-up all forecasted amounts when calculating the subsequent year's costs (id.). The resulting costs will be recovered as an adder to basic service rates (id.). Any over- or under-recovery that occurs will be reconciled in the following year (id. at 7-8).

B. Positions of the Parties

1. NSTAR Electric

a. Incremental Costs

NSTAR Electric contends that all of its Pilot costs are incremental as they would not occur but for the requirement of Section 85 that the Pilot be implemented (NSTAR Electric Brief at 12). NSTAR Electric further contends that it will have strict cost controls in place to ensure that only incremental costs are included for cost recovery (Exh. NSTAR-CLV at 5; Tr. 1, at 51-52; NSTAR Electric Brief at 12).

The Company argues that the incremental costs associated with the Urban Grid program will likely include costs incurred by employees of NSTAR Electric to install equipment (NSTAR Electric Brief at 13; NSTAR Electric Reply Brief at 7-8). NSTAR Electric disagrees with the Attorney General's proposal that the Company be allowed to recover incremental costs associated with the Urban Grid program only if they are extraordinary and exceed operation and maintenance expenses included in rates because it would establish a standard that would be impossible to meet, would add confusion to the issue of incremental costs and, if adopted, would result in the termination of the Urban Grid program (NSTAR Electric Reply Brief at 7). Specifically, the Company states that funding from DOE is predicated on Department approval of the costs associated with the Urban Grid program (NSTAR Electric Brief at 13; NSTAR Electric Reply Brief at 8). NSTAR Electric avers that the absence of Department approval of cost recovery for work performed by NSTAR Electric employees will result in the loss of DOE funding, which would cause NSTAR

Electric to abandon the Urban Grid program (NSTAR Electric Brief at 13; NSTAR Electric Reply Brief at 8-9). Consequently, the Company requests that the Department find that prudently incurred costs associated with the installation of equipment by NSTAR Electric employees for the Urban Grid program are incremental costs for purposes of cost recovery (NSTAR Electric Brief at 13-14).

NSTAR Electric argues that its proposed approach to recovery of incremental costs is consistent with how DOE will reimburse the Company for the costs that it incurs for the Pilot (NSTAR Electric Reply Brief at 8). The Company states that, under the terms of the funding agreement with DOE, NSTAR Electric will be subject to extensive cost controls which will require separate work orders for internal labor with a high level of documentation (NSTAR Electric Brief at 14). Thus, the Company claims that the costs will be well documented and reasonable (id.).

b. Method of Cost Recovery

The Company claims that the recovery of Pilot costs through basic service rates is consistent with Section 85 of the Green Communities Act (NSTAR Electric Brief at 14). NSTAR Electric also argues that it has maximized the use of federal funds through initial approval of its grant application from DOE which covers 50 percent of the costs of the Pilot (id. at 15).

c. DOE Funding

The Company argues that the Attorney General's recommendation that the Department require an additional compliance phase in this proceeding to consider any final DOE grant

terms and conditions prior to the implementation of the Pilot is unnecessary and would jeopardize DOE funding (NSTAR Electric Reply Brief at 12). Specifically, the Company contends that a compliance phase will jeopardize DOE funding because the Company needs to have Department approval of its Pilot soon to demonstrate to DOE that it has secured funding for the 50 percent of its costs not covered by DOE grants (id.).[38] The Company states that it will file with the Department for informational purposes the final terms of the federal grants for the Pilot. The Company will also seek Department approval of any material changes to the Pilot or conditions placed on NSTAR Electric by DOE (NSTAR Electric Reply Brief at 12).

2. Attorney General

a. Incremental Costs

The Attorney General suggests that the word "incremental" be added to NSTAR Electric's proposed smart grid tariff to ensure that NSTAR Electric: (1) properly tracks and documents all costs related to the Pilot; and (2) does not double recover any expenses (Attorney General Brief at 16).

b. Method of Cost Recovery

The Attorney General contends that the language of Section 85 provides the Department with discretion over cost recovery for the Company's Pilot (Attorney General Brief at 3). Regarding the costs of the Urban Grid program, the Attorney General argues that, because this investment is targeted primarily to the distribution system, the costs should be recovered

[38] As noted in Section VI.D.1, above, the Company must document that it has received Department approval of its Pilot within 120 days of the execution of the DOE Agreement or risk possible termination of the funding (Exh. AG-1-11 (Supp. 8) at 23-24).

through distribution rates (id.). However, if the Department determines that these costs should be recovered through basic service rates, the Attorney General recommends that only the incremental costs of the equipment be recovered in this manner (id.). The Attorney General argues that labor costs should only be recovered if the Company demonstrates in its next rate case that they are incremental to current operation and maintenance expenses (id. at 3, 16; Attorney General Reply Brief at 3).

c. Cap on Cost Recovery

The Attorney General argues that cost recovery should be limited to the Company's estimate of its total Pilot design and implementation costs (Attorney General Reply Brief at 3, citing Exh. NSTAR-CLV-1 (Supp.2)). The Attorney General recommends that NSTAR Electric be required to seek further approval from the Department for any costs that exceed the current estimate provided by the Company (Attorney General Reply Brief at 3-4).

d. DOE Funding

The Attorney General recommends that the Department require an additional condition or compliance phase that obligates NSTAR Electric to disclose any final DOE grant terms and conditions prior to the implementation of its Pilot (Attorney General Brief at 24). The Attorney General argues that DOE has not yet negotiated the final terms and conditions of the grant award with the Company and that such final terms and conditions should be submitted

and approved by the Department before the Company implements the Pilot (Attorney General Reply Brief at 4-5).[39]

3. Cape Light Compact

a. Incremental Costs

Cape Light Compact agrees with the Attorney General that language should be added to the Company's smart grid tariff to ensure that double recovery of Pilot costs does not occur (Cape Light Compact Reply Brief at 2). Cape Light Compact also supports the development of tools and policies to identify Pilot costs that are truly incremental (id.).

b. Method of Cost Recovery

Cape Light Compact argues that all incremental Pilot costs should be recovered through basic service rates, as proposed by the Company (Cape Light Compact Reply Brief at 2-3). Cape Light Compact does not agree with the Attorney General's argument that costs related to the Urban Grid program should be recovered through distribution rates (id. at 3). Cape Light Compact argues that the Attorney General's position is not supported by "the clear language of Section 85" (id.).

4. RESA

a. Incremental Costs

RESA supports the Company's proposal to recover only the incremental costs associated with its Pilot (RESA Reply Brief at 6). RESA agrees with the Attorney General's concern that cost recovery related to the Urban Grid program be closely reviewed to ensure

[39] The Attorney General filed her reply brief prior to the Company's submission of the DOE Agreement on January 29, 2010.

that the costs sought for recovery are truly incremental and to ensure that there is no double recovery by the Company (id. at 3).

b. Method of Cost Recovery

RESA supports the Company's proposal to recover the incremental costs of the Pilot through basic service rates even though it acknowledges that the benefits of the Pilot may accrue to all distribution customers (RESA Reply Brief at 6).

C. Analysis and Findings

1. Introduction

With regard to cost recovery, Section 85 states that smart grid pilot programs, "shall include proposals for rate treatment of incremental program costs; provided, however, that such program costs shall be deemed by the [D]epartment to be a cost of basic service and recovered in rates charged for basic service." Below, the Department addresses the following issues: (1) which Pilot costs qualify as "incremental" costs and are, therefore, eligible for recovery; (2) whether Section 85 provides the Department with discretion with respect to the manner in which the Company may recover its Pilot costs; (3) whether the cost estimates provided by the Company in this proceeding represent a ceiling of costs eligible for recovery; and (4) whether it is necessary for the Company to make a compliance filing to this proceeding regarding the final negotiated terms for DOE funding.

2. Incremental Costs

Section 85 states that smart grid pilot programs "shall include proposals for rate treatment of incremental program costs." NSTAR Electric states that all of its smart grid Pilot costs are incremental in nature in that the Company would not incur these costs but for the

implementation of the Pilot. Consistent with this, the Company requests that the Department "explicitly rule that prudently incurred costs associated with the installation of equipment by NSTAR Electric employees for the Urban Grid portion of the pilot be considered incremental costs for purposes of cost recovery…." (NSTAR Electric Brief at 12-13). In contrast, the Attorney General states that the Company should be allowed to recover only those costs that are extraordinary and exceed the operations and maintenance expenses funded through its current rates (Attorney General Brief at 16).

Because the Company seeks to recover its Pilot costs outside of base rates, it is necessary for the Department to make two determinations regarding the "incremental" nature of these costs. The Department first must determine whether the costs are directly attributable to Pilot implementation. This requires the Company to develop a cost tracking system that clearly demonstrates that costs are directly related to the Pilot, and that it would not incur these costs but for the implementation of the Pilot. While a determination that costs are incremental due to the Pilot is necessary for recovery outside of base rates, that determination alone is not sufficient. The Department additionally must determine whether the costs are incremental to those that the Company currently recovers through its base rates, in order to ensure that the Company does not "double recover" these costs.

With regard to the determination that costs are incremental due to the Pilot, the Company states that DOE will establish specific and stringent cost tracking and reporting requirements for each of its grant awardees (Tr. 1, at 51-53; RR-AG-1). Although the Company has not provided the Department with details on how this tracking system will

operate, the Company has represented that it intends to fully comply with the DOE requirements as applicable to each of it smart grid Pilot grants (RR-AG-1). The Department finds that the cost tracking and reporting requirements that DOE will place on the Company provide reasonable and appropriate assurance that it will recover from ratepayers only those costs that are incremental due to the Pilot. We direct the Company to file a report with the Department fully describing its cost tracking system when it submits its first Pilot cost reconciliation filing.

With regard to the determination that Pilot costs are incremental to those currently recovered through base rates, the Company states that it is not currently conducting any work associated with the Urban Grid program, and that "new activities means new costs" (NSTAR Electric Brief at 13). While the Department recognizes that the Company will be undertaking new activities associated with the Pilot, this alone is not sufficient demonstration that the associated Pilot costs require ratemaking treatment outside of base rates. Instead, the Company must ensure that its cost tracking system, in addition to satisfying the DOE requirements discussed above, identifies the Pilot costs that are incremental in that the Company does not currently recover them through its base rates. For example, the Company states that to perform the work associated with the Urban Grid program, it will need to "hire outside contractors, hire new employees or have current full-time employees engage in overtime to complete the Company's existing work plus the incremental work associated with the Urban Grid activities" (id.). In order to identify costs that are not currently included in rates (and thus are incremental), the Company must track and clearly identify not only the

labor costs associated with new employees hired specifically for Pilot implementation, but also for new employees hired to backfill positions or responsibilities previously held by current employees (whose costs are currently included in rates) who are transferred full-or part-time to participate in implementing, or overseeing the implementation of, the Pilot. As a final matter, to ensure appropriate ratemaking treatment of Pilot costs in its next rate case proceeding, the Company must clearly identify and take into account all such costs (including, but not limited to, capital, labor and support costs) recovered outside of base rates during previous years.

The Attorney General has recommended that the Company add language to its tariffs that would clarify the definition of incremental costs. We agree and direct the Company to revise its tariff language to clarify the definition of incremental smart grid Pilot costs consistent with the discussion above, and to submit, within fourteen days of the date of this Order, compliance tariffs for our review.

3. Method of Cost Recovery

a. Introduction

Section 85 states:

> The [D]epartment shall review and approve or modify [smart grid pilot program] plans on or before August 1, 2010. . . . The programs filed by the distribution company shall include proposals for rate treatment of incremental program costs; provided, however, that such program costs shall be deemed by the [D]epartment to be a cost of basic service and recovered in rates charged for basic service.

The Company states that its proposal to recover all costs associated with its Pilot through basic service rates is consistent with the requirements of Section 85. Cape Light Compact and RESA support the Company's proposal. Conversely, the Attorney General opposes the

Company's proposal, averring that the language of Section 85 provides the Department with discretion over the method of cost recovery for the Company's Pilot. Specifically, the Attorney General contends that while the Dynamic Pricing program costs are related to basic service and thus should be recovered through basic service rates, the Urban Grid program costs are unrelated to basic service and thus should be recovered through distribution rates.

The Electric Restructuring Act of 1997 unbundled the distribution and supply components of electric service.[40] Electric distribution companies continue to provide distribution service to all of their customers on a monopoly basis. Companies recover their distribution–related costs through distribution rates that apply to all of their customers. In contrast, customers now have the opportunity to receive their supply service from an entity (a "competitive supplier") other than the electric company in whose service territory they are located. The term "basic service" denotes the provision of supply service by electric distribution companies to those consumers who do not receive such service from a competitive supplier. G.L. c. 164, § 1B(d); 220 C.M.R. § 11.02; Default Service Procurement, D.T.E. 04-115-A at 6-7 (2005). Distribution companies recover their basic service-related costs through rates that apply only to its basic service customers.

As discussed below, the Department finds that certain of the Company's Pilot costs are unrelated to its provision of basic service; instead, these costs are related to the distribution service it provides to all of its customers. We must, therefore, consider the language of

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[40] St. 164 of the Acts of 1997 ("Restructuring Act").

Section 85 to determine the extent of the Department's discretion regarding the recovery of incremental Pilot costs through basic service rates.

b. Department Discretion

The Attorney General and the Company differ in their interpretation of certain language contained in Section 85. The cannons of statutory construction provide that "[o]rdinarily, if the language of a statute is plain and unambiguous it is conclusive as to legislative intent." Sterilite Corp. v. Continental Casualty Co., 397 Mass. 837, 839 (1986). The Department is persuaded, however, that the language of Section 85 regarding the recovery of Pilot costs is sufficiently ambiguous to warrant further analysis.

The intention of the Legislature in enacting Section 85 "must be ascertained, not alone from the literal meaning of its words, but from a view of the whole system of which it is but a part, and in the light of the common law and previous statutes." Pereira v. New England LNG Company, 364 Mass. 109, at 115 (1973), citing Armburg v. Boston & Maine R.R., 276 Mass. 418,426, 177 N.E. 665, 670, Boston v. Quincy Mkt. Cold Storage & Warehouse Co., 312 Mass. 638, 644, N.E. 2d 959. Accordingly, we must consider the cost recovery language of Section 85 not in isolation, but in relation to Department precedent related to cost recovery.

Where the Legislature enacts a comprehensive scheme of legislation such as the Green Communities Act, "there are likely to be casual overstatements and understatements, half-answers, and gaps in the statutory provisions. . . ." Memorial Drive Tenants Corp. v. Fire Chief of Cambridge, 424 Mass. 661, at 663 (1997). As practice develops and the difficulties are revealed, the courts are called upon to interweave the statute with decisions

answering the difficulties and composing, as far as feasible and reasonable, an harmonious structure faithful to basic designs and purposes of the Legislature. Id., citing Cummings v. Secretary of Environmental Affairs, 402 Mass. 611, 628-629 n.12, 524 N.E. 2d 836 (1988), quoting Mailhor v. Travelers Ins. Co., 375 Mass. 342, 345, 377 N.E. 2d 681 (1978). It is first the agency itself, here the Department, that must fulfill the responsibility of interpreting statutes applicable to the agency. City Council of Agawam v. Energy Facilities Siting Board, 437 Mass. 821, at 828 (2002) (Supreme Judicial Court gives Energy Facilities Siting Board broad discretion to interpret statutes that it is responsible for enforcing, lending "substantial deference" to such interpretations); AT&T v. Automatic Sprinkler Appeals Board, 52 Mass.App.Ct. 11, at 15 (although the duty of statutory interpretation is for the courts, where the agency's interpretation is reasonable, the court should not supplant that interpretation with its own judgment); Greater Media v. Department of Public Utilities, 415 Mass. 409, at 414 (1993) (ordinary precepts of statutory construction instruct us to accord deference to an administrative interpretation of the statute).

Pursuant to Section 85, the Department must review and approve or modify distribution companies' smart grid pilot programs, including proposals for rate treatment of incremental program costs. In inserting the words "shall be *deemed by the Department* to be cost of basic service" (emphasis added) in Section 85, we find that the Legislature intended to defer to the expertise of the Department to determine which Pilot costs are related to distribution companies' provision of basic service (and thus are appropriately recovered through basic service rates) and which costs are related to distribution service (and thus are appropriately

recovered through distribution rates). The Department cannot "deem" a cost to be a basic service cost if the underlying activity is unrelated to a company's provision of basic service.

The Department understands that a cursory reading of the phrase "shall be deemed by the Department as a cost of basic service and shall be recovered in rates charged for basic service" could be construed as a directive to assign all Pilot costs to basic service rates. Such an interpretation, however, does not resolve the dispute before us because the words of a statute will not be read literally if to do so would be lead to an absurd or unworkable result. See, e.g., Apkin v. Treasurer and Receiver General, 401 Mass. 427, 435 (1988); Board of Appeals of Hanover v. Housing Appeals Committee (1973) ("we must avoid a construction of statutory language which produces irrational results").

In this case, the Company's interpretation of Section 85, which would leave no discretion to the Department to allocate the costs of NSTAR Electric's Pilot to the appropriate rate elements would render an irrational and inequitable result. Accordingly, the Department finds that *to the extent* the Department deems Pilot costs to be a cost of basic service, the Company shall recover those costs in rates charged for basic service. The Department, however, will exercise the discretion granted to us to determine how NSTAR Electric should recover the incremental Pilot costs that the Department does not deem to be a cost of basic service.

c. Basic Service vs. Distribution Costs

As described above, the NSTAR Electric's proposed Pilot includes three programs: (1) a Dynamic Pricing program; (2) an Urban Grid program; and (3) a Distribution

Automation program. The issue of where cost recovery should occur hinges on which groups of customers will be the beneficiaries of these programs.

The objective of the Dynamic Pricing program is to evaluate the extent to which different time-differentiated rate structures for supply, in combination with customer information and automated load management technologies, produce reductions in customers' consumption, both overall and during high-priced "peak" periods. The program is available to basic service customers only because, in the restructured electric industry, these are the only customers for whom distribution companies establish rates for supply services.[41] As such there is a clear and direct relationship between the information the Company will gain from implementation of the Dynamic Pricing program regarding the effectiveness of different rate structures and technologies, and the manner in which the Company may provide basic service in the future. While this information will likely be useful to competitive supply customers, the primary beneficiaries of the Dynamic Pricing program will be basic service customers. Therefore, the Department deems the costs associated with the Dynamic Pricing program to be, for the purpose of Section 85, a cost of basic service, and directs NSTAR Electric to recover such costs through the rates charged to its basic service customers.

In the Urban Grid and Distribution Automation programs, the Company will install equipment on its underground and overhead distribution system that will allow it to monitor

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[41] Distribution companies play no role in establishing the supply service rates for customers who receive such service from competitive suppliers.

and improve the operational efficiency of the system.[42] Because a primary objective of these programs is to improve the manner in which the Company provides service to all of its distribution service customers, all customers (basic service and competitive supply customers alike) will benefit equally from their implementation. Unlike the Dynamic Pricing program, there is no relationship between the information the Company will gain from implementation of the Urban Grid and Distribution Automation programs and the manner in which the Company provides basic service. However, there is a direct relationship between the information the Company will gain from implementation of the Urban Grid and Distribution Automation programs and the quality and efficiency of *distribution service* provided to all *distribution service* customers. Therefore, it would not be appropriate for the Department to deem the costs associated with these programs a cost of basic service for the purpose of Section 85. Instead, we find that Urban Grid and Distribution Automation program costs clearly are related to distribution service, and direct the Company to recover such costs through the distribution rates charged to all of the Company's customers. The Department directs the Company to submit, within seven days of this Order, tariff(s) in compliance with this directive.

d. Cost Recovery Cap

The Attorney General suggests that cost recovery be limited to the estimated costs that NSTAR Electric provided in this proceeding and that the Company be required to obtain

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[42] The Urban Grid program additionally will allow the Company to better understand the impact that the installation of distribution generation resources will have on its secondary area networks.

Department approval of any costs that exceed the cost estimates (Attorney General Reply Brief at 3-4). The Department finds that imposing such a cap is unnecessary.

The Department's approval of the Company's Pilot allows NSTAR Electric to move forward with its investments related to this Pilot. While we have approved the recovery of NSTAR Electric's incremental Pilot costs, our approval does not constitute a blank check for the Company regarding the recovery of any and all costs incurred in order to implement its smart grid Pilot. The Company bears the burden to demonstrate that its costs have been reasonably and prudently incurred. The Company bears that burden regardless of the level of the actual costs incurred in order to implement the Pilot. In other words, the actual amount of incremental costs that NSTAR Electric seeks to recover may exceed the estimated amounts; however, that does not necessarily mean that the Company incurred these costs in an imprudent and unreasonable fashion. When the Company seeks recovery of Pilot program costs, the Department and all parties will have an opportunity to review the prudence of these costs. As stated above, the Company must file a report with the Department regarding its system to track incremental Pilot costs. Inclusion of a cost in this tracking system, however, does not guarantee recovery unless the Company can demonstrate that each cost was prudently and reasonably incurred.

e. DOE Funding

On November 24, 2009, DOE selected NSTAR Electric's Dynamic Pricing and Urban Grid projects to receive up to 50 percent federal stimulus funding pending further negotiations on final terms and conditions. To address concerns about changes to its smart grid Pilot

program filing, NSTAR Electric, in its reply brief, agreed to seek approval from the Department for any material changes to the Pilot that result from negotiations with DOE to finalize its grant award. For any non-material changes to the Pilot that result from its negotiations with DOE, the Company also has agreed to inform the Department of those changes. We find that this is an appropriate method to address material and non-material changes to the smart grid Pilot program.

VIII. ORDER

Accordingly, after due notice, hearing, and consideration, it is hereby

ORDERED: That the smart grid Pilot program petition filed by NSTAR Electric Company is APPROVED, subject to the directives contained herein; and it is

FURTHER ORDERED: That NSTAR Electric Company shall comply with all of the directives contained in this Order.

By Order of the Department,

/s/
Paul J. Hibbard, Chairman

/s/
Tim Woolf, Commissioner

/s/
Jolette A. Westbrook, Commissioner

An appeal as to matters of law from any final decision, order or ruling of the Commission may be taken to the Supreme Judicial Court by an aggrieved party in interest by the filing of a written petition praying that the Order of the Commission be modified or set aside in whole or in part. Such petition for appeal shall be filed with the Secretary of the Commission within twenty days after the date of service of the decision, order or ruling of the Commission, or within such further time as the Commission may allow upon request filed prior to the expiration of the twenty days after the date of service of said decision, order or ruling. Within ten days after such petition has been filed, the appealing party shall enter the appeal in the Supreme Judicial Court sitting in Suffolk County by filing a copy thereof with the Clerk of said Court. G.L. c. 25, § 5.