

# Energy Efficiency Ramps up in Massachusetts



Recent Decisions Make the State a National Leader in Efficiency Investments

Spring 2010

## Introduction

In January 2010, the Massachusetts Department of Public Utilities (DPU or Department) approved three-year natural gas and electric efficiency plans that will make the Commonwealth a national leader in cost-effective efficiency investments. The approved plans set the course for the first three-year investment cycle mandated by the Green Communities Act (GCA), passed in 2008, which requires the state's electric and natural gas distribution utilities as the energy efficiency program administrators ("PAs," generally utilities) to procure "all cost-effective energy efficiency."<sup>1</sup> The DPU decisions are the last step in a year-long effort by the PAs,<sup>2</sup> in collaboration with the newly created Energy Efficiency Advisory Council (EEAC) and other stakeholders to develop and approve effective three-year plans.<sup>3</sup>

Under the approved three-year plans, Massachusetts will see investments of over \$1.2 billion<sup>4</sup> in electric efficiency programs and approximately \$355 million in natural gas programs.<sup>5</sup> These investments in turn will collectively bring net benefits of approximately \$3.9 billion from electric and natural gas programs.<sup>6</sup> They are also expected to generate over 2.62 million MWh of annual electrical savings and over 57 million therms of annual natural gas savings.<sup>7</sup> The DPU found that electric energy efficiency programs in the three-year plans provide other benefits relevant to the state's environmental goals, such as reduction in statewide carbon dioxide emissions by 9.7 million short tons and the creation of 3,100 local jobs in Massachusetts over the three-year period.<sup>8</sup> The natural gas energy efficiency programs are expected to reduce statewide carbon dioxide emissions by over 5.2 million short tons over the life of the savings and create 778 local jobs.<sup>9</sup>

## Benefits and Energy Savings

The following table summarizes the electric plan benefits.

**Table 1: Summary of Statewide Electric EE Investments**

YEAR	2010	2011	2012	3 Year Totals
Benefits (\$)	1,156,515,424	1,705,325,862	2,078,685,195	4,940,526,480
Annual Savings (MWh)	624,427	897,232	1,103,423	2,625,083
Lifetime Savings (MWh)	7,413,712.01	10,467,612.97	12,932,542.09	30,813,867.07
Benefit-Cost Ratio	3.08	2.94	2.82	2.92
Savings as a percent of sales	1.4%	2.0	2.4%	N/A

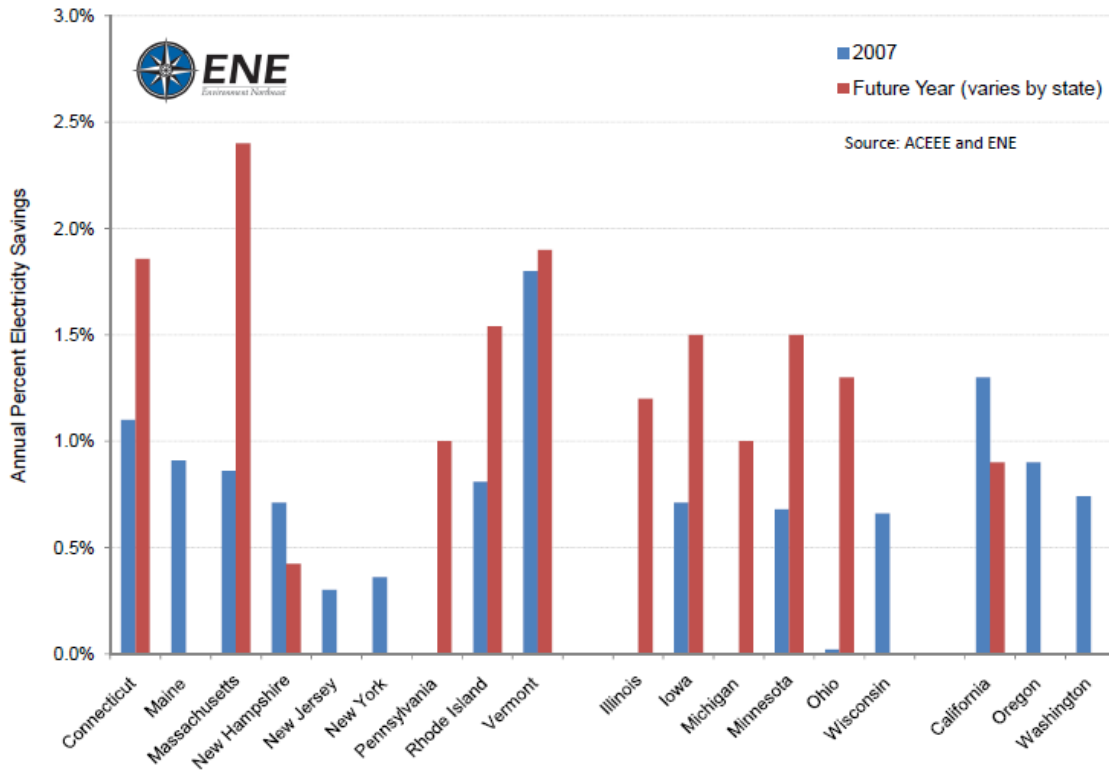
The Department's electric order approved the proposed graduated ramp up of energy efficiency programs over the three-year period in order to ensure that a delivery infrastructure will be in place to deliver high quality programs to customers on a sustainable basis.

Over the next three years, collectively, the state's PAs must achieve energy savings that will reduce retail electric sales by 2.4%, a level that has not been achieved in any other state. When the three-year electric

efficiency goals are achieved, customers will stand to recoup \$4.9 billion in benefits from the energy savings.<sup>10</sup>

The following figure presents planned savings targets for top efficiency states in the U.S. (Note that many of the states with high savings targets have not yet approved plans to achieve those targets.)

**Figure 1: Annual Percent Electricity Savings**



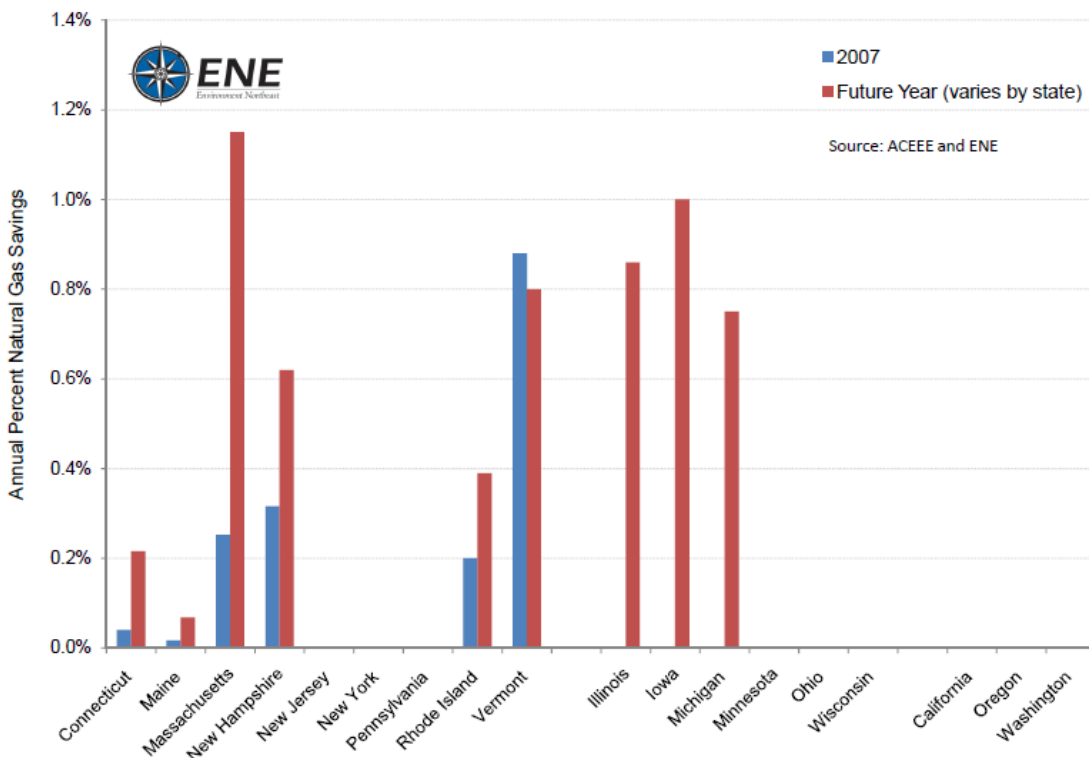
The DPU also approved aggressive goals submitted by the natural gas PAs. By 2012, the savings target of 24.7 million therms will be 1.15% of retail sales, a level that will elevate Massachusetts to the number one position in the nation for natural gas programs. Over the three years of the natural gas programs, Massachusetts’ consumers will enjoy nearly \$1.1 billion in benefits.

The following table summarizes the natural gas plan benefits.

**Table 2: Summary of Statewide Natural Gas EE Investments**

YEAR	2010	2011	2012	3 Year Totals
Benefits (\$)	\$264,427,697	\$363,984,445	\$470,143,385	1,098,555,526
Annual Savings (therms)	13,593,912	19,087,301	24,687,219	57,368,432
Lifetime Savings (therms)	228,759,473	302,541,218	380,232,992	911,528,540
Benefit-Cost Ratio	2.32	2.44	2.55	2.46
Savings as a percent of sales	0.65%	0.90%	1.16%	N/A

**Figure 2: Annual Percent Natural Gas Savings**



## Budgets and Funding

### Electric

Budget levels represent an historic increase from recent years. The electric program budget approved for 2010 is over \$293 million dollars and in 2012, increases to \$547 million.<sup>11</sup> The 2012 budget is more than a quadrupling of 2008 levels. This means much larger programs, which will now be integrated with natural gas programs and can service more customers, providing more rebates and incentives for insulating homes, replacing aging heating systems, replacing less efficient appliances and lighting in homes and businesses and providing greater savings for all customers on their utility bills.

The larger budgets are in fact “investments” which produce a measurable return. The Department approved a state-wide three-year electric budget of over \$1.2 billion.<sup>12</sup> This investment is expected to reap the state approximately \$3.9 billion in net benefits.<sup>13</sup> This level of return is ensured in part through a cost benefit analysis that the Department requires each PA to conduct on its energy efficiency programs (the total resource cost test or “TRC”). The cost-benefit analysis is performed using a Department-approved test (TRC test) and must demonstrate that for each dollar spent on a PA program, one or more dollars in benefits is achieved.<sup>14</sup>

The funding for electric programs comes from five different sources: (1) a system benefit charge (SBC) of \$0.0025 per kWh collected from ratepayers on their electric bill; (2) proceeds from the utilities participation in the forward capacity market (FCM); (3) proceeds from the Regional Greenhouse Gas

Initiative (RGGI); (4) other outside funding; and (5) an electric energy efficiency surcharge (EES), collected through an energy efficiency reconciliation factor (EERF), recovered from ratepayers through a distribution charge on their electric bills.<sup>15</sup> The Department generally found the funding sources consistent with its guidelines and directed the PAs to document their efforts to secure outside funding in their next annual reports.

### Natural gas

Natural gas program budgets will also see significant increases. The budget approved for 2010 is approximately \$88.3 million dollars and increases to \$148.8 million in 2012.<sup>16</sup> Similar to the electric programs, natural gas energy efficiency programs must be deemed cost-effective and are scrutinized under the TRC test.<sup>17</sup> After reviewing the activities and associated cost and benefits detailed in the natural gas program budgets, the Department found the budgets consistent with the Department's guidelines.<sup>18</sup> The Department did, however, direct two of the PAs, National Grid and Unitil to base their use of non-resource energy benefits on more current data.<sup>19</sup>

Natural gas programs are funded through a natural gas energy efficiency surcharge (EES), previously referred to as a conservation charge.<sup>20</sup> The natural gas PAs, like their electric counterparts, collect funds to defray costs associated with the MassSave/RCS program through a separate charge on customer utility bills.<sup>21</sup> Funding for the larger natural gas programs will contribute to long-term benefits such as increase energy saving programs from heating system replacements and higher levels of insulation and air sealing.

### **Innovation and Expansion**

In an effort to improve the delivery of energy efficiency programs and maximize long-term cost-effectiveness, the natural gas and electric three-year plans include a number of new ideas and plans. These include (a) a concerted effort to integrate the delivery of natural gas and electric programs for a more efficient and comprehensive experience for customers; (b) a commitment to securing outside financing for programs; (c) expanded on-bill repayment options so customers can finance their portion of the up-front costs of efficiency measures; and (d) a multi-family, low-income program to improve access to efficiency for residents in buildings with 5 or more units.

Importantly, the natural gas and electric PAs are planning to conduct five pilot programs to test new ways to reach customers in areas deemed underserved communities, typically, low-income, non-English speaking and minority communities. The pilots will be conducted in the Chinatown neighborhood of Boston, and in the cities of Chelsea, Lynn New Bedford and potentially Springfield. The Chinatown pilot, likely the most challenging of the five, will test a community-based organization's ability to mobilize homeowners and renters in single-family and multi-family residences as well as small business owners, to agree to participate in the programs, taking advantage of energy audits and incentives to make efficiency improvements to their homes and work places. The Chinatown community presents a challenge in terms of its cultural uniqueness, economic burdens and tight geographic setting. The two community-based groups that are handling outreach will utilize their knowledge and existing relationships to educate and enlist residents and small businesses to participate. Following the energy audit, and agreement by participants to complete the efficiency work, a contractor with a commitment to local hiring will implement the improvements. The community groups will coordinate all of the communication, translate when needed and close out the process with evaluation surveys. The PAs will evaluate the process for its cost effectiveness.

The PAs are also conducting other pilot programs including deep energy retrofit programs for existing homes, residential new construction programs targeting major renovations and, multi-family properties,

residential new construction lighting design programs and deep energy retrofits for commercial properties to develop and test the best methods to implement programs in these areas.<sup>22</sup>

The Department reviewed the pilot programs included in the three-year plans, including a slightly higher budget which required specific approval by the Energy Efficiency Advisory Council, and found both the budget and pilot programs consistent with Department guidelines.<sup>23</sup>

## Performance Incentives

Under the GCA, utilities may earn a performance incentive based on their success in meeting or exceeding program goals. The PAs set out a performance incentive plan that included an overall pool of incentive dollars to be divided into three components: (1) energy savings (kW, kWh for electric; therms for natural gas); (2) value measured by net benefits; and (3) performance metrics.<sup>24</sup> In its decisions, the Department approved the overall framework for natural gas and electric performance incentives, including the EEAC-endorsed pools and allocation among the PAs for 2010.<sup>25</sup> For electric PAs, the statewide incentive pool is \$17.3 million in 2010, \$21.6 million in 2011, and \$25.3 million in 2012.<sup>26</sup> On the natural gas side, the statewide natural gas incentive pool in the amounts of \$4.3 million in 2010, \$4.5 million in 2011 and \$5.5 million in 2012.<sup>27</sup> Each utility is allotted a percentage of the incentive pool that it may earn based on contributions to actual savings targets.<sup>28</sup> In 2010, the PAs proposed a cap of 125% on the total performance incentive a utility can earn.<sup>29</sup> While it approved most of the performance incentive proposal, the Department did direct the PAs to revise their proposed performance metrics and to work with the EEAC to develop a revised allocation method for 2011 and 2012 program years.<sup>30</sup>

## Next Steps

With the approval of the PA programs and budgets, the programs are being expanded and implemented but, there remain several necessary follow up steps for the PAs, the EEAC and the Department. First, the Department must review proposed tariff changes that will allow electric PAs to collect EES to help fund the increased budgets. Second, the PAs, working with the EEAC, must revise the performance metric and 2011-2012 allocation components of their performance incentive plan. Third, the PAs need to continue to pursue sources of outside funding for efficiency programs. Fourth, all parties will continue to revise the analysis of the bill impacts of these programs.

The approval of the three-year plans brings great promise for meaningful economic savings for the state and significant climate and other environmental benefits associated with avoided consumption of electricity and natural gas. Most importantly, with the approval of the three-year plans comes the responsibility of delivering the proposed savings. Program administrators are now getting to work executing the efficiency programs and bringing economic and environmental benefits to Massachusetts consumers.

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END NOTES

<sup>1</sup> See G.L. c. 25, § 21 (b)(1).

<sup>2</sup> Program administrators include gas and electric utilities who administer efficiency programs as well as the Cape Light Compact, a municipal aggregation of towns who have joined together to offer efficiency programs.

<sup>3</sup> See G.L. c. 25, § 22, The Energy Efficiency Advisory Council is an eleven – person body comprised of a broad spectrum of stakeholders including representatives from business, government, environment, labor, low income and residential. The EEAC worked closely with the program administrators in developing the 3 year plans that were submitted to the DPU in October of 2009.

<sup>4</sup> D.P.U. 09-116 through D.P.U. 09-120 Electric Order, January 28, 2010, (“Electric Order D.P.U. 09-116 – 09-120”), Table 3a: Statewide Program Budgets at 170.

<sup>5</sup> D.P.U. 09-121- 09-128 Natural Gas Order, January 28, 2010, (“Natural Gas Order D.P.U. 09-121 - 09-128”), Table 3 Statewide Program Budgets at 175.

<sup>6</sup> Electric Order D.P.U. 09-116 - 09-120 at xii (Executive Summary), Natural Gas Order D.P.U. 09-121 - 09-128 at vii (Executive Summary.)

<sup>7</sup> Electric Order D.P.U. 09-116 - 09-120 at 168 and Natural Gas Order D.P.U. 09-121 - 09-128 at 172.

<sup>8</sup> Electric Order D.P.U. 09-116 – 09-120 at 89 .

<sup>9</sup> Natural Gas Order D.P.U. 09- 121- 09-128 at 75.

<sup>10</sup> Electric Order D.P.U. 09-116 - 09-120 at 177.

<sup>11</sup> See *id.* at 173.

<sup>12</sup> See *id.*

<sup>13</sup> See *id.* at xii.

<sup>14</sup> See D.P.U. 08-50-A at 14. The DPU affirmed in 08-50-A that the total resource cost effectiveness test was the appropriate test for evaluation of the cost-effectiveness of ratepayer – funded energy efficiency programs...

<sup>15</sup> See *id.* at 55.

<sup>16</sup> Natural Gas Order D.P.U. 09-121-09-128 at 175.

<sup>17</sup> Gas Order D.P.U. 09-121 - 09-128 at 47.

<sup>18</sup> See *id.* at 50 - 51.

<sup>19</sup> See *id.* In calculating effectiveness, all program benefits and costs are identified. Non-electric resource benefits are included and take into account the avoided costs of natural gas, oil, propane, wood, kerosene, water and other resources for which consumption is reduced as a result of the implementation of energy efficiency programs. Non-electric non – resource benefits include, among others things: (1) reduced costs associated with efficient equipment practices; (2) reduced environmental and safety costs; and (3) all benefits associated with providing energy efficiency service to low income customers. Guidelines §§ 3.4.4.1(b)(i) and 3.4.4.1(b)(ii).

<sup>20</sup> See *id.* at 19; at 52 - 53. The EES is collected through a local distribution adjustment clause or LDAC, essentially a mechanism for collecting the charge.

<sup>21</sup> See *id.* at 52 - 53.

<sup>22</sup> Electric Order D.P.U. 09-116 - 09-120 at 47 - 48, Table 3b at 171; Natural Gas Order D.P.U. 09-121-09-128 at 45 - 46, Table 4 at 176.

<sup>23</sup> See Electric Order D.P.U. 09-116 - 09-120 at 48 (The DPU directed the PAs to provide further information regarding proposed 2010 and 2011 budgets at the time the PAs filed their 2010 Annual Reports); Natural Gas Order D.P.U. 09-121-09-128 at 46.

<sup>24</sup> See Electric Order D.P.U. 09-116 - 09-120 at 95; Natural Gas Order D.P.U. 09-121-09-128 at 101. (Performance metrics are “specific efforts expected to provide benefits beyond those captured in the savings and value components.”)

<sup>25</sup> Natural Gas Order D.P.U. 09-121-09-128 at 114; Electric Order D.P.U. 09-116 - 09-120 at 124.

<sup>26</sup> Electric Order D.P.U. 09-116 - 09-120 at 93 - 94.

<sup>27</sup> Natural Gas Order D.P.U. 09-121-09-128 at 79 - 80.

<sup>28</sup> Electric Order D.P.U. 09-116 - 09-120 at 94; Natural Gas Order D.P.U. 09-121 – 09-128 at 80.

<sup>29</sup> See *id.* Presently, there is no program cap set for the 2011 and 2012 years, but it is expected that the PAs and the EEAC will revisit this issue before the start of the 2011 program year.

<sup>30</sup> See *id.* at 93 - 94.