MASSACHUSETTS
RENEWABLE ENERGY PORTFOLIO STANDARD

ANNUAL RPS COMPLIANCE REPORT FOR 2005

FEBRUARY 20, 2007

(CORRECTED AUGUST 23, 2007)

Division of Energy Resources

Executive Office of Energy and Environmental Affairs

Commonwealth of Massachusetts

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ERRATUM (August 23, 2007)

At the beginning of the Executive Summary on page three, in the sixth line of the first paragraph, "1,032 MWh" has been corrected to "1.032 million MWh."

EXECUTIVE SUMMARY

Calendar Year 2005 was the third year of the Massachusetts Renewable Energy Portfolio Standard (RPS). All twenty retail electricity suppliers in Massachusetts demonstrated through their Annual Compliance Filings that they had met the 2005 RPS compliance obligation to supply two percent of their Massachusetts retail sales from new renewable energy generating sources. Retail sales in 2005 totaled about 51.6 million megawatt-hours (MWh), of which the two percent obligation was 1.032 million MWh. To meet that obligation, more than one and a quarter percent were from RPS qualified sources. The remaining shortfall of new renewable generation, amounting to less than three-quarters of a percent, was met through the alternative compliance mechanism.

For the Commonwealth of Massachusetts, the 664 thousand MWh of renewable energy used to meet the RPS requirement in 2005 was the equivalent of serving 83,793 households and reducing carbon dioxide (CO_2) emissions by 365,666 tons. Renewable resources within the Commonwealth accounted for 24.4% of the new renewable generation for compliance with RPS in 2005, thereby benefiting and financially supporting generators in Massachusetts.

The RPS continues to stimulate new power plant development. The number of new renewable generation units providing output for RPS compliance increased from nineteen in 2004 to twenty-five in 2005, while the total output of electricity for RPS compliance increased by 45 percent from 2004 to 2005. The major sources of increased output for RPS in 2005 were biomass plants in Maine and landfill methane units in Rhode Island, Vermont, and New York. For 2006, an additional six or seven generation units are expected to have provided output for RPS compliance.

While providing incentives to project development in Massachusetts and the rest of New England, the incentives have also had an effect in New York and most recently in the adjacent provinces of Canada. Although participation in the Massachusetts RPS market by New York new renewable generation units requires the additional expense of exporting the electricity to New England, such participation began in 2004 and has been increasing annually since then.

After a modest increase in the region's supply of new renewable generation in 2006, DOER expects a much larger increase in 2007. This is due to continued increases in output at several vintage and/or retooled biomass plants and at landfill methane projects, a significant increase in imports from landfill methane and wind projects in New York (including several already completed during the winter of 2006-07), and a full year of output from the recently completed Schiller biomass project in New Hampshire and the recently retooled Greenville Steam Company biomass plant in Maine, as well as the construction of additional projects in the development pipeline.

In sum, the results of DOER's review, analysis, and forecast for future compliance indicate, overall, the success of the program. The financial incentive of the RPS continues to provide its expected benefits to the Commonwealth, as well as to the surrounding region. The immediate, direct benefit is the development of new renewable electric generating facilities, which yields the secondary benefits of more diversity in the supply of primary energy sources and a cleaner air emissions profile for the fleet of electricity generating facilities (with less damage to human health and the environment). Furthermore, by providing incentives for a more diversified electric generation portfolio, RPS is expected to help reduce, over time, the Commonwealth's dependence on fuel imported from other regions or from overseas, especially increasingly expensive and volatile natural gas supplies.

INTRODUCTION AND SUMMARY

Calendar Year 2005 was the third year of the Massachusetts Renewable Energy Portfolio Standard (RPS). All twenty retail electricity suppliers in Massachusetts[1] demonstrated through their 2005 Annual Compliance Filings[2] that they had met the RPS compliance obligation to supply two percent of their Massachusetts retail sales from new renewable energy generating sources.

Retail sales in 2005 totaled about 51.6 million megawatt-hours (MWh). In meeting the two percent RPS compliance obligations, more than one and a quarter percent (about 664 thousand MWh, 1.3%) were from RPS qualified sources.[3] The remaining compliance obligation of less than three-quarters of a percent (about 368 thousand MWh, 0.7%) represents a shortfall in the availability of new renewable generation.

To meet that remaining compliance obligation, all except three of the twenty retail electricity suppliers had to use the RPS alternative compliance mechanism. The alternative compliance mechanism entails making Alternative Compliance Payments (ACPs) to an account at the Massachusetts Technology Collaborative (MTC), at the rate of $53.19 per MWh for 2005.[4] The total of ACPs for 2005 compliance was almost $19.6 million, which the MTC uses under DOER oversight to maximize the commercial development of new renewable generation.

The RPS supply shortfall in 2005 was larger than DOER had expected. Two factors seem to account for this. Most importantly, the total retail load obligation in 2005 was significantly higher than DOER had projected in its RPS compliance report for 2004 (51,558,778 MWh instead of 50,726,115 MWh), which resulted in an RPS obligation of 1,031,499 MWh instead of 1,014,522 MWh.[5] The higher actual load in 2005, as compared to DOER's projection, was due primarily to higher cooling (air conditioning) loads during a summer that was hotter than normal. In addition, more than 7,500 fewer MWh were generated from qualified power plants than DOER's internal projections had indicated. The result was a larger than expected total of ACP proceeds.

DOER expects a much larger increase in the supply of new renewable generation between 2005 and 2006 than between 2004 and 2005;[6] however, the demand also will rise substantially. Although the expected result is a smaller shortfall in the REC supply for 2006 than in 2005, the total dollar value of ACPs likely will be very close to the 2005 figure, due to the $1.94 per MWh increase in the Alternative Compliance Rate (from $53.19 for 2005 to $55.13 for 2006).[7] Looking

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[1] Municipally owned electricity suppliers are conditionally exempt from the RPS obligation.

[2] The retail electricity suppliers' Annual Compliance Filings for each year are due at DOER by July 1st of the following year.

[3] Less than two percent of that 664 thousand MWH (20 thousand MWh) represented surplus "banked" from 2003 and 2004. The figure 664 was derived by adding the 2003 and 2004 banked to the 2005 new renewable generation, and then subtracting the 2005 surplus that is being banked for 2006 and/or 2007 compliance: 645 + 20 - 1 = 664.

[4] DOER's calculation of ACP rates, based on annual increases in the Consumer Price Index, is explained at http://www.mass.gov/doer/rps/acp.htm.

[5] The RPS 2% obligation of 1,031,499 MWh is the total of all of the rounded-up obligations of the twenty filers.

[6] The total output of electricity for RPS compliance increased by 45 percent from 2004 to 2005. While output from the New England states slightly outpaced that increase, and New York provided 44.2 percent more, qualified Massachusetts sources provided only 4 percent more in 2005. The major sources of increased output for RPS were biomass plants in Maine and landfill methane projects in Rhode Island, Vermont, and New York.

[7] See footnote 4 regarding DOER's calculation of ACP rates.

forward one more year, the supply/demand balance appears set to improve considerably for 2007. The improvement is due both to full production in 2007 of landfill and biomass plants that began production or returned to production at various times during 2006, especially late in the year, and to the start-up in 2007 of additional new landfill, biomass, and wind capacity currently under construction. Some level of shortfall in supply is to be expected in the early years of this new program, and appropriate investment of the ACP funds has furthered the goals of growing the market share of renewable energy, along with its environmental and economic benefits.

The RPS stimulates new development activity. The number of new renewable generation units providing output for RPS compliance increased from nineteen in 2004 to twenty-five in 2005, and an additional six or seven are expected to have provided output for RPS compliance in 2006. One of the six new units for 2005 compliance is located in Massachusetts. The number of projects in various stages of development, especially some utilizing low-emission, advanced biomass technologies in Massachusetts, has continued to increase. The pending promulgation of revised RPS regulations should provide improved stimulus to the development of new renewable energy sources over the near term. However, new investment activity for renewables development beyond the near term is likely awaiting DOER's decision by the end of 2007 as to the continued increase in the RPS minimum standard during the period of 2010 through 2014.[8]

While providing those incentives to project development in Massachusetts and the rest of New England, the incentives have had an effect in New York and in the maritime provinces of Canada, as well. Although participation of New York new renewable generation units in the Massachusetts RPS market requires the additional expense of exporting the electricity to New England, such participation, which began in 2004, grew more during 2005, and has been accelerating during 2006. One wind farm was approved on Prince Edward Island, Canada, in April 2006, and its completion is expected in two phases during 2007 and 2008. That project will contribute to the supply for RPS compliance to the extent that it sells and transmits its electricity output to a buyer on the New England grid.

DOER expects a much more substantial increase in the supply of new renewable generation for 2007. This expectation is due to continued increases in output at several Vintage and/or retooled biomass plants and at landfill methane projects, a significant increase in imports from landfill methane and wind projects in New York (including several already completed during the winter of 2006-07), a full year of output from the recently completed 50 MW Schiller biomass project in New Hampshire and the recently retooled Greenville Steam Company biomass plant in Maine (both up and running in December 2006), and the construction of additional projects in the development pipeline.

The new renewable generation units that provided output for 2005 compliance, along with additional units that have come on line since then or that are currently in various phases of active development, are expected to continue the gradual improvement in the fuel diversity of the Commonwealth's electricity supply. Furthermore, by providing incentives for a more diversified electric generation portfolio for the region, RPS is expected to help reduce, over time, the Commonwealth's dependence on increasingly expensive and volatile natural gas supplies.

[8] This decision is required by the RPS regulations at 225 14.07(2). The regulations are available at http://www.mass.gov/doer/rps/225cmr.pdf.

For the Commonwealth of Massachusetts, the 664 thousand MWh of renewable energy used to meet the RPS requirement in 2005 was the equivalent of serving 83,793 households and reducing carbon dioxide (CO_2) emissions by 365,666 tons.[9] Renewable resources within the Commonwealth accounted for 24.4% of the new renewable generation for compliance with RPS in 2005, thereby benefiting and financially supporting generators in Massachusetts.

In sum, the results of DOER's review, analysis, and forecast for future compliance indicate, overall, the success of the program. The financial incentive of RPS continues to provide its expected benefits to the Commonwealth of Massachusetts, as well as to the New England region and New York. The immediate, direct benefit is the development of new renewable electric generating facilities, which yields the secondary benefits of more diversity in the state's supply of primary energy sources (with less fuel imported from other regions or from overseas) and a cleaner air emissions profile for the fleet of electricity generating facilities (with less damage to human health and the environment).

This report, with its appendices, briefly describes the Massachusetts Renewable Energy Portfolio Standard and how it operates, summarizes and provides detailed information from the 2005 compliance filings (including comparisons with prior years), provides analysis based on the 2005 compliance information (some of the details of which must remain confidential), projects the RPS compliance obligations for 2006 through 2009 (based on both projections of total electricity demand growth and on the statutory RPS minimum percentages), and discusses the current and future RPS supply of and demand for new renewable generation in the market created by the RPS. That discussion includes possible effects of the proposed changes in the RPS regulations that are expected to come into effect in the spring of 2007.

Appendix One narrates how DOER reviewed and verified supplier compliance for 2005. Appendix Two is the much more limited annual report actually required under the RPS regulations. Appendix Three provides greater detail regarding how the retail electricity suppliers complied with their RPS obligations for 2005. Appendix Four lists the RPS qualified power generators that provided new renewable generation in 2005 used by retail suppliers to meet their RPS compliance, as well as other currently qualified generators, including their actual or expected commercial start dates.

[9] The figures in this sentence are based on 663,641 MWh of new renewable generation for 2005 compliance, consisting of 644,849 MWh of 2005 new renewable generation, plus 19,531 MWh of Banked Compliance from 2003 and 2004, minus 739 MWh of surplus 2005 new renewable generation banked for use in 2006 and/or 2007; it does not include the 367,858 MWh of Alternative Compliance [Payment] Credits. The equivalent number of households was calculated using 660 kWh per month per average household, from DOER's internal analysis of its Electric Power Customer Migration data (available on-line at http://www.mass.gov/doer/pub_info/migrate.htm). The CO_2 displacement figure was calculated using the 2004 marginal emission rate for CO_2 of 1,102 lbs/MWh, from Table 1.1 on page one of the *2004 New England Marginal Emission Rate Analysis*, (ISO New England, Inc., May 2006, available at http://www.iso-ne.com/genrtion_resrcs/reports/emission/2004_mea_report.pdf); the report for 2005 was not yet available in early January 2007.

THE MASSACHUSETTS RENEWABLE ENERGY PORTFOLIO STANDARD

RPS was established by the Electric Utility Restructuring Act of 1997.[10] The RPS statute requires that all retail electricity suppliers providing electricity to end-use customers in Massachusetts include at least a certain minimum percentage from "new renewable" energy generating sources.[11] That obligation began at one percent for 2003, and it rises by one half percent each year through 2009, when the obligation will be four percent. After 2009, the obligation will rise by one percent each year until such time as DOER may choose to freeze the minimum percentage.[12] The statute also specifies which resources and technologies qualify as "new renewable." Following an extended process of stakeholder meetings, consultant white papers, and formal rulemaking, the Commonwealth issued final regulations for RPS on April 22, 2002.[13] The regulations require suppliers to submit Annual Compliance Filings that document their compliance with the RPS obligation, and they require electricity generation owners or operators to obtain from DOER Statements of Qualification to formally recognize their facilities as "new renewable generation units."

During 2006 DOER undertook a public process to amend the RPS regulations. The resulting proposed final regulations were submitted to the Clerk of the Massachusetts House of Representatives on November 6, 2006 for assignment to committee for review. The amended regulations should become final sometime in the spring of 2007. The amended regulations, in conjunction with the new *Guideline on the RPS Eligibility of Biomass Generation Units*, are intended to improve the operation of the program, including providing more clarity and certainty regarding the qualification of biomass generation units. Since electricity from biomass units is the fastest growing source of new renewable generation for RPS compliance, the issuance of the regulations and guidelines is likely to have a positive impact on RPS compliance.[14]

The new renewable generation "attribute" of each megawatt hour of electricity from a MA RPS qualified renewable generation unit is represented by an electronic certificate at the NEPOOL Generation Information System (GIS), where all generation units and retail electricity suppliers (a.k.a. "load serving entities") on the New England grid, as well as certificate brokers, have electronic accounts. A NEPOOL GIS certificate that is coded with the "MA new renewable generation" attribute (denoting MA RPS qualified electricity) is generally called a Massachusetts

[10] The RPS provisions of that act are incorporated into law as M.G.L., c. 25A, §11F, which is available at http://www.mass.gov/legis/laws/mgl/25a-11f.htm.

[11] Municipally owned electricity suppliers are conditionally exempt from the RPS obligation.

[12] The RPS regulations at 225 CMR 14.07(2) provide that DOER will determine no later than December 31, 2007, whether the obligation will increase by one percent per year during 2010 through 2014. DOER expects to announce early in 2007 its plans for making that determination.

[13] Documents from the stakeholder process, including policy white papers, in addition to other documents from the public process of rulemaking, can be accessed at http://www.mass.gov/doer/rps/delproc.htm. The final regulations, 225 CMR 14.00 et seq., can be accessed at http://www.mass.gov/doer/rps/regs.htm.

[14] Documentation of the proposed changes and of the public process leading to them can be accessed at http://www.mass.gov/doer/rps/rps_rule_revs.htm.

Renewable Energy Certificate (Mass REC or just REC)[15] in the RPS market. More detail about how RPS operates is in Appendix One of the *Annual RPS Compliance Report for 2003*.[16]

2005 RPS COMPLIANCE

DOER here summarizes the information provided by the twenty retail electricity suppliers in their Annual Compliance Filings for 2005.[17] Applicable Massachusetts retail sales during 2005 totaled 51,558,778 megawatt-hours (MWh).[18] The aggregated 2005 RPS obligation of two percent was 1,031,499 MWh from new renewable generation units, and that obligation was met by all twenty suppliers.[19] However, due to a shortfall in available RECs representing new renewable generation attributes, just over one-third (35.7%) of the obligation was met by means of the Alternative Compliance mechanism.[20]

Of the 1,031,499 MWh total obligation, 644,110 MWh was supplied by 2005 new renewable generation. Four of the suppliers also used Banked Compliance (surplus from their 2003 and 2004 compliance) that totaled 19,531 MWh, accounting for about two per cent of the 2005 obligation. Finally, all except three of the suppliers had to use the Alternative Compliance mechanism, making Alternative Compliance Payments (ACPs) at the rate of $53.19 per MWh for their remaining obligation. The ACPs totaling $19,566,367 were remitted to the Massachusetts Technology Collaborative (MTC), which must use the funds under DOER oversight to maximize the commercial development of new renewable generation capacity. DOER authorized the MTC to use 2003 and 2004 ACP funds to augment the amount that the MTC had already allocated from the ratepayer-funded Massachusetts Renewable Energy Trust funds to Round Two of its Massachusetts Green Power Partnership (MGPP), a program which provides future price support for RECs to facilitate the financing and construction of new renewable energy generating facilities.[21] The MTC use of proceeds from 2005 compliance is still under discussion.

Although the overall total of 2005 new renewable MWh plus Banked Compliance from 2003 and 2004 resulted in more than a one-third shortfall for compliance, which was met by ACPs, three suppliers nonetheless had surpluses totaling 739 MWh more than they needed for 2005 compliance, and they were able to bank that small surplus for use towards 2006 and/or 2007

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[15] REC has a more general meaning of renewable energy certificate or credit, which might or might not be RPS qualified. This term and its abbreviation are conventions of the marketplace and are not used in the RPS regulations, which refer only to “New Renewable Generation Attributes” and to “NEPOOL GIS Certificates.” This report will use "REC" or “Mass REC” to mean Massachusetts RPS qualified NEPOOL GIS certificate unless otherwise indicated, and "RPS" to mean the Massachusetts Renewable Energy Portfolio Standard unless otherwise indicated.

[16] The *Annual RPS Compliance Report for 2003* is available at http://www.mass.gov/doer/rps/rps-annual-05.pdf.

[17] The RPS regulations at 225 CMR 14.10(2) actually require a more limited “Annual Energy Resource Report,” which must include the prior year's “total retail electrical energy sales” (pursuant to §14.09(1)(a)) and the total “Renewable Generation Attributes” (pursuant to §14.09(1)(h)). Appendix Two contains that required report.

[18] This total does not include the retail sales of municipally owned electric companies (see footnote 1). Their sales account for about 14% of the overall Massachusetts total. The latter, therefore, is higher than the figure in this text.

[19] The aggregated total obligation is slightly higher than 2% of the total retail sales because each supplier’s own 2% obligation is subject to upward rounding.

[20] See the Alternative Compliance provisions at 225 CMR 14.08(4).

[21] More information on this program is available at http://www.masstech.org/renewableenergy/mgpp.htm.

compliance.[22] The above figures are included in Table One, alongside figures from the 2003 and 2004 compliance filings.[23]

Table One
Aggregated Information from the 2005, 2004, & 2003 RPS Annual Compliance Filings

		2005 MWh	***2004 MWh***	***2003 MWh***
A	Total retail electricity sales (load obligation) in Massachusetts[24]	51,558,778	*50,063,092*	*49,834,324*
B	Compliance Obligation: 2% in 2005 (*1.5% 2004, 1.0% 2003*)[25]	1,031,449	*750,954*	*498,344*
C	Total from 2005 (*2004, 2003*) New Renewable Generation	644,849	*444,680*	*304,112*
D	Total from banked attributes from previous year or two[26]	19,531	*61,147*	*255,069*
E	Total from New Renewable Generation (=C+D)	664,380	*505,827*	*559,181*
F	Shortfall for 2005 *(& 2004, but surplus for 2003)* (=B-E)	367,069	*245,127*	*(60,837)*
G	Total from Alternative Compliance Payments (ACPs)[27]	367,858	*265,424*	*181*
H	Total from New Renewable Generation & ACPs (=E+G)	1,032,238	*771,251*	*559,362*
I	Total banked for future Compliance (=H-B) (within two years)	739	*20,297*	*61,314*[28]

Figure One shows how the types of RPS compliance changed among the first three compliance years – 2003, 2004, and 2005. Compliance in the first year was facilitated considerably by "Early Compliance" from 2002, a year when compliance was not yet required. In 2002, RECs from RPS qualified generating units were created and could be acquired by retail suppliers to "bank" only for 2003 compliance. Due to the RECs shortfall in 2004, the number of banked RECs

[22] The quantity of banked RPS Attributes may not exceed 30% of a supplier's RPS obligation in the year in which those Attributes were created. Because that limit pertains separately to each supplier, the total MWh actually banked may be less than the total excess MWh, which was the case for 2003 but not for 2004.

[23] More detailed data on 2005 RPS compliance by the retail electricity suppliers is provided in Appendix Three.

[24] DOER has required that each retail electricity supplier use as its "retail electricity sales" the quantity of its "load obligation" assigned at the NEPOOL GIS (see Part 4 of the NEPOOL GIS Operating Rules, available via https://www.nepoolgis.com/.) That load obligation represents the quantity of electricity that the supplier (a.k.a. load serving entity) must provide at the PTF (pool transmission facility) boundary on the regional grid, and it includes transmission losses from that point to the end-use customers. See the *Guideline for Retail Electricity Suppliers on the Determination of Sales to End-use Customers for Calculating the Annual RPS Obligation*, at http://www.mass.gov/doer/rps/rps-compliance-guideline.pdf.

[25] The aggregated total RPS obligation for each year is slightly higher than the relevant percentage of the total load obligation because each supplier's own RPS obligation is subject to upward rounding. Cf. footnote 19.

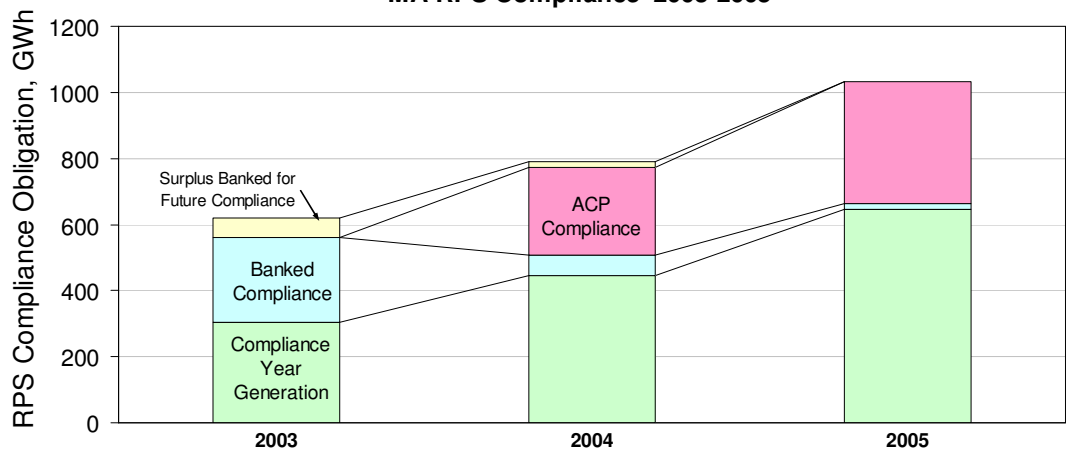
[26] RECs for RPS qualified new renewable generation from 2002, the year before the first Compliance Year, were "banked" by some Retail Suppliers to use for 2003 compliance under the "Early Compliance" provision of the regulations at 225 CMR 14.08(2) and 14.09(2).

[27] The total from ACPs is higher than the aggregated shortfall because several suppliers had a surplus at year's end. Subtracting that surplus (which those suppliers have banked for future use) from the RECs available for compliance yields a higher shortfall that had to be met by ACPs.

[28] This figure reflects a correction of the lower figure in Table One of the 2003 report. Note that 167 MWh of surplus banked from 2003 compliance were not used for 2004 Banked Compliance and are available for 2005 Banked Compliance.

from 2003 and 2004 to 2005 was much less than the number banked from 2003 to 2004 (and even fewer from 2005 compliance were available for banking forward). Thus, while the quantity of RECs has been steadily increasing, the annual shortfall has also been steadily increasing, with the result that fewer RECs have been banked each year. While the numbers of qualified generation units and their output increased considerably between 2003 and 2005, that growth was not sufficient to provide as many RECs from 2005 new renewable generation as needed for 2005 compliance. Consequently, each year the quantity of the shortfall covered by Alternative Compliance Payments (ACPs) has been increasing. However, while the quantity of compliance covered by ACPs grew by more than 100,000 MWh from 2004 to 2005 (and the dollar amount by more than $6 million), the percentage of RPS obligation covered by ACPs grew only slightly, from 35.3% to 35.7%, and the percentage of RPS obligation covered by the current year's RECs grew from 59.3% to 62.5% from 2004 to 2005. Also, as will be explained in a later section of this report, DOER anticipates a higher percentage of the 2006 obligation to be covered by 2006 RECs in the Filings due on July 2, 2007, and further reduction of the supply shortfall for the 2007 Compliance Year.

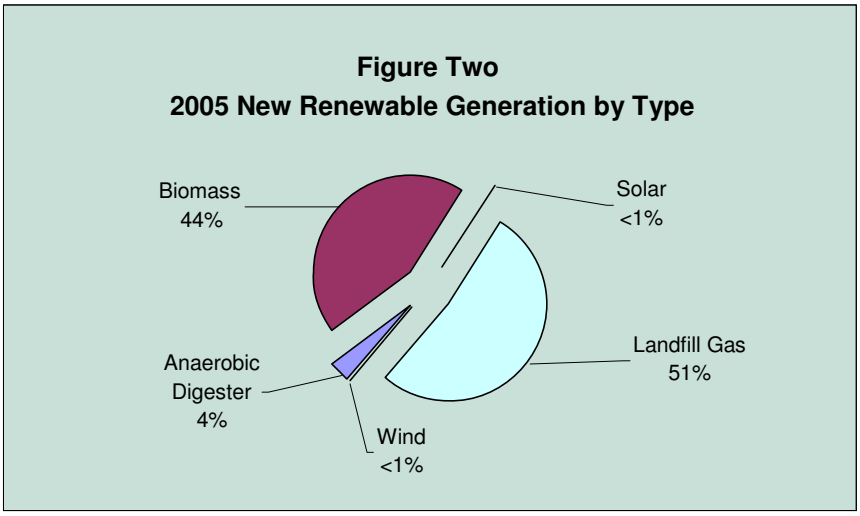
Figure One
MA RPS Compliance 2003-2005



	2003	2004	2005
Surplus Banked	61	20	1
ACP Compliance	0	265	368
Banked Compliance	255	61	20
Compliance Year Generation	304	445	645

Figure Two (below) shows the percentage of the total 644,849 MWh of 2005 output from new renewable generation units provided by each type of renewable resource. The order of the relative contributions from each resource remained the same as in 2004, but the landfill methane share declined while the biomass share increased. The largest single share in 2005 – 335,151 MWh – came from eighteen landfill methane energy plants located in six states. The second largest share, 285,289 MWh, came from three biomass plants in Maine. One anaerobic digester gas project in

Massachusetts was the third largest source, with 23,710 MWh. Finally, a wind farm in New York provided 693 MWh, and a solar photovoltaic array in Massachusetts provided 6 MWh.[29]



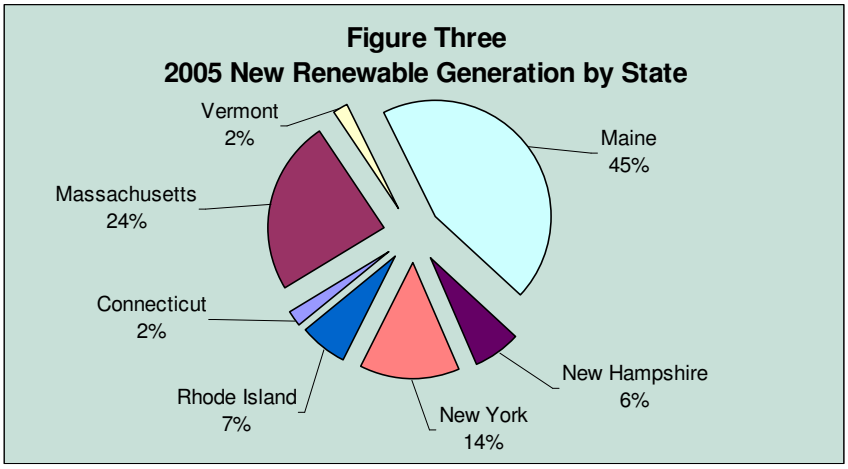


Figure Three shows the percentages of the 2005 new renewable output that came from Massachusetts, from the other five New England states, and from New York. Maine, with its concentration of biomass facilities, provided the largest share in 2005, up from 35% in 2004 to 45% in 2005: 285,289 MWh. Massachusetts ranked a more distant second in 2005 than in 2004 (down from 34% to 24%), with 157,022 MWh, mostly from eight qualified landfill methane energy plants – in Attleboro, Chicopee, Fall River, Granby, New Bedford, Plainville, Randolph, and Westfield – and the anaerobic digester plant at the Deer Island Wastewater Treatment Plant. New York was

[29] Although three aggregations of small solar photovoltaic (PV) systems are qualified, almost all PV certificates were sold into the voluntary "green power" market, where RPS qualified PV certificates command a premium price. Similarly, many RECs from qualified MA and NY wind facilities were sold into the voluntary market.

again the third largest source, exporting 90,373 MWh of new renewable electricity for RPS to the New England grid from three landfill energy plants and one wind farm. Rhode Island, with its large and expanding landfill methane plant complex providing 42,659 MWh, overtook New Hampshire as the fourth largest source in 2005. New Hampshire, Connecticut, and Vermont were fifth, sixth, and seventh respectively, each with supply from landfill plants – a pair of plants in Rochester, NH, and a small plant in each of the other two.

Additional information is in Appendix 4, which provides a pair of tables that list all RPS qualified new generating units by state, resource type, capacity, commercial start date (actual or projected), and, for "Vintage" units, "Historic Generation Rate."

Table Two lists the twenty suppliers that submitted Annual Compliance Filings for 2005. They fall into two categories:

- Regulated distribution utilities, which provide electricity under "Basic Service" to those customers in their franchise territories who do not purchase electricity from competitive suppliers; and
- Competitive suppliers, which compete for and supply electricity to retail customers in any or all of the distribution utility territories.

Table Two
2005 Massachusetts Retail Electricity Suppliers

Distribution Utilities	Competitive Suppliers (also in 2004)	Competitive Suppliers (new in 2005)
Boston Edison Company	Constellation NewEnergy	Consolidated Edison
Commonwealth Electric Company & Cambridge Electric Light Company	Dominion Retail, Inc.	Direct Energy Services, LLC
Fitchburg Gas & Electric Co. (d/b/a Unitil)	Mirant Americas Retail Energy Marketing, LP	Gexa Energy, LLC
Massachusetts Electric Company & Nantucket Electric Company	Select Energy, Inc., & Select Energy of New York, Inc.	Harvard Dedicated Energy, Ltd.
Western Massachusetts Electric Company	Strategic Energy LLC	Hess Corporation
	Suez Energy Resources NA	Mx Energy Electric, Inc.
	TransCanada Power Marketing Ltd.	Sempra Energy Solutions
		WPS Energy Services, Inc.

Additional detail regarding the process by which 2005 compliance filings were reviewed and processed are in Appendix One. DOER concludes that the 2005 filings were completed and processed more smoothly and expeditiously than had been the case for the 2004 Filings. However, the entry of eight competitive suppliers new to MA RPS compliance, did add some time to the process.

PROJECTION OF FUTURE RPS COMPLIANCE OBLIGATIONS

DOER has projected the future RPS compliance obligations through 2009, based on its analysis of Electric Power Customer Migration data that all Massachusetts suppliers submit monthly.[30] The RPS minimum percentage obligation increases as specified in the statute and regulations.[31] Table Three lists both the actual and projected total retail sales (as load obligation)[32] and the resulting projected RPS obligation in megawatt-hours (MWh).

Table Three
Actual (2003-2005) & Projected (2006-2009) RPS Annual Compliance Obligations

Year	*Actual*/Projected Load Obligation, MWh	RPS % Obligation	RPS MWh Obligation
2003	*49,834,324*	1.0	*498,344*
2004	*50,063,092*	1.5	*750,954*
2005	*51,558,778*	2.0	*1,031,176*
2006	52,529,442	2.5	1,313,236
2007	53,500,574	3.0	1,605,017
2008	54,489,659	3.5	1,907,138
2009	55,497,030	4.0	2,219,881

2006 COMPLIANCE SUPPLY AND OBLIGATION[33]

The sources of new renewable generation for 2006, according to preliminary estimates, continue to be predominated by landfill gas and biomass, both in terms of the number of qualified plants and, in some cases, the output from individual plants. The output from biomass plants in Maine increased substantially, due to continuing increases at the two Indeck plants, and at the Worcester Energy plant, all three of which qualify under Vintage Waivers.[34] In addition, near the end of 2006 the new 50 MW Schiller Station Unit 5 in New Hampshire began operation, as well as the 20 MW Greenville Steam Company in Maine; DOER expects both plants to add substantially more to the supply from biomass plants in 2007, when they provide a full year of RPS qualified

[30] DOER derived its 2005-2009 retail electricity demand (and, thereby, sales) by analyzing its Electric Power Customer Migration data (available on-line at http://www.mass.gov/doer/pub_info/migrate.htm). DOER derived a year-to-year increase curve from those data, and then adjusted the figures upwards to account for the difference between the those data (from monthly retail meter readings) and the retail sales totals reported in the RPS 2003 through 2005 Annual Compliance Filings (based on the suppliers' "load obligations" for the twelve calendar months). See explanation and reference in footnote 24 regarding the use of "load obligation" for "retail sales."

[31] The minimum percentages for RPS compliance are in the regulations at 225 CMR 14.07(1).

[32] See explanation and reference in footnote 24 regarding the use of "load obligation" for "retail sales."

[33] Information on the anticipated total output in 2006 and projections in subsequent years were obtained on a confidential basis from the owners, operators, and agents for most plants in December 2006. Thus, the information is kept deliberately non-quantitative.

[34] The Vintage Waiver provision in the RPS regulations is at 225 CMR 14.05(2). See also footnote 58.

generation.[35] Three more RPS qualified landfill plants (Seneca Falls Expansion, Colonie, and Modern) in New York began to export power and earn RECs during 2006 (with more on the way in 2007), while the output at landfills in New Bedford (MA), Coventry (VT), and Johnston (RI)[36] ramped up in 2006, following initial start-ups in 2005. Table Four lists the New Renewable Generation Units that began commercial operation, restarted, and/or began exporting electricity to the New England grid (the ISO New England control area) during 2006. Tables listing all plants qualified to provide RPS certificates, including those in Table Four, are in Appendix 4.

Table Four
Sources of RPS Certificates Added for 2006[37]

Name	State	Fuel / Technology	Capacity MW	Commercial Start Date
Schiller Station Unit 5	NH	biomass	50	12/06
Greenville Steam Company	ME	biomass	20	11/06
Colonie	NY	landfill	4.8	spring 2006
Modern LFG	NY	landfill	4.8	early 2006
Hull Wind 2	MA	wind	1.8	5/06
Mass Maritime Academy WTG	MA	wind	0.66	6/06
Mars Hill[38]	ME	wind	42	12/06

The 2006 RPS obligation is two and a half percent (2.5%) of the total load obligation of retail electricity suppliers in the Massachusetts territories of the five regulated, investor-owned utility companies. In addition to an increase in the RPS obligation by a half percent, the total load obligation is estimated to have increased. The result is a substantial increase in the RPS obligation for 2006 compliance (see Table Three). However, due to the considerably increased renewable electricity output described above, DOER anticipates perhaps 70% of the 2006 RPS compliance obligation to be covered by 2006 RECs, as compared to 62% of the 2005 obligation covered by 2005 RECs and 59% of 2004 obligation covered by 2004 RECs.

[35] Greenville Steam Company (as well as Boralex Livermore Falls) qualified under a rescinded RPS Guideline that provided that pre-1998 biomass plants lacking "advanced biomass power conversion technologies" but retooled with such technologies could qualify as New Renewable Generation Units without the need for a Vintage Waiver. See http://www.mass.gov/doer/rps/advbio.htm for the Guideline and http://www.mass.gov/doer/rps/rps-pol-stat-elig-biomass.pdf for the Policy Statement under which the Guideline was later modified.

[36] Expansion Phase 2 of the existing Johnston facility.

[37] DOER has not confirmed that all of the RECs from these plants will be made available for 2006 RPS compliance. Some might be sold into the voluntary green power market.

[38] The Mars Hill wind farm, although located in Maine, is outside of the ISO New England (ISO-NE) Control Area, i.e., is not on the New England power grid. It is in the territory of the Northern Maine Independent System Administrator (see http://www.nmisa.com/) and is connected to ISO-NE by transmission through the control area of the New Brunswick System Operator, which is adjacent to ISO-NE (see http://www.nbso.ca/en/). Because it is outside of ISO-NE, Mars Hill's electricity, like that of plants in New York, must be exported to ISO-NE in order to qualify for Mass RECs.

POST-2006 DEVELOPMENTS IN THE RPS MARKET

Regulatory Revisions

Decisions and announcements by DOER pertaining to current process of revising the RPS regulations are expected to have significant impacts on the development of new renewable generation units and, therefore, the possibility of projecting the future price and availability of RECs. On June 2, 2006, DOER issued for public comment proposed revisions to the RPS Regulations, along with an accompanying draft *Guideline on the RPS Eligibility of Biomass Generation Units* (the "*Guideline*"). The formal notices issued on that date initiated a public process that included a Public Hearing on June 28th and the receipt of 27 written comments by July 18th. DOER submitted its proposed final regulations and the *Guideline* to the state legislature for review by relevant committees (as required by DOER's statute) on November 6, 2006.[39]

The regulatory revisions and the *Guideline* are expected to provide clarification and decrease the uncertainties regarding the RPS qualification of biomass plants, especially by defining "low-emission, advanced power conversion technologies." In addition, the revised regulations address fuels derived from organic refuse, including wood from construction and demolition debris, and the use of "blended" fuels.[40]

In spite of past uncertainties, biomass has been the fastest growing source for RPS qualified new renewable generation. The improved regulations should facilitate still more growth in that sector. The reduction of uncertainty also should facilitate the development of new renewable generation units of all types, not just biomass, since financial institutions and other development investors value the reduction of investment risk that is provided by certainty. In addition, the regulations tighten-up the provisions for the use of vintage facilities, while allowing for the redevelopment of vintage locations, which also should facilitate new development.

Although the pending promulgation of revised RPS regulations should provide improved stimulus to the development of new renewable energy sources over the near term, new investment activity for renewables development beyond the near term is likely to await DOER's decision by the end of 2007 as to the continued increase in the RPS minimum standard during the period of 2010 through 2014.[41]

Development Activity

Among the potential biomass plants at various stages of planning, siting, or permitting processes are the following that already have Advisory Rulings: the 50 MW Russell Biomass Plant and the 21 MW EcoPower plant in Massachusetts, GenPower plants of 40 MW each in three states, and the 16 MW Hemphill and 4.8 MW Barnstead plants in New Hampshire. The eventual outcome of those processes is uncertain at this time. Meanwhile, DOER granted a Statement of Qualification in December 2006 to the 5.5 MW Laidlaw biomass plant in New York, and DOER has several more applications for biomass projects under review.

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[39] Current information about the process and copies of all documents, including those that DOER submitted to the legislature, are available via the DOER/RPS webpage, at http://www.mass.gov/doer/rps/rps_rule_revs.htm.

[40] See the documents at the RPS rulemaking webpage: http://www.mass.gov/doer/rps/rps_rule_revs.htm.

[41] This decision is required by the RPS regulations at 225 14.07(2). The regulations are available at http://www.mass.gov/doer/rps/225cmr.pdf.

Much wind capacity is at various stages of development in New England and in the adjacent electric system controls areas of New York, Quebec, and New Brunswick. In fact, during 2006 DOER granted Statements of Qualification for 111 MW of wind capacity at two projects in New York, for a 42 MW wind farm in northern Maine, and for a 99 MW wind farm on Prince Edward Island. The last two are in the New Brunswick Control Area. The three projects in New York and Maine have already come on line in December 2006 and January 2007, while the first 20 MW of the Canadian project are scheduled to come on line later in 2007 (the remainder in 2008). An expectation of still more wind capacity is based on news accounts and on interconnection requests at ISO New England.[42]

Finally, DOER is confident in expecting more supply from landfill projects in the New England – New York region. Two qualified landfill projects in New York (Nanticoke and Development Authority of the North Country) should begin to export power to New England during 2007, and DOER expects to receive applications in 2007 from others in the development pipeline in both New York and New England. Meanwhile, electricity output should continue to increase at several of the qualified landfills in New England during 2007 and beyond.

Some of the above might not receive the necessary financing, siting approvals, local and state permits, and contracts for power or RECs necessary for construction. Uncertainties remain, including the following:

- future statutory and regulatory treatment for the combustion of C&D wood as a power plant fuel in the region – currently subject to a moratorium in New Hampshire and to a 50% limit at plants in Maine;[43]
- the local acceptance of wind power on New England ridge lines and coasts, not to mention the eventual fate of the 420 MW Cape Wind project in Nantucket Sound;
- possible implementation of and rules for RPS in additional northeastern states;
- the post-2009 minimum standard for Massachusetts RPS that DOER will announce by the end of 2007; and
- the growth rate of voluntary markets for RECs.

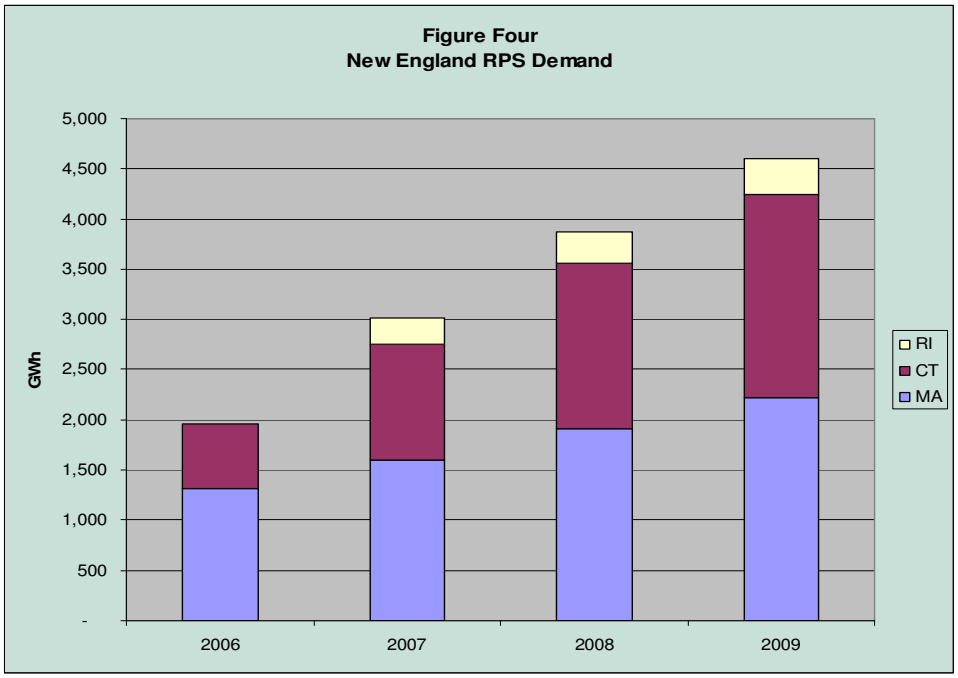
The future availability of RECs for MA RPS is certain to be affected by the development of RPS programs in neighboring states and differences in which renewable resources qualify in those programs. In 2007, the compliance percentage for the Connecticut RPS begins to increase at a higher rate than before, and the Connecticut legislature's 2006 tightening of its RPS eligibility standards has succeeded in reversing the downward slide in REC prices there. In addition, Rhode Island's RPS obligation commences in 2007. The net result will be higher demand for RECs, the majority of which are eligible in all three states. That could add pressure on the settling of RPS qualified certificates in Massachusetts after 2006.[44] The relative impacts on RPS demand in New

[42] The ISO New England is a not-for-profit corporation responsible for the operation of New England's bulk power generation and transmission system. More information is at http://www.iso-ne.com/. For interconnection requests, follow links from this URL: http://www.iso-ne.com/trans/nwtrns_inter/nw_inter/index.html.

[43] The Maine limitation currently may be under reconsideration. See, for example, this 12/30/06 story from the *Bangor Daily News*: http://bangordailynews.com/news/t/news.aspx?articleid=144663&zoneid=500.

[44] See Appendix Four of the 2003 RPS report (see footnote 16) for information about RPS obligations for Connecticut and Rhode Island. However, the CT legislature changed the qualification standards for biomass plants in 2006.

England from Massachusetts, Connecticut, and Rhode Island are presented graphically in Figure Four.



MA projections are from Table Three of this report. The CT (net 6.1% muni load) and RI retail sales projections are from sheet 2 of the following ISO-New England spreadsheet: http://www.iso-ne.com/trans/celt/fsct_detail/2006/isone_2006_forecast_data.xls.

Ongoing developments in how the New York Public Service Commission operates its state's new RPS, which commenced in 2005,[45] could have the potential to reduce the supply of new renewable generation output exported from New York to New England for the Massachusetts and Connecticut RPS markets. However, DOER's experience so far is that MA RPS competes favorably, perhaps because of the funding limitations of the NY RPS, and that qualified imports from New York are on the increase, especially from new or expanding landfill methane projects and from new wind farms.

Another factor of uncertainty for the future REC supply is the impact of voluntary purchases of RECs that are qualified for the Massachusetts RPS. Currently, almost all RECs from solar photovoltaic (PV) projects are sold into the voluntary green power market, where a premium price is paid for what is, in fact, the most costly of new renewable electricity available in New England. However, the green power market also includes increasing quantities of wind and landfill methane RECs. Growth of the voluntary green power market, like that of RPS, is favorable for the overall and long term growth of new renewable energy supply. However, it does present another element of uncertainty when DOER attempts to project future REC supply for RPS.

DOER's near-term expectation is that the supply of new renewable generation will improve substantially for 2007, as new landfill, biomass, and wind capacity currently in the pipeline

[45] A detailed record of the development of the New York RPS is at http://www.dps.state.ny.us/03e0188.htm.

becomes operational and output continues to expand at existing landfill and biomass facilities. Although the supply of RECs in 2007 has the potential to approach and even to surpass the projected demand, uncertainties remain. Those uncertainties include economic and weather conditions, which could – as evidenced by the 2005 figures – substantially alter electricity sales and, therefore, the total RPS obligation. Factors external to Massachusetts, such as changes in RPS rules in other states, can also impact REC demand, as can demand growth in the voluntary green power market. On the REC supply side, biomass plant capacity factors and output can be strongly affected by the price of wood, unusual storms, and unforeseen mechanical or financial difficulties. Wind and landfill methane plant operations likewise are not immune to unforeseen problems.

INVESTMENT OF FUNDS FROM ALTERNATIVE COMPLIANCE PAYMENTS

The Alternative Compliance mechanism of the RPS Regulations, at 225 CMR 14.08(4), provides for payments (ACPs) to be made to the Massachusetts Technology Collaborative (MTC) by retail suppliers in order to cover shortfalls in the supply of New Renewable Generation. The Regulations further provide that DOER "shall oversee the use of ACP funds by the [MTC] so as to maximize the commercial development of New Renewable Generation Units." Accordingly, ACP proceeds are held in an account separate from funds of the Massachusetts Renewable Energy Trust (MRET) at the MTC, the latter being collected as a system benefit charge on the electric bills of all retail customers in the territories of the regulated, investor-owned utilities of Massachusetts.

Pursuant to Memoranda of Understanding between DOER and the MTC, the MTC was authorized to use ACP funds from compliance years 2003 and 2004 to augment MRET funds for the Massachusetts Green Power Partnership (MGPP), beginning with MGPP Round 2 awards in 2005.[46] Only projects that use renewable energy resources or technologies that are eligible under the RPS regulations receive ACP funds, while MRET funds also can be and have been used for RPS-ineligible hydropower projects. Of about $13.7 million of ACP funds collected in the first two years of RPS compliance, about $7.6 million has been set aside in escrow (or otherwise committed) under REC price support contracts for three projects: Lempster [NH] Mountain Wind Project (Community Energy, Inc.), Greenville [ME] Steam Company, and Sheffield [VT] Wind in (UPC Wind Management). Two additional projects in Massachusetts selected by MTC had awards that were forfeited by the project owners and one contract (Greenville Steam Company) was reduced, totaling $4.9 million forfeited.[47] Currently, $5.4 million (including the $4.9 in forfeited awards) is available for future awards, and the remaining $700,000 is set-aside for administration of the awards over the multi-year terms of the awards.

As of the issuance of this report, discussions are still underway among DOER, the MTC, and stakeholders about how the proceeds of ACPs from 2005 compliance will be spent. However, it is very likely that at least a portion of the proceeds will be utilized for a third round of the MTC's MGPP initiative.

[46] The MGPP is designed to stimulate private investment in the construction of new renewable electric generating units in Massachusetts and New England. For information about how the MGPP operates, as well as a list of the project awards to date, visit the program's webpage at http://www.masstech.org/renewableenergy/mgpp.htm.

[47] See the MGPP webpage for more detail about both ACP and MRET funded projects and about the nature of financial support for those projects: http://www.masstech.org/renewableenergy/mgpp.htm.

CONCLUSION

During the third year of the RPS, all twenty retail suppliers achieved compliance, although Alternative Compliance Payments accounted for more than one-third of compliance. The process of tracking, submitting data, and verifying data worked more smoothly for 2005 than for 2004. Refinements will be made to further expedite DOER's review of future compliance filings.

More importantly, the results of DOER's review and forecast for future compliance indicate the success of the program. The 664 thousand MWh of renewable energy used to meet the requirement in 2005 was the equivalent of serving 83,793 households and reducing carbon dioxide (CO_2) emissions by 365,666 tons.[48] Renewable resources within the Commonwealth accounted for 24.4% of that energy, thereby benefiting and financially supporting generators in Massachusetts.

The Massachusetts RPS program has stimulated new development activity. The number of new renewable generation units providing output for RPS compliance increased from nineteen in 2004 to 25 in 2005, and an additional six or seven are expected to provide output for RPS compliance in 2006. One of the six new units for 2005 compliance is located in Massachusetts. The number of projects in various stages of development, especially some utilizing low-emission, advanced biomass technologies in Massachusetts, has continued to increase. Promulgation of revised RPS regulations early in 2007 should provide enhanced stimulus to the development of new renewable energy sources over the next several years.

All except three of the twenty retail electricity suppliers had to use the Alternative Compliance mechanism to meet their 2005 compliance obligations. Although DOER also expects a smaller shortfall in the REC supply for 2006, the total dollar value of Alternative Compliance Payments likely will be very close to the 2005 figure, due to the $1.94 per MWh increase in the Alternative Compliance Rate (from $53.19 for 2005 to $55.13 for 2006).

DOER expects a much more substantial increase in the supply of new renewable generation and, thereby, RECs for 2007. This expectation is due to continued increases in output at several Vintage and/or retooled biomass plants, a significant increase in imports from landfill methane and wind projects in New York (including several completed during the last few months), a full year of output from the recently completed 50 MW Schiller biomass project in New Hampshire and the recently retooled Greenville Steam Company biomass plant in Maine, and the construction of additional projects in the development pipeline.

As asserted in the reports for 2003 and 2004, the level of ACPs is not an indication of program flaws. The RPS REC market is new and maturing, and some level of shortfall in REC supply is to be expected during the first several years of the RPS. The MA RPS, as well as similar

[48] The figures in this sentence are based on 663,641 MWh of new renewable generation for 2005 compliance, consisting of 644,849 MWh of 2005 new renewable generation, plus 19,531 MWh of Banked Compliance from 2003 and 2004, minus 739 MWh of surplus 2005 new renewable generation banked for use in 2006 and/or 2007; it does not include the 367,858 MWh of Alternative Compliance [Payment] Credits. The equivalent number of households was calculated using 660 kWh per month per average household, from DOER's internal analysis of its Electric Power Customer Migration data (available on-line at http://www.mass.gov/doer/pub_info/migrate.htm). The CO_2 displacement figure was calculated using the 2004 marginal emission rate for CO_2 of 1,102 lbs/MWh, from Table 1.1 on page one of the *2004 New England Marginal Emission Rate Analysis*, (ISO New England, Inc., May 2006, available at http://www.iso-ne.com/genrtion_resrcs/reports/emission/2004_mea_report.pdf); the report for 2005 was not yet available in early January 2007.

programs elsewhere in the region and Renewable Energy Trust funded programs of the Massachusetts Technology Collaborative (MTC), will take time to mature and become robust. To assist that process, DOER, in coordination with the MTC, will ensure that the ACP funds continue to be invested wisely, for the development of new renewable generation, and on terms calculated to yield economic results for consumers.[49]

In the meantime, MA RPS has begun to provide a more diversified electric generation portfolio for the region. Increased diversification will, over time, reduce the Commonwealth's dependence on natural gas and, thereby, reduce the impact of recently enhanced natural gas price increases and volatility. Further, these new resources will not contribute to greenhouse gas levels in the region. All of this is being achieved at reasonable cost to consumers.

In addition to new renewable development in Massachusetts and elsewhere in New England, demand for MA RPS qualified new renewable generation, along with differences between the operation of the RPS in Massachusetts and of New York, have stimulated the development and import of electricity from new renewable sources in New York to serve the Massachusetts market.

Demand for RECs is set by statutory increases in the RPS compliance percentage and by the growth in electricity demand, rather than by the interaction of market forces. Therefore, supply can catch up to demand only as quickly as developers manage to overcome constraints on the development of new renewable projects. Those constraints include the challenges of site location and acceptance, financing of projects, and obtaining long term contracts for both electricity and RPS qualified RECs. In addition to those constraints, the process of developing large, new, energy facilities – planning, designing, contracting, and constructing – is inherently time consuming. DOER believes a balance of supply and demand can be achieved within the next year or two.

DOER intends to continue to work on developing solutions to the challenges noted above and will continue to evaluate and assess the likelihood of meeting future RPS target levels. DOER will report on this evaluation as appropriate, but at least annually, and looks forward to its continued role in facilitating the implementation of this critical program.

[49] The provision for how funds from Alternative Compliance Payments are to be spent is in the RPS regulations at 225 CMR 14.08(4)(b).

APPENDIX ONE

RPS 2005 Compliance Filings, Review, and Verification

All suppliers that sold retail electricity to end-use customers in the territories of the five Massachusetts regulated utilities during 2005 were required to file their Annual Compliance Filings for 2005 by July 3, 2005, the first business day after Saturday, July 1.[50] DOER issued forms and instructions for the Filings on May 25th, three weeks before the end of the NEPOOL GIS trading period for the fourth quarter of 2005. By July 5th, DOER had received Filings from all five of the regulated utility companies and from twelve of the fifteen competitive suppliers. Another Filing arrived on July 6th. Later Filings were received on July 13th and August 7th from two of the eight suppliers who were new entrants to the Massachusetts retail market.

During the summer and into the fall, DOER staff reviewed the Filings submitted by the suppliers, including printed and electronic copies of their GIS reports. The electronic files enabled DOER to aggregate, analyze, and summarize the information in the Filings, while the printed versions were used to verify that the electronic versions matched. DOER contacted suppliers for correction of mathematical errors and for some additional information, explanations, clarifications, and corrections. Meanwhile, DOER staff began drafting this report, the completed draft of which required review and revision several times before authorization for release. Thus, the report for 2005 is being issued early in 2007, after more than seven months of work at DOER.

On February 9, 2006, DOER issued a Guideline[51] stating that suppliers shall use the Load Obligation data recorded in their Massachusetts retail sub-accounts at the NEPOOL GIS as the sole basis for determining sales of electrical energy to end-use customers and for calculating their annual RPS obligations. The Guideline went on to state that if a supplier does not correctly assign its Load in the GIS, then DOER would obligate the supplier to base its calculation on data provided to DOER by the distribution utilities for RPS verification purposes.

Although the 2005 Filings showed improvement over the previous two years, some suppliers still did not correctly assign their Load in their GIS accounts. Therefore, DOER relied on data submitted (on a confidential basis) by the regulated utilities. In addition, several Filings included calculation errors. Accordingly, some adjustments were required.

The 2005 Filings were submitted, reviewed, supplemented, corrected, clarified, and accepted more smoothly and with fewer delays than had been the case for the 2004 Filings. DOER will, nonetheless, review the 2005 results further for possible improvements before providing instructions for the 2006 Annual Compliance Filings.

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[50] DOER provided an additional two days for "on-time" filing, due to the July Fourth holiday.

[51] See *Guideline for Retail Electricity Suppliers on the Determination of Sales to End-use Customers for Calculating the Annual RPS Obligation*, at http://www.mass.gov/doer/rps/rps-compliance-guideline.pdf.

APPENDIX TWO

2005 Annual Renewable Energy Resource Report

This Appendix reports certain information from the Annual Compliance Filings for 2005 that is required by the RPS regulations at 225 CMR 14.10 (2), which provides as follows:

> Annual Renewable Energy Resource Report. The Division will produce an annual report that summarizes information submitted to the Division by Retail Electric Suppliers in the Annual Compliance Filing submitted to the Division pursuant to 225 CMR 14.09 (1) (a) and (h).

The summary information for the report required at §14.10 (2), namely the "total retail electrical energy sales" (pursuant to §14.09 (1) (a)) and the total "Renewable Generation Attributes" (pursuant to §14.09 (1) (h)), in megawatt-hours (MWh), is provided in the following table:

2005 Annual Renewable Energy Resource Report

Total Retail Electrical Energy Sales in Massachusetts in 2005	51,558,778 MWh
Total Renewable Generation Attributes in 2005	2,227,778 MWh

The total Renewable Generation Attributes reported in the Filings is higher than the total quantity of *New* Renewable Generation Attributes used for RPS Annual Compliance and lower than the actual total quantity of energy from Renewable Generation Units (see below). Most of the latter do *not* qualify for RPS: hydropower plants, municipal solid waste (MSW) energy and trash-to energy plants, and pre-1998 renewable energy plants. Most of that RPS-*in*eligible output is aggregated with non-renewable sources into the so-called "residual mix" category in the GIS and is not reportable in the Filings, which use documentation from the GIS.

For more useful information, DOER has derived from a GIS public report complete data on how many GIS certificates were created for 2005 electricity from Renewable Generation Units for the entire New England power grid,[52] and then calculated the share of that renewable output that would have been delivered to Massachusetts retail customers if it were distributed equally in the grid (although, because of various physical factors, it cannot be).[53] In addition, DOER calculated the share of that output that would have been delivered to retail customers in the territories of the regulated utilities of Massachusetts, to whose retail sales this report pertains.

GIS Renewable Energy Certificates in 2005

Total Renewables in ISO-New England		12,880,178 MWh
Massachusetts share	45.38 %	5,844,812 MWh
MA regulated utility territories' share	39.03 %	5,026,538 MWh

[52] The data are from the four quarterly data tables for 2005 in the public report, "GIS Certificates Statistics" (the tab titled "By Renewable Fuel Type"), which is accessible via https://www.nepoolgis.com/mymodule/mypage.asp.

[53] The MA share was derived from a spreadsheet at the ISO New England's *CELT Forecasting Details 2006* web page, http://www.iso-ne.com/trans/celt/fsct_detail/index.html. The specific spreadsheet used, via the first choice, "Forecast Data 2006," is worksheet 1, "ISO-NE Control Area & New England States Net Energy for Load (NEL) & Seasonal Peak Load History.". Municipally owned utilities in Massachusetts accounted for 14% of the MA retail demand in 2004, leaving 86% to be supplied by companies in the territories of the regulated utilities, which is where the RPS applies.

APPENDIX THREE

2005 RPS Compliance Summary

	Retail Sales	New Renewable Energy Attributes							Banked for Future Compliance		
Retail Electricity Suppliers	**Load Obligation (from filing)**	**2005 Mass RECs (from GIS**	**2003 Banked Attributes**	**2004 Banked Attributes**	**Other Attributes[54]**	**Alternative Compliance Credits**	**Total RPS Attributes**	**2.0% RPS Obligation**	**Excess Attributes**	**Banking Limit (30%)**	**Banked Attributes**
Distribution Companies											
Mass/ Nantucket Electric	16,707,527	247,778	0	0	0	86,374	334,152	334,152	0	100,246	0
Commonwealth Electric & Cambridge Electric	3,425,926	16,441	50	0	0	52,031	68,522	68,522	0	20,557	0
Boston Edison	11,527,601	89,851	50	2	2,807	137,843	230,553	230,553	0	69,166	0
Western Mass Electric	3,355,843	38,418	0	0	0	28,699	67,117	67,117	0	20,136	0
Fitchburg G&E	352,239	7,000	57	721	0	0	7,778	7,046	732	2,114	732
Subtotals	35,369,136	399,488	157	723	2,807	304,947	708,122	707,390	732	212,219	732
Competitive Suppliers[55]											
Consolidated Edison											0
Constellation New Energy											0
Direct Energy											5
Dominion											0
Gexa											2
Harvard											0
Hess											0
Mirant Americas Retail											0
Mx Energy											0
Select Energy											0
Sempra											0
Strategic Energy											0
Suez											0
TransCanada											0
WPS											0
Subtotals	16,189,642	233,704	0	18,651	8,850	62,911	324,116	324,109	7	97,240	7
Totals	51,558,778	633,192	157	19,374	11,657	367,858	1,032,238	1,031,499	739	309,459	739
	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh

[54] "Other Attributes" are New Renewable Generation Attributes that are documented by a method *other than* a supplier's "My Settled Certificates" reports at the NEPOOL GIS.

[55] Most of the information for competitive suppliers is kept confidential in accordance with 225 CMR 14.09 (1) (b).

APPENDIX FOUR

MA RPS Qualified New Renewable Generation Units

The two tables below list all of the MA RPS qualified New Renewable Generation Units. The Table A lists only those Units that provided RECs for RPS compliance in 2005. Table B lists all other Units, including some that have not yet been completed and some that are in operation but have never provided RECs for RPS compliance.

Table A
Sources for RPS Certificates in 2005
by Fuel/Technology, State, and Date

Name	State [56]	Fuel / Technology [57]	Capacity MW	Commercial Start Date	Historic Generation Rate, MWh [58]
Deer Island Treatment Plant - STG	MA	AD	18.0	7/98	
Blue Spruce Farm (Bridport)	VT	AD	0.27	1/05	
Deblois - Worcester Energy	ME	BM	25.85	6/89, restart spring 2005	3,126
Indeck West Enfield	ME	BM	27.0	11/87 restart 6/01	20,888
Indeck Jonesboro (Washington)	ME	BM	27.0	11/87, restart 5/04	7,884
CRRA Hartford Energy LLC	CT	LFG	2.8	8/98	
Attleboro Landfill – QF	MA	LFG	1.5	1/98	
Randolph/BFG Electric Facility	MA	LFG	3.0	3/00	
[Sykes Rd] - GRS - Fall River	MA	LFG	5.7	8/00	
Granby Sanitary Landfill & Granby LFG Off Grid	MA	LFG	2.8	10/01	
Greater New Bedford LFG Utilization	MA	LFG	3.3	10/05	
Plainville Generating Co., LLC	MA	LFG	5.6	3/03	
Chicopee Units 1, 2, & 3	MA	LFG	5.7	2/04	
Westfield #1	MA	LFG	0.48	12/04	
Turnkey Load Reducer (Rochester)	NH	LFG	3.2	3/92	8,329
Rochester Landfill	NH	LFG	6.4	1/98	16,658 [59]

[56] See footnote 38 regarding the import requirements that apply to all RPS qualified plants in New York or other regional grids outside of the ISO New England control area (the NEPOOL grid).

[57] AD = anaerobic digestion. BM = biomass. LFG = landfill methane gas, PV = photovoltaic.

[58] "Historic Generation Rate," which pertains only to a plant that is RPS qualified with a Vintage Waiver (as provided in the RPS regulations at 225 CMR 14.05(2)), is the quantity of electricity that a Vintage plant must generate each calendar year before its GIS certificates get coded as MA RPS qualified and, thereby, eligible to be used by retail suppliers for RPS compliance. The term is defined at 225 CMR 14.02 as the average of a Vintage plant's annual output during 1995-97 or, if it started operation after January 1, 1995, during the plant's first 36 months of operation. A Vintage plant is one that began commercial operation before January 1, 1998.

Ontario LFG/Seneca Energy II (Stanley)	NY	LFG	5.6	3/03, import summer 2005	
Seneca Falls Landfill Gas (Waterloo)	NY	LFG	11.2	3/96, import 2004	48,130
Model City Energy Facility (Lewiston)	NY	LFG	5.6	6/01, import 2004	
Johnston Landfill	RI	LFG	12.0	12/89	86,901
Johnston RGGI Expansion Phase 1	RI	LFG	2.4	3/04	
Johnston RGGI Expansion Phase 2[60]	RI	LFG	6	8/05	
Coventry LF Gas to Energy	VT	LFG	4.8	5/05	
Solar New England [aggregation]	MA	PV	0.038	12/98	
Fenner Windpower Project (Cazenovia)	NY	Wind	30	12/01	

Table B, below, includes MA RPS qualified New Renewable Generation Units that did not provide RECs for 2005 compliance. Included are several that became qualified and/or began production in 2006, which should provide some RECs for 2006 compliance (with their start dates in boldface here); those units are also listed in Table Four of this report. Several already completed plants that are listed here in italics have not provided RECs for MA RPS in the past, and their likelihood of doing so in the near future is uncertain.

Table B
Other Qualified New Renewable Generation Units

Name	State[61]	Fuel / Technology	Capacity MW	Commercial Start Date	Historic Generation Rate, MWh
Ware Cogen	MA	BM	8.6	2007	
Boralex Livermore Falls	ME	BM	40	11/91, restart TBD	0[62]
Greenville Steam Company	ME	BM	20	12/86 & restart **11/06**	0[63]
Iggy's Biodiesel CHP (Cambridge)	MA	BM	0.045	spring 2007	
Schiller Station Unit 5 (Portsmouth)	NH	BM	50	**12/06**	
Laidlaw Energy & Environmental	NY	BM	5.5	2007	
Dunbarton Road Landfill (Manchester)	NH	LFG	1.3	8/88	4,248

[59] Although Rochester Landfill has a Commercial Start Date after 1997, it is located at the same site as Turnkey Load Reducer and, therefore, is sharing the latter's Historic Generation Rate, per the regulations at 225 CMR 14.05(1)(d)3.

[60] Johnston RGGI Expansion 2 and Expansion 1 are at the same site as the Johnston Landfill, and they share its Statement of Qualification and its Historical Generation Rate.

[61] See footnote 38 regarding the import requirements that apply to all RPS qualified plants in New York or other regional grids outside of the ISO New England control area (the NEPOOL grid).

[62] Boralex Livermore Falls is qualified as a "New," not "Vintage," plant. See footnote 35 for further details.

[63] Greenville Steam Company is qualified as a "New," not "Vintage," plant. See footnote 35 for further details.

Nanticoke Landfill Gas (Binghamton)	NY	LFG	2.1	3/04, import 2007	
Colonie LF/Innovative Energy (Cohoes)	NY	LFG	4.8	**spring 2006**	
Development Authority of the North Country/Innovative Energy (Rodman)	NY	LFG	4.8	TBD	
Modern LFG (Youngstown)	NY	LFG	6.4	**early 2006**	
Seneca Falls LFG Expansion[64]	NY	LFG	4.8	spring 2007	
MM Cuyahoga Energy (Solon)	*OH*	*LFG*	*3.8*	*2/99*	
Pontiac Energy (Cranston)	*RI*	*LFG*	*0.5*	*3/96*	*1,611*
Mass Energy Aggregate PV	*MA*	*PV*	*0.036*	*4/03*	
Mass Energy Aggregate PV (Cape & Is)	*MA*	*PV*	*0.09*	*10/03*	
MA PV Cluster [aggregation]	*MA*	*PV*	*0.037*	*6/03*	
One Oak Hill Road PV (Fitchburg)	MA	PV	0.147	summer 2005	
Hull Wind Turbine U5	MA	Wind	0.66	12/01	
Hull Wind 2	MA	Wind	1.8	**5/06**	
Massachusetts Maritime Academy WTG	MA	Wind	0.66	**6/06**	
Princeton Wind Farm [undergoing expansion to ca. 3.0 MW]	MA	Wind	0.32	9/84, restart 2007	208
Mass Energy Aggregate Small Wind	MA	*Wind*	*0.01*	*9/04*	
Mars Hill[65]	ME	Wind	42	**12/06**	
Maple Ridge II Wind Farm (Lowville)	NY	Wind	90.75	early 2007	
Steel Winds Energy Project (Lackawanna)	NY	Wind	20	early 2007	
West Cape Wind Farm (O'Leary), [in two phases, 20 MW and 79 MW]	PEI	Wind	99	spring 2007 & fall 2008	

[64] Seneca Falls LFG Expansion is at the same site as Seneca Falls Landfill Gas (previous table), and it shares its Statement of Qualification and its Historical Generation Rate.

[65] See footnote 38 regarding the import requirements that apply to the Mars Hill wind farm, which, although in New England, is outside of the ISO New England control area (the NEPOOL grid).