

**MASSACHUSETTS
RENEWABLE ENERGY PORTFOLIO STANDARD
ANNUAL RPS COMPLIANCE REPORT FOR 2006**

FEBRUARY 15, 2008

**Division of Energy Resources
Executive Office of Energy and Environmental Affairs
Commonwealth of Massachusetts**

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EXECUTIVE SUMMARY

Calendar Year 2006 was the fourth year of the Massachusetts Renewable Energy Portfolio Standard (RPS). All twenty-one retail electricity suppliers in Massachusetts met their obligation to supply two and a half percent of their Massachusetts retail sales from new renewable energy generating sources. Retail sales in 2006 totaled about 50.1 million megawatt-hours (MWh), of which the RPS obligation was 1.254 million MWh. About three-quarters of that obligation were met from RPS qualified sources, the remainder through the alternative compliance mechanism.

The Massachusetts RPS continues to stimulate new power plant development. From 2005 to 2006, the number of new renewable generation units providing output for RPS compliance rose by 40%, while the total output of electricity for RPS compliance rose by 45%. The major sources of increased output for RPS in 2006 were biomass plants in northern New England, landfill methane plants in New England and New York, and wind farms in Quebec. Renewable resources within the Commonwealth accounted for 24% of the total new renewable generation for compliance with RPS in 2006.

After a 45% increase in the region's supply of new renewable generation in 2006, DOER expects even larger increases in 2007 and 2008. In fact, DOER foresees the possibility that supply could approach or meet demand during those two years. If supply were to exceed demand, renewable energy certificate (REC) prices may decline or RECs may be banked for future compliance years.

The increases expected in 2007 and 2008 are due to continued increases of output at New England landfill methane projects; the first full years of output from the recently completed Schiller biomass project in New Hampshire and the recently retooled Greenville Steam Company biomass plant in Maine; a significant increase in imports from New York landfill methane projects and from Canadian and New York wind projects; 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. 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

2006 was the fourth year of the Massachusetts Renewable Energy Portfolio Standard (RPS). All twenty-one retail electricity suppliers in Massachusetts¹ demonstrated through their 2006 Annual Compliance Filings² that they had met the RPS compliance obligation to supply two and a half percent of their Massachusetts retail sales from new renewable energy generating sources.

Retail sales in 2006 totaled about 50.1 million megawatt-hours (MWh). In meeting the two and a half percent RPS compliance obligations, almost two percent (about 931 thousand MWh, 1.86%) were from RPS qualified sources.³ The remaining compliance obligation of less than two thirds of a percent (about 323 thousand MWh, 0.64%) represents a shortfall in the availability of new renewable generation.

To meet that remaining compliance obligation, sixteen of the twenty-one retail electricity suppliers used the RPS alternative compliance mechanism for a portion of their requirements. The alternative compliance mechanism entails making Alternative Compliance Payments (ACPs) to an account at the Massachusetts Technology Collaborative (MTC), at the rate of \$55.13 per MWh for 2006.⁴ The total of ACPs for 2006 compliance was almost \$17.8 million.

In 2006, ACPs comprised a significantly smaller portion of RPS supply (322,625 MWh, 25.7% of the total obligation) than in 2005 (367,858 MWh, 35.7%), while the total obligation was substantially more (1,253,600 MWh for 2006, compared to 1,031,499 MWh for 2005⁵). RPS supply grew at a slightly higher rate between 2005 and 2006 (45.6%) than between 2004 and 2005 (45.0%).

DOER expects an even larger increase in the supply of new renewable generation between 2006 and 2007 than between 2005 and 2006, along with a moderate increase in demand. The expected net result will be a much closer balance of demand and supply for 2007. Although the Alternative Compliance Rate has risen from \$55.13 for 2006 to \$57.12 for 2007,⁶ total ACPs likely will be very low for 2007, possibly even zero. DOER's expectation of a closer match between REC supply and demand situation in 2007 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 and the winter of 2006-2007, and to the start-up in 2007 of additional new landfill, biomass, and wind capacity that had been under construction.

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, to thirty-five in 2006. Output for RPS compliance in 2007 will come from as many as eighteen additional units, plus expanded capacity at two more. Seven of the new units for 2007 compliance

¹ Note that municipally owned electricity suppliers are conditionally exempt from the RPS obligation.

² The Annual Compliance Filings for each year are due at DOER by July 1st of the following year.

³ Only a small fraction of one percent of that 931 thousand MWh (2 thousand MWh) represented surplus "banked" from 2004 and 2005. The figure 931 thousand MWh RPS qualified generation for 2006 compliance consists of 938,772 MWh of 2006 new renewable generation, plus 1,661 MWh of Banked Compliance from 2004 and 2005, minus 9,548 MWh of surplus 2006 new renewable generation banked for use in 2007 and/or 2008: $939 + 2 - 10 = 931$. This does not include the 322,625 MWh of Alternative Compliance [Payment] Credits.

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 Each of the RPS retail load obligations is the total of all of the rounded-up obligations of the filers.

⁶ See footnote 4 regarding DOER's calculation of ACP rates.

are 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 promulgation of revised RPS regulations in October of 2007 should provide added stimulus to the development of new renewable energy sources over the near term, especially plants that co-fire biomass with fossil fuels (including blended biodiesel).

While RPS provides incentives to project development in Massachusetts and the rest of New England, the incentives also have had an effect in New York and in the neighboring maritime and Quebec provinces of Canada.⁷ Although participation of New York and Canadian 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 in New York, has been accelerating since then. Canadian sources joined New York's late in 2006 as a source of RPS supply, when a pair of 54 MW wind farms in Quebec were approved and commenced exports to the New England grid.⁸ One wind farm was approved on Prince Edward Island in April 2006, and the first of its two phases was completed and began exporting to New England in January 2007.

As noted above, 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 New England methane plants and vintage biomass plants, a full years 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 a significant increase in imports from New York landfill methane plants and from wind farms in New York and neighboring Canadian provinces (including several completed during the winter of 2006-07).

The new renewable generation units that provided output for 2006 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.

For the Commonwealth of Massachusetts, the 931 thousand MWh of renewable energy used to meet the RPS requirement in 2006 was the equivalent of serving 127,186 households and reducing carbon dioxide (CO₂) emissions by 515,295 tons.⁹ Renewable resources within the Commonwealth accounted for 24% of the new renewable generation for compliance with RPS in 2006, thereby financially supporting renewable energy development in Massachusetts.

⁷ Imports to the New England electricity grid (Independent System Operator New England, or ISO-NE) can come only from adjacent grids, namely those of New York (NYISO), Quebec (Hydro-Quebec TransEnergie), and New Brunswick (NBSO, which also serves Nova Scotia, Prince Edward Island, and much of northern Maine).

⁸ Note that a large portion of northern Maine is outside of the New England grid. Electricity from generators in that part of Maine can be exported to ISO-NE only via NBSO. One wind farm located there began exporting for RPS participation in the fall of 2006.

⁹ The equivalent number of households was calculated using 610 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/Eoca/docs/doer/2006migrate.pdf>). The CO₂ displacement figure was calculated using the 2005 marginal emission rate for CO₂ of 1,107 lbs/MWh, from Table 1.1 on page four of the *2005 New England Marginal Emission Rate Analysis*, (ISO New England, Inc., July 2007, available at http://www.iso-ne.com/genrtion_resrcs/reports/emission/2005_mea_report.pdf); the report for 2006 was not available in January 2008.

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 wider region. 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 electric 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 2006 compliance filings (including comparisons with prior years); provides analysis based on the 2006 compliance information (some details of which must remain confidential); projects the RPS compliance obligations for 2007 through 2009 (based on both projections of total electricity demand growth and on the statutory RPS minimum percentages); discusses the current and future RPS supply of and demand for new renewable generation in the market created by the RPS; and briefly describes how the proceeds from Alternative Compliance Payments are being used.

Appendix One narrates how DOER reviewed supplier compliance for 2006. Appendix Two is the much more limited annual report actually required under the RPS regulations. Appendix Three provides more detailed information on how the retail electricity suppliers complied with their RPS obligations for 2006. Appendix Four lists the RPS qualified power generators that provided new renewable generation in 2006 used by retail suppliers to meet their RPS compliance, as well as other currently qualified generators, including their actual or expected commercial start dates.

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 the final regulation for RPS on April 22, 2002.¹³ The

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 regulation at 225 CMR 14.07(2) provides that DOER will determine no later than December 31, 2007, whether the obligation will increase by one percent per year during 2010 through 2014. However, DOER decided late in 2007 to defer the post-2009 RPS obligation decision to the Massachusetts state legislature, which has included an annual one percent per year increase in a pending energy bill whose passage is expected sometime in 2008.

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 resulting 2002 RPS regulation can be viewed on line at <http://mass.gov/doer/rps/225cmr-2002.pdf>. The current RPS regulation, 225 CMR 14.00 et seq., promulgated on October 19, 2007, can be accessed on line at <http://www.mass.gov/doer/rps/225cmr.pdf>.

regulation requires suppliers to submit Annual Compliance Filings that document their compliance with the RPS obligation, and it requires electricity generation owners or operators to obtain from DOER Statements of Qualification to formally recognize their facilities as "new renewable generation units."

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 RPS new renewable generation" attribute (denoting MA RPS qualified electricity) is generally called a Massachusetts Renewable Energy Certificate (Mass REC or just REC)¹⁴ in the RPS market. More detail about how RPS operates is in Appendix One of the Annual RPS Compliance Report for 2003.¹⁵

2006 RPS COMPLIANCE

All twenty-one retail electricity suppliers met their RPS obligation, but the manner of meeting the obligation varied among them. DOER here summarizes the information provided by the twenty-one suppliers in their Annual Compliance Filings for 2006.¹⁶

Applicable Massachusetts retail sales during 2006 totaled 50,143,130 MWh.¹⁷ The aggregated 2006 RPS obligation of two and a half percent was 1,253,600 MWh from new renewable generation units. Of the 1,253,600 MWh total obligation, 938,772 MWh was supplied by 2006 new renewable generation. One of the suppliers also used Banked Compliance (surplus from its 2004 and 2005 compliance) that totaled 1,661 MWh, accounting for a small fraction of one per cent of the 2006 obligation. Finally, to compensate for a shortfall in available RECs, all except five of the suppliers had to use the Alternative Compliance mechanism, making Alternative Compliance Payments (ACPs) at the rate of \$55.13 per MWh for their remaining obligation.¹⁸ The ACPs totaling \$17,786,316 were remitted to the Massachusetts Technology Collaborative (MTC). Five suppliers had surpluses totaling 9,458 MWh more than they needed for 2006 compliance, and they were able to bank that small surplus for use towards 2007 and/or 2008 compliance.¹⁹ The

¹⁴ 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 a Massachusetts RPS qualified NEPOOL GIS certificate unless otherwise indicated, and "RPS" to mean the Massachusetts Renewable Energy Portfolio Standard unless otherwise indicated.

¹⁵ The *Annual RPS Compliance Report for 2003* is available at <http://www.mass.gov/doer/rps/rps-annual-05.pdf>.

¹⁶ 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.

¹⁷ This total does not include the retail sales of municipally owned electric companies (see footnote 1). Their sales account for about 13.4% of the overall Massachusetts total. The figure in this report, therefore, is lower than the overall Massachusetts load.

¹⁸ See footnote 4 regarding DOER's calculation of ACP rates.

¹⁹ 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 might not match the total excess MWh.

above figures are included in Table One, below, alongside figures from the previous years' compliance filings.²⁰

Table One
Aggregated Information from the 2003-2006 RPS Annual Compliance Filings

		2006 MWh	2005 MWh	2004 MWh	2003 MWh
A	Total retail electricity sales (load obligation) in Massachusetts ²¹	50,143,130	51,558,778	50,063,092	49,834,324
B	2.5% Compliance Obligation in 2006 (2% in 2005 1.5% 2004, 1% 2003) ²²	1,253,600	1,031,449	750,954	498,344
C	Total from 2006 (2005, 2004, 2003) New Renewable Generation	938,772	644,849	444,680	304,112
D	Total from banked attributes from previous year or two ²³	1,661	19,531	61,147	255,069
E	Total from New Renewable Generation (=C+D)	940,433	664,380	505,827	559,181
F	Shortfall for 2006 (& 2005 & 2004, but surplus for 2003) (=B-E)	313,167	367,069	245,127	(60,837)
G	Total from Alternative Compliance Payments (ACPs) ²⁴	322,625	367,858	265,424	181
H	Total from New Renewable Generation & ACPs (=E+G)	1,263,058	1,032,238	771,251	559,362
I	Total banked for future Compliance (within two years) (=H-B)	9,458	739	20,297	61,314 ²⁵

Figure One shows how the types of RPS compliance changed among the first three compliance years – 2003 - 2006. 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. However, although the numbers of qualified generation units and their output increased considerably between 2003 and 2005, that growth was insufficient to keep pace with the increase in demand. Accordingly, between 2003 and 2005, the surplus available for banking for

²⁰ More detailed data on 2006 RPS compliance by the retail electricity suppliers is provided in Appendix Three.

²¹ 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>.

²² 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 22.

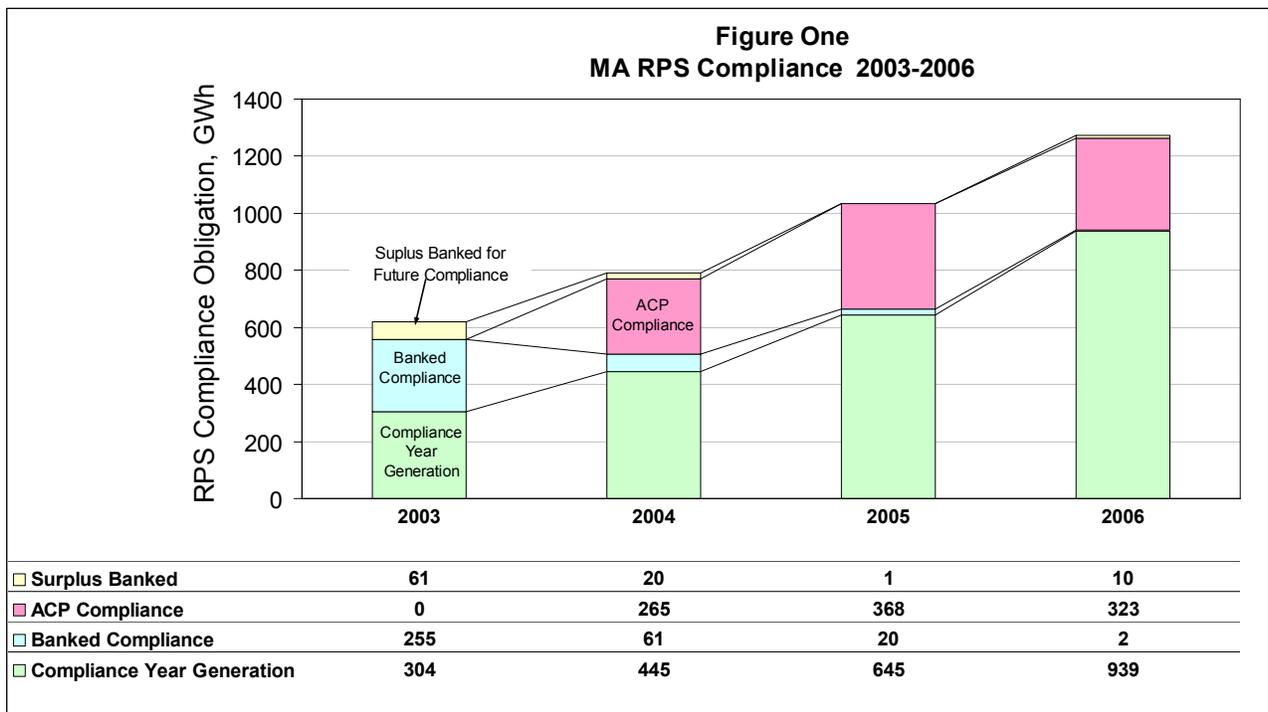
²³ RECs for RPS qualified new renewable generation from 2002, the year before the first Compliance Year, were “banked” by some Retail Suppliers to use for 2003 compliance under the “Early Compliance” provision of the 2002 regulation at 225 CMR 14.08(2) and 14.09(2). The 2002 regulation is on line as <http://mass.gov/doer/rps/225cmr-2002.pdf>.

²⁴ 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.

²⁵ 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 were available for 2005 Banked Compliance.

future years' compliance rapidly declined, and the reliance on ACPs rapidly rose. That trend was reversed in 2006, when the quantity of compliance covered by ACPs declined by about 45,000 MWh (and the dollar amount declined by almost \$2 million), and when the surplus available for banking grew slightly.

After the percentage of RPS obligation covered by ACPs grew slightly from 35.3% in 2004 to 35.7% in 2005, it then declined to 25.7% for 2006. Concomitantly, after the percentage of RPS obligation covered by the current year's RECs grew only slightly from 59.3% in 2004 to 62.5% in 2005, the percentage rose more sharply to 74.3% for 2006. Finally, as explained elsewhere in this report, DOER anticipates much, and possibly all, of the 2007 obligation to be covered by 2007 RECs in the Filings due on July 1, 2008, with little or no need for ACPs. Indeed, a surplus in the supply of 2007 RECs is possible for some retail suppliers, along with an increase in the amount banked forward.



The total capacity of renewable generation units whose output was available for at least part of 2006 to meet RPS compliance demand was 432 MW, almost double the 2005 capacity of 217 MW. Figure Two (below) shows the growth in available capacity during the first four compliance years of RPS.²⁶ However, four caveats must be noted. First, a large portion of the output of several “vintage” units is reduced by their “historical generation rate” – the average annual output during 1995-97 – which they must surpass each year before their output qualifies as new renewable generation. Second, the capacity is not adjusted for the time of year during which their output became qualified and available. For example the new 50 MW Schiller biomass plant in New Hampshire came on line in December 2006 and, therefore, its full impact on the market will not have been felt until 2007. Third, the data omits three landfills that have never been able to provide

²⁶ The data in Figure Three, as well as the first three caveats in this paragraph, come from Table A in Appendix Four of this report and in equivalent tables from the prior annual reports.

generation for RPS compliance and are not expected to in the future. Finally, most of the very small output of the photovoltaic facilities is sold into the voluntary green power market and is not available for RPS compliance.

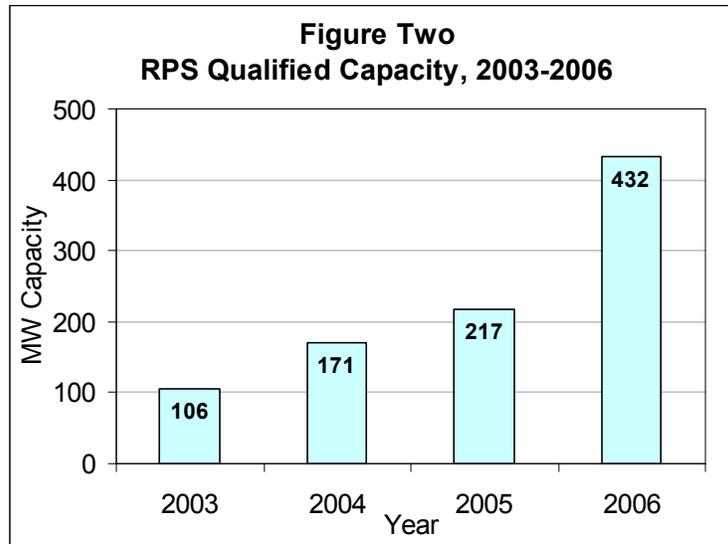


Figure Three (below) shows the percentage of the total 938,772 MWh of 2006 output from new renewable generation units provided by each type of renewable resource. The order of the relative contributions from the two largest resource types remained the same as in 2005, but both the landfill methane and biomass shares declined while the wind share increased, and wind passed anaerobic digester gas as the third largest source. In 2006, the largest single share, 449,633 MWh, came from twenty landfill methane energy plants located in six states. The second largest share, 395,856 MWh, came from three biomass plants in Maine and one in New Hampshire. Six wind farms in Massachusetts, Maine, New York, and Quebec provided 65,952 MWh, the third largest share. The one anaerobic digester gas project in Massachusetts provided 27,115 MWh. Finally, solar photovoltaic arrays in Massachusetts provided 216 MWh.²⁷

²⁷ Although four aggregations of small solar photovoltaic (PV) systems, as well as three larger individual arrays, are qualified, a large share of PV certificates are 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 are sold into the voluntary market.

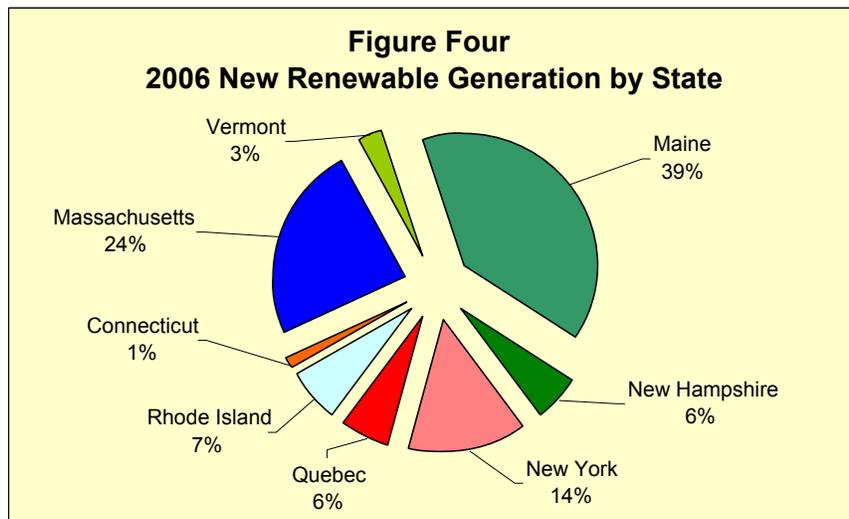
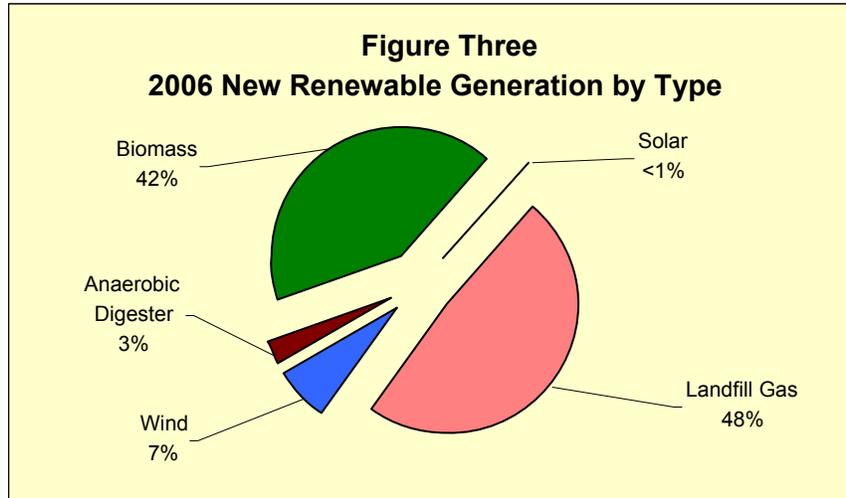


Figure Four (above) shows the percentages of the 2006 new renewable output that came from Massachusetts, the other five New England states, New York, and Quebec. Maine, with its concentration of biomass facilities, provided the largest share in 2006, although its percentage fell from 45% in 2005 to 39% in 2006: 367,753 MWh.²⁸ The Massachusetts share remained at 24% in 2006, still a distant second, with 225,090 MWh, mostly from eight qualified landfill methane energy plants – in Attleboro, Chicopee, Fall River, Granby, New Bedford, Plainville, Randolph, and Westfield – as well as from the anaerobic digester unit at the Deer Island Wastewater Treatment Plant, the new Hull and Massachusetts Maritime Academy wind turbines, and some PV arrays. New York was again the third largest source, exporting 135,648 MWh of new renewable electricity for RPS to the New England grid from five landfill energy plants and one wind farm. Rhode Island, with its large and expanding landfill methane plant complex providing 62,230 MWh, remained the fourth largest source in 2006. Imports from two wind farms in Quebec, which commenced late in

²⁸ It must be noted that 455 MWh of the output from Maine was located in the northern part of Maine that is outside of ISO-NE and was imported via the New Brunswick Control Area in Canada. That distinction is ignored in this graph.

2006, moved that province into fifth place, just ahead of New Hampshire, now in sixth place with supply from a pair of landfill plants. Vermont and Connecticut were seventh and eighth respectively, each with supply from one landfill plant.

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 and/or qualified output date (actual or projected), and, for “Vintage” units, “Historic Generation Rate.”

* * * * *

Only two new competitive suppliers entered the MA RPS market for 2006, as compared to eight new competitive suppliers for 2005. Table Two lists the twenty-one suppliers that submitted Annual Compliance Filings for 2006. 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
2006 Massachusetts Retail Electricity Suppliers

Distribution Utilities	Competitive Suppliers	
Boston Edison Company	Consolidated Edison	Integrays Energy Services, Inc. ²⁹
Commonwealth Electric Company & Cambridge Electric Light Company	Constellation NewEnergy	Mirant Americas Retail Energy Marketing, LP
Fitchburg Gas & Electric Co. (d/b/a Unitil)	Direct Energy Services, LLC	Mx Energy Electric, Inc.
Massachusetts Electric Company & Nantucket Electric Company	Dominion Retail, Inc.	Pepco Energy Services, Inc. ³⁰
Western Massachusetts Electric Co.	Gexa Energy, LLC	Sempra Energy Solutions
	Hampshire Council of Governments ³¹	Strategic Energy LLC
	Harvard Dedicated Energy, Ltd.	Suez Energy Resources NA
	Hess Corporation ³²	TransCanada Power Marketing Ltd.

Additional detail regarding the process by which 2006 compliance filings were reviewed and processed are in Appendix One. DOER concludes that the 2006 filings were completed and processed more smoothly and expeditiously than had been the case for the 2005 Filings.

²⁹ Integrays Energy Services, Inc. was formerly called WPS Energy Services, Inc.

³⁰ Pepco Energy Services, Inc. entered the Massachusetts retail market in December 2006.

³¹ Hampshire Council of Governments, a voluntary association of cities and towns in the Hampshire County area, became a retail supplier for some towns, schools, businesses, and not-for-profits in Western Massachusetts in 2006.

³² Hess Corporation, formerly Amerada Hess Corporation, acquired Select Energy’s retail business early in 2006.

PROJECTION OF FUTURE RPS COMPLIANCE OBLIGATIONS

DOER has projected the future RPS compliance obligations through 2009, based on analysis of “customer migration” data that all Massachusetts suppliers submit to DOER monthly and of data from the ISO-NE “Celt report” for 2007.³³ The RPS minimum percentage obligation increases as specified in the statute and regulations.³⁴ Table Three lists both the actual and projected total retail sales (as load obligation)³⁵ and the resulting projected RPS obligation in megawatt-hours (MWh). Please note that, although ISO-NE projects growth in the load obligation, the administration is putting in place plans to hold load growth to zero by means of energy efficiency.

Table Three

Actual (2003-2006) & Projected (2007-2009) 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	50,143,130	2.5	1,253,600
2007	51,161,050	3.0	1,534,831
2008	51,535,264	3.5	1,803,734
2009	52,045,556	4.0	2,081,822

2007 COMPLIANCE SUPPLY AND OBLIGATION³⁶

According to preliminary estimates, biomass plants are expected to have supplied the largest source of additional new renewable generation for 2007. The output from biomass plants in Maine

³³ DOER derived its 2007-2009 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). The difference between those numbers and the load obligation numbers aggregated from each year’s RPS annual filings represents PTF line losses, which are included in the load obligations. Those line losses ranged from 6.0% to 6.2% during 2003-05 but were only 5.35% in 2006; DOER uses 6% for 2007-09. The 2007 load obligation represents a full year from the Migration data; it should be noted that weather-related load grew at a higher than average rate during the fall and winter, with December alone representing a 7% increase over 2006. The annual increases after 2007 are based on energy growth rates from a spreadsheet at the ISO New England’s *CELT Forecasting Details 2007*, specifically worksheet 3, at http://iso-ne.com/trans/celt/fset_detail/2007/isonone_2007_forecast_data.xls, via the first choice, “Forecast Data 2007,” at the CELT report. See explanation and reference in footnote 21 regarding the use of “load obligation” for “retail sales.” Also, see footnote 39 regarding the ISO New England (ISO-NE).

³⁴ The minimum percentages for RPS compliance are in the regulations at 225 CMR 14.07(1).

³⁵ See explanation and reference in footnote 21 regarding the use of “load obligation” for “retail sales.”

³⁶ The anticipated total output in 2007 and projections in subsequent years were extrapolated from both information on actual output provided in the 2006 Annual Compliance Filing and information, actual start dates and new projections of start dates, and output information obtained on a confidential basis from the owners, operators, and agents for most plants in December 2006, supplemented by actual numbers from some units since then. Thus, the information is kept deliberately non-quantitative.

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.³⁷ In addition, near the end of 2006 the new 50 MW Schiller Station Unit 5 in New Hampshire began operation and should have provided its full output in 2007. Meanwhile, the output of the 20 MW Greenville Steam Company in Maine became qualified in mid-January 2007.³⁸

In addition to the increase in biomass-derived electricity, new sources of new renewable generation for 2007 are dominated by wind (six wind farms, 178.25 MW) and landfill gas (five plants, 17.6 MW), in terms of both the number of qualified plants and the total capacity. Three new RPS qualified landfill plants in New England (in Fitchburg and Haverhill, MA, and in East Windsor, CT) and two in New York (WM Chaffee and WM Mill Seat) began operation during 2007, with more on the way in 2008. In addition, the output at landfills in Coventry, VT, Johnston, RI, and Waterloo, NY, are expected to have continued increasing in 2007. Finally, four wind farms in New York and one on Prince Edward Island either began operation or began exporting power to the New England grid (ISO-NE³⁹) during 2007. New renewable generation units that began commercial operation, restarted, and/or began exporting electricity to ISO-NE during 2007 are listed in boldface in Table B in Appendix 4.⁴⁰

The 2007 RPS obligation is three percent (3.0%) 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 2007 compliance (see Table Three, above). However, due to the considerably increased renewable electricity output described above, DOER anticipates that most and possibly all of the 2007 RPS compliance obligation will be covered by 2007 RECs, as compared to 70% of the 2006 obligation covered by 2006 RECs, 62% of the 2005 obligation covered by 2005 RECs and 59% of 2004 obligation covered by 2004 RECs.

POST-2007 DEVELOPMENTS IN THE RPS MARKET

DOER's near-term expectation is that the supply of new renewable generation will continue to grow in 2008, having already increased substantially in 2007, when new landfill, biomass, and wind capacity that was in the pipeline became operational and as output continued to expand at existing landfill and biomass facilities. Uncertainties for demand in future years include economic and weather conditions, which could – as evidenced by the 2006 figures – substantially alter retail electricity sales and, therefore, the total RPS obligation. In addition to the pending RPS statutory changes in Massachusetts, factors external to Massachusetts, such as changes in RPS rules elsewhere, can impact REC demand, as can demand growth in the voluntary green power market.

³⁷ The Vintage Waiver provision in the RPS regulations is at 225 CMR 14.05(2). See also footnote 58.

³⁸ Greenville Steam Company (as well as Boralex Livermore Falls) qualified under a since-rescinded RPS Guideline that provided that pre-1998 biomass plants lacking “advanced biomass power conversion technologies” but retrofitted 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.

³⁹ The ISO New England (ISO-NE) 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/>.

⁴⁰ Table B lists all units that are Massachusetts RPS-qualified as of the date of this report except for those that provided RPS certificates for 2006 RPS compliance. The latter are listed in Table A.

On the REC supply side, biomass plant capacity factors and output can be strongly affected by the price of wood, storms and seasonal weather conditions, and unforeseen mechanical or financial difficulties. Wind and landfill methane plant operations likewise can experience unforeseen mechanical or financial problems. Supply in future years may be enhanced by new initiatives of the current Massachusetts administration, especially those focused on biomass, wind and PV.

Regulatory Revision, Biomass Eligibility Guideline, and Possible Statutory Changes

Promulgation of revised RPS regulations in October of 2007 may provide improved stimulus to the development of new renewable energy sources over the near term. However, decisions regarding new investment activity for renewables development beyond the near term could await the Massachusetts legislature's passage of a major energy bill that may contain provisions about post-2009 compliance obligations, hydropower eligibility, import restrictions, long-term contracting for RECs, and a commission to study the eligibility of C&D derived wood.

During 2006, DOER undertook a public process to amend the 2002 RPS regulation. The resulting proposed final regulation was submitted to the Clerk of the Massachusetts House of Representatives on November 6, 2006, for assignment to committee for review. However, the dissolution of the legislature and its committees at the end of December, followed by the arrival of a newly elected legislature and administration in January resulted in an extension of the process. The process ended on October 19, 2007, with the promulgation of a more modestly revised regulation and issuance of the concurrently revised, new *Guideline on the RPS Eligibility of Biomass Generation Units*.⁴¹

The amended regulation and the biomass eligibility guideline are intended to improve the operation of the program, including provision of more clarity and certainty regarding the qualification of biomass generation units, especially by providing clear and simple criteria for "low-emissions." In addition, new development should be facilitated by certainties resulting from tightened criteria for vintage power plants in the regulation. On the other hand, revised air emission provisions for plants that co-fire eligible with ineligible fuels may facilitate the use of existing fossil fueled plants and, thereby, add some uncertainty for developers of new renewable facilities.

After the revised regulation and the biomass guideline took effect, new uncertainty entered the RPS market. The Massachusetts legislature is seriously considering RPS statutory changes as part of a major energy bill. The bill was passed by the House as No. 4373 and by the Senate as No. 2468, but with some significant differences between the two versions. Several sections of the bills would mandate annual one percent increases after 2009, add small hydropower, establish a separate compliance tier for pre-1998 plants, impose some conditions for electricity imported from outside of ISO-NE, provide for some long-term REC contracting by regulated utilities, and establish a commission to study the RPS eligibility of C&D-derived wood. Eventual passage of revised statutory language for RPS would entail the development of new revisions in the RPS Regulation, which DOER would begin as soon as possible.

Development Activity

Biomass

Several biomass plants that received Advisory Rulings from DOER are at various stages of

⁴¹ Documentation of the public process leading to the revised regulation can be accessed at http://www.mass.gov/doer/rps/rps_rule_revs.htm.

planning, siting, or permitting processes; these include the 50 MW Russell Biomass Plant in western Massachusetts and four others in New England. The eventual outcome for these plants remains uncertain at this time, mostly due to siting issues, some of which are related to fuel choices. Meanwhile, the 5.5 MW Laidlaw biomass plant in New York, to which DOER granted qualification in December 2006, now has a projected completion date early in 2009. During 2007 DOER did not grant qualification to any biomass plants, but did qualify one small plant at the end of January 2008 (Seaman Paper). DOER expects a previously qualified, 0.045 MW biodiesel CHP plant to come on line in Massachusetts this spring and has additional applications for biomass projects under review. Of particular note is an application for the 120 MW Somerset Unit 6 in Massachusetts, around 35% of whose output could qualify for RPS.⁴²

Landfill Methane Gas

Installation and expansion of electricity generation at landfills continues in New England and New York. In addition to the 17.6 MW of new landfill capacity whose output became qualified at various times in 2007, another 17.5 MW already has been qualified and are expected to come on line during 2008. These 17.5 MW include 4 MW at two facilities in New England and 13.5 MW at three facilities in New York. Meanwhile, electricity output continues to increase at New England's largest landfill, Johnston and its expansions, in Rhode Island.

Wind

Substantial wind capacity is at various stages of development in New England and in the adjacent electric system control areas of New York, Quebec, and New Brunswick. In addition to the 178 MW of new wind capacity whose output became qualified at various times in 2007, another 121 MW already has been qualified and are expected to come on line in 2008 and 2009. These 121 MW include 3 MW in Massachusetts, 39 MW in New York, and 79 in Prince Edward Island. DOER expects to receive applications for still more wind capacity, based on news accounts and on interconnection requests at ISO-NE.⁴³ Considerable potential for new wind development exists along and off the coast of Massachusetts, as well as in northern New England, New York, and neighboring Canadian provinces.

Other

Following 2007's addition of 1.3 MW of anaerobic digester capacity qualified at three farm-based projects in Vermont and 0.36 MW at two PV systems in Massachusetts, DOER has no additional capacity to report for 2008 at this time. However, a major new state initiative that commenced in January 2008, Commonwealth Solar, is expected to result in the installation of more than 27 MW of solar power capacity over the next four years.⁴⁴

Development Challenges and Factors of Uncertainty

Uncertainties remain for new development of renewable-based electricity generation, including the following:

- future statutory and regulatory treatment for the combustion of C&D wood as an RPS qualified fuel in the region – currently subject to a moratorium in New Hampshire, a 50% limit at plants in Maine, and proposed review by a special commission in Massachusetts;

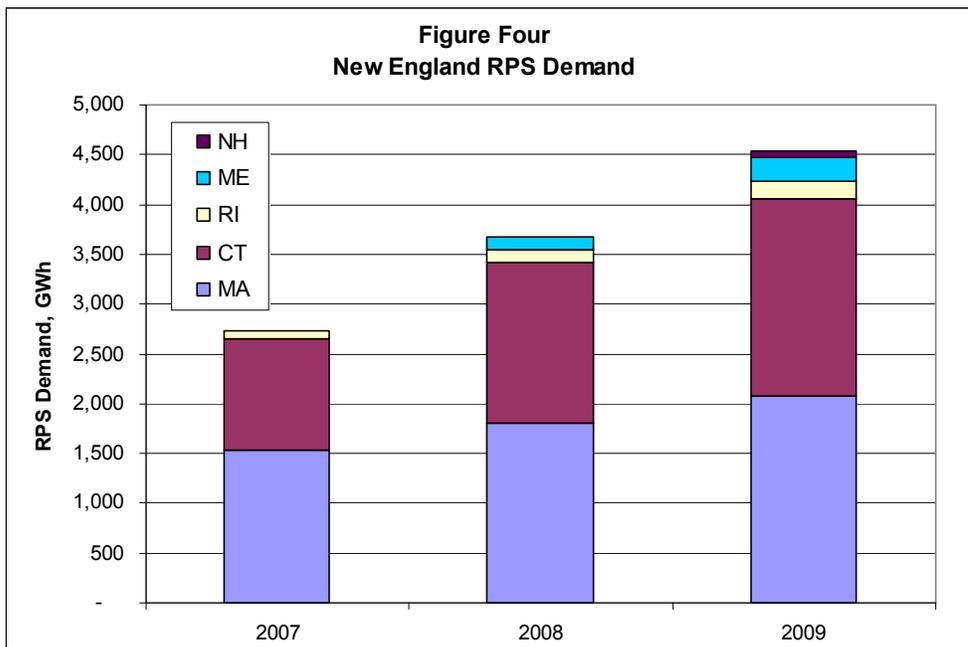
⁴² The Somerset application is available at <http://www.mass.gov/doer/rps/somerset-6.htm>.

⁴³ For interconnection requests at ISO-NE, follow links from this URL: http://www.iso-ne.com/trans/nwtrns_inter/nw_inter/index.html.

⁴⁴ Additional information is at <http://www.mass.gov/doer/programs/renew/solar/comm-sol.htm> and at <http://www.masstech.org/solar/>.

- 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;
- impact of recently enacted RPS programs in New Hampshire and Maine;
- growth of voluntary markets for RECs; and
- possible changes in the Massachusetts RPS that may result from legislation currently under consideration in the state legislature, as already discussed above.

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 began to increase at a higher rate than before, and the Connecticut REC price approached its \$55 per MWh statutory limit, putting its value on a par with the value of Massachusetts RECs. In addition, Rhode Island’s RPS obligation from new renewable sources commenced at 1% (plus 2% from new or existing) in 2007, Maine’s commences in 2008 at 1%, and New Hampshire’s at 0.5% in 2009. The net result will be higher demand for RECs, the majority of which will be eligible in all five states. That should add pressure on the settling of RPS qualified certificates in Massachusetts after 2007. The relative impacts on RPS demand from all five states are presented in Figure Five.



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 and future developments in how the New York Public Service Commission operates its state’s RPS, which commenced in 2005,⁴⁵ could reduce or increase the supply of new renewable generation output exported from New York to New England for the Massachusetts and other RPS markets. However, DOER’s experience so far is that MA RPS competes favorably,

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

perhaps because of NY RPS funding limitations, 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, most 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. While growth of the voluntary green power market is, of course, favorable for the overall and long term growth of new renewable energy supply, it presents another element of uncertainty when DOER attempts to project future REC supply for RPS.

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 used RPS-eligible renewable energy resources or technologies can receive ACP funds, while MRET funds also can be, and have been, used for RPS-ineligible hydropower projects. Of about \$51 million of ACP funds collected in the first four years of RPS compliance, about \$10.4 million has been spent or set aside in escrow under REC price support contracts for the three projects named in the Annual RPS Compliance Report for 2005.⁴⁷ Currently, about \$40 million is available for expenditures.

As of the writing of this report, \$28 million has been designated for the Commonwealth Solar program (subsidizing costs to install PV systems in Massachusetts),⁴⁸ while about \$3 million has been assigned to provide funding for CREB-financed PV projects at six state-owned facilities.⁴⁹ The remaining \$9 million has not yet been committed, but DOER is committed to using it to ensure that an increasing share of electricity serving Massachusetts ratepayers comes from new renewable energy resources.

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 Owners of two additional projects in Massachusetts forfeited their awards, and one contract was reduced, totaling \$4.9 million in withdrawn awards. 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>.

⁴⁸ See footnote 44 for links to additional information regarding the new Commonwealth Solar program for PV.

⁴⁹ CREBs are Clean Renewable Energy Bonds created by the US Internal Revenue Service under the federal Energy Policy Act of 2005. Information can be accessed at <http://www.irs.gov/newsroom/article/0,,id=164423,00.html>.

CONCLUSION

During the fourth year of the RPS, all twenty-one retail suppliers achieved compliance, although Alternative Compliance Payments accounted for just over one-quarter of compliance. The process of tracking, submitting data, and verifying data worked smoothly for 2006 filings.

More importantly, the results of DOER's review and forecast for future compliance indicate the success of the program. The 931 thousand MWh of renewable energy used to meet the RPS requirement in 2006 was the equivalent of serving 127,186 households and reducing carbon dioxide (CO₂) emissions by 515,295 tons.⁵⁰ Renewable resources within the Commonwealth accounted for 24% of that energy, thereby benefiting and financially supporting renewable energy development 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, to 33 in 2006. The total capacity of the generation units qualified to provide output for RPS compliance during 2006 was 432 MW, nearly double the 217 MW for 2005. An additional eighteen units became qualified during 2007 and early 2008, most of which could provide output for RPS compliance in 2007. Three of the eight new units for 2006 compliance are located in Massachusetts. The number of projects in various stages of development, including some utilizing low-emission, advanced biomass technologies in Massachusetts, has continued to increase. Promulgation of revised RPS regulations in October of 2007 and the high likelihood that the RPS obligation will increase by one per cent annually after 2009 should provide enhanced stimulus to the development of new renewable energy sources in the near future.

Sixteen of the twenty-one retail electricity suppliers used the Alternative Compliance mechanism to meet a portion of their 2006 compliance obligations, compared to seventeen of twenty for 2005. Based on the capacity of recently qualified plants and their operational status and plans, as well as the projected RPS obligation for 2007 and 2008, DOER expects little or possibly even no shortfall in the REC supply for 2007 and 2008. The most notable contributors to increased supply for 2007 will be biomass plants in New Hampshire and Maine that started up either in late 2006 or early 2007; new and expanding landfill methane projects in Massachusetts, elsewhere in New England, and New York; and wind farms in New York, Quebec, and Prince Edwards Island. A very large potential for additional wind development exists along and off the shore of Massachusetts, northern Maine, New York, and Canada.

The approaching maturity of the MA RPS is evidenced by the declining dependence on ACPs for compliance. As was asserted in the previous annual reports, 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 has been expected during the first several years of the RPS. The MA RPS, as well as similar programs elsewhere in the region and Renewable Energy Trust funded programs of the Massachusetts Technology Collaborative (MTC), have taken time to mature and become robust. To assist that process, DOER, in coordination with the MTC, has ensured and will continue to ensure that the ACP funds are invested wisely, for the development of new renewable generation, and on terms calculated to yield economic results for consumers.

In the meantime, MA RPS is showing progress in providing a more diversified electric generation portfolio for the New England region. Increased diversification will, over time, reduce

⁵⁰ The figures in this sentence are explained in footnote 9.

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.

DOER believes that we are on the cusp of a balance of new renewable electricity supply and the demand mandated by MA RPS. 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. Some of those constraints are addressed by provisions of the two versions of an energy bill recently passed by the two houses of the Massachusetts legislature and now subject to the process of reconciliation by a conference committee. DOER, as well as all RPS participants and stakeholders look forward to the conclusion of that process and hope for program improvements.

DOER intends to continue to work on developing solutions to the challenges noted above and looks forward to its continued management of this critical program.

APPENDIX ONE

RPS 2006 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 2006 were required to file their Annual Compliance Filings for 2006 by July 2, 2006, the first business day in July. DOER issued forms and instructions for the Filings on June 8th, just before the end of the NEPOOL GIS trading period for the fourth quarter of 2006. By July 3rd, DOER had received Filings from all five of the regulated utility companies and from fourteen of the sixteen competitive suppliers. Filings arrived on July 10th and July 13th from the other two suppliers.

During the summer and into the fall, DOER staff reviewed the Filings submitted by the suppliers, including printed and electronic copies of both their summary tables and GIS reports. The electronic files enabled DOER to aggregate, analyze, and summarize the information in the Filings, while the printed versions of GIS were used to verify that the electronic versions of those report matched. DOER contacted suppliers for correction of mathematical errors and for some additional information, explanations, clarifications, and corrections.

Although the Filings continued to show improvement over the previous years, a limited number of competitive suppliers still did not correctly assign “load” in their GIS accounts. Therefore, DOER relied on data submitted (on a confidential basis) by the regulated utilities. In addition, some Filings included calculation errors. Accordingly, some adjustments were required.

The 2006 Filings were submitted, reviewed, supplemented, corrected, clarified, and accepted more smoothly and with still fewer delays than had been the case for previous Filings.

APPENDIX TWO

2006 Annual Renewable Energy Resource Report

This Appendix reports certain information from the Annual Compliance Filings for 2006 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:

2006 Annual Renewable Energy Resource Report

Total Retail Electrical Energy Sales in Massachusetts in 2006	50,143,130 MWh
Total Renewable Generation Attributes in 2006	3,182,290 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-*ineligible* 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 2006 electricity from Renewable Generation Units for the entire New England power grid,⁵¹ 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).⁵² 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 2006

Total Renewables in ISO New England		14,000,173 MWh
Massachusetts share of ISO New England	45.56 %	6,378,479 MWh
MA regulated utility territories' share of ISO-NE	39.57 %	5,539,868 MWh

⁵¹ The data are from the four quarterly data tables for 2006 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>.

⁵² The MA share was derived from a spreadsheet at the ISO New England’s *CELT Forecasting Details 2007* web page, http://www.iso-ne.com/trans/cekt/fsct_detail/index.html. The specific spreadsheet used, via the first choice, “Forecast Data 2007,” 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 13.14% of the MA retail demand in 2004, leaving 86.86% to be supplied by companies in the territories of the regulated utilities, which is where the RPS applies.

APPENDIX THREE

2006 RPS Compliance Summary

Retail Electricity Suppliers	Retail Sales	New Renewable Energy Attributes							Banked for Future Compliance		
	Load Obligation (from filing)	2006 Mass RECs (from GIS)	2004 Banked Attributes	2005 Banked Attributes	Other Attributes ⁵³	Alternative Compliance Credits	Total RPS Attributes	2.5% RPS Obligation	Excess Attributes	Banking Limit (30%)	Banked Attributes
Distribution Companies											
Mass/ Nantucket Electric	14,028,533	232,761	0	0	0	117,953	350,714	350,714	0	105,217	0
Commonwealth Electric & Cambridge Electric	2,606,540	41,620	0	0	0	23,548	65,168	65,168	0	19,551	0
Boston Edison	8,905,134	179,365	0	0	0	43,266	222,631	222,631	0	66,790	0
Western Mass Electric	2,472,721	21,446	0	0	0	40,373	61,819	61,819	0	20,136	0
Fitchburg G&E	297,475	7,888	922	732	0	0	9,542	7,437	2,105	2,232	2,105
Subtotals	28,310,403	483,080	922	732	0	225,140	709,874	707,769	2,105	213,926	2,105
Competitive Suppliers⁵⁴											
Consolidated Edison											
Constellation New Energy											
Direct Energy											
Dominion											
Gexa											
Hampshire Council of Governments											
Harvard											
Hess											
Integrus											
Mirant Americas Retail											
Mx Energy											
Pepco											
Sempra											
Strategic Energy											
Suez											
TransCanada											
Subtotals	21,832,727	433,330	0	7	22,362	97,485	553,184	545,831	7,353	163,657	7,353
Totals	50,143,130	916,410	922	739	22,362	322,625	1,263,058	1,253,600	9,458	377,583	9,458
	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh

⁵³ "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.

⁵⁴ 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 2006. Nine Units that began generating for RPS in 2006 are listed in boldface. Table B lists all other Units, including some that have not yet provided electricity to the New England grid and some that are in operation but have never provided RECs for RPS compliance.

Table A
Sources for RPS Certificates in 2006
by Fuel/Technology, State, and Date

Name (city or town)	State ⁵⁵	Fuel / Technology ⁵⁶	Capacity MW	Commercial Start Date ⁵⁷	Historic Generation Rate, MWh ⁵⁸
Deer Island Treatment Plant – STG (Winthrop)	MA	AD	18.0	7/98	
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
Schiller Station Unit 5 (Portsmouth)	NH	BM	50	12/06	
CRRRA 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& CNBE Off Grid	MA	LFG	3.3	10/05	
Plainville Generating Co., LLC	MA	LFG	5.6	3/03	

⁵⁵ Note that, if an electricity generator is outside of the ISO New England control area – including plants in New York, Quebec, part of northern Maine, New Brunswick, and Prince Edward Island – then its electricity must be exported to the ISO-NE grid in order to qualify for Mass RECs.

⁵⁶ AD = anaerobic digestion. BM = biomass. LFG = landfill methane gas, PV = photovoltaic.

⁵⁷ Or the first month of RPS qualified output, or the month of first import to ISO-NE for units outside the control area.

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.

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
Colonie LF/Innovative Energy (Cohoes)	NY	LFG	4.8	1/06	
Ontario LFG/Seneca Energy II (Stanley)	NY	LFG	5.6	3/03, import 4/05	
Model City Energy Facility (Lewiston)	NY	LFG	5.6	6/01, import 3/04	
Modern LFG (Youngstown)	NY	LFG	6.4	1/06	
Seneca Falls Landfill Gas (Waterloo)	NY	LFG	11.2	3/96, import 1/04	48,130
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	
Brockton Brightfield	MA	PV	0.425	9/06	
MA PV Cluster [aggregation]	MA	PV	0.268	6/03	
One Oak Hill Road PV (Fitchburg)	MA	PV	0.147	8/05	
Solar New England [aggregation]	MA	PV	0.078	12/98	
Hull Wind 2	MA	Wind	1.8	5/06	
Massachusetts Maritime Academy WTG (Buzzards Bay)	MA	Wind	0.66	6/06	
Mars Hill (in NMISA, not ISO-NE)⁶¹	ME	Wind	42	10/06	
Fenner Windpower Project (Cazenovia)	NY	Wind	30	12/01, import 1/03	
Mount Miller Wind Energy (Murdochville)	QC	Wind	54	6/05, import 10/06	
Mount Copper Wind Energy (Murdochville)	QC	Wind	54	6/04, import 10/06	

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 The Mars Hill wind farm, although located in Maine, is outside of the 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.

Table B, below, includes MA RPS qualified New Renewable Generation Units that did not provide RECs for 2006 compliance. Nineteen of the Units are shown in boldface, signifying that they became qualified, began production, commenced qualified imports, or expanded capacity in 2007; therefore, they are potential sources of additional RECs for 2007 compliance. 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 ranges from uncertain to highly unlikely.

Table B
Other Qualified New Renewable Generation Units

Name (city or town)	State⁶²	Fuel / Technology	Capacity MW	Commercial Start Date⁶³	Historic Generation Rate, MWh
Berkshire Cow Power (Richford)	VT	AD	0.6	12/06	
Green Mt Dairy Farm (Sheldon)	VT	AD	0.33	2/07	
Montagne Farm (St. Albans)	VT	AD	0.38	10/07	
Blue Spruce Farm (Bridport)	VT	AD	0.27	1/05	
Iggy's Biodiesel CHP (Cambridge)	MA	BM	0.045	spring 2008	
Seaman Paper (Baldwinville)	MA	BM	0.3	6/06, qualified for 10/07	
Ware Cogen	MA	BM	8.6	mid/late 2008	
Boralex Livermore Falls	ME	BM	40	11/91, restart TBD	0 ⁶⁴
Greenville Steam Company	ME	BM	20	12/86, qualified 1/07	0⁶⁵
Laidlaw Energy & Environmental (Ellicottville)	NY	BM	5.5	early 2009	
Manchester Methane (E. Windsor)	CT	LFG	3.2	5/07	
Ameresco Northampton	MA	LFG	0.8	early 2008	
Covanta Haverhill – LF Gas	MA	LFG	1.6	12/07	
Fitchburg Landfill	MA	LFG	3.2	9/07	
Pine Tree Landfill	ME	LFG	3.17	2/08	
<i>Dunbarton Road Landfill (Manchester)</i>	<i>NH</i>	<i>LFG</i>	<i>1.3</i>	<i>8/88</i>	<i>4,248</i>
MM Albany	NY	LFG	6.6	late 2008	

⁶² Note that, if an electricity generator is outside of the ISO New England control area – including plants in New York, Quebec, part of northern Maine, New Brunswick, and Prince Edward Island – then its electricity must be exported to the ISO-NE grid in order to qualify for Mass RECs.

⁶³ Or the first month of RPS qualified output, or the month of first import to ISO-NE for units outside the control area.

⁶⁴ Boralex Livermore Falls is qualified as a “New,” not “Vintage,” plant. See footnote 38 for further details.

⁶⁵ Greenville Steam Company is qualified as a “New,” not “Vintage,” plant. See footnote 38 for further details.

Nanticoke Landfill Gas (Binghamton)	NY	LFG	2.1	3/04, import spring 2008	
Development Authority of the North Country/Innovative Energy (Rodman)	NY	LFG	4.8	summer 2008	
Seneca Falls LFG Expansion⁶⁶	NY	LFG	4.8	6/07	
WM Chaffee	NY	LFG	4.8	7/07	
WM Mill Seat (Bergen)	NY	LFG	4.8	7/07	
<i>MM Cuyahoga Energy (Solon)</i>	<i>OH</i>	<i>LFG</i>	<i>3.8</i>	<i>2/99</i>	
<i>Pontiac Energy (Cranston)</i>	<i>RI</i>	<i>LFG</i>	<i>0.5</i>	<i>3/96</i>	<i>1,611</i>
Coventry LF Gas to Energy [additional engine, new GIS acc't]	VT	LFG	1.8	1/07	
GSA Waltham, Solar Array	MA	PV	0.325	3/07	
Mass. Energy Aggregate PV	MA	PV	0.036	4/03	
Mass. Energy Aggregate PV (Cape & Is)	MA	PV	0.09	10/03	
Mass. Maritime Academy Dorm PV (Buzzards Bay)	MA	PV	0.08	11/07	
Shad Hall Photovoltaic (Harvard University, Boston)	MA	PV	0.036	9/03; 4/07 into NEPOOL GIS	
Hull Wind Turbine U5	MA	Wind	0.66	12/01	
Princeton Wind Farm [replacing old 0.32 MW with new 3.0 MW]	MA	Wind	3.0	9/84, restart spring 2009	208
Jiminy Peak Wind QF (Hancock)	MA	Wind	1.5	8/07	
Mass. Energy Aggregate Small Wind	MA	Wind	0.01	9/04	
Madison Windpower	NY	Wind	11.5	10/00, import 7/07	
Maple Ridge II Wind Farm (Lowville)	NY	Wind	90.75	12/06, import 1/07	
Munnsville Wind Farm (Bouckville)	NY	Wind	34.5	7/07	
Steel Winds Energy Project (Lackawanna)	NY	Wind	20	4/07	
West Hill Windpower (Sturbridge)	NY	Wind	39	fall 2008	
West Cape Wind Farm (O'Leary) [in two phases, 20 MW and 79 MW]	PEI	Wind	20 plus 79	5/07 & fall 2008-2009	

⁶⁶ 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.