MASSACHUSETTS
RENEWABLE ENERGY PORTFOLIO STANDARD

ANNUAL RPS COMPLIANCE REPORT FOR 2007

NOVEMBER 24, 2008

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Department of Energy Resources
Executive Office of Energy and Environmental Affairs
Commonwealth of Massachusetts

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[i] The first figure in this table, the 2007 "Total retail electricity sales (load obligation)," was corrected on 12/1/08.
[ii] The 2007 "Actual Load Obligation" figure in this table was corrected on 12/1/08

EXECUTIVE SUMMARY

The Massachusetts Renewable Energy Portfolio Standard (RPS) is a statutory obligation that Retail Electricity Suppliers (both regulated distribution utilities and competitive suppliers) obtain for their retail customers a percentage of electricity from sources that qualify as New Renewable Generation Units. The RPS began with an obligation of one percent in 2003, has increased by one-half percent annually since then, and will reach four percent in 2009. With the passage of the Green Communities Act of 2008, the RPS annual increase will double to one percent annually after 2009. The RPS obligation in 2007 was three percent.

A supply surplus for 2007 RPS compliance replaced the supply shortages of the previous four years of RPS, 2003-2006. The total supply of qualified electricity from New Renewable Generation Units exceeded the demand for the first time since the program began in 2003. The total retail load obligation in 2007 was about 50,978 GWh, of which the three percent RPS obligation was about 1,529 GWh. The total supply of RECs (renewable energy certificates) was about 1,606 GWh.

Twenty-four Retail Electricity Suppliers had RPS obligations in 2007. The supply surplus notwithstanding, eight of the twenty-four Retail Electricity Suppliers did not acquire the necessary RECs for compliance, and they used the Alternative Compliance mechanism to cover their 11 GWh of REC shortfall. The resulting REC surplus amounted to 88 GWh, of which 81 GWh were banked forward by fourteen suppliers to use towards their compliance in 2008 or 2009.

The supply of electricity from New Renewable Generation Units continued to be dominated by biomass and landfill methane powered plants, accounting for 49% and 30% respectively. However, a growing share has been coming from wind farms, amounting to 19% of the supply in 2007. The remaining supply came from anaerobic digester plants and solar photovoltaic arrays. Biomass plants in Maine were the largest single geographic source of this electricity at 32% of the total, followed by 17% from landfill methane plants and wind farms in New York, 16% from New Hampshire (mostly biomass), 16% from wind farms in adjacent Canadian provinces, and 12% from Massachusetts (mostly landfill methane).

Although the quantity of electricity from renewable generation sources in Massachusetts continues to grow, that growth is exceeded by an accelerating increase in supplies from northern New England biomass plants and by imports from wind farms and landfill gas projects in neighboring New York, Quebec, and the Maritime Provinces. However, Massachusetts does enjoy a favored position for future coastal and large-scale, offshore wind farm development, as well as much untapped biomass potential.

Thus, the RPS obligation is providing incentive for the accelerated development of New Renewable Generation Units during the six years since the RPS regulations were promulgated in 2002.

Future development of renewable resources for RPS will be affected by program changes and other provisions in the Massachusetts Green Communities Act of 2008 and myriad global, national, regional and local forces.

BRIEF INTRODUCTION TO THE RENEWABLE ENERGY PORTFOLIO STANDARD

The Massachusetts Renewable Energy Portfolio Standard (RPS) is a statutory obligation that Retail Electricity Suppliers (both regulated distribution utilities and competitive suppliers) obtain for their retail customers a percentage of electricity from sources that qualify as New Renewable Generation Units.[1] The RPS began with an obligation of one percent in 2003, has increased by one-half percent annually since then, will reach four percent in 2009, and will increase by one percent annually after 2009. The RPS obligation in 2007 was three percent.

Retail Electricity Suppliers ("Suppliers") meet their annual RPS obligations by acquiring a sufficient quantity of RPS-qualified renewable electricity certificates (RECs) that are created and recorded at the NEPOOL Generation Information System (GIS).[2] The NEPOOL GIS tracks all electricity generated within the ISO New England (ISO-NE) control area[3] and fed onto the New England grid, as well as electricity exchanged between ISO-NE and adjacent control areas. For each megawatt-hour (MWh) of electricity, whether renewable or not, one serial-numbered, electronic certificate is created and added to the NEPOOL GIS account of the unit that generated the MWh. Certificates that represent renewable generation are coded accordingly and known as RECs.[4] Suppliers purchase those RECs from the generators, who then transfer the RECs from their own GIS accounts to the Suppliers' accounts.

The supply of electricity that currently earns MA RPS-qualified RECs comes from facilities that began commercial operation after 1997[5] and use any of the following:

- Solar photovoltaic;
- Wind energy;
- Landfill methane and anaerobic digester gas; and
- Eligible biomass fuel in units the employ "low-emissions, advanced biomass power conversion technologies."

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[1] The RPS provisions of the Electricity Restructuring Act of 2007, later replaced by provisions of the Green Communities Act of 2008, were incorporated in Massachusetts law at M.G.L., c. 25A, §11F, which is available at www.mass.gov/legis/laws/mgl/25a-11f.htm.

[2] See www.nepoolgis.com.

[3] The ISO-NE control area, covering most of New England, is a geographic region in which a common generation control system is used to maintain scheduled interchange of electrical energy within and without the region. ISO New England Inc. (ISO-NE) is the independent system operator for the ISO-NE control area.

[4] Not all RECs are qualified for MA RPS; however those that *are* qualified are coded differently at the GIS than those that are *not* qualified. For example, the 1997 MA RPS statute defines hydropower and waste-to-energy plants as renewable, so their output earns RECs, as does the output from pre-1998 plants. However, they do not currently qualify for MA RPS, per the 1997 statute. Some of that currently unqualified renewable output (esp. small hydropower and low-emission biomass) may qualify, variously, for RPS in Connecticut and Rhode Island, which operate under their own rules. Note that what does and does not qualify for MA RPS will change on January 1, 2009, when new regulations are promulgated under the 2008 revision of the RPS statute.

[5] In addition to the electricity output from new, i.e., post-1997, renewable facilities, DOER also qualifies as "new" the output each year of some pre-1978 renewable facilities that exceeds those facilities' "historical generation rates," defined as their average annual output during 1995-97. The latter facilities are qualified as New Renewable Generation Units under a Vintage Waiver, per the RPS Regulations at 225 CMR 14.05(2).

The current MA RPS requirements are further expanded in the RPS Regulations, which also explain how facilities become qualified and how Retail Electricity Suppliers demonstrate their compliance with RPS.[6] Note that the list of RPS-eligible technologies will expand as of January 1, 2009.[7]

SUMMARY OF RPS COMPLIANCE IN 2007

A supply surplus for 2007 RPS compliance succeeded the supply shortages of the previous four years of RPS, 2003-2006. The total supply of electricity from New Renewable Generation Units (represented by renewable energy certificates, "RECs") exceeded the demand for the first time since the program began in 2003. The RPS obligation for 2007 for each supplier was three percent of its retail load obligation at the NEPOOL GIS. The total retail load obligation in 2007 was 50,978,101 MWh, of which the three percent RPS obligation was 1,529,359 MWh. The total supply of RECs was 1,606,396 MWh. This compares to a 2006 retail load obligation of 50,143,130 MWh, of which that year's two and a half percent RPS obligation was 1,253,600 MWh, and the REC supply of 940,433 MWh resulted in a shortage of 313,167 MWh. In contrast to that shortage in 2006, the supply of RECs for 2007 exceeded demand by 87,957 MWh.

The Massachusetts RPS has a flexibility provision under which a supplier can "bank" towards its RPS compliance in the next year or two a quantity of RECs that does not exceed 30% of its RPS obligation in the year when the RECs were generated.[8] Given a REC surplus in 2007 and lower REC prices towards the end of the 2007 REC trading year, some suppliers acquired more RECs than they needed for 2007 compliance, possibly as a hedge against any anticipated or potential supply shortages and price increases for RECs in 2008 or 2009. It is also possible that some suppliers anticipated a need for more RECs in 2007 than proved, in the end, to be required to cover their obligations.

While most of the Suppliers acquired surplus RECs for banking forward, eight Suppliers fell short of RECs, including six Suppliers that did not purchase RECs at all. Those eight Suppliers had to meet their compliance obligations by making Alternative Compliance Payments (ACPs) to the Massachusetts Technology Collaborative[9]. Four of the six that purchased no RECs were new to the Massachusetts retail electricity market, while the other two had only very small obligations. DOER speculates that the need of the six suppliers to rely exclusively on the ACP mechanism in the context of the 2007 REC surplus was variously due to unfamiliarity with the program (especially for new participants), unavailability of small lots of RECs to meet small needs, an overall shortage of RECs due to over-purchase by other participants, or decisions not to expend resources on the effort. The other two Suppliers, both more experienced participants, simply did not purchase quite enough to meet their 2007 RPS obligations; each of them met less than ten percent of its obligation with ACPs.

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[6] The Regulations for RPS, at 225 CMR 14.00, are available at www.mass.gov/Eoeea/docs/doer/rps/225cmr.pdf.

[7] DOER is currently engaged in revising the RPS regulations pursuant to RPS-related provisions of Green Communities Act of 2008, which is available at www.mass.gov/legis/laws/seslaw08/sl080169.htm. DOER's actions pursuant to the Act can be accessed via the DOER homepage at www.mass.gov/doer.

[8] For example, if Agni Energy had a 2007 Massachusetts retail load obligation of one million MWh, then its 3% RPS obligation would be 30,000 MWh, and, if it acquired more RECs than it needed to meet the RPS obligation, it could bank up to 9,000 MWh of 2007 RECs to use towards its RPS obligations in 2008 and 2009.

[9] See the RPS Regulations at 225 CMR 14.08(3) regarding the procedures for ACP and the use of ACP funds.

The use of ACPs in 2007 totaled only 10,920 MWh,[10] which cost $623,750.40 at a rate of $57.12 per MWh.[11] This is a very small fraction of the 322,625 MWh of ACPs used in 2006, which cost $17,786,316 at $55.13 per MWh.

The production of electricity by Massachusetts projects continued a slow but steady annual increase. However, the rate of that increase was well below the overall rate of increase. As a result, the percentage of total REC supply coming from in-state projects continued to decline – from 36% in 2004 to 24% in 2005, to 20% in 2006, and to 12% in 2007. Most of the increase of supply within New England came from biomass plants in Maine and New Hampshire.

The supply of electricity and RECs from New Renewable Generation outside of the ISO-NE control area, the New England grid, continued to increase at an accelerating rate. Between 2006 and 2007, while the supply of RECs from inside ISO-NE increased by about fifty percent, the supply of RECs from imported electricity more than doubled. On a percentage basis, import RECs increased from almost one quarter of the supply in 2006 to almost one third in 2007. While more than three quarters of the imports in 2006 came from New York landfill methane plants and wind farms and less than a quarter from Canadian wind farms, the two sources were about equal in 2007, with more than two-thirds of the increase in imports between 2006 and 2007 being from Canada.

DETAILS OF THE QUANTITY AND MANNER OF RPS COMPLIANCE IN 2007

DOER received filings from 24 Retail Electricity Suppliers ("Suppliers"), entities that served retail load in Massachusetts during 2007. These included four investor-owned, distribution companies that are regulated by the Massachusetts Department of Public Utilities (DPU) and twenty competitive suppliers that are licensed but not regulated by the DPU.[12] In Table One, the four competitive suppliers new to the Massachusetts market are listed in italics.

All of the suppliers except for one complied with their RPS obligations, with more than 99% of the compliance met by New Renewable Generation, and virtually all of the compliance (98.8%) being from 2007 generation, as opposed to using RECs banked from 2006 compliance surplus (0.4%). Less than one percent of the 2007 compliance obligation was met using the Alternative Compliance mechanism (0.7%), namely by making Alternative Compliance Payments (ACPs) to the Massachusetts Technology Collaborative (MTC).[13] The 2007 ACPs totaled only $623,740.40 (10,920 MWh at $57.12/MWh). This is in stark contract to the ACPs of the previous three compliance years, 2004-06, which were in excess of ten million dollars each year.

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[10] The ACP total of 10,920 MWh assumes that one Supplier that has, thus far, failed to comply with the RPS will comply by means of the ACP mechanism. That Supplier, which both began and ceased to serve retail load during 2008, has a small RPS obligation, only 361 MWh. See footnote 16 for further information.

[11] The announcement and calculation of the annual ACP rate can be accessed at the RPS News and Timeline page via the RPS page, via the DOER homepage at www.mass.gov/doer.

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

[13] See footnote 9 regarding the ACP mechanism.

Table One
2007 Massachusetts Retail Electricity Suppliers

Distribution Utilities	
Fitchburg Gas & Electric Co., d/b/a Unitil	NSTAR Electric Co.[14]
Massachusetts and Nantucket Electric Companies, d/b/a National Grid	Western Massachusetts Electric Co.
Competitive Suppliers	
Consolidated Edison Solutions, Inc.	*Horizon Power and Light LLC*[15]
Constellation NewEnergy, Inc.	Integrys Energy Services, Inc.
Direct Energy Services, LLC	Mirant Energy Trading, LLC
Dominion Retail, Inc.	MXenergy Electric, Inc.
Freedom Partners, LLC, d/b/a Freedom Energy, LLC[16]	Pepco Energy Services, Inc.
Gexa Energy, LLC	Sempra Energy Solutions LLC
Glacial Energy of Massachusetts, Inc.[17]	*Spark Energy, LP*[18]
Hampshire Council of Governments	Strategic Energy LLC
Harvard Dedicated Energy, Ltd.	Suez Energy Resources NA, Inc.
Hess Corporation[19]	TransCanada Power Marketing Ltd.

The detailed compliance figures for all five of the RPS compliance years are in Table Two, while more detail is in Appendix Three. The changes in compliance during the first five years of the program, 2003-07, are illustrated in Figure One. Note that 2002, when Suppliers were not yet obligated to comply with RPS, was a year in which New Renewable Generation Units first became qualified and Suppliers could purchase the RECs from their output to bank for use in 2003, the first compliance year. Those "Early Compliance" RECs jump-started the program in a situation wherein the financial incentives of RPS had not yet resulted in a sufficient supply of RECs. The shortage of qualified generation and RECs is evident in the high reliance on ACPs during 2004-06. However, the RPS obligation clearly has demonstrated its success in providing incentive for accelerated development of New Renewable Generation Units during the six years since the original RPS regulations were promulgated in April of 2002.

[14] NSTAR Electric is the successor company to Boston Edison and Commonwealth Electric.

[15] Horizon entered the Massachusetts retail market late in 2007.

[16] See Appendix One for information about Freedom Partners, which had not yet fulfilled its RPS compliance obligation as of the writing of the final draft of this report.

[17] Glacial Energy entered the Massachusetts retail market at the beginning of 2007.

[18] Spark Energy entered the Massachusetts retail market at the beginning of 2007.

[19] Hess acquired the retail customers of Select Energy, Inc., on 6/1/06.

Table Two
Aggregated Information from the 2003-2007 RPS Annual Compliance Filings (MWh)[20]

		2007	***2006***	***2005***	***2004***	***2003***
A	Total retail electricity sales (load obligation) in Massachusetts[21]	50,978,101	*50,143,130*	*51,558,778*	*50,063,092*	*49,834,324*
B	Compliance Obligation, 3% in 2007 (*2.5% in 2006, 2% 2005 1.5% 2004, 1% 2003)*	1,529,359	*1,253,600*	*1,031,449*	*750,954*	*498,344*
C	Total from New Renewable Generation in the Compliance Year itself	1,599,533	*938,772*	*644,849*	*444,680*	*304,112*
D	Total from surplus attributes banked from the previous year or two[22]	6,863	*1,661*	*19,531*	*61,147*	*255,069*
E	Total from New Renewable Generation (=C+D)	1,606,396	*940,433*	*664,380*	*505,827*	*559,181*
F	Surplus (for 2007 & 2003) or shortfall (for 2004-2006) (=B-E)	(87,957)	*313,167*	*367,069*	*245,127*	*(60,837)*
G	Total from Alternative Compliance Payments (ACPs)	10,920	*322,625*	*367,858*	*265,424*	*181*
H	Total from New Renewable Generation & ACPs (=E+G)	1,617,316	*1,263,058*	*1,032,238*	*771,251*	*559,362*
I	Total banked for future Compliance (within two years) (=H-B)[23]	80,559	*9,458*	*739*	*20,297*	*61,314*

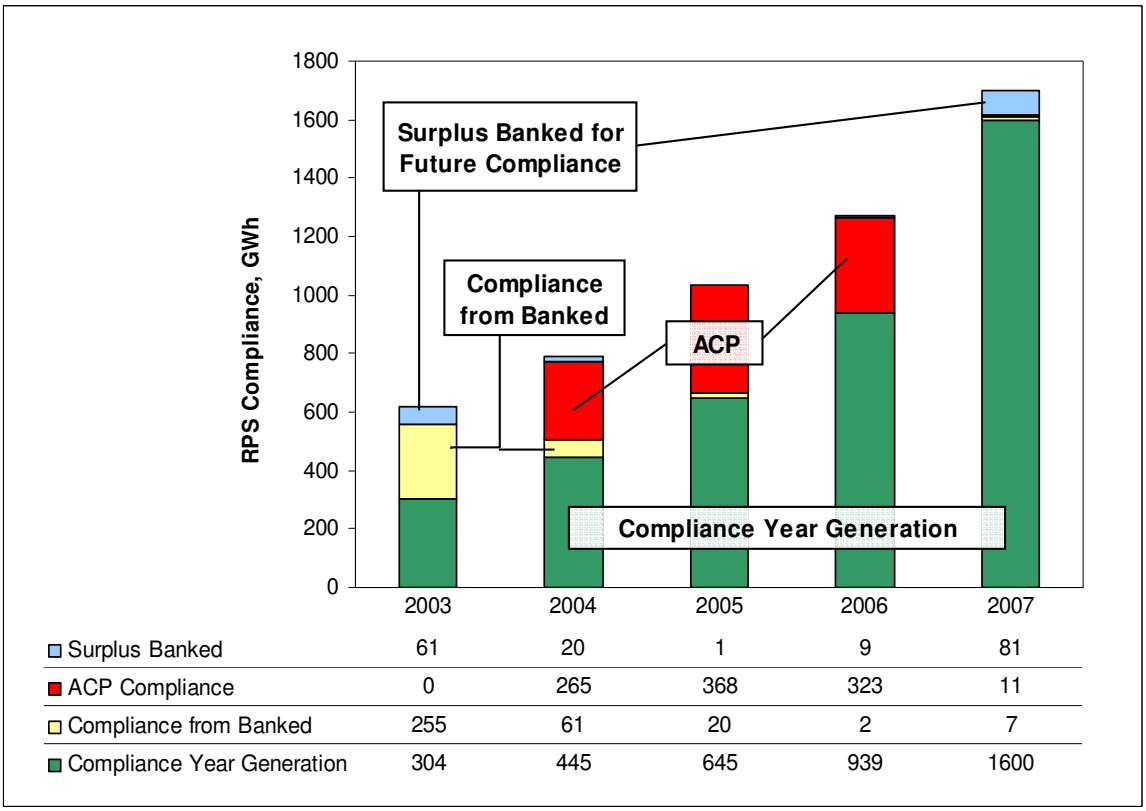
[20] These are aggregated figures. However, compliance is calculated separately for each Supplier, with fractions always rounded upwards. Therefore, the figures in each column might not appear to match the indicated calculations.

[21] DOER requires that each 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/.) For additional detail, 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. [Note that the figure for 2007 on this row was corrected on 12/1/08.]

[22] RECs for RPS qualified new renewable generation from 2002, 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).

[23] The difference in 2007 between the quantity of surplus RECs and the quantity banked is due to two Suppliers having purchased more RECs than the limit that they were permitted to bank. See footnote 8 regarding the banking limit.

Figure One
RPS Compliance, 2003-2007



	2003	2004	2005	2006	2007
Surplus Banked	61	20	1	9	81
ACP Compliance	0	265	368	323	11
Compliance from Banked	255	61	20	2	7
Compliance Year Generation	304	445	645	939	1600

GENERATION SOURCES FOR RPS COMPLIANCE

The percentage of 2007 RECs from the qualified types of renewable resources are illustrated in the Figure Two, while the percentages of 2007 RECs from the six New England states, New York, and the adjacent Canadian provinces are illustrated in Figure Three. Note that a small portion of northern Maine ("NMISA") is outside of the New England grid and connects to ISO-NE via the New Brunswick control area; therefore, the output of NMISA generators must be imported to ISO-NE to earn RECs. Figures Four and Five illustrate the five year trend of RECs, 2003-2007, by resource type and by location of the generation. Appendix Four has a pair of tables listing the data from which those four graphs were generated.

Most of the biomass generation is located in Maine and New Hampshire. Biomass plant output has been increasing substantially from year to year since 2003 and has overtaken landfill methane as the largest single resource type. Most of the wind RECs are from wind farms in New York, Quebec, northern Maine, and Prince Edward Island, of which the latter two are in the New Brunswick control area, adjacent to the ISO-NE control area; RECs for those resources are earned only on electricity imported into ISO-NE. Wind output has been increasing at an even higher rate than biomass since 2005, more than quadrupling since 2006. Given the magnitude of the wind resource – in the mountains, near the New England shore, off the coast of Massachusetts and Rhode

Island, and in the adjacent control areas – DOER expects wind to become an increasingly substantial source of renewable electricity in the coming years.

Figure Two
2007 RPS Compliance by Generator Type

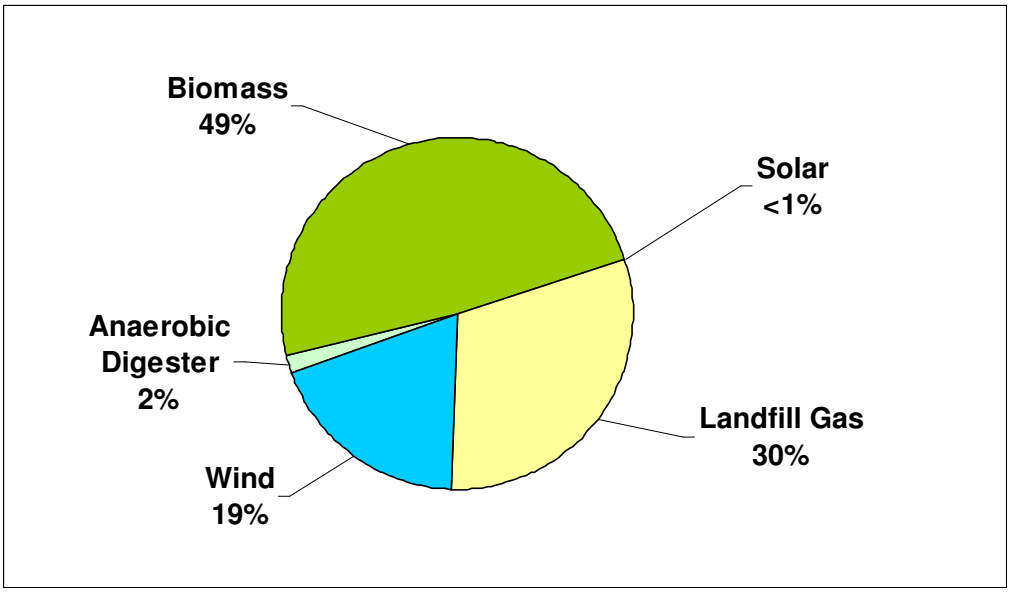


Figure Three
2007 RPS Compliance by Generator Location

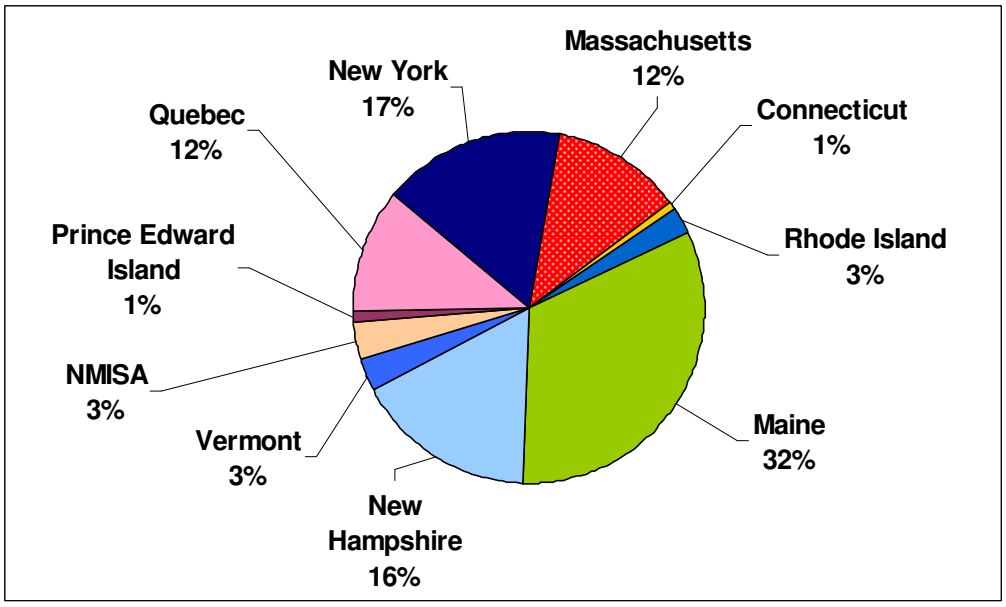


Figure Four
RPS Compliance by Generator Type, 2003-2007

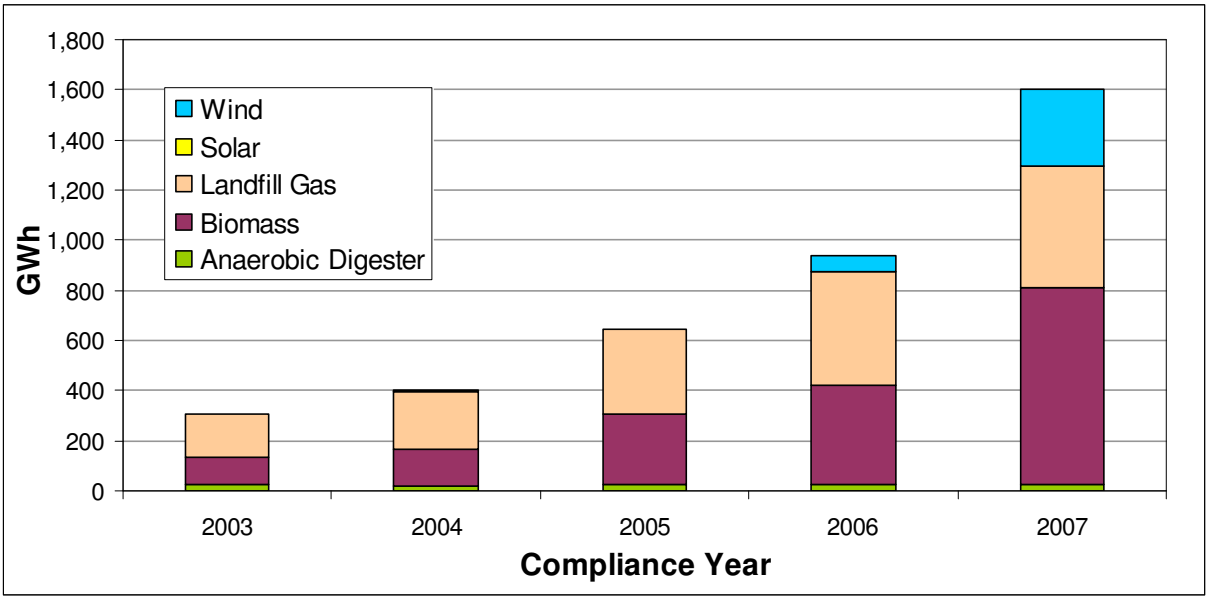
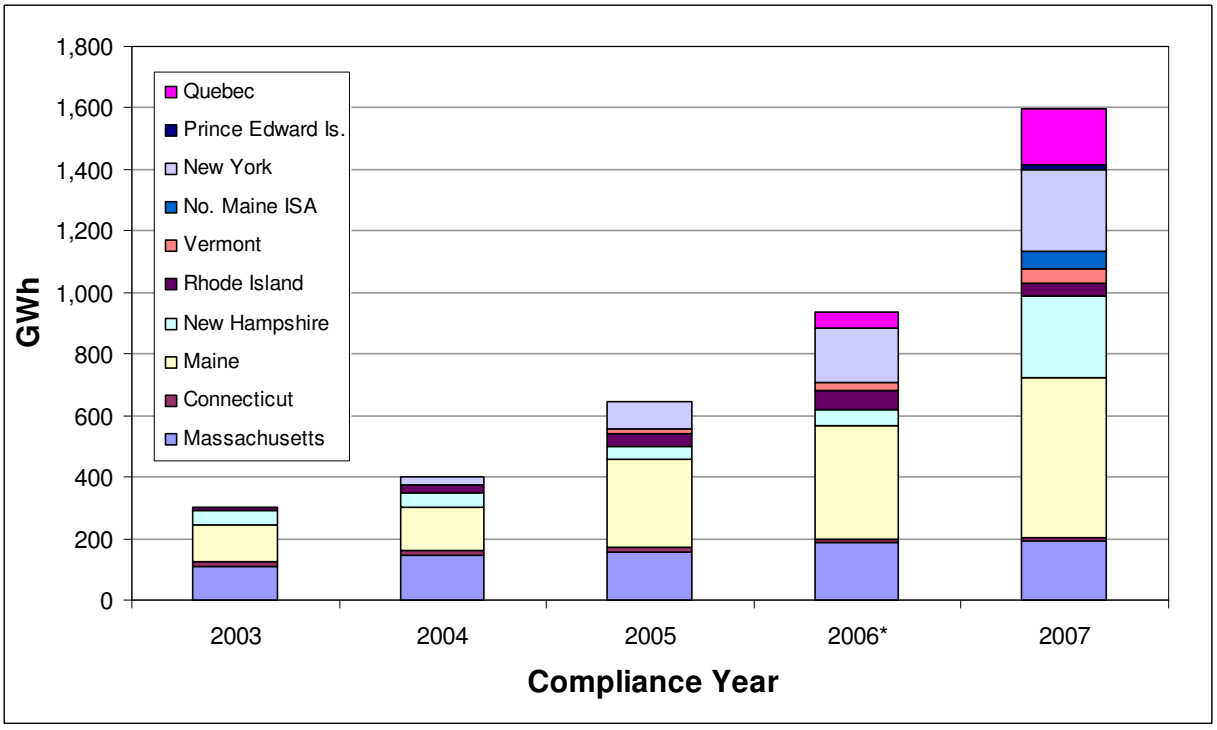


Figure Five
RPS Compliance by Generator Location, 2003-2007



The bulk of the landfill gas output is from Massachusetts, Rhode Island, and New York. Landfill output has been increasing much more slowly than that of biomass and wind and has, as noted above, been overtaken by biomass as the largest single source. Most of the anaerobic digester output is from the Deer Island Wastewater Treatment Plant near Boston, supplemented by very small, dairy farm manure-based units, mainly in northern Vermont; however, RECs from the Vermont facilities were not used for MA RPS compliance in 2007. Solar photovoltaic arrays, all of them in Massachusetts, provide a small but growing quantity of RECs for MA RPS.

Appendix Five has a table providing details about the RPS-qualified generation units that provided RECs during 2007. A second table in Appendix Five provides details about the status of RPS-qualified units that did *not* provide 2007 RECs, most of which are expected to provide them in 2008 or in future years.

PROJECTION OF FUTURE RPS COMPLIANCE OBLIGATIONS AND SUPPLY

DOER has projected the future RPS compliance obligation, based on "customer migration" data that all Massachusetts suppliers submit to DOER monthly and the Commonwealth's mandates for energy efficiency under the Green Communities Act of 2008.[24] The RPS minimum percentage obligation increases as specified in the statute and regulations,[25] with that increase changing from one half percent annually through 2009 to one percent annually thereafter, in accordance with the new RPS mandate of the Green Communities Act, Section 32. Table Three lists both the actual (2003-07) and projected (2008-2015) total retail sales – as load obligation[26] – and the resulting projected RPS obligation in megawatt-hours (MWh). Please note that, although ISO-NE projects annual growth in load obligation, the Commonwealth's growing energy efficiency program are being revamped to keep electricity sales at 2008 levels until 2014. In 2014, DOER expects electricity sales to begin decreasing to "meet at least 25 per cent of the Commonwealth's electric load . . . by the year 2020 with demand side resources", as stated in the Section 116 of the Green Communities Act. DOER has not yet calculated the retail load figurers for 2014 and 2015 and has assumed, for Table Three, a continuation of zero growth. Others can, of course, calculate projected RPS obligations based on their own load growth assumptions. This table provides figures only through 2015, although the annually increasing RPS obligation continues indefinitely into the future.

[24] See footnote 7 for a link to the Green Communities Act.

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

[26] See explanation and reference in footnote 21 regarding the use of "load obligation" for "retail sales."

Table Three
RPS Annual Compliance Obligations
Actual (2003-2007) & Projected (2008-2015)[27]

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	*50,978,101*	3.0	*1,529,359*
2008	51,370,602	3.5	1,797,971
2009	51,370,602	4.0	2,054,824
2010	51,370,602	5.0	2,568,530
2011	51,370,602	6.0	3,082,236
2012	51,370,602	7.0	3,595,942
2013	51,370,602	8.0	4,109,648
2014	51,370,602	9.0	4,623,354
2015	51,370,602	10.0	5,137,060

Figure Six shows DOER's projection in the growth of demand for "premium" RECs by the RPS mandates of the five New England states that have similar, albeit not identical, mandates for new renewable energy generation. Those mandates consist of the CT RPS Class I, the new ME RPS, the NH RPS Classes I and II, and the mandate for new facilities in the RI Renewable Energy Portfolio.[28] For Massachusetts, the graph uses the same figures as in Table Three. For the other four states, the figures are based on ISO-NE load growth projections.[29]

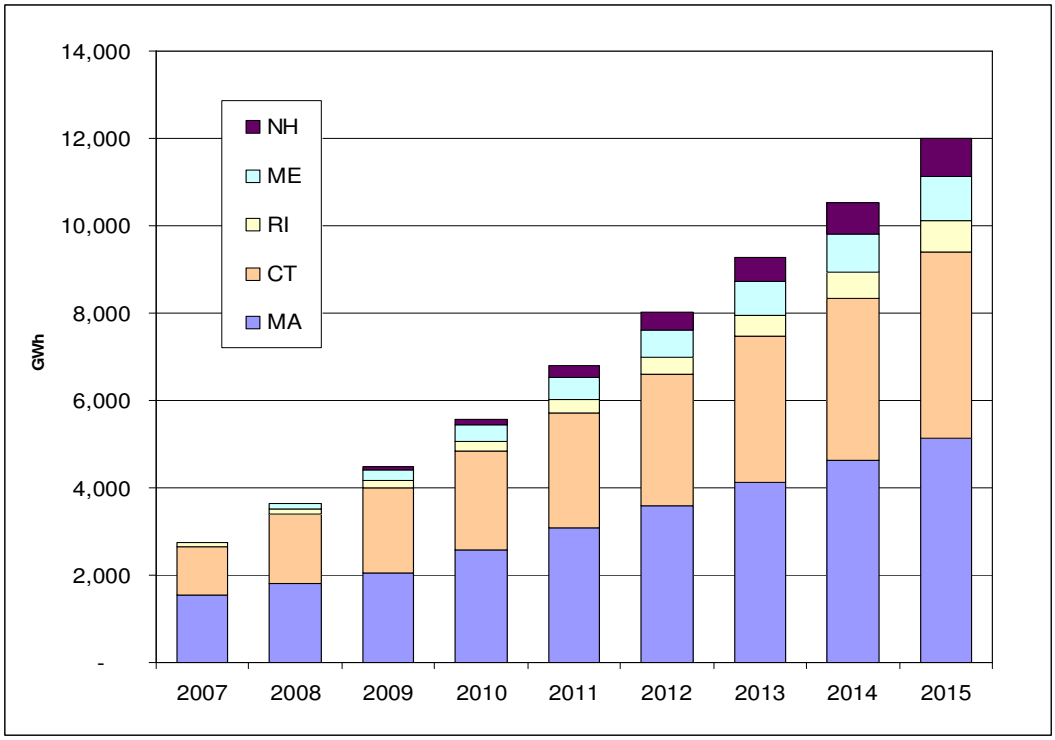
With regard to future MA RPS-eligible supply, DOER expects the trends evident in 2007, as summarized in the above sections, to continue during 2008. This expectation is based on the additional capacities and the stated commercial operation dates of those RPS-qualified Generation Units that did not yet contribute to the supply of New Renewable Generation during 2007. That information is listed in Table D of Appendix Five.

[27] The figures for 2003 through 2007 reflect actual load and are from RPS annual compliance filings. For the 2008 projected load obligation, DOER used the twelve month total for October 2007 through September 2008 from DOER's Electric Power Customer Migration data (available on-line at www.mass.gov/doer/pub_info/migrate.htm), and added 6% for line losses. The projections after 2008 assume zero load growth, as explained in the text preceding this table. Load obligation figures include historical PTF losses of 6% through 2015, except for 2006, when the loss factor was 5.35%. [Note that the figure for 2007 on this row was corrected on 12/1/08.]

[28] Details on the other programs are available via http://www.dsireusa.org/library/includes/type.cfm?EE=1&RE=1.

[29] The ISO-NE figures are from tab one at http://iso-ne.com/trans/celt/fsct_detail/2008/isone_2008_forecast_data.xls.

Figure Six
New England RPS Demand Growth by State, 2007-2015



The supply after 2008 also can be projected, in part, from information in Table D in Appendix Five, as well as from other sources of data regarding projects in various stages of development, such as the ISO-NE's tabulation of projects scheduled for interconnection studies.

DOER recognizes that projection of future REC supply is particularly difficult at this time for reasons both endogenous and exogenous to the RPS program. A large degree of uncertainty derives from forces external to the program itself, especially from the prospects of changing renewable and climate policies at the federal level, looming uncertainties in the global and national economies, rising economic pressures on both conventional fuels and the materials for constructing new power generating facilities (steel, cement, etc.), and global demand creating backlogs for the supply of wind power equipment.

Within the RPS program itself, significant revisions to the RPS regulations are forthcoming pursuant to several sections of the Green Communities Act of 2008, which was enacted on July 2, 2008.[30] Those changes will expand the types of resources that are eligible as New Renewable Generation, but they also could restrict the future eligibility of others. DOER cannot predict, at this time, the impact of those changes, but will assure that new regulations are presented in a timely manner and with appropriate public input.

[30] See footnote 7.

APPENDIX ONE

RPS 2007 Compliance Filings, Review, and Verification

All suppliers that sold retail electricity to end-use customers in the territories of the four Massachusetts regulated utilities during 2007 were required to file their Annual Compliance Filings for 2007 by July 1, 2007. DOER issued forms and instructions for the Filings on June 4th, eleven days before the end of the NEPOOL GIS trading period for the fourth quarter of 2007. By July 1st DOER had received Filings from all four of the regulated utility companies and from all but one of the sixteen competitive suppliers of which DOER had knowledge; the last one was received on July 3rd. In mid- July, DOER learned from the four regulated utility companies that four additional competitive suppliers had begun serving retail load in Massachusetts during 2007; those entities had never contacted DOER, did not received the Filing forms and instructions, although DOER had announced their availability at the NEPOOL-GIS homepage[31], and had not submitted Filings. DOER immediately located and contacted those entities, informed them of their obligations, and received Filings from all four before the end of July.

Freedom Partners, one of the four new suppliers, both entered and left the Massachusetts retail electricity market during 2007. Unfortunately, although Freedom did submit its Compliance Filing after being identified in mid-July and ordered to do so by DOER, it has not yet complied with its RPS obligation as of the writing of the final draft of this report. Although Freedom had already withdrawn voluntarily from the Massachusetts retail electricity market, DOER has notified them regarding their compliance failure, pursuant to the RPS Regulations at 225 CMR 14.12.

During the summer and into the early fall, DOER staff reviewed the Filings submitted by the suppliers, including printed and electronic copies of both their compliance summary tables and GIS spreadsheet 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 the electronic versions of those reports. 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, some competitive suppliers still did not correctly assign "load" in their GIS accounts. Therefore, in order to verify the figures provided in their Filings, DOER has continued to rely on data submitted (on a confidential basis) by the regulated utilities.

Aside from the belated discovery of four additional suppliers and the need to accept their Filings late, and aside from the situation of Freedom Partners, the 2007 Filings were submitted, reviewed, supplemented, corrected, clarified, and accepted more smoothly and with still fewer delays than had been the case for previous Filings.

[31] See www.nepoolgis.com.

APPENDIX TWO

2007 Annual Renewable Energy Resource Report

This Appendix reports certain information from the Annual Compliance Filings for 2007 that is required by the RPS regulations at 225 CMR 14.10 (2), which provides as follows:

> Annual Renewable Energy Resource Report. The Department will produce an annual report that summarizes information submitted to the Department by Retail Electric Suppliers in the Annual Compliance Filing submitted to the Department 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:

2007 Annual Renewable Energy Resource Report

Total Retail Electrical Energy Sales in Massachusetts in 2007	**50,978,101 MWh**
Total Renewable Generation Attributes in 2007	**2,352,318 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 2007 electricity from Renewable Generation Units for the entire New England power grid,[32] 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).[33] 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.

NEPOOL GIS Renewable Energy Certificates in 2007

Total Renewables in ISO New England		13,034,233 MWh
Massachusetts share of ISO New England	45.79 %	5,968,349 MWh
MA regulated utility territories' share of ISO-NE	39.64 %	5,166,405 MWh

[32] The data are from the four quarterly data tables for 2007 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.

[33] The Massachusetts share was derived from a spreadsheet at the ISO New England's *CELT Forecasting Details 2007* web page, http://www.iso-ne.com/trans/celt/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 account for about 13% of the Massachusetts retail demand, leaving about 87% to be supplied by companies in the territories of the regulated utilities, which is where the RPS applies.

APPENDIX THREE
2007 RPS Compliance Summary

	Retail Sales	New Renewable Energy Attributes							Banked for Future Compliance		
Retail Electricity Suppliers	**Load Obligation (from filing)**	**2007 MA RECs**	**2005 Banked Attributes**	**2006 Banked Attributes**	**Other 2007 Attributes**	**Alternative Compliance Credits**	**Total RPS Attributes**	**3.0% RPS Obligation**	**Excess Attributes**	**Banking Limit (30%)**	**Banked Attributes**
Distribution Companies											
National Grid	13,429,405	405,171	0	0	0	0	405,171	402,883	2,288	120,865	2,288
NSTAR	10,459,123	289,852	0	0	23,925	0	313,777	313,777	0	94,134	0
W. MA Electric	2,201,592	57,898	0	0	8,152	0	66,050	66,048	2	19,815	2
Fitchburg G & E	302,256	9,500	0	2,105	0	0	11,605	9,068	2,537	2,721	2,537
Subtotals	**26,392,376**	**762,421**	**0**	**2,105**	**32,077**	**0**	**796,603**	**791,776**	**4,827**	**237,535**	**4,827**
Competitive Suppliers											
Consolidated Edison Solutions											
Constellation New Energy											
Direct Energy Services											
Dominion Retial											
Freedom Energy											
Gexa Energy											
Glacial Energy of MA											
Hampshire Council of Gov'ts											
Harvard Dedicated Energy											
Hess Corporation											
Horizon Power & Light											
Integrys Energy Services											
Mirant Energy Trading											
Mxenergy Electric											
Pepco Energy Services											
Sempra Energy Solutions											
Spark Energy											
Strategic Energy											
Suez Energy Resources											
TransCanada Power Marketing											
Subtotals	**24,585,725**	**800,375**	**0**	**4,758**	**4,660**	**10,920**	**820,713**	**737,583**	**83,130**	**221,285**	**75,732**
Totals	**50,978,101**	**1,562,796**	**0**	**6,863**	**36,737**	**10,920**	**1,617,316**	**1,529,359**	**87,957**	**458,820**	**80,559**
	MWh	**MWh**	**MWh**	**MWh**	**MWh**	**MWh**	**MWh**	**MWh**	**MWh**	**MWh**	**MWh**

APPENDIX FOUR

Data Tables for RPS Compliance by Generator Type and Location

The two tables below provide the data from which the graphs in Figures Two through Five were generated.

Table A
RPS Compliance by Generation Type, 2003-2007

Year	2003	2004	2005	2006	2007	2007
Fuel Type	MWh	MWh	MWh	MWh	MWh	%
Anaerobic Digester	24,571	20,662	23,710	27,115	27,511	1.7
Biomass	108,106	146,228	285,289	395,856	782,315	48.9
Landfill Gas	171,025	230,553	335,151	449,633	486,558	30.4
Solar	0	0	6	216	803	0.1
Wind	533	4,000	693	65,952	302,346	18.9
Totals	**304,235**	**401,443**	**644,849**	**938,772**	**1,599,533**	**100.0**

Table B
RPS Compliance by Generation Location, 2003-2007

Year	2003	2004	2005	2006	2007	2007
Location	MWh	MWh	MWh	MWh	MWh	%
Massachusetts	108,106	146,228	157,022	184,777	192,200	12.0
Connecticut	15,209	13,810	14,353	13,204	10,180	0.6
Maine	122,958	142,715	285,289	367,298	520,821	32.6
New Hampshire	42,845	45,800	40,677	53,556	265,062	16.6
Rhode Island	15,117	26,521	42,659	62,230	42,562	2.7
Vermont	0	0	14,476	26,595	46,915	2.9
Northern Maine ISA	0	0	0	455	54,079	3.4
New York	0	26,369	90,373	175,961	265,299	16.6
Prince Edward Island	0	0	0	0	16,922	1.1
Quebec	0	0	0	54,696	85,493	11.6
Total	**304,235**	**401,443**	**644,849**	**938,772**	**1,599,533**	**100.0**

APPENDIX FIVE

MA RPS Qualified New Renewable Generation

The two tables below list all of the MA RPS qualified New Renewable Generation Units. Table C lists only those Units that provided RECs for RPS compliance in 2007. Fifteen Units or Unit expansions that began generating for RPS in 2007 are listed in boldface. Table D 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 C
Sources for RPS Certificates in 2007 by Fuel/Technology, State, and Date

Name (& city, town, or county)	State or Province[36]	Fuel / Technology[37]	Capacity (MW)	Commercial Start Date[38]	Historic Generation Rate (MWh)[39]
Deer Island Treatment Plant – STG (Winthrop)	MA	AD	18.0	7/98	
Deblois - Worcester Energy	ME	BM	25.85	6/89, restarted spring 2005	3,126
Greenville Steam Company	**ME**	**BM**	**20**	**12/86, qualified 1/07**	**0[40]**
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	
CRRA Hartford Energy LLC	CT	LFG	2.8	8/98	
MM East Windsor	**CT**	**LFG**	**3.2**	**5/07**	
Attleboro Landfill – QF	MA	LFG	1.5	1/98	

[36] 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, Nova Scotia, and Prince Edward Island – then its electricity must be exported to the ISO-NE grid in order to qualify for Mass RECs.

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

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

[39] "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.

[40] The substantially retooled Greenville Steam Company is qualified as a "New," not "Vintage," plant.

Covanta Haverhill – LF Gas	**MA**	**LFG**	**1.6**	**12/07**	
Randolph/BFG Electric Facility	MA	LFG	3.0	3/00	
[Sykes Rd] - GRS - Fall River	MA	LFG	5.7	8/00	
Fitchburg Landfill	**MA**	**LFG**	**3.2**	**9/07**	
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	
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[41]
WM Chaffee	**NY**	**LFG**	**4.8**	**7/07**	
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	
WM Mill Seat (Bergen)	**NY**	**LFG**	**4.8**	**7/07**	
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
Seneca Falls LFG Expansion[42]	**NY**	**LFG**	**4.8**	**6/07**	
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[43]	RI	LFG	6	8/05	
Coventry LF Gas to Energy	VT	LFG	4.8	5/05	
Coventry LF Gas to Energy [additional engine, new GIS account]	**VT**	**LFG**	**1.8**	**1/07**	
Brockton Brightfield	MA	PV	0.425	9/06	
MA PV Cluster [aggregation]	MA	PV	0.268	6/03	

[41] 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.

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

[43] 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.

Mass. Maritime Academy Dorm PV (Buzzards Bay)	**MA**	**PV**	**0.08**	**11/07**	
One Oak Hill Road PV (Fitchburg)	MA	PV	0.147	8/05	
Shad Hall Photovoltaic (Harvard University, Boston)	**MA**	**PV**	**0.036**	**9/03; 2/07 into NEPOOL GIS**	
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)*[44]	ME	Wind	42	10/06	
Fenner Windpower Project (Cazenovia)	NY	Wind	30	12/01, import 1/03	
Madison Windpower (Madison)	**NY**	**Wind**	**11.5**	**10/00, import 10/07**	
Maple Ridge II Wind Farm (Lowville)	**NY**	**Wind**	**90.75**	**12/06, import 7/07**	
Munnsville Wind Farm (Bouckville)	**NY**	**Wind**	**34.5**	**10/07**	
Steel Winds Energy Project (Lackawanna)	**NY**	**Wind**	**20**	**6/07**	
West Cape Wind Farm (O'Leary) – first phase	**PEI**	**Wind**	**20**	**5/07**	
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	

Table D, below, includes MA RPS qualified New Renewable Generation Units that did not provide RECs for 2007 compliance. Twenty-one of the Units are shown in boldface, signifying that they became qualified, began production, commenced qualified imports, or expanded capacity in 2007 or 2008; therefore, they are potential sources of additional RECs for 2008 compliance. However, note that the Commercial Start Date has not been updated for all of the Units in this table since those dates were provided in the Statement of Qualification Applications. 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.

[44] 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/public/). 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 D
Other Qualified New Renewable Generation Units

Name (city or town)	State or Province[45]	Fuel/ Technology	Capacity MW	Commercial Start Date[46]	Historic Generation Rate (MWh)
Berkshire Cow Power (Richford)	VT	AD	0.6	12/06	
Blue Spruce Farm (Bridport)	VT	AD	0.27	1/05	
Green Mt Dairy Farm (Sheldon)	**VT**	**AD**	**0.33**	**2/07**	
Montagne Farm (St. Albans)	**VT**	**AD**	**0.38**	**10/07**	
Neighborhood Energy (Newport)	**VT**	**AD**	**0.225**	**9/08**	
Iggy's Biodiesel CHP (Cambridge)	**MA**	**BM**	**0.045**	**spring 2008**	
Seaman Paper (Baldwinville)	**MA**	**BM**	**0.3**	**6/06, qualified for 10/07**	
Twin Rivers Technologies (Quincy)	**MA**	**BM**	**0.58**	**10/02, qualified for 4/08**	
Ware Cogen	**MA**	**BM**	**8.6**	**mid/late 2008**	
Boralex Livermore Falls	ME	BM	40	11/91, restart TBD	0[47]
Laidlaw Energy & Environmental (Ellicottville)	NY	BM	5.5	early 2009	
Ameresco Northampton	**MA**	**LFG**	**0.8**	**early 2008**	
Pine Tree Landfill (Hampden)	**ME**	**LFG**	**3.17**	**2/08**	
Dunbarton Road Landfill (Manchester)	*NH*	*LFG*	*1.3*	*8/88*	*4,248*
MM Albany	**NY**	**LFG**	**6.6**	**late 2008**	
Clinton (Morrisonville)	**NY**	**LFG**	**4.8**	**10/08**	
High Acres (Fairport)	**NY**	**LFG**	**9.6**	**7/9/-3/08**	**16,520**
Hyland (Angelica)	**NY**	**LFG**	**4.8**	**9/08**	
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**	**10/08**	

[45] 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.

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

[47] The substantially retooled Boralex Livermore Falls is qualified as a "New," not "Vintage," plant.

MM Cuyahoga Energy (Solon)[48]	*OH*	*LFG*	*3.8*	*2/99*	
Pontiac Energy (Cranston)	*RI*	*LFG*	*0.5*	*3/96*	*1,611*
Deer Island Solar (Winthrop)	**MA**	**PV**	**0.1**	**5/08**	
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 & Islands)	MA	PV	0.09	10/03	
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	
Kibby Wind Project (Kibby & Skinner Townships, Franklin Cty)	ME	WInd	132	fall 2009	
Mann Siding Power (St. Jean Baptiste)	NB	Wind	150	12/2011	
West Hill Windpower (Sturbridge)	**NY**	**Wind**	**39**	**fall 2008**	
West Cape Wind Farm (O'Leary) [second of two phases,]	**PEI**	**Wind**	**79**	**fall 2008-2009**	
Portsmouth Abbey Wind Turbine	**RI**	**Wind**	**0.66**	**3/06, qualified for 1/08**	

[48] Although MM Cayahoga Energy has a Statement of Qualification (dated September 3, 2003), the Operating Rules of the NEPOOL GIS have precluded its import of unit-specific energy, earning of RECs, and, thereby, participation in MA RPS. Under the Green Communities Act of 2008, DOER may grant Statements of Qualification only to Units that are in the ISO-NE Control Area and control areas adjacent thereto.