COMMONWEALTH OF MASSACHUSETTS
OFFICE OF CONSUMER AFFAIRS AND BUSINESS REGULATION
DIVISION OF ENERGY RESOURCES

RENEWABLE ENERGY PORTFOLIO STANDARD

ANNUAL RPS COMPLIANCE REPORT FOR 2004

JANUARY 9, 2006

INTRODUCTION AND SUMMARY

Calendar Year 2004 was the second year in which retail electricity suppliers in Massachusetts had to comply with the Renewable Energy Portfolio Standard (RPS). All thirteen suppliers[1] met the RPS compliance obligation to supply one and a half percent of their Massachusetts retail sales from new renewable energy generating sources. Retail sales in 2004 totaled just over 50 million megawatt-hours (MWh). In meeting the RPS compliance obligations, just under one percent – about 486 thousand MWh – were available from RPS-qualified sources.[2] The remaining compliance obligation of just over one half percent – about 265 thousand MWh – represents a shortfall in the availability of new renewable generation for 2004. That remaining obligation was met through an alternative mechanism consisting of Alternative Compliance Payments (ACPs) to an account at the Massachusetts Technology Collaborative (MTC), at the rate of $51.41 per MWh. The total of ACPs for 2004 compliance was about $13.6 million, which the MTC must use under DOER oversight to maximize the commercial development of new renewable generation. The process of Annual Compliance data submission and verification was more streamlined than last year, but DOER will make still further refinements to ensure consistent compliance and expeditious review of filings in future years.[3]

The Massachusetts RPS continues to provide a significant incentive for the construction of new renewable generation units and for increased electricity output from existing RPS qualified units. In addition, due to differences between RPS operations in Massachusetts as compared to New York, some new renewable generation units in New York began to participate in the Massachusetts RPS market during 2004 by exporting electricity to New England, and several additional New York plants coming on line during 2005 have already qualified and intend to participate. Qualified new renewable generation units within New England provided almost 25.6 percent more output for RPS compliance in 2004 than in 2003; however, the increase is 46.2

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

[2] About one-eighth of that 486 thousand MWH (61 thousand MWh) represented surplus "banked" from 2003. The figure 486 was derived by adding the 2003 banked to the 2004 new renewable generation, and then subtracting the 2004 surplus that is being banked for 2005 and/or 2006 compliance: 445 + 61 – 20 = 486.

[3] The retail electricity suppliers' Annual Compliance Filings for each year are due at DOER by July 1st of the following year. DOER staff then spends several months reviewing the filings, requesting and obtaining clarifications from the suppliers and additional verification data from the utility companies, and analyzing all of the data. Meantime, DOER staff begins drafting the report, which then must be reviewed and revised several times before it is complete and authorized for release. Thus, the report for 2004 is being issued at the beginning of 2006, after six months of work at DOER.

percent when electricity imports from New York are included. Qualified Massachusetts sources provided 22.9 percent more in 2004 than in 2003. The number of new renewable generation units providing output for RPS compliance increased from twelve in 2003 to nineteen in 2004, and DOER expects an additional six to have provided output for RPS compliance in 2005. Almost half of the new units for 2004 compliance are located in Massachusetts.

The new renewable generation units that provided output for 2004 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 gradually improve 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.

While DOER expects a comparable shortfall for 2005 RPS compliance, the supply appears to improve for 2006, as new landfill and biomass capacity currently in the pipeline become operational. Some level of shortfall in supply is to be expected in the early years of this new program, and appropriate investment of the ACP funds will further the goals of growing the market share of renewable energy, along with its environmental and economic benefits.

This report, with its appendices, describes the RPS obligation, summarizes information from the 2004 compliance filings, projects the RPS compliance obligations for 2005 through 2009, and discusses the current and future RPS market. That discussion includes possible effects of the pending rulemaking in which DOER expects to clarify the definition of "low-emission, advanced biomass power conversion technologies." Appendix One narrates how DOER reviewed and verified supplier compliance for 2004. Appendix Two is the much more limited annual report actually required under the RPS regulations. Appendix Three lists the RPS-qualified power generators that provided new renewable generation in 2004 used by retail suppliers to meet their RPS compliance, as well as other currently qualified generators.

THE MASSACHUSETTS RENEWABLE ENERGY PORTFOLIO STANDARD

RPS was established by the Electric Utility Restructuring Act of 1997.[4] The RPS statute requires that all retail electricity suppliers to end-use customers in Massachusetts include at least a certain minimum percentage from "new renewable" energy generating sources.[5] That obligation began at one percent (1%) for 2003, was one and a half percent (1.5%) for 2004, is two percent (2%) for 2005, and rises by one half percent (0.5%) each year through 2009, when the obligation will be four percent (4%). After 2009, the obligation will rise by one percent each year until such time as DOER may set for freezing the minimum percentage.[6] 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

[4] 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.

[5] See footnote 1 regarding the one exception to the RPS obligation.

[6] The RPS regulations at 225 CMR 14.07(2) provide that DOER will determine no later than December 31, 2007, whether the obligation will increase by one percent per year during 2010 through 2014.

final regulations for RPS on April 22, 2002.[7] The regulations require suppliers to submit Annual Compliance Filings that document their compliance with the RPS obligation, and they require electricity generation owners or operators to obtain from DOER Statements of Qualification to formally recognize their facilities as "new renewable generation units".

The new renewable generation "attribute" of each megawatt hour of electricity from a MA RPS-qualified, new renewable generation unit is represented by an electronic certificate at the NEPOOL Generation Information System (GIS), where all generation units, retail electricity suppliers (a.k.a. "load serving entities"), and brokers on the New England grid have electronic accounts. A NEPOOL GIS certificate that is coded with the MA new renewable generation attribute (denoting MA RPS-qualified electricity) is generally called a Mass REC or just REC[8] in the young RPS market. More detail about how RPS operates is in Appendix One of the *Annual RPS Compliance Report for 2003*.[9]

2004 RPS COMPLIANCE

DOER here summarizes the information provided by the thirteen retail electricity suppliers in their Annual Compliance Filings for 2004.[10] Applicable Massachusetts retail sales during 2004 totaled 50,063,092 megawatt-hours (MWh).[11] The aggregated 2004 RPS obligation of one and a half percent was 750,954 MWh from new renewable generation units, and that obligation was met by all suppliers.[12] However, due to a shortfall in available RECs representing new renewable generation attributes, just over one-third of the obligation was met by means of the Alternative Compliance mechanism.[13]

Of the 750,954 MWh total obligation, 444,680 MWh was supplied by 2004 new renewable generation. Most of the suppliers also used Banked Compliance (surplus from their 2003 compliance) that totaled 61,147 MWh, accounting for about one-twelfth of the 2004 obligation. Finally, all except three of the suppliers had to use the Alternative Compliance mechanism, making Alternative Compliance Payments (ACPs) at the rate of $51.41 per MWh for

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

[8] REC has a more general meaning of renewable energy certificate or credit, which might or might not be RPS-compliant. 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 "NE[POOL]-GIS Certificates." This report will use "REC" to mean MA RPS-qualified NEPOOL GIS certificate unless otherwise indicated, and "RPS" to mean the Massachusetts Renewable Energy Portfolio Standard unless otherwise indicated.

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

[10] 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.

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

[12] The aggregated total obligation is slightly higher than 1.5% of the total retail sales because each supplier's own 1.5% obligation is subject to upward rounding.

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

their remaining obligation. The ACPs totaling $13,645,448[14] were remitted to the Massachusetts Technology Collaborative (MTC), which must use the funds under DOER oversight to maximize the commercial development of new renewable generation capacity. DOER has authorized the MTC to use 2003 and 2004 ACP funds to augment the amount that the MTC had already allocated from the ratepayer-funded Massachusetts Renewable Energy Trust funds to Round Two of its Massachusetts Green Power Partnership, a program which provides future price support for RECs to facilitate the financing and construction of new renewable energy generating facilities.[15]

Although the overall total of 2004 new renewable MWh plus Banked Compliance from 2003 MWh resulted in a one-third shortfall for compliance, which was met by ACPs, four suppliers nonetheless had surpluses totaling 20,297 MWh more than they needed for 2004 compliance, and they were able to bank that surplus for use towards 2005 and/or 2006 compliance.[16] The above figures are included in Table One, alongside figures from 2003.

Table One
Aggregated Information from the 2004 (& 2003) RPS Annual Compliance Filings

		2004 MWh	***2003 MWh***
A	Total retail electricity sales in Massachusetts	50,063,092	*49,834,324*
B	Compliance Obligation: 1.5% for 2004 *(1.0% for 2003)*	750,954	*498,344*
C	Total from 2004 *(2003)* New Renewable Generation	444,680	*304,112*
D	Total banked from 2003 for 2004 *(from 2002 for 2003)*[17]	61,147	*255,069*
E	Total from New Renewable Generation (=C+D)	505,827	*559,181*
F	Shortfall for 2004 *(but Surplus for 2003)* (=B-E)	245,127	*(60,837)*
G	Total from Alternative Compliance Payments (ACPs)[18]	265,424	*181*
H	Total from New Renewable Generation and ACPs (=E+G)	771,251	*559,362*
I	Total banked for future Compliance (within two years)	20,297	*61,314*[19]

[14] The *Annual RPS Compliance Report for 2003* projected that ACPs for 2004 would "total at least $15 million." The reasons why this actual total is approximately $1.3 less than last February's projection are as follows: (a) the total retail load obligation for 2004 was overestimated by more than 724,000 MWh and, therefore, the RPS obligation by almost 11,000 MWh; and (b) the output of qualified generation units was underestimated by 43,680 MWh. Most notably, the quantity of landfill energy plant output exported from New York to New England for MA RPS was underestimated by about 11%. A link to the report for 2003 is at footnote 9.

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

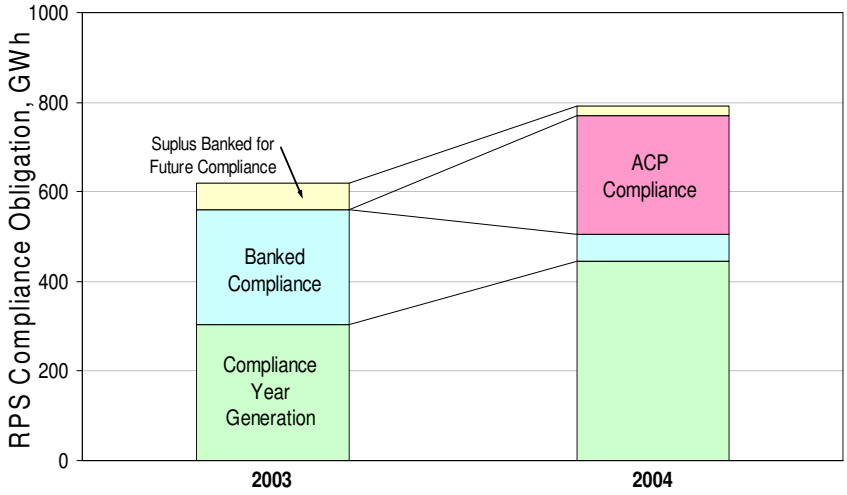
[16] The quantity of banked RPS Attributes may not exceed 30% of a supplier's RPS obligation in the year in which those Attributes were created. Because that limit pertains separately to each supplier, the total MWh actually banked may be less than the total excess MWh, which was the case for 2003 but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

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

[18] 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.

Figure One shows how the types of RPS compliance changed between the first two compliance years, 2003 and 2004. 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. While the numbers of qualified generation units and their output increased considerably during 2003 and 2004, that growth was not sufficient to provide as many RECs from 2004 new renewable generation as needed for 2004 compliance, even combined with banked RECs from 2003, let alone to provide as many RECs to "bank" from 2004 to 2005 as from 2003 and 2004. Therefore, just over one-third of the RPS compliance obligation for 2004 was met by means of Alternative Compliance Payments, although, as noted above, not as many as had been projected in the report for 2003.[20]

Figure One
MA RPS Compliance 2003-2004



	2003	2004
Surplus Banked	61	20
ACP Compliance	0	265
Banked Compliance	255	61
Compliance Year Generation	304	445

Figure Two shows the percentage of the total 444,680 MWh of 2004 output from new renewable generation units provided by each type of renewable resource. The order of the relative contributions from each resource remained the same as in 2003, but with landfill methane accounting for a larger share in 2004 than in 2003. The largest single share in 2004, 268,353

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

[20] See footnote 14 for an explanation of the difference between the projected and actual ACPs.

MWh, came from thirteen landfill methane energy plants located in five states. The second largest share, 154,753 MWh, came from two biomass plants in Maine. An anaerobic digester gas project in Massachusetts was the third largest source, with 17,787 MWh (less than in 2003). Finally, a wind farm in New York provided 3,781 MWh, and small solar photovoltaic arrays in Massachusetts provided 6 MWh.[21]

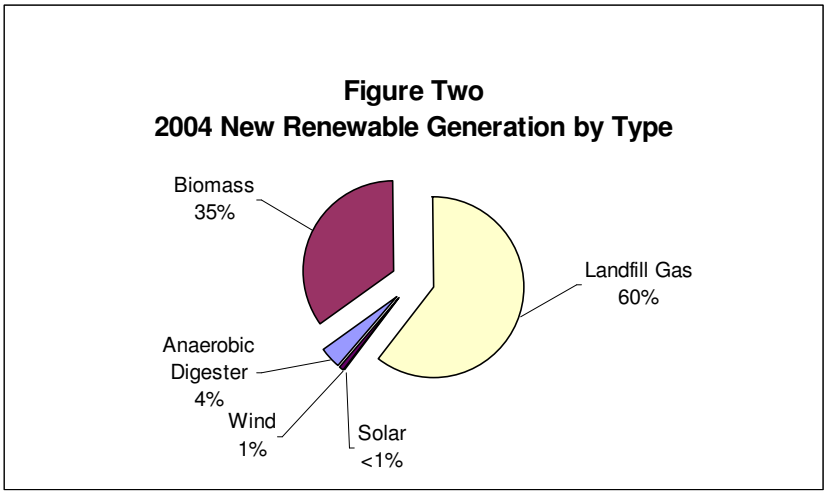
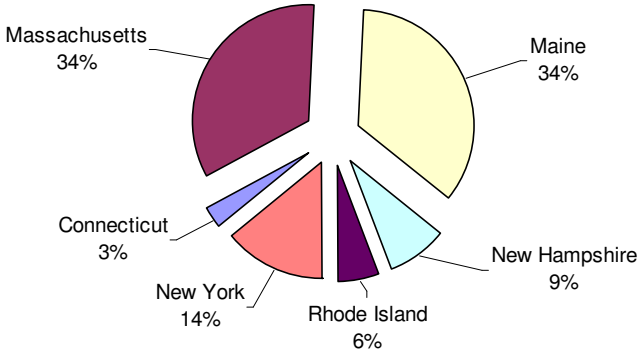


Figure Three shows the percentages of the 2004 new renewable output that came from Massachusetts, from other New England states, and from New York. Maine, with its concentration of biomass facilities, provided the largest share in 2004: 154,753. Massachusetts was a very close second in 2004, with 150,945 MWh, mostly from seven qualified landfill methane energy plants – in Attleboro, Chicopee, Fall River, Granby, Plainville, Randolph, and Westfield – and the anaerobic digester plant at the Deer Island Wastewater Treatment Plant. New York was the third largest source, exporting 62,655 MWh of new renewable electricity for RPS to the New England grid from two landfill energy plants and one wind farm. New Hampshire was the fourth largest source, entirely from a pair of landfills in Rochester. Rhode Island and Connecticut were fifth and sixth respectively, each with supply from landfill plants – a large, expanding site in the former and a small one in the latter.

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

Figure Three
2004 New Renewable Generation by State



Additional information is in Appendix 3, which provides a pair of tables that list all RPS-qualified new generating units by state, resource type, capacity, commercial start date (actual or projected), and, for "Vintage" units, "Historic Generation Rate."

Table Two lists the thirteen suppliers that submitted Annual Compliance Filings for 2004. 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
2004 Massachusetts Retail Electricity Suppliers

Distribution Utilities	Competitive Suppliers
Boston Edison Company	Constellation NewEnergy
Commonwealth Electric Company and Cambridge Electric Light Company	Dominion Retail, Inc.
Fitchburg Gas & Electric Co. (d/b/a Unitil)	Mirant Americas Retail Energy Marketing, LP
Massachusetts Electric Company and Nantucket Electric Company	Select Energy, Inc., and Select Energy of New York, Inc.
Western Massachusetts Electric Company	Sprague Energy Corporation
	Strategic Energy LLC
	Suez Energy Resources NA[22]
	TransCanada Power Marketing Ltd.

[22] This is the company known as Tractebel Energy Services Inc in 2003.

Additional detail regarding the process by which 2004 compliance filings were reviewed and processed are in Appendix One. DOER concludes that the 2004 filings were acceptable for the second year of compliance with regulations of this young program, and that the filings were submitted, reviewed, supplemented, corrected, clarified, and accepted more smoothly and expeditiously than had been the case for the 2003 Filings.

PROJECTIONS OF FUTURE RPS COMPLIANCE OBLIGATIONS

DOER has projected the future RPS compliance obligations through 2009, based on its analysis of Electric Power Customer Migration data that all Massachusetts suppliers submit monthly.[23] The RPS minimum percentage obligation increases as specified in the statute and regulations.[24] Table Three lists both the projected total retail sales and the resulting projected obligation in megawatt-hours (MWh), as well as the actual sales and obligation in 2003 and 2004 (with actual figures italicized).

Table Three
Actual & Projected RPS Annual Compliance Obligations, 2003-2009

Year	*Actual*/Projected Retail Sales, MWh	RPS % Obligation	RPS MWh Obligation
2003	*49,834,324*	1.0	*498,344*
2004	*50,063,092*	1.5	*750,954*
2005	50,726,115	2.0	1,014,522
2006	51,375,729	2.5	1,284,393
2007	52,033,662	3.0	1,561,010
2008	52,700,021	3.5	1,844,501
2009	53,374,913	4.0	2,134,997

2005 COMPLIANCE SUPPLY AND OBLIGATION

The sources of new renewable generation for 2005, according to preliminary estimates, continue to be predominated by landfill gas and biomass, both in terms of the number of qualified plants and, in some cases, the output from individual plants. The output from biomass plants in Maine is increasing substantially, due to the output increasing at the two Indeck plants, and to the

[23] DOER derived its 2005-2009 retail electricity demand (and, thereby, sales) by analyzing its Electric Power Customer Migration data (available on-line at http://www.mass.gov/doer/pub_info/migrate.htm). DOER derived a year-to-year increase curve from those data, and then adjusted the figures upwards to account for the difference between the those data (from monthly retail meter readings) and the retail sales totals reported in the RPS 2003 and 2004 Annual Compliance Filings (based, for the most part, on the suppliers' "load obligations" for the twelve calendar months at the PTF boundary, which include distribution line losses). The differences are attributable mainly to the line losses that most of the suppliers included in their reported retail sales.

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

restarting of the Worcester Energy plant, all three of which qualify under Vintage Waivers.[25] Two small new landfill plants in Massachusetts began generating, one in December of 2004 and one in October of 2005, while the output of landfill plants in both New Hampshire and Connecticut might show small increases. Rhode Island's output is increasing substantially, due to the installation of additional engines to tap the increasing supply of methane gas at the large and growing Johnston Landfill. New York facilities will continue to increase, with five more landfill plants added in 2005 to the MA RPS list of New Renewable Generation Units.[26] One of the five began exporting electricity to New England in August 2005, and the others are expected to begin exporting in 2006. Finally, Vermont is expected to have entered the MA RPS market in 2005, with one landfill plant and one very small anaerobic digester project having started production in 2005. Table Four lists the New Renewable Generation Units expected to have begun commercial operation or restarted during 2005. Tables listing all plants qualified to provide RPS certificates, including those in Table Four, are in Appendix 3.

Table Four
Sources of RPS Certificates Added for 2005

Name	State	Fuel / Technology	Capacity MW	Commercial Start Date	Historic Generation Rate, MWh
Blue Spruce Farm	VT	AD	0.27	1/05	
Deblois - Worcester Energy	ME	BM	25.85	6/89, restart 3/05	3,126
Greater New Bedford LFG	***MA***	LFG	3.3	10/05	
Coventry LF Gas to Energy	VT	LFG	4.8	7/05	
Ontario LFG/Seneca Energy II	NY	LFG	5.6	3/03, import 8/05	
Johnston LF Expansion (Phase 2)	RI	LFG	6.0	8/05	

The 2005 RPS obligation is two percent (2%) of the total retail electricity sales in the Massachusetts territories of the five regulated utility companies. In addition to an increase in the RPS obligation by a half percent, the total retail sales are estimated to have increased. The result is a substantial increase in the RPS obligation for 2005 compliance (see Table Three).

POST-2004 DEVELOPMENTS IN THE RPS MARKET

Notice of Inquiry

Decisions and announcements by DOER during 2005 have had significant impacts on the development of new renewable generation units and, therefore, the possibility of projecting the future price and availability of RECs. On January 19th, at a meeting of the MA Biomass Energy Working Group, DOER announced its intention to initiate a consultative process for improving the regulatory definition of "low-emission, advanced biomass power generation technologies."

[25] The Vintage Waiver provision in the RPS regulations is at 225 CMR 14.05(2).

[26] Available at http://www.mass.gov/doer/rps/approved.htm.

This initiated a period of much uncertainty among project developers, plant owners, and finance sources regarding technology requirements for new biomass plant construction in the future, the quantity of new generation likely to be developed, and the likely RPS value of their output. Reportedly, all new biomass plant development, except for the PSNH Schiller project in Portsmouth (approved by the NH Public Utilities Commission), came to a standstill, awaiting the promised "consultative process."

On July 1st, DOER issued (jointly with the Massachusetts Department of Environmental Protection, "DEP") a "Notice of Inquiry" (NOI) regarding the qualification of biomass plants. The NOI initiated an Inquiry of three months duration during which DOER gathered information, conducted a lively and informative Stakeholder Conference, and received written comments from RPS stakeholders.[27] The NOI included a proposal that DOER's earlier Biomass Retooling Guideline be formalized, albeit with limitations, in revised regulations. In the Biomass Retooling Guideline, DOER had interpreted the RPS regulations and statute such that if a technically ineligible, pre-1998 biomass plant were retooled to meet the criteria of "low-emission, advanced biomass power conversion technologies," it would be treated as a New Renewable Generation Unit, and all of its electricity output would, thereby, earn RECs.[28] Although the Biomass Retooling Guideline had been issued more than one year earlier, this proposal in the NOI evoked considerable and vociferous reactions, both for and against. Opposition came from most renewable energy developers, clean energy and consumer advocates, and current owners of New Renewable Generation Units. This opposition was fueled mainly by fears that RECs from relatively inexpensively retooled, older, biomass plants would overwhelm the market and devalue REC prices,[29] which would pose an insurmountable barrier to financing the development of new renewable energy plants. Those who concurred with DOER's proposal consisted mainly of those who owned older plants, who stood to benefit by retooling, as well as those who favored the prospect of reduced REC prices.

This controversy was resolved by DOER's issuance on October 27th of its "Policy Statement on the RPS Eligibility of Retooled Biomass Plants".[30] In the Policy Statement, DOER concurred with those who argued that the earlier Biomass Retooling Guideline was not consistent with the RPS statute. Thus, DOER rescinded that Guideline, effective immediately, and, accordingly, withdrew its proposed formalization.[31] While canceling the Guideline's interpretation (summarized above) of the RPS regulations and statute, DOER stated a new interpretation of the regulations under which an appropriately retooled biomass plant could qualify annually for the quantity of its output that exceeds its Historical Generation Rate, under

[27] The *Notice of Inquiry Regarding Some Proposed Revisions of the Regulations Pertaining to the Definition of "Low-Emission, Advanced Biomass Power Conversion Technologies,"* as well as the written comments, and other information about the Inquiry can be accessed at http://www.mass.gov/doer/rps/notice_of_inquiry.htm.

[28] The "Guideline on the MA RPS Eligibility of Generation Units That Re-tool with Low Emission, Advanced Biomass Power Conversion Technologies" can be accessed via a link at http://www.mass.gov/doer/rps/advbio.htm.

[29] As it happens, the Connecticut RPS REC market was flooded during the summer of 2005 and the CT REC price plunged precipitously, at least partly as a consequence of the ease by which retooled biomass plants could qualify for the NO_x emission criterion of the Connecticut RPS.

[30] The Policy Statement can be accessed via a link at http://www.mass.gov/doer/rps/notice_of_inquiry.htm.

[31] However, Advisory Rulings issued under the Biomass Retooling Guideline remain valid to the extent that they approved specific fuels, technologies, and air emissions, as noted on pages 5-6 of the Policy Statement.

the existing Vintage Waiver provision of the regulations.[32] DOER intends to formalize this interpretation when it issues the proposed revisions of the RPS regulations this winter.

Development Activity

Among the potential biomass plants at various stages of siting or permitting are the following that already have Advisory Rulings: the 50 MW Russell Biomass Plant and the 21 MW EcoPower plant in Massachusetts, GenPower plants of 40 MW each in three states, the small Hemphill and Barnstead plants in New Hampshire, and the 50 MW coal conversion unit at PSNH's Schiller Station in Portsmouth, NH.[33] The Schiller project is well along in construction and is expected to begin commercial operation in August of 2006; although PSNH has not yet applied for a Statement of Qualification, it will receive one if its application demonstrates implementation in accordance with (or better than) the details of its Advisory Ruling. Much wind capacity is also at various stages of development in New England (as well as New York), as evidenced by news accounts and by interconnection requests at the ISO New England.[34] Finally, several qualified landfill projects will be completed or undergo expansion in 2006.

Clearly not all of the above will receive the necessary financing, siting approvals, local and state permits, and contracts for power or RECs necessary for construction. Other uncertainties remain, including the following:

- future regulatory provisions for the combustion of C&D wood in Massachusetts and for its MA RPS eligibility in all jurisdictions;
- the future acceptability of C&D wood as a power plant fuel in New Hampshire, where it is currently under a moratorium, as well as in Maine;
- the local acceptance of wind power on New England ridge lines and coasts, not to mention the eventual fate of the 420 MW Cape Wind project in Nantucket Sound;
- possible implementation of and rules for RPS in additional northeastern states;
- future extensions of the federal Production Tax Credit; and
- the growth rate of voluntary markets for RECs.

The future availability of RECs for MA RPS is certain to be affected by the development of RPS in neighboring states and differences in what renewable resources qualify in those programs. In 2007, the compliance percentage for the Connecticut RPS will begin to increase at a higher rate than currently, and Rhode Island's RPS obligation will commence; both of those could add pressure on the settling of RPS-qualified certificates in Massachusetts.[35] The relative impacts on RPS demand in New England from Massachusetts, Connecticut, and Rhode Island are presented graphically in Figure Four.

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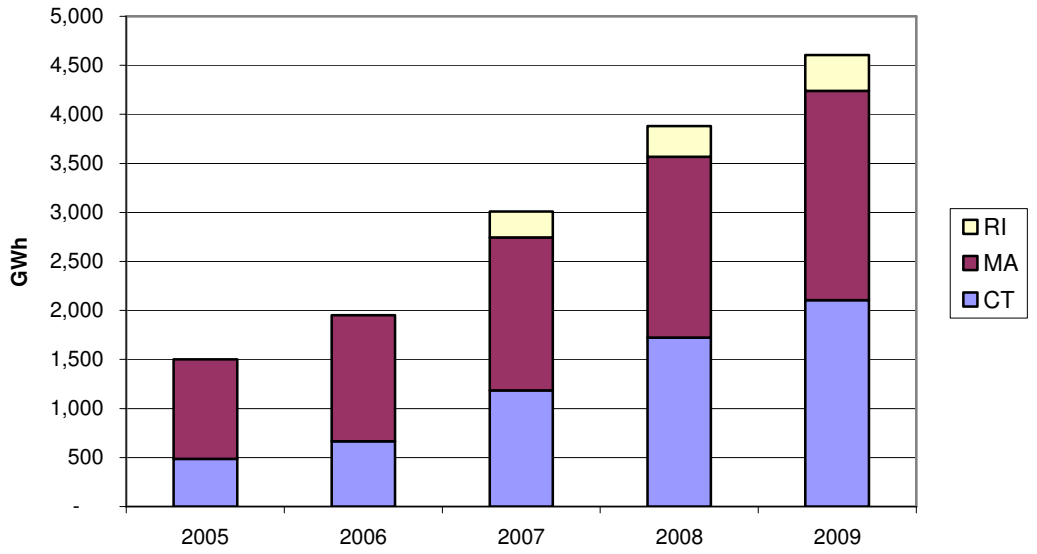
[32] The Vintage Waiver provision is at 225 CMR 14.05(2).

[33] The Advisory Rulings can be accessed via links at http://www.mass.gov/doer/rps/advisory.htm.

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

[35] See Appendix Four of the 2003 RPS report (see footnote 9) for information about RPS obligations for Connecticut and Rhode Island.

Figure Four
New England RPS Demand



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/2005/isone_2005_forecast_data.xls.

Ongoing developments in how the New York Public Service Commission operates its state's new RPS, which commenced in 2005,[36] have the potential to reduce the supply of new renewable generation output exported from New York to New England for the Massachusetts and Connecticut RPS markets. However, DOER's experience so far is that MA RPS competes favorably vis-à-vis NY RPS, and that imports from New York, especially from new or expanding landfill methane projects, are on the increase.

DOER's near-term expectation is that the supply of new renewable generation will improve for 2006, as new landfill and biomass capacity currently in the pipeline become operational and output expands at existing landfill and biomass facilities.

CONCLUSIONS

During the second year of the RPS, all thirteen retail suppliers achieved compliance, although Alternative Compliance payments accounted for more than one-third of compliance. The process of tracking, submitting data, and verifying data worked more smoothly for 2004 than for 2003. Refinements will be made to further simplify DOER's review of future compliance filings.

More importantly, the results of DOER's review and forecast for future compliance indicate that the program is successful. The 486 thousand MWh of renewable energy used to

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

meet the requirement in 2004 was the equivalent of serving 65,259 households and reducing carbon dioxide (CO_2) emissions by 286,220 tons.[37] Renewable resources within the Commonwealth accounted for 34% of that energy, thereby benefiting and financially supporting generators in Massachusetts.

The Massachusetts RPS program has stimulated new development activity. The number of new renewable generation units providing output for RPS compliance increased from twelve in 2003 to nineteen in 2004, and an additional six are expected to provide output for RPS compliance in 2005. Almost half of the new units for 2004 compliance are located in Massachusetts. The number of projects in various stages of development, especially some utilizing low-emission, advanced biomass technologies in Massachusetts, has increased over the past two years, although most actual construction was deferred during 2005 by regulatory uncertainty introduced by DOER's Notice of Inquiry and its pending revision of the regulations concerning how biomass plants will be evaluated for RPS qualification. That uncertainty was reduced in late October by DOER's Policy Statement. Promulgation of revised RPS regulations during the first half of 2006 should provide enhanced stimulus to the development of new renewable energy sources over the next several years.

Most of the retail electricity suppliers had to use the Alternative Compliance mechanism to meet their 2004 compliance obligations, as had been expected. Although DOER also expects a roughly comparable shortfall in the REC market for 2005, DOER expects that the supply of new renewable generation will improve for 2006, due to continued increases in output at several Vintage and/or retooled biomass plants, increased imports from projects in New York, completion of the 50 MW Schiller biomass project in Portsmouth, NH, and the construction of additional projects in the development pipeline.

As asserted in the report for 2003, the level of ACPs is not an indication of program flaws. The RPS REC market is new and maturing, and some level of shortfall in REC supply is to be expected during the first several years of the RPS. The MA RPS, as well as similar programs elsewhere in the region and Renewable Energy Trust funded programs of the Massachusetts Technology Collaborative (MTC), will take time to mature and become robust. To assist that process, DOER, in coordination with the MTC, will ensure that the ACP funds continue to be invested wisely, for the development of new renewable generation, and on terms calculated to yield economic results for consumers.[38] In fact discussions between DOER and the MTC regarding use of the 2005 ACP funds have already begun, and several options are under

[37] The figures in this sentence are based on 485,530 MWh of new renewable generation for 2004 compliance, consisting of 444,680 MWh of 2004 new renewable generation, plus 61,147 MWh of Banked Compliance from 2003, minus 20,297 MWh of surplus 2004 new renewable generation banked for use in 2005 and/or 2006; it does not include the 265,424 MWh Alternative Compliance Payment. The equivalent number of households was calculated using 620 kWh per month per average household, from DOER's internal analysis of its Electric Power Customer Migration data (available on-line at http://www.mass.gov/doer/pub_info/migrate.htm). The CO_2 displacement figure was calculated using the 2003 marginal emission rate for CO_2 of 1,179 lbs/MWh, from Table 5.3 of *The 2003 NEPOOL Marginal Emission Rate Analysis for the NEPOOL Environmental Planning Committee,* December 2004 (available at http://www.iso-ne.com/genrtion_resrcs/reports/emission/Marginal_Emissions_Analysis_2003.pdf); the report for 2004 was not yet available as of 1/6/06.

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

consideration, including augmenting MTC funding of a third round of the Massachusetts Green Power Partnership.[39]

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

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

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

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

[39] Details of this program are available at http://www.masstech.org/renewableenergy/mgpp.htm. All of the proceeds from the ACPs for 2003 and 2004 compliance are augmenting MTC funding of the second round of the MGPP. The provision for how funds from Alternative Compliance Payments are to be spent is in the RPS regulations at 225 CMR 14.08(4)(b). .

APPENDIX ONE

RPS 2004 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 2004 were required to file their Annual Compliance Filings for 2004 by July 1, 2005. DOER issued forms and instructions for the Filings on May 23rd, three weeks before the end of the GIS trading period for the fourth quarter of 2004. By July 1st, DOER had received Filings from all five of the regulated utility companies and from seven of the eight competitive suppliers. One late Filing was received in August from a supplier that had stopped selling electricity at retail in Massachusetts and for which RPS compliance had been mismanaged.

During the summer and into the fall, DOER staff reviewed the paper Filings submitted by the suppliers, including printed and electronic copies of their GIS reports. The electronic files in spreadsheet format enabled DOER to aggregate, analyze, and summarize the information in the Filings, while the printed versions were used to verify that the electronic versions had not been altered. DOER contacted suppliers for correction of mathematical errors and for some additional information, explanations, and clarifications.

DOER's verification of the figures provided for retail product sales, as required by the RPS regulations,[40] was done by a combination of the following:

- Comparison of the figures that each supplier entered in its Filing forms with the figures for load obligation obtained by analysis of the electronic GIS spreadsheet files accompanying each Filing; and
- Comparison and verification of the figures that each supplier entered in its Filing forms with the figures for load obligation obtained by analysis of data submitted (on a confidential basis) by the regulated utilities. This data was in electronic files that listed the "retail supplier product loads" for both themselves and all of the competitive suppliers operating within their territories. The five regulated utilities already report the same information to other regulatory agencies with considerable enforcement powers.[41.]

DOER compared the information in the Filing forms, the information in the GIS files included with the Filings, and the retail supplier load information from the utilities. DOER found that the information for each of the utility companies tended to vary only very slightly among those three data sources (usually between zero and less than one tenth of one percent, and never by more than 0.34%), while it varied somewhat more for five of the competitive suppliers (between zero and less than four percent) and substantially for three of them.

Close examination of the data showed that the wider variances between Filing information and the GIS information resulted from a failure of those three suppliers to manage their GIS accounts diligently. Specifically, they did not regularly allocate to their state retail subaccounts the load obligations that the GIS placed in their main accounts at the beginning of each quarterly

[40] See 225 CMR 14.09(1)(b) for this requirement and for the verification and documentation provisions.

[41] These files were obtained pursuant to a set of letters from DOER to the five utilities, dated August 26, 2005, citing DOER's authority to obtain such information and to afford it confidential treatment under Section 7 of Chapter 25A of the Massachusetts General Laws. Use of this data is consistent with DOER procedures for the 2003 Compliance Filings and with a 7/16/04 report under DTE Docket 03-62 (see the 2003 RPS report, page 17, paragraph three).

trading period. The unallocated load was identified in the GIS reports as "Unassigned Obligation." For those suppliers, the retail supplier load information from the utilities was a better standard of comparison with actual retail sales as reported in the Filings than was the GIS information.

It should be noted that, even if all suppliers accurately assigned all of their load obligations to their GIS state retail subaccounts, both those figures and the load information from the utilities will vary from actual retail sales, which are based on retail meter readings. Three factors are responsible for such discrepancies:

- Schedule differences: Load obligations are based on a calendar month, while retail meter readings, on which billing is based, are done at different times of the month by each of the suppliers. Hence, twelve months of load obligations add up to a calendar year while actual retail billings do not.
- Line losses: In order to supply the electricity measured at a retail customer's meter, a supplier must transmit a slightly larger amount to the transformer facility between the high voltage transmission system and the local distribution system that carries the power to the retail customer's meter.[42] It is that higher amount that is recorded in the GIS and in utility load obligation reports.
- Adjustments: Reconciliation by ISO New England of modeled and actual sales, whose reporting to the NEPOOL GIS is delayed.

It is the amounts allocated to retail subaccounts in the GIS that DOER had instructed the suppliers to use as the basis for their RPS obligations.[43] Of course, as noted above, lack of diligence by some suppliers rendered some of the GIS reports useless for verification purposes.

One supplier whose reported retail sales were substantially below the assigned load obligation in its MA subaccount amended its Filing to base its RPS obligation on the higher utility-derived load obligation and to remit an additional ACP. Another declined to amend its Filing to base its obligation on a *lower* utility-derived load obligation and to reduce its RPS obligation accordingly. And a third successfully demonstrated to DOER that the lower figures in its Filing were the correct and appropriate ones.

Some additional need for clarification was experienced in relation to reporting of retail sales and REC information in the case of a supplier with a voluntary Green retail offering. DOER will modify its Filing forms and instructions to avoid confusion in this regard for future Filings, which could include more such offerings.

Having concluded the review process, DOER is satisfied that the Filings were acceptable for the second year of supplier compliance with the regulations of this young program. The 2004 Filings were submitted, reviewed, supplemented, corrected, clarified, and accepted more smoothly and with fewer delays than had been the case for the 2003 Filings. DOER will, nonetheless, review the 2004 results further and consult with both the utilities and the competitive suppliers before providing instructions for the 2005 Annual Compliance Filings. The goals are better GIS data management by suppliers, clearer instructions for the Filings, still fewer errors and more accuracy in the Filings, and more reliable and facilitated verification.

[42] Electricity traveling through wires loses a small fraction of its energy as heat.

[43] This instruction was contained in an email message from DOER to all suppliers dated June 7, 2005.

APPENDIX TWO
2004 Annual Renewable Energy Resource Report

This Appendix reports certain information from the Annual Compliance Filings for 2004 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:

2004 Annual Renewable Energy Resource Report

Total Retail Electrical Energy Sales in Massachusetts in 2004	50,063,092 MWh
Total Renewable Generation Attributes in 2004	1,716,335 MWh

The total Renewable Generation Attributes reported in the Filings is much higher than the total quantity of *New* Renewable Generation Attributes used for RPS Annual Compliance and much 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 2004 electricity from Renewable Generation Units for the entire New England power grid,[44] 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).[45] 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 2004

Total Renewables in ISO-New England		11,569,096 MWh
Massachusetts share	45.27%	5,237,330 MWh
MA regulated utility territories' share	38.93%	4,503,849 MWh

[44] The data were aggregated from the four quarterly data tables in the public report titled, "GIS Certificates Statistics" (specifically the tab titled "By Fuel"), which is accessible at https://www.nepoolgis.com/mymodule/mypage.asp.

[45] The MA share was derived from a spreadsheet at the ISO New England's *CELT Forecasting Details 2005* web page, http://www.iso-ne.com/trans/celt/fsct_detail/index.html The specific spreadsheet used, "2005 CELT & RSP Forecast Detail: ISO-NE Control Area, New England States, and RSP Sub-areas," dated 11/9/05, is worksheet 2 at the following URL: http://www.iso-ne.com/trans/celt/fsct_detail/2005/isone_2005_forecast_data.xls. Municipally owned utilities in Massachusetts accounted for 14% of the MA retail demand in 2004, leaving 86% to be supplied by companies in the territories of the regulated utilities, which is where the RPS applies.

APPENDIX THREE
MA RPS Qualified New Renewable Generation Units

The two tables below list all of the MA RPS-qualified New Renewable Generation Units. The first lists only those Units that provided RECs for RPS compliance in 2004. The second lists all other Units, including some that have not yet been completed and some that are in operation but have never provided RECs for RPS compliance.

Sources for RPS Certificates in 2004 by Fuel/Technology, State, and Date

Name	State	Fuel / Technology[46]	Capacity MW	Commercial Start Date	Historic Generation Rate, MWh[47]
Deer Island Treatment Plant - STG	***MA***	AD	18.0	7/98	
Indeck West Enfield	ME	BM	27.0	11/87	20,888
Indeck Jonesboro (Washington)	ME	BM	27.0	11/87 & restart 5/04	7,884
CRRA Hartford Energy LLC	CT	LFG	2.8	8/98	
Attleboro Landfill – QF	***MA***	LFG	1.5	1/98	
Randolph/BFG Electric Facility	***MA***	LFG	3.0	3/00	
[Sykes Rd] - GRS - Fall River	***MA***	LFG	5.7	8/00	
Granby Sanitary Landfill & Granby LFG Off Grid	***MA***	LFG	2.8	10/01	
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[48]
Seneca Falls Landfill Gas (Waterloo)	NY	LFG	11.2	3/96	48,130
Model City Energy Facility (Lewiston)	NY	LFG	5.6	6/01	
Johnston Landfill	RI	LFG	12.0	12/89	86,901
Johnston [LF] RGGI Expansion Phase 1	RI	LFG	2.4	3/04	
Solar New England [aggregation]	***MA***	PV	0.038	12/98	
Fenner Windpower Project (Cazenovia)	NY	Wind	30	12/01	

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

[47] "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.

[48] 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.

The table below includes MA RPS qualified New Renewable Generation Units that did not provide RECs for 2004 compliance. Included are several that became qualified and/or began production in 2005, which should provide some RECs for 2005 compliance (with their start dates are in boldface here); those units are also listed in Table Four.. Several already completed plants listed here in italics have not provided RECs for MA RPS in the past, and their likelihood of doing so in the near future is uncertain.

Other Qualified New Renewable Generation Units

Name	State	Fuel / Technology	Capacity MW	Commercial Start Date	Historic Generation Rate, MWh
Blue Spruce Farm (Bridport)	VT	AD	0.27	**1/05**	
Deblois - Worcester Energy	ME	BM	25.85	6/89 & restart **3/05**	3,126
Greenville Steam Company	ME	BM	20	12/86 & restart 2006	
Ware Cogen	***MA***	BM	8.6	2006	
Iggy's Biodiesel CHP (Cambridge)	***MA***	BM	0.045	Spring 2006	
Greater New Bedford LFG Utilization	***MA***	LFG	3.3	**10/05**	
Dunbarton Road Landfill (Manchester)	NH	LFG	1.3	8/88	4,248
Ontario LFG/Seneca Energy II (Stanley)	NY	LFG	5.6	3/03, import **8/05**	
Nanticoke Landfill Gas (Binghamton)	NY	LFG	2.1	3/04, import 06	
Colonie LF/Innovative Energy (Cohoes)	NY	LFG	4.8	1/06	
Development Authority of the North Country/Innovative Energy (Rodman)	NY	LFG	4.8	7/06	
Modern LFG (Youngstown)	NY	LFG	6.4	1/06	
MM Cuyahoga Energy (Solon)	*OH*	*LFG*	*3.8*	*2/99*	
Johnston [LF] RGGI Expansion Phase 2[49]	RI	LFG	6	**8/05**	
Pontiac Energy (Cranston)	*RI*	*LFG*	*0.5*	*3/96*	*1,611*
Coventry LF Gas to Energy	VT	LFG	4.8	**5/05**	
Mass Energy Aggregate PV	***MA***	*PV*	*0.036*	*4/03*	
MA PV Cluster [aggregation]	***MA***	*PV*	*0.037*	*6/03*	
Hull Wind Turbine U5	***MA***	Wind	0.66	12/01	
Princeton Wind Farm[undergoing expansion to ca. 3.0 MW]	**MA**	Wind	0.32	9/84 & restart late 2006	208
Mass Energy Aggregate Small Wind	***MA***	*Wind*	*0.01*	*9/04*	

[49] Johnston [LF] RGGI Expansion 2, like Expansion 1 (listed in the previous table), is at the same site as the Johnston Landfill and shares its Statement of Qualification and its Historical Generation Rate.