

White paper: Alternative Energy Portfolio Standards (APS) in Massachusetts

Executive Summary

The Massachusetts Alternative Energy Portfolio Standard (APS) is a mandatory market-based program which requires that a fraction of the electricity sold by the state's Retail Electricity Suppliers be generated using Alternative Energy technologies. APS-qualified generators obtain certificates called AECs (Alternative Energy Certificates) for the electricity they produce. These certificates are then sold to the Retail Electricity Suppliers who use them to demonstrate annual compliance to the Massachusetts Department of Energy Resources (DOER). Among the APS eligible technologies in Massachusetts, natural gas-fired cogeneration is predominant and represents more than 99% of the 2010 APS-certified generation.

The law lays out the volume of APS certificates that the Retail Electricity Suppliers have to obtain for compliance: The minimum standard is fixed at 1% of the Supplier's retail end-use load (nonexempt load) in 2009 and increases to 5% by 2020. The retail electricity suppliers can also make Alternative Compliance Payments (ACPs) to the DOER in lieu of buying AECs to be in compliance for a given year. The price of the ACPs is fixed by the APS regulation and acts as an annual price cap on the APS market. The ACP price was initially fixed at 20\$/MWh in 2009 and increases annually in line with the Consumer Price Index.

In the two years since the APS program started, there has been a shortage of Alternative Energy Certificates. This explains why the current price of APS certificates is close to the ACP rate, between 18 and 19\$/MWh. This supply/demand imbalance of AECs is expected to persist in the next couple of years, but the supply could quickly catch up with new cogeneration plants entering the market.

Introduction

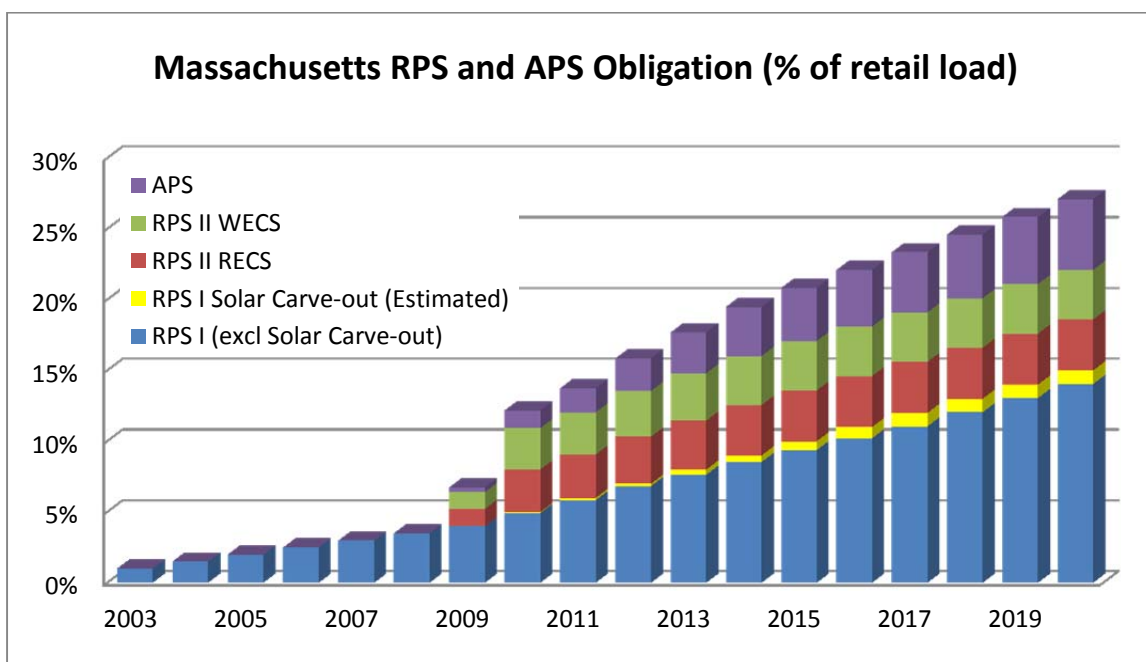
The Alternative Energy Portfolio Standard is a regulation first implemented in 2009 as part of a broad effort in Massachusetts to develop renewable energies and other energy efficient technologies. The first Renewable Energy Portfolio Standard, later renamed RPS Class I, started in 2003 and obligated the retail electricity suppliers (regulated and non-regulated) to source a percentage of its electricity sales from Renewable Energy Sources (solar, wind, landfill methane and other low-emission biomass technology).

In 2008, a new law, known as the Green Communities Act, expanded the RPS Class I regulation and introduced a subclass in the RPS Class I and three new Energy Portfolio Standards:

- RPS Class I SRECs (Solar Renewable Energy Certificates), which introduces a mandatory compliance percentage for solar photovoltaic projects within the RPS Class I
- RPS Class II RECS (Renewable Energy Certificates), which supports the generation units in commercial operation before 1998 which use eligible Renewable Energy technology
- RPS Class II WECS (Waste Energy Certificates) that also concerns generation units in operation before 1998 but is specific to trash to energy plants or municipal solid waste plants

- APS (Alternative Energy Portfolio Standard)

As its name indicates, the APS program was created for alternative energy sources that may not fall in to the Renewable Portfolio Standard. Its goal is to encourage commercial development of these technologies and consequently to reduce overall greenhouse gas emissions.



Eligible Technologies

The generation units must meet several requirements to be eligible under the APS program. First, they must use one of the eligible technologies among Combined Heat and Power (CHP), flywheel energy storage, gasification with carbon capture and sequestration, and paper derived fuel. A provision is also included in the law for efficient steam technology but no regulation has yet been developed for this category.

All the generation units, including behind-the-meter generation, must be located in the ISO – New England Control Area and in Massachusetts in the case of off-grid generation. The commercial operation date must be on or after January 1st 2008 with the exception of CHP generation units which were in operation before 2008 but were retrofitted after 2008. The DOER also imposes a maximum CO₂ emission rate of 890lb/MWh net of electricity for all the generation units – this rate includes the useful heat for cogeneration¹.

The specific requirements per type of technology are reviewed below. As cogeneration is the dominant technology in the APS program, more details are provided for this technology.

A summary table of APS requirements per type of technology is available in appendix A.

¹ As a comparison, the EPA's proposed NSPS for CO₂ is suggesting a standard of 1,000 lb CO₂/MWh and is requesting comment on a range of 950 to 1,100lb CO₂/MWh. This corresponds more or less to the CO₂ emission rates of natural gas fired combined cycle plants.

Combined Heat and Power

Cogeneration is by far the largest contributor for the APS obligation compliance as it is the most mature technology eligible under the alternative energy portfolio standard. Although the use of petroleum derived fuels and materials, coal and nuclear is excluded, the law does allow the use of natural gas as the primary fuel. This contributes greatly to the popularity of CHP units in the APS program and all the current APS qualified generation units use natural gas.

The program imposes several conditions for a CHP project to qualify for the APS standard. One specific requirement is that the end-use customer of the CHP thermal load must be located in Massachusetts. This de facto excludes generation units that are not situated in the state or very close by. Qualifying units must be generators that started commercial operation on or after 2008. A facility that was in operation before 2008 can also qualify if it adds incremental electrical energy and/or incremental useful thermal energy to its existing generation. In particular, a facility that produces less electricity but additional useful thermal energy can qualify as an APS generation unit. Therefore, the regulation provides incentives for existing electric-only power plants to add useful thermal load, or for thermal-only plants to add electrical generation. Note also that no *maximum* generator capacity is defined by the Massachusetts law.

The APS qualifying generation units must report quarterly all the electrical, thermal energy sales and consumed fuel and the amounts need to be verified by an ISO-NE's third party meter reader.

The regulation does not specify any cogeneration, thermal or electrical efficiencies for the APS qualified units – however, the amount of the generated AECs depends directly on the thermal and electrical efficiency of the CHP. For cogeneration units entering into commercial operation in or after 2008 the amount of APS attributes (in MWh), is calculated as follows:

$$APS\ attribute = \frac{Electrical\ Energy}{0.33} + \frac{Useful\ Thermal\ Energy}{0.8} - All\ fuel\ and\ other\ energy\ consumed\ (HHV)$$

The electrical Energy, useful Thermal Energy and fuel are expressed in MWh.

As an example, a CHP unit with 35% electrical and thermal efficiencies (HHV) can expect generating 1.42 AECs per MWh of electricity produced.

For CHP unit with incremental Useful Thermal Energy and/or incremental Electrical Energy, a similar formula is used:

$$APS\ attribute = \frac{Incremental\ Electrical\ Energy}{0.33} + \frac{Incremental\ Useful\ Thermal\ Energy}{0.8} - All\ Incremental\ fuel\ and\ other\ energy\ consumed\ (HHV)$$

33% is the assumed overall efficiency of the electrical production, whereas 80% is assumed for thermal efficiency from the fuel conversion to the end customer.

The Electrical Energy is regarded as the “Net Electrical Energy” so any electrical parasitic load greater than 25kW like fuel gas compressors or boiler feedwater pumps must be subtracted from the APS Electrical Energy. Auxiliary system representing more than 60% of the parasitic load must be metered. Supplemental firing of an

HRSG shall be metered and included in the fuel and other energy consumed by the CHP unit. The modified formula taking into account parasitic load and supplemental firing is shown below:

$$APS \text{ attribute} = \frac{\text{Electrical Energy} - \text{Electrical Parasitic Load}}{0.33} + \frac{\text{Useful Thermal Energy}}{0.8}$$

– All fuel and other energy consumed including supplemental firing fuel (HHV)

The favorable regulation towards CHP resulted in cogeneration projects representing 99.1% of the APS qualified generation in 2010 – out of the 26 qualified projects, 24 use cogeneration.

Flywheel storage

As of May 2012, flywheel storage is the only technology other than CHP represented in the current APS qualified generation units list. The main requirement for APS flywheel storage units is that the qualifying unit must participate in the ISO-NE market to help regulate the system frequency. The law assumes an efficiency of 65% so every MWh sent to the grid by the flywheel unit will generate 0.65 MWh APS attribute. Like APS CHP qualified generators, the electrical energy discharged by the flywheel unit has to be verified by an ISO's third party Meter Reader.

Currently, two flywheel projects of 1 and 2MW (both by Beacon Power) are qualified for the APS program.

Paper-derived fuel

The law specifies that a generation unit can qualify for the APS standard if it substitutes a portion of its fossil fuel source with an equal or greater quantity of paper derived fuel on a heat content basis. Co-firing with an ineligible APS fuel is allowed but needs to be documented, and only the electrical generation attributed to the paper-derived fuel can count against APS certificates. The attribution of APS credits is also subject to compliance to air permits, and if the generating unit is not in Massachusetts, the emission rate of the generation unit must match the MassDEP rules for comparably fueled generation units located in Massachusetts.

Gasification

Gasification units can potentially qualify for the APS program, but strong restrictions apply. The generation unit, in addition to gasification, should also capture and permanently sequester CO₂ emissions. The law allows the use of natural gas, coal, biomass and petroleum coke as fuel for generators, but specifically excludes any other petroleum-derived fuels and material. The legislation also requires the conversion efficiency from feedstock to final combustion fuel be equal or greater than 70%. Only the net electrical generation will qualify as APS attributes.

The state has yet to develop rules for gasification projects that can qualify in the APS program.

Co-firing and Aggregations

An APS generator can co-fire an eligible APS fuel with an ineligible fuel. The whole facility will be subject to the MassDEP emission rates for similar fueled generation units and it will have to document and report the fuel mix used at the facility. Only the portion of the electricity attributed to the combustion of the APS eligible fuel will qualify for APS attributes.

The applicant can also aggregate qualifying APS generation units under one application, provided all the generation units use the same technology.

Compliance by the Retail Electricity Suppliers and APS Minimum Standard

The Alternative Energy Portfolio Standard is very similar to the RPS Class I and II programs. The retail electricity suppliers must demonstrate to the DOER that a percentage of their retail sales, called APS minimum standard percentage, can be attributed to APS certified generation. The APS obligation for retail suppliers was fixed at 1% of the retail load in 2009, escalates to 5% through 2020 and beyond 2020 will increase by 0.25% as a percentage of the retail sales. The table below shows the minimum percentages of annual electrical electricity sales with APS alternative generation attributes from 2009 to 2020.

Compliance Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Cumulative Minimum %	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00	4.25	4.50	4.75	5.00

The APS minimum standard applies to both regulated and unregulated retail suppliers but the law made an exception in the early years of the program for unregulated suppliers. As the competitive suppliers are not able to adjust their tariffs freely for the contracts executed before 2009, the regulation defines an “exempt” load, which represents the retail sales under pre-2009 contracts. The unregulated suppliers will only need to provide APS attributes for the percentage of nonexempt load. However, all new contracts executed after 2009 are subject to the APS minimum standard. Projections suggest that by 2015 the exempt load will be negligible.

To demonstrate compliance to the DOER, the suppliers submit AECs that they procured from APS qualified generators and can also use banked AECs that are in surplus from the two previous years². If one retail electricity supplier has not provided enough certificates to meet the APS minimum standard percentage, it can remain in compliance by making Alternative Compliance Payment (ACP) for the deficient certificates. The ACP rate was fixed by the law at 20\$/MWh in 2009 and then adjusted up or down according to the previous year’s Consumer Price Index.

The sum of all AECs, banked AECs, and Alternative Compliance Credits must be equal to the Supplier’s APS compliance obligation volumes.

Price of AECs and ACP cap

As the APS is a market-based program, the price of AECs is negotiated directly between retail suppliers and owners or operators of the APS qualified generation units or by the intermediary of brokers. The retail suppliers regularly issue Requests for Proposal to buy RPS and APS certificates from qualified generators.

As mentioned above, the law sets the price of the Alternative Compliance Payment (ACP) rate. The ACP mechanism effectively caps the price of AECs by providing another way for suppliers to be in compliance if the AECs supply is scarce. The ACP rates published by the DOER from 2009 to 2012 are shown below. With the assumption of a 3% CPI through 2020, the ACP rate between 2012 and 2020 should remain in the 21-26\$/MWh range.

The collected Alternative Compliance Payments are made to a fund that finances renewable development in the state.

² The law limits the number of AECs that can be banked forward. The banked AECs need to be in surplus of the certificates used for compliance and a supplier cannot bank more than 30% of the APS minimum standard volume.

Compliance Year	2009	2010	2011	2012
APS ACP Rate	\$20.00	\$20.00	\$20.40	\$21.02

The AECs prices in the early years of the APS implementation were reported in the 18-19\$/MWh range.

APS compliance reports for 2009 and 2010

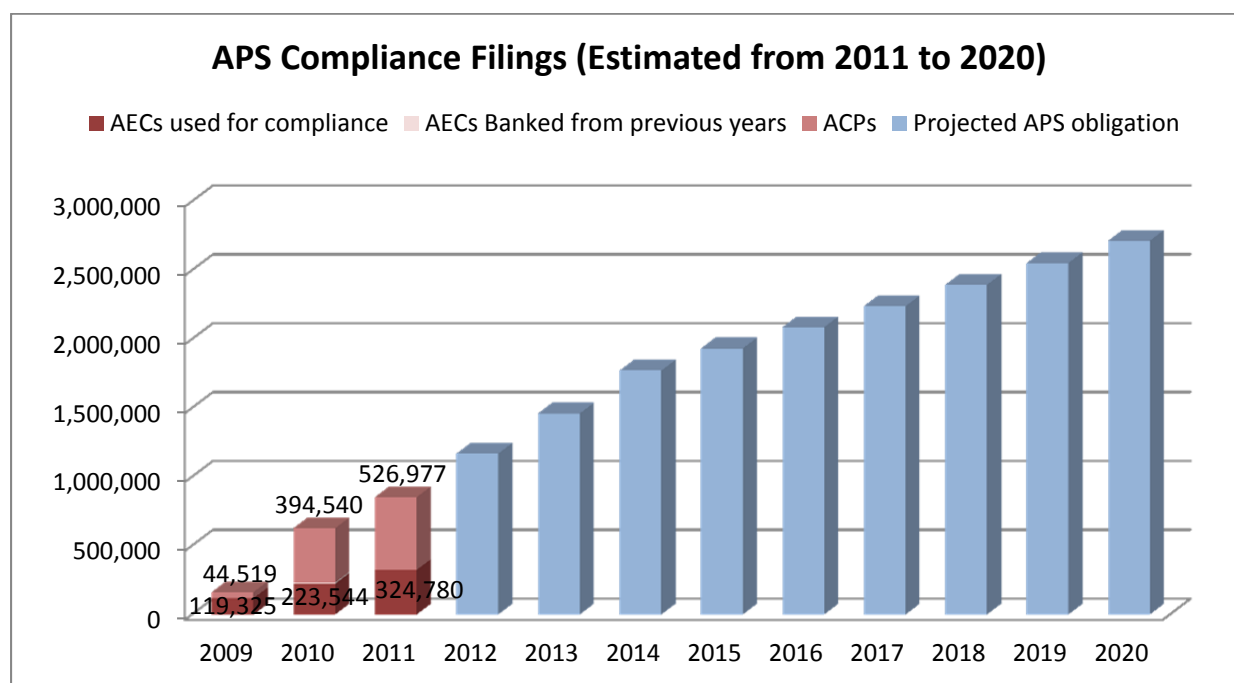
The amount of Alternative Compliance Payment made for a year is a direct indicator of the conditions of the demand and supply for the AECs credits. The first years of the program clearly show that there is currently an undersupply of AECs, mainly due to the fact that the APS program is in its early implementation stage and has not had significant effect on the market yet.

For the 2009 Compliance Year, the first year of the program, the retail electricity suppliers had to provide 163,844 APS certificates, which represented 0.34% of the total retail load. The difference with the 1% required in the law can be explained by the exempt load for unregulated suppliers, due to contracts executed before 2009. The retail suppliers provided 119,325 AECs and made payments for 44,519 Alternative Compliance Credits to be in compliance for the year 2009. In 2009, only six generation units qualified as APS units and totaled 23.836MW capacity.

In 2010, although the amount of APS credits almost doubled, the AECs generated during the year or banked from the previous year only represented 37% of the total APS attributes required for compliance. An additional 10.915MW capacity qualified as APS generation units and started generating credits in 2010.

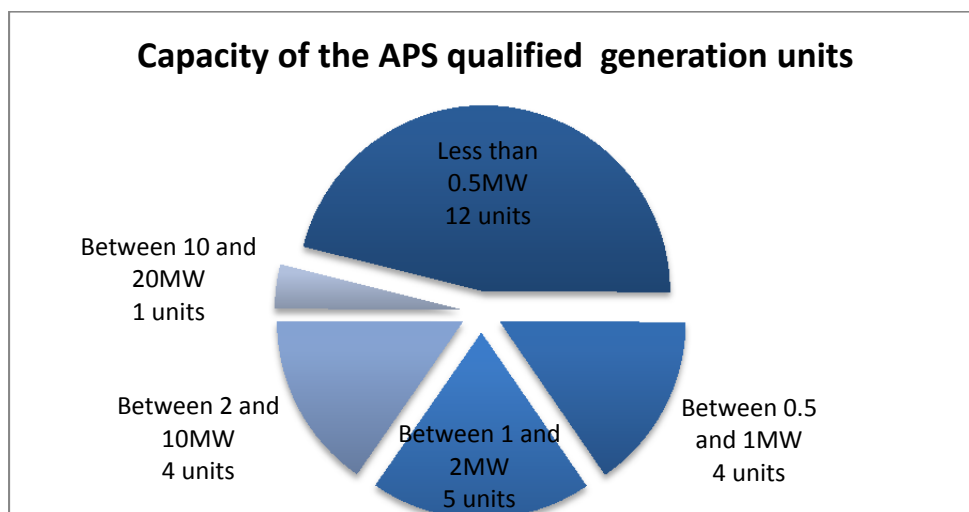
The DOER report for 2011 compliance year has not been published yet but the GISPOOL data currently shows that 324,780 APS attributes were certified, out of an estimated 852,272 APS certificates needed for compliance. The last update from the DOER (May 7 2012) shows that 13.308MW additional capacity qualified to generate APS credits starting in 2011.

The detail list of the APS qualified units is shown in appendix B.



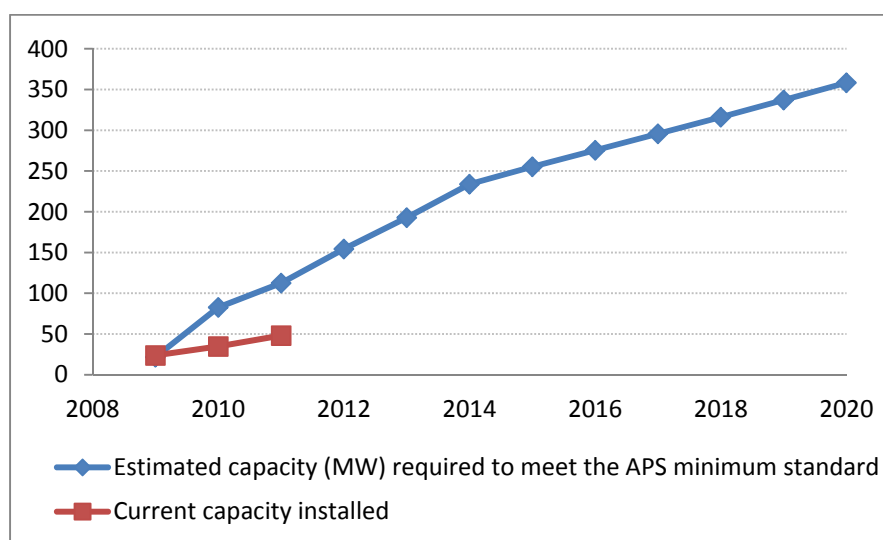
The Alternative Energy Portfolio Standard in the near future

At this stage of the program's implementation, it is difficult to evaluate the AECs price and the supply of the Alternative Energy Portfolio Standard certificates through 2020. CHP will certainly remain the main technology used for APS generation and if the generation capacity entering the APS market were to continue to accelerate at the current rate, the AECs supply would match the demand in the years 2017-2019. That being said, the supply for AECs can quickly pick up with new CHP projects entering the APS market, especially if big CHP generation units start generating AECs³.



As of now, although there is no limit in the capacity size for a generator to enter the APS market, most of the APS-qualified generating units have a capacity of less than 2MW (see above). A 20MW cogeneration unit could potentially generate more than 200,000 AECs each year.

The figure below shows the estimated APS certified CHP capacity required to meet the APS minimum standard⁴.



³ The MassDEP publishes the recent approved air permits so new or upgraded cogeneration units could be found at the MassDEP webpage: <http://www.mass.gov/dep/air/approvals/agappvls.htm#generic>

⁴ Sales growth assumption is taken from the DOER 2010 report through 2016, then a 1% load growth is assumed through 2020.

The AECs price for the next couple of years is expected to be lower but close to the Alternative Compliance Payment rate (currently at 21\$/MWh)⁵. Based on the way the market is structured, price could rapidly drop once the supply meets the demand as there is no alternative market for Massachusetts CHP credits. Note that contrary to the Connecticut RPS Class III, which also accepts CHP projects, no floor price is defined in Massachusetts (Connecticut RPS Class III credits are currently priced at the floor at 10\$/MWh after a few years of implementation).

Other parameters could affect the AECs market. The supply of APS certificates could be greatly impacted by any change in the state or federal investment incentive regulation⁶. In addition, gas and electricity prices will deeply influence the future capacity of CHP constructed in the next decade.

The Massachusetts APS program is still in its early stage of implementation. Twelve other states have introduced portfolio standards encouraging cogeneration although the rules of the programs greatly vary from one state to the other. Some states put the CHP technology in competition with other Renewable Energy Sources by not creating a separate portfolio for Alternative Energy; others impose a minimum efficiency requirement (ex: Connecticut), a combination of CHP and waste energy or a maximum capacity for CHP facility. Each program has its own design and particularities that should be carefully considered to understand the benefits of these production-type incentives.

⁵ Most of the AECs currently traded by brokers are 2012 and 2013 vintage AECs. With the uncertainty on the supply, long term AECs deals are difficult to make.

⁶ The most successful Portfolio Standard programs are usually complemented by investment incentives.

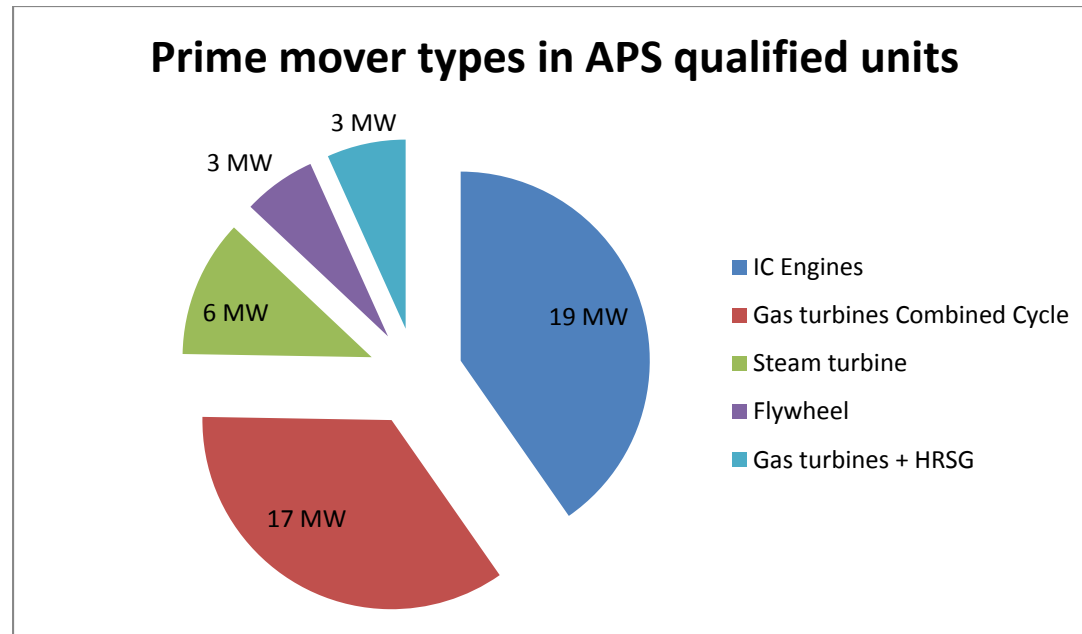
Appendix A: Summary table of APS requirements per type of technology

	CHP	Flywheel	Gasification	Paper derived fuel	Efficient steam technology
Type of fuel	Any fuel except: - petroleum derived fuels and materials - coal - nuclear		Any fuel except: - petroleum derived fuels and materials other than petroleum coke - nuclear		
Location	Generation unit must be located within the ISO-NE Control Area. Off grid generation: in Massachusetts Behind the meter generation: within ISO NE Control Area				
	The Useful Thermal Energy to the end-use load must be located in the Commonwealth of Massachusetts				
Limitations	CHP unit that did not produce electrical nor useful thermal energy before 2008	Unit must participate in ISO-NE regulation market	Capture and Permanent sequestration program of CO ₂ - annual compliance reports	Displace, on an energy content basis, an equal or greater portion of the Unit's fossil fuel	
	CHP unit that produced electrical or useful thermal energy before 2008 and added incremental Useful thermal or elec energy in or after 2008		Conversion efficiency from feedstock to final combustion fuel shall be greater or equal to 70%	Obtain amendment to the air permit to reflect usage of paper derived fuel emission rates consistent with MassDEP comparably fueled generation units Third party consultant assistance	
			Valid air permit and for generation units outside of Mass, emission rates consistent with MassDEP rates for comparably fueled generation units	Copy of MassDEP documentation	
COD	On or after January 1st 2008				
Qualifying energy	For CHP unit that did not produce electrical nor useful thermal energy before 2008: Net Elec energy delivered to the end-use/0.33 + Useful Thermal Energy/0.80 - all fuel and energy consumed in HHV	65% of the electrical energy discharged from the flywheel during the quarter	Net elec production	Portion of the generation attributable to the quantity of paper-derived fuel that is not derived from any fossil sources	
	For CHP unit that produced electrical or useful thermal energy before 2008 and added incremental Useful thermal or elec energy: Incremental Net Elec energy delivered to the end-use/0.33 + Incremental Useful Thermal Energy/0.80 - all Incremental fuel and energy consumed in HHV				
Metering verification	Report quarterly to NEPOOL GIS the net Elec MWh, Useful Thermal Energy and total fuel and any other energy consumed in HHV and verification by an independent verification system or ISO-NE's independent Third Party Meter Reader	Quarterly report and verification by an independent verification system or ISO-NE's independent Third Party Meter Reader	If participant to ISO-NE, ISO-NE If not, verification by an independent verification system or ISO-NE's independent Third Party Meter Reader	possible Third party consultant assistance to verify qualifying APS alternative generation	
Net CO ₂ emissions	890 lb/MWh including all net carbon dioxide emission related to combustion, fuel processing and sequestration whether or not such activities occur at the generation unit or another location				
	Includes thermal delivery				

Appendix B: qualified alternative Energy Unit and

Updated May 7, 2012

MA APS ID Number	NEPOOL GIS ID	Plant-Unit Name	City/Town	State *	Fuel / Resource / Technology**	Rated MWe Capacity	APS Effective Date	Commercial Operation Date	SQ Date	CHP Facility Type	CHP System Type	Authorized Agent	Independent Verifier
FW-5001-09	NON32838	Beacon Power Flywheel System 1	Tyngsborough	MA	Flywheel Storage	1	4/1/2009	4/1/2009	10/10/2009	Stand-alone	N/A	Self	The Cadmus Group, Inc.
HP-5003-09	NON32837	Titleist Ball Plant II -- CHP Unit	New Bedford	MA	Natural Gas/CHP	2	4/1/2009	1/29/2008	11/13/2009	Manufacturing	Natural Gas Engine + HRSG	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5006-09	NON32840	Amherst College -- CHP Unit	Amherst	MA	Natural Gas/CHP	1.6	4/1/2009	1/31/2008	12/11/2009	Institutional	Gas Turbine+ HRSG + Steam Turbine	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5005-09	NON32845	Umass Amherst -- CHP Unit	Amherst	MA	Natural Gas/CHP	14	4/1/2009	12/5/2008	12/11/2009	Institutional	Gas Turbine+ HRSG + Steam Turbine	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5004-09	NON32841	Smith College -- CHP Unit	Northampton	MA	Natural Gas/CHP	3.236	4/1/2009	1/5/2009	12/11/2009	Institutional	Gas Turbine + HRSG	NEXANT, Inc.	Eaton Energy Solutions, Inc.
FW-5002-09	NON32839	Beacon Power Flywheel System 2	Tyngsborough	MA	Flywheel Storage	2	7/14/2009	7/14/2009	10/10/2009	Stand-alone	N/A	Self	The Cadmus Group, Inc.
HP-5007-10	NON32883	Harvard University -- Blackstone Steam Turbine	Cambridge	MA	Natural Gas/CHP	5.65	1/1/2010	10/30/2009	7/9/2010	Institutional	Back-pressure Steam Turbine	Self	William P. Short III
HP-5008-10	NON32921	EPS CHP Aggregation	Franklin	MA	Natural Gas/CHP	4.12	1/1/2010	1/27/2008	7/13/2010	Manufacturing	Natural Gas Genset	Conservation Services Group	Peregrine Energy Group, Inc.
HP-5010-11	NON32923	South East Regional School District CHP	Easton	MA	Natural Gas/CHP	0.25	7/1/2010	12/1/2009	1/10/2011	Institutional	Natural Gas Genset	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5011-11	NON32953	Worcester Housing Authority - CHP	Worcester	MA	Natural Gas/CHP	0.3	8/2/2010	8/2/2010	1/10/2011	Multi-family	Natural Gas Genset	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5013-11	NON33102	American DG CHP	Bedford	MA	Natural Gas/CHP	0.535	10/1/2010	1/1/2008	4/7/2011	Various	Natural Gas Genset	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5014-11	NON32922	MSCBA - Dowden Hall CHP	Worcester	MA	Natural Gas/CHP	0.06	10/1/2010	8/6/2010	4/7/2011	Dormitory	Natural Gas Genset	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5015-11	NON33333	NESC-CHP	Marlborough	MA	Natural Gas/CHP	0.225	1/15/2011	1/15/2011	7/6/2011	Sports Club	Natural Gas Genset	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5016-11	NON32989	World Shaving HQ Cogen	Boston	MA	Natural Gas/CHP	7.2	4/1/2011	12/1/2010	9/29/2011	Manufacturing	Natural Gas Genset	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5017-11	NON33535	WHA Federal CHP	Worcester	MA	Natural Gas/CHP	0.15	4/1/2011	4/1/2011	9/30/2011	Public Housing	Natural Gas Genset	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5018-11	NON33494	IPG Photonics CHP	Oxford	MA	Natural Gas/CHP	0.25	4/1/2011	3/22/2011	10/5/2011	Manufacturing	Natural Gas Genset	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5020-11	NON32929	Sonesta CHP	Cambridge	MA	Natural Gas/CHP	0.085	7/1/2011	6/15/2011	12/19/2011	Hotel	Natural Gas Genset	EnergyROI	PowerDash, LLC
HP-5021-12	NON33855	MA AEGIS Energy CHP	Various	MA	Natural Gas/CHP	0.6	7/1/2011	6/4/2008	1/10/2012	Various	Natural Gas Genset	Conservation Services Group	Peregrine Energy Group, Inc.
HP-5022-12	NON33761	Seaman Paper CHP	Templeton	MA	Natural Gas/CHP	0.283	7/1/2011	4/1/2009	1/10/2012	Manufacturing	Natural Gas Genset	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5012-11	NON32974	Boston Scientific-Marlborough CHP	Marlborough	MA	Natural Gas/CHP	0.555	10/1/2011	1/1/2011	1/10/2011	Manufacturing	Natural Gas Genset	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5009-11	NON32906	Genzyme - Allston CHP Plant	Boston	MA	Natural Gas/CHP	1.2	10/1/2011	10/1/2011	1/10/2011	Manufacturing	Gas Turbine+ HRSG + Steam Turbine	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5023-12	NON33703	MI Restorative Center CHP	Lawrence	MA	Natural Gas/CHP	0.085	10/1/2011	6/1/2011	4/10/2012	Healthcare	Natural Gas Genset	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5024-12	NON34029	Whole Foods CHP	Dedham	MA	Natural Gas/CHP	0.4	10/1/2011	1/7/2010	4/10/2012	Retail	Natural Gas Genset	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5025-12	NON34030	Star Markets CHP	Chestnut Hill	MA	Natural Gas/CHP	0.4	10/1/2011	10/30/2009	4/10/2012	Retail	Natural Gas Genset	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5026-12	NON34051	Swampscott HS CHP	Swampscott	MA	Natural Gas/CHP	0.075	10/1/2011	11/1/2011	4/10/2012	Education	Natural Gas Genset	NEXANT, Inc.	Eaton Energy Solutions, Inc.
HP-5019-11	NON33604	Simonds International CHP	Fitchburg	MA	Natural Gas/CHP	1.8	11/27/2011	11/27/2011	12/14/2011	Manufacturing	Natural Gas Genset	Element Markets	William P. Short III



Appendix C: References

<http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/rps-aps/rps-aps-sqa/aps-statement-of-qualification-applications.html>

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<http://www.mass.gov/eea/docs/doer/rps-aps/aps-chp-guidelines-jun14-2011.pdf>

<http://www.mass.gov/eea/docs/doer/rps/rps-aps-2010-annual-compliance-rpt-jan11-2012.pdf>

<http://www.malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter25A/Section11F1~2>

<http://www.mass.gov/eea/docs/doer/rps/225cmr1600-052909.pdf>

<http://www.mass.gov/eea/docs/doer/rps-aps/aps-qualified-units.xls>