

Alternative Portfolio Standard Rulemaking

APS Regulations & Guidelines – Renewable Thermal (Biomass)

Performance Requirements for Wood Pellet Boilers

Pursuant to the Alternative Energy Portfolio Standard Regulations at 225 CMR 16.00. Table 3 (page 7) has a list of performance requirements (see next page).

A Thermal Efficiency requirement makes sense to include, for obvious reasons.

First Issue: Multi-Pass Heat Exchanger

The multi-pass heat exchanger requirement should be deleted. This requirement is intended to ensure high efficiency, but this has already been taken care of with the efficiency requirement. Mandating one particular boiler design does not make sense. It's technically possible to meet the efficiency requirement with a single or double pass through the heat exchanger, and it may make sense to do so, particularly with smaller boilers. *Note:* The requirement is a holdover from earlier times when efficiency claims were fudged or simply made up by some manufacturers. This was before the EPA came out with its NSPS which closed that loophole. [see United States Environmental Protection Agency (EPA) Residential Heater NSPS 40 CFR Part 60 subpart QQQQ]

Second Issue: Pressurization Requirements

ASME certification should not be required for residential installations with heat output of less than 200,000 BTU/Hour. Contrary to widespread belief, there is no such requirement in the state regulations. This fact has been checked and confirmed with the Massachusetts Board of Boiler Rules. I suggest adding an extra line: the first for commercial boilers requiring ASME, and the second for residential boilers below 200,000 BTU/Hour output. *Note:* This goes for water heaters and buffer tanks, which are not ASME-certified and tested in sizes below 120 gallons.

Third Issue: Pellet Deliveries

Bulk pellet delivery is not economic and not an environmentally sound way to obtain wood pellets when a bulk pellet truck is forced to drive long distances for small deliveries (3 tons is typical for residential delivery). Therefore, I believe an exception to this bulk pellet delivery requirement should be made for residences where bulk pellet delivery is very distant. I suggest a 60 mile or 90 minute limit.

Thanks very much.

George Whiting

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Commonwealth of Massachusetts
Department of Energy Resources
[Effective Date]

Guideline on Biomass, Biogas, & Biofuels for
Renewable Thermal Generation Units

Table 3. Performance Requirements

Performance Requirement	Pellets	Chips
Thermal efficiency at nominal output	$\geq 85\%$ Higher Heating Value	$\geq 75\%$ Higher Heating Value or $\geq 80\%$ Lower Heating Value if EN303-5 is used to verify particulate emissions
Start up	Automatic (i.e., electric ignition)	
Modulation/shut off	The system must automatically modulate to lower output and/or turn itself off when the heating load decreases or is satisfied	
Multi-pass heat exchanger	Required	
Pressurized portion of the system (Commercial)	ASME certification required	
Thermal storage	Required, unless the manufacturer has submitted independent third party test results documenting that the heating system meets the Massachusetts Clean Energy Center's requirements (see below for more information)	
Fuel storage	The system must have covered bulk storage RESIDENTIAL: (Within 60 miles or 90 minutes of bulk pellet supplier)	
Feedstock conveyance	The system must be automatically fed from feedstock storage to the furnace or boiler	

Pressure vessel (Residential) Vessel designed and tested for 30 psi (either ASME or EN 303-5)

A heat load calculation of the building must be provided to ensure proper sizing of the system. The heat load calculation must be based on Manual J of Air Conditioning Contractors of America or an equivalent method.

All cordwood systems will be reviewed on a case by case basis and qualified if the testing results for particulate emissions are equivalent or lower than the standards established for a wood pellet or wood chip system, efficiency is equivalent or greater than the established standards for wood pellet or a wood chip system, and the fuel quality standards are equivalent or more stringent than those standards for a wood pellet or wood chip system. Qualified cordwood systems will need to meet the sizing and installation requirements in New York State Energy Research and Development Authority's (NYSERDA) Advance Cordwood Boiler program under Renewable Heat New York.

See also <http://www.mass.gov/eea/docs/doer/renewables/thermal/guideline-on-biomass-biogas-and-biofuels.pdf> Page 6 Table 2 Performance Requirements