TARM BIOMASS™
Innovative Leaders in Alternative Heating Solutions
www.tarmbiomass.com

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Samantha Meserve
Massachusetts DOER
100 Cambridge St. Suite 1020
Boston, MA 02114

Dear Ms. Meserve,

Please accept these comments about the proposed Alternate Portfolio Standard on behalf of Tarm Biomass. Tarm Biomass imports and distributes heating boilers that utilize cordwood, wood pellets, and wood chips. Currently Tarm Biomass sells boilers producing up to 1.7 MM Btu/hr. (500 kW).

Comments:

- Section 6, Biomass Suppliers List (Table 1. Biomass Suppliers List, Class Characteristic): This sentence contradicts the language in the table, which refers to the MINIMUM combined percentage of forest derived residues, non-forest derived residues, and forest salvage: "The MAXIMUM combined percentage of Forest Derived Residues, Non-Forest Derived Residues, and Forest Salvage per Class can be found in 225 CMR 16.05(4)(k) and seen in the table below." Which is it, maximum as stated in the paragraph, or minimum as stated in the referenced table?

  If it is a minimum percentage, it seems almost impossible that most biomass fuel suppliers could meet the percentages, especially precision dry chip suppliers, which use mostly new wood from forest thinnings. It is not possible to make precision dry wood chips from forest salvage, as such pieces of wood must be ground rather than chipped. Ground wood is not ideal fuel for our boilers and is almost impossible to monitor for contaminants. Precision wood chipping for boilers under 3 MM Btu/hr. requires a bole rather than a bunch of branches and chunks of cast-off wood.

  If it is a maximum percentage, the rules would seem to penalize wood pellet suppliers that use non-forest derived residues from milling operations. That would seem contrary to carbon neutrality goals, as pure mill waste wood likely has a lower carbon impact when burned than does new wood. Some pellet producers could not participate in the rule if a minimum percentage.

  In either case, the restrictions would seem to make applying the APS to heating fuels extremely difficult. Perhaps electrical generation from biomass fuel is what the authors had in mind and such rules may work for that segment. For heating fuels, the requirement seems to virtually eliminate participation. Furthermore, the rules are very strict from a documentation standpoint. Such a program may work on paper, but is unlikely to work in the field of logging. I'm not in the fuel business, so maybe I'm missing something?

- Rules based on boiler input are confusing. In the biomass heating world, boilers are spoken about in terms of output. Using boiler input as a criterion for making rules creates needless headaches for everyone involved.

- We support the inclusion of EN303-5 test results and the specified emission limits for both wood pellet and wood chip boilers.

- It is unclear whether or not EN303-5 may be used to verify the minimum 85% efficiency requirement for pellet boilers.

- Under section 8 "Qualifying a Central Wood Heating System" the second paragraph of Section A encourages that, "...manufacturers to seek qualification through NYSERDA for pellet wood fired hydronic heaters with two stage gasification combustion design...". I think this statement is based on a mistaken understanding of how pellet boilers work. Most wood pellet boilers do not utilize two stage combustion. In fact, I'm not aware of any that use two stage combustion. Cordwood boilers utilize two stage combustion. Pellet boilers generally use direct combustion with a long flame path.

- Section 8, A. also says, with regard to use of wood chips, "If using EN303-5 the system's PM emissions must be tested at both nominal and 30% load capacity levels." Section 8, B. requires the same for boilers between 1 MM Btu/hr. and 3 MM Btu/hr. What is not described is the performance criteria that must be met at 30% load capacity levels. What levels must be achieved at 30% output for dust, CO, and efficiency?

- Section 8, B. seems to indicate that field-based performance testing shall be conducted even for boilers with existing lab tests, such as EN 303-5. We are opposed to field testing for boilers under 3 MM Btu/hr. Field tests are too expensive and complicated for such small boilers. Lab testing will adequately assure field performance given all of the other requirements of the APS program.

- The thermal storage Table #4 seems to have swapped the requirement for boilers 80,000-119,000 Btu/Hr. with the requirement for boilers 119,000-1 MM Btu/hr.

- The thermal storage requirement in Table 4, assuming the above point is correct about the chart being mixed up, arbitrarily assigns thermal storage requirements. What is it about a boiler with an input of 1,000,010 Btu/hr. that makes it require twice the storage of a boiler at 999,990 Btu/hr. input? Given that the thermal storage requirement is for the lead boiler input, this rule encourages the use of multiple boilers rather than single, larger boilers.

  We have found that a single, larger boiler connected to a large heating load with hundreds or thousands of feet of pipe almost never cycles on/off. That steady state operation not only avoids the dirtiest moments of biomass boiler operation, but also means that boiler requires less maintenance than lighter duty boilers that cycle more often. Generally, we have found that the larger the installation is, the less thermal storage is needed. Large boilers do not turn

on and off easily given very large fuel beds and thousands of pounds of refractory that take hours to reheat after going cold. Therefore, care is taken to ensure these boilers won't cycle. If anything, boilers under 1 MM Btu/hr. should be the boilers requiring 2 gallons/M Btu/hr. and larger boilers should only be required to use 1 gallon/M Btu/hr.

Your proposed guidelines allow installation without thermal storage, but only if it can be proven that the machine can modulate below 20% capacity. On the contrary, what actually happens

in the field is that engineers and installers of biomass heating boilers make sure that large boilers aren't confronted with heat loads that are below their minimum output unless it is possible to shut those boilers off for long periods of time, such as seasonally.

Of course, understanding how the building uses heat is essential. Assigning thermal storage volume based on arbitrary boiler size thresholds doesn't make sense and may discourage certain types of installations that might be the best for Massachusetts operators. For instance, we have an installation at a school in VT with a 1.7 MM Btu/hr. boiler and a 350,000 Btu/hr boiler. The smaller boiler is turned on for shoulder seasons only. At this time the 1.7 MM Btu/hr boiler is shut off. There are also backup oil heating boilers that can help when loads overwhelm both biomass boilers. During the regular heating season, the 1.7 MM Btu/hr. runs continuously. The buffer tank holds approximately 1,000 gallons. At this location smart boiler sizing along with a smaller buffer has made for a very smooth operating and clean biomass heating system.

That concludes our comments. Thank you for your efforts to encourage biomass heating as part of your APS program. We appreciate this opportunity to share out input and are available to answer any questions.

Feeling good about wood,

Scott W. Nichols, President