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wES
Energy • Environment • Enterprise

October 25, 2017

Deborah Howland
Executive Director
NH Public Utilities Commission
21 South Fruit Street, Suite 10
Concord, NH 03301-2429

RE: Docket No. DRM 16-829

Dear Ms. Howland,

Wilson Engineering Services, PC appreciates the opportunity to submit comments on components of PUC 2500, and respectfully requests consideration of the following comment regarding rules for qualification of efficient CHP systems.

Currently, sources which generate electricity using biomass are able to qualify for REC production by meeting specific requirements for Eligible Electric Biomass Technologies, including PUC 2502.17(a) which requires the units to have

> *"a quarterly average nitrogen oxide (NOX) emission rate for the hours in the calendar quarter during which the device generated electricity of less than or equal to 0.075 pounds/million British thermal units (lbs/MMBtu), and either has a particulate emission rate of less than or equal to 0.02 lbs/MMBtu as measured and verified under RSA 362-F:12, or is participating in a plan approved by the department under RSA 362-F:11, IV for reductions in particulate matter emissions from other emission sources comparable to the difference between the generation unit's particulate matter emissions rate and the 0.02 lbs/MMBtu rate."*

Additionally, these generating facilities are required to conduct annual stack tests for Particulate Matter (PM) pursuant to PUC 2505.04(g)(2), and are required to install continuous emission monitors for NOx pursuant to PUC 2505.04(h).

It is important to note that these stack testing and continuous emission monitoring requirements apply all electric generation units using biomass as a fuel, regardless of size.

On the other hand, "Thermal Biomass Renewable Energy Technologies" are able to qualify for REC production by meeting requirements based on the size of the unit in PUC 2502.36. The requirements for these system are as follows. For systems with a heat input of 3 mmBtu/hr or less, there are no PM or NOx requirements, provided that the units have a combustion efficiency of 99% or greater. For systems with a heat input between 3 and 30 mmBtu/hr, a one-time stack test must demonstrate a PM emissions rate less than or equal to 0.10 lbs/mmBtu, and there is no NOx requirement. For systems rated equal to or greater than 30 mmBtu/hr, the PM emissions rate must be less than or equal to 0.02 lbs/mmBtu (this is the same requirement that all biomass electric must currently meet), and there is no NOx requirement until 100 mmBtu/hr gross heat input, at which point the requirement is 0.075 lbs/mmBtu (the same requirement as all biomass electric).

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PUC 2505.08 requires CHP sources to meet the requirements for both thermal and electric sources. Therefore, in the case of biomass, the more stringent electric requirements would apply, even to a source, for example, which has a gross heat input of less than 30 mmBtu/hr.

WES proposes changes to the PUC 2500 rules (and potentially, if needed, to the RPS statute) to enable CHP systems to more easily qualify their electric generation for Class I RECs, in addition to qualifying their useful thermal energy output for Class I Thermal RECs. Because CHP sources commonly provide higher overall efficiencies compared to sources which simply generate either electricity or useful thermal energy, the PUC rules should not discourage such systems.

A hypothetical steam boiler using biomass fuel, rated at 20 mmBtu/hr heat input, would need to pass a one-time stack test to meet the 0.1 lbs/mmBtu emissions requirement if it was used to produce useful thermal energy. However, if the owner was to add a backpressure steam turbine to this project to generate thermally-led electricity (maintaining the same amount of delivered useful heat to the buildings), the owner would be required to reduce PM emissions by a factor of 5, install continuous NOx monitors, and conduct a PM stack test annually to demonstrate compliance, if the owner desired to qualify this renewable electric generation for Class I RECs.

Additionally, at the household scale, there are now technologies that have small CHP options using stirling engines in conjunction with a pellet boiler. In this case, these systems can produce up to 4 kW and provide 180,000 Btu/hr of heat. Running these systems in a thermally-led manner provides an excellent option for homeowners or small commercial building owners. These systems are also currently required to meet the same requirements with regard to emissions and emissions monitoring as an electric generating station.

In both cases mentioned, owners would not be encouraged to pursue a CHP option in favor of a thermal only option. Compared to biomass sources producing only electricity or only useful thermal energy, thermally-led CHP biomass sources provide the most overall benefit to the people of New Hampshire, due to their higher overall operating efficiencies. Therefore, these types of systems should be able to qualify for both Class I and Class I Thermal RECs using the requirements for thermal biomass renewable energy technologies. A simple qualification requirement would be to require that such sources achieve an overall efficiency of 60% or better. This would serve to exclude electric generating stations, which may use an incidental amount of useful thermal energy in their processes, and less efficient non-thermally-led CHP systems.

Thank you for the opportunity to submit these comments.

Sincerely,

Wilson Engineering Services, PC

Daniel A. Wilson, P.E
Vice President