December 5, 2024

Holly R. Anderson
Clerk of the Commission
112 State Street
Montpelier, VT 05620-2701

Re: Case No. 23-2220-RULE – Proceeding to Design the Potential Clean Heat Standard

Dear Ms. Anderson:

On behalf of the Northeast Hearth, Patio & Barbecue Association (NEHPBA), I offer the following comments on the design of the Clean Heat Standard (CHS) for biomass heating equipment.

Biomass-burning stoves, boilers, and furnaces serve as both a primary and secondary source of heat for tens of thousands of Vermonters. In several meetings of the Clean Heat Technical Advisory Group (TAG), the scope of installed equipment receiving credit under a potential CHS has narrowed. This will effectively limit opportunities to reduce greenhouse gas emissions. The TAG's focus on the EPA's Inspector General's report is misguided. The report questions the EPA's current certification program for wood heaters and pellet-fueled stoves. It should not be a template for determining which biomass equipment may receive credit under a CHS.

A more relevant approach would be to address the historical methane emissions from conventional wood heaters, which comprise the majority of woodstoves in Vermont households, according to the Environmental Protection Agency (EPA).[1] The values in the EPA report are not laboratory values but rather derived from real-world, in-situ tests and indicate that the emissions of methane from conventional stoves are 30 lbs./ton of wood burned. Vermont Households use 347,000 cords/year of firewood.[2]

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[1] EPA's AP-42: Compilation of Air Emissions Factors from Stationary Sources, precisely Volume 1, Chapter 10, Residential Wood Stoves. Found here: https://www.epa.gov/sites/default/files/2020-09/documents/1.10_residential_wood_stoves.pdf

[2] Renewable Energy Vermont and Biomass Energy Resource Center. March 2018. EXPANDED USE OF ADVANCED WOOD HEATING IN VERMONT. Found here: http://www.revermont.org/wp-content/uploads/FINAL-2030-Wood-Heat-Road-Map.pdf

As the weight of a seasoned cord of hardwood can vary, we can use 3,000 lb/s per cord as a conservative number, which means the total burned in residential households is on the order of 520,000 tons/year. While not all of these are conventional stoves, the national average is 80%. A conservative Vermont estimate would be 60%. This translates into approximately 7800 tons of methane per year. Emission factors for automatic appliances (pellet stove: 9 g/GJ, pellet boiler: 4 g/GJ) were more than an order of magnitude lower than the batch-working ones.[3] This is an average for all pellet stoves, regardless of any additional efficiency or performance enhancement contemplated by the TAG. If all conventional cordwood stoves were to be replaced, current pellet stoves could reduce Vermont's methane emissions from residential wood heat by 7,000 tons per year, irrespective of any additional requirements or limitations on the technology.

Of course, many Vermonters cut or process all or part of their firewood, so they are unlikely to switch to a pellet stove. Using the AP-42 values, which date from work done in the early 1990s, we can calculate that for every 1000 Vermont households that switch from a conventional stove to any EPA-certified stove, there will be a reduction in Methane emissions of approximately 60 lbs. The data in the AP-42 reflects real-world, in-situ research, which was accomplished in 1992. It is reasonable to expect that methane emissions from EPA-certified wood stoves have diminished over the last 3 decades. It is also reasonable to assume gains in efficiency and reduction in GHGs if Vermonters currently use older biomass-burning equipment receive incentives to upgrade to more efficient models.

In summary, the emphasis in the EPA Inspector General's report on certification testing as handled by the TAG is misplaced. A well-conceived Vermont Clean Heat Standard should, in fact, expand the credit opportunities for biomass heating equipment rather than restrict them.

Sincerely,

Karen L. Arpino
NEHPBA
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NEHPBA.org

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[3] Atmospheric Environment. Methane emissions from small residential wood combustion appliances: Experimental emission factors and warming potential. Volume 189, September 2018, Pages 164-173. Found here: https://www.sciencedirect.com/science/article/abs/pii/S135223101830445X