Docket ID No. EPA-HQ-OAR-2018-0195

ATTACHMENT C TO HEARTH, PATIO & BARBECUE ASSOCIATION COMMENTS

Memorandum from Jill Mozier, EC/R Inc. to David Cole, et al., EPA/OAQPS, "Derivation of wood heater model percentages meeting Step 2 standards" (Nov. 10, 2004), *previously docketed as* EPA-HQ-OAR-2009-0734-1768

MEMORANDUM

DATE: November 10, 2014

SUBJECT: Derivation of wood heater model percentages meeting Step 2 standards

FROM: Jill Mozier, EC/R Inc.

TO: David Cole, EPA/OAQPS
Gil Wood, EPA/OAQPS
Amanda Aldridge, EPA/OAQPS

The purpose of this memorandum is to document how we derived the percentage of wood heater appliances estimated to already meet the Step 2 standards effective in 2020.

I. Non-Catalytic Wood Stoves

For our cost and emission calculations, we estimate that 18% of non-catalytic stove models already meet the 2020 Step 2 standard. To estimate this percentage of non-catalytic stoves emitting 2.0 g/hr or less (EPA weighted average emissions), we used HPBA's 2010 wood heater database[1] with the correction factor for method 5G removed, consistent with the final rule. This adjusted dataset is provided as an attachment to this memo and will be made available in the docket.[2] The dataset contains 110 non-catalytic stoves and 20 of these – or 18% – have an EPA weighted average emission of 2.0 g/hr or less.

II. Catalytic & Hybrid Wood Stoves

For our cost and emission calculations, we estimate that 89% of catalytic and hybrid stove models already meet the 2020 Step 2 standard. To estimate this percentage of catalytic and hybrid stoves emitting 2.0 g/hr or less (EPA weighted average emissions), we used data from EPA's Office of Enforcement and Compliance Assurance (OECA) for wood stoves certified between 2010 and 2014[3] with the correction factor for method 5G removed, consistent with the final rule. This dataset is also provided as an attachment to this memo and will be make available in the docket.[4] The dataset contains 9 catalytic and other (presumably hybrid) stoves certified between 2010 and 2014 and 8 of these – or approximately 89% – have an EPA weighted average emission of 2.0 g/hr or less.

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[1] Final HPBA Heater Database version 2/25/10, EC/R received from Bob Ferguson for HPBA on 4/26/10
[2] Spreadsheet entitled *HPBA dataset 5g correction factor removed_ECR version* is submitted to EPA via e-mail along with this memo and will be included in the docket
[3] The regularly-updated list of EPA certified wood heaters is available on OECA's website at http://www.epa.gov/compliance/resources/publications/monitoring/caa/woodstoves/certifiedwood.pdf
[4] Spreadsheet entitled *New data NSPS sheet RT_ECR version* is submitted to EPA via e-mail along with this memo and will be included in the docket

III. Non-Catalytic and Catalytic Wood Stoves Combined

For our cost and emission calculations, we estimate that 26% of non-catalytic and catalytic stove models combined already meet the 2020 Step 2 standard. We required a combined estimate because our shipment data (used for emission calculations) does not distinguish between catalytic and non-catalytic heaters. We used a weighted average to calculate the combined percentage meeting Step 2 based on industry data provided in their comment in response to the proposed rule. Specifically, Hearth, Patio and Barbecue Association's (HPBA's) economic consultant, NERA, estimated that in 2018 there would be approximately 100,000 wood stove sales and that 89,000 of these total woodstove sales would be non-catalytic while approximately 11,000 would be catalytic.[5] Using a weighted average based on these sales projections from industry and assuming that 18% of non-catalytic and 89% of catalytic & hybrid stoves can meet Step 2 already (as explained above), we estimate that 26% of all wood stoves can meet the 2020 Step 2 standard without additional R&D investment.

IV. Pellet Stoves

For our cost and emission calculations, we estimate that 70% of pellet stove models already meet the 2020 Step 2 standard. To estimate this percentage of pellet stoves emitting 2.0 g/hr or less (EPA weighted average emissions), we used OECA data for wood stoves certified between 2010 and 2014, adjusted by removal of the 5g correction factor, as explained above.[6] The dataset contains 27 pellet stoves certified between 2010 and 2014 and 19 of these – or 70% – have an EPA weighted average emission of 2.0 g/hr or less.

V. Hydronic Heaters

For our cost and emission calculations, we estimate that 18% of hydronic heater models already meet the 2020 Step 2 standard. We based this estimate on the fact that 9 of the 49 Phase 2 qualified hydronic heater models – or 18% – emit 0.10 pounds of PM or less per million Btu heat output (lb/mmBtu) for each individual burn rate. This statistic is based on models qualified at Phase 2 under EPA's Hydronic Heater's Voluntary Program as of 10-23-2014.[7]

VI. Forced-Air Furnaces and Single Burn Rates Stoves

For our cost and emission calculations, we estimate that all forced-air furnace and single burn rate stove models will require investment in R&D in order to meet the 2020 Step 2 limits. Forced-air furnace and single burn rate stove designs able to meet the Step 2 limits may be based on technology transferred from hydronic heater designs and/or wood stove designs.

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[5] Cost-Effectiveness Analysis of Alternative Woodstove New Source Performance Standards, prepared by NERA Economic Consulting, May 2014, p.7. Submitted as Attachment 2 from the Hearth, Patio and Barbeque Association's Comment on the proposed rule to Docket EPA-HQ-OAR-2009-0734 available at http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2009-0734-1643.

[6] See footnotes 3 and 4.

[7] A list of Phase 2 qualified hydronic heater models is available on EPA's Burn Wise website at http://www.epa.gov/burnwise/owhhlist.html. A more detailed spreadsheet is also available in the docket and is entitled *Hydronic Heater M28 Test Data*