Appliance Standards Awareness Project
American Council for an Energy-Efficient Economy
Consumer Federation of America
National Consumer Law Center, on behalf of its low-income clients
Natural Resources Defense Council

July 5, 2022

Ms. Julia Hegarty
U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
Building Technologies Office, EE-5B
1000 Independence Avenue SW
Washington, DC 20585

RE: Docket Number EERE–2019–BT–STD–0036/RIN 1904–AE82: Notification of Availability of Preliminary Technical Support Document for Energy Conservation Standards for Consumer Boilers

Dear Ms. Hegarty:

This letter constitutes the comments of the Appliance Standards Awareness Project (ASAP), American Council for an Energy-Efficient Economy (ACEEE), Consumer Federation of America (CFA), National Consumer Law Center, on behalf of its low-income clients (NCLC), and Natural Resources Defense Council (NRDC) on the preliminary technical support document (PTSD) for energy conservation standards for consumer boilers. 87 Fed. Reg. 26304 (May 4, 2022). We appreciate the opportunity to provide input to the Department.

We support DOE's decision to evaluate non-condensing and condensing boilers within a single product class. Consistent with the December 2021 final interpretive rule,[1] in the preliminary analysis, DOE did not consider condensing technology to constitute a separate product class from non-condensing technology for consumer boilers.[2] We support DOE's decision to consider condensing and non-condensing boilers within a single product class because both products use gas as the primary fuel source and provide the same utility to consumers. We do not believe that use of non-condensing technology constitutes a "performance related feature" that warrants a separate product class.

We encourage DOE to evaluate electric and gas heat pump technology for consumer boilers as potential max-tech efficiency levels. Air-to-water and water-to-water electric heat pumps meet the definitional criteria to be classified as consumer boilers and are commercially

[1] https://www.regulations.gov/document/EERE-2018-BT-STD-0018-0148.
[2] 87 Fed. Reg. 26308.

available in the U.S.[3] While hydronic systems are the main heating means in only 8% of U.S. homes overall, they are the main heating means for 28% of households in the Northeast.[4] State policies, market and technology maturation, and emissions reduction imperatives are likely to continue motivating a shift towards high-efficiency electricity-based heating. Additionally, gas-fired absorption heat pumps (GAHPs) have the potential to replace standard gas space heating appliances, including in cold climates. In a study that investigated GAHPs for various heating applications, the residential gas heat pump system achieved an AFUE of 141%.[5] These systems are commercially available for residential use in the United States[6,7] and internationally.[8]

Although electric and gas heat pump boilers are commercially available and have the potential to result in significant energy savings, DOE did not consider them as technology options because they do not impact AFUE or standby/off mode energy use as measured by the current DOE test method.[9] Thus, we encourage DOE to expeditiously develop test procedures and define performance metrics for these products so that conventional and heat pump boilers can be fairly evaluated and compared.

We urge DOE to evaluate one or more alternate natural gas price scenarios. In the preliminary analysis, DOE utilized projections from the Energy Information Administration's Annual Energy Outlook (AEO) 2021 to estimate future natural gas prices.[10] However, we believe that DOE may be significantly underestimating future natural gas prices using this approach. As the movement towards electrification continues and the efficiencies of gas-fired appliances increase, customers and sales of natural gas will likely decline over time. Multiple studies indicate that a consistent decline in gas customers and/or consumption will result in an increase in gas prices for the remaining customers.[11,12] For example, as the Natural Resources Defense Council (NRDC) outlines in their comments on the May 2022 consumer water heater standards PTSD,[13] their analysis found that gas prices will exceed 600% of the AEO projections in the Pacific and Mid-Atlantic regions in multiple electrification scenarios. Thus, DOE may be significantly underestimating the operating cost savings from potential amended standards for gas boilers.

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[3] Available from various manufacturers. See for example, https://www.nordicghp.com/product/nordic-products/air-source-heat-pump/air-to-water/ and https://www.aermec.us/products-2/air-to-water-units/ank/?hsCtaTracking=0259f429-7ede-4e1d-8281-5bd68c3822d5%7C435b5df9-9045-48b0-9e99-c6436b02a785.

[4] U.S. Energy Information Administration 2020 Residential Energy Consumption Survey (RECS). Note that RECS data does not differentiate hydronic heating between hot water and steam systems.

[5] http://hpc2017.org/wp-content/uploads/2017/05/O.4.3.3-Residential-and-Commercial-Capacity-Absorption-Heat-Pumps.pdf.

[6] See https://www.robur.com/en-us/products/gahp-a.

[7] Gas Heat Pump Webinar https://webinars.myescenter.com/2021/Enbridge_GHP_Webinar.pdf.

[8] See https://www.robur.com/heat_pumps/gas_absorption_heat_pump_for_homes_k18 and https://www.bosch-thermotechnology.com.au/au/en/ocs/residential/compress-3000aw-1064540-p/.

[9] https://www.regulations.gov/document/EERE-2019-BT-STD-0036-0021. pp. 3-39 - 3-40.

[10] https://www.regulations.gov/document/EERE-2019-BT-STD-0036-0021. p. 8-25.

[11] https://thefutureofgas.com/content/downloads/2022-03-21/3.18.22%20-%20Independent%20Consultant%20Report%20-%20Decarbonization%20Pathways.pdf. p. 101.

[12] https://www.nber.org/papers/w28955.

[13] https://www.regulations.gov/comment/EERE-2017-BT-STD-0019-0037.

We therefore encourage DOE to evaluate one or more alternate natural gas price scenarios to better understand the effect of increased gas prices.

DOE thoroughly evaluated installation costs for consumer boilers in the preliminary analysis. We understand that venting systems for condensing boilers are different from those for non-condensing boilers and can be complex to install in certain retrofit applications. For the preliminary analysis, DOE evaluated installation issues associated with switching from a non-condensing to a condensing boiler, such as flue venting issues, condensate removal, and installation with an orphaned water heater, and estimated the cost impact of such scenarios.[14] We believe that DOE's analysis of installation costs is comprehensive and reasonable for condensing boiler installations.

We believe that DOE's assignment of efficiency levels in the no-new-standards case reasonably reflects actual consumer behavior. In their comments on the 2021 request for information (RFI), the Joint Gas Utilities argued that the DOE analysis is flawed by assigning efficiencies in the no-new-standards case randomly.[15] However, as DOE notes in the PTSD, the assignment of boiler efficiency in the no-new-standards case is not entirely random. First, DOE used State-level market data to preferentially assign higher-efficiency boilers to States with higher fractions of high-efficiency boiler shipments. Second, within each state, DOE used the 2015 Residential Energy Consumption Survey (RECS) and the 2019 American Home Comfort Study to account for subgroups that could select higher efficiency boilers more often; in particular, DOE utilized these data to preferentially assign higher-efficiency boilers to homes with higher square footage.[16]

Furthermore, we agree with DOE's determination that the method of assigning boiler efficiencies, which is in part random, is more representative of actual consumer behavior than assigning efficiencies based solely on cost-effectiveness. As DOE describes in the PTSD, there are various market failures as well as aspects of consumer preference that significantly impact how products are chosen by consumers.[17] For example, there are often misaligned incentives in rental properties where the landlord purchases and installs the boiler while the renter is responsible for paying the utility bill. Additionally, information about the purchase price, installation cost, and projected energy costs of boilers is not always transparent, and consumers are likely to make decisions that do not result in the highest net present value for their specific scenario. We therefore believe that DOE's assignment of efficiency levels in the no-new-standards case is sufficiently representative of actual consumer behavior.

[14] https://www.regulations.gov/document/EERE-2019-BT-STD-0036-0021. p. 8C-14.
[15] https://www.regulations.gov/comment/EERE-2019-BT-STD-0036-0015. pp. 10-11.
[16] https://www.regulations.gov/document/EERE-2019-BT-STD-0036-0021. p. 2-30.
[17] https://www.regulations.gov/document/EERE-2019-BT-STD-0036-0021. p. 2-31.

Thank you for considering these comments.

Sincerely,

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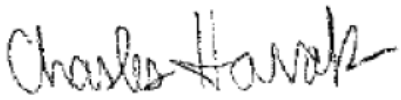

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