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Energy Conservation Program
US Department of Energy
Office of Energy Efficiency and Renewable Energy
Mailstop EE-5B
1000 Independence Avenue SW, Washington, DC 20585-0121

RE: Energy Conservation Program: Energy Conservation Standards for Consumer Water Heaters – Notice of Proposed Rulemaking Docket No. EERE-2017- BT-STD-0019

The National Multifamily Housing Council (NMHC) and National Apartment Association (NAA) have a significant interest in the availability and affordability of the consumer appliances that our residents rely on in their homes. Therefore, we submit the following comments in response to the Department of Energy’s (DOE) Notice of Proposed Rulemaking (NOPR) on Energy Conservation Standards for Consumer Water Heaters. In addition to supporting the goals of the Energy Policy and Conservation Act (EPCA), we are committed to addressing the nation’s pressing housing needs. However, we face serious obstacles in addressing rising housing costs, maintaining affordable housing stock and delivering much-needed new supply. We therefore urge you to consider the impacts of this rulemaking on affordable housing preservation and housing production and ensure that new water heater efficiency requirements do not undermine efforts to address America’s acute housing challenges.

For more than 26 years, NMHC and NAA have partnered to provide a single voice for America’s apartment industry. Our combined memberships are engaged in all aspects of the apartment industry, including ownership, development, management and finance. NMHC represents the principal officers of the apartment industry’s largest and most prominent firms. As a federation of 141 state and local affiliates, NAA encompasses over 95,000 members representing more than 11.6 million apartment homes globally.

One-third of all Americans rent their housing, and our industry plays a critical role in meeting the nation’s housing needs by providing apartment homes for nearly 39 million residents and contributing \$3.4 trillion annually to the economy. Energy and water efficient appliances and fixtures are important to housing providers and our residents, and our apartment homes reflect consumer preferences and expectations for appliance operation, environmental performance and affordability that is well-supported by the existing marketplace. Though we strongly support improved energy performance in the residential sector, the practical implementation of these new efficiency standards can create serious, and sometimes cost-prohibitive, challenges for America’s renters.

Critical Housing Shortages and Affordability Needs

In promulgating this rule on efficiency standards for water heaters, the DOE has stated an intention to boost energy savings, provide climate benefits and lower utility bills. However, DOE’s analysis on the necessity and justification of new standards must balance other considerations, including impacts on the nation’s housing conditions.

Our organizations have long been engaged in the rulemaking process for DOE efficiency standards,

ensuring that the unique needs of the apartment industry are recognized. It is essential that we build and renovate housing at all price points to address the nation’s critical housing challenges and ensure economic stability for American households.

According to recent research commissioned by NMHC and NAA, **the U.S. needs to build 4.3 million new apartment homes by 2035 to meet the demand for rental housing.**¹ This includes an existing shortage of 600,000 apartments stemming from underbuilding due in large part to the 2008 financial crisis. Further, underproduction of housing has translated to higher housing costs – resulting in a consequential loss of affordable housing units (those with rents less than \$1,000 per month), with a decline of 4.7 million affordable apartments from 2015-2020.

In fact, the total share of cost-burdened apartment households (those paying more than 30% of their income on housing) has increased steadily over several decades and reached 57.6% in 2021.² During this same period, the total share of *severely* cost-burdened apartment households (those paying more than half their income on housing) increased from 20.9 to 31.0%.³

Further, the Biden Administration has recognized this immense need to bolster the nation’s housing production and outlined a strategy to improve housing supply conditions through the Housing Supply Action Plan. The plan underscores that this national supply shortfall “burdens family budgets, drives up inflation, limits economic growth, maintains residential segregation, and exacerbates climate change.”⁴ And that “[r]ising housing costs have burdened families of all incomes, with a particular impact on low- and moderate-income families, and people and communities of color.”⁵ Of particular importance to this rulemaking, the plan specifically identifies the need to control materials costs and address supply chain challenges.

It is becoming increasingly difficult to build housing that is affordable to a wide range of income levels. Ongoing materials and equipment shortages and strained supply chain conditions pressures housing development and results in costs and delays that impact overall affordability and availability. In addition, ill-timed, unnecessary or unduly burdensome laws, policies and regulations at all levels of government prevent us from delivering the housing our country so desperately needs. Elevated regulatory costs, in particular, create a barrier to affordable housing supply. Recent research published by NMHC and the National Association of Home Builders found that regulation imposed by all levels of government accounts for 40.6 percent of multifamily development costs.⁶

¹ Hoyt Advisory Services, “Estimating the Total U.S. Demand for Rental Housing by 2035.” (2022), <https://www.weareapartments.org/>.

² American Housing Survey, U.S. Census Bureau, “NMHC tabulations of 1985 American Housing Survey microdata.” (2021).

³ *Id.*

⁴ “President Biden Announces New Actions to Ease the Burden of Housing Costs.” (May 16, 2022) <https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/16/president-biden-announces-new-actions-to-ease-the-burden-of-housing-costs/>.

⁵ *Id.*

⁶ National Multifamily Housing Council and National Association of Home Builders, “Regulation: 40.6 Percent of the Cost of Multifamily Development.” (2022) <https://www.nmhc.org/globalassets/research--insight/research->

Construction Cost and Supply Chain Challenges

As DOE looks at opportunities for increased building energy performance, it is important to recognize the immense, practical pressures on apartment development and construction that impact our ability to deliver new and renovated housing units. These challenging conditions are particularly exacerbated by new regulatory burdens and changes to the availability and expense of essential appliances in particular.

Following extreme, pandemic-fueled volatility in product costs, supply chain stability, and staffing constraints, the apartment construction and renovation pipeline has seen some moderation, yet continues to face difficult conditions. Construction delays are prevalent – with 90 percent of respondents reporting delays in NMHC’s June 2023 Quarterly Survey of Apartment Construction and Development Activity.⁷ Further, 47 percent of respondents reported experiencing repricing increases in projects over the last three months. Respondents experiencing delayed starts were most likely to cite project infeasibility as a cause (62% of respondents, up from 49% last quarter) and the availability of necessary products and materials, or lack thereof, continues to be of concern, with 10 percent of respondents citing materials sourcing and delivery challenges as a contributing factor to delayed starts.

Apartment builders and developers also continue to be impacted by escalations in materials costs. The prices of a myriad of essential building products and equipment continue to rise, with respondents reporting a 2% average increase in residential appliance costs over a three-month period. A sizeable portion of respondents further reported relying on alternative brands or suppliers to mitigate price increases and supply shortages for appliances (43%).

Therefore, we urge DOE to avoid new efficiency requirements that would undermine efforts to ease high construction costs and alleviate delays.

Impacts of New Water Heater Standards in Multifamily Buildings

Before finalizing new water heater standards, we urge DOE to recognize the distinct challenges faced by the multifamily sector and reconsider the practical impacts to the nation’s renters and housing providers. DOE’s analysis suffers serious deficiencies with respect to apartment properties that raises questions of cost-effectiveness, practicality and constructability. Specifically, DOE’s analysis should focus on ensuring housing affordability and distinguishing the needs of the existing building and new construction markets. At a minimum, the supporting information provided by DOE here lacks important perspective on the diversity of multifamily housing and is inadequate to properly analyze the proposed rule’s implications in apartments.

In particular, DOE’s analysis does not account for the breadth of existing multifamily building configurations. While DOE makes some reference to the differing installation and cost conditions (among other elements) between various housing types in the March 2022 *Preliminary Analysis Technical Support Document* (TSD) and the July 2023 *Technical Support Document* (TSD2), the analysis does not well-address distinctions within the multifamily landscape including high-rise

reports/cost-of-regulations/2022-nahb-nmhc-cost-of-regulations-report.pdf.

⁷ National Multifamily Housing Council, “Quarterly Survey of Apartment Construction & Development Activity.” (June 2023) <https://www.nmhc.org/research-insight/nmhc-construction-survey/2023/quarterly-survey-of-apartment-construction--development-activity-june-2023/>.

versus low-rise buildings, historic structures and adaptive reuse projects (i.e. commercial to residential conversions). As further explored below, such features can significantly influence water heater installation, operations and consumer satisfaction, and DOE's impact analysis would benefit from a broader consideration of the multifamily marketplace.

Building Code Compliance and Adaptive Reuse

DOE is proposing changes that would impact the kind of small space applications typical in apartment homes. DOE's position does not consider that model plumbing codes require that water heaters be able to be serviced, repaired or replaced without removing permanent construction. The supporting analysis also fails to understand that resizing a utility closet in an apartment home will typically involve substantial construction and quality of life impacts for apartment residents. For example, when considering heat pump water heaters, (HPWH), DOE suggests that replacing utility closet doors with louvered doors is an acceptable design solution [NOPR IV.B.2]. This ignores the impacts of attendant increases in equipment noise in the smaller living footprint of the typical apartment home. DOE should also consider the consequences of utility closet changes given the common colocation of water heaters with laundry appliances in apartments. DOE's suggestion that it may be possible to ignore manufacturers' specified volume of space for HPWH installation based on "current research" [NOPR F.2.d] is not acceptable as it conflicts with building code requirements to comply with manufacturer's instructions.

Notably, the TSD does not address the unique considerations of existing or future commercial-to-residential conversions. These buildings would face specific installation barriers under DOE's proposal. The nature of the construction, historic building considerations or zero lot lines result in building facades that are frequently not available for vent terminations. Such buildings may have a much taller story height than a typical new residential building, and existing structural frame geometries and shaft locations significantly influence dwelling unit configurations. In these cases, new vent piping or condensate drains may need to traverse finished space outside of the affected dwelling unit to reach a building shaft with sufficient space to add piping. Such piping runs will virtually always exceed the lengths cited for cost-analysis in the TSD and entail substantial additional costs unconsidered by DOE.

Multifamily Design and Retrofit Challenges

The proposed rule's requirement of additional tank insulation for both gas and electric heaters produces significant issues for the typical multifamily dwelling unit, which relies on utility closets and zero clearance applications. These challenges are exacerbated given the dense construction inherent in multifamily design, where there are few areas to accommodate water heater placement. DOE's cost-effectiveness analysis fails to properly address retrofit challenges that make certain product choices untenable, force product switching and/or necessitate expansive construction efforts. Further, necessary changes in the placement of new water heaters and unit reconfigurations can have a material impact on rentable square footage or have undesirable impacts on unit design where appliances will need to be placed in different areas than they were originally designed to be.

Cascading Equipment Replacement

In multifamily properties, furnaces and gas water heaters from several units commonly share a chimney vent, or a gas furnace and a water heater within one apartment will share a venting system. If a new condensing gas water heater cannot be accommodated in an apartment due to building construction limitations, then it is likely the unit will be replaced with an electric unit. Venting systems are designed to work with a certain volume of gases; changes in the volume of gas being vented will affect the draw of the venting system, and could result in toxic-combustion gases being drawn back into the building. In short, eliminating a non-condensing water heater from a venting stack may initiate a cascade of equipment replacements due to venting requirements or force

additional venting changes. It is foreseeable that local building inspectors will have concerns about the adequacies of the draw of a vent when it is carrying a reduced volume of gases.

Underestimated Product Switching and Impacts of Increased Electrification

DOE “*assumes that any product switching as a result of the proposed standards is likely to be minimal.*” [NOPR IV.F.9] DOE makes this assumption because of the installation costs associated with various product switching scenarios. DOE’s assumption fails to account for forced product switching driven by the typical space limitations in existing multifamily dwellings, where frequently the water heater shares a small closet with stacked laundry facilities. In such cases there simply may not be space enough for any replacement storage water heaters compliant with the proposed rule and owners will be forced to switch to instantaneous water heaters with the attendant additional installation costs (as noted by DOE) of improved infrastructure, i.e., venting, larger sized gas supply piping, or electrical panel upsizing.

We also believe DOE fails to properly evaluate the impacts of market unavailability that forces product switching. For example, DOE’s proposed rule will eliminate non-condensing tankless water heaters, so products will be unavailable to housing providers seeking a traditional replacement of a non-condensing tankless water heater. Conceivably, in order to avoid the installation cost of a condensation drain, an apartment owner may choose a non-condensing gas storage water heater as a replacement. Therefore, the efficiency of their water heater will go from 0.81, the current standard for non-condensing tankless water heaters, to 0.59, the proposed standard for gas storage water heaters – resulting in a 25% drop in efficiency. Here, DOE has failed to examine the breadth of product switching costs and real-world installation expenses that face housing providers.

However, it is most predictable that this rulemaking will result in the greater use of electric products. We specifically caution against moving forward with new efficiency standards that may significantly reduce our product options based on a particular fuel source, with more onerous requirements or compliance demands being imputed on products using fossil fuels. While we appreciate that DOE’s stated intention is not to preclude gas-fueled water heaters, we urge DOE to consider that the rulemaking will likely result in construction and replacement conditions that nevertheless reduce the usability of gas appliances in typical multifamily buildings and potentially heavily steers consumers towards electric options. Increased building electrification requires more interconnectivity, changes to power systems and upgraded electrical infrastructure that poses significant cost and constructability barriers for the existing apartment stock,

In addition, any anticipated increase in electrification needs should be coupled with efforts to ensure the electric grid is prepared, and that necessary components are affordable and available at scale to support such increases. Our organizations have recently submitted comments on DOE’s proposal for new distribution transformer standards. In that comment, we highlighted Administration-level concerns about the production capacity of critical electric grid components and raised concern about the ability to realize electrification goals at this time. We urge DOE to consider such costs and barriers to increased electric product use as you undertake this rulemaking.

Workforce Challenges

DOE has expressed concerns regarding the training of the workforce that would be necessary to install and service the heat pump water heater market by the proposed standards’ compliance date, noting that advance technology water heaters “require the ability to work with refrigerants similar to heating, ventilation, and air conditioning contractors.” This raises particular operations and maintenance concerns for apartment properties that may have to bear the expense of new equipment installation, while incurring additional expenses for staff training on use, upkeep and repair. Worker training is necessary to ensure that the new systems are run and maintained correctly, and that

residents do not suffer if the systems go down and cannot be repaired quickly and efficiently. Though DOE has addressed this issue, it has only expressed “hope” that workforce programs supported by the Inflation Reduction Act and Bipartisan Infrastructure Law will support training for potential workforce programs. Multifamily housing providers may be required to shoulder the financial burden to pay for worker training to meet proposed standards, potentially passing on costs to residents.

Average Lifetime of Consumer Water Heaters

DOE asserts in the introductory paragraph to Table I.2 of the NOPR that the average lifetime of consumer storage water heaters is 15 years for storage water heaters and 20 years for instantaneous water heaters, but the Air-Conditioning, Heating, and Refrigeration Institute (AHRI), which represents the manufacturers of water heaters, states that most water heaters have an expected service life of 10 to 13 years.⁸ This means the lifecycle cost savings asserted by DOE are significantly overstated.

Overestimated Efficiency for Heat Pump Water Heaters

Where HPWHs are installed, they will typically have backup or supplemental capabilities provided by electric resistance heating elements integral to the unit. This means that the product has a more efficient operating mode and a less efficient (resistance) mode. Given no loss of functionality, even though less efficient, it is likely that many owners will choose to not replace or repair a failed HPWH in favor of continued use of its supplemental resistance heating because of the high initial cost of a HPWH versus the slightly higher monthly expense of resistance water heating, particularly for income challenged households. This predictable practice results in inaccurate DOE lifecycle cost and energy savings estimates.

Impact on Housing Affordability

Increased costs of building maintenance and operation directly impact rental rates and will exacerbate the shortage of quality, affordable housing. For properties that will be forced to replace gas storage water heaters with electric water heaters, there will likely be an increased cost for consumers given the current price of gas relative to electricity. Generally, as options for compliance are reduced because of limited equipment options, costs can be expected to rise because of focused supply chain issues and market demand forces. DOE’s analysis does not properly account for the implications of shrinking equipment supply considerations, lost consumer choice in products and fuel type and increased energy rates on very low-, low- and moderate-income renter households.

In addition, this rulemaking comes as part of a wider series of similar rulemakings from DOE, all of which seek to change performance standards for essential residential appliances. We urge DOE to consider the collective impacts of these requirements and recognize that the effect of even relatively modest, individual pricing increases are magnified when housing providers are forced to manage cost escalations across multiple product classes at once.

Manufacturing Barriers

This proposed rule does not take into account the infeasibility of meeting the proposed standards or the market challenges of the standards it proposes. For instance, for gas-fired storage water heaters (GSWHs), the DOE has tentatively determined that it is possible for these heaters to *surpass* the max-tech efficiency levels specified in the 2022 Analysis. This is a strained assumption, as DOE defines

⁸ AHRI website <https://www.ahrinet.org/scholarships-education/education/homeowners/indoor-comfort-systems/water-heaters#:~:text=Most%20water%20heaters%20have%20an,economical%20choice%20for%20your%20home>. Accessed 09-08-2023.

“max-tech” as an efficiency level representative of the *maximum possible* efficiency level for a given product. The DOE is imposing standards with the assumption that manufacturers and the entire water heater market are able to exceed standards they have determined to be the highest possible attainable level. This disconnect between the DOE’s proposed standards and the actual potential to meet them is widespread throughout the proposed rule and the Department’s analysis and has significant implications for consumers and product choice and availability moving forward.

Conclusion

The apartment industry supports the goal of improving energy efficiency and lowering carbon emissions. At the same time, improving housing affordability and availability are key national priorities. We are committed to working with policymakers to further energy efficiency goals while supporting the creation of more housing, preserving affordability and ensuring that every American has a safe, quality place to call home.

Respectfully Submitted by:

National Apartment Association

National Multifamily Housing Council