July 10, 2015

The Honorable David T. Danielson
Assistant Secretary
Energy Efficiency and Renewable Energy
US Department of Energy

RE: NOPR for Energy Conservation Standards for Residential Furnaces; EERE-2014-BT-STD-0031

The National Multifamily Housing Council (NMHC), the National Apartment Association (NAA), and the National Leased Housing Association (NLHA) appreciate the opportunity to submit comments on the proposed rule regarding Energy Conservation Standards for Residential Furnaces ("the Proposed Rule"). Our members are strongly committed to energy efficiency and have led the way in the construction of green buildings that have been certified under the National Green Building Standard (ICC-700), the Green Building Council's Leadership in Energy and Environmental Design (LEED) and the Environmental Protection Agency's Energy Star program, among other designations. Energy and water efficient appliances and fixtures are important to consumers and our apartment homes reflect consumer preferences for performance and environmental sustainability.

The combined memberships of NMHC, NAA and NLHA represent firms engaged in all aspects of conventional and affordable rental housing, including owners, operators, developers, housing agencies and nonprofits.[1] The Apartment industry provides homes for 17.9 million households (in buildings with 5+ units). Half of all apartment households in the U.S. in 2013 were housing-burdened (spending more than 30% of their income for housing), a result of rising rents, but also a result of stagnant incomes for many years (U.S. Department of Housing and Urban Development, American Housing Survey). On an inflation-adjusted basis, household incomes have remained the same since the 1980s, leaving property owners with the dilemma that their residents are not earning more money, but aging apartment units require higher operating costs every year (U.S. Census Bureau, Current Population Survey, and Annual Social & Economic Supplement). As a result, unplanned retrofits would likely require property owners to raise their rents, further hindering the supply of affordable housing.

[1] For more than 20 years, the National Multifamily Housing Council (NMHC) and the National Apartment Association (NAA) have partnered in a joint legislative program 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 more than 170 state and local affiliates, NAA is comprised of over 67,000 members representing more than 7.6 million apartment homes throughout the United States and Canada. The National Leased Housing Association (NLHA) represents the interests of 550 member organizations involved in federally assisted rental housing including developers, owners, lenders, housing agencies and nonprofits. NLHA's members provide affordable housing for over three million families.

The costs of both housing and utility bills are of paramount concern for apartment owners and their residents. We have serious concerns about the impact that the proposed rule to raise the minimum energy-efficiency standard for non-weatherized gas furnaces would have on our communities. This disproportionate regulatory burden will be especially acute for older, affordable properties when the time comes to replace older furnaces.

The Proposed Rule would require non-weatherized gas furnaces to have a 92% annual fuel use efficiency (AFUE) by 2021. While high efficiency furnaces are already on the market; these units present certain well-documented challenges for the apartment retrofit market. According to data compiled by manufacturers and installers, over 55% of the gas furnace market in northern climates has already shifted to furnaces with 90% AFUE; existing apartment properties comprise 20% of the share of the market that has not yet made the switch. In new construction, the installation issues associated with side-vented, condensing furnaces are able to be addressed in the design phase however, in older properties the limitations of the existing structure render the switch to condensing units impractical if not impossible.

We have been following the efforts of industry and advocacy groups to come together on a solution that achieves our mutual aim of improved energy efficiency. We recognize that this is a highly technical undertaking involving numerous sophisticated computer-modeling analyses to determine a comprehensive view of furnace system operation within a building unit. While the furnace rule has focused on the aspect of burner performance, the working group has been looking at how related factors including fan efficiency and advanced thermostats might improve the overall energy efficiency associated with the furnace use. Despite the best efforts of all concerned, it appears there will not be a final work product to submit to DOE before the close of the comment period.

NMHC, NAA and NLHA concur with comments submitted on the Proposed Rule by the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) and the Air Conditioning Contractors of America (ACCA) -- organizations whose members provide the goods and services the housing industry relies upon. In addition, as the owners and managers of multifamily properties that would be directly impacted the Proposed Rule, we highlight the additional serious concerns below:

Lack of regional approach

As originally proposed, the direct final rule reflected a regional approach to equipment energy performance. Based on the profile of heating and cooling days, DOE originally proposed to require furnaces of 90% AFUE in states with heating degree days of 5,000 or more where the cost of the more expensive units could be offset more quickly by fuel cost savings. In fact, market data has shown that in the northern region, fully 55% of sales of furnaces are for 90% AFUE models and 50% of all sales nationally. In warmer areas of the country (south and southwest with fewer than 5,000 heating degree days), furnaces are used less frequently and the utility cost savings was not as significant a factor. The cost differential between the 80% and 90% AFUE units is approximately $1000 per unit, not including associated installation expenses.

DOE wisely considered the cost issue in the original rule published in 2011 but failed to do so in the current iteration of the rule which is requiring a national standard of 92%

AFUE. Since the direct final rule was originally published, the costs of natural gas have been significantly reduced making the economic case for a regional standard even stronger and calling into question any economic justification for the proposed national standard of 92% AFUE. A regional efficiency standard is currently in place for air conditioner equipment and we believe that the same practical approach should be used to guide standards for furnaces.

Failure to consider retrofit market

Furnaces with AFUE of 90% or more are required to be horizontally vented as opposed to the vertical venting associated with non-condensing units. While this feature can be practically accommodated in new construction, this is not the case for existing apartment units where unit configuration makes it impractical to impossible to accommodate horizontal venting.

Highly efficient 80% AFUE furnaces with 2-stage burners have been available for several years and provide a fuel efficient, cost effective retrofit solution, as they do not require structural alterations. These furnaces provide superior thermal comfort levels for residents and are less expensive to operate even in colder climates according to one firm who undertook an energy efficiency upgrade involving replacement of a 75,000 BTU furnace and building envelope sealing in a New Jersey apartment community. The installed cost of the 2-stage, 45,000/25,000 BTU furnace (80% AFUE) was approximately $2000 and resulted in a 40% savings in utility costs.

An estimate obtained this week pegged the cost of retrofitting this property with a 60,000 BTU Heat 94% SEER Horizontal gas furnace at $7,300, exclusive of the carpentry and painting that would be needed due to the new ductwork. This estimate is significantly more expensive than the cost estimates that DOE has projected for the rule. This property was able to accommodate the requirement that the vent pipe be located 4' from a window or door; a more typical mid-rise apartment building would likely not be able to meet this requirement without major alterations to the building facade.

Specific challenges associated with retrofitting an existing apartment unit to accommodate new furnaces include:

1. Location of the utility closet. Whether the furnace is located in the middle of an apartment unit or is adjacent to an exterior wall, horizontal venting will require the installation of new ductwork. The location of the unit will dictate how extensive the new ductwork must be to reach an exterior wall. Building construction will determine whether the vent pipe can be recessed or must be included in a soffit. In addition, manufacturers' requirements and various local ordinances determine how far the furnace vent must be located from air intake sources including doors and windows, building corners and gas meter vents. This presents additional challenges for multifamily properties that are densely constructed by design and where there are few open areas on the exterior of the building to accommodate furnace vents.

2. Cascading Equipment Replacement. In many multifamily properties, furnaces and gas hot water heaters from several units may share a chimney vent or a furnace and a hot water heater within one apartment will share a venting system

with a gas furnace. If a new condensing gas furnace 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 furnace from a venting stack may initiate a cascade of equipment replacements due to venting requirements. 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.

3. Cost Prohibitive Alternatives. A suggested possible work around for the horizontal venting issue in cases where a gas furnace and gas hot water heater share a common venting system involves replacing both pieces of equipment while maintaining the vertical vent. Replacing the gas hot water heater with a high efficiency water heater and running the 3" vent from the water heater into a 4" vent pipe from the condensing furnace would enable venting through the existing roof vent. This "solution" is so costly (estimated to be $9,300 per apartment on one property) as to be impractical in most situations.

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 furnaces with electric furnaces, there will likely be an increase cost for consumers given the current price of gas relative to electricity. Properties that will be forced as a practical matter to replace functioning hot water heaters in order to accommodate the installation requirements of a new furnace will face even greater expense.

Impact on Greenhouse Gas Emissions

While the rule is pegged to improving the operating efficiency of certain gas furnaces, the Proposed Rule fails to fully account for other, unintended consequences of consumers shifting from gas to electric furnaces. Many existing apartment properties unable to accommodate the installation requirements for new condensing gas furnaces will be forced to switch to electric furnaces resulting in higher utility bills for property owners and their residents. This fuel shift will lead to an overall increase in green house gas emissions and would appear to be at odds with the Administration's goals set forth in the 2013 Climate Action Plan.

Summary

NMHC, NAA and NLHA believe that the proposed rule fails to consider furnace performance in the context of housing affordability. We urge DOE to reconsider the 92% AFUE national standard. Single-burner efficiency should not be the sole determinant for establishing an energy efficiency standard especially when it would exert serious economic disruption in existing rental housing communities where condensing furnaces are incompatible with the existing building structure. We request that the Department:

1. Retain the 80 AFUE minimum for non-weatherized gas furnaces with a heating input capacity of 80,000 BTUh or less. Because of the venting requirements, retrofitting a condensing furnace in place of a non-condensing furnace is often impractical or impossible. This solution will avoid the increased cost on the smaller units that consume less energy annually and are less likely to provide a payback to the consumer. Or,

2. Create a regional approach to furnace efficiency along the same lines as the current regional air conditioning standard. In addition, it will be necessary to provide a northern region condensing furnace exemption for existing buildings or the ability to have a waiver for especially difficult retrofits. Such an approach properly apportions efficiency requirements and initial product cost with operating expenses as well as provide relief for some or all of the more expensive retrofits.

Thank you again for the opportunity to share our concerns.

Sincerely,

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