July 10, 2015

U.S. Department of Energy
Building Technologies Program
Via email: ResFurnaces2014STD0031@ee.doe.gov

RE: Notice of Proposed Rulemaking for Energy Conservation Standards for Residential Furnaces; docket number EERE-2014–BT–STD–0031

This letter provides comments on behalf of the Natural Resources Defense Council regarding the Department of Energy's (DOE's) Notice of Proposed Rulemaking (NOPR) for Energy Conservation Standards for Residential Furnaces. 80 FR 13119 (March 12, 2015). We appreciate the opportunity to provide input.

NRDC is a national, non-profit environmental organization with more than 1.4 million members and activists. Since 1970, our lawyers, scientists, and other environmental specialist have worked to protect the world's natural resources, public health, and the environment. NRDC's top institutional priorities include curbing global warming and creating a clean energy future. NRDC has long advocated for energy efficiency as a critical component in meeting our energy demands and climate goals, now and in the future.

NRDC has a long history of involvement in setting standards. NRDC has spent decades working to build and improve the Department of Energy's ("DOE") federal appliance standards programs because of the important energy, environmental, and consumer benefits of appliance efficiency standards. NRDC participated in the enactment of the first federal legislation establishing efficiency standards and has been active in all significant rulemakings since then.

I. Introduction

An updated energy efficiency standard for residential gas furnaces is urgently needed. Manufacturers have delivered great technology improvements since the standard was last significantly updated in 1987 (most notably with the development of very high efficiency, economic condensing furnaces which capture 95% or more of the energy available from combustion). At the same time, long-standing impediments to energy efficiency remain, including bounded rationality in consumer choice, and split incentives between renters and owners or between homeowners and builders.[1] A strong, updated standard is an essential complement to the suite of policy tools for residential energy efficiency, which includes product labeling (e.g., ENERGY STAR), utility energy efficiency programs, and federal tax credits.

[1] There is ample evidence and underlying theory that many homeowners focus on first-costs and ignore or discount the life-cycle savings from more efficient products. *See, e.g.,* Sanstad and Howarth, *Consumer Rationality and Energy Efficiency, available at* http://aceee.org/files/proceedings/1994/data/papers/SS94_Panel1_Paper21.pdf; *Lee. S. Friedman, "Bounded Rationality versus Standard Utility Maximization: A Test of Energy Price Responsiveness,"* pp. 138-172 in Judgments, Decisions, and Public Policy, Cambridge University Press, 2002, available at https://gspp.berkeley.edu/assets/uploads/research/pdf/brsec3.pdf The July 9, 2015 Gas Technology Institute Report on the furnace NOPR appears to suggest that DOE should have assumed a greater level of optimal economic decisionmaking by customers. But the real world data on which DOE based the NOPR shows that many purchasers do not make the most economic decision. Likewise, the literature on market barriers, like split incentives and bounded rationality, explains why this occurs. GTI provides no basis on which to assume that future customers will be different.

Under federal law, DOE is charged with establishing energy efficiency standards for appliances and other products that are set at the highest level that is technologically feasible and economically justified, and with updating those standards. 42 U.S.C. § 6295. Congress first established furnace efficiency standards in 1987, and directed DOE to strengthen these standards twice – first by 1994, and second by 2007. 42 U.S.C. § 6295(f)(4). Yet today, despite several efforts by DOE, furnace efficiency standards are still at much the same level as they were back in 1987.[2] In the NOPR, DOE has proposed a standard based on rigorous analysis and extensive public input. That standard will deliver great consumer and environmental benefits: DOE estimates it will save consumers about $20 billion dollars, and reduce carbon pollution by more than 300 Mt CO_2-eq for purchases made over a thirty-year period. This is equivalent to the emissions from 63 million passenger vehicles for one year.[3]

We believe the proposed rule meets the statutory criteria and is well justified by DOE's analysis. But we nonetheless recommend a number of important and substantial changes to further improve the final standard. Working closely with utilities, manufacturers, installers, consumer advocates and other stakeholders, NRDC has identified some enhancements to the *proposed standard* in the NOPR that will deliver even greater consumer and environmental benefits. We have also identified some enhancements to the *analyses* in the NOPR to more accurately reflect the consumer, environmental, manufacturer and energy impacts of various standards options and facilitate selection of the most beneficial standards.

In brief, we urge DOE to make the following revisions to the Final Rulemaking:

1) **Adopt a 95% Annual Fuel Utilization Efficiency (AFUE) condensing standard that covers the substantial majority of furnaces manufactured;**

2) **Adopt an 80% AFUE standard for furnaces below a specified maximum capacity threshold;**

3) **Set the capacity threshold low enough that the national energy, economic, and environmental benefits are largely preserved while allowing consumers in small and moderately-sized, well insulated and weatherized homes in moderate and warm climates to have a non-condensing option;**

4) **Enhance the NOPR analyses** in the following areas:
   a. Apply learning curve to installation costs that are likely to decline, particularly for homes with relatively challenging conditions for which there has been relatively little market experience and learning to date;
   b. Evaluate and publish the distribution of consumer, environmental, energy savings and manufacturer impacts as a function of furnace capacity;
   c. Include the *benefits* to manufacturers of electric heating equipment in the industry impact analysis;
   d. Revisit the source energy factor for electricity to facilitate a more meaningful assessment of the net energy impact of fuel switching to electricity
   e. Extend the analysis of impacts on low income households, including the significance of the mix of renters and owners (e.g., with the latter not directly exposed to installation costs);
   f. Qualitatively explore the opportunity for gas utility energy efficiency programs to deliver consumer and energy savings, particularly if a capacity-differentiated standard is adopted.
   g. Consider additional standby and off-mode opportunities;

These are discussed in more detail below.

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[2] For a summary of the long history of DOE natural gas furnace efficiency standards and the considerable efforts amongst some stakeholders to seek consensus on standards, see:
http://switchboard.nrdc.org/blogs/kkennedy/getting_to_yes_on_efficiency_h.html and
http://switchboard.nrdc.org/blogs/kkennedy/the_us_department_of_energy_re.html

[3] http://www.epa.gov/cleanenergy/energy-resources/calculator.html#results

II. DOE Should Adopt a 95% AFUE Condensing Standard that Covers the Substantial Majority of Furnace Sales

While DOE notes that it strongly considered a 95% AFUE standard (80 FR 13119), the Secretary tentatively concluded that the potential negative impacts on manufacturers would outweigh the consumer, environmental and energy-saving benefits relative to 92% AFUE. Balancing these considerations is essential to good policy outcomes, and is required under NAECA. (42 U.S. Code § 6295 (o).)

In this case, the benefits of a 95% AFUE standard to customers and the environment are so disproportionate to the manufacture impacts that it would be unreasonable for DOE to set the standard at a 92% AFUE standard. Relative to 92% AFUE, the NOPR analysis indicates that a national 95% AFUE would deliver 32% greater consumer savings (totaling over $20 billion at a 3% discount rate); nearly 50% greater energy savings; and 44% greater reduction in carbon pollution (totaling over 300 Mt CO_2eq). Absent a 95% AFUE standard, there does not appear to be any way to recoup these potential benefits. The manufacturer impacts from a 95% AFUE standard pale in comparison. *Even under the worst-case manufacturer earnings scenario* in the NOPR for a national 95% AFUE standard rather than a 92% standard, the consumer benefits exceed the reduction in manufacturer value by more than an order of magnitude (i.e., $5.0 billion of additional consumer savings foregone in exchange for preserving $0.2 billion in manufacturers' net present value; that's an extraordinary ratio of worse than 20:1, with consumers losing a lot to save manufacturers a little). In the best-case manufacturer impact scenario, manufacturer value increases with a 95% AFUE standard. The most likely value may lie somewhere in between.

We recognize the importance of a vibrant, profitable manufacturing industry, appreciate the technology contributions that manufacturers have made and continue to deliver, and share the view that careful consideration of manufacturer impacts is essential. But it would be unreasonable for DOE to forgo the overwhelming consumer benefits simply to avoid a comparatively small manufacturer impact. Surely there's a better way to preserve manufacturer value. Similarly, the present value of reduced CO2-eq emissions is $1.9 billion higher with a 95% AFUE standard compared to 92%; that's a large multiple of the *worst-case* reduction in manufacturer value of $0.2 billion.

We propose two simple enhancements to the NOPR that both strongly indicate that a 95% AFUE standard should be adopted rather than a 92% standard. If the Secretary's balancing was even remotely close under the assumptions, analysis and standards policy presented in the NOPR, then a 95% AFUE should be clearly more attractive when these two enhancements are considered.

The two major enhancements to the NOPR that further shift the balance from 92% AFUE toward 95% AFUE are:

- *Reduce the impact on manufacturers by allowing the continued production and sale of 80% AFUE furnace below a reasonable capacity threshold.* As discussed below, limiting the condensing standard to a larger size class would allow the continued production of 80% AFUE furnaces to serve some households. This would reduce the need for manufacturers to retool their entire manufacturing capacity. It would also let manufacturers continue to differentiate their products and win higher markups and earnings, increasing the probability that the more optimistic manufacturer impact estimate will attain.

- *Benefits to manufacturers of* ***electric*** *heating equipment are overlooked in the NOPR industry impact analysis, and including them would indicate lower impacts.* As discussed below, the NOPR apparently only evaluates the benefits and costs to industry from the manufacture of gas furnaces. That misses all the gains that the industry will see from manufacture of electric heaters (both heat pumps and electric furnaces). With an estimated reduction in gas furnace sales of around 9% resulting from a switch to electric heating, these wins for electric heater manufacturing matter. The major manufacturers of gas furnaces are also

major manufacturers of electric heating products. An increase in electric heating sales will help offset gas furnace manufacturing losses. Those wins need to be included in the analysis of total manufacturing industry impacts. Furthermore, including sales of electric heating equipment in the manufacturer impact analysis is necessary since DOE has included the impact of this equipment in the lifecycle cost and national impact analysis. DOE cannot arbitrarily decide to count the impacts of switching to this equipment where it shows up as a cost to consumers and then not count the impacts when they show up as a benefit to manufacturers, especially when the manufacturers of the products are virtually one and the same.

III. Adopt an 80% AFUE standard for furnaces below a certain maximum capacity threshold

The proposed standard in the NOPR contemplates a single national standard for non-weatherized gas furnaces. As noted above, a national 95% AFUE standard provides very substantial overall consumer and environmental benefits, but there is a small minority of households that would not recoup their higher costs due to their lower than average heating needs and, in some cases, higher installation costs.

Adopting regional standards would be one valid approach that recognizes the differences in heating load across the country. NRDC and other stakeholders proposed a regional standard to DOE in a consensus agreement in 2009, which DOE adopted in 2011.[4] But a regional standard must divide along state lines and some border states include wide climatic differences; Philadelphia just doesn't have the same weather as Erie or Pittsburgh. And while a regional enforcement regime can be made to work well (as was developed through a consensus negotiation for the regional air-conditioner standard), it is a somewhat more complicated process than the ordinary compliance regime.

There is another, more effective way to differentiate homes and the furnaces they need. This is to adopt a 95% AFUE standard for standard size furnaces and to retain an 80% AFUE standard for smaller furnaces with lower heating capacities.

Consumers would win. A capacity-based standard would effectively distinguish between many households for which non-condensing furnaces are and are not the most economic choice at the moment. For example, a reasonably well insulated existing home in a moderate or warm climate has little heating load, and accordingly, relatively little savings opportunity in replacing a non-condensing furnace with a condensing unit. However, such homeowners could still face the higher equipment and installation costs that currently come with a condensing furnace in some instances. (We note that, as is discussed below, the NOPR analysis omits the latest technologies that are available to reduce installation costs for condensing furnaces.) These homes likely constitute a significant fraction of the approximately twenty percent of households which the NOPR estimates would have higher life cycle costs under a national 92% AFUE standard. Relative to the proposed standard in the NOPR, setting a non-condensing standard for smaller-capacity furnaces would likely deliver significant improvement to total consumer benefits. While size is not a perfect proxy for consumer life cycle costs, a standard that properly distinguishes small furnaces would address a significant portion of these concerns without compromising the significant savings for the majority of homes that require larger furnaces and for which higher efficiency furnaces are more cost effective.

Manufacturers would also win. Being able to keep making some 80% AFUE furnaces would mean that manufacturers would not have to retool as much. That's a plus. And wherever an 80% AFUE furnace below the capacity threshold could potentially meet a given home's heating needs, manufacturers would still have the opportunity to differentiate their products based on higher efficiency, and get higher margins.

[4] This standard was challenged in court and ultimately DOE agreed to vacate most aspects of the standard as part of a settlement of this litigation.

DOE enforcement would be simple. In contrast with a regional standard, and similar to a single national standard, a capacity-based standard would be easy to administer and enforce, and require neither significant changes to the current enforcement process nor additional requirements for equipment distributors and installers. Further, it would require no new legislation or new authorities.

Gas utilities and efficient installers would win. A capacity-based standard would also provide significant benefits for residential energy efficiency programs. For example, gas utility energy efficiency programs that deliver whole home performance improvements (e.g., duct and air sealing, insulation, etc.) would be big winners, particularly for the small subset of homes for which upgrading to a condensing furnace would be unusually expensive. Installers would be encouraged to install furnaces that are sized appropriately based on the industry standard heat load calculations and explore whole home performance measures that reduce heating requirements and thereby allow for continued application of a smaller non-condensing furnace. The net impact for many households would likely be lower costs and the same or better efficiency than simply moving to a condensing furnace.

Some additional analysis to adequately characterize the consumer, environmental, energy savings, and manufacturer impacts of a range of possible capacity thresholds would be helpful. Using its existing highly developed models, DOE could publish this through a subsequent Notice of Data Availability and invite additional stakeholder input, and should be able to do so promptly.

IV. Specify an appropriate capacity threshold for 80% AFUE

The prime objective in choosing a capacity threshold is to ensure that the standards require a high-efficiency condensing furnace for the majority of homes with the greatest heating load while allowing the homes with the lowest heating load, either because of their location in warm climate zones or their small size and appropriate weatherization, to continue to use the 80% AFUE furnaces where those are significantly more cost-effective. Encouraging utility efficiency programs that improve insulation and weatherization in new and existing homes, and reducing the risk and extent of negative impacts on manufacturers are both valuable secondary objectives.

Our initial assessment of a suitable threshold is 50 kbtu/h output capacity. That should cover many well-weatherized, moderate-size row houses, or well-insulated homes in a mild or warm climate, as well as multifamily housing. This will encourage and reward effective gas utility energy efficiency programs focusing on the whole home, and will greatly reduce the fraction of households that would have a net life cycle cost increase as a result of the standard, while still capturing the energy efficiency opportunity. As noted, it may be appropriate for DOE to publish data on the capacity threshold and seek additional comment on that question.

V. DOE Should Enhance and Improve the NOPR Analyses in the Following Ways

The NOPR analyses, which are already comprehensive, rigorous, and have benefited from extensive stakeholder input, can be further enhanced to more fully reflect the consumer, environmental, manufacturer and energy impacts of various standards options and facilitate selection of the most beneficial standards.

a) *Include lower-cost installation measures that are emerging for homes with relatively challenging conditions.*
The NOPR clearly and rigorously assesses the incremental installation costs of condensing furnaces. In some small fraction of homes, those installations can be unusually high. Two commonly cited examples are 1) certain row houses for which standard venting approaches are not available, and 2) cold-climate homes in which the furnace and water heater share a vent and in which the water heater will be "orphaned." These are important considerations and DOE does well to examine them carefully.

But DOE's assumptions regarding installation costs are overly negative, and should be revisited. For example, DOE has not adequately incorporated new technologies that can significantly reduce installation costs. Technical Support Document Appendix 8L describes one such new technology that has been developed by M&G DuraVent. This new technology is simply one example of the kind of innovation that occurs in response to new standards. Manufacturers and installers have an impressive track record of delivering such innovations when the need arises. DOE's detailed analysis shows that the DuraVent technology would greatly reduce, by nearly 9%, the fraction of row homes and condominiums that would face some net cost increase under a 95 AFUE standard. Further, the analysis shows that this new technology would deliver large average consumer savings for row homes and condominiums overall. That's great news, and completely consistent with the history of technology innovation.[5] But the NOPR omits this technology when estimating consumer impacts. The NOPR must be revised to consider this specific technology. More broadly, the NOPR, by keeping installation costs constant over time, implicitly assumes that manufacturers and installers have met their match, and won't deliver any new technologies that both earn them more money and save money for households with challenging installation costs. That assumption, which is implied but not openly stated in the NOPR, is unreasonably negative and inconsistent with the dynamism and creativity that market incentives have always delivered. This needs some enhancement.

Notably, DOE has recognized in this and several other rulemakings that *manufacturing* costs decline with experience once a new standard is implemented. Manufacturers innovate, making more earnings for themselves by serving their customers. DOE should apply the same analytic framework to installation costs. Given that homes with challenging conditions have generally not been fit with condensing furnaces, there is great room for innovation, and the only reasonable expectation is that innovation will rapidly grow once a condensing standard is established.

b) *Evaluate and publish the distribution of consumer, environmental, energy and manufacturer impacts as a function of furnace capacity.*
As discussed above, there is a strong case for adopting a standard with two efficiency levels based on a capacity threshold.

It is important to recognize that dividing furnaces into two product groups based on heating capacity is fundamentally different from dividing furnaces based on use of condensing or non-condensing technology. In the NOPR, DOE correctly indicated that there was no justification for creating two product categories based on whether a furnace uses condensing or non-condensing technology. As discussed further in section VI, the essential and only consumer utility of a furnace is to heat a home and both condensing and non-condensing furnaces serve this same function. Indeed, the fact that condensing and non-condensing furnaces provide the same function and compete to serve the same homes means that setting standards for each class separately would achieve virtually no change to the current market and achieve virtually no consumer or energy savings. Less efficient non-condensing furnaces would continue to out-compete condensing furnaces based on their lower first cost and notwithstanding the lifecycle savings available from condensing furnaces.

In contrast, separating furnaces based on capacity is reasonable because larger and smaller furnaces are distinct products that serve different homes. The customer utility in both cases is still home heating but smaller furnaces provide sufficient customer utility only for those homes with lower heating loads, whether due to excellent insulation or geographic location. Just as DOE differentiates lightbulbs that

[5] This engineering improvement and cost reduction will occur most rapidly in anticipation of improved furnace standards. If non-condensing furnaces remain on the market there will be dramatically lower incentive to solve installation challenges in row houses. The Gas Technology Institute's July 9, 2015 report mistakenly suggests that DOE should assume that the level of learning will be the same whether or not DOE issues stronger furnace standards.

produce different quantities of lumens, DOE can reasonably set separate standards for furnaces that provide different quantities of heat.

c) *Include the benefits to manufacturers of electric heating equipment in the industry impact analysis.*
As discussed above, the NOPR appears to include consideration of only that portion of heating equipment companies that manufacture gas furnaces. With an estimated reduction in gas furnace sales resulting from a switch to electric heating for 9% of households, there will be gains to electric heater manufacturing that somewhat offset gas furnace manufacturing losses. These gains must be included in the analysis of total manufacturing industry impacts to give a more accurate overall industry assessment and to achieve a consistent approach with the rest of the DOE analyses for this rulemaking.

d) *Revisit the assumed source energy factor for electricity.*
Given that the NOPR estimates that some households will switch from gas furnaces to electric heating under a national condensing standard, it is critical for DOE to adopt an appropriate 'source energy' factor to convert electric kWh consumption at a home into a meaningful energy equivalent at the source. Without this, we can't meaningfully assess the net energy savings that the standard will deliver. Importantly, the furnace standard is unusual in this regard, as most standards do not have such a large anticipated fuel-switching impact. We need to get this (reasonably) right.

The NOPR references the Energy Information Administration Annual Energy Outlook 2014 (EIA AEO 2014) in calculating a source energy factor for electricity. However, the source conversion factors that EIA adopts have serious deficiencies for the purpose of setting a product standard; they're simply not the right numbers to inform good standards decisions. There are three main shortcomings, all of which lead to an overstatement of electricity source energy when converting from kWh to Btus, and hence an understatement of the net energy savings of this standard.

First, as shown in Footnote 2 of Table A17 of AEO 2014, EIA has assumed that "Consumption at hydroelectric, geothermal, solar, and wind facilities is determined by using the fossil fuel equivalent of 9,716 Btu per kilowatthour." This EIA assumption is entirely inappropriate for this furnace NOPR, even if it is appropriate for the AEO. There is no meaningful physical basis for it; geothermal, wind, hydroelectric and solar facilities are not fossil fuels, and they do not require 9,716 Btu per kWh to generate. Given that a key objective in reducing energy use through the furnace standard is to address the risk of dangerous carbon pollution, a more suitable estimate of the source energy use of these renewable, non-emitting generation types is *zero* Btu/kWh. That revision alone would reduce the source conversion factor by some 15%, based on the current share of these renewable generators in the nation's electricity mix. Over the 50-year horizon of this NOPR, the mix of zero-emissions generation will increase, making the current EIA approach increasingly misleading for this purpose.

There's another problem with the NOPR source energy factor: it doesn't in any way account for marginal, rather than average generation source energy. A marginal factor is much more appropriate; our interest in this issue lies in the impact of the standard on the energy used by households that switch fuels. All of that switching happens 'at the margin.' What is at the margin in electricity generation over the next 50 years is almost entirely: a) very highly efficient combined cycle gas turbines, which have much lower energy consumption than the current average fleet of old and new generators in the nation's electricity mix; and b) renewable generation, for which a zero source energy factor is appropriate. Accounting for this marginal generation issue would reduce the source conversion factor by more than 50% from what DOE has assumed in the NOPR.

The impact of this assumption makes a big difference. What the NOPR shows as a 2.8 quad energy savings for a 92% AFUE national standard would more accurately be shown as over 5.0 quads of energy savings, if the 4.3 quads that are currently attributed to electric fuel switching were accounted for more sensibly.

We recognize that source energy accounting is a challenging and complex issue, and it won't be resolved fully within this rulemaking. We also recognize that DOE has considered some of these issues in other rulemakings.

However, at a minimum, given the large fuel-switching impact of the furnace standard, it is important for DOE to publish a range of net energy results reflecting marginal and renewable generation. The NOPR does something similar with discount rates, publishing total consumer life cycle cost savings at a discount rate of 3% and 7%. In this furnace standard, in which fuel switching plays such a large role, doing any less is counterproductive.

e) *Extend the analysis of low income household impacts, including the significance of the mix of renting and ownership (e.g., with the former not directly exposed to installation costs).*
At the April 13, 2015 public meeting on gas furnace standards DOE's consultants presented initial analysis of the characteristics of low income households including the mix of renters (with limited and indirect exposure to installed costs, although often responsible for paying utility bills), and the risk that they'd be exposed to high installed costs. The impact on low income households is of great interest. If a significant fraction of low-income households are renters rather than owners, the NOPR may over-estimate consumer costs.

f) *Qualitatively explore the opportunity for gas utility energy efficiency programs to deliver consumer and energy savings, particularly if a two-capacity standard is adopted.*

g) *Consider additional standby and off-mode opportunitie*s.
DOE indicates that it is technologically feasible to achieve much lower levels of standby and off-mode energy use by using a control relay to completely disconnect the brushless permanent magnet (BPM) motor and other controls when not in use. To address manufacturer concerns regarding potential product life impacts of taking this approach, DOE should assess whether this could be done in a smart manner to minimize the number of power cycles, for example by only disconnecting when the furnace has been inactive for more than 24 hrs. This would achieve the desired results during long periods of inactivity, such as summer, without cycling on and off during periods of regular activity. If the BPM motor and other controls were disconnected just 150 days per year using this smart disconnect strategy, combined with other strategies already considered by DOE, NRDC's calculations indicate the potential for roughly 50 kWh annual savings per unit. Multiplied by 50 million units, this equates to 2.5 billion kWh annual savings potential.

VI. DOE Appropriately Declined to Separate Product Classes Based on the Use of Condensing or Non-condensing Furnace Technology

DOE provides a cogent explanation of why, contrary to the suggestion made by suppliers of natural gas, gas furnaces should be subdivided into two product classes depending on whether condensing or non-condensing technology is used. As DOE explains in the NOPR, the consumer utility served is the heat provided by the furnace. The differences in installation between condensing and non-condensing furnaces (differences that will continue to shrink as technology improves) do not warrant creation of separate product classes. Manufacturers, consumer organizations and efficiency advocates have all agreed in prior rulemakings that both condensing and non-condensing furnaces provide the same utility – heating a home. See 76 Fed. Reg. at 67041.

The fact that condensing and non-condensing furnaces provide the same basic utility is further confirmed by the fact that furnaces utilizing these different venting systems compete in the market. As DOE recognizes, this common utility means that establishing separate product classes by furnace technology would limit the

maximum efficiency to the level of a non-condensing furnace. DOE correctly observes that this outcome would be contrary to the purpose of the Energy Policy Conservation Act. These effects are appropriately considered by DOE in determining whether to create two product classes. 42 U.S.C. § 6295(q)(1) (directing the Secretary, when deciding whether to create a separate product class, to "consider such factors as the utility to the consumer of such a feature, and *such other factors as the Secretary deems appropriate*") (emphasis added). Importantly, the other product classes that DOE has created did not entail similar practical effects because those have generally involved a specialty product that did not compete with the standard product under normal conditions.

Finally, Congress implicitly recognized that condensing and non-condensing furnaces should be retained as a single product category when it authorized DOE to set regional standards for furnaces. The 2007 amendment to the Energy Policy Conservation Act allows DOE to establish a higher condensing furnace standard in northern States. 42 U.S.C. § 6295(o)(6)(B)(ii). When it adopted this provision, Congress by necessity understood that the product class would include condensing and non-condensing furnaces because there would be no need for a regional standard authority if the statute required that non-condensing furnaces be treated separately and be available in all States. The legislative history further confirms this understanding.[6]

VII. Conclusion

An update to energy efficiency standards for residential gas furnaces is urgently needed. DOE has proposed a standard with enormous benefits: consumer savings of about $20 billion, and reduced carbon pollution totaling over 300 Mt CO_2-eq. In these comments, we have proposed some straight-forward enhancements to the NOPR that would deliver even greater savings to consumers, benefit manufacturers and utilities, and retain the energy efficiency and environmental gains. We have also proposed enhancements to DOE's rigorous and comprehensive analysis, to even more accurately reflect the consumer, environmental, manufacturer and energy impacts, and facilitate selection of the most beneficial standards.

Thank you for considering these comments, and let us know if we can help in any way, at any time. We would be glad to provide further information or answer any questions.

Respectfully submitted,

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[6] See *Energy Efficiency Promotion Act of 2007: Hearing on S. 1115 Before the S. Comm. on Energy and Nat'l Res.*, 110th Cong. 91 (2007) (statement of William Prindle, Acting Exec. Dir., Am. Council for an Energy-Efficient Econ.). *115 Hearing*, *supra* note **Error! Bookmark not defined.**, at 49 (William Prindle, Acting Exec. Dir., Am. Council for an Energy-Efficient Econ.).