

Before the
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
UNITED STATES DEPARTMENT OF ENERGY
WASHINGTON, D.C.

COMMENTS OF
THE AMERICAN GAS ASSOCIATION,
THE AMERICAN PUBLIC GAS ASSOCIATION,
SPIRE INC., AND SPIRE MISSOURI INC.

In response to the Request for Information Entitled
Energy Conservation Program: Energy Conservation Standards for Consumer
Boilers

86 Fed. Reg. 15804 (March 25, 2021)
Docket No. [EERE-2019-BT-STD-0036](#)
RIN 1904-AE82

May 26, 2021

I. Introduction

The American Gas Association, the American Public Gas Association, Spire Inc., and Spire Missouri Inc. (collectively “Commenters”) appreciate the opportunity to comment on the above-captioned request for information concerning energy conservation standards for consumer boilers (the “RFI”).

The American Gas Association (“AGA”), founded in 1918, represents more than 200 local energy companies that deliver clean natural gas throughout the United States. There are more than 76 million residential, commercial, and industrial natural gas customers in the U.S., of which 95 percent — more than 72 million customers — receive their gas from AGA members. AGA is an advocate for natural gas utility companies and their customers and provides a broad range of programs and services for member natural gas pipelines, marketers, gatherers, international natural gas companies, and industry associates. Today, natural gas meets more than 30 percent of the United States’ energy needs.

The American Public Gas Association (“APGA”) is the trade association for approximately 1,000 communities across the U.S. that own and operate their retail natural gas distribution entities. They include municipal gas distribution systems, public utility districts, county districts, and other public agencies, all locally accountable to the citizens they serve. Public gas systems provide safe, reliable, and affordable energy to their customers and support their communities by delivering fuel to be used for cooking, clothes drying, and space and water heating, as well as for various commercial and industrial applications.

Spire Inc. and Spire Missouri Inc. (collectively “Spire”) are in the natural gas utility business. Spire Inc. owns and operates natural gas utilities that distribute natural gas to over 1.7 million residential, commercial, and institutional customers across Missouri, Alabama, and Mississippi, and Spire Missouri Inc. is the largest natural gas utility serving residential, commercial, and institutional customers in Missouri.

Natural gas utilities are critical stakeholders in rulemakings concerning standards for products (such as consumer boilers) that use natural gas and support energy efficiency, including cost effective efficiency improvements, for natural gas products. Commenters are guided by the congressional mandate that appliance efficiency standards should not impose unjustified costs on consumers or deprive consumers of natural gas products that are suitable for their needs. Such standards are not authorized by statute and would be harmful to natural gas utilities and the consumers they serve.

II. Comments

A. More stringent standards do not appear to be economically justified.

When the Department of Energy (“DOE”) amended its standards for consumer boilers in 2016,¹ it determined that more stringent standards were not economically justified. The analysis underlying that conclusion projected that consumers would be paying significantly higher natural gas prices by the time new standards took effect. That price projection was wrong. DOE’s conclusion that more stringent standards were not economically justified in 2016 was therefore based on an analysis that significantly overstated the economic benefits such standards could provide. Because current natural gas pricing information indicates that consumers receive far less value from efficiency improvements than DOE had assumed, standards that were determined to be economically unjustified in 2016 would be even less economically justified now.

1. Natural Gas Price Trends.

DOE’s 2016 analysis relied on Energy Information Administration (“EIA”) information to estimate residential gas prices for 2013 and develop an energy price “factor” as a multiplier to project gas prices in subsequent years. The following discussion of DOE’s natural gas price projections was provided on Page 8-26 of its Final Rule Technical Support Document:

¹ Department of Energy, *Energy Conservation Program: Energy Conservation Standards for Residential Boilers*, Final Rule, 81 Fed. Reg. 2319 (Jan. 15, 2016).

Energy Price Trends

To arrive at prices in future years, DOE multiplied the prices described in the preceding section by the forecasts of annual average price changes in EIA's *AEO 2015*. Figure 8.2.3 shows the national residential energy price factor trends. To estimate the trend after 2040, DOE used the average rate of change during 2030–2040. DOE applied the projected energy price for each of the nine census divisions to each building in the sample based on the building's location. Appendix 8D includes more details.

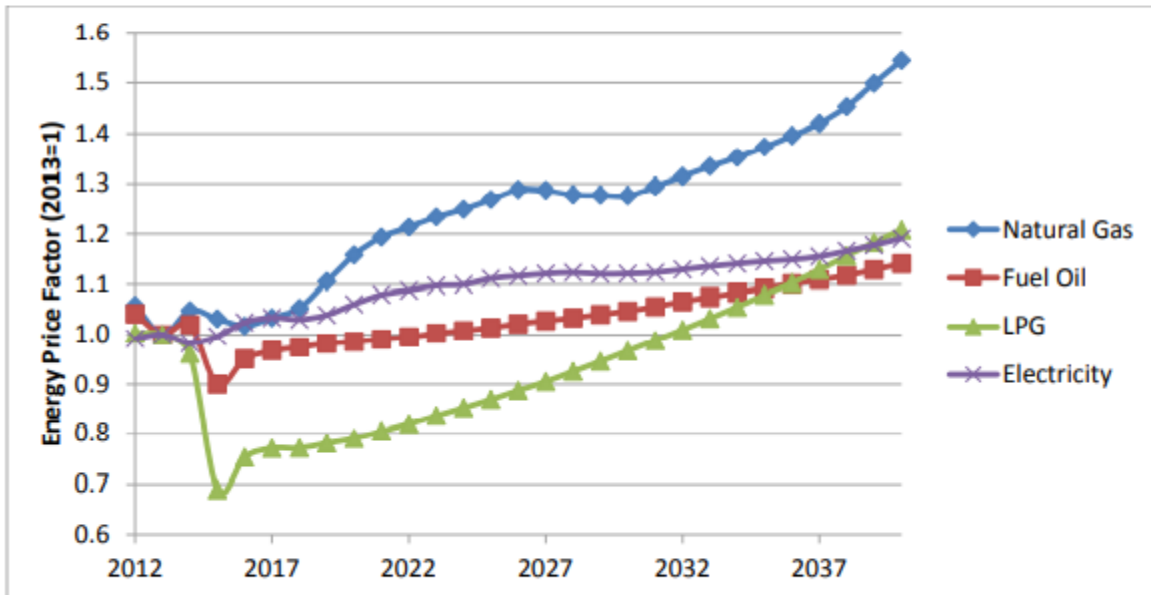


Figure 8.2.3 Projected National Commercial Energy Price Factors, AEO 2015 (Reference Case)

According to the figure above, DOE projected that the price of natural gas in 2020 would be approximately 16% higher than the 2013 price and that the price in 2025 would be nearly 30% higher than the 2013 price.

EIA data is now available to show the actual trend in the residential price of natural gas from 2013 through 2020.² That data indicates that the average residential natural gas price was \$10.32 per thousand cubic feet of natural gas in 2013 and \$10.84 in 2020. According to those figures, the price of natural gas in 2020 was only about 5% higher than it was in 2013, not 16% higher as DOE had projected. The EIA Annual Energy Outlook 2021 (“AEO2021”) price forecast is also available now, and that information does not project the additional substantial increase in gas prices that DOE predicted between 2020 and 2025; to the contrary, it suggests that the average residential price for natural gas will be only one penny per million BTUs higher in 2025 than it was in 2020, a total increase of only about 5% over 2013 prices rather than the nearly 30% increase DOE’s 2016 analysis projected.³

² [U.S. Price of Natural Gas Delivered to Residential Consumers \(Dollars per Thousand Cubic Feet\) \(eia.gov\)](https://www.eia.gov/priceindex/naturalgas/residential/)

³ [U.S. Energy Information Administration - EIA - Independent Statistics and Analysis](https://www.eia.gov/energyinformationadministration/)

In short, the analysis supporting DOE's 2016 determination that more stringent standards for consumer boilers were not economically justified had substantially overestimated future gas price increases and thus substantially overestimated the economic value that efficiency benefits would provide to consumers.

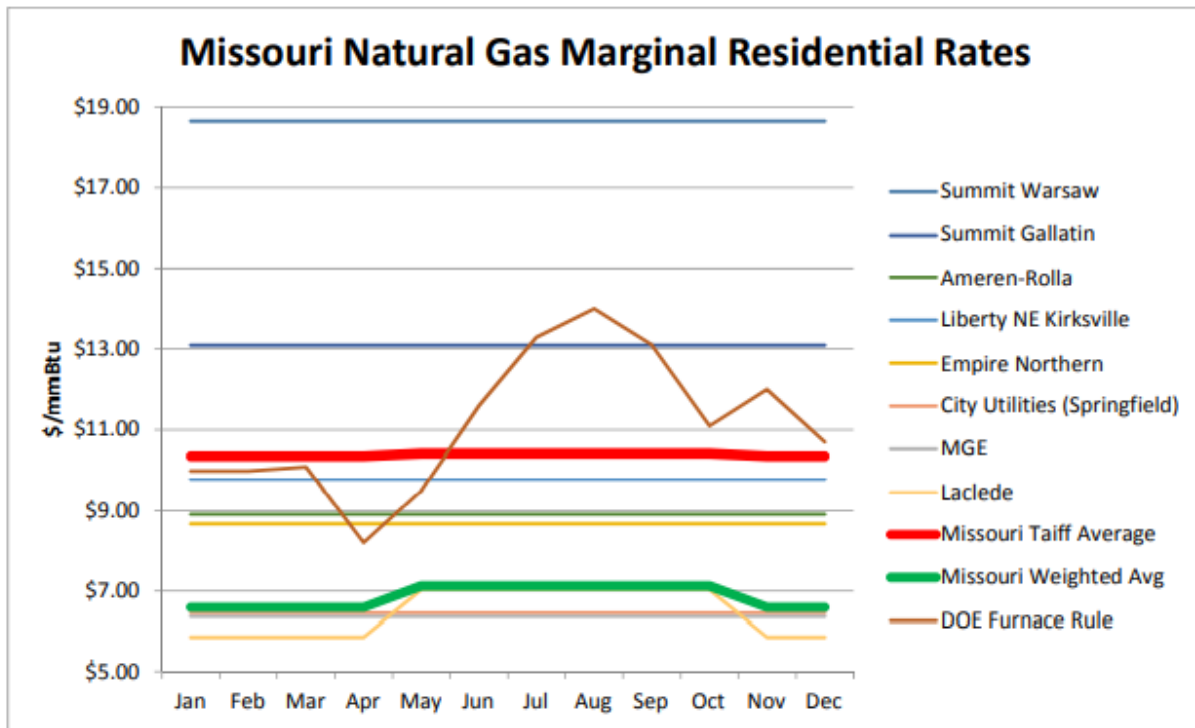
2. Marginal Residential Natural Gas Prices.

In addition to overestimating future gas price increases, DOE's 2016 analysis appears to have dramatically overstated the baseline 2013 gas prices that provided the starting point for future price projections. The critical error was in the methodology used to estimate the marginal energy prices consumers actually pay for natural gas, *i.e.*, the prices that determine the utility bill savings efficiency improvements would provide for consumers.

DOE's analysis started with information on average residential natural gas prices and somehow used that information as a basis to estimate the substantially lower marginal residential natural gas prices needed to determine the impact that incremental gas savings would have on consumer utility bills. Commenters are not aware of any reasonable way to quantify marginal prices based on average prices, and the methodology DOE used in the 2016 analysis was not described in sufficient detail to suggest that DOE found a solution to that problem. DOE did provide a table identifying the "marginal" gas prices used in its analysis, and that information suggests that DOE overestimated marginal residential gas prices by a substantial margin.

For purposes of its comments in the contemporaneous residential furnace rulemaking, Spire Inc. did what it has repeatedly urged DOE to do: it collected actual residential marginal price data (which is readily available on utility and utility commission web sites) for the State of Missouri. That information was submitted in the form of the following figure:

Figure 9



The heavy green line – representing the weighted average marginal residential price for Missouri – shows a twelve-month average marginal price of less than \$7.00 per mm/BTU. According to Table 8.2.14, p. 8-25 of the Final Rule Technical Support Document for the 2016 rule, DOE’s estimated marginal rates for Missouri (in dollars per MMBtu) were as follows:

J	F	M	A	M	J	J	A	S	O	N	D
8.93	8.94	9.07	7.18	8.32	10.29	11.80	12.48	11.63	9.83	10.82	9.52

These numbers yield an estimated average of \$9.90 as compared to the average of less than \$7.00 based on actual marginal rate information; an error that – by itself – caused DOE’s analysis to overstate consumer utility bill savings by roughly 40%. As already indicated, this error was compounded by DOE’s use of projected price increases that were about 15% higher than those that actually occurred up to 2020 and about 25% higher than those that can be expected to occur between 2020 and 2025 based on current (AEO2021) projections.

Because DOE’s 2016 determination was based upon an analysis that so substantially overstated natural gas prices – and thus the economic benefit that such standards would provide consumers – it is extremely unlikely that new standards could be determined to be economically justified based on current natural gas pricing information.

B. DOE may not adopt standards that would make atmospherically vented boilers unavailable.

As DOE recognized in its final interpretive rule issued on January 15, 2021 (the “Interpretive Rule”),⁴ standards that could only be satisfied by products using condensing combustion technology would effectively make atmospherically vented gas products unavailable, a result that would have the unlawful effect of leaving many consumers without the type of products their homes were designed to accommodate. That Interpretive Rule formally interpreted the Energy Policy and Conservation Act of 1975, as amended (“EPCA”), as follows:

DOE interprets the statute to preclude the adoption of energy conservation standards that would limit the market to natural gas, propane gas, and/or oil-fired furnaces, water heaters, or similarly-situated covered products/equipment (where permitted by EPCA) that use condensing combustion technology, as that would result in the unavailability of a performance related feature within the meaning of 42 U.S.C. 6295(o)(4) and 42 U.S.C. 6313(a)(6)(B)(iii)(II)(aa) (and as applicable in certain cases through 42 U.S.C. 6316(a)). Stated differently, DOE has determined that non-condensing technology (and associated venting) constitutes a performance-related “feature” for such appliances covered under EPCA.⁵

Thus, DOE concluded that standards effectively banning atmospherically vented gas appliances, such as residential furnaces, would result in the unavailability of performance related features in violation of EPCA. That conclusion is correct as a matter of fact and statutory interpretation, as explained in detail in comments submitted in the record underlying the Interpretive Rule and incorporated as a part of these comments as Attachments A-C.⁶ The issues with respect to consumer boilers are not materially different than they are in the case of residential furnaces, and the relevant legal principle is disarmingly simple: where it has been shown that buildings are architecturally designed to accommodate products with some characteristics but not others, DOE must preserve the availability of products with those characteristics instead of imposing standards that would require modification of the buildings designed for them.⁷ As is true in the case of residential furnaces, consumer boiler standards that can be achieved only by condensing products would unquestionably violate that principle.⁸

C. Separate Product Classes and Related Issues.

The RFI requests comment on a number of enumerated issues, including issues with respect to separate product classes and related matters. As explained below, the analysis provided in Section B of these comments is relevant to – and in some respects dispositive of – several of those issues.

⁴ 86 Fed. Reg. 4776 (January 15, 2021).

⁵ 86 Fed. Reg. at 4816.

⁶ Attachments A-C are identified in the docket as documents EERE-2018-BT-STD-0018-0044 (and its attachments), EERE-2018-BT-STD-0018-0080, and EERE-2018-BT-STD-0018-0063, respectively.

⁷ See Attachment B at 10-12.

⁸ See Attachment C at p. 4 (explaining the basic technical issues) and Attachment A at pp. 3-5 and 7-10 and Attachment B at pp. 10-12 and 20-23 (explaining the relevant practical issues).

Issues 1 and 2 present the question of whether changes to the current consumer boiler product classes should be made and requests information as to the differences between consumer boilers that use condensing technology and those that do not, including whether any changes in product classes would impact product utility or result in the unavailability of important performance-related features.

To address the technical question first, the issues with respect to the differences between condensing and non-condensing products are not materially different in the case of consumer boilers than they are in the case of residential furnaces: many existing buildings were designed to accommodate atmospherically-vented consumer boilers and standards that could be achieved only by condensing products would result in the unavailability of products that could be installed without the need to modify such buildings.⁹ Accordingly, consumer boilers are “similarly-situated” appliances for purposes of DOE’s Interpretive Rule and DOE’s conclusion that standards that only condensing products can achieve would result in the unavailability of an important performance related feature within the meaning of 42 U.S.C. § 6295(o)(4) is applicable in the case of consumer boilers. This conclusion is correct on the merits, as already discussed in Section B of these comments. As to the issue of separate product classes, the implications of this conclusion are as follows.

DOE cannot subject the existing product classes of gas-fired consumer boilers to standards that could only be achieved by condensing products. Whether additional product classes are necessary depends on whether more stringent standards would be justified for a subset of the products covered by any of the existing product classes. If, for example, higher minimum efficiency standards would be justified for the condensing products in a particular existing product class, a separate product class (and more stringent standard) could be specified for the condensing products in that pre-existing class while the remaining products in that class remain subject to less stringent standards.¹⁰ From a drafting standpoint, the most logical structural approach would be to divide the existing product class into two separate classes by specifying standard “a” (the new standard) for the condensing products in the pre-existing class and a separate standard “b” (presumably the existing standard) for all other products in the pre-existing product class. From the standpoint of terminology, the “condensing products” category could most precisely be denominated as “products requiring Category IV venting as defined by the National Fuel Gas Code” or as “power vented” products (with a clear preamble explanation that the latter term is short-hand for the same range of products). This approach would ensure that the scope of the two new product classes (each a subset of the original class) is clear and that the new standard is applicable – as required by law – only to the range of products for which it was technically and economically justified. This approach would also preserve the availability of consumer boilers compatible with existing venting systems built into many of the existing buildings in which such products are installed, as required by 42 U.S.C. § 6295(o)(4).

Issues 15-17 raise questions with respect to the costs associated with building modifications required to replace existing atmospherically vented consumer boilers with condensing boilers. For

⁹ The technical issues and practical impacts are described in Section B of these comments and detailed in the attachments cited therein.

¹⁰ Presumably the currently existing standards. For the reasons discussed in Section A of these comments, it seems clear that more stringent standards for such products would not be economically justified.

several reasons, those issues are extremely difficult to address. The cost of required modifications depend on a wide range of site-specific considerations that are difficult to assess generically, and there are many cases in which such modifications would be undesirable, impractical, or effectively precluded (*e.g.*, by code, restrictive covenant, or impacts on neighboring properties). Because replacements generally do not occur in such cases, neither their frequency nor the often disproportionately high costs they would impose are captured in existing market data. Such data overwhelmingly relates to installations with costs that were acceptable to the purchaser and would thus substantially understate the costs consumers would face if the need for building modifications was imposed.¹¹

More importantly, there appears to be little point in collecting such data, because – as already discussed – DOE may not impose standards that would effectively require purchasers to modify their existing buildings to accommodate products for which those buildings were not designed. As explained in detail in Attachment B at pp. 9-13 and 19-23, out-of-pocket costs do not account for the collateral impacts of the building modifications such standards would require, and 42 U.S.C. § 6295(o)(4) was intended to preclude the adoption of standards that would impose collateral impacts of that kind. The suggestion that this statutory protection for consumers can be disregarded in the case of standards that can be economically justified must be rejected because it would impermissibly nullify an express statutory constraint on DOE’s authority.¹² Accordingly, information concerning the cost of the building modifications that would be required if standards made atmospherically vented consumer boilers unavailable should not be relevant in this proceeding.

D. DOE should address systemic problems with its economic analysis of standards before proposing any new standards.

Commenters believe that DOE must make significant improvements in data collection and analytical practices employed in standards rulemaking. A number of these issues were raised in comments provided for purposes of a peer review of DOE’s analytical methods for standards rulemaking, a copy of which is provided as Attachment D and incorporated as a part of these comments. Commenters particularly urge DOE to address the issues identified below.

1. Natural Gas Pricing.

As discussed in Section A of these comments, DOE’s methodology with respect to natural gas pricing has been problematic both with regard to the determination of marginal natural gas prices and the projection of gas price trends, with the result in both cases being a substantial overestimate of the economic benefits consumers can expect to see as a result of efficiency improvements. There are straight-forward improvements that DOE can and should implement immediately.

First, the AEO forecasts on which DOE has relied have overstated future natural gas prices for many years. While the magnitude of the error in these forecasts has been decreasing in recent years, the fact remains that the AEO forecasts – for whatever reason – systematically overstate

¹¹ These issues are discussed in detail in Attachment A at pp. 4-6 and Attachment B at pp. 20-23.

¹² See Attachment A at p. 5 & n. 19 and Attachment B at pp. 11-12.

future natural gas prices. In response to this information – if DOE continues to rely on the AEO forecasts – it should ensure that it:

- Uses the most recent (and thus more credible) available forecast; and
- Review the magnitude of the known error in prior forecasts and adjust the most recent forecasts downward to reasonably account for the extent to which – based on prior experience – they can be expected to overstate future gas prices.

This would be essentially the opposite of DOE’s current approach, which appears to have the effect of adjusting the most recent AEO price projections *upward*.¹³ The latter approach is unjustified and should be abandoned entirely because it has the effect of compounding rather than compensating for the systematic error in the AEO forecasts.

Second, DOE must improve its approach to determining marginal natural gas prices. DOE’s current approach appears to assume some relationship between other price information and marginal price information that does not exist and appears to produce results that very substantially overstate the economic benefits that efficiency improvements would provide for consumers. The solution is for DOE to simply do what Spire did for the State of Missouri: determine marginal natural gas prices by collecting information on actual marginal gas prices.

2. Baseline Efficiency Assignment.

DOE cannot determine the economic impact of standards for consumer boilers without developing a base case for analysis that reflects the impacts of actual purchasing behavior. Where a standard would require efficiency improvements that would provide substantial economic benefits in some cases but impose net costs in others, the economic impact of the standard necessarily depends on the extent to which product purchases made in the absence of the standard reflect a statistically significant preference for economically beneficial efficiency investments or aversion to net cost efficiency investments. As explained in Attachment D, DOE’s current analytical approach effectively ignores this fact by assigning baseline efficiencies randomly, as though purchasers never consider the economic consequences of their purchasing decisions regardless of the magnitude of the economic stakes involved, and that facially absurd assumption dramatically overstates the potential for standards to provide economic benefits for consumers and understates their potential to cause economic harm.¹⁴

To correct its analytical approach, DOE should identify and determine the impact of relevant market failures and ensure that the modeling conducted for purposes of lifecycle cost (“LCC”) and payback analyses is based upon a reasonable representation of baseline market conditions and purchasing behavior. In short, DOE’s modeling must assign base case efficiencies *appropriately* rather than randomly. At least two immediate corrections are warranted.

¹³ Specifically, DOE apparently averages years of previous AEO forecasts to produce a “price factor” that it uses to project gas prices forward. Because the magnitude of the error in these forecasts has been decreasing in recent years, this approach effectively “locks in” the effect of larger errors in earlier AEO forecasts, with the result that the DOE approach produces projected gas prices that are overstated to an even greater extent than the more recent AEO forecasts.

¹⁴ See Attachment D at pp. 6-8. These issues are also explained in Attachment A at pp. 11-12 and Attachment B at pp. 15-17.

First, DOE should recognize that standards are not needed to induce purchasers to choose more efficient products in cases in which those more efficient products would be the low-cost option in terms of initial investment (as can be the case in some installation scenarios). In such cases, the basic premise that efficiency standards would prevent purchasers deterred by higher initial costs from passing up economically beneficial efficiency investments does not even apply. Accordingly, all cases in which the higher-efficiency product is the low-cost option in terms of initial costs should be assigned to the base case rather than being assigned randomly as though such purchases might only occur as a result of new standards. The failure to make this simple correction could result in a massive overstatement of the economic benefits new standards would provide, as demonstrated by the results of DOE's 2016 analysis of proposed residential furnace standards.¹⁵

Second, DOE should recognize that the overall results of its LCC and payback analyses tend to be heavily influenced by a relatively small number of cases that have disproportionately large economic consequences and that these are exactly the kinds of cases in which purchasing decisions are most likely to depend upon economic considerations. Rather than ignoring these facts – as random base case efficiency assignment does – DOE should start with the obvious assumption that efficiency investments with very high economic benefits are disproportionately likely to be made in the absence of new standards and that investments with particularly negative economic consequences are disproportionately likely to be declined unless standards leave purchasers with no choice. As a practical approach, Commenters recommend that DOE start with the assumption that very favorable efficiency investments should be assigned to the base case and that very unfavorable outcomes should be treated as rule outcomes; in effect, this would assume perfect economic decision-making in the limited but critical subset of cases in which the economic consequences of the relevant efficiency investment would be greatest (and thus most obvious). DOE should then consider the nature and frequency of scenarios in which there is reason to believe that perfect economic decision-making would *not occur* and adjust the distribution of economic outcomes to the base and rule-outcome cases appropriately based on those considerations. This narrowly-tailored and relatively simple approach would be a vast improvement over DOE's current methodology for assignment of base case efficiencies and should be implemented immediately – at least as an interim solution – pending further consideration of the relevant issues.

3. LCC and Payback Analysis.

By statute, DOE must prepare and consider both “payback” and LCC analyses in determining whether standards are economically justified. Specifically, DOE must consider:

- Whether “the additional cost to the consumer of purchasing a product complying with an energy conservation standard level will be less than three times the value of the energy ... savings during the first year that the consumer will receive as a result of the standard” (*i.e.*, a payback analysis);¹⁶ and
- The “savings in operating costs throughout the estimated average life of the covered product ... compared to any increase in the price of, or in the initial charges for, or

¹⁵ See Attachment D at p. 8, n. 19.

¹⁶ 42 U.S.C. § 6295(o)(2)(B)(iii).

maintenance expenses of” the product “likely to result from the imposition of the standard” (*i.e.*, a life cycle cost analysis).¹⁷

The statutory language makes it clear that both types of analysis are designed to assess the economic justification of standards by comparing the cost of required efficiency improvements with the operating cost savings those efficiency improvements would provide. Unfortunately, DOE has approached the issue of fuel switching in a way that confounds such comparisons and makes required efficiency improvements appear to be more economically justifiable than they are. Specifically – as explained in Attachment D at pp. 8-10 – DOE’s fuel switching analysis skews its economic analysis of required efficiency improvements by selectively excluding net-cost efficiency investments from DOE’s LCC and payback analyses.

The premise of DOE’s fuel switching analysis is that the economics of required efficiency improvements can be ignored when a standard would make investments in regulated products so economically unreasonable that purchasers would choose to make more reasonable investments in alternative products instead. The result is purported LCC and payback analyses that reflect the costs and benefits of a mix of different products rather than a comparison of the costs and benefits of the required efficiency improvements. As explained in Attachment D at pp. 8-10 and Attachment B at pp. 13-15, this kind of analysis is inconsistent with the statutory objective of conserving energy through increased product efficiency and is contrary to clear statutory direction that standards be justified based on the energy savings that any required efficiency improvement would provide. In short, energy conservation standards must be designed to require economically justified improvements in the efficiency of regulated products, not to impose unjustified costs that would drive purchasers to alternative products. DOE’s fuel switching analysis is improper in that it actively undermines the former purpose for the apparent purpose of facilitating the latter.

Commenters urge DOE to recognize that the question for purposes of LCC and payback analyses is what the economics of a required efficiency improvement would be from the purchaser perspective, *not how purchasers would react in cases in which those economics are unattractive*. Accordingly, LCC and payback analyses should account for the economics of required efficiency improvements in all cases in which purchasers would decline to invest in such improvements in the absence of a standard. In other words – for purposes of LCC and payback analysis – DOE should account for the costs and benefits of required efficiency improvements in all “rule outcome” cases *with the assumption that the standard under consideration would have no adverse impact on product sales*.

* * *

Thank you for your review and consideration of these comments, and if you have any questions regarding this submission, please do not hesitate to contact us.

¹⁷ 42 U.S.C. § 6295(o)(2)(B)(i)(II).

Respectfully submitted,

Matthew J. Agen

Matthew J. Agen
Assistant General Counsel
American Gas Association
400 N. Capitol Street, NW
Washington, DC 20001

Stuart Saulters

Stuart Saulters
Vice President of Government Relations
American Public Gas Association
201 Massachusetts Avenue, NE, Suite C-4
Washington, DC 20002

Mark C. Darrell

Mark C. Darrell
Senior Vice President, Chief Legal &
Compliance Officer
Spire Inc.
700 Market Street, 6th Floor
St. Louis, Missouri 63101

Attachments:

- A. Comments of Petitioners and Associated Attachments for Docket No. EERE-2018-BT-STD-0018 (March 1, 2019)
- B. Comments of Petitioners for Docket No. EERE-2018-BT-STD-0018 (September 9, 2019)
- C. Petition for Rulemaking (October 18, 2018)
- D. Memorandum to Members of the Peer Review Committee from Barton Day (January 8, 2020)

Attachment A

Comments of Petitioners and Associated Attachments
for Docket No. EERE-2018-BT-STD-0018
(March 1, 2019)

**BEFORE THE
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
UNITED STATES DEPARTMENT OF ENERGY
WASHINGTON, D.C.**

**Energy Conservation Program:
Energy Conservation Standards for Residential
Furnaces and Commercial Water Heaters**

**Notice of Petition for Rulemaking
Docket No. EERE-2018-BT- STD-0018**

**Comments of Petitioners
Spire Inc.
The American Public Gas Association
The American Gas Association
The National Propane Gas Association
The Natural Gas Supply Association**

March 1, 2019

As signatories to the petition for rulemaking that is the subject of the above-referenced notice (the “Petition”), Spire Inc., the American Public Gas Association, The American Gas Association, the National Propane Gas Association and the Natural Gas Supply Association (collectively “Petitioners”) appreciate the U.S. Department of Energy’s prompt request for comment on the Petition and we are pleased to submit these comments and provide additional information concerning the Petition and the relief sought.

Prompt and favorable action on the Petition is warranted. The pending proposals in the commercial boiler and residential furnace rulemaking proceedings¹ are fatally defective, and it serves no useful purpose for them to remain pending during the time required for the Department of Energy (“DOE”) to develop new regulatory proposals. It would be more constructive and transparent for DOE to acknowledge the defect in the proposals by withdrawing them and simultaneously requesting comment to inform its preparation of revised regulatory analyses. This approach is particularly appropriate in view of the nature of the defect identified in the Petition, because:

- The legal conclusion that DOE may not impose standards that would effectively ban atmospherically-vented gas products involves a straight-forward issue of statutory interpretation that is amenable to immediate resolution; and
- Once rendered, that legal conclusion would require DOE to assess significantly different issues and regulatory options than DOE has analyzed in its existing regulatory analysis.

The requested legal determination would resolve one of the most controversial issues in both rulemaking proceedings and allow DOE to redirect its analysis as required while providing a clear explanation of why such a redirection is necessary. The pending proposals are the product of clear legal error, and DOE need not – and should not – wait until it has developed new proposed regulatory actions before correcting that error and soliciting comment to inform its further deliberations. Instead, DOE should take a constructive step forward by acknowledging the legal error underlying its existing proposals and soliciting comment on the issues it must address going forward (including the question of whether separate standards – and thus separate product classes – would be justified for condensing products).

Petitioners urge DOE to respond not just to its Petition, but to a pending March 14, 2017 request that the proposals at issue be reconsidered on the grounds that – due to a fundamental flaw in DOE’s modeling approach – the economic justifications for the proposed standards are invalid.² The systemic defect in DOE’s economic analysis provides a separate and independently-sufficient basis for withdrawal of the proposed rules at issue, and Petitioners urge DOE to withdraw its pending proposals on these grounds as well. Like the legal issue raised in the Petition:

¹ See Energy Conservation Standards for Residential Furnaces, Docket Number EERE-2014-BT-STD-031, RIN No. 1904-AD20 and Energy Conservation Standards for Commercial Water Heaters, Docket Number EERE-2014-BT-STD-042, RIN No. 1904-AD34.

² A copy of this request is provided as Attachment A to these comments.

- The issue involving DOE’s modeling is relatively straight-forward and amenable to immediate resolution; and
- Correction of the error involved will require a substantial revision of DOE’s existing regulatory analyses.

Again, there is no reason for DOE to wait until it has developed a revised modeling approach before acknowledging that its current approach is invalid and soliciting comment to inform its preparation of revised analyses. To the contrary, it would be far more constructive and transparent for DOE to acknowledge the defect in its modeling approach so that the public understands that the existing proposals have not been economically justified and that substantial revision of DOE’s regulatory analyses will be required before the pending rulemaking proceedings can be concluded. Petitioners therefore urge DOE to publicly acknowledge the defect in its modeling approach while simultaneously requesting comment on how its approach should be corrected going forward.

Petitioners respectfully submit that – in view of the legal and modeling defects referred to above – DOE is not in a position to take final action on its pending proposals and will need to prepare substantially revised analyses before it can bring these rulemaking proceedings to conclusion. However, DOE *can* take prompt action to resolve critical core issues – the legal issue, the modeling issue, or both – thereby making material progress in these rulemaking proceedings and facilitating a more efficient and orderly resolution of the remaining issues going forward. That is the outcome Petitioners seek.

Petitioners offer the following additional comment in support of such action.

A. DOE should also withdraw its pending commercial packaged boiler standards

Petitioners request that their Petition be considered to apply to DOE’s pending rulemaking regarding standards for commercial packaged boilers.³ The same legal and modeling issues that are fatal to the proposed standards for commercial water heaters and residential furnaces undermine the rulemaking regarding standards for commercial packaged boilers as well. However, the commercial packaged boiler rulemaking was more advanced (having reached the error correction stage) and there is currently litigation pending in the U.S. Court of Appeals for the Ninth Circuit over whether – notwithstanding a pending error correction request identifying the error in DOE’s modeling⁴ – DOE has a non-discretionary duty to publish the draft standards it posted for error correction as final.⁵ Assuming that DOE prevails in that litigation, Petitioners request that both the proposed standards and the draft standards posted for error correction in the

³ Energy Conservation Program: Energy Conservation Standards for Commercial Packaged Boilers; Docket Number EERE-2013-BT-STD-0030, RIN No. 1904-AD01.

⁴ A copy of Spire’s pending error correction request is provided as Attachment B to these comments.

⁵ *NRDC v. Perry*, No. 15380, 15475.

commercial boiler rulemaking be withdrawn for the same reasons the proposed standards for commercial water heaters and residential furnaces should be withdrawn.

B. The issues are clear and ripe for decision

As already mentioned, both the legal and modeling defects referred to in these comments are ripe for decision, and resolution of these defects would significantly clarify the relevant issues going forward.

1. The Legal Issue

As discussed in the Petition, DOE cannot lawfully adopt standards that would effectively eliminate gas products that are compatible with the conventional atmospheric venting systems built into many of the existing buildings in which gas products are installed. This issue has already been addressed at length in previous rounds of comments in the rulemaking proceedings at issue,⁶ and neither the facts nor the law have changed.

Standards achievable only through the use of condensing combustion technology would eliminate product features including compatibility with conventional atmospheric venting systems and the ability to operate without a plumbing connection. These features are required to allow many purchasers to replace their existing gas products without the need for substantial and often impractical building modifications.⁷ The unavailability of these features would pose serious problems, and Petitioners filed the Petition because these problems are serious enough that they would compel many consumers to replace their existing gas products with other (primarily electric) alternatives,⁸ and other parties are opposing the Petition for precisely the same reason.⁹

In view of the facts, the issue of legal interpretation is an easy one. It would be unreasonable to dismiss the importance of features required to make products compatible with existing buildings on the grounds that the buildings could be modified (and other existing gas products could be replaced) as necessary to permit the use of a new condensing product, and absurd to suggest that

⁶ See e.g., Spire’s January 6, 2017 comments in response to DOE’s notice entitled “Supplemental Notice of Proposed Rulemaking: Energy Conservation Program; Energy Conservation Standards for Residential Furnaces,” Document ID EERE-2014-BT-STD-0031-0309 (“Spire’s January 6, 2017 Residential Furnace Comments”) at pp. 1-4, 11-20, and 51-56.

⁷ In addition to extensive previous comment on this issue, see the Affidavit of George L. Welsch (“Welsch Affidavit”), provided as Attachment C to these Comments.

⁸ Spire’s January 6, 2017 Residential Furnace Comments at 1-4, 23-24.

⁹ Entities that manufacture electric heating products do not have business interests that would be served by improvements in the efficiency of gas products as such. Rather, their business interests would be served by standards for gas products that would cause consumers to choose electric products instead. The same is true of entities seeking to eliminate the use of natural gas and propane, because – from their perspective – a purchasing decision resulting in *no gas product* would be substantially preferable to any outcome resulting in a new gas product.

a statutory scheme designed to ensure the availability of refrigerators with side-mounted (as opposed to top-mounted) freezers¹⁰ would fail to ensure the availability of gas furnaces with features many consumers need to be able to use any gas furnace at all. There is no need for additional data to resolve the issues raised by the Petition, and there are no credible factual issues to be resolved. Suggestions to the contrary are in error, as discussed below.

a. Market research is unnecessary and unlikely to be useful

The Northwest Energy Efficiency Alliance (NEEA) filed a request for extension of the comment period in this proceeding, indicating that it is part of an advocacy group that has commissioned a market research study designed to:

address the prevailing belief in industry that requiring condensing technology for residential furnaces and commercial water heaters is cost prohibitive, due to some “difficult” installation scenarios driven by venting modification and condensate management requirements, especially in constrained spaces.¹¹

The request suggests that “[i]ndustry has not offered any data regarding the frequency or specific cost of these “difficult” installations.”¹² The suggestion that such data is necessary reflects a serious misapprehension of the issues relevant to the Petition: in short, the question raised by the Petition is not whether condensing standards would be *cost prohibitive*; it is whether condensing standards would result in the unavailability of desired product features. Moreover – even if economic justification were a relevant issue in this context – there are obvious reasons why market data is unlikely to be helpful in quantifying the frequency of relevant “installation scenarios” or the costs they would impose.

As a matter of engineering fact, non-condensing products are compatible with the existing atmospheric venting systems built into most of the existing buildings in which gas products are installed, and condensing products are not. As a result – in all cases in which an existing atmospherically-vented product is to be replaced – a condensing product cannot be installed in the place of the existing product in the way that a non-condensing product ordinarily could be.¹³ Instead of facing the installation costs required to install the type of product for which the building was designed, purchasers face the need to modify the building to accommodate a product with materially different features. There are many existing non-condensing furnaces being replaced every year, so this – by inspection – is a volume problem. It is true that the nature and extent of the building modifications required to replace a non-condensing furnace with a condensing furnace can vary considerably, but they are rarely insubstantial and the problems that justified separate product classes for “space constrained” appliances clearly pale by

¹⁰ See 42 U.S.C. § 6295(b)(1) (specifying separate product classes – and thus separate standards – for inherently less-efficient side-mounted freezers).

¹¹ Northwest Energy Efficiency Alliance request for extension of comment period (“NEEA Request”), document ID EERE-2018-BT-STD-0018-0009 in the docket for this proceeding.

¹² NEEA Request.

¹³ Welsch Affidavit at ¶¶ 9-14.

comparison.¹⁴ In many cases the required building modifications would impose the need for unwelcome changes in floor plans or sacrifices of currently-occupied space, and in many cases the required modifications would not be practical at all.¹⁵ While it is hard to say *exactly how common* each scenario is, it is clear that the issues are *common*. There are several common types of housing – such as high-rise apartments and condominiums, town homes and multi-story homes with centrally-located furnaces in finished basements – that present obvious challenges, and – due to the various combinations of factors that can prove problematic – there can be serious challenges in many other scenarios as well.¹⁶ These facts are sufficient to establish that the product features required to obviate these problems are desired by many consumers, and that by itself is sufficient to justify favorable action on the Petition.

It is true that more detailed information concerning the specific frequency of various problematic scenarios and the costs they impose would be needed for DOE to determine whether standards eliminating those features would be economically justified, but *that is not an issue relevant to the Petition*. The statutory provisions relevant to the Petition address the elimination of product features, not the economic justification of standards.¹⁷ Consequently, it does not matter whether the costs imposed by the unavailability of the relevant product features could be averaged away or otherwise economically justified. The statutory scheme is clear in this regard. The Environmental Policy and Conservation Act of 1974 (“EPCA”) provides separate product classes based on the difference in product features between wall furnaces and floor furnaces, and DOE could not impose standards making floor furnaces unavailable by characterizing the resulting loss of product features is a matter of “installation costs” to be addressed as an issue of economic justification rather than as a prohibited loss of available product features. Consumers who want floor furnaces cannot be required to settle for wall furnaces any more than consumers who want side-by-side refrigerator-freezers can be made to settle for refrigerators with top-mounted freezers instead. The same is true for consumers who want appliances small enough to fit in the space they have available for them and for consumers who want gas furnaces that can be put into their existing furnace closets and connected to their existing vent systems. There is no need for detailed data quantifying the costs that elimination of such gas furnaces would impose, because standards must *always be economically justified*¹⁸ and the statutory provisions protecting the availability of product features would be meaningless if they could be ignored on the grounds that standards eliminating product features would be economically justified.¹⁹

¹⁴ Welsch Affidavit at ¶ 13.

¹⁵ Welsch Affidavit at ¶¶ 11-14.

¹⁶ Welsch Affidavit at ¶ 14.

¹⁷ See 42 U.S.C. §§6295(o)(2) and 6313(a)(6)(B)(iii)(II).

¹⁸ See 42 U.S.C. §§6295(o)(4) and 6313(a)(6)(A)(ii)(II).

¹⁹ An agency obviously “may not construe [a] statute in a way that completely nullifies textually applicable provisions meant to limit its discretion.” *Whitman v. American Trucking Associations*, 531 U.S. 457, 485 (2001); see *Hearth Patio & Barbecue Association v. DOE*, 706 F.3d 499, 506 (D.C. Cir. 2013); *NRDC v. EPA*, 489 F.3d 1364, 1373 (D. C. Cir. 2007).

In any event, there are obvious reasons why market data is unlikely to be useful in quantifying either the frequency of the various relevant product replacement scenarios or the costs elimination of the product features at issue would impose in each.

First, “installation costs” are not a sufficient measure of the value of the product features that would become unavailable if condensing standards for gas furnaces were imposed, because loss of those features would often impose the need for *undesired* building modifications. For example, if the features provided by non-condensing furnaces were unavailable, it would often be necessary to install a new furnace in currently-occupied space or to install new venting that intrudes on currently occupied space, and – particularly in the case of homes with only one or two exterior walls – furnace replacements would often require the sacrifice of existing window or balcony space. The economic cost of such building modifications does not account for unsatisfactory impacts of the modifications themselves, and thus fails to quantify the value of the product features consumers would lose if condensing standards were imposed.

Second, market data cannot be expected to be representative of the relevant furnace replacement scenarios. The problem, in short, is that market data reflects transactions that are actually occurring, and the transactions of greatest relevance in the context of the Petition *tend not to occur*. Again, that is ultimately the point: Petitioners’ concern is not merely that condensing standards would cause gas product replacements to become unduly costly, it is that *condensing standards would cause many gas product replacements not to occur at all*. Current market data cannot be expected to reflect either the frequency of such “non-installations” or the costs that they would impose if they were to occur; as a result, the outcomes of greatest concern to Petitioners would be represented by no data points at all. More broadly, there is an inverse relationship between the magnitude of the difficulties (and costs) involved in replacing non-condensing gas products with condensing products and the frequency with which such replacements actually occur. Market data can, therefore, be expected to understate both the frequency of more problematic replacement scenarios and the costs that more problematic product substitutions would impose (*i.e.*, both the frequency of particular scenarios and the costs associated with each particular scenario would be skewed low). These problems with the unrepresentativeness of market data would exist even if standards banning non-condensing products were already in place, because a rule banning non-condensing gas products cannot force purchasers to choose gas products that are unsuitable for their needs. In short, market data on the replacement of noncondensing gas products with condensing gas products would inherently exclude data points representing the outcomes of greatest concern to Petitioners: those in which such replacements do not occur.

Finally, the usefulness of market data is likely to be limited by the fact that it is difficult to compare cases in which non-condensing products are (or might be) replaced with condensing products. There are simply too many variables involved, including existing floor plans and product locations, the vertical and lateral distances from product locations to the outdoors, the availability of the space (and access) required to accommodate equipment and venting, the nature and extent of co-venting issues, constraints imposed by applicable building codes or restrictive covenants, building orientations, and so forth. As a result, it probably isn’t reasonable to expect that data on individual installations can be reliably sorted into reasonably precise “scenarios” for purposes of assessment or comparison.

b. There are no credible factual issues to be resolved

Mitsubishi Electric U.S. (“Mitsubishi Electric”) – a manufacturer of electrical heating products – filed comments in response to the Petition claiming that Petitioners have mischaracterized the facts relevant to the Petition. These comments claim to “carefully dismant[le] the contradictions and inaccuracies” of Petitioner’s arguments and “clarif[y] the real world challenges and costs of installing equipment whether it is condensing or non-condensing.”²⁰ In summary, Mitsubishi Electric asserts that non-condensing products provide no useful features and that – even when existing non-condensing products are being replaced – condensing products are, with “extremely rare exceptions” no more difficult or costly to install than condensing products.²¹ These assertions are demonstrably false.

Mitsubishi Electric’s assertions rest in large part on the surprising claim that non-condensing furnaces generally cannot be replaced with non-condensing furnaces without the need for “costly building modifications and system reconfigurations” substantially as burdensome as those that would be required to replace a non-condensing furnace with a condensing furnace.²² The short and sufficient answer to this claim is that Mitsubishi Electric is wrong: in the *real world*, existing non-condensing furnaces are commonly, safely, and appropriately replaced with non-condensing furnaces without the need for furnace relocation or any other “costly building modifications [or] system reconfigurations,” let alone with difficulties remotely approaching those that the substitution of a condensing gas furnace would typically impose.²³ Mitsubishi Electric’s erroneous claim to the contrary is based on two subsidiary claims, both of which are also demonstrably false.

The most important of these subsidiary claims is summarized by Mitsubishi Electric as follows:

The Gas Industry Petitioners further argue that .80 AFUE non-condensing furnaces are not induced draft and therefore can be used to replaced (sic) atmospherically vented appliances where existing vents are shared, whereas condensing furnaces cannot. This is an entirely false assertion. Both condensing and non-condensing furnaces have positive

²⁰ Mitsubishi Electric U.S. Comments on Gas Industry Petition for Rulemaking (“Mitsubishi Electric Comments”), document ID EERE-2018-BT-STD-0018-0010 in the docket for this proceeding, at 1.

²¹ Mitsubishi Electric Comments at 1.

²² Mitsubishi Electric Comments at 1.

²³ Welsch Affidavit at ¶¶ 9, 11-12. While installation costs make up a substantial portion of the cost of any furnace replacement, the installation costs for condensing products are generally close to double the installation costs for non-condensing products in the “easy” cases; more often, installation of a condensing product would either be significantly more costly or impractical. Welsch Affidavit at ¶ 13.

pressure vents and neither should ever share a vent with a gravity vent water heater as this will lead to back-drafting and CO poisoning hazards.²⁴

This claim is based on a fundamental misunderstanding of the relevant technology: specifically, on the erroneous understanding that “all or most .80 AFUE equipment is power vented.” In fact, the overwhelming majority of 80% AFUE furnaces are fan-assisted but *not* power-vented, which means that they are Category I products that are compatible with atmospheric venting systems (and atmospherically-vented water heaters) just as Petitioners have said. Mitsubishi Electric’s error on this point is one that building inspectors have been specifically cautioned against:

Inspectors should not confuse fan-assisted furnaces with those that are power vented. When a gravity-vented flue is connected to a power-vented flue, back-drafting can occur at the draft diverter of the gravity flue, exposing occupants of the building to noxious gases. With a category I furnace, this is not a problem because both appliances are gravity-vented, even an induced draft furnace.²⁵

The technical explanation is as follows:

A Plus 80 furnace is designed for greater fuel efficiency than a standard gravity vented furnace. This is achieved by lengthening the heat exchanger to allow more heat transfer into the circulating air. But longer heat exchangers produce draft resistance and they lower the temperature of the exhaust gases relative to atmospheric temperature. To enable proper venting, an inducer fan is built into the system. The fan applies a slight negative pressure on the heat exchanger to ensure that the products of combustion are evacuated upward. The fan, however, does not exert positive pressure into the flue pipe. The exhaust in the flue is gravity-vented. Therefore, its vent pressure is rated as “non-positive,” which is why it can be vented in common with a gravity vented water heater.²⁶

In short, non-condensing furnaces *are* compatible with existing atmospheric venting systems and co-vented atmospherically-vented products, as correctly stated in the Petition.

Mitsubishi Electric summarizes its other subsidiary argument as follows:

Safety code compliance issues frequently require costly building modifications or system modifications to safely install .80 AFUE non-condensing equipment, primarily because of poor design of hall closet return plenums which frequently restrict airflow to the equipment in most homes where such installs are employed.

²⁴ Mitsubishi Electric Comments at 1, 4-5.

²⁵ M. Casey and B. Stone, *Common Venting of Gas Appliances*, available from the California Real Estate Inspectors Association at: <https://www.creia.org/common-venting-of-gas-appliances>

²⁶ Id. For a similar explanation of this issue, see M. Casey and B. Stone, *The Venting in Common of Multiple Gas Appliances*, American Society of Home Inspectors News, March 2011, available at: www.ashireporter.org/HomeInspection/Articles/The-Venting-in-Common-of-Multiple-Gas-Appliances/2067

On the face of it, the claim that “costly building modifications or system modifications” are “frequently” required to replace non-condensing furnaces with new non-condensing furnaces does not necessarily preclude the possibility that – *even more frequently* – such modifications are *not* required. However, even the suggestion that there are problems in a substantial minority of cases would be incorrect: non-condensing gas furnaces – including those in existing furnace closets – can typically be replaced with non-condensing gas furnaces without furnace relocation or any other costly building modifications being necessary to address safety, code compliance, or other concerns.²⁷ The fact that this is true despite alleged problems with the “poor design of hall closet return plenums” is hardly surprising, because such problems – when encountered – can typically be addressed without furnace relocation or other relatively dramatic measures, as Mitsubishi Electric appears to acknowledge.²⁸ Mitsubishi Electric offers a variety of allegations – including some remarkable disparagement of installation contractors and building inspectors – but none of it adds up to a credible basis to doubt the fact that non-condensing products generally can be (and commonly are) replaced with non-condensing products without installation problems even remotely comparable to those the substitution of non-condensing products would typically impose.

In addition to claiming that substantial building modifications are almost always required to replace a non-condensing furnace with another non-condensing furnace, Mitsubishi Electric suggests that the substitution of a condensing furnace would rarely impose any substantial problems at all. Mitsubishi Electric’s larger argument is that “[w]ith extremely rare exceptions” condensing products are not *more difficult* to install than non-condensing products, so its claims may be based in part on comparisons skewed by Mitsubishi Electric’s erroneous understanding that costly building modifications are required to install *non-condensing* furnaces. However, some of Mitsubishi Electric’s specific claims are harder to explain.

Mitsubishi Electric baldly asserts that there is “rarely a problem” installing the vents condensing products would require and “never a problem installing condensate lines.”²⁹ This assertion is accompanied by an argument that amounts to little more than a claim that it is easy to install condensing products in cases in which one assumes conditions that make it easy.³⁰ According to Mitsubishi Electric, more serious difficulties are “extremely rare” and are “typically encountered” in two-story homes and town houses in which a combination of three factors “may” combine to “make a condensing furnace install more challenging.”³¹ The most obvious problems with this narrative is that Mitsubishi Electric’s brief list of complicating factors is conspicuously incomplete and it is wrong to suggest that complicating factors are largely limited

²⁷ Welsch Affidavit at ¶ 9.

²⁸ Mitsubishi Electric Comments at 5.

²⁹ Mitsubishi Electric Comments at 1.

³⁰ Mitsubishi Electric Comments at 1, 2.

³¹ Mitsubishi Electric Comments at 1.

to – or even most prevalent in – the context of two story housing.³² However, the more fundamental problem is that Mitsubishi Electric is applying an unreasonably high standard for what qualifies as a “problem” at all. This is demonstrated by the fact that Mitsubishi Electric expressly identifies the need to relocate a furnace to an attic as a *non-problem*,³³ an assessment that would undoubtedly stun both consumers who simply want to replace an existing furnace and installation contractors who understand the practical problems commonly associated with attic installations.

In truth, the replacement of a non-condensing furnace with a condensing furnace requires the installation of a product for which the existing building was not designed. As a result, the consumer has to give up the option of having a new furnace installed in place of the existing furnace and connected to the existing vent system. In some cases, it may be possible to run the vents for a condensing furnace vertically through the existing atmospheric vent as Mitsubishi Electric suggests, but this usually isn’t an option due to common problems such as co-vented products, inadequate space inside the existing vent, or vent runs that are offset significantly or too long. Similarly, in some cases it may be possible to address co-venting problems by using a specialized vent system that allows the vent for the condensing product to run inside the atmospheric vent being used by a formerly co-vented product, but only in the unusual circumstance in which: (1) there are only two commonly-vented products, (2) the specialized vent system is approved for use with both products and the existing vent, and (3) code officials are prepared to allow a deviation from code provisions that ordinarily preclude such venting. Far more often, the incompatibility of a condensing product with the existing building create more serious difficulties, and – in many cases – those difficulties impose the need for undesired or even impractical building modifications. Many consumers would be outraged if products with the features required to obviate these difficulties were made unavailable.

In the interests of efficiency, many consumers are willing to give up their ability to replace their furnace without having to sacrifice the corner of a bedroom to a new vent chase or having a steam plume visible through their window, just as many consumers are prepared to sacrifice their preference for a side-mounted freezer to obtain the higher efficiency of a top-mounted freezer. However, these are choices between products that offer different product features, and Congress made it abundantly clear that choices between product features must be left in the hands of consumers rather than being imposed upon them by efficiency standards.

As a matter of statutory interpretation, DOE may not require efficiency improvements that can only be achieved through the sacrifice of product features that consumers desire, much less through the sacrifice of product features that would effectively leave many consumers without any gas product at all.

³² For example, Mitsubishi Electric makes no mention of co-venting problems or the particularly difficult challenges common in the context of high-rise housing. See Welsch Affidavit at ¶ 14.

³³ Mitsubishi Electric Comments at p. 5.

2. The Modeling Issue

DOE's modeling approach is not designed to address the economic impacts a new standard would have. In summary:

- Recognizing that the economic impact of investments in higher-efficiency products varies considerably based on factors such as installation scenarios and product use, DOE uses modeling in which thousands of individual trial cases are used to simulate the range of potential economic outcomes expected to be encountered in the real world.
- There is no dispute as to what DOE's modeling is *supposed to do*: it is supposed to provide an assessment of the economic impact of a standard based on trial cases representing the investments in higher-efficiency products that would occur as the result of a new standard (*i.e.*, the investments that would only occur if a new standard is imposed).
- There is no dispute as to what DOE's model *actually does instead*: it provides an assessment of economic impacts based on randomly-selected trial cases representative of all efficiency investments: those purchasers would choose to make in the absence of regulation as well as those that would occur only if a new standard is imposed.³⁴
- This approach would only be valid if there is reason to expect that there would be no difference – in terms of the quality of economic outcomes – between the universe of efficiency investments purchasers would choose to make in the absence of regulation and that of the investments they would make only if a new standard were imposed, *and there is no such reason*. To the contrary, it is objectively unreasonable to suggest that purchasers acting in the absence of regulation are so universally and completely indifferent to the economic outcome of their efficiency investments that their investments should reflect no statistically-significant preference for economically beneficial investments (or aversion to economically disastrous investments), and available evidence clearly indicates that the opposite is true.³⁵
- In short, DOE's modeling is designed to consider the right *number* of efficiency investments (based on the projected market share that lower-efficiency products would

³⁴ Rather than distinguishing the efficiency investments that would occur in the absence of regulation (*i.e.*, the base case efficiency investments) from those that would occur as the result of a new standard (*i.e.*, the rule impact investments), DOE's model "assigns" investments to the base and rule impact cases on a random basis.

³⁵ For example, regional data for residential furnaces shows dramatically higher market shares for condensing furnaces in the coldest areas than in the warmest, providing clear evidence that – in the absence of regulation – investments in higher-efficiency furnaces are far more likely to be made in cases where the economic justification for such investments is strongest and far less likely to be made in cases where the economic justification is weakest. Spire's January 6, 2017 Residential Furnace Comments at 58-59.

retain in the absence of regulation), but it is not designed to consider the *right* efficiency investments: those that would only occur if new standards were imposed. As a result, DOE's modeling simply does not provide an assessment of the economic impacts a new standard would have, and regulatory analysis based on such modeling is invalid.

No further analysis is needed to determine that the pending proposed standards for residential furnaces and commercial water heaters are fatally defective and should be withdrawn. The relevant issues have already been addressed at length in multiple previous comment submissions in the rulemaking proceedings at issue³⁶ and it is time for the conceptually obvious defect in DOE's modeling – and consequent need for DOE to revise its regulatory analyses – to be acknowledged.

C. **DOE should issue notices withdrawing its pending proposals and requesting comment to inform its development of new proposed actions**

Petitioners urge DOE to respond to the Petition by:

- Issuing a notice withdrawing its proposed rules in the commercial water heater, residential furnace, and (assuming a favorable decision in NRDC v. Perry) commercial packaged boiler rulemaking proceedings on the grounds that those proposals (a) would have the unlawful effect of making currently-available product features unavailable and (b) are based on economic justifications that are invalid due to a basic defect in DOE's modeling approach, and
- Requesting comment in each of those rulemaking proceedings on how, in view of the identified problems with the pending proposals, DOE should modify its approach in developing new proposals in each of those rulemaking proceedings.

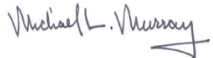
Petitioners believe that DOE can and should take such action without further administrative process. If DOE concludes that it cannot resolve both the legal and modeling issues, it should resolve at least one of those issues to facilitate forward progress as it continues to consider the other.

For further information, please contact:

Mark Krebs
Energy Policy and Standards Specialist
Spire Inc.
Mark.Krebs@Spireenergy.com

³⁶ See e.g., Spire's January 6, 2017 Residential Furnace Comments at 4-8 and 58-62.

Respectfully submitted

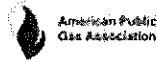
				
Mark Darrell	Bert Kalisch	Mike Murray	Michael Calderera, P.E.	Dena E. Wiggins
Senior Vice President, Chief Legal and Compliance Officer	President & CEO	General Counsel	SVP, Advocacy & Technical Services	President & CEO
Spire Inc.	American Public Gas Association	American Gas Association	National Propane Gas Association	Natural Gas Supply Association
700 Market Street St. Louis, MO 63101	201 Massachusetts Avenue, NE, Suite C-4 Washington, DC 20002	400 North Capitol Street, NW Suite 450 Washington, DC 20001	National Propane Gas Association 1899 L Street, NW Ste 350 Washington, D.C. 20036	1620 Eye St NW Suite 700 Washington, D.C. 20006
mark.darrell@spireenergy.com	bkalisch@apga.org	mmurray@aga.org	mcaldarera@npga.org	dena.wiggins@ngsa.org

ATTACHMENTS

List:

- A. [March 14, 2017 Request for Reconsideration of Pending Proposals](#)
- B. [Spire-APGA Corrections Request final](#)
- C. Affidavit of George Welsch

The above documents can be accessed via regulations.gov when these comments are posted.



March 14th, 2017

The Honorable Secretary Rick Perry
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

Subject: EERE Sets Appliance Minimum Efficiency Standards Using Faulty and Biased Modeling – Request for Reconsideration of Proposed Rules and Opportunity for Comment

Background:

Many DOE's appliance minimum efficiency analyses rely on modeling that is invalid due to a basic methodological flaw. This faulty modeling calls into question EERE's overall claims of what their "energy efficiency" efforts have saved consumers in both their gas and electric utility bills; potentially going back years.

On February 9th, Spire and APGA sent DOE a letter with the subject "*Error Correction Request and Request for Withdrawal of Draft Final Rule: Energy Conservation Program: Energy Conservation Standards for Commercial Packaged Boilers: Docket Number EERE-2013-BT-STD-0030: RIN 1904-AD01.*" That request was also sent to regulations.gov and posted on February 14th as Spire-APGA Corrections Request final.

The basis for our request for error correction was that a modeling flaw that fundamentally corrupted EERE's analyses in the commercial boiler rulemaking. This flaw was not limited to just the commercial boiler docket. As we have already informed DOE, this flaw also invalidated EERE's analysis in at least the following dockets as well:

- Docket EERE-2014-BT-STD-0031
Energy Conservation Standards for Residential Furnaces
- Docket EERE-2014-BT-STD-0042
Energy Conservation Standards for Commercial Water Heaters

In short: DOE only has the authority to impose efficiency standards that are economically justified.¹ These are not.

Purpose:

¹ 42 U.S.C. § 6295(o)(2) is applicable to consumer products; 42 U.S.C. 6313(a)(6)(A)(ii) (II) and (a)(6)(B)(ii) is applicable to commercial packaged boilers and commercial water heaters.

The purpose of this submission is to request that DOE recognize the error in its basic methodology and provide a corrected regulatory analysis in these three proceedings before any final actions are taken. We further suggest that DOE issue a single Federal Register notice in Docket Numbers EERE-2013-BT-STD-0030, EERE-2014-BT-STD-0031, and Docket EERE-2014-BT-STD-0042 to acknowledge the modeling error, announce DOE's intent to prepare corrected regulatory analyses in each proceeding, and solicit comment to facilitate that effort.

Our attached Request for Reconsideration and Opportunity for Comment provides a brief explanation of the relevant issues, which we believe are fully substantiated by the work of our consultants (the Gas Technology Institute, et. al.) comments submitted by Spire, APGA, AGA (and others) in response to DOE's SNOPR regarding Energy Conservation Standards for Residential Furnaces.

If DOE wants to initiate its consideration via a simple meeting, we would be happy to do so along with providing DOE with anything else it deems necessary to initiate corrective action. Another option to consider would be for DOE to hold a workshop so that DOE's new leadership can hear from other industry stakeholders about other methodologies that have used to force more stringent minimum energy efficiency standards. For just a few reoccurring examples of such additional problems:

- Until DOE "determinations" properly consider that HVACR equipment must be installed to the manufactures minimum installation standards DOE analysis will continue to overestimate energy savings on HVAC equipment by 30-50%. As it stands over 90% of 14 SEER AC unit are functioning at 8 to 10 SEER range.
- DOE's failure to properly consider energy savings as reflected by "tail-block" utility rates can also overestimate energy savings on HVAC equipment by 30-50%.

We appreciate your prompt consideration of this request. We also look forward to working with the new DOE administration to ensure that safe and affordable energy is kept available to U.S. consumers in accordance with the opening paragraph of An America First Energy Plan.

Sincerely,

Spire, Inc.
American Public Gas Association
Air Conditioning Contractors of America
National Multifamily Housing Council
National Apartment Association
National Leased Housing Association

Copy: Mr. Daniel Simmons
Ms. Suzie Jaworowski
Mr. Travis Fisher
Mr. Brian McCormack

March 14th, 2017

**BEFORE THE
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
UNITED STATES DEPARTMENT OF ENERGY
WASHINGTON, D.C.**

**Request for Reconsideration of Proposed Rules
and
Opportunity for Comment**

**Energy Conservation Program:
Energy Conservation Standards for Commercial Packaged Boilers
Docket Number EERE-2013-BT-STD0030, RIN No. 1904-AD01**

**Energy Conservation Program:
Energy Conservation Standards for Commercial Water Heaters
Docket Number EERE-2014-BT-STD-0042; Rin No. 1904-AD34**

**Energy Conservation Program:
Energy Conservation Standards for Residential Furnaces
Docket Number EERE-2014-BT-STD-0031; RIN No. 1904-AD20**

Introduction

The undersigned, the American Public Gas Association (APGA), Spire Inc. (Spire), the Air Conditioning Contractors of America (ACCA), the National Multifamily Housing Council (NMHC), the National Apartment Association (NAA) and the National Leased Housing Association (NLHA) respectfully request that DOE correct a systemic methodological error that invalidates the economic justification for efficiency standards proposed in at least the following pending rulemaking proceedings:

1. Energy Conservation Program: Energy Conservation Standards for Commercial Packaged Boilers, Docket Number EERE-2013-BT-STD0030
2. Energy Conservation Program: Energy Conservation Standards for Commercial Water Heaters, Docket Number EERE-2014-BT-STD-0042
3. Energy Conservation Program: Energy Conservation Standards for Residential Furnaces, Docket Number EERE-2014-BT-STD-0031

DOE only has the authority to impose efficiency standards that are economically justified.¹ As a result, analysis of the economic impacts of standards considered in efficiency rulemaking is a central – and necessary – feature of DOE’s regulatory analysis. The systemic error in DOE’s analysis involves DOE’s use an arbitrary modeling function to generate a base case for analysis that dramatically overstates the potential for efficiency standards to produce economic benefits. Use of an artificial base case necessarily skews the resulting economic analysis, ensuring that the results, in every case, substantially overstate the benefits of any efficiency standard under consideration.²

Efficiency standards can only provide economic benefits to the extent that purchasers of appliances and equipment fail to invest in more efficient products when it would be economically beneficial for them to do so. In fact, the potential benefits of an efficiency standard are simply the benefits of the efficiency investments purchasers would make if the standard left them with no choice. Accordingly, the economic impacts of an efficiency standard cannot be determined without an understanding of actual purchasing behavior.

Remarkably, DOE’s methodology for economic analysis *does not even consider actual purchasing behavior*. Instead, DOE uses a random distribution function in its complex Life-Cycle Costing (LCC) spreadsheets and Monte Carlo analyses to generate an artificial base case for analysis. That base case does not reflect the demonstrated tendency of purchasers of appliances and equipment to make efficiency investments that would be economically beneficial

¹ 42 U.S.C. § 6295(o)(2) (applicable to consumer products); 42 U.S.C. § 6313(a)(6)(A)(ii) (II) and (a)(6)(B)(ii) (applicable to commercial packaged boilers and commercial water heaters).

² The methodological error has been discussed in detail in comments and technical reports APGA and Spire submitted to the docket in the rulemaking proceeding concerning standards for residential furnaces (Docket Number EERE-2014-BT-STD-0031).

(and to forego efficiency investments that would be economically unreasonable).³ Rather, it depicts the marketplace *as it would exist if purchasers of appliances and equipment never even attempted to make economically reasonable decisions*. Under this artificial paradigm, efficiency standards always produce many more beneficial outcomes – and many fewer negative outcomes – than they would in the real world. Consequently, the use of this artificial base case systematically skews DOE's analysis to produce significantly more regulatory benefits than truly exist. The results of such analysis do not even arguably reflect the economic impacts efficiency standards would have in the real world, and therefore provide no basis to conclude that efficiency standards are economically justified as required by law. In fact, if DOE had used realistic base cases for analysis in the rulemaking proceedings referred to above, the results would very likely have shown that more consumers would be harmed than benefitted by the proposed standards. At a minimum, DOE has failed to provide the economic justification required for the adoption of its proposed standards, and the proposed rules in the proceedings referred to above are legally deficient.

DOE cannot ignore the fact that the economic impacts of efficiency regulation are directly dependent on the nature of the decisions purchasers make in the absence of regulation. Nor can it use the expedient of an arbitrary modeling function to avoid the need to determine and consider the facts with respect to actual purchasing behavior, particularly when the result is to produce a base case that conspicuously fails to reflect the reality it purportedly represents. The use of an arbitrarily-generated base case in lieu of a base case designed to represent the purchasing decisions that would actually be affected by new efficiency standards is a clear methodological error that invalidates the results of every economic analysis in which it is employed.

Technical Description of the Error

As DOE recognizes, the economic consequences of individual consumer investments in higher-efficiency products vary considerably due to factors such as differences in individual installation conditions and product use patterns. Consequently, such investments can provide substantial economic benefits for some purchasers while imposing substantial net costs on others. To assess the range of economic impacts of new proposed standards, DOE relies on Monte Carlo analyses based on ten thousand "trial cases" that purport to represent the full range of product installation scenarios and product use patterns that exist in the United States.

These ten thousand trial cases must reflect the fact that some consumers already have installed or will install appliances satisfying a new efficiency standard even in the absence of regulation. It is only the remaining trial cases – those representing the cases in which consumers have not invested in more efficient products and would not invest such products unless a new standard forced them to do so – that should be considered in determining the economic impacts of a new efficiency standard.

³ These tendencies are demonstrated, for example, by the fact that the market share of higher-efficiency gas furnaces is dramatically higher in colder regions (where the economic justification for higher-efficiency furnaces tends to be strongest) than it is in warm-weather regions (where investments in higher-efficiency furnaces tend to be economically unattractive).

As stated above, DOE does not attempt to determine the extent to which purchasers of a product succeed or fail to make economically beneficial efficiency investments on their own. Instead, its model randomly assigns consumer choices, as though the efficiency investments purchasers would make on their own are no more likely to be economically beneficial – and no less likely to be economically disastrous – than those that would only occur only if new standards left purchasers no choice. This creates an artificial base case for analysis that completely misrepresents the decisions of consumers that have purchased an efficient appliance prior to the rule or would do so even in the absence of the rule, and thereby misrepresents the nature of the trial cases in which purchasing decisions would actually be altered by new standards.

The impact of this methodological error is dramatic because the average economic outcome for investments in high-efficiency products is driven by those appliance installations in which relatively dramatic economic consequences would result. In the real world, the scenarios in which high-efficiency products would provide the greatest economic benefits are precisely those in which purchasers are most likely to choose such products *on their own*. Conversely, the scenarios in which high-efficiency products would impose the highest net costs are those in which purchasers are least likely to choose such products on their own. It follows that – in the ten thousand trial cases used as the basis for analysis – high efficiency products assumed to be present in the absence of regulation should be present in a high percentage of the cases in which such products would produce the highest economic returns and a very low percentage of the cases in which they would impose the highest net costs. By erroneously assigning high-efficiency products to installation scenarios on a random basis, DOE's methodology produces a massive reallocation of positive economic outcomes from the "base case" to the "standards case." Simultaneously, it produces a massive reallocation of negative economic outcomes from the "standards case" to the "base case."

To eliminate this methodological error, it will be necessary for DOE to determine the extent to which purchasers of specific products forego investment in more efficient products and the circumstances in which they choose to do so. DOE will then need to design its ten thousand trial cases in a manner that reasonably reflects these facts. Only then will there be a valid way to assess the economic consequences of proposed standards and to determine what standards – if any – would be economically justified as required by law.

DOE should correct this methodological error going forward. In addition, DOE should correct the analysis it has provided to date in all three of the rulemaking proceedings referred to above and reconsider its proposed actions. Otherwise, any standards imposed in these proceedings not be economically justified as required by law.

Summary & Additional Modeling Flaws

- 1. The basic methodological error (described above): Erroneous assignment of base-case efficiency.**

DOE's methodology assigns the base case efficiencies of products arbitrarily, in a manner that is plainly contrary to actual purchasing behavior. This methodology provides no valid basis for assessment of the economic impacts of efficiency standards.

2. Coverage of affected customer classes is inadequate.

The DOE approach does not adequately account for multiple consumer classes. For example, in the present version of the residential furnace docket, DOE represents only single-family, owner-occupied residential consumer housing, ignoring other major classes including multi-family housing, renters, public housing occupants, and other groups, all of which would be affected by residential gas furnace minimum efficiency standards. Similar concerns affect the other proceedings. Each consumer class has different economic criteria and roles in purchase decisions. The single-family, owner-occupied housing model biases the analysis in a singular and extreme way.

Relief Requested

For the reasons expressed above, we respectfully request that DOE:

1. Correct its methodological error going forward;
2. Request comment in each of the rulemaking proceedings referred to above to facilitate appropriate revision of the regulatory analyses in each proceeding; and
3. On the basis of such comment, revise the LCC spreadsheets and Monte Carlo analyses in each proceeding, reconsider the level and appropriateness of each proposed standard, and seek comment on the results of those analyses.

Since we seek to correct modeling biases that have become institutionalized, it is important to consider the use of new independent evaluators (*i.e.*, other than DOE's National Labs and Navigant who initially introduced these errors). This may require a separate solicitation which may ultimately result in a basic reformulation of LCC analysis used in standard setting.

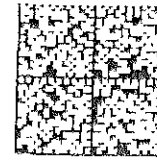
Respectfully submitted,

Spire, Inc.
American Public Gas Association
Air Conditioning Contractors of America
National Multifamily Housing Council
National Apartment Association
National Leased Housing Association

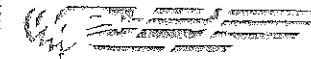


700 Market Street
Saint Louis, MO 63101

PRESORTED
FIRST CLASS



U.S. POSTAGE >> PITNEY BOWES



ZIP 63144 \$ 000.40³
02 4W
0000334055 MAR 14 2017

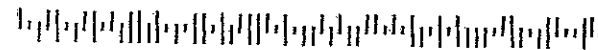


Received

MAR 27 2017

MAIL SANITIZED

005 BTADAAB 20585



MISSOURI GAS ENERGY

Mark Krebs
Energy Policy and Standards Specialist

Missouri Gas Energy
700 Market Street, 5th Floor
St. Louis, MO 63101

(314) 342-0714 Office



* SpireEnergy.com
Mark.Krebs@SpireEnergy.com

**BEFORE THE
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE
ENERGY
UNITED STATES DEPARTMENT OF ENERGY
WASHINGTON, D.C.**

Error Correction Request and Request for Withdrawal of Draft Final Rule

**Energy Conservation Program: Energy Conservation Standards for
Commercial Packaged Boilers**

Docket Number EERE-2013-BT-STD-0030

RIN 1904-AD01

ErrorCorrectionInfo@EE.DOE.Gov

**Submitted by Spire, Inc. and the American Public Gas Association
February 11, 2017**

Pursuant to 10 C.F.R. § 430.5, DOE has posted the above-referenced draft final rule (the “Draft Rule”) on its web site and requested that interested parties notify it of any “typographical or other errors, as described in such regulations, by no later than midnight on February 11, 2017.” By this submission, Spire Inc. (“Spire”) and the American Public Gas Association (“APGA”) (together, “Joint Requestors”) hereby notify DOE of a fundamental error in the modeling upon which the Rule was based. This error completely invalidates the regulatory analysis that provides the basis both for the selection of the energy efficiency standards the Draft Rule would impose and the Secretary’s determination that such standards are economically justified. As a result of this error, the regulatory analysis does not support the standards the Draft Rule would impose and the Joint Requestors respectfully request that the Draft Rule be withdrawn.

Withdrawal of the Draft Rule is warranted and appropriate under the corrections procedure specified by 10 C.F.R. § 430.5. Regardless, withdrawal of the Draft Rule is within DOE’s discretion, and is necessary to prevent the issuance of standards that plainly have not been economically justified as required by law. Accordingly, Joint Requestors request that the Draft Rule be withdrawn and that the issues involved be addressed appropriately through further collaborative rulemaking proceedings. Similar errors are evident in other rulemaking proceedings, such as the Furnace SNOPR and commercial water heating NOPR, and these systematic errors must be systematically addressed and corrected, even though the associated proceeding are on different timelines in other dockets.

Finally, the proposed rule raises serious safety concerns for non-condensing furnaces, which themselves warrant withdrawal and reconsideration.

Interest in this Proceeding

Spire, formerly the Laclede Group, Inc., is a holding company that owns and operates Laclede Gas Company, including its Missouri Gas Energy operating division, the two largest natural gas distribution companies in the state of Missouri, Alabama Gas Corporation, the largest natural gas distribution company in the state of Alabama, and Mobile Gas Service Corporation and Willmut Gas and Oil Company, which operate in Alabama and Mississippi, respectively. Spire's utility companies have been distributing gas in one form or another in their respective service areas for more than a century and a half. Today, they collectively provide natural gas distribution service to more than 1.7 million residential, commercial and industrial customers.

Spire supports energy conservation. Spire's utility businesses have supported energy efficiency education for homeowners and businesses alike for many years, and have invested significant resources in rebate programs promoting the sale of high-efficiency equipment and appliances. However, ill-conceived efficiency regulations can do considerable unnecessary harm, and Spire, its natural gas distribution companies, and the communities and customers those companies serve would be directly and adversely affected by the energy conservation standards the Draft Rule would impose. Specifically, the Draft Rule would effectively force many purchasers of commercial packaged boilers to switch from gas boilers to alternatives that would impose higher energy costs for commercial boiler operators and produce a loss of customers – and a direct loss of revenue – for natural gas distribution companies including those owned by Spire. Spire therefore has a keen interest in the subject of the Draft Rule and submitted extensive comments to the docket in this proceeding, including a submission dated June 22, 2016.¹ Spire is therefore a party to this rulemaking as defined by 10 C.F.R. § 430.5(b).

¹ Spire's Comments dated June 22, 2016 are available in the docket at:
[file:///C:/Users/BDDay/Downloads/Spire Comments on Commercial Boiler NOPR.pdf](file:///C:/Users/BDDay/Downloads/Spire%20Comments%20on%20Commercial%20Boiler%20NOPR.pdf)

Similarly, APGA has its own interest and is a party to this proceeding. APGA is the national association for publicly-owned natural gas distribution systems. There are approximately 1,000 public gas systems in 36 states, and more than 730 of these systems are APGA members, who will be affected directly by the implementation of the Draft Rule.²

The Primary Error in Question

Base and standards case used for economic modeling do not reflect reality. The regulatory analysis offered in support of the Draft Rule is based on a modeling methodology in which DOE starts by constructing ten thousand “trial cases” that are supposed to represent the full range of commercial gas boiler installation scenarios that exist in the United States. The methodology then calls for DOE to conduct simulations to determine how new efficiency standards would change commercial boiler installation outcomes in these trial cases. This is how DOE measures the economic consequences of those changed outcomes. In some cases, commercial boilers that satisfy the efficiency standards that the Draft Rule would impose have already been installed or would be installed in the absence of regulation; in other cases, such boilers would only be installed if new standards are adopted. DOE’s analysis is supposed to identify the latter cases – those trial cases in which installation outcomes would be altered by new energy efficiency standards – and then determine the economic consequences of those altered outcomes.

The fundamental error in the analysis underlying the Draft Rule is that the ten thousand trial cases DOE used as its basis for analysis were not constructed to reflect the reality that – in

² APGA and the American Gas Association filed comments on June 22nd, 2016 with the Department of Energy in response to the Notice of Proposed Rulemaking – Energy Conservation Standards for Commercial Packaged Boilers. - Docket No. EERE-2013-BT-STD-0030; RIN 1904-AD01

the absence of regulation – purchasers generally choose high-efficiency commercial gas boilers in installation scenarios in which an investment in such equipment would make economic sense for the purchaser. Instead, the ten thousand trial cases were improperly constructed by randomly “assigning” high-efficiency boilers to installation scenarios without regard to the economic consequences of the installation involved, as though – in the absence of regulation – purchasers of commercial boilers literally never consider the economics of such purchases at all. The result is that the ten thousand trial cases do not represent the market that actually exists; instead they represent an imaginary market in which purchases of high-efficiency gas boilers made in the absence of regulation are no more likely to be economically beneficial for the purchaser – and no less likely to be economically disastrous for the purchaser – than purchases that would only occur as a result of regulatory compulsion. The existence of this error is revealed by the fact that Cell D10 of the spreadsheet entitled “No New Stds Case Efficiency” links to a linear random distribution function picking base case boiler efficiency. This spreadsheet can be found in DOE Boiler LCC spreadsheets CPB_ECS_NOPR_LCC_2016-03-15.xlsm at the following link: <https://www.regulations.gov/document?D=EERE-2013-BT-STD-0030-0045>

Unfortunately, the problem can only be observed if the spreadsheet is opened with an Oracle Crystal Ball plug-in; otherwise, only the numeric output of the last computation spreadsheet run is visible.

The result of this error is a dramatic distortion of the base case for regulatory analysis. In the real world, installation scenarios in which high-efficiency boilers would provide the greatest economic benefits are those in which purchasers are most likely to purchase such boilers on their own; it follows that a disproportionate percentage of such installation scenarios should be represented in the “base case” (*i.e.*, among the trial cases in which boilers meeting the new

standards would be present in the absence of new regulation). Conversely, installation scenarios in which high-efficiency boilers would result in the greatest net costs are those in which purchasers are least likely to choose such boilers in the absence of regulation; it follows that a disproportionate percentage of such installation scenarios should be represented in the “standards case” (*i.e.*, among the trial cases in which boilers meeting the new standards would be absent unless new standards are imposed). By erroneously assigning high-efficiency boilers to installation scenarios on a random basis, DOE produced a universe of trial cases in which the distribution of even the best and worst economic outcomes is exactly the same for installations of high-efficiency boilers required by rule as it is for installations that purchasers would choose to make on their own in the absence of regulation. This error in DOE’s methodology produced a massive reallocation of positive economic outcomes from the “base case” to the “standards case,” and a massive reallocation of negative economic outcomes from the “standards case” to the “base case.” The result is an obviously skewed regulatory analysis that does not even arguably address the universe of installation outcomes that would actually be affected by the adoption of new standards. The entire economic analysis underlying the Draft Rule is therefore completely erroneous and invalid, and it provides no justification at all for the standards the Draft Rule would impose.

The Correction Required

The error in question is elementary: standards cannot be economically justified unless their impacts are identified and the economic consequences of those impacts are considered. In effect, DOE provided an economic analysis that did not even attempt to identify the real impacts of the standards that the Draft Rule would impose. Instead, it created an artificial universe of supposedly impacted installation scenarios. The imaginary market thus created by DOE

improperly included a substantial range of positive outcomes that would occur (or have already occurred) in the absence of new standards while improperly excluding a substantial range of negative outcomes that would only occur if new standards are imposed. Correction of this error would dramatically reduce the economic benefits claimed to justify the Draft Rule and would fundamentally alter the outcome of DOE's regulatory analysis. Accordingly, editorial revisions would not be adequate to correct the error, and the Draft Rule should be withdrawn.

Additional Errors

DOE's unreasonable methodology to deny consumer economic logic is not the only error in need of correction. For example, and most importantly, DOE erred by putting consumer safety at risk. Spire commented extensively on this problem in its [filed comments of June 22, 2016](#), as did many others. These include the following excerpts:

[From AHRI 22JUN16 comments](#)

DOE needs to understand the full range of venting approaches in the field. DOE's approach to venting and installation is simply much too limited and misses the subtlety of the venting issue. This has significant consequences. First, DOE is proposing minimum efficiency standards that reduce the current margin of safety in venting systems on existing commercial boiler installations by reducing the energy available to drive the products of combustion through the venting system. Second, because manufacturers and installing contractors cannot accept this potential reduction in the safe and proper operation of the venting system, there are additional installation costs associated with upgrading or reworking the vent system to provide a safe and proper venting system for the higher efficiency boiler.

[From AGA and APGA 22JUN16 Comments](#)

The Department should revise its technical analysis and economic justification for the proposed 85.0% levels because they considerably reduce the margin of safety levels which are included in product designs to help ensure that premature failures do not occur. The 85.0% thermal efficiency ("ET") minimum efficiency requirement that is proposed for Small Gas-Fired Hot Water Commercial Packaged Boilers and 85.0% combustion efficiency ("EC") for Large Gas-Fired Hot Water Commercial Packaged Boilers are dangerously close to promoting excessive condensation in both the venting system and the interior heat exchanger of these boilers. Excessive condensation could result in premature failure of the boiler and the vent.⁶ The current

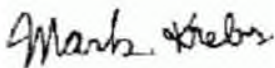
minimums at 80.0% ET and 82.0% EC, for Small and Large Gas-Fired Hot Water Commercial Packaged Boilers, respectively, as developed by the ASHRAE 90.1 committee, reflect a balance between a justifiable margin of safety and an improved energy efficiency level. The Department has failed to meet its burden for deviating from the ASHRAE standard.

Request for Withdrawal

As already stated, withdrawal of the Draft Rule pursuant to 10 C.F.R. § 430.5 is necessary to correct a fundamental error in DOE's regulatory analysis. In any event, withdrawal of the Draft Rule is within DOE's discretion and is plainly warranted on the merits.

On January 20, 2017, the White House issued a Memorandum for the Heads of Executive Departments and Agencies instituting a regulatory freeze pending review of new regulations not yet submitted to the Office of the Federal Register for publication. The Draft Rule is subject to that regulatory freeze, and – since the Draft Rule would impose standards that lack the economic justification expressly required by law –the review required by the regulatory freeze memorandum can and should result in a withdrawal of the Draft Rule to facilitate further analysis of the relevant issues and development of a new proposal appropriately addressing DOE's statutory obligations.

Respectfully submitted,



Mark Krebs
Energy Policies and Standards Specialist
Spire Inc.
700 Market Street
St. Louis, MO 63101
Mark.Krebs@spireenergy.com
(314) 365-4117



Dave Schryver
Executive Vice President
American Public Gas Association
201 Massachusetts Avenue, NE, Suite C-4
Washington, DC 20002
dschryver@apga.org
202-464-0835

**BEFORE THE
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
UNITED STATES DEPARTMENT OF ENERGY
WASHINGTON, D.C.**

**Energy Conservation Program:
Energy Conservation Standards for Residential
Furnaces and Commercial Water Heaters**

**Notice of Petition for Rulemaking
Docket No. EERE-2018-BT- STD-0018**

Affidavit of George L. Welsch

STATE OF MISSOURI

COUNTY OF ST. LOUIS.

I, GEORGE L. WELSCH, being duly sworn, state as follows:

1. I am over 18 years of age and suffer from no legal incapacity.
2. I have personal knowledge as to the matters stated herein.
3. I am the President and owner of Welsch Heating & Cooling Company, a Nationally-recognized heating and air conditioning contractor serving the needs of consumers in and around Saint Louis, Missouri. My office address is 2175 Welsch Industrial Court, P.O. Box 28545, Saint Louis, MO, 63146.
4. I graduated from Washington University in St. Louis with a B.S. in Mechanical Engineering, am a Registered Professional Engineer in the State of Missouri and have been the Chairman of the Board of Examiners for Mechanical Licensing in St. Louis County since 1999. I have approximately fifty-five years of experience in the heating and air conditioning business and have served on the Board of Directors and as the National President of the Sheet Metal and Air Conditioning Contractors National Association ("SMACNA"), which is one of the principal trade association for heating and air conditioning contractors.
5. I have been involved in thousands of gas furnace installations and am familiar with residential furnace technology, with the range of residential gas furnace and related venting products sold in the United States, and with the technical, practical and economic considerations involved in the purchase and installation of residential gas furnaces.

6. On September 23, 2016, the U. S. Department of Energy issued a supplemental proposed rule proposing a minimum efficiency standard of “92.0 AFUE” for residential non-weatherized gas furnaces with certified input capacities of more than 55,000 Btu/hr. This proposed standard can only be achieved by products using condensing combustion technology (“condensing products”).
7. Gas products that use condensing combustion technology (“condensing products”) achieve higher measured efficiencies than conventional gas products by recovering more heat from combustion gasses before they are vented. As a result, condensing products produce cooler exhaust gasses than conventional (i.e., non-condensing) gas products and produce liquid condensate that conventional gas products generally do not (hence the use of the term “condensing” to describe condensing products).
8. There are millions of residential furnace installations throughout the United States in buildings that have built-in “Class B” metal venting systems. These venting systems are designed to vent combustion gasses at atmospheric pressure, using the buoyancy of relatively hot combustion gases to carry them vertically (typically through the roof of the building). These venting systems can be many stories in height when sized appropriately and are commonly sized to serve multiple gas appliances such as furnaces and water heaters. Gas furnaces utilizing these venting systems are frequently installed in closets located in relatively central positions in the interior of a living unit and are often stacked vertically in multi-family housing to access a common venting system.
9. Most if not all non-condensing gas furnaces are “Category I” appliances that are, by definition, designed to be vented at atmospheric pressure. As such, these products are compatible with Class B atmospheric venting systems and can generally be (and commonly are) used to replace existing non-condensing furnaces without substantial difficulties and in full compliance with applicable building and safety code requirements. In the case of such replacements, the new furnace is typically installed in the same location as the existing furnace and connected to the same vent system with only relatively modest modifications being required to address safety, code compliance, or other issues. My business has performed thousands of furnace replacements of this kind that have been inspected for code compliance and approved without substantial difficulty.
10. Condensing products are not compatible with class “B” metal venting systems. The cooler combustion gasses generated by condensing products lack sufficient buoyancy to be vented at atmospheric pressure and produce acidic liquid condensation that would dangerously corrode a class “B” venting system. For these reasons, condensing products require power (*i.e.*, positive pressure) venting through vent systems constructed of material (typically PVC pipe) that is not subject to corrosion by acidic condensate. Because the positive pressure created by a power-vented product could cause a back-draft of combustion products into the occupied space of a building through any commonly-vented products, a separate venting system is required for each individual condensing gas product.

11. Because condensing furnaces are incompatible with existing Class B venting systems, it is often difficult – and in many cases impractical – to replace an existing non-condensing furnace with a condensing furnace. Installation of a vertical venting system in place of an existing Class B metal venting system is often impractical due to limitations on the maximum allowable vent lengths for condensing gas products or lack of the space that would be required to bundle the venting for more than one or two condensing products through the existing chase. The alternative of a horizontal installation can be problematic or impractical because a minimum pitch of $\frac{1}{4}$ inch per lateral foot is required to drain condensate from a vent, and this would often require the venting to run through occupied space. For example, a 24-foot lateral run from a furnace to an exterior wall would require a vent that is at least six inches lower at the furnace end than at the exterior wall, which would typically make it impossible for the vent to be enclosed in the space available between occupied floors. Lateral venting can also be problematic or impractical due to limitations on side-venting imposed by restrictive covenants, building codes, restricted access to exterior walls, or the spacing or orientation of surrounding buildings.

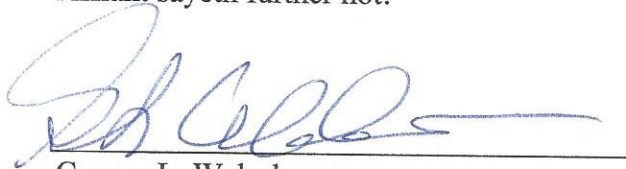
12 In addition, the replacement of non-condensing gas products with condensing gas products can create problems for other commonly-vented appliances. Where venting for the new condensing product replaces the existing Class B venting system, any commonly-vented products dependent on that system would also need to be replaced, creating a new set of venting issues for any gas replacement products. Where the existing Class B venting system is left in place, the elimination of one commonly-vented product would in many cases leave it improperly-sized for the remaining commonly-vented appliances. This would create the risk of an unsafe and very dangerous back-draft condition. This can be a particularly problematic issue in cases involving multi-family housing that have furnaces in different housing units stacked vertically utilizing a common venting system. In these situations, which are relatively common, impact on commonly-vented appliances would often preclude the replacement of a non-condensing furnace with a condensing furnace. This would be true even if the conditions were such that separate venting of the new furnace would be relatively easy.

13. My business has replaced many existing non-condensing furnaces with condensing furnaces. Such replacements make sense for many consumers when the complications involved are not excessive, but installation costs are always a substantial part of the cost of furnace replacements and it has been my experience that – even in the least challenging cases – the installation work required for condensing products is generally close to twice as costly as that for non-condensing products. More often, costs for installation of a condensing product would be significantly higher, the installation would require undesirable building modifications, or the installation simply would not be practical.

14. My business has installed gas furnaces in numerous cases in which DOE's proposed minimum efficiency standard of "92% AFUE" for residential non-weatherized gas furnaces with certified input capacities of more than 55,000 Btu/hr. would leave purchasers without any suitable options for gas furnace replacements. For example, there are many high-rise apartment and condominium buildings with Class B venting systems in which condensing gas furnaces could not be installed without the need for substantial building modifications. Also in these instances, removing one or more non-condensing furnaces from the Class B common vent system would likely require replacement of most if not all of the other appliances using that vent

system. Similarly, there are many multi-story homes with Class B venting systems and furnaces centrally located in finished basements in which condensing furnaces could not be installed without the need for substantial building modifications involving furnace relocations or other sacrifices of currently occupied space. As an engineer and contractor, I believe that the likely result of DOE's proposed standard in these and many other cases would be that existing non-condensing gas furnaces would be replaced – not with new condensing gas furnaces – but with alternatives such as electric furnaces, which are less energy efficient overall, would impose significantly higher energy costs, and would require building occupants to settle for an entirely different (and for many less satisfactory) form of heat than that to which they had become accustomed.

Affiant sayeth further not:



George L. Welsch

VERIFICATION

STATE OF Missouri)

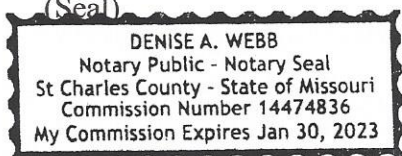
COUNTY OF St. Charles)

)

Signed and sworn (or affirmed) before me on 2/22/2019 (date) by

George L. Welsch (name of person making statement)

(Seal)



Denise A Webb
NOTARY PUBLIC

Printed Name: Denise A. Webb

My Commission Expires:

1/30/2023

Attachment B

Comments of Petitioners
for Docket No. EERE-2018-BT-STD-0018
(September 9, 2019)

**BEFORE THE
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
UNITED STATES DEPARTMENT OF ENERGY
WASHINGTON, D.C.**

**Energy Conservation Program:
Energy Conservation Standards for Residential
Furnaces and Commercial Water Heaters**

**Notice of Proposed Interpretive Rule and Response to Petition for
Rulemaking**

84 Fed. Reg. 33011 (July 11, 2019)

Docket No. EERE–2018–BT– STD–0018

**Comments of Petitioners
Spire Inc.
The American Public Gas Association
The American Gas Association
The National Propane Gas Association
The Natural Gas Supply Association
And
The National Association of Home Builders
The Air Conditioning Contractors of America
The Plumbing-Heating-Cooling Contractors—National Association
The National Multifamily Housing Council
The National Apartment Association
The National Leased Housing Association
The Manufactured Housing Association for Regulatory Reform**

September 9, 2019

Introduction

As signatories to the petition for rulemaking that is the subject of the above-referenced proceeding (the “Petition”), Spire Inc. (“Spire”), the American Public Gas Association (“APGA”), the American Gas Association (“AGA”), the National Propane Gas Association (“NPGA”) and the Natural Gas Supply Association (“NGSA”) (collectively “Petitioners”) appreciate the opportunity to provide comments to the Department of Energy (“DOE”) on its proposed response to the Petition – most notably its proposed interpretive rule – published in the *Federal Register* on July 11, 2019 (hereinafter the “Proposal”).¹ Petitioners are joined in this submission by the National Association of Home Builders (“NAHB”), the Air Conditioning Contractors of America (“ACCA”), the Plumbing-Heating-Cooling Contractors—National Association (“PHCC-NA”), the National Multifamily Housing Council (“NMHC”), the National Apartment Association (“NAA”), the National Leased Housing Association (“NLHA”) and the Manufactured Housing Association for Regulatory Reform (MHARR), which – though not signatories to the Petition – will also be referred to by the collective term “Petitioners” for purposes of these comments.

Petitioners appreciate DOE’s thorough consideration of the issues raised by the Petition and support DOE’s proposal to issue an interpretive rule confirming that:

adoption of energy conservation standards that would limit the market to natural gas and/or propane gas furnaces, water heaters, or similarly situated products/equipment . . . that use condensing combustion technology would result in the unavailability of a performance related feature within the meaning of 42 U.S.C. [§§] 6295(o)(4) and 6313(a)(6)(B)(iii)(II)(aa).²

In general, Petitioners believe that DOE appropriately considered the Petition and comments submitted in response to its publication. Nevertheless, Petitioners believe that DOE should take more decisive action to resolve the issues raised by the Petition and to advance the rulemaking process in its pending residential furnace and commercial water heater rulemaking proceedings.³ Petitioners also respectfully urge DOE to clarify or reconsider its analysis in certain respects, as discussed in more detail below.

¹ *Granting in part and denying in part a petition for rulemaking; notice of proposed interpretive rule; request for comment*, Docket No. EERE-2018-BT0STD-0018, 84 Fed. Reg. 33011 (July 11, 2019). Petitioner’s previous comments in this proceeding, filed March 1, 2019 (“Petitioners’ Previous Comments”) are identified in the docket for this proceeding as Document No. EERE-2018-BT-STD-0018-0044.

² 84 Fed. Reg. at 33020-21.

³ Energy Conservation Standards for Residential Furnaces, Docket No. EERE 2014-BT-STD-031, and Energy Conservation Standards for Commercial Water Heaters, Docket No. EERE-BT-STD-042, respectively.

Discussion

A. Why We Are Here

The Petition seeks to resolve the issue of whether DOE can impose energy conservation standards that would make atmospherically vented gas products such as furnaces and water heaters unavailable. In practical terms, this issue matters because standards that would make atmospherically vented products unavailable to consumers would do more to promote electrification than to promote the efficiency of gas products. Petitioners are not “aggrieved by a proposed federal energy conservation standard whereby gas furnaces would consume less natural gas or propane gas” as one electrification advocate suggests;⁴ instead they are aggrieved by energy conservation standards for gas products that – by making important product characteristics unavailable – would force many consumers to give up gas appliances in favor of electric alternatives. That’s why the Petition was filed and why manufacturers of electric products have participated so vigorously in a proceeding that is specific to gas products.⁵

Suggestions that Petitioners are opposed to condensing technology or that favorable action on the Petition would “create missed opportunities for consumers, businesses, and governments”⁶ are meritless. Condensing gas products are already available to purchasers who want (and can reasonably use) them, and they increasingly dominate the market in regions in which the economic justification for them is strong. Petitioners do not oppose the operation of that market.⁷ However – as DOE has recognized – condensing products are not suitable for all installations, because they lack important performance characteristics (or “features”) that many consumers want or need due to the constraints of existing building configurations. The Petition seeks to preserve the availability of those product characteristics so that gas products will continue to be available to serve the full range of consumer needs. It is *the opponents of the Petition* – not the Petitioners – that seek to deny consumers access to the products that best serve their needs.

⁴ National Electrical Manufacturers Association comments identified in the docket for this proceeding as Document No. EERE-2018-BT-STD-0018-0046 (“NEMA Comments”) at p. 5.

⁵ DOE’s summary of the range of interests involved in this proceeding did not refer to electrification interests as such (*see* 84 Fed. Reg. at 33012 and 33014). However, such interests have vigorously opposed the Petition despite their lack of standing with respect to the issues involved. *See Hazardous Waste Treatment Council v. EPA*, 861 F.2d 277, 285 (D.C. Cir. 1988) (business interests seeking commercial advantage through governmental regulation of their competitors lacked standing to challenge purported regulatory laxity because they were not suitable advocates for the environmental interests embodied by the statute and had “no common law interest, much less a constitutional one, in having the government drive business [their] way”).

⁶ Comments submitted by the Attorney General of New York *et al* (“AG Comments”), identified in the docket for this proceeding as Document No. EERE-2018-BT-STD-0018-0049 at p. 9.

⁷ *E.g.*, “Comments of the American Public Gas Association,” Docket Number EERE-2014-BT-STD-0031, at pp. 34-37 (filed July 10, 2015) (“what APGA does not support is interfering with a well-functioning market with a standard that will promote fuel switching”).

The practical issue is that standards that would eliminate atmospherically vented gas products would too often result – not in the sale of more efficient gas products – but in the sale of *fewer gas products*. That difference in outcomes is critical, as illustrated by the impact condensing standards would have on low income consumers. Suggestions that favorable action on the Petition would be “quite harmful to the economic interests of consumers, especially low-income consumers”⁸ are based on the premise that condensing standards for residential furnaces would give low income renters the benefits of condensing gas furnaces, which they frequently would not. Existing multifamily properties provide much of the country’s affordable housing, and the owners and managers of older properties already face significant challenges to maintaining affordable housing options for renters. Unfortunately, it is this existing housing stock that faces some of the most serious technical impediments to the installation of condensing gas furnaces. Where it would be impractical to install condensing furnaces, the unavailability of atmospherically vented gas furnaces would force many property owners to turn to alternatives such as electric resistance heating, which would be the low-cost option in terms of initial investment and – in the context of multi-family housing – would often be the only *practical* option.⁹ While electrification advocates might be pleased with any outcome that results in the substitution of electric products for gas products, these scenarios would adversely affect all residents, but would impose the greatest burdens on low income renters who are least able to afford substantially higher utility bills.¹⁰

B. DOE Should Take Decisive Action to Resolve the Issues Raised by the Petition

Petitioners urge DOE to take further action consistent with its proposed interpretive rule by:

- Issuing written findings pursuant to 42 U.S.C. §§ 6295(o)(4) and 6313(a)(6)(B)(iii)(II)(aa), respectively, in its pending residential furnace and commercial water heater rulemaking proceedings;¹¹ and
- Withdrawing the pending proposed rules in those proceedings on the basis of those written findings.

Such findings are justified by the evidence, warranted by DOE’s proposed interpretive rule, and sufficient to establish that adoption of the pending proposals would be contrary to law. DOE

⁸ Comments of the National Consumer Law Center and Consumer Federation of America, identified in the docket for this proceeding as Document No. EERE-2018-BT-STD-0018-0050, at p. 1.

⁹ As indicated in Spire’s comments on DOE’s pending proposal for residential furnaces, the cost and installation requirements for heat pumps makes them an unlikely option in scenarios in which building owners are unwilling or unable to install condensing gas furnaces. See Spire’s January 1, 2017 comments, identified as Document No. EERE-2014-BT-STD-0031-0309 in in Docket No. EERE-2014-031 (“Spire’s Residential Furnace Comments”) at pp. 32-33.

¹⁰ In fact, the proposed residential furnace standards would be harmful for low income consumers for a number of reasons and raise issues warranting an Environmental Justice review. See Spire’s Residential Furnace Comments at pp. 35-43.

¹¹ Energy Conservation Standards for Residential Furnaces, Docket No. EERE 2014-BT-STD-031, and Energy Conservation Standards for Commercial Water Heaters, Docket No. EERE-BT-STD-042.

notes that it intends to develop new supplemental proposed rules if its proposed interpretive rule is finalized and suggests that withdrawal of the two pending proposed rules (both of which would impose standards achievable only for condensing products) is therefore “unnecessary.”¹² Petitioners respectfully disagree.

If DOE adopts its interpretive rule as proposed, it will have determined that the pending proposals in DOE’s residential furnace and commercial water heater rulemaking proceedings are legally defective and cannot be adopted as proposed. In that case, a failure to withdraw those proposals would be a disservice to the public in at least three respects.

First, DOE has a statutory obligation to complete these rulemaking proceedings and it is important that it make constructive progress. If DOE issues its interpretive rule as proposed and the findings Petitioners have requested, it will have resolved an issue that has been a substantial impediment in both of the rulemaking proceedings at issue and – as DOE correctly notes – it will be necessary for DOE to prepare new proposed rules consistent with its interpretive rule. To do so, DOE will need to consider (or reconsider) a number of issues, including the issue of whether separate, more stringent standards for condensing products would be justified. Rather than devoting substantial time and resources to the consideration of such issues without the benefit of public input, DOE should expedite its rule development process by issuing notices confirming that new proposed rules will be required and requesting public comment to help inform the development of those proposals.¹³ This approach would also serve to give all interested parties a clearer understanding of the status of DOE’s deliberations and would document material progress in the respective rulemaking proceedings.

Second, withdrawal of the pending proposals is warranted to correct the public record. Both proposals were the subject of substantial adverse comment to which DOE has never responded. Far from being all-but-final products of agency deliberation, they were highly controversial proposals issued for notice and comment. Moreover, the standards proposed were objectively problematic – not just for the reasons stated in the Petition – but because they were based on analyses that significantly underestimated the installed cost of condensing products,¹⁴ significantly overestimated the value of potential energy savings,¹⁵ and relied upon a defective

¹² 84 Fed. Reg. at 33021.

¹³ As indicated in Petitioners’ Previous Comments, it would be particularly helpful for DOE to acknowledge the error in its modeling approach and take comment on the issue of how it should modify its analysis to ensure that model results are based on the economic consequences of efficiency investments that are reasonably representative of the efficiency investments that would occur only if new standards are imposed. See Petitioner’s Previous Comments at pp. 1-2 and 11-12.

¹⁴ See Spire’s Residential Furnace Comments at pp. 71-73 and 91-94; Spire’s August 30, 2016 comments, identified as Document No. EERE-2014-BT-STD-0042-0045 in in Docket No. EERE-2014-045 (“Spire’s Commercial Water Heater Comments”) at pp. 24-26 and 43-45.

¹⁵ See Spire’s Residential Furnace Comments at pp. 81-86; Spire’s Commercial Water Heater Comments at 35-39.

modeling approach that systematically skewed the results of its analysis.¹⁶ These objectively substantial criticisms (among others) were raised in robust comment submissions timely filed in response to both proposals. Subsequently, DOE received a formal request that these proposed rules be withdrawn as meritless.¹⁷ That request has been pending since early 2017, and DOE has publicly recognized that preparation of a supplemental proposed rule will be necessary at least in the residential furnace rulemaking. However, despite all of these facts, DOE has been subject to persistent criticism for its purportedly unjustified “failure” to adopt the proposed rules as final. Opponents of the Petition have advanced this familiar chorus, as though the outcome of these rulemaking proceedings had already been determined and the energy savings claimed to justify the proposed standards are real.¹⁸ These unjustified claims will persist – and will continue to have traction they don’t deserve – as long as the proposed rules are left pending as though they might still have merit. If DOE determines that its proposed rules are not, in fact, meritorious – a determination the proposed interpretive rule would require – it would be misleading for DOE to leave the proposed rules pending as the most recent embodiment of its views until such time as new proposed rules can be developed and issued. Transparency demands that DOE promptly correct the record that the proposed rules created by issuing notices documenting DOE’s determination that the proposed standards are unwarranted and cannot be adopted.

Third, DOE should note that its proposal not to take any near-term action consistent with its proposed interpretive rule is already being used to undermine the significance of DOE’s response to the Petition.¹⁹ DOE should not risk having the credibility of its response undermined by its own efforts to minimize the potential that litigation challenging its proposed interpretation might be filed sooner rather than later. Although Petitioners understand DOE’s desire to avoid litigation, that desire should not impair DOE’s ability to take meaningful action as requested by the Petitioners, because such action is warranted and would be easy to defend on the merits.

C. DOE Should Clarify the Text of its Proposed Interpretation

The Proposal presents DOE’s proposed interpretation of the Energy Policy and Conservation Act of 1975 (“EPCA”)²⁰ as follows:

¹⁶ See Spire’s Residential Furnace Comments at pp. 5-6 and 58-62; Spire’s Commercial Water Heater Comments at 23-24.

¹⁷ A copy of this request was submitted as Attachment A to Petitioners’ Previous Comments.

¹⁸ See *e.g.*, Comments of Pacific Gas and Electric Company, San Diego Gas and Electric, and Southern California Edison, identified in the docket for this proceeding as Document No. EERE-2018-BT-STD-0018-0045 (“Cal. Electric Comments”) at pp. 5-6; AG Comments at pp. 3-4.

¹⁹ For example, an Energywire report of July 3, 2019 quoted Steven Nadel, executive director of the American Council for an Energy-Efficient Economy, as follows: “Nadel noted that DOE stated the new rule was ‘just an interpretation.’ It’s like DOE is saying, ‘Don’t sue us now. This is not a final decision,’ he said).

²⁰ 42 U.S.C. 6291 *et seq.* As is customary for DOE, references to EPCA in this document refer to the statute as amended through America’s Water Infrastructure Act of 2018, Public Law 115–270 (Oct. 23, 2018).

adoption of energy conservation standards that would limit the market to natural gas and/or propane gas furnaces, water heaters, or similarly situated products/equipment (where permitted by EPCA) that use condensing combustion technology would result in the unavailability of a performance related feature within the meaning of 42 U.S.C. [§§] 6295(o)(4) and 6313(a)(6)(B)(iii)(II)(aa) and 42 U.S.C. 6316(a).²¹

In the interests of clarity, Petitioners urge DOE to conclude that standards limiting the market to products that use condensing combustion technology “would result in the unavailability of a performance characteristic or feature” within the meaning of the cited provisions. Petitioners do not believe that this would be any substantive change, but this wording more closely tracks the language of 42 U.S.C. §§ 6295(o)(4) and 6313(a)(6)(B)(iii)(II)(aa). In addition – as explained below – Petitioners are confused by the parenthetical clause and the citation to 42 U.S.C. § 6316(a) in DOE’s proposed interpretation and request that both be omitted.

Petitioners raised – and DOE proposes to address – a specific issue as to what constitutes a “performance characteristic” (or “feature”) for purposes of 42 U.S.C. §§ 6295(o)(4) and 6313(a)(6)(B)(iii)(II)(aa) (the “Unavailability Provisions”). The Proposal goes on to suggest that these provisions do not apply in cases in which DOE is adopting ASHRAE 90.1 standards pursuant to 42 U.S.C. § 6313(a)(6)(A)(ii)(I),²² and Petitioners infer that the parenthetical clause may be intended as a reference to that point. However, the question of when DOE’s authority is constrained by the Unavailability Provisions is a separate issue that has no bearing on question of what constitutes a “performance characteristic” (or “feature”) for purposes of those provisions.²³ In addition, the meaning of the parenthetical clause isn’t clear, and the placement of that clause in the text of DOE’s interpretation suggests that it speaks to the “performance characteristic” issue rather than to the applicability of the Unavailability Provisions. The reference to 42 U.S.C. § 6316(a) is confusing for a similar reason: that provision – rather than being another Unavailability Provision as its placement in the text suggests – is a complicated applicability provision that governs some of the cases in which the Unavailability Provisions apply. Again, that is an issue separate from that addressed by the text to which the citation is attached.

Petitioners do not believe that DOE needs to address the applicability of the Unavailability Provisions in the text of its interpretive rule, but – to the extent it chooses to do so – Petitioners request that DOE address the applicability issues in separate text rather than in the text of its interpretation as to what constitutes a “performance characteristic” (or “feature”) for purposes of those provisions.

In sum, in the in the interest of clarity, Petitioners request that DOE revise its proposed interpretation regarding the “performance characteristic” issue as follows:

²¹ 84 Fed. Reg. at 33020.

²² 84 Fed. Reg. at 33013, 33021.

²³ In cases in which the Unavailability Provisions don’t apply, DOE’s interpretation as to what constitutes a “performance characteristic” for purposes of those provisions would be irrelevant, and nothing in the interpretation Petitioners request suggests otherwise.

adoption of energy conservation standards that would limit the market to natural gas and/or propane gas furnaces, water heaters, or similarly situated products/equipment (~~where permitted by EPCA~~) that use condensing combustion technology would result in the unavailability of a performance characteristic or related feature within the meaning of 42 U.S.C. §§ 6295(o)(4) and 6313(a)(6)(B)(iii)(II)(aa) ~~and 42 U.S.C. 6316(a)~~.

If necessary, issues as to when that interpretation serves to constrain DOE's rulemaking authority can be addressed in an additional sentence.

D. DOE Should Clarify or Reconsider Aspects of its Analysis

1. DOE should renounce the asserted legal basis for its previous tentative conclusion that standards effectively banning atmospherically vented gas products are permissible.

As the Proposal states, DOE previously “viewed venting of condensing vs non-condensing as a technological and economic issue incidental to the appliance’s purpose of providing heat or hot water to a dwelling or business.”²⁴ Petitioners appreciate the fact that “DOE has now come to see that it may have been too narrow in its focus” and that “a consumer’s interaction with and perception of a furnace or water heater may go beyond its primary function.”²⁵ However, Petitioners respectfully submit that DOE should more clearly renounce the asserted legal basis for its previous tentative conclusion.

DOE’s previous tentative conclusion that condensing standards would not have the unlawful effect of making performance characteristics (or features) unavailable was based on specific legal grounds: the assertion that *the only product characteristics that EPCA protects* are characteristics that provide utility to consumers *beyond the basic function of the product at issue*. DOE was explicit on this point in the residential furnace rulemaking, stating that it “has no statutory basis” to protect product characteristics that “do not provide unique utility to consumers beyond the basic function of providing heat, which all furnaces perform.”²⁶ DOE then asserted that “the consumer utility of a furnace is that it provides heat to a dwelling, and that the type of venting used for particular furnace technologies does not impact that utility” or “provide any separate performance-related utility.”²⁷ These assertions did not reflect a factual conclusion that there is no difference between atmospherically vented products and condensing products, because DOE acknowledged that there are such differences and that – due to those differences – atmospherically vented products have advantages that condensing products lack. Instead these assertions amounted to a legal claim that those differences “don’t count” for purposes of the Unavailability Provisions.

²⁴ 84 Fed. Reg. at 33016.

²⁵ *Id.*

²⁶ 81 Fed. Reg. 65720, 65753 (September 23, 2016).

²⁷ 81 Fed. Reg. at 65752-53.

The first problem with this legal assertion is that nothing in the statute suggests that the only product characteristics protected under the Unavailability Provisions are those that provide utility to consumers *beyond the basic function of the product at issue*. The statute simply says that DOE may not adopt standards that are “likely to result in the unavailability . . . of performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as those” currently available to consumers.²⁸ Rather than applying these provisions of the statute as they are written, DOE asserted – without any legal basis – that there are performance characteristics or features that the Unavailability Provisions do not protect. Similarly, in interpreting the requirement that DOE consider “the utility to the consumer” of a feature when considering the need for separate product classes,²⁹ DOE’s position was that it only had to consider *certain kinds of utility*: “utility as an aspect of the product *that is accessible to the layperson and is based on user operation*.”³⁰ Again, this simply is not what the statute states. In both instances, DOE simply read unqualified statutory language to include qualifications of DOE’s own creation.

Because there is no legal basis to suggest that any performance characteristics that matter to consumers do not qualify as “performance characteristics” (or “features” for purposes of the statutory provisions that govern the need for separate product classes), DOE’s previous analysis was clearly “too narrow in its focus” and questions as to whether “a consumer’s interaction with and perception of a furnace or water heater may go beyond its primary function”³¹ are legally irrelevant. Under EPCA, the legally relevant question is whether atmospherically vented furnaces have “performance characteristics” (or “features”) that are important to consumers, and – as DOE has now recognized – they plainly do.³² There is no legal basis for DOE to dismiss the significance of such characteristics on the basis of abstract extra-statutory considerations such as whether those characteristics are “accessible to the layperson”³³ or have separate utility beyond the basic function of the product, and DOE should recognize these points expressly.

The root of the problem with DOE’s previous analysis was that it characterized the differences between condensing and atmospherically vented products strictly as a matter of cost, and dismissed them on the theory that all cost-related characteristics are “incidental to the appliance’s purpose” and thus do not qualify as characteristics warranting protection under EPCA.³⁴ As already indicated, this is incorrect as a matter of statutory interpretation, because there is no basis to dismiss characteristics that matter to consumers on the grounds of extra-statutory abstractions involving the nature of the characteristic involved. However, suggestions

²⁸ See 42 U.S.C. §§ 6295(o)(4) and 6313(a)(6)(B)(iii)(II).

²⁹ See 42 U.S.C. § 6295(q)(1)(B).

³⁰ 84 Fed. Reg. at 33013.

³¹ 84 Fed. Reg. at 33016.

³² See 84 Fed. Reg. at 33016 and 33020.

³³ 84 Fed. Reg. at 33013.

³⁴ 84 Fed. Reg. at 33013; see 81 Fed. Reg. 65720, 65752 (September 23, 2016) (features that make a product less costly to install do not warrant protection because such features do not provide any separate utility beyond the basic product function).

that the difference in product characteristics between condensing products and atmospherically vented products is simply a matter of cost are also incorrect from a factual standpoint, because atmospherically vented products have operating capabilities that condensing products lack. If the market for residential furnaces were limited to condensing furnaces, these characteristics would be unavailable, and consumers would be left with no residential furnaces capable of operating with existing atmospheric venting systems, capable of operating with other commonly-vented appliances, or capable of operating without a condensate disposal system. The fact that unavailability of these characteristics would impose significant cost on consumers does nothing to change the fact that material differences in performance characteristics are involved or that those differences have significant utility for consumers.

For some consumers, the utility of these performance characteristics is the same utility DOE recognized in the case of vented clothes dryers: “the ability to have [the product] in a living area where vents are impossible to install.”³⁵ For others it is the same utility DOE recognized in the case of “space constrained” appliances: the ability to have a product that will fit into the space provided for the product without the need for building modifications.³⁶ For some consumers, these characteristics make it possible to replace one product without having to scrap another perfectly good appliance. For many consumers they make it possible to use the product without having to accept actively undesirable building modifications (such as modifications that require a sacrifice of existing window, balcony, or interior living space). There is simply no basis to characterize the loss of such utilities as a matter of cost rather than of the unavailability of performance characteristics for purposes of the Unavailability Provisions.

Sacrifices of window and balcony space are also a significant issue in the context of new construction, as illustrated by the following photograph of an apartment building with condensing furnaces. Condensing products are normally installed along an exterior wall with short horizontal venting directly through the wall. This requires a sacrifice of available window or balcony space that can be particularly obvious in the case of apartment buildings or townhouses. In the example shown in Figure 1, the furnace in each unit is located in a utility space (accessed from the balcony of each apartment) that consumes over half as much space as the balcony itself:

³⁵ 84 Fed. Reg. at 33013 *see* 76 Fed. Reg. 22454, 22485 (April 21, 2011) (discussing separate product classes and the unique utility that ventless clothes dryers offer to consumers). Although the venting issues are slightly different, the practical issues are similar and even more pronounced in the case of atmospherically vented furnaces than in the case of vented clothes dryers.

³⁶ 84 Fed. Reg. at 33016 and 33020. Although the particular characteristics involved are different (size in the case of space-constrained products and venting in the case of atmospherically vented furnaces), both characteristics provide exactly the same utility, though the value of that utility to consumers is generally far greater in the case of atmospherically vented furnaces than in the case of space-constrained appliances.

Figure 1



In similar buildings with atmospherically vented furnaces, the furnaces are generally located in the interior of the building (e.g., along the central hallway separating the apartments on one side of the building from those on the other) and vented vertically through the roof of building. The latter type of design eliminates the need for the vent-studded columns of vertically-stacked utility spaces along the outside wall of the building and the resulting loss of available window or balcony space.

Congress did not authorize DOE to impose energy conservation standards that would leave consumers to bear the collateral damage caused by the elimination of product performance characteristics, and it certainly did not authorize DOE to dismiss such damage merely by accounting for the out-of-pocket costs such damage would impose. In this regard, it is important to recognize that the range of issues that can appropriately be addressed as a simple matter of economic analysis is narrower than DOE has previously recognized.

EPCA expressly directs DOE to compare the savings in operating costs that a required efficiency improvement would provide “to any increase in the price of, or in the initial charges for, or maintenance expenses *of the covered product*” (*i.e.*, the product that is the subject of the standard).³⁷ One need not determine the precise limits of what qualifies as an “initial charge for” a product to conclude that the cost of substantial building modifications are beyond them. This

³⁷ 42 U.S.C. § 6295(o)(2)(B)(i)(II).

is especially true where a standard would result in the unavailability of product characteristics that many consumers need to be able to replace a product without having to accept *undesirable* building modifications, because it would be patently unreasonable to account for such scenarios as a mere matter of “installations costs” and force consumers to accept the undesirable building modifications (or do without the product in question). Similarly, it is objectively unreasonable to characterize the cost of scrapping and replacing a “stranded” (but otherwise perfectly good) *water heater* as part of the “initial charges for” (or “installation cost” of) *a furnace*. Rather than being “initial charges for” condensing products, these are costs of collateral damage caused by the unavailability of performance characteristics or features. The fact that these costs can be substantial makes the significance of the loss of product characteristics more obvious, but it does not make the issue one that is “primarily a matter of cost” rather than a matter of performance characteristics for purposes of the Unavailability Provisions.

This is clear as a matter of statutory interpretation, because adverse impacts on product reliability are a matter of product performance – not just cost – which is why the “incidence and cost of [f] repair” was specifically identified as a “performance characteristic” for purposes of the Unavailability Provisions.³⁸ Similarly, if the need for building modifications could be dismissed as a matter of “installation costs,” the ability of a product to “fit in standard building spaces” would not be protected under 42 U.S.C. § 6295(o)(4) as Congress plainly intended,³⁹ and the statute would not have specified separate product classes for three different categories of “direct heating equipment” that differ principally in the manner of their installation.⁴⁰ As a straight-forward matter of statutory interpretation, it is absurd to suggest that Congress intended to ensure the continued availability of products with the sizes – but not products with venting or other performance characteristics – needed to “fit in standard building spaces” without the need for building modifications. The governing principle is the same in both cases: *where it has been shown that buildings are architecturally designed to accommodate products with some characteristics but not others, DOE must preserve the availability of products with those characteristics instead of imposing standards that would require modification of the buildings designed for them.*

Petitioners have not previously focused on the comparative physical size of condensing and atmospherically vented products, in large part because the differences in venting requirements for condensing products generally present far more serious practical issues than differences in product size. However, DOE did request comment on the extent to which condensing standards would raise issues with regard to product size, and also discussed issues with respect to manufactured housing, a context in which space constraints are a particularly important

³⁸ H.R. Rep. 100-11 at 23 (1987).

³⁹ See H.R. Rep. No. 100-11 at 22 (1987).

⁴⁰ See 42 U.S.C. § 6295(e)(3). Opponents of the Petition suggest that Congress didn’t know what it was doing when it enacted this provision. See comments submitted by the Natural Resources Defense Council and EarthJustice identified in the docket for this proceeding as Document No. EERE-2018-BT-STD-0018-0055 (“NRDC/EarthJustice Comments”) at p. 12. However, this claim is insufficient to rebut the basic principle that the provisions of a statute must not be read in isolation, but as part of the statute as a whole, and interpreted in their context as part of a coherent and harmonious statutory scheme. *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 132-33 (2000).

consideration.⁴¹ In that regard, condensing products are at least typically larger than comparable atmospherically vented products, and even small differences can have significant practical impacts in cases in which (for example) a furnace and air handler must fit inside a closet or other confined space with required clearances on all sides.

2. DOE should reconsider its analysis concerning the significance of fuel switching in the context of efficiency regulation.

As the Proposal recognizes, opponents of the Petition argue that fuel switching “is a cost impact” that can be appropriately addressed in DOE’s economic analysis and that there is no reason to view fuel switching as a cause for concern.⁴² In fact, the potential for standards to cause fuel switching is a critical consideration in standards rulemaking for several different reasons.

First, fuel switching can occur because a standard would result in the unavailability of important product characteristics. This would be the case if condensing standards were imposed on residential furnaces or commercial water heaters, because there are many cases in which it would be impractical to install condensing products or in which such products could not be installed without the need for undesirable building modifications that purchasers would be unwilling to accept. Where this is the case, the Unavailability Provisions would not preclude the adoption of the standard because fuel switching would occur, but because of the unavailability of product characteristics that would cause that fuel switching to occur.

Second, it is important to recognize that the purpose of energy efficiency standards is to produce energy conservation benefits by increasing the efficiency of the products subject to those standards: a purpose that can be served only to the extent products with required efficiency improvements would actually be sold. While electrification advocates would be delighted with efficiency standards that would drive gas products out of the market, that is not a legitimate objective for regulation authorized by statutory provisions that are specifically designed to promote the efficiency of the regulated products.

The related point is that DOE must justify standards on the basis of *the economics of required efficiency improvements*, which DOE cannot do if – instead of accounting for the economics of cases in which poor economic outcomes would drive consumers to alternative products – it excludes those outcomes from its analysis and substitutes more favorable economic outcomes based on assumed product substitution. EPCA makes this explicit by requiring DOE to prepare and consider both “payback” and life-cycle cost (“LCC”) analyses in determining whether standards are economically justified. Specifically, DOE must consider:

- Whether “the additional cost to the consumer of purchasing a product complying with an energy conservation standard level will be less than three times the value of the energy . . .

⁴¹ 84 Fed. Reg. at 33016-17.

⁴² 84 Fed. Reg. at 33017-18.

savings during the first year that the consumer will receive as a result of the standard” (*i.e.*, a payback analysis);⁴³ and

- The “savings in operating costs throughout the estimated average life of the covered product . . . compared to any increase in the price of, or in the initial charges for, or maintenance expenses of” the product “likely to result from the imposition of the standard (*i.e.*, a life cycle cost analysis).⁴⁴

The statutory language makes it clear that both types of analysis are designed to assess the economic justification of standards through a comparison of the cost of required efficiency improvements and the operating cost savings those efficiency improvements would provide.

DOE recognizes that consumers may react to the increased cost of higher-efficiency products by declining to purchase such products, and consideration of such market impacts is critical for evaluation of some of the issues DOE must consider in standards development. However, *the way consumers would react* to the economics of required efficiency improvements does not change the economics consumers would be reacting to, and it is *those* economics – the economics of the required efficiency improvements – that payback and LCC analyses must address.

Unfortunately, DOE’s analysis in the residential furnace rulemaking “accounted for instances where installation of a condensing furnace was either too difficult or costly, with the result being substitution of another type of heating product.”⁴⁵ Specifically, in the residential furnace rulemaking DOE preferentially excluded high-cost efficiency investments from its analysis, assumed that purchasers in those cases would choose alternative products, and prepared purported payback and LCC analyses reflecting the investment outcomes for the resulting mix of products.⁴⁶ This analysis was problematic in several respects. Most obviously, it failed to answer the core question that payback and LCC analysis is supposed to address: the question of how the cost consumers would pay for a required efficiency improvement would compare with the operating cost savings that efficiency improvement would provide. In addition, rather than accounting for the unreasonable costs that would induce fuel switching, DOE’s analysis claimed regulatory benefits resulting – not from the efficiency improvements its proposed standards would require – but from assumed actions taken in response to the *costs of the required efficiency improvements*. By this logic, standards could be “economically justified” on the grounds that they are *so economically unjustified* that consumers would no longer purchase the regulated products at all.

DOE should recognize that the purpose of payback and LCC analysis is to determine what the economics of a required efficiency improvement would be, and that it is improper to skew that analysis by excluding unfavorable economic outcomes from its analysis on the basis of

⁴³ 42 U.S.C. § 6295(o)(2)(B)(iii).

⁴⁴ 42 U.S.C. § 6295(o)(2)(B)(i)(II).

⁴⁵ 84 Fed. Reg. at 33017.

⁴⁶ See Spire’s Residential Furnace Comments at pp. 6-7 and 62-65.

assumptions as to *how purchasers would be expected to react to the economics of those unfavorable outcomes*. By doing the opposite in the residential furnace rulemaking, DOE effectively used evidence that consumers would consider required efficiency improvements to be economically unjustified (i.e., fuel switching in response to particularly unfavorable economic outcomes) as a basis to exclude unfavorable data from its analysis of the economics of the efficiency improvements at issue. In the future – to ensure that payback and LCC analyses appropriately accounts for the economics of required efficiency improvements – DOE should account for all of the relevant economic outcomes by assuming that the standard under consideration would not reduce the number of products sold.⁴⁷

3. DOE should acknowledge that the systemic error in its base-case efficiency assignment invalidates the economic analysis underlying its pending proposals.

As explained in Petitioners' Previous Comments, a systemic defect in DOE's economic analysis provides a separate and independently-sufficient basis for DOE to withdraw its pending proposed rules.⁴⁸ In short, DOE's modeling is supposed to provide an assessment of the economic impacts of the efficiency investments that would only occur if a proposed standard were adopted, and – due to the use of random base-case efficiency assignment – DOE's modeling fails to provide such an assessment. DOE's response – that its "base-case efficiency distributions . . . are not entirely random"⁴⁹ – is not responsive to the issue.

With respect to the commercial water heater rulemaking, DOE states that:

the no-new-standards case and the selection in the LCC model were . . . based on distributions of models in DOE's data base, which included all commercially-available equipment on the market at the time and which (due to the absence of shipments data) represents the best data available to the DOE at the time.⁵⁰

The fundamental problem with DOE's modeling approach is that it is supposed to analyze the economics of the efficiency investments that would occur only if a new standard were adopted but – instead of doing so – it analyzes the economics of a *random selection of all potential efficiency investments*, including those that consumers would make on their own in the absence of regulation. The suggestion that DOE's modeling was based on a reasonable assessment of the relative market shares of products with different efficiencies has no bearing on this issue, because the problem is not that DOE's analysis is based on the wrong *number* (or percentage) of

⁴⁷ While the adverse impact a standard would have on product sales should be ignored *for purposes of payback and LCC analysis*, it does not follow that it should be ignored for purposes of other analyses as well. For example, the impact a standard would have on product sales is critical in the consideration of manufacturer and utility impacts, and is also important when DOE is estimating the energy savings a standard would provide (because required efficiency improvements can only provide energy savings to the extent that the more efficient products are purchased and used). These differences in analytical approach are required by the different purposes the analyses serve.

⁴⁸ See Petitioner's Previous Comments at pp. 11-12 and Attachments A and B.

⁴⁹ 84 Fed. Reg. at 33018.

⁵⁰ *Id.*

efficiency investments; it is that its analysis is based on *the wrong efficiency investments*: a random selection of investments rather than those purchasers would decline to make in the absence of regulatory compulsion. As a result, DOE's payback and lifecycle cost analyses do not provide assessments of regulatory impacts (*i.e.*, of the efficiency investments that would occur only if new standards were imposed): they provide results for a random selection of all potential efficiency investments including those that consumers would choose to make on their own.⁵¹ Whether DOE's analysis was based on the right *number* of efficiency investments is completely beside the point.⁵²

With respect to the residential furnace rulemaking, DOE states that:

assignment of efficiency in the base case was based on both the region and specific building in which it is installed, with the market shares of furnaces first being assigned by region based on historical shipments data and then allocated to specific buildings based on the existing furnace being replaced.⁵³

Consideration of regional differences in market share simply ensures that DOE's analysis is based on the right number (or percentage) of efficiency investments in each region; it does not address the fundamental problem that DOE's analysis is not based on the *right* efficiency investments. The suggestion that baseline efficiencies are "allocated to specific buildings based on the existing furnace being replaced" also fails to address the problem, *because DOE's model randomly assigns the efficiencies of the existing furnaces being replaced*, with the result that efficiency assignments based on those efficiencies are equally random.

For an abstract illustration of the problem with DOE's analysis, consider a region in which condensing furnaces already account for 90% of all new furnace sales. For purposes of illustration, assume that:

- 10% of the new furnace installations in the region involve furnace replacement scenarios in which it would be particularly difficult to replace an atmospherically vented furnace with a condensing furnace (*i.e.*, "bad installations"); and
- 80% of the cases in which condensing furnaces are *not already being sold* are cases involving "bad installations."

Under these assumptions:

⁵¹ DOE had no basis to assume that the results for these two different universes of efficiency investments would be the same; it simply chose to characterize the wrong universe of efficiency investments as rule outcomes.

⁵² However, it should be noted that DOE did not consider the right number of efficiency investments either. Lacking any credible information about the distribution of commercial water heater efficiencies, DOE simply made the arbitrary assumption that sales are directly proportional to the number of available models, as though every individual model had the same number of sales. See Spire's Commercial Water Heater Comments at 12-13 and 24-26.

⁵³ 84 Fed. Reg. at 33018.

- 10% of the new furnace installations in the region would be “rule outcome” cases (*i.e.*, cases in which condensing furnaces would only be imposed if a standard requiring condensing furnaces were imposed);
- 80% of those “rule outcome” cases would involve “bad installations,” and
- The economics of the “rule outcome” cases would look relatively bad.

Under DOE’s modeling approach, DOE would use shipment data to conclude (correctly, based on the reality assumed above) that 10% of the new furnace installations in the region are “rule outcome” cases. However, instead of considering the economics of the actual rule outcome cases (80% of which would involve “bad installations”), DOE’s approach considers the economics of a random 10% of *all new furnace installations*, only 10% of which involve “bad installations.” The economics of this random selection of installations would obviously look much better than the economics of the actual rule outcome cases, and that is the point: because DOE’s analysis is based on the *wrong installations* it does not actually provide an assessment of rule impacts. The practical impact is equally obvious: to the extent purchasers acting in the absence of regulation have *any* statistically significant preference for good economic outcomes or aversion to bad economic outcomes (as they unquestionably do), DOE’s analytical approach produces a systematic overstatement of regulatory benefits and understatement of costs.

This fundamental problem with DOE’s modeling approach fatally undermines the economic analysis in support of DOE’s proposed rules in the residential furnace and commercial water heater rulemakings. As a result, there is no reasonable basis to conclude that the standards proposed are economically justified as EPCA requires. Neither the claim that DOE’s “base-case efficiency distributions . . . are not entirely random”⁵⁴ nor the explanation of the basis for that claim have any bearing on this issue. Withdrawal of DOE’s pending proposed rules is warranted for this reason alone.

E. DOE Was Right to Reject Adverse Comments on the Petition

Comments submitted in opposition to the Petition relied extensively on previous DOE statements that have already been addressed in these Comments, and suggest that the Petition seeks to reopen rulemaking proceedings in which the issues have already been resolved.⁵⁵ This is no argument at all, as agencies are free to reconsider their positions if they conclude that a change in position is warranted and provide a reasonable explanation for that change.⁵⁶ Moreover, as discussed above, the Petition concerns highly controversial notices of proposed rulemaking that were the subject of substantial adverse comments to which DOE has never responded. While

⁵⁴ 84 Fed. Reg. at 33018.

⁵⁵ See AG Comments at p. 6-8; Cal. Electric Comments at p. 11; Northeast Energy Efficiency Partnership comments identified in the docket for this proceeding as Document No. EERE-2018-BT-STD-0018-0048 at p. 1; NRDC/EarthJustice Comments at p. 13.

⁵⁶ *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502 (2009).

opponents of the Petition seem to suggest that the outcome of these proceedings had already been determined, the fact is that DOE's deliberations had not been concluded and *cannot lawfully be concluded* without consideration of substantial adverse comments in the record demonstrating that significant changes in DOE's proposed actions are necessary. Suggestions to the contrary notwithstanding,⁵⁷ DOE's obligation to comply with statutory deadlines does not obviate its responsibility to consider comment nor require it to proceed with its pending proposals without regard to its statutory obligations to comply with notice and comment requirements and ensure that new standards are lawful on the merits.

Besides urging DOE not to consider the issues raised by the Petition on the merits, comments submitted in opposition to the Petition largely mischaracterize the issues raised by the Petition and raise legal and factual arguments that DOE was right to reject.

1. Opponents of the Petition misread the legislative history.

The Natural Resources Defense Council, Inc. ("NRDC") and EarthJustice argue that the Unavailability Provisions only apply if the unavailability of the performance characteristics or features at issue would "completely destroy the market for a covered product."⁵⁸ This argument is based on a transparent misreading of (misquoted) legislative history that simply makes the point that standards can *result in the unavailability of product characteristics* by effectively pricing products with such characteristics out of the market. The legislative history states that 42 U.S.C. § 6295(o)(4):

"would forbid a standard for small gas furnaces being set at a level that would increase the price to the point that the product would be noncompetitive and that would result in minimal demand for the product."⁵⁹

In this example, "small" describes a product characteristic that would be made unavailable by a standard effectively pricing "small" products out of the market. The same point is stated more clearly in other legislative history as follows:

A standard would result in the "unavailability" of characteristics, etc., if, as a result of the standard, a product containing such a characteristic would become prohibitively expensive, i.e., if there would be minimal demand for the product having such characteristic.⁶⁰

⁵⁷ AG Comments at p. 4-5.

⁵⁸ NRDC/EarthJustice Comments at p. 3; see 42 U.S.C. § 6295(o)(4) ("... performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as those generally available...") and 42 U.S.C. § 6313(a)(6)(B)(iii)(II)(aa) ("... performance characteristics (including reliability, features, sizes, capacities, and volumes) that are substantially the same as those generally available...").

⁵⁹ S. Rept. 100-6 at 8-9 (January 30, 1987) reprinted in 1987 U.S.C.C.A.N. 52, 59.

⁶⁰ H.R. Rep. No. 100-11 at 22 (1987).

This legislative history is not relevant to the issues raised by the Petition. Standards that can be achieved only through condensing technology would make products with the characteristics atmospherically vented products offer unavailable by banning such products outright, not by pricing them out of the market. Nothing in the statute or the legislative history suggests that standards resulting in the unavailability of gas furnaces with such characteristics would be precluded only if the unavailability of those characteristics would “completely destroy the market” for gas furnaces.

2. Opponents of the Petition misread the statutory text.

NRDC and EarthJustice also argue that a difference in the placement of a parenthesis mark between the two Unavailability Provisions somehow “dooms” the Petition with respect to residential furnaces.⁶¹ However, NRDC and EarthJustice point out, the difference between the two provisions came to exist when 42 U.S.C. § 6313(a)(6)(B)(iii)(II) was adopted as a “technical correction” conforming the statutory provisions applicable to commercial products such as water heaters with those applicable to consumer products.⁶² There was no indication at the time that any substantive difference between the two provisions was intended, and there is no reason why it would make sense for any substantive difference to exist. Under the circumstances, it seems clear that the difference was merely a typographical error. In any event, it is difficult to see any material difference between the two provisions, because both cover “performance characteristics (including reliability)” and both cover “features, sizes, capacities, and volumes.” The only ostensible difference between them is whether “features, sizes, capacities, and volumes” are included (along with “reliability”) under “performance characteristics,” and it is difficult to see how that difference would matter. The ability of a product to function with atmospheric venting – and the ability to operate without generating liquid condensate – are “performance characteristics” in the literal sense that they relate directly to how the product performs and is capable of performing. While opponents of the Petition argue in circles trying to come up with some linguistic basis to argue that the specific characteristics that atmospherically vented products offer are somehow outside the scope of the protections the Unavailability Provisions provide, they ultimately fall back upon the same kinds of extra-statutory qualifications already discussed.⁶³ These efforts provide no basis to conclude that broadly-written statutory provisions that were intended “to ensure that an amended standard does not deprive consumers of product choices and characteristics, features, sizes, *etc.*”⁶⁴ should, in the case of atmospherically vented gas products, be read to fail in that purpose.

3. No material facts are in dispute.

Opponents of the Petition also fail to generate any credible dispute as to the material facts. In particular, there is no question that:

⁶¹ NRDC/EarthJustice Comments at p. 4-5.

⁶² See NRDC/EarthJustice Comments at p. 2, note 1.

⁶³ See NRDC/EarthJustice Comments at pp. 4-5, NEMA Comments at pp. 13-14.

⁶⁴ H.R. Rep. No. 100-11 at 22 (1987).

- Standards that could only be achieved through the use of condensing technology would make atmospherically vented products unavailable;
- Atmospherically vented products can do things that condensing products cannot (specifically, they can operate with the atmospheric venting systems built into most of the existing buildings in which gas products are installed and can operate without generating liquid condensate);
- The unavailability of products with these capabilities would generally leave purchasers seeking to replace existing atmospherically vented products without the type of replacement products for which their buildings were designed; and
- In such cases, atmospherically vented products generally cannot be replaced with condensing products without the need for building modifications.

Claims that “Petitioners have not shown that any characteristic of the performance of furnaces – whether reliability, safety, heating, serviceability, incidence and cost of repair, or something else – is substantially different depending on whether the furnace does or does not rely on condensing technology”⁶⁵ sound like factual claims but are not. They simply reflect the baseless assertion that the substantial differences in performance characteristics between atmospherically vented products and condensing products can be characterized as “installation characteristics” and dismissed with the *ipse dixit*⁶⁶ that “[e]ase of installation is not a performance characteristic.”⁶⁷ As already discussed, statements characterizing the issues involved as a matter of “increased cost of installation”⁶⁸ or “incremental costs”⁶⁹ that could be appropriately addressed in payback and lifecycle cost analysis are unreasonable efforts to reduce the loss of product characteristics to a matter of out-of-pocket costs, not factual claims that nothing more is involved. Opponents of the Petition do not actually contest the fact that more is involved, they simply ignore or seek to dismiss that fact. For example, a study prepared in opposition to the Petition repeatedly acknowledges that the installation of condensing appliances frequently presents non-economic problems for purchasers.⁷⁰ Although the report goes out of its way to characterize these other considerations as the “aesthetic” concerns of “building owners,” the reality is that condensing

⁶⁵ NRDC/EarthJustice Comments at p. 5.

⁶⁶ Literally “he said”: a bald assertion.

⁶⁷ NRDC/EarthJustice Comments at p. 4.

⁶⁸ NEMA Comments at p.4.

⁶⁹ Cal. Electric Comments at p. 3.

⁷⁰ See Investigation of Installation Barriers and Costs for Condensing Gas Appliances, identified in the docket for this proceeding as Document No. EERE-2018-BT-STD-0018-0062 (“Installation Barriers”) at p. 7 (“20% of the time . . . [Building owners/architects] have a vision [and] don’t want to see chases on the side of their building, gas exhaust fumes and smoke, etc.”); p. 3 (citing “the building owner’s design goals,” and “building aesthetics”) p. 6 (citing cases in which “[a] building owner does not want to drill through any walls or have any visible exterior vents” and acknowledging problems “caused by building owners’ refusal to allow a vent in a certain location”), p. 8 (citing “[s]pecific building owner preferences” and “owner aesthetic preferences”).

standards would leave many consumers facing the need to sacrifice window, balcony, or interior living space simply to replace an existing gas product. Rather than denying the existence of such considerations, the study simply declines to recognize them as a cognizable issue independent of out-of-pocket costs. As a result, the study only considers required building modifications to be “significant” – no matter what the impacts of such modifications might be – if their out-of-pocket costs would result in total “installation costs” that, by themselves, would be “more than double the total system cost of a typical retrofit.”⁷¹ Accordingly, the study’s claims that “significant” building modifications are only infrequently required are based on an unreasonable definition of “significance” and are not really responsive to the factual basis for the Petition.

One particular *faux*-factual issue involves the question of whether there are cases in which it would be “impossible” to replace atmospherically vented gas products with condensing products. This purported debate is of limited legal significance, because it stems from the false premise that – unless “installation challenges” imposed by the loss of the product characteristics at issue would “absolutely preclude”⁷² the installation of condensing products – the unavailability of those characteristics can be dismissed as matter of out-of-pocket cost.⁷³ In any event, much of this debate is semantic. Petitioners have been reluctant to speak in terms of technical (as opposed to practical) “impossibility” because it is *technically possible* to put a man on the moon, and – in that sense – there is very little of a mechanical nature that is truly *impossible*. For example, the owner of a condominium unit who cannot install a condensing furnace without violating applicable restrictive covenants or compromising a common venting system serving appliances in other separately-owned condominiums could simply buy out as many neighbors as it takes to resolve these issues. It’s only money, after all, not a matter of *technical* or *physical* impossibility. However, it is only in that objectively ridiculous sense that it would always be possible to replace atmospherically vented products with condensing products. Petitioners think it is reasonable, speaking in practical terms, to say that it is impossible to install condensing products in circumstances of this kind, and that is certainly the kind of usage DOE employed when it referred to settings in which it is “impossible” to install vented clothes dryers.⁷⁴ It is therefore unreasonable to suggest that Petitioners have not shown that there are cases in which condensing products “cannot” be installed and are concerned only about cases in which the installation of condensing products would be “economically less convenient.”⁷⁵ Similarly, assertions that it is *always possible* (or only rarely “impossible”) to replace atmospherically vented product with condensing products are either false or limited to “physical” or “technical” impossibility⁷⁶ to an extent that makes them non-responsive to the point that there are many cases in which condensing products are not a practical option.

⁷¹ Installation Barriers at p. 3.

⁷² NRDC/EarthJustice Comments at p. 6 n.3

⁷³ Hence asserted puzzlement over whether “the installation challenges Petitioners allege mean that installing a furnace or water heater using condensing technologies is impossible, or only more expensive.” NRDC/EarthJustice Comments at pp. 5-6.

⁷⁴ 84 Fed. Reg. at 33013.

⁷⁵ NEMA comments at p. 10.

⁷⁶ See NRDC/EJ Comments at p. 5 (“physically impossible”).

There *are* many cases in which condensing products are not a practical option.⁷⁷ This has been documented repeatedly, including in numerous written comments volunteered in response to a survey addressing the cost of residential furnace replacements.⁷⁸ Based on a survey of fifteen individuals (including eleven installers), the study prepared in opposition to the Petition suggests that “[t]here is always a way of getting venting ‘done.’”⁷⁹ However, many other installers have had different experience, reporting that:

“There are multiple situations, especially in larger urban cities, where a condensing furnace installation is literally impossible. These include historic buildings, concrete buildings, and other buildings where distance to acceptable vent location violates manufacturer’s install guidelines, or where the only way to vent a condensing furnace would be through other homeowner’s condos.”⁸⁰

And:

“We have had several installations where upgrading to a condensing furnace was not possible, not because of costs, but simply not being able to conform to Code with the venting requirements.”⁸¹

⁷⁷ Affidavit of George L. Welsch, submitted as Attachment C to Petitioner’s Previous Comments, at ¶¶ 11-14. See The Air-Conditioning, Heating & Refrigeration Institute’s comment submission of July 10, 2015, available in Docket No. EERE-2014-BT-STD-0031 and identified as Document No. EERE-2014-BT-STD-0031-0159 (the “AHRI Furnace Comments”) at pp. 58-63.

⁷⁸ The survey is documented in a study (entitled “Survey of Furnace Installation Contractors” and dated June 2015) that was prepared by Shorey Consulting, Inc., and submitted as Appendix A to the AHRI Furnace Comments and included in Document No. EERE-2014-BT-STD-0031-0159. Written comments provided in response to the survey are included in Appendix C of that document (“Appendix C”). For relevant comment, *see e.g.*, Appendix C at p. 14 (“Condensing furnaces “are great and we recommend them, but sometimes they just can’t be installed”); p. 15 (There are cases in which condensing furnaces “could not be installed no matter what”); p. 16 (“[I]n some replacements it is impossible to get a high efficiency [product] installed”); p. 22 (“There are some installations where it is impossible to install a 90% furnace”); and p. 23 (“Sometimes an 80% furnace replacement is the only option due to building restraints” and “[o]f the standard (80%) efficient furnaces we installed, at least half of them were in homes where there was 0% chance of installing a high efficient furnace according to manufacturers’ specifications and local codes”).

⁷⁹ Installation Barriers at p. 6.

⁸⁰ Appendix C at p. 23.

⁸¹ Appendix C at pp. 25-26. *See also* Appendix C at p. 13 (“Condensing furnaces are impossible to install in some older homes to satisfy the venting requirements”); p. 17 (“There are replacement applications that dictate an 80% furnace” because there is “physically no way to get a 90+ flues out of the premises”); p. 19 (“Sometimes it is impossible to find a safe location to vent a condensing furnace”).

Similarly, the study prepared in opposition to the Petition suggests that condensate disposal “would never prevent a retrofit project,”⁸² but other installers have had contrary experience.⁸³

Most importantly, it is not only cases of “practical impossibility” that count. While there are a significant number of cases in which the unavailability of atmospherically vented products would leave consumers with no practical gas replacement option, there are many more cases in which the unavailability of such products would leave consumers without any products they could use without having to accept substantial and often undesirable building modifications. As one installer put it, “[t]here are MANY installations in the replacement areas that there is NO practical way to vent a 90% to the exterior of the home without EXTENSIVE cost and remodeling involvement.”⁸⁴ As another explained:

“Not all homes are able to use sidewall vented units. Here in the northeast we have houses with finished basements with the units in the middle of the house. To replace the unit you have to rip apart the basement for the venting and intake. Also many houses do not have the window clearance and/or ground clearance for direct vent. And the chimney can't be lined for it because it is being used for multiple appliances.”⁸⁵

This is a volume problem by any credible measure: *nearly half* of all residential furnaces in the northern part of the country are located in finished basements, over ten percent nationwide are in apartments, many more are in townhomes, and these are all installations in which the replacement of atmospherically vented products would routinely require significant building modifications.⁸⁶ There is no factual basis to assert otherwise.

Conclusion

The purpose of EPCA’s Unavailability Provisions is to ensure that standards do not deprive purchasers of “product choices and characteristics, features, sizes, etc.” and that energy savings

⁸² Installation Barriers at p. 9.

⁸³ See Appendix C at p. 16 (“We have multiple locations” in which there is “no possibility of installing [a] condensate disposal system”); p. 13 (“In freezing locations, such as ventilated attics, 90+% condensing furnaces may not always fit the applications because of condensing lines freezing and furnaces failing to fire”); p. 15 (“We do not install condensing furnaces in non-conditioned spaces (attics) no matter what”); p. 24 (“We will not install a condensing furnace in an unconditioned attic”); and p. 27 (“I don’t recommend a 90% furnace” in attic installations because “[d]rain freezing can be a bad event and heat taped drains seem counterproductive”).

⁸⁴ Appendix C at p. 17 (emphasis in original). See also Appendix C at p. 19 (“There are many applications in the Boston area where a high efficiency condensing furnace is not possible without huge amounts of modifications to the building in order to vent outside”).

⁸⁵ Appendix C at p. 14. See also Appendix C at pp. 23-24 (“Some installations, because we are a “basement” area of the country will be VERY difficult/costly because of finished basements. This can make accessing an exterior wall next to impossible without tearing out drywall and creating a new chase way for PVC”); Affidavit of George L. Welsch at ¶¶ 11-14.

⁸⁶ See AHRI Furnace Comments at pp. 62-63.

are achieved “without sacrificing the utility or convenience of appliances to consumers.”⁸⁷ These provisions were intended, among other things, to preserve the availability of product characteristics that purchasers need to be able to use products without having to modify their existing buildings to do so. This is clear from the expressly stated intent that standards preserve “the availability of sizes that fit in standard building spaces”⁸⁸ and from the fact that Congress provided separate product classes for each of the three standard types of installations for direct heating equipment.⁸⁹ In general, the building modifications necessary to enlarge the “standard building space” for an appliance pale in comparison with building modifications required to replace atmospherically vented furnaces or water heaters with condensing products. There is no basis to suggest that Congress intended to spare purchasers from the need for the lesser kinds of modifications but not the greater; nor is there any basis to suggest that – by some accident of legislative drafting – Congress produced such a result inadvertently. Arguments to the contrary are based on abstract qualifications that have no statutory basis, have not been consistently applied, and serve only to confound an otherwise easy issue of statutory interpretation.

Petitioners commend DOE’s willingness to take a fresh look at the relevant issues and welcome its proposal to recognize that condensing standards would indeed run afoul of the constraints imposed by the Unavailability Provisions. Petitioners urge DOE to recognize the issues presented are, in fact, straight-forward, and to take action to ensure that they are conclusively resolved.

Petitioners specifically urge DOE to withdraw the pending proposed rules in the residential furnace and commercial water heater rulemaking proceedings. Such a withdrawal is warranted not only by DOE’s proposed interpretive rule, but by the fact that the economic justification for the standards proposed in both proceedings was based on defective modeling that resulted in a systematic overstatement of regulatory benefits and systematic understatement of the costs imposed. Rather than waiting until it has invested all the time required to prepare new proposed rules, Petitioners urge DOE to promptly acknowledge both problems with its pending proposals and request comment as to how it should address these problems in the development of new proposals. This approach would correct the existing record in both rulemaking proceedings, document material progress in the resolution of key issues, and provide a constructive basis for further progress in both proceedings.

Signatories

The following parties are signatories to these comments:

Spire

Spire Inc. is a holding company that owns and operates Spire Missouri Inc., the largest natural gas distribution company in the state of Missouri, Spire Alabama Inc., the largest natural gas distribution company in the state of Alabama, Spire Gulf Inc. and Spire Mississippi Inc.,

⁸⁷ H.R. Rep. No. 100-11 at 22-23 (1987).

⁸⁸ H.R. Rep. No. 100-11 at 23 (1987).

⁸⁹ 42 U.S.C. § 6295(e)(3).

operating in the Gulf Coast region of Alabama and in Mississippi, respectively. Spire's utility companies have been distributing gas in one form or another in their respective service areas for more than a century and a half. Today, they collectively provide natural gas distribution service to more than 1.7 million residential, commercial and industrial customers.

[The American Public Gas Association](#)

The American Public Gas Association (APGA) represents the interests of approximately 1,000 public gas systems in the United States. APGA members are retail distribution entities owned by, and accountable to, the citizens they serve. They include municipal gas distribution systems, public utility districts, county districts, and other public agencies that own and operate natural gas distribution facilities in their communities. Public gas systems' primary focus is to provide safe, reliable, and affordable natural gas service to their customers. APGA members serve their communities in many ways. First and foremost, they deliver natural gas for cooking, cleaning, and heating, as well as for various commercial and industrial applications.

[The American Gas Association](#)

The American Gas Association (AGA), founded in 1918, represents more than 200 local energy companies that deliver clean natural gas throughout the United States. There are more than 74 million residential, commercial and industrial natural gas customers in the U.S., of which 95 percent — more than 71 million customers — receive their gas from AGA members. AGA is an advocate for natural gas utility companies and their customers and provides a broad range of programs and services for member natural gas pipelines, marketers, gatherers, international natural gas companies and industry associates. Today, natural gas meets more than one-fourth of the United States' energy needs.

[The National Propane Gas Association](#)

The National Propane Gas Association (NPGA) is the national trade association of the propane industry with a membership of about 2,800 companies, and 38 state and regional associations that represent members in all 50 states. Membership in NPGA includes retail marketers of propane gas who deliver the fuel to the end user, propane producers, transporters and wholesalers, and manufacturers and distributors of equipment, containers, and appliances. Propane gas fuels millions of installations nationwide for home and commercial heating and cooking, in agriculture, industrial processing, and as a clean air alternative engine fuel for both over-the-road vehicles and industrial lift trucks. Residents throughout the country utilize propane to fuel home furnaces, but propane is uniquely popular in rural regions. Thus, the potential impact of the proposal on residential furnaces in the South and among low-income residents is an important concern to members of NPGA.

[The Natural Gas Supply Association](#)

The Natural Gas Supply Association (NGSA) represents integrated and independent companies that supply natural gas. Founded in 1965, NGSA is the only national trade association that solely focuses on producer-marketer issues related to the downstream natural gas industry.

[The National Association of Home Builders](#)

NAHB is a Washington, DC-based trade association that is affiliated with more than 660 state and local home builders' associations (HBAs) located in all 50 states and Puerto Rico and represents more than 140,000 members – many of whom will be directly affected by DOE's proposed rule. NAHB's builder members will construct 80 percent of the new housing units projected for this year; NAHB's *The Leading Home Suppliers* Council represents the nation's top manufacturers; the more than 14,000 firms that belong to NAHB Remodelers comprise about one fifth of all firms that specify remodeling as a primary or secondary business activity; and the NAHB Multifamily Council is comprised of more than 1,000 builders, developers, owners, and property managers of all sizes and types of condominiums and rental apartments. NAHB's members represent all aspects of the housing industry and work in concert to ensure that all Americans have access to safe, decent and affordable housing, whether they choose to buy a home or rent.

[The Air Conditioning Contractors of America](#)

The ACCA is the nation's premier trade association for heating, ventilation, air conditioning, and refrigeration contractors. ACCA's member companies provide quality service in heating, air conditioning, refrigeration, building and home performance, solar, hydronics, and plumbing. ACCA has created the nationally recognized and industry endorsed standards needed to ensure HVACR systems are properly installed and maintained.

[The National Multifamily Housing Council](#)

Based in Washington, D.C., the National Multifamily Housing Council (NMHC) is the leadership of the apartment industry. We bring together the prominent owners, managers and developers who help create thriving communities by providing apartment homes for 39 million Americans and contributing \$1.3 trillion annually to the economy. NMHC provides a forum for insight, advocacy and action that enables both members and the communities they help build to thrive.

[The National Apartment Association](#)

The National Apartment Association (NAA) serves as the leading voice and preeminent resource through advocacy, education and collaboration on behalf of the rental housing industry. As a federation of nearly 160 affiliates, NAA encompasses over 82,000 members representing more than 9.7 million apartment homes globally. NAA believes that rental housing is a valuable partner in every community that emphasizes integrity, accountability, collaboration, community responsibility, inclusivity and innovation.

[The National Leased Housing Association](#)

The National Leased Housing Association is widely recognized as the only national organization serving all major participants – private and public – in the multifamily rental housing field. NLHA is a vital and effective advocate for 500-member organizations, including developers, owners, managers, public housing authorities, state housing finance agencies, local governments, investment bankers, attorneys, accountants, architects, non-profit sponsors and syndicators involved in government related rental housing. This unique coalition is committed to public and private sector interaction as the most pragmatic means of meeting this nation's rental housing needs.

[The Plumbing-Heating-Cooling Contractors—National Association](#)

The Plumbing-Heating-Cooling Contractors - National Association (PHCC) is a 135 year old association representing over 3200 contractor members who employ approximately 60,000 technicians. These contractor members believe in providing the best products and services for their consumer clients and support a practical and achievable approach to energy conservation.

[The Manufactured Housing Association for Regulatory Reform](#)

MHARR is a Washington, D.C.-based national trade association representing the views and interests of producers of manufactured housing regulated by the U.S. Department of Housing and Urban Development (HUD) pursuant to the National Manufactured Housing Construction and Safety Standards Act of 1974, as amended by the Manufactured Housing Improvement Act of 2000, 42 U.S.C. 5401, et seq. (2000 reform law). MHARR was founded in 1985. Its members include independent manufactured housing producers from all regions of the United States.

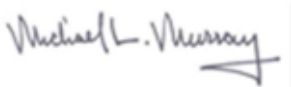
Respectfully submitted,



Mark Darrell
Senior Vice President, General Counsel
& Chief Compliance Officer
[Spire Inc.](#)
700 Market Street
St. Louis, MO 63101
mark.darrell@spireenergy.com



Bert Kalisch
President & CEO
[American Public Gas Association](#)
201 Massachusetts Avenue, NE, Suite C-4
Washington, DC 20002
bkalisch@apga.org



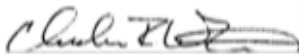
Michael L. Murray
General Counsel
Matthew J. Agen
Assistant General Counsel
[American Gas Association](#)
400 N. Capitol St., NW
Washington, DC 20001
mmurray@aga.org
magen@aga.org



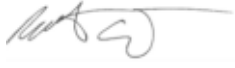
Michael A. Caldarera
Sr. Vice President, Advocacy & Technical Services
National Propane Gas Association
Michael A. Caldarera, P.E.
Sr. Vice President, Advocacy &
Technical Services
[National Propane Gas Association](#)
1899 L Street, NW, Suite 350
Washington, D.C. 20036
mcaldarera@npga.org



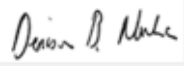
Daphne Magnuson
Vice President of Strategic Communications
[Natural Gas Supply Association](#)
900 17th St., NW, Suite 500
Washington, D.C. 20006
daphne.magnuson@ngsa.org



Charles R. White
Vice President Regulatory Affairs
[PHCC—National Association](#)
180 S. Washington Ste 100
Falls Church, VA 22046
white@naphcc.org



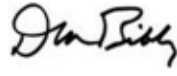
Robert Pinnegar, CAE
President & CEO
[National Apartment Association](http://NationalApartmentAssociation.org)
4300 Wilson Blvd., Ste. 800
Arlington, VA 22203
rpinnegar@naahq.org



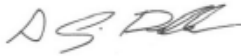
Denise B. Muha
Executive Director
[National Leased Housing Association](http://NationalLeasedHousingAssociation.org)
1900 L Street, NW #300
Washington, DC 20036
Dmuha@hudnlha.com



Mark Weiss
President & CEO
[Manufactured Housing Association for Regulatory Reform](http://ManufacturedHousingAssociationforRegulatoryReform.org)
1331 Pennsylvania Ave. N.W., Suite 512
Washington, D.C. 20004
MHARRDG@AOL.COM



Doug Bibby
President
[National Multifamily Housing Council](http://NationalMultifamilyHousingCouncil.org)
1775 Eye Street, N.W., Suite 1100
Washington, D.C. 20006
dbibby@nmhc.org



S. Craig Drumheller
Assistant Vice President, Construction Codes & Standards
[National Association of Home Builders](http://NationalAssociationofHomeBuilders.org)
1201 15th Street NW, Washington, DC 20005
cdrumheller@nahb.org



Todd Washam
Vice President, Public Policy & Industry Relations
Air Conditioning Contractors of America
2800 Shirlington Road, Ste. 300
Arlington, VA 22206
todd.washam@acca.org

Attachment C

Petition for Rulemaking
(October 18, 2018)

October 18, 2018

**BEFORE THE
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
UNITED STATES DEPARTMENT OF ENERGY
WASHINGTON, D.C.**

Petition for Rulemaking

**Energy Conservation Program:
Energy Conservation Standards for Residential Furnaces
Docket Number EERE-2014-BT-STD-031; RIN No. 1904-AD20**

**Energy Conservation Program:
Energy Conservation Standards for Commercial Water Heaters
Docket Number EERE-2014-BT-STD-042; RIN No. 1904-AD34**

Introduction

The undersigned organizations submit this petition for rulemaking under 5 U.S.C. §553(e). As explained below, we request that the Department of Energy (“DOE”):

- Issue an interpretive rule confirming that energy conservation standards effectively limiting the market for natural gas and/or propane gas (“fuel gas”) furnaces or water heaters to products using condensing combustion technology would result in the unavailability of “performance characteristics” within the meaning of the Energy Policy and Conservation Act of 1975, as amended (“EPCA”), 42 U.S.C. § 6291 *et seq.*, and, consistent with that determination,
- Withdraw its proposed standards for residential furnaces and commercial water heaters on the grounds of appropriate written findings as specified by 42 U.S.C. §§ 6295(0)(4) and 6313(a)(6)(B)(iii)(II), respectively.¹

We believe that these actions would appropriately resolve issues that have already contributed to delays in both the residential furnace and commercial water heater rulemaking proceedings, thereby facilitating a more orderly and efficient resolution of the remaining issues in these proceedings.

The basis for this petition is straight forward. The compatibility of a product with conventional atmospheric venting systems is an important product feature, as is the ability of a product to operate without generating liquid condensate requiring disposal *via* a plumbing connection. Residential furnaces and commercial water heaters that provide these features are generally available in the United States now. Products that use condensing combustion technology (“condensing products”) lack either one of these features. Efficiency standards that can only be achieved through the use of condensing combustion technology would therefore have the effect of rendering products with these features unavailable in the United States, a circumstance that EPCA was specifically designed to preclude.

EPCA expressly provides that DOE:

may not prescribe an amended standard . . . if the Secretary finds (and publishes the finding) that interested persons have demonstrated by a preponderance of the evidence that a standard is likely to result in the unavailability in the United States or any product type (or class) of performance characteristics (including reliability, features, sizes,

¹ Standards for non-weatherized residential furnaces were published in a notice of proposed rulemaking at 80 Fed. Reg. 13120 (March 12, 2015) (“NOPR”) and in a supplemental notice of proposed rulemaking published at 81 Fed. Reg. 65720 (September 23, 2016) (Docket No. EERE-2014-BT-STD-0031); standards for commercial water heating equipment were published at 81 Fed. Reg. 34440 (May 31, 2016) (Docket No. EERE-2014-BT-STD-0042). Petitioners request that DOE withdraw all of the standards proposed in these two proceedings. The same issue is presented in the proposed rule for commercial packaged boiler energy conservation standards, Notice of Proposed Rulemaking and Announcement of Public Meeting, 81 Fed. Reg. 15836 (Mar. 24, 2016); litigation concerning that rulemaking is currently pending in the United States Court of Appeals for the Ninth Circuit. *NRDC v. Perry*, (Nos. 18-15380, 18-1545).

capacities, and volumes) that are substantially the same as those generally available in the United States at the time of the finding of the Secretary.²

There are no material facts in dispute. In both the residential furnace and commercial water heater rulemaking proceedings,³ interested parties have demonstrated by a preponderance of the evidence – and DOE has itself acknowledged⁴ – that:

- The standards proposed for residential furnaces and commercial water heaters (with a limited exception for certain “small” residential furnaces) can only be achieved by condensing products;
- Condensing products lack both the ability to function with atmospheric venting systems and the ability to function without generating liquid condensate requiring disposal *via* a plumbing connection;
- Products that have the ability to function with atmospheric venting systems and without generating liquid condensate requiring disposal *via* a plumbing connection are currently available in the United States; and
- Standards that can be achieved only by condensing products would make such products unavailable.

The only issue to be resolved is whether the product features at issue are “performance characteristics” for purposes of 42 U.S.C. §§ 6295(0)(4) and 6313(a)(6)(B)(iii)(II), and they plainly are.⁵ Accordingly, DOE should issue an interpretive rule confirming that this is the case, and – consistent with that determination – should withdraw its proposed standards for residential furnaces and commercial water heaters on the basis of appropriate written findings pursuant to 42 U.S.C. §§ 6295(0)(4) and 6313(a)(6)(B)(iii)(II), respectively.

² 42 U.S.C. §§ 6295(0)(4) (applicable to residential furnaces) and 6313(a)(6)(B)(iii)(II) (identical provision applicable to commercial water heaters).

³ See note 1.

⁴ 81 Fed. Reg. 65720 at 65752-53 (Sept. 23, 2016) (residential furnaces); 81 Fed. Reg. 34440 at 34462-63 (May 31, 2016) (commercial water heating equipment). Cf. “An Energy Revolution” [an interview with DOE Secretary Perry] *American Gas* (October 2017) (“We are not going to pursue policies that tell businesses and consumers to choose one energy source over another. ... The American people should be able to use the type of energy that they think is best for their businesses, their lives and their families.”). http://read.nxtbook.com/aga/american_gas_magazine/american_gas_oct_2017/index.html?utm_source=twitter&utm_medium=social&utm_content=Oktopost-twitter-profile&utm_campaign=Oktopost-WGC+2018#an_energy_revolution

⁵ See Joint Request for Interpretation, EERE-2014-BT-STD-0031 (filed June 6, 2017) at p. 3 (“It is absurd to suggest that features that may be necessary to make the use of a product practical (or even possible) are not “performance-related features” for EPCA purposes.). See also White Paper Developed by the American Gas Association and American Public Gas Association, “In the Upcoming Rulemaking on Amendments to the Minimum Efficiency Standards for Non-Weatherized Residential Gas Furnaces, DOE Should Employ Separate Product Classes for Condensing and Noncondensing Furnaces” (Oct. 22, 2014) (detailing the unique performance-related characteristics and consumer utility of non-condensing furnaces) (attached to Joint Request for Interpretation, *supra*).

Features Precluded by the Use of Condensing Combustion Technology

Conventional fuel gas products are designed for atmospheric venting, typically through vent systems that carry exhaust gases, via buoyancy, vertically through the roof of the buildings in which they are installed. The vast majority of existing buildings and homes in which fuel gas products are installed in the United States were built with atmospheric venting systems designed to accommodate such products. Atmospherically-vented products are compatible with these existing venting systems (and with other atmospherically-vented products that use them); condensing products are not.

Gas products using condensing combustion technology provide increased thermal efficiency by extracting additional heat from combustion gases before they are vented. As a result, condensing products produce liquid condensate and cooler exhaust gases that lack sufficient buoyancy to exit a building via an atmospheric venting system. Condensing products therefore require plumbing for condensate disposal and “power” (*i.e.*, positive pressure) venting, typically through horizontal venting penetrating an exterior building wall.

Importantly, power-vented products *cannot share* common vent systems with atmospherically-vented products under the prevailing national model codes.⁶ Positive pressure in such a vent system would force combustion products into occupied spaces within the building through draft hoods and other atmospheric vent system structures. For this reason, safety standards and installation codes specifically separate vented fuel gas appliances and equipment into different categories based on their venting characteristics and specify that power-vented products cannot be connected to atmospheric venting systems or share common venting systems with atmospherically-vented gas products. In addition, condensing products require plumbing for condensate disposal that other vented gas products generally do not.

As further explained below and in comments submitted previously in the residential furnace and commercial water heater rulemaking proceedings, the features condensing products lack – compatibility with existing atmospheric venting systems and the ability to operate without a plumbing connection – are extremely important to consumers. Products with these features can be installed in locations inside buildings where condensing products cannot. Most significantly, non-condensing products can *replace* existing atmospherically-vented products without triggering the need for expensive building modifications or premature replacement of other commonly-vented gas products. Therefore, if these features were unavailable, there would be many cases in which it would be impractical to replace existing gas products with new gas products.

⁶ “National Fuel Gas Code, 2015 Edition,” ANSI Z223.1/NFPA 54/, American Gas Association/National Fire Protection Association, 2015, and “International Fuel Gas Code,” International Code Council/American Gas Association, 2015.

The Statutory Scheme, Precedent, and Application

Energy Policy and Conservation Act

Products that offer different features are often capable of achieving different measured efficiencies. Where this is the case, there is a potential that a particular efficiency standard could be achievable for products with some features but not achievable for products with other features, in which case the standard would effectively ban products with the latter features.

Congress anticipated such situations, and it made it clear that DOE is authorized to regulate product efficiency but *not to restrict the range of features that covered products can provide*. In fact, Congress expressly sought to ensure “that energy savings are not achieved through the loss of significant consumer features.”⁷ EPCA expressly prohibits the adoption of an energy conservation standard if it has been shown that the standard would have the effect of eliminating a currently-available product feature from the market. 42 U.S.C. §§ 6295(o)(4) and 6313(a)(6)(B)(iii)(II). If DOE determines that a more stringent standard would be appropriate for products with specific product features, it can impose such standards *for products with those features*. Specifically, DOE can “establish different standards within [a] type of covered product . . . based upon performance-related features of the product.”⁸ However, DOE can do this only by creating *separate product classes* for products with different performance-related features and specifying different (and achievable) standards for each. 42 U.S.C. § 6295(q)(1). This statutory scheme was expressly designed “to ensure that an amended standard does not deprive consumers of product choices and characteristics, features, sizes, etc.,” and to “preclude” the adoption of standards “that manufacturers are only able to meet by adopting engineering changes that eliminate performance characteristics.”⁹ Unfortunately, that is exactly what DOE’s proposed standards for residential furnaces and commercial water heaters would do.

Again, there is no dispute as to the relevant facts: DOE has acknowledged that its proposed efficiency standards can only be achieved through use of condensing combustion technology, and that those standards would effectively eliminate gas products that are compatible with atmospheric venting systems and do not require a plumbing connection.¹⁰ DOE has simply suggested that the elimination of such products does not constitute a loss of product features for purposes of 42 U.S.C. §§ 6295(o)(4) and 6313(a)(6)(B)(iii)(II).¹¹ This suggestion is inconsistent both with EPCA’s provisions and DOE’s own previous determinations.

⁷ H.R. Rep. No. 100-11, 22 (1987).

⁸ National Energy Conservation Act 1978, H.R. Rep. 95-1751, 115 (1978).

⁹ H.R. Rep. No. 100-11, 23 (1987).

¹⁰ See 81 Fed. Reg. 65720 at 65752-53 (Sept. 23, 2016) (residential furnaces); 81 Fed. Reg. 34440 at 34462-63 (May 31, 2016) (commercial water heating equipment).

¹¹ Furnace SNOPR, 81 Fed. Reg. at 65752. This suggestion dates back to the vacated Direct Final Rule, Energy Conservation Program: Energy Conservation Standards for Residential Furnaces and Residential Central Air Conditioners and Heat Pumps, 76 Fed. Reg. 37407, (June 27, 2011) (“Direct Final Rule”). Under an April 24, 2014 order of the United States Court of Appeals for the District of Columbia Circuit approving a settlement among the parties including DOE, that rule (including but not limited to DOE’s determination that residential furnaces constitute a single class of products for purposes of 42 U.S.C. 6295(q)(1)(B)) was vacated and

DOE Precedent

One of the ways in which DOE can avoid the adoption of standards that would eliminate available product features is to create separate product classes, with separate (and achievable) standards for products with those features.¹² In addressing the need for separate product classes, DOE has recognized again and again that features that significantly affect the conditions under which products can be used are *performance-related features* for EPCA purposes; *i.e.*, features that should be preserved rather than made “unavailable” by an energy conservation standard.

DOE has recognized different product classes for electric residential clothes dryers to address differences in product features concerning installation space constraints and differences in available electrical power supply.¹³ Similarly, DOE’s decision to maintain separate product classes for “space-constrained” heat pump and air conditioning products reflects the legal conclusion that product features that resolve significant installation constraints are *performance-related features* providing utility that other products lack.¹⁴ The fact that DOE characterized the need to modify existing buildings to accommodate new products as a matter of “installation cost” did nothing to undermine that legal conclusion.¹⁵ The same legal conclusion is reflected in the provisions of EPCA itself: for example, EPCA provides separate product classes for residential direct heating equipment based on variations in the manner in which such products are designed to be installed.¹⁶

In light of these precedents, DOE’s continued failure to acknowledge that standards effectively eliminating atmospherically-vented gas products would result in a loss of

remanded to DOE for notice and comment rulemaking. Thus, DOE agreed, and the court ordered, that DOE reconsider the question of whether condensing and non-condensing non-weatherized gas furnaces should be treated as separate product classes in future rulemaking covering these products. DOE’s subsequent failure to appropriately resolve this issue has significantly complicated (and thus delayed) development of a final rule regarding residential furnace standards, and has been the subject of extensive adverse comment. *E.g.*, APGA Residential Furnace Comments at 6-11 (filed Nov. 22, 2016) (“DOE fails to address the line of contrary precedent that APGA brought to its attention.”); AGA Comments at 32-43 (filed Nov. 22, 2016) (“AGA’s view is that the utility and performance characteristics of non-condensing furnaces do require the creation of a separate product class for non-condensing furnaces.”).

¹² See 42 U.S.C. § 6295(q)(1).

¹³ 10 C.F.R. § 430.32(h)(3).

¹⁴ See Direct Final Rule, 76 Fed. Reg. at 37446 (“Because physical size constraints for through-the-wall products continue to exist, DOE determined that continuation of the space-constrained product class is warranted.”).

¹⁵ *Id.* at 37404 (“DOE believes that through-the-wall equipment intended for replacement applications can meet the definition of space-constrained products because they must fit into a pre-existing hole in the wall, and a larger through-the-wall unit would trigger a considerable increase in the installation cost to accommodate the larger unit.”).

¹⁶ See 42 U.S.C. § 6295(e)(3). See also Final Rule, Energy Conservation Program: Energy Conservation Standards for Ceiling Fans, 82 Fed. Reg. 6826, 6833 (Jan 19, 2017) (adopting 7 product classes: highly-decorative, belt-driven, very small-diameter, hugger, standard, high-speed small-diameter and large-diameter fans). *Cf.* 10 C.F.R. § 430.32(y) (separate the product classes for furnace fans for non-condensing and condensing furnaces; thus DOE distinguished between non-condensing and condensing furnaces as an appropriate basis for creating separate product classes under EPCA).

performance characteristics for purposes of 42 U.S.C. §§ 6295(0)(4) and 6313(a)(6)(B)(iii)(II) would be arbitrary and capricious.

Application

The ability of a product to function without a plumbing connection is a feature that is no less important than features that affect where products will fit, what type of wiring they require, or whether they are designed to be free-standing as opposed to being installed in a wall or a floor. The ability of a product to function with atmospheric venting is an even *more* important feature because *it enables products to be used as replacements for atmospheric-vented products without the need for building alterations or the risk of adverse impacts on other atmospheric-vented gas products tied to a common venting system.*

These product characteristics are very important to the pocketbooks of many American homeowners using natural gas. Many homes with a conventional gas furnace have a commonly-vented conventional gas water heater. If standards make atmospherically-vented furnaces unavailable, furnace replacement may result in venting problems for the commonly-vented water heater, with the result that a perfectly good water heater may need to be replaced as well.¹⁷

The importance of performance characteristics such as the ability of a product to operate with a building's existing infrastructure and other commonly-vented products cannot be dismissed on the grounds that the building could be modified and other appliances scrapped. It is unreasonable to characterize the lack of such performance characteristics as a mere matter of "installation costs"¹⁸ or to dismiss them as such.¹⁹ In any event, there are cases in which the features condensing products lack are necessary if a gas product is to be used at all. This can occur, for example, in scenarios involving multistory housing in which vented gas products are common-vented into a central venting system that serves multiple floors of residential units that are under different ownership. In such cases, the inability of a consumer to replace an atmospherically-vented product with another atmospherically-vented product would not merely present problems for the consumers involved; it could adversely affect the venting of common-vented products owned by other parties in the same building.

DOE's prior assertion that standards requiring the use of condensing combustion technology would not impose a loss of product "features" is based on two conflicting legal arguments. The first, as stated in the residential furnace rulemaking, is that "the consumer utility of a furnace is that it provides heat to a dwelling, and the type of venting used for particular

¹⁷ Spire Residential Furnace SNOPR Comments (filed Jan. 6, 2017) (<https://www.regulations.gov/contentStreamer?documentId=EERE-2014-BT-STD-0031-0309&attachmentNumber=1&contentType=pdf>) (open the PDF document and use the search function for the word "stranded").

¹⁸ See 81 Fed. Reg. at 65753.

¹⁹ *Id.* at 37404 ("DOE believes that through-the-wall equipment intended for replacement applications can meet the definition of space-constrained products because they must fit into a pre-existing hole in the wall, and a larger through-the-wall unit would trigger a considerable increase in the installation cost to accommodate the larger unit.").

furnace technologies does not impact that utility.”²⁰ One obvious problem with this argument is that it is wrong on the facts: atmospheric-venting does impact the ability of a furnace to provide heat to a dwelling, because there are some cases in which atmospherically-vented furnaces can be used and condensing products cannot. Another is factors that limit the circumstances under which products can reasonably be used – size, for example – plainly have an impact on the utility of a product and are unmistakably within the range of “performance characteristics” that standards may not make unavailable.²¹

The second argument (again as stated in the context of the residential furnace rulemaking) is that the only “features” that must be preserved are those that “provide unique utility to consumers beyond the basic function of providing heat, which all furnaces perform.”²² The argument that a “feature” must have unique utility “beyond the basic function” of a product is obviously difficult to square with the argument that a “feature” must “impact the ability of a [product] to provide” that basic function. However, the most obvious problem is that there is simply no statutory basis to assert either that a feature must have “unique utility” or that such utility must somehow be “beyond the basic function” of the product. EPCA simply states that DOE may not impose standards if it has been shown that they would likely result in unavailability of currently-available “performance characteristics (including reliability, features, sizes, capacities, and volumes).”²³

The policy concern driving these meritless legal arguments has been stated by DOE as follows:

Tying the concept of “feature” to a specific technology would effectively lock-in the currently existing technology as the ceiling for product efficiency and eliminate DOE’s ability to address significant technological advances that could yield significant consumer benefits in the form of lower energy costs while providing the same functionality for the consumer.”²⁴

This policy concern is at odds with the policy judgment Congress made when it adopted the relevant statutory provisions. The limitations on DOE’s authority to impose design choices on manufacturers and consumers were not just designed to ensure the continued availability of products having the same “functionality,” particularly if “functionality” means nothing more than the basic ability of a product to provide heat (or hot water, as the case may be). Instead, Congress expressly sought to ensure “that energy savings are not achieved through the loss of significant consumer features.”²⁵ Features such as the compatibility of a product with an existing building’s venting system and appliances, as well as its ability to operate without the need for a

²⁰ 81 Fed. Reg. at 65752.

²¹ See 42 U.S.C. § 6295(0)(4) (expressly including “sizes” – apart from “capacities or volumes” – among the examples of “performance characteristics” that cannot be made unavailable).

²² 81 Fed. Reg. at 65753.

²³ 42 U.S.C. §§ 6295(0)(4) and 6313(a)(6)(B)(iii)(II).

²⁴ 81 Fed. Reg. at 65752 (residential furnaces); 81 Fed Reg. at 23363 (commercial water heaters).

²⁵ H.R. Rep. No. 100-11, 22 (1987).

plumbing connection, are unquestionably significant to consumers. Arguments to the contrary in the pending rulemaking proceedings amount to transparent attempts to justify exactly the kind of outcome Congress intended to preclude: the adoption of standards that would achieve higher efficiency by eliminating currently available “performance characteristics” (including “features”) that are important to many purchasers.

Conclusion

DOE’s rulemaking proceedings concerning standards for residential furnaces and commercial water heaters have been fatally undermined by their failure to recognize that EPCA precludes the adoption of standards that would effectively eliminate fuel gas products that do not use condensing combustion technology. Petitioners believe that prompt action to correct that failure is both warranted and necessary to facilitate any reasonably efficient path forward in those rulemaking proceedings. Accordingly, Petitioners respectfully request that DOE – after soliciting and appropriately considering public comment on this Petition – promptly take final action by:

- Issuing an interpretive rule confirming that energy conservation standards limiting the market for natural gas and/or propane gas furnaces or water heaters to products using condensing combustion technology would result in the unavailability of “performance characteristics” within the meaning of 42 U.S.C. §§ 6295(0)(4) and 6313(a)(6)(B)(iii)(II), and
- Withdrawing its proposed standards for residential furnaces and commercial water heaters on the grounds of appropriate written findings as specified by 42 U.S.C. §§ 6295(0)(4) and 6313(a)(6)(B)(iii)(II), respectively.

Further deliberation in the two pending rulemaking proceedings can then occur, with appropriate consideration – as EPCA requires – of any need for separate standards (and separate product classes) for products that use condensing combustion technology and those that do not.²⁶

Respectfully submitted,

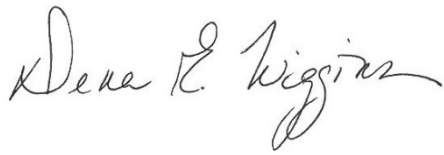


Mark Darrell
Senior VP, General Counsel &
Chief Compliance Officer
Spire Inc.
700 Market Street
St. Louis, MO 63101
Email: mark.darrell@spireenergy.com



Bert Kalisch
President & CEO
American Public Gas Association
201 Massachusetts Avenue, NE, Suite C-4
Washington, DC 20002
202.464.2742
Email: bkalisch@apga.org

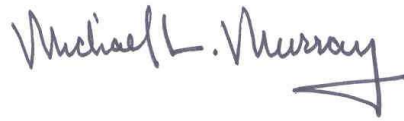
²⁶ See 42 U.S.C. § 6295(q)(1).



Dena E. Wiggins
President and CEO
Natural Gas Supply Association
1620 Eye St NW
Suite 700
Washington, D.C. 20006
202.326.9300
E-mail: dena.wiggins@ngsa.org



Mike Calderera
Vice President, Regulatory & Technical
Services
National Propane Gas Association
1899 L Street, NW Ste 350
Washington, D.C. 20036
(202) 466-7200
Email: mcaldarera@npga.org



Mike Murray
General Counsel
American Gas Association
400 North Capitol Street, NW
Suite 450
Washington, DC 20001
202.824.7000
Email: mmurray@aga.org

Attachment D

Memorandum to Members
of the Peer Review Committee from Barton Day
(January 8, 2020)

Law Offices of Barton Day, PLLC

10645 N. Tatum Blvd, Suite 200-508, Phoenix, AZ 85028

www.bartondaylaw.com

Memorandum

To: Members of the Peer Review Committee

From: Barton Day

Re: Peer review the analytical methods employed by the U.S. Department of Energy (DOE) in setting “standards regulations” for the performance of buildings and associated equipment and products.

Date: January 8, 2020

On behalf of my client Spire Inc., I am writing to provide written feedback as a follow up to comments I provided on the second day of the November 19-20, 2019 public meeting concerning the National Academies of Sciences, Engineering and Medicine’s peer review of DOE’s methods for regulatory analysis in energy conservation standards rulemaking.

On November 19, 2019, DOE and its contractors provided several presentations, including a presentation outlining the regulatory analysis prepared in support of DOE’s proposed residential furnace standards. On the following day, the Committee raised questions concerning the legal context for DOE standards development, including questions concerning the objectives of DOE’s appliance efficiency program and any legal requirements relevant to regulatory analysis in DOE standards rulemaking. This correspondence provides a brief response to the Committee’s legal questions and then identifies two serious methodological flaws in the analysis prepared in the residential furnace rulemaking.

For a more comprehensive technical critique of DOE’s residential furnace, the Committee is urged to review Spire’s January 1, 2017 comment submission in the residential furnace rulemaking, which includes a 107 page comment document accompanied by six supporting attachments including a 122 page report providing a detailed technical review of DOE’s regulatory analysis.¹

¹ Spire’s comment submission (“Spire’s Residential Furnace Comments”) is identified as Document No. EERE-2014-BT-STD-0031-0309 in in Docket No. EERE-2014-BT-0031. This submission – along with all six attachments – can be accessed at: <https://www.regulations.gov/document?D=EERE-2014-BT-STD-0031-0309>

A. Legal Questions Raised by the Committee

1. Objectives of the Appliance Efficiency Program

DOE's appliance efficiency program is an energy conservation program authorized for the specific purpose achieving *energy conservation through technologically feasible and economically justified improvements in the efficiency of regulated products*. The statutory provisions authorizing this program are codified in the U.S Code as Chapter 77 of Title 42 (entitled "Energy Conservation"), and the authorized purpose of the program is confirmed by an explicit "Congressional statement of purpose" – codified in the statute itself – stating that the relevant purposes of Chapter 77 are:

- to conserve energy supplies through energy conservation programs, and, where necessary, the regulation of certain energy uses;
- to provide for improved energy efficiency of motor vehicles, major appliances, and certain other consumer products; [and]
- to conserve water by improving the water efficiency of certain plumbing products and appliances.²

DOE has considered the environmental impacts of energy conservation standards in determining whether efficiency standards are economically justified, but *the purpose of standards* must be to conserve energy by improving the efficiency of regulated products, not to advance environmental objectives as such.³ The singular nature of this statutory purpose is confirmed by the fact that DOE "may not prescribe" a standard – even a standard that would be technologically feasible and economically justified – if it "will not result in significant conservation of energy."⁴

² 42 U.S.C. § 6201(4), (5) and (8). The full text of 42 U.S.C. § 6201 can be accessed at: <https://www.govinfo.gov/content/pkg/USCODE-2011-title42/html/USCODE-2011-title42-chap77-sec6201.htm>

³ The statute does not require DOE to consider the environmental impacts of standards. However, in determining whether standards are *economically justified*, DOE has treated the environmental impacts of standards as an "other relevant" consideration under 42 U.S.C. §§ 6295(o)(2)(B)(1)(VII) (commercial products) and 6313(a)(6)(B)(ii)(VII) (industrial equipment). The full text of 42 U.S.C. §§ 6295 and 6313 can be accessed at: <https://www.govinfo.gov/content/pkg/USCODE-2010-title42/html/USCODE-2010-title42-chap77-subchapIII-partA-sec6295.htm> and <https://www.govinfo.gov/content/pkg/USCODE-2009-title42/html/USCODE-2009-title42-chap77-subchapIII-partA-1-sec6313.htm>

⁴ 84 Fed. Reg. 3910 at 3921 (February 13, 2019) (quoting 42 U.S.C. § 6295(o)(3)(B)); see 42 U.S.C. § 6313(a)(6)(A)(ii)(II) (requiring a "significant *additional* conservation of energy" in the case of industrial equipment standards more stringent than those required under ASHRAE/IES Standard 90.1).

2. Legal Requirements Applicable to DOE's Regulatory Analysis in Standards Rulemaking

The legal framework for DOE standards rulemaking requires significantly more rigorous economic analysis than would be required simply for purposes of compliance with Executive Orders 12866 and 13563. The key considerations are as follows.

- The economic analysis required in standards rulemaking is not conducted simply as a matter of good regulatory practice. Instead, the analysis is both *legally required* and *determinative of regulatory outcomes*, because (with limited exception) DOE generally cannot adopt a standard without making the determination that it is economically justified.⁵
- DOE's determination that a standard is economically justified *must be supported by substantial evidence*.⁶
- DOE's obligation to economically justify energy conservation standards is *subject to notice and comment rulemaking procedures*.⁷ For notice and comment to be legally sufficient under general principles of administrative law, interested parties must have the opportunity to review and comment on all of the key evidence and analysis DOE relies upon to support its determination that a standard is economically justified.⁸ This means that all of the key evidence required to justify the adoption of a standard – including actual technical data, studies, and staff reports⁹ – must be made available for review by interested parties and thus “exposed to refutation” during the rulemaking process.¹⁰
- DOE's analysis must address considerations identified as relevant by statute, including the results of lifecycle cost (“LCC”) and “payback” analyses that require direct

⁵ 42 U.S.C. §§ 6295(o)(2) (commercial products) and 6313(a)(6)(A)(ii)(II) (industrial equipment). The exception applies only when DOE is adopting requirements of ASHRAE/IES Standard 90.1 pursuant to 42 U.S.C. § 6313(a)(6)(A)(ii)(I).

⁶ 42 U.S.C. § 6306(b)(2). “Clear and convincing” evidence is required to justify industrial equipment standards more stringent than those applicable under ASHRAE/IES Standard 90.1. See 42 U.S.C. § 6313(a)(6)(A)(ii)(II). The full text of 42 U.S.C. § 6306 can be accessed at: <https://www.govinfo.gov/content/pkg/USCODE-1996-title42/html/USCODE-1996-title42-chap76-subchapIII-partA-sec6306.htm>

⁷ 42 U.S.C. §§ 6295(p)(1)-(2) and 6306(a)(1). The more general notice and comment requirements of the Administrative Procedure Act (5 U.S.C. § 553) also apply.

⁸ See *Chamber of Commerce v. SEC*, 443 F.3d 890, 900-02 (D.C. Cir. 2006); *Ass'n of Data Processing Service Orgs. v. Bd. of Governors*, 745 F.2d 677, 684 (D.C. Cir. 1984).

⁹ *American Radio Relay League, Inc. v. FCC*, 524 F.3d 227 (D.C. Cir. 2008).

¹⁰ *Owner-Operator Indep. Drivers Ass'n v. FMCSA*, 494 F.3d 188, 209 (D.C. Cir. 2007) (quoting *Ass'n of Data Processing Service Orgs. v. Bd. of Governors*, 745 F.2d 677, 684 (D.C. Cir. 1984)).

comparison of the incremental cost of required efficiency improvements and the operating cost savings those required efficiency improvements would provide.¹¹

3. Methodological Implications

The legal considerations outlined above have the important methodological implications outlined below.

a. Actual evidence is required.

DOE must have credible evidence to support every necessary part of its analysis. To the extent such evidence is not immediately available, DOE must gather the evidence it needs rather than substituting baseless assumptions or “estimates” for which it provides no articulable basis. For example, DOE cannot (as it routinely does) assume that the percentage of products *sold* with particular features is the same as the percentage of *available models* with those features, because there is no factual basis for such an assumption. The methodological implication is that DOE’s analytical approach must be designed to avoid the need for information that cannot be obtained through diligent data collection efforts.

b. DOE cannot rely on key information that is not documented on the record for public review and comment.

As the presentations provided during the public meeting of November 18, 2019 explained, DOE’s regulatory analysis relies heavily on information obtained by DOE’s consultants through “tear-down” analyses and manufacturer interviews. Unfortunately, there is typically no meaningful information in the public record concerning such analyses or interviews; DOE simply states that some of its critical conclusions are based upon (or supported by) information obtained through such analyses or interviews. In the residential furnace rulemaking, a DOE official responded to repeated requests for an explanation of the basis for such conclusions by indicating that DOE did not have any explanation to provide, because all DOE obtains from its consultants is a set of input parameter values on a spreadsheet. This is substantive problem, because it leaves DOE with no *evidence* to support critical elements of its analysis. It is also a basic violation of DOE’s notice and comment obligations, because it leaves interested parties with no opportunity to assess the representativeness or validity of the information on which DOE’s conclusions are based or to understand how that information was interpreted or why it was interpreted in the way that it was. This was especially problematic in the residential furnace rulemaking, in which the results of DOE’s inordinately complex methodology for estimating product and installation costs had produced results grossly at odds with available market data.¹²

¹¹ 42 U.S.C. §§ 6295(o)(2)(B)(i)(II) and (o)(2)(B)(iii) (commercial products); 6313(a)(6)(B)(ii)(II) (industrial equipment).

¹² See Spire’s January 1, 2017 comments in the residential furnace rulemaking, identified as Document No. EERE-2014-BT-STD-0031-0309 in in Docket No. EERE-2014-BT-0031 (“Spire’s Residential Furnace Comments”) at pp. 71-73 and 91-94. These comments and their supporting attachments can be accessed at <https://www.regulations.gov/document?D=EERE-2014-BT-STD-0031-0309>

The methodological implication is that DOE's analytical approach should be designed to minimize DOE's need to rely on non-public information. Confidential or proprietary information can be used as appropriate to enhance DOE's understanding of the relevant issues but DOE may not rely on undisclosed information as the primary basis for conclusions material to the outcome of its analysis. To the extent it is necessary for DOE to rely on confidential business information or other non-public information (such as the results of manufacturer interviews or "tear-down" analyses), DOE must prepare documentation for the public record that provides a sufficient basis to enable interested parties to provide meaningful comment on the representativeness and validity of that information and DOE's interpretation of it.

- c. DOE's analysis must be consistent with relevant statutory requirements and purposes.

DOE's regulatory analysis must be designed to ensure that statutorily relevant issues are addressed in a manner that is consistent with specific statutory direction and with the fundamental statutory purpose of achieving energy conservation through improvements in the efficiency of regulated products. It may not – as it did in the residential furnace rulemaking – substitute an alternative analysis designed to justify standards on a fundamentally different basis than that specified by statute. This issue is discussed in detail in Section B.2. below

B. Major Methodological Issues in the Residential Furnace Rulemaking

DOE's proposed standards for residential furnaces are highly controversial, and DOE's attempt to justify those standards has been challenged for numerous legal and technical reasons.¹³ While this correspondence focuses on two specific methodological problems with DOE's analysis, there was a third problem that exacerbated the practical impact of both: in the residential furnace rulemaking, DOE sought to justify efficiency standards that would leave many consumers without replacement options suitable for most standard gas furnace installations. Specifically, DOE:

- Proposed standards that can be achieved only by furnaces that are incompatible with the atmospheric venting systems built into most of the existing homes in which gas furnaces are installed, thereby making it impossible for many consumers to replace their existing furnaces without the need to modify their homes as necessary to permit the installation of products they were not designed to accommodate;¹⁴ and
- Treated the costs imposed by the unavailability of atmospherically-vented gas furnaces (which in some cases include the cost of scrapping existing atmospheric venting systems and scrapping and replacing other commonly-vented products, such as water heaters) as part of the "installation cost" *of the new furnace*.

¹³ See, e.g., Spire's Residential Furnace Comments.

¹⁴ In proposing such standards DOE disregarded clear statutory direction that standards may not be adopted if they would result in the unavailability of products suitable for standard home installations. DOE has since recognized that this was a mistake it should correct going forward. See 84 Fed. Reg. 33011, 33020-21 (July 11, 2019).

As a result, “installation costs” (and thus the initial cost of products meeting the new standard) would vary dramatically depending on the installation scenario involved and DOE recognized that there would be a significant number of cases in which consumers facing substantial “installation” challenges would decline to invest in high-efficiency gas furnaces even if a standard were imposed.

With this background, there are two major methodological issues that warrant close attention.

1. DOE’s Failure to Consider Baseline Purchasing Behavior

A basic premise of efficiency regulation is that market failures can cause purchasers to forego economically beneficial investments in higher-efficiency products, and that – where the net economic impact of all declined investments in such products would be positive – efficiency standards would be economically beneficial for consumers. DOE routinely justifies standards on this basis, claiming that its standards will provide substantial net economic benefits for consumers in the form of utility bill savings. However, in the residential furnace rulemaking *DOE’s methodological approach did not provide a basis to conclude that such claims are true.*

The November 19, 2019 presentation describing DOE’s residential furnace rulemaking suggests that “DOE identified market failures to justify” the standards in the supplemental proposed rule DOE issues in 2016.¹⁵ In fact, DOE merely cited general literature as a basis to assert the existence of market failures; it made no effort to determine the extent to which market failures actually cause purchasers to forego economically beneficial investments in higher-efficiency furnaces.

In the residential furnace rulemaking DOE recognized that:

- Furnaces meeting the efficiency standards under consideration are already available and have captured a significant percentage of the market; and
- The economic consequences of such investments depend on the installation involved, to the extent that operating cost savings would significantly exceed initial costs in some installations while initial costs would significantly exceed operating cost savings in others.

In these circumstances, the economic impact of a standard depends upon the extent to which purchases made in the absence of regulation reflect a preference for economically advantageous efficiency investments or an aversion to economically disadvantageous investments. To the extent they do, the distribution of economic outcomes would be different for “base case” efficiency investments (*i.e.*, investments that would be made in the absence of a new standard) than it would be for “rule outcome” efficiency investments (*i.e.*, investments that would be made only if a standard were imposed), with base case efficiency investments being more likely to

¹⁵ See Slide 7 of the “Furnaces” presentation (“Furnaces Presentation”), which can be accessed through the “Furnaces” link at: <https://www8.nationalacademies.org/pa/projectview.aspx?key=51775>

have favorable economic outcomes and “rule outcome” investments being more likely to have unfavorable economic outcomes.

Regional data strongly suggests that purchases of residential furnaces are significantly influenced by economic considerations, because high-efficiency furnaces have captured a higher percentage of the market in areas where heating demand (and thus the value of efficiency improvements) is relatively high and a lower percentage of the market in areas where heating demand (and thus the value of efficiency improvements) is relatively low.¹⁶ DOE also recognized that the range of economic outcomes for investments in high-efficiency furnaces is particularly large due – in large part – to the venting requirements for high-efficiency furnaces.¹⁷ Nevertheless, DOE made no effort to determine the extent to which baseline purchasing behavior reflects any statistically significant preference for favorable economic outcomes or aversion to unfavorable economic outcomes or the impact such preferences would have on the distribution of different economic outcomes in “rule outcome” efficiency investments. Instead, DOE’s modeling assumed that that investments in high-efficiency furnaces made in the absence of regulation *do not reflect any statistically significant preference for economically favorable efficiency investments or aversion to economically unfavorable investments*. The mechanism involved is as follows:

- DOE’s modeling uses ten thousand “trial cases” to represent the range of installation scenarios expected to be encountered in the real world;
- DOE’s model is designed to use an algorithm to assign “base-case” product efficiencies in way that would reasonably represent purchasing behavior in the absence of regulation;
- Instead of using an algorithm to produce a base case that reflects actual purchasing behavior, DOE used a random distribution function to assign baseline efficiencies as though purchasers acting in the absence of regulation never consider the economics of their purchases, no matter how extreme the economic outcome.

In effect, this approach produces a purported assessment of rule impacts that is *based on the economics of a randomly selected universe of all potential efficiency investments rather than on the economics of the efficiency investments that would occur only if a standard were imposed*.¹⁸ In practice, the impact of this difference is enormous, because the results of DOE’s analyses are heavily influenced by a small percentage of product purchases that have extreme economic

¹⁶ See the Furnaces Presentation at slides 43-44. In fact, DOE’s data indicates that high-efficiency furnaces have already captured over 90% of the market in areas where the savings high-efficiency furnaces provide would generally be greatest. See Spire’s Residential Furnace Comments at 58-59.

¹⁷ See the Furnaces Presentation at slides 31-32, 35. DOE’s assessment of the seriousness and cost impacts of the installation issues grossly understated the magnitude of the installed cost of high-efficiency furnaces, and the suggestion Canadian experience suggests otherwise has been thoroughly discredited. See Spire’s Residential Furnace Comments at pp. 11-18 and 91-94.

¹⁸ See Spire’s Residential Furnace Comments at pp. 4-6 and 58-61; Gas Technology Institute Technical Analysis of DOE Supplemental Notice of Proposed Rulemaking on Residential Furnace Minimum Efficiencies (January 4, 2017) (Attachment C to Spire’s Residential Furnace Comments) at pp. 18-24.

outcomes, and these are the types of cases in which economic considerations are most likely to influence purchasing decisions made in the absence of a new standard.¹⁹

DOE has suggested that its assignment of baseline efficiencies is not *entirely* random because it did consider regional differences in market share.²⁰ However – as the presentation during the November 19, 2019 meeting shows – DOE is referring only to its market share analysis: its analysis of how many rule outcome purchases would be expected to occur in each region. These regional differences reflect differences in heating demand (and thus the value of efficiency improvements) but does not provide any consideration of individual economic outcomes, which are often driven by installation costs and venting requirements. As a result, DOE accounts for differences in market share, but – within each region – it still “assigns” trial cases to the base case or rule outcome case randomly, as though purchases made in the absence of a new standard reflect no statistically significant preference for economically beneficial efficiency investments and no aversion to economically unfavorable efficiency investments.²¹

DOE’s analysis expressly recognizes that purchases of residential furnaces are influenced by economic considerations; it simply ignores that fact until – in the context of its fuel-switching analysis – it employs a “consumer choice” model that assumes that purchasing decisions are *always* influenced by economic considerations.²² Unfortunately, by that point DOE’s analysis is based on a universe of purported “rule outcome” trial cases that – rather than being designed to represent actual rule outcome purchases – consists of a randomly-selected universe of trial cases. As a result, DOE’s analysis does not actually provide an assessment of the economic impact of the proposed standard.

2. DOE’s improper use of a fuel switching analysis in lifecycle cost and payback analysis

As already stated, the statutory purpose of the appliance efficiency program is to achieve energy conservation through economically justified efficiency improvements. In determining whether required efficiency improvements are economically justified, DOE must consider whether the cost of those efficiency improvements is justified by the benefits those efficiency improvements would provide. Accordingly, the statute specifically requires that DOE prepare and consider both “payback” and life-cycle cost (“LCC”) analyses in determining whether required efficiency improvements are economically justified. Specifically, DOE must consider:

¹⁹ Indeed, a review of DOE’s analysis in the residential furnace rulemaking found that more than half of the total claimed economic benefits of the proposed standard were attributable to installations in which high-efficiency furnaces would have *lower initial costs* and would provide operating cost savings from day one. See Spire’s Residential Furnace Comments at pp. 60-61 and Attachment C to Spire’s Residential Furnace Comments at p. 23.

²⁰ 81 Fed. Reg. 65720 at 65789 (September 23, 2016).

²¹ DOE has also suggested that baseline efficiencies are “allocated to specific buildings based on the existing furnace being replaced.” 84 Fed. Reg. 33011 at 33018 (July 11, 2019). However, DOE’s model randomly assigns the efficiencies of the existing furnaces being replaced, with the result that efficiency assignments based on those efficiencies are also random.

²² See Furnaces Presentation at slides 46-49.

- Whether “the additional cost to the consumer of purchasing a product complying with an energy conservation standard level will be less than three times the value of the energy . . . savings during the first year that the consumer will receive as a result of the standard” (i.e., a payback analysis);²³ and
- The “savings in operating costs throughout the estimated average life of the covered product . . . compared to any increase in the price of, or in the initial charges for, or maintenance expenses of” the product “likely to result from the imposition of the standard (i.e., a life cycle cost analysis).²⁴

As already discussed, DOE’s failure to consider baseline purchasing behavior fatally undermined its payback and LCC analyses. However, DOE also employed a methodology that does more to confound than to address the fundamental question of whether the cost of required efficiency improvements would be justified by the value of the energy savings those efficiency improvements would provide. In short – having identified “rule outcome” trial cases on a basis that assumed that consumers never consider the economics of their efficiency investments – DOE then selectively revised the economic outcomes of these purported “rule outcome” trial cases by assuming that consumers facing economically unattractive gas furnace investments would choose alternative products instead. Specifically, DOE:

- Assumed that consumers facing economically unattractive gas furnace options as a result of the proposed standard would substitute electric alternatives for furnaces with the required efficiency improvements, and – on that basis – preferentially excluded “rule outcome” trial cases with bad economic outcomes from its analysis; and
- Made unduly optimistic assumptions about the economics of the electric products consumers would choose instead and substituted the costs and benefits of the electric alternatives for the economics of the gas furnace investments it had excluded from its analysis.²⁵

The problem with this approach is that the resulting analyses do not address the specific question DOE is required to consider. By statute, required “*efficiency improvements*” must be “technologically feasible and economically justified.”²⁶ In view of the methodology employed, DOE’s payback and LCC analyses do not address the economics of the *required efficiency improvements*. Instead these analyses redefine economic justification in a way that would allow *economically unjustified* efficiency improvements to be justified on the basis of the economics of investments in alternative products that unacceptable costs would force consumers to choose

²³ 42 U.S.C. § 6295(o)(2)(B)(iii).

²⁴ 42 U.S.C. § 6295(o)(2)(B)(i)(II).

²⁵ See Furnaces Presentation at slides 46-49.

²⁶ 42 U.S.C. § 6295(o)(2)(A) (emphasis added). Similarly, it is impacts on “consumers of products subject to” a standard – not consumers of alternative products – that must be considered in determining whether standards are economically justified. 42 U.S.C. § 6295(o)(2)(B)(i)(I).

instead. This kind of economic justification is irreconcilable with the statutory purpose of the appliance efficiency program, which is to promote energy conservation through *economically justified improvements in the efficiency of regulated products*. Moreover – by treating fuel switching as an appropriate outcome of efficiency regulation rather than as evidence that required efficiency improvements are economically unjustified – DOE’s analytical approach ignores the fact that the replacement of gas furnaces with electric alternatives is likely to increase overall energy consumption, thereby frustrating the core purpose of the appliance efficiency program.²⁷ The methodological problem is clear: DOE’s LCC and payback analyses are not designed to address the specific questions it has a statutory obligation to consider, and is designed to defeat rather than promote the statutory purpose of achieving *energy conservation through economically justified improvements in the efficiency of regulated products*.

I appreciate the opportunity to provide feedback for the peer review process and hope that the members of the peer review Committee find it helpful. I understand that the Committee will not be providing any response the feedback it receives but would be pleased to respond to any questions the Committee might have in relation to the information I’ve provided.

²⁷ See Spire’s Residential Furnace Comments at pp. 20-28.