

**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.

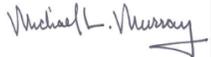
Petitioners believe that DOE can and should take such action without further administrative process. If DOE concludes that it cannot resolve both the legal and modeling issues, it should resolve at least one of those issues to facilitate forward progress as it continues to consider the other.

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

Respectfully submitted

				
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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.