

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.

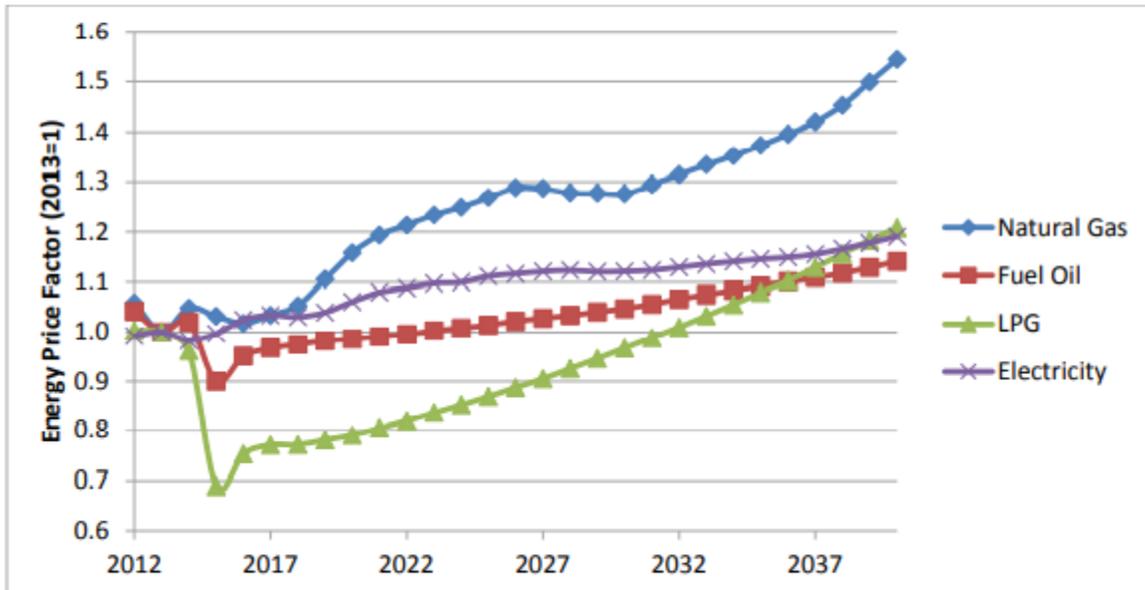


Figure 8.2.3 Projected National Commercial Energy Price Factors, AEO 2015 (Reference Case)

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.

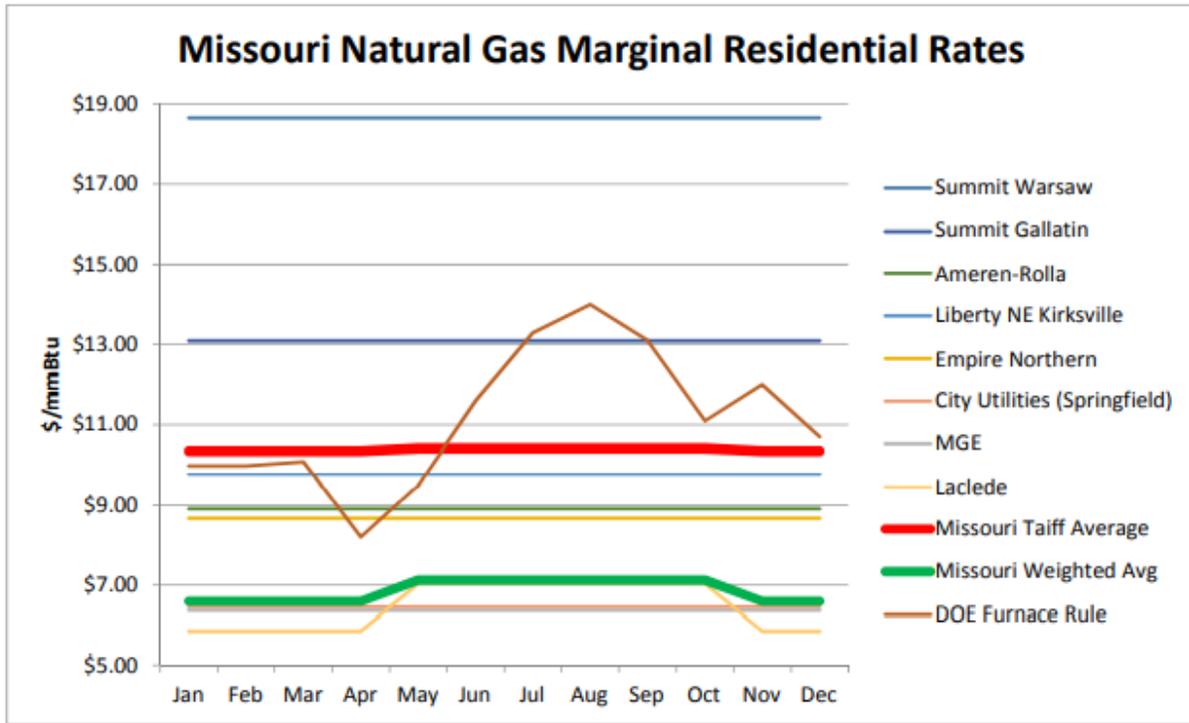
2. Marginal Residential Natural Gas Prices.

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,

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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)