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 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.

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[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 is 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