

Appliance Standards Awareness Project  
Natural Resources Defense Council  
American Council for an Energy-Efficient Economy  
Consumer Federation of America  
Alliance to Save Energy  
Northwest Power and Conservation Council  
Northeast Energy Efficiency Partnerships  
Earthjustice

October 17, 2011

Ms. Brenda Edwards  
U.S. Department of Energy  
Building Technologies Program  
1000 Independence Avenue, SW  
Mailstop EE-2J  
Washington, DC 20585

**RE: Docket Number EERE-2011-BT-STD-0011/ RIN 1904-AC06: Energy Conservation Standards for Residential Furnaces and Residential Central Air Conditioners and Heat Pumps**

Dear Ms. Edwards,

This letter constitutes the comments of the Appliance Standards Awareness Project (ASAP), Natural Resources Defense Council (NRDC), American Council for an Energy-Efficient Economy (ACEEE), Consumer Federation of America (CFA), Alliance to Save Energy (ASE), Northwest Power and Conservation Council (NPCC), Northeast Energy Efficiency Partnerships (NEEP), and Earthjustice (EJ) in response to the direct final rule for energy conservation standards for residential furnaces, central air conditioners, and heat pumps. 76 Fed. Reg. 37408. We appreciate the opportunity to provide input to the Department.

**We urge DOE to adopt the standards in the direct final rule for residential furnaces, central air conditioners, and heat pumps.** The standards in the direct final rule reflect the standards in the consensus agreement negotiated by manufacturers and their trade association, efficiency and environmental groups, and a state agency. These standards are also supported by consumer groups, and by several utilities including gas utilities. We believe that these standard levels represent the maximum improvement in energy efficiency that is technologically feasible and economically justified, and they will result in significant national energy savings, energy bill savings for consumers, reductions in peak electricity demand, and reductions in greenhouse gas and other air pollution emissions. DOE estimates that the standards will save 3.4-4.4 quads of energy over 30 years; achieve net present value savings for consumers of \$15.9-\$18.7 billion at a 3 percent discount rate; eliminate the need for almost 4 GW of electricity generating capacity by 2045; reduce CO<sub>2</sub> emissions by as much as 143 million metric tons over 30 years; and reduce

NOx and mercury emissions by about 100,000 tons and 0.15 tons, respectively, over the same period.<sup>1</sup> 76 Fed. Reg. 37412.

**DOE has appropriately applied the direct final rule process.** As noted above, the standards in the direct final rule are based on a consensus agreement negotiated by a diverse group of stakeholders. As the Secretary correctly determined, this group of stakeholders meets the requirement that the joint proposal be submitted by groups that are “fairly representative of relevant points of view.” 42 U.S.C. § 6295(p)(4)(A). The consensus group includes representatives from all the categories specifically noted in the Act, namely “manufacturers of the covered products, States, and efficiency advocates.” *Id.* The Department also correctly determined that the Act does not require absolute unanimity among all interested parties before the Department may proceed with issuance of a direct final rule. Indeed, the Act contemplates that a direct final rule may be approved even when some groups file adverse comments since it allows the Secretary to decline to withdraw a direct final rule if the adverse comments filed do not provide “a reasonable basis for withdrawing the rule.” 42 U.S.C. § 6295(p)(4)(C). In short, the Secretary reasonably determined that the consensus agreement for furnaces, central air conditioners, and heat pumps was submitted by “interested persons who are fairly representative of relevant points of view.” 76 Fed. Reg. 37422.

**The standards in the direct final rule will provide significant consumer benefits.** DOE’s analysis shows that the standards will yield positive average life-cycle cost (LCC) savings for consumers purchasing furnaces, central air conditioners, and heat pumps. We recognize that individual consumer impacts will vary due to many factors including local energy prices, climate, and the physical characteristics of a given house. However, consumer impacts will necessarily vary for any energy conservation standard for any product. We believe that DOE has thoroughly considered all the benefits and burdens of the standard levels, and has correctly concluded that the significant benefits, including the net total savings to consumers, substantially outweigh the burdens, including the negative economic impacts on a portion of consumers.

**DOE has thoroughly evaluated the consumer impacts of the furnace standards in the direct final rule.** In response to the rulemaking analysis plan (RAP) which DOE issued in 2010, several parties such as the American Gas Association (AGA) submitted comments arguing that the Department had underestimated the cost of installing condensing furnaces in certain existing homes and that these higher costs would lead those consumers to repair rather than replace their furnaces or switch from gas to electric heat. In the direct final rule, DOE considered these views and conducted a thorough analysis of installation costs for both replacement and new construction installations. In addition, DOE separately evaluated consumer impacts for equipment installed in new homes and in existing homes. This analysis shows that while the LCC savings for furnaces installed in new construction are greater than the savings for replacement installations due to differences in average installation costs, average LCC savings are positive for both subgroups. 76 Fed. Reg. 37507.

We understand that the Department has received adverse comments from at least some of these groups that reiterate the concern that certain subgroups will face high installation costs and could opt to switch fuels. To the extent that such comments simply elaborate concerns that the

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<sup>1</sup> The analysis period is 2013-2045 for furnaces and 2015-2045 for central air conditioners and heat pumps.

Department has already considered and addressed, they would not constitute a “reasonable basis for withdrawing the direct final rule” and we urge the Secretary not to do so. 42 U.S.C. § 6295(p)(4)(c)(i)(II).

We also understand that AGA’s comments in response to the DFR include a recommendation that if DOE adopts the 90 percent AFUE regional furnace standard, DOE should waive compliance under certain specific circumstances that impose financial hardships as part of the required rulemaking to develop an enforcement plan. DOE’s organizing statute provides for hardship waivers and the agency’s Office of Hearing and Appeals (OHA) administers applications. 42 U.S.C. § 7194(a). We believe that the enforcement plan proceeding, required under 42 U.S.C. § 6295(o)(6)(G)(ii) after adoption of a regional standard, would be an appropriate time for consideration of an OHA waiver process designed to address any special hardship situations. The agency has regularly considered and acted on such waivers, most typically filed by manufacturers, but in certain rare instances, by purchasers of regulated products. We note that a regional standard creates an unusual set of circumstances since equipment that does not meet the regional requirement will continue to be available within the United States, and therefore, more easily available for installations for which waivers might be granted. We take no position at this time on whether and how such waivers might be granted, other than noting that, if necessary, a waiver process could be considered within the context of the required enforcement rulemaking.

**It is appropriate that DOE has applied learning rates in the analysis.** As DOE noted in the notice of effective date and compliance dates for the direct final rule for clothes dryers and room air conditioners, DOE has stated that when data are available to project potential equipment cost reductions over time, DOE plans to use these data as part of its analysis. 76 Fed. Reg. 52857. In the direct final rule for furnaces, central air conditioners, and heat pumps, DOE applied learning rates based on historical data for warm air furnaces and unitary air conditioners, which show that real costs have decreased over time.<sup>2</sup> The incorporation of learning rates in this rulemaking is consistent with recent DOE final rules on refrigerators, clothes dryers and room air conditioners, where DOE also applied learning rates.<sup>3</sup> We note that because the LCC analysis evaluates purchases only in the first year the standards will be in effect, the impact of learning rates on the LCC analysis is minimal. DOE’s approach for applying learning rates in the LCC analysis is actually likely to be conservative as the LCC analysis will not fully reflect the consumer benefits of decreasing equipment prices over time. We also note that the DOE sensitivity analysis shows that the standards in the direct final rule will provide large net present value savings even without the incorporation of learning rates. 76 Fed. Reg. 37517-18.

**The furnace standards are cost-effective even if AEO 2011 price trends are used in the LCC analysis.** DOE’s analysis for the direct final rule used the AEO 2010 Reference Case to forecast natural gas prices over the analysis period. DOE noted in the notice of effective date and compliance dates for the direct final rule for clothes dryers and room air conditioners that DOE traditionally uses the Reference Case forecast from the most recent AEO available at the time of the analysis for its default energy price forecast. 76 Fed. Reg. 52859. As AEO 2010 was the most recent version of AEO available at the time of the analysis for the direct final rule for furnaces,

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<sup>2</sup> Direct Final Rule Technical Support Document. 2011. Appendix 8-J.

<sup>3</sup> 76 Fed. Reg. 57516; 76 Fed. Reg. 22454.

central air conditioners, and heat pumps, DOE appropriately used the AEO 2010 Reference Case. In an email submitted to DOE on October 7, 2011, the American Public Gas Association (APGA) requested that DOE run a suite of scenarios using DOE’s LCC model.<sup>4</sup> The requested scenarios included using AEO 2011 Reference Case or AEO 2011 High Shale Case to forecast natural gas prices. DOE’s analysis showed that the standards in the direct final rule would result in average positive LCC savings for both replacement and new construction installations even if lower natural gas prices are used in the analysis as shown in the table below.

Table 1. Average LCC savings for furnace installations.<sup>5</sup>

Sub-Group	Natural Gas Price Trend		
	AEO 2010 Reference Case	AEO 2011 Reference Case	AEO 2011 High Shale Case
Replacements	\$90	\$63	\$34
New Construction	\$343	\$316	\$286

We note that the calculation of average LCC savings for furnaces includes those consumers who would be unaffected by the standards (i.e. those consumers who would purchase a furnace meeting the new standard in the base case).<sup>6</sup> Because about 70% of consumers are unaffected by the standards (and whose LCC savings are zero by definition),<sup>7</sup> the average LCC savings for those consumers who are affected by the standards would be significantly higher than the average LCC savings shown in Table 1.

The additional LCC analysis conducted by DOE in response to APGA’s request showed that average LCC savings are positive for both replacement and new construction installations for each individual change requested by APGA, including the price trends noted above as well as additional changes. Average LCC savings for both replacements and new construction are positive even if a package of different assumptions is applied (APGA’s “Case 1”), including assumptions that we believe are unreasonable such as a fixed 16-year lifetime. In the direct final rule, DOE used a distribution of lifetimes to reflect expected failure rates in the field. DOE derived the average lifetime of 23.7 years for non-weatherized gas furnaces from a combination of sources including the Residential Energy Consumption Survey (RECS), the American Housing Survey, the American Comfort Survey, and shipment data.<sup>8</sup> The additional analysis conducted by DOE in response to APGA’s request only reinforces that the furnace standards in the direct final rule are cost-effective for consumers.

**DOE’s use of average natural gas prices is appropriate.** In the furnace rulemaking analysis plan (RAP) published in March 2010, DOE indicated that it would derive average monthly energy prices using recent EIA data.<sup>9</sup> DOE notes in the direct final rule that Ingersoll Rand stated that using average, not marginal, energy prices for the furnace LCC analysis is reasonable and

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[http://www1.eere.energy.gov/buildings/appliance\\_standards/residential/residential\\_furnaces\\_cac\\_hp\\_direct\\_final\\_rule.html](http://www1.eere.energy.gov/buildings/appliance_standards/residential/residential_furnaces_cac_hp_direct_final_rule.html)

<sup>5</sup> *Ibid.* APGA Scenario Analysis Spreadsheet.

<sup>6</sup> Direct Final Rule Technical Support Document. 2011. Chapter 8. p. 117.

<sup>7</sup> *Ibid.* Chapter 11. pp. 12-13.

<sup>8</sup> *Ibid.* Chapter 8. p. 8-68.

<sup>9</sup> Residential Furnace Rulemaking Analysis Plan. 2010. p. 54.

avoids much unnecessary complexity. 76 Fed. Reg. 37475. In the 2010 final rule for energy conservation standards for residential water heaters, direct heating equipment, and pool heaters, DOE used average residential natural gas prices for 13 geographic areas. 75 Fed. Reg. 20158. DOE applied the same approach in the direct final rule for furnaces.

In an ex parte memo submitted to DOE by AGA on October 11, 2011, AGA presents scenarios using either 13% fixed gas costs or citygate gas prices, which we presume are intended to represent marginal gas prices.<sup>10</sup> Even if DOE were to use marginal gas prices, it would be necessary to use marginal prices during the winter months since furnaces are only operated during the heating season. An analysis conducted by Lawrence Berkeley National Laboratory found that marginal natural gas prices were only 4.4% lower than average prices in the winter, but 15.3% lower than average prices in non-winter months.<sup>11</sup> These findings suggest that using marginal natural gas prices in the furnace LCC analysis would not significantly change the results. Regional and monthly price variations, however, are significant, as average annual residential natural gas prices in the 13 geographic regions range from \$9.07/MMBtu to \$21.01/MMBtu, and monthly prices can vary by as much as 60% in a given region over the course of a year.<sup>12</sup> Therefore, capturing this significant regional and monthly variation, as DOE did in the direct final rule, is far more important than capturing small differences between average and marginal prices. In the 2007 final rule for energy conservation standards for residential furnaces and boilers, DOE attempted to derive seasonal marginal gas prices, but it was unable to develop statistically valid estimates and instead used marginal annual prices.<sup>13</sup> We believe that DOE's approach in the direct final rule for developing natural gas prices, which incorporates regional and seasonal variations, is appropriate and that the prices DOE derived reflect the prices faced by furnace users.

**The process for setting these standards has been lengthy and complete.** EPCA directed DOE to publish a final rule by January 1, 1994 to determine if the energy conservation standards for residential furnaces should be amended. The initiation of the furnace rulemaking was delayed significantly, and a final rule was not published until 2007. As part of the 2007 rulemaking, DOE published a framework document, an advance notice of proposed rulemaking (ANOPR), and a notice of proposed rulemaking (NOPR), and public meetings were held at each stage of the process. In addition, DOE held an additional public meeting to specifically discuss with stakeholders issues related to residential furnace and boiler venting installation. The furnace standards in the direct final rule represent the completion of a process following a voluntary remand of the 2007 final rule. As part of this process, DOE published a rulemaking analysis plan (RAP) and held a public meeting to request comment on the analytical approaches that DOE anticipated using to evaluate potential amended standards for furnaces. Thus, DOE has provided substantially more opportunities to comment on the proposed rule than the statute requires. After the Secretary receives a consensus agreement, the statute provides that the Secretary can, after

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<sup>10</sup> [http://energy.gov/sites/prod/files/111011\\_Ex\\_Parte.pdf](http://energy.gov/sites/prod/files/111011_Ex_Parte.pdf)

<sup>11</sup> Chaitkin, S., J. McMahon, C. Dunham-Whitehead, R. van Buskirk and J. Lutz. 2000. Estimating Marginal Residential Energy Prices in the Analysis of Proposed Appliance Energy Efficiency Standards. Conference Paper, Proceedings of the ACEEE Summer Study on Energy Efficiency in Buildings.

<sup>12</sup> Direct Final Rule Technical Support Document. 2011. Chapter 8. p. 44; Final Rule Analytical Spreadsheets: Furnace LCC and PBP Spreadsheet.

<sup>13</sup> U.S. Department of Energy. 2007. Technical Support Document: Energy Efficiency Program for Consumer Products: Energy Conservation Standards for Residential Furnaces and Boilers. p. 8-12.

determining that the proposal is consistent with the substantive criteria in subsection (o), simply publish the proposal as a direct final rule and hold a single 110-day comment period, at which point the rule may become final. 42 U.S.C. § 6295(p)(4)(B).

Likewise, DOE has provided for significantly more public input concerning standards for central air conditioners and heat pumps than the direct final rule provisions require. DOE initiated a rulemaking for central air conditioners and heat pumps in 2008 with the publication of a framework document and a public meeting. DOE subsequently published a preliminary technical support document and held another public meeting. There has been ample opportunity for public comment on the rulemakings for both furnaces and central air conditioners and heat pumps, and DOE has considered public comments at each stage of the rulemakings. Therefore, we urge DOE to promptly adopt the standards for furnaces, central air conditioners, and heat pumps in the direct final rule.

Thank you very much for considering these comments.

Sincerely,



Andrew deLaski  
Executive Director  
Appliance Standards Awareness Project



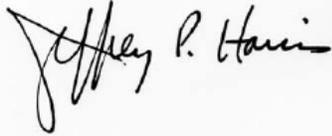
David B. Goldstein  
Energy Program Co-Director  
Natural Resources Defense Council



Steven Nadel  
Executive Director  
American Council for an Energy-Efficient Economy



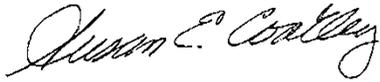
Mel Hall-Crawford  
Energy Projects Director  
Consumer Federation of America



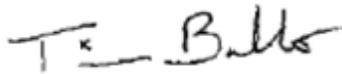
Jeff Harris  
Vice President for Programs  
Alliance to Save Energy



Tom Eckman  
Manager, Conservation Resources  
Northwest Power and Conservation Council



Susan E. Coakley  
Executive Director  
Northeast Energy Efficiency Partnerships



Timothy D. Ballo  
Associate Attorney  
Earthjustice