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Department of Energy: Energy Conservation Standards Program: Energy Conservation Standards for Consumer Furnaces, Notice of Proposed Rulemaking and Request for Comment

Docket Number EERE-2014-BT-STD-0031
87 FR 40,590 (July 7, 2022).

Comments Submitted by the Competitive Enterprise Institute, Consumers' Research, Center for the American Experiment, JunkScience.com, Project 21, Caesar Rodney Institute, Rio Grande Foundation, Committee for a Constructive Tomorrow, FreedomWorks Foundation, Heartland Institute, Thomas Jefferson Institute, Independent Women's Forum, Independent Women's Voice, and Institute for Energy Research

INTRODUCTION

The undersigned free market and consumer organizations have a longstanding interest in bringing to light the deleterious consequences of federal regulations, which are often neglected by agencies in their attempts to adopt a regulatory agenda. For over 20 years, we have participated in rulemakings conducted by the Department of Energy (DOE) as well as litigation regarding energy and water conservation standards for home appliances. This includes agency actions impacting dishwashers, air conditioners, clothes washers and dryers, showerheads, and light bulbs.[1] Our particular focus has been on ensuring that the consumer protections built into

[1] See, Brief Amicus Curiae of the Competitive Enterprise Institute and FreedomWorks, in Louisiana v. United States Department of Energy, United States Court of Appeals for the Fifth Circuit, No. 22-60146, July 9, 2022, https://cei.org/wp-content/uploads/2022/07/Dishwasher-Amicus-Final_FILED.pdf; Comments Of The Competitive Enterprise Institute Regarding The Energy Conservation Program For Consumer Products And Commercial And Industrial Equipment, December 5, 2001, http://cei.org/sites/default/files/Ben%20Lieberman%20-%20CEI's%20Comments%20Regarding%20the%20Energy%20Conservation%20Program%20For%20Consumer%20Products%20and%20Commercial%20Equipment.pdf; Consumers Research Comment of the Notice of Proposed Rulemaking and Announcement of Public Meeting Concerning the Energy Conservation Program's Test Procedures for Showerheads,

the law are given full weight in the rulemaking process. In our view, these protections have often been downplayed or ignored by the agency when setting excessively stringent efficiency standards that raise overall costs and/or reduce product quality and choice.

It is for these reasons that we supported DOE's January 15, 2021 Final Interpretive Rule creating a separate category for non-condensing natural gas furnaces.[2] Failure to do so would have violated the law by effectively eliminating this furnace type despite it being the best option for some homeowners.[3]

It is also for these reasons that we opposed DOE's December 29, 2021 Final Interpretive Rule reversing the previous Final Interpretative Rule and eliminating the protection for non-condensing furnaces.[4] This Final Interpretive Rule made possible the Notice of Proposed Rulemaking (NOPR) at issue here that would set out stringent new efficiency standards for furnaces that non-condensing versions cannot meet. We believe this NOPR violates the law and harms consumers and therefore should not be finalized.[5]

SUMMARY OF THE ARGUMENT

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https://consumersresearch.org/cr-comment-on-the-nprm-on-showerhead-test-procedures/; Comments of Free-Market Organizations to the Department of Energy, Energy Test Procedure for Showerheads, Notice of Proposed Rulemaking, September 20, 2021, https://cei.org/wp-content/uploads/2021/09/Showerheads-9-2021.pdf; Comments of Free Market Organizations to the Department of Energy, Energy Conservation Standards for General Service Incandescent Lamps, Notice of Proposed Determination, November 4, 2019, https://cei.org/sites/default/files/GSIL_Comment-10-2019.pdf; Comments of Free Market Organizations to the Department of Energy, Energy Conservation Standards for General Service Incandescent Lamps, Notice of Proposed Rule, January 27, 2022, https://cei.org/regulatory_comments/cei-leads-coalition-opposing-proposed-doe-lightbulb-rule/.

[2] Department of Energy, Energy Conservation Program for Appliance Standards: Energy Conservation Standards for Residential Furnaces and Commercial Water Heaters, Final Interpretive Rule, 86 FR 4,776 (January 15, 2021), https://www.govinfo.gov/content/pkg/FR-2021-01-15/pdf/2020-28956.pdf.

[3] The primary difference between a non-condensing and condensing furnace is that a non-condensing furnace has only one heat exchanger while a condensing furnace has two. The second heat exchanger allows more heat to be taken out of the exhaust and utilized, which is why condensing furnaces can achieve higher levels of efficiency. However, it adds to the up-front cost of the furnace and makes venting considerably more challenging.

[4] Department of Energy, Energy Conservation Program for Appliance Standards: Energy Conservation Standards for Residential Furnaces and Commercial Water Heaters, Final Interpretive Rule, 86 FR 73,947, (December 29, 2021), https://www.govinfo.gov/content/pkg/FR-2021-12-29/pdf/2021-28007.pdf.

[5] CEI's Ben Lieberman submitted substantially similar comments to DOE on October 4, 2022. The present revised comments reflect subsequent input from one of the signatories. We also fix a typo in footnote 34, inserting the missing word "not," which is critical to the footnote's meaning.

The Energy and Policy Conservation Act of 1975 (EPCA) authorizes DOE to set and periodically consider amending energy and water conservation standards for most home appliances, including furnaces.[6] Such standards are to be set to "achieve the maximum improvement in energy efficiency…which the Secretary determines is technologically feasible and economically justified."[7] Further, the agency cannot adopt any standard unless it would save a significant amount of energy.[8]

EPCA does not, as DOE now strongly suggests, prioritize efficiency above all else in the standards-setting process. Instead, the statute contains a number of provisions protecting consumers from excessively stringent standards that may do more harm than good. For example, in determining whether a standard is economically justified, DOE is required to balance the potential energy savings over the life of the appliance against any additional costs in the form of a higher purchase price and/or increased maintenance expenses.[9] These costs can increase sharply with the stringency of the standard, and a point may be reached where the level is set so stringently that it costs consumers more than it saves them. EPCA seeks to avoid such a result.[10] This is but one example of the provisions in EPCA that serve as a brake on regulatory overreach.

Most relevant here is the provision in the law categorically prohibiting any new or amended standard if the Secretary finds, by a preponderance of evidence, that it is "likely to result in the unavailability in the United States…of performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as those generally available in the United States at the time of the Secretary's finding."[11] [Hereinafter the "features provision."] The features provision is virtually tailor-made to protect consumers from natural gas furnace standards so stringent so as to effectively force non-condensing versions off the market in favor of condensing furnaces with very different characteristics that make them incompatible with some homes.

Finally, climate change considerations do not play a role under EPCA and in any event DOE should not use the Interagency Working Group's (IWG) social cost of greenhouse gases (SC-GHGs) analysis to calculate net regulatory benefits. The SC-GHG—an estimate of the present value of the cumulative climate damages of an incremental ton of carbon dioxide equivalent (CO2e) greenhouse gas (GHG) emissions out to the year 2300—is too speculative and subjective, and too easily manipulated for political purposes, to be weighed in the same scales with the near-term consumer costs of the proposed standards. As it happens, the IWG exercise is egregiously biased due to its reliance on overheated climate models, inflated emission scenarios, and pessimistic adaptation assumptions. Using biased SC-GHG estimates to estimate net benefits is arbitrary and capricious. DOE's net-benefits calculation also overlooks the obvious problem that, however estimated, the climate benefits of the proposed standards are too small to be detected or verified; "benefits" no one can experience are so in name only.

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[6] 42 U.S.C. §6291 *et seq.*
[7] 42 U.S.C. §6295(o)(2)(A).
[8] 42 U.S.C. §6295(o)(3)(B).
[9] 42 U.S.C. §6295(o)(2)(B)(i)(II).
[10] 42 U.S.C. §6295(o)(2)(B)(iii).
[11] 42 U.S.C. §6295(o)(4).

ARGUMENT

I. EPCA PROTECTS NON-CONDENSING FURNACES AND CONSUMER CHOICE

No two homes are exactly alike, nor are any two homeowners. The above-mentioned features provision acknowledges individualized circumstances and preferences and preserves them by ensuring that DOE standards are not set so high as to create one-size-fits-all limitations.

Even if only a few homeowners need non-condensing furnaces, the law would protect them, but in truth quite a few do. As other commenters have described in detail, a natural gas furnace must be compatible with a home's venting system, and condensing furnaces are frequently not.[12] Further, it is not merely a matter of spending money to modify the existing venting system to be compatible with a condensing furnace. Depending on the home's configuration, it may not be practical or even possible to do so. In other cases, it could be done but with very real disadvantages such as compromised safety or the need for ducts traversing rooms or components that take up additional space. The problems are particularly acute in homes where a non-condensing furnace shares the venting system with other appliances such as a water heater, and continued operation of these other appliances may be jeopardized by a switch to a condensing furnace.

A forced shift towards condensing furnaces would disproportionately burden lower-income homeowners who tend to have older and more space-constrained houses – the kinds most likely to need a non-condensing furnace. Thus, the NOPR may have adverse environmental justice implications not acknowledged by the agency.

The circumstances are as varied as the nation's housing stock, and condensing furnaces cannot suit every need. In fact, the elimination of non-condensing furnaces would likely force some homeowners to make a switch, not to a condensing natural gas furnace but to an electric furnace, with higher operating costs as well as other potential disadvantages.[13] The extent to which the NOPR would induce natural gas furnace users to abandon natural gas entirely in favor of electric furnaces further underscores that the features provision has been violated.

From a consumer choice perspective, it is important to emphasize that, with or without the NOPR, any homeowner who wants a condensing furnace (or an electric one for that matter) will always be free to select one. The only thing at issue here is whether or not to foreclose the option of a non-condensing furnace.

DOE makes the argument that heat is heat and thus whether the heat is delivered by a non-condensing or condensing furnace is of no consequence to consumers and therefore not a

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[12] 86 FR 73,961.

[13] 87 FR, 40,646-40,647; Department of Energy, Energy Conservation Program for Consumer Products: Representative Unit Costs of Energy, 87 FR 12,681 (March 7, 2022), https://www.govinfo.gov/content/pkg/FR-2021-03-17/pdf/2021-05482.pdf.

protected feature.[14] In DOE's words, "the technology used to supply heated air or hot water is not a performance-related 'feature' that provides a distinct consumer utility under EPCA."[15] This is an unacceptably narrow reading of the features provision, whose broad language protects every aspect of a product that is of relevance to consumers. Here, the feature at issue is more accurately characterized as the furnace's compatibility with the home in which it is to be installed – which of course is of great importance to the homeowner.

It should be emphasized that what counts as a protected feature under EPCA is not what the agency chooses but what the public demands, to be determined by whether that feature was available on the market at the time of the rulemaking ("substantially the same as those generally available in the United States at the time of the Secretary's finding").[16] Here, the existing and ongoing demand for condensing furnaces is undeniable.

DOE also observes that non-condensing furnaces are less energy efficient than condensing ones, and thus asserts that preserving them would fundamentally undercut the purpose of EPCA.[17] As discussed previously, this efficiency-obsessed approach is not how EPCA works and indeed ignores many of its statutory protections. EPCA requires a balancing in which efficiency is not pursued to the point that it jeopardizes the interests of homeowners. DOE's exaltation of efficiency disregards considerations that were important to the Congress that enacted EPCA and is accordingly arbitrary and capricious.

Here, DOE's insistence on treating efficiency as paramount would effectively write the features provision out of the law. The entire point of this provision is to protect product characteristics likely to be sacrificed by an excessively stringent standard. Note also that the statute contains a related provision setting out the process of promulgating separate rules with a stringency level calibrated so as to preserve any such features (most appliances have multiple efficiency standards depending on their precise characteristics), and it explicitly acknowledges that such separate standards would need to be less stringent than the one that caused the problem in the first place.

There is a proper way under EPCA for DOE to pursue greater efficiency for non-condensing furnaces, and that is to create a separate standard achievable by models with this feature. In contrast, EPCA does not allow DOE to promulgate a one-size-fits-all standard that only condensing furnaces can meet.

II. CLIMATE CHANGE CONSIDERATIONS ARE SUPRERSEDED BY THE CONSUMER PROTECTIONS IN EPCA, AND THEIR QUANTIFICATION BY DOE IS HIGHLY PROBLEMATIC

[14] 87 FR, 40,604.
[15] 87 FR, 40,613.
[16] 42 U.S.C. §6295(o)(4).
[17] 86 FR, 73,965-73,967.

Climate change is nowhere mentioned in EPCA's detailed instructions to DOE on how to set and amend appliance efficiency standards. Regardless, the agency has elsewhere proclaimed that "[a]ddressing the effects of climate change is a top priority of the Energy Department," and that this new agency-wide agenda includes "working to dramatically increase the efficiency of appliances…."[18] The NOPR itself references Executive Order 13990, "Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis," (January 25, 2021), the United States re-entering the Paris Agreement, and "the need to confront the global climate crisis" as justification for strengthening furnace standards.[19]

The economic analysis in the NOPR incorporates the social cost of greenhouse gas emissions and thus the benefits of avoiding these emissions. It quantifies projected climate benefits exceeding $1 billion dollars annually and $16.2 billion dollars in total.[20]

However, the recent Supreme Court decision in *West Virginia v. Environmental Protection Agency* strongly suggests that climate change concerns do not create statutory authority beyond that which is clearly stated by Congress.[21] Indeed, if the Environmental Protection Agency is not permitted to use climate change to justify a rule forcing a shift away from coal-fired power plants absent clear statutory authority, then DOE may not do the same to non-condensing furnaces. Nonetheless, DOE proposes to do just that and includes the social cost of greenhouse gas emissions in its determination that the proposed new standards are economically justified.

Further, whether or not the social cost of greenhouse gas emissions is a valid consideration in the appliance standards-setting process, it would in any event be superseded by the consumer protections in the statute. In particular, the features provision preserves consumer choice and does so independently of the agency's determination of economic justification. In other words, a new or amended standard, no matter how economically justified the agency believes it to be, cannot sacrifice a product characteristic that is on the market at the time of the rulemaking. This includes non-condensing furnaces. In this way, EPCA ensures that freedom of choice takes precedence over the pursuit of any environmental agenda.

Aside from questions about whether climate change should play a role in appliance efficiency rulemakings, the agency's attempt at quantifying these impacts is highly problematic. The social cost of greenhouse gases (SC-GHG) is an estimate in dollars of the "present value" of the cumulative climate change damages caused by an additional ("marginal") ton of carbon dioxide-equivalent (CO2e) greenhouse gases emitted in a given year. It is also an estimate of the benefit of avoiding or reducing one ton of emissions in that year.

The U.S. government's IWG uses three integrated assessment models (IAMs) to estimate GHG emissions' social cost. IAMs "integrate" a climate model, which estimates the physical

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[18] Department of Energy, "Climate Change," https://www.energy.gov/science-innovation/climate-change.
[19] 87 FR, 40,604, 40,609.
[20] 87 FR, 40,593-40,595, 40,659-40,663.
[21] 597 U.S.____(2022).

impacts of GHG emissions, with an economic model, which estimates the dollar value of climate change effects on agricultural productivity, GDP, and other economic variables. The three IAMs are abbreviated DICE, FUND, and PAGE. Agencies estimate the climate benefits of their regulations by multiplying the projected tons of GHG emissions reduced or avoided by the IWG's SC-GHG values.

Although DOE claims its climate-benefits estimate did not inform its selection of regulatory standards,[22] discussion of the SC-GHG is warranted for three reasons. First, the concept of GHGs as a social cost (negative externality) is a factor in DOE's selection of the standards,[23] as it must be in any GHG emission-reduction policy. Second, DOE claims the IWG used the "best available science" to quantify GHGs' social cost.[24] Third, the standards' purported climate benefits comprise a substantial portion of the NOPR's total benefits.

Specifically, if discounted at 3%, IWG-based climate benefits ($16.2 billion) constitute approximately one-quarter of total benefits ($65.2 billion). If discounted at 7%, climate benefits ($16.2 billion) constitute more than half of total benefits ($32.2 billion).[25] Touting $16.2 billion in climate benefits has an obvious PR value in the court of public opinion. Such bragging rights might even influence the opinion climate of future litigation over the standards.

It is therefore important to consider whether the IWG metrics are based on the best available science, as the NOPR claims, or reflect significant methodological biases and even scientific malpractice.

SC-GHG estimates are highly sensitive to the modeler's choice of inputs and assumptions. For example, when the FUND model is updated with empirical information regarding climate sensitivity[26] and carbon dioxide fertilization,[27] the SCC drops to very low numbers with substantial probabilities of being negative through 2050.[28] A negative SCC is another way of saying a net benefit.

Previous comment letters to other agencies explore in detail the IWG's methodological biases.[29] Here, a condensed overview must suffice.

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[22] 87 FR 40,659.
[23] 87 FR 40,609.
[24] 87 FR 40,659.
[25] 87 FR 40,594.
[26] Climate sensitivity is typically defined as the amount of global warming that occurs after the climate system has fully adjusted to a doubling of atmospheric CO_2 concentration.
[27] Rising CO2 concentration enhances the growth of most food crops and other plant life by increasing their internal water use efficiency and photosynthetic activity.
[28] Kevin Dayaratna, Ross McKitrick, and Patrick Michaels. 2020. Climate sensitivity, agricultural productivity and the social cost of carbon in FUND. Environmental Economics and Policy Studies 22: 433-448, https://link.springer.com/article/10.1007/s10018-020-00263-w.
[29] See, e.g., the comments of Patrick Michaels, Kevin Dayaratna, and Marlo Lewis on: (1) the Federal Energy Regulatory Commission's Notice Inviting Technical Conference Comments, 86 FR 66293 (November 21, 2021), https://cei.org/wp-content/uploads/2022/01/CEI-Comments-

SC-GHG estimates are highly sensitive to:

- The discount rates chosen to calculate the present value of future emissions and reductions.

- The calculated climate sensitivities chosen to estimate the warming impact of projected increases in atmospheric GHG concentration.

- The timespan chosen to estimate cumulative damages from rising GHG concentration.

- The extent to which the SC-GHG reflects empirical information about the agricultural and ecological benefits of CO_2 fertilization.

- The assumptions chosen regarding the potential for adaptation to decrease the cost of future climate change impacts.

- The choice of socioeconomic pathways used to project future GHG emissions and concentrations.

In addition, from a political perspective, it matters whether the net benefits of climate policy proposals are calculated by comparing the domestic costs of GHG-reduction policies to the IAM-estimated global climate benefits or to the comparatively smaller domestic benefits.

What this all means is that, if SCC analysts intend to make climate change look economically catastrophic and build a case for aggressive regulation, they:

- Run the IAMs with discount rates with below-market discount rates, which inflates the perceived present value of future climate damages and emission reductions.[30]

Michaels-Dayaratna-Lewis-Docket-No.-PL21-3-000-FINAL.pdf; (2) the Securities and Exchange Commission's proposed Enhancement and Standardization of Climate-Related Disclosures to Investors, 87 FR 21334 (June 17, 2022), https://cei.org/wp-content/uploads/2022/06/CEI-Lewis-Comments-SEC-Climate-Risk-Disclosure-June-17-2022-Final-Amended-Version-with-changes-accepted.docx.pdf; and (3) the National Highway Traffic Safety Administration's proposed Corporate Average Fuel Economy Standards for Model Years 2024-2026 Light Duty Vehicles, 86 FR 49602 (September 3, 2021), https://cei.org/wp-content/uploads/2021/10/CEI-Comments-Docket-No-NHTSA20210053-10-26-2021-pdf.pdf; and the Environmental Protection Agency's proposed Revised 2023 and Later Light Duty Vehicle Greenhouse Gas Emissions Standards, 86 FR 43726 (August 10, 2021), https://cei.org/wp-content/uploads/2021/09/CEI-Comments-Docket-EPAHQOAR20210208-9-27-2021.pdf.

[30] D. W. Kreutzer, "Discounting Climate Costs," Heritage Foundation Issue Brief No. 4575, June 16, 2016, https://www.heritage.org/environment/report/discounting-climate-costs; Kevin Dayaratna, Rachel Greszler and Patrick Tyrrell, "Is Social Security Worth Its Cost?" Heritage

- Use IAMs with climate sensitivity derived from general circulation models that, on average, project twice as much warming in the tropical troposphere as has been observed over the past 42 years.[31]

- Calculate cumulative damages over a 300-year period—i.e., well beyond the limits of informed speculation about future economic vulnerabilities and adaptive technologies.

- Minimize the agricultural benefits of atmospheric CO_2 fertilization by, for example, averaging the results of three IAMs, two of which (DICE and PAGE) effectively assign a dollar value of zero to carbon dioxide's positive externalities.

- Include at least one IAM (e.g., PAGE) that unrealistically assumes adaptation cannot mitigate the cost of climate change impacts once 21st century warming and sea-level rise exceed 1°C and 10 inches, respectively.[32]

- Run the models with implausible emission scenarios that assume the world repeatedly burns through all economically-recoverable fossil fuel reserves.[33]

- Inflate the net benefits of climate policy for U.S. citizens and residents by comparing domestic costs (apples) to global benefits (oranges).

- Conceal those malpractices by ignoring any peer-reviewed studies that identify and challenge the aforementioned biases.[34]

Foundation Backgrounder No. 3324, July 10, 2018, https://www.heritage.org/budget-and-spending/report/social-security-worth-its-cost.

[31] See, e.g., R. McKitrick and J. Christy. 2020. Pervasive Warming Bias in CMIP6 Tropospheric Layers. Earth and Space Science Volume 7, Issue 9, https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2020EA001281.

[32] Interagency Working Group, Technical Support Document: - Technical Update of the Social Cost of Carbon Under Executive Order 12866 - August 2016, pp. 14-15, https://www.epa.gov/sites/default/files/2016-12/documents/sc_co2_tsd_august_2016.pdf. The PAGE model's pessimistic assessment of human adaptive capabilities is unreasonable. See Bjorn Lomborg, "Climate Change Calls for Adaptation, Not Panic," *Wall Street Journal*, October 21, 2021, https://www.wsj.com/articles/climate-change-adaptation-panic-exaggerating-disaster-11634760376.

[33] Roger Pielke, Jr., "The Biden Administration Just Failed Its First Scientific Integrity Test," The Honest Broker, February 28, 2021, https://rogerpielkejr.substack.com/p/the-biden-administration-just-failed.

[34] For example, the 115 references listed at the end of the IWG's February 2021 Technical Support Document (https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf) do not include Kevin Dayaratna, Ross McKitrick, and David Kreutzer. 2017. Empirically Constrained Climate Sensitivity and the Social Cost of Carbon, *Climate Change Economics*, Vol. 8, No. 2 (2017), p. 1750006-1-1750006-12,

In other words, the analysts would do exactly what the Obama IWG did in its 2010, 2013, and 2016 TSDs, and what the Biden IWG did in its 2021 interim TSD.

DOE defends the Obama and Biden administrations' practice of comparing domestic regulatory costs to global climate benefits, noting, for example, that international trade, investment, and tourism create "spillover pathways" that make other nations' problems our problems as well.[35] Whatever the merits of that argument, it does not rebut the fact that Americans bear most of the costs of domestic climate regulations and non-Americans reap most of the purported benefits of U.S. emission reductions. However valid it may be to present an agency's estimate of global climate benefits, those should be reported separately, as Office of Management and Budget Circular A-4 directs.[36] There is no scientific or ethical justification for hiding the comparatively smaller domestic benefits of U.S. climate regulations.

In short, the SC-GHG depends on so many questionable and biased methodological choices there is no good reason to believe NOPR's projected emission reductions have any actual monetary value. Reasonable alternative assumptions about climate sensitivity and CO_2 fertilization substantially drive down SC-GHG estimates, even pushing social cost values into negative territory. Replacing the obsolete return-to-coal baselines with realistic emission scenarios would further decrease SC-GHG values during 2023-2050 and beyond.

However small (or negative) the global SCC would be after all reasonable adjustments are made to assumptions regarding discount rates, time horizons, climate sensitivity, CO_2 fertilization, adaptive capabilities, and baseline emission trajectories, the SCC would be smaller still (or increasingly negative) if calculated on a domestic (U.S.-only) basis.

In a series of cases dealing with the Environmental Protection Agency's (EPA) modeling of air pollutant risks, the D.C. Circuit Court of Appeals has repeatedly held that an agency's use of a model is "arbitrary" if the model bears "no rational relationship to the reality it purports to represent."[37] Logically, an agency's reliance on unrealistic emission scenarios or adaptation assumptions is also arbitrary and capricious. Because DOE's benefit-cost analysis incorporates SC-GHG estimates that rely on unrealistic models, emission scenarios, and adaptation assumptions, it is vulnerable to challenge as arbitrary and capricious.

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https://www.worldscientific.com/doi/abs/10.1142/S2010007817500063 or Kevin Dayaratna, Ross McKitrick, and Patrick Michaels. 2020. Climate Sensitivity, Agricultural Productivity and the Social Cost of Carbon in FUND. *Environmental Economics and Policy Studies* 22: 433-448, https://link.springer.com/article/10.1007/s10018-020-00263-w.

[35] 87 FR 40,660.

[36] Office of Management and Budget, Regulatory Impact Analysis: A Primer, p. 5, https://www.reginfo.gov/public/jsp/Utilities/circular-a-4_regulatory-impact-analysis-a-primer.pdf.

[37] Chem. Mfrs. Ass'n v. EPA 28 F.3d 1259, 1264 (D.C. Cir. 1994); *Am. Iron & Steel Inst. v. EPA*, 115 F.3d 979, 1004 (D.C. Cir. 1997); *Columbia Falls Aluminum Co. v. EPA*, 139 F.3d 914, 923 (D.C. Cir. 1998); *Sierra Club v. EPA*, 356 F.3d 296, 307 (D.C. Cir. 2004).

Finally, even if the IWG's methodology were not biased in multiple ways, DOE's claim that the furnace efficiency standards will deliver $16.2 billion in climate benefits would still defy common sense. According to DOE's Technical Support Document, the proposed standards (TSL 8) will reduce CO2e emissions by 315.9 million metric tons during 2022-2051.[38]

Table 13.3.1 Cumulative Emissions Reduction for Potential Standards for Non-Weatherized Gas Furnaces and Mobile Home Gas Furnaces (AFUE)*

	TSL								
	1	2	3	4	5	6	7	8	9
Power Sector and Site Emissions									
CO_2 (million metric tons)	39.3	75.8	74.3	97.5	90.5	115	151	173	212
SO_2 (thousand tons)	-7.74	-25.2	-41.1	-37.1	-154.6	-75.7	-175.9	-86.7	-221.2
NO_X (thousand tons)	66.9	136	144	177	251	232	359	329	486
Hg (tons)	-0.03	-0.10	-0.16	-0.14	-0.58	-0.29	-0.66	-0.33	-0.83
CH_4 (thousand tons)	-0.06	-1.25	-3.04	-2.13	-15.3	-6.04	-16.4	-6.09	-20.1
N_2O (thousand tons)	-0.05	-0.28	-0.55	-0.44	-2.46	-1.06	-2.70	-1.14	-3.36
Upstream Emissions									
CO_2 (million metric tons)	6.84	14.7	16.8	19.6	35.6	27.7	47.5	37.7	63.0
SO_2 (thousand tons)	-0.10	-0.36	-0.61	-0.54	-2.43	-1.14	-2.73	-1.29	-3.43
NO_X (thousand tons)	111	239	275	319	595	455	788	618	1,042
Hg (tons)	0.00	0.00	0.00	0.00	-0.01	0.00	-0.01	0.00	-0.01
CH_4 (thousand tons)	669	1,451	1,678	1,939	3,668	2,783	4,841	3,764	6,400
N_2O (thousand tons)	0.007	0.008	0.001	0.009	-0.043	-0.003	-0.037	0.006	-0.041
Total Emissions									
CO_2 (million metric tons)	46.1	90.5	91.1	117	126	143	198	211	275
SO_2 (thousand tons)	-7.84	-25.6	-41.7	-37.6	-157	-76.8	-179	-88.0	-225
NO_X (thousand tons)	178	375	419	496	846	687	1147	947	1,528
Hg (tons)	-0.03	-0.10	-0.16	-0.14	-0.59	-0.29	-0.67	-0.33	-0.84
CH_4 (thousand tons)	669	1,450	1,675	1,937	3,653	2,777	4,825	3,758	6,380
CH_4 (million tons CO_2eq)**	18.7	40.6	46.9	54.2	102.3	77.7	135.1	105.2	178.6
N_2O (thousand tons)	-0.05	-0.27	-0.55	-0.43	-2.50	-1.07	-2.74	-1.13	-3.40
N_2O (thousand tons CO_2eq)**	-12.6	-71.9	-147	-114	-664	-283	-727	-300	-900

* Negative values refer to an increase in emissions.
** CO_2eq is the quantity of CO_2 that would have the same global warming potential (GWP).

One of us (Dr. Dayaratna) took that emission-reduction estimate and simulated the associated temperature impacts using the Model for the Assessment of Greenhouse Gas Induced Climate Change (MAGICC version 6). He assumed a climate sensitivity of 5°C (the upper end of the climate sensitivity range in the IPCC's Sixth Assessment Report)[39] and used Representation Concentration Pathway 6.0 (the second highest in the IPCC's Fifth Assessment Report) as the baseline emission scenario. The results were a 0.0073°C temperature reduction by 2050 and 0.0154°C reduction by 2100. For perspective, the margin of error for measuring changes in global annual average temperature is 0.08°C.[40]

Here are the results using lower sensitivities:

- 4.5°C sensitivity, 0.0069°C reduction by 2050, 0.0142°C reduction by 2100
- 3.0°C sensitivity, 0.0055°C reduction by 2050, 0.010°C by 2100
- 2.0°C sensitivity, 0.0042°C reduction by 2050, 0.002°C by 2100

[38] Department of Energy, Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment. Residential Furnaces. August 30, 2016, Table 13.3.1, Table 13.3.1, https://www.regulations.gov/document/EERE-2010-BT-STD-0011-0111.
[39] Intergovernmental Panel on Climate Change, Sixth Assessment Report, The Physical Science Basis, Technical Summary, p. 46, https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_TS.pdf.
[40] NOAA, National Centers for Environmental Information, Global Temperature Uncertainty, https://www.ncei.noaa.gov/access/monitoring/dyk/global-precision (accessed October 3, 2022).

This is all assuming the TSL standards eliminate 315.9 MT CO2e immediately from the United States for the rest of the century. Obviously, the rule intends to implement those reductions gradually, which means the puny temperature reductions calculated above significantly overstate the case.

In short, the NOPR's climate change mitigation would be far too small for scientists to detect. It would make no discernible difference to weather patterns, crop yields, polar bear populations, or any other environmental condition people care about. Benefits no one can experience are "benefits" in name only. Such benefits are not real enough to be netted against $4.0 billion to $8.2 billion in higher product costs DOE estimates the standards would impose on consumers.

III. RESTRICTING CONSUMER CHOICE IS UNNECESSARY TO IMPROVE FURNACE EFFICIENCY

Federal agencies are required to consider non-regulatory alternatives to major rules.[41] In the context of energy efficiency standards, DOE has specifically committed to the consideration of non-regulatory approaches.[42] Here, market forces and non-regulatory federal programs are already leading to increased market penetration of the more efficient condensing furnaces, and thus this rule is unnecessary.

Condensing furnaces are steadily gaining market share, and especially so in newly constructed housing that is increasingly being designed to accommodate them. As discussed previously, those owners of existing homes not compatible with condensing furnaces continue to prefer non-condensing ones, and EPCA protects these consumers. Nonetheless, the trend towards greater furnace efficiency is already occurring.

Other federal programs are contributing to this trend and are doing so without impinging on consumer choice. For example, the required Federal Trade Commission energy use labels on appliances, including furnaces, provides the necessary information so that consumers can readily incorporate energy consumption into their purchasing choices.[43] The same is true of the federal Energy Star program, which identifies and highlights the most efficient models in each appliance category, including furnaces.[44] The NOPR does not adequately acknowledge the efficiency improvements already underway and very likely to continue, and its assumptions are unrealistic and skewed towards overstating the marginal benefits of regulatory action.

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[41] Executive Order 12,866, "Regulatory Planning and Review," 58 FR 51,735 (October 4, 1993).
[42] 24 10 CFR, Part 430, Subpart C, Appendix A, §16 (Interpretive Rule).
[43] Federal Trade Commission, "EnergyGuide Labels," https://www.ftc.gov/news-events/topics/tools-consumers/energyguide-labels.
[44] U.S. Department of Energy and U.S. Environmental Protection Agency, "Energy Star: Furnaces," https://www.energystar.gov/products/furnaces.

It should be noted that EPCA expressly forbids the promulgation of a rule if the agency finds that "such standard will not result in significant conservation of energy…"[45] Given the growing market share of more efficient condensing furnaces occurring with or without DOE regulations, it is unlikely that the NOPR would result in significant energy savings. Further, because DOE has failed to identify a problem which the NOPR would cure, the NOPR if finalized would be arbitrary and capricious.

CONCLUSION

The purpose of EPCA is not regulation for its own sake, nor regulation in pursuit of an environmental agenda, but regulation towards the goal of improved efficiency consistent with consumer utility. Here, the NOPR would violate the consumer protections in the law by eliminating the future availability of non-condensing furnaces for those homeowners who need this important feature. For this reason, we believe the NOPR should be withdrawn.

[45] 42 U.S.C. §6295(o)(3)(B).

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