

March 15, 2024

**To:** Department of Energy

**Re:** Energy Conservation Program: Energy Conservation Standards for Fans and Blowers, 89 Fed. Reg. 3714 (proposed Jan. 19, 2024)

The Institute for Policy Integrity at New York University School of Law (Policy Integrity)<sup>1</sup> respectfully submits this letter on the Department of Energy’s proposed efficiency standards for fans and blowers (Proposed Rule)<sup>2</sup> and associated technical support document.<sup>3</sup> Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in administrative law, economics, and public policy.

First, DOE should increase the efficiency level (EL) for individual equipment classes to the maximum efficiency improvements that are technologically feasible and economically justified.

- **For example, adopting EL 5 (instead of EL 4) for Radial Housed Fans would increase consumer savings, plus climate and health benefits, by billions of dollars with relatively modest effects on industry conversion costs and on consumers with net costs.**

Second, while DOE closely evaluates the Proposed Rule’s benefits and costs, DOE should take two critical steps to reflect economic best practices and federal guidance:

- **DOE should monetize climate benefits using updated damage values from the Environmental Protection Agency (EPA).** To monetize climate benefits, DOE applies estimates of the social cost of greenhouse gases (SC-GHG) from the Interagency Working Group on the Social Cost of Greenhouse Gases (Working Group).<sup>4</sup> Although the Working Group’s climate-damage valuations reflected “the best science available at the time of that process,”<sup>5</sup> they are now a decade old. In December 2023, EPA published updated SC-GHG values that “reflect recent advances in the scientific literature on climate change and its economic impacts.”<sup>6</sup> The Working Group then endorsed the use of

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<sup>1</sup> This document does not purport to present the views, if any, of New York University School of Law.

<sup>2</sup> Energy Conservation Program: Energy Conservation Standards for Fans and Blowers, 89 Fed. Reg. 3714 (proposed Jan. 19, 2024) [hereinafter Proposed Rule].

<sup>3</sup> Dep’t of Energy, Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial Industrial Equipment: Fans and Blowers (Dec. 2023) [hereinafter Proposed TSD].

<sup>4</sup> See Proposed Rule, 89 Fed. Reg. at 3719 n.8; TSD at 14-1 to 14-5.

<sup>5</sup> TSD at 14-1 to 14-2.

<sup>6</sup> ENV’T PROT. AGENCY, EPA REPORT ON THE SOCIAL COST OF GREENHOUSE GASES: ESTIMATES INCORPORATING RECENT SCIENTIFIC ADVANCES (2023) [hereinafter EPA REPORT].

updated climate-damage values like EPA’s that “reflect the best available evidence.”<sup>7</sup> Based on these endorsements, DOE should apply EPA’s latest climate-damage estimates.

- **DOE should discount all regulatory impacts using the 2% discount rate from the updated Circular A-4.** DOE discounted the Proposed Rule’s impacts using annual rates of 3% and 7%, but that was based on 2003 guidance that no longer reflects economic best practices. In November 2023, the Office of Management and Budget (OMB) finalized an updated version of Circular A-4 that, consistent with the latest economic literature, endorses a default 2% discount rate for all regulatory effects.<sup>8</sup> DOE should put that guidance into practice.

### **I. DOE Should Reconsider Efficiency Levels for Individual Equipment Classes, and Should at Minimum Adopt EL 5 for Radial Housed Fans**

DOE must adopt the maximum improvements in energy efficiency that are technologically feasible and economically justified.<sup>9</sup> By DOE’s calculations, Trial Standard Level (TSL) 5 would increase total energy savings, consumer operating cost savings, consumer net benefits, climate benefits, health benefits, and total net benefits compared to TSL 4 both for general fans and blowers (GFBs)<sup>10</sup> and for air circulating fans (ACFs).<sup>11</sup> DOE’s tentative determination that, notwithstanding all those additional benefits, TSL 5 is not economically justified hinges largely on average effects to manufacturers across all equipment classes, including “extremely large conversion costs,” effects on profits and free cash flows, and “the lack of manufacturers currently offering equipment meeting the efficiency levels required at this TSL (models representing 93 percent of all GFB shipments will need to be redesigned to meet this TSL).”<sup>12</sup>

Even assuming DOE has properly weighed the billions of dollars in forgone additional consumer savings and health and climate benefits under TSL 5 against the additional manufacturer effects for the *average equipment class*, DOE’s reasoning does not seem to hold for each *individual equipment class*. DOE should consider the appropriate EL for each individual equipment class, rather than lumping all equipment classes together into overly broadly categorized TSLs.

For example, Radial Housed Fans do not seem to fit DOE’s explanation for selecting TSL 4 (EL 4 for Radial Housed Fans) versus TSL 5 (EL 5 for Radial Housed Fans). While DOE estimates that “models representing 93 percent of all GFB shipments will need to be redesigned to meet this TSL [5],”<sup>13</sup> for Radial Housed Fans, DOE estimates that 22.2% of the market share would already meet EL 5 by 2030 in a scenario with no new efficiency standards adopted (i.e., the baseline scenario).<sup>14</sup> Given the existing market demand and manufacturer supply at higher ELs,

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<sup>7</sup> Interagency Working Grp., Memorandum from the Interagency Working Group on Social Cost of Greenhouse Gases (Dec. 22, 2023).

<sup>8</sup> OFF. OF MGMT. & BUDGET, CIRCULAR A-4: REGULATORY ANALYSIS 77 (2023) [hereinafter UPDATED CIRCULAR A-4].

<sup>9</sup> 42 U.S.C. §§ 6316(a), 6295(o)(2)(A).

<sup>10</sup> Proposed Rule, 89 Fed Reg. at 3838 tbl.V-64.

<sup>11</sup> *Id.* at 3846 tbl.V-68.

<sup>12</sup> *Id.* at 3842; *cf. id.* at 3849 (making a nearly identical argument for ACFs).

<sup>13</sup> *Id.* at 3842 (emphasis added).

<sup>14</sup> *Id.* at 3789–90 & tbl.IV-19.

the total required redesigns would likely be more manageable for Radial Housed Fans specifically than for the average GFB product. Indeed, only 10 additional Radial Housed Fan product lines (33, compared to 23) would need to be redesigned under EL 5 versus EL 4.<sup>15</sup> Additional industry conversion costs for Radial Housed Fans at EL 5 (compared to EL 4) are under \$100 *million*,<sup>16</sup> compared to the \$2.61 *billion* in additional net present value consumer savings, \$2.49 *billion* in additional health benefits, and at least \$1.26 *billion* in additional climate benefits available at EL 5 compared to EL 4 for Radial Housed Fans (see Table below estimating health and climate benefits for the additional 1.48 quads saved at EL 5). Consumers experiencing net costs would increase only 11 percentage points (from 13% to 24%), while the average consumer would save an additional \$1,677 under EL5.<sup>17</sup> DOE's estimates also demonstrate how manufacturers could decrease their production costs and increase their markups for Radial Housed Fans at EL 5, thereby preserving profits.<sup>18</sup>

Contrary to DOE's general justification for rejecting TSL 5 across all equipment classes, the additional energy savings, net consumer savings, emissions reductions, health benefits, and climate benefits available at EL 5 for Radial Housed Fans seem to easily outweigh the modest increases in the percent of consumers experiencing net costs and in industry conversion cost—particularly given that 22% of Radial Housed Fans are already projected to meet EL 5 by 2030 even without new standards. DOE should build on that existing robust market supply and demand for more efficient Radial Housed Fans by adopting EL 5 as the maximum efficiency improvement that is technologically feasible and economically justified.

For the above reasons, DOE should minimally adopt EL 5 instead of EL 4 for Radial Housed Fans. But this is just one example of the type of equipment-specific analysis that DOE should perform. More broadly, DOE should assess the economic justification of TSL 5 for individual equipment classes, rather than considering only the overall or average effects across equipment classes. Other equipment classes may also merit reconsideration of a higher EL. For example, almost 30% of Axial Inline Fans are already projected to meet ELs 4–5 by 2030,<sup>19</sup> and moving from TSL 4 (EL 3) to TSL 5 (EL 4) would save an additional 0.76 quads;<sup>20</sup> though DOE would need to weigh those benefits against the increased percentage of consumers experiencing net costs (51.3% versus 23.6%).<sup>21</sup> Similarly, more than 70% of Housed Centrifugal ACFs are

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<sup>15</sup> Proposed TSD, *supra* note 3, at 12-20 tbl.12.4.28.

<sup>16</sup> *Id.* at 12-20 tbl.12.4.29 (total cost of \$133.9 million at EL 5 versus \$38.2 million at EL 4).

<sup>17</sup> Proposed Rule, 89 Fed. Reg. at 3811 tbl.V-20 (average savings of \$5391 at EL 5 versus \$3714 at EL 4).

<sup>18</sup> TSD at 12-11 tbl.12.4.10, 12-27 tbl.12.4.46, 12-31 tbl.12.4.60.

<sup>19</sup> Proposed Rule, 89 Fed. Reg. at 3790 tbl.IV-19 (24.5% at EL4 + 4.8% at EL5 = 29.3%).

<sup>20</sup> TSD at 10-13 tbl.10.5.1 (1.21 quads under TSL 5 versus 0.45 quads under TSL 4, using full fuel-cycle energy savings, or FFC).

<sup>21</sup> Proposed Rule, 89 Fed. Reg. at 3806 tbl.V-4.

projected to meet or exceed EL 3 even without new standards,<sup>22</sup> though the additional energy savings available at the higher EL are much more modest (0.01 quads).<sup>23</sup>

The following Table estimates and summarizes the benefits and costs of moving from EL 4 to EL 5 for Radial Housed Fans, supporting the higher EL for this equipment class.

<b>Table: EL 5 vs. EL 4 for Radial Housed Fans</b>					
		<b>EL 5</b>	<b>EL 4</b>	<b>Difference</b>	<b>Table Citation &amp; Estimate Method</b>
	<b><u>Consumer Benefits</u></b>				
1	Average LCC Savings	\$5,391	\$3,714	\$1,677	NOPR Table V-20
2	% Consumers with Net Costs	24.40%	13.30%	11.10%	NOPR Table V-20
3	Simple Payback Period	2.2 years	1.7 years	0.5 years	NOPR Table V-19
4	NPV of Consumer Benefits*	\$4.67 billion	\$2.06 billion	<b>\$2.61 billion</b>	TSD Table 10.5.3
	<b><u>Manufacturer Effects</u></b>				
5	Products Meeting EL Without New Standards	22.2%	49.4%	27.2%	NOPR Table IV-19
6	Product Line Redesigns	33	23	10	TSD Table 12.4.28
7	Total Industry Conversion Costs	\$133.9 million	\$38.2 million	<b>\$95.7 million</b>	TSD Table 12.4.29
	<b><u>Public Benefits</u></b>				
8	FFC National Energy Savings (in Quads)	2.57	1.09	1.48	TSD Table 10.5.1
9	Estimated Climate Benefits**	\$2.19 billion	\$0.93 billion	\$1.26 billion	NOPR V-64; see calculation notes
10	Estimated Health Benefits*	\$4.32 billion	\$1.83 billion	\$2.49 billion	NOPR V-64; see calculation notes
11	Estimated Total External Benefits*	\$6.51 billion	\$2.76 billion	<b>\$3.75 billion</b>	row 9 + row 10
12	Estimated Total Net Benefits (External Benefits + NPV of Consumer Benefits)*	\$11.18 billion	\$4.82 billion	<b>\$6.36 billion</b>	row 11 + row 4
*3% discount rate values shown; DOE should update its calculations using a 2% rate.					
**Showing IWG's 2021 SC-GHG values; DOE should update its calculations using EPA's 2023 values.					
Notes on estimation of climate and health benefits: Year-by-year emissions figures specific to Radial Housed Fans at EL 5 vs. EL 4 do not seem to be available. However, DOE's calculations of climate and health benefits seem relatively constant per quad saved. Comparing DOE's estimated climate benefits (at 3%) to quads saved for GFBs in Table V-64, the ratio is about \$0.853 billion of climate benefits per quad (ranging from 0.833 to 0.882 across the six TSLs; the range is presumably due to rounding in Table V-64). Similarly comparing DOE's estimated health benefits (at 3%) to quads saved, the ratio is about \$1.682 billion of health benefits per quad (ranging from 1.662 to 1.706 across the six TSLs; again, the range is presumably due to rounding in Table V-64). And for total external benefits (i.e., adding climate plus health benefits and subtracting consumer cost savings), the ratio is about \$2.53 billion per quad (ranging from 2.506 to 2.558 across the six TSLs; again, the range is presumably due to rounding in Table V-64). Therefore, those averages have been used in these calculations.					

## II. DOE Should Apply EPA's Updated Climate-Damage Estimates

DOE should apply EPA's updated climate-damage estimates. These estimates are not only the best available federal climate-damage values, but they also respond to the key limitations of the Working Group's values that DOE highlights in the Proposed Rule.

### A. EPA's Estimates Represent the Best Available Federal Climate-Damage Values

EPA published its updated climate-damage estimates following peer review and public comment. EPA presents its estimates for each greenhouse gas in ranges using three different discount rates (1.5%, 2%, and 2.5%),<sup>24</sup> with the 2% estimates as its central values.<sup>25</sup> Although different revisions work in different directions, on balance, EPA's central climate-damage estimates are higher than those from the Working Group. For example, the central social cost of carbon in 2030 comes out to \$230 per metric ton under EPA's updated approach,<sup>26</sup> versus \$62 under the Working Group's approach.<sup>27</sup>

For numerous reasons, EPA's updated values are the most robust and comprehensive federal climate-damage estimates available. First, they rely on much newer studies and data than the Working Group estimates. As EPA explained, the "climate change literature and the science underlying the economic damage functions have evolved" since the Working Group's last substantive updates in 2013.<sup>28</sup> Whereas the research underlying the Working Group's damage functions was published in the 1990s and 2000s, many economic studies have since been published.<sup>29</sup> See the figure on the next page for an illustration the timeline of economic research on climate impacts and its incorporation into the Working Group's estimates.

EPA incorporated much of that newer research into its updated damage estimates. For instance, EPA used three state-of-the-art damage functions published within the past several years: one from the University of Chicago's Climate Impact Lab; one from Resources for the Future and the University of California, Berkeley; and one from economists Dr. Thomas Sterner and the undersigned Dr. Peter Howard that integrates and combines many other published estimates through a meta-analysis.<sup>30</sup>

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<sup>22</sup> 89 Fed. Reg. at 3790 tbl.IV-20 (48% at EL3 + 21% at EL4 + 2% at EL5 = 71%).

<sup>23</sup> TSD at 10-14 tbl.10.5.2.

<sup>24</sup> EPA REPORT, *supra* note 6, at 101 tbl.4.1.1.

<sup>25</sup> *Id.* at 69.

<sup>26</sup> *Id.* at 4 tbl.ES.1 (in 2020\$).

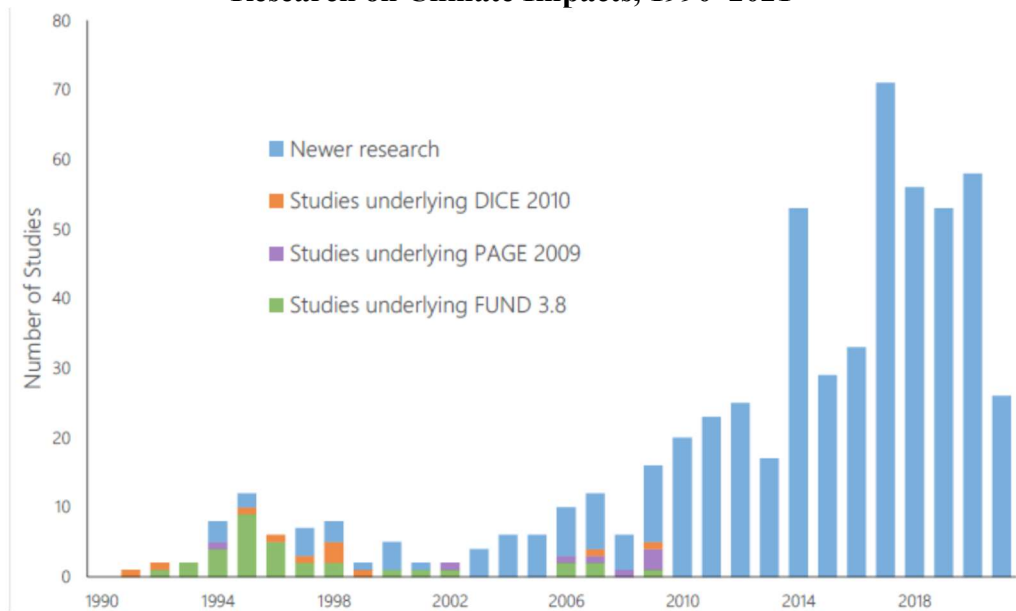
<sup>27</sup> INTERAGENCY WORKING GRP., TECHNICAL SUPPORT DOCUMENT: SOCIAL COST OF CARBON, METHANE, AND NITROUS OXIDE INTERIM ESTIMATES UNDER EXECUTIVE ORDER 13990 at 5 tbl.ES.1 (also in 2020\$).

<sup>28</sup> EPA REPORT, *supra* note 6, at 45–46. The Working Group released estimates of the social cost of methane and the social cost of nitrous oxide in 2016. In 2021, it endorsed its prior valuations for all three greenhouse gases and adjusted them for inflation.

<sup>29</sup> *Id.* at 46 fig.2.3.1.

<sup>30</sup> *E.g. id.* at 47 (explaining the use of three damage functions published, respectively, in 2023, 2022, and 2017).

## Research on Climate Impacts, 1990–2021<sup>31</sup>



Second, EPA’s updated values apply the latest research on discounting and are the only federal valuations that are consistent with the OMB’s updated guidance on discounting in benefit-cost analysis. In November 2023, OMB finalized revisions to Circular A-4 that endorsed a 2% discount rate.<sup>32</sup> As that document explains, current economic evidence supports a near-term discount rate of 2% reflecting the social rate of time preference,<sup>33</sup> with the discounting rate declining over time.<sup>34</sup> EPA’s approach to discounting is consistent with this guidance.<sup>35</sup> It is also consistent with the Working Group’s recognition that “lower discount rates” are likely appropriate for the SC-GHG,<sup>36</sup> which DOE echoes in the Proposed Rule’s technical support document.<sup>37</sup> And it is consistent with three separate surveys of expert economists finding a consensus that the discount rate for long-term effects like climate change should be near 2%.<sup>38</sup>

Third, EPA’s updated values apply the 2017 recommendations from the National Academies of Sciences. In 2017, the National Academies largely endorsed the Working Group’s approach but

<sup>31</sup> This chart is reproduced from *id.* at 46 fig.2.3.1.

<sup>32</sup> UPDATED CIRCULAR A-4, *supra* note 8, at 77.

<sup>33</sup> *Id.* at 76–77.

<sup>34</sup> *Id.* at 80.

<sup>35</sup> See *supra* nn.32–38 and accompanying text (noting EPA’s use of Ramsey approach at central 2% near-term rate).

<sup>36</sup> INTERAGENCY WORKING GRP., *supra* note 27, at 4; see also *id.* at 16–21.

<sup>37</sup> TSD at 14-4 to 14-5 (“[T]he current scientific and economic understanding of discounting approaches suggests discount rates appropriate for intergenerational analysis in the context of climate change are likely to be less than 3 percent, near 2 percent or lower.”).

<sup>38</sup> Peter Howard & Derek Sylvan, *Wisdom of the Experts: Using Survey Responses to Address Positive and Normative Uncertainties in Climate-Economic Models*, 162 CLIMATIC CHANGE 213, 223 (2020) (median discount rate of 2.0% and mean of 2.3%); Moritz A. Drupp et al., *Discounting Disentangled*, 10 AM. ECON. J.: ECON. POL’Y 109, 111 (2018) (same); Christian Gollier et al., *The Discounting Premium Puzzle: Survey Evidence from Professional Economists*, 122 J. ENV’T ECON. & MGMT., 2023, at 1, 11 (same). See also Peter H. Howard et al., *U.S. Benefit-Cost Analysis Requires Revision*, 380 SCIENCE 803, 803 (2023) (noting that “more recent economic data” supports a discount rate “close to 2%”).

offered recommendations for improvement and called for future updates consistent with those recommendations.<sup>39</sup> The Working Group has not substantively updated its valuations since the National Academies report.<sup>40</sup> EPA’s update, in contrast, holistically incorporates those recommendations. For instance, EPA developed its climate-damage estimates through a modular approach with “four components . . . — socioeconomics and emissions, climate, damages, and discounting”—following the National Academies’ recommended framework.<sup>41</sup>

For these reasons and others, expert peer reviewers offered extensive praise for EPA’s estimates.<sup>42</sup> These experts lauded EPA’s numbers as a “huge advance,”<sup>43</sup> a “significant step,”<sup>44</sup> and a “much-needed improvement”<sup>45</sup> over the Working Group’s estimates that “advanc[es] our state of knowledge”<sup>46</sup> and “represents well the emerging consensus in the literature.”<sup>47</sup> Expert reviewers particularly praised EPA for faithfully applying the National Academies’ recommendations.<sup>48</sup>

In the final rule, DOE should explain that upon review of the best available science and economics, and based on its own judgment and consistent with its own statutory responsibilities, DOE agrees with EPA’s choices in its updated methodology and DOE is applying the updated values to monetize the rule’s climate benefits.

### **B. EPA’s Estimates Improve Upon Limitations in the Working Group’s Estimates that DOE Acknowledges in the Proposed Rule**

EPA’s climate-damage estimates are not just the best available—they correct for specific limitations in the Working Group’s valuations that DOE recognizes in the Proposed Rule.

In the Proposed Rule’s technical support document, DOE acknowledges that the Working Group’s valuations incorporated “the best science available at the time of that process”<sup>49</sup> but that “the socioeconomic and emissions scenarios used as inputs to the models do not reflect new information from the last decade of scenario generation or the full range of projections.”<sup>50</sup> As discussed above, EPA’s estimates correct for this limitation by applying the latest available science and economics—including the use of three up-to-date damage functions.<sup>51</sup> To ensure that

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<sup>39</sup> NAT’L ACADS. OF SCIS., ENG’G & MED., VALUING CLIMATE DAMAGES: UPDATING ESTIMATION OF THE SOCIAL COST OF CARBON DIOXIDE (2017).

<sup>40</sup> Rather than address those recommendations, President Trump disbanded the Working Group and withdrew its technical support documents. Exec. Order No. 13,783 §§ 5(b)–(c), 82 Fed. Reg. 16,093, 16,095–96 (Mar. 28, 2017).

<sup>41</sup> EPA REPORT, *supra* note 6, at 1.

<sup>42</sup> FINAL COMMENTS SUMMARY REPORT, EXTERNAL LETTER PEER REVIEW OF TECHNICAL SUPPORT DOCUMENT: SOCIAL COST OF GREENHOUSE GAS (2023).

<sup>43</sup> *Id.* at 7 (comments of Dr. Maureen Cropper).

<sup>44</sup> *Id.* at 9 (comments of Dr. Chris E. Forest)

<sup>45</sup> *Id.* at 10 (comments of Dr. Catherine Louise Kling)

<sup>46</sup> *Id.* at 14 (comments of Dr. Wolfram Schlenker).

<sup>47</sup> *Id.* at 15 (comments of Dr. Gernot Wagner).

<sup>48</sup> *E.g. id.* at 9 (comments of Dr. Forest); *id.* at 14 (comments of Dr. Schlenker).

<sup>49</sup> TSD at 14-1 to 14-2.

<sup>50</sup> *Id.* at 14-5.

<sup>51</sup> *See supra* nn. 28–30 and accompanying text.

its climate-damage estimates incorporate “new information from the last decade,”<sup>52</sup> DOE should apply EPA’s damage estimates.

DOE’s technical support document also recognizes that “the current scientific and economic understanding of discounting approaches suggests discount rates appropriate for intergenerational analysis in the context of climate change are likely to be less than 3 percent, near 2 percent or lower.”<sup>53</sup> It highlights this as a limitation of the Working Group’s estimates, which use a central discount rate of 3%. Yet as noted above, EPA’s valuations correct for this limitation by applying a Ramsey framework starting at 2%, consistent with economic consensus and the latest Circular A-4 guidance.<sup>54</sup> To reflect the “current scientific and economic understanding of discounting,”<sup>55</sup> DOE should apply EPA’s damage estimates.

Acknowledging the limitations of the Working Group’s estimates, DOE states that it is awaiting “revised estimates . . . reflecting the latest peer-reviewed science” and is following the Working Group’s assessment until such values are available.<sup>56</sup> But “revised estimates” are now available from EPA.<sup>57</sup> Those estimates are consistent with the Working Group’s 2021 recommendation that agencies adopt higher climate-damage valuations using lower discount rates.<sup>58</sup> And although the Working Group did not develop EPA’s updated estimates, it has broadly endorsed their use.<sup>59</sup>

While EPA’s estimates capture numerous important climate impacts and greatly improve upon the Working Group’s approach, “[t]here are still many important categories of climate impacts and associated damages that are not yet reflected in these estimates due to data and modeling limitations.”<sup>60</sup> Moreover, EPA captures certain climate damages incompletely.<sup>61</sup> These omissions do not cast doubt on EPA’s approach, as no method could capture all the harm from climate

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<sup>52</sup> TSD at 14-5.

<sup>53</sup> *Id.* at 14-4 to 14-5.

<sup>54</sup> *See supra* nn. 32–38 and accompanying text.

<sup>55</sup> TSD at 14-4.

<sup>56</sup> *Id.* at 14-1 (“As a member of the IWG involved in the development of the February 2021 SC-GHG TSD, DOE agrees that the interim SC-GHG estimates represent the most appropriate estimate of the SC-GHG until revised estimates have been developed reflecting the latest peer-reviewed science.”).

<sup>57</sup> *See id.*

<sup>58</sup> INTERAGENCY WORKING GRP., *supra* note 27, at 4 (endorsing “additional sensitivity analysis using discount rates below 2.5 percent”).

<sup>59</sup> Interagency Working Grp., *supra* note 7 (“Since the research underlying the IWG’s interim estimates was published, there have been a variety of developments in the scientific literature. As agencies consider applying the SC-GHG in various contexts, consistent with OMB Circular No. A-4 and applicable law, agencies should use their professional judgment to determine which estimates of the SC-GHG reflect the best available evidence, are most appropriate for particular analytical contexts, and best facilitate sound decision-making.”).

<sup>60</sup> EPA REPORT, *supra* note 6, at 81.

<sup>61</sup> *Id.*



change.<sup>62</sup> Rather, they suggest that EPA’s values are conservative, lower-bound estimates of climate costs.<sup>63</sup>

Accordingly, DOE should apply EPA’s updated SC-GHG estimates in all future processes and rulemakings—including when it finalizes the Proposed Rule. When applying these valuations, DOE should recognize that they are the best federal estimates available but likely continue to understate the true costs of greenhouse gas emissions.

## II. DOE Should Align Its Use of Discount Rates with Best Practices and Updated Federal Guidance

To assess the Proposed Rule’s social benefits and costs, DOE uses discount rates of 3% and 7% for most impacts.<sup>64</sup> The agency justifies this decision by stating that these rates are “in accordance with guidance provided by the [OMB] to Federal agencies on the development of regulatory analysis.”<sup>65</sup> But that claim is no longer accurate. While the 2003 version of Circular A-4 recommended 3% as a consumption-based discount rate, alongside a 7% capital-based discount rate,<sup>66</sup> OMB no longer recommends either rate. Instead, as noted above, OMB now endorses a 2% discount rate.<sup>67</sup>

Capital-Based Discount Rate. Recent economic literature rejects the 7% discount rate in regulatory impact analysis, as a wide range of economists now disfavor using a rate of return to capital (rather than the rate at which society discounts future versus present consumption) to calculate the social discount rate.<sup>68</sup> Reflecting this literature, the updated Circular A-4 calls for analysts to account for effects on capital outside the discount rate, not within it.<sup>69</sup> Expert peer reviewers widely endorsed this revision.<sup>70</sup>

Consumption-Based Discount Rate. In its analysis, DOE should shift its consumption-based discount rate from 3% to 2%. The 2023 version of Circular A-4 derives a 2% consumption-based rate by applying the same methodology that the 2003 version had used to derive a 3% rate, just

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<sup>62</sup> EPA’s damage estimates include positive impacts of climate change such as increases in agricultural production in cold-weather areas where crop yields could benefit from warming. They also omit some potentially positive impacts of climate change: For instance, EPA’s estimates omit both increases in tourism (in some regions) and decreases in tourism (in other regions). On the whole, the valuations omit far more harmful effects than beneficial ones. *See, e.g.*, Richard S. J. Tol, *The Economic Effects of Climate Change*, 23 J. Econ. Persps. 29, 37 (2009) (concluding that, in predicting climate change’s future effects, “negative surprises should be more likely than positive surprises”).

<sup>63</sup> EPA REPORT, *supra* note 6, at 105 (summarizing that EPA’s values “likely underestimate the marginal damages from greenhouse gas pollution”).

<sup>64</sup> *E.g.* Proposed Rule, 89 Fed. Reg. at 3720 tbl.I-6; *id.* at 3721. DOE uses a central 3% discount rate for climate impacts.

<sup>65</sup> *Id.* at 3794.

<sup>66</sup> *See* OFF. OF MGMT. & BUDGET, CIRCULAR A-4: REGULATORY ANALYSIS 34 (2003).

<sup>67</sup> UPDATED CIRCULAR A-4, *supra* note 8, at 77.

<sup>68</sup> *See, e.g.*, Howard et al., *supra* note 38, at 803 (“Recent economic literature strongly supports the use of a consumption discount rate over a capital rate of return[.]”).

<sup>69</sup> UPDATED CIRCULAR A-4, *supra* note 8, at 77–79 (endorsing “shadow price of capital” approach).

<sup>70</sup> *See* ICF INT’L, INDIVIDUAL PEER REVIEWER COMMENTS ON PROPOSED OMB CIRCULAR NO. A-4, “REGULATORY ANALYSIS” 50 (2023) (calling Current Circular A-4’s elimination of the 7% discount rate “the conceptually correct approach”) (comments of Dr. Joseph Cordes); *id.* at 71 (calling that approach “strongly grounded in the literature”) (comments of Dr. Kenneth Gillingham); *id.* at 82 (calling that approach “justified . . . based on the economic literature”) (comments of Dr. William Pizer).

using updated data and adjusting for inflation.<sup>71</sup> Put differently, using a 3% rate effectively ignores the changed economic conditions in the past twenty years that have yielded lower risk-free interest rates.<sup>72</sup>

Following the updated Circular A-4, DOE should apply a 2% discount rate here and in all future actions. Although the updated Circular A-4 officially took effect for draft rules sent to OMB starting in March 2024, it also instructs agencies to apply its guidance immediately “[t]o the extent feasible and appropriate.”<sup>73</sup> Given the extensive economic support for lower discount rates, it is “appropriate” here for DOE to apply a 2% discount rate. Doing so is also “feasible” given that the discount rate parameter is easily adjustable. If necessary, DOE could apply a 2% rate alongside other discount rates, much like EPA did in a recent rule.<sup>74</sup>

Respectfully,

Peter Howard, Ph.D., Economics Director  
Max Sarinsky, Regulatory Policy Director  
Jason Schwartz, Legal Director

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<sup>71</sup> See UPDATED CIRCULAR A-4, *supra* note 8, at 76–77.

<sup>72</sup> Peter Howard & Jason A. Schwartz, *Valuing the Future: Legal and Economic Considerations for Updating Discount Rates*, 39 YALE J. ON REGUL. 595, 599 (2022) (detailing “the compelling economic evidence for further lowering [the prior Circular A-4’s] default [discount] rates for regulatory analyses”).

<sup>73</sup> UPDATED CIRCULAR A-4, *supra* note 8, at 93.

<sup>74</sup> See Env’t Prot. Agency, *Regulatory Impact Analysis of the Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review* 1-13 to 1-15 tbls.1-4 to 1-6 (2023).