

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA**

WILDEARTH GUARDIANS and
PHYSICIANS FOR SOCIAL
RESPONSIBILITY,

Plaintiffs,

v.

RYAN ZINKE, MICHAEL NEDD, and U.S.
BUREAU OF LAND MANAGEMENT

Defendants.

Civil Action No. 16-cv-01724
ECF Case

**BRIEF OF THE INSTITUTE FOR POLICY INTEGRITY AT
NEW YORK UNIVERSITY SCHOOL OF LAW AS *AMICUS CURIAE*
IN SUPPORT OF PLAINTIFFS' MOTION FOR SUMMARY JUDGMENT**

Bethany A. Davis Noll (Bar ID: 1002512)
Richard L. Revesz
Jason A. Schwartz
Institute for Policy Integrity
New York University School of Law
139 MacDougal, 3rd floor
New York, NY 10012
bethany.davisnoll@nyu.edu
T: (212) 992-8932

*Counsel for Amicus Curiae
Institute for Policy Integrity*

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The Institute for Policy Integrity at New York University School of Law (“Policy Integrity”)¹ submits this brief as *amicus curiae* in support of plaintiffs’ motion for summary judgment seeking a declaration that Federal Defendants’ (collectively “BLM”) Wyoming leasing decisions and associated environmental assessments (“EAs”) are arbitrary and capricious.

INTEREST OF AMICUS CURIAE

Policy Integrity is a nonpartisan, not-for-profit think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and environmental policy.

Policy Integrity has produced extensive scholarship on the use of economic analysis in regulatory decisionmaking and resource management. An area of special concern for Policy Integrity is the proper valuation of the climate impacts from leases on federal land. Policy Integrity’s economists and legal scholars are among the nation’s leading experts on the economic analysis underlying federal natural resources leasing and management, having published numerous papers, reports, scholarly articles, and comments on this topic. Policy Integrity has, for example, produced scholarship on rationalizing federal leasing of coal, oil, and gas,² and on the appropriate monetization of climate impacts in agency rulemakings and environmental impact analyses.³

Policy Integrity has also filed *amicus curiae* briefs addressing agency analyses of the climate impact of federal leases. For example, Policy Integrity filed a brief in the U.S. Court of

¹ This brief does not purport to represent the views of New York University School of Law.

² *E.g.*, Jayni Foley Hein, *Harmonizing Preservation and Production: How Modernizing the Department of the Interior’s Fiscal Terms for Oil, Gas, and Coal Leases Can Ensure a Fair Return to the American Public* (Policy Integrity Report, 2015), available at http://policyintegrity.org/files/publications/DOI_LeasingReport.pdf.

³ *E.g.*, Richard Revesz et al., *Best Cost Estimate of Greenhouse Gases*, 357 *Science* 655 (2017) (arguing for the continued use of the social cost of greenhouse gases in all government climate analyses).

Appeals for the Tenth Circuit addressing the assumptions underlying BLM’s environmental impact statement for coal leases. Br. of the Institute for Policy Integrity, *Wildearth Guardians v. U.S. Bureau of Land Mgmt.*, No. 15-8109, 2017 WL 4079137 (10th Cir. Sept. 15, 2017). In addition, Policy Integrity has submitted numerous comments to federal agencies addressing how to monetize the cost of carbon dioxide and methane emissions when making decisions under the National Environmental Policy Act (“NEPA”).⁴

Plaintiffs show that BLM failed to properly analyze the greenhouse gas emissions of the leasing decisions at issue. Policy Integrity has unique expertise on the proper application of the social cost of greenhouse gases to monetize climate impacts in environmental impact statements, and Policy Integrity has a significant interest in ensuring that such analysis is done correctly in this and future leasing decisions. As such, this brief focuses on the legal and economic principles that should govern any analysis of the impacts of a significant increase in greenhouse gas emissions.⁵

SUMMARY OF ARGUMENT

As Plaintiffs have argued, BLM arbitrarily failed both to quantify the direct and indirect, or downstream, greenhouse gas emissions of its Wyoming leasing decisions and to monetize the climate costs of those emissions, even as the agency’s NEPA analyses quantified and monetized

⁴ *E.g.*, Policy Integrity et al., Joint Comments to the U.S. Forest Service Comments on Failure to Use the Social Cost of Greenhouse Gases in the Supplemental Draft Evtl. Impact Statement for Coal Lease Modifications (July 24, 2017), http://policyintegrity.org/documents/2017-07-24_Joint_Comments_Forest_Service_EIS_SCC.pdf.

⁵ No publicly held entity owns an interest of more than ten percent in Policy Integrity. Policy Integrity does not have any members who have issued shares or debt securities to the public. Additionally, no party’s counsel authored this brief in whole or in part, and no party or party’s counsel contributed money intended to fund the preparation or submission of this brief. No person—other than the *amicus curiae*, its members, or its counsel—contributed money intended to fund the preparation or submission of this brief.

the economic upside of leasing. *See* Pls.’ Mem. Points Auths. Supp. Pls.’ Mot. Summ. J. (Pls. Br.) 16–20. This amicus brief supplements Plaintiffs’ arguments with three main points.

First, to quantify the direct greenhouse gas emissions from these leases, BLM should have multiplied the estimated number of wells by a reasonably accurate per-well emissions factor. Not only did BLM arbitrarily refuse to estimate the number of wells likely to be drilled, but BLM’s estimate of the tons of methane emissions from operating each individual well is off by at least a factor of one million.

Second, even if BLM had not arbitrarily failed to accurately quantify the tons of direct and indirect emissions, the agency also failed to monetize the associated climate costs. Monetization of climate costs is necessary where, as here, an agency’s NEPA analysis relies on the monetized benefits of the proposed action. BLM monetized the rental revenues of each lease sale and, through material incorporated by reference, touted and quantified the importance of oil and gas drilling to regional output and employment, as well as to federal and state royalties and taxes. Under a rich body of case law, it is arbitrary to base a decision on quantified benefits without attending to calculable costs. BLM should have followed past agency practices under NEPA—including by itself in other contexts—and used the well-established estimates of the social cost of greenhouse gases to monetize climate costs. BLM’s various criticisms of the social cost of greenhouse gases all deeply misunderstand the relevance of this useful tool to individual resource management decisions.

Third, while BLM assumes that leasing these parcels will increase overall domestic production of oil and gas, the agency arbitrarily failed to follow basic economic logic and consider how increasing the supply will lower prices, thereby increasing demand, increasing combustion of oil and gas, and ultimately increasing greenhouse gas emissions.

ARGUMENT

As Plaintiffs have explained, NEPA requires agencies to take a hard look at the direct and indirect greenhouse gas emissions from resource management decisions, as well as the associated climate costs. *See* Pls. Br. 12-16. Direct emissions include methane and carbon dioxide from the lease sites and connected actions, during production, processing, transmission, and distribution. Indirect emissions include carbon dioxide from foreseeable combustion of the extracted resources. As Plaintiffs demonstrated, BLM arbitrarily failed to quantify the direct and indirect greenhouse gas emissions that will come from the Wyoming leases. *See id.* 16-23; *see also Sierra Club v. Fed. Energy Regulatory Comm’n*, 867 F.3d 1357, 1374 (D.C. Cir. 2017) (FERC should have “given a quantitative estimate of the downstream greenhouse emissions” of the pipeline decision or explained “why it could not have done so.”). Here we focus on three other specific problems with BLM’s analysis: (1) BLM’s failure to disclose an accurate per-well emissions factor, (2) BLM’s failure to provide a monetary estimate for the impact of the direct and indirect greenhouse gas emissions, and (3) BLM’s failure to consider how the leases could increase the supply of oil and gas and affect demand as well as emissions.

I. BLM Misled the Public with Per-Well Emissions Data that Underestimated Greenhouse Gases by at Least a Factor of One Million

To quantify the direct greenhouse gas emissions from these leases, BLM should have multiplied the estimated number of wells by a reasonably accurate per-well emissions factor. Not only did BLM arbitrarily refuse to estimate the number of wells likely to be drilled, *see* Pls. Br. 16–19, but BLM’s estimate of the direct greenhouse gas emissions from operating each individual well is off by at least a factor of one million.

BLM argues that it “disclosed data sufficient for a concerned citizen to understand, at least as well as BLM can, the potential GHG impacts” of the leases, because the EAs explained “that

an average well produces emissions of 0.00059 metric tons of CO₂e.”⁶ Fed. Defs.’ Cross-Mot. Summ. J. (BLM Br.) 27; *accord id.* at 25. Indeed, several EAs stated that “each potential well . . . could emit approximately 0.00059 mt of CO₂e,” having defined “mt” as “metric ton.” Administrative Record (AR) 11960, 28220, 55016; *accord* AR12396, AR28487. However, BLM almost certainly misstated estimates that should have been given in the unit MMt (*million* metric tons) rather than in the unit “mt” (metric tons). Consequently, the EAs understated the direct emissions per well by a factor of one million.

As Plaintiffs note, the derivation of the 0.00059 mt estimate is not explained in the record, nor is it obvious. Pls. Br. 18 n.9 (also noting that another BLM report estimates 791–3,682 tons per well per year). In fact, it is not possible to derive the number from the information that is provided in the EAs. For example, the August 2016 High Plains EA asserts that the total number of wells in the High Plains District is 39,500 and that the direct, annual greenhouse gas emissions from wells within the High Plains District are “12.94 metric tons (mt).” AR55016. It then concludes that per-well emissions are 0.00059 mt. *Id.* But dividing 12.94 mt by 39,500 total wells does not equal 0.00059 mt per well; it equals 0.00033 mt. That division error is only the beginning of BLM’s misleading math, though, because according to the apparent source of BLM’s data, either quotient understates true emissions by a factor of one million.

BLM cites a report entitled the *Wyoming Greenhouse Gas Inventory and Reference Case Projection 1990-2020*, prepared by the Center for Climate Strategies (CCS), as the source of its information on “Wyoming’s current and possible future [greenhouse gas] emissions.” *See e.g.*, AR11959, 28219, 55015. Indeed, Defendant-Intervenors Western Energy Alliance (WEA)

⁶ CO₂e refers to carbon dioxide equivalent units. Pound for pound, methane is a more potent global warmer than carbon dioxide. Methane emissions can be converted to equivalent units of carbon dioxide by multiplying by the relative global warming potential of the gases.

confirm that BLM's per-well emissions factor was "based on the WY GHG Inventory emission data," and derived from dividing that emissions data by the number of wells in Wyoming. W. Energy Alliance and Petroleum Assoc. of Wyoming's Statement Points Auths. Supp. Cross-Mot. Summ. J. (WEA Br.) 29. According to the Inventory, there were "over 33,000 active gas and oil wells" in Wyoming as of 2007. CCS, *Wyoming Greenhouse Gas Inventory* at E-2 (2007).⁷ BLM's EAs use "19.6 mt" as the amount of direct greenhouse gas emissions from all wells in the state (though the source of that number is not stated). AR11960, 28220, 55016. Dividing 19.6 mt by 33,000 wells would equal around 0.00059 mt per well, which is the per-well emissions number that BLM used in the EAs. AR11960, 28220, 55016.

The crucial problem with that calculation, however, is that neither the Inventory nor any other source suggests that all of Wyoming's oil and gas wells directly emit only 19 *metric tons* of greenhouse gases; rather, the Inventory puts emissions from this sector at several *million metric tons* per year. The Wyoming Greenhouse Gas Inventory gives all its values for "methane emissions and projections from the fossil fuel industry" in "million metric tons CO₂e." CCS, *supra*, at tbl.E2. The Inventory estimates total fugitive emissions from the oil and gas industries in Wyoming as about 12.1 million metric tons in the year 2010,⁸ including about 2.8 million metric tons from oil and gas production alone (i.e., excluding emissions from oil and gas processing and distribution).⁹ CCS, *supra*, at tbl.E2. Given the data in the Inventory, it remains unclear how BLM derived the number "19.6"; but what is clear from the Inventory is that BLM confused MMt with mt. No reasonable estimate based on the Inventory could have generated values as low as 19.6 metric tons

⁷ Available at <http://www.climatestrategies.us/library/library/download/411>.

⁸ 11.6 million metric tons for natural gas production, processing, transmission, and distribution, plus 0.5 million metric tons for oil production.

⁹ 2.3 million metric tons for natural gas production, plus 0.5 million metric tons for oil production.

sector-wide or 0.00059 metric tons per-well. Instead, the real per-well value is somewhere at least one million times greater. Tellingly, the Western Energy Alliance’s opposition memorandum misquotes BLM as listing per-well emissions at “0.00059 MMtCO₂e,” WEA Br. 29 (emphasis added) (citing AR55016), while the actual record cite reveals BLM listed only “0.00059 mt of CO₂e,” AR55016—a figure one million times lower.

Furthermore, BLM’s EAs obscure the fact that these estimates represent annual emissions. *See* AR55016 (listing metric tons per well, not metric tons per well per year). In short, while the EAs would mislead readers to believe that the operation of each well emits only 0.00059 metric tons of greenhouse gases over its entire lifetime, instead each well actually emits closer to 590 metric tons (i.e., 0.00059MMt) or more *each year*. To give additional context by applying the social cost of carbon (a metric BLM should have used, as discussed below), fugitive methane directly emitted from oil and gas wells leased by the agency would cause climate costs of \$29,500 *per well in the year 2020 alone*.¹⁰ Due to the EAs’ utterly flawed information, the “concerned citizens” of whom BLM speaks were deeply misled about the magnitude of direct emissions per well.

II. BLM Arbitrarily Failed to Monetize the Direct and Indirect Climate Costs of Its Actions

Even if BLM had provided an accurate estimate of the per-well emissions, the agency’s analysis would still have been incomplete because it also failed to monetize the associated climate costs. Monetization of climate costs is necessary where, as here, an agency’s NEPA analysis relies

¹⁰ For year 2020 emissions, the social cost of carbon is about \$50 per metric ton (in 2017 dollars). *See* Revesz, *Best Cost Estimate of Greenhouse Gases*, *supra*. Though using the social cost of methane would be more accurate and would have yielded even higher monetized values, BLM gives greenhouse gas estimates only in carbon dioxide-equivalents, not broken out into tons of methane. *See* AR55016. Multiplying 590 metric tons of CO₂e per well times \$50/mtCO₂e would equal \$29,500 per well in 2020.

on the monetized benefits of the proposed action. BLM should have followed past agency practices under NEPA—including by itself in other contexts—and used the well-established estimates of the social cost of greenhouse gases to monetize climate costs from direct and indirect emissions.

A. Courts Require Agencies to Quantify Costs When They Justify Their Decisions by Quantifying Benefits

When a NEPA document includes an economic analysis, that analysis “cannot be misleading.” *High Country Conservation Advocates v. U.S. Forest Serv.*, 52 F. Supp. 3d 1174, 1182 (D. Colo. 2014). It is “arbitrary and capricious to quantify the *benefits*” of agency action “and then explain that a similar analysis of the *costs* was impossible when such an analysis was in fact possible.” *Id.* at 1191-93 (holding that BLM and the Forest Service should have used the social cost of carbon to analyze direct and indirect emissions from a coal lease modification).

BLM attempts to distinguish *High Country* on the ground that the U.S. District Court for the District of Colorado faulted the agency for originally including the social cost of carbon in a draft environmental impact statement (EIS) but then deleting it from the final EIS without adequate explanation. BLM Br. 30. But the main problem that the court highlighted in *High Country* was the poorly explained mismatch between the treatment of costs and benefits, not the mismatch between the draft and final EIS. The *High Country* court referred to the draft EIS only to make clear that the agency knew, contrary to its claims, that a tool existed to quantify the climate costs of the decisions. 52 F. Supp. 3d at 1191. In fact, the U.S. District Court for the District of Montana recently issued a nearly identical ruling as *High Country* in a case where the agency had failed to use the social cost of carbon in both the draft and final EIS, confirming that the central holding of *High Country* was focused on the treatment of benefits, not the draft EIS. *See Montana Env'tl. Info. Ctr. v. U.S. Office of Surface Mining*, No. 15-106, 2017 WL 3480262, at *14-*15 (D. Mont. Aug.

14, 2017) (holding that a bureau within Interior should have considered the climate costs of a coal lease modification as there was an available tool to do so).

And here, just like in *High Country*—as further discussed below, see *infra* section II.B.1.—there is copious evidence that BLM knew that a tool exists to monetize the climate costs of its leasing decisions, namely, the social cost of greenhouse gases. For example, even as BLM denied in May 2016 that the social cost of greenhouse gases was relevant to its leases because “climate science does not allow a precise connection between project-specific GHG emissions and specific environmental effects of climate change,” see, e.g., AR19286, the agency was simultaneously using the social cost of methane to justify (appropriately) a regulation that reduced methane leaks on its oil and gas leases. BLM, Waste Prevention, Production Subject to Royalties, and Resource Conservation; Proposed Rule, 81 Fed. Reg. 6615, 6624-6625 (Feb. 8, 2016); see also BLM, *Envtl. Assessment—Waste Prevention, Prod. Subject to Royalties, and Res. Conservation* at 52 (Feb. 2016)¹¹ (presenting the socio-economic impacts in a NEPA document using the social cost of methane). BLM’s argument that no reliable tool existed to monetize climate damages, therefore, is directly undercut by its own simultaneous use of such a tool in a related context. Consequently, the Wyoming lease EAs offered, in the words of the *High Country* ruling, “a factually inaccurate justification” for why the agency omitted the social cost of greenhouse gases. 52 F. Supp. 3d at 1191. Here, just as in *High Country*, “a tool existed” and indeed had previously been used by the agency. *Id.*

¹¹ Available at <https://www.regulations.gov/document?D=BLM-2016-0001-0003>. The rule was finalized in November 2016. BLM, Waste Prevention, Production Subject to Royalties, and Resource Conservation; Final Rule, 81 Fed. Reg. 83,008 (Nov. 18, 2016). The Court may take judicial notice of these official government documents. See *Pharm. Research & Manufacturers of Am. v. U.S. Dep’t of Health & Human Servs.*, 43 F. Supp. 3d 28, 33 (D.D.C. 2014).

Beyond the specific requirement to use the social cost of greenhouse gases in NEPA documents when other significant costs or benefits are quantified, a host of courts have ruled more broadly that when agencies justify their actions based on the benefits of their actions, they must also acknowledge costs in an even-handed manner. *Bus. Roundtable v. SEC*, 647 F.3d 1144, 1148-49 (D.C. Cir. 2011) (chastising the agency for “inconsistently and opportunistically fram[ing] the costs and benefits of the rule [and] fail[ing] adequately to quantify certain costs or to explain why those costs could not be quantified”); *Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1202 (9th Cir. 2008) (holding that the failure to quantify the most significant effect—greenhouse gas emissions—is arbitrary when the agency monetized other effects); *Competitive Enter. Inst. v. Nat’l Highway Traffic Safety Admin.*, 956 F.2d 321, 326-27 (D.C. Cir. 1992) (holding that the agency was required to explain whether the benefits of energy savings that it calculated outweighed the safety concerns that it had failed to calculate); *Johnston v. Davis*, 698 F.2d 1088, 1094–95 (10th Cir. 1983) (remanding an environmental impact statement because it made “no mention” of a crucial factor that would make the action net costly); *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983) (holding if agency “trumpet[s]” economic benefits, it must also disclose costs).

Here, BLM calculated the monetized benefits of leases and so must treat the climate costs of leasing with proportional analytical rigor. BLM’s assertion that the present facts do not include “detailed projections of a project’s upside,” BLM Br. 30 (quoting *High Country*, 52 F. Supp. 3d at 1195), is directly contradicted by the record. To begin, multiple EAs monetize the minimum and expected rental revenue from the leases, down to the dollar. For example, the EA for the May 2015 lease sales recognizes that the value of the leases is at least \$73,702.00, and that rental revenue “would likely be much higher” and could be as much as \$3,399,142.00. AR3426; *see also*,

e.g., AR18650–51 (calculating up to \$8,133,952.00 in potential rental revenue from leasing the November 2015 parcels). In short, as the American Petroleum Institute’s memorandum admits, “BLM’s socioeconomic impact analysis acknowledges the monies received from *leasing*.” *See* Mem. Am. Petroleum Institute Opp. Pls.’ Mot. Summ. J. (API Br.) 7 (quoting AR2827).

On top of that rental income, BLM also touts valuable royalties and taxes, as well as more indirect benefits like “employment and purchasing opportunities.” AR3426; *see also* AR18651 (“The State of Wyoming, as well as many counties and communities within, rely on oil and gas development for part, if not the majority, of their economic base.”). For these benefits, various EAs incorporate by reference¹² additional documents and tell readers to “[r]efer to the Final EISs for the Kemmerer, Pinedale, Rawlins, and Green River RMPs [Resource Management Plans] for additional socioeconomic analysis.” AR3426; *see also* AR18651. Wyoming belittles the EAs’ calculations of economic benefits as “one-paragraph discussions” that “merely note the mundane reality that lessees must bid for oil and gas leases.” Mem. Supp. Wyoming, Colorado, and Utah’s Cross Mot. Summ. J. (Wyo. Br.) 23. But in fact the EAs have incorporated by reference dozens of pages on the socioeconomic benefits of leasing. For example, the Kemmerer RMP concluded that, compared to an alternative that would emphasize environmental conservation and limit oil and gas development (Alternative B), BLM’s preferred alternative (Alternative D) would increase oil and gas earnings by about \$12 million per year, increase oil and gas output by about \$171 million per year, increase employment by several hundred jobs per year, increase federal mineral royalties by \$14.4 million per year, increase state severance taxes by \$6.9 million per year, and increase local

¹² 40 C.F.R. § 1502.21 allows agencies, under certain circumstances, to “incorporate material into an environmental impact statement by reference.”

ad valorem production taxes by \$7.3 million per year. Kemmerer Field Office, BLM, *Proposed Res. Mgmt. Plan and Final Env'tl. Impact Statement* at 4-259–4-263 (2008).¹³ More broadly, the Kemmerer RMP speaks glowingly of the economic value of oil and gas drilling, explaining that “activities on BLM-administered land and mineral estate contribute to the fiscal well-being of local government, as well as to state and federal governments,” and that the mining industry’s substantial contributions to “state and local tax revenues” may explain why “Wyoming has no personal or corporate income tax.” *Id.* at 3-175; *see generally id.* at 3-162–3-178 (describing all economic effects).¹⁴ By incorporating the RMPs into its EAs, BLM is telling the public and decisionmakers that approving these oil and gas leases will contribute to these impressive estimates of earnings, employment, and state and federal revenues, with benefits monetized down to the dollar.

BLM also asserts that it could not quantify climate costs because it “lacks knowledge at the leasing stage as to whether ‘a proposed parcel will actually be sold.’” BLM Br. 18 (quoting AR3426). But BLM’s projections of economic benefits, such as the estimates of rental income, are calculated “on the assumption that all . . . parcels . . . would be sold.” AR3426; *accord, e.g.*, AR18650. Uncertainty about sales did not stop BLM from making an assumption to calculate benefits, and it should not have stopped the agency from doing the same to calculate climate costs.

¹³ Available at https://eplanning.blm.gov/epl-front-office/eplanning/docset_view.do?projectId=63198¤tPageId=88596&documentId=77655.

¹⁴ *See also, e.g.*, Rawlins Field Office, BLM, *Proposed Res. Mgmt. Plan and Final Env'tl. Impact Statement* at 4-195 (2008), https://eplanning.blm.gov/epl-front-office/eplanning/docset_view.do?projectId=63197¤tPageId=88584&documentId=78292 (concluding that, compared to Alternative 3, which would have emphasized environmental protection, the preferred alternative would, from 2004 through 2023, increase total royalties and taxes from oil and gas leases by \$244,162,042).

Given the wealth of attention that BLM paid to the economic upside of leasing, the ruling of the U.S. District Court for the District of Colorado in *High Country* should inform this case: “In a nutshell, the agencies cannot claim that they are unable to predict the impacts of methane emissions because activities . . . are too speculative and then turn around and calculate down to the job and the nearest \$100,000 the economic impacts.” 52 F. Supp. 3d at 1195. In short, BLM needed to monetize climate costs and failed to do so.

B. The Social Cost of Greenhouse Gases Provides a Sophisticated Methodology to Assess the Climate Costs of These Leases

BLM and intervenors offer several flimsy attacks on the social cost of greenhouse gas methodology, but those attacks demonstrate a thorough lack of understanding for the metric’s design and proper application. We respond to each attack in turn below.

1. The Social Cost of Greenhouse Gases Is a Sophisticated Scientific Tool Based on the Best Available Data

BLM asserted that it lack “scientific tools” to calculate the costs of the carbon dioxide and methane emitted directly at oil and gas wells and indirectly upon combustion of those fossil fuels. AR3455. This is flatly false: the social cost of greenhouse gas methodology is a sophisticated tool, based on peer-reviewed models and the best available science and economics, and capable of assessing the specific climate costs of emissions from individual lease-sale projects.

In 2009, an Interagency Working Group assembled experts from a dozen federal agencies and White House offices to “estimate the monetized damages associated with an incremental increase in [greenhouse gas] emissions in a given year” based on “a defensible set of input assumptions that are grounded in the existing scientific and economic literature.” Interagency Working Group on Social Cost of Carbon, *Technical Support Document: Social Cost of Carbon*

for Regulatory Impact Analysis Under Executive Order 12866 (Feb. 2010) (2010 TSD).¹⁵ The estimates are based on the three most cited, most peer-reviewed models¹⁶ built to link physical impacts to the economic damages of each additional ton of greenhouse gas emissions. The Working Group ran these models using inputs and assumptions drawn from the peer-reviewed literature, and its estimates were updated every few years to reflect the latest and best scientific and economic data. *See Interagency Working Group on Social Cost of Greenhouse Gases, Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866* at 5–29 (Aug. 2016) (2016 TSD).¹⁷

The Working Group’s estimates have been repeatedly endorsed by reviewers. In 2014, the U.S. Government Accountability Office reviewed the Working Group’s methodology and concluded that it had followed a “consensus-based” approach, relied on peer-reviewed academic literature, disclosed relevant limitations, and adequately planned to incorporate new information via public comments and updated research. Gov’t Accountability Office, *Regulatory Impact Analysis: Development of Social Cost of Carbon Estimates* 12-19 (2014).¹⁸ In 2016, the U.S. Court of Appeals for the Seventh Circuit held that estimates of the social cost of carbon used to date by agencies were reasonable. *Zero Zone, Inc. v. Dep’t of Energy*, 832 F.3d 654, 679 (7th Cir. 2016). In 2016 and 2017, the National Academies of Sciences issued two reports that, while

¹⁵ Available at <https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf>.

¹⁶ These models are DICE (the Dynamic Integrated Model of Climate and the Economy), FUND (the Climate Framework for Uncertainty, Negotiation, and Distribution), and PAGE (Policy Analysis of the Greenhouse Effect).

¹⁷ Available at https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/scc_tsd_final_clean_8_26_16.pdf.

¹⁸ Available at <http://www.gao.gov/assets/670/665016.pdf>.

recommending future improvements to the methodology, supported the continued use of the existing Working Group estimates.¹⁹ It is, therefore, unsurprising that scores of economists and climate policy experts have endorsed the Working Group's values as the best available estimates.²⁰

In March 2017, President Trump's Executive Order 13,783 disbanded the Working Group. Exec. Order. No. 13,783 § 5(b), 82 Fed. Reg. 16,093 (Mar. 28, 2017). But the Executive Order does not alter the fundamental legal and economic principles that require BLM to monetize the climate costs caused by its leasing decisions. In fact, the Executive Order presumes that agencies may continue "monetizing the value of changes in greenhouse gas emissions," *id.* § 5(c), and some agencies under the current administration have continued to use the Working Group's estimates in both NEPA and regulatory analyses. *E.g.*, U.S. Dep't of Interior, Bureau of Ocean Energy Mgmt., *Draft Env'tl. Impact Statement: Liberty Development Project* at 3-129, 4-246 (Aug. 2017) (BOEM, Liberty Development Project)²¹ (calling the social cost of carbon "a useful measure" and applying it to analyze the consequences of offshore oil and gas drilling); Dep't of Energy, Energy Conservation Program: Energy Conservation Standards for Walk-In Cooler and Freezer Refrigeration Systems, 82 Fed. Reg. 31,808, 31,811, 31,857 (July 10, 2017) (using the Working

¹⁹ Nat'l Acad. Sci., Eng. & Medicine, *Valuing Climate Damages: Updating Estimates of the Social Cost of Carbon Dioxide* 3 (2017); Nat'l Acad. Sci., Eng. & Medicine, *Assessment of Approaches to Updating the Social Cost of Carbon: Phase 1 Report on a Near-Term Update* 1 (2016).

²⁰ *See, e.g.*, Revesz, *Best Cost Estimate of Greenhouse Gases*, *supra*; Michael Greenstone et al., *Developing a Social Cost of Carbon for U.S. Regulatory Analysis: A Methodology and Interpretation*, 7 *Rev. Env'tl. Econ. & Pol'y* 23, 42 (2013); Richard L. Revesz et al., *Global Warming: Improve Economic Models of Climate Change*, 508 *Nature* 173 (2014) (co-authored with Nobel Laureate Kenneth Arrow, among others); Decl. of Michael Hanemann ¶ 17, *Wyoming v. Interior*, No. 16-00285 (D. Wyo. Dec. 14, 2016), *available at* <https://www.edf.org/sites/default/files/content/69.1-2016.12.15-Dec-of-M-Hanemann.pdf> (The estimates that the Working Group prepared for the costs of methane are "the best available estimate of the environmental cost of an additional unit of methane emissions.").

²¹ *Available at* <https://cdxnodengn.epa.gov/cdx-enepa-II/public/action/eis/details?eisId=236901>.

Group’s estimates for carbon and methane emissions to analyze energy efficiency regulation, and describing the social cost of methane as having “undergone multiple stages of peer review”). Because the Working Group’s estimates still reflect the best science and economics, BLM should continue to use those estimates; otherwise, BLM must derive comparable values using a similarly rigorous and balanced methodology. *See Revesz, Best Cost Estimate of Greenhouse Gases*, supra.

2. The Social Cost of Greenhouse Gases Is Perfectly Suited to Connect Emissions from Individual Projects with Specific Climate Costs

In the EAs, BLM claimed that “climate science does not allow a precise connection between project-specific GHG emissions and specific environmental effects of climate change.” *E.g.*, AR19286. But that statement ignored that the social cost of greenhouse gas methodology can connect emissions from individual projects to specific climate effects. BLM argues that the social cost of greenhouse gases does not apply to these lease sales because the “tool was developed for the express purpose” of preparing regulatory impact analyses, and “the action challenged here is not a rulemaking.” BLM Br. 29.²² Developing consistent numbers for all federal agencies to use in their regulatory impact analyses certainly was a goal of the Working Group, but models used by the Working Group focus on the physical consequences of any greenhouse gas emissions and the models’ estimates do not vary depending on the type of decision that led to the emission. A ton of greenhouse gas emissions has the same marginal cost whether emitted as a result of a regulatory

²² API additionally argues that the social cost of greenhouse gases ““was developed to support agencies in responding to EO 13514, not for use in making land management decisions.”” API Br. 38 (quoting AR2827). But the social cost of greenhouse gases was already in use at the time that Executive Order 13,514 was signed and so this cannot be true. The Social Cost of Carbon’s first interim values were in use by August 2009. *See* Dep’t of Energy, Energy Conservation Program: Energy Conservation Standards for Refrigerated Bottled or Canned Beverage Vending Machines, 74 Fed. Reg. 44,914, 44934 (Aug. 31, 2009). And Executive Order 13,514 was not signed until over a month later. Exec. Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance, 74 Fed. Reg. 52,117 (Oct. 8, 2009).

policy or a resource management decision. The estimates are equally valid for NEPA analyses as for regulatory impact analyses.

Multiple agencies, including BLM, have used the social cost of greenhouse gases in NEPA documents, including for resource management decisions. For example, BLM used the social cost of methane in an Environmental Assessment to describe hundreds of millions of dollars in socio-economic benefits from its waste methane regulation. BLM, *Envtl. Assessment—Waste Prevention, Prod. Subject to Royalties, and Res. Conservation* at 52 (2016).²³ BLM offices have also used the social cost of carbon in NEPA analyses of resource management decisions. For example, BLM-Idaho calculated \$295,137 in annual climate costs associated with two oil and gas wells from the Little Willow Creek Protective Oil and Gas Lease. *See* BLM, *Final Envtl. Assessment*, DOI-BLM-ID-B010-2014-0036-EA, at 82 (2015).²⁴ And BLM-Montana calculated \$38,499 in annual climate costs from its Miles City Oil and Gas Lease Sale. *See* BLM, *Envtl. Assessment*, DOI-BLM-MT-C020-2014-0091-EA, at 76 (2014).²⁵

As BLM's sister bureau within the Department of Interior, the Office of Surface Mining, explained, including the social cost of greenhouse gases in a NEPA document on a resource management decision "provide[s] further context and enhance[s] the discussion of climate change impacts in the NEPA analysis." *Final Envtl. Impact Statement—Four Corners Power Plant and*

²³ Available at <https://www.regulations.gov/document?D=BLM-2016-0001-0003>. BLM finalized the regulation in November 2016. 81 Fed. Reg. 83,008.

²⁴ Available at <https://eplanning.blm.gov/epl-front-office/projects/nepa/64290/77147/85662/WEG.pdf> (pdf page 73).

²⁵ Available at https://www.blm.gov/sites/blm.gov/files/MT-DAKs%20MCFO%20EA%20October%202014%20Sale_Post%20for%2030%20day.pdf.

Navajo Mine Energy Project at 4.2-26 to 4.2-27 (2015)²⁶ (calculating a \$7.8 billion cumulative cost of carbon emissions from its proposed action, as compared to the no action alternative); *see also* BOEM, *Liberty Development Project*, *supra* at 3-129 (“the SCC is a useful measure to assess the benefits of CO2 reductions and inform agency decisions”); U.S. Army Corps of Engineers, *Draft Env'tl. Impact Statement for the Missouri River Recovery Mgmt. Project* at 3-335 (2016)²⁷ (monetizing the climate costs from downstream carbon dioxide emitted by the coal- and gas-fired power plants that would ramp up generation should the Corps’ river management project decrease hydropower generation); U.S. Forest Serv., *Rulemaking for Colorado Roadless Areas: Supplemental Final Env'tl. Impact Statement* at 120-123 (Nov. 2016) (using both the social cost of carbon and social cost of methane relating to coal leases).²⁸

The social cost of greenhouse gas methodology in fact is well-suited for valuing the emissions from individual lease sales, because the tool was designed for “actions that have small, or ‘marginal’ impacts on cumulative global emissions.” 2010 TSD at 2, *supra*. BLM’s argument that the tool only models effects “at the global scale,” AR2827, therefore misunderstands how the methodology works.²⁹ *See also* BLM Br. at 28. The social cost of greenhouse gases is derived by first running a climate-economic-damage calculation for a baseline scenario, and then adding a

²⁶ Available at <https://www.wrcc.osmre.gov/initiatives/fourCorners/documents/FinalEIS/Section%204.2%20-%20Climate%20Change.pdf>.

²⁷ Available at <http://cdm16021.contentdm.oclc.org/cdm/compoundobject/collection/p16021coll7/id/3054/rec/1>.

²⁸ Available at https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd525072.pdf.

²⁹ NEPA, of course, requires that “all agencies of the Federal Government *shall . . . recognize the worldwide and long-range character of environmental problems.*” 42 U.S.C. § 4332(F) (emphasis added); *see also Env'tl. Defense Fund v. Massey*, 986 F.2d 528, 535 (D.C. Cir. 1993) (confirming that subsection (F) is mandatory). For more on why agencies should adopt a global perspective in applying the social cost of greenhouse gases, see Peter Howard & Jason Schwartz, *Think Global: International Reciprocity as Justification for a Global Social Cost of Carbon*, 42 Columbia J. Env'tl. L. 203 (2017).

single additional unit of greenhouse gas emissions to the model and rerunning the calculation. The marginal difference in damages after adding a single additional unit of emissions is the social cost of greenhouse gases. The methodology works to monetize projects with as little as one ton of emissions.

3. The Social Cost of Greenhouse Gases Accounts for Complexity and Uncertainty

Intervenor-Defendant American Petroleum Institute (API) argues that the social cost of carbon is inapplicable because it ““does not account for the complexity of multiple stressors and indications.”” API Br. 6, 37–38 (quoting AR2827). In fact, the social cost of greenhouse gas methodology deploys multiple techniques to incorporate a wide range of scenarios and assumptions—making it a valid tool despite any potential “stressors” that would cause variation in possible future emissions or socio-economic conditions.

The Working Group’s methodology began with three integrated assessment models that “translate emissions into changes in atmospheric greenhouse concentrations, atmospheric concentrations into changes in temperature, and changes in temperature into economic damages.” 2010 TSD, *supra*, at 5. Each model applies slightly different parameters and assumptions, and so the Working Group combined the three models to balance out the limitations of any individual model. *Id.* at 6. Into these three models, the Working Group next fed five socio-economic and emissions trajectories, *id.* at 15, applied three different discount rate assumptions, *id.* at 17, and used a Monte Carlo simulation to run each scenario 10,000 times, each time randomly selecting the value of uncertain parameters from a probability distribution function, *id.* at 28. Though the methodology has limitations, such as incomplete treatment of catastrophic risks, *id.* at 29, even its critics have called the Working Group’s analysis of uncertainty “impressively thorough.” Frank

Ackerman & Elizabeth Stanton, *Climate Risks and Carbon Prices: Revising the Social Cost of Carbon* at 6, *Econ.: The Open-Access, Open-Assessment E-Journal* (Apr. 2012).³⁰

Moreover, to the extent that current estimates of the social cost of greenhouse gases omit any “stressors and indications,” the omissions almost universally point toward even higher climate costs per ton. *See* Revesz et al., *Improve Economic Models of Climate Change*, *supra*. The fact that the estimates are incomplete with respect to catastrophic risks, tipping points, ocean acidification, species loss, high-temperature damages, risk aversion, and inter-sectoral and inter-regional interactions, among other factors, 2010 TSD, *supra*, at 29–32, suggests not that the current estimates have no relevance for agency analysis, but only that current estimates should be treated as a lower bound.

4. The Working Group’s Estimates Recommend a Central Value for Decisionmaking

API also argues that the social cost of greenhouse gas values contain a range of estimates that vary by 4,000% and that BLM found ““this range to be less than helpful in informing the public and the decision-maker.”” API Br. 14, 38 (quoting AR12520). In fact, the range of values recommended by the Working Group is much narrower and designates a “central” value to help guide decisionmakers. The most recent estimates for year 2020 emissions, converted to 2017 dollars to account for inflation, range from about \$15 to about \$150 per metric ton of carbon dioxide, with a central value of about \$50 per metric ton. *See* 2016 TSD, *supra*, at 4 (values converted using CPI inflation calculator). Agencies have had no difficulty in incorporating that range or in focusing on the central value. *E.g.*, BOEM, *Liberty Development Project*, *supra* at 3-

³⁰ Available at <http://www.economics-ejournal.org/economics/journalarticles/2012-10>.

129 (“the SCC is a useful measure to assess the benefits of CO₂ reductions and inform agency decisions”).

5. A Related Methodology Specifically Values the Social Cost of Methane

BLM argued, as late as in its response to comments on its August 2016 lease sales, that the social cost of carbon “is not applicable to non-CO₂ GHG emissions, such as methane.” AR55165 (published Aug. 1, 2016); *accord* WEA Br. 42 (citing AR19419). This argument overlooks the creation of a tool specifically for valuing the social cost of methane—a tool that was already familiar to BLM at that time. For example, BLM applied it in February 2016 in the environmental assessment for the proposed waste methane prevention policy for oil and gas leases. *Envtl. Assessment—Waste Prevention, Prod. Subject to Royalties, and Res. Conservation* at 52 (Feb. 2016).³¹ Moreover, even before the specific metric for the social cost of methane was available, agencies could apply the social cost of carbon to non-carbon dioxide gases by converting to carbon dioxide-equivalent units using the gases’ relative global warming potentials. *See* Nat’l Highway Traffic Safety Admin., *Final Env’tl. Impact Statement for Corporate Average Fuel Economy Standards—Passenger Cars and Light Trucks, Model Years 2017-2025* at 5-26 (2012)³² (“Transforming gases into CO₂ equivalents using GWP [global warming potential], NHTSA multiplied the carbon equivalents by the SCC [social cost of carbon] to incorporate the social costs of non-CO₂ gases.”).

³¹ Available at <https://www.regulations.gov/document?D=BLM-2016-0001-0003>.

³² Available at https://one.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/FINAL_EIS.pdf.

III. BLM Arbitrarily Failed to Consider How Its Leases, by Increasing Supply of Oil and Gas, Could Affect Demand, Combustion, and Emissions

In the leasing decisions at issue, BLM assumes that the oil and gas leases will result in additional revenue and, conversely, that forgoing the leases could reduce “domestic production of oil and gas.” AR11965, 28225; *see also* AR3452, 18650, 34677, 55020, 12394, 28496, 55254.³³ In other words, leasing these parcels increases domestic production of oil and gas, relative to not leasing. However, BLM arbitrarily failed to follow basic economic logic and consider how increasing the supply will lower prices, thereby increasing demand, increasing combustion of oil and gas, and ultimately increasing greenhouse gas emissions.

As the Tenth Circuit recently explained, when more of a commodity is drilled or mined, the price for that commodity goes down and demand goes up. *WildEarth Guardians v. United States Bureau of Land Mgmt.*, 870 F.3d 1222, 1235 (10th Cir. 2017). The D.C. Circuit has also addressed this issue. *Ctr. for Sustainable Economy v. Jewell*, 779 F.3d 588, 609 (D.C. Cir. 2015) (“forgoing additional leasing on the [outer continental shelf] would cause an increase in the use of substitute fuels such as renewables, coal, imported oil and natural gas, and a reduction in overall domestic energy consumption from greater efforts to conserve in the face of higher prices”); *see also* *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 549–550 (8th Cir. 2003) (“the increased availability of inexpensive coal will at the very least make coal a more attractive option to future entrants into the utilities market”); *Montana Env'tl. Info. Ctr.*, 2017 WL 3480262, at *15 (holding that it was “illogical” for the agency to assume that choosing not to approve federal coal leases would have no effect on coal supply, demand, or consumption, because “other coal

³³ The five leasing sales at issue in this case involve 282 new oil and gas lease parcels. In just one of the five environmental assessments pertaining to the sales, the BLM estimated that development of the parcels in that area would proceed at a rate of “545 wells spudded per year.” AR 3452.

would be burned in its stead”); *High Country Conservation Advocates*, 52 F. Supp. 3d at 1197 (recognizing that increased production of coal could affect “the demand for coal relative to other fuel sources, and coal that otherwise would have been left in the ground will be burned” (quotation marks omitted)). This obvious chain reaction is predicted by basic economic principles of supply and demand. See N. Gregory Mankiw, *Principles of Economics* 74–78, 80–81 (5th ed. 2008). If increased consumption of oil and gas comes at the expense of energy conservation or of cleaner energy sources like nuclear and renewables, the end result would be an increase in greenhouse gas emissions.

Despite BLM’s failure to consider this economic issue in analyzing these leases, BLM and BLM’s sister bureaus within Interior have long understood how individual lease sales can affect supply and demand, and Interior has a long history of analyzing how newly leased oil and gas resources can substitute for energy conservation or cleaner fuel sources. For example, back in 1979, BLM conducted a NEPA analyses for offshore oil and gas leases, and the agency assessed how choosing not to lease a parcel would cause substitute energy sources to replace the forgone oil and gas, including energy conservation, renewable energy, nuclear power, or other fossil fuels. BLM, *Final Env’tl. Statement, OCS Sale No. 48, Proposed 1979 Outer Continental Shelf Oil and Gas Lease Sale Offshore Southern California*, 1508–11 (1979);³⁴ *id.* 1508–1532 (explaining the environmental effects of each substitute, including changes in carbon dioxide). More recently, BLM’s sister bureau, the Bureau of Ocean Energy Management, has used sophisticated modeling to calculate the change in greenhouse gas emissions resulting from the effects on demand of either approving or not approving individual oil and gas leases. BOEM, *Liberty Development Project*, *supra* at 4-50; see also BOEM, *Proposed Final Outer Continental Shelf Oil & Gas Leasing*

³⁴ Available at <https://books.google.com/books?id=A3sRAAAAYAAJ>.

Program 2012-2017, 110 (2012)³⁵ (calculating that if the offshore acreage were not leased, 6% of the forgone oil and gas would be replaced by energy conservation).

In sum, BLM may not ignore the impact that increased production could have on the availability of oil and gas, the price of oil and gas relative to other energy resources, and the emissions that could result from those changes. *See WildEarth Guardians*, 870 F.3d at 1235; *Mid States Coal. for Progress*, 345 F.3d at 549–550. BLM has failed to do the analysis to determine whether these leases will change demand in ways that will increase greenhouse gas emissions.

CONCLUSION

This Court should grant plaintiffs’ motion for summary judgment.

Dated: New York, NY

Respectfully submitted,

Oct. 25, 2017

/s/ Bethany A. Davis Noll

Bethany A. Davis Noll (Bar ID: 1002512)

Richard L. Revesz

Jason A. Schwartz

Institute for Policy Integrity

New York University School of Law

139 MacDougal, 3rd floor

New York, NY 10012

bethany.davisnoll@nyu.edu

T: (212) 992-8932

Counsel for Amicus Curiae

Institute for Policy Integrity

³⁵ Available at http://www.boem.gov/uploadedFiles/BOEM/Oil_and_Gas_Energy_Program/Leasing/Five_Year_Program/2012-2017_Five_Year_Program/PFP%2012-17.pdf