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WESTERN ENVIRONMENTAL LAW CENTER

U.S. Bureau of Land Management
New Mexico State Office
Attn: Melanie Barnes, State Director
301 Dinosaur Trail
Santa Fe, NM 87508

November 7, 2022

Re: Scoping for the New Mexico/Oklahoma 2022 Second Quarter Oil and Gas Lease Parcel Sale (DOI-BLM-NM-P000-2022-0001-EA)(New Mexico) and (DOI-BLM-NM-0040-2022-0045-EA)(Oklahoma).

Dear Bureau of Land Management:

The Western Environmental Law Center ("WELC"), along with the Center for Biological Diversity, Citizens Caring for the Future, Friends of the Earth, Sierra Club, Western Environmental Law Center, Waterkeeper Alliance, Western Watersheds, and WildEarth Guardians (together "Conservation Groups"), submit the following scoping comments on the Bureau of Land Management ("BLM") New Mexico/Oklahoma 2023 Second Quarter (Q2 '23) Oil and Gas Lease Parcel Sale ("Lease Sale") involving 45 nominated parcels of Federal minerals within the Pecos and Oklahoma Field Offices and including all parcels.[1] As detailed in more depth below, the Conservation Groups encourage the BLM to complete a thorough, transparent environmental review for the parcels *before* moving forward with the Lease Sale.

The names, mailing addresses, and telephone numbers for each organization and individual filing this comment letter are listed below:

Center for Biological Diversity
1536 Wynkoop Street Suite #421
Denver, CO 80202
520.623.5252

1004 Major Avenue NW
Albuquerque, NM 87107
575.302.7587

Citizens Caring for the Future

Friends of the Earth
1101 15th Street NW, 11th Floor

[1] A list of parcel numbers and serial numbers referenced in this comment letter is attached as **Appendix A** to this comment. A list of all exhibits to this comment is attached as **Appendix B**. Exhibits referenced herein and itemized in Appendix B were provided on a USB drive sent under separate cover via FedEx on November 5, 2022, and were delivered at the BLM New Mexico State Office at 11:05 am on November 7, 2022, see delivery proof, **Appendix C**.

Washington, D.C. 20005
202-783-7400

Sierra Club
2101 Webster St. Suite 1300
Oakland, CA 94612
415.977.5500

Western Environmental Law Center
103 Reeders' Alley
Helena, MT 59601
406.471.3173
Waterkeeper Alliance, Inc.
180 Maiden Lane, Suite 603
New York, NY 10038
212.747.0622

Western Watersheds Project
P.O. Box 779
Depoe Bay, OR 97341
928.322.8449

WildEarth Guardians
301 N. Guadalupe, Ste. 201
Santa Fe, NM 87501
505.988.9126

I, Morgan E. O'Grady, have been authorized to file this comment letter on behalf of the above groups.

INTERESTS AND PARTICIPATION OF COMMENTING PARTIES.

The **Center for Biological Diversity ("Center")** is a non-profit environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center also works to reduce greenhouse gas emissions to protect biological diversity, our environment, and public health. The Center has over one million members and activists, including those living in New Mexico and Oklahoma who have visited these public lands for recreational, scientific, educational, and other pursuits and intend to continue to do so in the future, and are particularly interested in protecting the many native, imperiled, and sensitive species and their habitats that may be affected by the proposed oil and gas leasing.

Citizens Caring for the Future ("CCFF") is an unincorporated non-profit membership association based in southeastern New Mexico in the Permian Basin. CCFF's mission is to bring together southeastern New Mexico community members who support protecting the air, water and public health and safety during the current oil and gas boom in the Permian. The organization seeks to find an informed and safe path to ensure protections for the local community in the face of the health, safety and environmental dangers posed by rapid oil and gas development in the greater Carlsbad region of southeastern New Mexico.

Friends of the Earth ("FoE") is a 501(c)(3) non-profit, membership-based organization with offices located in Berkeley, California and Washington, DC. FoE currently has over 4.7 million activists and over 290,000 members, located across all 50 states and the District of Columbia. FoE is also a member of Friends of the Earth-International, which is a network of grassroots groups in 74 countries worldwide. FoE's primary mission is to defend the environment and champion a more healthy and just world by collectively ensuring environmental and social justice, human dignity, and respect for human rights and peoples' rights. FoE is dedicated to fighting climate change and advocating for clean energy alternatives. FoE's Climate

& Energy program directly engages in administrative and legal advocacy to protect the environment and society from climate change, pollution, and industrialization associated with fossil fuel development on public lands and associated greenhouse gas emissions. Key to this work is fighting to reduce greenhouse gas emissions and domestic reliance on fossil fuels, including from federally produced fossil-fuels, and advance justly-sourced, renewable energy.

The **Sierra Club** was founded in 1892 and is the nation's oldest grassroots environmental organization. The Sierra Club is incorporated in California, and has over 790,000 members nationwide and is dedicated to the protection and preservation of the environment. The Sierra Club's mission is to explore, enjoy and protect the wild places of the earth; to practice and promote the responsible use of the earth's ecosystems and resources; and to educate and enlist humanity to protect and restore the quality of the natural and human environments. The Sierra Club has members that live in, work and use the lease sale areas for recreation such as hiking, snowshoeing, cross-country skiing, climbing, backpacking, camping, fishing and wildlife viewing, as well as for business, scientific, spiritual, aesthetic and environmental purposes.

Waterkeeper Alliance is a not-for-profit, member supported, international environmental organization based in New York City. Waterkeeper Alliance unites more than 300 Waterkeeper Organizations and Affiliates that are on the frontlines of the global water crisis, patrolling and protecting more than 2.5 million square miles of rivers, lakes, and coastal waterways on 6 continents. Waterkeeper Organizations and Affiliates defend our fundamental human right to drinkable, fishable and swimmable waters, and combine firsthand knowledge of their waterways with an unwavering commitment to the rights of their communities. Through its Clean and Safe Energy campaign, Waterkeeper Alliance has increasingly engaged in public advocacy, administrative proceedings and litigation aimed at reducing the water quality and climate change impacts of fossil fuel extraction, transport and combustion, including from BLM-controlled lands, throughout the United States. Waterkeeper Alliance and its member Waterkeeper Organizations and Affiliates have members, supporters and staff who have visited public lands in New Mexico and Oklahoma including lands and waters that would be affected by actions under the challenged lease sale, for recreational, scientific, educational, and other pursuits, intend to continue to do so, and are particularly interested in protecting them from water-intensive energy development.

The **Western Environmental Law Center ("WELC")** uses the power of the law to defend and protect the American West's treasured landscapes, iconic wildlife, and rural communities. WELC combines legal skills with sound conservation biology and environmental science to address major environmental issues in the West in the most strategic and effective manner. WELC works at the national, regional, state, and local levels; and in all three branches of government. WELC integrates national policies and regional perspective with the local knowledge of our 100+ partner groups to implement smart and appropriate place-based actions.

Western Watersheds Project is a non-profit organization with more than 12,000 members and supporters. Its mission is to protect and restore western watersheds and wildlife through education, public policy initiatives and legal advocacy. Western Watersheds Project and its staff and members use and enjoy America's public lands and their wildlife, cultural and natural resources for health, recreational, scientific, spiritual, educational, aesthetic, and other

purposes. Western Watersheds Project also has a direct interest in mineral development that occurs in areas with sensitive wildlife populations and important wildlife habitat.

WildEarth Guardians ("Guardians") is dedicated to protecting and restoring the wildlife, wild places, wild rivers, and health of the American West. Guardians is a west-wide environmental advocacy organization with thousands of members, including members in New Mexico and surrounding states. Guardians' members live in and regularly use and enjoy lands in the Lease Sale areas, and are interested in their conservation.

STATEMENT OF REASONS IN SUPPORT OF CONSERVATION GROUPS' COMMENT LETTER OF THE NEW MEXICO/OKLAHOMA 2023 SECOND QUARTER LEASE SALE.

The above-named Conservation Groups submit these scoping comments in response to the BLM's proposed Q2 '23 Lease Sale and its respective proposed parcels. For reasons explained below, BLM must defer all parcels proposed for lease pending completion of programmatic review of the federal fossil fuel programs and analysis under the National Environmental Policy Act of 1976 ("NEPA"), the Federal Land Policy and Management Act ("FLPMA"), the Endangered Species Act ("ESA"), and other laws of those programs' cumulative greenhouse gas pollution, their associated climate impacts, and their compatibility with BLM's public-lands statutory mandates and the U.S. goal of limiting global warming to 1.5° Celsius. Importantly, that analysis is both legally required and has never been done. Each sold lease parcel would lock in more future greenhouse gas pollution at a time when it is imperative for the U.S. to reduce emissions. That pollution will worsen climate and extinction crises and their associated harm to people and the environment. Multiple studies show that there is simply no room left in the global carbon budget for new commitments of fossil fuel development. The world's already producing oil and gas fields, if fully developed, will by themselves push global warming past the 1.5° Celsius limit (not accounting for emissions from coal production). Thus, we again urge BLM, and by extension the Department of Interior, to exercise their full authority under federal law to end new federal fossil fuel leasing and enact a managed decline of production consistent with the U.S. goal of limiting global warming to 1.5° Celsius.

I. EFFECT OF RECENT COURT DECISIONS, EXECUTIVE ORDERS, LEGISLATION, AND SCHEDULED RULEMAKING.

A. BLM Is Not Required to Hold a Lease Sale or Issue Any Leases—Even Following the Inflation Reduction Act.

As an initial matter, we note that in announcing the scoping period for the Lease Sales, BLM inaccurately suggested that the sale is required by the recently enacted Inflation Reduction Act of 2022, H.R. 5376 ("IRA" or "Act").[2] Nothing in the IRA requires BLM to offer any

[2] *See* **Exhibit 1,** Office of Secretary of the Interior, Press Release, *Interior Department Moves Forward with Leasing Provisions Mandated in Inflation Reduction Act* (Oct. 6, 2022) (stating that scoping for Wyoming and New Mexico lease sales is occurring "to comply with congressional direction on oil and gas leasing through the Inflation

onshore oil and gas leases or alters BLM's inherent authority under FLPMA and the MLA to hold or postpone lease sales or to issue leases sold.[3]

While the IRA conditions the Interior Department's ability to issue rights-of-way for renewable energy development to new oil and gas leasing, BLM cannot take as a given that new renewable rights-of-way must be issued in the coming months. The entire purpose of prioritizing renewable energy development on public lands is to benefit the climate. If oil and gas leasing pursuant to the IRA offsets or eliminates those climate benefits, the rationale for renewable projects disappears. BLM should not approve renewable projects in that circumstance, because doing so consumes significant staff resources and the projects will cause their own adverse impacts to public lands and wildlife.

Before moving forward with any new oil and gas lease sales, BLM must provide a reasoned explanation for that choice, supported by record evidence relevant to the IRA. Among other relevant factors, BLM must consider: (a) whether and how many renewable rights-of-way are ready for issuance; (b) when those renewable projects would come on-line and how the clean energy they produce would compare with the energy and carbon pollution generated by production on the proposed oil and gas leases; and (c) alternatives that would minimize or mitigate the carbon pollution from the proposed oil and gas leases.

B. The BLM May Not Assume GHG Reductions based on Passage of the IRA.

The IRA, was signed into law by President Biden on August 16, 2022. The administration has asserted that passage of the Act will result in a 40% reduction—or one gigaton—of greenhouse gas emissions by 2030,[4] and has lauded the Act as a means to "significantly cut the social costs of climate change."[5] There is little question that the Act's $369 billion investment in energy security and climate change programs represents an essential infusion of resources toward tackling the climate crisis. Nonetheless, BLM may not rely on the Act as a basis for assuming a quantifiable decrease in emissions or as an offset to emissions under the lease sale for three reasons: (1) the Act itself contains provisions that undercut its goals of effecting a clean energy transition by perpetuating the federal oil and gas program, contrary to all scientific mandates; (2) even provisions that directly address supply-side sources of greenhouse gas emissions have the potential to increase emissions in the near-term; and, finally; (3) the majority of the IRA's climate provisions will vary in efficacy (i.e. emissions reductions)

Reduction Act (IRA)") https://www.doi.gov/pressreleases/interior-department-moves-forward-leasing-provisions-mandated-inflation-reduction-act.

[3] No litigation challenging the "pause" on new leasing called for by Executive Order 14008 countermands this inherent discretion. The scope of the injunction issued by the District Court for the Western District of Louisiana does not cover "Lease Sales cancelled or postponed after March 24, 2021, and as to any lease sales involving non-plaintiff states," which precludes Wyoming, New Mexico, Colorado, and Nevada, among others. *See Louisiana v. Biden*, No. 2:21-CV-00778, 2022 U.S. Dist. LEXIS 148570, at *42 (W.D. La. Aug. 18, 2022). In *Western Energy Alliance f. Wyoming*, No. 21-cv-00013-SWS (D. Wyo. May 20, 2021) the Federal District Court for the District of Wyoming explicitly affirmed that "the Secretary enjoys wide discretion" when deciding where, whether, and when to make lands available for lease.

[4] **Exhibit 2,** U.S. Department of Energy Office of Policy, "The Inflation Reduction Act Drives Significant Emissions Reductions and Positions America to Reach our Climate Goals."

[5] **Exhibit 3,** White House Press Release: "New OMB Analysis: The Inflation Reduction Act will Significantly Cut the Social Costs of Climate Change."

depending on how they are implemented by the federal government, as well as state and local governments, and it is therefore impossible to reliably assume that a given level of reductions will be achieved.[6]

1. The IRA's Mandate for New Leasing Runs Counter to Climate Science

Section 50265 of the Act requires that for any renewable energy right of way issued during the first ten years following ratification of the Act, at least one onshore lease sale must have been held in the 120 days prior to its issuance and a minimum number of acres must have been offered for lease during the twelve-month period preceding the right of way's issuance.[7]

As discussed in depth in section I.C, above, there is little ambiguity about the science of climate change. In order to maintain a coin flip chance of maintaining warming below 1.5°C, *global* fossil fuel production must decrease by approximately 6% per year between 2020 and 2030, and approximately 60% of global fluid mineral resources must be left in the ground. [8, 9] For developed nations, including the U.S., in order to maintain a 50% or better chance of avoiding 1.5°C of warming, "coal production needs to fall by 50% within five years and be effectively eliminated by 2030," while oil and gas production must be cut by 74% by 2030 and end by 2035.[10] To maintain a 67% chance of avoiding 1.5°C of warming, the U.S. must *end* oil and gas production by 2031.[11] The latest reports—released within the last two weeks—only paint a grimmer picture of the rapidly shrinking opportunity to avert the worst consequences of climate change. It is clear that extreme weather events, and their human, ecological, and economic costs, are already harming, killing, and displacing millions of people around the world.[12] Instead of falling, greenhouse gas concentrations continue to rise, and modest reductions have done little to check their trajectory.[13] Without drastic action, "the physical and socioeconomic impacts of climate change will be devastating. Irreversible physical changes in the climate system, known as tipping points, can not be ruled out and could have significant global and regional consequences."[14] International pledges—including by the United States—are insufficient to avert catastrophic temperature increases and are woefully insufficient to constrain global temperature

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[6] *See, e.g.* **Exhibit 4,** New York Times (August 12, 2022), "How the New Climate Bill Would Reduce Emissions." https://www.nytimes.com/interactive/2022/08/02/climate/manchin-deal-emissions-cuts.html.

[7] H.R. 5376, Inflation Reduction Act of 2022, Section 50265(b)(1). The amount of onshore acreage to be offered must be "not less than the lesser of – (i) 2,000,000 acres; and (ii) 50 percent of the acreage for which expressions of interest have been submitted for lease sales during that period." Further, under Subsection (b)(2) of Section 50265, offshore wind leasing is similarly constrained.

[8] **Exhibit 5,** SEI, IISD, ODI, E3G, and UNEP, *The Production Gap Report: 2020 Special Report* (2021).

[9] **Exhibit 6,** Welsby, D., Price, J., Pye, S. et al. *Unextractable fossil fuels in a 1.5 °C world*. Nature 597, 230–234 (2021) (if 60% of remaining oil and gas is left in situ, we will retain a 50% chance of limiting warming to 1.5°C).

[10] **Exhibit 7,** Calverley, D. and Anderson, K. (2022), *Phaseout pathways for fossil fuel production within Paris-compliant carbon budgets*. Tyndall Centre, University of Manchester.

[11] *Id*.

[12] **Exhibit 8,** The 2022 report of the *Lancet* Countdown on health and climate change: health at the mercy of fossil fuels. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(22)01540-9/fulltext

[13] **Exhibit 9,** World Meteorological Organization (2022). United in Science 2022 A multi-organization high-level compilation of the most recent science related to climate change, impacts and responses. https://library.wmo.int/doc_num.php?explnum_id=11309; United Nations Framework Convention on Climate Change (October 26, 2022), Nationally Determined Contributions Under the Paris Agreement: Syntheseis Report by the Secretariat. https://unfccc.int/documents/619180.

[14] *Id.*

rise below 1.5°C.[15] Moreover, most nations that pledged reductions are nowhere near meeting those pledges.[16]

By dictating that additional onshore leasing must occur to allow development of urgently needed renewable energy infrastructure on public lands,[17] the Act holds hostage potential emissions reductions to the continuance of federal fossil fuel leasing, in direct contravention of the scientific reality that fossil fuel production must end within the decade. Moreover, the requirement that a quota for both sales held and acres offered be met *before* any new right of way for renewable energy development can be issued virtually ensures that the minimum amounts set forth in Section 50265 will be exceeded, because BLM must ensure that these criteria are met proactively, rather than in response to a particular renewable development project.[18] The IRA's mandate for additional onshore fluid mineral development over the next decade jeopardizes humanity's ability to constrain warming to 1.5°C, and flies in the face of an overwhelming scientific consensus.[19]

2. Provisions of the IRA Designed to Reduce GHGs may have the Opposite Effect

Section 60113 of the IRA amends the Clean Air Act to implement the Methane Emissions Reduction Program (MERP), which provides both incentives for methane reduction and taxes on excessive releases of the greenhouse gas from oil and gas infrastructure. Because the MERP program allows EPA to use and enforce state methane regulations when they meet or exceed federal regulations, it is entirely possible that implementation of MERP may have the effect of actually *increasing* oil and gas production and consequent methane emissions in states, such as New Mexico,[20] that already have strong methane regulations at a time when production should be decreasing. The effects of this increase will be compounded by the fact that neither these states nor the EPA have implemented or shown a willingness to implement strong enforcement mechanisms, meaning that the effects of such "strong regulations" are diluted.

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[15] **Exhibit 11,** United Nations Environment Programme (2022). Emissions Gap Report 2022: The Closing Window — Climate crisis calls for rapid transformation of societies. Nairobi. https://www.unep.org/emissions-gap-report-2022.

[16] *Id.*; United Nations Framework Convention on Climate Change (October 26, 2022), Nationally Determined Contributions Under the Paris Agreement: Syntheseis Report by the Secretariat. https://unfccc.int/documents/619180, Exhibit 10.

[17] It is also worth noting that Section 50264 of the Act *requires* continuation of the Outer Continental Shelf Leasing Program irrespective of future renewable energy development.

[18] *See*, https://www.doi.gov/pressreleases/interior-department-moves-forward-leasing-provisions-mandated-inflation-reduction-act, announcing scoping for onshore and offshore 2023 sales without reference to any specific renewable energy rights of way.

[19] **Exhibit 12,** International Institute for Sustainable Development, *Navigating Energy Transitions: Mapping the Road to 1.5° C* at xi, October 2022. Additional development also risks leaving stranded assets, as fields will need to be decommissioned before the end of their lifespan. *Id.*

[20] Indeed, BLM's most recent lease sale notices included a projected sale in New Mexico. https://www.doi.gov/pressreleases/interior-department-moves-forward-leasing-provisions-mandated-inflation-reduction-act. Exhibit 1.

GHG concentrations in the atmosphere have risen dramatically in the past two years despite efforts at reduction.[21] These increases have been particularly troubling with respect to methane.[22] Because methane is far more potent over the short-term, additional methane emissions made possible by the IRA's fossil-fuel leasing mandates will undercut—at least in part—the longer-term consumption-based reductions the IRA is designed to encourage. This is particularly true with respect to methane because of its high near-term radiative forcing characteristics, which have the potential to trigger climate feedback loops that may be irreversible by the time reductions achieved through energy infrastructure changes take effect. BLM must acknowledge these realities, and must incorporate them into its analysis of cumulative effects for the lease sales, particularly in the context of disclosing the public health impacts of burning fossil fuels from the lease parcels.

3. The IRA's Emissions Reduction Potential Depends on Implementation

Most of the IRA's provisions seek to facilitate the transition away from fossil-fuel energy sources by expanding tax credits for and investing in renewable energy, energy efficiency, and as-yet unproven carbon capture and storage technology. Because nothing in the legislation requires emissions cuts, its efficacy at reducing emissions will depend on how quickly lower and zero-emission energy sources can displace fossil-fuel based energy sources. This transition in turn depends on the willingness and ability of state and local government entities to overcome transmission shortages, political agendas, and setbacks in the global supply chain.

As a result, the IRA's provisions may be viewed as creating the *potential* for significant emissions cuts, rather than guaranteeing them. As current climate science tells us, immediate cuts are not only desirable, they are an absolute necessity if the direst outcomes of climate change are still to be averted. Because of this reality, NEPA dictates that BLM may not count on the IRA as an offset to emissions projected under these lease sales but must instead analyze the IRA in the context of its imprimatur of continuing fossil-fuel development on public lands.

4. BLM must disclose which wind or solar rights-of-way are supported by the Wyoming and New Mexico oil and gas leases and should establish publicly accessible tracking for renewable rights-of-way.

In announcing the Wyoming and New Mexico oil and gas lease sales, BLM expressly linked the decision to offer the leases to the IRA: "In accordance with congressional direction in the Inflation Reduction Act, Bureau of Land Management New Mexico started a 30-day scoping period to receive public input on 45 parcels totaling 10,123.91 acres that may be included in an upcoming lease sale."[23] While the IRA, and now BLM, tie issuance of rights-of-way for wind

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[21] **Exhibit 13,** World Meteorological Organization (October 26, 2022) Greenhouse Gas Bulletin: The State of Greenhouse Gases in the Atmosphere Based on Global Observations through 2021. https://library.wmo.int/doc_num.php?explnum_id=11352

[22] *Id.*

[23] https://www.blm.gov/press-release/bureau-land-management-new-mexico-seeks-feedback-proposed-oil-and-gas-lease-sale. BLM issued a similar statement for Wyoming: "In accordance with congressional direction in the Inflation Reduction Act, Bureau of Land Management Wyoming started a 30-day scoping period to receive public input on 209 parcels totaling 251,086 acres that may be included in an upcoming lease sale."

and solar development on public lands to recent issuance of oil and gas leases within the last 120 days (and offers for lease within the last year), BLM has not identified which renewable development rights-of-way the proposed Wyoming and New Mexico oil and gas leases will facilitate. BLM has provided no information on upcoming wind or solar rights-of-way to the public through this NEPA process, and, as far as Conservation Groups are aware, has not made available any publicly-accessible tracking system for renewable rights-of-way that are under consideration. Since BLM has expressly stated the New Mexico and Wyoming leasing decisions are being made pursuant to the IRA, which itself does not mandate oil and gas leases, BLM must explain in its NEPA reviews *which specific renewable rights-of-way* are facilitated by these decisions.

For the sake of efficiency and transparency, given the leasing provisions of the IRA, Conservation Groups further request that in addition to providing this information in specific NEPA reviews, BLM establish a publicly-accessible system for tracking potential and recently-issued rights-of-way for wind and solar development on public lands.

C. BLM's NEPA Analysis must Address whether any Proposed Leasing is Consistent with U.S. Climate Commitments, and Address Its Full Costs and Benefits.

BLM must consider and address whether the proposed leasing is consistent with U.S. climate commitments and national policy. The United States committed in 2021 to reduce the nation's greenhouse gas emissions 50–52% by 2030.[24] President Biden also has recognized the need for action, stating that the "United States and the world face a profound climate crisis. We have a narrow moment to pursue action . . . in order to avoid the most catastrophic impacts of that crisis." Exec. Order No. 14008, *Tackling the Climate Crisis at Home and Abroad*, 86 Fed. Reg. 7,619, 7,619 (Jan. 27, 2021).

Similarly, the Interior Department has acknowledged the need to address climate change when making management decisions on federal lands. Interior Secretarial Order 3289, *Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources* (Sept. 14, 2009), stated that "the realities of climate change require us to change how we manage the land, water, fish and wildlife, and cultural heritage and tribal lands and resources we oversee"; and acknowledged that the Department of the Interior is "responsible for helping protect the nation from the impacts of climate change." And in 2021, the Secretary recognized that the "Nation faces a profound climate crisis," ordering the Interior Department to "prioritize[ ] action on climate change." Interior Secretarial Order 3399, *Department-Wide Approach to the Climate Crisis and Restoring Transparency and Integrity to the Decision-Making Process* (April 16, 2021).

A fundamental disconnect exists, however, between the federal government's commitment to address climate change, and how public lands are managed for energy

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https://www.blm.gov/press-release/bureau-land-management-wyoming-seeks-feedback-proposed-oil-and-gas-lease-sale.

[24] **Exhibit 14,** U.S. Dep't of State & U.S. Exec. Office of the President, The Long-Term Strategy of the United States: Pathways to Net-Zero Greenhouse Gas Emissions by 2050, at 1 (Nov. 2021), https://www.whitehouse.gov/wp-content/uploads/2021/10/US-Long-Term-Strategy.pdf.

production. A recent paper calculates that lifecycle emissions from federal fossil fuel development resulted in an average of 1,408 million metric tons (MMT) of Carbon Dioxide-equivalent (CO2e) per year since 2005—the equivalent of 377 coal-fired power plants, or the emissions from 303 million cars—and are projected to be around 1,130 MMT CO2e by 2030.[25] These emissions will amount to around 20% of total U.S. emissions each year.[26]

BLM cannot ignore national climate policy in making decisions over the proposed lease sale, or in the NEPA analysis for any such sale.

Relatedly, BLM's NEPA analysis must address the social and economic costs resulting from development of any leases it offers, and explain what benefits warrant incurring those costs. For its June 2022 Wyoming lease sale, BLM used the social cost of carbon metric to project that foreseeable development would cause billions of dollars in social and environmental harms. But BLM never explained why it chose to incur such enormous societal costs, or how its cost analysis informed the agency's decision making. For example, the environmental assessment for that sale did not discuss whether there might be any benefits from the lease sale that warrant incurring those enormous costs.

BLM cannot make the same error for its proposed Q2 '23 sale. It would be arbitrary and capricious to ignore the central question of whether any economic benefits and revenues compare to the enormous social and environmental costs of those sales. Offering numerous leases that will impose billions of dollars in social and environmental harms without addressing what (if any) countervailing benefits might warrant such a decision would be arbitrary and capricious and inconsistent with FLPMA. An action is arbitrary and capricious, *inter alia*, "if the agency has . . . failed to consider an important aspect of the problem [or] offered an explanation for its decision that runs counter to the evidence before the agency." *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 43 (1983).

D. BLM Should Defer New Leasing until New Oil and Gas Rules are Promulgated.

We also are deeply concerned that BLM is moving forward with more oil and gas leasing before releasing proposed rules to revise the agency's outdated regulations and reform the antiquated onshore program.[27] New, durable rules are long overdue and desperately needed to modernize the program and ensure that it is consistent with U.S. climate commitments. The passage of the IRA has not reduced the urgency of updating BLM's regulations—indeed, it has underscored the need to have updated regulations in place—that incorporate the IRA—before proceeding with *any* new leasing either pursuant to or independent of the IRA. Among other things, these regulations or guidance must set forth criteria for leasing supported by record evidence relevant to the IRA as described in Section I.A-B. above.

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[25] **Exhibit 15,** N. Ratledge et al., *Emissions from Fossil Fuels Produced on US Federal Lands and Waters Present Opportunities for Climate Mitigation*, 171 Climatic Change, no. 11, Mar. 14, 2022, at 2–5, https://link.springer.com/content/pdf/10.1007/s10584-021-03302-x.pdf.

[26] *Id*. at 6 fig.2.

[27] https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202204&RIN=1004-AE80

E. *WORC v. BLM* requires BLM to analyze the climate and non-climate public health effects of downstream use of oil and gas leases.

In a recent decision, the federal District Court in Montana held that BLM violated NEPA in amending the Buffalo Field Office Resource Management Plan ("RMP"). Specifically, the court held that BLM failed to take a hard look at the climate and non-climate public health impacts of downstream use of fossil fuels produced under the plans: "BLM … must disclose the public health impacts, both climate and non-climate, of burning fossil fuels from the planning areas." *WORC v. BLM*, No. 4:20-CV-00076-GF-BMM, 2022 WL 3082475, at *8 (D. Mont. Aug. 3, 2022) ("*WORC v. BLM"*). The court instructed BLM to correct the NEPA deficiencies the court identified in both the remand for the RMPs and in any future analyses supporting fossil fuel leases within the planning areas. Under the court's clear instruction to BLM, "[a]ny new or pending leases of coal, oil, or gas resources in the planning areas subject to the Buffalo RMP and the Miles City RMP must undergo comprehensive environmental analyses in compliance with this order and all existing procedural requirements under NEPA and the APA." *Id.* at *8.

As some of BLM's recently announced oil and gas leases are within the Buffalo Field Office planning area, at a minimum BLM must analyze and disclose the climate and non-climate public health impacts of downstream use of those leases. While the Montana District Court order specifically directs BLM's analysis with respect to those leases within the Buffalo Field Office, once BLM analyzes foreseeable downstream impacts for the Wyoming leases, there is no reason to expect it could not undertake the same analysis for the New Mexico lease sales. NEPA requires BLM to analyze foreseeable indirect effects, 40 C.F.R. § 1508.1(g)(2), and this provides BLM with the independent obligation analyze non-climate, public health effects of its leasing decisions for both Wyoming and New Mexico, including non-climate public health effects of foreseeable downstream end-use of fossil fuels. Several of the Conservation Groups joining this letter recently identified for BLM the myriad non-climate public health effects of fossil fuel combustion, which BLM should use as part of its analysis here.[28]

II. NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

A. Adequate NEPA Review Under Secretarial Order 3399 Is Required Prior to Offering These Leases for Sale.

On July 16, 2020, the Council of Environmental Quality (CEQ) published in the Federal Register its final rule to revise the NEPA regulations (2020 Rule), which went into effect on September 14, 2020. The 2020 Rule immediately drew five lawsuits challenging the 2020 Rule on a variety of grounds, including under the Administrative Procedures Act, NEPA, and the Endangered Species Act, contending that the 2020 Rule exceeded CEQ's authority and that the related rulemaking process was procedurally and substantively defective. *Wild Va. v. Council on Env't Quality*, No. 3:20cv45 (W.D. Va. 2020); *Envtl. Justice Health All. v. Council on Env't Quality*, No. 1:20cv06143 (S.D.N.Y. 2020); *Alaska Cmty. Action on Toxics v. Council on Env't Quality*, No. 3:20cv5199 (N.D. Cal. 2020); *California v. Council on Env't Quality*, No.

[28] **Exhibit 16,** Letter of Sierra Club, et al. to BLM on the Buffalo and Miles City NEPA Scoping Process, at 47-54 (Nov. 2, 2022).

3:20cv06057 (N.D. Cal. 2020); *Iowa Citizens for Cmty. Improvement v. Council on Env't Quality*, No 1:20cv02715 (D.D.C. 2020).

Following the inauguration of President Biden in January 2021, CEQ moved the courts to stay the litigation mentioned above, pending the new administration's review of the 2020 Rule. In response to CEQ and joint motions, the districts courts have issued temporary stays in each of the cases, except for *Wild Virginia v. Council on Environmental Quality*, which the district court dismissed without prejudice on June 21, 2021, and is currently on appeal to the U.S. Court of Appeals for the Fourth Circuit.

On April 16, 2021, the Secretary of the Interior issued Secretarial Order 3399, which directs Interior's bureaus and offices to "not apply the 2020 Rule in a manner that would change the application or level of NEPA that would have been applied to a proposed action before the 2020 Rule went into effect."[29] To the extent BLM may rely on or apply the 2020 Rule for purposes of administering this lease sale proposed for Q2 '23, we find that reliance on and application of the 2020 Rule unlawful for the reasons explained in the stayed litigation of the 2020 Rule referenced above.

Further, on April 20, 2022, CEQ finalized the first of two proposed rulemakings (the "Phase 1 Final Rule") to revise its NEPA regulations pursuant to direction set forth in Executive Order No. 14008, *Tackling the Climate Crisis at Home and Abroad* and Executive Order 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle Climate Change*. Both executive orders directed agencies to engage in a comprehensive review of regulations issued during the previous administration.[30] The Phase 1 Final Rule involved a narrow set of revisions essentially restoring long-standing regulations that were in effect prior to the promulgation of the 2020 Rule. The Phase 2 rulemaking is planned to include a more comprehensive revision to the 2020 Rule.[31]

Prior to the finalization of the Phase 2 Rule, under the plain terms of NEPA and Secretarial Order 3399, the BLM's NEPA processes for the proposed Q2 '23 Lease Sale must take place under the CEQ's pre-2020 regulations implementing NEPA as modified by its Phase 1 Final Rule. As set forth below, BLM's NEPA analysis must also include the cumulative impact analysis of GHG emissions in the 2020 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends from Coal, Oil, and Gas Exploration and Development on the Federal Mineral Estate, (hereinafter "Specialist Report").[32]

B. BLM Must Prepare an EIS to Address the Cumulative Impacts of All Lease Sales Proposed for Q2 2023.

[29] Sec. Or. No. 3399, *Department-Wide Approach to the Climate Crisis and Restoring Transparency and Integrity to the Decision-Making Process* (April 16, 2021), https://www.doi.gov/sites/doi.gov/files/elips/documents/so-3399-508_0.pdf.
[30] 87 Fed. Reg. 23453, 23455 (April 20, 2022).
[31] *Id.* at 23456.
[32] *See* **Exhibit 17,** Department of the Interior, Bureau of Land Management, 2020 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends (2020) (hereinafter "2020 BLM Specialist Report"), *available at* https://www.blm.gov/content/ghg/.

As set forth above in section I.A., the parcels proposed for sales in each state, including those explicitly commented on here,[33] are driven by the Interior Department's incorrect rationale that it the IRA mandates new oil and gas leasing. Each of the proposed lease sales here are plainly part of a larger national initiative to implement the IRA and must be analyzed as such under NEPA.

That means preparing an environmental impact statement (EIS) to address the cumulative impacts of the tens of millions of acres that may be leased both onshore and offshore. Cumulative impacts include not only those related to climate and greenhouse gases, but also wildlife habitat, water pollution, impacts to wildlife and recreation and other uses of these lands and waters, and other relevant issues. NEPA's cumulative impacts requirement mandates that BLM must evaluate impacts "result[ing] from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions." 40 C.F.R. § 1508.1(g)(3) (2022). BLM's cumulative effects analysis "must give a realistic evaluation of the total impacts and cannot isolate a proposed project, viewing it in a vacuum." *Grand Canyon Trust v. Fed. Aviation Admin.*, 290 F.3d 339, 342 (D.C. Cir. 2002); *see also Great Basin Mine Watch v. Hankins*, 456 F.3d 955, 973-74 (9th Cir. 2006) (holding agency's cumulative impacts analysis insufficient based on failure to discuss other mining projects in the region); *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1214-16 (9th Cir. 1998) (overturning Forest Service EA that analyzed impacts of only one of five concurrent logging projects in the same region); *see also Kern v. BLM*, 284 F.3d 1062, 1078 (9th Cir. 2002) (holding that BLM arbitrarily failed to include cumulative impacts analysis of reasonably foreseeable future timber sales in the same district as the current sale).

Analyzing those impacts will require an EIS. NEPA requires an agency to prepare an EIS for any major federal action that may significantly affect the quality of the human environment. 42 U.S.C. § 4332(2)(C). An agency can rely on an EA only if it makes an affirmative finding that environmental impacts will not be significant (a FONSI). If there are "substantial questions" whether leasing may have a significant effect on the environment, an EIS is required. *Anderson v. Evans*, 371 F.3d 475, 488 (9th Cir. 2004); *Ctr. for Biological Diversity v. BLM*, 937 F. Supp. 2d 1140, 1154 (N.D. Cal. 2013). Here, it would be arbitrary and capricious to conclude that leasing on such a scale will not be significant. As a result, all 45 parcels for the New Mexico/Oklahoma Q2 '23 lease sale, listed in Appendix A, require the preparation of such an EIS.

Any claim that analyzing the cumulative carbon emissions from these lease sales would be inaccurate and not useful is arbitrary. EAs for previous lease sales have provided a similar analysis of the reasonably foreseeable GHG emissions from each sale, making it entirely feasible to aggregate and assess their cumulative impacts. Even if such an estimate would be conservative, that does not excuse BLM from providing any forecast of cumulative emissions from the lease sales proposed in Q2 '23.

[33] *See* Appendix A, Parcel List.

C. BLM Must Prepare a Programmatic EIS to take a Hard Look at the Impacts of the Resumption of Federal Oil and Gas Leasing and to Avoid Any New Greenhouse Gas Pollution.

The proposed lease sale in New Mexico and Oklahoma thus is plainly part of a larger national initiative and must be analyzed as such under NEPA. There is no remaining room in the carbon budget for any new commitments of future greenhouse gas (GHG) pollution. Greenhouse gas pollution resulting only from existing federal fossil fuel development and potential development from leases and drilling permits already issued but not yet under production, would contribute to catastrophic climate change and unnecessary and undue degradation to the atmosphere and other public lands values that BLM is legally obligated to protect. Adding to this the additional burden of new leasing would only exacerbate these extreme climate impacts, BLM has yet to acknowledge this data-driven reality at a programmatic level.

BLM and Interior must therefore take a hard and comprehensive look at the cumulative climate change impacts of authorizing *any* new leasing when combined with committed emissions already under lease or permit, and immediately defer ANY sale of new leases and APD approvals pending demonstration of compatibility with U.S. and global climate goals. This is the type of analysis that BLM and Interior had the opportunity to conduct under the auspices of the comprehensive review and reconsideration of Federal oil and gas permitting and leasing practices called for by Executive Order 14008,[34] but failed to complete. The Department and BLM must do so now, along with other relevant agencies that manage fossil fuel development on federal lands and waters, including BOEM. BLM must also consider a reasonable alternative of managed decline of GHG emissions from the approximately 13.5 million acres of fossil fuel estate already under lease but not producing.[35]

The climate crisis is fundamentally an incremental problem and the contribution of individual oil and gas development actions on the part of the BLM to climate change are difficult to assess, precisely because it is rare that such actions—taken in isolation—will be truly significant at a national or global scale. This is particularly true at the level of an individual lease sale, where the projected development of mineral resources on a given lease or set of leases will reduce the remaining global and national carbon budgets by vanishingly small fractions. Yet it is this creeping normalcy that results in fossil fuel development on BLM administered lands being responsible for 14% of total U.S. GHG emissions, 1.6 % of global emissions, and nearly 20% of

[34] Executive Order 14008 of January 27, 2020, *Tackling the Climate Crisis at Home and Abroad*, Fed. Reg. Vol. 86, No. 19.

[35] *See* 2020 BLM Specialist Report at Table 4-8, Five-Year Federal Oil and Gas Statistics, recording 26.4 million acres under lease for oil and gas with nearly 13 million acres producing but note Section 1.0 – Introduction, which states that total acres under lease for oil and gas *and* coal is 26.4 million acres, of which "approximately 48%, or 13 million acres") is producing. It is therefore unclear whether these numbers represent *all* fossil-fuel development on federal lands or only oil and gas.

all emissions in the U.S. from fossil fuel production.[36] With respect to carbon dioxide, emissions from fossil fuels produced on federal lands represent a quarter of *all* CO_2 emissions in the U.S.[37]

It is precisely because of this incrementally small but collectively mammoth impact on the climate crisis that BLM must prepare a programmatic EIS for the federal oil and gas program. The "comprehensive review and reconsideration of the Federal oil and gas permitting and leasing practices" called for in Executive Order 14008 demanded no less.[38] Yet neither Interior nor BLM fulfilled the explicit mandate of Executive Order 14008. They must do before committing a single additional acre to fossil-fuel development. Such a programmatic examination would dovetail with an EIS that collectively analyzes the proposed Q2 '23 lease sales, discussed above, which collectively constitute the government's response to the fossil fuel leasing provisions of the IRA. At the outset, however, Conservation Groups stress that BLM should conduct a programmatic EIS for the entire federal oil and gas leasing program before holding another lease sale. The purpose of a programmatic EIS or other programmatic NEPA review is to:

> [A]ddress the general environmental issues relating to broad decisions, such as those establishing policies, plans, *programs*, or suite of projects, and can effectively frame the scope of subsequent site-and project-specific federal actions . . . [o]ne advantage of preparing a programmatic NEPA review *for repetitive agency activities* is that the programmatic NEPA review can provide a starting point for analyzing direct, indirect, and cumulative impacts.[39]

A programmatic approach is compelled for the following reasons: 1) the fundamentally incremental nature of the climate crisis; 2) Executive Order 14008 recognizes the small and shrinking window that remains to avoid the most catastrophic effects of climate change, a recognition that was not reflected in the Department's Report on the Federal Oil and Gas Leasing Program[40]; 3) BLM should complete the analysis it started with its issuance of the BLM Specialist Report and the Interior Report, by conducting a PEIS; and 4) the need for consistency with the pending federal coal review.

1. The Incremental Nature of Climate Change Requires a Programmatic EIS.

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[36] Department of the Interior, Bureau of Land Management, 2020 BLM Specialist Report at Section 9.1 (Representative Concentration Pathways), ("Climate change is fundamentally a cumulative phenomenon, global in scope, and all GHGs contribute incrementally to climate change regardless of scale or origin."); Section 7.1. (Emissions Comparisons), Table 7-1 (2020).

[37] **Exhibit 18**, Merrill, M.D., Sleeter, B.M., Freeman, P.A., Liu, J., Warwick, P.D., and Reed, B.C., Federal lands greenhouse gas emissions and sequestration in the United States—Estimates for 2005–14: U.S. Geological Survey Scientific Investigations Report 2018–5131, 31 (2018).

[38] **Exhibit 19**, Members of petitioner groups made this point initially in their comments submitted in response to Executive Order 14008, with the title: WELC et al Recommendations for Scope and Criteria for Review of the Federal Fossil Fuel Programs**.** (April 16, 2021).

[39] **Exhibit 20**, Memorandum for Heads of Federal Departments and Agencies, *Effective Use of Programmatic NEPA Reviews*, Counsel on Environmental Quality, December 18, 2014 (emphasis added).

[40] **Exhibit 21**, *Report on the Federal Oil and Gas Leasing Program, Prepared in Response to Executive Order 14008* (November, 2021) (Hereinafter "Interior Report") (the Report focused entirely on necessary fiscal reforms but ignored climate, in direct contravention of the language of §208 of Executive Order 14008.)

The Council on Environmental Quality (CEQ) has provided guidance on how federal agencies should address climate change in their NEPA analyses through its "Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews" (hereafter "Final Climate Guidance").[41] The Final Climate Guidance applies to all proposed federal agency actions, "including land and resource management actions." In its Final Climate Guidance, the CEQ recognizes that:

> Climate change results from the incremental addition of GHG emissions from millions of individual sources, which collectively have a large impact on a global scale. CEQ recognizes that the totality of climate change impacts is not attributable to any single action but is exacerbated by a series of actions including actions taken pursuant to decisions of the Federal Government. Therefore, a statement that emissions from a proposed Federal action represent only a small fraction of global emissions is essentially a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether or not to what extent to consider climate change impacts under NEPA. Moreover, these comparisons are also not an appropriate method for characterizing the potential impacts associated with a proposed action and its alternatives and mitigations because this approach does not reveal anything beyond the nature of the climate change challenge itself: the fact that diverse individual sources of emissions each make a relatively small addition to global atmospheric GHG concentrations that collectively have a large impact.

BLM has struggled in the past to comply with this guidance and frame the requisite "hard look" required by NEPA with regard to the climate impacts of individual oil and gas lease sales. The agency has run afoul of NEPA in the past precisely because it has been unable or unwilling to articulate the ways in which individual lease sales and subsequent site-specific decisions contribute to climate change.[42] Importantly, courts have held BLM accountable by recognizing that "the impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct." *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin*., 538 F.3d 1172, 1217 (9th Cir. 2008).

These past failings argue for a comprehensive, programmatic approach to provide context for subsequent leasing and drilling stage actions. NEPA, by its plain language, demands a

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[41] **Exhibit 22**, CEQ, Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews (Aug. 2016).

[42] *See, e.g.*, *WildEarth Guardians v. Bernhardt*, 501 F. Supp. 3d 1192, 1209 (D.N.M. 2020) (acknowledging minimal impact of local actions but questioning BLM assertion that *de minimis* site specific decision would have *no* impact on climate change); *Wildearth Guardians v. U.S. Bureau of Land Mgmt*., 457 F. Supp. 3d 880, 894 (D. Mont. 2020) (noting that "the global nature of climate change and greenhouse-gas emissions means that any single lease sale or BLM project likely will make up a negligible percent of state and nation-wide greenhouse gas emissions. Thus, if BLM ever hopes to determine the true impact of its projects on climate change, it can do so only by looking at projects in combination with each other, not simply in the context of state and nation-wide emissions."); *WildEarth Guardians v. Zinke*, 368 F. Supp. 3d 41, 69 (D.D.C. 2019) (NEPA requires BLM to quantify GHG emissions of leased parcels in the aggregate); *San Juan Citizens All. v. United States Bureau of Land Mgmt*., 326 F. Supp. 3d 1227 (D.N.M. 2018) (recognizing impact of challenged action alone may be significant only in combination with other actions).

comprehensive analysis of the impacts of the federal oil and gas leasing program—including, but not limited to the climate impacts.[43] Indeed, the 1978 regulations promulgated by the Council on Environmental Quality appear prescient in this respect; the cumulative impact and effects analyses might have been drafted as tools to help describe climate change. "Cumulative Impact" is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions." 40 C.F.R. § 1508.7. "Indirect Effects" encompass such indicia as "effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems." 40 C.F.R. § 1508.8.[44]

If these sections, combined with the fundamentally cumulative nature of climate change, do not themselves compel a programmatic EIS, they certainly provide necessary guidance for one. As previously noted, BLM has been faulted in the past for not taking into consideration the cumulative and downstream impacts of its lease sales on climate change. *E.g. San Juan Citizens All. v. United States Bureau of Land Mgmt*., 326 F. Supp. 3d 1227, 1248 (D.N.M. 2018); *Wildearth Guardians v. U.S. Bureau of Land Mgmt*., 457 F. Supp. 3d 880, 894 (D. Mont. 2020). Yet the necessarily broad scale of an adequate analysis is indubitably best done once, and at the programmatic level, allowing the agency to tier to and place its subsequent, site-specific analyses within the context of the larger framework.[45] While the BLM Specialist Report initiated this process, it has yet to be completed because BLM omitted a number of important considerations, including a meaningful analysis of fossil fuels currently committed to development under existing leases, a program-wide economic analysis of the climate costs of the oil and gas program, and a meaningful discussion about how BLM land management fits within the broader framework of global climate commitments and warming thresholds. In short, preparing a programmatic NEPA analysis will help the Agency to reduce or eliminate redundant and duplicative analyses and effectively address cumulative impacts, substantially reducing the administrative burden and economic costs to the Agency and assisting the Agency in formulating comprehensive mitigation measures that apply at the national level.

a. There Is a Small Remaining Window to Avoid the Most Catastrophic Effects of Climate Change and a Programmatic Review Is Necessary to Inform Future Action.

The science is clear: there is simply no room for continuation of a "business as usual" approach on the federal mineral estate if humanity is to have a meaningful chance of curtailing truly catastrophic warming. Global fossil fuel production must decrease by approximately 6%

[43] *See, e.g.* 42 U.S.C. § 4332(C) (requiring "a detailed statement . . . on—(i) the environmental impact of the proposed action, (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented, (iii) alternatives to the proposed action, (iv) the relationship between local short-term use of man's environment and the maintenance and enhancement of long-term productivity, and (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.").

[44] These sections illustrate the necessity of a clear declaration by BLM of which NEPA regulations were applied during the analyses for *all* sales, discussed *supra*.

[45] *See, Effective Use of Programmatic NEPA Reviews*, Exhibit 20.

per year between 2020 and 2030 if we hope to limit warming to 1.5°C.[46] Even this type of managed decline of fossil fuel production may be insufficient to achieve this goal. According to a recent study, to maintain a coin-flip chance of holding warming at °C, approximately 60% of global oil and gas must be left in the ground.[47] Even more recently, researchers at the University of Manchester's Tyndall Centre in 2022 published an analysis of phaseout pathways for coal, oil, and gas production compliant with carbon budgets for avoiding 1.5° C of warming. Their analysis finds that for developed nations, including the U.S., in order to maintain a 50% or better chance of avoiding 1.5° C of warming, "coal production needs to fall by 50% within five years and be effectively eliminated by 2030," while oil and gas production must be cut by 74% by 2030 and end by 2035.[48] To maintain a 67% chance of avoiding 1.5° C of warming, the U.S. must end oil and gas production by 2031.[49] In light of ongoing production, BLM must not lease any further parcels for development, as doing so jeopardizes meeting the 1.5° C target.[50]

Similarly, the Intergovernmental Panel on Climate Change (IPCC) recently released the first three installments of its sixth assessment report (AR6).[51] The IPCC Sixth Assessment provided the remaining carbon budget from the beginning of 2020 as 400 $GtCO_2$ for a 67% probability of meeting the 1.5°C limit and 500 $GtCO_2$ for a 50% probability of 1.5°C.[52] At current emissions levels, the world will exceed the global carbon budget for a 50% chance of limiting warming to 1.5°C in just 10 years. The Sixth Assessment Report found that net anthropogenic greenhouse gas emissions during 2010 to 2019 were higher than any previous time in human history.[53] Nationally determined contributions (NDCs) make it likely that we will exceed 1.5°C this century. Policies implemented at the end of 2020 are projected to result in higher global GHG

[46] *The Production Gap Report,* Exhibit 5.
[47] *Unextractable fossil fuels in a 1.5 °C world*, Exhibit 6.
[48] *Phaseout pathways for fossil fuel production within Paris-compliant carbon budgets*, Exhibit 7.
[49] *Phaseout Pathways*, Exhibit 7. *See also The Closing Window*, Exhibit 11.
[50] *Navigating Energy Transitions: Mapping the Road to 1.5° C*, Exhibit 12. Additional development also risks leaving stranded assets, as fields will need to be decommissioned before the end of their lifespan. *Id.*
[51] **Exhibits 23** and **24**, IPCC, 2021: Summary for Policymakers and Technical Summary. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [MassonDelmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 3−32, doi:10.1017/9781009157896.001; **Exhibit 159**, IPCC, 2022*: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926; **Exhibit 25**, IPCC, 2022: *Climate Change 2022: Impacts, Adaptation, and Vulnerability.* Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. In Press.
[52] Intergovernmental Panel on Climate Change, Summary for Policymakers In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (2021), https://www.ipcc.ch/report/sixth-assessment-report-working-group-i/ at SPM-38.
[53] IPCC, 2022: Summary for Policymakers. In: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926.001. At SPM-4.

emissions than even those implied by NDCs. Projected CO_2 emissions over the lifetime of existing and planned fossil fuel infrastructure exceed the CO_2 emissions in pathways that limit warming to 1.5°C.[54] In pathways that limit warming to 1.5°C with no or limited overshoot, global GHG emissions peak between 2020 and 2025, and then fall to 48% below 2019 level by 2030, reaching net-zero by early 2050s. Without strengthening policies beyond those at present, GHG emissions are projected to rise beyond 2025, leading to global warming of 3.2°C by 2100.[55] Reducing GHG emissions across the energy sector requires substantial reduction in overall fossil fuel use and the deployment of low-emission energy sources. The continued installation of unabated fossil fuel infrastructure will 'lock-in' GHG emissions.[56]

As UN Secretary-General António Guterres stated upon the release of the Intergovernmental Panel on Climate Change's (IPCC) latest 2022 report:

> Climate scientists warn that we are already perilously close to tipping points that could lead to cascading and irreversible climate impacts. But, high-emitting Governments and corporations are not just turning a blind eye, they are adding fuel to the flames. They are choking our planet, based on their vested interests and historic investments in fossil fuels, when cheaper, renewable solutions provide green jobs, energy security and greater price stability…. Climate activists are sometimes depicted as dangerous radicals. But, the truly dangerous radicals are the countries that are increasing the production of fossil fuels. Investing in new fossil fuels infrastructure is moral and economic madness…[57]

BLM has yet to complete either a project or program-level NEPA document that analyzes the federal oil and gas program in light of these scientific conclusions and with an eye to developing alternatives that respond to them. A programmatic NEPA review is the ideal vehicle for such an analysis. NEPA requires analysis *before* making decisions with potentially irreversible effects: "the appropriate time for preparing an EIS is *prior* to a decision, when the decisionmaker retains a maximum range of options." *Sierra Club v. Peterson*, 717 F.2d 1409, 1414 (D.C. Cir. 1983). While this is of course true at the project level, it is no less true at the programmatic level when each project comprises an incremental part of the overall impact.

The leasing process "is the point of no return with respect to emissions," and it is therefore not only appropriate but critical that the Agency take not only a hard look but a comprehensive one before crossing that threshold. *WildEarth Guardians v. Zinke*, 368 F. Supp. 3d 41, 66 (D.D.C. 2019). At this moment in time, we have very nearly reached the point of no return, not only with regard to the projected lease sales at issue here, but with regard to the ability to avert the worst impacts of climate change. President Biden recognized this in Executive Order 14008: "The United States and the world face a profound climate crisis. We have a narrow moment to pursue action at home and abroad in order to avoid the most catastrophic impacts of that crisis and to seize the opportunity that tackling climate change presents."

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[54] *Id.* at SPM-15, 16.
[55] *Id.* at SPM-21
[56] *Id. at* SPM-36.
[57] United Nations Secretary-General, António Guterres (UN Secretary-General) to the press conference launch of IPCC Report (February 28, 2022) (emphasis added), https://media.un.org/en/asset/k1x/k1xcijxjhp.

The issuance of EO 14008 and its implementing secretarial orders represents both an opportunity and a demand for comprehensive action by the Department of Interior and BLM. Neither entity has yet responded to this directive to the extent explicitly contemplated by the Executive Order, but both retain the opportunity to do so before committing public lands to additional fossil-fuel production. The "comprehensive review and reconsideration" of the federal leasing program called for in Section 208 of EO 14008 required a hard and wholistic look not only at emissions from federal fossil fuels but at how the program contributes to the climate crisis and what must be done to help the United States achieve and contribute to global climate security—not only by compliance with binding international agreements but in a way that meaningfully reduces programmatic emissions.

b. BLM Must Complete the Analysis Begun in the "2020 BLM Specialist Report."

A programmatic review is particularly critical following release of the BLM Specialist Report and Interior Report. The former constitutes—in large part—the quantification and context of federal mineral estate-associated GHG emissions courts have faulted BLM for not providing in the past. BLM must now take the logical next step, by completing the programmatic NEPA analysis it has effectively begun with the BLM Specialist Report. It must also do what it failed to do in the Interior Report – qualitatively and quantitatively discuss the climate change impacts of these emissions in the context of the federal program, leased but as yet undeveloped federal lands, as well as national and global emissions. Failure to do so will represent not only a derogation of the action called for by EO 14008, but also a lost opportunity to meaningfully evaluate the outsized role the federal oil and gas leasing program plays in the climate crisis, and to explore alternatives to reduce its impacts through the federal oil and gas program.

BLM has, with the BLM Specialist Report, fulfilled the lowest common denominator of quantifying federal emissions against the backdrop of federal laws and climate science. It must now meaningfully analyze those emissions in light of remaining national and global carbon budgets, and must apply tools such as the Social Cost of Greenhouse Gases to describe the actual economic, ecologic, and human costs of the program at national and global scales. Section 7.2 of the BLM Specialist Report briefly describes federal fossil fuel emissions in the context of various carbon budgeting mechanisms and global emissions commitments (such as under the Paris Agreement). However, more is required by NEPA, and it must be done at a programmatic level, as the quantification of GHGs in the BLM Specialist Report was done. Just as uncertainty about the effects of an individual sale or permitted development does not absolve BLM from its duty to attempt to analyze those effects,[58] uncertainty about the United States' equitable share of the remaining carbon budget, or variability in carbon budgeting methods and social cost metrics does not justify a failure to analyze meaningful ways to address climate change and the oil and gas program's contributions to it.

[58] *Wildearth Guardians v. U.S. Bureau of Land Mgmt*., 457 F. Supp. 3d 880, 894 (D. Mont. 2020) (The global nature of climate change complicates an assessment of the exact climate change impacts from the lease sales. This complication does not preclude BLM from complying with the Ninth Circuit's mandate to catalogue past, present, and reasonably foreseeable projects).

c. A Programmatic EIS for the Federal Oil and Gas Program Is Consistent with The Department's Review of the Federal Coal Leasing Program.

A final factor weighing in favor of the completion of a programmatic EIS is the Federal Coal Program Review. Originally initiated in response to Secretarial Order 3338 (January 15, 2016), the intent was to conduct a programmatic EIS and review of the federal coal program designed to address a range of concerns, including but not limited to questions as to the fair return to American taxpayers from federal coal royalties, market fluctuations and resultant impacts to coal-dependent communities, and the more fundamental question of whether the leasing and production of federal coal is consistent with the Nation's domestic and international goals to preserve a livable climate and meet international commitments to maintain global warming below certain critical thresholds, namely 1.5°C. Secretarial Order 3338 was rescinded by former Interior Secretary Ryan Zinke through Secretarial Order 3348, which also lifted the federal coal leasing pause that had been implemented by SO 3338. On August 20, 2021, the BLM issued a Federal Register notice in response to Secretarial Order 3398 (issued by Interior Secretary Deb Haaland), indicating its intent to reinstitute a federal coal program review and soliciting public comment. BLM received 214,866 comments in response to its request. The current status of the review itself is unknown.

While SO 3398 did not reinstate SO 3338 or explicitly revive the PEIS, it did reinitiate review of the federal coal leasing program. The appropriate course for both that review and the "comprehensive review and reconsideration" called for by EO 14008 is one or more programmatic NEPA processes analyzing the climate, fiscal, and taxpayer impacts of all federal fossil fuel development. Until those analyses occur, no additional fossil fuel leasing should occur. As explained above, BLM and Interior must comply with EO 14008's mandates and retain the ability to do so before committing federal lands to additional GHG emissions. They are compelled to do so by both EO 14008 and existing statutory mandates under FLPMA.

For the above-described reasons, all 45 parcels for the New Mexico/Oklahoma Q2 '23 lease sale, listed in Appendix A, should be withdrawn pending preparation of such an EIS.

D. BLM Must Consider a Range of Alternatives.

The NEPA alternatives analysis required by 42 U.S.C. § 4332(C)(iii) is "heart" of the NEPA process. 40 C.F.R. § 1502.14. For the reasons articulated below, BLM must comply with NEPA in its analysis of alternatives for the New Mexico/Oklahoma Q2 '23 lease sale.

1. BLM Must Consider a No-Leasing Alternative.

BLM must analyze a no-leasing or no action alternative to adequately inform the public and the decision maker. The impacts to GHG emissions and climate according to the no action alternatives considered must indicate the difference in estimated GHG emissions between the proposed alternatives and the no action alternatives. BLM may not argue that Federal production levels would remain static or even increase if the leases are not developed, as courts have repeatedly rejected such "perfect substitution" arguments. *See, e.g. Friends of the Earth v. Haaland*, No. CV 21-2317 (RC), 2022 WL 254526, at *12 (D.D.C. Jan. 27, 2022) (finding

argument that no action alternative would result in higher emissions arbitrary); *WildEarth Guardians v. United States Bureau of Land Mgmt.*, 870 F.3d 1222, 1238 (10th Cir. 2017) (irrational and unsupported substitution argument arbitrary).

The 2016 CEQ GHG Guidance indicates that in the alternatives analysis, agencies should compare anticipated levels of GHG emissions from each alternative, including the no-action alternative, and mitigation actions to provide information to the public and enable the decision maker to make an informed decision.[59] In addition, the analyses of the no-action alternatives implies a "perfect substitution" argument regarding GHG emissions that the Interior Department's Bureau of Ocean Energy Management recently disavowed. We again request BLM evaluate and discuss BOEM's NEPA analysis of GHG emissions from recent offshore lease sales in its NEPA analysis of the proposed Q2 '23 lease sales.[60]

As we discussed above, BLM should develop a single NEPA document analyzing all of the proposed Q2 '23 lease sales to better evaluate the cumulative GHG emissions estimated from the proposed lease sales and their impact on climate change. Likewise, the no-action alternative should evaluate and discuss the cumulative effect of not leasing any of the Q2 '23 parcels proposed for oil and gas development. This analysis should not only quantify the total GHG emissions that would be avoided as a result of not leasing but should also quantify and evaluate the co-benefits of not leasing, including the benefits of avoided air pollution, avoided water use, avoided produced water disposal, and the ability to put lands not leased to other beneficial uses.[61] The co-benefits analysis should also reflect the cumulative value of the renewable energy-generating capacity of the federal lands and mineral estate that would be preserved under the no-action alternative.

2. BLM Must Consider an Alternative That Considers Adopting a Policy of Managed Decline of Fossil Fuel Production from the Entire Federal Mineral Estate.

We request that BLM include an alternative that considers adopting a policy of managed decline of fossil fuel production from the entire federal mineral estate. Inconsistencies among BLM offices in determining the alternatives to consider would be example of the need to consider the proposed lease sales in a single impact statement rather than through individual EAs. It would also underscore the need for a programmatic review of the BLM fossil fuel program. We request BLM explain the basis for how and why it determines whether to consider proposed alternatives, and we request that BLM consider an alternative involving a policy of managed decline of fossil fuel production from the entire federal mineral estate.

3. BLM Must Consider an Alternative That Protects Groundwater.

BLM must consider alternatives that would protect usable groundwater. *See WildEarth Guardians v. U.S. Bureau of Land Mgmt.*, 457 F.Supp.3d 880, 890 (D. Mont. 2020). Specifically,

[59] 2016 CEQ GHG Guidance at 15, Exhibit 22.
[60] **Exhibit 26**, Bureau of Ocean Energy Management, Draft Environmental Impact Statement for Cook Inlet Planning Area Oil and Gas Lease Sale 258 in Cook Inlet, Alaska (October 2021) at 32-42, 45-48.
[61] 2016 CEQ GHG Guidance at 23, Exhibit 5; Interior Report at 4, 12, Exhibit 21.

BLM should consider not leasing parcels within areas where there is less than 2,000 feet of vertical separation between the oil and gas formations likely to be targeted and any groundwater aquifer with 10,000 ppm TDS or less. BLM should also analyze an alternative whereby parcels would not be leased in areas overlying usable groundwater and surface water, and an alternative that includes other measures to ensure that all usable groundwater zones are protected. This might involve pre-leasing groundwater testing and adding a lease stipulation or lease notice requiring specified casing and cementing depths. Alternatively, or additionally, BLM should consider requiring a lease stipulation or lease notice requiring the lessee to perform groundwater testing prior to drilling to identify all usable water, and consultation with the U.S. Geological Survey and other agencies to identify those waters with up to 10,000 ppm TDS.

4. BLM Must Consider an Alternative that Minimizes Methane Waste Through both Technology and Regulatory Authority.

BLM must include in their analysis an alternative that applies a stipulation that mandates the use of best available methane reduction technologies to parcels. Recent research has demonstrated that the use of ten technically proven and commercially available methane emissions reduction technologies can together capture more than 80 percent of the methane currently going to waste in the oil and gas sector's operations. *See* Harvey Report referenced above. These technologies include:

- Green Completions to capture oil and gas well emissions;
- Plunger Lift Systems or other well deliquification methods to mitigate gas well emissions;
- Tri-Ethylene Glycol (TEG) Dehydrator Emission Controls to capture emissions from dehydrators;
- Desiccant Dehydrators to capture emissions from dehydrators;
- Dry Seal Systems to reduce emissions from centrifugal compressor seals;
- Improved Compressor Maintenance to reduce emissions from reciprocating compressors;
- Low-Bleed or No-Bleed Pneumatic Controllers used to reduce emissions from control devices;
- Pipeline Maintenance and Repair to reduce emissions from pipelines;
- Vapor Recovery Units used to reduce emissions from storage tanks; and
- Leak Monitoring and Repair to control fugitive emissions from valves, flanges, seals, connections and other equipment.

In addition to these best available methane reduction technologies, BLM must also consider an alternative that implements its legal obligation to use all reasonable precautions to prevent waste, including a stipulation on leases that provides for no routine venting or flaring, similar to regulations that are already being implemented in the states of Colorado and New Mexico. Similarly, Interior's standard lease form, Form 3100-11 (October 2008) provides, in section 4, that a "[l]essee … must prevent unnecessary damage to, loss of, or waste of leased resources," and that Interior "reserves right to specify rates of development and production in the public interest …". Such an alternative must also articulate the implementation of existing methane waste policies as described in Notice to Lessees 4a (Jan. 1, 1980) ("NTL-4A), and provide guidance requiring strict compliance with, at a minimum, NTL-4a's existing measures as

well as BLM's legal authority and responsibility pursuant to the Federal Land Policy and Management Act to prevent or reduce methane emissions, independent of the agency's MLA duty to prevent waste. In addition, such an alternative could involve the following mechanisms to prevent methane waste:

- Removal of a lease parcel from proposed sale or denial of an application for permit to drill if Interior determines that methane, nitrogen oxides, or other harmful emissions are impermissible, whether because such emissions would constitute waste or impair or cause undue or unnecessary harm to non-mineral public lands resources and values, in particular but not exclusively "air and atmospheric" values.
- Controlling the timing, location, and pace of new drilling as well as the rate of production of new or existing wells to eliminate methane or other harmful emissions to align new drilling and production with midstream system capacity.
- A requirement, whether via stipulation or condition of approval, that a lessee or operator, once flowback establishes the level of gas production, connect an oil well producing associated gas to a natural gas line with sufficient capacity prior to the commencement of full production.
- A menu of drilling-stage of conditions of approval specifying known and readily available practices or technologies typically employed to reduce methane waste in accord with the MLA or methane and other harmful emissions in accord with FLPMA.

E. BLM Must Take a Hard Look at Reasonably Foreseeable Environmental Consequences.

BLM must take the requisite "hard look" at the reasonably foreseeable environmental consequences of the proposed New Mexico/Oklahoma sale.

1. The 2020 BLM Specialist Report Fails NEPA's "Hard Look" Test with Regard to Analyzing Climate Impacts of Resuming Federal Oil and Gas Leasing.

a. BLM Must Not Improperly Segment Its NEPA Analysis of The Proposed Lease Sales.

BLM may not improperly segment its decision to offer portions of the federal mineral estate for fossil fuel development. Rather than separate the environmental analysis, BLM must evaluate the proposed lease sales and their associated environmental impacts in a single NEPA analysis to reflect the connected nature of the leasing actions and the reasonably foreseeable cumulative climate impacts associated with the potential GHG emissions from authorized leases.

To assess the effects of a proposed action, BLM should account for the proposed action – including "connected" actions – subject to reasonable limits based on feasibility and practicality.[62] "Connected actions" are actions that are closely related and therefore should be

[62] 2016 CEQ GHG Guidance at 13, Exhibit 22.

discussed in the same impact statement. 40 C.F.R. 1508.25(a)(1)[63] Actions are connected if, among other circumstances, the actions are interdependent parts of a larger action and depend on the larger action for their justification. *Id.* at (a)(1)(iii). Other types of actions that should be considered in a single impact statement also include "cumulative actions," actions which when viewed with other proposed actions have cumulatively significant impacts, and "similar actions," actions which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography. *Id.* at (a)(2) and (3). Agencies should analyze similar actions in the same impact statement when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement. *Id.* at (a)(3).

Rather than segment the NEPA analysis according to individual oil and gas lease sales, the CEQ NEPA regulations regarding connected actions, cumulative actions, and similar actions suggest BLM should analyze the environmental impacts of the proposed lease sales in a single NEPA analysis. The proposed 2023 lease sales meet the definition of "connected action" because according to BLM, the agency offered the 2023 lease sales pursuant to the same overarching statutory obligation – the Inflation Reduction Act. The proposed 2023 lease sales also qualify as "cumulative actions" based on their cumulatively significant emissions of GHGs and their impacts on climate change. In addition, the proposed 2023 lease sales are properly understood as "similar actions" because the NEPA analysis and proposed sale dates are common in time and the best way to adequately assess their cumulative GHG emissions is through a single impact statement.

b. Federal Fossil Fuel Emissions Are Significant Under NEPA.

i. EPA GHG Equivalency Calculator

We request BLM contextualize the GHG emissions of this lease sale by using the EPA GHG equivalency calculator to consider the GHG emissions over the average 30-year production life of the leases. We also request BLM contextualize the cumulative GHG emissions from the federal fossil fuel program using EPA's GHG equivalency calculator.

ii. Social Cost of Greenhouse Gases

BLM must also use the social cost of greenhouse gases (SC-GHG) as another tool to assess GHG emissions and climate change effects from the proposed lease sale. The social cost of greenhouse gases provides an estimate of the monetized global damages associated with the incremental increases of GHGs. BLM must not improperly segment its NEPA analysis of the proposed lease sales by only providing the social cost of GHGs for each individual lease sale rather than a cumulative total.

[63] All citations in this document are to the 1978 CEQ Regulations unless otherwise indicated, consistent with Secretarial Order 3399, which provides: "Bureaus/Offices will not apply the 2020 Rule in a manner that would change the application or level of NEPA that would have been applied to a proposed action before the 2020 Rule went into effect on September 14, 2020." Secretarial Order 3399, Sec. 5(a).

We request BLM contextualize the cumulative GHG emissions from the federal fossil fuel program using the social cost of GHGs. The cumulative costs of the federal fossil fuel program is an important consideration for BLM to weigh, as it is many orders of magnitude greater than the already significant costs of just the proposed 2023 lease sales.

We also caution BLM in its understanding and weight of the social cost of GHG analysis. BLM must be clear that the SC-GHG is a measure of impacts to the human environment (reflected in 2020 U.S. dollars) that BLM is obligated to evaluate pursuant to NEPA regardless of whether or not BLM conducts a complete or partial cost cost-benefit analysis of the proposed lease sales.

iii. Carbon Budgeting

In addition to SC-GHG, BLM must use carbon budgeting to evaluate the impact of GHG emissions associated with BLM's onshore fossil fuel authorizations on the remaining atmospheric capacity to take on further GHG emissions without exceeding different degrees of additional warming. BLM may not improperly omit a carbon budget analysis of the United States' share of the global carbon budget, as GHG emissions from the onshore federal fossil fuel program consume a tremendous amount of the global budget – 1.47% of the budget consistent with a 66% chance of limiting warming to 1.5 C.

In addition to the tools BLM may use to contextualize and evaluate federal fossil fuel GHG emissions, we request BLM evaluate and consider the impacts of climate change that have already occurred as a result of the cumulative emissions of GHGs. BLM's NEPA analysis of GHGs and climate change tends to frame the impacts of climate change as long-term impacts, estimated to be realized at some future point in time. However, the climate has already changed as a result of anthropogenic GHG emissions and the consequences of global climate change are already being realized.

BLM's NEPA analyses of the proposed lease sales must acknowledge that anthropogenic GHG emissions over the past 60 years have resulted in impacts associated with the change in global climate. In fact, the 2020 BLM Specialist Report refers to the IPCC climate assessment report, which states: "Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentration of greenhouse gases have increased."[64] The IPCC AR5 report indicates that the globally averaged combined land and ocean surface temperature data, as calculated by a linear trend, show warming of 0.85 +/- 0.2 C over the period 1880 to 2012.[65] Warming of 0.85 C is only a little over half the warming the 1.5 C of warming the U.S. has committed to avoid and yet scientists are increasingly able to show the significant impacts of just 0.85 C of warming in terms of the intensification of wildfires, hurricanes, drought, and other weather-related phenomena.[66]

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[64] 2020 BLM Specialist Report at Section 8.3, *citing* IPCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the IPCC Fifth Assessment Report.
[65] *Id.*
[66] Every extreme-weather attribution peer-reviewed study published to date is tracked and available at Carbon Brief, *Mapped: How climate change affects extreme weather around the world*, https://www.carbonbrief.org/mapped-how-

We request BLM consider, discuss, and evaluate the climate science regarding past and present impacts from climate change to further contextualize the climate impacts from the cumulative emissions of GHGs associated with the proposed lease sales and the federal fossil fuel program.

c. BLM Has the Ability to Provide For Meaningful And Measurable Mitigation Actions In The Context of Cumulative Climate Change Resulting From Global Emissions.

BLM has both the duty and authority to address climate change programmatically and in the context of project level actions. Under FLPMA, BLM has an array of responsibilities, implicated by the impacts of climate change, that it must consider when deciding whether to approve new oil and gas lease sales, including to:

- Protect public land values including air and atmospheric, water resource, ecological, environmental, and scenic values, and to preserve and protect "certain public lands in their natural condition," and "food and habitat for fish and wildlife." 43 U.S.C. §1701(a)(8);
- Account for "the long-term needs of future generations." 43 U.S.C. § 1702(c);
- Prevent "permanent impairment of the productivity of the land and quality of the environment." 43 U.S.C. § 1702(c);
- "[T]ake any action necessary to prevent unnecessary or undue degradation of the lands." 43 U.S.C. § 1732(b), and
- Manage public lands on the basis of multiple use and sustained yield. 43 U.S.C. § 1732(a).

To carry out these responsibilities in the context of oil and gas leasing, BLM has a corresponding array of authorities to address the impacts of oil and gas leasing and development. These authorities include choosing not to lease the federal mineral estate for oil and gas development, withdrawing federal minerals from leasing; prohibiting leasing in resource management plans and through resource management plan amendments, requiring conditions of approval in new authorizations of oil and gas leases, as well as managing the rate of oil and gas production in federal leases.

To BLM's authority to choose not to lease the federal mineral estate, development of public lands is not required but must instead be weighed against other possible uses, including conservation to protect environmental values. *See, e.g.*, *New Mexico ex rel. Richardson v. BLM*, 565 F.3d 683, 710 (10th Cir. 2009) ("BLM's obligation to manage for multiple use does not mean that development *must* be allowed. . . . Development is a *possible* use, which BLM must

climate-change-affects-extreme-weather-around-the-world (last visited Nov. 29, 2021); *see also* **Exhibit 27**, Intergovernmental Panel on Climate Change, *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (2021); **Exhibit 28**, Swain, Daniel L. et al., *Attributing Extreme Events to Climate Change: A New Frontier in a Warming World*, One Earth (Jun. 2, 2020); **Exhibit 29,** Reed, Kevin A. et al., *Forecasted Attribution of the Human Influence on Hurricane Florence*, Science Advances 6 (1): eaaw9253, https://doi.org/10.1126/sciadv.aaw9253.

weigh against other possible uses—including conservation to protect environmental values, which are best assessed through the NEPA process." (emphasis in original)); *Wilderness Workshop v. BLM*, 342 F. Supp. 3d 1145, 1166 (D. Colo. 2018) ("[T]he principle of multiple use does not require BLM to prioritize development over other uses" (internal quotations and citations omitted).). As we indicated above, the court in *Louisiana v. Biden* confirmed that BLM is authorized to postpone lease sales to address NEPA and similar concerns tied to particular lease proposals. *Louisiana v. Biden*, No. 2:21-cv-778-TAD-KK at *14.

Just as BLM can deny a project outright to protect the environmental uses of public lands, it can also condition a project's approval on the commitment to mitigation measures that lessen environmental impacts. *See, e.g.*, *Pub. Lands Council v. Babbitt*, 167 F.3d 1287, 1300–01 (10th Cir. 1999) ("FLPMA unambiguously authorizes the Secretary to specify terms and conditions in livestock grazing permits in accordance with land use plans."); *Grynberg Petro*, 152 IBLA 300, 307–08 (2000) (describing how appellants challenging conditions of approval bear the burden of establishing that they are "unreasonable or not supported by the data").

BLM's authority to mitigate environmental impacts is importantly related to BLM's NEPA obligations to consider ways to avoid, minimize, and mitigate impacts in accordance with the mitigation hierarchy. 40 C.F.R. §§ 1508.8, 1502.14, 1502.16, 1508.20. Specifically, BLM must "include appropriate mitigation measures not already included in the proposed action or alternatives." *Id.* §§ 1502.14(f), 1502.16(h). Thus, based on site-specific NEPA reviews that rationally connect to FLPMA's mandates, BLM must impose constraints on new well approvals to avoid catastrophic climate change and protect and advance the public interest.[67] This includes the robust use by BLM of conditions of approval to, in sequenced priority, avoid, mitigate, or compensate for climate, public lands, or community impacts. *See* 43 U.S.C. §§ 1701(a)(8), 1702(c), 1732(b); 43 C.F.R. § 3101.1-2; *Yates Petroleum Inc*., 176 I.B.L.A. 144, 154 (2008) (upholding conditions of approval more stringent than provisions contained in the overarching resource management plan).

The Mineral Leasing Act (MLA) also authorizes BLM to reduce the rate production over a defined period of time, limiting the amount of extraction and greenhouse gas pollution that would result. The MLA authorizes the Secretary of the Interior to "alter or modify from time to time the rate of prospecting and development and the quantity and rate of production under such a plan." 30 USCA § 226(m). Likewise, nearly all BLM leases for onshore oil and gas contain a clause which states that "Lessor reserves the right to specify rates of development and production in the public interest." See U.S. Department of the Interior, Offer to Lease and Lease for Oil and Gas, Form 3100-11 (Oct. 2008). According to these authorizations, the Secretary and BLM could set a declining rate of production over time that provides for an orderly phase-out of onshore fossil fuel production.

BLM's legal duty and authority provide a variety of mitigation actions BLM could take to meaningfully and measurably to address cumulative climate change resulting from global emissions. We request BLM perform its NEPA analyses in a way that correctly reflect its legal duties and authorities.

[67] **Exhibit 30**, Bruce. M Pendery, *BLM's Retained Rights: How Requiring Environmental Protection Fulfills Oil and Gas Lease Obligations*, 40 Envtl. L. 599 (2010).

d. The 2020 BLM Specialist Report Omits Analysis of the Compatibility of New Commitments of Federal Fossil Fuels with the U.S. Goal of Avoiding 1.5°C Warming.

The 2020 BLM Specialist Report does not analyze whether the estimated GHG emissions associated with the proposed lease sales and the cumulative GHG emissions from the federal fossil fuel program are compatible with the U.S. goal of avoiding 1.5 C of warming. The United States is a signatory to the United Nations' Paris Agreement, which seeks to keep global temperatures within 2 C of the pre-industrial climate, and preferably within 1.5 C. Among other pledges and commitments, the United States has pledged to reduce its emissions by filing an intended nationally determined contribution with the United Nations to reduce net GHG emissions by 17 percent below 2005 levels by 2020, and by 26-28 percent by 2025. BLM's NEPA analyses must analyze the compatibility of cumulative federal fossil fuel program emissions with the United States' commitments to avoid 1.5 C of warming. Other federal agencies including the Bureau of Ocean Energy Management having conducted this type of analysis in the context of reviewing other federal projects pursuant to NEPA.[68] We request BLM conduct this analysis as well.

e. The 2020 BLM Specialist Report Omits Analysis of the Global and National Over-Commitment of Fossil Fuels Relative to Global Carbon Budgets Necessary to Avoid 1.5°C Warming.

BLM's must analyze and evaluate the estimated GHG emissions from the lease sales and cumulative GHG emissions within the context of the widening production gap. The production gap is the difference between global fossil fuel production projected by governments and fossil fuel production consistent with the 1.5 C-warming pathway and other pathways. In 2019, the Stockholm Environment Institute (SEI) released a report on the production gap with grave findings that the world's projected fossil fuel production was seriously out of sync with the level of fossil fuel production consistent with limiting warming to 1.5 C.[69] The subsequent 2020 *Production Gap Report* warned that:

> the world must decrease fossil fuel production by roughly 6% per year between 2020 and 2030 to limit warming to 1.5°C, but fossil fuel producers are planning and projecting an average annual increase of 2%, which by 2030 would result in more than double the production consistent with the 1.5°C limit.[70]

[68] **Exhibit 31**, Bureau of Ocean Energy Management, Outer Continental Shelf Oil and Gas Leasing Program: 2017-2022, Final Programmatic Environmental Statement, Volume I (Nov. 2016) at 4-8 to 4-10.
[69] **Exhibit 32**, Stockholm Environment Institute, *The Production Gap: The Discrepancy Between Countries' Planned Fossil Fuel Production and Global Production Levels Consistent with Limiting Warming to 1.5°C or 2.0°C* (2019), https://www.sei.org/publications/the-production-gap-report/.
[70] *See,* SEI, IISD, ODI, E3G, and UNEP. (2021). The Production Gap Report: 2020 Special Report, http://productiongap.org/2020report, Exhibit 5.

Last year the United Nations, in collaboration with SEI and other academic institutions, issued the first comprehensive update to the 2019 production gap analysis.[71] The 2021 UN Production Gap Report raises more alarm that despite the most recent IPCC findings that the world is running out of time to limit long-term global warming to 1.5°C that the world's governments continue to plan to produce more than double the amount of fossil fuels in 2030 than would be consistent with a 1.5°C-warming pathway. The report's main findings include:

- In spite of net-zero emission targets, countries have not explicitly recognized or planned for the rapid reduction in fossil fuel production that these targets require;

- Global fossil fuel production must start declining immediately and steeply to be consistent with limiting long-term warming to 1.5°C;

- Governments' production plans and projections would lead to around 240% more coal, 57% more oil, and 71% more gas than would be consistent with limiting global warming to 1.5°C;

- Projections from the US Energy Information Administration show US oil and gas production increasing to 17% and 12% above 2019 levels by 2030, respectively.[72]

We request BLM consider the production gap reports discussed above, which indicate an imperative to rapidly transition away from fossil fuels using supply side policies.

f. The 2020 BLM Specialist Report Fails to Adequately Quantify and Assess All Related Past, Present, and Reasonably Foreseeable GHG Emissions.

The BLM must properly complete a cumulative impacts analysis of the proposed lease sales, including an assessment of the cumulative impact of greenhouse gas emissions from the federal fossil fuel program. 40 C.F.R. §§ 1502.14, 1508.7; *Center for Biological Diversity v. National Highway Traffic Admin.*, 538 F.3d 1172, 1215 (9th Cir. 2008). BLM must analyze greenhouse gas emissions from any and all federal, state, and private fossil fuel leasing and development projects. As we discussed above, BLM may not improperly segment its NEPA analysis of the proposed lease sales and must more effectively conduct an analysis of the cumulative impacts of fossil fuel leasing and development in the context of a programmatic review of the federal fossil fuel program. Should BLM choose to carry on without a programmatic review, it must still comprehensively analyze cumulative GHG emissions pursuant to its statutory obligations under NEPA. The applicable CEQ NEPA regulations define "cumulative impacts" as:

> the impact on the environment which results from the incremental impact the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes

[71] **Exhibit 33**, SEI, IISD, ODI, E3G, and UNEP. (2021). The Production Gap Report 2021, http://productiongap.org/2021report.
[72] *See id*, 2021 Production Gap Report, Exhibit 33.

such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

40 C.F.R. § 1508.7 (2005).

i. GHG Emissions from Federal Offshore Oil and Gas Leasing.

BLM must assess the cumulative greenhouse gas emissions from recent and reasonably foreseeable federal offshore oil and gas lease sales. Recent and reasonably foreseeable federal offshore oil and gas lease sales, whose GHG emissions and the cumulative impacts must be assessed include:

Recent and Pending Federal Offshore Oil and Gas Lease Sales[73]

Year	Sale Number	Area
2021	257	Gulf of Mexico
2021	259	Gulf of Mexico
2022	258	Cook Inlet
2022	261	Gulf of Mexico

The U.S. Bureau of Ocean Energy Management produced a Programmatic Environmental Impact Statement, analyzing the estimated GHG emissions that would potentially be produced if the 2017-2022 Outer Continental Shelf (OCS) Oil and Gas Leasing Program were implemented. The four offshore oil and gas lease sales identified above are among the lease sales studied in the PEIS for the 2017-2022 OCS Oil and Gas Leasing Program. That PEIS estimated that if the 2017-2022 OCS program were implemented, the estimated future lifecycle GHG emissions from that program would be 7,886,680,000 metric tons of CO_{2e}:[74]

Table 4.2-3. Estimated Future Lifecycle GHG Emissions from the Proposed Action in Thousands of Metric Tons of CO_2e

Program Area	Proposed Action (Low-Price Scenario)	No Action Alternative (Low-Price Scenario)	Proposed Action (High-Price Scenario)	No Action Alternative (High-Price Scenario)
Beaufort Sea	120	0	1,985,070	2,019,670
Chukchi Sea	20	0	1,943,310	2,043,210
Cook Inlet	39,480	40,620	156,820	240,930
GOM	1,245,920	1,258,110	3,801,480	3,719,880
Total	**1,285,540**	**1,298,730**	**7,886,680**	**8,020,550**

Source: Wolvovsky and Anderson 2016
Key: CO_2e = carbon dioxide equivalent

[73] *See* Bureau of Ocean Energy Management, Oil and Gas Lease Sales 2017-2022, available at https://www.boem.gov/oil-gas-energy/lease-sales.
[74] Bureau of Ocean Energy Management, Outer Continental Shelf Oil and Gas Leasing Program: 2017-2022, Final Programmatic Environmental Statement, Volume I (Nov. 2016) at 4-8, Exhibit 31.

ii. GHG Emissions from Federal Fossil Fuel Projects.

BLM must also assess the cumulative greenhouse gas emissions from recent and reasonably foreseeable federal fossil fuel lease sales and similar federal actions, as required by NEPA. *WildEarth Guardians v. Zinke*, 368 F. Supp. 3d 41, 63 (D.D.C. 2019). Examples of pending coal lease applications that, if authorized, would contribute to GHG emissions include:

Applicant	**Mine Name**	**Application Date**	**Application Tonnage**	**Application Acreage**
Coteau Properties Co.[75]	Freedom Mine	May 17, 2019	19.2 M tons	1,119.89 acres
Falkirk Mining Co.[76]	Falkirk Mine	January 28, 2021	11.96 M tons	800 acres
Spring Creek Coal, LLC[77]	Spring Creek Mine	July 3, 2017	170.2 M tons	1,262.57 acres
Spring Creek Coal, LLC[78]	Spring Creek Mine	May 11, 2016	7.9 M tons	150 acres
UtahAmerican Energy, Inc.[79]	Not provided	December 13, 2017	1.34 M tons	317.84 acres
UtahAmerican Energy, Inc.[80]	Not provided	December 13, 2017	7.55 M tons	954.80 acres
Canyon Fuel Co., LLC[81]	Not provided	July 10, 2019	3.3 M tons	120 acres
UtahAmerican Energy, Inc.[82]	Not provided	March 1, 2002	Not provided	4,192 acres
Bronco Utah Reserves, Inc.[83]	Not provided	March 28, 2018	Not provided	2,956 acres
Antelope Coal LLC[84]	Antelope Mine	August 20, 2015	441 M tons	3,508 acres

iii. GHG Emissions from Non-Federal Oil and Gas Leasing.

BLM must also assess cumulative greenhouse gas emissions from recent and reasonably foreseeable non-federal oil and gas leasing and development projects. For example, just this year 10 states have held 36 lease sales, selling tens of thousands of acres for oil and gas development.[85]

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[75] **Exhibit 34**, Coteau Properties Co. Leasing Application, Freedom Mine (May 17, 2019).
[76] **Exhibit 35**, Falkirk Mining Company Leasing Application, Falkirk Mine (Amended: January 28, 2021).
[77] **Exhibit 36**, Spring Creek Coal, LLC Leasing Application, Spring Creek Mine (Modified: July 3, 2017).
[78] **Exhibit 37**, Spring Creek Coal, LLC Leasing Application, Spring Creek Mine (Modified: May 11, 2016).
[79] **Exhibit 25**, UtahAmerican Energy, Inc. Leasing Application, UTU-014218 (December 13, 2017).
[80] **Exhibit 38,** UtahAmerican Energy, Inc. Leasing Application, UTU-0126947 (December 13, 2017).
[81] **Exhibit 39**, Canyon Fuel Company LLC, Leasing Application (July 10, 2019).
[82] **Exhibit 40**, UtahAmerican Energy, Inc., Leasing Application, UTU-80043 (March 1, 2002).
[83] **Exhibit 41**, Bronco Utah Reserves, Inc., Leasing Application (March 28, 2018).
[84] **Exhibit 42**, Antelope Coal LLC, Leasing Application, Antelope Mine (August 20, 2015).
[85] Past state oil and gas lease sale data available at https://www.energynet.com/page/Government_Sales_Results.

g. Emission Comparisons must meet NEPA's "Hard Look" Standard.

BLM must properly frame and weigh the context and intensity factors for assessing the significance of reasonably foreseeable GHG emissions from the proposed lease sales and their cumulative climate impacts. As all GHGs contribute incrementally to the climate change phenomenon, BLM may not compare the estimated emissions associated with the proposed actions to the total global, national, state, and other categories of GHG emissions to support its finding that the GHG emissions from the proposed actions are insignificant. Any such attempt to minimize the estimated GHG emissions from the proposed actions in this way is precisely how the 2016 CEQ GHG Guidance directed federal agencies *not* to limit assessments of the significance of GHG emissions.[86] This method of analysis doesn't reveal anything beyond the nature of the climate change challenge itself.[87]

Moreover, BLM's analysis of GHG emissions from the proposed lease sales in comparison with global, national, state, and other categories of emissions must be complete and must inform the public and decision maker of comparisons that would more effectively reveal the context and intensity of the reasonably foreseeable GHG emissions. GHGs have a long atmospheric lifetime, which allows them to become well mixed and uniformly distributed over the entirety of the Earth's surface, no matter their point of origin. Accordingly, why not compare the potential GHG emissions from one proposed lease sale with another past or present federal (or non-federal) fossil fuel action or project? Why not compare the potential emissions to different individual sources of GHG emissions, such as a gas-fired power plant? A dairy operation? A landfill?

BLM must explain the basis for any decision to limit its GHG emission comparisons to the global, national, and state levels, even though the examples of other comparisons mentioned above would provide valuable context and intensity information to the public and the decision maker. We request BLM include a more comprehensive comparison of the estimated GHG emissions associated with the lease sales proposed in 2023 and the cumulative GHG emissions from the federal fossil fuel program to other emissions source, including but not limited to other individual federal and non-federal fossil fuel leases, individual coal-fired and natural gas electric generating facilities, and individual concentrated animal feeding operations (CAFOs).

h. BLM's Analysis of Cumulative GHG Emissions in the 2020 BLM Specialist Report Fails NEPA's "Hard Look" Standard.

BLM must clearly and properly assess the significance of the cumulative impacts of the potential emissions of GHGs from the Q2 '23 lease sales and their impact on climate change. Although the 2020 BLM Specialist Report provided a discussion of cumulative GHG emissions from the BLM fossil fuel leasing program and future climate change impacts, the 2020 BLM Specialist Report failed to analyze these cumulative impacts using the SC-GHG and failed to assess carbon budgets according to historic

[86] 2016 CEQ GHG Guidance at 10-11, Exhibit 22.
[87] *Id*., Exhibit 22.

GHG contribution and equitable apportionment. BLM chose not to conduct an analysis of the monetized net harm to society associated with the cumulative increases in GHG emissions in the 2020 BLM Specialist Report. We request BLM conduct a social cost analysis of the cumulative GHG emissions attributable to federal fossil fuel development and production in accordance with the Interim Estimates of the Social Cost of Carbon, Methane, and Nitrous Oxide.[88] This analysis must include the monetized net harm to society of reasonably foreseeable emissions according to the increasing social cost of greenhouse gases, which reflects the expectation that the net harm to society will increase as the impacts of climate change accumulate over time.

BLM's 2020 BLM Specialist Report must also further contextualize its carbon budget analysis by evaluating carbon budgets according to the United States' historic contributions. It is well-documented that the United States is the world's largest historic contributor of GHG emissions and, thus, bears a greater global responsibility to more quickly reduce the quantity of its GHG emissions.[89] The 2020 BLM Specialist Report attempts to cast doubt on the utility of assessing GHG emissions according to carbon budgets, stating: "Carbon budgets have not yet been established on a national or subnational scale, primarily due to the lack of consensus on how to allocate the global budget to each nation, and as such the global budgets that limit warming to 1.5°C or 2.0°C are not useful for BLM decisionmaking as it is unclear what portion of the budget applies to emissions occurring in the United States."[90] However, uncertainty in other contexts of GHG and climate change analysis has not prevented BLM from using averages, estimates, and models to address uncertainty and provide the public and decision makers helpful information.[91] As such, BLM should consult the best scientific reports and data available to determine a representative carbon budget that reasonably applies to emissions in the United States, given its historic contributions.[92] The carbon budget analysis in the 2020 BLM Specialist Report, as currently drafted, is misleading because it inappropriately compares GHG emissions from the BLM federal fossil fuel program to the remaining global carbon budget. To the public or a decision maker, this analysis minimizes the GHG emissions from the BLM federal fossil fuel program and implies the emissions are insignificant to the global carbon budget, comparatively.

i. BLM Must Take a Hard Look at Methane Emissions and Waste.

[88] **Exhibit 44**, U.S. Government Interagency Working Group on Social Cost of Greenhouse Gases, Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990 (February 2021).
[89] Evans, Simon, *Analysis: Which countries are historically responsible for climate change?* Carbon Brief, https://www.carbonbrief.org/analysis-which-countries-are-historically-responsible-for-climate-change (last visited Nov. 29, 2021).
[90] 2020 BLM Specialist Report at Section 7.2, Exhibit 17.
[91] *See, e.g.,* 2020 BLM Specialist Report, Exhibit 17, at Section 3.4 (estimating global warming potentials), Section 4.0 (using various methods and assumptions to estimate emission factors for coal, oil, and gas and short- and long-term fossil fuel emissions projections), Sections 6.2-6.4 (projecting global and U.S. emissions).
[92] *See, e.g.,* **Exhibit 45**, Van den Berg, Nicole et al., *Implications of various effort-sharing approaches for national carbon budgets and emission pathways*, Climatic Change 162: 1805-1822 (2020), https://link.springer.com/article/10.1007%2Fs10584-019-02368-y; **Exhibit 46,** Dooley, Kate et al., *Ethical choices behind quantifications of fair contributions under the Paris Agreement*, Nature Climate Change 11: 300-305 (2021), available at https://www.nature.com/articles/s41558-021-01015-8.

BLM must take a hard look at the impacts of methane, preferably in both a programmatic NEPA review, and an aggregated EIS for the Q2' 23 sales as discussed above. Methane is an incredibly potent greenhouse gas. Methane has contributed to approximately 30% of the global rise in temperatures to date. [93] Because of methane's potent short-term warming characteristics, curbing methane emissions is one of the most effective near-term ways to address the climate crisis. Methane emissions from fossil fuel operations represent nearly one-third of human-caused emissions.[94] These emissions represent both a major climate threat and also an opportunity. Slowing and ultimately halting fossil fuel demand will not by itself achieve needed GHG cuts, particularly in the near-term. This means that curbing wasteful methane emissions from oil and gas production are an essential element of reducing climate-warming emissions.[95]

In 2019, oil and gas operators vented or flared approximately 150 billion cubic feet of methane, resulting in the loss of over $50 million in federal royalty revenue. This is enough natural gas to meet the needs of 2.1 million households, which is nearly as many households as the states of New Mexico, North Dakota, Utah and Wyoming combined. BLM is required to must take a hard look at direct, indirect, and cumulative methane emissions in accordance with NEPA. This includes Interior's duty to quantify methane emissions and, on that basis, to assess impacts and a range of reasonable alternatives and mitigation measures to cut those emissions. BLM must also consider the other environmental impacts of this wasted resource, including the public health and welfare impacts of flaring.[96]

While Conservation Groups understand that BLM is currently undertaking rulemaking on methane waste, and this is necessary regulatory action, BLM *must* adequately address the impacts of methane waste from these sales both individually and collectively, and identify pathways to mitigate both the emission of methane and those impacts.

2. BLM Must Take a Hard Look at Impacts to Human Health.

BLM must include an analysis of reasonably foreseeable direct, indirect, and cumulative human health impacts resulting from oil and gas leasing and development. 40 C.F.R. § 1508.1(g). Protecting public health is fundamental to NEPA's underlying purpose. NEPA was enacted in part to "stimulate the health and welfare of man," 42 U.S.C § 4321, and mandates that agencies consider the degree to which their proposed actions affect public health or safety. 40 C.F.R § 1501.3(b)(2)(iii). NEPA requires federal agencies "to use all practicable means, consistent with other essential considerations of national policy" to "assure for all Americans safe, healthful, productive and aesthetically and culturally pleasing surroundings." 42 U.S.C 4331(b). "Effects" that agencies must analyze include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic,

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[93] **Exhibit 47**, IEA (2021) Michaels, K.C., de Oliveira, Tomás, *Curtailing Methane Emissions from Fossil Fuel Operations, Pathways to a 75% cut by 2030*, International Energy Agency,
[94] *Id.*
[95] *Id.*
[96] EDF, Flaring Aerial Survey Results (2021), *available at* https://www.permianmap.org/flaring-emissions/; *see also* **Exhibit 48**, Gvakharia et al., *Methane, Black Carbon, and Ethane Emissions from Natural Gas Flares in the Bakken Shale,North Dakota*, Environmental Science & Technology 5317, 5317 (2017); **Exhibit 49,** Cushing et al., *Up in Smoke: Characterizing the Population Exposed to Flaring From Unconventional Oil and Gas Development in the Contiguous U.S.*, 16 Environmental Research Letters 1, 1 (2021).

historic, cultural, economic, social, or *health*, whether direct, indirect, or cumulative." 40 C.F.R § 1508.1(g)(4) (emphasis added). In addition, NEPA's use of the term "human environment" expressed Congressional intent that NEPA should promote public policy attentive to the inexorable link between human well-being and environmental integrity.[97]

To protect public health and promote informed agency decision-making, transparency, and public participation, NEPA imposes "action-forcing procedures … requir[ing] that agencies take a hard look at environmental consequences." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989). Such consequences include all "reasonably foreseeable" direct, indirect, and cumulative effects, including health effects. *See, e.g., Middle Rio Grande Conserv. Dist. v. Norton*, 294 F.3d 1220, 1229 (10th Cir. 2002). An effect is "reasonably foreseeable" if it is "sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision." *Sierra Club v. Marsh,* 976 F.2d 763, 767 (1st Cir.1992). An agency's hard look "must be taken objectively and in good faith, not as an exercise in form over substance, and not as a subterfuge designed to rationalize a decision already made." *Forest Guardians v. U.S. Fish & Wildlife Serv.,* 611 F.3d 692, 712 (10th Cir. 2010).

Courts have recognized BLM's obligation to take a hard look at health impacts in its NEPA analyses at the oil and gas leasing stage. *See Wilderness Workshop v. Bureau of Land Mgmt.*, 342 F. Supp. 3d 1145 (D. Colo. 2018). In *Wilderness Workshop*, the court reasoned that it was premature to consider health effects at the planning stage, but, "in the context of oil and gas leasing, the site-specific impacts occur in the later stages of leasing and development," and therefore, health impacts should be considered at those stages. *Id.* at 1163 (citing *Pennaco Energy v. U.S. Dep't of Interior*, 377 F. 3d 1147, 1151-1152 (10th Cir. 2004)).

BLM must analyze several important issues related to health and safety risks and impacts—whether direct, indirect, or cumulative. NEPA and its implementing regulations require BLM to not just list generalized categories of risks, but rather analyze and take a hard look at those risks and their *effects*. *See* 40 C.F.R. § 1508.1(g). "General statements about 'possible' effects and 'some risk' do not constitute a 'hard look' absent a justification regarding why more definitive information could not be provided." *Kern v. Unites States BLM*, 284 F.3d 1062, 1075 (9th Cir. 2002). BLM cannot defer NEPA's requisite hard look at health impacts to the APD stage. The intent of NEPA is for agencies to study the impact of their actions on the environment—here, leasing—*before* the action is taken. *See Conner v. Burford,* 848 F.2d 1441, 1452 (9th Cir. 1988) (NEPA requires that agencies prepare an EIS before there is "any irreversible and irretrievable commitment of resources")*; see also Upper Pecos Ass'n v. Stans*, 500 F.2d 17 (10th Cir. 1974) (concluding that "consideration of environmental factors should come in the early stages of program and project formulation").

[97] **Exhibit 50**, Rajiv Bhatia and Aaron Wernham, *Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice*, 116 ENVIRONMENTAL HEALTH PERSPECTIVES 991 (Apr. 16, 2008) (Noting that "the statutory and procedural requirements of EIA provide a powerful and underutilized mechanism to institutionalize a holistic, cross-sectoral approach to addressing health in public policy" and describing the then-emerging and now well-established practice of health impact assessment as a "catalyst" for integrating health considerations into environmental assessments under NEPA and its state analogs).

a. Overview of Human Health Impacts and Sources of Peer-Reviewed Literature Related to Proximity to Oil and Gas Development.

An extensive and ever-growing body of peer-reviewed research has shown what people living near oil and gas operations already know firsthand—that proximity to drilling and fracking operations and other oil and gas facilities is linked to adverse health risks and impacts. These risks and impacts are discussed in further detail throughout this section, and in the numerous accompanying exhibits, but in general, they include (but are not limited to):

- Reproductive harms – including birth defects, low birth weight, preterm births, and miscarriages;
- Respiratory health effects – including asthma, lung disease, breathing difficulty, and, most recently, increased vulnerability to COVID-19;
- Eye, skin, and throat irritation and rashes;
- Cardiovascular effects – including higher blood pressure and other indicators of, or precursors to, heart disease;
- Possible disruption of the endocrine system (a system of glands producing hormones that regulate a variety of functions in the body, including metabolism, growth and development, reproduction, sleep, and mood);
- Cancer (lung cancer and other types of cancer);
- Motor vehicle injuries and fatalities, and other health and safety risks associated with increased vehicle traffic (and the air pollutants it emits) from oil and gas development;
- Injuries and fatalities from explosions, fires, spills, and leaks; and
- Trauma and psychological stress.

One excellent, frequently updated, and easy-to-use resource for keeping up with this growing body of peer-reviewed research is the Physicians, Scientists, and Engineers for Healthy Energy ("PSE Healthy Energy") database, the Repository for Oil and Gas Energy Research, or "ROGER."[98] ROGER is an extensive repository of peer-reviewed literature, "a near-exhaustive collection of bibliographic information, abstracts, and links to many of [sic] journal articles that pertain to shale and tight gas development."[99] This database is organized into several categories, and for the "Health" category alone, there are over 260 studies listed, including several recent studies from 2019-2022. BLM should avail itself of this invaluable resource in order to take NEPA's requisite hard look at health impacts.

There are several other notable scientific papers BLM should consider in order to analyze and disclose to the public the health risks and impacts associated with its leasing decisions.[100]

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[98] *See* Physicians, Scientists, and Engineers for Healthy Energy ("PSE Healthy Energy"), "The ROGER Citation Database," https://www.psehealthyenergy.org/our-work/shale-gas-research-library/ (last visited November 4, 2022).
[99] *Id.*
[100] *See, e.g.,* **Exhibit 51**, R.Z. Witter, et al*., Occupational exposures in the oil and gas extraction industry: state of the science and research recommendations*, AMERICAN JOURNAL OF INDUSTRIAL MEDICINE (2014); **Exhibit 52**, Jessica Gilman, et al., *Source signature of volatile organic compounds (VOCs) from oil and natural gas operations in northeastern Colorado*, ENVIRONMENTAL SCIENCE & TECHNOLOGY (2013); **Exhibit 53**, Roxana Z. Witter, et al., *The Use of Health Impact Assessment for a Community Undergoing Natural Gas Development,* FRAMING HEALTH MATTERS (2013); **Exhibit 54**, Nadia Steinzor, et al., *Investigating links between shale gas development and health impacts through a community survey project in Pennsylvania*, NEW SOLUTIONS, vol. 23 iss. 1. (2013); **Exhibit 55**,

Multiple peer-reviewed papers have identified adverse health effects and risks arising from exposure to unconventional oil and gas drilling operations, even within a large radius of residences—potentially up to ten miles.[101] For example, one study found that babies whose mothers lived in close proximity to multiple oil and gas wells were 30% more likely to be born with heart defects than babies born to mothers who did not live close to oil and gas wells.[102] Other adverse health impacts documented among residents living near drilling and fracking operations include increased reproductive harms, asthma attacks, higher rates of hospitalization, ambulance runs, emergency room visits, self-reported respiratory problems and rashes, motor vehicle fatalities, trauma, and drug abuse. Moreover, one recent study found that fracking and drilling near people's homes "drives stress experiences that go beyond the mere presence of industrial land uses in neighborhoods," and identified

> two key institutional barriers driving negative mental health impacts for people living near UOG [unconventional oil and gas] production – namely: 1) uncertainty, due to inaccessible, transparent information about environmental and public health risks and 2) powerlessness to meaningfully impact regulatory or zoning processes.[103]

John L. Adgate, et al., *Potential Public Health Hazards, Exposures and Health Effects from Unconventional Natural Gas Development*, ENVIRONMENTAL SCIENCE & TECHNOLOGY (2014); **Exhibit 56**, Christopher W. Moore, et al., *Air Impacts of Increased Natural Gas Acquisition, Processing, and Use: A Critical Review*, ENVIRONMENTAL SCIENCE & TECHNOLOGY (2014); **Exhibit 57**, Avner Vengosh, et al., *The effects of shale gas exploration and hydraulic fracturing on the quality of water resources in the United States*, PROCEDIA EARTH AND PLANETARY SCIENCE (2014); **Exhibit 58**, Christopher D. Kassotis, et al., Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and Ground Water in a Drilling-Dense Region, ENDOCRINOLOGY (2014); **Exhibit 59**, Brian E. Fontenot, et al., *An Evaluation of Water Quality in Private Drinking Water Wells Near Natural Gas Extraction Sites in the Barnett Shale Formation*, ENVIRONMENTAL SCIENCE & TECHNOLOGY (2013); **Exhibit 60**, Sherilyn A. Gross, et al., *Analysis of BTEX Groundwater Concentrations from Surface Spills Associated with Hydraulic Fracturing Operations*, JOURNAL OF THE AIR & WASTE MANAGEMENT ASSOCIATION (2013); **Exhibit 61**, K.D. Retzer, *et al., Motor vehicle fatalities among oil and gas extraction workers,* ACCIDENT ANALYSIS & PREVENTION (2013); **Exhibit 62,** Gayathri Vaidyanathan, *Fracking Can Contaminate Drinking Water*, Climate Wire (April 4, 2016), available at: https://www.scientificamerican.com/article/fracking-can-contaminate-drinking-water/; **Exhibit 63**, A. Tustin, et al., *Associations Between Unconventional Natural Gas Development and Nasal and Sinus, Migraine Headache, and Fatigue Symptoms in Pennsylvania,* ENVIRONMENTAL HEALTH PERSPECTIVES (July 31, 2016), available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5289909/.

[101] *See, e.g.,* **Exhibit 64**, Lisa M. McKenzie *et al.*, *Birth Outcomes and Maternal Resident Proximity to Natural Gas Development in Rural Colorado*, 122 ENVIRONMENTAL HEALTH PERSPECTIVES 412 (April 2014) [Hereinafter McKenzie et al., *Birth Outcomes*) (Finding an increased risk of congenital heart and neural tube defects in babies born to mothers living within 10 miles of a natural gas well); **Exhibit 65,**, Janet Currie *et al., Hydraulic Fracturing and Infant Health: New Evidence from Pennsylvania*, 3 SCIENCE ADVANCES e1603021(Dec. 13, 2017) (Finding evidence of negative health effects of in utero exposure to fracking sites within 3 km, or about 1.86 miles, of a mother's residence, with the largest health impacts seen within 1 km, or about 0.62 miles); **Exhibit 66**, Ellen Webb *et al., Potential Hazards of Air Pollutant Emission from Unconventional Oil and Natural Gas Operations on the Respiratory Health of Children and Infants*, 31 REV. ENVIRONMENTAL HEALTH 225-243 (Jun. 1, 2016), at 236 [hereinafter Webb et al.] (Noting that many unconventional oil and gas setback rules, for setbacks of 1000 feet or less, do not adequately protect health, especially children's respiratory health, that "the majority of municipal setback ordinances are not supported by empirical data," and calling for a one-mile minimum for setbacks between drilling facilities and schools, hospitals, and occupied dwellings).

[102] *See* McKenzie *et al.*, *Birth Outcomes*, *supra* Exhibit 64.

[103] *See* **Exhibit 67**, Stephanie A. Malin, *Depressed democracy, environmental injustice: Exploring the negative mental health implications of unconventional oil and gas production in the United States*, 70 Energy Research & Social Science, 101720 at 2 (2020).

In turn, "these institutional barriers make UOG production a chronic stressor – which can be more insidious, negative, and, significantly, can generate longer- term mental health impacts such as self-reported depression."[104]

A 2022 review of literature on health impacts of fracking by Physicians for Social Responsibility ("PSR") concluded that:

> In sum, the vast body of scientific studies now published on hydraulic fracturing in the peer-reviewed scientific literature confirms that the climate and public health risks from fracking are real and the range of environmental harms wide. **Our examination uncovered no evidence that fracking can be practiced in a manner that does not threaten human health directly or without imperiling climate stability upon which human health depends.**
>
> The rapidly expanding body of evidence compiled here is massive, troubling, and cries out for decisive action. Across a wide range of parameters, the data continue to reveal a plethora of recurring problems that cannot be sufficiently averted through regulatory frameworks. The risks and harms of fracking are inherent in its operation. The only method of mitigating its grave threats to public health and the climate is a complete and comprehensive ban on fracking. Indeed, a fracking phase-out is a requirement of any meaningful plan to prevent catastrophic climate change.[105]

"No Surface Occupancy" (NSO) stipulations could be implemented within a certain distance of residences, schools, or other occupied areas that might mitigate some of these effects, but they do not eliminate BLM's obligation to take a hard look at health effects at the leasing stage, as NEPA requires. Stipulations and notices are used to comply with FLPMA and the MLA, and are not a substitute for a NEPA analysis. *See, e.g.,* 43 C.F.R. § 3101.1-3; 43 U.S.C. § 1732(a). Moreover, most existing oil and gas setbacks or NSO stipulations (typically < 1000 feet) are likely inadequate to protect people and communities against health and safety risks and adverse effects. At minimum, some health experts have called for a one-mile minimum distance between drilling facilities and schools, hospitals, and occupied dwellings, in light of the heightened health risks of residing within close proximity to unconventional oil and gas drilling sites.[106] Many others call for setbacks of even greater distances. One study found adverse health impacts at distances of six miles.[107] Another study found increased risk of congenital heart and neural tube defects in babies born to mothers living within 10 miles of natural gas wells.[108] Even larger setbacks may not protect against certain health hazards, especially for people already

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[104] *Id*.
[105] **Exhibit 68,** Physicians for Social Responsibility and Concerned Health Professionals of NY, Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking, 8th Edition (2022). [Hereinafter PSR 2022]. *See also* **Exhibit 69**, Physicians for Social Responsibility and Concerned Health Professionals of NY, Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking, 7th Edition (2020). [Hereinafter PSR 2020].
[106] *See* Webb *et al*., *supra* Exhibit 66.
[107] **Exhibit 70**, Kathy V. Tran et al., Residential Proximity to Oil and Gas Development and Birth Outcomes in California: A Retrospective *Cohort Study of 2006–2015 Births*, 128 Environmental Health Perspectives , 067001 (2020)
[108] Mckenzie et al., *Birth Outcomes*, *supra*, Exhibit 64.

facing disproportionate health risks due to cumulative social, structural, and environmental factors, or for children and the elderly. For example, a 2016 study and Health Impact Assessment ("HIA") in Maryland's Marcellus Shale Basin found that, even with a setback of 2000 feet from residential property as a "mitigating factor," Air Quality was a fracking-related hazard of High concern for its potential negative health impacts after taking into account additional evaluation criteria, such as presence of vulnerable populations, duration and frequency of exposure, and likelihood and severity/magnitude of health effects.[109] BLM must take a hard look at the adverse health risks and effects associated with proximity to oil and gas activity and facilities and disclose them to the public.

b. Cumulative Health Risks and Impacts to Social and Structural Factors Affecting Health.

BLM must take a hard look not only at direct health impacts and proximity-related health impacts of oil and gas development, but also at cumulative health risks and impacts. *See* 40 C.F.R. § 1508.1(g)(3). Cumulative health risks and impacts can arise not only from multiple pollutant exposures, and cumulative pollution exposures over time, but also from compounding structural, social, and economic factors, many of which are rooted in systemic inequities and injustices. Researchers have begun to apply a growing body of evidence documenting how social and environmental stressors lead to health inequities and cumulative impacts[110] specifically in

[109] *See, e.g.*, **Exhibit 71**, *Meleah* D. Boyle et al., Hazard Ranking Methodology for Assessing Health Impacts of Unconventional Natural Gas Development and Production: The Maryland Case Study, 11 PLOS ONE e0145368 (Jan. 4, 2016) [Hereinafter Boyle et al.](Assigning setback effectiveness a "positive" value of 1 if it is anticipated to minimize health effects, and a "negative" value of 2 if it is not anticipated to minimize health effects, in evaluating the "hazard rankings" for a variety of unconventional natural gas drilling impacts. Notably, there is no "zero" value by which setbacks eliminate health risks or health effects. And, for effects related to water quality, seismic activity, social determinants of health, healthcare infrastructure, cumulative exposures/risks, and occupational health and safety, the authors determined that, at least in that study area (Marcellus Shale in Maryland), setbacks were not anticipated to minimize or mitigate health risks at all. *See* Table 3).

[110] *See, e.g.,* **Exhibit 72**, Rachel Morello-Frosch et al., *Understanding the Cumulative Impacts of Inequalities in Environmental Health: Implications for Policy*, 30 HEALTH AFFAIRS 879 (May 2011) (Identifying four key concepts underlying the emerging knowledge about cumulative impacts of environmental and social stressors: "First, health disparities between groups of different racial or ethnic makeup or socioeconomic status are significant and persistent, and exist for diseases that are linked to social and environmental factors. Second, inequalities in exposures to environmental hazards are also significant and persistent, and are linked to adverse health outcomes. Third, intrinsic biological and physiological factors—for example, age—can modify the effects of environmental factors and contribute to differences in the frequency and severity of environmentally related disease. And fourth, extrinsic social vulnerability factors at the individual and community levels—such as race, sex, and socioeconomic status—may amplify the adverse effects of environmental hazards and can contribute to health disparities."). In addition, the U.S. EPA and numerous states have called for, and developed guidance on, cumulative impact analyses, including cumulative risk assessments and health impact assessments (HIAs), that analyze multiple environmental stressors in conjunction with social stressors, environmental justice considerations, and social determinants of health. *See, e.g.*, **Exhibit 73**, U.S. ENVIRONMENTAL PROTECTION AGENCY, FRAMEWORK FOR CUMULATIVE RISK ASSESSMENT (May), *Available at* https://www.epa.gov/sites/production/files/2014-11/documents/frmwrk_cum_risk_assmnt.pdf; **Exhibit 74**, MINNESOTA POLLUTION CONTROL AGENCY, CUMULATIVE IMPACT ANALYSIS *Available at* https://www.pca.state.mn.us/air/cumulative-impact-analysis (Noting that "People's health is affected by many outside factors including multiple sources of pollution and other social conditions and stressors. Some people and communities are burdened by higher levels of pollution and more social stressors than others."; **Exhibit 74**, CUMULATIVE IMPACTS SUBCOMMITTEE, ENVIRONMENTAL JUSTICE ADVISORY COUNCIL TO THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION, STRATEGIES FOR ADDRESSING CUMULATIVE IMPACTS IN ENVIRONMENTAL JUSTICE COMMUNITIES (March 2009), *Available at*

the oil and gas drilling context.[111] For example, the aforementioned 2016 Marcellus Shale study and Health Impact Assessment ("HIA") ranked "social determinants of health," (in this study, social determinants included crime, injuries, mental health, sexually transmitted infections, and substance abuse) as a fracking-related hazard of the highest concern with respect to public health impacts, along with air quality and health care infrastructure.[112] Cumulative risks, too, were considered their own category of fracking-related public health hazard, and ranked as a "moderately high" concern (along with water quality, noise, and traffic).[113]

In general, the research indicates that the potential cumulative effects of social and environmental stressors and "social determinants of health" in the context of oil and natural gas activity are as follows: (1) they can increase the *risk or magnitude of exposure* and the *number and/or severity of adverse health impacts* of oil and gas drilling (e.g. pollution sources are often located closer to "environmental justice" communities; underlying health conditions can increase vulnerability to pollution-related health impacts; and pollution-related risks and impacts can exacerbate existing health, social, and economic stressors and vice versa); and (2) they can present obstacles to diagnosing, managing, treating, and mitigating adverse health impacts (e.g. lack of access to health care providers makes it more difficult to manage asthma). BLM must take a hard look at the reasonably foreseeable cumulative health impacts of its actions, including cumulative impacts as they relate to social and structural factors—often referred to as social determinants of health—and environmental justice. These "social determinants" can include both positive and negative factors. Most broadly, "social determinants of health" that BLM should consider are:

> conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks. Conditions (e.g., social, economic, and physical) in these various environments and settings (e.g., school, church, workplace, and neighborhood) have been referred to as 'place.' In addition to the more material attributes of 'place,' the patterns of social engagement and sense of security and well-being are also affected by where people live. Resources that enhance quality of life can have a significant influence on population health outcomes. Examples of these resources include safe and affordable housing, access to education, public safety, availability of healthy foods, local emergency/health services, and environments free of life-threatening toxins.[114]

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https://www.nj.gov/dep/ej/docs/ejac_impacts_report200903.pdf (Identifying adverse cumulative impacts of exposures to multiple environmental burdens in "environmental justice" communities as one of "the most critical and pertinent Environmental Justice issues requiring state action and attention").

[111] *See, e.g.,* **Exhibit 76**, Susan Kinnear et al., *The Need to Measure and Manage the Cumulative Impacts of Resource Development on Public Health: An Australian Perspective* (May 15, 2013), Available at https://www.intechopen.com/books/current-topics-in-public-health/the-need-to-measure-and-manage-the-cumulative-impacts-of-resource-development-on-public-health-an-au (https://www.intechopen.com/books/current-topics-in-public-health/the-need-to-measure-and-manage-the-cumulative-impacts-of-resource-development-on-public-health-an-au; *See also* **Exhibit 77**, Jill Johnston & Lara Cushing, *Chemical Exposures, Health, and Environmental Justice in Communities Living on the Fenceline of Industry*, 7 Current Environmental Health Reports, 48-57 (2020).

[112] Boyle et al., Exhibit 71.

[113] Boyle et al., Exhibit 71.

[114] Office of Disease Prevention and Health Promotion, *Healthy People 2020: Social Determinants of Health*, *Available at* https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health.

Moreover, the CEQ guidance on environmental justice in the NEPA process specifically directs agencies to incorporate relevant underlying health data, and what amounts to social determinants of health, into their NEPA analyses, and to use this data to identify cumulative risks and reasonably foreseeable cumulative effects.[115] It emphasizes the importance of using public health data to identify "the potential for multiple or cumulative exposure to human health or environmental hazards in the affected population and historical patterns of exposure to environmental hazards, to the extent such information is reasonably available…"[116] and notes that "[a]gencies should consider these multiple, or cumulative effects, even if certain effects are not within the control or subject to the discretion of the agency proposing the action."[117] It also embraces a broad, socio-ecological model of health that is consistent with the language and purpose of NEPA. An additional guiding principle is that "[a]gencies should recognize the interrelated cultural, social, occupational, historical, or economic factors that may amplify the natural and physical environmental effects of the proposed agency action. These factors should include the physical sensitivity of the community or population to particular impacts; the effect of any disruption of the community structure associated with the proposed action; and the nature and degree of impact on the physical and social structure of the community."[118]

BLM's full analysis and disclosure of health and safety risks and impacts, including cumulative impacts, is particularly important given that typical methods of collecting and analyzing emissions data have often underestimated health risks by failing to adequately measure the intensity, frequency, and duration of community exposure to toxic chemicals from fracking and drilling; failing to examine the effects of chemical mixtures; and failing to consider vulnerable populations.[119] Of high concern, numerous studies highlight that health assessments of drilling and fracking emissions often fail to consider impacts on vulnerable populations including environmental justice communities[120] and children.[121] For example, a recent analysis of oil and gas development in California found that 14 percent of the state's population totaling 5.4 million people live within a mile of at least one oil and gas well. More than a third of these residents, totaling 1.8 million people, also live in areas most burdened by environmental pollution.[122]

The existing health status and pollution burdens experienced by individuals and populations in the lease sale areas, and the disproportionate health risks they face in light of social determinants of health and environmental justice concerns, are precisely the kinds of

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[115] **Exhibit 78**, Council on Environmental Quality, ENVIRONMENTAL JUSTICE: GUIDANCE UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT (December 10, 1997) at 9 [Hereinafter CEQ EJ and NEPA Guidance].
[116] *Id.*, Exhibit 78.
[117] *Id*., Exhibit 78.
[118] *Id*., Exhibit 78.
[119] **Exhibit 79**, Brown, David et al., *Understanding Exposure From Natural Gas Drilling Puts Current Air Standards to the Test.* 29 REVIEWS ON ENVIRONMENTAL HEALTH 277 (2014).
[120] **Exhibit 80**, NRDC [Natural Resources Defense Council], Drilling in California: Who's At Risk?, October 2014 ("NRDC 2014"); **Exhibit 81**, Clough, Emily & Derek Bell, *Just Fracking: A Distributive Environmental Justice Analysis of Unconventional Gas Development in Pennsylvania, USA*, 11 Environmental Research Letters 025001 (2016); **Exhibit 82**, McKenzie, Lisa M. et al., *Population Size, Growth, and Environmental Justice Near Oil and Gas Wells in Colorado*, 50 ENVIRONMENTAL SCIENCE & TECHNOLOGY 11471 (2016).
[121] Webb, Ellen et al., Exhibit 66..
[122] NRDC 2014, Exhibit 80.

"incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions" that NEPA requires BLM to analyze here. 40 C.F.R. § 1508.1(g)(3). BLM cannot simply dismiss the "incremental" addition of wells from a particular lease sale (or the "incremental" increase in air pollution from those wells) as insignificant merely because they constitute a small "percent increase" *compared to* state, regional/basin-wide, or national well counts or emissions. This misses the entire point of NEPA's requisite cumulative impacts analysis—it is not to determine what *fraction* of regional, state, or national wells and emissions the wells and emissions from a particular lease sale make up. Quite the opposite—rather than breaking emissions from an individual lease sale down into annual fractions or "component parts" in attempt to dismiss them as insignificant, BLM must analyze *additive* short *and* long-term emissions *and their direct, indirect, and cumulative health effects* from these lease sales—the impacts which result "from the incremental impact of the action when *added* to past, present, and reasonably foreseeable future actions" (and impacts). 40 C.F.R. § 1508.1(g)(3).

In addition, BLM must not summarily dismiss health and safety *impacts* as temporary simply because some *exposures* (e.g., to emissions and fugitive dust from construction) are temporary. It is arbitrary, and contrary to scientific understanding, to assume that just because an exposure is temporary, so too are the effects resulting from that exposure. The health effects that can arise from environmental exposures, especially in conjunction with social determinants of health and environmental justice issues, may endure long after the acute exposure source is gone.[123]

BLM also cannot dismiss health impacts as "temporary," and thus avoid taking a hard look at cumulative health impacts, by simply stating that wells will be properly plugged and reclaimed "at the end of their useful lives," and thus cease to cause unspecified "aggregate" health risks and impacts at that time. For one, a well's "useful life" can span decades. BLM must analyze cumulative emissions and their impacts over the full life course of a well, in conjunction with other wells in the lease sale area *and* other past, present, and reasonably foreseeable future actions and emissions. Moreover, information from several states, and nationally, indicates that wells often are *not* properly plugged and reclaimed at the end of their "useful lives." For example, while it is sometimes difficult to obtain an exact count of "orphaned" or improperly plugged and abandoned wells, reports indicate that there are hundreds, even thousands, of such wells across private, state, and federal lands in New Mexico alone,[124] and in nearby Western states such as Colorado and Wyoming.[125] These wells can leach toxic chemicals and contaminate water supplies, posing direct and cumulative health risks to nearby communities.[126] State and BLM bonding requirements are usually insufficient to meet the costs associated with plugging

[123] *See, e..g.,* Morello-Frosch et al, Exhibit 72; Some specific examples include birth defects arising from prenatal exposures, enduring cognitive difficulties arising from prenatal or early childhood exposures, or asthma that develops in childhood, affects school attendance (and health outcomes related to it), and endures into adulthood.
[124] *See, e.g.,* **Exhibit 83**, Adrian Hedden, *State Agencies Grapple With Abandoned Oil Wells,* Carlsbad Current-Argus, Feb. 9, 2018, *Available at* https://www.currentargus.com/story/news/local/2018/02/09/unplugged-state-agencies-grapple-abandoned-oil-wells/324990002/.
[125] *See, e.g.,* **Exhibit 84**, Joshua Zaffos, *'Orphaned' Oil and Gas Wells are on the Rise."* High Country News, Jan. 16, 2018. *Available at* https://www.hcn.org/issues/50.3/energy-industry-orphaned-oil-and-gas-wells-are-on-the-rise.
[126] *Id*. Exhibit 84.

and abandoning these wells, retiring other equipment, and cleaning up the well sites. Thus, idle or orphaned wells and abandoned well sites pose not only health risks and impacts, but also financial ones,[127] which can further compound existing health impacts, including cumulative impacts, and related health inequities.[128]

c. Health and Environmental Justice.

BLM must also take a hard look at the inexorable relationship between health and environmental justice. Executive Order 12898 ("EO 12898") on environmental justice requires each federal agency to make the achievement of "environmental justice part of its mission by identifying *and addressing*, as appropriate, disproportionately high and adverse *human health* or environmental effects of its programs, policies, and activities on minority populations and low-income populations."[129] EO 12898, Section 1-101 (emphasis added). BLM could not analyze, let alone take NEPA's requisite hard look at, environmental justice impacts without analyzing health and safety impacts, particularly cumulative and disproportionate risks and impacts.

As noted above, the CEQ guidance on environmental justice in the NEPA process specifically directs agencies to incorporate relevant underlying health data, and social and structural factors, into their NEPA analyses, and to use this data to identify cumulative risks and reasonably foreseeable cumulative effects.[130] An environmental justice "analysis" must contain more than a textbook citation to Executive Order 12898, or tables listing demographic data and identifying the general existence of "environmental justice" populations of concern in the lease sale area, with no discussion of actual risks and impacts to those populations. Merely providing a textbook citation to the requirements of Executive Order 12898, and *listing* environmental justice populations in the lease sale area, without engaging in any further analysis or public disclosure of the *impacts* of its leasing decisions on these populations, is arbitrary and capricious and fails to satisfy NEPA's hard look mandate. *Standing Rock Sioux Tribe v. U.S. Army Corps of Engineers*, 255 F. Supp. 3d 101, 140 (D.D.C. 2017), is instructive here. In this case, concerning the Dakota Access Pipeline (DAPL), the court looked to the CEQ Guidance on Environmental Justice in the NEPA processes and ruled that it was not enough for the Army Corps EA merely to acknowledge that the Standing Rock community had a high percentage of "minorities" and "low-income individuals," and could be affected by an oil spill. The court noted that the EA was silent on "the distinct cultural practices of the Tribe and the social and economic factors that might amplify its experience of the environmental effects of an oil spill" and that in order to meet its NEPA "hard look" obligations, the Army Corps "needed to offer more than a bare-bones conclusion that Standing Rock would not be disproportionately harmed." *Standing Rock Soiux Tribe, 255 F. Supp. 3d at 140; see also Friends of Buckingham v. State Air Pollution Control Board*, 947 F.3d 68, 92 (4th Cir. 2020) (finding that the agency's failure to consider

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[127] *Id.* Exhibit 84; *See also* **Exhibit 85** U.S. Gov't Accountability Office, Oil and Gas Wells: Bureau of Land Management Needs to Improve its Data and Oversight of Its Potential Liabilities 1, GAO-18-250 (May 2018), available at: https://www.gao.gov/assets/700/691810.pdf; **Exhibit 86**, U.S. Gov't Accountability Office, Bureau of Land Management Should Address Risks from Insufficient Bonds to Reclaim Wells, GAO-19-615 (Sept. 2019).
[128] PSR 2020, Exhibit 69.
[129] Executive Order 12898, 59 Fed. Reg. 7629 (Feb. 11, 1994) Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations, *available at* https://www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf.
[130] CEQ EJ and NEPA Guidance, Exhibit 78.

disproportionate impacts on those closest to a Compressor Station resulted in a "flawed analysis."). "In sum, NEPA requires more. BLM cannot discount the localized impacts to people for whom the public health impacts are of clear significance." *California v. Bernhardt*, 472 F. Supp. 3d 573, 622 (N.D. Cal. 2020) (citing *Anderson v. Evans*, 371 F.3d 475, 490 (9th Cir. 2004)).

The inequities at which BLM must take a hard look in an environmental justice analysis are not incidental, nor are they biologically determined—they are structural, systemic, and part of an unjust historical and ongoing pattern and practice of environmental racism, settler colonialism, and treatment of communities in the leasing areas as energy sacrifice zones. And, as discussed throughout these comments, there are several other health risks and impacts BLM should also analyze in the context of health and environmental justice, particularly in light of social and structural factors that affect health. BLM must engage in a thorough analysis of these and other inequities that NEPA requires, apply this analysis to its decision-making, and articulate a "rational connection between the facts found and the choices made" in coming to its ultimate conclusions in light of that analysis. *Motor Vehicle Mfr. Ass'n v. State Farm Mut. Auto. Ins. Co*., 463 U.S. 29, 43, 52 (1983). In conducting this analysis, BLM can and should synthesize existing local health, socioeconomic, and other data in the lease sale areas—for example, county health statistics and reports, locally-conducted health impact assessments,[131] where available, or mapping of pollution exposure risks and demographic data through tools like U.S. EPA's "EJ Screen"[132]—and the best available science, including but not limited to the peer-reviewed studies and sources mentioned in these comments.

Moreover, BLM's own September 2022 Instruction Memorandum 2022-059, "Environmental Justice Implementation,"[133] mandates environmental justice analyses in BLM's NEPA reviews. This Instruction Memorandum, the accompanying FAQ/guide to Addressing Environmental Justice in NEPA Documents, and the numerous tools and resources listed therein, should —indeed, must—help guide BLM's environmental justice analysis, and its analysis of any disproportionate, adverse, or cumulative health impacts, for these lease sales.

d. Air Pollution and Health Impacts.

Air pollution is of particular concern with respect to health impacts of these lease sales, including not only direct impacts, but also cumulative risks and impacts and historical patterns of multiple and cumulative exposures The potential harms resulting from exposure to dangerous air pollutants associated with fracking and drilling are serious and wide-ranging. A growing body of

[131] Health Impact Assessment, or HIA, is a process that helps evaluate the potential health effects of a plan, project, or policy before it is built or implemented. HIA brings potential positive and negative public health impacts and considerations to the decision-making process for plans, projects, and policies that fall outside traditional public health arenas, such as transportation and land use. An HIA provides practical recommendations to increase positive health effects and minimize negative health effects." Centers for Disease Control and Prevention (CDC), "Health Impact Assessment" (Sept. 19, 2016), https://www.cdc.gov/healthyplaces/hia.htm.

[132] *See https://www.epa.gov/ejscreen.*

[133] U.S. Bureau of Land Management, IM 2022-059, "Environmental Justice Implementation" (September 20, 2022, *Available at* https://www.blm.gov/policy/im2022-059; *See also* **Exhibit 87**, Bureau of Land Management, 2022. Addressing Environmental Justice in NEPA Documents: Frequently Asked Questions. U.S. Department of the Interior, Bureau of Land Management, Socioeconomics Program, Washington, D.C.

scientific research has documented adverse health impacts from air pollution related to unconventional oil and gas development or fracking, including studies showing air pollutants at levels associated with reproductive and developmental harms and increased risk of morbidity and mortality.[134] More broadly, a recent study found that if implemented, nationwide efforts to eliminate energy-related emissions, including from oil and gas production could prevent as many as 53,200 premature deaths each year and would provide $608 billion in benefits from avoided $PM_{2.5}$-related illness and death.[135]

A comprehensive review of the risks and harms of fracking to human health came to several key findings, including: (1) "drilling and fracking contribute to toxic air pollution and smog (ground-level ozone) at levels known to have health impacts," (2) "public health problems associated with drilling and fracking include poor birth outcomes, reproductive and respiratory impacts, cancer risks, and occupational health and safety problems"; and (3) "fracking infrastructure poses serious potential exposure risks to those living near it."[136]

The range of illnesses that can result from the wide array of air pollutants from fracking were summarized in a study by Dr. Theo Colburn, which charts which fracking chemicals have been linked to certain illnesses.[137] This study analyzed air samples taken during drilling operations near natural gas wells and residential areas in Garfield County, Colorado, and detected 57 chemicals between July 2010 and October 2011, including 44 with reported health effects.[138] For example:

> Thirty-five chemicals were found to affect the brain/nervous system, 33 the liver/metabolism, and 30 the endocrine system, which includes reproductive and developmental effects. The categories with the next highest numbers of effects were the immune system (28), cardiovascular/blood (27), and the sensory and respiratory systems (25 each). Eight chemicals had health effects in all 12 categories. There were also several chemicals for which no health effect data could be found.[139]

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[134] **Exhibit 88**, Hays, Jake & Seth B.C. Shonkoff , *Towards an Understanding of the Environmental and Public Health Impacts of Unconventional Natural Gas Development: A Categorical Assessment of the Peer-Reviewed Scientific Literature*, 11 PLoS ONE e0154164 (2016); **Exhibit 89**, Webb, Ellen et al*., Developmental and reproductive effects of chemicals associated with unconventional oil and natural gas operations*, 29 REV ENVIRON HEALTH 307 (2014); **Exhibit 90**, Clean Air Task Force, Fossil Fumes: A Public Health Analysis of Toxic Air Pollution From the Oil and Gas Industry, June 2016, *available at* http://www.catf.us/resources/publications/files/FossilFumes.pdf.

[135] **Exhibit 91**, Mailloux, N. A., Abel, D. W., Holloway, T., & Patz, J. A. (2022). Nationwide and regional PM2.5-related air quality health benefits from the removal of energyrelated emissions in the United States. GeoHealth, 6, e2022GH000603. https:// doi.org/10.1029/2022GH000603. ($PM_{2.5}$ is fine particulate matter that results from a number of energy production activities, including oil and gas. This study also looked at the benefits of removal of sulfur dioxide, and nitrogen oxides, pollutants often released with $PM_{2.5}$, including from the oil and gas sector.

[136] PSR 2020, Exhibit 69.

[137] **Exhibit 92**, Theo Colborn et al., *An exploratory study of air quality near natural gas operations*, HUM. ECOL. RISK ASSESS (Nov. 9, 2012) [Hereinafter Colborn 2012].

[138] Colborn 2012 at pp. 21-22 (pages refer to page numbers in attached manuscript and not journal pages), Exhibit 92.

[139] Colborn 2012 at 11, Exhibit, Exhibit 92.

The study found extremely high levels of methylene chloride, which may be used as cleaning solvents to remove waxy paraffin that is commonly deposited by raw natural gas in the region. These deposits solidify at ambient temperatures and build up on equipment.[140] While none of the detected chemicals exceeded governmental safety thresholds of exposure, the study noted that such thresholds are typically based on "exposure of a grown man encountering relatively high concentrations of a chemical over a brief time period, for example, during occupational exposure."[141] Consequently, such thresholds may not apply to individuals experiencing "chronic, sporadic, low-level exposure," including sensitive populations such as children, the elderly, and pregnant women.[142] For example, the study detected polycyclic aromatic hydrocarbon (PAH) levels that could be of "clinical significance," as recent studies have linked low levels of exposure to lower mental development in children who were prenatally exposed.[143] In addition, government safety standards do not take into account "the kinds of effects found from low-level exposure to endocrine-disrupting chemicals…, which can be particularly harmful during prenatal development and childhood.[144]

A rigorous study by Johns Hopkins University, which examined 35,000 medical records of people with asthma in Pennsylvania, found that people who live near a higher number of, or larger, active gas wells were 1.5 to 4 times more likely to suffer from asthma attacks than those living farther away, with the closest groups having the highest risk.[145] Relatedly, a 2018 study of pediatric asthma-related hospitalizations found that children and adolescents exposed to newly spudded unconventional natural gas development wells within their zip code had 1.25 times the odds of experiencing an asthma-related hospitalization compared to children who did not live in these communities. Furthermore, children and adolescents living in a zip code with any current or previous drilling activity had 1.19 times the odds of experiencing an asthma-related hospitalization compared to children who did not live in these communities. Amongst children and adolescents (ages 2-18), children between 2 and 6 years of age had the greatest odds of hospitalization in both scenarios.[146]

BLM should analyze these asthma-related effects in relation to existing asthma rates and related impacts in the communities adjacent to and counties encompassing the proposed lease sales. For example, Eddy County and Chaves County, New Mexico, within the analysis area for the Pecos District Office, have the highest adult asthma emergency department visit crude rates in the state, more than double the state average.[147] Eddy County also has the second highest crude rate of child asthma emergency department visits in New Mexico (a very close second),

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[140] Exhibit 92 at 10.
[141] Exhibit 92 at 11-12
[142] Exhibit 92 at. 12.
[143] Exhibit 92 at 10-11.
[144] Exhibit 92 at 12.
[145] **Exhibit 93**, Rasmussen, Sara G. et al., *Association Between Unconventional Natural Gas Development in the Marcellus Shale and Asthma Exacerbations,* 176 JAMA INTERNAL MEDICINE 1334 (2016)
[146] **Exhibit 94**, Willis, Mary D. et al., *Unconventional natural gas development and pediatric asthma hospitalizations in Pennsylvania,* 166 ENVIRONMENTAL RESEARCH 402 (2018)
[147] Based on most recent available, 2014-2016 data on NM Dept. of Health IBIS Database. For Eddy County 2014-2016: 69.5/10k population. For Chaves County, 69/10k population. For NM overall 2014-2016: 31.2. *See* **Exhibit 160**, New Mexico Department of Health, *Health Indicator Report of Asthma Emergency Department Visits Among Adults* (Last Visited November 18, 2021). *Available at* https://ibis.health.state.nm.us/indicator/view/AsthmaEDAdult.Cnty.html.

and Lea County the third highest. The rate in Eddy County is well over twice the state average (150.1 per 10,000 population vs. a state average of 62.7 per 10,000 population).[148] And air pollution-related asthma, in particular, can exert profound and widespread cumulative health effects throughout a person's life course, especially when combined with social determinants of health. For example, children with asthma are much more likely to miss school, hurting their educational prospects as well as their health (with some adverse health effects enduring into adulthood), and resulting in significant funding losses for local schools.[149] As the New Mexico Department of Health has noted,[150] and nationwide studies confirm,[151] "low-income" populations and "environmental justice" populations face not only disproportionate asthma risks, but also significant difficulty managing their asthma, in part due to lack of access to health care.

Ozone is a criteria pollutant of particular concern in the region that contributes to asthma and missed school days (and one that can, in general, adversely affect health, especially for "sensitive groups" such as children, the elderly, and those with pre-existing health issues). In New Mexico, over 12,000 children suffer asthma attacks annually due to oil and gas ozone smog.[152] Smog is also responsible for almost 9,000 missed school days in New Mexico.[153] And Eddy County New Mexico, specifically, received a failing grade of "F" from the American Lung Association (ALA) for high ozone days (based on data collected from 2018-2020.[154] In the ALA's State of the Air 2022 report, Eddy County, NM is ranked among the 25 worst counties in the United States for ozone and particle pollution.[155] Background concentrations of ozone in some of the lease sale areas are already at or exceed the National Ambient Air Quality Standards ("NAAQS"), leaving virtually no room for growth in emissions. Several studies that measured and/or modeled gas-related air emissions in various states have identified significant increases in ground level ozone as a result of natural gas development.[156] Ozone was once a summertime urban phenomenon but is now being seen increasingly in western rural areas during the winter due

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[148] *See* **Exhibit 95**, New Mexico Department of Health, *Health Indicator Report of Asthma Emergency Department Visits Among Children* (Last Visited November 18, 2021). *Available at* https://ibis.health.state.nm.us/indicator/complete_profile/AsthmaEDChild.html.
[149] *See* **Exhibit 96**, Attendance Works, *Mapping the Early Attendance Gap* (2017). *Available at* http://www.attendanceworks.org/wp-content/uploads/2017/05/Mapping-the-Early-Attendance-Gap_Final-4.pdf.
[150] **Exhibit 97**, New Mexico Dept. of Health*, The Burden of Asthma in New Mexico: 2014 Epidemiology Report* (Jan. 2014), at 41. Available at https://nmhealth.org/data/view/environment/54/.
[151] *See, e.g.,* **Exhibit 98**, Tim Kelley and Gregory D. Kearney, *Insights Into the Environmental Health Burden of Childhood Asthma*, 12 ENVIRONMENTAL HEALTH INSIGHTS doi: 10.1177/1178630218757445 (Feb. 20, 2018).
[152] Oil and Gas Threat Map (2018). New Mexico. *Available at* http://oilandgasthreatmap.com/threat-map/new-mexico/ ; Western Environmental Law Center, *Reducing Oil and Gas Exploitation in the San Juan Basin. Available at* https://westernlaw.org/safeguarding-climate/reforming-oil-gas-operations/reducing-oil-and-gas-exploitation-in-the-san-juan-basin/.
[153] *Id.*
[154] **Exhibit 161,** American Lung Association, *State of the Air 2022* at 113, https://www.lung.org/getmedia/74b3d3d3-88d1-4335-95d8-c4e47d0282c1/sota-2022 [Hereinafter ALA, *State of the Air 2022*]; *See also* **Exhibit 162**, American Lung Association, *State of the Air 2020* at 123, http://www.stateoftheair.org/assets/SOTA-2020.pdf.
[155] ALA, *State of the Air 2022* at 19, Exhibit 161.
[156] *See, e.g.,* **Exhibit 99**, Seth Lyman and Howard Shorthill, *Final Report: 2012 Uintah Basin Winter Ozone & Air Quality Study*, UTAH STATE UNIVERSITY, February 1, 2013.

to the natural gas boom, so much so that some relatively small cities are no longer in compliance with the federal regulations that set allowable ozone levels.[157]

Ozone can cause difficulty breathing, coughing and sore throat. It can also inflame and damage the airways. It aggravates lung diseases like asthma, emphysema, and chronic bronchitis. It can make the lungs more susceptible to infection and it can continue to damage the lungs even when the symptoms have disappeared.[158] Children are particularly vulnerable because their lungs are still developing until about age 18.[159] As their lungs grow in the presence of ozone, their alveoli production is reduced, and they can end up with smaller, more brittle lungs. Women exposed during pregnancy deliver preterm, low birth weight babies with a high probability of developing asthma. In a letter to former EPA Administrator Lisa Jackson, a group of five national medical and public health groups wrote that the most vulnerable individuals, including children, teens, senior citizens, people who exercise or work outdoors, and people with chronic lung diseases like asthma, COPD, and emphysema, are most in danger of being sickened by ozone and that children who grow up in areas of high ozone pollution may never develop their full lung capacity as adults, which can put them at greater risk of lung disease throughout their lives.[160]

In addition, oil and gas air pollution exacerbates cancer risks. A recent Yale University study identified numerous fracking chemicals that are known, probable, or possible human carcinogens (20 air pollutants) and/or are linked to increased risk for leukemia and lymphoma (11 air pollutants), including benzene, 1,3-butadiene, cadmium, diesel exhaust, and polycyclic aromatic hydrocarbons.[161] And a 2018 study by McKenzie et al. conducted in the Denver Julesberg Basin on the Colorado Northern Front Range (CNFR) found that the established setback distance of 152 m (500 ft) did little to protect people in that proximity. In analyses of nonmethane concentrations from 152 to >1600 meters from oil and gas facilities, the study found that the EPA's minimum cumulative lifetime excess cancer risk benchmark of 1 in a million was exceeded. Cumulative lifetime excess cancer risk increased with decreasing distance from the nearest oil and gas facility. Residents living within 610 meters of and oil and gas facility had an overall cancer risk in excess of the EPA's upper bound for remedial action of 1 in 10,000. Furthermore, residents within 152 meters of an oil and gas facility had an overall excess cancer risk of 8.3 in 10,000, along with an increased likelihood of neurological, hematological, and developmental health effects. Over 95% of the total risk was due to benzene, with additional risk due to the presence of toluene, ethylbenzene, xylene, and alkanes.[162] Other studies have found

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[157] **Exhibit 100**, Gabrielle Pétron, *et al*., *Estimation of emissions from oil and natural gas operations in northeastern Colorado*, Power Point available at: http://www.epa.gov/ttnchie1/conference/ei20/session6/gpetron_pres.pdf

[158] *See* **Exhibit 101** EPA, *Ozone – Good Up High Bad Nearby*, available at: http://www.epa.gov/oar/oaqps/gooduphigh/bad.html#7.

[159] *See* **Exibit 102,** U.S. EPA, "Children are Not Little Adults," *https://www.epa.gov/children/children-are-not-little-adults*

[160] *See* **Exhibit 103**, Letter from American Lung Association to U.S. EPA (November 30, 2011).

[161] **Exhibit 104**, Elliot, Elise G. et al., *A Systematic Evaluation of Chemicals in Hydraulic-Fracturing Fluids and Wastewater for Reproductive and Developmental Toxicity*, 27 JOURNAL OF EXPOSURE SCIENCE AND ENVIRONMENTAL EPIDEMIOLOGY 90 (2016).

[162] **Exhibit 105**, McKenzie, Lisa et al., *Ambient Nonmethane Hydrocarbon Levels Along Colorado's Northern Front Range: Acute and Chronic Health Risks*, 52 ENVIRONMENTAL SCIENCE & TECHNOLOGY 4514 (2018).

that residents living closer to drilling and fracking operations had higher hospitalization rates[163] and reported more health symptoms including upper respiratory problems and rashes.[164]

e. Maternal, Prenatal and Child Health Impacts.

Numerous studies also suggest that higher maternal exposure to fracking and drilling can increase the incidence of high-risk pregnancies, premature births, low-birthweight babies, and birth defects.[165] A study of more than 1.1 million births in Pennsylvania found evidence of a greater incidence of low-birth-weight babies and significant declines in average birth weight among pregnant women living within 3 kilometers of fracking sites.[166] The study estimated that about 29,000 U.S. births each year occur within 1 kilometer of an active fracking sties and "that these births therefore may be at higher risk of poor birth outcomes." A study of 9,384 pregnant women in Pennsylvania found that women who live near active drilling and fracking sites had a 40 percent increased risk for having premature birth and a 30 percent increased risk for having high-risk pregnancies.[167] Another Pennsylvania study found that pregnant women who had greater exposure to gas wells—measured in terms of proximity and density of wells—had a much higher risk of having low-birthweight babies; the researchers identified air pollution as the likely route of exposure.[168] In rural Colorado, mothers with greater exposure to natural gas wells had a higher risk of having babies with congenital heart defects and possibly neural tube defects.[169] A July 2020 study found that residential proximity to flaring (the open combustion of natural gas) from oil and gas development was associated with an increased risk of preterm birth, specifically for "Hispanic" women, in the Eagle Ford Shale of Texas.[170] Here, again, these documented risks are of particular concern in certain communities near the proposed lease sales in light of environmental justice concerns, like proximity of homes to multiple wells[171] (an exacerbating factor in the Eagle Ford Shale study), and social and structural inequities, such as limited access to prenatal care. (For example, in Chaves County, NM (within the Pecos District Office) in 2017, nearly half of mothers lacked access to prenatal care during the first trimester of their pregnancies.)[172] BLM should have taken local health data like this into account as part of its "hard look" at health impacts, especially as they relate to social determinants of health and environmental justice.

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[163] **Exhibit 106**, Jemielita, Thomas et al., *Unconventional Gas and Oil Drilling Is Associated with Increased Hospital Utilization Rates.* 10 PLoS ONE e0131093 (2015).
[164] **Exhibit 107**, Rabinowitz, Peter M. et al., *Proximity to Natural Gas Wells and Reported Health Status: Results of a Household Survey in Washington County, Pennsylvania*, 123 ENVIRONMENTAL HEALTH PERSPECTIVES 21.
[165] *See, e.g.,* PSR 2020 at 187-189, Exhibit 69.
[166] Currie, Janet et al., Exhibit 65.
[167] **Exhibit 108**, Casey, Joan A., *Unconventional Natural Gas Development and Birth Outcomes in Pennsylvania, USA*, 27 EPIDEMIOLOGY 163 (2016).
[168] **Exhibit 109**, Stacy, Shaina L. et al., *Perinatal Outcomes and Unconventional Natural Gas Operations in Southwest Pennsylvania*. 10 PLoS ONE e0126425 (2015).
[169] McKenzie, *Birth Outcomes* (2014), Exhibit 64.
[170] **Exhibit 110**, Lara J. Cushing et al., *Flaring from Unconventional Oil and Gas Development and Birth Outcomes in the Eagle Ford Shale in South Texas*, 128 ENVIRONMENTAL HEALTH PERSPECTIVES , 077003 (2020).
[171] *See* EDF, New Mexico Oil and Gas Data tool, available at https://www.edf.org/nm-oil-gas/, for one excellent resource for mapping proximity of homes to wells, along with other environmental-justice-relevant data, specifically in New Mexico. We recommend that BLM use this and other available tools for taking a hard look at cumulative health impacts and environmental justice impacts.
[172] **Exhibit 111**, New Mexico Department of Health, *Health Indicator Report of Prenatal Care in the First Trimester*, *available at* https://ibis.health.state.nm.us/indicator/view/PrenCare.Cnty.html.

f. Occupational Health and Safety Impacts

Those *living* near oil and gas development aren't the only ones at risk. Oil and gas *workers* also suffer high risks from toxic exposure and accidents.[173] One study of the occupational inhalation risks caused by emissions from chemical storage tanks associated with fracking wells found that chemicals used in 12.4 percent of wells posed acute non-cancer risks, chemicals used in 7.5 percent of wells posed acute cancer risks, and chemicals used in 5.8 percent of wells posed chronic cancer risks.[174] As summarized below:

> Drilling and fracking jobs are among the most dangerous jobs in the nation with a fatality rate that is four to seven times the national average. Irregularities in reporting practices mean that counts of on-the-job fatalities among oil and gas workers are likely underestimates…Occupational hazards in the fracking industry include head injuries, traffic accidents, blunt trauma, burns, inhalation of hydrocarbon vapors, toxic chemical exposures, heat exhaustion, dehydration, and sleep deprivation. An investigation of occupational exposures found high levels of benzene in the urine of wellpad workers, especially those in close proximity to flowback fluid coming up from wells following fracturing activities. Exposure to silica dust, which is definitively linked to silicosis and lung cancer, was singled out by the National Institute for Occupational Safety and Health as a particular threat to workers in fracking operations where silica sand is used. At the same time, research shows that many gas field workers, despite these serious occupational hazards, are uninsured or underinsured and lack access to basic medical care.[175]

g. Naturally Occurring Radioactive Materials and Technology Enhanced Naturally Occurring Radioactive Materials.

Radioactive wastes from oil and gas production can be found in produced water, flowback water from hydraulic fracturing, drilling waste including cuttings and mud, and/or sludge. This material can concentrate in pipes, storage tanks and facilities, and on other extraction equipment, and may be left on site or be emitted into the environment. Some of these materials, such as Radium, can penetrate the skin and raise the risk of cancer.[176] The NEPA analysis conducted for this plan amendment must consider the potential health impacts of radioactive materials, as well as all other potential health effects discussed herein.

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[173] **Exhibit 112**, Esswein, Eric J. et al., *Occupational Exposures to Respirable Crystalline Silica During Hydraulic Fracturing*, 10 JOURNAL OF OCCUPATIONAL AND ENVIRONMENTAL HYGIENE 347 (2013); **Exhibit 113**, Esswein, Eric et al., *Evaluation of Some Potential Chemical Exposure Risks during Flowback Operations in Unconventional Oil and Gas Extraction: Preliminary Results*, 11 JOURNAL OF OCCUPATIONAL AND ENVIRONMENTAL HYGIENE D174 (2014); **Exhibit 114**, Harrison, Robert J. et al., *Sudden Deaths Among Oil and Gas Extraction Workers Resulting from Oxygen Deficiency and Inhalation of Hydrocarbon Gases and Vapors — United States, January 2010–March 2015*, 65 MMWR MORB MORTAL WKLY REP 6 (2016); PSR 2020, Exhibit 66.

[174] **Exhibit 115**, Chen, Huan & Kimberly E. Carter, *Modeling potential occupational inhalation exposures and associated risks of toxic organics from chemical storage tanks used in hydraulic fracturing using AERMOD*, 224 ENVIRONMENTAL POLLUTION 300 (2017).

[175] PSR 2020 at 162, Exhibit 69.

[176] *See, e.g.,* **Exhibit 116**, Agency for Toxic Substances and Disease Registry (ASTDR). *Radium.* (July 1999), *Available at* https://www.atsdr.cdc.gov/toxfaqs/tfacts144.pdf; (Beta and gamma particles can penetrate the skin).

Processes used to produce oil and gas often generate radioactive waste containing concentrations of naturally occurring radioactive materials (NORM) and Technologically Enhanced Naturally Occurring Radioactive Materials (TENORMS). The geological formations to be drilled will result in radioactive waste, containing both NORMS and TENORMs. The radioactive materials will show up in formation drilling, production wastes, and operations. Every single shale well that uses an on-site pit for disposal of drill cuttings and/or fluids likely will leave behind some amount of concentrated radioactive materials.[177] Further, Alpha-emitting radioactive decay elements concentrate at the pipe scale, so the waste is much more radioactive than any of the constituent parts.[178] BLM must also evaluate radiation exposure risks as part of its obligation to take a hard look at public health and safety. Further, BLM should conduct a baseline groundwater analysis in the lease sale areas before any more leasing and development occurs, to ensure that no environmental contamination occurs from disposal of radioactive sludge/scale.

3. BLM Must Take a Hard Look At Environmental Justice.

BLM must also take a hard look at environmental justice—not just in relation to health, but also in its own right. As defined by the U.S. Environmental Protection Agency, "environmental justice" means "the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, in the development, implementation, and enforcement of environmental laws, regulations, and policies."[179] Executive Order 12898 (EO 12898) requires each Federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."[180] Even more recently, President Biden's January 27, 2021 "Executive Order on Tackling the Climate Crisis at Home and Abroad" (EO 14008) explicitly recognizes the inexorable links among climate, health, and environmental justice (which includes social and economic justice), and the corresponding need to address all of them in concert, with a whole-of-government approach.[181]

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[177] *See* **Exhibit 117**, Occupational Health and Safety (Oct. 01, 2012) "Radiation Sources in Natural Gas Well Activities," https://ohsonline.com/Articles/2012/10/01/Radiation-Sources-in-Natural-Gas-Well-Activities.aspx?Page=2.

[178] **Exhibit 118**, USGS (1999) Naturally Occurring Radioactive Materials (NORM) in Produced Water and Oil-Field Equipment— An Issue for the Energy Industry https://pubs.usgs.gov/fs/fs-0142-99/fs-0142-99.pdf.

[179] *See* U.S. Environmental Protection Agency, *Environmental Justice*, www.epa.gov/environmentaljustice.

[180] Exec. Order No. 12,898, 59 Fed. Reg. 32 (Feb. 11, 1994), available at: https://www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf.

[181] *See* Executive Order 14008, 86 Fed. Reg. 7619-7633, Tackling the climate crisis at home and abroad (January 27, 2021), *available at* https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/ Section 201 (Policy), for example, recognizes the threat to public health posed by the climate crisis and the need to "deliver environmental justice in communities all across America." Another part of the EO is expressly dedicated to "Securing Environmental Justice and Spurring Economic Opportunity," and Section 219 expands on the language of EO 12898, directing agencies to make environmental justice part of their mission, to expressly include climate, cumulative impacts, and "accompanying economic challenges." Section 221 creates the "White House Environmental Justice Advisory Council" (WHEJAC), which has since submitted draft recommendations to CEQ on an environmental justice screening tool and on updates to EO 12898.

Environmental Justice is a "relevant factor" for which federal agencies must take a hard look under NEPA, made reviewable under the APA's arbitrary and capricious standard. *See Latin Ams. for Social & Econ. Dev. v. Fed. Highway Admin.,* 756 F.3d 447, 465 (6th Cir. 2014); *Coliseum Square Ass'n, Inc. v. Jackson*, 465 F.3d 215, 232 (5th Cir. 2006); *Cmtys. Against Runway Expansion, Inc. v. FAA*, 355 F.3d 678, 689 (D.C. Cir. 2004); *Standing Rock Sioux Tribe v. U.S. Army Corps of Engineers*, 440 F. Supp. 3d 1, 9 (D. D.C. 2020), *vacated by, in part, affirmed by, in part, Standing Rock Sioux Tribe v. United States Army Corp of Eng'rs*, 985 F.3d 1032 (D.C. Cir. 2021)*; Friends of Buckingham v. State Air Pollution Control Bd*., 947 F.3d 68, 87 (4th Cir. 2020).

As EO 12898, EO 14008, and related agency guidance documents state,[182] and as courts have affirmed specifically with regard to the NEPA process, BLM *must* take environmental justice seriously. As the court stated in *Standing Rock*, 440 F. Supp. 3d 1, 9:

> in this Circuit, NEPA creates, through the Administrative Procedure Act, a right of action deriving from Executive Order 12,898. This order requires federal agencies to 'make achieving environmental justice part of their mission'—'[t]o the greatest extent practicable and permitted by law'—'by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of [their] programs, policies, and activities on minority populations and low-income populations.'

(citing 59 Fed. Reg. 7629 (Feb. 11, 1994), § 1-101; *Cmtys. Against Runway Expansion, Inc.*, 355 F.3d at 688–89 (recognizing right to environmental-justice review under NEPA and APA)).

According to EPA Guidance on environmental justice in the NEPA process, an environmental justice analysis must also include "the cultural values that the community and/or Indian Tribe may place on a natural resource at risk."[183] The Guidance also states that it is "essential" for the "NEPA analyst to consider the cumulative impacts from the perspective of these specific resources or ecosystems which are vital to the communities of interest."[184] Yet BLM must incorporate Tribes' and community members' knowledge of, and concerns about, such cultural values and cumulative impacts in its NEPA analyses for the lease sales. It would be arbitrary and capricious, a failure to "articulate a rational connection between the facts found and the choices made," *Motor Vehicle Mfr. Ass'n*, 463 U.S. at 43, for BLM to acknowledge that there are "environmental justice populations" in the lease sale areas who could experience adverse and disproportionate risks or impacts, without actually *analyzing*, or in some cases even mentioning,

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[182] For example, CEQ's 2016 Final Guidance on climate change, Exhibit 5, has also recommended that federal agencies should incorporate environmental justice principles into their programs, policies, and activities. The 2016 Final Guidance further recommended that agencies consider whether the effects of climate change, in association with the effects of a proposed agency action, may result in a disproportionate effect on minority and low-income populations. And, as mentioned throughout these comments, CEQ's Guidance on Environmental Justice in the NEPA process directs agencies to identify and address disproportionate and cumulative risks and impacts; *See also* **Exhibit 119**, U.S. EPA (2016), "Promising Practices for EJ Methodologies in NEPA Review" *available at* https://www.epa.gov/sites/default/files/2016-08/documents/nepa_promising_practices_document_2016.pdf.

[183] **Exhibit 120**, 1998 EPA NEPA Final Guidance https://www.epa.gov/sites/production/files/2015-02/documents/ej_guidance_nepa_epa0498.pdf.

[184] *Id.* Exhibit 120.

the risks and impacts of its leasing decisions on these populations, let alone taking them into account in its decision-making. "Where BLM has acknowledged increased risk, it cannot then conclude impacts are not significant absent a comprehensive analysis." *State of California*, 472 F. Supp. 3d at 622.

BLM must also adhere to the "process" requirements of environmental justice—fair treatment and *meaningful involvement*. If BLM ignores or excludes the very people and communities who are most affected by its leasing decisions, BLM is not only denying them fair treatment and meaningful involvement in decision-making—and, in the case of indigenous peoples and Tribes, abrogating the right to self-determination and free prior and informed consent[185]—but also depriving itself, and the general public, of invaluable knowledge and expertise that would enable better-informed and more transparent decision-making. "Better decisions" are indeed a fundamental goal of NEPA, and they require extensive, meaningful public involvement throughout an agency's decision-making process—not just "input" on pre-determined agendas.[186] Indeed, "environmental justice is not merely a box to be checked." *Friends of Buckingham*, 947 F.3d at 92.

4. BLM Must Take A Hard Look At Impacts to Resources Other Than Climate From Development Of The Proposed Leases.

BLM must analyze and disclose the reasonably foreseeable impacts to a variety of non-climate resources from drilling on these particular leases. In particular, BLM must take a hard look at the impacts to groundwater, wildlife and other resources that will be harmed by oil and gas development resulting for its leasing decisions.

Courts have long made clear that "the sale of leases cannot be divorced from post-leasing exploration, development, and production." *Bob Marshall All. v. Hodel*, 852 F.2d 1223, 1229 (9th Cir. 1988). BLM's issuance of leases typically is an irretrievable commitment of resources, and before taking that step the agency must consider the reasonably foreseeable impacts—such as oil and gas drilling—to other resources. Making an irreversible commitment of resources, without analyzing effects of developing those leases, is an "approve now and ask questions later" approach—"precisely the type of environmentally blind decision-making NEPA was designed to avoid." *Conner v. Burford*, 848 F.2d 1441, 1450-51 (9th Cir. 1988); *Sierra Club v. Peterson*, 717 F.2d 1409, 1413-15 (D.C. Cir. 1983).

BLM may not simply provide broad descriptions of categories of impacts that result from oil and gas development generally, without examining how severe those impacts are likely to be for the particular leases being offered here. Such boilerplate could be applied to virtually any oil

[185] The duty to obtain free prior and informed consent (FPIC) from indigenous peoples is recognized by the International Labour Organization Convention ("ILO") 169 and the U.N. Declaration on the Rights of Indigenous Peoples ("UNDRIP"), Articles 10, 11, 19, 28, 29, and 32. *See* **Exhibit 121**, UN General Assembly, *United Nations Declaration on the Rights of Indigenous Peoples.* FPIC is embedded in the right to self-determination. "The duty of States to obtain Indigenous Peoples' FPIC entitles Indigenous people to effectively determine the outcome of decision-making that affects them, *not merely a right to be involved*." **Exhibit 122**, UN Expert Mechanism on the Rights of Indigenous Peoples, *Final report of the study on indigenous peoples and the right to participate in decision-making* (August 17, 2011), *see especially* para. 21.

[186] *See* 40 C.F.R. § 1500.1(c).

and gas proposal anywhere on public lands, and provides the agency and the public no useful information about the specific leases proposed in these lease sales. This does not satisfy NEPA. "General statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided." *Conservation Cong. v. Finely*, 774 F.3d 611, 621 (9th Cir. 2014).

Similarly, an assertion that additional analysis is not feasible at the leasing stage would be arbitrary and capricious and violates NEPA. There is ample information available to forecast reasonably foreseeable development on the specific leases being offered, and to evaluate the potential impacts of that development on groundwater, wildlife and other resources.

As discussed below, it is entirely feasible for BLM to project future development on the leases to estimate impacts to other resources. BLM can use evidence of impacts from existing development on wildlife, groundwater, etc., to predict what will happen from allowing even more oil and gas development in these areas.

While any projection of future development impacts necessarily involves uncertainty, that uncertainty does not excuse BLM from making any projection at all. Failure to use readily available resources to forecast reasonably foreseeable impacts to these resources would be arbitrary and capricious and violate NEPA. *New Mexico ex rel. Richardson v. BLM*, 565 F.3d 683, 718-19 (10th Cir. 2009) (failure to discuss impacts from developing oil and gas lease was arbitrary and capricious where "[c]onsiderable exploration has already occurred on parcels adjacent to the" proposed lease); *N. Plains Res. Council*, 668 F.3d at 1078-79 (rejecting agency argument that impacts from future coalbed methane development were "too speculative" to evaluate where there was "available data concerning likely future development").

a. BLM Must Take A Hard Look At Impacts To Groundwater From Well Construction Practices And Hydraulic Fracturing.

NEPA requires BLM to assess all the potential environmental impacts from oil and gas leases, before it offers those leases to operators. That responsibility includes taking a "hard look" at how ensuing development could impact groundwater. *WildEarth Guardians v. U.S. Bureau of Land Mgmt.*, 457 F. Supp. 3d 880, 886–89 (D. Mont. May 1, 2020).

Groundwater is a critical resource that supplies many communities, particularly rural ones, with drinking water. Protecting these resources is imperative to protect human health and the environment, especially because groundwater will become more important as increased aridity and higher temperatures alter water use. The U.S. Environmental Protection Agency (EPA) has noted that existing drinking water resources "may not be sufficient in some locations to meet future demand" and that future sources of fresh drinking "will likely be affected by changes in climate and water use."[187] As a result, BLM must protect both aquifers currently used for drinking water, and deeper and higher-salinity aquifers that may be needed in coming decades.

[187] U.S. Environmental Protection Agency, *Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States*, EPA/600/R-16/236F, at 2–18 (Dec. 2016) (EPA 2016 Report).

Oil and gas drilling involves boring wells to depths thousands of feet below the surface, often through or just above groundwater aquifers. Without proper well construction and vertical separation between aquifers and fractured formations, oil and gas development can contaminate underground sources of water.[188] However, federal rules and regulations do not provide specific direction for BLM and operators to protect all usable water. Even rules that purport to do so, like Onshore Order No. 2's requirement to "protect and/or isolate all usable water zones," are inconsistently applied and often disregarded in practice.[189] State regulations are similarly inadequate to ensure protection of groundwater.

Moreover, industry has admitted that it often does not protect usable water in practice. Western Energy Alliance and the Independent Petroleum Association of America have told BLM that the "existing practice for locating and protecting usable water" does not measure the numerical quality of water underlying drilling locations, and therefore does not consider whether potentially usable water would be protected during drilling.[190] For example, reports studying samples of existing oil and gas well records in Wyoming and Montana confirm industry admissions that well casing and cementing practices do not always protect underground sources of drinking water.[191] Similarly, a study of hydraulic fracturing in Pavillion, Wyoming, confirmed that oil and gas drilling had contaminated underground sources of drinking water in that area due to lack of vertical separation between the aquifer and target formation.[192]

In light of these risks to a critical resource, BLM must evaluate potential groundwater impairment. As a threshold matter, BLM must provide a detailed account of all regional groundwater resources that could be impacted, including usable aquifers that may not currently be used as a drinking water supply. The accounting must include, at minimum, all aquifers with up to 10,000 parts per million total dissolved solids, and it cannot substitute existing drinking water wells or any other incomplete proxy for a full description of all usable or potentially usable groundwater in the region. Second, BLM must use that accounting to assess how new oil and gas wells might impact these resources. That evaluation must assess the sufficiency of protective measures that will be employed, including wellbore casing and cementing and vertical separation between aquifers and the oil and gas formations likely to be hydraulically fractured. In assessing these protections, BLM cannot presume that state and federal regulations will protect groundwater, because of the shortcomings and industry noncompliance described above. BLM

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[188] *See, e.g.*, *Fracking Can Contaminate Drinking Water*, Exhibit 62; **Exhibit 123**, Dominic C. DiGiulio & Robert A. Jackson, *Impact to Underground Sources of Drinking Water and Domestic Wells from Production Well Stimulation and Completion Practices in the Pavillion, Wyoming Field*, 50 Am. Chem. Society, Envtl. Sci. & Tech. 4524, 4532 (Mar. 29, 2016); EPA 2016 Report.

[189] *See* **Exhibit 124,** BLM, Regulatory Impact Analysis for the Final Rule to Rescind the 2015 Hydraulic Fracturing Rule, at 44–45 (Dec. 2017). Available at https://beta.regulations.gov/document/BLM-2017-0001-0464.

[190] **Exhibit 125**, Western Energy Alliance and the Independent Petroleum Association of America, Sept. 25, 2017 comments Re: RIN 1004-AE52, Oil and Gas; Hydraulic Fracturing on Federal and Indian Lands; Rescission of a 2015 Rule (82 Fed. Reg. 34,464) (2017 WEA comments), at 59. Available at https://www.regulations.gov/document?D=BLM-2017-0001-0412.

[191] **Exhibit 126,** Rebecca Tisherman, et al., *Examination of Groundwater Resources in Areas of Wyoming Proposed for the June 2022 BLM Lease Sale* (May 12, 2022),

[192] Dominic C. DiGiulio & Robert A. Jackson, *Impact to Underground Sources of Drinking Water and Domestic Wells from Production Well Stimulation and Completion Practices in the Pavillion, Wyoming Field*, 50 Am. Chem. Society, Envtl. Sci. & Tech. 4524, 4532 (Mar. 29, 2016). Exhibit 123.

may not defer this analysis of groundwater impacts to the APD stage. *WildEarth Guardians*, 457 F. Supp. 3d at 888. Failure to conduct this analysis would violate NEPA. *Id.*

b. Big Game.

BLM must also evaluate the reasonably foreseeable impacts to big game from development on the proposed leases. This extends beyond a description of: (a) the regulatory and management frameworks applicable to big game species, along with the scientific literature, (b) existing conditions, and which lease parcels are in different categories of habitat (such as crucial winter habitat and migration corridors), (c) the lease stipulations that would apply, and (d) how BLM selected which parcels in big game habitat to offer or defer. Such information provides a basis for analyzing the likely impacts to big game from development on the proposed leases—but it would not substitute for that analysis. Failure to analyze the likely impacts to big game populations from the leases it proposes to offer and boilerplate statements about categories of impacts would not satisfy NEPA.

c. Other Species and Resources.

BLM must also take a hard look at impacts to other resources. For example, BLM must analyze foreseeable impacts to cultural and heritage resources, wilderness study areas and lands with wilderness characteristics, and special status species.

5. BLM Must Not Improperly Limit the Context of Significance Analysis.

BLM must not improperly limit the context and scope of the potentially affected environment in which the proposed leasing actions, and their cumulative impacts, will occur. Significance assessments under NEPA require consideration of "context," meaning the significance of the proposed action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality.[193] Significance varies with the setting of the proposed action.[194] BLM may not limit the consideration of context to the localities wherein the oil and gas development would take place, if authorized, and find that the impacts of oil and gas development would not have international, national, regional, or state-wide importance. We request BLM consider a wide array of contexts, including society as whole, global, national, and regional contexts, that reflect the cumulative and global nature of climate change impacts.

6. BLM Must Analyze Public Health and Safety Impacts from GHG Emissions and Climate Change.

BLM must evaluate and discuss the impacts of GHG emissions and climate change on public health and safety, and we request BLM clearly address these impacts in a single EIS. The 2020 BLM Specialist Report describes both the existing health threats caused by climate change

[193] 40 CFR 1508.27(a).
[194] *Id*.

and the predicted intensification and new emerging health threats caused by continued GHG emissions.[195]

7. BLM Must Properly Analyze Uncertainty.

The 2020 BLM Specialist Report identifies countless areas of uncertainty regarding the analysis of GHGs and climate change, including:

- [Global warming potentials] have a large uncertainty: +/- 30 percent and +/-39 percent for the 20-year and 100-year CH4 GWPs, respectively, and +/-21 percent and +/-29 percent for the 20-year and 100-year N2O GWPs, respectively.[196]

- Earth's climate system is complex and interwoven in ways that are not yet fully understood. There are several known climate feedback mechanisms that add uncertainty in terms of timing (fast and slow feedbacks) and overall sensitivity within the evaluation of the climate system.[197]

- As with the forcing components, there are also positive and negative feedback mechanisms, and there is a relatively large range of uncertainty concerning estimates of the climate sensitivity that leaves the subject open to further investigation.[198]

- Melting glaciers are likely to produce uncertainties for hydrologic power generation, which is an important resource in Alaska.[199]

- The IPCC [carbon] budget suggests a range of approximately 420 $GtCO_2$ for a 66% chance of limiting warming to 1.5 C to 840 $GtCO_2$ for a 33% chance. Similarly, estimates for the 2 C probabilities range from 1,170 to 2,030 $GtCO_2$. These estimates contain uncertainties that are characteristic of scientists' current understanding of the Earth's climate influencing systems, such as feedbacks and the forcing and response associated with the non- CO_2GHG species, and historical emissions accounting. The uncertainty range associated with the new estimates is approximately +/- 400 Gt CO_2.[200]

- As expected with such a complex model, there are multiple sources of uncertainty inherent in the SC-GHG estimates. Some sources of uncertainty relate to physical effects of GHG emissions, human behavior, future population growth and economic changes, and potential adaptation.

Well-documented scientific research and BLM's own analysis demonstrate that the potential effects of climate chance are highly uncertain and involve unique and unknown risks.

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[195] 2020 BLM Specialist Report at Section 9.5, Exhibit 17.
[196] 2020 BLM Specialist Report at Section 3.4., Exhibit 17.
[197] *Id.* at Section 8.2.
[198] *Id.*
[199] *Id.* at Section 8.4.
[200] *Id.* at Section 7.2.

BLM must properly address this NEPA intensity factor in light of these impacts, and we request BLM do so in a single EIS.

8. BLM Must Properly Analyze Controversy Over Impacts from GHGs.

As the global body of scientific research and understanding of climate change reflects, there is controversy concerning critical aspects of the nature and effect of GHG emissions and their impact on climate change. This controversy is exemplified by the BLM's conclusions that the emissions from the proposed lease sales and the cumulative emissions from the federal fossil fuel program are not significant as compared to a robust scientific literature, indicating current and foreseeable fossil fuel development is not aligned GHG reductions necessary to prevent warming exceeding 1.5°C.[201] We request BLM address the NEPA intensity factor for controversy and do so in a single EIS.

9. BLM Must Properly Analyze Cumulative Impacts of GHG Emissions.

BLM must evaluate the estimated GHG emissions from the proposed lease sales as another NEPA intensity factor, due to the seriousness and cumulative nature of climate change. Considering both the impacts of climate change that are already occurring as a result of historic anthropogenic emissions of GHGs and forecast impacts of continued GHG emissions, it is clear that significant cumulative effects are expected from the proposed oil and gas lease sales. We request BLM analyze this NEPA intensity factor.

10. BLM Must Properly Analyze Federal or State Law and Policy.

There are several federal and state government laws and policies that set GHG emission reduction targets or commitments, which authorization of the proposed leases will likely threaten. On the federal side, President Biden announced a goal to achieve net-zero emissions by 2050,[202] as well as a target to reduce GHG emissions by 50-52% by 2030, compared to 2005 levels.[203] In addition, the United States is a signatory to the 2015 Paris Agreement, committing to a goal of limiting global temperature increase well below 2 C, pursuing efforts to limit the increase to 1.5 C, and committing to reaching global peaking of GHGs as soon as possible.

On the state side, both Colorado and New Mexico have statutes and executive orders setting emission reduction goals. In Colorado, HB19-1261 requires the state to reduce GHG emissions by at least 26 percent in 2025, at least 50 percent by 2030, and at least 90 percent by 2050, relative to 2005 pollution levels. In New Mexico, Executive Order 2019-003 declares the state's support of the 2015 Paris Agreement goals and orders the state to achieve statewide reduction of GHG emissions of at least 45% by 2030, relative to 2005 levels.

BLM must discuss and evaluate how the proposed lease sales and their estimated GHG emissions may threaten violation of these federal and state laws and policies.

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[201] See, e.g. The Production Gap Report 2021, Exhibit 33.
[202] Executive Order 13990 (January 20, 2021).
[203] Executive Order 14008 (January 27, 2021).

B. BLM Must Not Rely on Unlawful USGS Assessments.

The Energy Policy and Conservation Act ("EPCA") requires the Department of the Interior ("DOI") to conduct an inventory that includes United States Geological Survey ("USGS") estimates of oil and gas resources underlying onshore federal lands, as well as "the extent and nature of any restrictions or impediments to the development of the resources." 42 U.S.C. § 6217(a). EPCA requires this information to "be regularly updated and made publicly available." *Id.* § 6217(b). USGS updates its estimates of oil and gas resources through periodic "assessments."[204] However, USGS assessments do not provide updates regarding "the extent and nature of any restrictions or impediments to the development of [oil and gas] resources," despite the clear statutory mandate to do so. 42 U.S.C. § 6217(a). Such assessments therefore overstate the availability of oil and gas resources on federal lands and fail to acknowledge the significant limitations on development of these resources.

BLM must not rely directly on these statutorily defective USGS assessments for its NEPA analysis of the proposed lease sales. More broadly, BLM decisions and public input on which lands to offer for lease have been based on USGS assessments of where oil and gas resources exist. Because these assessments fail to properly account for restrictions and impediments to the development of these resources, BLM may not rely on them when deciding which lands to open for lease.

For the reasons set forth above, all 45 parcels in the New Mexico/Oklahoma Q2 '23 lease sale, listed in Appendix A, require a NEPA analysis that adequately addresses the flaws in the underlying USGS assessments.

III. FEDERAL LAND POLICY AND MANAGEMENT ACT (FLPMA)

For the reasons discussed below, BLM's proposed Q2 '23 New Mexico/Oklahoma lease sale violates FLPMA. As a result, the Agency should withdraw all 45 parcels listed in Appendix A.

A. Leasing New Federal Fossil Fuels for Development Would Cause Unnecessary and Undue Degradation That Is Prohibited Under FLPMA.

The Federal Land Policy and Management Act ("FLPMA"), 43 U.S.C. § 1701 *et seq.*, directs that "the public lands be managed in a manner that will protect the quality of [critical resource] values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use." 43 U.S.C. §

[204] United States Geological Survey, *United States Assessments of Undiscovered Oil and Gas Resources,* https://www.usgs.gov/centers/central-energy-resources-science-center/science/united-states-assessments-undiscovered-oil ("USGS Energy Resources Program provides periodic assessments of the oil and natural gas endowment of the United States and the World. This website provides access to new, prioritized, assessment results and supporting data for the United States, as part of the Energy Policy and Conservation Act (EPCA)"); **Exhibit 129**, U.S. Geological Survey, *Assessment of Undiscovered Continuous Oil Resources in the Bakken and Three Forks Formations of the Williston Basin Province, North Dakota and Montana*, 2021.

1701(a)(8). This substantive mandate requires that BLM not elevate the development of oil and gas resources above other critical resource values in the planning area. To the contrary, FLPMA requires that where oil and gas development would threaten the quality of critical resources, conservation of these resources should be the preeminent goal.

Congress has declared through FLPMA that it is the policy of the United States that "the public lands [shall] be managed in a manner that will protect the quality of … air and atmospheric … values." 43 U.S.C. § 1701(a)(8). Under FLPMA's "multiple use and sustained yield" management directive, *id.* § 1701(a)(7), the federal government must manage public lands and resources in a manner that "takes into account the *long-term needs of future generations* for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and *harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land*[.]" *Id.* § 1702(3) (emphasis added). BLM's obligation to manage for multiple use does not mean that development *must* be allowed. Rather, [d]evelopment is a *possible* use, which BLM must weigh against other possible uses—including conservation to protect environmental values[.]" *New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 710 (10th Cir. 2009) (emphasis original). Under these authorities, BLM is required not only to evaluate the impacts that federal fossil fuel leasing has on public lands, waters, and wildlife resources, but to avoid harm to those resources whenever possible.

These directives are not simply aspirational, but grounded in the substantive requirements of FLPMA. "In managing the public lands," the agency "shall, by regulation or otherwise, take any action necessary to prevent unnecessary or undue degradation of the lands." 43 U.S.C. § 1732(b). Written in the disjunctive, BLM must prevent degradation that is "unnecessary" and degradation that is "undue." *Mineral Policy Ctr. v. Norton*, 292 F.Supp.2d 30, 41-43 (D.D.C. 2003). This protective mandate applies to BLM planning and management decisions, and should be considered in light of its overarching mandate that the agency employ "principles of multiple use and sustained yield." 43 U.S.C. § 1732(a); *see also, Utah Shared Access Alliance v. Carpenter*, 463 F.3d 1125, 1136 (10th Cir. 2006) (finding that BLM's authority to prevent degradation is not limited to the RMP planning process). While these obligations are distinct, they are interrelated and highly correlated. The Bureau must balance multiple uses in its management of public lands, including "recreation, range, timber, minerals, watershed, wildlife and fish, and [uses serving] natural scenic, scientific and historical values." 43 U.S.C. § 1702(c). It must also plan for sustained yield— "control [of] depleting uses over time, so as to ensure a high level of valuable uses in the future." *Norton v. S. Utah Wilderness Alliance,* 542 U.S. 55, 58 (2004).

"Application of this standard is necessarily context-specific; the words 'unnecessary' and 'undue' are modifiers requiring nouns to give them meaning, and by the plain terms of the statute, that noun in each case must be whatever actions are causing 'degradation.'" *Theodore Roosevelt Conservation Partnership v. Salazar*, 661 F.3d 66, 76 (D.C. Cir. 2011) (citing *Utah v. Andrus,* 486 F. Supp. 995, 1005 n. 13 (D. Utah 1979) (defining "unnecessary" in the mining context as "that which is not necessary for mining"—or, in this context, "for oil and gas development"—and "undue" as "that which is excessive, improper, immoderate or unwarranted.")); *see also Colorado Env't Coalition,* 165 IBLA 221, 229 (2005) (concluding that

in the oil and gas context, a finding of "unnecessary or undue degradation" requires a showing "that a lessee's operations are or were conducted in a manner that does not comply with applicable law or regulations, prudent management and practice, or reasonably available technology, such that the lessee could not undertake the action pursuant to a valid existing right.").

Here, the actions that BLM must determine meet the substantive requirements of FLPMA as outlined above include: (1) the programmatic resumption of oil and gas leasing on federal lands; and (2) the decision of whether or not to offer to sell and issue oil and gas leases on each of the specific parcels identified. Critically, however, BLM's consideration of these substantive requirements must not be viewed in the abstract, but within the specific "context" of the agency's analysis and the scientific information available to it. 40 C.F.R. §§ 1502.24 (requiring "scientific integrity" of analysis), 1508.27(a) (requiring consideration of "both short and long-term effects" (1978)).[205]Accordingly, and of foundational importance, is whether the continued leasing and development of oil and gas will result in unnecessary and undue degradation to lands, resources, and species as a result of climate impacts.

Courts have recognized, "[t]he impact of [GHG] emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct." *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin*., 538 F.3d 1172, 1217 (9th Cir. 2008); *see also San Juan Citizens Alliance v. Bureau of Land Mgmt.,* 326 F. Supp. 3d 1227, 1248 (D.N.M. 2018); 40 C.F.R. § 1508.7 (1978) ("Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."). Moreover, BLM has a duty to "consider the cumulative impact of GHG emissions generated by past, present, or reasonably foreseeable BLM lease sales in the region and nation." *WildEarth Guardians v. Zinke,* 368 F. Supp. 3d 41, 77 (D.D.C. 2019). This consideration must be contextual. An "agency's [environmental analysis] must give a realistic evaluation of the total impacts and cannot isolate a proposed project, viewing it in a vacuum." *Grand Canyon Trust v. F.A.A.*, 290 F.3d 339, 342 (D.C. Cir. 2002). In other words, it is not sufficient to simply list estimated emissions in a table, without relating those emissions to other BLM decisions and without "analysis of that catalogue and 'their combined environmental impacts.'" *WildEarth Guardians v. Bureau of Land Mgmt*., 457 F. Supp. 3d 880, 892 (D. Mont. 2020).

As discussed above, BLM has endeavored to satisfy the requirement to consider the cumulative climate impacts of its leasing decisions by preparing the "2020 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends" (hereinafter "Report").[206] Setting aside any potential deficiencies of the Report, the underlying conclusions are chilling. Annual greenhouse gas emissions from *existing* federal fossil fuel production totals 918.6 $MTCO_2e$, with total projected cumulative "life-of-project" emissions of 3,682.7 $MTCO_2e$ over the next 12 months. Report at Executive Summary, Table ES-1, Table ES-2; Table ES-3; 7.0 Emissions Analysis, Table 7-1. Already permitted but not yet producing leases add 656.2 $MTCO_2e$ to this total over the next 12 months. Report at Executive Summary, Table ES-3. And the long-term onshore fossil fuel emissions projection is 24,112.35 $MTCO_2e$. Report at Executive Summary, Table ES-4; 5.0 GHG Emissions and Projections from BLM-Authorized

[205] *See* Section I.B., *infra* (discussing applicability of CEQ NEPA regulations).
[206] 2020 BLM Specialist Report, Exhibit 17.

Actions, Table 5-18. BLM also applies these emissions in the context of the remaining Global Carbon Budget, which recognizes that there are 420 $GtCO_2$ that remain for a 66% chance to prevent warming above a 1.5C threshold. Report at 7.2 Carbon Budgets and Carbon Neutrality. With a federal fossil fuel emissions estimate of 2.24 $GtCO_2$ during that timeframe, this represents 1.47% of the total remaining global budget to avoid catastrophic warming. Report at 7.2 Carbon Budgets and Carbon Neutrality, Table 7-3. In other words, *any* additional emissions are entirely incompatible with maintaining a livable planet. The Report also details past and present climate impacts, at Section 8.3, projected future climate impacts under varying mitigation pathways, at Sections 7.2 and 9.2, as well as state specific climate projections, at Sections 8.4 and 9.4.

BLM must apply this analysis to its substantive duty to avoid unnecessary and undue degradation under FLPMA. 43 U.S.C. § 1732(b). These requirements are distinct from BLM's requirements under NEPA. "A finding that there will not be significant impact [under NEPA] does not mean either that the project has been reviewed for unnecessary and undue degradation or that unnecessary or undue degradation will not occur." *Ctr. for Biological Diversity v. United States DOI,* 623 F.3d 633, 645 (9th Cir. 2010) (quoting *Kendall's Concerned Area Residents,* 129 I.B.L.A. 130, 140 (1994)). In the instant case, the BLM's failure to specifically account for unnecessary and undue degradation in its decision to continue the leasing and development of oil and gas—which is distinct from its compliance under NEPA—is actionable on procedural grounds and must occur before the leasing decision is approved.

BLM must therefore take sufficient measures to prevent degradation unnecessary to, or undue in proportion to, its oil and gas leasing decisions. *See Theodore Roosevelt Conservation Partnership*, 661 F.3d at 76. BLM must define what constitutes "unnecessary or undue degradation" in the context of continued oil and gas leasing and development, either at a programmatic level or within these specific sales—and with particular consideration of greenhouse gas emissions and resulting climate impacts—and explain why its chosen alternative will not result in such degradation, as required by FLPMA, 43 U.S.C. § 1732(b). The failure to define, analyze, or take action to prevent the unnecessary or undue degradation of lands in the context of climate impacts would be arbitrary and capricious agency action, an abuse of discretion, and action without observance of procedures required by law, pursuant to the APA. 5 U.S.C. § 706(2).

B. BLM is Required by FLPMA to Take Every Opportunity to Reduce Methane Emissions from Mineral Production on Federal Lands.

As discussed above, methane represents an opportunity for BLM to meaningfully reduce GHG emissions associated with the federal oil and gas program. BLM is not only required to analyze alternatives that address this highly potent short-term GHG, it also has substantive mandates under FLPMA to prevent, reduce, or mitigate methane emissions, independent of the agency's MLA duty to prevent waste. We note in particular FLPMA's mandates that Interior:

- Protect "air and atmospheric" values (43 U.S.C. § 1701(a)(8));
- Account for "the long-term needs of future generations" (43 U.S.C. § 1702(c));
- Prevent "permanent impairment of the productivity of the land and quality of the environment" (43 U.S.C. § 1702(c)); and

- "[T]ake any action necessary to prevent unnecessary or undue degradation of the lands." (43 U.S.C. § 1732(b)).

These statutory directives enable Interior to take action before lease rights are conferred, whether at the planning or leasing stages, that will eliminate methane emissions and otherwise protect public lands. That includes the authority *and responsibility* to (1) reduce acres available for leasing to address the contribution of methane emissions to the climate crisis and the impacts of the crisis to public lands, (2) attach methane and other harmful emission reduction stipulations to an oil and gas lease to protect air and atmospheric resources and to mitigate climate impacts to public lands, and (3) condition lease development at the permitting stage. See 43 C.F.R. § 3101.1-2. In the absence of existing methane waste and air quality regulations, and even following the conclusion of current EPA and BLM rulemaking efforts with regard to methane, BLM has a duty to leverage its considerable authority under FLPMA to the fullest extent permitted by law, including by identifying stipulations and conditions of approval for *all* of the Q2 '23 lease sales, to minimize, reduce, and mitigate methane impacts to the greatest extent possible.

C. BLM Must Analyze Whether There Are Any Benefits from The Lease Sales That Warrant Incurring the Enormous Social and Environmental Costs of Those Sales.

BLM must consider an important aspect of the problem: what economic benefits and revenues would result from the lease sales, and how do they compare to the enormous social and environmental costs of those sales? Offering hundreds of leases that will impose billions of dollars in social and environmental harms without addressing what (if any) countervailing benefits might warrant such a decision would be arbitrary and capricious and inconsistent with FLPMA. An action is arbitrary and capricious, *inter alia*, "if the agency has . . . failed to consider an important aspect of the problem [or] offered an explanation for its decision that runs counter to the evidence before the agency." *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 43 (1983). Here, it would be arbitrary and capricious to quantify the costs of selling so many leases, but disregard the other side of the cost-benefit scale. *See High Country Conserv. Advocs. v. U.S. Forest Serv.*, 52 F. Supp. 3d 1174, 1191 (D. Colo. 2014) (holding it was "arbitrary and capricious to quantify the ***benefits*** of the lease modifications and then explain that a similar analysis of the ***costs*** was impossible when such an analysis was in fact possible"); *Montana Env. Info. Ctr. v. U.S. Office Surf. Mining*, 274 F. Supp. 3d 1074, 1098 (D. Mont. 2017) (ruling in favor of plaintiff's argument that it was "arbitrary and capricious for [agency] to quantify socioeconomic benefits while failing to quantify costs"). Such a one-sided analysis also violates NEPA. *Id.*

The need to consider both costs and benefits is also part of BLM's obligation under the multiple-use mandate of FLPMA. FLPMA requires striking a balance between conflicting uses, such as oil and gas development and climate (and numerous other uses). As the Supreme Court has noted "multiple use" describes the enormously complicated task of striking a balance among the many competing uses to which land can be put, "including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and [uses serving] natural scenic, scientific and historical values." *Norton v. SUWA*, 542 U.S. 55, 58 (2004) (quoting 43 U.S.C. § 1702(c)). BLM cannot strike that balance without even considering what it is balancing.

Generating an estimate of the economic benefits from the proposed lease sales is entirely feasible. The Interior Department and other agencies routinely produce estimates of the economic impacts from oil and gas development. For example, "numerous prior environmental impact studies for BLM RMPs involving substantial oil and gas activity" have included such projections.[207]

Should BLM forecast potential oil and gas production from the leases proposed for the Q2 '23 sales, it would allow the agency to estimate royalties and other economic benefits from that production. Moreover, any estimate of greenhouse gas impacts would further illustrate that the agency can make such projections.

IV. ENDANGERED SPECIES ACT (ESA)

A. BLM Must Consult with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service on the Greenhouse Gas Emissions Caused by Its Leasing Proposal.

For every discretionary action, Section 7(a)(2) of the Endangered Species Act ("ESA") requires each federal agency, in consultation with the nation's wildlife agencies, to "insure that any action authorized, funded, or carried out by such agency … is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species" using the best scientific data available. 16 U.S.C. § 1536(a)(2). The Supreme Court has unequivocally stated that the Act's "language, history, and structure" made clear "beyond doubt" that "Congress intended endangered species to be afforded the highest of priorities" and endangered species should be given "priority over the 'primary missions' of federal agencies" especially during such consultations. *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 174, 185 (1978). Even with a global threat to biodiversity such as climate change, "the plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, *whatever the cost*." *Id*. at 184 (emphasis added). Because

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[207] BLM, *Draft Resource Management Plan and Environmental Impact Statement Carlsbad Field Office, Pecos District, New Mexico* at 4-450 (Aug. 2018), https://eplanning.blm.gov/public_projects/lup/64444/153042/187358/BLM_CFO_Draft_RMP_-_Volume_I_-_EIS_-_August_2018_(1).pdf; *see, e.g.*, **Exhibit 130,** Bureau of Ocean Energy Management, *Economic Analysis Methodology For The 2017–2022 Outer Continental Shelf Oil And Gas Leasing Program* (Nov. 2016), https://www.boem.gov/sites/default/files/oil-and-gas-energy-program/Leasing/Five-Year-Program/2017-2022/Economic-Analysis-Methodology.pdf#page10; **Exhibit 131,** U.S. Dep't of Energy, *The Economic Benefits of Oil and Gas* (2020), https://www.energy.gov/sites/prod/files/2020/10/f80/Economic%20Impact%20of%20Oil%20and%20Gas.pdf; **Exhibit 132,** Federal Reserve Bank of Dallas, *Anticipated Federal Restrictions Would Slow Permian Basin Production* (Mar. 4, 2021), https://www.dallasfed.org/research/economics/2021/0304. Indeed, researchers produced reports on behalf of oil and gas industry interests predicting the economic impacts of pausing federal oil and gas leasing in 2021. The same kind of analysis can and must be done for BLM's decision to re-start leasing now. *See, e.g.*, **Exhibit 133**, May 19, 2021 Laura Zachary declaration, (discussing examples); *see also* **Exhibit 134,** https://suwa.org/wp-content/uploads/CEI-Economic-Effects-of-Pausing-Oil-and-Gas-Leasing-on-Federal-Lands.pdf. The analyses cited above often use flawed assumptions in their modeling that generated grossly exaggerated estimates of the economic impacts from halting new leasing. *See* Zachary Decl., Exhibit 133 (discussing flaws in modeling). We reference these reports only to illustrate that it is entirely feasible to prepare such forecasts.

resuming federal oil and gas leasing will have an appreciable, cumulative impact on climate-threatened species, BLM must include these species as part of its consultation with both the National Marine Fisheries Service and the U.S. Fish and Wildlife Service (collectively the "Services").[208]

While many of the ESA's provisions work to effectuate the conservation goals of the statute, the "heart of the ESA" is the interagency consultation requirements of Section 7 of the ESA. *W. Watersheds Project v. Kraayenbrink*, 632 F.3d 472, 495 (9th Cir. 2011); 16 U.S.C. § 1536. At the first step of the consultation process, an action agency must determine if its action either "may affect" listed species or will have "no effect" on listed species within the action area. Under the ESA, "action" is broadly defined to include "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas" and include, but are not limited to "(a) actions intended to conserve listed species or their habitat; (b) the promulgation of regulations; (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or (d) actions directly or indirectly causing modifications to the land, water, or air." 50 C.F.R. § 402.02. Similarly, the "action area" is equally broadly defined as "all areas to be affected directly *or indirectly* by the Federal action and not merely the immediate area involved in the action." 50 C.F.R. § 402.02 (emphasis added).

1. Greenhouse Gas Emissions Have Direct, Predictable, and Devastating Effects on Endangered Species and Habitats.

As an initial matter, the science is overwhelmingly clear that climate change represents a stark threat to the future of biodiversity within the United States and around the world. The Fourth National Climate Assessment warns that "climate change threatens many benefits that the natural environment provides to society," and that "extinctions and transformative impacts on some ecosystems" will occur "without significant reductions in global greenhouse gas emissions."[209]The best available science shows that anthropogenic climate change is causing widespread harm to life across the planet, disrupting species' distribution, timing of breeding and migration, physiology, vital rates, and genetics—in addition to increasing species extinction risk.[210] Climate change is already affecting 82% of key ecological processes that underpin ecosystem function and support basic human needs.[211] Climate change-related local extinctions are widespread and have occurred in hundreds of species, including almost half of the 976 species surveyed.[212] Nearly half of terrestrial non-flying threatened mammals and nearly one-quarter of threatened birds are estimated to have been negatively impacted by climate change in

[208] In *Massachusetts v. EPA*, the Supreme Court found that U.S. vehicle emissions represented a "meaningful contribution" to global emissions, and even addressing a fraction of these emissions was sufficient for standing purposes and requires EPA to take action. *Massachusetts v. EPA*, 549 U.S. 497 (2007).
[209] **Exhibit 135,** U.S. Global Change Research Program, *Impacts, Risks, and Adaptation in the United States, Fourth National Climate Assessment, Vol. II* 42, 44 (2018), https://nca2018.globalchange.gov/.
[210] **Exhibit 136,** Rachel Warren et al., *Increasing impacts of climate change upon ecosystems with increasing global mean temperature rise*, 106 Climatic Change 141 (2011).
[211] **Exhibit 137,** Brett R. Scheffers*, The broad footprint of climate change from genes to biomes to people,* 354 Science 719 (2016).
[212] **Exhibit 138,** John J. Wiens, *Climate-related local extinctions are already widespread among plant and animal species*, 14 PLoS Biology e2001104 (2016).

at least part of their range.[213] Furthermore, across the globe, populations of terrestrial birds and mammals that are experiencing greater rates of climate warming are more likely to be declining at a faster rate.[214] Genes are changing, species' physiology and physical features such as body size are changing, species are moving to try to keep pace with suitable climate space, species are shifting their timing of breeding and migration, and entire ecosystems are under stress.[215]

Species extinction risk will accelerate with continued greenhouse gas pollution. One million animal and plant species are now threatened with extinction, with climate change as a primary driver.[216] At 2°C compared with 1.5°C of temperature rise, species' extinction risk will increase dramatically, leading to a doubling of the number of vertebrate and plant species losing more than half their range, and a tripling for invertebrate species.[217] Numerous studies have projected catastrophic species losses during this century if climate change continues unabated: 15 to 37% of the world's plants and animals committed to extinction by 2050 under a mid-level emissions scenario[218]; the potential extinction of 10 to 14% of species by 2100[219]; global extinction of 5% of species with 2°C of warming and 16% of species with business-as-usual warming[220]; the loss of more than half of the present climatic range for 58% of plants and 35% of animals by the 2080s under the current emissions pathway, in a sample of 48,786 species[221]; and the loss of a third or more of animals and plant species in the next 50 years.[222] As summarized by the Third National Climate Assessment, "landscapes and seascapes are changing rapidly, and species, including many iconic species, may disappear from regions where they have been

[213] **Exhibit 139,** Michela Pacifici et al., *Species' traits influenced their response to recent climate change*, 7 Nature Climate Change 205 (2017). The study concluded that "populations of large numbers of threatened species are likely to be already affected by climate change, and … conservation managers, planners and policy makers must take this into account in efforts to safeguard the future of biodiversity."
[214] **Exhibit 140,** Fiona E.B. Spooner et al., *Rapid warming is associated with population decline among terrestrial birds and mammals globally*, 24 Global Change Biology 4521 (2018).
[215] **Exhibit 141,** Camille Parmesan & Gary Yohe, *A globally coherent fingerprint of climate change impacts across natural systems*, 421 Nature 37 (2003); **Exhibit 142,** Terry L. Root et al., *Fingerprints of global warming on wild animals and plants*, 421 Nature 57 (2003); **Exhibit 143,** Camille Parmesan, *Ecological and evolutionary responses to recent climate change*, 37 Annual Review of Ecology Evolution and Systematics 637 (2006); **Exhibit 144,** I-Ching Chen et al., *Rapid range shifts of species associated with high levels of climate warming*, 333 Science 1024 (2011); **Exhibit 145,** Ilya M. D. Maclean & Robert J. Wilson, *Recent ecological responses to climate change support predictions of high extinction risk*, 108 PNAS 12337 (2011); *Increasing impacts of climate change upon ecosystems with increasing global mean temperature rise*, Exhibit 136; **Exhibit 146,** Abigail E. Cahill et al., *How does climate change cause extinction?*, 280 Proceedings of the Royal Society B 20121890 (2012).
[216] **Exhibit 147,** IPBES, Global Assessment Report on Biodiversity and Ecosystem Services (E.S. Brondízio et al eds., 2019), https://ipbes.net/news/Media-Release-Global-Assessment.
[217] Intergovernmental Panel on Climate Change, *Summary for Policymakers,* in Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (V. Masson-Delmotte et al eds., 2021), https://www.ipcc.ch/report/ar6/wg1/.
[218] **Exhibit 148,** Chris D. Thomas et al., *Extinction risk from climate change*, 427 Nature 145 (2004).
[219] *Recent ecological responses to climate change support predictions of high extinction risk*, Exhibit 145.
[220] **Exhibit 149,** Mark C. Urban, *Accelerating extinction risk from climate change*, 348 Science 571 (2015).
[221] **Exhibit 150,** Rachel Warren et al., *Quantifying the benefit of early climate change mitigation in avoiding biodiversity loss*, 3 Nature Climate Change 678 (2013).
[222] **Exhibit 151,** Cristian Román-Palacios & John J. Wiens*, Recent responses to climate change reveal the drivers of species extinction and survival*, 117 PNAS 4211 (2020).

prevalent or become extinct, altering some regions so much that their mix of plant and animal life will become almost unrecognizable."[223]

Methane emissions are particularly alarming. Immediate, deep reductions in methane emissions are critical for lowering the rate of global warming in the near-term, preventing the crossing of irreversible planetary tipping points, and avoiding harms to species and ecosystems from methane's intensive near-term heating effects and ground-level ozone production.[224] Methane is a super-pollutant 87 times more powerful than CO_2 at warming the atmosphere over a 20-year period,[225] and is second only to CO_2 in driving climate change during the industrial era.[226] Methane also leads to the formation of ground-level ozone, a dangerous air pollutant, that harms ecosystems and species by suppressing plant growth and reducing plant productivity and carbon uptake.[227] Because methane is so climate-damaging but also comparatively short-lived with an atmospheric lifetime of roughly a decade, cutting methane has a relatively immediate effect in slowing the rate of temperature rise in the near-term. Critically, deep cuts in methane emissions of ~45% by 2030 would avoid 0.3°C of warming by 2040 and are considered necessary to achieve the Paris Agreement's 1.5°C climate limit and prevent the worst damages from the climate crisis.[228] Deep cuts in methane emissions that reduce near-term temperature rise are also critical for avoiding the crossing of planetary tipping points—abrupt and irreversible changes in Earth systems to states wholly outside human experience, resulting in severe physical, ecological and socioeconomic harms.[229]

What is more, scientists can now predict specific harms to individual species from the incremental emissions increases directly attributable to the federal agency actions, and can also assess the consequences of emissions for listed species' conservation and recovery. For example, the recovery plan for the polar bear predicts three different scenarios for polar bear populations under scenarios where emissions are abated early, emissions are abated later, and where emissions continue unabated.[230] Likewise, with respect to particular agency actions, scientists were able to calculate that the rollback of vehicle emissions standards by the Trump administration would have resulted in a sustained loss of more than 1,000 square miles of summer sea ice habitat for the polar bear and nearly one full additional day of ice-free conditions

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[223] **Exhibit 152,** U.S. Global Change Research Program, *Climate Change Impacts in the United States: The Third National Climate Assessment* 196 (Jerry M. Melillo et al. eds., 2014), doi:10.7930/J0Z31WJ2.

[224] **Exhibit 153,** United Nations Environment Programme & Climate and Clean Air Coalition, *Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions* 11 (2021), https://www.unep.org/resources/report/global-methane-assessment-benefits-and-costs-mitigating-methane-emissions.

[225] G. Myhre et al., *Anthropogenic and Natural Radiative Forcing*, in: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (T.F. Stocker et al. eds., 2013), https://www.ipcc.ch/report/ar5/wg1/ at Table 8.7.

[226] United Nations Environment Programme & Climate and Clean Air Coalition, Exhibit 153, at 11.

[227] *Id.* at 11, 69.

[228] *Id.* at 11.

[229] **Exhibit 154,** O. Hoegh-Guldberg et al., *Impacts of 1.5°C Global Warming on Natural and Human Systems*, in: Global Warming of 1.5°C, An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty 262 (V. Masson-Delmotte et al. eds., 2018), https://www.ipcc.ch/sr15/chapter/chapter-3/.

[230] **Exhibit 155,** U.S. Fish and Wildlife Service, *Polar bear (*Ursus maritimus*) Conservation Management Plan, Final* (2016).

in Alaska and many other parts of the Arctic, which would reduce the length of the polar bear feeding season and lower reproductive success and survival.[231] Thus as a scientific matter, there is no basis for any federal agency to assert that climate change does not harm endangered and threatened species or that it is scientifically impossible to ascertain the particular harm caused by an agency's contribution to greenhouse gas emissions.

Furthermore, there are no defensible legal rationales for ignoring climate-threatened species that are harmed by the emissions that will result from a proposed agency action. Since 2008, federal agencies have taken cover behind a cursory, two-page memorandum from the Fish and Wildlife Service, which asserted, without any citation or acknowledgement of the scientific literature, that the "best scientific data available today do not allow us to draw a causal connection between GHG emissions from a given facility and effects posed to listed species or their habitats, nor are there sufficient data to establish that such impacts are reasonably certain to occur."[232] Several months later, David Bernhardt — then Department of Interior Solicitor during the George W. Bush administration—issued a five-page memorandum concurring with the FWS.[233] Even if these memoranda were correct at the time — and they were not — as the FWS memorandum stated: that "As new information and knowledge about emissions and specific impacts to species and their habitats is developed, we will adapt our framework for consultations accordingly. This is particularly important as more regionally-based models are developed and refined to the level of specificity and reliability needed for the Service to execute its implementation of the Act's provisions ensuring consistency with the statute's best available information standard."[234] Thus, the FWS and Bernhardt Memoranda were never intended to provide a permanent shield to avoid consultations, and any reliance on it today would simply be arbitrary and capricious. Accordingly, all federal agencies must assess whether the emissions that result from their activities harm climate-threatened species.

2. The BLM's Proposed Leasing Action Clearly Crosses the "May Affect" Threshold for Climate-Threatened Species and Requires Consultation.

If the agency determines that an action *may affect* a species—even if the effect is small, indirect, or the result of cumulative actions—it must formally consult with the Services. 50 C.F.R. §§ 402.02, 402.14(a), (g) (2020). Federal courts have repeatedly held that the "may affect" threshold is "very low" and that any effect — whether "beneficial, benign, adverse or of an undetermined character" — is sufficient to cross that threshold. *Karuk Tribe of Cal. v. U.S. Forest Serv*., 681 F.3d 1006, 1027 (9th Cir. 2012). Only a scientific finding of "no effect" is

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[231] Declarations of Shaye Wolf and Steven Amstrup, *Competitive Enterprise Inst. et al. v. National Highway Traffic Safety Admin. et al.,* Case No. 20-1145, Document No. 1880214 (filed Jan. 14, 2021) and Dirk Notz & Julienne Stroeve, *Observed Arctic sea ice loss directly follows anthropogenic CO_2 emission*, 354 SCIENCE 747 (2016), https://science.sciencemag.org/content/354/6313/747/tab-pdf.

[232] **Exhibit 156,** Memorandum from H. Dale Hall, Director Fish & Wildlife Service, to Regional Directors, Regions 1-8 (May 14, 2008), https://www.fws.gov/policy/m0331.pdf ("FWS Memorandum").

[233] **Exhibit 157,** Memorandum from David L. Bernhardt, Department of the Interior, Office of the Solicitor to the Secretary of the Department of the Interior Director (Oct. 3, 2008), https://doi.opengov.ibmcloud.com/sites/doi.opengov.ibmcloud.com/files/uploads/M-37017.pdf.

[234] FWS Memorandum at 2-3, Exhibit 156.

sufficient to avoid the consultation process altogether.[235] In essence, as the Joint Consultation Handbook explains, a "no effect" finding means exactly what it says, and is only properly made "when the action agency determines its proposed action will not affect a listed species or designated critical habitat";[236] it cannot be employed when an agency simply believes it is too hard to determine the impacts of its actions. *Am. Fuel & Petrochemical Mfrs. v. EPA*, 937 F.3d 559, 598 (D.C. Cir. 2019) (A finding that "it is impossible to know" an agency action will affect listed species or critical habitat "is not the same as" a no effect determination.).

It is abundantly clear in this instance the proposed agency action will result in a significant fraction of all global greenhouse gas emissions, and consequently there are real impacts that cross the "may affect" threshold, even if some of those impacts are still of an undetermined character at this point. The purpose of the consultation process, by Congressional design, is to allow the expert wildlife agencies to assess these impacts using the best available science, so that they can evaluate the harm that may be caused. Any attempt by the Bureau of Land Management (or U.S. Fish and Wildlife Service) to simply assert that it is unable to determine the impacts of greenhouse gas emissions on listed species is illegal and *ultra vires*. Only the expert wildlife agencies, with best scientific data available, can determine the effects of a federal action on species or habitat.

Indeed, the second step of the consultation process reinforces the basic notion that an action agency may not unilaterally assert that the greenhouse gases that will be emitted will not harm listed species. Once the "may affect" threshold is crossed, the action agency must then prepare a "biological assessment" to determine whether the listed species may be adversely affected by the proposed action. If the action agency believes that the impacts of its greenhouse gas emissions are not significant, it may make a finding that such impacts are "not likely to adversely affect" listed species, which is defined as all impacts being "discountable" or "insignificant."[237] Critically, however, the expert wildlife agencies must themselves concur regarding whether the action agency's scientific assessment of the impacts to climate-threatened species is correct. 50 C.F.R. § 402.14(b)(1).

At the formal consultation phase, the Services must provide the action agency with a "biological opinion" explaining how the proposed action will affect the listed species or habitat. 16 U.S.C. § 1536(b); 50 C.F.R. §§ 402.14(g), (h). If the Services conclude that the proposed action will jeopardize the continued existence of a listed species, including those that are not in the immediate project area and that are harmed by greenhouse gas emissions, or will result in the destruction or adverse modification of critical habitat, the Services must provide "reasonable and prudent alternatives" ("RPAs") to the proposed action that they believes would address those impacts. 16 U.S.C. § 1536(b)(3). If the Services conclude that the proposed action will not likely to jeopardize listed species, or result in the destruction or adverse modification of critical habitat, then they must provide an "incidental take statement" ("ITS"), specifying the amount or extent

[235] **Exhibit 158,** U.S. Fish and Wildlife Service & National Marine Fisheries Service, *Endangered Species Consultation Handbook: Procedures for Conducting Consultation and Conference Activities under Section 7 of the Endangered Species Act* xvi (1998), https://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf.
[236] *Id.* at xvi. However, the agencies are still encouraged to obtain written concurrence from the Services. *See id.* definitions of "Formal consultation" and "Informal consultation" at xiv, xv.
[237] U.S. Fish and Wildlife Service & National Marine Fisheries Service, at xv.

of such incidental taking on the species, any "reasonable and prudent measures" ("RPMs") that they consider necessary or appropriate to minimize such impact. 16 U.S.C. § 1536(b)(4); 50 C.F.R. §§ 402.14(h)(4)(i).

With respect to the greenhouse gas emissions that will result from federal fossil fuel leasing, the best available science suggests that this action, along with other federal onshore mineral production will result in approximately 24,112 megatons of carbon dioxide equivalent through 2050.[238] These emissions are appreciable and significant, and must be assessed under the ESA's consultation framework. This analysis is also consistent with President Biden's "whole of government" approach to addressing the climate crisis, as well as Executive Order 13990, which states that all federal agencies "must be guided by the best science and be protected by processes that ensure the integrity of Federal decision-making."[239]

Consultation on climate-threatened species that may be affected by cumulative impacts of emissions caused by the agency's action is similar to many other complex consultations undertaken by the Services. The Services must first attempt to quantify any take of listed species, but if such harms cannot be quantified, the Services can qualitatively assess the harm, something Congress contemplated when it passed the 1982 amendments to the Endangered Species Act. The legislative history of those amendments reflects Congress' recognition that a numerical determination of take would not always be obtainable— such as when the eggs of listed species are boiled alive in power plant cooling systems—and intention that such challenges not present an insurmountable barrier to completing consultations.[240] Furthermore, the Services have regularly relied on surrogates, such as habitat, ecological conditions, or a similarly-affected species that are easier to monitor in instances where the biology of a listed species or the nature of the proposed action makes it difficult to detect or monitor take of individual animals.

Similarly, the Services must also assess the negative impacts of greenhouse gases on critical habitat. Assessing the loss of critical habitat in a climate consultation is complex, but no more difficult than assessing critical habitat in other nationwide programmatic consultations. Under the Services' regulations,[241] critical habitat is only adversely modified or destroyed when it appreciably diminishes the value of the "whole" designation. In many cases, climate impacts to critical habitat will affect the entirety of a designation — likely to the same extent in a relatively similar manner. For example, acidification impacts to a listed coral are likely to be roughly equivalent across the range of each species, and sea level rise would likely harm the habitat of Florida Keys species relatively equally across the range, making it more likely that an adverse modification determination would be needed at the end of the assessment process. But the fact that the outcome of such an analysis is a positive adverse modification or destruction determination is not a legal justification for not conducting an analysis at all. Thus, to the extent that the impacts to critical habitat are significant, the Services must develop RPAs and RPMs — including through surrogate metrics — to address the habitat degradation that climate change is bringing.

[238] 2020 BLM Specialist Report at Section 6.0 and Table ES-4, Exhibit 17.
[239] Executive Order 13990.
[240] H.R. Rep. No. 97-567, at 27 (1982).
[241] These regulations are being challenged in federal court and the Administration initiated a review.

For both the jeopardy analysis and critical habitat analysis, the Services will need to develop analytical tools and methods that meet the standards of the Endangered Species Act, just as it does in traditional consultations, to address complex threats that are hard to assess quantitatively. The National Marine Fisheries Service can use the amount of sea ice lost as a surrogate for determining anticipated take of bearded seals, while the Fish and Wildlife Service can use declining stream flows and increasing water temperatures as a surrogate to infer the status of the western glacier stonefly or its critical habitat. This has been a pre-existing practice and the Services already have the knowledge and expertise to do this.

If the Services ultimately determine that the proposed action will result in jeopardy, the Services must provide RPAs that will allow the agency to move forward in a way that avoids jeopardy to the species or destruction or adverse modification of designated critical habitat. 16 U.S.C. 1536(b)(3)(A). While jeopardy determinations are rare, in the context of climate consultations they are all the more critical to the survival not only of listed species, but of humanity itself. If a federal agency action substantially increases the likelihood of overshooting the 1.5-degree Celsius goal of the Paris Agreement, it is likely to not only jeopardize climate-threatened species, but people everywhere. As the Endangered Species Act makes clear, the action agency must not take such an action, or it must implement RPAs that ensure that GHG emissions decrease such that they are consistent with the goals of the Paris Agreement, the reports of the Intergovernmental Panel on Climate Change, and the best available science. Thus, consultations would provide a powerful mechanism to achieve President Biden's stated policy to "reduce climate pollution in every sector of the economy; increase resilience to the impacts of climate change; protect public health" and "conserve our lands, waters, and biodiversity."[242]

In instances where the federal agency actions will not rise to the level of jeopardy but will result in incidental take in areas that are geographically remote from the agency action itself, the Services must *still* issue RPMs to minimize the take of climate-threatened species. The most durable and effective approach for climate consultations to implement RPMs would be for the Services to condition the receipt of an ITS through the implementation of RPMs within a climate-focused Section 7(a)(1) conservation program for each climate-threatened species identified in the biological opinion where the Services anticipate take.[243] Section 7(a)(1) requires all federal agencies to "utilize their authorities…by carrying out programs for the conservation of endangered species and threatened species."[244] As the Supreme Court noted in *Tennessee Valley Authority v. Hill* noted, section 7(a)(1) is no less than "stringent, mandatory language,"[245] that "reveals an explicit congressional decision to require agencies to afford first priority to the declared national policy of saving endangered species."[246] By requiring agencies to develop a climate-focused Section 7(a)(1) conservation program as a condition to obtaining an ITS, the

[242] Executive Order 14008.
[243] H.R. Rep. No 97-567, at 44 ("I]n many cases in which a proposed action will not result in jeopardy, there may be minor modifications to the project which will minimize the effects on the species and which the action agency could easily and inexpensively adopt. We believe that providing such information to the action agency is important for the continued protection of endangered species and assists other federal agencies in fulfilling their obligations under section 7(a)(1) of the Act").
[244] 16 U.S.C. 1536(a)(1).
[245] *TVA v. Hill*, 437 U.S. at 183.
[246] *Id.* at 185.

Services can require agencies to finally comply with the law and ensure that their activities are consistent with the recovery of listed species and address the take they cause.

For this proposed action, it is clear that the anticipated greenhouse gas pollution from federal oil and gas leasing will harm listed species far beyond the immediate area of the proposed activity in a manner that is attributable to the agency action. Pending consultation, BLM should postpone the New Mexico/Oklahoma Q2 '23 lease sale.

V. CONCLUSION

Prior to any decision to conduct new leasing of federal public lands for fluid mineral development, BLM must comply with its obligations under the National Environmental Policy Act, the Federal Land Policy and Management Act, and the Endangered Species Act, to consider the impacts of that nationwide policy on resources including global climate, environmental justice, wildlife habitat, air quality, and surface and groundwater quality. BLM's current plan- and lease-level NEPA compliance cannot support a decision to lawfully engage in new leasing, and therefore all new leasing must be deferred until BLM prepares a comprehensive environmental review, including an analysis of the cumulative impacts of past, ongoing, and reasonably foreseeable fossil fuel development. In order to comply with the United States' legal and moral obligations to its citizens, and to future generations, that review must include meaningful consideration of alternatives that could allow the Department of Interior to fulfill its role in putting the nation on a path towards an emissions future compatible with limiting warming to 1.5°C and mitigating the worst effects of global climate change. The Conservation Groups appreciate your consideration of the information and concerns addressed in this letter, as well as the information included in the attached exhibits, sent under separate cover.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

/s/ Morgan O'Grady

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