

August 1, 2018

Via overnight delivery

Raymond Sauzo, State Director
Bureau of Land Management
Attn: Oil and Gas Lease Sale
One North Central Ave., Ste. 800
Phoenix, AZ 85004-4427

Re: Protest of BLM Arizona August 6, 2018 Competitive Oil and Gas Lease Sale, DOI-BLM-AZ-G010-2018-0024-DNA and DOI-BLM-AZ-G010-2018-0027-DNA

Dear Mr. Sauzo:

The Center for Biological Diversity (“Center”), Sierra Club, White Mountains Conservation League, Living Rivers and Colorado Riverkeeper, Grand Canyon Trust, Food and Water Watch, WildEarth Guardians and Western Watersheds Project hereby file this Protest of the Bureau of Land Management’s (“BLM”) proposed 6 September, 2018 oil and gas lease sale and its accompanying Determinations of NEPA Adequacy, DOI-BLM-AZ-G010-2018-0024-DNA and DOI-BLM-AZ-G010-2018-0027-DNA. The Center and Sierra Club protest the proposed sale of all three parcels, totaling 4,201.97 acres: AZ-2019-03-0391, AZ-2019-03-0386, and AZ-2019-03-0418.

I. Protesting Parties: Contact Information and Statement of Interests

This Protest is filed on behalf of the Center for Biological Diversity (“Center”), Sierra Club, White Mountains Conservation League, Living Rivers and Colorado Riverkeeper, Grand Canyon Trust, Food and Water Watch, WildEarth Guardians and Western Watersheds Project by their authorized representatives:

For Center for Biological Diversity:

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The **Center for Biological Diversity** is a national, nonprofit conservation organization with over 1.6 million members and online activists dedicated to the protection of endangered species and wild places. The Center has members and employees living in Arizona who have visited the parcels and adjacent public lands for recreational, scientific, educational, and other pursuits; they will continue to do so in the future. The Center, its members, directors, and staff

have worked and advocated to conserve and protect public lands and waters in the Little Colorado River Valley, on the nearby Mogollon Rim, downstream of the parcels in Grand Canyon National Park, and they have worked to conserve and protect habitat and populations of Little Colorado River spinedace and yellow-billed cuckoo.

For Sierra Club:

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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 more than 800,000 members nationwide, with approximately 15,965 members in Arizona alone, 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's Grand Canyon Chapter has members who use and enjoy surrounding lands that may be affected by the proposed lease sale. The Sierra Club has members that live, work or recreate in the potentially affected area, using it for recreation such as hiking, backpacking, camping, fishing or wildlife viewing, as well as for business, scientific, spiritual, aesthetic or environmental purposes.

For White Mountain Conservation League:

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The **White Mountain Conservation League** is a local, non-profit, volunteer organization that for over 25 years has promoted the sound, sustainable use and management of the White Mountains of Arizona. WMCL opposes the BLM's leasing of public lands to oil and gas exploration and development. NEPA guidelines must be followed prior to the leasing of any public lands for oil and gas exploration. We are concerned about the area's water aquifers, threatened and endangered species that will be affected by this, proximity to the Petrified Forest National Park, and the our rural way of life. These issues and others must be addressed prior to moving ahead with the leasing any public lands for oil and gas exploration/development.

For Food and Water Watch:

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Food & Water Watch champions healthy food and clean water for all. We stand up to corporations that put profits before people, and advocate for a democracy that improves people's lives and protects our environment. With more than a million membership, we engage and mobilize citizens politically through person-to-person, on-the-ground organizing, educational campaigns and new media technologies. We believe political involvement is critical for holding governments accountable to their constituents and for creating policies that ensure a sustainable world with safe food and clean water. With many of our members not only in the affected area in Arizona, but throughout states in close proximity to public lands, we oppose the expanded reach of the oil & gas industry. Corporate profit should never be the priority over the preservation of our most precious natural resources. We must abandon our dependence on fossil fuels and make an immediate and just transition to renewables.

For Living Rivers and Colorado Riverkeeper:

Living Rivers & Colorado Riverkeeper
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Living Rivers & Colorado Riverkeeper is a nonprofit organization based in Moab, Utah. Moab is the county seat of Grand County and the parcel is located about 90 miles to the north. The Green River forms the western boundary of Grand County and the Colorado River flows through Moab. Living Rivers has approximately 1,200 members in Utah, Colorado, and other states. Since its inception in the year 2000, Living Rivers has been engaged in advocating for responsible management of the Colorado River system for wildlife and humans. In 2002 Living Rivers was designated as the official Colorado Riverkeeper by the Waterkeeper Alliance, which is comprised of over 300 "Waterkeepers" on six continents. Living Rivers' trustees, partners, and members live, work, and recreate on the land and waters of the Colorado River.

For WildEarth Guardians:

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WildEarth Guardians is a nonprofit environmental advocacy organization dedicated to protecting the wildlife, wild places, wild rivers, and health of the American West. On behalf of our members, Guardians has an interest in ensuring the BLM fully protects public lands and resources as it oversees the oil and gas industry's plans to lease publicly-owned minerals. More specifically, Guardians has an interest in ensuring the BLM meaningfully and genuinely takes into account the air, water, and climate implications of its oil and gas decisions, including objectively and robustly weighing the costs and benefits of authorizing the release of more greenhouse gas emissions known to contribute to global warming.

For Grand Canyon Trust:

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The **Grand Canyon Trust** is a membership-based, non-profit advocacy organization founded in 1985 that has over 3,000 members. It's headquartered in Flagstaff, Arizona. The mission of the Trust is to protect and restore the Colorado Plateau – its spectacular landscapes, flowing rivers, clean air, diversity of plants and animals, and areas of beauty and solitude. The Trust has members who would be negatively affected by impacts to the parcels and adjacent public lands. This is not the first time that the Trust has worked to protect water resources in the area. For example, our organization challenged the proposed expansion of the Springerville Coal Plant, in part, to protect valuable, limited water resources. As an active participant in the Coconino Plateau Water Advisory Council, our water program has also actively worked to protect seeps and springs in the Little Colorado River watershed. And the Trust has also worked to protect native fish in the Little Colorado River from threats to in-stream flow due to upstream groundwater depletion.

For Western Watersheds Project:

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Western Watersheds Project is a non-profit organization with more than 5,000 members and supporters. WWP's mission is to protect and restore western watersheds and wildlife through education, public policy initiatives and legal advocacy. Western Watersheds Project has staff and members in Arizona who use and enjoy America's lands and their wildlife, cultural and natural resources for health, recreational, scientific, spiritual, educational, aesthetic and other purposes. WWP also has a direct interest in mineral development that occurs in areas with sensitive wildlife populations and important wildlife habitat, as well as long-standing interests in preserving and conserving Apache and Navajo County watersheds.

II. Statement of Reasons Why the Proposed Lease Sale Is Unlawful

BLM's Determinations of NEPA Adequacy ("DNAs") and proposed decision to lease the parcels listed above are substantively and procedurally flawed for the following reasons, as discussed in detail below:

- BLM's use of Determinations of NEPA Adequacy to authorize leasing, and its failure to prepare an Environmental Impact Statement or Environmental Assessment, violates the National Environmental Policy Act.
- IM 2018-034 violates the National Environmental Policy Act, Federal Land Policy and Management Act, and Administrative Procedure Act by requiring BLM's unlawful use of determinations of NEPA adequacy and unlawfully limiting public participation
- BLM violated NEPA by failing to consider reasonably foreseeable impacts not analyzed in the 1988 Phoenix District RMP FEIS, including but not limited to new information relating to modern oil, gas, and hydraulic fracturing technology, climate change, regional drought, groundwater conditions, Petrified Forest National Park expansion, threatened and endangered species, and tribal consultations.
- BLM's failure to complete a site-specific NEPA analysis of oil and gas stipulations conflicts with the Phoenix District RMP and violates the Federal Land Policy and Management Act and the National Environmental Policy Act.
- Fluid mineral leasing primarily for helium extraction violates the Mineral Leasing Act and DOI regulations.

- BLM violated Section 7 of the Endangered Species Act by failing to ensure that agency actions will not jeopardize the continued existence of species listed under the Endangered Species Act, including Little Colorado River spinedace and yellow-billed cuckoo.

A. BLM's use of Determinations of NEPA Adequacy to authorize oil and gas leasing, and its failure to prepare an Environmental Impact Statement or Environmental Assessment, violates the National Environmental Policy Act.

NEPA requires agencies to undertake thorough, site-specific environmental analysis at the earliest possible time and prior to any “irretrievable commitment of resources” so that the action can be shaped to account for environmental values. Pennaco Energy, Inc. v. United States DOI, 377 F.3d 1147, 1160 (10th Cir. 2004). Oil and gas leasing is an irretrievable commitment of resources. S. Utah Wilderness All. v. Norton, 457 F. Supp. 2d 1253, 1256 (D. Utah 2006). Thus, NEPA establishes “action-forcing” procedures that require agencies to take a “hard look,” at “all foreseeable impacts of leasing” before leasing can proceed. Center for Biological Diversity v. United States DOI, 623 F.3d 633, 642 (9th Cir. 2010); N.M. ex rel. Richardson v. BLM, 565 F.3d 683, 717 (10th Cir. 2009). Chief among these procedures is the preparation of an environmental impact statement (“EIS”). Id. BLM, however, did not prepare an EIS, or even an Environmental Assessment to determine whether preparation of an EIS is required.

In order to determine whether a project’s impacts may be “significant,” an agency may first prepare an Environmental Assessment (“EA”). 40 C.F.R. §§ 1501.4, 1508.9. If the EA reveals that “the agency’s action may have a significant effect upon the . . . environment, an EIS must be prepared.” Nat’l Parks & Conservation Ass’n v. Babbitt, 241 F.3d 722, 730 (9th Cir. 2001) (internal quotations omitted). If the agency determines that no significant impacts are possible, it must still *adequately* explain its decision by supplying a “convincing statement of reasons” why the action’s effects are insignificant. Blue Mountains Biodiversity Project v. Blackwood, 161 F.3d 1208, 1212 (9th Cir. 1998) (emphasis added). Here, however, BLM’s DNAs lack any analyses of site-specific impacts.

In issuing its DNAs, BLM failed both of NEPA’s “twin aims”: not only did BLM fail to ensure that the agency takes a “hard look” at the environmental consequences of its proposed action, it also failed to make information on the environmental consequences available to the public, which may then offer its insight to assist the agency’s decision-making through the comment process. See, e.g., Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 349 (1989). NEPA’s procedural requirement is not merely a formality, but is there to allow the agencies and the public to understand the consequences of the proposed lease auction. Not only did BLM fail to provide an adequate environmental analysis of the foreseeable impacts of the proposed lease sale, but furthermore failed to provide the public adequate notice of either foreseeable environmental impacts

BLM’s deferral of site-specific analysis until the APD stage is unlawful under NEPA, its implementing regulations, and legal precedents. Courts have repeatedly rejected BLM’s claim that it is not required to conduct any site-specific environmental review until after the parcels are leased and a proposal is submitted by industry. See, e.g., Center for Biological Diversity & Sierra Club v. BLM, 937 F. Supp. 2d 1140, 1158 (N.D. Cal. 2013) (“ . . . BLM asserts the now-familiar argument that there is no controversy because any degradation of the local environment from

fracking should be discussed, if ever, when there is a site-specific proposal. But the Ninth Circuit has specifically disapproved of this as a reason for holding off on preparing an EIS.”); and Conner v. Burford, 848 F.2d 1441, 1450 (9th Cir. 1988) (“The government’s inability to fully ascertain the precise extent of the effects of mineral leasing ... is not, however, a justification for failing to estimate what those effects might be before irrevocably committing to the activity.”).

BLM is required under NEPA to perform and disclose an analysis of environmental impacts of the parcels offered for lease *before* there are any “irreversible and irretrievable commitments of resources.” Center for Biological Diversity, 937 F. Supp. 2d at 1152 (citing Conner v. Burford, 848 F.2d 1441, 1446 (9th Cir. 1988) (“Our circuit has held that an EIS must be prepared *before* any irreversible and irretrievable commitment of resources.”) (emphasis added). “[N]on-NSO leases, even if subject to substantial government regulation, do constitute an ‘irretrievable commitment of resources.’ As a result, unless the lease reserves to the agencies an ‘*absolute right* to deny exploitation of those resources,’ the sale of [] non-NSO leases ... constitutes the go or no-go point where NEPA analysis becomes necessary.” Id at 1152. In other words, the specific environmental effects of oil and gas leasing in the project area must be analyzed and disclosed now, at the leasing stage.

Rather than perform the environmental review as required, BLM asserts that all significant impacts of the proposed action are covered by the environmental impact statements (EIS) for the 1999 Phoenix District Resource Management Plan (“RMP”), and defers the site-specific analysis until after the parcels are leased.¹ This is unlawful. BLM is required to analyze all foreseeable human health and safety risks, and seismic risks, posed by unconventional extraction techniques before leasing. In fact, BLM’s earlier analysis for the 1988 Phoenix District RMP is nearly devoid of any discussion of oil and gas development impacts. In a case called Center for Biological Diversity & Sierra Club v. BLM, 937 F. Supp. 2d 1140, 1152 (N.D. Cal. 2013), BLM also attempted to defer NEPA analysis of hydraulic fracturing (hereinafter referred to as “fracking”) on the parcels at issue until it received a site-specific proposal, because the exact scope and extent of drilling that would involve fracking was unknown. The district court held BLM’s “unreasonable lack of consideration of how fracking could impact development of the disputed parcels went on to unreasonably distort BLM’s assessment,” and explained:

“[T]he basic thrust” of NEPA is to require that agencies consider the range of possible environmental effects before resources are committed and the effects are fully known. “Reasonable forecasting and speculation is thus implicit in NEPA, and we must reject any attempt by agencies to shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as ‘crystal ball inquiry.’”

Center for Biological Diversity, 937 F. Supp. 2d at 1157 (citing City of Davis v. Coleman, 521 F.2d 661, 676 (9th Cir. 1975)).

As the courts have made clear time and again, NEPA requires that “assessment of all ‘reasonably foreseeable’ impacts must occur at the earliest practicable point, and must take place before an ‘irretrievable commitment of resources’ is made.” N.M. ex rel. Richardson v. BLM, 565 F.3d 683, 717-18 (10th Cir. 2009) (citing 42 U.S.C. § 4332(2)(C)(v)); compare with Center for

¹ DNA at 1-2.

Biological Diversity, 937 F. Supp. 2d at 1152 (N.D. Cal. 2013) (“Agencies are required to conduct this review at the ‘earliest possible time’ to allow for proper consideration of environmental values. . . A review should be prepared at a time when the decisionmakers ‘retain a maximum range of options.’”). In Richardson, BLM argued there also that it was not required to conduct any site-specific environmental reviews until the issuance of an APD. The court looked to the Ninth and D.C. Circuits in concluding that “NEPA requires BLM to conduct site-specific analysis before the leasing stage.” Richardson, 565 F.3d at 688. Richardson then offered a two-part test to determine whether NEPA has been satisfied: First we must ask whether the lease constitutes an “irretrievable commitment of resources.” The Tenth Circuit, again citing to the Ninth and D.C. Circuits, concluded that issuing an oil and gas lease without an NSO stipulation constitutes such a commitment. Second, the agency must ask whether all “foreseeable impacts of leasing” have been taken into account before leasing can proceed. Id. Given the utter lack of any site-specific review of the present surface-occupancy-permitting parcels, for this lease sale, such impacts have not been taken into account.

B. IM 2018-034 violates the National Environmental Policy Act, Federal Land Policy and Management Act, and Administrative Procedure Act by requiring BLM’s unlawful use of determinations of NEPA adequacy and unlawfully limiting public participation.

Over the past year, the Trump Administration has steadily disregarded the notion, enshrined in federal law, that public lands exist for the benefit of all American people. In the name of “energy dominance,” the new Administration has made sweeping changes to its land management practices to prioritize oil and gas development above all else, eroding basic principles of government transparency, public participation, and balanced stewardship of our public lands. In doing so, the Administration has flouted the law.

IM 2018-034 is one such change. Rather than promulgating regulations to overhaul its oil and gas leasing procedures, BLM issued this “Instruction Memorandum” on January 31, 2018—without any public notice, comment, or environmental review—directing BLM offices to sharply limit public involvement in oil and gas leasing decisions. The IM lists public involvement as an “unnecessary impediment” to domestic energy production and imposes new barriers to public input in the leasing process. These include making comment periods optional at the discretion of BLM field staff and restricting the former 30-day protest period to just 10 days.

These changes unreasonably inhibit protestors—and all Americans—from weighing in on decisions affecting their public lands. They are also unlawful, for three reasons. First, BLM promulgated IM 2018-034 without notice-and-comment rulemaking required under the Federal Land Policy and Management Act (FLPMA), National Environmental Policy Act (NEPA), and Administrative Procedure Act (APA). Second, the revised procedures disregard BLM’s obligations, under both FLPMA and NEPA, to allow for public participation in land management decisions. Third, BLM failed to provide a reasoned explanation for its elimination of long-standing public comment and protest periods, violating its obligation to engage in well-reasoned, non-arbitrary decisionmaking under the APA.

FLPMA Section 309(e) requires that the public be allowed meaningful participation in public lands management decisions. *See* 43 U.S.C. § 1739(e). It provides:

In exercising his authorities under this Act, the Secretary, *by regulation*, shall establish procedures . . . to give the Federal, State, and local governments and the public adequate notice and an opportunity to comment upon the formulation of standards and criteria for, *and to participate in*, the preparation and execution of plans and programs for, and the management of, the public lands.

43 U.S.C. § 1739(e) (emphasis added). FLPMA Section 310 further directs BLM to follow traditional APA rulemaking procedures in promulgating rules and regulations under FLPMA, without regard to APA's "public property" exemption which allowed BLM avoid rulemaking in the past. *See* 43 U.S.C. § 1740. Also, FLPMA Section 102 reiterates that "it is the policy of the United States that [the Secretary of Interior] be required to establish comprehensive rules and regulations *after considering the views of the general public*[" 43 U.S.C. § 1701(a).

FLPMA thus mandates that DOI and BLM involve the public in the "actual management of public lands." *Donald K. Majors*, 123 IBLA 142, 147 (1992). "There are strong indications that Congress intended some form of public input for all decisions that may have significant impact on federal lands." *Nat'l Wildlife Fed'n v. Burford*, 835 F.2d 305, 322 (1987) (citing H.R. Rep. No. 1163, 94th Cong., 2d Sess. 7 (1976), U.S. Code Cong. & Ad. News 1976, p. 6181), *rev'd on other grounds*, 497 U.S. 871 (1990). BLM violated these FLPMA mandates in adopting IM 2018-034 without undertaking notice-and-comment rulemaking, and in applying IM 2018-034 to exclude or sharply limit public participation in BLM oil and gas leasing decisions.

NEPA is designed to ensure that federal agencies "will have available, and will carefully consider, detailed information concerning significant environmental impacts" of their actions before they occur. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989); 40 C.F.R. § 1500.1(c). NEPA "also guarantees that the relevant information will be made available to the larger [public] audience that may also play a role in both the decision-making process and the implementation of that decision." *Robertson*, 490 U.S. at 349; 40 C.F.R. § 1500.1(b).

Under the CEQ regulations, federal agencies may adopt their own agency-specific procedures for fulfilling their NEPA obligations. *See* 40 C.F.R. § 1507.3. Agencies must consult with CEQ while developing these procedures and publish the proposed regulations in the Federal Register for public review and comment. *Id.* § 1507.3(a). Agencies must also "continue to review their policies and procedures and in consultation with the [CEQ] to revise them as necessary to ensure full compliance with the purposes and provisions of the Act." *Id.*; *see also* 40 C.F.R. § 1506.6 ("Agencies shall: . . . (a) Make diligent efforts to involve the public in preparing . . . their NEPA procedures"). In adopting IM 2018-034, BLM violated NEPA and the CEQ regulations by adopting IM 2018-034 without undertaking notice-and-comment rulemaking or conferring with CEQ, thereby excluding or sharply limiting public participation in BLM's NEPA evaluations of proposed oil and gas leasing decisions.

By, under IM 2018-034, providing the public with only a 10-day protest period, on a Determination of NEPA Adequacy addressing proposed oil and gas leases involving substantial uncertainties and potential impacts, BLM is violating the APA, NEPA, and FLPMA.

IM 2018-034 is procedurally invalid under FLPMA, NEPA, and the APA. First, as noted above, FLPMA section 309(e) provides that:

In exercising his authorities under this Act, the Secretary, *by regulation*, shall establish procedures . . . to give the Federal, State, and local governments and the public adequate notice and an opportunity to comment upon the formulation of standards and criteria for, and to participate in, the preparation and execution of plans and programs for, and the management of, the public lands.

43 U.S.C. § 1739(e) (emphasis added). FLPMA Section 310 further directs BLM to follow APA rulemaking procedures. *See* 43 U.S.C. § 1740.

Where Congress has explicitly directed an agency to proceed “by regulation” on some subject, the agency has no discretion to use a less formal method. *See MST Express v. Dep’t of Transp.*, 108 F.3d 401 (D.C. Cir. 1997) (vacating guidance on vehicle safety rating procedures, because the agency “failed to carry out its statutory obligation” to establish these procedures “by regulation”); *Ethyl Corp. v. EPA*, 306 F.3d 1144 (D.C. Cir. 2002) (vacating an EPA guidance document because Congress explicitly directed EPA to proceed “by regulation” on that subject). Here, IM 2018-034 falls within the scope of FLPMA Section 309, because it establishes procedures for public participation in oil and gas leasing, a BLM management decision. Yet BLM adopted IM 2018-034 by fiat, without notice-and-comment rulemaking as required by FLPMA and the APA. Accordingly, BLM’s issuance of IM 2018-034 was procedurally invalid.

Second, BLM’s issuance of IM 2018-034 also violated its obligation to proceed by notice-and-comment rulemaking when updating its NEPA procedures. As noted above, the CEQ regulations direct federal agencies to adopt and revise their own agency-specific NEPA procedures through consultation with CEQ, and by publishing the proposed regulations in the Federal Register for public review and comment. *See* 40 C.F.R. § 1507.3; *see also* 40 C.F.R. § 1506.6 (“Agencies shall: . . . (a) Make diligent efforts to involve the public in preparing . . . their NEPA procedures”). Here, BLM used IM 2018-034 to revise its NEPA procedures for oil and gas leasing, without publishing the proposed changes in the Federal Register for public comment, in violation of the CEQ regulations and NEPA. BLM’s failure to follow proper procedures to adopt the changes to its oil and gas leasing process as required by the CEQ regulations compounds its FLPMA violations

Third, BLM’s elimination of critical opportunities for public participation in leasing decisions is arbitrary, capricious, and contrary to law. In FLPMA Section 102, Congress declared: “it is the policy of the United States that” the Secretary of Interior be required to “assure adequate third party participation.” 43 U.S.C. § 1701(a). To achieve this objective, as quoted above, FLPMA Section 309(e) requires that the Secretary of Interior must “*give . . . the public adequate notice and an opportunity to comment* upon the formulation of standards and criteria for, and to participate in, the preparation and execution of plans and programs for, and the management of, the public lands.” 43 U.S.C. § 1739(e) (emphasis added). FLPMA Section 103 further defines “public involvement” as “the opportunity for participation by affected citizens in rule making, decision making, and planning with respect to the public lands, including public meetings or hearings held at locations near the affected lands, or advisory mechanisms, or such other procedures as may be necessary to provide public comment in a particular instance.” 43 U.S.C. § 1702(d). these provisions require public involvement in BLM management decisions, including for livestock grazing. *See Western Watersheds Project v. Kraayenbrink*, No.

4:05-cv-297, 2006 WL 2348080, at *7 (D. Id. 2006) (ECF No. 61) (“This statutory language values public input on long-range issues . . . as well as on day-to-day issues (‘the management of’ and ‘execution of’ those long-range plans)”); *see also Natl. Parks and Conservation Ass’n v. F.A.A.*, 998 F.2d 1523, 1531 (10th Cir. 1993) (“Congress, through FLPMA . . . , has determined that the public has a right to participate in actions affecting public lands”). Like grazing decisions, oil and gas leasing decisions fall into the “management” category of Section 309(e). Therefore, under FLPMA, public participation is required for such decisions, and IM 2018-034 violates this mandate.

First, by removing the term “will” and replacing it with a “may,” *see* IM 2018-034 § III.C.5., BLM has granted itself impermissible discretion in determining whether to involve the public in oil and gas leasing decisions. *Second*, by declaring that public comment is not required in lease sales supported by a DNA and making no provision for public comment in lease sales supported by an EA, IM 2018-034 fails satisfy BLM’s obligation to provide, at a bare minimum, an opportunity for public comment in leasing decisions. *Third*, by relegating public input to the adversarial protest and appeals process for many lease sales, BLM has deprived the public of meaningful involvement in the formulation of BLM leasing decisions.

Fourth and finally, the unreasonably short comment and protest deadlines inhibit the public’s ability to meaningfully review and comment on BLM oil and gas leasing decisions. The public receives no notice when specific parcels are nominated for leasing. This means that BLM’s publication of a Draft EA or Sale Notice is often the public’s first indication of which lands will be up for auction. In a matter of 10 or 15 calendar days—which amounts to just 6 to 11 working days—would-be commenters and protesters must scramble to prepare their submissions. The effective turnaround time is often shorter. Comments and protests are not considered filed until received, and BLM prohibits electronic submission, *see* 43 C.F.R. § 1822.11, so parties must mail them in advance to ensure timely receipt.

Preparing meaningful public comments is a time-consuming process. To have any chance of improving the agency’s decisionmaking, parties must (1) survey the parcel maps to determine which public lands will be included in the sale; (2) review up to hundreds of pages of BLM plans, reports, environmental analysis and appendices; (3) assess potential impacts to the lease parcels and surrounding areas, encompassing tens or hundreds of thousands of acres, including to fish and wildlife populations or their habitats, air or water quality, archaeological sites or cultural resources, and recreation or other uses; (4) gather and review available data and scientific literature; (5) conduct site visits to “ground truth” BLM’s assumptions and data; (6) engage outside experts; (7) track down and review the relevant land use plans, agency manuals, regulations, and statutes to evaluate potential violations of law or policy; (8) write comments to sufficiently raise key issues with the BLM; (9) circulate draft comments for feedback or sign-on by partner organizations; and (10) obtain organizational approval for submission of the final comments. Accomplishing these tasks in 30 days was difficult for even the most efficient and experienced professional staff. Doing so in as little as six working days is practically impossible.

C. BLM violated NEPA by failing to consider reasonably foreseeable impacts not analyzed in the 1988 Phoenix District RMP FEIS, including but not limited to new information relating to modern oil, gas, and hydraulic fracturing technology,

climate change, regional drought, groundwater conditions, Petrified Forest National Park expansion, threatened and endangered species, and tribal consultations.

BLM's Determinations of NEPA Adequacy for Navajo and Apache County parcels conclude that no additional NEPA documentation is required for the lease sale because the impacts have already been addressed by the 1988 Final Environmental Impact Statement (FEIS) for the Phoenix Resource Management Plan, signed in 1989. *See* DOI-BLM-AZ-G010-2018-0024-DNA at 2–3; DOI-BLM-AZ-G010-2018-0027-DNA at 2–3. That conclusion is arbitrary and capricious because (1) the 1988 FEIS contemplated that leases would not issue until subsequent site-specific environmental analysis was conducted to determine the stipulations to be imposed in the leases; (2) significant new developments and information plainly have taken place since 1988 with regard to, *inter alia*, the nature of oil and gas extraction, the impacts of oil and gas extraction, and the vulnerability of wildlife to those impacts in light of other threats.

Remarkably, the DNAs conclude that:

(1) The proposed action is substantially the same as previously analyzed because the process of *leasing* under the Mineral Leasing Act is the substantially the same as in 1988. DNAs at 3.

(2) The range of alternatives analyzed in the existing NEPA document(s) is appropriate with respect to the current proposed action, taking into account current environmental concerns, interests, resource values, and circumstances, because “[n]o new environmental concerns, interests, etc. are known that would impact the germane aspects of the RMP such that new alternatives would need to be considered.” *Id.*

(3) The existing analysis and its conclusions are adequate in light of any new information or circumstances, and all new information and all new circumstances are insignificant with regard to analysis of the proposed action because:

- “BLM Archaeologist Dan McGrew has concluded that tribal consultation was adequate for the Phoenix RMP”;
- “There are no immediate environmental justice concerns due to the relative remoteness of the area in question”; and
- Concerns about ESA listed and BLM sensitive species, and other site specific concerns, would be analyzed later, after lease issuance, when BLM completes Environmental Assessments for Applications for Permits to Drill. *Id.*

(4) The direct, indirect, and cumulative effects that would result from implementation of the new proposed action are similar (both quantitatively and qualitatively) to those analyzed in the existing NEPA document because “At this stage of project development, there would be no new direct or indirect impacts outside of those previously considered in the Phoenix RMP and Final EIS for making subsurface minerals available for lease. Cumulatively, the broad project area contains other oil/gas wells, but they are likely abandoned and plugged wells. Any direct, indirect, or cumulative impacts for specific drilling operations would be analyzed in subsequent NEPA review on *Applications for Permit to Drill*.” *Id.* The Navajo County DNA adds “Impacts

are the same because the mineral leasing program and the field methods for fluid leasable minerals remain the same; the RMP analysis remains valid due to the unchanging procedures and methods.” DOI-BLM-AZ-G010-2018-0027-DNA at 3.

A Determination of NEPA Adequacy “DNA” is an administrative convenience created by BLM.² BLM guidance states that a DNA may only be utilized when, among other conditions, “the direct, indirect, and cumulative effects that would result from implementation of the new proposed action [are] similar (both quantitatively and qualitatively) to those analyzed in the existing NEPA document.” BLM NEPA HANDBOOK, § 5.1.2–.3. A DNA cannot be used to address site-specific environmental effects not previously considered in a NEPA document. *See, e.g., S. Utah Wilderness All.*, 166 IBLA 270 (Aug. 16, 2005). Reliance on a DNA where the proposed action is of “greater intensity and scope” than the actions contemplated by the prior NEPA documents violates NEPA. *Friends of Animals v. U.S. Bureau of Land Mgmt.*, No. 3:15-CV-0057-LRH-WGC, 2015 WL 555980, at *4 (D. Nev. Feb. 11, 2015) (finding plaintiffs were likely to succeed on their claim).

DNAs cannot be used “to replace supplemental environmental assessments or impact statements and may only be used ‘for the purpose of determining whether new information or changed circumstances require the preparation of a supplemental EA or EIS.’” *Summit Lake Paiute Tribe of Nevada v. U.S. Bureau of Land Mgmt.*, 496 F. App’x 712, 715–16 (9th Cir. 2012) (quoting *Idaho Sporting Congress Inc. v. Alexander*, 222 F.3d 562, 566 (9th Cir.2000)). A DNA must be set aside as arbitrary and capricious, and not in compliance with NEPA, where the agency has failed to take a “hard look” in “determin[ing] that the new impacts will not be significant (or not significantly different from those already considered.” *North Idaho Community Action Network v. U.S. Dept. of Transp.*, 545 F.3d 1147, 1154–55 (9th Cir. 2008).

“[W]hether to prepare a supplemental EIS is similar to the decision whether to prepare an EIS in the first instance: If there remains ‘major Federal actio[n]’ to occur, and if the new information will ‘affec[t] the quality of the human environment’ in a significant manner or to a significant extent not already considered, a supplemental EIS must be prepared.” *Marsh v. Ore. Natural Res. Council*, 490 U.S. 360, 374 (1989). “Further, the BLM must re-examine its decision when the EIS ‘rests on stale scientific evidence ... and false assumptions.’” *Oregon Nat. Desert Ass’n v. Bureau of Land Mgmt.*, No. CIV. 08-1271-KI, 2011 WL 5830435, at *6 (D. Or. Nov. 15, 2011) (quoting *Seattle Audubon Soc’y v. Espy*, 998 F.2d 699, 704 (9th Cir.1993)). It must take a “hard look at the environmental effects of their planned action, even after a proposal has received initial approval.” *Marsh*, 490 U.S. at 373, 385. “Failure to issue a supplemental EIS when these criteria are met is arbitrary, capricious and not in accordance with NEPA.” *Oregon Nat. Desert Ass’n v. Bureau of Land Mgmt.*, 2011 WL 5830435, at *6 (D. Or. Nov. 15, 2011).

First, the DNAs at issue improperly rely on an FEIS to satisfy the NEPA obligations for an action outside the scope of actions contemplated by that FEIS. Second, the FEIS in question is entirely devoid of any analysis of the direct, indirect, or cumulative impacts of oil and gas

² U.S. Bureau of Land Management, National Environmental Policy Act Handbook H-1790-1, at § 5.1.3 (2008) [hereinafter BLM NEPA Handbook], available at: https://www.ntc.blm.gov/krc/uploads/366/NEPAHandbook_H-1790_508.pdf (stating a DNA is “not itself a NEPA document”).

leasing. Third, the DNAs fail to consider significant new information related to hydraulic fracturing, climate change, and imperiled wildlife. Finally, the DNAs improperly attempt to defer the analysis of all impacts not addressed in the FEIS to the APD stage, despite the reality that the sale of leases irretrievably commits the resources at the leasing stage unless stipulations are so expansive that development may be precluded entirely at the APD stage for the full range of reasons within BLM's discretion at the time of leasing---a situation which is not the case with the extremely limited stipulations BLM has decided to impose here, notably without conducting the environmental analysis that the Phoenix RMP required as the basis for determining parcel-specific stipulations.

1. The 1988 FEIS Contains No Evaluation of the Impacts of Oil & Gas Leasing

The 1988 FEIS contains almost no discussion, let alone any actual evaluation, of the environmental impacts of oil and gas leasing. Instead, the FEIS states that “future exploration and development of leasable minerals in the RMP area is only a remote possibility.” FEIS at 14. The FEIS includes no analysis at all of the potential impacts of oil and gas leasing. Rather than analyze the direct, indirect, and cumulative impacts of oil and gas leasing, the FEIS summarily notes the prohibition on surface occupancy for certain ACECs and special management areas,³ and then defers all analysis of the impacts of oil and gas leasing to the time at which BLM must incorporate stipulations into leases. FEIS at 14 (“Should exploration and/or development of leasable resources be pursued during the life of this RMP, special stipulations will be incorporated into the lease agreement after the results of site-specific environmental assessments for each action are known.”); *see also* FEIS at 17 (“The BLM would prepare a site-specific environmental analysis before actions in the approved RMP are implemented. The environmental analysis would provide a site-specific assessment of the impacts of implementing the actions. In addition, the BLM would conduct wildlife, protected plant and cultural resource clearances as a part of the environmental analysis process. The analysis would also identify mitigation necessary to reduce the impacts of implementing an approved action.”). Indeed, the FEIS in general defers analysis of environmental impacts to a later stage of planning, which it refers to as the development of “activity plans”—the stage at which BLM will determine “how to carry out the particular uses provided for in the RMP.” FEIS at 103. An express “general assumption” of the FEIS is that “[e]nvironmental assessments will be conducted prior to implementing any activity plans.” *Id.* at 84. The FEIS further explains that mitigation measures are not considered at all in the FEIS, and that such consideration will be deferred until the activity planning stage, when “an environmental assessment identifying the environmental impacts of each activity plan will be developed and specific mitigation measures will be incorporated into the assessment to lessen those impacts. Therefore, mitigation measures will be incorporated on a site-specific basis as this RMP is implemented.” *Id.* at 95.

³ The “constraints on surface use” referred to on page 14 of the FEIS RMP appears to be the prohibition of surface occupancy for oil and gas leasing in certain ACECs and special management areas. *See* FEIS at 22-25 (table listing ACECs and special management areas). The only gesture towards evaluating the impacts of oil and gas leasing to explain the need for such constraints occurs *in a single sentence* on page 90 of the FEIS, which explains: “Prohibiting surface occupancy on oil and gas leases within 30,200 acres of crucial desert bighorn habitat would benefit bighorn by preventing habitat destruction and disruption of habitat use patterns.”

Moreover, to satisfy NEPA, the impacts of oil and gas leasing that must be analyzed *prior to leasing* include the impacts of greenhouse gas emissions and the impacts, including water consumption, of the modern methods used to extract oil and gas from formations previously thought to be uneconomic to exploit, such as high volume hydraulic fracturing. *See San Juan Citizens All. v. U.S. Bureau of Land Mgmt.*, No. 16-CV-376-MCA-JHR, 2018 WL 2994406, at *10-11, *19, *21 (D.N.M. June 14, 2018) (setting aside leases due to NEPA violations where BLM failed to evaluate downstream emissions of greenhouse gases and the volume of water that would be used for hydraulic fracturing operations); *Ctr. for Biological Diversity v. Bureau of Land Mgmt.*, 937 F. Supp. 2d 1140, 1157 (N.D. Cal. 2013) (BLM could not rely on 2006 RMP/FEIS to demonstrate that impacts of decision to lease were adequately analyzed because the “emergence of fracking raises potential concerns that were not considered by the 2006 PRMP/FEIS...[which made] no explicit mention of fracking at all.”); *cf. W. Org. of Res. Councils v. U.S. Bureau of Land Mgmt.*, No. CV 16-21 GF-BMM, 2018 WL 1475470, *13 (D. Mont. March 26, 2018) (BLM violated NEPA by failing “to consider in the EIS the environmental consequences of the downstream combustion of the coal, oil and gas resources potentially open to development under these RMPs.”).⁴

The 1988 FEIS includes no discussion whatsoever of climate change, greenhouse gases, the emissions associated with oil and gas leasing in the RMP area, hydraulic fracturing, acidizing, or horizontal drilling. Nor does it include any discussion whatsoever of the impacts of oil and gas extraction on resources such as groundwater, watersheds or wildlife, apart from a single sentence summarily acknowledging that oil and gas development is destructive to desert bighorn sheep habitat and interferes with their habitat use. FEIS at 90.

In short, the FEIS contains no actual analysis of the impacts of oil and gas leasing, and therefore no analysis applicable to the direct and indirect effects of the proposed leasing in question. Reliance on the FEIS to satisfy BLM’s NEPA obligations with regard to the decision to sell the leases in question is therefore plainly arbitrary and capricious.

2. Significant New Information Renders the 1988 FEIS Stale

a. Foreseeable Development Impacts

Hydraulic fracturing and acidizing of wells are reasonably foreseeable impacts of the leases at issue, and have not been analyzed at all in the 1988 FEIS. Publicly available information post-dating the FEIS demonstrates that leasing of the fluid mineral interests at issue here is likely to entail hydraulic fracturing and acidizing, and that these activities are more than merely a remote possibility due to the availability of these new technologies, and likely, the prospect of extracting helium in addition to fossil fuels. *See Olufela Olukoga, Oil and Gas; and Helium Production Potential of Oil and Gas Assets in Navajo County, Arizona* 1, 77–79, 133 (2016), <http://azoilgas.com/wp-content/uploads/2016/08/Blackstone-Exploration-Engineering-Report.pdf>. That 2016 report explains that prior drilling in the Holbrook Basin consisted of

⁴ In response to the court’s conclusion that the RMPs in question violated NEPA by failing to evaluate downstream emissions, BLM’s Montana State Office deferred all new and pending oil and gas leasing on parcels within those areas for “additional environmental analysis” necessary to comply with the court’s decision. *See* Letter from John K. Raby, Acting State Director, Bureau of Land Management (Apr. 24, 2018) (reference # 3120 (MT922)).

shallow vertical wells that did not intersect deeper rock layers with reported oil and gas shows. *Id.* at 5. It further details that Blackstone Exploration Company is “pioneering the resurgence in drilling activities in the Holbrook basin” by employing “modern exploration, drilling completion and production principles,” and that Blackstone is “actively engaged in expanding its leasehold area in Arizona” beyond the 400,000 acres it has already leased in Navajo and Coconino Counties. *Id.* at 5. The 2016 study aims to inform the field development for new wells being drilling by Blackstone in Apache and Navajo Counties. *Id.* at 1. The study found that wells drilled by Blackstone showed multiple possible hydrocarbon bearing zones of thicknesses “rais[ing] the expectation of commercial hydrocarbon” recovery, as well as helium gas. *Id.* at 1-2. With regard to wells drilled by Blackstone Exploration, the report recommends that “the possible productive zones identified in each of the wells drilled and subsequent wells will have to be acidized and fractured to unlock the oil and gas reserves in these tight rocks.” *Id.* at 133; *see also id.* at 126 (noting that acidizing and fracturing will be required to recover the helium as well as hydrocarbons). The report explains that this conclusion is based on the extraction history for the Dineh-bi-Keyah (“DBK”) field, where acidizing and fracturing were required to unlock hydrocarbons in commercial quantities. *Id.*

Acidizing and hydraulic fracturing have significant impacts on human health and the environment, including impacts on air quality, water quality, and water quantity. Because the 1988 FEIS is devoid of any mention of these modern extraction practices, which are reasonably likely to be employed in the Holbrook Basin in light of production in nearby areas, BLM must analyze these impacts prior to lease issuance in order to comply with NEPA. Furthermore, the 2016 report demonstrates that the 1988 FEIS’s assumptions regarding the low likelihood of oil and gas development in the Holbrook Basin are outdated. The report indicates that new technologies involving the combination of acidizing and hydraulic fracturing have been used in nearby areas to extract hydrocarbons and helium in commercial quantities, which was unforeseen at the time of the FEIS and RMP. The resulting increased interest in oil and gas development in this area was never contemplated by the FEIS or RMP, which made no attempt to evaluate the direct, indirect, or cumulative effects of such development.

Helium extraction is also a reasonably foreseeable impact of the leases at issue, and has not been evaluated in any manner in the 1988 FEIS. The 2016 report details the prospects for encountering commercial quantities of helium in the Holbrook Basin, and notes that the concentrations of helium encountered in Blackstone’s wells suggests that higher concentrations will be encountered in deeper Devonian rock layers at the same locations. Olukoga at 128. The study draws that conclusion based in part on observations from the DBK field, where operators encountered helium in commercial quantities in 2003, after deepening wells to reach Devonian and Mississippian rock formations. *Id.* at 133. The report also notes that “Due to increasing demand for helium, oil and gas operators are developing helium prospects near the old helium fields in the Holbrook Basin in central Apache County and are starting to produce the helium-rich gas at the Dineh-bi-Keyah field in northern Apache County[.]” *Id.* at 17. The Mineral Leasing Act reserves helium and excludes it from leasing, and the applicable DOI regulations allow for BLM to contract with lessees or with third parties to provide for the capture of helium only when the helium would otherwise be lost in the course of hydrocarbon extraction. *See* 30 U.S.C. § 181; 43 C.F.R. §§ 16.1–16.3. Nonetheless, it is reasonably foreseeable here that the economics of oil and gas extraction in the Holbrook Basin turn on whether the lessee anticipates extracting helium in addition to hydrocarbons. Consequently, prior to lease issuance, BLM must

evaluate the impacts of helium extraction, in addition to evaluating the impacts of the acidizing and hydraulic fracturing necessary to extract that resource in commercial quantities.

b. Air Quality and Health Impacts of Oil and Gas Development and Hydraulic Fracturing

A. BLM must analyze air quality impacts, and associated public health impacts that will result from leasing the proposed December, 2018 parcels prior to leasing.

i. Types of Air Emissions

Numerous impacts of fracking and other oil and gas extraction techniques are directly associated with the hundreds chemical additives employed and the resultant air pollution. These chemicals fall into a number of categories: *breakers* to lower fracking fluid viscosity before fracking fluid flows back, proppants to keep newly-formed fractures open, *gelling agents* to pry open fractures, *biocides* to prevent bacteria from degrading gelling agents, *carriers* for aiding in transport of other fluids, and *crosslinkers* to increase viscosity of fluids to increase fracking effectiveness.⁵

Many chemicals amongst these categories are designated as Hazardous Air Pollutants (HAPs), which can enter the air during the venting of gases during fracking or the evaporation of chemicals from fracking and produced fluids, leading to dangerous human exposures.⁶ For instance, ethylbenzene, formaldehyde, and methylene chloride are all known or suspected carcinogens, while methanol is linked to reproductive harm, and hydrochloric acid and hydrofluoric acid can cause both eye irritation and respiratory harm.⁷ Therefore, being in close proximity to fracking operations can lead to serious health effects. Some of the same chemicals are used in both fracking and conventional oil and gas operations, so some risks posed by fracking are also found with conventional methods.⁸

There are also emissions from other aspects of the oil and gas extraction process, including the emission of natural gas itself, in forms such as methane (predominantly) and ethane. For instance, hydrogen sulfide is contained in natural gas, with long-term exposure to hydrogen sulfide linked to respiratory infections, eye, nose, and throat irritation, breathlessness,

⁵ Stringfellow, William et al., Identifying chemicals of concern in hydraulic fracturing fluids used for oil production, 220 Environmental Pollution 413 (2017).

⁶ Sierra Club et al. comments on New Source Performance Standards: Oil and Natural Gas Sector; Review and Proposed Rule for Subpart OOOO (Nov. 30, 2011) (“Sierra Club Comments”) at 13.

⁷ Agency for Toxic Substances and Disease Registry (ATSDR), ATSDR A-Z Index, <https://www.atsdr.cdc.gov/az/a.html> (last visited on July 12, 2018) (“ASTDR A-Z Index”); Californians Against Fracking, Fracking and Dangerous Drilling in California, Briefing Book, Center for Biological Diversity (Accessed July 13, 2018), https://www.biologicaldiversity.org/campaigns/california_fracking/pdfs/fracking-and-drilling-in-california.pdf.

⁸ Stringfellow, William et al., Comparison of chemical use between hydraulic fracturing, acidizing, and routine oil and gas development, 12 PLoS One 4 (2017).

nausea, dizziness, confusion, and headaches.⁹ Also, the diesel equipment used to pump the fracking fluids into the well produces nitrogen oxide (“NO_x”) and particulate matter (“PM”) emissions. Additionally, some volatile organic compounds (“VOCs”), such as the BTEX compounds (benzene, toluene, ethylbenzene, and xylene), when exposed to light can transform into PM. When gases are flared instead of vented, the combustion during flaring may cause emissions of PM and NO_x.¹⁰ NO_x and PM are both criteria pollutants which must be regulated under the National Ambient Air Quality Standards (NAAQS) due to their potential to cause primary and secondary health effects. They both contribute to the formation of ozone, another criteria pollutant.¹¹ Concentrations of these criteria pollutants along with two others, carbon monoxide and sulfur dioxide, have been shown to increase in regions where unconventional oil and gas recovery techniques are permitted. Criteria pollutants are associated with an array of health impacts:¹²

Nitrogen oxides (NO_x) react with ammonia, moisture, and other compounds to form small particles. These small particles penetrate deeply into sensitive parts of the lungs and can cause or worsen respiratory diseases, such as emphysema and bronchitis, and can aggravate existing heart disease, leading to increased hospital admissions and premature death. NO_x and volatile organic compounds react in the presence of heat and sunlight to form ozone.

Particulate matter (PM) - especially fine particles - contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including: premature death in people with heart or lung disease, increased mortality, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing.¹³

Sulfur Dioxide (SO₂) – has been shown to cause an array of adverse respiratory effects including bronchoconstriction and increased asthma symptoms.¹⁴ Studies also show a connection between short-term exposure and increased visits to emergency departments and hospital

⁹ U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Report to Congress on Hydrogen Sulfide Air Emissions Associated with the Extraction of Oil and Natural Gas (EPA-453/R-93-045) at i (Oct. 1993) (“USEPA 1993”).

¹⁰ California Council on Science and Technology, Advanced Well Stimulation Technologies in California (2016) (“CCST 2016”), <http://ccst.us/publications/2014/160708-blm-report.pdf>, at 248; McKenzie, Lisa M. et al., Human Health Risk Assessment of Air Emissions From Development of Unconventional Natural Gas Resources, 424 Science of the Total Environment 79 (2012) (“McKenzie 2012”); Shonkoff, Seth B.C. et al., Environmental Public Health Dimensions of Shale and Tight Gas Development, 122 Environmental Health Perspectives 787 (2014) (“Shonkoff 2014”).

¹¹ U.S. Environmental Protection Agency, Criteria Air Pollutants, <https://www.epa.gov/criteria-air-pollutants> (last visited on July 10, 2018.)

¹² U.S. Environmental Protection Agency, Criteria Air Pollutants, <https://www.epa.gov/criteria-air-pollutants> (last visited on July 10, 2018.)

¹³ U.S. Environmental Protection Agency, Particulate Matter, (PM) <https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm> (Accessed July 13, 2018); Ostro, Bart et al., Long-term Exposure to Constituents of Fine Particulate Air Pollution and Mortality: Results from the California Teachers Study, 118 Environmental Health Perspectives 3 (2010)

¹⁴ U.S. Environmental Protection Agency, Sulfur Dioxide, available at: <https://www.epa.gov/so2-pollution/sulfur-dioxide-basics#effects> (accessed July 13, 2018).

admissions for respiratory illnesses, particularly in at-risk populations including children, the elderly, and asthmatics.¹⁵

Carbon Monoxide (CO) can cause harmful health effects by reducing oxygen delivery to the body's organs (like the heart and brain) and tissues. At extremely high levels, CO can cause death.¹⁶ Exposure to CO can reduce the oxygen-carrying capacity of the blood. People with several types of heart disease already have a reduced capacity for pumping oxygenated blood to the heart, which can cause them to experience myocardial ischemia (reduced oxygen to the heart), often accompanied by chest pain (angina), when exercising or under increased stress.¹⁷ For these people, short-term CO exposure further affects their body's already compromised ability to respond to the increased oxygen demands of exercise or exertion.¹⁸

Ozone (O₃) can trigger or worsen asthma and other respiratory ailments.¹⁹ It has been linked to pneumonia, COPD, asthma, bronchitis, emphysema, and premature death. Ground level ozone can have harmful effects on sensitive vegetation and ecosystems. Ozone may also lead to loss of species diversity and changes to habitat quality, water cycles, and nutrient cycles.

Likewise, the BTEX compounds, which contribute to the formation of criteria pollutants, pose great potential harms. Benzene, for instance, is a known human carcinogen that has been linked to blood disorders such as leukemia, immune system damage and chromosomal mutations. The other BTEX compounds (toluene, ethylbenzene, xylene) have varying effects, including damage to the brain and nervous system, kidneys, and liver, with symptoms of exposure including fatigue, drowsiness, headaches, dizziness, confusion, eye and respiratory tract irritation, and loss of muscle coordination.²⁰

Due to such chemical prevalence, research continues to mount on the health risks of fracking, well stimulation, and other oil and gas activities.²¹ Research has found that people living near drilling sites have a higher risk for developing cancer,²² increased asthma attacks,²³

¹⁵ *Id.*

¹⁶ U.S. Environmental Protection Agency, Carbon Monoxide, *available at*: <https://www.epa.gov/co-pollution/basic-information-about-carbon-monoxide-co-outdoor-air-pollution#Effects> (accessed July 13, 2018).

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ U.S. Environmental Protection Agency, Health Effects of Ozone Pollution, *available at*: <https://www.epa.gov/ozone-pollution/health-effects-ozone-pollution> (accessed July 10, 2018).

²⁰ Suh, H. H et al., Criteria air pollutants and toxic air pollutants, 108 *Environmental Health Perspectives* (2000) (Suppl 4), 625;

Agency for Toxic Substances and Disease Registry (2015, November 4). *ATSDR A-Z Index*. Retrieved from <https://www.atsdr.cdc.gov/az/a.html> ;

Jia, C., & Batterman, S. (2010). A critical review of naphthalene sources and exposures relevant to indoor and outdoor air. *International Journal of Environmental Research and Public Health*, 7(7), 2903-2939.

²¹ PSE Healthy Energy, The Science on Shale Gas Development, <https://www.psehealthyenergy.org/our-work/publications/archive/the-science-on-shale-gas-development/> (last visited on July 10, 2018).

²² McKenzie, L.M. et al., Childhood hematologic cancer and residential proximity to oil and gas development, 12 *PLoS One* 2 (2017).

²³ Rasmussen, Sara G. et al., Association Between Unconventional Natural Gas Development in the Marcellus Shale and Asthma Exacerbations, 176 *JAMA Internal Medicine* 9 (2016).

higher hospitalization rates, and more upper respiratory problems and rashes.²⁴ For pregnant women, living closer to drilling sites is associated with a higher risk of having babies with birth defects, high-risk pregnancies and premature births, and low-birthweight babies.²⁵

ii. Sources of Air Emissions

Harmful air pollutants are emitted during every stage of unconventional oil and gas development, including drilling, completion, well stimulation, production, and disposal, as well as from transportation of water, sand, and chemicals to and from the well pad.²⁶ The well stimulation stage can emit diesel exhaust, VOCs, particulate matter, ozone precursors, silica, and acid mists.²⁷

VOCs, NO_x, methane, and ethane are potent ground-level (tropospheric) ozone precursors that are emitted by oil and gas drilling and fracking operations.²⁸ VOCs can form ground-level (tropospheric) ozone when combined with nitrogen oxides (“NO_x”) from compressor engines, turbines, other engines used in drilling, and flaring,²⁹ in the presence of sunlight. This reaction can diminish visibility and air quality and harm vegetation. Many regions around the country with substantial oil and gas operations are now suffering from extreme ozone levels due to heavy emissions of these pollutants.³⁰ A recent study of ozone pollution in the Uintah Basin of northeastern Utah, a rural area that experiences hazardous tropospheric ozone concentrations, found that oil and gas operations were responsible for 98 to 99 percent of VOCs and 57 to 61 percent of NO_x emitted from sources within the Basin considered in the study’s inventory.³¹

Drilling and casing the wellbore require substantial power from large equipment. The engines used typically run on diesel fuel, which emits particularly harmful types of air pollutants when burned. Similarly, high-powered pump engines are used in the fracturing and completion phase. This too can amount in large volumes of air pollution. In total, VOCs emitted by car and

²⁴ 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 (2015).

²⁵ Stacy, Shaina L. et al., Perinatal Outcomes and Unconventional Natural Gas Operations in Southwest Pennsylvania, 10 *PLoS One* 6 (2015).

²⁶ McCawley, Michael, Air Contaminants Associated with Potential Respiratory Effects from Unconventional Resource Development Activities, 36 *Seminars in Respiratory and Critical Care Medicine* 379 (2015); Shonkoff 2014.

²⁷ *Id.*

²⁸ U.S. Environmental Protection Agency, Integrated Science Assessment (ISA) for Ozone (O₃) and Related Photochemical Oxidants (2013).

²⁹ See, e.g., U.S. Environmental Protection Agency, Oil and Gas Sector: Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution: Background Technical Support Document for Proposed Standards at 3-6 (July 2011); Armendariz, Al, Emissions for Natural Gas Production in the Barnett Shale Area and Opportunities for Cost-Effective Improvements (2009) (“Armendariz 2009”) at 24.

³⁰ Armendariz 2009 at 1, 3, 25-26; Koch, Wendy, *Wyoming's Smog Exceeds Los Angeles' Due to Gas Drilling*, USA Today (May 9, 2011); Craft, Elena, Environmental Defense Fund, Do Shale Gas Activities Play a Role in Rising Ozone Levels? (2012); Colorado Dept. of Public Health and Environment, Conservation Commission, Colorado Weekly and Monthly Oil and Gas Statistics (July 6, 2012) at 12.

³¹ Lyman, Seth & Howard Shorthill, Final Report: 2012 Uintah Basin Winter Ozone & Air Quality Study, Utah Department of Environmental Quality (2013) (“Lyman 2013”).

truck engines, as well as the drilling and completion stages of oil and gas production, make up about 3.5 percent of the gases emitted by oil or gas operations.³² Vehicles and equipment are also responsible for generating harmful particulate matter.³³

Flaring and venting of gas are also potential sources of air emissions. Gas flaring and venting can occur in both oil and gas recovery processes when underground gas rises to the surface and is not captured as part of production. Emissions from flaring typically include carbon monoxide, nitrogen oxides, benzene, formaldehyde and xylene, but levels of these smog-forming compounds are seldom measured directly.³⁴

Fugitive emissions can occur at every stage of extraction and production, often leading to high volumes of gas being released into the air. Methane emissions from oil and gas production are as much as 270 percent greater than previously estimated by calculation.³⁵ Studies show that fugitive emissions from pneumatic valves (which control routine operations at the well pad by venting methane during normal operation) and equipment leaks are higher than EPA estimates.³⁶ This is of great concern because ground-level ozone can be formed by methane in substantial quantities as it interacts with nitrogen oxides and sunlight.³⁷ One paper modeled reductions in various anthropogenic ozone precursor emissions and found that “[r]educing anthropogenic CH₄ emissions by 50% nearly halves the incidence of U.S. high-O₃ events”³⁸

Ethane, also a greenhouse gas, breaks down and reacts with sunlight to create smog. Ethane emissions have risen steeply in recent years due to U.S. oil and gas production. A recent study documented that ethane emissions in the Northern Hemisphere increased by about 400,000 tons annually between 2009 and 2014, with the majority coming from North American oil and gas activity, reversing a decades-long decline in ethane emissions.³⁹ About 60 percent of the drop in ethane levels that occurred over the past 40 years has already been made up in the past five years. At this rate, U.S. ethane levels are expected to hit 1970s levels in about three years. About two percent of global ethane emissions originate from the Bakken Shale oil and gas field alone,

³² Brown, Heather, Memorandum to Bruce Moore, U.S.EPA/OAQPS/SPPD re Composition of Natural Gas for use in the Oil and Natural Gas Sector Rulemaking, July 28, 2011 (“Brown Memo”) at 3.

³³ Earthworks, Sources of Oil and Gas Pollution (2011); Bay Area Air Quality Management District, Particulate Matter Overview, Particulate Matter and Human Health (2012).

³⁴ Physicians for Social Responsibility and Concerned Health Professionals of NY, Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking, Fourth Edition, November 17, 2016 (“PSR 2016”).

³⁵ Miller 2013.

³⁶ Allen, David et al., Measurements of Methane Emissions at Natural Gas Production Sites in The United States, 110 PNAS 17768 (2013) (“Allen 2013”); Harriss, Robert et al., Using Multi-Scale Measurements to Improve Methane Emission Estimates from Oil and Gas Operations in the Barnett Shale Region, Texas, 49 Environ. Sci. Technol. 7524 (2015).

³⁷ Fiore, Arlene et al., Linking Ozone Pollution and Climate Change: The Case for Controlling Methane, 29 Geophys. Res. Letters 19 (2002) (“Fiore 2002”); U.S. Environmental Protection Agency, Oil and Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews Proposed Rule, 76 Fed. Reg 52,738 (Aug 23, 2011).

³⁸ Fiore 2002; *see also* Martin, Randal et al., Final Report: Uinta Basin Winter Ozone and Air Quality Study Dec 2010 - March 2011 (2011) at 7.

³⁹ Helmig, Detlev et al., Reversal of Global Atmospheric Ethane and Propane Trends Largely Due to US Oil and Natural Gas Production, 9 Nature Geoscience 490 (2016).

which emits 250,000 tons of ethane per year.⁴⁰ Because global ethane levels were decreasing until 2009, the U.S. shale gas boom is thought to be responsible for the global increase in levels since 2010.

Fracking can pollute air hundreds of miles from the well pad. For example, ethane pollution in Baltimore, Maryland and Washington, D.C, has been attributed to the rapidly increasing natural gas production in the upwind, neighboring states of Pennsylvania and West Virginia.⁴¹

Evaporation from pits can also contribute to air pollution. Pits that store drilling waste, produced water, and other waste fluid may be exposed to the open air. Chemicals mixed with the wastewater—including the additives used to make fracking fluids, as well as volatile hydrocarbons, such as benzene and toluene, brought to the surface with the waste—can escape into the air through evaporation. Some pits are equipped with pumps that spray effluents into the air to hasten the evaporation process. For example, evaporation from fracking waste pits in western Colorado was found to have added tons of toxic chemicals to the air, increasing air pollution in Utah.⁴² In Texas, toxic air emissions from fracking waste pits are unmonitored and unregulated.⁴³ In California, unlined disposal pits for drilling and fracking waste are documented sources of contamination.⁴⁴ Even where waste fluid is stored in so-called “closed loop” storage tanks, fugitive emissions can escape from tanks.

Truck traffic related to oil and gas extraction contributes to air emissions. Trucks capable of transporting large volumes of chemicals and waste fluid typically use large engines that run on diesel fuel, also increasing threats of NO_x and PM emissions.

iii. Health Impacts of Increased Air Pollution

The potential harms resulting from increased exposure to the dangerous air pollutants from unconventional oil and gas development are serious and wide-ranging. A growing body of scientific research has documented adverse public health impacts from unconventional oil and gas development, including studies showing air pollutants at levels associated with reproductive and developmental harms and the increased risk of morbidity and mortality.⁴⁵ A comprehensive

⁴⁰ Kort, Eric A. et al., Fugitive Emissions From the Bakken Shale Illustrate Role of Shale Production in Global Ethane Shift. 43 Geophysical Research Letters 4617 (2016).

⁴¹ Vinciguerra, Timothy et al, Regional Air Quality Impacts of Hydraulic Fracturing and Shale Natural Gas Activities: Evidence From Ambient VOC Observations. 110 Atmospheric Environment 144 (2015).

⁴² Maffy, Brian, *Utah grapples with toxic water from oil and gas industry*, The Salt Lake Tribune, August 28, 2014, available at <http://archive.sltrib.com/story.php?ref=sltrib/news/58298470-78/danish-flats-ponds-company.html.csp>; The company responsible for the waste pits was found to have operated without a permit, underreported emissions and provided erroneous data to regulators.

⁴³ Center for Public Integrity, Open Pits Offer Cheap Disposal for Fracking Sludge But Health Worries Mount, October 2, 2014.

⁴⁴ Stringfellow, William T. et al., Impacts of Well Stimulation on Water Resources, In California Council on Science and Technology, An Independent Assessment of Well Stimulation in California, Volume 2, Chapter 2 (2015) (“CCST 2015”) at 110-113.

⁴⁵ 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); Shonkoff 2014; Webb, Ellen et al., Developmental and reproductive effects of chemicals associated with unconventional oil and natural gas operations, 29 Rev Environ Health 307 (2014);

review of the risks and harms of fracking to public health came to several key findings related to air pollution: (1) “drilling and fracking emissions 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, including reproductive impacts and occupational health and safety problems, are increasingly well documented”; and (3) “fracking infrastructure poses serious potential exposure risks to those living near it.”⁴⁶

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 chemicals have been shown to be linked to certain illnesses.⁴⁷ 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.⁴⁸ 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.⁴⁹

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.⁵⁰ 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.”⁵¹ 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.⁵² 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.⁵³ 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.”⁵⁴

McKenzie 2012; 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>.

⁴⁶ Physicians for Social Responsibility and Concerned Health Professionals of NY, Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking, Fourth Edition, November 17, 2016 (“PSR 2016”).

⁴⁷ Colborn 2011; Colborn 2012; *see* note 120 & accompanying text below.

⁴⁸ Colborn 2012 at pp. 21-22 (pages refer to page numbers in attached manuscript and not journal pages).

⁴⁹ Colborn 2012 at 11.

⁵⁰ *Id.* at 10.

⁵¹ *Id.* at 11-12.

⁵² *Id.* at 12.

⁵³ *Id.* at 10-11.

⁵⁴ *Id.* at 12.

Adverse health impacts documented among residents living near drilling and fracking operations include reproductive harms, increased asthma attacks, increased rates of hospitalization, ambulance runs, emergency room visits, self-reported respiratory problems and rashes, motor vehicle fatalities, trauma, and drug abuse. A 2016 review concluded:

By several measures, evidence for fracking-related health problems is emerging across the United States. In Pennsylvania, as the number of gas wells increase in a community, so do rates of hospitalization. Drilling and fracking operations are correlated with elevated motor vehicle fatalities (Texas), asthma (Pennsylvania), self-reported skin and respiratory problems (southwestern Pennsylvania), ambulance runs and emergency room visits (North Dakota), infant deaths (Utah), birth defects (Colorado), high risk pregnancies (Pennsylvania), premature birth (Pennsylvania), and low birthweight (multiple states). Benzene levels in ambient air surrounding drilling and fracking operations are sufficient to elevate risks for future cancers in both workers and nearby residents, according to studies. Animal studies show that two dozen chemicals commonly used in fracking operations are endocrine disruptors that can variously disrupt organ systems, lower sperm counts, and cause reproductive harm at levels to which people can be realistically exposed.⁵⁵

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.⁵⁶ Relatedly, in a 2018 study of pediatric asthma-related hospitalizations, it was 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.⁵⁷

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.⁵⁸

In a 2018 study by McKenzie et al. conducted in the Denver Julesberg Basin on the Colorado Northern Front Range (CNFR), it was found that the currently established setback

⁵⁵ PSR 2016 at 93.

⁵⁶ Rasmussen, Sara G. et al., Association Between Unconventional Natural Gas Development in the Marcellus Shale and Asthma Exacerbations, 176 JAMA Internal Medicine 1334 (2016).

⁵⁷ Willis, Mary D. et al., Unconventional natural gas development and pediatric asthma hospitalizations in Pennsylvania, 166 Environmental Research 402 (2018).

⁵⁸ 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).

distance of 152 m (500 ft) does little to protect people in that proximity. In analyses of nonmethane concentrations from 152 to >1600 m from oil and gas facilities, it was 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 m of an 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 m 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.⁵⁹

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. 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 km of fracking sites.⁶⁰ The study estimated that about 29,000 U.S. births each year occur within 1 km of an active fracking sites 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.⁶¹ 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.⁶² In rural Colorado, mothers with greater exposure to natural gas wells were associated with a higher risk of having babies with congenital heart defects and possibly neural tube defects.⁶³

Other studies have found that residents living closer to drilling and fracking operations had higher hospitalization rates⁶⁴ and reported more health symptoms including upper respiratory problems and rashes.⁶⁵

Workers suffer high risks from toxic exposure and accidents.⁶⁶ One study of the occupational inhalation risks caused by emissions from chemical storage tanks associated with

⁵⁹ McKenzie, Lisa et al., Ambient Non-methane Hydrocarbon Levels Along Colorado's Northern Front Range: Acute and Chronic Health Risks, 52 *Environmental Science & Technology* 4514 (2018).

⁶⁰ Currie, Janet et al., Hydraulic fracturing and infant health: New evidence from Pennsylvania, 3 *Science Advances* e1603021 (2017).

⁶¹ Casey, Joan A., Unconventional Natural Gas Development and Birth Outcomes in Pennsylvania, USA, 27 *Epidemiology* 163 (2016).

⁶² Stacy, Shaina L. et al., Perinatal Outcomes and Unconventional Natural Gas Operations in Southwest Pennsylvania, 10 *PLoS ONE* e0126425 (2015).

⁶³ McKenzie, Lisa M., Birth Outcomes and Maternal Residential Proximity to Natural Gas Development in Rural Colorado, 122 *Environmental Health Perspectives* 412 (2014).

⁶⁴ Jemielita, Thomas et al., Unconventional Gas and Oil Drilling Is Associated with Increased Hospital Utilization Rates, 10 *PLoS ONE* e0131093 (2015).

⁶⁵ 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 (2015).

⁶⁶ Esswein, Eric J. et al., Occupational Exposures to Respirable Crystalline Silica During Hydraulic Fracturing, 10 *Journal of Occupational and Environmental Hygiene* 347 (2014); Esswein, Eric et al., Evaluation of Some Potential

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.⁶⁷ As summarized below:

Drilling and fracking jobs are among the most dangerous jobs in the nation with a fatality rate that is five times the national average and shows no sign of abating. Occupational hazards 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.⁶⁸

Methods of collecting and analyzing emissions data often underestimate 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.⁶⁹ Of high concern, numerous studies highlight that health assessments drilling and fracking emissions often fail to consider impact on vulnerable populations including environmental justice communities⁷⁰ and children.⁷¹ 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.⁷²

iv. Health and Safety Buffers around Oil and Gas Sites

Chemical Exposure Risks during Flowback Operations in Unconventional Oil and Gas Extraction: Preliminary Results, 11 *Journal of Occupational and Environmental Hygiene* D174 (2013); 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 2016.

⁶⁷ 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).

⁶⁸ PSR 2016 at 80

⁶⁹ Brown, David et al., Understanding Exposure From Natural Gas Drilling Puts Current Air Standards to the Test, 29 *Reviews on Environmental Health* 277 (2014).

⁷⁰ Natural Resources Defense Council, Drilling in California: Who's At Risk?, October 2014 ("NRDC 2014"); Clough, Emily & Derek Bell, Just Fracking: A Distributive Environmental Justice Analysis of Unconventional Gas Development in Pennsylvania, USA, 11 *Environmental Research Letters* 025001 (2016); McKenzie, Lisa M. et al., Population Size, Growth, and Environmental Justice Near Oil and Gas Wells in Colorado, 50 *Environmental Science & Technology* 11471 (2016).

⁷¹ Webb, Ellen et al., Potential Hazards of Air Pollutant Emissions From Unconventional Oil and Natural Gas Operations on The Respiratory Health of Children And Infants, 31 *Reviews on Environmental Health* 225 (2016).

⁷² NRDC 2014.

Due to the prevalence of oil and gas extraction, an area of growing interest in public health is the relationship between the proximity of modern oil and gas extraction, nearby communities, and health impacts. Published studies examining this relationship have considered health outcomes, exposure to toxic health risks, and setback requirements that would be adequate to ensure the health and safety of people living in close proximity to oil and gas infrastructure.⁷³

The overarching conclusion is that the closer people live to oil and gas wells, the more likely it is that they will be exposed to toxic air contaminants, and the more likely the risk of adverse health effects. For instance, Rabinowitz et al. (2015) found an increased number of upper respiratory symptoms and skin conditions among residents who lived less than 1 km (3,280 feet) from an active well, compared with residents who lived more than 2 km (6,561 feet) from an active well.⁷⁴ Kassotis et al. (2014) found elevated levels of endocrine disrupting chemicals in water sources 1 mile (5,280 feet) away from oil and gas operations. This study noted that near one of the investigated facilities, some of the animals in the area were no longer producing live offspring.⁷⁵

Macey et al. (2014), in investigating several areas with setback regulations for oil and gas operations, found high concentrations of carcinogenic VOCs at distances greater than setback regulations, including formaldehyde up to 2,591 feet and benzene up to 885 feet away from wells in Wyoming and Pennsylvania. This study also found that in Colorado's Boulder and Weld Counties, hydrogen sulfide concentrations exceeded the minimum risk level.⁷⁶ Thus, the safe setback distance implied by this study is 2,591 feet, as opposed to the 350 ft setback requirement in Wyoming, or the 500 ft setback requirements in Colorado and Pennsylvania. In considering the results the Rabinowitz et al. (2015) study, focused in Pennsylvania, an even higher setback of 6,561 feet is suggested.

It is important to note that the risks to public health from oil and gas extraction are not limited to toxic exposures. A study by Boyle et al. (2017) found that homes up to 600 m (1,968 feet) away from a natural gas compressor station experienced outdoor noise levels in excess of the US EPA's recommended limit of 55 dBA 100% of the time.⁷⁷ Other studies have found non-auditory impacts of noise on health such as annoyance, sleep disturbance, daytime sleepiness, hypertension, cardiovascular disease, and diminished cognitive performance in school children.⁷⁸

There are also added risks from explosions similar hazards. Haley et al. (2016) considered the minimum setback distance that would be safe in the event of a blow-out or explosion event at an oil or gas facility. They found that the average evacuation zone for such an event is 0.8 miles, or 4,224 feet, based on historical evacuation data. Setbacks to guard against

⁷³ Wong, N.J., Existing scientific literature on setback distances from oil and gas development sites (2017), *available at*: http://www.stand.la/uploads/5/3/9/0/53904099/2500_literature_review_report-final_jul13.pdf.

⁷⁴ Rabinowitz, P.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 (2015).

⁷⁵ Kassotis, C.D. et al., Estrogen and androgen receptor activities of hydraulic fracturing chemicals and surface and ground water in a drilling-dense region. 155 *Endocrinology* 897 (2014).

⁷⁶ Macey, G.P. et al., Air concentrations of volatile compounds near oil and gas production: a community-based exploratory study. 13 *Environmental Health* 82 (2014).

⁷⁷ Boyle, M.D. et al., A pilot study to assess residential noise exposure near natural gas compressor stations. 12 *PloS One* 30174310 (2017).

⁷⁸ See e.g., Basner, M. et al., Auditory and non-auditory effects of noise on health, 383 *The Lancet* 1325 (2014).

such hazards are important to consider since accidents have resulted from inadequate setback distances. For instance, On April 17, 2017, a one-inch abandoned pipeline exploded under a home in Firestone, Colorado, killing two people and badly burning a third. The gas well head was located just 178 feet from the home.⁷⁹ A proper setback in place could have prevented this catastrophe from happening.

Existing setback laws range from 150 to 1,500 feet. In some cases, setbacks are statewide, while in others, they are at the local level. In Colorado, for example, regulations require a 500 ft setback from residences and a 1000 ft setback from high occupancy buildings. Meanwhile, in Utah setbacks are at the county level, with Duchesne County having a setback of 300 ft, and Uintah County having a setback of 1000 ft from residences.⁸⁰ However, the growing consensus is that these setbacks are inadequate to protect public health. In analyzing the risks associated with drilling in the Marcellus Shale, the University Of Maryland School Of Public Health recommended a minimum setback distance of 2,000 ft from well pads in the state. In a recent report from the Los Angeles County Department of Public Health, it was found that even a 1,500 ft setback would be inadequate to protect from all of the public health and safety hazards associated with proximity to oil and gas infrastructure.⁸¹

In 2016, the Southwest Pennsylvania Environmental Health Project (EHP) convened a consortium of 18 professionals with expertise in public health, medicine, environmental sciences, policy, and risk analysis to determine an acceptable setback distance based on consensus. The result was 89% agreement on a 6,600 ft setback. There was also consensus on greater setback distances in areas where there are vulnerable subpopulations, such as schools, preschools, and hospitals.⁸² Thus, there is building agreement that oil and gas activities in close proximity to people yield an undue health burden. Setbacks that ensure the safety of communities should be implemented in the interim between now and an ultimate phase out of oil and gas extraction.

BLM must conduct site specific analysis of the air quality and health impacts, outlined in the preceding sections, which will result from leasing the proposed parcels.

c. Climate Change Impacts

i. BLM Must Consider the Contribution of Leasing to Climate Change

⁷⁹ Kelly, D., Deadly House explosion in Colorado traced to uncapped pipe from gas well. Los Angeles Times, May 2, 2017, *available at*: <http://www.latimes.com/nation/nationnow/la-na-colorado-explosion-20170502-story.html>. (Accessed July 12, 2018).

⁸⁰ Utah Division of Oil, Gas, and Mining, Oil and Gas Residential Setbacks: Overview of Other State Regulations (August 2013), *available at*: https://fs.ogm.utah.gov/bbooks/2013/08_Aug/Briefing/1_Oil&GasResidentialSetbacks_OverviewOfOtherStateRegulations.pdf.

⁸¹ Los Angeles County Dept. of Public Health, Public Health and Safety Risks of Oil and Gas Facilities in Los Angeles County, February 2018, *available at*: http://publichealth.lacounty.gov/eh/docs/PH_OilGasFacilitiesPHSafetyRisks.pdf.

⁸² Health and Unconventional Oil & Gas Development: Delphi Study Results, South West Pennsylvania Environmental Health Project Technical Reports, Issue 4 (Accessed July 12, 2018), *available at*: http://www.marsparentgroup.com/uploads/3/0/3/4/30347031/issue_4_health_and_unconventional_oil_gas_development_delphi_study_results.pdf.

Since the 1988 FEIS, considerable new information has come to light about the disastrous impacts of anthropogenic climate change induced by fossil fuel combustion. As detailed below, a large body of scientific research has established that the vast majority of global and U.S. fossil fuels must stay in the ground in order to avoid the most catastrophic effects of anthropogenic climate change. The 1988 FEIS does not mention climate change at all. Nor does it attempt to evaluate the impact of greenhouse gas emissions associated with potential oil and gas development in the area covered by the RMP. This new information is plainly relevant to the analysis of whether leasing will result in impacts that are significant when considered cumulatively with other emissions.

If we are to stem the impacts of climate change and manage for sustainable ecosystems, not only must the BLM take a hard look at greenhouse gas (“GHG”) emissions stemming from the development it authorizes, but the BLM’s decision must be reflective of the challenges we face.

The EPA has determined that human emissions of greenhouse gases are causing global warming that is harmful to human health and welfare. *See* 74 Fed. Reg. 66,496 (Dec. 15, 2009), *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act*. The D.C. Circuit has upheld this decision as supported by the vast body of scientific evidence on the subject. *See Coal. for Responsible Regulation, Inc. v. E.P.A.*, 684 F.3d 102, 120-22 (D.C. Cir. 2012). Indeed, EPA could not have found otherwise, as virtually every climatologist in the world accepts the legitimacy of global warming and the fact that human activity has resulted in atmospheric warming and planetary climate change.⁸³ The world’s leading minds and most respected institutions—guided by increasingly clear science and statistical evidence—agree that dramatic action is necessary to avoid planetary disaster.⁸⁴ GHG concentrations have been steadily increasing over the past century,⁸⁵ and our insatiable

⁸³ *See, e.g.,* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *The Science of Climate Change* (1995); U.S. Climate Change Science Program, *Abrupt Climate Change* (Dec. 2008); Hansen, James et al., *Global Surface Temperature Change*, REVIEWS OF GEOPHYSICS, 48, RG4004 (June 2010); *see also*, Muller, Richard A., *Conversion of a Climate Change Skeptic*, NEW YORK TIMES, July 28, 2012 (citing Richard A. Muller, et. al., *A New Estimate of the Average Earth Surface Temperature, Spanning 1753 to 2011*; Richard A. Muller, et. al., *Decadal Variations in the Global Atmospheric Land Temperatures*.

⁸⁴ *See, e.g.,* Rob Atkinson, et al., *Climate Pragmatism: Innovation, Resilience, and No Regrets* (July 2011); Ramanathan, Veerabhadran et al., *The Copenhagen Accord for Limiting Global Warming: Criteria, Constraints, and Available Avenues* (Feb. 2010); UNITED NATIONS, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *Climate Change 2007: Synthesis Report* (2007); A.P. Sokolov, et al., *Probabilistic Forecast for Twenty-First-Century Climate Based on Uncertainties in Emissions (without Policy) and Climate Parameters*, MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT) (Oct. 2009) (abstract); UNITED NATIONS, FRAMEWORK CONVENTION ON CLIMATE CHANGE, *Report of the Conference of the Parties* (Dec. 2011); Bill McKibben, *Global Warming’s Terrifying New Math*, ROLLING STONE, July 19, 2012; Elizabeth Muller, *250 Years of Global Warming*, BERKLEY EARTH, July 29, 2012; Marika M. Holland, et. al., *Future abrupt reductions in summer Arctic sea ice*, Geophysical Research Letters, Vol. 33, L23503 (2006).

⁸⁵ *See* Randy Strait, et al., *Final Colorado Greenhouse Gas Inventory and Reference Case Projections: 1990-2020*, CENTER FOR CLIMATE STRATEGIES (Oct. 2007); Robin Segall et al., *Upstream Oil and Gas Emissions Measurement Project*, U.S. ENVIRONMENTAL PROTECTION AGENCY; Lee Gribovicz, *Analysis of States’ and EPA Oil & Gas Air Emissions Control Requirements for Selected Basins in the Western United States*, WESTERN REGIONAL AIR PARTNERSHIP (Nov. 2011).

consumption of fossil fuels is pushing the world to a tipping point where, once reached, catastrophic change will be unavoidable.⁸⁶ In fact, the impacts from climate change are already being experienced, with drought and extreme weather events becoming increasingly common.⁸⁷

Renowned NASA climatologist Dr. James Hansen provides the analogy of loaded dice—suggesting that there still exists some variability, but that climate change is making these extreme events ever more common.⁸⁸ In turn, climatic change and GHG emissions are having dramatic impacts on plant and animal species and habitat, threatening both human and species resiliency and the ability to adapt to these changes.⁸⁹ According to experts at the Government Accountability Office (“GAO”), federal land and water resources are vulnerable to a wide range of effects from climate change, some of which are already occurring. These effects include, among others, “(1) physical effects, such as droughts, floods, glacial melting, and sea level rise; (2) biological effects, such as increases in insect and disease infestations, shifts in species distribution, and changes in the timing of natural events; and (3) economic and social effects, such as adverse impacts on tourism, infrastructure, fishing, and other resource uses.”⁹⁰

Despite the strength of these findings, federal agencies have historically failed to take serious action to address these impacts. This type of dismissive approach fails to satisfy the guidance outlined in Department of Interior Secretarial Order 3226, discussed below, or the requirements of NEPA. “Reasonable forecasting and speculation is ... implicit in NEPA, and we must reject any attempt by agencies to shirk their responsibilities under NEPA by labelling any and all discussion of future environmental effects as ‘crystal ball inquiry.’” *Save Our Ecosystems v. Clark*, 747 F.2d 1240, 1246 n.9 (9th Cir. 1984 (quoting *Scientists’ Inst. for Pub. Info., Inc. v. Atomic Energy Comm.*, 481 F.2d 1079, 1092 (D.C. Cir. 1973)).

⁸⁶ See, e.g., James Hansen, *Tipping Point: Perspective of a Climatologist*, STATE OF THE WILD 2008-2009; GLOBAL CARBON PROJECT, *A framework for Internationally Co-ordinated Research on the Global Carbon Cycle*, ESSP Report No. 1; INTERNATIONAL ENERGY AGENCY, *CO₂ Emissions from Fuel Combustion*, Highlights 2011; GLOBAL CARBON PROJECT, *10 Years of Advancing Knowledge on the Global Carbon Cycle and its Management*; Malte Meinshausen, et al., *Greenhouse-gas emission targets for limiting global warming to 2° C*, 458 NATURE, April 30, 2009.

⁸⁷ See, e.g., UNITED NATIONS, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* (2011); Aiguo Dai, *Increasing drought under global warming in observations and models*, NATURE: CLIMATE CHANGE (Aug. 2012); Stephen Saunders, et. al., *Hotter and Drier: The West’s Changed Climate* (March 2008).

⁸⁸ See, James Hansen, et al., *Climate Variability and Climate Change: The New Climate Dice* (Nov. 2011); James Hansen, et al., *Perception of Climate Change* (March 2012); James Hansen, et al., *Increasing Climate Extremes and the New Climate Dice* (Aug. 2012).

⁸⁹ See Fitzgerald Booker, et al., *The Ozone Component of Climate Change: Potential Effects on Agriculture and Horticultural Plant Yield, Product Quality and Interactions with Invasive Species*, 51 J. INTEGR. PLANT BIOL. 4, 337-351 (2009); Peter Reich, *Quantifying plant response to ozone: a unifying theory*, TREE PHYSIOLOGY 3, 63-91 (1987).

⁹⁰ GAO Report, *Climate Change: Agencies Should Develop Guidance for Addressing the Effects on Federal Land and Water Resources* (2007); see also Committee on Environment and Natural Resources, National Science and Technology Council, *Scientific Assessment of the Effects of Global Climate Change on the United States* (2008); Melanie Lenart, et al. *Global Warming in the Southwest: Projections, Observations, and Impacts* (2007) (describing impacts from temperature rise, drought, floods and impacts to water supply on the southwest).

As noted above, NEPA imposes “action forcing procedures ... requir[ing] that agencies take a *hard look* at environmental consequences.” *Methow Valley*, 490 U.S. at 350 (citations omitted) (emphasis added). These “environmental consequences” may be direct, indirect, or cumulative. 40 C.F.R. §§ 1502.16, 1508.7, 1508.8. BLM is required to take a hard look at those impacts as they relate to the agency action. “Energy-related activities contribute 70% of global GHG emissions; oil and gas together represent 60% of those energy-related emissions through their extraction, processing and subsequent combustion.”⁹¹ Even if science cannot isolate each additional oil or gas well’s contribution to these overall emissions, this does not obviate BLM’s responsibility to consider oil and gas development in the action area from the cumulative impacts of the oil and gas sector. In other words, the BLM cannot ignore the larger relationship that oil and gas management decisions have to the broader climate crisis that we face. Here, the agency’s analysis must include the full scope of GHG emissions. *See Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1379 (9th Cir. 1998) (“To ‘consider’ cumulative effects, some quantified or detailed information is required. Without such information, neither the courts nor the public, in reviewing the [agency’s] decisions, can be assured that the [agency] provided the hard look that it is required to provide.”). If we are to stem climate disaster—the impacts of which we are already experiencing—the agency’s decisionmaking must be reflective of this reality and plan accordingly.

BLM is responsible for the management of 700 million acres of federal onshore subsurface minerals.⁹² Indeed, “the ultimate downstream GHG emissions from fossil fuel extraction from federal lands and waters by private leaseholders could have accounted for approximately 23% of total U.S. GHG emissions and 27% of all energy-related GHG emissions.”⁹³ This suggests that “ultimate GHG emissions from fossil fuels extracted from federal lands and waters by private leaseholders in 2010 could be more than 20-times larger than the estimate reported in the CEQ inventory, [which estimates total federal emissions from agencies’ operations to be 66.4 million metric tons]. Overall, ultimate downstream GHG emissions resulting from fossil fuel extraction from federal lands and waters by private leaseholders in 2010 are estimated to total 1,551 [million metric tons of CO₂ equivalent (“MMTCO₂e”)].” *Id.* In 2010, the GAO estimated that BLM could eliminate up to 40% of methane emissions from federally authorized oil and natural gas development, the equivalent of eliminating 126 Bcf or 46.3 MMTCO₂e of GHG pollution annually and equivalent to roughly 13 coal-fired power plants.⁹⁴ To suggest that the BLM does not, here, have to account for GHG pollution from oil and gas development, would be to suggest that the collective 700 million acres of subsurface mineral estate is not relevant to protecting against climate change. This sort of

⁹¹ International Investors Group on Climate Change, *Global Climate Disclosure Framework for Oil and Gas Companies*.

⁹² See U.S. DOI-BLM, *Mineral and Surface Acreage Managed By BLM*, available at: http://www.blm.gov/wo/st/en/info/About_BLM/subsurface.html.

⁹³ Stratus Consulting, prepared for: The Wilderness Society, *Greenhouse Gas Emissions from Fossil Energy Extracted from Federal Lands and Waters*, Feb. 1, 2012.

⁹⁴ GAO, *Federal Oil & Gas Leases: Opportunities Exist to Capture Vented and Flared Natural Gas, Which Would Increase Royalty Payments and Reduce Greenhouse Gases*, GAO-11-34 at 12 (Table 1)(October 2010). This GHG equivalence assumes a CH₄ warming potential of 72 (20-year warming period) as per the Intergovernmental Panel on Climate Change’s Fourth Assessment Report and using EPA’s GHG equivalencies calculator.

flawed, reductive thinking would be problematic, and contradicted by the agency's very management framework that provides a place-based lens to account for specific pollution sources to ensure that the broader public interest is protected. In discussing the project's climate change impacts, it is insufficient for the BLM to only frame the problem in global terms:

CEQ recognizes that many agency NEPA analyses to date have concluded that GHG emissions from an individual agency action will have small, if any, potential climate change effects. Government action occurs incrementally, program-by-program and step-by-step, and climate impacts are not attributable to any single action, but are exacerbated by a series of smaller decisions, including decisions made by the government. Therefore, the statement that emissions from a government action or approval represent only a small fraction of global emissions is more a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether to consider climate impacts under NEPA. Moreover, these comparisons are not an appropriate method for characterizing the potential impacts associated with a proposed action and its alternatives and mitigations. This approach does not reveal anything beyond the nature of the climate challenge itself: the fact that diverse individual sources of emissions each make relatively small additions to global atmospheric GHG concentrations that collectively have huge impact.⁹⁵

Therefore, even though greenhouse gas emissions from this project may look minor when viewed on the scale of the global climate crisis we face, when considered cumulatively with all of the other GHG emissions from BLM-managed land, they become significant and cannot be ignored..

ii. BLM Must Consider Recent Climate Science and Carbon Budgeting.

Since the dawn of the industrial revolution a century ago, the average global temperature has risen some 1.6 degrees Fahrenheit. Most climatologists agree that, while the warming to date is already causing environmental problems, another 0.4 degree Fahrenheit rise in temperature, representing a global average atmospheric concentration of carbon dioxide ("CO₂") of 450 parts per million ("ppm"), could set in motion unprecedented changes in global climate and a significant increase in the severity of natural disasters—and could represent the point of no return.⁹⁶ In February 2017, the atmospheric concentration of CO₂ was approximately 406.42 ppm, up from 404.04 ppm the same month a year earlier.⁹⁷

⁹⁵ Council on Environmental Quality, *Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts* (December 18, 2014) at 9, available at: <http://www.whitehouse.gov/administration/eop/ceq/initiatives/nepa/ghg-guidance> (hereinafter "CEQ Draft Guidance").

⁹⁶ See David Johnston, *Have We Passed the Point of No Return on Climate Change?*, Scientific American (April 2015), available at: <http://www.scientificamerican.com/article/have-we-passed-the-point-of-no-return-on-climate-change/>.

⁹⁷ NOAA, Earth System Research Laboratory, *Trends in Atmospheric Carbon Dioxide*, available at: <http://www.esrl.noaa.gov/gmd/ccgg/trends/>.

Climate change has been intensively studied and acknowledged at the global, national, and regional scales. Climate change is being fueled by the human-caused release of greenhouse gas emissions, in particular carbon dioxide and methane. The Intergovernmental Panel on Climate Change (“IPCC”) is a Nobel Prize-winning scientific body within the United Nations that reviews and assesses the most recent scientific, technical, and socio-economic information relevant to our understanding of climate change. In its most recent report to policymakers in 2014, the IPCC provided a summary of our understanding of human-caused climate change. Among other things, the IPCC summarized:⁹⁸

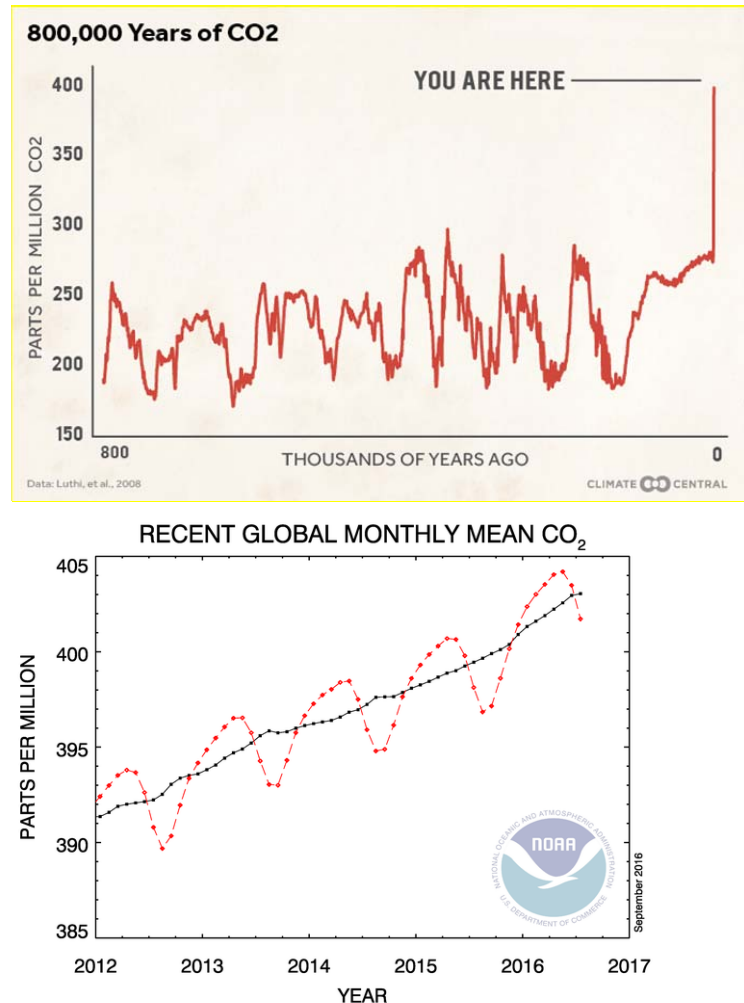
- Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on human and natural systems.
- Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, and sea level has risen.
- Anthropogenic greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide, methane, and nitrous oxide that are unprecedented in at least the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are extremely likely to have been the dominant cause of the observed warming since the mid-20th century.
- In recent decades, changes in climate have caused impacts on natural and human systems on all continents and across the oceans. Impacts are due to observed climate change, irrespective of its cause, indicating the sensitivity of natural and human systems to changing climate.
- Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive, and irreversible impacts for people and ecosystems. Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks.
- Surface temperature is projected to rise over the 21st century under all assessed emission scenarios. It is very likely that heat waves will occur more often and last longer, and that extreme precipitation events will become more intense and frequent in many regions. The ocean will continue to warm and acidify, and global mean sea level will continue to rise.

Carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are recognized as the key greenhouse gases contributing to climate change. In 2009, the EPA found that these “six greenhouse gases taken in combination endanger both the

⁹⁸ IPCC AR5, *Summary for Policymakers* (March 2014) available at: http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf.

public health and the public welfare of current and future generations.”⁹⁹ The D.C. Circuit has upheld this decision as supported by the vast body of scientific evidence on the subject. *See Coal. for Responsible Regulation, Inc. v. EPA.*, 684 F.3d 102, 120-22 (D.C. Cir. 2012).

According to the National Oceanic and Atmospheric Administration (“NOAA”), “[t]he combined average temperature over global land and ocean surfaces for August 2016 was the highest for August in the 137-year period of record, marking the 16th consecutive month of record warmth for the globe.”¹⁰⁰ The global climate crisis is happening and it may well be accelerating quickly.



The graphs show globally averaged historic and monthly mean carbon dioxide.

The IPCC in 2013 affirmed: “Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The

⁹⁹ U.S. Environmental Protection Agency, *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act* 74 Fed. Reg. 66,496 (Dec. 15, 2009).

¹⁰⁰ NOAA, Global Analysis – August 2016, available at: <https://www.ncdc.noaa.gov/sotc/global/201608>.

atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased” causing “widespread impacts on human and natural systems.”¹⁰¹ This is consistent with the findings of the United States’ 2014 Third National Climate Assessment, stating: “That the planet has warmed is ‘unequivocal,’ and is corroborated through multiple lines of evidence, as is the conclusion that the causes are very likely human in origin.”¹⁰² With particular regard to the Southwest Region—which includes Colorado, New Mexico, Utah, Arizona, Nevada, and California—the National Climate Assessment included in the following overview:¹⁰³

- Snowpack and streamflow amounts are projected to decline in parts of the Southwest, decreasing surface water supply reliability for cities, agriculture, and ecosystems.
- The Southwest produces more than half of the nation’s high-value specialty crops, which are irrigation-dependent and particularly vulnerable to extremes of moisture, cold, and heat. Reduced yields from increasing temperatures and increasing competition for scarce water supplies will displace jobs in some rural communities.
- Increased warming, drought, and insect outbreaks, all caused by or linked to climate change, have increased wildfires and impacts to people and ecosystems in the Southwest. Fire models project more wildfire and increased risks to communities across extensive areas.
- Flooding and erosion in coastal areas are already occurring even at existing sea levels and damaging some California coastal areas during storms and extreme high tides. Sea level rise is projected to increase as Earth continues to warm, resulting in major damage as wind-driven waves ride upon higher seas and reach farther inland.
- Projected regional temperature increases, combined with the way cities amplify heat, will pose increased threats and costs to public health in southwestern cities, which are home to more than 90% of the region’s population. Disruptions to urban electricity and water supplies will exacerbate these health problems.

Immediate and substantial greenhouse gas reductions are required to avoid catastrophic impacts to people and communities. “Following the warmest year on record in 2014 according to most estimates, 2015 reached record warmth yet again, surpassing the previous record by more than 0.1°C.”¹⁰⁴

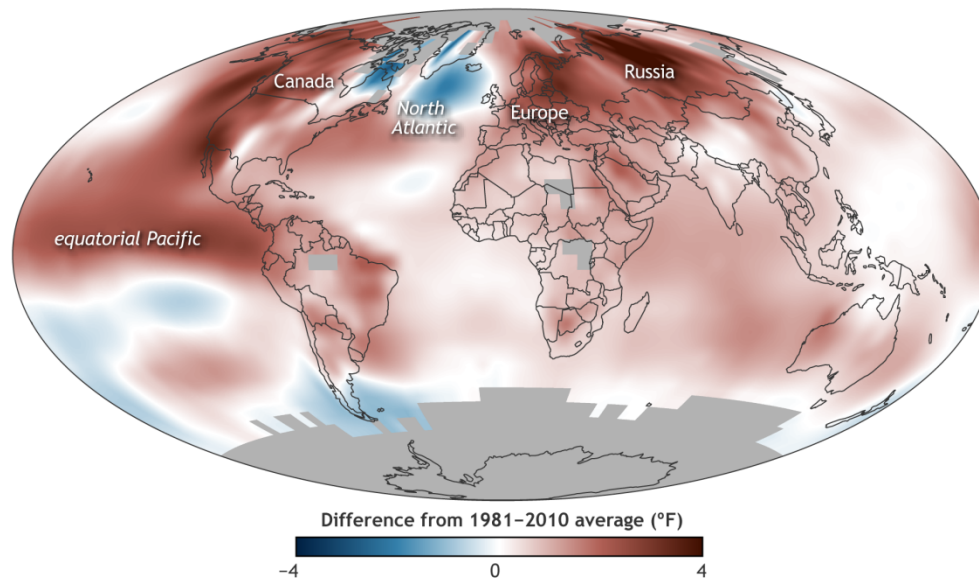
¹⁰¹ IPCC AR5 Synthesis Report at 2.

¹⁰² Jerry M. Melillo, *et al.*, *Climate Change Impacts in the United States: The Third National Climate Assessment* (2014) at 61, available at: <http://nca2014.globalchange.gov>.

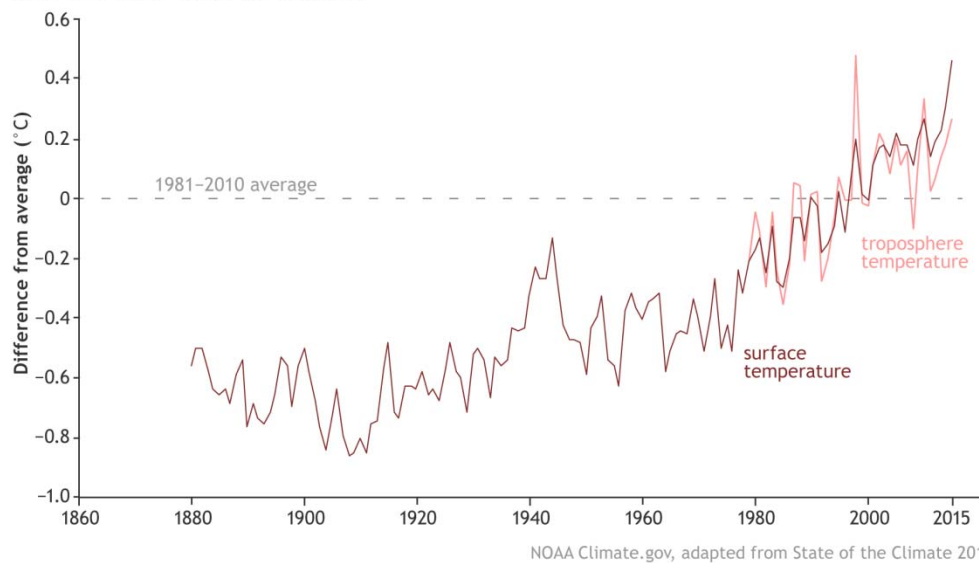
¹⁰³ *See id.* at 463-86.

¹⁰⁴ American Meteorological Society, *State of the Climate in 2015*, Vol.97, No.8 (Aug. 2016), at S7.

VERY FEW COOL SPOTS IN 2015



NEW HOTTEST YEAR ON RECORD



As noted above, the Paris Agreement commits all signatories—including the United States—to a target holding long-term global average temperature “to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels.”¹⁰⁵ As articulated by a team of international climate scientists, including Dr. James Hansen, in a 2013 report: “The widely accepted target of limiting human-made global warming to 2 degrees Celsius (3.6 degrees Fahrenheit) above preindustrial level is too high and would subject young people, future generations and nature to irreparable harm.... Observational

¹⁰⁵ Paris Agreement at Art. 2.

data reveal that some climate extremes are already increasing in response to warming of several tenths of a degree in recent decades; these extremes would likely be much enhanced with warming of 2°C or more.”¹⁰⁶ “Runaway climate change—in which feedback loops drive ever-worsening climate change, regardless of human activities—are now seen as a risk even at 2°C of warming.”¹⁰⁷ Indeed, the impacts of 2°C temperature rise have been “revised upwards, sufficiently so that 2°C now more appropriately represents the threshold between ‘dangerous’ and ‘extremely dangerous’ climate change.”¹⁰⁸

Although the Paris Agreement has underscored that immediate action is needed to avoid ‘extremely dangerous’ warming, meeting the voluntary commitments adopted in Paris alone will be insufficient to meet goal of limiting temperature change to between 1.5°C and 2.0°C above pre-industrial levels. As noted by a 2015 UNEP technical report:

The emissions gap between what the full implementation of the unconditional [intended nationally determined contributions (INDCs)] contribute and the least-cost emission level for a pathway to stay below 2°C, is estimated to be 14 GtCO₂e (range: 12-17) in 2030 and 7 GtCO₂e (range: 5-10) in 2025. When conditional INDCs are included as fully implemented, the emissions gap in 2030 is estimated to be 12 GtCO₂e (range: 10-15) and 5 GtCO₂e (range: 4-8) in 2025.¹⁰⁹

In other words, far greater emissions reductions are necessary to stay below and 2.0°C, let alone aspire to 1.5°C of warming. If no further progress were made beyond the Paris Agreement, expected warming by 2100 would be 3.5°C.¹¹⁰ In the alternative, if no action is taken and the status quo is maintained estimated warming by 2100 is upwards of 4.5°C.¹¹¹

With specific regard to United States commitments under the Paris Agreement, the U.S. INDC set specific greenhouse gas emissions reduction target for 2025 of a 26% to 28% reduction

¹⁰⁶ James Hansen, *et al.*, *Assessing “Dangerous Climate Change”: Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature*, 8 PLoS ONE 8 e81648 (2013).

¹⁰⁷ Greg Muttitt, *et al.*, *The Sky’s Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production*, Oil Change International (Sept. 2016) at 6; *see also* David Spratt, *Climate Reality Check: After Paris, Counting the Cost* (March 2016) at 8 (“there is an unacceptable risk that before 2°C of warming, significant “long-term” feedbacks will be triggered, in which warming produces conditions that generate more warming, so that carbon sinks such as the oceans and forests become less efficient in storing carbon, and polar warming triggers the release of significant permafrost and clathrate carbon stores. Such an outcome could render ineffective human efforts to control the level of future warming to manageable proportions.”).

¹⁰⁸ Kevin Anderson and Alice Bows, *Beyond ‘Dangerous’ Climate Change: Emission Scenarios for a New World*, Phil. Trans. R. Soc. (2011).

¹⁰⁹ United Nations Environment Programme (UNEP), *The Emissions Gap Report 2015: A UNEP Synthesis Report* (Nov. 2015) at xviii.

¹¹⁰ Spratt, *Climate Reality Check* at 2.

¹¹¹ *See* Climate Interactive, Climate Scorecard, available at:

<https://www.climateinteractive.org/programs/scoreboard/>; *see also*, Andrew P. Schurer, *et al.*, *Separating Forced from Chaotic Climate Variability over the Past Millennium*, *Journal of Climate*, Vol. 26 (March 2013).

below the 2005 emission levels, producing a range in 2005 net GHG emissions from 6,323 to 7,403 MTCO₂e.¹¹² The difference between this target and the estimated 2025 emissions without INDC policies results in an ‘emissions gap’ ranging from 896 to 2,121 MTCO₂e.¹¹³

Both the IPCC and National Climate Assessment recognize the dominant role of fossil fuels in driving climate change:

While scientists continue to refine projections of the future, observations unequivocally show that climate is changing and that the warming of the past 50 years is primarily due to human-induced emissions of heat-trapping gases. These emissions come mainly from burning coal, oil, and gas, with additional contributions from forest clearing and some agricultural practices.¹¹⁴

CO₂ emissions from fossil fuel combustion and industrial processes contributed about 78% to the total GHG emission increase between 1970 and 2010, with a contribution of similar percentage over the 2000–2010 period (*high confidence*).¹¹⁵

As summarized in a recent report:

The Paris Agreement aims to help the world avoid the worst effects of climate change and respond to its already substantial impacts. The basic climate science involved is simple: cumulative carbon dioxide (CO₂) emissions over time are the key determinant of how much global warming occurs. This gives us a finite *carbon budget* of how much may be emitted in total without surpassing dangerous temperature limits.¹¹⁶

According to the IPCC, as of 2011, the remaining carbon budget of cumulative CO₂ emissions from all anthropogenic sources must remain below 1,000 GtCO₂ to provide a 66% probability of limiting warming to 2°C above pre-industrial levels.¹¹⁷ For years 2012–2014, approximately 107 GtCO₂ was emitted, averaging approximately 36 GtCO₂ per year, which left us at the start of 2016 with a carbon budget of only 850 GtCO₂.¹¹⁸ These emissions were the highest in human history and 60% higher than in 1990 (the Kyoto Protocol reference year). Of course, the Paris Agreement aim of limiting global warming to 1.5°C requires adherence to a

¹¹² Jeffery Greenblatt & Max Wei, *Assessment of the climate commitments and additional mitigation policies of the United States*, Nature Climate Change (Sept. 2016), available at: <http://www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate3125.html>.

¹¹³ *Id.* at 2; see also UNEP, Emissions Gap Report.

¹¹⁴ Third National Climate Assessment at 2.

¹¹⁵ IPCC AR5 Synthesis Report at 46.

¹¹⁶ *The Sky's Limit* at 6.

¹¹⁷ IPCC AR5 Synthesis Report at 63–64 & Table 2.2. For an 80% probability of staying below 2°C, the budget from 2000 is 890 GtCO₂, with less than 430 GtCO₂ remaining. Malte Meinshausen *et al.*, *Greenhouse-gas emission targets for limiting global warming to 2°C*, Nature (2009) at 1159.

¹¹⁸ See Annual Global Carbon Emissions, available at: <https://www.co2.earth/global-co2-emissions>; see also C. Le Quéré, *et al.*, *Global Carbon Budget 2015*, Earth Syst. Sci. Data (Dec. 2015).

more stringent carbon budget of only 400 GtCO₂ from 2011 onward, of which about 250 GtCO₂ remained at the start of 2016.¹¹⁹ “With global annual emissions amounting to 36 GtCO₂ in 2015, scientists predict that at current rates global emissions will exceed the carbon budgets necessary to stay under the 1.5°C target by 2021 and the 2°C target by 2036.”¹²⁰

The potential carbon emissions from *existing* fossil fuel reserves—the known belowground stock of extractable fossil fuels—considerably exceed both 2°C and 1.5°C of warming. “Estimated total fossil carbon reserves exceed this remaining [carbon budget] by a factor of 4 to 7.”¹²¹ “For the 2°C or 1.5°C limits, respectively 68% or 85% of reserves must remain in the ground.”¹²² The reserves in currently operating oil and gas field alone, even with no coal, would take the world beyond 1.5°C.¹²³

In order for the world to stay within a carbon budget consistent with Paris Agreement goals—“holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C”¹²⁴—significant fossil fuel resources must remain in the ground. More specifically, to meet the target of 2°C, globally “a third of oil reserves, half of gas reserves and over 80 percent of current coal reserves should remain unused from 2010-2050.”¹²⁵ Studies estimate that global coal, oil and gas resources considered currently economically recoverable contain potential greenhouse gas emissions of 4,196 GtCO₂,¹²⁶ with other estimates as high as 7,120 GtCO₂.¹²⁷

Critically, the United States carbon quota—equivalent to 11% of the global carbon budget needed for a 50% chance of limiting warming to 2°C—allocates approximately 158 GtCO₂ to the United States as of 2011.¹²⁸ By way of comparison, federal and non-federal fossil fuel emissions together would produce between 697 and 1,070 GtCO₂.¹²⁹ Regarding just federal

¹¹⁹ Dustin Mulvaney, *et al.*, *Over-Leased: How Production Horizons of Already Leased Federal Fossil Fuels Outlast Global Carbon Budgets*, EcoShift Consulting (July 2016) at 2 (citing Joeri Rogelj, *et al.*, *Difference between carbon budget estimates unraveled*, Nature Climate Change (2016)).

¹²⁰ Mulvaney at 2 (citing Oak Ridge National Laboratories, Carbon Dioxide Information Analysis Center (2015), available at: <http://cdiac.ornl.gov/GCP/>).

¹²¹ IPCC AR5 Synthesis Report at 63.

¹²² *The Sky’s Limit* at 6; see also Kevin Anderson and Alice Bows, *Reframing the climate change challenge in light of post-2000 emission trends*, Phil. Trans. R. Soc. (2008) (“to provide a 93% mid-value probability of not exceeding 2°C, the concentration (of atmospheric greenhouse gases) would need to be stabilized at or below 350 parts per million carbon dioxide equivalent (ppm CO₂e)” compared to the current level of ~485 ppm CO₂e.).

¹²³ *The Sky’s Limit* at 5, 17.

¹²⁴ Paris Agreement at Art. 2.

¹²⁵ Christophe McGlade & Paul Ekins, *The geographical distribution of fossil fuels unused when limiting global warming to 2°C*, Nature (Jan. 2015).

¹²⁶ Michael Raupach, *et al.*, *Sharing a quota on cumulative carbon emissions*, Nature Climate Change (Sept. 2014).

¹²⁷ IPCC AR5, Mitigation of Climate Change, Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (2014) at Table 7.2.

¹²⁸ Raupach at 875.

¹²⁹ Dustin Mulvaney, *et al.*, *The Potential Greenhouse Gas Emissions from U.S. Federal Fossil Fuels*, EcoShift Consulting (Aug. 2015) at 16.

fossil fuel resources, the United States contains enough recoverable coal, oil and gas that, if extracted and burned, would result in as much as 492 GtCO₂, far surpassing the entire global carbon budget for a 1.5°C target and nearly eclipsing the 2°C target—to say nothing of the United States ‘share’ of global emissions.¹³⁰ Unleased federal fossil fuels comprise 91% of these potential emissions, with already leased federal fossil fuels accounting for as much as 43 GtCO₂.¹³¹

In 2012, “the GHG emissions resulting from the extraction of fossil fuels from federal lands by private leaseholders totaled approximately 1,344 MMTCO₂e.”¹³² Between 2003 and 2014, approximately 25% of all United States and 3-4% of global fossil fuel greenhouse gas emissions are attributable to federal minerals leased and developed by the Department of the Interior.¹³³ Continued leasing and development of federal fossil fuel resources commits the world to ‘extremely dangerous’ warming well beyond the 2°C threshold. As one study put it, “the disparity between what resources and reserves exist and what can be emitted while avoiding a temperature rise greater than the agreed 2°C limit is therefore stark.”¹³⁴ In short, *any* new leasing of federal fossil fuel resources is inconsistent with a carbon budget that would seek to avoid catastrophic climate change.

The production horizons for already leased federal fossil fuel resources underscore how unwarranted any additional leasing is. Comparing these production horizons to dates at which carbon budgets would be exceeded if current emission levels continue:

- Federal crude oil already leased will continue producing for 34 years beyond the 1.5°C threshold and 19 years beyond the 2°C threshold;
- Federal natural gas already leased will continue producing 23 years beyond the 1.5°C threshold and 8 years beyond the 2°C threshold;
- Federal coal already leased will continue producing 20 years beyond the 1.5°C threshold and 5 years beyond the 2°C threshold.¹³⁵

Opportunities to reduce GHG emissions through the cessation of new leasing and non-renewal of non-producing leases further underscores how unwarranted continued leasing is.

If new leasing and renewal of existing non-producing leases continues, by 2040 it will contribute about two-thirds of expected federal fossil fuel production (forecast based on EIA and other sources).¹³⁶ On the other hand, if new leasing ceases and existing non-producing leases are not renewed, 40% of forecast coal production could be avoided in 2025 and 74% of coal

¹³⁰ *Id.*

¹³¹ *Id.*

¹³² Stratus Consulting, *Greenhouse Gas Emissions from Fossil Energy Extracted from Federal Lands and Waters: An Update* (Dec. 2014) at 9.

¹³³ See Energy Information Administration, *Sales of Fossil Fuels Produced from Federal and Indian Lands, FY 2003 through FY 2014* (July 2015); see also Stratus Consulting.

¹³⁴ McGlade at 188.

¹³⁵ Mulvaney (2016) at 5.

¹³⁶ Peter Erickson and Michael Lazarus, *How Would Phasing Out U.S. Federal Leases for Fossil Fuel Extraction Affect CO₂ Emissions and 2°C Goals?*, Stockholm Environmental Institute (2016) at 12.

production could be avoided in 2040. As for oil and gas, 12% of oil production could be avoided in 2025 and 65% could be avoided by 2040 while 6% of natural gas production could be avoided in 2025 and 59% could be avoided by 2040.¹³⁷

This avoided production would significantly reduce future U.S. emissions. Cessation of new and renewed leases for federal fossil fuel extraction could reduce CO₂ emissions by about 100 Mt per year by 2030. Annual emission reductions could become greater than that over time as production declines on existing leases and maintaining or increasing production becomes dependent on yet-to-be issued leases.¹³⁸

A comparison with other measures shows that “no leasing” could be a very significant part of U.S. efforts to address climate change. The 100 Mt CO₂ emissions savings that could result from no leasing in 2030 compares favorably with EPA standards for light- and medium-duty vehicles that are expected to yield 200 Mt in CO₂ savings in 2030, and with standards for heavy-duty vehicles that are expected to yield 70 Mt in CO₂ savings in the same year. The 100 Mt CO₂ emissions reduction from leasing restrictions would be greater than either the emission reductions that the EPA expects to achieve through its existing regulation of oil and gas industry emissions or reductions the BLM expects to achieve from its proposed methane waste standards on oil and gas operations on federal land. Clearly, cessation of new and renewed leases could make an important contribution to U.S. climate change mitigation efforts.¹³⁹

Also, importantly, avoided production through no new leasing and non-renewal of existing non-producing leases could help avoid further carbon lock-in in terms of investment in both fossil fuel-producing and fossil fuel-using infrastructure.¹⁴⁰

Simply put, the timeframe to avoid catastrophic climate change is short, and the management of our federal minerals is dangerously out of step with this reality.

iii.. BLM Must Consider Changes to Resources Due to Climate Change

In addition to the complete lack of any analysis in the 1988 FEIS of the impacts of oil and gas leasing in terms of contributing to climate change, the FEIS contains no evaluation at all of the vulnerability of resources to impacts in light of climate change impacts. The 1989 RMP addresses oil and gas leasing summarily by prohibiting surface occupancy in specified ACECs and special management areas. In light of diminished habitat, increased wildfires, drought, invasive species, shifting temperature and precipitation regimes, and other impacts of climate change, BLM must re-evaluate whether oil and gas development on the areas left open by the RMP would have significant impacts on sensitive resources such as wildlife in areas both within and outside of the ACECs and special management areas.

c. Imperiled Wildlife

¹³⁷ Erickson and Lazarus at 16.

¹³⁸ *Id.* at 26.

¹³⁹ *Id.* at 27.

¹⁴⁰ *Id.* at 30.

BLM has also violated NEPA by failing to consider significant new information about ESA-listed and sensitive species post-dating the nearly thirty-year old FEIS.

The DNA for Navajo County concedes that the parcels at issue are within the geographic range of the federally listed species Little Colorado spinedace (*Lepidomeda vittata*), as well as the Little Colorado sucker (*Catostomus* sp.) and bluehead sucker (*Pantosteus discobolus*), which are BLM sensitive species. Nonetheless, the DNA asserts that no impacts need to be evaluated at present because impacts will be evaluated for the first time after the lease issuance, at the APD stage instead. DOI-BLM-AZ-G010-2018-0027-DNA at 3. The DNA for the Apache County parcels asserts that there will be no previously unanalyzed significant impacts to sensitive wildlife because “no new sensitive (threatened, endangered, candidate, or special status) species have been added to the area of interest since it was analyzed in the Phoenix RMP.” DOI-BLM-AZ-G010-2018-0024-DNA at 3.

The Little Colorado spinedace is mentioned in the 1988 FEIS only in the context of evaluating the impact of land disposals that would affect the quantity of water in Silver Creek. FEIS at 90. Since 1988, significant new information regarding the species has become available. In 1997, the Fish and Wildlife Service (FWS) completed a recovery plan for the species.¹⁴¹ The recovery plan goals include “1) protect[ing] existing spinedace populations, 2) restor[ing] depleted and extirpated spinedace populations, 3) protect[ing] and enhance[ing] existing habitats.” Recovery Plan at 8. The Plan explains that each of the known existing populations of the species must be protected from loss:

Spinedace populations are known to remain in the Little Colorado River, Rudd, Nutrioso, Chevelon, Silver and East Clear creeks as well as other possible locations threatened by ongoing habitat modification or destruction. Stream alteration, watershed modification and introduction of and dispersal of non-native fishes into the Little Colorado River drainage poses an increasing threat to remaining spinedace populations. Loss of any of these populations significantly increases risk of extinction by decreasing the likelihood of species survival.... It is imperative that existing populations and their habitats be protected to ensure survival of and effect recovery of this species.

Recovery Plan at 10. The Recovery Plan stated that the populations in the most “imminent danger should be given the highest priority to ensure their continued survival and movement toward recovery of the species.” *Id.* at 10. With regard to the known populations, the Plan tentatively ranked “Silver Creek population in most imminent danger (possibly extinct); followed by East Clear, Chevelon, Rudd and Nutrioso Creeks and the Little Colorado river.” *Id.*

In 2008, the last finalized status review completed by FWS for the species recommended that the species be listed as endangered rather than threatened based on increased threats from water pumping, drought, and invasive species:

At the time of listing in 1987, habitat loss based on past water development projects and predation from introduced non-native fish were considered the major threats to spinedace. Threats to the spinedace have worsened since listing, and their impact on existing

¹⁴¹ Little Colorado River Spinedace *Lepidomeda vittata* Recovery Plan (dated Oct. 1997, signed Jan. 9, 1998) available at: https://ecos.fws.gov/docs/recovery_plan/980109.pdf.

populations and habitats is expected to increase further into the foreseeable future over the next 50 to 100 years. Water-development projects are expected to increase within the range of the spinedace as human populations and the demand for water grows.

...the continued invasion of non-native aquatic species into spinedace habitat and the ongoing and future reductions in surface water (due to both drought and surface and groundwater pumping) are threats that are increasing in magnitude, extend to existing spinedace populations, and are contributing factors to the spinedace's continuing decline throughout its range. Within the foreseeable future (50 years) the complete loss of baseflow to the area that supports the largest population of spinedace has been predicted by two different hydrologic models based upon current groundwater pumping; we expect the rate of groundwater pumping to increase in the future as the human population in the area increases. There are very few habitats within the range of the species that are currently able to be occupied due to lack of water or presence of multiple predators, so at this time, recovery options are limited. Areas that are currently able to support spinedace are relatively small, fragmented habitats that frequently have no connection to other habitats due to lack of water.

2008 Five-year status report at 19-20.¹⁴² The 2008 status report also provided new information about the presence of the species in Silver Creek:

[T]he Silver Creek population was considered extirpated until fish were collected from the creek again in 1997. Prior to the surveys in July 1997, the spinedace had not been collected anywhere in the Silver Creek drainage since 1965, despite numerous surveys and attempts to locate them. Although the AGFD and others have surveyed Silver Creek since 1997, no spinedace have been located.

Id. at 5. The status review further explained that the population at Silver Creek may have dropped to levels too low to detect with surveys:

[N]umerous surveys since [1997] have failed to find spinedace, including an extensive survey in 2004 funded by a cooperative agreement with the BLM (McKell and Lopez 2005). It is believed that changes to the habitat since 1997 have likely increased habitat for non-native fishes and impacted our ability to capture spinedace during surveys. If spinedace are still present in Silver Creek, it may be that they exist at such low numbers, or in areas that have not been surveyed due to access restrictions, that our current sampling techniques are insufficient to detect them in this altered habitat.

¹⁴² U.S. Fish and Wildlife Service Arizona Ecological Services Office, Little Colorado Spinedace (*Lepidomeda vittata*) 5-Year Review: Summary and Evaluation, (2008), *available at*: https://ecos.fws.gov/docs/five_year_review/doc2008.pdf. In 2014 and 2018, FWS published notices that it was commencing a 5-year status review for the species, but no actual status reviews have been published since 2008. *See* 83 Fed. Reg. 25034, 25038 (May 31, 2018), 79 Fed. Reg. 27632, 27634 (May 14, 2014); U.S. Fish and Wildlife Service, ECOS Profile, *available at*: <https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=E04M>.

Id. at 7.

The 2008 status review also provided new information indicating the presence of distinct genetic sub-groups within the population, the need to conserve all of those sub-groups, and the possibility that conservation of the Silver Creek fish might be important to maintaining genetic variation:

The cause and exact time of the isolation of the three sub-groups are not known, but Tibbets et al. (1994) recommend that all of these populations be maintained to conserve genetic variation in this species. Spinedace from Silver Creek were not included in the study since none were available at the time. Though Silver Creek fish were located again in 1997, fish were not collected for genetic work and it is unknown whether they would fit into one of the three genetic sub-groups or possibly belong to a separate subgroup.

Id. at 6. A 2009 Biological Opinion issued by FWS stated that the species “is assumed to still occupy the streams it is known from historically (Chevelon, Silver, Nutrioso, East Clear Creek, and the LCR proper). ... However, all of the known populations have decreased since 1993 and drought conditions continue to put additional strain on all known populations.”¹⁴³

In short, the 2008 status review includes significant information that bears on how severe impacts to the species from oil and gas leasing, such as impacts to water quantity, will be. It also provides significant new information to inform an assessment of how leasing by BLM in this area would undermine state and federal efforts to recover the species. *See id.* at 9-10 (describing conservation efforts), 19 (describing insufficiency of state and federal efforts in light of increasing threats); 40 C.F.R. § 1502.16(c) (requiring evaluation of “possible conflicts between the proposed action and the objectives of Federal, regional, State, and local...policies...for the area concerned.”). In particular, the new information regarding the continued presence of the Silver Creek population, which the Recovery Plan identified as most important to protect, and its likely persistence at levels too low to be detected in surveys, and the overall increased vulnerability of the species to extinction, is highly relevant to the evaluation of how water use and other indirect impacts of oil and gas leasing on the parcels in question will affect the persistence and recovery of this species. BLM cannot defer all consideration of these impacts to the APD stage because BLM has by no means ensured or even evaluated whether it will actually retain sufficient authority at that later stage to preclude or limit development based on impacts to the species from, *inter alia*, water withdrawals for hydraulic fracturing that are not directly authorized by BLM, and more generally impacts that do not rise to the level of jeopardizing the species, but may be significant nonetheless. To the extent that BLM believes that the generic ESA related lease stipulations posted on the sale notice will allow it to retain full authority to prevent *all* harms to the species that will result directly, indirectly, and cumulatively to the species from development, even where the harms may not reach the threshold of jeopardizing the species, BLM should clarify, evaluate, and substantiate that position by stating it clearly in the lease itself. Moreover, the scope of the effects analysis required pursuant to NEPA at the leasing stage for a set of parcels in a given area is broader than what would potentially be required to

¹⁴³ U.S. Fish and Wildlife Service, Biological Opinion RE: Rehabilitation of Nelson Dam (Feb. 3, 2009) at 5, *available at*: https://www.fws.gov/Southwest/es/arizona/Documents/Biol_Opin/070403_NelsonDam.pdf.

comply with the ESA at the APD stage for an individual lease on one of those parcels. Consequently, the posted stipulations do not retain the full discretion that BLM holds at the present stage with regard to stopping impacts to these species from development.

Neither the Little Colorado sucker nor the bluehead sucker are mentioned at all in the 1988 FEIS. Nor does the FEIS more generally address those species as part of any broad evaluation of fish identified as BLM sensitive species. The status of the Little Colorado sucker and bluehead sucker as BLM sensitive species appears to post-date the FEIS, as does the 2006 Arizona Statewide Conservation Agreement intended to prevent the need to list these species.¹⁴⁴ The status and conservation needs of these BLM sensitive species plainly was not considered at all in the FEIS, and information available after the 1988 FEIS, such as the Conservation Agreement, is significant new information that BLM must consider prior to any action that could affect these species. Moreover, it is plain that these species are vulnerable to impacts to water quantity and water quality that could result from drilling, hydraulic fracturing, and acidizing on wells in the parcels within the watersheds, and from increased ground and surface water consumption associated with those activities. Among other things, BLM must evaluate whether oil and gas leasing in the potential habitat of these sensitive species can be reconciled with the Conservation Agreement. *See* 40 C.F.R. § 1502.16(c) (requiring evaluation of “possible conflicts between the proposed action and the objectives of Federal, regional, State, and local...policies...for the area concerned.”).

The DNA does not attempt to assess the significance of this new information about these species at all. Instead, the DNA asserts that the assessment of impacts to these species will be conducted at the APD stage. BLM’s assertion that the impacts to these species from oil and gas development can be assessed for the first time *after* lease issuance violates NEPA.

D. BLM’s failure to complete a site-specific NEPA analysis of oil and gas stipulations conflicts with the Phoenix District RMP and violates the Federal Land Policy and Management Act and the National Environmental Policy Act.

The 1988 FEIS upon which the DNAs rely states that leases must include stipulations developed through site-specific environmental assessments. The issuance of leases without site-specific stipulations developed through environmental assessments is an action outside the scope of what the FEIS contemplated. Here, BLM proposes to lease the parcels in question without imposing any stipulations based on site-specific environmental assessment at the lease stage, *and* without including any stipulations to ensure that BLM actually retains the full authority to

¹⁴⁴Arizona Game and Fish Department, Arizona Statewide Conservation Agreement For Roundtail Chub (*Gila Robusta*), Headwater Chub (*Gila Nigra*), Flannelmouth Sucker (*Catostomus Latipinnis*), Little Colorado River Sucker (*Catostomus Spp.*), Bluehead Sucker (*Catostomus Discobolus*), and Zuni Bluehead Sucker (*Catostomus Discobolus Yarrowi*) available at: <https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/HeadwaterChub/SCA%20Agreement%2020061220%20final.pdf>.

incorporate stipulations later, at the APD stage, when it purportedly will engage in site-specific environmental assessments for the first time.¹⁴⁵ The Phoenix District FEIS/RMP states:

The interdisciplinary team has determined that future exploration and development of leasable minerals in the RMP area is only a remote possibility. Nevertheless, constraints on surface use within some special management areas and ACECs have been recommended in this Proposed RMP/FEIS should development be proposed. All land in the RMP area would remain open to leasing. Should exploration and/or development of leasable resources be pursued during the life of this RMP, special stipulations will be incorporated into the lease agreement after the results of site-specific environmental assessments for each action are known.

Phoenix RMP/FEIS at 14. The 1988 FEIS itself makes it plain that the site-specific environmental assessment must be conducted at a time when BLM has full authority to incorporate all stipulations that may be shown to be necessary based on that assessment.

BLM cannot simply ignore the reality that its ability to impose and enforce stipulations after lease issuance is limited. This is especially true on lands where the federal government does not own the surface estate, which is the case here. In a recent letter to BLM regarding leasing near Great Sand Dunes National Park in Colorado, EPA specifically identified this problem, and urged BLM to “more fully describe how BLM applies stipulations, BMPs and mitigation measures when managing development of federal minerals on private lands. Based on past experience...BLM may have limitations in applying measures on private surface.”¹⁴⁶

The RMP/FEIS plainly relies on the assumption that BLM will conduct an environmental assessment *prior* to any leasing, and include stipulations based on that assessment. It is thus arbitrary and capricious for BLM to rely on the FEIS to cover an action not contemplated by that NEPA document—namely, the issuance of leases without site-specific stipulations developed in the required manner.

The sale of leases without the incorporation of stipulations based on site-specific analysis also conflicts with the plain language of the Phoenix District RMP and therefore violates FLPMA. FLPMA requires that “the Secretary shall manage the public lands under principles of multiple use and sustained yield, in accordance with the land use plans developed by him under section 202 of this Act when they are available[.]” 43 U.S.C. § 1732(a). The Phoenix District FEIS/RMP states: “Should exploration and/or development of leasable resources be pursued during the life of this RMP, special stipulations will be incorporated into the lease agreement after the results of site-specific environmental assessments for each action are known.” Phoenix RMP/FEIS at 14. Here, BLM is proposing to sell the leases without such special stipulations, and

¹⁴⁵ The two stipulations that BLM has posted on the notice for the sale do not appear to have been developed via site-specific environmental analysis of the parcels, nor do they appear to adequately reserve full authority by BLM to impose any and all stipulations that later may be revealed to be necessary based on a site-specific environmental analysis addressing the full range of potential environmental impacts resulting from development.

¹⁴⁶ Letter from Philip S. Strobel, Director, NEPA Compliance and Review Program, US EPA Region 8, to Keith Berger, Field Manager, BLM Royal Gorge Field Office (Apr. 8, 2018).

without conducting any site-specific environmental analysis to determine the need for such stipulations. Further, BLM has not imposed any stipulation that would fully reserve the authority to impose such special stipulations at a later stage. This failure to address the Phoenix RMP's requirement regarding stipulations is not in accordance with the RMP, and thus violates FLPMA.

E. Fluid mineral leasing primarily for helium extraction violates the Mineral Leasing Act and DOI regulations.

Given the available information, discussed above, indicating that helium may be present in commercial quantities in the leasing area, and that the potential to extract helium may be a key factor motivating leasing, BLM should assess whether fluid minerals extraction here is likely so dependent economically on the presence of commercial concentrations of helium that the sale of the leases violates the requirements of the MLA and the regulations thereunder regarding the reservation of helium. The sale and issuance of leases for other fluid minerals, where the true primary target of exploration and extraction activities is helium, circumvents current DOI regulations for the reservation of helium, which allow its extraction only under limited circumstances. Those regulations allow helium to be extracted and sold only if it would be otherwise drained by activities on adjacent lands, or lost in the course of extracting leasable fluid minerals (i.e. the helium extraction is merely incidental to the other fluid mineral extraction). Selling leases for parcels where it is likely that helium is the primary target allows private parties to manufacture the circumstances under which contracts for helium extraction can be obtained. This creates a backdoor to regulations intended to keep helium reserved *in situ* unless its loss incident to other mineral extraction is unavoidable.

The Mineral Leasing Act reserves all rights to helium to the federal government, even when the lands are leased for extraction of hydrocarbons and other leasable fluid minerals, 30 U.S.C. § 181. A party that obtains a lease for hydrocarbons (oil and natural gas) also has to apply for a special contract with the Secretary of Interior in order to have rights to sell any helium that may be encountered during hydrocarbon extraction, *see* 43 C.F.R. § 16.1(a), (b), and cannot intentionally develop wells designed for the purpose of extracting helium unless the Secretary of Interior has expressly granted permission for them to do so. *See* 43 C.F.R. § 16.3. Further, under the Department of Interior's rules, the Secretary of Interior can only enter into such a contract under two circumstances: (1) where exploration for leasable minerals is occurring, and the helium would be lost in the course of the lessee extracting the other gases; or (2) where the helium on the lands with federally owned mineral rights is or would be drained as a result of gas extraction activities on adjacent lands. 43 C.F.R. § 16.1(a). The DOI rules require that the application set forth "information sufficient to enable the Secretary to determine that the proposal will conserve helium that will otherwise be wasted, drained, or lost to Federal ownership or use, and to evaluate the suitability of the proposal." 43 C.F.R. § 16.2. The rules do not allow for DOI to enter into a contract or lease under any other circumstances. If no drainage is occurring, the rules plainly do not allow for a helium contract where helium extraction is the primary purpose of a lessee's activity's, rather than incident to other fluid mineral extraction.

F. BLM violated Section 7 of the Endangered Species Act by failing to ensure that agency actions will not jeopardize the continued existence of species listed under the

Endangered Species Act, including Little Colorado River spinedace, Little Colorado sucker, and yellow-billed cuckoo.

BLM's failure to consult with the Fish and Wildlife Service regarding impacts to listed species including the Little Colorado River spinedace and Western yellow-billed cuckoo¹⁴⁷ is unsupported and violates Section 7 of the Endangered Species Act. Specifically, the BLM's failure to conduct site-specific consultation with the Fish and Wildlife Service regarding the proposed parcels violates ESA § 7.

BLM data reveals the presence of threatened, endangered, and sensitive species and their critical habitat within the areas proposed for leasing, but the BLM has failed to provide any meaningful information whatsoever regarding potential effects. BLM admits that "BLM Fisheries Biologist Heidi Blasius determined that the parcels of interest are within the geographic range of the federally threatened Little Colorado spinedace (*Lepidomeda vittata*), Little Colorado sucker (*Catostomus* sp.) and bluehead sucker (*Pantosteus discobolus*), all Arizona BLM sensitive species." Navajo County DNA at 3. BLM must not only evaluate the indirect and cumulative effects on special status species under NEPA, it must also (a) consult with the Fish and Wildlife Service under Section 7 regarding the effects of oil and gas development and water use on listed species and critical habitat, and (b) evaluate the effects on sensitive species under its own sensitive species policy.

Congress enacted the Endangered Species Act (ESA) in 1973 to provide for the conservation of endangered and threatened fish, wildlife, plants and their natural habitats. 16 U.S.C § 1531, 1532. The ESA imposes substantive and procedural obligations on all federal agencies with regard to listed and proposed species and their critical habitats. *See id.* §§ 1536(a)(1), (a)(2) and (a)(4) and § 1538(a); 50 C.F.R. § 402. Under section 7 of the ESA, federal agencies must "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 which is determined ... to be critical." 16 U.S.C. § 1536(a)(2).

The definition of agency "action" is broad and includes "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies," including programmatic actions. 50 C.F.R. § 402.02. Likewise, the "action area" includes "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." *Id.*

¹⁴⁷ Yellow-billed cuckoo are documented in the Silver Creek riparian area at Woodruff Dam, within or immediately adjacent to Navajo County lease parcels. *See* <https://ebird.org/hotspot/L3171914?m=8&yr=last10>.

The duties in ESA section 7 are only fulfilled by an agency's satisfaction of the consultation requirements that are set forth in the implementing regulations for section 7 of the ESA, and only after the agency lawfully complies with these requirements may an action that "may affect" a protected species go forward. *Pac. Rivers Council v. Thomas*, 30 F.3d 1050, 1055-57 (9th Cir. 1994). The action agency must initially prepare a biological assessment (BA) to "evaluate the potential effects of the proposed action" on listed species. 50 C.F.R. § 402.12. If the action agency concludes that the proposed action is "not likely to adversely affect" a listed species that occurs in the action area, the Service must concur in writing with this determination. *Id.* §§ 402.13(a) and 402.14(b). If the Service concurs in this determination, then formal consultation is not required. *Id.* § 402.13(a). If the Service's concurrence in a "not likely to adversely affect" finding is inconsistent with the best available data, however, any such concurrence must be set aside. *See id.* § 402.14(g)(8); 5 U.S.C. § 706(2). If the action agency concludes that an action is "likely to adversely affect" listed species or critical habitat, it must enter into "formal consultation" with the Service. 50 C.F.R. §§ 402.12(k), 402.14(a). The threshold for triggering the formal consultation requirement is "very low"; indeed, "any possible effect ... triggers formal consultation requirements."¹⁴⁸

Formal consultation commences with the action agency's written request for consultation and concludes with the Service's issuance of a "biological opinion." 50 C.F.R. § 402.02. The biological opinion states the Service's opinion as to whether the effects of the action are "likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat." *Id.* § 402.14(g)(4).¹⁴⁹ When conducting formal consultation, the Service and the action agency must evaluate the "effects of the action," including all direct and indirect effects of the proposed action, plus the effects of actions that are interrelated or interdependent, added to all existing environmental conditions – that is, the "environmental baseline." *Id.* §§ 402.14 and 402.02. The environmental baseline includes the past and present impacts of all Federal, state, and private actions and other human activities in the action area....*Id.* The effects of the action must be considered together with "cumulative effects," which are "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." *Id.*

If the Service concludes in a biological opinion that jeopardy is likely to occur, it must prescribe "reasonable and prudent alternatives" to avoid jeopardy. *Id.* § 402.14(h)(3). If the Service concludes that a project is not likely to jeopardize listed species, it must nevertheless provide an incidental take statement (ITS) with the biological opinion, specifying the amount or

¹⁴⁸ *See* Interagency Cooperation Under the Endangered Species Act, 51 Fed. Reg. 19,926 (June 3 1996).

¹⁴⁹ To "jeopardize the continued existence of" means "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." *Id.* § 402.02.

extent of take that is incidental to the action (but which would otherwise be prohibited under Section 9 of the ESA), “reasonable and prudent measures” (RPMs) necessary or appropriate to minimize such take, and the “terms and conditions” that must be complied with by the action agency to implement any reasonable and prudent measures. 16 U.S.C. § 1536(b)(4); 50 C.F.R. § 402.14(i).

The ESA requires federal agencies to use the best scientific and commercial data available when consulting about whether federal actions will jeopardize listed species. *See* 16 U.S.C. § 1536(a)(2). Accordingly, an action agency must “provide the Service with the best scientific and commercial data available or which can be obtained during the consultation for an adequate review of the effects that an action may have upon listed species of critical habitat.” 50 C.F.R. § 402.14(d). Likewise, “[i]n formulating its biological opinion...the Service will use the best scientific and commercial data available.” *Id.* § 402.14(g)(8). However, if the action agency failed “to discuss information that would undercut the opinion’s conclusions,” the biological opinion is legally flawed, and the ITS will not insulate the agency from ESA Section 9 liability. *See Ctr. for Biological Diversity v. BLM*, 698 F.3d 1101, 1127-28 (9th Cir. 2012).

Section 7(d) of the ESA provides that once a federal agency initiates consultation on an action under the ESA, the agency, as well as any applicant for a federal permit, “shall not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection (a)(2) of this section.” 16 U.S.C. § 1536(d). The purpose of section 7(d) is to maintain the environmental status quo pending the completion of consultation. Section 7(d) prohibitions remain in effect throughout the consultation period and until the federal agency has satisfied its obligations under section 7(a)(2) that the action will not result in jeopardy to listed species or adverse modification of critical habitat.

BLM must use the existing readily available data to identify which sensitive species that are of critical concern with regards to the lands included in, or in immediate proximity to, the proposed sale parcels.

In addition, BLM must consult with the Service regarding the impacts of the lease sale on affected listed species, in compliance with its section 7 obligations under the ESA. To the extent that BLM relies on its section 7 programmatic consultations for the several management plans governing the lease sale, that reliance is not proper for any of the listed species affected by BLM’s action. The potential for fracking and horizontal drilling and its associated impacts within the planning area constitutes “new information reveal[ing] effects of the [RMPs] that may affect listed species or critical habitat in a manner or to an extent not previously considered [in the prior section 7 programmatic consultations].” 50 CFR § 402.16(b). BLM must therefore reinitiate

consultation on all of the planning documents for these areas. In any case, it must formally consult over the lease sale's potential adverse effects on listed species and consider the full scope of fracking and other drilling activities that could affect these species.

The law is clear that, in the context of oil and gas leasing, "agency action" under the ESA includes not just the legal transaction of lease issuance, but also all resulting post-leasing activities from exploration, through production, to abandonment:

we hold that agency action in this case entails not only leasing but leasing and all post-leasing activities through production and abandonment. Thus, section 7 of the ESA on its face requires the FWS in this case to consider all phases of the agency action, which includes postleasing activities, in its biological opinion. Therefore the FWS was required to prepare, at the leasing stage, a comprehensive biological opinion assessing whether or not the agency action was likely to jeopardize the continued existence of protected species, based on "the best scientific and commercial data available." 16 U.S.C. § 1536(a)(2).¹⁵⁰

The Ninth Circuit's decision in *Conner v. Burford* is similarly clear that the consultation requirement is not obviated by uncertainty about the precise location and extent of future drilling: "Although we recognize that the precise location and extent of future oil and gas activities were unknown at the time, extensive information about the behavior and habitat of the species in the areas covered by the leases was available."¹⁵¹ Similarly, the inclusion of a general Threatened and Endangered Species stipulation in the standard lease terms cannot substitute for the ESA Section 7 obligation to prepare a comprehensive biological opinion at the initial leasing stage:

Appellants ask us, in essence, to carve out a judicial exception to ESA's clear mandate that a comprehensive biological opinion -- in this case one addressing the effects of leasing and all post-leasing activities -- be completed before initiation of the agency action. They would have us read into the ESA language to the effect that a federal agency may be excused from this requirement if, in its judgment, there is insufficient information available to complete a comprehensive opinion and it take upon itself incremental step consultation such as that embodied in the T & E stipulations. We reject this invitation to amend the ESA. That it is the role of Congress, not the courts.¹⁵²

¹⁵⁰ *Conner*, 848 F.2d at 1453.

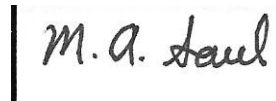
¹⁵¹ *Id.* at 1453.

¹⁵² *Id.* at 1455.

The BLM's refusal to consult at the lease stage, and proposal to defer consultation to the APD stage, is precisely the sort of incremental step consultation decisively rejected as inconsistent with the ESA in *Conner v. Burford*. The refusal to consult at the lease stage further precludes reliance on the earlier Phoenix RMP and any related plan-level consultation, because that plan-level consultation does not include site-specific evaluations for individual activities. Under *Conner*, the individual activity in question is clearly the issuance of a (non-NSO) lease, and consultation must occur prior to lease issuance if the resulting activities may affect listed species or critical habitat. Based on the information in the EA and the maps we have provided based on BLM GIS data, there is substantial basis to conclude that leasing and post-leasing activities may affect, at a minimum, the Little Colorado River spinedace (as discussed in detail above) and Western yellow-billed cuckoo. Therefore, under ESA § 7, BLM must consult with FWS prior to leasing.

For the foregoing reasons, the protesting parties hereby request that the proposed lease parcels be withdrawn from competitive sale.

Submitted, as authorized representative, on behalf of Center for Biological Diversity, Sierra Club, White Mountains Conservation League, Living Rivers and Colorado Riverkeeper, Grand Canyon Trust, Food and Water Watch, WildEarth Guardians and Western Watersheds Project by:

A handwritten signature in black ink that reads "M. A. Saul". The signature is written in a cursive, slightly slanted style. It is positioned to the right of a short vertical black line.

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