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## Western Environmental Law Center

February 20, 2019

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

**Re: Protest of March 2019 Oil & Gas Lease Sale:  
DOI-BLM-NM-F010-2019-0001 EA – Farmington Field Office  
DOI-BLM-NM-A010-2019-0001 EA – Rio Puerco Field Office**

Dear Acting State Director Seidlitz:

Pursuant to 43 C.F.R. § 3120.1-3, the Western Environmental Law Center, along with the Amigos Bravos, Center for Biological Diversity, Chaco Alliance, Diné Citizens Against Ruining Our Environment, Food & Water Watch, San Juan Citizens Alliance, Sierra Club, and WildEarth Guardians (together “Citizen Groups”), submit the following Protest of the Bureau of Land Management (“BLM”) New Mexico State Office March 2019 Competitive Oil and Gas Lease Sale. This Protest regards all parcels included by both the Farmington Field Office (“FFO”) and the Rio Puerco Field Office (“RPFO”), and their associated Environmental Assessments (“EA”) and unsigned Finding of No Significant Impacts (“FONSI”).<sup>1</sup> The FFO is proposing to lease 22 parcels and the RPFO is proposing lease 8 parcels in the March 2019 lease sale, together totaling 30 parcels and approximately 10,000 acres of federal mineral estate in New Mexico.

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<sup>1</sup> The FFO and RPFO EA/FONSI for the March 2019 lease sale is available at:

<https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=170868>

Citizen Groups protest the following lease parcels:

**March 2019 NM Lease Sale**

<u>Parcel No.</u>	<u>County</u>	<u>Field Office</u>	<u>Acres</u>
NM-201903-008	Sandoval	Rio Puerco	80.000
NM-201903-009	Sandoval	Rio Puerco	40.000
NM-201903-010	Rio Arriba	Farmington	160.000
NM-201903-011	McKinley	Farmington	160.000
NM-201903-012	McKinley	Farmington	160.000
NM-201903-013	McKinley	Farmington	160.000
NM-201903-014	McKinley	Farmington	160.000
NM-201903-015	McKinley	Farmington	30.000
NM-201903-016	McKinley	Farmington	161.800
NM-201903-017	McKinley	Farmington	160.000
NM-201903-018	Sandoval	Rio Puerco	480.240
NM-201903-019	Sandoval	Rio Puerco	482.000
NM-201903-020	Sandoval	Rio Puerco	479.970
NM-201903-021	Sandoval	Rio Puerco	319.440
NM-201903-022	Sandoval	Rio Puerco	641.040
NM-201903-023	Sandoval	Rio Puerco	480.000
NM-201903-024	Sandoval	Farmington	640.000
NM-201903-025	Sandoval	Farmington	640.000
NM-201903-026	Sandoval	Farmington	40.000
NM-201903-033	San Juan	Farmington	160.000
NM-201903-037	San Juan	Farmington	160.000
NM-201903-038	San Juan	Farmington	320.000
NM-201903-039	San Juan	Farmington	1,122.850
NM-201903-040	San Juan	Farmington	80.000
NM-201903-041	San Juan	Farmington	160.000
NM-201903-042	San Juan	Farmington	240.000
NM-201903-043	San Juan	Farmington	709.290
NM-201903-044	San Juan	Farmington	712.280
NM-201903-045	San Juan	Farmington	714.600
NM-201903-046	San Juan	Farmington	160.000

Citizen Groups' Protest of each of the 30 total parcels included in the tables above, which include common interests and contain common concerns, as detailed below. Citizen Groups' interests and concerns include the direct, indirect, and cumulative impacts of each of the parcels, both individually and when aggregated with other parcels included in the March 2019 lease sale, as well as the existing leasing and development of parcels in the San Juan Basin and across the Greater Chaco Landscape.

## INTEREST OF THE PROTESTING PARTIES

Signatories for the protesting parties, identified below, are included at the end of the protest. Each of the signatories identifies their relationship and authorization to sign on behalf of the protesting group or association.

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

The mailing address for WELC to which correspondence regarding this protest should be directed is as follows:

Western Environmental Law Center  
208 Paseo del Pueblo Sur, #602  
Taos, New Mexico 87571

**Amigos Bravos** is a statewide river conservation organization guided by social justice principles. Amigos Bravos’ mission is to protect and restore the waters of New Mexico, and ensure that those waters provide a reliable source of clean water to the communities and farmers that depend on them, as well as a safe place to swim, fish, and go boating. Amigos Bravos works locally, statewide, and nationally to ensure that the waters of New Mexico are protected by the best policy and regulations possible.

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

The **Chaco Alliance** is a grassroots citizens group dedicated to protecting and preserving Chaco Culture National Historical Park. We are interested in all threats to the park and its surrounding landscape, especially the threat created by energy development in the area.

**Diné Citizens Against Ruining Our Environment** (“Diné C.A.R.E.”) is an all-Navajo organization comprised of a federation of grassroots community activists in Arizona, New Mexico and Utah who strive to educate and advocate for our traditional teachings derived from

our Diné Fundamental Laws. Our goal is to protect all life in our ancestral homeland by empowering local and traditional people to organize, speak out, and determine the outlook of the environment through civic involvement and engagement in decision-making process relating to tribal development.

**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. We work to create a healthy future for our families and for generations to come—a world where all people have the resources they need, including wholesome food, clean water and sustainable energy. We are a public interest organization that remains independent of corporate and government influence. We are funded fully through our members, individual donors, and foundation grants.

Founded in 1986, **San Juan Citizens Alliance** ("SJCA") organizes people to protect our water and air, our lands, and the character of our rural communities in the San Juan Basin. SJCA focuses on four program areas, including the *San Juan Basin Energy Reform Campaign*, which ensures proper regulation and enforcement of the oil, gas, and coal industry and transitioning to a renewable energy economy. SJCA has been active in BLM and National Forest oil and gas issues in the San Juan Basin since the early 1990s, and has commented on virtually every multi-well drilling program, lease sale, and programmatic environmental review conducted in the region by the federal land management agencies since the early 1990s. SJCA's members live, work, and recreate throughout the San Juan Basin and San Juan Mountains. SJCA's members' health, use and enjoyment of this region is directly impacted by the decisions identified in this protest.

The **Sierra Club** was founded in 1892 and is the nation's oldest grassroots environmental organization. The Sierra Club is incorporated in California, and has over 790,000 members nationwide and is dedicated to the protection and preservation of the environment. The Sierra Club's mission is to explore, enjoy and protect the wild places of the earth; to practice and promote the responsible use of the earth's ecosystems and resources; and to educate and enlist humanity to protect and restore the quality of the natural and human environments. The Sierra Club has a New Mexico chapter, known as the Rio Grande chapter, with members that live in and use this area for recreation such as hiking, climbing, backpacking, camping, fishing and wildlife viewing, as well as for business, scientific, spiritual, aesthetic and environmental purposes.

**WildEarth Guardians** protects and restores wildlife, wild places, wild rivers, and the health of the American West. As part of its Climate and Energy Program, Guardians works to advance clean energy and expose the true cost of fossil fuels. Guardians works to protect and restore the Great Chaco Region in northwestern New Mexico in order to safeguard its cultural heritage, natural values, communities, and open spaces.

Citizen Groups have consistently participated in BLM decisionmaking for prior oil and gas leasing in the Greater Chaco landscape and areas in and adjacent to the Santa Fe National Forest and, therefore, incorporate by reference our prior administrative comments, protests, and exhibits submitted for these prior lease sales, including: October 2014 Scoping Comments (submitted March 24, 2014), Draft Environmental Assessment Comments (May 28, 2014) and

Protest (August 14, 2014), January 2015 Draft Environmental Assessment Comments (September 23, 2014) and Protest (November 19, 2014), October 2016 Scoping Comments (March 14, 2016), January 2017 Scoping Comments (June 17, 2016), Draft Environmental Assessment Comments (September 2, 2016) and Protest (December 6, 2016), March 2018 Draft Environmental Assessment Comments (October 20, 2017), and December 2018 Scoping Comments (July 20, 2018) and Protest (October 31, 2018). Because the parcels at issue in this sale are adjacent to and connected to these past lease sales and, in some cases, specific parcels have previously been offered and deferred and/or postponed by the FFO and RPFO, all prior administrative engagement is properly before the agency and should be considered and included in the administrative record for this lease sale. These incorporated comments and exhibits offer detailed technical information, expert reports, and legal analysis that the agency is required to consider in its decisionmaking process for the proposed action. *See Forest Guardians v. U.S. Fish and Wildlife Serv.*, 611 F.3d 692, 717 (10th Cir. 2010) (“The purpose behind NEPA is to ensure that the agency will only reach a decision on a proposed action after carefully considering the environmental impacts of several alternative courses of action and *after taking public comment into account.*”).

Citizen Groups’ October 19, 2018 Scoping Comments and associated exhibits on the March 2019 lease sale were substantive and identified many issues and concerns, as well as legal errors in the BLM’s past oil and gas leasing decisions and analysis. Unfortunately, in the final EAs for both the FFO and RPFO for the March 2019 lease sale, the BLM fails to directly respond to any of the public comments received by the agency. Critically, BLM also failed to include any opportunity for the public to comment on draft EAs for the March 2019 lease sale, and have included only a 10-day protest period. As detailed below, this process is inconsistent with public participation requirements of the Federal Land Policy and Management Act (“FLPMA”), 43 U.S.C. §§ 1712(a) & (h), 1739(e), the National Environmental Policy Act (“NEPA”) 43 U.S.C. § 4332(C), 40 C.F.R. § 1506.6, and the Administrative Procedure Act (“APA”), 5 U.S.C. § 706(2), as detailed in a District of Idaho decision in *Western Watersheds Project v. Zinke*, 2018 WL 4550396, Case No. 1:18-cv-00187-REB (Doc. 74), (D. Idaho Sept. 21, 2018), which enjoined BLM’s reliance of Instruction Memorandum 2018-034 (“IM 2018-034”). As a result, this protest raises substantially similar issues as were raised in previous Citizen Groups’ comments to BLM, and in particular the October 19, 2018 scoping comments. Moreover, Citizen Groups continue to request that the BLM refrain from offering any of the parcels up for lease until the agency completes its requirements under the Federal Land Policy and Management Act of 1976 (“FLPMA”), 43 U.S.C. §§ 1701–1787, the National Environmental Policy Act of 1969 (“NEPA”), 42 U.S.C. §§ 4321–4370h, and the National Historic Preservation Act (“NHPA”), 16 U.S.C. §§ 470– 470x-6.

**STATEMENT OF REASONS  
IN SUPPORT OF CITIZEN GROUPS' PROTEST OF BLM'S  
DECEMBER 2018 COMPETITIVE OIL & GAS LEASE SALE**

**I. The BLM Must Defer All Oil and Gas Lease Parcels Offered in Reliance on IM 2018-034.**

On September 21, 2018, the Chief U.S. Magistrate Judge Bush of the District of Idaho issued a Memorandum Decision and Preliminary Injunction in *Western Watersheds Project v. Zinke*, 336 F. Supp. 3d 1204 (D. Idaho, 2018). That decision enjoins and restrains the BLM from implementing certain specified provisions of IM 2018-034 for fourth quarter/December 2018 and future oil and gas lease sales “contained in whole or in part within the Sage-Grouse Plan Amendments’ recognized ‘Planning Area Boundaries,’” *Id.* at 50.

Although parcels included in the Farmington and Rio Puerco field office’s March 2019 lease sale may fall outside of Sage-Grouse planning boundaries—and therefore are not specifically implicated by the court’s preliminary injunction decision—the court’s reasoning applies with equal force to all oil and lease sales conducted under the unlawful requirements of IM 2018-034. For the reasons set forth below, the Citizen Groups hereby request that the BLM postpone and defer all parcels included in the March 2019 competitive oil and gas lease sale, and any other future lease sales, unless and until the agency fully complies with the Preliminary Injunction and addresses the legal deficiencies identified therein.

In his Memorandum Decision and Order, Judge Bush ruled that plaintiffs are likely to succeed on the merits of both their substantive and procedural challenges to IM 2018-034 under the Federal Land Policy and Management Act (“FLPMA”), 43 U.S.C. §§ 1712(a) & (h), 1739(e), the National Environmental Policy Act (“NEPA”) 43 U.S.C. § 4332(C), 40 C.F.R. § 1506.6, and the Administrative Procedure Act (“APA”), 5 U.S.C. § 706(2). The court reviewed BLM’s IM 2018-034 and concluded that it constitutes final agency action with respect to several critical elements of the BLM’s oil and gas leasing process, including: (a) BLM decisions whether or not to permit public involvement, (b) length of public review and comment, and (c) length of public protests of oil and gas lease sales. Exhibit 1 at 23-34. As the court noted, “the burden of such constraints upon public participation and compressed protest periods falls most heavily upon members of the public, as those who have nominated potential lease parcels and BLM have had far more time to evaluate and consider the details of such parcels.” *Western Watersheds*, 1:18-cv-00187-REB at 25.

In reviewing the plaintiffs’ claims, and BLM’s defenses, under the standards applicable to review of motions for preliminary relief, the court determined that the plaintiffs are likely to succeed on the merits of the claim that IM 2018-034’s constraints on public participation are: (1) procedurally invalid because BLM imposed binding requirements for oil and gas leasing on BLM-administered lands and minerals without required public notice and comment, *id.* at 33-34, and (2) that IM 2018-034 “improperly constrains public participation in BLM oil and gas leasing decisions.” *Id.* at 36. Notably, BLM procedures for the pending March 2019 oil and gas lease sale have been consistent with provisions of IM 2018-034 that the court deemed unlawful, as detailed below.

The court concluded plaintiffs are likely to succeed on the fundamental question of whether BLM's statutory obligations require a minimum level of public involvement in leasing decisions with irrevocable, long-lasting consequences for the lands and minerals BLM manages on behalf of the public, and that the IM 2018-034 procedures fall short of those obligations. The court found:

It is well-settled that public involvement in oil and gas leasing is required under FLPMA and NEPA. . . . On a very fundamental level, it strains common sense to see how these requirements are fulfilled when just comparing IM 2018-034 to IM 2010-117. That is, how can it be said that IM 2018-034 provides the required public participation 'to the fullest extent possible' and 'to the extent practicable,' when it is dramatically more restrictive (at least on the issue of public participation) than the previously-established IM (IM 2010-117) it only recently replaced?

*Id.* at 36-37. The court went on to state:

IM 2018-034 jettisoned prior processes, practices, and norms in favor of changes that emphasized economic maximization to the detriment if not outright exclusion of pre-decisional opportunities for the public to contribute to the decisionmaking process affecting the management of public lands. That choice was problematic when considering the Congressional directives for public involvement contained in FLPMA and NEPA and the apparent shortcomings of IM 2018-034 in allowing for public participation in BLM oil and gas leasing decisions.

*Id.* at 40-41. Reviewing the record, the court further concluded that:

[i]n this case, the record contains significant evidence indicating that BLM made an intentional decision to limit the opportunity for (and even in some circumstances to preclude entirely) any contemporaneous public involvement in decisions concerning whether to grant oil and gas leases on federal lands. . . . The evidence illustrates that the intended result of the at-issue decisions was to dramatically reduce and even eliminate public participation in the future decision-making process. Doing so certainly serves to meet the stated "purpose" of IM 2018-034 – that is, reducing or precluding public participation will "streamline the leasing process to alleviate unnecessary impediments and burdens, to expedite the offering of lands for lease . . . ." Yet, the route chosen by BLM to reach that destination is problematic because the public involvement requirements of FLPMA and NEPA cannot be set aside in the name of expediting oil and gas lease sales. The benefits of public involvement and the mechanism by which public involvement is obtained are not 'unnecessary impediments and burdens.'

*Id.* at 41 (emphasis added). Because of the court's clear legal conclusion that BLM, through IM 2018-034's new procedures, unlawfully eliminated required minimum levels of public involvement in mineral leasing decisions, any subsequent leasing decisions

carried out under the procedures of IM 2018-034—even if outside of Sage-Grouse habitat—will not only be clouded by the court’s decision, but potentially subject to vacatur. As the court noted: “In not being allowed to participate at the leasing decision stage, or in having to hurriedly clamber to do so because of IM 2018-034’s changes because of the limited time frame and other constraints upon public participation, oil and gas leases have been (and will be) issued without the full benefit of public input.” *Id.* at 42-43 (emphasis added). BLM is now fully on notice of the serious legal deficiencies inherent in the restricted public involvement procedures of IM 2018-034.

In BLM’s haste to implement “energy dominance” policies and to curtail or eliminate public involvement in lease sale decisions, the BLM and Department of Interior ran afoul of NEPA, FLPMA, and the APA in both its promulgation of IM 2018-034, and in subsequent lease sales employing its procedures. Past participation in landscape-scale planning decisions, or the possibility of subsequent participation in permitting decisions once irrevocable commitments of development rights have already been conveyed, are no substitute for the legally-required duty on BLM to provide meaningful public participation in leasing decisions.

Because the entire process of identifying, reviewing, and offering oil and gas lease sales for the BLM’s March 2019 and subsequent mineral leasing processes is fundamentally compromised by the unlawful provisions of IM 2018-034, Citizen Groups’ request that BLM defer all parcels in the March 2019 lease sale.

## **II. The BLM Cannot Lease the March 2019 Parcels Until the BLM Completes the Mancos Shale/Gallup Formation RMP Amendment and EIS and the Rio Puerco RMP Revision and EIS.**

According to the BLM, “[l]and use planning forms the basis of, and is essential to, everything that the [BLM] does in caring for America’s public lands.” Resource Management Planning Final Rule, 81 Fed. Reg. 89,580, 89,580 (Dec. 12, 2016). The duty to develop land use plans stems from the Federal Land Policy and Management Act, (“FLPMA”), which requires that “[t]he Secretary [of the Interior] shall, with public involvement and consistent with the terms and conditions of this Act, develop, maintain, and, when appropriate, revise land use plans which provide by tracts or areas for the use of the public lands.” 43 U.S.C. § 1712(a).

The BLM fulfills its statutory mandate by developing Resource Management Plans (“RMPs”). When the BLM issues a new RMP or amends a RMP, the agency must comply with the requirements of NEPA. *See* 43 C.F.R. §§ 1601.0–6. Thus, the BLM is required to issue an Environmental Impact Statement (“EIS”) with each RMP. *Id.*

The applicable land use plans for the March 2019 lease sale are the 2003 Farmington Resource Management Plan (“2003 RMP”) and the Rio Puerco Field Office 1986 RMP (updated in 1992). Because the BLM has not yet completed the ongoing processes for Mancos Shale/Gallup Formation RMP Amendment (“Mancos RMPA”), or the RPFO RMP Revision (for which a draft was released in 2012), the existing plans and analysis are stale and outdated. *See* FFO EA at 5; RPFO at 4.



As discussed in Citizen Groups' scoping comments, because the BLM relies on the outdated 2003 RMP and 2001 reasonably foreseeable development scenario ("RFD"), as well as the 1986 RPFO RMP, the BLM cannot demonstrate that impacts associated with the proposed leasing will not be significant, or that leasing will otherwise sufficiently protect resources throughout the Greater Chaco Landscape. This is due to the fact that, by the BLM's own admission, the 2003 RMP and RFD, nor the 1986 RPFO RMP, do not account for the environmental impacts of horizontal drilling and multi-stage hydraulic fracturing of the Mancos Shale formation. Yet, by leasing these parcels, the BLM is poised to facilitate just this kind of unforeseen development, despite any analysis as to the actual environmental impacts on both project and programmatic level.

NEPA regulations established by the Council of Environmental Quality ("CEQ") specifically prohibit an agency from taking any action that could undermine its decision-making process, while work on a programmatic EIS "is in progress and the action is not covered by an existing program statement." *See* 40 C.F.R. § 1506.1(c). Indeed, the intent of NEPA is to study the impact of an action on the environment *before* the action is taken. *See Conner v. Burford*, 848 F.2d 1441, 1452 (9th Cir. 1988) (explaining that NEPA requires that agencies prepare an EIS before there is "any irreversible and irretrievable commitment of resources").

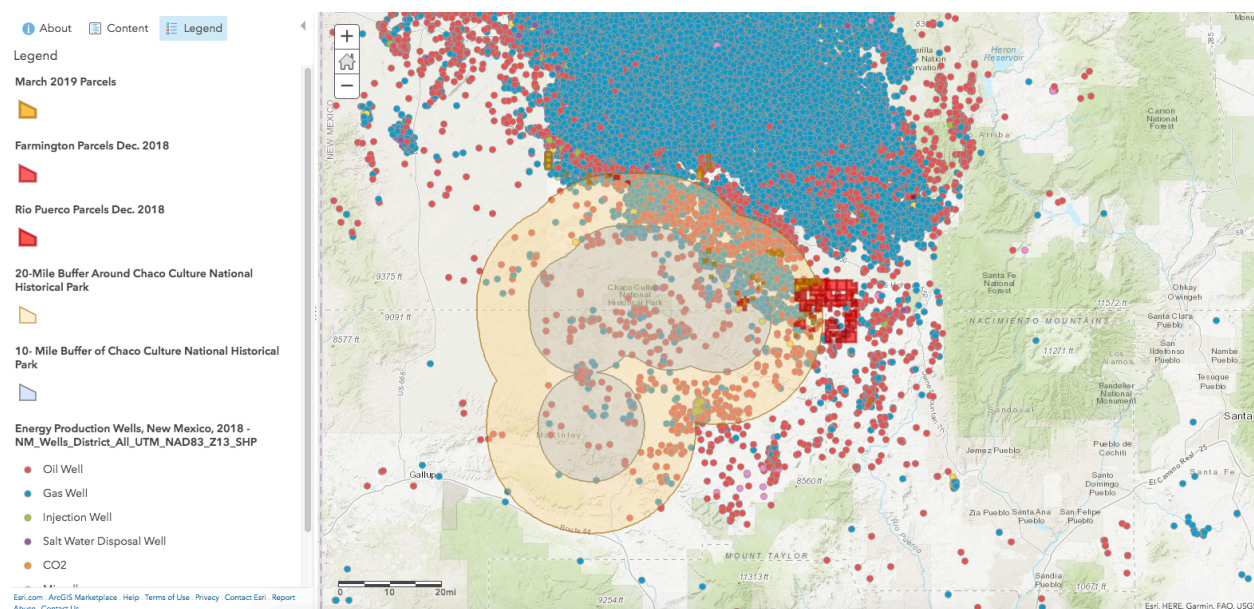
Furthermore, where an "[i]nterim action prejudices the ultimate decision on the program," NEPA forbids the action. 40 C.F.R. §§ 1506.1(c)(1)-(3). An action prejudices the outcome "when it tends to determine subsequent development or limit alternatives." *Id.* Proceeding to lease a total of 41 parcels within the FFO and RPFO—or any other major Federal action impacting resources in the planning area—is impermissible due to the inherent prejudice that this action will cause to the pending Mancos Shale RMPA and RPFO RMP Revision. Regulations acknowledge that the "lease purchaser would have the exclusive right to use as much of the leased mineral estate as is necessary to explore and drill for oil and gas, subject to the stipulations attached to the lease." 43 C.F.R. § 3101.1-2. Put simply, when the oil and gas lease rights are conveyed following the sale, lessees have a right to drill, and the impact on the environment from the exercise of those rights cannot be undone. This is exactly the situation NEPA seeks to protect against—allowing new activity that limits alternatives in the future. Indeed, once this lease sale is held, the agency will no longer be able to consider an alternative in the Mancos Shale RMPA and RPFO RMP Revision that disallows oil and gas development on these parcels, even if the agency's subsequent analysis deems this as necessary.

Additionally, although the FFO and RPFO consistently asserts that any impacts from the lease sale would be linked to "future potential development," it would be entirely disingenuous for the agency to attempt to segregate this lease sale from the "shale oil play" that has motivated the Mancos Shale RMPA and Reasonably Foreseeable Development Scenario ("RFD") and the adjacent RPFO RMP Revision. Development of the proposed leases for the purpose of developing the Mancos Shale for oil is not speculative. Instead, it is the entire purpose for undertaking proposed leasing. Therefore, proceeding with the leasing of these parcels will prejudice the pending Mancos Shale RMPA and EIS process, in direct violation of NEPA.

The potential for foreseeable development is underscored by the fact that the BLM has already approved over 350 Application Permits to Drill ("APDs") into the Mancos Shale,

including 30 new wells to date since February 6, 2017,<sup>2</sup> and is weighing approval of many additional APDs in this area. Even the companies themselves are touting potential development of the Mancos shale.

A simple map of this area prepared by WildEarth Guardians also confirms the massive scale of development, including wells that appear to clearly target the Mancos shale in the vicinity of the proposed lease parcels. The map demonstrates the lease parcels in red in proximity to all active and new wells in the area. This map further underscores that development of the proposed leases is not remotely speculative, and that the BLM has the means to fully analyze and assess impacts associated with Mancos shale drilling.



*A map of the March 2019 and December 2018 Lease Parcels with Existing Mancos Shale Wells.*

Furthermore, BLM should implement a moratorium on any further leasing until the Mancos Shale RMPA and EIS are completed, *see* 40 C.F.R. §§ 1506.1(c)(1)–(3). Such a decision is within the discretion of the FFO and RPFO. Courts have confirmed that BLM has broad discretion—and often the responsibility—not to lease public lands for minerals development to safeguard other multiple use, environmental, and human health resources and values. *See, e.g., Udall v. Tallman*, 380 U.S. 1 (1965); *Rocky Mountain Oil & Gas Ass’n v. U.S. Forest Serv.* 157 F.Supp.2d 1142 (D. Mont. 2000). BLM’s authority to open these parcels to oil and gas development is derived from the Mineral Leasing Act of 1920, 30 U.S.C. § 181 *et seq.* Nowhere does the Mineral Leasing Act (“MLA”) mandate that any particular lands be offered for lease. Rather, the Act states generally that “[a]ll lands subject to disposition under this chapter which are known or believed to contain oil or gas deposits *may* be leased by the Secretary.” 30 U.S.C. § 226(a) (emphasis added). Indeed, more than 90% of available public lands in the FFO have already been leased, thereby precluding the need for more leasing. The BLM should use its

<sup>2</sup> *See* Fracking-Related Activities Approved in the Greater Chaco Region Since February 6, 2017, <https://climatewest.files.wordpress.com/2017/04/fracking-related-activities-approved-since-february-6-2017.pdf>.

discretion to defer, at a minimum, any development of the lease parcels until the underlying RMPs are up-to-date.

The BLM's decision to move forward with further leasing is especially disrespectful in light of Tribal resolutions calling for a moratorium. In February 2017, the Navajo Nation issued a call for a moratorium on "fracking-related activities such as multi-stage hydraulic fracturing and horizontal drilling and lease sales and permit approvals in the Mancos Shale/Gallup formation in the greater Chaco area until such time as the amendment to the resource management plan is completed and an environmental impact statement is finalized."<sup>3</sup> The All Pueblo Council of Governors also issued a formal resolution calling for a similar moratorium on September 27, 2017.<sup>4</sup> Furthermore, Sens. Tom Udall and Martin Heinrich and Reps. Ben Ray Lujan and Michelle Lujan Grisham sent a letter to the New Mexico BLM acting state director expressing concern over oil and gas leasing in the Greater Chaco area through the March 2018 lease sale.<sup>5</sup> New Mexico's congressional delegation noted that "some of the parcels currently included in the lease sale may not be appropriate [to lease] during this interim period while the Bureau of Land Management (BLM) and Bureau of Indian Affairs (BIA) are updating the joint Mancos-Gallup Resource Management Plan Amendment (RMPA) and Environmental Impact Statement." The delegation then urged the BLM to "assure that any parcels leased in March are done so in a way that does not undercut the larger process being conducted in the joint RMPA." In response, the BLM ended up deferring the sale of all of the March 2018 parcels.<sup>6</sup>

Then Secretary of the Interior Zinke directed the BLM to defer the March 8, 2018 oil and gas lease sale so the agency could complete an ongoing cultural analysis necessary to comply with NEPA and the National Historic Preservation Act (NHPA), including Section 106 consultations. In March 7, 2018 article in the Denver Post, then BLM Acting Director Aden Seidlitz was quoted as saying, "We understand the cultural importance of the area, and the need to gather additional information about this landscape before holding a lease sale. . . . We will continue to work with consulting parties, including tribal and state governments, state and federal agencies and others, as we consider and analyze impacts of oil and gas leasing in the area." Despite this, BLM and BIA have not completed the cultural analysis, have not made progress on consultation and have not gathered adequate information concerning impacts to multiple resources in the project area. Therefore, this lease sale needs to be deferred just like the March 2018 per Zinke directives and acknowledgement of NEPA/NHPA deficiencies.

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<sup>3</sup> Ex. 2, Letter from the Navajo Nation, *Concerns Regarding Chaco Canyon Cultural Historic Park*, <http://www.sanjuancitizens.org/wp-content/uploads/2017/03/NN-Moratorium-request-2017-02-23-.pdf>.

<sup>4</sup> Ex. 3, Rebecca Moss, *Tribes Ask Feds to Halt Drilling Leases in Chaco Region*, Santa Fe New Mexican, [http://www.santafenewmexican.com/news/local\\_news/tribes-ask-feds-to-halt-drilling-leases-in-chaco-region/article\\_414de61a-814b-59f7-8537-d91c5dbadf6c.html](http://www.santafenewmexican.com/news/local_news/tribes-ask-feds-to-halt-drilling-leases-in-chaco-region/article_414de61a-814b-59f7-8537-d91c5dbadf6c.html).

<sup>5</sup> Ex. 4, Dec. 19, 2017 Letter from Sens. Tom Udall and Martin Heinrich and Reps. Ben Ray Lujan and Michelle Lujan Grisham.

<sup>6</sup> Press Release: BLM Defers Oil and Gas Lease Sale in New Mexico, Mar. 2, 2018, <https://www.blm.gov/press-release/blm-defers-oil-and-gas-lease-sale-parcels-new-mexico>.

Put simply, the exact same concerns that applied to the March 2018 and December 2018 lease sale apply to the March 2019 lease sale. The RMPA is still not complete, therefore moving forward with leasing within the FFO and RPFO would be entirely disingenuous and in complete violation of NEPA. Thus, any additional leasing must be postponed until the agency completes the Mancos Shale RMPA and EIS.

Furthermore, while CEQ regulations require a moratorium on any further leasing until the Mancos Shale RMPA and EIS are completed, *see* 40 C.F.R. §§ 1506.1(c)(1)-(3), such a decision is also well within the discretion of the FFO. As provided in BLM Instruction Memorandum No. 2010-117 (May 17, 2010):

As outlined in the Land Use Planning Handbook (H-1601-1), the Resource Management Plan (RMP) underlies fluid minerals leasing decisions. Through RMP effectiveness monitoring and periodic RMP evaluations, state and field offices will examine resource management decisions to determine whether the RMPs adequately protect important resource values in light of changing circumstances, updated policies, and new information (H-1601-1, section V, A, B). The results of such reviews and evaluations may require field office resource information updates and land use plan maintenance, amendment, or revision. In some cases state and field office staff may determine that the public interest would be better served by further analysis and planning prior to making any decision whether or not to lease.

(emphasis added). There can be no better example than the present situation of where the public interest would be better served by completing the Mancos Shale RMPA and EIS, as well as the RPFO RMP Revision, *before* deciding whether it is appropriate to lease additional public lands. According to BLM oil and gas statistics, there are currently 4,478,959 acres of leased land “in effect” in New Mexico, with approximately 84% (3,761,154 acres) in production. *See* BLM, Oil and Gas Statistics by Year for Fiscal Years 1988–2016, available at: <https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/oil-and-gas-statistics>. Indeed, more than 90% of available public lands in the FFO have already been leased. Before additional public lands are sold to oil and gas industry and committed to development, the agency must analyze the additional impacts of developing the Mancos Shale/Gallup formation.

The BLM’s dismissal of instituting a moratorium on further leasing is especially disrespectful in light of the fact that on February 6, 2017, the Navajo Nation issued a call for a moratorium on “fracking-related activities such as multi-stage hydraulic fracturing and horizontal drilling and lease sales and permit approvals in the Mancos Shale/Gallup formation in the greater Chaco area until such time as the amendment to the resource management plan is completed and an environmental impact statement is finalized.”<sup>7</sup> The All Pueblo Council of Governors also issued a formal resolution calling for a similar moratorium on September 27,

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<sup>7</sup> Exhibit 1 to Citizen Groups’ Oct. 20, 2017 comments, Letter from the Navajo Nation, *Concerns Regarding Chaco Canyon Cultural Historic Park*, available at: <http://www.sanjuancitizens.org/wp-content/uploads/2017/03/NN-Moratorium-request-2017-02-23-.pdf>.

2017.<sup>8</sup> Finally, Sens. Tom Udall and Martin Heinrich and Reps. Ben Ray Luján and Michelle Lujan Grisham sent a letter to the New Mexico BLM acting state director expressing concern over oil and gas leasing in the Greater Chaco area through the March 2018 lease sale, which includes parcels and is in the same area as the March 2019 sale.<sup>9</sup> Specifically, New Mexico’s congressional delegation noted that “some of the parcels currently included in the lease sale may not be appropriate [to lease] during this interim period while the Bureau of Land Management (BLM) and Bureau of Indian Affairs (BIA) are updating the joint Mancos-Gallup Resource Management Plan Amendment (RMPA) and Environmental Impact Statement.” The delegation then urged the BLM to “assure that any parcels leased in March are done so in a way that does not undercut the larger process being conducted in the joint RMPA.”

BLM’s reliance on the outdated 2003 RMP is in direct violation of NEPA and as such, any additional leasing must be postponed until the agency completes the Mancos-Gallup RMPA and EIS. BLM’s move to lease parcels within the Rio Puerco Field Office before completion of the underlying RMP there presents similar concerns as those accompanying the FFO parcels. Here, the BLM has issued a draft RMP-EIS but has failed to finalize these documents. Therefore, the RPFO is operating under the 1989 RMP.

As noted above, NEPA requires that, until an agency issues a Record of Decision for a pending NEPA document, “no action concerning the proposal shall be taken which would: (1) have an adverse environmental impact; or (2) limit the choice of reasonable alternatives.” 40 C.F.R. § 1506.1(a)(1), (2). Here, there is no doubt that leasing the parcels could potentially limit BLM’s consideration of alternatives in the final RMP and EIS. For example, according to the draft EIS for the RPFO RMP, BLM’s preferred alternative proposes completely closing and restricting surface use on some of the lands proposed for lease.<sup>10</sup> As a result, any decision to lease the March 2019 parcels would directly conflict with the preferred action for the proposed RMP and DEIS. This is exactly the situation NEPA seeks to prevent. 40 C.F.R. § 1506.1(a) (“Until an agency issues a record of decision . . . no action concerning the proposal shall be taken which would: (1) Have an adverse environmental impact; or (2) Limit the choice of reasonable alternatives.”); *see also* 40 C.F.R. § 1502.2(f) (“Agencies shall not commit resources prejudicing selection of alternatives before making a final decision”); *Conner v. Burford*, 848 F.2d 1441, 1446 (9th Cir. 1986).

The need to postpone leasing until the draft RPFO RMP and EIS are finalized is further underscored by a look at the “current” RFD for the draft RMP and EIS for the RPFO.<sup>11</sup> For

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<sup>8</sup> Exhibit 2 to Citizen Groups’ Oct. 20, 2017 comments, Rebecca Moss, *Tribes Ask Feds to Halt Drilling Leases in Chaco Region*, Santa Fe New Mexican, [http://www.santafenewmexican.com/news/local\\_news/tribes-ask-feds-to-halt-drilling-leases-in-chaco-region/article\\_414de61a-814b-59f7-8537-d91c5dbadf6c.html](http://www.santafenewmexican.com/news/local_news/tribes-ask-feds-to-halt-drilling-leases-in-chaco-region/article_414de61a-814b-59f7-8537-d91c5dbadf6c.html).

<sup>9</sup> Dec. 19, 2017 Letter from Sens. Tom Udall and Martin Heinrich and Reps. Ben Ray Luján and Michelle Lujan Grisham.

<sup>10</sup> *See* RPFO RMP-DEIS, Map 036, Surface Restrictions Leasables Alternative B.

<sup>11</sup> *See generally* BLM, RPFO, *Reasonably Foreseeable Development Scenario For Fluid Mineral Development In the Bureau of Land Management Rio Puerco Field Office* (2010),

example, the BLM completely fails to anticipate the drilling boom within the Mancos Shale area and fails to anticipate *any* horizontal wells within the RPFO.<sup>12</sup> Indeed, the RPFO previously deferred parcels 105, 106, 107, 108, 109, 110 from the January 2014 oil and gas lease sale because “leasing the parcels would harm resource values and may limit the choice of reasonable alternative actions being considered in the Rio Puerco Draft RMP-EIS.”<sup>13</sup> The same reasoning applies here. Additionally, data from the State of New Mexico Energy, Minerals, and Natural Resources Department demonstrates that industry has drilled new, horizontal wells into the Mancos formation within the last five years within the RPFO.<sup>14</sup> The BLM cannot ignore the use of this new technology or otherwise operate under a RPFO RMP-EIS that fails to account for the increased environmental impacts from this type of drilling. Thus, we urge the BLM to postpone leasing the parcels within the RPFO unless and until it completes its draft RMP-EIS.

### **III. The BLM Cannot Rely on the 2003 RMP EIS to Justify the Proposed Leasing or a Finding of No Significant Impact.**

While the FFO is to be commended for acknowledging the inability of the 2003 RMP/EIS and RFD to continue serving their necessary planning function and beginning the RMP amendment process, at the same time, the BLM cannot simultaneously rely on the 2003 RMP/EIS to justify the March 2019 lease sale. Furthermore, BLM’s EA explicitly tiers to the analysis contained in the 2003 RMP/EIS, which, as explained in the agency’s Federal Register Notice for the Mancos Shale RMPA, is no longer capable of guiding such decision-making:

As full-field development occurs, especially in the shale oil play, additional impacts may occur that previously were not anticipated in the RFD or analyzed in the current 2003 RMP/EIS, which will require an EIS-level plan amendment and revision of the RFD for complete analysis of the Mancos Shale/Gallup Formation.

79 Fed. Reg. 10,548 (Feb. 25, 2014). The inability of the current RMP/EIS and RFD to support the proposed leasing, or to provide any reasonable analysis from which to tier, is further underscored by the details of its shortcomings.

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[https://eplanning.blm.gov/epl-front-office/projects/lup/64954/78492/89455/Rio\\_Puerco\\_RFDS.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/64954/78492/89455/Rio_Puerco_RFDS.pdf). Indeed, it is clear that the BLM copied the RFDS document directly from a Montana BLM document because references to the Montana appear throughout the document. *Id.* at 5, 21, 31.

<sup>12</sup> See *id.* at 27.

<sup>13</sup> BLM, *Rio Puerco Field Office, EA January 2014 Competitive Oil and Gas Lease Sale* at 11, [https://www.nm.blm.gov/oilGas/leasing/leaseSales/2014/january2014/Jan%202014%20OG%20Lease%20Sale%20EA\\_Public%20Review\\_Rio%20Puerco.pdf](https://www.nm.blm.gov/oilGas/leasing/leaseSales/2014/january2014/Jan%202014%20OG%20Lease%20Sale%20EA_Public%20Review_Rio%20Puerco.pdf).

<sup>14</sup> Ex. 5, NM Oil Conservation Division, Well Report for 30-043-21140 BONANZA #011 [320344], <https://wwwapps.emnrd.state.nm.us/ocd/ocdpermitting/Data/WellDetails.aspx?api=30-043-21140> (last visited Oct. 6, 2018); Ex. 6, NM Oil Conservation Division, Well Report for 30-043-20949 EAGLE SPRINGS 8 FEDERAL #001H [36438], <https://wwwapps.emnrd.state.nm.us/ocd/ocdpermitting/Data/WellDetails.aspx?api=30-043-20949> (last visited Oct. 16, 2018).

Notably, the 2003 Farmington RMP never contemplated commercially viable development of the Mancos shale, whether for oil or gas, utilizing horizontal drilling techniques. This is significant because all indications are that the proposed leases are meant to facilitate horizontal drilling of the Mancos Shale. The RFD (which was actually prepared in 2001, two years prior to the adoption of the RMP) stated:

Horizontal drilling is possible but not currently applied in the San Juan Basin due to poor cost to benefit ratio. If horizontal drilling should prove economically and technically feasible in the future, the next advancement in horizontal well technology could be drilling multi-laterals or hydraulic fracturing horizontal wells. Multilaterals could be one, two or branched laterals in a single formation or single laterals in different formations. Hydraulic fracturing could be a single fracture axial with the horizontal well or multiple fractures perpendicular to the horizontal well. These techniques are currently complex and costly, and therefore typically inappropriate for most onshore U.S. reservoirs. Comprehensive engineering and geologic research will be required in the near future in order for these techniques to become viable within the 20-year time frame anticipated by this RFD.<sup>15</sup>

In other words, at the time the 2001 RFD was prepared and the RMP finalized, horizontal drilling and fracking were not viable.

Although the 2001 RFD<sup>16</sup> makes clear that viable shale gas and oil development using horizontal drilling would not occur within 20 years, the RFD nevertheless contemplated 300 Mancos shale gas and oil wells, including development and exploration wells. *See* RFD at 5.27. However, the RFD contemplated “behind pipe” access to Mancos shale reserves through vertically drilled wells into the Dakota formation. RFD at 5.27. In other words, the RFD considered access to the Mancos shale only as an afterthought to drilling vertical Dakota wells, and certainly did not contemplate horizontally drilled wells into the Mancos shale. To the extent that the RFD contemplated development only of the Mancos shale, it was only in a region called the “fractured Mancos oil play” in the southeastern portion of the Basin, which was described

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<sup>15</sup> BLM, *Oil and Gas Resource Development for the San Juan Basin, New Mexico, a 20-year, Reasonably Foreseeable Development (RFD) Scenario Supporting the Resource Management Plan for the Farmington Field Office, Bureau of Land Management* (July 2, 2001) at 8.3.

<sup>16</sup> The BLM has revised its RFD multiple times since 2001, with the latest version issued in 2015. The fact that the BLM felt the need to issue revised RFD scenarios supports Citizen Groups’ arguments that the 2001 RFD and RMP are deficient for failing to anticipate the widespread use of horizontal drilling. For example, in the EA for the lease sale, the BLM admits that, “[s]ince 2011, the Mancos/Gallup shale play in the San Juan Basin has been developed by horizontal drilling and any future development is anticipated to be primarily horizontal drilling.” EA at 52. Unfortunately for the BLM, the new RFD cannot cure the agency’s failure to analyze the impacts of horizontal drilling in the 2003 RMP, because no other NEPA document fully analyzes the increased *impacts* that will flow from different development such as multi-stage hydraulic fracturing and horizontal drilling.



only as “probable” development. RFD at 5.27. Again, the RFD did not contemplate horizontal drilling, whether for development or exploration.

WPX (formerly Williams Production), a major oil and gas producer in the San Juan Basin before selling their holdings to Enduring Resources, previously confirmed that the RFD never contemplated the impacts of horizontal drilling of the Mancos shale, whether for exploration or development. The company recently stated in its Middle Mesa development proposal that, “When the [RMP] FEIS was prepared, horizontal drilling had been attempted as an experimental technique in the San Juan Basin, but faced technical problems and not yet been proven economically viable[.]”<sup>17</sup> The BLM has concurred, noting that only the recent advancement in horizontal drilling technology that “has made Mancos stand-alone wells economically viable,” explaining:

[A]t the time of the RFD[S] report, horizontal drilling and multi-stage hydraulic fracturing was in its infancy, since then, the technology has evolved to be more efficient and less costly as in the past. Horizontal drilling and multi-stage fracturing is a common practice throughout the U.S. even though the RFD[S] only hinted at its future success and usage.<sup>18</sup>

Here, “hinting” at environmental impacts does not suffice to demonstrate that such impacts were fully analyzed and assessed as required under NEPA or that the 2003 RMP and accompanying RFD sufficiently considered the impacts of this practice or demonstrated that there would be no significant impacts. The 2003 RMP and accompanying RFD simply do not suffice to demonstrate that the BLM has adequately considered the cumulative impacts of Mancos shale oil or gas development, particularly horizontal drilling and fracking to develop Mancos shale in the FFO. In light of the shortcomings of the 2003 RMP and RFD, as well as significant new information demonstrating that the Mancos shale is being targeted for horizontal drilling for gas and oil, it is clear that both the 2003 RMP and EIS are now inadequate under NEPA.

Taken together with BLM’s concession that the 2003 RMP/EIS do not address the latest surge in Mancos shale development, it is clear that unless and until the BLM completes the RMP Amendment and EIS, there exists no sufficient environmental considerations of horizontal drilling and fracking of the Mancos shale.<sup>19</sup> To this end, the BLM cannot rely on the 2003

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<sup>17</sup> Williams Production Co., *Proposal for Rosa Middle Mesa Development* at 3 (previously included as Exhibit 1 in Citizen Groups’ comments from Oct. 27, 2014 on FFO approval of APDs in the Mancos Shale).

<sup>18</sup> BLM, *Unconventional Gas Reservoirs, Hydraulic Fracturing, and the Mancos Shale* (Nov. 30, 2011) at 6 (previously included as Exhibit 2 in Citizen Groups’ comments from Oct. 27, 2014 on FFO approval of APDs in the Mancos Shale).

<sup>19</sup> In light of this, BLM must presume that the lands proposed for leasing are not “available” due to the failure of the 2003 RMP/EIS to account for the significant impacts of horizontal drilling and fracking of Mancos shale. In this case, the BLM clearly made lands available for leasing based on its understanding of environmental considerations at the time the 2003 RMP/EIS was adopted. Given that horizontal drilling and fracking techniques were not accounted for, it would



RMP/EIS to support approval of the proposed leases or any determination that impacts will not be significant.

Finally, the BLM cannot rely on the updated RFDs to somehow fulfill its NEPA obligations. As noted above, BLM updated its RFDs in 2014, 2015 and 2018 to account for horizontal drilling. But, these updates do not satisfy the BLM's NEPA obligations. The RFDs do not include any impacts analysis, and the BLM admits that the existing RFDs do not even cover most of the lease parcels. Thus, the BLM cannot rely on the RFDs to cure the failure of the 2003 RMP/EIS to discuss the impacts from horizontal drilling.

**IV. The BLM is Required to Prepare an EIS, and Fails to Provide a Convincing Statement of Reasons Why the Lease Sale Will Impact the Environment No More than Insignificantly.**

As Citizen Groups have consistently maintained, an environmental impact statement ("EIS") should be prepared before the BLM can offer the subject parcels at the March 2019 oil and gas lease sale. An EIS is required when a major federal action "significantly affects the quality of the human environment." 42 U.S.C. § 4332(2)(C); 40 C.F.R. § 1502.4. A federal action "affects" the environment when it "will or *may* have an effect" on the environment. 40 C.F.R. § 1508.3 (emphasis added); *Airport Neighbors All. v. U.S.*, 90 F.3d 426, 429 (10th Cir. 1996) ("If the agency determines that its proposed action *may* 'significantly affect' the environment, the agency must prepare a detailed statement on the environmental impact of the proposed action in the form of an EIS.") (emphasis added). Similarly, according to the Ninth Circuit:

We have held that an EIS *must* be prepared if 'substantial questions are raised as to whether a project ... *may* cause significant degradation to some human environmental factor.' To trigger this requirement a 'plaintiff need not show that significant effects *will in fact occur*,' [but instead] raising 'substantial questions whether a project may have a significant effect' is sufficient.

*Idaho Sporting Cong. v. Thomas*, 137 F.3d 1146, 1149-50 (9th Cir. 1998) (emphasis in original) (citations omitted). Given the magnitude of the proposed action and possible direct, indirect and cumulative impacts to both the natural environment and human communities, BLM's FONSI is unsupported.

The significance of a proposed action is gauged based on both context and intensity. 40 C.F.R. § 1508.27. Context "means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests,

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be absurd to believe that the RMP decision made lands available for leasing for the purpose of horizontal drilling of the Mancos shale. Indeed, BLM's Handbook on the issuance of oil and gas leases explicitly states that eligible lands are available for leasing only when all statutory requirements and reviews, "including compliance with the National Environmental Policy act (NEPA) of 1970," have been met. BLM Handbook, H-3101-1, Section I.A.1.

and the locality.” *Id.* § 1508.27(a). Intensity “refers to the severity of impact,” and is determined by weighing ten factors, including “[1] [t]he degree to which the proposed action affects public health or safety,” “[2] [u]nique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas,” “[3] [t]he degree to which the effects on the quality of the human environment are likely to be highly controversial,” “[4] [t]he degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks[,]” and “[5] [w]hether the action is related to other actions with individually insignificant but cumulatively significant impacts.” *Id.* § 1508.27(b)(2)–(5), (7). For this latter factor, “[s]ignificance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.” *Id.*

The first intensity factor under NEPA is “the degree to which the proposed action affects public health and safety.” Here, there is no doubt the proposed action, which would allow for the use of fracking, impacts public health and safety.<sup>20</sup> Thus, the BLM must fully analyze and disclose the impacts of fracking in a future EIS.

A similar argument applies to the second and third intensity factors, which require, respectively, a look at the degree to which impacts are highly controversial and the degree to which impacts are highly uncertain or involve unique and unknown risks. Indeed, the situation here is directly similar to the situation in *Center for Biological Diversity v. U.S. Bureau of Land Management*, where the court held that the BLM’s “unreasonable lack of consideration of how fracking could impact development of the disputed parcels . . . unreasonably distort[ed] BLM’s assessment of at least three of the ‘intensity’ factors in its FONSI,” including the aforementioned factors. 937 F. Supp. 2d at 1157. Specifically, the court reasoned that fracking was highly controversial based on the possibility of significant environmental degradation, public outcry, and potential threats to health and safety. *Id.* at 1157–58. There is no doubt that similar reasoning applies here. Fracking presents a risk of contamination and oil and gas in New Mexico consistently occurs near populated areas, thereby resulting in public outcry and threats to health and safety.<sup>21</sup>

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<sup>20</sup> See Ex. 7, Concerned Health Prof’ls of NY & Physicians for Soc. Responsibility, *Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking (Unconventional Gas and Oil Extraction)* (5th ed. 2018); Ex. 8, Env’t America, *Fracking by the Numbers: Key Impacts of Dirty Drilling at the State and National Level* 13 (2013) (“In New Mexico alone, waste pits from all oil and gas drilling have contaminated groundwater on more than 400 occasions”); see also BLM Oil and Gas, *Hydraulic Fracturing on Federal and Indian Lands*, 80 Fed. Reg. 161,128 (Mar. 26, 2015), <https://www.gpo.gov/fdsys/pkg/FR-2015-03-26/pdf/2015-06658.pdf> (noting that a final rule regulating fracking on federal land will “provide significant benefits to all Americans by avoiding potential damages to water quality, the environment, and public health”).

<sup>21</sup> Ex. 9, Clean Air Task Force, *Fossil Fumes: A Public Health Analysis of Toxic Air Pollution from the Oil and Gas Industry* 13 (2016), <http://www.catf.us/resources/publications/files/FossilFumes.pdf>.

Additionally, based on the proximity of the March 2019 lease sale parcels to Chaco Culture National Historical Park and within the Greater Chaco Region there is no doubt that the fourth intensity factor—the unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas—is also implicated. The proposed lease parcels for the FFO and RPFO are in close proximity to the park, outlying sites, and other culturally sensitive areas. Indeed, there is pending federal legislation which would institute a 10-mile buffer around the park to ensure further protections.<sup>22</sup> Although the cultural resources of the Greater Chaco Region do not stop at the boundaries of the park,<sup>23</sup> the proximity of the leases to cultural resources is particularly concerning based on the BLM’s past failure to fully discuss impacts from oil and gas development on the cultural resources of the Greater Chaco Region.

Critically, the FFO and RPFO have also failed to “put forth a convincing statement of reasons’ that explains why [the March 2019 lease sale] will impact the environment no more than insignificantly. This account proves crucial to evaluating whether the [agency] took the requisite ‘hard look.’” *Ocean Advoc. v. U.S. Army Corps of Engrs.*, 402 F.3d 846, 864 (9th Cir. 2005) (internal citations omitted). A convincing statement explaining the insignificance of impacts from the sale does not exist in the EA. To the contrary, BLM suggests that any real analysis of impacts can be pushed off until the APD stage—which, as described below, is wholly deficient. And, although the BLM does list the required significance factors in its revised FONSI, the BLM’s conclusions of no significant impact are based on outdated, flawed data from the 2003 RMP and EIS. But, if the BLM does not have a current regional analysis which analyzes the impacts of horizontal drilling in the Mancos Shale, it cannot conclude that the lease sale is insignificant. The cursory and evasive manner in which BLM has addressed these significance factors in the EA and unsigned FONSI is insufficient to meet the agency’s NEPA mandate. If BLM proceeds in its refusal to perform an EIS, it must provide a detailed accounting of each NEPA significance factor, as provided in 40 C.F.R. § 1508.27, and explain why the project will impact the environment no more than insignificantly.

#### **V. The BLM Impermissibly Relies on Mitigation Measures to Avoid a Finding of Significance.**

Even if “some or all of the environmental consequences of oil and gas development may be mitigated through lease stipulations, it is equally true that the purpose of NEPA is to examine the foreseeable environmental consequences of a range of alternatives *prior* to taking an action that cannot be undone.” *Montana Wilderness Ass’n v. Fry*, 310 F.Supp.2d 1127, 1145 (D. Mont., 2004) (emphasis added) (citation omitted); 40 C.F.R. § 1501.2. “[M]itigation measures, while necessary, are not alone sufficient to meet the [Agency’s] NEPA obligations to determine the projected extent of the environmental harm to enumerated resources *before* a project is approved.” *Northern Plains Res. Council v. Surface Transp. Board*, 668 F.3d 1067, 1085 (9th

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<sup>22</sup> Sen. Tom Udall, Draft Senate Bill, available at: <https://www.tomudall.senate.gov/download/chaco-cultural-heritage-area-protection-act-bill-text>.

<sup>23</sup> Ex. 10, Carrie Heitman, *Houses Great and Small: Reevaluating the ‘House’ in Chaco Canyon, New Mexico*, 72 *Anthropology Faculty Pubs.* 251, <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1073&context=anthropologyfacpub>.

Cir. 2011) (emphasis in original). Consequently, if BLM discovers significant impacts at the APD stage, it may no longer be able to prevent them.

Here, BLM relies on general mitigation measures to avoid a finding of significance, in violation of the agency's NEPA mandate. For example, both the FFO and RPFO EAs are organized by issue, and include a subsection concerning mitigation for that particular issue. BLM then lists best management practices and other regulatory requirements, but fails to describe or quantify how such measures will reduce impacts below levels of significance. These stipulations are not specifically aimed at mitigating any direct, indirect, or cumulative impact from this proposed action, nor are they linked to site-specific concerns. In fact, the type of detailed mitigation that NEPA calls for would be impossible without first analyzing the site-specific impacts of leasing and development, which the FFO and RPFO expressly acknowledges has not been done.

The mitigation measures proposed by the agency must be reasonably developed, which, here, is not the case. "A 'perfunctory description,' or 'mere listing of mitigation measures, without supporting analytical data,' is insufficient to support a finding of no significant impact." *National Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722, 735 (9th Cir. 2001). The court, when determining the sufficiency of the mitigation measures, considers "whether they constitute an adequate buffer against the negative impacts that may result from the authorized activity. Specifically, [the court] examine[s] whether the mitigation measures will render such impacts so minor as to not warrant an EIS." *Id.*; see also *Hill v. Boy*, 144 F.3d 1446, 1451 (11th Cir.1998) (explaining that where an agency relies on an assumption to reach a FONSI, the assumption must be supported by substantial evidence). Moreover, the proposed mitigation underlying the FONSI "must be more than a possibility" in that it is "imposed by statute or regulation or have been so integrated into the initial proposal that it is impossible to define the proposal without mitigation." *Wyoming Outdoor Council v. U.S. Army Corps of Eng'rs*, 351 F.Supp.2d 1232, 1250 (D.Wyo. 2005). Here, the agency offers nothing more than the statement that site-specific mitigation measures and BMPs would be attached as COAs—and fails to list what these potential measures might be.

Similarly, with regard to cumulative impacts, the agency must provide *some* explanation of how or why compensatory mitigation will reduce the cumulative adverse impacts on the resources in question to insignificance. Bare assertions of mitigation are insufficient. *O'Reilly v. U.S. Army Corps of Eng'rs*, 477 F.3d 225, 235 (5th Cir.2007) ("[A] bare assertion is simply insufficient to explain *why* the mitigation requirements render the cumulative effects of this project less-than-significant, when considered with the past, present, and foreseeable future development in the project area." (emphasis in the original)).

## **VI. The BLM Fails to Take a "Hard Look" by Predetermining its NEPA Analysis.**

NEPA "requires ... that an agency give a 'hard look' to the environmental impact of any project or action it authorizes." *Morris v. U.S. Nuclear Regulatory Comm'n*, 598 F.3d 677, 681 (10th Cir. 2010). This examination "must be taken objectively and in good faith, not as an exercise in form over substance, and not as a subterfuge designed to rationalize a decision already made." *Forest Guardians v. U.S. Fish & Wildlife Serv.*, 611 F.3d 692, 712 (10th Cir. 2010) (quoting *Metcalf v. Daley*, 214 F.3d 1135, 1142 (9th Cir. 2000)); see also 40 C.F.R. §

1502.2(g) (“Environmental impact statements shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made.”); *id.* § 1502.5 (“The statement shall be prepared early enough so that it can serve practically as an important contribution to the decision-making process and will not be used to rationalize or justify decisions already made.”).

In the past, the BLM has failed to perform the necessary analysis at the lease sale stage by deferring analysis to the APD stage and relying on mitigation measures. But, this approach presupposes that impacts can be mitigated before even knowing what those site-specific impacts are. The agency is also presupposing that oil and gas resources, if developed, outweigh non-oil and gas resources, like wildlife habitat, air quality, water quality protection, and human communities in the planning area.

As soon as BLM issues an oil and gas lease—particularly, as here, when the lease is sold without a no surface occupancy (“NSO”) stipulation covering the entire parcel—that sale confers a right to the leaseholder, which includes the right of occupancy. Without analyzing impacts from the lease sale itself, any subsequent analysis intrinsically shifts from *preventing* impacts (and managing lands for other resource values) to merely *mitigating* impacts (and allowing oil and gas lessees to exercise their surface use rights to the lease at the expense of other resource values). This approach is fundamentally incongruous with NEPA’s mandate. In *Northern Plains Resource Council v. Surface Transportation Board*, the Ninth Circuit warned: “In a way, reliance on mitigation measures presupposes approval. It assumes that—regardless of what effects construction may have on resources—there are mitigation measures that might counteract the effect without first understanding the extent of the problem. This is inconsistent with what NEPA requires.” 668 F.3d 1067, 1084–85 (9th Cir. 2011). In the present case, this presupposition is precisely what BLM has done in the past. We urge the BLM not to assume that any actual NEPA analysis can wait until some unspecified future date while relying on generic lease stipulations and future mitigation to avoid a finding of significance.

BLM, in making this predetermined conclusion, creates an un-level playing field that benefits oil and gas leasing and drilling at the expense of other multiple-use resources. There is a long line of cases that warn agencies against making a predetermined decision with respect to NEPA analysis. The Tenth Circuit has cautioned: “[I]f an agency predetermines the NEPA analysis by committing itself to an outcome, the agency likely has failed to take a hard look at the environmental consequences of its actions due to its bias in favor of that outcome and, therefore, has acted arbitrarily and capriciously.” *Forest Guardians*, 611 F.3d at 713 (citing *Davis v. Mineta*, 302 F.3d 1104 (10th Cir. 2002)). The Tenth Circuit further stated that “[w]e [have] held that . . . predetermination [under NEPA] resulted in an environmental analysis that was tainted with bias” and was therefore not in compliance with the statute. *Id.* (citing *Davis*, 302 F.3d at 1112–13, 1118–26)).

While the threshold for finding agency predetermination is high—“occur[ing] only when an agency *irreversibly and irretrievably* commits itself to a plan of action that is dependent upon the NEPA environmental analysis producing a certain outcome, *before* the agency has completed that environmental analysis,” *Forest Guardians*, 611 F.3d at 714 (emphasis in original)—here, should BLM’s current leasing process follow past precedent, this threshold will be met. For

example, for the March 2019 EA, BLM made the express determination that a full analysis of impacts is not necessary at the lease sale stage, which guarantees that a FONSI will be issued. As a result, any future FONSI will be based not on any actual analysis of impacts, but rather on the predetermined decision to perform the necessary NEPA analysis at a later stage. Indeed, by not performing any genuine analysis, it is impossible to reach any conclusion other than a FONSI. By playing this shell-game, BLM, at a minimum, has created an improper “inertial presumption” in favor of committing resources to oil and gas development before knowing the site-specific impacts. *Natl. Wildlife Fed. v. Morton*, 393 F.Supp. 1286, 1292 (D.D.C. 1975).

Furthermore, should BLM predetermine its decision—or create a presumption in favor of oil and gas leasing and development—BLM will be violating NEPA, as well as FLPMA. As the Tenth Circuit has explained:

It is past doubt that the principle of multiple use does not require BLM to prioritize development over other uses. . . . Development is a *possible* use, which BLM must weigh against other possible uses – including conservation to protect environmental values, which are best assessed through the NEPA process.

*New Mexico ex rel. Richardson*, 565 F.3d 683, 710 (10th Cir. 2009). Thus, we look forward to a full and fair NEPA analysis that avoids the pitfalls of predetermination.

## **VII. The BLM Must Take a Hard Look at the Direct, Indirect, and Cumulative Impacts of Oil and Gas Leasing and Development.**

NEPA and its implementing regulations, promulgated by the Council on Environmental Quality (“CEQ”), 40 C.F.R. §§ 1500.1–1518.4, are our “basic national charter for the protection of the environment.” 40 C.F.R. § 1500.1. Recognizing that “each person should enjoy a healthful environment,” NEPA ensures that the federal government uses all practicable means to “assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings,” and to “attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences,” among other policies. 43 U.S.C. § 4331(b).

NEPA regulations explain, in 40 C.F.R. §1500.1(c), that:

Ultimately, of course, it is not better documents but better decisions that count. NEPA’s purpose is not to generate paperwork – even excellent paperwork – but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.

Thus, while “NEPA itself does not mandate particular results, but simply prescribes the necessary process,” *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989), agency adherence to NEPA’s action-forcing statutory and regulatory mandates helps federal agencies ensure that they are adhering to NEPA’s noble purpose and policies. *See* 42 U.S.C. §§ 4321, 4331.

NEPA imposes “action forcing procedures . . . requir[ing] that agencies take a *hard look* at environmental consequences.” *Methow Valley Citizens Council*, 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. A cumulative impact—particularly important here—is defined as:

the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

40 C.F.R. § 1508.7.

Federal agencies determine whether direct, indirect, or cumulative impacts are significant by accounting for both the “context” and “intensity” of those impacts. 40 C.F.R. § 1508.27. Context “means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality” and “varies with the setting of the proposed action.” *Id.* § 1508.27(a). Intensity “refers to the severity of the impact” and is evaluated according to several additional elements, including, for example: unique characteristics of the geographic area such as ecologically critical areas; the degree to which the effects are likely to be highly controversial; the degree to which the possible effects are highly uncertain or involve unique or unknown risks; and whether the action has cumulatively significant impacts. *Id.* § 1508.27(b).

#### **VIII. BLM Must Consider Existing, New, and Revised National Policy on Climate Change in Its EA and RMP Decisionmaking.**

The National Environmental Policy Act (“NEPA”) is our “basic national charter for the protection of the environment,” achieving its purpose through “action forcing procedures. . . requir[ing] that agencies take a *hard look* at environmental consequences.” 40 C.F.R. § 1500.1; *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989) (citations omitted) (emphasis added). This includes the consideration of best available information and data, as well as disclosure of any inconsistencies with federal policies and plans.

In 2014, President Obama described climate change as an “urgent and growing threat . . . that will define the contours of this century more dramatically than any other.”<sup>24</sup> In that same year, the U.S. pledged to reduce its greenhouse gas (“GHG”) emissions 26-28 percent below

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<sup>24</sup> The White House, Remarks by the President at U.N. Climate Change Summit (Sept. 23, 2014), available at: <https://www.whitehouse.gov/the-press-office/2014/09/23/remarks-president-un-climate-change-summit>.

2005 levels by 2020.<sup>25</sup> Following this, President Obama also announced a new goal to cut methane emissions from the oil and gas sector by 40-45 percent below 2012 levels by 2025,<sup>26</sup> and set standards to reduce carbon dioxide emissions from the electricity sector by 32 percent from 2005 levels by 2030.<sup>27</sup> In 2015, President Obama recognized, “ultimately, if we’re going to prevent large parts of this Earth from becoming not only inhospitable but uninhabitable in our lifetimes, we’re going to have to keep some fossil fuels in the ground rather than burn them and release more dangerous pollution into the sky.”<sup>28</sup> In his final State of the Union address, President Obama again noted the federal government’s commitment to fighting climate change, vowing “to accelerate the transition away from old, dirtier energy sources,” and making a powerful promise “to change the way we manage our oil and coal resources so that they better reflect the costs they impose on taxpayers and our planet.”<sup>29</sup> These statements culminated in December, 2015 when the President joined with 194 other nations in recognizing “that climate change represents an urgent and potentially irreversible threat to human societies and the planet” and setting the goal of “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.”<sup>30</sup> President Obama ratified the Paris Agreement, along with China, on September 3, 2016.<sup>31</sup> President Obama has also recognized that “the Paris Agreement alone will not solve the climate crisis. Even if we meet every target embodied in the agreement, we’ll only get to part of where we need to go.”<sup>32</sup>

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<sup>25</sup> U.S.-China Joint Announcement on Climate Change (Nov. 11, 2014), available at: <https://www.whitehouse.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change> (previously attached as Exhibit 46 to the Oct. 20, 2017 comments).

<sup>26</sup> The White House, Climate Action Plan: Strategy to Reduce Methane Emissions (March 2014), available at: <https://www.whitehouse.gov/blog/2014/03/28/strategy-cut-methane-emissions> (Carbon Budget Exhibit 1 to the Oct. 20, 2017 comments).

<sup>27</sup> Environmental Protection Agency, Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64662 (Oct. 23, 2015).

<sup>28</sup> The White House, Statement by the President on the Keystone XL Pipeline (Nov. 6, 2015), available at: <https://www.whitehouse.gov/the-press-office/2015/11/06/statement-president-keystone-xl-pipeline>.

<sup>29</sup> President Barack Obama, State of the Union (Jan. 12, 2016), available at: <https://obamawhitehouse.archives.gov/sotu>.

<sup>30</sup> United Nations Framework Convention on Climate Change, Conference of the Parties (Nov 30-Dec. 11, 2015), Adoption of the Paris Agreement, Art. 2, U.N. Doc. FCCC/CP/2015/L.9 (Dec. 12, 2015), available at: <http://unfccc.int/resource/docs/2015/cop21/eng/l09.pdf> (“Paris Agreement”) (Carbon Budget Exhibit 2 to the Oct. 20, 2017 comments).

<sup>31</sup> The White House, President Obama: The United States Formally Enters the Paris Agreement (Sept. 3, 2016), available at: <https://www.whitehouse.gov/blog/2016/09/03/president-obama-united-states-formally-enters-paris-agreement>.

<sup>32</sup> The White House, Office of the Press Secretary, Remarks by the President on the Paris Agreement (Oct. 5, 2016), available at <https://www.whitehouse.gov/the-press-office/2016/10/05/remarks-president-paris-agreement> (last viewed Oct. 26, 2016).



Although the Trump administration has suggested a different set of priorities with respect to action on climate change, this does not alter the fundamental math and science of the challenges we face. Indeed, even if the Trump administration were to back out of the United States' many commitments to reduce greenhouse gas emissions and to create a pathway that limits warming, that does not absolve the agency from considering the best available information and taking a hard look at impacts, as well as to have its decisionmaking be reflective of this analysis.

Further, the Secretary of the United States Department of the Interior stated, in Secretarial Order 3226, *Evaluating Climate Change Impacts in Management Planning* (January 19, 2001), that "[t]here is a consensus in the international community that global climate change is occurring and that it should be addressed in governmental decision making." Secretarial Order 3226 established the responsibility of agencies to "consider and analyze potential climate change impacts when undertaking long-range planning exercises, when setting priorities for scientific research and investigations, when developing multi-year management plans, and/or when making major decisions regarding potential utilization of resources under the Department's purview."

In a 2007 report entitled *Climate Change: Agencies Should Develop Guidance for Addressing the Effects on Federal Land and Water Resources*, the GAO concluded that the Department of the Interior had not provided specific guidance to implement Secretarial Order 3226, that officials were not even aware of Secretarial Order 3226, and that Secretarial Order 3226 had effectively been ignored. This report led to Secretarial Order 3289, *Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources* (September 14, 2009), which reinstated the provisions of Order 3226, and recognized that "the realities of climate change require us to change how we manage land, water, fish and wildlife, and cultural heritage and tribal lands and resources we oversee," and acknowledged that the Department of the Interior is "responsible for helping protect the nation from the impacts of climate change." A month later, in Executive Order No. 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (Oct. 5, 2009), the President called on all federal agencies to "measure, report, and reduce their greenhouse gas emissions from direct and indirect activities." 74 Fed. Reg. 52,117 (Oct. 8, 2009). This directive was followed by Executive Order No. 13693, *Planning for Federal Sustainability in the Next Decade* (March 25, 2015), which reaffirmed the federal government's commitment to reducing GHG emissions. 80 Fed. Reg. 15,871 (March 25, 2015).

In 2009, the Environmental Protection Agency ("EPA") issued a finding that the changes in our climate caused by elevated concentrations of greenhouse gases in the atmosphere are reasonably anticipated to endanger the public health and welfare of current and future generations. 74 Fed. Reg. 66,496 (Dec. 15, 2009). In 2015, EPA acknowledged more recent scientific assessments that "highlight the urgency of addressing the rising concentrations of CO<sub>2</sub> in the atmosphere." 80 Fed. Reg. 64,661 (Oct. 23, 2015).

In 2016, the White House Council on Environmental Quality ("CEQ")—the federal agency tasked with managing the federal government's implementation of NEPA—recognized

the unique nature of climate change and the challenges it imposed on NEPA compliance. On August 1, 2016, CEQ released *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews* (hereafter, “Climate Guidance”) (attached as Exhibit 4 to Citizen Groups’ Oct. 20, 2017 comments). The guidance applies to all proposed federal agency actions, “including land and resource management actions.” *Id.* at 9. Notably, CEQ’s guidance is intended to “facilitate compliance with existing NEPA requirements.” *Id.* at 1. In other words, the Climate Guidance is meant to underscore BLM’s existing legal obligations to disclose and consider the foreseeable effects that, for example, oil and gas leasing and development has on climate change. On January 12, 2017, BLM issued a Permanent Instruction Memorandum to all Washington Office and Field Officials requiring that “[a]ll relevant NEPA documents must be consistent with the CEQ guidance.” IM No. 2017-003 (attached as Exhibit 26 to Citizen Groups’ Oct. 20, 2017 comments). Although the Trump Administration has since revoked the CEQ’s August 2016 Climate Guidance and the BLM revoked IM No. 2017-003 on October 24, 2017,<sup>33</sup> the BLM is still bound by CEQ regulations on climate with regards to NEPA and existing case law to this effect. *See, e.g., WildEarth Guardians v. U.S. Bureau of Land Management*, 870 F.3d 1222 (10th Cir. 2017). Furthermore, the underlying climate science and facts have not changed.

In its Climate Guidance, the CEQ recognized that:

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

*Id.* at 10-11. CEQ’s Climate Guidance also explains the application of NEPA principles and practices to the analysis of GHG emissions and climate change, including: (1) that agencies quantify a proposed action’s projected direct and indirect GHG emissions, taking into account available data and GHG quantification tools; (2) that agencies use projected GHG emissions as a proxy for assessing potential climate change effects when preparing a NEPA analysis; (3) where

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<sup>33</sup> BLM, Rescinding the Washington Office Permanent Instruction Memorandum No. 2017-003, the Council on Environmental Quality Guidance on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews, available at, <https://www.blm.gov/policy/im-2018-002>.

GHG emission tools, methodologies, or data inputs are not reasonably available, that agencies include a qualitative analysis in the NEPA document and explain the basis for determining that quantification is not reasonably available; (4) that agencies analyze foreseeable direct, indirect, and cumulative GHG emissions and climate effects; (5) that agencies consider reasonable alternatives and the short- and long-term effect and benefits in the alternatives and mitigation analysis; (6) that agencies consider alternatives that would make the actions and affected communities more resilient to the effects of a changing climate; and (7) that agencies assess the broad-scale effects of GHG emissions and climate change, either to inform programmatic decisions, or at both the programmatic and project-level. *See id.* at 4-6.

**A. BLM Must Consider National Policy on Climate Change in Agency Decisionmaking in the EA and the RMPA, as well as Consider Recent Climate Science and Carbon Budgeting.**

NEPA requires BLM to consider national policy in its decisionmaking process.<sup>34</sup> The FFO and RPFO have historically adopted a position in its decisionmaking that reflects a fundamental disconnect with regard to how our public lands are managed for energy production and national policies to limit GHG emissions. The agency has not only failed to take informed action to address climate change, as required by Secretarial Order 3226 and 3289, but has signaled a deep misunderstanding of basic climate science as well as the “tools and methodologies for quantifying GHG emissions and comparing GHG quantities across alternative scenarios.” *See* Climate Guidance at 11.<sup>35</sup> As stated in Order 3289, BLM must “appl[y] scientific tools to increase understanding of climate change and to coordinate an effective response to its impacts,” and “management decisions made in response to climate change impacts must be informed by [this] science.”

Through statements that have been offered to avoid any actual analysis, BLM has historically failed to take a hard look at the climate impacts of fossil fuel leasing and development on public lands in the planning area, as required by NEPA and underscored by the CEQ. These mistakes must not be repeated here. The FFO must also consider alternatives that would meaningfully address greenhouse gas emissions and climate change impacts in the planning area—including a no-leasing and reduced-leasing alternatives—and that are reflective of current science and national policy. The FFO planning area is already over 90% leased for oil and gas. Over 40,000 oil and gas wells have historically been drilled, with at least 21,725 wells

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<sup>34</sup> NEPA regulations direct federal agencies, “to discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned),” 40 C.F.R. § 1506.2(d), and require agencies to address “possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned.” 40 C.F.R. § 1502.16(c). CEQ’s NEPA Climate Guidance interprets these regulations to encompass the requirement to address “approved federal, regional, state, tribal, or local plans, policies, or laws for GHG emission reductions or climate adaptation to make clear whether a proposed project’s GHG emissions are consistent with such plans or laws.” Climate Guidance at 28-29.

<sup>35</sup> *See also*, Climate Guidance at 12 n.28 (linking to quantification tools that “are widely available, and are already in broad use in the Federal and private sectors”).

currently in production. This legacy of exploitation has resulted in vast impacts to the regions land, air, and water—including a methane hotspot that drapes over the basin—which people and our communities have been forced to endure and which will be exacerbated by these lease sales. To correct past failures, BLM must, at a minimum, ensure it uses the best and most up-to-date climate science available, much of which is summarized below.

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 (“CO<sub>2</sub>”) 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.<sup>36</sup> In November 2017, the atmospheric concentration of CO<sub>2</sub> was approximately 405.14 ppm, up from 403.53 ppm the same month a year earlier.<sup>37</sup>

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:<sup>38</sup>

- 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

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<sup>36</sup> 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/>.

<sup>37</sup> NOAA, Earth System Research Laboratory, *Trends in Atmospheric Carbon Dioxide*, available at: <http://www.esrl.noaa.gov/gmd/ccgg/trends/>.

<sup>38</sup> IPCC AR5, *Summary for Policymakers* (March 2014) available at: [http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5\\_SYR\\_FINAL\\_SPM.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf) (Carbon Budget Exhibit 5 to Citizen Groups’ Oct. 20, 2017 comments).

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-20<sup>th</sup> 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 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 public health and the public welfare of current and future generations.”<sup>39</sup> 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).

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.”<sup>40</sup> And, in September 2018, NOAA concluded “[w]ith global records dating back to 1880, the September 2018 global temperature across the world's land and ocean surfaces was 0.78°C (1.40°F) above the 20th century average of 15.0°C (59.0°F)—tying with 2017 as the fourth highest September temperature in the 139-year record.”<sup>41</sup> Similarly, in September 2018, the atmospheric concentration of CO<sub>2</sub> was approximately 405.51 ppm, up from

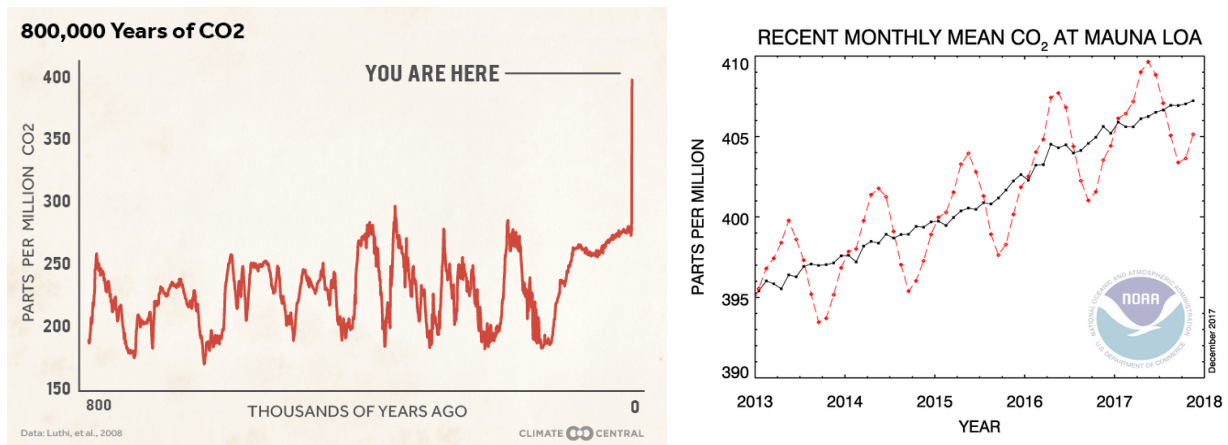
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<sup>39</sup> Environmental Protection Agency, *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act* 74 Fed. Reg. 66,496 (Dec. 15, 2009).

<sup>40</sup> NOAA, Global Analysis – August 2016, available at: <https://www.ncdc.noaa.gov/sotc/global/201608>.

<sup>41</sup> NOAA, *Global Climate Report – September 2018*, <https://www.ncdc.noaa.gov/sotc/global/201809> (last visited Oct. 17, 2018).

403.37 ppm the same month a year earlier.<sup>42</sup> 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 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.”<sup>43</sup> 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.”<sup>44</sup> 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:<sup>45</sup>

- 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

<sup>42</sup> NOAA, Earth System Research Laboratory, *Trends in Atmospheric Carbon Dioxide*, available at: <http://www.esrl.noaa.gov/gmd/ccgg/trends/>.

<sup>43</sup> IPCC AR5 Synthesis Report at 2 (Carbon Budget Exhibit 5 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>44</sup> 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> (attached as Exhibit 6 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>45</sup> *See id.* at 463-86.

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."<sup>46</sup> This record warming was again surpassed in 2016. "Globally-averaged temperatures in 2016 were 1.78 degrees Fahrenheit (0.99 degrees Celsius) warmer than the mid-20th century mean. This makes 2016 the third year in a row to set a new record for global average surface temperatures."<sup>47</sup>

Most of the warming occurred in the past 35 years, with 16 of the 17 warmest years on record occurring since 2001. Not only was 2016 the warmest year on record, but eight of the 12 months that make up the year – from January through September, with the exception of June – were the warmest on record for those respective months. October, November, and December of 2016 were the second warmest of those months on record – in all three cases, behind records set in 2015.<sup>48</sup>

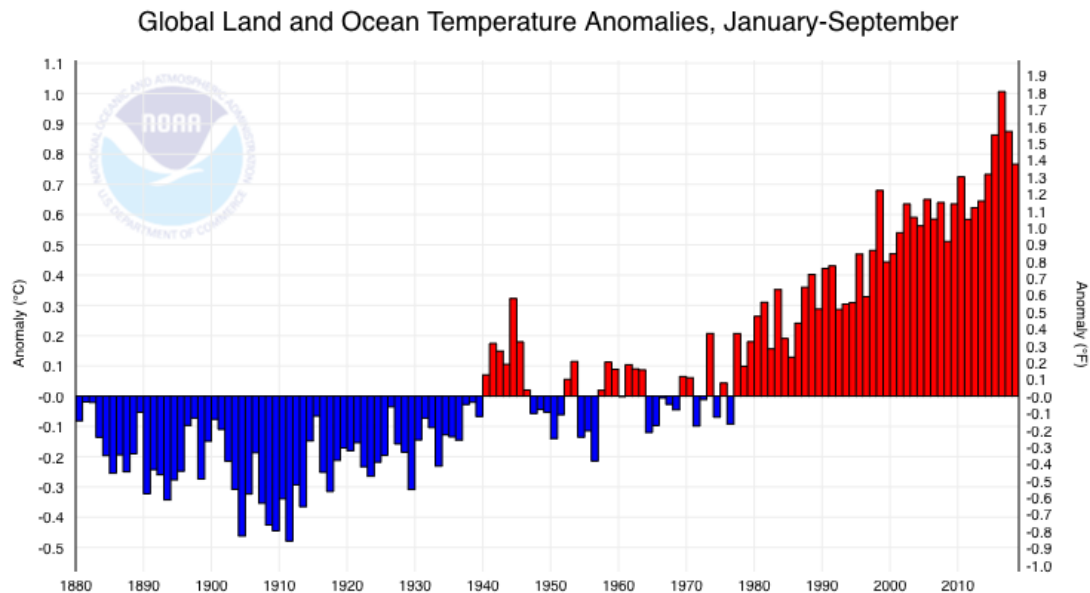
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<sup>46</sup> American Meteorological Society, *State of the Climate in 2015*, Vol.97, No.8 (Aug. 2016), at S7 (Carbon Budget Exhibit 7 to Citizen Groups' Oct. 20, 2017 comments).

<sup>47</sup> NASA, *NASA NOAA Data Show 2016 Warmest Year on Record Globally* (Jan. 18, 2017), available at: <https://www.nasa.gov/press-release/nasa-noaa-data-show-2016-warmest-year-on-record-globally>.

<sup>48</sup> *Id.*; see also NOAA/NASA, *Annual Global Analysis for 2016* (Jan 2017) (attached as Exhibit 27 to Citizen Groups' Oct. 20, 2017 comments).

Researchers have developed a mathematical equation to describe the impacts of human activity on the Earth.<sup>49</sup> The equation shows that astronomical and geophysical forces on the Earth system, while complex, tend to zero over time because of their slow nature and rarity. Whereas GHG emissions caused by humans over the past 45 years have increased the rate of temperature rise to 1.7 degrees Celsius per century, representing a change to the climate that is 170 times faster than the natural background rate.<sup>50</sup> The researchers conclude that failing to reduce anthropological climate change “could trigger societal collapse.”<sup>51</sup>



*Annual Global Temperature: Difference from 20<sup>th</sup> Century Average, in °F*

As noted above, the Paris Agreement commits all signatories 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.”<sup>52</sup> 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 data reveal that some climate extremes are already increasing in response to warming of several tenths of a degree in recent

<sup>49</sup> Owen Gaffney and Will Steffen, *The Anthropocene Equation*, The Anthropocene Review (2017) (attached as Exhibit 28 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>50</sup> Gaffney at 3.

<sup>51</sup> Gaffney at 7.

<sup>52</sup> Paris Agreement at Art. 2 (Carbon Budget Exhibit 2 to Citizen Groups’ Oct. 20, 2017 comments).



decades; these extremes would likely be much enhanced with warming of 2°C or more.”<sup>53</sup> “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.”<sup>54</sup> “[T]here 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.”<sup>55</sup> 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.”<sup>56</sup> “[T]he risks previously believed to be associated with an increase of around 4°C in global temperatures are now associated with the rise of a little over 2°C, while the risks previously associated with 2°C are now thought to occur with only 1°C rise.”<sup>57</sup>

Other reports have found: “[T]here 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.”<sup>58</sup> 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.”<sup>59</sup> “[T]he risks previously believed to be associated with an increase of around 4°C in global temperatures are now

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<sup>53</sup> 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) (Carbon Budget Exhibit 8 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>54</sup> 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 (Carbon Budget Exhibit 9 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>55</sup> David Spratt, *Climate Reality Check: After Paris, Counting the Cost* (March 2016) at 8 (Carbon Budget Exhibit 10 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>56</sup> Kevin Anderson and Alice Bows, *Beyond ‘Dangerous’ Climate Change: Emission Scenarios for a New World*, Phil. Trans. R. Soc. (2011) (Carbon Budget Exhibit 11 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>57</sup> International Energy Agency, *Redrawing the Energy-Climate Map* (June 2013) at 14, (Carbon Budget Exhibit 29 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>58</sup> David Spratt, *Climate Reality Check: After Paris, Counting the Cost* (March 2016) at 8 (Carbon Budget Exhibit 10 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>59</sup> Kevin Anderson and Alice Bows, *Beyond ‘Dangerous’ Climate Change: Emission Scenarios for a New World*, Phil. Trans. R. Soc. (2011) (Carbon Budget Exhibit 11 to Citizen Groups’ Oct. 20, 2017 comments).

associated with the rise of a little over 2°C, while the risks previously associated with 2°C are now thought to occur with only 1°C rise.”<sup>60</sup>

Notably, a 2018 report from the Intergovernmental Panel on Climate Change (IPCC), the authoritative international scientific body for the assessment of climate change, quantified the devastating harms that would occur at 2°C warming, highlighting the necessity of limiting warming to 1.5°C to avoid catastrophic impacts to people and life on Earth.<sup>61</sup> According to the IPCC’s analysis, the damages that would occur at 2°C warming compared with 1.5°C include more deadly heatwaves, drought and flooding; 10 centimeters of additional sea level rise within this century, exposing 10 million more people to flooding; a greater risk of triggering the collapse of the Greenland and Antarctic ice sheets with resulting multi-meter sea level rise; dramatically increased species extinction risk, including a doubling of the number of vertebrate and plant species losing more than half their range, and the virtual elimination of coral reefs; 1.5 to 2.5 million more square kilometers of thawing permafrost area with the associated release of methane, a potent greenhouse gas; a tenfold increase in the probability of ice-free Arctic summers; a higher risk of heat-related and ozone-related deaths and the increased spread of mosquito-borne diseases such as malaria and dengue fever; reduced yields and lower nutritional value of staple crops like corn, rice, and wheat; a doubling of the number of people exposed to climate-change induced increases in water stress; and up to several hundred million more people exposed to climate-related risks and susceptible to poverty by 2050.<sup>62</sup> The IPCC reaffirmed the severe impacts from climate change and that rapid action away from fossil fuels is needed if we are to limit the impacts of climate change.

- Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C. Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate.
- Warming from anthropogenic emissions from the pre-industrial period to the present will persist for centuries to millennia and will continue to cause further long-term changes in the climate system, such as sea level rise, with associated impacts but these emissions alone are unlikely to cause global warming of 1.5°C.
- Climate models project robust differences in regional climate characteristics between present-day and global warming of 1.5°C, and between 1.5°C and 2°C. These differences include increases in: mean temperature in most land and ocean regions,

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<sup>60</sup> International Energy Agency, *Redrawing the Energy-Climate Map* (June 2013) at 14, (Carbon Budget Exhibit 29 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>61</sup> IPCC [Intergovernmental Panel on Climate Change], *Global Warming of 1.5°C*, an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (October 6, 2018), <http://www.ipcc.ch/report/sr15/>.

<sup>62</sup> *Id.* at Summary for Policymakers.

hot extremes in most inhabited regions, heavy precipitation in several regions, and the probability of drought and precipitation deficits in some regions.

- Climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are projected to increase with global warming of 1.5°C and increase further with 2°C.
- Pathways limiting global warming to 1.5°C with no or limited overshoot would require rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems (high confidence). These systems transitions are unprecedented in terms of scale, but not necessarily in terms of speed, and imply deep emissions reductions in all sectors, a wide portfolio of mitigation options and a significant upscaling of investments in those options (medium confidence).

#### IPCC SR 15.

This trend is confirmed by data from the American Meteorological Society, NASA, and NOAA. “The global land and ocean surface temperature was remarkably high in 2017. Depending on the dataset considered, the past year ranked as the second or third highest since records began in the mid-to-late 1800s at 0.38°–0.48°C above the 1981–2010 average.”<sup>63</sup> Additionally, “[c]ontinuing the planet's long-term warming trend, globally averaged temperatures in 2017 were 1.62 degrees Fahrenheit (0.90 degrees Celsius) warmer than the 1951 to 1980 mean, according to scientists at NASA’s Goddard Institute for Space Studies (GISS) in New York. That is second only to global temperatures in 2016.”<sup>64</sup> “Earth’s globally averaged temperature for 2017 made it the third warmest year in NOAA’s 138-year climate record, behind 2016 (warmest) and 2015 (second warmest). However, unlike the past two years, Earth’s average temperature in 2017 was not influenced by the warming effect of an El Nino, say scientists from NOAA’s National Centers for Environmental Information (NCEI).”<sup>65</sup>

NOAA also concluded: “[t]he average temperature across the globe in 2017 was 1.51 degrees F above the 20th century average of 57 degrees F. 2017 marks the 41st consecutive year (since 1977) with global land and ocean temperatures at least nominally above the 20th-century average. The six warmest years on record for the planet have all occurred since 2010.”<sup>66</sup> And, just recently NOAA found: “Warmth continued its steady march across the world last month, making for the fourth hottest September on record for the globe and the fourth warmest year to

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<sup>63</sup> Ex. 15, American Meteorological Society, *State of the Climate in 2017*, Vol. 99, No. 8 (Aug. 2018), at S5.

<sup>64</sup> NASA, *Long-Term Warming Trend Continued in 2017: NASA, NOAA* (Jan. 18, 2018), <https://www.nasa.gov/press-release/long-term-warming-trend-continued-in-2017-nasa-noaa>.

<sup>65</sup> NOAA, *2017 Was 3rd Warmest Year on Record for the Globe*, Jan. 18, 2018, <https://www.noaa.gov/news/noaa-2017-was-3rd-warmest-year-on-record-for-globe>.

<sup>66</sup> *Id.*

date, according to the latest analysis by scientists from NOAA's National Centers for Environmental Information."<sup>67</sup>

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 GtCO<sub>2</sub>e (range: 12-17) in 2030 and 7 GtCO<sub>2</sub>e (range: 5-10) in 2025. When conditional INDCs are included as fully implemented, the emissions gap in 2030 is estimated to be 12 GtCO<sub>2</sub>e (range: 10-15) and 5 GtCO<sub>2</sub>e (range: 4-8) in 2025.<sup>68</sup>

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.<sup>69</sup> In the alternative, if no action is taken and the status quo is maintained—a position long reflected in BLM's management of public lands in the San Juan Basin—estimated warming by 2100 is upwards of 4.5°C.<sup>70</sup> To achieve an outcome consistent with a 50% chance of keeping warming to 2.0°C, the growth in global-energy related CO<sub>2</sub> emissions needs to halt and start to reverse within the current decade.<sup>71</sup> Delaying stronger climate action to 2020 would come at a cost: \$1.5 trillion in low-carbon investments are avoided before 2020, but \$5 trillion in additional investments would be required between 2020-2035 to get back on track.<sup>72</sup>

With specific regard to United States' past commitments under the Paris Agreement, the U.S. INDC set specific greenhouse gas emissions reduction target for 2025 of a 26% to 28% reduction below the 2005 emission levels, producing a range in 2005 net GHG emissions from

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<sup>67</sup> NOAA, *September 2018 and Year to Date Were 4th Hottest on Record for the Globe*, Oct. 17, 2018, <https://www.noaa.gov/news/september-2018-and-year-to-date-were-4th-hottest-on-record-for-globe>.

<sup>68</sup> United Nations Environment Programme (UNEP), *The Emissions Gap Report 2015: A UNEP Synthesis Report* (Nov. 2015) at xviii (Carbon Budget Exhibit 12).

<sup>69</sup> Spratt, *Climate Reality Check* at 2 (Carbon Budget Exhibit 10 to Citizen Groups' Oct. 20, 2017 comments).

<sup>70</sup> 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) (Carbon Budget Exhibit 13 to Citizen Groups' Oct. 20, 2017 comments).

<sup>71</sup> IEA (2013) at 13.

<sup>72</sup> IEA (2013) at 114.

6,323 to 7,403 MTCO<sub>2</sub>e.<sup>73</sup> The difference between this target and the estimated 2025 emissions without INDC policies results in an ‘emissions gap’ ranging from 896 to 2,121 MTCO<sub>2</sub>e.<sup>74</sup>

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.<sup>75</sup>

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CO<sub>2</sub> 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*).<sup>76</sup>

The energy sector accounts for around two-thirds of GHG emissions, and more than 80% of global energy consumption is based on fossil fuels.<sup>77</sup> To keep open a realistic chance of meeting the 2°C target, intensive action is required before 2020. 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 (CO<sub>2</sub>) 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.<sup>78</sup>

According to the IPCC, as of 2011, the remaining carbon budget of cumulative CO<sub>2</sub> emissions from all anthropogenic sources must remain below 1,000 GtCO<sub>2</sub> to provide a 66%

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<sup>73</sup> 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> (Carbon Budget Exhibit 14 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>74</sup> *Id.* at 2; *see also* UNEP, Emissions Gap Report (Carbon Budget Exhibit 12 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>75</sup> Third National Climate Assessment at 2 (Carbon Budget Exhibit 6 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>76</sup> IPCC AR5 Synthesis Report at 46 (Carbon Budget Exhibit 5 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>77</sup> IEA (2013) at 9.

<sup>78</sup> *The Sky’s Limit* at 6 (Carbon Budget Exhibit 9 to Citizen Groups’ Oct. 20, 2017 comments).

probability of limiting warming to 2°C above pre-industrial levels.<sup>79</sup> For years 2012-2014, approximately 107 GtCO<sub>2</sub> was emitted, averaging approximately 36 GtCO<sub>2</sub> per year, which left us at the start of 2016 with a carbon budget of only 850 GtCO<sub>2</sub>.<sup>80</sup> 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 more stringent carbon budget of only 400 GtCO<sub>2</sub> from 2011 onward, of which about 250 GtCO<sub>2</sub> remained at the start of 2016.<sup>81</sup> “With global annual emissions amounting to 36 GtCO<sub>2</sub> 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.”<sup>82</sup>

The 2018 IPCC special report on *Global Warming of 1.5°C* provided a revised carbon budget for a 66 percent probability of limiting warming to 1.5°C, estimated at 420 GtCO<sub>2</sub> and 570 GtCO<sub>2</sub> depending on the temperature dataset used, from January 2018 onwards.<sup>83</sup> At the current emissions rate of 42 GtCO<sub>2</sub> per year, this carbon budget would be expended in just 10 to 14 years, underscoring the urgent need for transformative global action to transition from fossil fuel use to clean energy.<sup>84</sup> Importantly, a 2016 global analysis found that the carbon emissions that would be emitted from burning the oil, gas, and coal in the world’s *currently operating* fields and mines would fully exhaust and exceed the carbon budgets consistent with staying

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<sup>79</sup> IPCC AR5 Synthesis Report at 63-64 & Table 2.2 (attached as Exhibit 5 to Citizen Groups’ Oct. 20, 2017 comments). For an 80% probability of staying below 2°C, the budget from 2000 is 890 GtCO<sub>2</sub>, with less than 430 GtCO<sub>2</sub> remaining. Malte Meinshausen *et al.*, *Greenhouse-gas emission targets for limiting global warming to 2°C*, Nature (2009) at 1159 (attached as Exhibit 15). Other sources offer slightly different calculations in order to have a 50% probability of keeping warming below 2°C, with total emissions to 2050 below 1,440 GtCO<sub>2</sub> from 2000 onward, of which 420 GtCO<sub>2</sub> has already been emitted (as of 2011). It is estimated that another 136 GtCO<sub>2</sub> will be emitted from non-energy sources up to 2050, meaning the energy sector can emit a maximum of 884 GtCO<sub>2</sub> by 2050. IEA (2013) at 16-17.

<sup>80</sup> 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) (Carbon Budget Exhibit 16 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>81</sup> Dustin Mulvaney, *et al.*, *Over-Leased: How Production Horizons of Already Leased Federal Fossil Fuels Outlast Global Carbon Budgets*, EcoShift Consulting (July 2016) (attached as Exhibit 17 to Citizen Groups’ Oct. 20, 2017 comments) at 2 (citing Joeri Rogelj, *et al.*, *Difference between carbon budget estimates unraveled*, Nature Climate Change (2016) (Carbon Budget Exhibit 18 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>82</sup> Mulvaney at 2 (citing Oak Ridge National Laboratories, Carbon Dioxide Information Analysis Center (2015), available at: <http://cdiac.ornl.gov/GCP/>).

<sup>83</sup> IPCC [Intergovernmental Panel on Climate Change], *Global Warming of 1.5°C*, an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (October 6, 2018), <http://www.ipcc.ch/report/sr15/>.

<sup>84</sup> *Id.*

below 1.5°C or 2°C.<sup>85</sup> Further, the reserves in currently operating oil and gas fields alone, even excluding coal mines, would lead to warming beyond 1.5°C. An important conclusion of the analysis is that *most* of the existing oil and gas fields and coal mines will need to be closed before their reserves are fully extracted in order to limit warming to 1.5 degrees.<sup>86</sup> Some existing fields and mines will need to be closed to limit warming to 2 degrees.<sup>87</sup>

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.”<sup>88</sup> “For the 2°C or 1.5°C limits, respectively 68% or 85% of reserves must remain in the ground.”<sup>89</sup> The reserves in currently operating oil and gas field alone, even with no coal, would take the world beyond 1.5°C.<sup>90</sup>

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”<sup>91</sup>—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.”<sup>92</sup> These fossil fuel reserves represent “unburnable

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<sup>85</sup> Oil Change International, *The Sky’s Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production* (September 2016), <http://priceofoil.org/2016/09/22/the-skys-limit-report/>.

<sup>86</sup> Oil Change International, *The Sky’s Limit California: Why the Paris Climate Goals Demand That California Lead in a Managed Decline of Oil Extraction*, May 2018, <http://priceofoil.org/ca-skys-limit> at 7, 13.

<sup>87</sup> Oil Change International, *The Sky’s Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production* (September 2016) at 5, 7.

<sup>88</sup> IPCC AR5 Synthesis Report at 63 (Carbon Budget Exhibit 5 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>89</sup> *The Sky’s Limit* at 6 (attached as Exhibit 9 to Citizen Groups’ Oct. 20, 2017 comments); *see also* Kevin Anderson and Alice Bows, *Reframing the climate change challenge in light of post-2000 emission trends*, Phil. Trans. R. Soc. (2008) (Carbon Budget Exhibit 19) (“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 CO<sub>2</sub>e)” compared to the current level of ~485 ppm CO<sub>2</sub>e.).

<sup>90</sup> *The Sky’s Limit* at 5, 17 (Carbon Budget Exhibit 9 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>91</sup> Paris Agreement at Art. 2 (Carbon Budget Exhibit 2 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>92</sup> Christophe McGlade & Paul Ekins, *The geographical distribution of fossil fuels unused when limiting global warming to 2°C*, Nature (Jan 2015) (Carbon Budget Exhibit 20 to Citizen Groups’ Oct. 20, 2017 comments).

carbon” and as such would be stranded assets in which countries, industries, and companies are heavily invested but on which they would be unable to recoup returns. Citigroup warned investors that “the total value of stranded assets could be over \$100 trillion based on current market prices.”<sup>93</sup> Studies estimate that global coal, oil and gas resources considered currently economically recoverable contain potential greenhouse gas emissions of 4,196 GtCO<sub>2</sub>,<sup>94</sup> with other estimates as high as 7,120 GtCO<sub>2</sub>.<sup>95</sup>

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 GtCO<sub>2</sub> to the United States as of 2011.<sup>96</sup> By way of comparison, federal and non-federal fossil fuel emissions together would produce between 697 and 1,070 GtCO<sub>2</sub>.<sup>97</sup> Regarding just federal 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 GtCO<sub>2</sub>, 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.<sup>98</sup> Unleased federal fossil fuels comprise 91% of these potential emissions, with already leased federal fossil fuels accounting for as much as 43 GtCO<sub>2</sub>.<sup>99</sup>

In 2012, “the GHG emissions resulting from the extraction of fossil fuels from federal lands by private leaseholders totaled approximately 1,344 MMTCO<sub>2</sub>e.”<sup>100</sup> 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.<sup>101</sup> Continued leasing and development of federal fossil fuel resources commits the world

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<sup>93</sup> Jason Channell, *et al.*, *Energy Darwinism II*, Citi GPS: Global Perspectives & Solutions (August 2015) at 118 (Carbon Budget Exhibit 30 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>94</sup> Michael Raupach, *et al.*, *Sharing a quota on cumulative carbon emissions*, Nature Climate Change (Sept. 2014) (Carbon Budget Exhibit 21 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>95</sup> 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 (Carbon Budget Exhibit 22 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>96</sup> Raupach at 875 (Carbon Budget Exhibit 21 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>97</sup> Dustin Mulvaney, *et al.*, *The Potential Greenhouse Gas Emissions from U.S. Federal Fossil Fuels*, EcoShift Consulting (Aug. 2015) at 16 (Carbon Budget Exhibit 23 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>98</sup> *Id.*

<sup>99</sup> *Id.*

<sup>100</sup> Stratus Consulting, *Greenhouse Gas Emissions from Fossil Energy Extracted from Federal Lands and Waters: An Update* (Dec. 2014) at 9 (Carbon Budget Exhibit 24 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>101</sup> See Energy Information Administration, *Sales of Fossil Fuels Produced from Federal and Indian Lands, FY 2003 through FY 2014* (July 2015) (Carbon Budget Exhibit 25 to Citizen



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.”<sup>102</sup> In short, *any* new leasing of federal fossil fuel resources is inconsistent with a carbon budget that would seek to avoid catastrophic climate change.

Research on the United States’ carbon budget and the carbon emissions locked in U.S. fossil fuels similarly establishes that the U.S. must halt new fossil fuel production and rapidly phase out existing production to avoid the worst dangers of climate change. Scientific studies have estimated the U.S. carbon budget consistent with a 1.5°C target at 25 GtCO<sub>2</sub>eq to 57 GtCO<sub>2</sub>eq on average,<sup>103</sup> depending on the sharing principles used to apportion the global budget across countries.<sup>104</sup> The estimated U.S. carbon budget consistent with limiting temperature rise to 2°C – a level of warming well above what the Paris Agreement requires and which would result in devastating harms – ranges from 34 GtCO<sub>2</sub> to 123 GtCO<sub>2</sub>,<sup>105</sup> depending on the sharing

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Groups’ Oct. 20, 2017 comments); *see also* Stratus Consulting (Carbon Budget Exhibit 24 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>102</sup> McGlade at 188.

<sup>103</sup> Robiou du Pont, Yann et al., *Equitable mitigation to achieve the Paris Agreement goals*, 7 *Nature Climate Change* 38 (2017), and Supplemental Tables 1 and 2. Quantities measured in GtCO<sub>2</sub>eq include the mass emissions from CO<sub>2</sub> as well as the other well-mixed greenhouse gases (CO<sub>2</sub>, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and SF<sub>6</sub>) converted into CO<sub>2</sub>-equivalent values, while quantities measured in GtCO<sub>2</sub> refer to mass emissions of just CO<sub>2</sub> itself.

<sup>104</sup> Robiou du Pont et al. (2017) averaged across IPCC sharing principles to estimate the U.S. carbon budget from 2010 to 2100 for a 50 percent chance of returning global average temperature rise to 1.5°C by 2100, consistent with the Paris Agreement’s “well below 2°C” target, and based on a cost-optimal model. The study estimated the U.S. carbon budget consistent with a 1.5°C target at 25 GtCO<sub>2</sub>eq by averaging across four equity principles: capability (83 GtCO<sub>2</sub>eq), equal per capita (118 GtCO<sub>2</sub>eq), greenhouse development rights (-69 GtCO<sub>2</sub>eq), and equal cumulative per capita (-32 GtCO<sub>2</sub>eq). The study estimated the U.S. budget at 57 GtCO<sub>2</sub>eq when averaging across five sharing principles, adding the constant emissions ratio (186 GtCO<sub>2</sub>eq) to the four above-mentioned principles. However, the constant emissions ratio, which maintains current emissions ratios, is not considered to be an equitable sharing principle because it is a grandfathering approach that “privileges today’s high-emitting countries when allocating future emission entitlements.” For a discussion of sharing principles, see Kartha, S. et al., *Cascading biases against poorer countries*, 8 *Nature Climate Change* 348 (2018).

<sup>105</sup> Robiou du Pont et al. (2017) estimated the U.S. carbon budget for a 66 percent probability of keeping warming below 2°C at 60 GtCO<sub>2</sub>eq based on four equity principles (capability, equal per capita, greenhouse development rights, equal cumulative per capita), and at 104 GtCO<sub>2</sub>eq based on five principles (adding in constant emissions ratio, but see footnote above). For a 66 percent probability of keeping warming below 2°C, Peters et al. (2015) estimated the U.S. carbon budget at 34 GtCO<sub>2</sub> based on an “equity” approach for allocating the global carbon budget, and 123 GtCO<sub>2</sub> under an “inertia” approach. The “equity” approach bases sharing on population size and provides for equal per-capita emissions across countries, while the “inertia” approach bases

principles used. Under any scenario, the remaining U.S. carbon budget compatible with the Paris climate targets is extremely small.

An analysis of U.S. fossil fuel resources demonstrates that the potential carbon emissions from already leased fossil fuel resources on U.S. federal lands would essentially exhaust the remaining U.S. carbon budget consistent with the 1.5°C target. This analysis estimated that recoverable fossil fuels on U.S. *federal lands* would release up to 349 to 492 GtCO<sub>2</sub>eq of carbon emissions, if fully extracted and burned.<sup>106</sup> Of that amount, *already leased* fossil fuels would release 30 to 43 GtCO<sub>2</sub>eq of emissions, while as yet unleased fossil fuels would emit 319 to 450 GtCO<sub>2</sub>eq of emissions. Thus, carbon emissions from *already leased* fossil fuel resources *on federal lands alone* (30 to 43 GtCO<sub>2</sub>eq) would essentially exhaust the U.S. carbon budget for a 1.5°C target (25 to 57 GtCO<sub>2</sub>eq), if these leased fossil fuels are fully extracted and burned. The potential carbon emissions from unleased fossil fuel resources (319 to 450 GtCO<sub>2</sub>eq) would exceed the U.S. carbon budget for limiting warming to 1.5°C many times over.<sup>107</sup> This does not include the additional carbon emissions that will be emitted from fossil fuels extracted on non-federal lands, estimated up to 500 GtCO<sub>2</sub>eq if fully extracted and burned.<sup>108</sup> This research further establishes that the United States must halt new fossil fuel projects and close existing fields and mines before their reserves are fully extracted to achieve the Paris climate targets and avoid the worst damages from climate change.

Furthermore, research that models emissions pathways for limiting warming to 1.5° or 2°C shows that a rapid end to fossil fuel extraction in the United States is critical. Specifically,

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sharing on countries' current emissions. Similarly using a 66 percent probability of keeping warming below 2°C, Gignac et al. (2015) estimated the U.S. carbon budget at 78 to 97 GtCO<sub>2</sub>, based on a contraction and convergence framework, in which all countries adjust their emissions over time to achieve equal per-capita emissions. Although the contraction and convergence framework corrects current emissions inequities among countries over a specified time frame, it does not account for inequities stemming from historical emissions differences. When accounting for historical responsibility, Gignac et al. (2015) estimated that the United States has an additional cumulative carbon debt of 100 GtCO<sub>2</sub> as of 2013. *See* Peters, Glen P. et al., Measuring a fair and ambitious climate agreement using cumulative emissions, 10 Environmental Research Letters 105004 (2015); Gignac, Renaud and H. Damon Matthews, Allocating a 2C cumulative carbon budget to countries, 10 Environmental Research Letters 075004 (2015).

<sup>106</sup> Ecoshift Consulting, et al., The Potential Greenhouse Gas Emissions of U.S. Federal Fossil Fuels, Prepared for Center for Biological Diversity & Friends of the Earth (2015), <http://www.ecoshiftconsulting.com/wpcontent/uploads/Potential-Greenhouse-Gas-Emissions-U-S-Federal-Fossil-Fuels.pdf>.

<sup>107</sup> Ecoshift Consulting, et al., The Potential Greenhouse Gas Emissions of U.S. Federal Fossil Fuels, Prepared for Center for Biological Diversity & Friends of the Earth (2015), at 4.

<sup>108</sup> Ecoshift Consulting, et al., The Potential Greenhouse Gas Emissions of U.S. Federal Fossil Fuels, Prepared for Center for Biological Diversity & Friends of the Earth (2015), at 3 (“the potential GHG emissions of federal fossil fuels (leased and unleased) are 349 to 492 Gt CO<sub>2</sub>e, representing 46% to 50% of potential emissions from all remaining U.S. fossil fuels”).

research indicates that *global* fossil fuel CO<sub>2</sub> emissions must *end entirely* by mid-century and likely as early as 2045 for a reasonable likelihood of limiting warming to 1.5° or 2°C.<sup>109</sup> Due to the small U.S. carbon budget, the United States must end fossil fuel CO<sub>2</sub> emissions even earlier: between 2025 and 2030 on average for a reasonable chance of staying below 1.5°C, and between 2040 and 2045 on average for a reasonable chance of staying below 2°C.<sup>110</sup> Ending U.S. fossil fuel CO<sub>2</sub> emissions between 2025 and 2030, consistent with the Paris climate targets, would require an immediate halt to new production and closing most existing oil and gas fields and coal mines before their reserves are fully extracted.

Ending the approval of new fossil fuel production and infrastructure is also critical for preventing “carbon lock-in,” where approvals and investments made now can lock in decades worth of fossil fuel extraction that we cannot afford. New approvals for wells, mines, and fossil fuel infrastructure -- such as pipelines, marine and rail import and export terminals -- require upfront investments that provide financial incentives for companies to continue production for decades into the future.<sup>111</sup> Given the long-lived nature of fossil fuel projects, ending the approval of new fossil fuel projects avoids the lock-in of decades of fossil fuel production and associated emissions.<sup>112</sup>

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<sup>109</sup> Rogelj, Joeri et al., Energy system transformations for limiting end-of-century warming to below 1.5°C, 5 Nature Climate Change 519 (2015); IPCC [Intergovernmental Panel on Climate Change], Global Warming of 1.5°C, an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (October 6, 2018), <http://www.ipcc.ch/report/sr15/>.

<sup>110</sup> See Climate Action Tracker, USA (last updated 30 April 2018), <http://climateactiontracker.org/countries/usa> at Country Summary figure showing U.S. emissions versus year.

<sup>111</sup> Davis, Steven J. and Robert H. Socolow, Commitment accounting of CO<sub>2</sub> emissions, Environmental Research Letters 9: 084018 (2014); Erickson, Peter et al., Assessing carbon lock-in, 10 Environmental Research Letters 084023 (2015); Erickson, Peter et al., Carbon lock-in from fossil fuel supply infrastructure, Stockholm Environment Institute, Discussion Brief (2015); Seto, Karen C. et al., Carbon Lock-In: Types, Causes, and Policy Implications, 41 Annual Review of Environmental Resources 425 (2016); Green, Fergus and Richard Denniss, Cutting with both arms of the scissors: the economic and political case for restrictive supply-side climate policies, Climatic Change <https://doi.org/10.1007/s10584-018-2162-x> (2018).

<sup>112</sup> Erickson et al. (2015): “The essence of carbon lock-in is that, once certain carbon-intensive investments are made, and development pathways are chosen, fossil fuel dependence and associated carbon emissions can become “locked in”, making it more difficult to move to lower-carbon pathways and thus reduce climate risks.” Green and Denniss (2018): “When production processes require a large, upfront investment in fixed costs, such as the construction of a port, pipeline or coalmine, future production will take place even when the market price of the resultant product is lower than the long-run opportunity cost of production. This is because rational producers will ignore ‘sunk costs’ and continue to produce as long as the market price is sufficient to cover the marginal cost (but not the average cost) of production. This is known as ‘lock-in.’”

The production horizons for already leased federal fossil fuel resources underscore how unwarranted any additional leasing is, and in turn the reasonableness of the FFO's consideration of a no-leasing alternative. 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.<sup>113</sup>

Not only can the federal government not afford to lease *any* additional public lands for fossil fuel development—underscoring the need to consider a no leasing alternative—but substantial efforts must also be made to limit the production horizon of fossil fuel resources already leased. Accordingly, the FFO must also consider taking an aggressive position on the non-renewal and expiration of non-producing leases, as well as review of agency policy on lease suspensions and unitization.

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).<sup>114</sup> 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 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.<sup>115</sup>

This avoided production would significantly reduce future U.S. emissions. Cessation of new and renewed leases for federal fossil fuel extraction could reduce CO<sub>2</sub> 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.<sup>116</sup>

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 CO<sub>2</sub> emissions savings that could result from no leasing in 2030 compares favorably with EPA standards for light- and medium-vehicles that are expected to yield 200 Mt in CO<sub>2</sub> savings in 2030, and with standards for heavy-

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<sup>113</sup> Mulvaney (2016) at 5.

<sup>114</sup> Peter Erickson and Michael Lazarus, *How Would Phasing Out U.S. Federal Leases for Fossil Fuel Extraction Affect CO<sub>2</sub> Emissions and 2°C Goals?*, Stockholm Environmental Institute (2016) at 12 (Carbon Budget Exhibit 323 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>115</sup> Erickson and Lazarus at 16.

<sup>116</sup> Erickson and Lazarus at 26.

duty vehicles that are expected to yield 70 Mt in CO<sub>2</sub> savings in the same year. The 100 Mt CO<sub>2</sub> 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.<sup>117</sup>

Also, importantly, avoided production through no new leasing and the 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.<sup>118</sup> 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.

## **B. Projected Energy Demands, International Finance, and Stranded Assets**

The world's energy needs continue to grow, with projections of a 30% rise in global energy demand to 2040. The International Energy Agency ("IEA") has estimated that for this increasing demand to be met, a cumulative \$48 trillion in investment is needed in global energy supply,<sup>119</sup> of which 60% is comprised of fossil fuels and nearly 20% to renewables, with an additional \$23 trillion invested in improvements in energy efficiency.<sup>120</sup> "Countries are generally on track to achieve, and even exceed in some instances, many of the targets set in their Paris Agreement pledges; this is sufficient to slow the projected rise in global energy-related CO<sub>2</sub> emissions, but not nearly enough to limit warming to less than 2°C."<sup>121</sup> By contrast, it would be exceedingly difficult to chart a course toward a 2°C pathway. A major reallocation of investment capital going to the energy sector would be needed, requiring an estimated \$40 trillion in cumulative energy supply investment moving away from fossil fuels and toward renewables.<sup>122</sup> The more ambitious target of limiting warming to less than 1.5°C would be even more difficult to achieve, demanding net-zero emissions between 2040 and 2060, a goal that would require radical near-term reductions in energy sector CO<sub>2</sub> emissions.<sup>123</sup> IEA estimates that "\$53 trillion in cumulative investment in energy supply and efficiency is required over the period to 2035 in order to get the world onto a 2°C emissions path."<sup>124</sup>

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<sup>117</sup> Erickson and Lazarus at 27.

<sup>118</sup> Erickson and Lazarus at 30.

<sup>119</sup> International Energy Agency, *World Energy Investment Outlook* (2014), at 3 (Carbon Budget Exhibit 31 to Citizen Groups' Oct. 20, 2017 comments).

<sup>120</sup> International Energy Agency, *World Energy Outlook 2016: Executive Summary* (2016), at 2 (Carbon Budget Exhibit 32 to Citizen Groups' Oct. 20, 2017 comments).

<sup>121</sup> IEA (2016) at 2.

<sup>122</sup> IEA (2016) at 5.

<sup>123</sup> IEA (2016) at 5.

<sup>124</sup> IEA (2014) at 14.

The liability exposure from not acting is enormous, with cumulative ‘lost’ GDP from the impacts of climate change equating to \$44 trillion.<sup>125</sup> Yet, investment decisions being taken today are not consistent with a 2°C climate goal and are not aimed at creating infrastructure that is sufficiently resilient to withstand the increased physical risks that are expected to result from future climate change.<sup>126</sup> “[O]ur current energy infrastructure has already ‘locked-in’ future carbon-dioxide emissions.”<sup>127</sup> Even as this energy infrastructure is quickly sealing our climate fate in the near term, it will become obsolete in the slightly longer term. Indeed, many new energy sector assets are destined to become stranded when carbon reduction policies that limit the utilization of those assets are inevitably adopted in response to climate change impacts. As of 2013, emissions from existing global fossil fuel energy infrastructure already represented four-fifths, or 550 GtCO<sub>2</sub>, of the total volume of CO<sub>2</sub> emissions that the earth can accommodate under a 2°C trajectory.<sup>128</sup> With delayed climate action to date, in 2017 we now find ourselves at an investment watershed, where energy infrastructure now locks in the entire remaining carbon budget to 2035.<sup>129</sup> From this point forward, far more costly actions are going to be required to subsequently undo the lock-in effect, and every additional investment in the energy sector committed to fossil fuels would become stranded assets under policies to achieve a 2°C pathway.

At the same time, the capital expenditures required to maintain current energy sector demand for fossil fuels have more than doubled since 2000, to \$950 billion annually.<sup>130</sup> In other words, more capital investment is being required to maintain our current reliance on fossil fuels at a time, paradoxically, when from a climate perspective all of the new investment must be redirected towards renewable energy sources to effect a radical transformation of the energy sector, as necessary to avoid catastrophic warming. The market value of oil and gas produced globally was around \$4.2 trillion in 2012, which was almost double what it was in 2005.<sup>131</sup> Yet, this has not resulted in a financial windfall to the oil and gas industry, as costs and royalties have more than kept pace with increased revenues.<sup>132</sup> In short, oil and gas companies are merely maintaining a fossil fuel treadmill where increasingly costly investments are needed to meet demand but lead to rising costs for the oil and gas industry as well as significant costs to society as reliance on oil and gas fuels climate change, an irrational system. In the face of these increasing capital requirements, there is growing awareness of significant financial exposure for individual companies from the possible future stranding of new fossil fuel investments. For example, among major oil and gas companies, the estimated cost of stranded assets over the next

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<sup>125</sup> Citi at 8.

<sup>126</sup> IEA (2013) at 84.

<sup>127</sup> IEA (2013) at 98.

<sup>128</sup> IEA (2013) at 99.

<sup>129</sup> IEA (2013) at 113.

<sup>130</sup> IEA (2014) at 51, 52.

<sup>131</sup> IEA (2014) at 54.

<sup>132</sup> IEA (2014) at 54.

decade ranges from \$21.5 billion for ConocoPhillips to \$76.9 billion for Shell.<sup>133</sup> Nevertheless, the global capital markets have yet to internalize these risks and charge premiums that would steer investment towards renewable energy.

“Analysis of the entire energy system shows that delaying action on climate change is a false economy. Investments of around \$1.5 trillion are avoided in the period to 2020, but an additional \$5 trillion of investments are required between 2020 and 2035.”<sup>134</sup>

According to the 2°C pathway modeled by IEA, from 2015-2035 the carbon budget for energy-based emissions from all fossil fuels is 593 GtCO<sub>2</sub>.<sup>135</sup> If global energy investment continues on its current course, there will be over \$2 trillion in investment in energy sources that will emit around 156 GtCO<sub>2</sub> of emissions over the 2°C target of 593 GtCO<sub>2</sub>.<sup>136</sup> This can also be viewed through the lens of specific fossil fuel demand to 2035 under a 2°C pathway. For coal, zero additional capital investment is needed, as production from existing coalmines would exceed demand.<sup>137</sup> For gas, approximately \$460 billion—or over 40% of anticipated capital expenditures—is unneeded, resulting in 9.3 GtCO<sub>2</sub> of avoided emissions.<sup>138</sup> For oil, it is projected that demand peaks around 2020, meaning that the oil sector does not need to continue to grow. Based on current Paris Agreement commitments, oil production required in the period to 2035 amounts to around 760 billion barrels, but falls to 690 billion barrels to maintain a course for 2°C.<sup>139</sup> Yet the estimated level of proven oil reserves are close to 1.7 trillion barrels.<sup>140</sup> This results to between a 940 and 1,010 billion barrel surplus of proven reserves that cannot be burned. Avoided capital expenditures for oil are nearly \$1.5 trillion, avoiding 27.6 GtCO<sub>2</sub> of emissions.<sup>141</sup>

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<sup>133</sup> Carbon Tracker Initiative, *The \$2 trillion stranded assets danger zone: How fossil fuel firms risk destroying investor returns* (Nov. 2015) at 23, (Carbon Budget Exhibit 33 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>134</sup> IEA (2013) at 114.

<sup>135</sup> Carbon Tracker (2015) at 7.

<sup>136</sup> Carbon Tracker (2015) at 2.

<sup>137</sup> Carbon Tracker (2015) at 10.

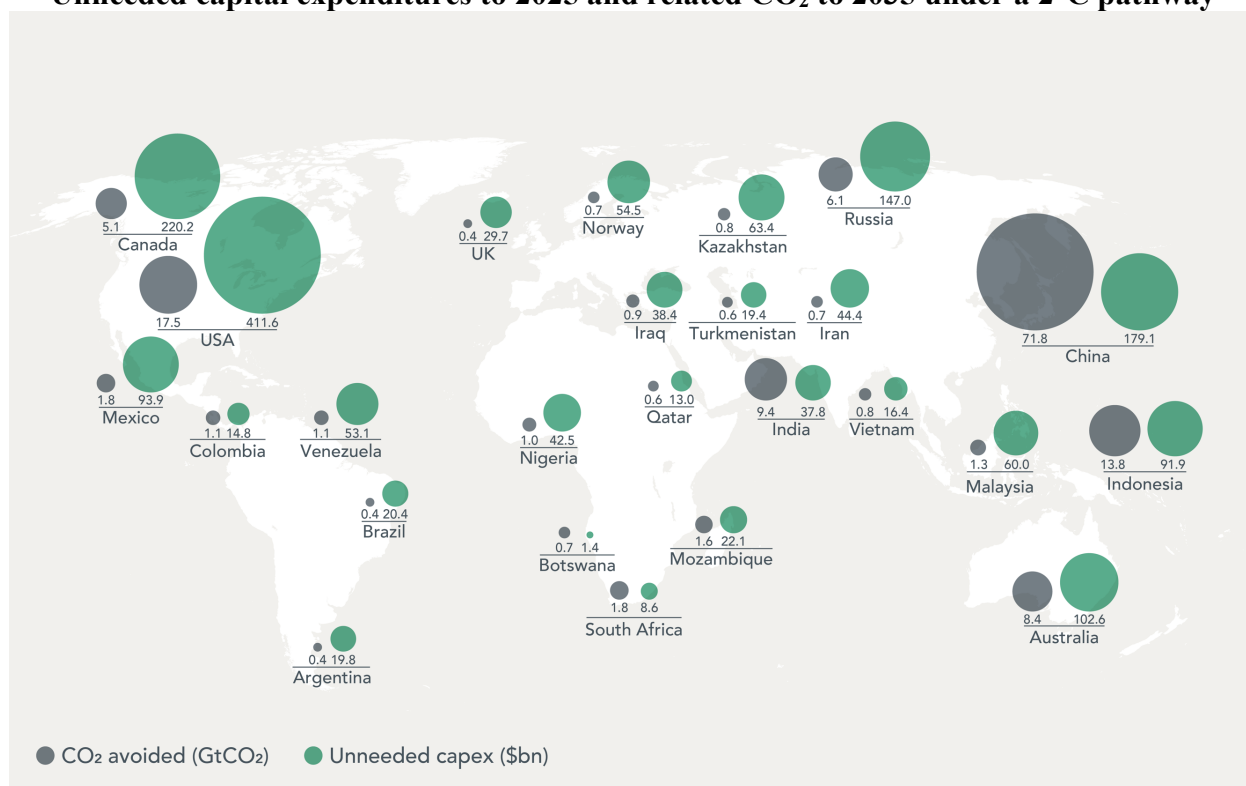
<sup>138</sup> Carbon Tracker (2015) at 14.

<sup>139</sup> IEA (2014) at 87.

<sup>140</sup> IEA (2014) at 87.

<sup>141</sup> Carbon Tracker (2015) at 18.

## Unneeded capital expenditures to 2025 and related CO<sub>2</sub> to 2035 under a 2°C pathway



It is cheaper for the world to address climate change than bear its economic consequences. As detailed above, there are enough coal, oil and gas reserves that are technically recoverable to equal up to 7,120 GtCO<sub>2</sub> of emissions.<sup>142</sup> Only a portion of this carbon is already locked-in—i.e., total reserves held by fossil fuel companies and state owned assets—but this ‘embedded’ carbon still amounts to 2,860 GtCO<sub>2</sub>—already enough to take us beyond 3°C of warming.<sup>143</sup> Only 20% of these fossil fuel reserves can be burned to 2050 if the world is to have a chance of not exceeding global warming of 2°C.<sup>144</sup>

The total coal, oil and gas reserves listed on the world’s stock exchanges equaled 762 GtCO<sub>2</sub> in 2013—an amount that continues to grow.<sup>145</sup> “If listed fossil fuel companies have a pro-rata allocation of the global carbon budget, this would amount to around 125–275 GtCO<sub>2</sub>, or 20 - 40% of the 762 GtCO<sub>2</sub> currently booked as reserves. The scale of this carbon budget deficit poses a major risk for investors. They need to understand that 60 - 80% of coal, oil and gas reserves of listed firms are unburnable.”<sup>146</sup> The systemic risks threatening the stability of

<sup>142</sup> IPCC AR5 at Table 7.2.

<sup>143</sup> Carbon Tracker Initiative, *Unburnable Carbon 2013: Wasted capital and stranded assets* (2013), at 14 (Carbon Budget Exhibit 34 to Citizen Groups’ Oct. 20, 2017 comments).

<sup>144</sup> Carbon Tracker (2013) at 4.

<sup>145</sup> Carbon Tracker (2013) at 4.

<sup>146</sup> Carbon Tracker (2013) at 4.



financial markets related to unburnable carbon are growing more entrenched, with 200 fossil fuel companies having a market value of \$4 trillion and debt of \$1.5 trillion.<sup>147</sup>

As provided by Citigroup in a warning to investors:

Emissions contained in current ‘reserves’ figures are around three times higher than the so called ‘carbon budget’. Some studies suggest that globally a third of oil reserves, half of gas reserves and over 80% of current coal reserves would have to remain unused from 2010 to 2050 in order to have a chance of meeting the 2°C target. In financial terms, we estimate that the value of unburnable reserves could amount to over \$100 trillion out to 2050.<sup>148</sup>

The longer climate action is delayed the more expensive it becomes to avoid each additional ton of GHG emissions, and the more capital expenditures will become stranded.<sup>149</sup> In other words, climate action is directly tied to economic resilience, and the longer action is delayed the larger the lead balloon becomes. This is not only a problem for the fossil fuel industry, but for our economy and the wellbeing of our communities. These financial implications also bear directly on BLM’s decisionmaking relative to the leasing and development of our public lands for fossil fuel resources. Not only do each additional acre leased and well authorized contribute to societies collective carbon burden, but inherent financial risk and market instability has far reaching implications for public lands remediation. When fossil fuel resources become stranded it is the public, not financially struggling fossil fuel companies, who are left holding the bag.

#### **IX. The BLM Fails to Take a Hard Look at the Direct, Indirect and Cumulative Impacts of Oil and Gas Leasing and Development.**

The National Environmental Policy Act (“NEPA”), 42 U.S.C. §§ 4321–4370h, and its implementing regulations, promulgated by the Council on Environmental Quality (“CEQ”), 40 C.F.R. §§ 1500.1–1518.4, are our “basic national charter for the protection of the environment.” 40 C.F.R. § 1500.1. Recognizing that “each person should enjoy a healthful environment,” NEPA ensures that the federal government uses all practicable means to “assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings,” and to “attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences,” among other policies. 43 U.S.C. § 4331(b).

NEPA regulations explain, in 40 C.F.R. §1500.1(c), that:

Ultimately, of course, it is not better documents but better decisions that count. NEPA’s purpose is not to generate paperwork – even excellent paperwork – but to foster excellent action. The NEPA process is intended to help public officials

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<sup>147</sup> Carbon Tracker (2013) at 5, 30.

<sup>148</sup> Citi at 82.

<sup>149</sup> IEA (2014) at 43.

make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.

Thus, while “NEPA itself does not mandate particular results, but simply prescribes the necessary process,” *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989), agency adherence to NEPA’s action-forcing statutory and regulatory mandates helps federal agencies ensure that they are adhering to NEPA’s noble purpose and policies. *See* 42 U.S.C. §§ 4321, 4331.

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. A cumulative impact—particularly important here—is defined as:

the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

40 C.F.R. § 1508.7.

Federal agencies determine whether direct, indirect, or cumulative impacts are significant by accounting for both the “context” and “intensity” of those impacts. 40 C.F.R. § 1508.27. Context “means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality” and “varies with the setting of the proposed action.” 40 C.F.R. § 1508.27(a). Intensity “refers to the severity of the impact” and is evaluated according to several additional elements, including, for example: unique characteristics of the geographic area such as ecologically critical areas; the degree to which the effects are likely to be highly controversial; the degree to which the possible effects are highly uncertain or involve unique or unknown risks; and whether the action has cumulatively significant impacts. *Id.* § 1508.27(b).

Furthermore, the Federal Land Policy and Management Act (“FLPMA”), 43 U.S.C. §§ 1701–1781, directs that “the public lands be managed in a manner that will protect the quality of [critical resource] values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use.” 43 U.S.C. § 1701(a)(8). This substantive mandate requires that the agency not elevate the development of oil and gas resources above other critical resource values in the planning area. To the contrary, FLPMA requires that where oil and gas development would threaten the quality of critical resources, that conservation of these resources should be the preeminent goal. As detailed, below, for several critical resource values in the planning area, the proposed action conflicts with the BLM’s mandate under NEPA and FLPMA.

**A. The BLM Cannot Defer a Site-Specific Analysis of the Impacts from the Lease Sale Because Leases Constitute Irretrievable Commitments of Resources.**

In its EA for the March 2019 lease sale, the BLM indicates in multiple places that it is appropriate to defer its site-specific analysis of the impacts from the lease sale to the Application Permit to Drill (“APD”) stage. *See, e.g.*, FFO EA at 9-14 (eliminating many issues raised by commenters because impacts analysis would be deferred to the APD stage). But, this determination is undermined by the BLM’s own conclusion that lease purchaser would have the exclusive right to use as much of the leased mineral estate as is necessary to explore and drill for oil and gas, subject to the stipulations attached to the lease.”

BLM has previously relied on *Park County Resource Council v. U.S. Department of Agriculture*, 817 F.2d 609 (10th Cir. 1987), to support its contention that site-specific NEPA analysis is not required until the APD stage. In *Park County*, the Court provided that “*with appropriate lease stipulations* aimed at protecting the environment, lease issuance itself, essentially a paper transaction, does not *usually* require prior preparation of an EIS.” *Park County*, 817 F.2d at 621 (emphasis added). *Park County*, however, does not stand for the proposition—as BLM has implied—that there is a categorical rule exempting BLM from ever performing site-specific analysis at the lease sale stage. Indeed, the Ninth Circuit has consistently held that the sale of oil and gas leases is an irretrievable commitment of resources for which an EIS must be prepared. *See, e.g., Conner v. Burford*, 848 F.2d 1441 (9th Cir.1988); *Bob Marshall Alliance v. Hodel*, 852 F.2d 1223, 1227 (9th Cir.1988). Further, *Park County* cannot be understood in a vacuum; as the Tenth Circuit more recently explained:

[T]here is no bright line rule that site-specific analysis may wait until the APD stage. Instead, the inquiry is necessarily contextual. Looking to the standards set out by regulation and by statute, 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. 42 U.S.C. § 4332(2)(C)(v); *Pennaco Energy v. U.S. Dept. of Interior*, 377 F.3d 1147, 1160 (10<sup>th</sup> Cir. 2004); *Kern v. U.S. Bureau of Land Management*, 284 F.3d 1062, 1072 (9<sup>th</sup> Cir. 2002); 40 C.F.R. §§ 1501.2, 1502.22. Each of these inquiries is tied to the existing environmental circumstances, not to the formalities of agency procedures. Thus, applying them necessarily requires a fact-specific inquiry.

*New Mexico ex rel. Richardson*, 565 F.3d 683, 717–18 (10th Cir. 2009). The court unambiguously stated that “[t]he operative inquiry [is] simply whether all foreseeable impacts of leasing [are] taken into account before leasing [can] proceed.” *Id.* at 717.

Indeed, in *Pennaco Energy*, the court found: “A plan-level EIS for the area failed to address the possibility of [coal-bed methane (“CBM”)] development, and a later EIS was prepared only after the leasing stage, and thus ‘did not consider whether leases should have been issued in the first place.’” *New Mexico*, 565 F. 3d. at 717 (citing *Pennaco Energy*, 377 F.3d at 1152). Moreover, the Court held that “[b]ecause the issuance of leases gave lessees a right to surface use, the failure to analyze CBM development impacts before the leasing stage foreclosed NEPA analysis from affecting the agency’s decision.” *Id.* (citing *Pennaco Energy*, 377 F.3d at

1160). This proposition was also affirmed in *Wilderness Workshop v. Bureau of Land Mgmt.*, stating “in the context of oil and gas leasing, the site-specific impacts occur in the later stages of leasing and development.” 32 F. Supp. 3d 1145, 1163 (D. Colo., 2018).

Unlike *Park County* where site-specific impacts were difficult to anticipate, here, like in *Pennaco Energy*, the impacts of leasing parcels are reasonably foreseeable—more than 90% of the FFO planning area has already been leased and expansive oil and gas development has already occurred. Moreover, the agency has identified the reasonably foreseeable development scenario in the area, including an estimate of the number of potential wells. In the FFO, BLM predicts 28 total wells (11 vertical and 17 horizontal); and in RPFO, BLM predicts 8 wells (6 vertical and 2 horizontal). See FFO EA at 15; RPFO EA at 13. Thus, as in *Pennaco Energy*, an EIS assessing the specific effects of oil and gas development from this lease sale is required before leases are conferred to industry.

Moreover, irrespective of BLM’s ultimate conclusion with regard to stipulations, an irretrievable commitment of resources will be conferred at the lease sale stage; oil and gas leases confer “the right to use so much of the leased lands as is necessary to explore for, drill for, mine, extract, remove and dispose of all the leased resource in a leasehold.” 40 C.F.R. § 3101.1-2; *Sierra Club v. Hodel*, 848 F.2d 1068, 1093 (10th Cir. 1988) (agencies are to perform hard look NEPA analysis “before committing themselves irretrievably to a given course of action so that the action can be shaped to account for environmental values”); see also EA at 7 (“After a lease has been issued, the lessee has the right to use as much of the leased land as necessary to explore (or drill) for, extract, remove, and dispose of oil and gas deposits located under the leased lands.”).

Yet, even if there were a NSO stipulation covering an entire parcel—which is not the case here—the mere issuance of the lease confers a right to the resources thereunder. Whether through directional drilling or some other method of extraction, the leaseholder has an exercisable interest as soon as the lease is conferred, which it then relies upon in proceeding with its development plan. Therefore, significant environmental impacts, based on those lease rights, may also occur once a lease is issued. Although it is true that “some or all of the environmental consequences of oil and gas development may be mitigated through lease stipulations, it is equally true that the purpose of NEPA is to examine the foreseeable environmental consequences of a range of alternatives *prior* to taking an action that cannot be undone.” *Montana Wilderness Ass’n v. Fry*, 310 F.Supp.2d 1127, 1145 (D. Mont., 2004); see also 40 C.F.R. § 1501.2.

Here, the BLM refuses to perform site-specific analysis at the lease stage, and, once lease right are conferred, BLM’s authority will thereafter be limited to imposing mitigation measures consistent with the terms of the lease. Consequently, if BLM discovers significant impacts at the APD stage, it may no longer be able to prevent them. Because BLM is irretrievably committing resources at the lease sale stage, it must consider the impacts of its decision to lease parcels before it can confer public resources to a private developer in a lease—analysis which would be inherently flawed if performed without the benefit of a completed Mancos Shale RMPA and EIS.

On a similar note, the BLM’s EAs improperly segment its analysis as well. While the EA purports to evaluate the sale of oil and gas lease parcels which will allow drilling, completion,

and production components, the agency also contends that consideration of impacts from development stage activity will actually occur later once APDs are submitted. *See* FFO EA at Table 1.2; RPFO EA at 4.3.4.2; 4.3.8.2; 4.3.14.2.

As NEPA provides, to adequately assess the environmental impacts of a proposed action, BLM must assess three types of actions: (1) connected actions, (2) cumulative actions, and (3) similar actions. 40 C.F.R. § 1508.25. Connected actions “are closely related and therefore should be discussed in the same impact statement. Actions are connected if they: (i) Automatically trigger other actions which may require environmental impact statements; (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously; (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.” *Id.* Cumulative actions are those actions that “when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement.” *Id.* Similar actions are those actions that “when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography. An agency may wish to analyze these actions in the same impact statement. It should do so when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement.” *Id.*

There are two steps necessary to drill this area: first, BLM’s proposed action to lease the subject parcels, and, second, BLM’s promise of separate NEPA for the review and approval of APDs. The second cannot be accomplished without the first, and the act of drilling does not have independent utility. Instead, they are, for all intents and purposes, interdependent parts of a single action—to drill this area for oil and gas—that has been improperly segmented into two pieces. As detailed above, BLM knows enough about current oil and gas development in the southern San Juan Basin to analyze the impacts that will occur if the lease sale occurs and oil and gas development commences. Among those impacts are immense amounts of nitrogen deliveries, the need for extensive storage, the need for ancillary development for oil that does not currently exist, flaring of natural gas and industrial infrastructure delivery development in rural, undeveloped areas, among others. FFO EA at 16.

Finally, the need to do a full NEPA at the lease sale stage is further supported by the fact that the BLM frequently does not complete a NEPA analysis at the APD stage. For example, on October 12, 2017, the FFO issued a decision record approving the development of two natural gas wells through a categorical exclusion.<sup>150</sup> The FFO also has one APD approval through a categorical exclusion pending.<sup>151</sup> Thus, unless the BLM actually commits, through the imposition of a stipulation or stipulations, to conduct additional NEPA analysis at the drilling

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<sup>150</sup> Exhibit 3, BLM, *Decision Record for Heros 2308 09L 3H and COM 4H Oil and Natural Gas Wells* (Oct. 12, 2017), [https://eplanning.blm.gov/epl-front-office/projects/nepa/89077/122647/149657/2017.10.12\\_2017-0113-CX\\_DR.pdf](https://eplanning.blm.gov/epl-front-office/projects/nepa/89077/122647/149657/2017.10.12_2017-0113-CX_DR.pdf).

<sup>151</sup> DOI-BLM-NM-F010-2018-0006-CX for PGA Unit 2 #4r Natural Gas Well, BLM ePlanning website, available at <https://eplanning.blm.gov/epl-front-office/eplanning/projectSummary.do?methodName=renderDefaultProjectSummary&projectId=92771>.

stage, it more often than not does not happen. This means that any commitment to address the impacts development of the proposed leases through subsequent NEPA is, at best, hollow, and at worst, a deliberate attempt to avoid accountability for addressing potentially significant environmental impacts under NEPA.

## **B. The BLM Fails Take a “Hard Look” at Cumulative Impacts.**

A cumulative impact is the “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” 40 C.F.R. § 1508.7. Here, while BLM includes a “*Cumulative Impacts*” sections under various resources in their EA, BLM fails to actually conduct any substantive analysis of those impacts. *See Natural Resources Def. Council v. Hodel*, 865 F.2d 288, 298 (D.C. Cir. 1988) (providing that section headings without the “requisite analysis” are insufficient); *see also* 40 C.F.R. § 1508.27(b)(7) (BLM must consider whether the proposed action is related to other actions that together may have cumulatively significant impacts. “Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.”).

Here, the FFO and RPFO EAs’ cumulative impacts analysis is insufficient. The area overlying the Mancos Shale is an area besieged by fossil fuel development. The FFO has over 23,000 active oil and gas wells, as well as two massive mine-to-mouth coal-fired power plant complexes—the Navajo Mine and Four Corners Power Plant, and the San Juan Mine and San Juan Generating Station. The adverse impacts of such development on the area’s air, water, land, and human communities cannot be overstated. Yet, the FFO characteristically provides, with respect to such impacts: “Future development of the nominated lease parcels could contribute to increases in GHG emissions through both direct and indirect pathways.” FFO EA at 32.

Of particular concern, BLM’s analysis of cumulative GHG emissions states: “The increase in direct and indirect GHG emissions that could result from development of the nominated lease parcels would not produce climate change impacts that significantly differ from Alternative B – No Action Alternative.” FFO EA at 32; RPFO at 29. This language is characteristic of past BLM discussion from earlier leasing sales. Specifically, the language appears to mirror language that Judge Armijo of the U.S. District Court for the District of New Mexico found to be unlawful.

On June 14, 2018, Judge Armijo resolved a petition for review of agency action in *San Juan Citizens Alliance v. Bureau of Land Mgmt.*, No. 16-cv-0376-MCA-JHR, 2018 WL 2994406 (D.N.M. June 14, 2018) (Attached). Much like the present case, that litigation involved a challenge under the National Environmental Policy Act (“NEPA”) of the Bureau of Land Management’s (“BLM”) failure to take a hard look at the greenhouse gas pollution and climate change impacts of oil and gas leasing in the Santa Fe National Forest.

In *San Juan Citizens Alliance*, the court analyzed similar issues to those present here.

Regarding cumulative impacts, Judge Armijo defined BLM's obligation under 40 C.F.R. § 1508.7, and found that "[i]t is the broader, significant 'cumulative impact' which must be considered by an agency, but which was not considered in this case." *Id.* at \*14. The court later continued, linking BLM's failure to quantify indirect greenhouse emissions with the need for broader analysis of cumulative climate impacts, requiring that "analysis must be conducted anew given BLM's failure to consider downstream greenhouse gas emissions." *Id.* at \*15.

Furthermore, although BLM includes a cursory section of resource values cumulatively affected by the proposed action, the agency consistently avoids any actual cumulative analysis by claiming that it lacks the required data to conduct a cumulative impacts analysis or that the scope of the lease sale is de minimis given the scale of the resource considered. The BLM also claims that the nature of the impacts from the project are de minimis, thereby making the cumulative impacts impossible to quantify. The CEQ in its Final Climate Guidance states:

Climate change results from the incremental addition of GHG emissions from millions of individual sources, which collectively have a large impact on a global scale. CEQ recognizes that the totality of climate change impacts is not attributable to any single action, but are exacerbated by a series of actions including actions taken pursuant to decisions of the Federal Government. Therefore, a statement that emissions from a proposed Federal action represent only a small fraction of global emissions is essentially a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether or to what extent to consider climate change impacts under NEPA. Moreover, these comparisons are also not an appropriate method for characterizing the potential impacts associated with a proposed action and its alternatives and mitigations because this approach does not reveal anything beyond the nature of the climate change challenge itself: the fact that diverse individual sources of emissions each make a relatively small addition to global atmospheric GHG concentrations that collectively have a large impact.<sup>152</sup>

The BLM also attempts to satisfy its NEPA obligation for air resources by solely tiering to the Air Resources Technical Report for Oil and Gas Development ("ARTR"). *See* FFO EA at 321 RPFO EA at 29. Although the ARTR does broadly describe the air resource conditions and impacts for the New Mexico, Oklahoma, Texas and Kansas region, a document of this scope cannot satisfy the site-specific cumulative impacts to air resources stemming from this lease sale, which is the level of analysis NEPA demands. "Conclusory remarks," as are consistently provided throughout BLM's EA, "do not equip a decisionmaker to make an informed decision about alternative courses of action." *NRDC*, 865 F.2d at 298. "Perfunctory references do not constitute analysis useful to a decisionmaker in deciding whether, or how, to alter the program to lessen cumulative environmental impacts." *Id.* at 275. BLM's conclusory treatment of their cumulative impacts analysis fails to meet their hard look requirement under NEPA.

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<sup>152</sup> Climate Guidance (emphasis added) (attached as Exhibit 4 to Citizen Groups' Oct. 20, 2017 comments).

Finally, the BLM also fails to account for GHG emissions from cumulative and similar actions in its EA. As NEPA requires, an agency must analyze the impacts of “similar” and “cumulative” actions in the same NEPA document in order to adequately disclose impacts in an EIS or provide sufficient justification for a FONSI in an EA. *See* 40 C.F.R. §§ 1508.25(a)(2)–(3). Here, the BLM fails to take into account the greenhouse gas emissions resulting from other proposed lease sales in the New Mexico State Office (including New Mexico, Texas, Oklahoma, and Kansas) and surrounding Western states, and, indeed from all BLM-managed fossil fuel emissions.

### **C. The BLM Fails to Take a “Hard Look” at Impacts to Air Quality.**

In addition to its insufficient cumulative impacts analysis, the BLM also fails to take a hard look at the air quality impacts from oil and gas leasing and development in the planning area. 40 C.F.R. § 1506.6. Here, the BLM’s air quality analysis fails because it relies on the outdated RMP and the broad scale Air Resources Technical Report (ARTR) and because the agency completely fails to calculate and analyze the site-specific emissions that will result from the March 2019 lease sale.

To start, the FFO’s air resources analysis is tiered to the existing 2003 RMP and EIS, which, as detailed above and functionally admitted by BLM, is no longer capable of guiding agency decision-making. The 2003 RMP/EIS is also fatally flawed specifically with regards to air quality. Indeed, significant new information demonstrates that emissions associated with oil and gas development are significantly higher than what the 2003 Farmington RMP contemplated. According to recent inventory data prepared by the Western Regional Air Partnership (“WRAP”), the 2003 Farmington EIS underestimates emissions of VOCs from oil and gas operations by nearly 30-fold. In 2003, BLM estimated that within 20 years, VOC emissions would amount to 2,008.5 tons/year. According to the most recent WRAP inventory, VOC emissions from oil and gas activities in San Juan and Rio Arriba Counties were estimated to be nearly 60,000 tons/year in 2006 and projected to be more than 55,000 tons per year by 2012.<sup>153</sup> The table below illustrates this discrepancy between the amount of VOC emissions projected in 2003 and the most recent estimates.

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<sup>153</sup> *See* ENVIRON, *Final Report: Development of 2012 Oil and Gas Emissions Projections for the South San Juan Basin* (Dec. 2009) (prepared for Western Regional Air Partnership) (included as Old Leasing Exhibit 121); ENVIRON, *Final Report: Development of Baseline 2006 Emissions from Oil and Gas Activity in the South San Juan Basin* (Nov. 2009) (prepared for Western Regional Air Partnership) (included as Old Leasing Exhibit 122).



<b>Source of Emission Inventory</b>	<b>VOC Emission Estimate (tons/year)</b>
RMP 20-Year Projection (RMP EIS at J-11)	2,008.5
WRAP Phase III 2006 Inventory for San Juan/Rio Arriba Counties	59,933
WRAP Phase III 2012 Projection for San Juan/Rio Arriba Counties	55,049

This discrepancy is significant because it indicates that BLM cannot reasonably tie to the 2003 RMP/EIS to justify that air quality impacts will not be significant. If anything, BLM must either prepare an EIS to address the air quality impacts of the proposed leases, supplement the 2003 RMP/EIS prior to moving ahead with the proposed leases, or, as discussed above, defer further leasing and development until the Mancos Shale RMPA and EIS are completed.

This discrepancy also indicates that the county-level emissions data presented in the EA, which show dramatically lower VOC emissions in San Juan and Rio Arriba Counties, are flawed. See FFO EA at 23; RPFO EA at 18-19. The EA indicates that EPA emission inventory data from 2014 was utilized in reporting overall emissions in San Juan and Rio Arriba Counties. However, the EPA's inventory data does not reflect the actual emission inventory data presented by the WRAP because it relies solely on point source inventory data submitted by the New Mexico Environment Department.<sup>154</sup> Yet, as the WRAP data indicates, the vast majority of oil and gas-related VOC emissions are non-point source emissions.

In other words, the limited county-level emissions data BLM presents in the EA fail to accurately account for oil and gas emissions, raising further concerns that the EA is inadequate and fails to justify a finding of no significant impact. BLM must analyze and assess impacts in terms of accurate emissions data for the oil and gas industry. Moreover, the agency admits that additional near-field air quality modeling is needed. Regardless of what additional modeling tells us about impacts to air quality, once leases are sold, the agency cannot prevent development. This is precisely the type of scenario that NEPA forbids.

The FFO also incorporates in the EA broad technical information related to air resources from the ARTR for New Mexico, Oklahoma, Texas and Kansas, which is too general in scope to sufficiently analyze the site-specific impacts of oil and gas leasing and development from the proposed action. The FFO EA states: "The methodology and assumptions for calculating air pollutant emissions are described in the Air Resources Technical Report" and are approximations of emissions based on assumptions, rather than premised on actual monitoring data. FFO EA at

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<sup>154</sup> Exhibit 4, EPA, *2014 National Emissions Inventory, Version 1, Technical Support Document DRAFT* (Dec. 2016) at 2-14, available at [https://www.epa.gov/sites/production/files/2016-12/documents/nei2014v1\\_tsd.pdf](https://www.epa.gov/sites/production/files/2016-12/documents/nei2014v1_tsd.pdf).

With no analysis, quantified data, or reference to any of NEPA's significance factors, 40 C.F.R. § 1508.27, the agency has failed to satisfy their statutory mandate. The BLM's hard look analysis "must be taken objectively and in good faith, not as an exercise in form over substance, and not as a subterfuge designed to rationalize a decision already made." *Forest Guardians*, 611 F.3d at 712. What the agency offers fails to satisfy this obligation. In addition, NEPA requires an agency to analyze site specific impacts of a proposal. *See High Country Conservation Advocates v. U.S. Forest Serv.*, 52 F.Supp. 3d 1174 (D. Colo. 2014) ("The EA, while typically a more concise analysis than an EIS, must still evaluate the need for the proposal, alternatives as required by NEPA section 102(2)(E), and the environmental impacts of the proposed action and alternatives."); *see also Pennaco Energy v. U.S. Dept. of Interior*, 377 F.3d 1147, 1159 (10th Cir. 2004). Thus, the BLM cannot rely on the broad-scale Air Resources Technical Report to meet its requirement to analyze the impacts of the March 2019 lease sale.

The EAs also do not actually analyze or assess the impacts of developing the proposed leases on national ambient air quality standards ("NAAQS"). We are especially troubled that the EA fails to analyze the direct, indirect, and cumulative air quality impacts in the context of NAAQS promulgated since the RMP was adopted. These NAAQS include the 1-hour nitrogen dioxide NAAQS (promulgated in 2010), the 1-hour sulfur dioxide NAAQS (also promulgated in 2010), the 24-hour PM<sub>2.5</sub> NAAQS (promulgated in 2006), the annual PM<sub>2.5</sub> NAAQS (promulgated in 2012), and the 8-hour ozone NAAQS (promulgated in 2015).<sup>155</sup> We are particularly concerned over the impacts to the 1-hour NO<sub>2</sub> NAAQS given that short-term NO<sub>2</sub> concentrations are linked to near-field, near ground-level emissions, including compressor engines exhaust stacks and other combustion sources. Because the RMP does not analyze or assess impacts to these air quality standards, in particular the NO<sub>2</sub> NAAQS, the EA cannot reasonably tie to the analysis in the 2003 RMP/EIS or otherwise reasonably conclude that the direct, indirect, and cumulative impacts of the proposed leasing will not be significant.

Even if no air quality violations are currently occurring, this does not mean that the NAAQS will never be violated. The U.S. District Court for the District of Colorado in fact rejected a similar analysis prepared by the BLM in support of an oil and gas drilling plan in the Roan Plateau area of western Colorado. In that case, the BLM asserted that the lack of ozone violations indicated that future impacts would not be significant. In her ruling, Judge Krieger stated: "The mere fact that the area has not exceeded ozone limits in the past is of no significance when the purpose of the EIS is to attempt to predict what environmental effects are likely to occur in the future[.]" *Colo. Envtl. Coal. v. Salazar*, 875 F. Supp. 2d 1233, 1257 (D. Colo. 2012). This is particularly relevant here where the current monitoring stations are hovering just below the 2015 NAAQS for ozone.

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<sup>155</sup> The EPA also retained prior ozone NAAQS, including the 2008 ozone NAAQS, which limited ambient concentrations to no more than 0.075 parts per million over an eight hour period. *See* 40 C.F.R. § 50.15.

#### **D. The BLM Fails to Take a “Hard Look” at the Impacts from Climate Change.**

The BLM fails to take a hard look at the climate change impacts from oil and gas leasing and development in the planning area for a number of reasons. 40 C.F.R. § 1506.6.

First, the BLM again claims that leasing the parcels will have no direct impacts to climate change from GHG emissions because any impacts will occur at the development stage, and the BLM will analyze the impacts at that point. But, as discussed above, the BLM cannot defer analyzing the impacts from the lease sale until the APD stage because leasing is an irretrievable commitment of resources, and BLM loses any power to limit development at the APD stage unless a NSO stipulation covers the entire parcel.

Second, although Citizen Groups appreciate the fact that the BLM includes an analysis of the direct GHG emissions from the lease sale, the agency’s analysis vastly underestimates potential emissions because it relies on national, as opposed to site-specific data, in violation of NEPA. The FFO continues to rely on data from the ARTR to satisfy the agency’s NEPA “hard look” obligations for climate change and GHG emissions. *See* FFO EA at 30; RPFO EA at 25. As noted above, although the ARTR provides a broad overview of oil and gas emissions for a four-state region, the document, in isolation, is incapable satisfying the type of site-specific NEPA analysis necessary here.

Indeed, as noted above, the court in *San Juan Citizens Alliance* recently held that such analyses are required. Specifically, the court held that “BLM’s failure to estimate the amount of greenhouse gas emissions which will result from consumption of the oil and gas produced as a result of development of wells *on the leased areas* was arbitrary,” because the indirect effects of leasing were reasonably foreseeable and that BLM’s arguments otherwise were “contrary to the reasoning in several persuasive cases that combustion emissions are an indirect effect of an agency’s decision to extract those natural resources.” *See San Juan Citizens All.*, 2018 WL 2994406, at \*10–11 (emphasis added). The court concluded, “[t]his error [] require[d] BLM [to] reanalyze the potential impacts of such greenhouse gases on climate change in light of the recalculated amount of emissions in order to comply with NEPA.” *Id.* at \*11. As a result, the court set aside the BLM’s finding of no significant impact, the leases, and remanded the issue to BLM for further analysis. *Id.* at \*21. Thus, there is no doubt that BLM is required to analyze and quantify the direct and indirect greenhouse gas emission for the lease sale.

Furthermore, the BLM cannot rely on the underlying RMPs-EISs to fulfill its NEPA duties. Both RMPs are severely out of date and do not include the full impacts of horizontal drilling coupled with fracking. Thus, the BLM must wait until it completes the respective RMPs-FEISs before moving forward with any leasing.

CEQ’s Final Guidance<sup>156</sup> explains the application of NEPA principles and practices to the analysis of GHG emissions and climate change, including, among others: (1) that agencies quantify a proposed action’s projected direct and indirect GHG emissions, taking into account

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<sup>156</sup> As noted above, while the Trump Administration has rescinded the August 2016 CEQ Climate Guidance, it is still relevant because it summarizes the requirements of NEPA.

available data and GHG quantification tools; (2) that agencies use projected GHG emissions as a proxy for assessing potential climate change effects when preparing a NEPA analysis; (3) where GHG emission tools, methodologies, or data inputs are not reasonably available, agencies include a qualitative analysis in the NEPA document and explain the basis for determining that quantification is not reasonably available; (4) analyze foreseeable direct, indirect, and cumulative GHG emissions and climate effects; (5) consider reasonable alternatives and the short- and long-term effect and benefits in the alternatives and mitigation analysis; (6) consider alternatives that would make the actions and affected communities more resilient to the effects of a changing climate; and (7) assess the broad-scale effects of GHG emissions and climate change, either to inform programmatic decisions, or at both the programmatic and project-level. BLM falls dramatically short of this level of analysis and consideration, as required by NEPA.

The BLM must also complete a cumulative impacts analysis for the lease sale, including an assessment of the cumulative greenhouse gas emissions that will result from surrounding BLM lease sales. Specifically, the BLM must analyze greenhouse gas emissions from similar, collectively significant oil and gas lease sales within New Mexico, as well as throughout the Rocky Mountain West.

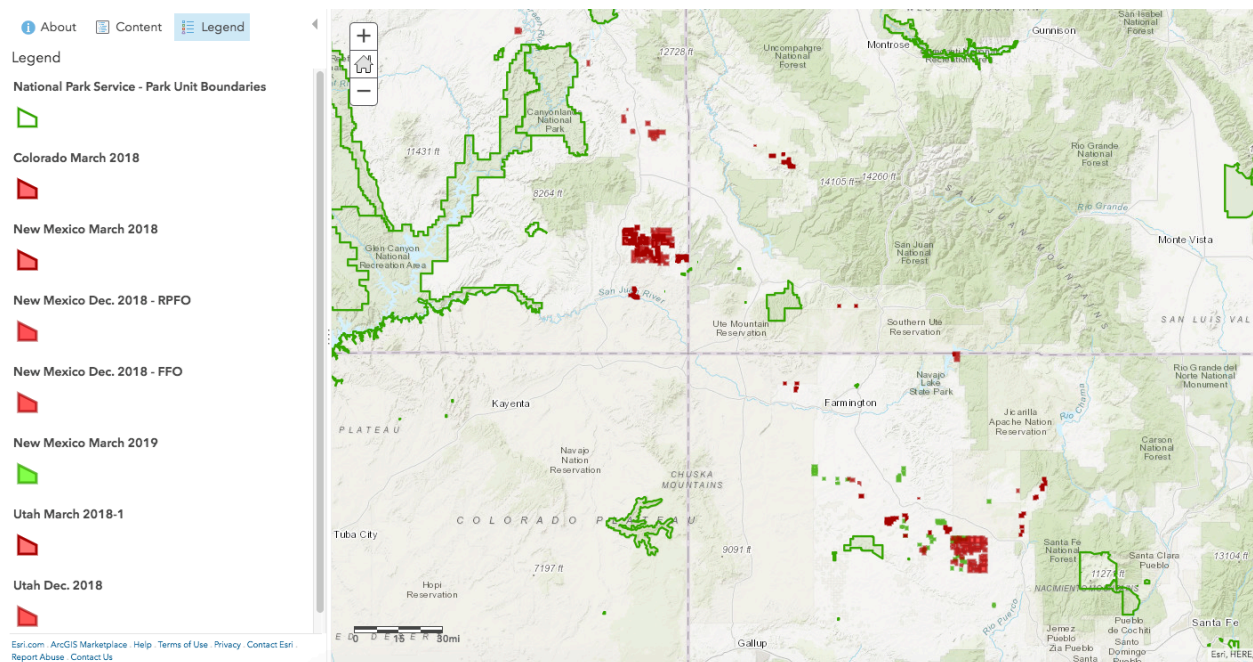
CEQ NEPA regulations define “cumulative impacts” as:

the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

40 C.F.R. § 1508.7.

This is exactly what the federal oil and gas leasing program presents—individual actions with collectively significant impacts. For example, the BLM has sold, is selling, and will be selling millions of acres of oil and gas leases in the West.

The need to consider “similar” and “cumulative” actions is underscored by the fact that the BLM has acknowledged in past EAs that the proper geographic area for analyzing and assessing the impacts of greenhouse gas emissions is on a statewide and national scale. These assessments emphasize the need for the BLM to not simply account for emissions from the proposed leasing, but likely for all greenhouse gas emissions associated with BLM-approved oil and gas leasing nationwide. Indeed, the BLM cannot claim that emissions are insignificant in the context of state or national emissions, but then fail to disclose the direct, indirect, and cumulative greenhouse gases that would result from all other “similar” and “cumulative” actions within a statewide or national scope. Thus, the BLM must assess the cumulative impacts from all of the surrounding lease parcels occurring within the same time period and geographic area.



*A map of the all of the 2018 parcels and the March 2019 parcels in the Four Corners Region. All GIS data from the BLM.*

#### **a. Social Cost of Carbon.**

An EIS must do more than merely identify impacts. An EIS must also enable the agency and other interested parties to “evaluate the severity” of the effects. *See Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989); *see also* 40 C.F.R. § 1508.27-(b) (a factor in assessing intensity or severity, and hence significance for NEPA purposes, is “the degree to which the proposed action affects public health or safety”).

BLM’s EA offers estimates of the amount of GHGs that will be emitted under the lease sale, but fails to include any meaningful discussion of the impacts of these emissions. Where information relevant to foreseeable adverse impacts is unavailable, agencies must nonetheless evaluate “such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.” 40 C.F.R. § 1502.22(b)(4).

One widely used approach to evaluating the impact of GHG emissions is to estimate the costs of those emissions to society. The federal Interagency Working Group on the Social Cost of Carbon has developed estimates of the present value of the future costs of carbon dioxide emissions as a proxy for the magnitude and severity of those impacts. The EPA has relied on a similar peer-reviewed estimate for the social cost of methane emissions, which adjusts the social cost of carbon dioxide to account for the different effects of methane on climate change and its greater global warming potential. These tools are easy to use by agencies, easy to understand by the public, and supported by years of peer-reviewed scientific and economic research. The EPA and other federal agencies have used these social cost protocols to estimate the effects of rulemakings on climate, and certain BLM field offices have used these tools in leasing level NEPA analysis. These protocols estimate the global financial cost of each additional ton of GHG pollution emitted to the atmosphere, taking into account factors such as diminished agricultural

productivity, droughts, wildfires, increased intensity and duration of storms, ocean acidification, and sea-level rise.

Here, BLM included discussion of the social cost of carbon protocol as FFO Appendix G and RPFO Appendix I, but, contrary to the agency's application of the protocol in previous lease sale, here BLM states:

To summarize, this EA does not undertake an analysis of SCC because: 1) it is not engaged in a rulemaking for which the protocol was originally developed; 2) the IWG, technical supporting documents, and associated guidance have been withdrawn; 3) NEPA does not require cost-benefit analysis; and 4) the full social benefits of oil and gas production have not been monetized, and quantifying only the costs of GHG emissions but not the benefits would yield information that is both potentially inaccurate and not useful.

FFO EA at 76; RPFO EA at 71.

Although these statements attempt to insulate the agency from including such analysis, BLM misses the fundamental NEPA obligation that employing SCC would satisfy, which is acting as a proxy for the magnitude and severity of climate impacts.

Simple calculations applying the SCC to GHG emissions from this lease sale offer a straightforward comparative basis for analyzing impacts, and identifying very significant costs. For example, the agency discloses for the FFO 4,396 MTCO<sub>2</sub>e of direct emissions, and 4,129,679.33 MTCO<sub>2</sub>e of indirect emissions, which together total 4,134,075.33 MTCO<sub>2</sub>e of emissions. FFO EA at 31. Applying the IWG central value of \$43 per ton of CO<sub>2</sub> results in a SCC of \$177,765,239.19 from the FFO lease sale.<sup>157</sup> For the RPFO, the agency discloses 1,115 MTCO<sub>2</sub>e of direct emissions, and 1,355,637 MTCO<sub>2</sub>e of indirect emissions, which together total 1,356,752 MTCO<sub>2</sub>e of emissions. RPFO EA at 28-29. Applying the IWG central value of \$43 per ton of CO<sub>2</sub> results in a SCC of \$58,340,336.00 from the RPFO lease sale. Together, the total monetized harm from these sales total over \$236 million in damages. And, as Citizen Groups discuss above, this amount is likely much greater because the BLM underestimates direct carbon emissions from the proposed leases.

Instead of considering these costs, the agency attempts to evade the necessary NEPA analysis of the magnitude and severity of GHG emission impacts. But, as noted by Judge Jackson, the SCC protocol provides such a tool. *See High Country Conservation Advocates v. U.S. Forest Serv.*, 52 F.Supp.3d 1174, 1190 (D.Colo. 2014); *see also Mont. Env'tl. Info. Ctr. v. U.S. Office of Surface Mining*, No. CV 15-106-M-DWM (D. Mont. Aug. 14, 2017) (affirming the reasoning in *High Country*). By failing to consider the costs of GHG emissions from the Proposed Action, the agency's analysis effectively assumes a price of carbon that is \$0. *See High*

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<sup>157</sup> It is important to note that, although the 2010 IWG SCC protocol did not address methane impacts, the 2013 IWG Technical Update explicitly addresses methane impacts. Thus, it is appropriate to calculate a SCC outcome that takes into account the full CO<sub>2</sub>e emissions associated with the proposed leasing.

*Country*, 52 F.Supp.3d at 1192 (holding that although there is a “wide range of estimates about the social cost of GHG emissions[,] neither the BLM’s economist nor anyone else in the record appears to suggest the cost is as low as \$0 per unit. Yet by deciding not to quantify the costs as all, the agencies effectively zeroed out the cost in its quantitative analysis.”). The agency’s failure to consider the SCC is arbitrary and capricious, and ignores the explicit directive of EO 12866.

An agency must “consider every significant aspect of the environmental impact of a proposed action.” *Baltimore Gas & Elec. Co. v. Natural Resources Def. Council*, 462 U.S. 87, 107 (1983) (quotations and citation omitted). This includes the disclosure of direct, indirect, and cumulative impacts of its actions, including climate change impacts and emissions. 40 C.F.R. § 1508.25(c). The need to evaluate such impacts is bolstered by the fact that “[t]he harms associated with climate change are serious and well recognized,” and environmental changes caused by climate change “have already inflicted significant harms” to many resources around the globe. *Massachusetts v. EPA*, 549 U.S. 497, 521 (2007); *see also id.* at 525 (recognizing “the enormity of the potential consequences associated with manmade climate change”). Among other things, the agency’s analysis must disclose “the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity[,]” including the “energy requirements and conservation potential of various alternatives and mitigation measures.” 42 U.S.C. § 4332(c); 40 C.F.R. § 1502.16(e). As explained by CEQ, this requires agencies to “analyze total energy costs, including possible hidden or indirect costs, and total energy benefits of proposed actions.” 43 Fed. Red. 55,978, 55,984 (Nov. 29, 2978); *see also* Executive Order 13514, 74 Fed. Reg. 52,117 (Oct. 5, 2009) (requiring government agencies to disclose emissions information annually from direct and indirect activities). Failing to perform such analysis undermines the agency’s decisionmaking process and the assumptions made.

Moreover, BLM measures the sales GHG emissions against a baseline of national and/or global GHG emissions—thereby marginalizing the Proposed Actions contribution to our climate crisis while concluding the agency is powerless to avoid or mitigate such impacts. FFO EA at 31; RPFO EA at 28. The EPA has cautioned “against comparing GHG emissions associated with a single project to global GHG emission levels” because it erroneously leads to a conclusion that “on a global scale, emissions are not likely to change” as a result of the project.<sup>158</sup> As noted above, CEQ has offered similar guidance, recognizing that “the totality of climate change impacts is not attributable to any single action, but are exacerbated by a series of actions including actions taken pursuant to decisions of the Federal Government. Therefore, a statement that emissions from a proposed federal action represent only a small fraction of global emissions is essentially a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether or to what extent to consider climate change impacts under NEPA.” Applying the SCC, as provided above, takes these abstract emissions and places them in concrete, economic terms. It also allows the agency to easily perform the cost-benefit analysis mandated by EO 12866, as well as BLM’s own policy. Specifically, Instruction Memorandum No. 2013-131 (Sept. 18, 2013) is reflective of the BLM’s attempt to internalize the costs of such emissions:

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<sup>158</sup> *See* Sarah E. Light, *NEPA’s Footprint: Information Disclosure as a Quasi-Carbon Tax on Agencies*, 87 Tul. L. Rev. 511, 546 (2013).

All BLM managers and staff are directed to utilize estimates of nonmarket environmental values in NEPA analysis supporting planning and other decision-making where relevant and feasible, in accordance with the attached guidance. At least a qualitative description of the most relevant nonmarket values should be included for the affected environment and the impacts of alternatives in NEPA analyses....

Nonmarket environmental values reflect the benefits individuals attribute to experiences of the environment, uses of natural resources, or the existence of particular ecological conditions that do not involve market transactions and therefore lack prices. Examples include the perceived benefits from hiking in a wilderness or fishing for subsistence rather than commercial purposes. The economic methods described in this guidance provide monetary estimates of nonmarket values. Several non-economic, primarily qualitative methods can also be used to characterize the values attributed to places, landscapes, and other environmental features. Guidance on qualitative methods for assessing environmental values, including ethnography, interviews, and surveys, is in preparation.

Ideally, economic analysis for resource management should consider all relevant values, not merely those that are easy to quantify. Utilizing nonmarket values provides a more complete picture of the consequences of a proposed activity than market data alone would allow. The BLM's Land Use Planning Handbook, Appendix D encourages inclusion of information on nonmarket values, but does not provide detail.

The agency simply cannot continue to ignore its obligation to consider the costs of GHG emissions in its decisionmaking, as it has done here.

Nor can the agency continue to tout the benefits of oil and gas development without similarly disclosing the costs. *See* 40 C.F.R. § 1502.23. BLM regularly touts the amount of money federal lease sales generate. For example, on September 7, 2017, the BLM issued a press release stating that “[i]n keeping with the Administration’s goals of promoting America’s Energy independence, the Bureau of Land Management New Mexico quarterly oil and gas lease sale resulted in competitive bids for 15,331.91 acres. The combined bids from the sale brought in \$130,855,717, which will be distributed between the federal government and New Mexico.”<sup>159</sup> This approach is misleading and frustrates the purposes of NEPA.

#### **b. Methane Emissions and Waste.**

By making absolutely no commitment on mitigation measures and BMPs to address the

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<sup>159</sup> Exhibit 6 to Citizen Groups’ Oct. 20, 2017 Comments, *BLM New Mexico Oil and Gas Lease Sale Nets More Than \$130 Million* (Sept. 7, 2017), <https://www.blm.gov/press-release/blm-new-mexico-oil-and-gas-lease-sale-nets-more-130-million>.



GHG emissions from oil and gas leasing and development, the FFO is missing a critical opportunity and, indeed, obligation, to address the serious issue of methane (“CH<sub>4</sub>”) emissions and waste. *See* FFO EA at 32; RPFO EA at 30 (recognizing requirement that industry adhere to BLM’s NTL-4A and that “BLM encourages industry to participate in the Natural Gas STAR program that is administered by the USEPA. The Natural Gas STAR program is a flexible, voluntary partnership that encourages oil and natural gas companies to adopt proven, cost effective technologies and practices that improve operational efficiency and reduce natural gas emissions.”). Such generic discussion fails to satisfy NEPA.

“There are readily available and cost-effective mitigation technologies that can drastically reduce the amount of methane lost during production. And, as discussed above, the EPA’s new global warming potential (“GWP”) estimates for methane (based on the most recent IPCC study)<sup>160</sup> of 28–36 over a 100-year period,<sup>161</sup> and 84–87 over a 20-year period underscore the importance of eliminating methane waste, which is a critical step the FFO can take *now* to reduce GHG emissions in the planning area. That the FFO failed to make the use of *any* methane mitigation technology a requirement for the future development of these parcels is inexcusable.

NASA recently released a study of methane emissions in the San Juan Basin identifying 250 large methane plumes emitted from well pads, storage tanks, pipelines, gas processing plants, and venting from the San Juan coal mine.<sup>162</sup> Together these sources make up roughly half of all basin-wide methane emissions, and all but one of these sources is from the oil and gas industry. But, the BLM has failed to include any discussion or analysis of the impacts reflected in this study.

To comply with NEPA, the BLM must take a hard look at direct, indirect, and cumulative impacts, as discussed above. 40 C.F.R. §§ 1502.16(a), (b); 1508.25(c). In evaluating impacts, the agency must discuss “[e]nergy requirements and conservation potential of various alternatives and mitigation measures,” “[n]atural or depletable resource requirements and conservation potential of various alternatives and mitigation measures,” and “[m]eans to mitigate adverse environmental impacts (if not fully covered under 1502.14(f)).” 40 C.F.R. §§ 1502.16(e), (f), (h). The FFO’s EA fails to provide any such analysis or comparison.

We emphasize, again, the “heart” of the NEPA process: BLM’s duty to consider “alternatives to the proposed action” and to “study, develop, and describe appropriate

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<sup>160</sup> *See* IPCC, *Fifth Assessment Report Climate Change 2013* at 8-58 (Old Leasing Exhibit 68).

<sup>161</sup> Interestingly, the BLM states that the GWP for methane is between 28 to 36 times that of CO<sub>2</sub> a 100-year period at the beginning of the EA. EA at 27. But, the BLM misstates the GWP for methane later on in the GHG Impacts section to be 21 to 25 times that of CO<sub>2</sub>. This is reflective of the cut and paste nature of the BLM’s EA in general. Indeed, the final EA seems to be almost exactly the same as the EA from the January 2017 lease sale. This is unacceptable, especially in light of the importance of these lease parcels.

<sup>162</sup> Christian Frankenberg, et al., *Airborne Methane Remote Measurements Reveal Heavy-Tail Flux Distribution in Four Corners Region*, PNAS, vol. 113 no. 25 (Aug. 30, 2016) available at <http://www.pnas.org/content/113/35/9734.full>.

alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.” 42 U.S.C. §§ 4332(2)(C)(iii), 4332(2)(E); 40 C.F.R. § 1502.14(a). Alternatives are critical because, “[c]learly, it is pointless to ‘consider’ environmental costs without also seriously considering action to avoid them.” *Calvert Cliffs’ Coordinating Comm., Inc. v. U.S. Atomic Energy Commn.*, 449 F.2d 1109, 1128 (D.C. Cir. 1971). Here, BLM considered only two alternatives: a “no action” alternative in which none of the nominated parcels would be offered for sale, and the “proposed action” where 25 parcels with standard terms and conditions and lease stipulations dating back to the obsolete and ineffective 2003 RMP and EIS. *See* EA 12–13 (discussing alternatives). None of these existing measures or stipulations addresses GHG emissions or methane waste.

Moreover, the FFO and RPFO fail to quantify the magnitude of methane pollution from oil and gas emissions sources within the planning area—which, given the agency’s admission that these parcels will be developed in a business-as-usual manner—is directly relevant to the proposed sale. Petroleum and natural gas systems are the biggest contributor to methane emissions in the United States, accounting for over one quarter of all methane emissions, or 202.3 million metric tons of CO<sub>2</sub>e each year (which does not include CH<sub>4</sub> that has been flared, captured, or otherwise controlled).<sup>163</sup> However, methane emission rates can differ quite dramatically from one oil and gas field to the next, and, depending on the type of mitigation and emission controls employed, emissions can range anywhere from 1% to 12% of production.<sup>164</sup> In order to sufficiently understand the scope of methane emission impacts expected from the proposed action, BLM should quantify estimated emission rates and analyze alternatives that would mitigate these impacts. However, even without specific data from the proposed action, we can assume leakage somewhere between these two extremes and, even at the low end, emissions reductions would not be trivial, particularly in a region containing the largest methane plume in the country. The agency’s refusal to consider any mitigation measures that would reduce these emissions fails to satisfy BLM’s NEPA obligations.

Even setting aside the issue of climate change, every ton of methane emitted to the atmosphere from oil and gas development is a ton of natural gas *lost*. Every ton of methane lost to the atmosphere is therefore a ton of natural gas that cannot be used by consumers. Methane lost from federal leases will also not yield royalties otherwise shared between federal, state, and local governments. This lost gas reflects serious inefficiencies in how BLM oil and gas leases are

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<sup>163</sup> *See* Exhibit 7 to Citizen Groups’ Oct. 20, 2017 comments, U.S. EPA, *Executive Summary: Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015*, at ES-6 (April 2017) available at [https://www.epa.gov/sites/production/files/2017-02/documents/2017\\_executive\\_summary.pdf](https://www.epa.gov/sites/production/files/2017-02/documents/2017_executive_summary.pdf).

<sup>164</sup> *See, e.g.,* David T. Allen, et. al., *Measurements of Methane Emissions at Natural Gas Production Sites in the United States*, PNAS (Aug. 19, 2013) (finding emissions as low as 1.5% of production at select sites) (Old Leasing Exhibit 66); Anna Karion, et. al., *Methane emissions estimate from airborne measurements over a western United States gas field*, GEOPHYSICAL RESEARCH LETTERS (Aug. 27, 2013) (finding emissions of 6 to 12 percent, on average, in the Uintah Basin) (Old Leasing Exhibit 67).

developed. Energy lost from oil and gas production – whether avoidable or unavoidable – reduces the ability of a lease to supply energy, increasing the pressure to drill other lands to supply energy to satisfy demand. 40 C.F.R. §§ 1502.16(e)-(f). In so doing, inefficiencies create indirect and cumulative environmental impacts by increasing the pressure to satisfy demand with new drilling. 40 C.F.R. §§ 1508.7, 1508.8(b).

**c. Managing for Community and Ecosystem Resiliency.**

Critically absent from the FFO and RPFO's analyses is any mention of the climate change impacts already affecting the planning area. 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."<sup>165</sup> There is absolutely no mention, much less analysis, in the EA of these growing impacts or the necessity to employ climate mitigation measures to ensure landscape and human resiliency and their ability to adapt and respond to climate change impacts.

Beyond mitigating climate change by reducing contributions of GHG pollution to the atmosphere, the BLM can also help promote ecological resiliency and adaptability by reducing external anthropogenic environmental stresses (like oil and gas development) as a way of best positioning public lands, and the communities that rely on those public lands, to withstand what is acknowledged ongoing and intensifying climate change degradation. It is crucial for the BLM to close the gap in their decision-making regarding the cumulative contribution of oil and gas development authorized in the proposed action, particularly given the conflict between such authorization and the agency's responsibility to manage for healthy, resilient ecosystems. Although the FFO and RPFO have recognized the threat of climate change, the agency's decision-making is not reflective of this harm and the agency fails to take the many necessary and meaningful steps to ameliorate the impacts to communities, landscapes, and species. The FFO and RPFO failure to even mention the relationship between climate change and these impacts is a fundamental deficiency in the EA.

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<sup>165</sup> GAO Report, *Climate Change: Agencies Should Develop Guidance for Addressing the Effects on Federal Land and Water Resources* (2007) (included previously with Citizen Groups June 17, 2016 comments as Scoping Exhibit 35); *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) (Old Leasing Exhibit 36); Melanie Lenart, et. al. *Global Warming in the Southwest: Projections, Observations, and Impacts* (2007) (Old Leasing Exhibit 37) (describing impacts from temperature rise, drought, floods and impacts to water supply on the southwest).

## **E. The BLM Fails to Take a “Hard Look” at Hydraulic Fracturing.**

The BLM also fails to take a hard look at hydraulic fracturing (or “fracking”) impacts from oil and gas leasing and development in the FFO and RPFO planning areas. 40 C.F.R. § 1506.6. BLM recognizes fracking related impacts to a variety of resources, including air quality impacts and water resource impacts, yet fails to provide the required hard look that NEPA demands. BLM’s discussion on the impacts of fracking is greatly reduced from prior leasing EAs, and in each instance where the BLM actually mentions it, the BLM either relies on vague and undefined future mitigation, cursorily attempts to explain why these impacts actually are insignificant, or ignores these impacts altogether—all without ever providing the hard look analysis that NEPA demands. Although BLM included additional information in FFO Appendix F and RPFO Appendix E: Phases of Oil and Gas Development, it offers little more than a factual background on the hydraulic fracturing process without actually analyzing impacts to people and resource values in the planning area. FFO EA at 71; RPFO EA at 59.

To start, the BLM fails to mention that the advent of hydraulic fracturing coupled with horizontal drilling means that additional, larger gas wells are possible, resulting in increased numbers of compressor stations. Low-frequency noise from compressor stations near homes has been linked to “noise-induced hearing loss, oxidative stress, increased cardiovascular effects, endocrine disruption, and an increased risk of developing diabetes. There is also a growing concern that low frequency noise (10–250 Hz) can disrupt sleep, contribute to poorer performance (e.g., poor concentration and attention span), and cause annoyance.”<sup>166</sup> Despite these impacts, the BLM fails to include a section analyzing the impacts from increased noise.

With regard to VOC emissions from fracked wells, the EA cites EPA-promulgated air quality regulations for completion of hydraulically fractured gas wells, and states that “[t]hese rules require air pollution mitigation measures that reduce emissions of volatile organic compounds during gas well completions.” EA at 25. However, the EA fails to provide what these mitigation measures actually are, or quantify how such measures “constitute an adequate buffer against the negative impacts [and] whether the mitigation measures will render such impacts so minor as to not warrant an EIS.” *National Parks*, 241 F.3d at 735.

Critically, the agency eliminates from the EA any discussion of fracking’s myriad impacts on human health and safety, relying instead on generic discussions of the fracking process in appendices. FFO EA at 72; RPFO EA at 60. Failure to provide detailed analysis, despite the recognition that “one or more residences typically exist within a mile of nominated lease parcels,” and that the “Proposed Action would result in localized impacts to air quality for nearby residences from emissions of particulate matter, VOCs, and HAPs,” not only violates NEPA’s hard look obligation, but is an unconscionable affront to local communities. FFO EA at 11, 28; RPFO EA at 8, 24.

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<sup>166</sup> Soneja S. Boyle et al., A Pilot Study to Assess Residential Noise Exposure Near Natural Gas Compressor Stations, PLOS ONE, <http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0174310&type=printable>.

BLM and the New Mexico Oil & Gas Conservation Division's ("NMOCD") lack of inspection capacity also significantly undermines responsible oil and gas development in the state.<sup>167</sup> As of 2012, NMOCD has only 13 field inspectors to oversee 53,000 producing wells—an impossible task.

## **F. The BLM Fails to Take a “Hard Look” at Impacts to Water Resources.**

### **a. Groundwater**

The BLM completely fails to consider the impacts of the proposed action on groundwater. For example, the BLM cites the astounding statistic that “recent horizontally drilled wells within the Mancos/Gallup formations of the San Juan basin used approximately 1,020,000 gallons of water on average per well for drilling and completion (3.1 acre-feet)[,]” and that “Groundwater rights held by the oil and gas industry in the San Juan Basin were estimated to be 6,674 acre-feet per year.” FFO EA at 38. BLM also calculates “Drilling and completion of potential oil and gas wells in the nominated lease parcels was estimated to use approximately 28.8 million gallons.” FFO EA at 39.

There is no discussion of how the groundwater drawdown from developing these oil wells will impact the land, wildlife, livestock, or human communities in the planning area, or how these impacts are further compounded in a drought-stricken southwest. There is no discussion of alternatives—such as the use of nitrogen fracking, which is already occurring in the area and which was referenced by the FFO in a scoping meeting handout for the Mancos Shale RMP—or the tradeoff between water savings and air quality impacts of employing these technologies. There is no discussion of how impacts to groundwater will be mitigated, let alone with a sufficient enough buffer to avoid significance. Quite simply, the agency's EA does not satisfy the hard look NEPA demands.

As with other resource values, BLM's shell-game approach to NEPA analysis fails to satisfy the agency's explicit mandate to analyze all reasonably foreseeable impacts at the earliest practicable point, which, here, clearly requires assessment prior to the March 2019 lease sale. *See New Mexico ex rel. Richardson*, 565 F.3d at 718. Unspecified mitigation and unsupported conclusions fail to demonstrate an “adequate buffer against the negative impacts” and fail to determine “whether the mitigation measures will render such impacts so minor as to not warrant an EIS.” *National Parks*, 241 F.3d at 735.

Additionally, it is well established that the Mancos Shale formation, and groundwater associated with Mancos Shale beds, contains high concentrations of pollutants including nitrate, selenium, and uranium.<sup>168</sup> Prior to authorizing leases that will foreseeably result in Mancos Shale drilling, the BLM must analyze the potential for drilling and related operations—including produced water and frack fluid storage and disposal, drilling mud and cuttings storage and

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<sup>167</sup> *See* Earthworks, *Enforcement Report: New Mexico Oil & Gas Conservation Division* (May 2012), <https://www.earthworksaaction.org/files/publications/NM-OCD-Enforcement-Report.pdf>.

<sup>168</sup> *See* U.S. Dep't of Energy, *Natural Contamination from the Mancos Shale*, LMS/S07480 (April 2011), [http://energy.gov/sites/prod/files/S07480\\_NatContRpt.pdf](http://energy.gov/sites/prod/files/S07480_NatContRpt.pdf).

disposal, cross-contamination of aquifers from induced fractures and/or wellbore communication—to result in contamination of ground and/or surface waters with selenium, uranium, or other Mancos Shale contaminants.

Given the agency’s admission that groundwater contamination could occur—as well as a recently published study demonstrating drinking-water well contamination from fracking<sup>169</sup>—the agency’s conclusion that there is no possibility of impacts to groundwater remains unsupported.

## **b. Surface Water**

BLM is remarkably silent with regard to potential impacts to surface waters, and indeed the FFO and RPFO eliminates surface water quality and quantity from any discussion in the EA. FFO EA at 12; RPFO EA at 9. There is no analysis of specific mitigation measures or any other explanation of how these impacts are otherwise so insignificant as to not warrant an EIS. Such a cursory approach by the agency fails to comply with NEPA’s hard look requirement.

## **G. The BLM Fails to Take a “Hard Look” at Induced Seismic Risks.**

BLM completely fails to discuss the possibility of induced seismic risks in the EAs as well. For example, BLM did not look at whether there are active fault lines in the area, or fault lines that could be activated by wastewater injection. Furthermore, BLM failed to consider the growing body of scientific evidence showing that increases in wastewater injections might increase seismic activity in the area.<sup>170</sup>

Pore-pressure models have demonstrated that a combination of brine production and wastewater injection near faults in Azle, Texas, for example, generate subsurface pressures sufficient to induce earthquakes on near-critically stressed faults in the area.<sup>171</sup> But earthquake swarms have been observed to be associated with extraction as well, not just injection.<sup>172</sup>

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<sup>169</sup> See Thomas H. Darrah, et al., *Noble Gasses Identify the Mechanisms of Fugitive Gas Contamination in Drinking-Water Wells Overlying the Marcellus And Barnett Shales*, PNAS (Aug. 12, 2014) <http://www.pnas.org/content/111/39/14076.full> (identifying “discrete clusters of fugitive gas contamination . . . that showed increased contamination through time” of drinking-water wells as a result of nearby hydraulic fracturing).

<sup>170</sup> Ellsworth, W.L. Injection-Induced Earthquakes, 341 *Science* 1225942 (2013) (“Ellsworth 2013”), <https://scits.stanford.edu/sites/default/files/science-2013-ellsworth.pdf>; Keranen, Katie et al., Potentially Induced Earthquakes in Oklahoma, USA: Links Between Wastewater Injection and the 2011 Mw5.7 Earthquake Sequence, *Geology* doi:10.1130/G34045.1 (March 26, 2013) (“Keranen 2013”) [https://profile.usgs.gov/myscience/upload\\_folder/ci2013May3015351271984Keranen%20etal%20Geology%202013.pdf](https://profile.usgs.gov/myscience/upload_folder/ci2013May3015351271984Keranen%20etal%20Geology%202013.pdf).

<sup>171</sup> Hornbach, Matthew J. et al., Causal Factors for Seismicity near Azle, Texas, *Nature Communications* 6:6728 (April 21, 2015), 1, available at: <http://www.nature.com/ncomms/2015/150421/ncomms7728/full/ncomms7728.html>.

<sup>172</sup> *Id.* at 5-6.

Induced seismicity is often associated with subsurface pressure changes, and extensional stresses will concentrate on the boundary of the fluid draw-down region, promoting normal faulting.<sup>173</sup> The fact that there has not yet been much seismic activity in the area does not preclude the possibility that more oil and gas activity will lead to earthquakes.

The BLM is required to look at the region's fault environment by identifying and characterizing all faults in these areas based on sources including but not limited to the USGS Quaternary Fault and Fold database. In its analysis, BLM should assess its ability to identify all faults in these areas, including strike-slip faults and deep faults that can be difficult to detect. BLM should also consider the background seismicity of oil- and gas-bearing lands including the history of earthquake size and frequency, fault structure (including orientation of faults), seismicity rates, failure mechanisms, and state of stress of faults, as well as the geology of oil- and gas-bearing lands including pore pressure, formation permeability, and hydrological connectivity to deeper faults. The BLM also must analyze the potential for fracking and wastewater disposal to induce earthquakes, and the possible risks of induced seismicity in the specific areas for lease, including structures in the area that are at risk. Moreover, many of the archeological features in the region, including the delicately balanced walls of Pueblo Bonito and other Great Houses associated with Chaco Culture National Historical Park and outlying sites, are particularly susceptible to seismic activity. Completely omitting any discussion of the risks from induced seismicity does not meet NEPA requirements.

#### **H. BLM Fails to Take a “Hard Look” at Impacts to Human Health, Including Direct Impacts and Cumulative Impacts.**

The BLM's final FFO EA also fails to include *any* meaningful, site-specific analysis of the human health impacts that will result from oil and gas leasing and development in the planning area. 40 C.F.R. § 1506.6. As mentioned above, the agency has essentially eliminated public health and safety as an issue for discussion. FFO EA at 9, 11 (listing public health and safety impacts among the “Issues Considered, Analyzed in Brief with Statement of Rationale, and Dismissed from Further Analysis” in Table 1.4). And the RPFO EA is similarly devoid of any meaningful discussion. *See* RPFO EA at 7- 8 (also listing human health and safety effects among the “Issues Considered, Analyzed In Brief with Statement of Rationale, and Dismissed from Further Analysis” in Table 1.3).

Protecting public health is fundamental to NEPA's underlying purpose. NEPA was enacted in part “to stimulate the health and welfare of man,” 42 USC § 4321, and its requisite evaluation of significance mandates that agencies take into account the degree to which their proposed actions affect public health or safety. 40 CFR § 1508.27 (b) (2). NEPA requires federal agencies “to use all practicable means, consistent with other essential considerations of national policy” to “assure for all Americans safe, healthful, productive and aesthetically and culturally pleasing surroundings.” 42 USC 4331 (b). The broad array of effects agencies must consider reflects a socio-ecological model of health that takes into account environmental, social, and structural determinants. “Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic,

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<sup>173</sup> *Id.*

cultural, economic, social, or health, whether direct, indirect, or cumulative.” 40 CFR § 1508.8. In addition, NEPA’s use of the term “human environment” expressed Congressional intent for NEPA to promote public policy attentive to the inexorable link between human well-being and environmental integrity.<sup>174</sup> Senator Henry Jackson, the key author of NEPA, expressed this intent by stating: “When we speak of the environment, basically, we are talking about the relationship between man and these physical and biological and social forces that impact upon him. A public policy for the environment basically is not a public policy for those things out there. It is a policy for people.”<sup>175</sup>

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

The RPFO and FFO EAs may contain the word “health” in a few sections, but they lack any meaningful analysis of reasonably foreseeable human health impacts, especially in the context of cumulative impacts, social determinants of health, and environmental justice. Despite cursory mention in a table dismissing health as a potentially significant impact altogether, and as background information in the context of air quality standards, none of these references to the human health impacts of oil and gas leasing and development include any actual analysis of the site-specific effects of *these* March lease sales and subsequent reasonably foreseeable development on the leased parcels. The FFO’s shell-game approach to NEPA fails to satisfy the agency’s explicit mandate to analyze all reasonably foreseeable impacts at the earliest practicable point, which, here, clearly requires assessment prior to the March 2019 lease sale. *See New Mexico ex rel. Richardson*, 565 F.3d at 718. And recently, the court in *Wilderness Workshop v. Bureau of Land Mgmt.*, 342 F. Supp. 3d 1145 (D. Colorado, 2018), affirmed BLM’s obligation to analyze reasonably foreseeable human health effects *now*, rather than deferring to the APD stage. In *Wilderness Workshop*, Judge Babcock indicated that NEPA requires BLM to conduct a site-specific analysis of human health impacts at the leasing stage. Judge Babcock cited *Pennaco Energy*, 377 F. 3d at 1151-1152 and stated, “in the context of oil and gas leasing, the site-specific

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<sup>174</sup> Rajiv Bhatia and Aaron Wernham, *Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice*, 116 ENVIRONMENTAL HEALTH PERSPECTIVES 991 (Apr. 16, 2008) (Noting that “the statutory and procedural requirements of EIA provide a powerful and underutilized mechanism to institutionalize a holistic, cross-sectoral approach to addressing health in public policy” and describing the then-emerging and now well-established practice of health impact assessment as a “catalyst” for integrating health considerations into environmental assessments under NEPA and its state analogs).

<sup>175</sup> *Id.*



impacts occur in the later stages of *leasing* and development.” *Wilderness Workshop*, 342 F. Supp. 3d 1145 at 1163 (emphasis added).

The EA’s failure to take a hard look at the health impacts of oil and gas activities on these leases, impacts that are reasonably foreseeable, is especially concerning given the EA’s acknowledgement that “one or more residences typically exist within a mile of the nominated lease parcels.” RPFO EA at 8; *See also* FFO EA at 11. Worse yet, the RPFO EA acknowledges that “there are low-income, minority, and Native American populations of concern (or ‘Environmental Justice Populations,’ defined under EO 12898), that may be disproportionately impacted and potentially adversely impacted by activities resulting from the development of the nominated lease parcels.” RPFO EA at 39. Yet both the RPFO EA and the FFO EA fail to provide any meaningful analysis of disproportionate or cumulative health impacts to these populations. Specifically, Table 7.2 in the RPFO EA and Table 3.11.2 in the FFO EA purport to analyze such environmental justice impacts, but a table that essentially lists possible effects and a “yes/no” conclusion, without more, does not satisfy NEPA’s “hard look” requirement.<sup>176</sup> The EAs contain nominal discussions of cumulative impacts following the tables, but improperly defer meaningful analysis to a later stage, stating “If future development occurs on the proposed lease parcels, identified and affected EJ populations will be given the opportunity to identify any environmental impacts that might arise from development that could have disproportionately high and adverse effects.” FFO EA at 51; RPFO EA at 44. Further, these tables and accompanying text in the FFO EA and the RPFO EA are almost identical to one another, word-for-word (including the quantitative information, on the rare occasion that it is provided in this context). Copying and pasting an already deficient table and section from one EA to another ignores the unique environmental justice and health concerns specific to each lease sale and falls far short of the “hard look” at health and environmental justice impacts that NEPA requires.

Both the RPFO EA and the FFO EA attempt to justify their cursory treatment and subsequent dismissal of health impacts by invoking Lease Stipulation BIA-1, which designates a 500-foot setback from residences for parcels located on BIA-managed surface. RPFO EA at 8; FFO EA at 11. But these setbacks do not discharge BLM’s duty to conduct a meaningful analysis of health impacts, including cumulative impacts. For one, a setback of only 500 feet may not be adequately protective of public health and safety. Multiple peer-reviewed scientific papers have identified adverse health effects arising from exposure to unconventional oil and gas drilling within a much larger radius of residences, potentially up to ten miles.<sup>177</sup> In fact, a setback may

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<sup>176</sup> *See, e.g., Klamath-Siskiyou Wildlands Center v. BLM*, 387 F.3d. 989, 995 (9<sup>th</sup> Circ. 2004) (Finding that a table in BLM’s EA, purporting to estimate cumulative effects, was merely a list with yes/no boxes for significance, not “useful analysis,” and some boxes in which “No” was checked, ostensibly implying no impact, contained contradictory references to notes stating that “[t]hese affected critical elements would be impacted by implementing the proposed action.”); *See also Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F. 3d. 1372, 1380 (9<sup>th</sup> Circ. 1998)(“general statements about ‘possible effects’ and ‘some risk’ do not constitute a ‘hard look’ absent a justification regarding why more definitive information could not be provided”).

<sup>177</sup> *See, e.g., Lisa M. McKenzie et al., Birth Outcomes and Maternal Resident Proximity to Natural Gas Development in Rural Colorado*, 122 ENVIRONMENTAL HEALTH PERSPECTIVES 412 (April 2014) (Finding an increased risk of congenital heart and neural tube defects in babies born

not protect against certain health hazards *at all*, especially for people already facing disproportionate health risks due to cumulative social and environmental stressors. For example, a recent study and Health Impact Assessment in Maryland's Marcellus Shale found that a much greater distance of *2000 feet* from residential property could be an "adequate" setback that "can minimize exposure" to air pollution from unconventional natural gas development and production.<sup>178</sup> Yet, even with that setback as a mitigating factor, the study ranked Air Quality as a fracking-related hazard of High concern for its potential negative health impacts after taking into account additional evaluation criteria, such as presence of vulnerable populations, duration and frequency of exposure, and likelihood and severity/magnitude of health effects.<sup>179</sup> And for many health impacts, including those related to social determinants of health and cumulative exposures/risks, the study found that setbacks were unlikely to minimize risks or mitigate effects *at all*.<sup>180</sup> In addition, these setbacks apply *only* to parcels on BIA-managed surface. This leaves ¼ of the March lease sale parcels managed by the RPFO and 4 of the parcels managed by the FFO without any setback protections at all. Thus, while setbacks may help reduce the risk of some, but not all, health impacts from oil and gas activity, they do not necessarily render these risks "insignificant," especially in light of the "context" and "intensity" significance factors NEPA requires BLM to consider. *See infra*, at 17, 22, and 49, and 40 CFR § 1508.27. Importantly, these factors include "[t]he degree to which the proposed action affects public health or safety", 40 C.F.R. § 1508.27(b)(2), and "[w]hether the action is related to other actions

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to mothers living within 10 miles of a natural gas well); Janet Currie *et al.*, *Hydraulic Fracturing and Infant Health: New Evidence from Pennsylvania*, 3 SCIENCE ADVANCES e1603021 (Dec. 13, 2017) (Finding evidence of negative health effects of in utero exposure to fracking sites within 3 km, or about 1.86 miles, of a mother's residence, with the largest health impacts seen within 1 km, or about 0.62 miles); Ellen Webb *et al.*, *Potential Hazards of Air Pollutant Emission from Unconventional Oil and Natural Gas Operations on the Respiratory Health of Children and Infants*, 31 REV. ENVIRONMENTAL HEALTH 225-243 (Jun. 1, 2016), at 236 (Noting that many unconventional oil and gas setback rules, for setbacks of 1000 feet or less, do not adequately protect health, especially children's respiratory health, that "the majority of municipal setback ordinances are not supported by empirical data," and calling for a one-mile minimum for setbacks between drilling facilities and schools, hospitals, and occupied dwellings in light of the heightened health risks of residing within ½ mile or less of unconventional oil and gas drilling sites).

<sup>178</sup> *See, e.g.*, Meleah D. Boyle *et al.*, *Hazard Ranking Methodology for Assessing Health Impacts of Unconventional Natural Gas Development and Production: The Maryland Case Study*, 11 PLOS ONE e0145368 (Jan. 4, 2016) (Assigning setback effectiveness a "positive" value of 1 if it is anticipated to minimize health effects, and a "negative" value of 2 if it is not anticipated to minimize health effects, in evaluating the "hazard rankings" for a variety of unconventional natural gas drilling impacts. Notably, there is no "zero" value by which setbacks *eliminate* health risks or health effects. And, for effects related to water quality, seismic activity, social determinants of health, healthcare infrastructure, cumulative exposures/risks, and occupational health and safety, the authors determined that, at least in that study area (Marcellus Shale in Maryland), setbacks were not anticipated to minimize or mitigate health risks at all).

<sup>179</sup> *Id.* (Table 3).

<sup>180</sup> *Id.*

with individually insignificant but cumulatively significant impacts.” 40 C.F.R. § 1508.27(b) (7). And the mere mention of these setbacks in a table in the EA certainly does not obviate the need to perform the thorough analysis of reasonably foreseeable health impacts that a NEPA “hard look” requires at the leasing stage.

In addition, both the RPFO EA and the FFO EA mention “health” in their discussion of air quality impacts, but they do not actually *analyze* the health effects of these lease sales. Mention of “health” in the discussion of air quality impacts is confined to general statements that existing regulations, such as the National Ambient Air Quality Standards (NAAQS), “are set at a level to protect public health.” RPFO EA at 16; FFO EA at 20. This is not an acceptable substitute for a meaningful analysis of reasonably foreseeable health effects, especially in light of the Physicians for Social Responsibility’s key finding that, when it comes to fracking, “growing evidence shows that regulations are simply not capable of preventing harm.”<sup>181</sup> There is no excuse for failing to provide more detailed information about specific air quality related health impacts at the leasing stage, especially when there are already opportunities to collect more localized, site-specific air monitoring data. For example, the Counselor Health Impact Assessment-Hozhoogo’na’ada Committee (HIA-HNDA Committee) submitted an information letter to BLM regarding the December lease sale, in which they described plans to conduct a cultural, spiritual, and health impact assessment (HIA-HNDA) of oil drilling operations in the Navajo Nation area of Counselor, Torreon-Star Lake, and Ojo Encino Chapters in New Mexico, and urged BLM to take a hard look at human health impacts. They have already conducted air monitoring in the northern and central portions of the Counselor Chapter, where heavy oil and gas drilling has occurred. Similarly, both EAs discuss the Air Quality Index (AQI) as an indicator of air pollution that may affect human health, but they provide only broad county-level AQI data and generalized statements about the categories of health risks corresponding to a given AQI value, despite the fact that local air quality data is readily available in real time at the zip code level on EPA’s AirNow.gov page.<sup>182</sup>

Nowhere in the EAs does BLM mention the HIA-HNDA, or even acknowledge that more localized air monitoring, specific to the lease sales and reasonably foreseeable development in the region, is not only necessary and feasible, but also *ongoing*. Instead, the EAs dismiss air quality related health concerns altogether by improperly relying on general statements and overbroad regional air quality technical reports, county-level air quality index (AQI) data, and NAAQS attainment status, none of which adequately reflects the site-specific exposures, risks, and reasonably foreseeable health impacts of the lease sales.

Scientific research continues to raise concerns about the health risks of living in close proximity to oil and gas wells. There are several notable scientific papers BLM should consider in this context. First, a recent review identified 15 different components of unconventional oil and gas development, everything from trucks and tanks to chemicals and venting, which can

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<sup>181</sup> Physicians for Social Responsibility and Concerned Health Professionals of NY, Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking, Fifth Edition, March 13, 2018 (“PSR 2018”).

<sup>182</sup> U.S. Environmental Protection Agency, AirNow: Air QUALITY INDEX (AQI) BASICS (Aug. 31, 2016), *Available at* <https://airnow.gov/index.cfm?action=aqibasics.aqi>

present a chemical, physical and/or safety hazard.<sup>183</sup> Second, a recent study found that babies whose mothers lived in close proximity to multiple oil and gas wells were 30% more likely to be born with defects in their heart than babies born to mothers who did not live close to oil and gas wells.<sup>184</sup> In addition, researchers have begun to apply the growing body of evidence documenting how the cumulative effects of social and environmental stressors produce health disparities<sup>185</sup>

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<sup>183</sup> John L. Adgate *et al.*, *Potential Public Health Hazards, Exposures and Health Effects from Unconventional Natural Gas Development*, 48 ENVIRONMENTAL SCIENCE & TECHNOLOGY 8307 (Feb. 24, 2014) (previously included as Exhibit 14 in Citizen Groups Sept. 23, 2014 comments on the January 2015 lease sale).

<sup>184</sup> Lisa M. McKenzie *et al.*, *Birth Outcomes and Maternal Resident Proximity to Natural Gas Development in Rural Colorado*, 122 ENVIRONMENTAL HEALTH PERSPECTIVES 412 (April 2014) (previously included as Exhibit 15 in Citizen Groups Sept. 23, 2014 comments on the January 2015 lease sale).

<sup>185</sup> See, e.g., Rachel Morello-Frosch *et al.*, *Understanding the Cumulative Impacts of Inequalities in Environmental Health: Implications for Policy*, 30 HEALTH AFFAIRS 879 (May 2011) (Identifying four key concepts underlying the emerging knowledge about cumulative impacts of environmental and social stressors: “First, health disparities between groups of different racial or ethnic makeup or socioeconomic status are significant and persistent, and exist for diseases that are linked to social and environmental factors. Second, inequalities in exposures to environmental hazards are also significant and persistent, and are linked to adverse health outcomes. Third, intrinsic biological and physiological factors—for example, age or genetic makeup—can modify the effects of environmental factors and contribute to differences in the frequency and severity of environmentally related disease. And fourth, extrinsic social vulnerability factors at the individual and community levels—such as race, sex, and socioeconomic status—may amplify the adverse effects of environmental hazards and can contribute to health disparities.”). In addition, the U.S. EPA and numerous states have called for, and developed guidance on, cumulative impact analyses, including cumulative risk assessments and health impact assessments (HIAs), that analyze multiple environmental stressors in conjunction with social stressors, environmental justice considerations, and social determinants of health. See, e.g., U.S. ENVIRONMENTAL PROTECTION AGENCY, FRAMEWORK FOR CUMULATIVE RISK ASSESSMENT (May 2003), Available at [https://www.epa.gov/sites/production/files/2014-11/documents/frmwrk\\_cum\\_risk\\_assmnt.pdf](https://www.epa.gov/sites/production/files/2014-11/documents/frmwrk_cum_risk_assmnt.pdf); MINNESOTA POLLUTION CONTROL AGENCY, CUMULATIVE IMPACT ANALYSIS (last visited Feb. 19, 2019) Available at <https://www.pca.state.mn.us/air/cumulative-impact-analysis> (Noting that “People’s health is affected by many outside factors including multiple sources of pollution and other social conditions and stressors. Some people and communities are burdened by higher levels of pollution and more social stressors than others.”; CUMULATIVE IMPACTS SUBCOMMITTEE, ENVIRONMENTAL JUSTICE ADVISORY COUNCIL TO THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION, STRATEGIES FOR ADDRESSING CUMULATIVE IMPACTS IN ENVIRONMENTAL JUSTICE COMMUNITIES (March 2009), Available at [https://www.nj.gov/dep/ej/docs/ejac\\_impacts\\_report200903.pdf](https://www.nj.gov/dep/ej/docs/ejac_impacts_report200903.pdf) (Identifying adverse cumulative impacts of exposures to multiple environmental burdens in “environmental justice” communities as one of “the most critical and pertinent Environmental Justice issues requiring state action and attention”).

specifically in the oil and gas drilling context.<sup>186</sup> One study in the Marcellus shale in Maryland ranked social determinants of health, (including crime, injuries, mental health, sexually transmitted infections, and substance abuse) as a fracking-related hazard of the highest concern with respect to public health impacts, along with air quality and health care infrastructure.<sup>187</sup> Cumulative risks, too, were considered their own category of fracking-related public health hazard, and ranked as a “moderately high” concern (along with water quality, noise, and traffic).<sup>188</sup> In general, the research indicates that the potential cumulative effects of social and environmental stressors and social determinants of health in the context of oil and natural gas activity are twofold: 1) they can increase the *risk of exposure* and *vulnerability* to the adverse health impacts of oil and gas drilling (e.g. pollution sources are often located closer to “environmental justice” communities, underlying health conditions can increase vulnerability to new pollution-related health impacts, and new pollution-related health impacts can exacerbate existing health and socioeconomic stressors); and 2) they can present obstacles to diagnosing, managing, treating, and mitigating adverse health impacts (e.g. lack of access to health care providers makes it more difficult to manage asthma). Thus, rather than merely noting that health impacts may occur, and that adverse and/or disproportionate impacts are likely to occur in environmental justice populations, BLM must now take a hard look at the reasonably foreseeable health impacts of its actions, including cumulative impacts as they relate to social determinants of health and environmental justice. These social determinants can include both positive and negative factors. Most broadly, social determinants of health that BLM should consider are:

conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks. Conditions (e.g., social, economic, and physical) in these various environments and settings (e.g., school, church, workplace, and neighborhood) have been referred to as ‘place.’ In addition to the more material attributes of ‘place,’ the patterns of social engagement and sense of security and well-being are also affected by where people live. Resources that enhance quality of life can have a significant influence on population health outcomes. Examples of these resources include safe and affordable housing, access to education, public safety, availability of healthy foods, local emergency/health services, and environments free of life-threatening toxins.<sup>189</sup>

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<sup>186</sup> See, e.g., Susan Kinnear et al., *The Need to Measure and Manage the Cumulative Impacts of Resource Development on Public Health: An Australian Perspective* (May 15, 2013), Available at <https://www.intechopen.com/books/current-topics-in-public-health/the-need-to-measure-and-manage-the-cumulative-impacts-of-resource-development-on-public-health-an-au>

<sup>187</sup> Meleah D. Boyle et al., *Hazard Ranking Methodology for Assessing Health Impacts of Unconventional Natural Gas Development and Production: The Maryland Case Study*, 11 PLOS ONE e0145368 (Jan. 4, 2016)

<sup>188</sup> *Id.*

<sup>189</sup> Office of Disease Prevention and Health Promotion, *Healthy People 2020: Social Determinants of Health*, Available at <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health>

The CEQ Guidance on environmental justice in the NEPA process specifically directs agencies to incorporate relevant underlying health data, and what amounts to social determinants of health, into their NEPA analyses, and to use this data to identify cumulative risks and reasonably foreseeable cumulative effects. It emphasizes the importance of using public health data to identify “the potential for multiple or cumulative exposure to human health or environmental hazards in the affected population and historical patterns of exposure to environmental hazards, to the extent such information is reasonably available...”<sup>190</sup> and notes that “Agencies should consider these multiple, or cumulative effects, even if certain effects are not within the control or subject to the discretion of the agency proposing the action.”<sup>191</sup> It also embraces a broad, socio-ecological model of health that is consistent with the language and purpose of NEPA. An additional guiding principle is that “Agencies should recognize the interrelated cultural, social, occupational, historical, or economic factors that may amplify the natural and physical environmental effects of the proposed agency action. These factors should include the physical sensitivity of the community or population to particular impacts; the effect of any disruption on the community structure associated with the proposed action; and the nature and degree of impact on the physical and social structure of the community.”<sup>192</sup> While the RPFO and FFO EAs contain tables listing possible effects on “environmental justice populations,” these tables fail to take any underlying *health* data into account, or to analyze the “nature and degree” of any specific health impacts at all. The dismissal of health effects as insignificant in both the RPFO and FFO EAs is thus especially problematic in light of the tables’ findings that the lease sales will have adverse, disproportionate effects on “environmental justice” populations. Neither EA contains any explanation for the failure to analyze specific health effects in light of reasonably foreseeable adverse, disproportionate impacts to “environmental justice” populations.

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.<sup>193</sup> A comprehensive review of the risks and harms of fracking to public health came to several key findings related to air pollution, including: (1) “drilling and fracking contribute to toxic air pollution and smog (ground-level ozone) at levels known to have health impacts,” (2) “public health problems

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<sup>190</sup> Council on Environmental Quality, ENVIRONMENTAL JUSTICE: GUIDANCE UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT (December 10, 1997) at 9.

<sup>191</sup> *Id.*

<sup>192</sup> *Id.*

<sup>193</sup> 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); 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>.

associated with drilling and fracking include poor birth outcomes, reproductive and respiratory impacts, cancer risks, and occupational health and safety problems; and (3) “fracking infrastructure poses serious potential exposure risks to those living near it.”<sup>194</sup>

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.<sup>195</sup> 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.<sup>196</sup> 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.<sup>197</sup>

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.<sup>198</sup> 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.”<sup>199</sup> 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.<sup>200</sup> 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.<sup>201</sup> In addition, government safety standards do not take into account “the kinds of

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<sup>194</sup> Physicians for Social Responsibility and Concerned Health Professionals of NY, Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking, Fifth Edition, March 13, 2018 (“PSR 2018”).

<sup>195</sup> Colborn 2011; Colborn 2012; *see* note 120 & accompanying text below.

<sup>196</sup> Colborn 2012 at pp. 21-22 (pages refer to page numbers in attached manuscript and not journal pages).

<sup>197</sup> Colborn 2012 at 11.

<sup>198</sup> *Id.* at 10.

<sup>199</sup> *Id.* at 11-12.

<sup>200</sup> *Id.* at 12.

<sup>201</sup> *Id.* at 10-11.

effects found from low-level exposure to endocrine-disrupting chemicals..., which can be particularly harmful during prenatal development and childhood.<sup>202</sup>

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.<sup>203</sup>

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.<sup>204</sup> 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.<sup>205</sup> These asthma-related impacts are of particular concern in the March lease sale area. In San Juan County and Rio Arriba County, child asthma

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<sup>202</sup> *Id.* at 12.

<sup>203</sup> PSR 2016 at 93.

<sup>204</sup> Rasmussen, Sara G. et al., Association Between Unconventional Natural Gas Development in the Marcellus Shale and Asthma Exacerbations, 176 JAMA Internal Medicine 1334 (2016).

<sup>205</sup> Willis, Mary D. et al., Unconventional natural gas development and pediatric asthma hospitalizations in Pennsylvania, 166 Environmental Research 402 (2018).



hospitalizations exceed the New Mexico state average.<sup>206</sup> Rio Arriba County and McKinley County have some of the highest rates of asthma emergency department visits in Northern New Mexico, also in excess of the state average (and are likely underestimated in this data set because many asthma-related visits in the region are to IHS facilities instead).<sup>207</sup> These statistics are particularly concerning in light of the high poverty rates in areas near the March lease sales, rates the RPFO and FFO EAs note in their table listing (but failing to analyze) environmental justice concerns. RPFO EA at 40; FFO EA at 49. As the New Mexico Department of Health notes,<sup>208</sup> and nationwide studies confirm,<sup>209</sup> low-income populations and “environmental justice” populations face not only disproportionate asthma risks, but also significant difficulty managing their asthma, in part due to lack of access to health care. For example, in 2017, over 40% of San Juan county residents expressed difficulty accessing health care,<sup>210</sup> often due to geographic isolation but also economic difficulty. And air pollution-related asthma, in particular, can exert profound and widespread cumulative health effects throughout the life course, especially when combined with social determinants of health. For example, children with asthma are more likely to become overweight or obese.<sup>211</sup> This is a serious children’s health challenge in San Juan county, where almost 30% of children ages 5-17 were obese in 2017, up from 17.2% in 2008.<sup>212</sup> Children with asthma are also much more likely to miss school, hurting their educational prospects as well as their health (with some adverse health effects enduring into adulthood), and resulting in significant funding losses for local schools.<sup>213</sup> Relatedly, both the RPFO and FFO EAs note that ozone is a criteria pollutant of concern in the region, and one that can, in general, adversely affect health, especially for “sensitive groups” such as children, the elderly, and those with pre-existing health issues. RPFO EA at 18; FFO EA at 19-20. The EAs also note that in San Juan County, levels of ozone have come close to exceeding the NAAQS, and that “if such exceedances were to occur, the area would be designated ‘nonattainment,’ which could impact

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<sup>206</sup> New Mexico Dept. of Health, *The Burden of Asthma in New Mexico: 2014 Epidemiology Report* (Jan. 2014), at 41. Available at <https://nmhealth.org/data/view/environment/54/>

<sup>207</sup> *Id.* at 33

<sup>208</sup> *Id.* at 16

<sup>209</sup> See, e.g., Tim Kelley and Gregory D. Kearney, *Insights Into the Environmental Health Burden of Childhood Asthma*, 12 ENVIRONMENTAL HEALTH INSIGHTS doi: [10.1177/1178630218757445](https://doi.org/10.1177/1178630218757445) (Feb. 20, 2018)

<sup>210</sup> *Id.* at 205.

<sup>211</sup> See e.g. Z. Chen et al., *Effects of Childhood Asthma on the Development of Obesity Among School-age Children*, 195 AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE 1181 (May 1, 2017).

<sup>212</sup> Professional Research Consultants, Inc. *Community Health Needs Assessment Report. San Juan County, New Mexico* (2017). at 179. Available at <https://www.sanjuanregional.com/upload/docs/About%20Us/Community%20Reinvestment/2017CHNA.pdf>

<sup>213</sup> See Attendance Works, *Mapping the Early Attendance Gap* (2017). Available at [http://www.attendanceworks.org/wp-content/uploads/2017/05/Mapping-the-Early-Attendance-Gap\\_Final-4.pdf](http://www.attendanceworks.org/wp-content/uploads/2017/05/Mapping-the-Early-Attendance-Gap_Final-4.pdf)

industrial development for the area.” FFO EA at 22; RPFO EA at 18. Here, too, the EAs raise the specter of risk in general terms, but they fail to analyze that risk as it relates specifically to the March lease sales and the health of those affected by them, whether individually or cumulatively with social determinants of health, environmental justice, and other reasonably foreseeable risks, actions, and impacts. Indeed, the only mention of the impacts of exceeding the ozone NAAQs with respect to the March lease sales is in the context of the effect it would have on *industrial development*, not human health. Such prioritizing of oil and gas development over human health is especially problematic when, in New Mexico, over 12,000 children suffer asthma attacks annually due to oil and gas ozone smog.<sup>214</sup> The smog pollution is also responsible for almost 9,000 missed school days in New Mexico children.<sup>215</sup> And San Juan County, specifically, has already received a failing “F” grade from the American Lung Association for smog (ground-level ozone) pollution.<sup>216</sup>

Yet the RPFO EA and FFO EA entirely failed to take this and other readily available local health and socioeconomic data into account when analyzing reasonably foreseeable health impacts of the March lease sales. The existing health status of populations in the lease sale area, and the disproportionate health risks those populations face in light of these social determinants of health and environmental justice concerns, are precisely the kinds of “incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions” that NEPA requires BLM to analyze in the EA 40 C.F.R. § 1508.7.

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.<sup>217</sup>

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

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<sup>214</sup> Oil and Gas Threat Map (2018). New Mexico. *Available at* <http://oilandgasthreatmap.com/threat-map/new-mexico/>; Western Environmental Law Center, *Reducing Oil and Gas Exploitation in the San Juan Basin*. *Available at* <https://westernlaw.org/safeguarding-climate/reforming-oil-gas-operations/reducing-oil-and-gas-exploitation-in-the-san-juan-basin/>

<sup>215</sup> *Id.*

<sup>216</sup> American Lung Association, *State of the Air 2016*, at 115 (2016). *Available at* <https://www.lung.org/assets/documents/healthy-air/state-of-the-air/sota-2016-full.pdf>;

<sup>217</sup> 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).

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.<sup>218</sup>

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.<sup>219</sup> The study estimated that about 29,000 U.S. births each year occur within 1 km of an active fracking site 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.<sup>220</sup> 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.<sup>221</sup> 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.<sup>222</sup> Here, again, these documented risks are of particular concern in the lease sale area, in light of social determinants of health such as access to care. For example, in San Juan County in 2017, 30% of mothers reported having no prenatal care during the first trimester.<sup>223</sup> BLM should have taken local health data like this into account as part of a "hard look" at health impacts, especially cumulative impacts as they relate to social determinants of health and environmental justice.

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<sup>218</sup> McKenzie, Lisa et al., Ambient Nonmethane Hydrocarbon Levels Along Colorado's Northern Front Range: Acute and Chronic Health Risks, 52 Environmental Science & Technology 4514 (2018).

<sup>219</sup> Currie, Janet et al., Hydraulic fracturing and infant health: New evidence from Pennsylvania, 3 Science Advances e1603021 (2017).

<sup>220</sup> Casey, Joan A., Unconventional Natural Gas Development and Birth Outcomes in Pennsylvania, USA, 27 Epidemiology 163 (2016).

<sup>221</sup> Stacy, Shaina L. et al., Perinatal Outcomes and Unconventional Natural Gas Operations in Southwest Pennsylvania. 10 PLoS ONE e0126425 (2015).

<sup>222</sup> McKenzie, Lisa M., Birth Outcomes and Maternal Residential Proximity to Natural Gas Development in Rural Colorado, 122 Environmental Health Perspectives 412 (2014).

<sup>223</sup> Professional Research Consultants, Inc. *Community Health Needs Assessment Report. San Juan County, New Mexico* (2017) at 30. Available at <https://www.sanjuanregional.com/upload/docs/About%20Us/Community%20Reinvestment/2017CHNA.pdf>

Other studies have found that residents living closer to drilling and fracking operations had higher hospitalization rates<sup>224</sup> and reported more health symptoms including upper respiratory problems and rashes.<sup>225</sup>

Workers suffer high risks from toxic exposure and accidents.<sup>226</sup> One study of the occupational inhalation risks caused by emissions from chemical storage tanks associated with fracking wells found that chemicals used in 12.4 percent of wells posed acute non-cancer risks, chemicals used in 7.5 percent of wells posed acute cancer risks, and chemicals used in 5.8 percent of wells posed chronic cancer risks.<sup>227</sup> 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.<sup>228</sup>

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;

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<sup>224</sup> Jemielita, Thomas et al., Unconventional Gas and Oil Drilling Is Associated with Increased Hospital Utilization Rates. 10 PLoS ONE e0131093 (2015).

<sup>225</sup> 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).

<sup>226</sup> Esswein, Eric J. et al., Occupational Exposures to Respirable Crystalline Silica During Hydraulic Fracturing, 10 Journal of Occupational and Environmental Hygiene 347 (2013); Esswein, Eric et al., Evaluation of Some Potential Chemical Exposure Risks during Flowback Operations in Unconventional Oil and Gas Extraction: Preliminary Results, 11 Journal of Occupational and Environmental Hygiene D174 (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.

<sup>227</sup> 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).

<sup>228</sup> PSR 2016 at 80

and failing to consider vulnerable populations.<sup>229</sup> Of high concern, numerous studies highlight that health assessments of drilling and fracking emissions often fail to consider impact on vulnerable populations including environmental justice communities<sup>230</sup> and children.<sup>231</sup> 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.<sup>232</sup>

### **IX. The BLM Fails to Take a “Hard Look” at Impacts to Human Communities, Cultural Values, and Environmental Justice.**

BLM also attempts to avoid taking a hard look at the impacts to human communities while at the same time acknowledging that “many of the lease parcels are located nearby or are surrounded by Navajo residences or near small communities such as Ojo Encino, Nageezi, Counselor, and Huerfano among others. One or more residences generally exist within a mile of each parcel.” FFO EA at 14. All analysis of potential impacts to these communities has been eliminated from BLM discussion or analysis.

BLM fails to satisfy the agency's NEPA obligations for impacts to these communities, but the agency also ignores the concerns of the Tribes in the area and a whole host of foreseeable impacts, the consideration of which should be fundamental to the agency's decision-making process for the subject lease sale. These considerations are particularly critical here given that Table 4.1 includes 39 separate Pueblos and Tribes that sent formal consultation requests to BLM FFO, and that BLM has acknowledged that consultation is ongoing and that “ongoing work [is] needed for a thorough cultural resources analysis.” FFO EA at 42-43. Quite simply, all leasing must be deferred until such consultation has been completed.

Indeed, as noted above, occupied buildings and residences are in close proximity to well sites on these lease parcels, raising the specter of impacts to human communities—not just from poor air quality, but myriad other impacts from hydraulic fracturing. On July 11, 2016, a massive fire broke out at a fracking site operated by WPX Energy that was approved by the FFO, setting

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<sup>229</sup> Brown, David et al., Understanding Exposure From Natural Gas Drilling Puts Current Air Standards to the Test. 29 *Reviews on Environmental Health* 277 (2014).

<sup>230</sup> NRDC [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).

<sup>231</sup> 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).

<sup>232</sup> NRDC 2014.

off several explosions and closing Highway 550.<sup>233</sup> Approximately 36 storage tanks caught fire and burned, local residents were evacuated, and numerous domestic animals and livestock were killed. The massive fire took several days to burn itself out.<sup>234</sup> Furthermore, the fire occurred in an area with limited access to emergency response and similar resources.

Moreover, there are excellent sources the FFO should consider in their assessment and consideration of impacts to human communities and, particularly, native communities, many of which are outlined in an article in *THE ATLANTIC*.<sup>235</sup> Among the concerns and impacts to native communities raised in this article—and in particular the social and cultural impacts experienced on the Fort Berthold Indian Reservation, located in the heart of North Dakota’s Bakken formation—include:

[North Dakota’s U.S. Attorney] noticed a peculiar pattern emerging from Fort Berthold. Many of his filings – a surprising number of them – involved non-Indian perpetrators. “We had five or six in a month,” he told me. “Why was this? We realized it’s non-enrolled folks moving to the oil patch.”

The immediate side-effects are the obvious ones, and they come with any boom: limited jail space, an overworked police force, a glut of men with cash in their pockets. In 2012, the tribal police department reported more murders, fatal accidents, sexual assaults, domestic disputes, drug busts, gun threats, and human trafficking cases than in any year before. The surrounding counties offer similar reports.

But there is one essential difference between Fort Berthold and the rest of North Dakota: The reservation’s population has more than doubled with an influx of non-Indian oil workers – over whom the tribe has little legal control.

In 2011, the U.S. Justice Department did not prosecute 65 percent of rape cases reported on reservations. According to department records, one in three Native American women are raped during their lifetimes – two-and-a-half times the likelihood for an average American woman – and in 86 percent of these cases, the assailant is non-Indian.

Between 2009 and 2011, federal case filings on North Dakota reservations rose 70

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<sup>233</sup> Chow, L. Massive Fracking Explosion in New Mexico, 36 Oil Tanks Catch Fire, EcoWatch, July 13, 2016, available at <http://www.ecowatch.com/massive-fracking-explosion-in-new-mexico-1919567359.html>.

<sup>234</sup> See Exhibit 8 to Citizen Groups’ Oct. 20, 2017 comments, Letter from Diné CARE, *et al.*, to Secretary Sally Jewell, *et al.*, RE: Mancos Shale Oil Drilling, Public Participation, and WPX Energy Explosion, July 26, 2016.

<sup>235</sup> Sierra Crane-Murdoch, *On Indian Land, Criminals Can Get Away With Almost Anything*, *THE ATLANTIC* (Feb. 22, 2013), available at: <http://www.theatlantic.com/national/archive/2013/02/on-indian-land-criminals-can-get-away-with-almost-anything/273391/> (Old Leasing Exhibit 161).

percent.

With a new oil and gas boom already occurring in the San Juan Basin<sup>236</sup>—with an estimated 30 billion barrels of oil trapped in the Mancos Shale—the impacts described above threaten to compound those already experienced by the native and non-native communities in the planning area. BLM’s failure to articulate and analyze such impacts represents a fundamental deficiency of the EA, and overlooks critical information weighing on the conclusions reached therein, in violation of NEPA.

#### **X. The BLM Fails to Sufficiently Analyze All Reasonable Alternatives.**

Through the March 2019 lease sale NEPA process, the FFO and RPFO are required to “estimate and display the physical, biological, economic, and social effects of implementing each alternative considered in detail. The estimation of effects shall be guided by the planning criteria and procedures implementing [NEPA].” 43 C.F.R. § 1610.4-6. Incumbent to any NEPA process is a robust analysis of alternatives to the proposed action. Consideration of reasonable alternatives is necessary to ensure that the agency has before it and takes into account all possible approaches to, and potential environmental impacts of, a particular project. NEPA’s alternatives requirement, therefore, ensures that the “most intelligent, optimally beneficial decision will ultimately be made.” *Calvert Cliffs’ Coordinating Comm., Inc. v. U.S. Atomic Energy Comm’n*, 449 F.2d 1109, 1114 (D.C. Cir. 1971).

“[T]he heart” of an environmental analysis under NEPA is the analysis of alternatives to the proposed project, and agencies must evaluate all reasonable alternatives to a proposed action.” *Colorado Environmental Coalition*, 185 F.3d at 1174 (quoting 40 C.F.R. § 1502.14). An agency must gather “information sufficient to permit a reasoned choice of alternatives as far as environmental aspects are concerned.” *Greater Yellowstone*, 359 F.3d at 1277 (citing *Colorado Environmental Coalition*, 185 F.3d at 1174); *see also Holy Cross Wilderness Fund v. Madigan*, 960 F.2d 1515, 1528 (10th Cir. 1992). Thus, agencies must “ensure that the statement contains sufficient discussion of the relevant issues and opposing viewpoints to enable the decisionmaker to take a ‘hard look’ at environmental factors, and to make a reasoned decision.” *Izaak Walton League of America v. Marsh*, 655 F.2d 346, 371 (D.C. Cir.1981) (citing *Kleppe v. Sierra Club*, 427 U.S. 390, 410 n. 21 (1976)).

Here, BLM considered only two alternatives: a “no action” alternative in which none of the nominated parcels would be offered for sale, and the “proposed action” where the agency will offer for lease a total of 30 parcels covering approximately 10,000 acres with standard terms and conditions as well as lease stipulations dating back to the obsolete and ineffective 2003 RMP and EIS and the 1987 RPFO RMP. In other words, the FFO and RPFO failed to consider any

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<sup>236</sup> Staci Matlock, *New Oil Boom Coming to San Juan Basin*, THE NEW MEXICAN (March 13, 2014), available at: [http://www.santafenewmexican.com/news/local\\_news/new-oil-boom-coming-to-san-juan-basin/article\\_665ff2f2-bd6c-54fd-9dd8-238092c73917.html](http://www.santafenewmexican.com/news/local_news/new-oil-boom-coming-to-san-juan-basin/article_665ff2f2-bd6c-54fd-9dd8-238092c73917.html) (Old Leasing Exhibit 158); Ryan Collins, *BP Unlocks a New Shale Gusher in New Mexico*, Bloomberg (Aug. 7, 2017), <https://www.bloomberg.com/news/articles/2017-08-07/little-known-new-mexico-shale-play-gives-bp-big-time-results>.

alternative that would limit or mitigate the impacts of oil and gas development, or consider oil and gas development on equal footing to other multiple use values in the planning area.

FLPMA does not mandate that every use be accommodated on every piece of land; rather, delicate balancing is required. *See Norton v. S. Utah Wilderness Alliance*, 542 U.S. 55, 58 (2004). “‘Multiple use’ requires management of the public lands and their numerous natural resources so that they can be used for economic, recreational, and scientific purposes without the infliction of permanent damage.” *Public Lands Council v. Babbitt*, 167 F.3d 1287, 1290 (10th Cir. 1999) (citing 43 U.S.C. § 1702 (c)). As held by the Tenth Circuit, “[i]f all the competing demands reflected in FLPMA were focused on one particular piece of public land, in many instances only one set of demands could be satisfied. A parcel of land cannot both be preserved in its natural character and mined.” *Rocky Mtn. Oil & Gas Ass’n v. Watt*, 696 F.2d 734, 738 n. 4 (10th Cir.1982) (quoting *Utah v. Andrus*, 486 F.Supp. 995, 1003 (D. Utah 1979)); *see also* 43 U.S.C. § 1701(a)(8) (stating, as a goal of FLPMA, the necessity to “preserve and protect certain public lands in their natural condition”); *Pub. Lands Council*, 167 F.3d at 1299 (citing § 1701(a)(8)). As further provided by the Tenth Circuit:

BLM’s obligation to manage for multiple use does not mean that development *must* be allowed on [a particular piece of public lands]. Development is a *possible* use, which BLM must weigh against other possible uses – including conservation to protect environmental values, which are best assessed through the NEPA process. Thus, an alternative that closes the [proposed public lands] to development does not necessarily violate the principle of multiple use, and the multiple use provision of FLPMA is not a sufficient reason to exclude more protective alternatives from consideration.

*New Mexico ex rel. Richardson*, 565 F.3d at 710. This type of analysis is entirely absent from the FFO’s EA, which has elevated oil and gas above the area’s other multiple use resources, in violation of NEPA. *See* 43 C.F.R. § 1610.4-6.

## **XI. The BLM Fails to Comply with the National Historic Preservation Act.**

The National Historic Preservation Act (“NHPA”), like NEPA, requires agencies to take a “hard look” at a project’s impacts, and was enacted specifically to protect America’s historic and cultural heritage. 16 U.S.C. §§ 470(b), 470-1. The heart of the NHPA is Section 106, which prohibits federal agencies from approving any federal “undertaking” unless the agency takes into account the effects of the undertaking on historic properties that are included in, or eligible for, inclusion in the National Register of Historic Places. 16 U.S.C. §§ 470(f), 470(w)(7); *see also Pueblo of Sandia v. United States*, 50 F.3d 856, 859 (10th Cir. 1995). Section 106 is a “stop, look, and listen provision” that requires federal agencies to consider the effects of their actions and programs on historic properties and sacred sites before implementation. *Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 805 (9th Cir. 1999); *see also Valley Cmty. Pres. Comm’n v. Mineta*, 373 F.3d 1078, 1085 (10th Cir. 2004).

To adequately “take into account” the impacts on historic and cultural properties under Section 106, BLM must first determine whether the “proposed Federal action is an undertaking,”



and if so, “whether it is a type of activity that has the potential to cause effects on historic properties.” 36 C.F.R. §§ 800.3(a), 800.16(y). BLM must then “[d]etermine and document the area of potential effects” and then “[r]eview existing information on historic properties within [that] area.” *Id.* § 800.4(a)(1)-(2). The area of potential effects (“APE”) is defined as:

the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties . . . The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

*Id.* § 800.16(d).

BLM must make a “reasonable and good faith effort” to identify historic and cultural properties within the APE, and consult with Indian Tribes and the state historic preservation office (“SHPO”) regarding the results of identification efforts. *Id.* at § 800.4(b)(1). Consultation involves a comprehensive assessment of actual adverse impacts on historic properties and of ways to “avoid, minimize or mitigate the adverse effects,” including proposing alternatives. *Id.* at § 800.6(a).

If the undertaking is a type of activity where historic properties “may be affected,” BLM applies the “criteria of adverse effect” to historic properties within the APE. *Id.* at §§ 800.4(d)(2), 800.5(a)(1). An “effect” is defined broadly to include any alteration that directly or indirectly affects the characteristics of a historic property that make it eligible for listing in the National Register of Historic Places. *Id.* §§ 800.16(i), 800.5(a)(1). An effect is “adverse” when it may “diminish the integrity of the property’s location . . . setting . . . feeling, or association.” *Id.* Adverse effects are not limited to physical destruction of historic properties, but also include “[c]hange of the . . . physical features within the property’s setting that contribute to its historic significance,” as well as the “introduction of visual, atmospheric or audible elements that diminish the integrity of the property’s significant historical features.” *Id.* at §§ 800.5(a)(2)(iv), (v). In addition to considering an undertaking’s direct and indirect impacts to historic properties, BLM must also consider “reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.” *Id.* at § 800.5(a)(1).

BLM may establish a “program alternative” for complying with Section 106 requirements. 36 C.F.R. §§ 800.3(a)(2), 800.14(a). In June 2004, BLM’s New Mexico State Director and the New Mexico SHPO entered into a State Protocol Agreement (“Protocol”) regarding the manner in which BLM would meet its responsibilities under the NHPA, and renewed the Protocol in 2014. For the March 2019 lease sale, BLM used the Protocol to meet its NHPA obligations in lieu of the Section 106 regulations.

Finally, “[f]ederal agencies are encouraged to coordinate compliance with section 106 and the procedures in this part [setting out compliance with NHPA] with any steps taken to meet the requirements of the National Environmental Policy Act (NEPA). Agencies should consider their section 106 responsibilities as early as possible in the NEPA process, and plan their public participation, analysis, and review in such a way that they can meet the purposes and requirements of both statutes in a timely and efficient manner.” 36 C.F.R. 800.8(a)(1).

Chaco Culture National Historical Park (“the Park”) is the heart of the greater Chacoan landscape, characterized by a network of outlying sites and ancient roads, and is located within a geographic area that includes lands and federal minerals under the FFO and RPFO’s jurisdiction. The Greater Chaco landscape has been described as the “Chaco Phenomenon” due to its unique archeological signatures. Congress recognized “the national significance of the Chacoan sites” and the need to protect these “unique archaeological resources” when it created the Park in 1980. 16 U.S.C. § 410ii. The Park is listed on the National Register of Historic Places and is designated a World Heritage Site. The World Heritage designation includes not only the Park, but also several satellite villages—known as “Chacoan Outliers”—including Pierre’s Site, Halfway House, Twin Angels, Aztec Pueblo, Kin Nizhoni and Casamero. These sites are all linked through a network of roads—the most prominent of which is the Great North Road, which connects Chaco Canyon to a settlement approximately 55 miles to the north known today as Aztec Ruin.

**A. The BLM Fails to Adequately Identify Indirect and Cumulative Adverse Impacts to Historic and Cultural Properties.**

Here, the BLM fails to comply with the NHPA because the BLM’s EAs for the March 2019 lease sale does not identify indirect and cumulative adverse effects to historic and cultural properties. BLM has refused to provide any analysis of such impacts, instead: “The BLM FFO has assessed the undertaking’s potential to affect historic properties at the leasing stage primarily by means of an existing literature and data review. Site-specific identification efforts, including Class III cultural resources inventories, would occur later, at the APD stage.” FFO EA at 40. In the RPFO, BLM eliminated cultural resources from consideration altogether, instead deferring surveys and analysis to the APD stage. RPFO EA at 8.

Unless these inventories are completed before the lease sale, the BLM cannot impose any stipulations to protect these cultural resources because “the act of selling oil and gas leases in itself does not have the potential to impact cultural resources. However, once issued, a lease bestows upon its owner the “right to use so much of the lease lands as is necessary to explore for, drill for, mine, extract, remove and dispose of the leased resource in the leasehold.” 43 CFR§ 3101.1-2. Air and light pollution, noise, and vehicle traffic from BLM-authorized oil and gas development all have the potential to adversely affect landscape-level historic properties such as the Park and Chaco Protection Sites that are within the boundaries of the FFO and RPFO. Despite the abundance of landscape-level historic properties in the FFO that may be adversely affected by Mancos Shale development, including in and adjacent to areas where BLM has approved hundreds of APDs and leases, BLM has failed to analyze oil and gas development’s indirect and cumulative impacts to these properties in the March 2019 EA. Such a “landscape-level” analysis of impacts is required before BLM can approve any more leases for wells in the Mancos Shale formation.

**B. The BLM Fails to Adequately Consult with Tribes.**

As noted above, the BLM is required to “consult with Indian Tribes and the state historic preservation office (“SHPO”) regarding the results of identification efforts. *Id.* at § 800.4(b)(1).

Consultation involves a comprehensive assessment of actual adverse impacts on historic properties and of ways to “avoid, minimize or mitigate the adverse effects,” including proposing alternatives. 36 C.F.R. § 800.6(a). In particular, “[t]he agency official shall ensure that consultation in the section 106 process provides the Indian tribe or Native Hawaiian organization a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects.”

As noted above, Consultation involves a *comprehensive assessment* of actual adverse impacts on historic properties and of ways to “avoid, minimize or mitigate the adverse effects,” including proposing alternatives. 36 C.F.R. § 800.6(a) (emphasis added). Yet, the EAs fail to indicate whether these meetings resulted in a comprehensive assessment or discussion of alternatives. This seems unlikely because the BLM continues to press forward despite the fact that both the Navajo Nation and the All Pueblo Council of Governors have requested moratoriums on leasing, fracking, and drilling until the RMP Amendment process is complete.<sup>237</sup> The BLM’s blatant disregard for Tribal interests and concerns alarming and does not suffice to meet the requirements of the NHPA.

## **XII. The BLM Fails to Balance Multiple Uses under FLPMA’s Unnecessary and Undue Degradation Provision.**

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

“Application of this standard is necessarily context-specific; the words ‘unnecessary’ and ‘undue’ are modifiers requiring nouns to give them meaning, and by the plain terms of the statute, that noun in each case must be whatever actions are causing ‘degradation.’ ” *Theodore Roosevelt Conservation P’ship v. Salazar*, 661 F.3d 66, 76 (D.C. Cir. 2011) (citing *Utah v. Andrus*, 486 F.Supp. 995, 1005 n.13 (D. Utah 1979) (defining “unnecessary” in the mining context as “that which is not necessary for mining”—or, in this context, “for oil and gas

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<sup>237</sup> See Exhibits 1 & 2.

development”—and “undue” as “that which is excessive, improper, immoderate or unwarranted.”); *see also Colorado Env’t Coalition*, 165 IBLA 221, 229 (2005) (concluding that in the oil and gas context, a finding of “unnecessary or undue degradation” requires a showing “that a lessee’s operations are or were conducted in a manner that does not comply with applicable law or regulations, prudent management and practice, or reasonably available technology, such that the lessee could not undertake the action pursuant to a valid existing right.”).

Here, that action is the oil and gas development authorized by the FFO and RPFO through the March 2019 lease sale. The inquiry, then, is whether the agency has taken sufficient measures to prevent degradation unnecessary to, or undue in proportion to, the development the proposed action permits. *See Theodore Roosevelt Conservation Partnership*, 661 F.3d at 76. For example, methane waste and pollution may cause “undue” degradation, even if the activity causing the degradation is “necessary.” Where methane waste and pollution is avoidable, even if in the process of avoiding such emissions lessees or operators incur reasonable economic costs that are consistent with conferred lease rights, it is “unnecessary” degradation. 43 U.S.C. § 1732(b).

Therefore, drilling activities may only go forward as long as unnecessary and undue environmental degradation does not occur. This is a *substantive* requirement, and one that the BLM must define and apply in the context of oil and gas development authorized through the lease sale. In other words, the FFO must define and apply the substantive UUD requirements in the context of the specific resource values at stake.

Further, these UUD requirements are distinct from requirements under NEPA. “A finding that there will not be significant impact [under NEPA] does not mean either that the project has been reviewed for unnecessary and undue degradation or that unnecessary or undue degradation will not occur.” *Ctr. for Biological Diversity*, 623 F.3d at 645 (quoting *Kendall’s Concerned Area Residents*, 129 I.B.L.A. 130, 140 (1994)). In the instant case, BLM must specifically account for UUD in its NEPA analysis for the March 2019 lease sale, which is distinct from its compliance under NEPA, and is also actionable on procedural grounds.

### **XIII. Conclusion**

The Citizen Groups appreciate your consideration of the information and concerns addressed herein, as well as the information included in the attached exhibits and incorporated comments. In general, we are alarmed at the fatal deficiencies and the numerous issues overlooked and/or marginalized in the EAs for the FFO and RPFO. The boilerplate EAs continues the trend of BLM rushing oil and gas lease documents to meet prescribed lease sale schedules, rather than performing the analysis required by NEPA, FLMPA, and NHMA. These deficiencies fail to support the agency’s decision to proceed with the proposed lease sale. Accordingly, the agency should grant this protest and defer action on the proposed lease parcels until these deficiencies are addressed.

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

Sincerely,



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