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March 2, 2016

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VIA Federal Express

Mary Jo Rugwell
Acting State Director
Bureau of Land Management
Wyoming State Office
5353 Yellowstone Road
Cheyenne WY 82009

Dear Ms. Rugwell:

The Center for Biological Diversity (the "Center") hereby files this Protest of the Bureau of Land Management ("BLM")'s planned May 3, 2016 oil and gas lease sale and Environmental Assessment WY-040-EA15-130, pursuant to 43 C.F.R. § 3120.1-3. The Center formally protests the inclusion of each of the following 30 parcels as identified in the February 3 Notice of Competitive Oil and Gas Lease Sale, covering 27,070.43 acres in the field offices of the High Desert District:

WY-1605-001	WY-1605-017
WY-1605-002	WY-1605-018
WY-1605-003	WY-1605-019
WY-1605-004	WY-1605-020
WY-1605-005	WY-1605-021
WY-1605-006	WY-1605-022
WY-1605-007	WY-1605-023
WY-1605-008	WY-1605-024
WY-1605-009	WY-1605-025
WY-1605-010	WY-1605-026
WY-1605-011	WY-1605-027
WY-1605-012	WY-1605-028
WY-1605-013	WY-1605-029
WY-1605-014	WY-1605-030
WY-1605-015	WY-1605-031
WY-1605-016	WY-1605-032

Alaska • Arizona • California • Florida • Minnesota • Nevada • New Mexico • New York • Oregon • Washington • Washington, DC

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PROTEST

I. Protesting Party: Contact Information and Interests:

This Protest is filed on behalf of the Center for Biological Diversity and their board and members by:

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The Center is a non-profit environmental organization with 50,186 member activists, including members who live and recreate in the High Desert planning area in Wyoming. The Center uses science, policy and law to advocate for the conservation and recovery of species on the brink of extinction and the habitats they need to survive. The Center has and continues to actively advocate for increased protections for species and habitats in the High Desert planning areaa on lands managed by the BLM. The lands that will be affected by the proposed lease sale include habitat for listed, rare, and imperiled species that the Center has worked to protect including the Greater sage-grouse. The Center's board, staff, and members use the lands within the planning area, including the lands and waters that would be affected by actions under the lease sale, for quiet recreation (including hiking and camping), scientific research, aesthetic pursuits, and spiritual renewal.

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

BLM's proposed decision to lease the parcels listed above is substantively and procedurally flawed for the reasons discussed in the Center's December 2, 2015 comment letter on the Environmental Assessment ("EA") for the High Desert May 2015 lease sale, which is incorporated by reference. Additional reasons as to why the proposed lease sale is unlawful are provided below.

A. The Proposed Lease Sale Is Inconsistent With the Revised RMPs' Requirement to Prioritize Oil and Gas Development Outside Greater Sage-Grouse Habitat

The Center continues to take the position that the 2015 Wyoming greater sage-grouse RMP amendments do not conform to the best available science or the recommendations of BLM's own experts regarding necessary measures to protect sage grouse habitats and prevent population declines[1] The Wyoming RMP Amendments referenced in the EA do not conform to the agency's own expert determinations regarding management measures necessary to conserve

[1] *See* WildEarth Guardians et al., Protest of BLM Wyoming Resource Management Plans Final Environmental Impact Statement (June 27, 2015)

greater sage-grouse populations in the face of oil and gas development.[2] Even assuming the validity, however, of the RMP amendments, the proposed lease fails to maintain consistency with the management measures prescribed in the amended RMPs, as required by FLPMA.

Even under the BLM's own determinations, the proposed action is directly in conflict with a core provision of the 2015 sage-grouse RMP amendments. All the Rocky Mountain Region RMPs – significantly, including Wyoming – are subject to the following measure for both priority and general habitat management areas:

> ***Prioritization Objective*—In addition to allocations that limit disturbance in PHMAs and GHMAs, the ARMPs and ARMPAs prioritize oil and gas leasing and development outside of identified PHMAs and GHMAs. This is to further limit future surface disturbance and encourage new development in areas that would not conflict with GRSG. This objective is intended to guide development to lower conflict areas and as such protect important habitat and reduce the time and cost associated with oil and gas leasing development by avoiding sensitive areas, reducing the complexity of environmental review and analysis of potential impacts on sensitive species, and decreasing the need for compensatory mitigation.**[3]

The EA explicitly acknowledges that its amended RMPs "direct the BLM to prioritize oil and gas leasing and development in a manner that minimizes resource conflicts in order to protect important habitat and reduce development time and costs." EA at 2. Indeed, the EA states, although without further explanation, that 8 parcels and portions of 5 others containing approximately 12,225.79 of Priority Habitat Management Areas were deferred pursuant to the Plans' prioritization requirement. EA at 2. Unlike many other provisions of the Wyoming sage-grouse Plan Amendments, however, the prioritization requirement is explicitly applicable to both Priority and General Habitat Management Areas,[4] and it appears that no effort has been made to minimize the loss of General Habitat (subject only to minimal site-specific protections for breeding habitat under the Wyoming RMP Amendments).

Based on review of EA Table 3.1 and the Wyoming May 2016 Crossover list, the following parcels in the February 3 Lease Sale notice, comprising approximately 20,276 out of a total 27,070 acres, contain Greater sage-grouse General Habitat Management Areas as mapped in the 2015 sage-grouse RMP Amendments:

WY-1605-001	WY-1605-013
WY-1605-002	WY-1605-014
WY-1605-003	WY-1605-015
WY-1605-004	WY-1605-016
WY-1605-005	WY-1605-017
WY-1605-006	WY-1605-018
WY-1605-007	WY-1605-025

[2] *See* id. at 29-31, 45-54.
[3] 2015 Rocky Mountain RMP ROD at 1-25.
[4] *See* Rocky Mountain RMP ROD at 1-25.

WY-1605-008	WY-1605-026
WY-1605-009	WY-1605-027
WY-1605-010	WY-1605-028
WY-1605-011	
WY-1605-012	

The BLM is subject to clear direction in the RMP amendments that its sage-grouse RMP plans and conservation strategy rely not only on stipulations within designated habitats (stipulations acknowledged as insufficient, in Wyoming, to result in a net conservation gain for general habitat, *see* 2015 RMPA ROD at 1-30 to 1-31), but also on a larger strategy of prioritizing development outside of all sage-grouse habitats.[5] Despite its acknowledgement of the prioritization requirement by deferring 12 parcels, however, the BLM's proposed action would lease 22 out of 30 parcels comprising approximately 20,276 acres that fall within greater sage-grouse habitat.[6]

It is impossible to understand how offering leases predominantly within sage-grouse habitat is consistent with the RMP requirement to prioritize leasing outside such habitat, and the EA provides no rationale whatsoever for this decision. In particular, the EA fails offer any explanation as to why approximately 12,225 acres are deferred as "consistent" with the prioritization requirement but the remaining 20,276 acres of sage-grouse habitat (74.9% of the total lease sale) are not.

An apparent BLM policy of leasing almost entirely within sage-grouse habitat is not only inconsistent with the RMPs and FLPMA's consistency requirement. It also undermines a fundamental assumption of the RMP Amendment EISs – as well as the Fish and Wildlife Service's "not warranted" determination for the greater sage-grouse. That assumption is that the measures adopted in the RMP Amendments will tend to result in oil and gas development tending to occur outside of greater sage-grouse habitat.[7] Proposing a lease sale consisting of approximately 75% sage-grouse habitat shortly following the finalization of the sage-grouse RMPs strongly undermines that assumption. It further undermines the assumption in the Fish and Wildlife Service's "Not Warranted" finding for the greater sage-grouse that federal and state implementation of the "Wyoming Plan" for fluid minerals will continue the 2012-15 of reduced drilling within sage-grouse habitat.[8] If BLM is not actually going to give meaningful content to its plan direction to prioritize leasing outside of sage-grouse habitats, it cannot rely on FEISs, such as the Wyoming RMP FEIS, that assume the effectiveness of that plan direction.

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[5] *See., e.g.*, BLM, Wyoming Proposed RMP/Final EIS at ES-17 ("The most effective way to conserve the GRSG is to protect existing, intact habitat. The BLM aims to reduce habitat fragmentation and protect key habitat areas. . . . The Proposed Plan prioritizes oil and gas development outside of GRSG habitat and focuses on a landscape-scale approach to conserving GRSG habitat.")

[6] *Compare* EA at 9-18 Table 3-1 *with* Lease Sale Notice and BLM Wyoming May 2015 Crossover List (correlating lease sale and EA parcel numbering). According to EA Table 3.1 and the Crossover List, Lease Sale parcels 001 through 018 and 025 through 028 all contain Greater sage-grouse GHMA.

[7] *See, e.g.*, Wyoming Greater Sage-Grouse Land Use Plan Amendment at 2-10 ("the Proposed LUP Amendments provide consistent Greater Sage-Grouse habitat management across the range, prioritize development outside of Greater Sage-Grouse habitat, and focus on a landscape-scale approach to conserving Greater Sage-Grouse habitat").

[8] *See* U.S. Fish and Wildlife Service, 12-Month Finding on a Petition to List Greater Sage-Grouse, 80 Fed. Reg. 59,858, 59,883 (Oct. 2, 2015).

B. BLM Must Defer the Lease Sale and Halt All New Leasing Until It Properly Considers the Climate Change Effects of New Leasing and Fracking

Climate change is a problem of global proportions resulting from the cumulative greenhouse gas emissions of countless individual sources. A comprehensive look at the impacts of fossil fuel extraction, and especially fracking, across all of the planning areas affected by the leases in updated RMPs is absolutely necessary. BLM has *never* thoroughly considered the cumulative climate change impacts of *all* potential fossil fuel extraction and fracking (1) within the High Desert planning areas, (2) across all of Wyoming, and (3) across all public lands. Proceeding with new leasing proposals *ad hoc* in the absence of a comprehensive plan that addresses climate change and fracking is premature and risks irreversible damage before the agency and public have had the opportunity to weigh the full costs of oil and gas and other fossil fuel extraction and consider necessary limits on such activities. Therefore BLM must cease all new leasing at least until the issue is adequately analyzed in a programmatic review of all U.S. fossil fuel leasing, or at least within amended RMPs.

1. BLM Must Limit Greenhouse Gas Emissions By Keeping Federal Fossil Fuels In the Ground

Expansion of fossil fuel production will substantially increase the volume of greenhouse gases emitted into the atmosphere and jeopardize the environment and the health and well being of future generations. BLM's mandate to ensure "harmonious and coordinated management of the various resources *without permanent impairment of the productivity of the land and the quality of the environment*" requires BLM to limit the climate change effects of its actions.[9] Keeping all unleased fossil fuels in the ground and banning fracking and other unconventional well stimulation methods would lock away millions of tons of greenhouse gas pollution and limit the destructive effects of these practices.

A ban on new fossil fuel leasing and fracking is necessary to meet the U.S.'s greenhouse gas reduction commitments. On December 12, 2015, 197 nation-state and supra-national organization parties meeting in Paris at the 2015 United Nations Framework Convention on Climate Change Conference of the Parties consented to an agreement (Paris Agreement) committing its parties to take action so as to avoid dangerous climate change. [10] As the Paris Agreement opens for signature in April 2016[11] and the United States is expected to sign the treaty[12] as a legally binding instrument through executive agreement,[13] the Paris Agreement commits the United States to critical goals—both binding and aspirational—that mandate bold action on the United States' domestic policy to rapidly reduce greenhouse gas emissions.[14]

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[9] *See* 43 U.S.C. §§ 1701(a)(7), 1702(c), 1712(c)(1), 1732(a) (emphasis added); *see also id.* § 1732(b) (directing Secretary to take any action to "prevent unnecessary or undue degradation" of the public lands).

[10] Paris Agreement, Art. 2.

[11] Paris Agreement, Art. 20(1).

[12] For purposes of this Petition, the term "treaty" refers to its international law definition, whereby a treaty is "an international law agreement concluded between states in written form and governed by international law" pursuant to article 2(a) of the Vienna Convention on the Law of Treaties, 1155 U.N.T.S. 331, 8 I.L.M. 679 (Jan. 27, 1980).

[13] *See* U.S. Department of State, Background Briefing on the Paris Climate Agreement, (Dec. 12, 2015), http://www.state.gov/ r/pa/prs/ps/2015/12/250592.htm.

[14] Although not every provision in the Paris Agreement is legally binding or enforceable, the U.S. and all parties are

The United States and other parties to the Paris Agreement recognized "the need for an effective and progressive response to the urgent threat of climate change on the basis of the best available scientific knowledge."[15] The Paris Agreement articulates the practical steps necessary to obtain its goals: parties including the United States have to "reach global peaking of greenhouse gas emissions *as soon as possible* . . . and to *undertake rapid reductions* thereafter in accordance *with best available science*,"[16] imperatively commanding that developed countries specifically "should continue taking the lead by undertaking economy-wide absolute emission reduction targets"[17] and that such actions reflect the "highest possible ambition."[18]

The Paris Agreement codifies the international consensus that climate change is an "urgent threat" of global concern,[19] and commits all signatories to achieving a set of global goals. Importantly, the Paris Agreement commits all signatories to an articulated target to hold the 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"[20] (emphasis added).

In light of the severe threats posed by even limited global warming, the Paris Agreement established the international goal of limiting global warming to 1.5°C above pre-industrial levels in order to "prevent dangerous anthropogenic interference with the climate system," as set forth in the UNFCCC, a treaty which the United States has ratified and to which it is bound.[21] The Paris consensus on a 1.5°C warming goal reflects the findings of the IPCC and numerous scientific studies that indicate that 2°C warming would exceed thresholds for severe, extremely dangerous, and potentially irreversible impacts.[22] Those impacts include increased global food and water insecurity, the inundation of coastal regions and small island nations by sea level rise and increasing storm surge, complete loss of Arctic summer sea ice, irreversible melting of the Greenland ice sheet, increased extinction risk for at least 20-30% of species on Earth, dieback of the Amazon rainforest, and "rapid and terminal" declines of coral reefs worldwide.[23] As

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committed to perform the treaty commitments in good faith under the international legal principle of *pacta sunt servanda* ("agreements must be kept"). Vienna Convention on the Law of Treaties, Art. 26.

[15] *Id.*, Recitals.

[16] *Id.*, Art. 4(1).

[17] *Id.*, Art. 4(4).

[18] Id, Art. 4(3).

[19] *Id.*, Recitals.

[20] *Id.*, Art. 2.

[21] *See* U.N. Framework Convention on Climate Change, Cancun Agreement. Available at http://cancun.unfccc.int/ (last visited Jan 7, 2015); United Nations Framework Convention on Climate Change, Copenhagen Accord. Available at http://unfccc.int/meetings/copenhagen_dec_2009/items/5262.php (last accessed Jan 7, 2015). The United States Senate ratified the UNFCC on October 7, 1992. *See* https://www.congress.gov/treaty-document/102nd-congress/38.

[22] *See* Paris Agreement, Art. 2(1)(a); U); U.N. Framework Convention on Climate Change, Subsidiary Body for Scientific and Technical Advice, Report on the structured expert dialogue on the 2013-15 review, No. FCCC/SB/2015/INF.1 at 15-16 (June 2015);IPCC AR5 Synthesis Report at 65 & Box 2.4.

[23] *See* Jones, C. et al, Committed Terrestrial Ecosystem Changes due to Climate Change, 2 Nature Geoscience 484, 484–487 (2009);Smith, J. B. *et al.*, Assessing Dangerous Climate Change Through an Update of the Intergovernmental Panel on Climate Change (IPCC) 'Reasons for Concern', 106 Proceedings of the National Academy of Sciences of the United States of America 4133, 4133–37 (2009); ; Veron, J. E. N. *et al.*, The Coral Reef

scientists noted, the impacts associated with 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."[24] Consequently, a target of 1.5 °C or less temperature rise is now seen as essential to avoid dangerous climate change and has largely supplanted the 2°C target that had been the focus of most climate literature until recently.

Immediate and aggressive greenhouse gas emissions reductions are necessary to keep warming below a 1.5° or 2°C rise above pre-industrial levels. Put simply, there is only a finite amount of CO_2 that can be released into the atmosphere without rendering the goal of meeting the 1.5°C target virtually impossible. A slightly larger amount could be burned before meeting a 2°C became an impossibility. Globally, fossil fuel reserves, if all were extracted and burned, would release enough CO_2 to exceed this limit several times over.[25]

The question of what amount of fossil fuels can be extracted and burned without negating a realistic chance of meeting a 1.5 or 2°C target is relatively easy to answer, even if the answer is framed in probabilities and ranges. The IPCC Fifth Assessment Report and other expert assessments have established global carbon budgets, or the total amount of remaining carbon that can be burned while maintain some probability of staying below a given temperature target. According to the IPCC, total cumulative anthropogenic emissions of CO_2 must remain below about 1,000 gigatonnes ($GtCO_2$) from 2011 onward for a 66% probability of limiting warming to 2°C above pre-industrial levels.[26] Given more than 100 $GtCO_2$ have been emitted since 2011,[27] the remaining portion of the budget under this scenario is well below 900 $GtCO_2$. To have an 80% probability of staying below the 2°C target, the budget from 2000 is 890 $GtCO_2$, with less than 430 $GtCO_2$ remaining.[28]

To have even a 50% probability of achieving the Paris Agreement goal of limiting warming to 1.5°C above pre-industrial levels equates to a carbon budget of 550-600 $GtCO_2$ from

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Crisis: The Critical Importance of <350 ppm CO2, 58 Marine Pollution Bulletin 1428, 1428–36, (2009); ; Warren, R. J. *et al.*, Increasing Impacts of Climate Change Upon Ecosystems with Increasing Global Mean Temperature Rise, 106 Climatic Change 141–77 (2011); Hare, W. W. *et al.*, Climate Hotspots: Key Vulnerable Regions, Climate Change and Limits to Warming, 11 Regional Environmental Change 1, 1–13 (2011); ; Frieler, K. M. *et al.*, Limiting Global Warming to 2°C is Unlikely to Save Most Coral Reefs, Nature Climate Change, Published Online (2013) doi: 10.1038/NCLIMATE1674; ; M. Schaeffer *et al.*, Adequacy and Feasibility of the 1.5°C Long-Term Global Limit, Climate Analytics (2013).

[24] Anderson, K. and A. Bows, Beyond 'Dangerous' Climate Change: Emission Scenarios for a New World, 369 Philosophical Transactions, Series A, Mathematical, Physical, and Engineering Sciences 20, 20–44 (2011).

[25] Marlene Cimons, Keep It In the Ground 6 (Sierra Club *et al.*, Jan. 25, 2016).

[26] IPCC, 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change; Summary for Policymakers at 27; IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change at 64 & Table 2.2 [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)] at 63-64 & Table 2.2 ("IPCC AR5 Synthesis Report").

[27] From 2012-2014, 107 GtCO2 was emitted (*see* Annual Global Carbon Emissions at http://co2now.org/Current-CO2/CO2-Now/global-carbon-emissions.html).

[28] Carbon Tracker Initiative, Unburnable Carbon – Are the world's financial markets carrying a carbon bubble? available at http://www.carbontracker.org/wp-content/uploads/2014/09/Unburnable-Carbon-Full-rev2-1.pdf; Meinshausen, M. *et al.*, Greenhouse gas emission targets for limiting global warming to 2 degrees Celsius, 458 Nature 1158, 1159 (2009)

2011 onward,[29] of which more than 100 $GtCO_2$ has already been emitted. To achieve a 66% probability of limiting warming to 1.5°C requires adherence to a more stringent carbon budget of only 400 $GtCO_2$ from 2011 onward,[30] of which less than 300 $GtCO_2$ remained at the start of 2015. An 80% probability budget for 1.5°C would have far less that 300 $GtCO_2$ remaining. Given that global CO_2 emissions in 2014 alone totaled 36 $GtCO_2$,[31] humanity is rapidly consuming the remaining burnable carbon budget needed to have even a 50/50 chance of meeting the 1.5°C temperature goal.[32]

According to a recent report by EcoShift Consulting commissioned by the Center and Friends of the Earth, unleased (and thus unburnable) federal fossil fuels represent a significant source of potential greenhouse gas emissions:

- Potential GHG emissions of federal fossil fuels (leased and unleased) if developed would release up to 492 gigatons (Gt) (one gigaton equals 1 billion tons) of carbon dioxide equivalent pollution (CO2e); representing 46 percent to 50 percent of potential emissions from all remaining U.S. fossil fuels.
- Of that amount, up to 450 Gt CO2e have not yet been leased to private industry for extraction;
- Releasing those 450 Gt CO2e (the equivalent annual pollution of more than 118,000 coal-fired power plants) would be greater than any proposed U.S. share of global carbon limits that would keep emissions below scientifically advised levels.

Fracking has also opened up vast reserves that otherwise would not be available, increasing the potential greenhouse gas emissions that can be released into the atmosphere. BLM must consider a ban on this dangerous practice and a ban on new leasing to prevent the worst effects of climate change.

2. BLM Must Consider A Ban on New Oil and Gas Leasing and Fracking in a Programmatic Review and Halt All New Leasing and Fracking in the Meantime.

Development of unleased oil and gas resources will fuel climate disruption and undercut the needed transition to a clean energy economy. As BLM has not yet had a chance to consider no leasing and no-fracking alternatives as part of any of its RMP planning processes or a comprehensive review of its federal oil and gas leasing program, BLM should suspend new leasing until it properly considers this alternative in updated RMPs or a programmatic EIS for

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[29] IPCC AR5 Synthesis Report at 64 & Table 2.2.

[30] *Id.*

[31] *See* Global Carbon Emissions, http://co2now.org/Current-CO2/CO2-Now/global-carbon-emissions.html

[32] In addition to limits on the *amount* of fossil fuels that can be utilized, emissions pathways compatible with a 1.5 or 2°C target also have a significant temporal element. Leading studies make clear that to reach a reasonable likelihood of stopping warming at 1.5° or even 2°C, global CO2 emissions must be phased out by mid-century and likely as early as 2040-2045. *See, e.g.* Joeri Rogelj *et al.*, Energy system transformations for limiting end-of-century warming to below 1.5°C, 5 Nature Climate Change 519, 522 (2015). United States focused studies indicate that we must phase out fossil fuel CO2 emissions even earlier—between 2025 and 2040—for a reasonable chance of staying below 2°C. *See, e.g.* Climate Action Tracker, http://climateactiontracker.org/countries/usa. Issuing new legal entitlements to explore for and extract federal fossil fuels for decades to come is wholly incompatible with such a transition.

the entire leasing program. BLM demonstrably has tools available to consider the climate consequences of its leasing programs, and alternatives available to mitigate those consequences, at either a regional or national scale.[33]

BLM would be remiss to continue leasing when it has never stepped back and taken a hard look at this problem at the programmatic scale. Before allowing more oil and gas extraction in the planning area, BLM must: (1) comprehensively analyze the total greenhouse gas emissions which result from past, present, and potential future fossil fuel leasing and all other activities across all BLM lands and within the various planning areas at issue here, (2) consider their cumulative significance in the context of global climate change, carbon budgets, and other greenhouse gas pollution sources outside BLM lands and the planning area, and (3) formulate measures that avoid or limit their climate change effects. By continuing leasing and allowing new fracking in the absence of any overall plan addressing climate change BLM is effectively burying its head in the sand.

A programmatic review and moratorium on new leasing would be consistent with the Secretary of Interior's recent order to conduct a comprehensive, programmatic EIS (PEIS) on its coal leasing program, in light of the need to take into account the program's impacts on climate change, among other issues, and "the lack of any recent analysis of the Federal coal program as a whole." *See* Secretary of Interior, Order No. 3338, § 4 (Jan. 15, 2016). Specifically, the Secretary directed that the PEIS "should examine how best to assess the climate impacts of continued Federal coal production and combustion and how to address those impacts in the management of the program to meet both the Nation's energy needs and its climate goals, as well as how best to protect the public lands from climate change impacts." *Id.* § 4(c).

The Secretary also ordered a moratorium on new coal leasing while such a review is being conducted. The Secretary reasoned:

> Lease sales and lease modifications result in lease terms of 20 years and for so long thereafter as coal is produced in commercial quantities. Continuing to conduct lease sales or approve lease modifications during this programmatic review risks locking in for decades the future development of large quantities of coal under current rates and terms that the PEIS may ultimately determine to be less than optimal. This risk is why, during the previous two programmatic reviews, the Department halted most lease sales with limited exceptions.... Considering these factors and given the extensive recoverable reserves of Federal coal currently under lease, I have decided that a similar policy is warranted here. A pause on leasing, with limited exceptions, will allow future leasing decisions to benefit from the recommendations that result from the PEIS while minimizing any economic hardship during that review.

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[33] *See, e.g.,* BLM Montana, North Dakota and South Dakota, Climate Change Supplementary Information Report (updated Oct. 2010) (conducting GHG inventory for BLM leasing in Montana, North Dakota and South Dakota); BLM, Proposed Rule: Waste Prevention, Production Subject to Royalties, and Resource Conservation, 81 Fed. Reg. 6615 (Feb. 8, 2016) (proposing BLM-wide rule for prevention of methane waste).

Id. § 5.

The Secretary's reasoning is also apt here. A programmatic review assessing the climate change effects of public fossil fuels is long overdue. And there is no shortage of oil and gas that would preclude a moratorium while such a review is conducted, as evidenced by very low natural oil and gas prices. More importantly, BLM should not "risk[] locking in for decades the future development of large quantities of [fossil fuels] under current…terms that a [programmatic review] may ultimately determine to be less than optimal." *Id.* BLM should cancel the sale and halt all new leasing and fracking until a programmatic review is completed.

For the same reasons discussed above, the EA cannot postpone the discussion of air pollution and climate change impacts until site-specific plans are proposed. "Reasonable forecasting" is possible based on development projections in the RFD for each planning area. This information includes potential areas of extraction, the type of reserves and their location, and potential drilling techniques – enough information to support a reasonable projection of potential air pollution and greenhouse gas emissions.[34]

A piecemeal analysis at the APD stage risks sweeping under the rug cumulative impacts of drilling on multiple parcels for lease within the same locale. At the individual APD stage, BLM would have no more information than it does now to analyze the cumulative impacts of developing multiple leased parcels in a given area, except for the development plans for an individual APD. Because BLM must analyze impacts at "the earliest practicable time," and no benefit would be gained from postponing the analysis, BLM must discuss these cumulative impacts before the lease sale.

C. The EA Fails to Discuss the Public Health Impacts of Increased Hydraulic Fracturing.

The EA refers to a "white paper" generally discussing the impacts of hydraulic fracturing (or "fracking"), but provide no meaningful information regarding of the risk and severity of public health impacts that could potentially result from increased natural gas drilling and hydraulic fracturing operations on the proposed parcels for lease. Ample scientific evidence indicates that well development and well stimulation activities have been linked to an array of adverse human health effects, including carcinogenic, developmental, reproductive, and endocrine disruption effects. The white paper's cursory discussion does not amount to a "hard look" at the health risks posed by oil and gas development, including hydraulic fracturing.

Natural gas drilling operations result in the emissions of numerous non-methane hydrocarbons (NMHCs) that have been linked to numerous adverse health effects. A recent study that analyzed air samples taken during drilling operations near natural gas wells and residential areas in Garfield County, detected 57 chemicals between July 2010 and October 2011, including 44 with reported health effects.[35] For example:

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[34] *See, e.g.*, EA at 60, 85 (discussing RFD and GHG emissions for Rawlins, Kemmerer, Pinedale and Green River RMPs).

[35] Colborn, et al. An Exploratory Study of Air Quality Near Natural Gas Operations, Human and Ecological Risk Assessment: An International Journal, Vol. 20, Iss. 1, 2014, pp. 21-22 (pages refer to page numbers in attached manuscript and not journal pages) ("Colborn 2014), available at

> 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.[36]

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.[37] 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."[38] 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.[39] For example, the study detected 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.[40] Nor do government safety standards take into account "the kinds of effects found from low-level exposure to endocrine disrupting chemicals…, which can be particularly harmful during prenatal development and childhood.[41]

While all phases of oil and gas production put people at risk, in recent years attention has focused on the new dangers of fracking and other forms of well stimulation which use hundreds of chemicals, the majority of which are known to have adverse human health effects. A study of gas production in Colorado yielded 632 chemicals used in 944 different products.[42] Of these chemicals, 75 percent have been shown to cause harm to the skin, eyes, and other sensory organs; approximately 40-50 percent could affect the brain/nervous system, immune and cardiovascular systems, and the kidneys; 37 percent could affect the endocrine system; and 25 percent could cause cancer and mutations.[43] These chemicals must be transported, mixed, stored, injected, captured and disposed of. Each step creates a risk for communities that are nearby the well site, transportation route, or disposal site. Studies confirm that such contamination has occurred.[44]

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http://www.tandfonline.com/doi/full/10.1080/10807039.2012.749447.

[36] Colborn 2014, p. 11.

[37] *Id.*, p. 10.

[38] *Id.*, pp. 11-12.

[39] *Id.* p. 12.

[40] *Id.*, p. 10-11.

[41] *Id.*, p. 12.

[42] Colborn, Theo et al., Natural Gas Operations from a Public Health Perspective, 17 Human and Ecological Risk Assessment 1039, p. 1045 (2011) ("Colborn 2011").

[43] *Id.* p. 1046.

[44] McPhale, C. Study: Casing, cement at fault, Denton Record Chronicle, Sept. 19, 2014, available at http://www.dentonrc.com/local-news/local-news-headlines/20140919-study-casing-cement-at-fault.ece; Darrah, T. et al., Noble gases identify the mechanisms of fugitive gas contamination in drinking-water wells overlying the

Due to the heavy and frequent use of chemicals, proximity to fracked wells is associated with higher rates of cancer, birth defects, poor infant health, and acute health effects for nearby residents who must endure long-term exposure:

- In one study, residents living within one-half mile of a fracked well were significantly more likely to develop cancer than those who live more than one-half mile away, with exposure to benzene being the most significant risk.[45]

- Another study found that pregnant women living within 10 miles of a fracked well were more likely to bear children with congenital heart defects and possibly neural tube defects.[46] A separate study independently found the same pattern; infants born near fracked gas wells had more health problems than infants born near sites that had not yet conducted fracking.[47, 48]

- A study analyzed Pennsylvania birth records from 2004 to 2011 to assess the health of infants born within a 2.5-kilometer radius of natural-gas fracking sites. They found that proximity to fracking increased the likelihood of low birth weight by more than half, from about 5.6 percent to more than 9 percent.[49] The chances of a low Apgar score, a summary measure of the health of newborn children, roughly doubled, to more than 5 percent.[50] Another recent Pennsylvania study found a correlation between proximity to unconventional gas drilling and higher incidence of lower birth weight and small-for-gestational-age babies.[51]

- In Texas, a jury awarded nearly $3 million to a family who lived near a well that was hydraulically fractured.[52] The family complained that they experienced migraines, rashes, dizziness, nausea and chronic nosebleeds. Medical tests showed one of the plaintiffs had more than 20 toxic chemicals in her bloodstream.[53] Air samples around their home also

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Marcellus and Barnett Shales, Proceedings of the National Academy of Sciences of the United States of America, September 30, 2014, vol. 111 no. 39, available at http://www.pnas.org/content/111/39/14076.full.pdf+html.

[45] McKenzie, L. et al., Human Health Risk Assessment of Air Emissions from Development of Unconventional Natural Gas Resources, 424 Science of the Total Environment 79 (2012) ("McKenzie 2012").

[46] McKenzie, L. et al., Birth Outcomes and Maternal Residential Proximity to Natural Gas Development in Rural Colorado, Advance Publication Environmental Health Perspectives (Jan. 28, 2014), http://dx.doi.org/10.1289/ehp.1306722 ("McKenzie 2014").

[47] Hill, Elaine L., Unconventional Natural Gas Development and Infant Health: Evidence from Pennsylvania, Cornell University (2012).

[48] Whitehouse, Mark, *Study Shows Fracking is Bad for Babies*, Bloomberg View, Jan. 4, 2014, available at http://www.bloombergview.com/articles/2014-01-04/study-shows-fracking-is-bad-for-babies.

[49] *Id.*, citing Janet Currie of Princeton University, Katherine Meckel of Columbia University, and John Deutch and Michael Greenstone of the Massachusetts Institute of Technology.

[50] *Id.*

[51] Stacy, Shaina L., et al. (2015) Perinatal Outcomes and Unconventional Natural Gas Operations in Southwest Pennsylvania. PLoS ONE 10(6): e0126425. doi:10.1371/journal.pone.0126425, available at http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0126425 and attached hereto.

[52] *Parr v. Aruba Petroleum, Inc.*, Case No. 11-01650-E (Dallas Cty., filed Sept.13, 2013).

[53] Deam, Jenny, *Jury Awards Texas family Nearly $3 million in Fracking Case*, Los Angeles Times (Apr. 3, 2014) http://www.latimes.com/nation/la-na-fracking-lawsuit-20140424-story.html.

> showed the presence of BTEX — benzene, toluene, ethylbenzene and xylene — colorless but toxic chemicals typically found in petroleum products.[54]

Chemicals used for fracking also put nearby residents at risk of endocrine disruption effects. A study that sampled water near active wells and known spill sites in Garfield, County Colorado found alarming levels of estrogenic, antiestrogenic, androgenic, and antiandrogenic activities, indicating that endocrine system disrupting chemicals (EDC) threaten to contaminate surface and groundwater sources for nearby residents.[55] The study concluded:

> [M]ost water samples from sites with known drilling-related incidents in a drilling-dense region of Colorado exhibited more estrogenic, antiestrogenic, and/or antiandrogenic activities than the water samples collected from reference sites[,] and 12 chemicals used in drilling operations exhibited similar activities. Taken together, the following support an association between natural gas drilling operations and EDC activity in surface and ground water: [1] hormonal activities in Garfield County spill sites and the Colorado River are higher than those in reference sites in Garfield County and in Missouri, [2] selected drilling chemicals displayed activities similar to those measured in water samples collected from a drilling-dense region, [3] several of these chemicals and similar compounds were detected by other researchers at our sample collection sites, and [4] known spills of natural gas fluids occurred at these spill sites.

The study also noted a linkage between EDCs and "negative health outcomes in laboratory animals, wildlife, and humans":

> Despite an understanding of adverse health outcomes associated with exposure to EDCs, research on the potential health implications of exposure to chemicals used in hydraulic fracturing is lacking. Bamberger and Oswald (26) analyzed the health consequences associated with exposure to chemicals used in natural gas operations and found respiratory, gastrointestinal, dermatologic, neurologic, immunologic, endocrine, reproductive, and other negative health outcomes in humans, pets, livestock, and wildlife species.
>
> Of note, site 4 in the current study was used as a small-scale ranch before the produced water spill in 2004. This use had to be discontinued because the animals no longer produced live offspring, perhaps because of the high antiestrogenic activity observed at this site. There is evidence that hydraulic fracturing fluids are associated with negative health outcomes, and there is a critical need to quickly and thoroughly evaluate the overall human and environmental health impact of this process. It should be noted that although this study focused on only estrogen and androgen receptors, there is a need for evaluation of other hormone receptor

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[54] *Id.*

[55] Kassotis, Christopher D., et al., Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and Ground Water in a Drilling-Dense Region. Endocrinology, March 2014, 155(3):897–907, pp. 905-906, available at http://press.endocrine.org/doi/full/10.1210/en.2013-1697.

activities to provide a more complete endocrine-disrupting profile associated with natural gas drilling.[56]

Acidizing presents similarly alarming risks to public health and safety. In acidizing operations, large volumes of hydrochloric and hydrofluoric acid are transported to the site and injected underground. These chemicals are highly dangerous due to their corrosive properties and ability to trigger tissue corrosion and damage to sensory organs through contact.

Harmful chemicals are also found in the flowback fluid after well stimulation events. Flowback fluid is a key component of oil-industry wastewater from stimulated wells. A survey of chemical analyses of flowback fluid dating back to April 2014 in California revealed that concentrations of benzene, a known carcinogen, were detected at levels over 1,500 times the federal limits for drinking water.[57] Of the 329 available tests that measured for benzene, the chemical was detected at levels in excess of federal limits in 320 tests (97 percent).[58] On average, benzene levels were around 700 times the federal limit for drinking water.[59] Among other carcinogenic or otherwise dangerous chemicals found in flowback fluid from fracked wells are toluene and chromium-6.[60] These hazardous substances were detected in excess of federal limits for drinking water in over one hundred tests. This dangerous fluid is commonly disposed of in injection wells, which often feed into aquifers, including some that could be used for drinking water and irrigation.

In sum, the EA must be revised to fully disclose the adverse human health impacts of increased oil and gas drilling and hydraulic fracturing. Such an analysis must also include a discussion of whether specific residential areas, towns, schools, and other populated areas in and around the parcels for lease are at higher risk of exposure.

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[56] *Id.*, p. 905.

[57] California Department of Conservation Division of Oil, Gas, & Geothermal Resources, California Well Stimulation Public Disclosure Report, available at http://www.conservation.ca.gov/dog/Pages/WellStimulationTreatmentDisclosure.aspx. The highest concentration was 7,700 parts per billion (ppb) for a well with API number 03052587. The US EPA's maximum contaminant level for benzene is 5 ppb.

[58] *Id.*

[59] *Id.*, *see also* Cart, J., High Levels of Benzene Found in Fracking Wastewater, Los Angeles Times, Feb. 11, 2015, http://www.latimes.com/local/california/la-me-fracking-20150211-story.html#page=1.

[60] *Id.*; *see also* Center for Biological Diversity, Cancer-causing Chemicals Found in Fracking Flowback from California Oil Wells (2015) Feb. 11, 2015, available at http://www.biologicaldiversity.org/news/press_releases/2015/fracking-02-11-2015.html.

For all of the reasons stated above, the lease sale, will, if adopted unchanged, result in violations of BLM's obligations under NEPA, the Endangered Species Act, Federal Land Policy and Management Act, and Mineral Leasing Act. An appropriate response to this protest would be for BLM to defer the lease sale and commence preparation of an EIS.

Please do not hesitate to contact me if you have any questions or to schedule a protest resolution meeting.

Sincerely,

M. A. Saul

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