

November 5, 2018

Submitted via email (blm_nm_cfo_rmp@blm.gov)

Hector Gonzalez, RMP Team Lead
Bureau of Land Management, Carlsbad Field Office
620 East Greene Street
Carlsbad, New Mexico 88220

Re: Comments on the Carlsbad Draft Resource Management Plan and Environmental Impact Statement

Dear Mr. Gonzalez,

Please accept these comments behalf of The Wilderness Society, Environmental Defense Fund, Western Environmental Law Center, CAVU, Earthworks, Southwest Environmental Center, Conservation Voters New Mexico, New Mexico Environmental Law Center, National Parks Conservation Association, New Energy Economy, Sierra Club, Natural Resources Defense Council, New Mexico Sportsmen, Center for Civic Policy, New Mexico CAFé, New Mexico Interfaith Power and Light, New Mexico Voices for Children and Moms Clean Air Force on the Bureau of Land Management's ("BLM") Draft Carlsbad Resource Management Plan (RMP) and Environmental Impact Statement (EIS). We are extremely concerned about the lack of adequate measures in place to minimize natural gas waste and methane emissions from existing and future oil and gas development in the RMP planning area.

The BLM has a statutory duty to prevent the waste of publicly owned resources pursuant to the Mineral Leasing Act (MLA) and to prevent unnecessary or undue degradation from methane pollution pursuant to the Federal Land Policy and Management Act (FLPMA). However, it is well-documented that the agency has failed to meet these obligations. Between 2009 and 2015, 462 billion cubic feet (Bcf) of natural gas from federal leases was vented or flared – enough to serve 6.2 million households for a year.¹

To rectify this issue, the BLM finalized its Waste Prevention, Production Subject to Royalties, and Resource Conservation rule (2016 Final Rule or Methane Rule) on November 15, 2016. This rule would have curbed the waste of natural gas from federal and tribal lands and reduced methane emissions by 180,000 tons per year (tpy) or roughly 35% from 2014 estimates² by requiring periodic leak detection and repair (LDAR) inspections, prohibiting venting, significantly limiting flaring, and establishing a number of equipment specific requirements.

This rule has since been significantly revised. The new rule, finalized on September 28, 2018, essentially eviscerates the 2016 rule's substantive provisions and instead relies on existing state regulations and the outdated Notice to Lessee 4A (NTL-4A) framework to minimize waste. The

¹ 81 Fed. Reg. 83009.

² 81 Fed. Reg. 223 (November 18, 2016) at 83014.

revision to the 2016 rule, along with the impending rescission of the EPA New Source Performance Standard (NSPS), the well-documented failings of the NTL-4A framework and inadequate state regulations all contribute to an environment in which we fail to see how the agency can ensure it is meeting its waste and unnecessary or undue prevention mandates.

In fact, the BLM's own analysis of this RMP finds that projected oil and gas development in the CFO planning area is expected to emit 46,191 metric tons of methane per year, leading to the waste of natural gas worth roughly \$16.5 million per year in 2028—waste that will only exacerbate climate change. And this is likely an underestimate given that the latest science shows that emissions are dramatically underreported by approximately 60 percent based on EPA inventory estimates.³

Given the absence of adequate natural gas waste and methane emission reduction measures, it is imperative that the field office address this issue in the final RMP. However, the preferred alternative included in the Draft RMP fails to include any waste or degradation minimization stipulations or other measures aimed at reducing gas waste and methane emissions. As a result, the rampant waste of federal natural gas that has occurred in New Mexico will continue unabated, harming public health, the climate, and the environment and causing the American public to lose out on millions of dollars in royalty revenue.

Moreover, BLM is required to quantify potential methane pollution associated with projected oil and gas development in the planning area, analyze the impacts of that pollution, evaluate alternatives based on the impacts and identify mitigation options when preparing its EIS. BLM has failed to conduct the analysis required in the draft EIS.

The agency must analyze the climate impacts associated with methane pollution resulting from future oil and gas development in the planning area, develop and include waste minimization and methane reduction stipulations and conditions of approval in the RMP and consider additional measures like phased leasing to minimize and reduce natural gas waste and methane pollution.

I. BLM has the legal obligation and authority to require waste reduction measures and has a mandate to reduce waste.

Under the MLA, FLPMA, and the Federal Oil and Gas Royalty Management Act (FOGRMA), the Department of the Interior has a responsibility and an obligation to take action to manage federal resources in a way that benefits the public. The MLA provides for the Department of the Interior to manage lands for conservation and development of oil and gas, among other minerals and resources. BLM, under the MLA, is the only federal agency with a waste prevention mandate. The MLA directs DOI to require “all reasonable precautions to prevent waste of oil or gas developed in the land” (30 U.S.C. § 225).

Further, the MLA's use of “all” to modify the term “reasonable precautions” shows that Congress intended BLM to aggressively control waste. The agency may not forego reasonable and effective

³ <http://science.sciencemag.org/content/361/6398/186.full?ijkey=42lcrj/vdyZA&keytype=ref&siteid=sci>

measures limiting venting, flaring, and leaks for the sake of administrative convenience or to enhance the bottom lines of operators. See *Halliburton, Inc. v. Admin. Review Bd.*, 771 F.3d 254, 266 (5th Cir. 2014) (ruling that statutory term “all relief necessary” authorized broad remedies against defendant because “we think Congress meant what it said. All means all.” (internal quotation omitted)); *Cty. of Oakland v. Fed. Housing Fin. Agency*, 716 F.3d 935, 940 (6th Cir. 2013) (“a straightforward reading of the statute leads to the unremarkable conclusion that when Congress said ‘all taxation,’ it meant *all* taxation” (emphasis original)).

FLPMA further provides that “the public lands be managed in a manner that will protect the quality of...environmental, air and atmospheric...values” and for BLM to manage lands for conservation. FLPMA also mandates that the Interior Department “shall, by regulation or otherwise, take any action necessary to prevent unnecessary or undue degradation” (UUD) of public lands. 43 U.S.C. § 1732(b). This mandate prohibits DOI from managing public lands primarily for energy development or in a manner that unduly or unnecessarily degrades other uses, including by virtue of exacerbating issues such as climate change that operate to degrade public lands, further highlighting the need for the agency to regulate and limit natural gas waste.

Given these circumstances, the MLA mandate that BLM require “all reasonable precautions to prevent waste, along with FLPMA’s multiple use mandate and UUD standard, it is clear BLM must address waste and ensure there are adequate standards in place – whether through federal regulatory requirements, land use plan-level prohibitions against development that results in excessive waste or unnecessary or undue methane pollution, lease stipulations, or drilling-stage conditions of approval – to minimize methane waste and pollution. 30 U.S.C. §§ 187, 225; 43 U.S.C. §§ 1701(a)(8), 1702(c), 1732(b).

It is important to note that in its revisions to the 2016 waste rule, BLM attempts to justify its decision to rescind reasonable waste prevention measures by adding a new definition of “waste of oil and gas.” Pursuant to the new definition, the agency has indicated it considers only the profits of individual oil and gas companies—not economic losses or other impacts to the public—when deciding what constitutes waste. However, this definition violates the plain language and intent of the MLA, which requires BLM to consider not just private oil and gas interests, but also the “interests of the United States” and the “public welfare” when regulating waste of publicly owned oil and gas resources leased, in the public interest, to oil and gas companies. 30 U.S.C. § 187. BLM also fails to reconcile its new definition of waste with its previous recognition in 2016 that, when regulating waste, it also must consider the interests of the public and state, tribal, and local governments entitled to royalty payments. BLM, in the RMP for the Carlsbad Field Office, would be wise to not view this definition as a constraint on its authority to reduce methane emissions, in particular given BLM’s responsibilities pursuant to FLPMA.

Additionally, the agency’s new emphasis on the economic implications for private corporations fails to consider the emergence of cost-effective technologies and best practices making it easier and cheaper than ever to minimize waste and emissions. For example, a recent study found that LDAR costs would account for less than 3 percent of annual operating costs for an average marginal well,

resulting in a decrease in annual profit of less than one-tenth of one percent.⁴ Moreover, any determination about the cost-effectiveness of requiring additional waste minimization measures should be based on field-level economics, not the economics of an individual well. While implementing a new technology or practice may result in reduced profitability for a single low-producing well, the costs associated with that business decision are spread among all the company's assets, and additional gas capture across a field can easily offset those marginal losses. BLM must consider these interests when evaluating waste and pollution in the planning context and cannot rely on its new definition to avoid its obligations to regulate waste. Furthermore, BLM must evaluate the economics of drilling projects by accounting for the benefits of methane reductions to public health, the climate, and the environment, as well as the costs to these very same areas from impacts caused by methane emissions the agency and operators are unable to prevent. If the agency chooses to base decisions in this RMP on the new, limited, and arbitrary definition of waste that does not delimit the agency's full spectrum of field-office level authority and responsibility, it must present an analysis to support that decision that also takes these factors into account.

II. The waste prevention measures in place are inadequate and cannot ensure waste minimization so this must be addressed in the RMP.

It is imperative that BLM incorporate waste and pollution prevention requirements as stipulations or conditions of approval into this RMP because of the glaring lack of adequate protections provided by other means. All substantive waste minimization provisions under the 2016 BLM Waste Rule were removed under the September 2018 revision, New Mexico state requirements fail to address any of the primary sources of waste, and EPA is in the process of eliminating protections established under NSPS 0000a. This expanding regulatory void demands RMP-level action.

a. The revision to BLM's Waste Prevention Rule will fail to prevent waste

In 1979, NTL-4A was issued to fulfil the agency's waste prevention mandate. Among other things, NTL-4A regulated venting, flaring, and royalty-free uses of oil and natural gas on BLM-administered leases. It prohibited venting or flaring of gas well gas and oil well gas unless otherwise approved; specified the circumstances under which an operator owes royalties on oil and gas lost from a lease; and authorized royalty-free venting or flaring of gas on a short-term basis without the need for approval.

However, after 35 years the agency recognized that relying on this framework was insufficient to meet its waste minimization obligations. The inadequacy of the NTL-4A framework has been well documented.

Starting in December 2007, a Royalty Policy Committee (RPC) report, *Mineral Revenue Collection from Federal and Indian Lands and the Outer Continental Shelf*, recommended that BLM update its

⁴ Morton, Pete and Hjerpe, Evan. 2016. A Review of the Economic Factors Surrounding the Capture of Methane from Oil and Natural Gas Development on Federal Public Land. Conservation Economics Institute. Available at: https://docs.wixstatic.com/ugd/5fc209_59c6d0e608554ac98fd5ac9b4655fad1.pdf.

rules and identified specific actions to improve production accountability. This was followed by a March 2010 report by the OIG, *BLM and MMS Beneficial Use Deductions* which recommended that BLM clarify its requirements for royalty-free use of natural gas; an October 2010 GAO report, *Federal Oil and Gas Leases – Opportunities Exist to Capture Vented and Flared Gas, Which Would Increase Royalty Payments and Reduce Greenhouse Gases* which recommended that BLM update its regulations to take advantage of opportunities to capture economically recoverable natural gas using available technologies; and eventually a July 2016 GAO report entitled, *OIL AND GAS—Interior Could Do More to Account for and Manage Natural Gas Emissions* which reviewed the DOI’s provisions to account for and manage natural gas emissions and found BLM’s guidance to operators on determine and reporting non-royalty bearing production was unclear and leading to inconsistent tracking and reporting which may impact the accuracy of DOI’s data on natural gas emissions.

The agency recognized these shortcomings, citing each report in the draft 2016 rule and highlighting a number of additional issues. BLM stated that NTL-4A required the agency to address venting and flaring on a case-by-case basis resulting in a tremendous administrative burden. It also notes that since NTL-4A was issued, technologies and practices for oil and gas production as well as technologies for controlling emissions have advanced considerably and that “NTL-4A neither reflects today’s best practices and advanced technologies, nor is particularly effective in requiring their use to avoid waste.”⁵ Finally, BLM acknowledged that the broad, general directives of NTL-4A left key terms and provisions (like “beneficial use”, “beneficial purpose”, avoidably lost” and “economically justified”) open to interpretation resulting in the inconsistent application the NTL across field offices.⁶ More specifically, questions often arose in regards to when venting or flaring required prior approval, when gas was royalty bearing and what constituted royalty-free onsite use.

The issues associated with the NTL-4A framework resulted in the rampant waste of publicly owned gas. The 2010 GAO report found that “in 2008, about 128 billion cubic feet (Bcf) of natural gas was either vented or flared from Federal leases, about 50 Bcf of which was economically recoverable (about 40% of the total volume lost). This economically recoverable volume represents about \$23 million in lost Federal royalties and 16.5 million metric tons of carbon dioxide equivalent (CO₂e) emissions.”⁷

Between the release of the 2010 GAO report and 2013 this waste continued. As BLM prepared the Regulatory Impact Analysis (RIA) for the 2016 Rule the agency found that in 2013, 98 Bcf of natural gas was vented and flared from Federal and Indian leases. This volume had a sales value of \$392 million and would have generated royalty revenues in excess of \$49 million. Of the 98 Bcf of gas, it is estimated that 22 Bcf was vented and 76 Bcf was flared.⁸ According to the Office of Natural

⁵ 81 Fed. Reg. 25 (February 8, 2016) at 6628.

⁶ Ibid

⁷ U.S. Bureau of Land Management.(2016). *Regulatory Impact Analysis for: Revisions to 43 CFR 3100 (Onshore Oil and Gas Leasing) and 43 CFR 3600 (Onshore Oil and Gas Operations) Additions of 43 CFR 3178 (Royalty-Free Use of Lease Production) and 43 CFR 3179 (Waste Prevention and Resource Conservation)*. p.2

⁸ Id at 3

Resources Revenue (ONRR), Federal and Indian onshore lessees and operators reported that they vented or flared 462 Bcf of natural gas between 2009 and 2015.⁹

Moreover, the waste of federal resources continues to worsen. The total amount of annual reported flaring from Federal and Indian leases increased by over 1000 percent from 2009 to 2015.¹⁰ The trends we have seen in requests for flaring and venting submitted as Sundry Notices to BLM field offices support the trends seen in wasted volumes. In 2005, BLM received just 50 applications to vent or flare gas. In 2011, BLM received 622 applications, and this doubled again within 3 years to 1,248 applications in 2014.¹¹ This waste has very real financial and environmental impacts. According to a recent study, taxpayers could lose out on almost \$800 million in royalties over the next decade due to natural gas being flared or vented from federal lands.¹²

These national trends are reflected in New Mexico. According to the analysis conducted by BLM, in 2013 operators in New Mexico flared 8.2Bcf of natural gas; 5.9Bcf, or roughly 72 percent of that came from federal and tribal lands.¹³

The 2016 Final Rule, if fully implemented, would have significantly reduced the waste of federal and tribal natural gas. When finalizing the 2016 Rule, BLM conducted a thorough analysis and estimated net benefits of up to \$204 million per year.¹⁴ That estimate took into consideration engineering compliance costs as well as the social cost of additions of carbon dioxide to the atmosphere. Total costs were estimated to be between \$110-279 million per year.¹⁵ The benefits included projected environmental benefits of reducing the amount of greenhouse gas (GHG) pollution as well as the cost savings that the industry will receive from the recovery and sale of natural gas. Monetized benefits were estimated to be between \$209 – 403 million per year.¹⁶ The rule was projected to reduce VOC emissions by 250,000-267,000 tons per year and methane emissions by 175,000 – 180,000 tpy (using the social cost of methane, estimated to be worth \$189 – 247 million per year).¹⁷ Additionally, the 2016 rule was expected to increase royalties by up to \$14 million per year and increasing natural gas production by 41Bcf per year, while having little if any effect on crude oil production.¹⁸ Altogether, the 2016 final rule would have reduced venting by about 35% and flaring by 49%.¹⁹

⁹ 81 Fed. Reg. 223 (November 18, 2016) at 83009

¹⁰ *Id.* at 83015

¹¹ *Ibid.*

¹² Western Values Project, "Up in Flames: Taxpayers Left Out in the Cold as Publicly Owned Natural Gas is Carelessly Wasted" (2014) Available at: <http://westernvaluesproject.org/wp-content/uploads/2014/05/Up-In-Flames.pdf>.

¹³ U.S. Bureau of Land Management.(2016). *Regulatory Impact Analysis for: Revisions to 43 CFR 3100 (Onshore Oil and Gas Leasing) and 43 CFR 3600 (Onshore Oil and Gas Operations) Additions of 43 CFR 3178 (Royalty-Free Use of Lease Production) and 43 CFR 3179 (Waste Prevention and Resource Conservation)*. p.202

¹⁴ 81 Fed. Reg. 223 (November 18, 2016) at 83014.

¹⁵ *Id.* at 83068.

¹⁶ *Id.* at 83069.

¹⁷ *Ibid.*

¹⁸ *Id.* at 83014.

¹⁹ *Id.* at 83069.

The 2016 Rule also had numerous ancillary benefits including reducing light and noise pollution from flaring operations, reducing exposure to hazardous air pollutants and known carcinogens like benzene, and reducing respiratory problems associated with exposure to high ozone levels.

Impressively, the 2016 rule was able to provide these benefits while imposing minimal compliance costs on operators. BLM estimated that average costs for a representative small operator under the 2016 final rule would increase by about \$55,200, which would result in an average reduction in profit margin of 0.15 percentage points.²⁰ Independent economic analyses have come to similar conclusions. A recent study found that capture costs will account for less than 3 percent of annual costs for an average marginal well, resulting in a decrease in annual profit of less than one-tenth of one percent.²¹

The benefits of the 2016 rule stand in stark contrast to the anticipated costs the revised rule will impose on the public. The recently finalized revised rule eliminates the changes made by the 2016 rule to improve upon NTL-4A and does nothing to ensure the issues stemming from the use of NTL-4A are addressed. The new rule rescinds or revises nearly all the substantive provisions of the 2016 final rule, and instead relies on existing state and EPA regulations as well as the prior NTL-4A framework to address waste of natural gas.

The new BLM rule explicitly rescinds well drilling requirements (43 CFR § 3179.101), well completion and related operations requirements (43 CFR § 3179.102), pneumatic controllers equipment requirements (43 CFR § 3179.201), pneumatic diaphragm pumps equipment requirements (43 CFR § 3179.202), storage vessels equipment requirements (43 CFR § 3179.203), LDAR requirements (43 CFR § 3179.301 – 3179.305) and the requirement to submit Waste Minimization Plans (43 CFR § 3162.3-1). It modifies and/or replaces the 2016 final rule requirements addressing the determination of avoidable and unavoidable loss (43 CFR § 3179.4), the determination of royalty bearing production (43 CFR § 3178.3 – 3178.10 and § 3179.5), initial production testing requirements (43 CFR § 3179.103), subsequent well testing requirements (43 CFR § 3179.104) and gas capture requirements (43 CFR § 3179.7 and 3179.8) with requirements that are similar to those of NTL-4A.”²²

The changes made by the new rule are likely to result in the same issues experienced when federal gas waste was managed under the original NTL-4A framework. This decision will ultimately lead to increased VOC and methane emissions and increased waste of from venting, flaring and leaks. BLM’s own analysis found that the revised rule will lead to lost cost savings from natural gas recovery and sale of \$559 million to \$734 million, forgone methane emissions reductions valued at \$66 million to \$259 million, the loss of 299 Bcf of natural gas production and lost royalty payments of \$28.3 million to \$79.1 million.²³ Meanwhile, the revised rule is not expected to result in any

²⁰ 81 Fed. Reg. 223 (November 18, 2016) at 83014.

²¹ Morton, Pete and Hjerpe, Evan. 2016. A Review of the Economic Factors Surrounding the Capture of Methane from Oil and Natural Gas Development on Federal Public Land. Conservation Economics Institute. Available at: https://docs.wixstatic.com/ugd/5fc209_59c6d0e608554ac98fd5ac9b4655fad1.pdf.

²² 83 Fed. Reg. 189 (September 28, 2018).

²³ *Ibid*

tangible increases in federal oil production and unlikely to alter the investment or employment decisions of firms.²⁴

b. Existing New Mexico state regulations fail to adequately address waste of federal resources

As part of BLM's final 2016 Rule, the agency consulted with State regulators and reviewed State requirements related to waste of oil and gas resources.²⁵ BLM discussed that State regulations do not apply to BLM-administered leases on Indian lands, and that States do not have a statutory mandate or trust responsibility to reduce the waste of Federal and Indian oil and gas.²⁶ Moreover, states typically are not subject to FLPMA's statutory mandates regarding environmental protection and multiple use management. For these and *other* reasons, BLM concluded that there was "a need for uniform, modern waste reduction standards for oil and gas operations on public and Indian lands across the country."²⁷ Considering BLM's prior findings, eliminating BLM waste policies would not result in reduced methane emissions and doing so would not satisfy BLM's mandate to prevent waste of both Federal *and* Indian oil and gas.

Setting aside the potential legal issues associated with abdicating the agency's independent statutory obligations and, instead, relying on inconsistent and varying state standards to fulfill the agency's federal waste prevention obligations, the regulations that do exist in New Mexico are insufficient. When preparing the Waste Prevention Rule, BLM found that New Mexico flared more federal oil well gas than every state but North Dakota and that flared volumes have continued to grow over time, rising a staggering 2,255% from 2009 to 2013.²⁸ A 2015 report from business consulting firm ICF International reaffirmed these results, finding that more methane gas was wasted from oil and gas production on federal and tribal lands in New Mexico than any other state.²⁹ More recently, a new study shows excessive leaking, venting and flaring of natural gas has resulted in New Mexico's oil and gas industry emitting 570,000 tons of methane each year.³⁰ In fact, between \$182 and \$244 million worth of natural gas is wasted each year, causing taxpayers to lose out on as much as \$27 million in tax and royalty revenues annually. This is enough natural gas to meet the annual heating and cooking needs of every home in the state. In the Permian Basin alone, more than 409,000 tons of methane was released from oil and gas facilities in 2014.³¹

This rampant waste of federal gas is indicative of a high producing state with inadequate waste prevention standards. More specifically, New Mexico's state regulations fail to address a number of

²⁴ *Ibid*

²⁵ See 81 Fed. Reg. at 83,019.

²⁶ *Ibid*

²⁷ *Ibid*

²⁸ U.S. Bureau of Land Management.(2016). *Regulatory Impact Analysis for: Revisions to 43 CFR 3100 (Onshore Oil and Gas Leasing) and 43 CFR 3600 (Onshore Oil and Gas Operations) Additions of 43 CFR 3178 (Royalty-Free Use of Lease Production) and 43 CFR 3179 (Waste Prevention and Resource Conservation)*. p.202

²⁹ ICF International "Onshore Petroleum and Natural Gas Operations on Federal and Tribal Lands in the United States: Analysis of Emissions and Abatement Opportunities" (2015). Available at:

https://www.edf.org/sites/default/files/content/federal_and_tribal_land_analysis_presentation_091615.pdf

³⁰ McVay, Renee and Hull, Hillary. "Oil and Gas Methane Emissions in New Mexico" (2017). Available at:

<https://www.edf.org/sites/default/files/new-mexico-methane-analysis.pdf>

³¹ Western Regional Air Partnership "O&G Emissions Inventory Project: Greater San Juan and Permian Basin." (2017) Available at: <https://www.wrapair2.org/SanJuanPermian.aspx>

issues that otherwise would have been resolved under BLM's 2016 final rule and now will not be covered by the new rule:

- Section 3179.6 of the 2016 Final Rule prohibited the venting of gas under all but a short list of exempted situations. New Mexico has no venting prohibition.
- Section 3179.7 of the 2016 Final Rule established monthly gas capture percentage targets that operators must meet, starting at 85% and increasing to 98% by 2027. The capture percentages were a crucial component of the 2016 Final Rule's larger venting and flaring reduction strategy. New Mexico does not have any comparable venting or flaring reduction targets. While the state does prohibit operators from flaring and venting casinghead gas produced from a well after 60 days following the well's completion, exceptions may be granted when "when the flaring or venting casinghead gas appears reasonably necessary to protect correlative rights, prevent waste or prevent undue hardships on the applicant."³²
- Section 3179.9 of the 2016 Final Rule required operators to measure and report the volume of all flared and vented gas. Operators of lower producing wells were permitted to estimate rather than measure the flared or vented volumes. This data helps BLM track the volume of federal gas vented and flared. It ensures the agency has the data it needs to evaluate the effectiveness of its rule and to make sure royalties are being properly assessed. New Mexico only requires operators to "meter and report casinghead gas produced and sold or transported away from a lease..." and casinghead gas that "the owner produces and uses for fuel purposes in the lease's development and normal operation."³³ New Mexico regulations explicitly state that flared gas does not need to be measured except for that gas which is flared prior to connection to a gathering line. Recently, Senate Memorial 102 established a pilot program requiring operators to report the volume of flared, vented and leaked gas. However, these requirements have not been formally adopted by the state or made permanent in any way.
- Section 3179.101 through 3179.104 of the 2016 Final Rule required that gas from all well drilling, completion and testing operations be captured and sold, flared, used on site, or injected. New Mexico has no comparable requirements.
- Sections 3179.201 and 3179.202 of the 2016 Final Rule established requirements for pneumatic controllers and diaphragm pumps. BLM's own analysis found that combined, pneumatic pumps and controllers were the single largest source of vented natural gas from federal lands in 2013 accounting for nearly 40% of all vented gas.³⁴ New Mexico has no state requirements to minimize emissions from pneumatic pumps or controllers.
- Sections 3179.301 through 3179.305 of the 2016 final rule required leak detection and repair (LDAR) for all well production facilities, compressors and produced water facilities located on a federal lease. Operators must use optical gas imaging technology, a portable analyzer or a device not listed that is approved by BLM. Inspections must be conducted semi-annually for all well production facilities and quarterly for all compressors. Any leaks

³² New Mexico Administrative Code (NMAC) 19.15.18.12.F

³³ NMAC 19.18.15.11

³⁴ U.S. Bureau of Land Management.(2016). *Regulatory Impact Analysis for: Revisions to 43 CFR 3100 (Onshore Oil and Gas Leasing) and 43 CFR 3600 (Onshore Oil and Gas Operations) Additions of 43 CFR 3178 (Royalty-Free Use of Lease Production) and 43 CFR 3179 (Waste Prevention and Resource Conservation)*. p.19

found must be repaired within 30 days. The rule also establishes a 500ppm repair threshold when leaks are detected. In Colorado the repair threshold is less stringent for compressor stations (2,000ppm) and inspection frequencies vary based on actual VOC emissions. New Mexico has no LDAR requirements for oil and gas production facilities or compressor stations. Additionally, the BLM's 2016 rule contained the only LDAR requirements for nearly 88,000 wells on federal and tribal lands—in other words, over 80% of wells subject to the Waste Prevention Rule are not covered by EPA OOOOa or state LDAR standards and are now leaking unchecked.

More generally, even where state regulations meet or exceed the standard established by the 2016 rule, without regulations of its own, the agency must rely on the state's inspection and enforcement and defer to New Mexico in the assessment of penalties in instances where violations do occur. In other words, by not imposing more specific waste prevention requirements in the RMP, BLM may lose out on its ability to effectively regulate waste and ensure accurate royalty collection. And, insofar as BLM determined that the specific provisions of the 2016 Methane Waste Rule were not appropriate at a national level, BLM should nonetheless consider, as a reasonable alternative, their appropriateness for inclusion as "reasonable measures" at the RMP-level to prevent waste or unnecessary or undue degradation within the Carlsbad Field Office and based on an RMP-specific NEPA analysis. 40 C.F.R. § 1502.14. We address this request in further detail below.

III. The current boom in the Permian Basin increases the potential for significant GHG emissions and natural gas waste.

Along with weak state regulations, the natural gas waste issue is compounded in New Mexico by the ongoing boom in the Permian Basin. The Permian has experienced a renaissance as of late. The unique geological shale formation in the basin, containing six to eight oil-rich zones, began attracting investment about a decade ago after operators employed new technologies and techniques significantly driving down the cost of production. These developments, along with existing infrastructure, have brought the breakeven price as low as \$40 a barrel.³⁵

As the economics in the basin have improved, the area has seen increased investment, a surge in leasing and rising oil production. As of 2017, New Mexico produced more onshore federal oil – around 89 million bbls or 46% of total US federal onshore oil - than any other state in the country and was second to only Wyoming in federal onshore natural gas production – producing around 801,000,000Mcf or 25% of total US federal onshore gas.³⁶

Production volumes and trends are even more striking in Eddy and Lea counties which overlay the Permian and make up the majority of the CFO RMP planning area. In 2017, the two counties accounted for 94% of all oil produced in the state and 50% of all gas.³⁷ Over the last decade, (2007-

³⁵ Krauss, Clifford. "Land Rush in Permian Basin, Where Oil Is Stacked Like a Layer Cake". *New York Times*. 17 Jan. 2017.

³⁶ US Department of the Interior, Office of Natural Resources Revenue, Extractive Industries Transparency Initiative: <https://revenue.data.doi.gov/>

³⁷ US Department of the Interior, Office of Natural Resources Revenue, Extractive Industries Transparency Initiative: <https://revenue.data.doi.gov/>

2017) gas production in Eddy and Lea counties combined increased 34% while oil production increased 191%. And as of June 2018, the two counties had 367 operators, 9,073 leases and 23,564 producing wells.³⁸ And interest continues to grow. According to Baker Hughes rig count data, as of October 26, 2018, the Permian Basin had 110 more active drill rigs than it did at the same time one year ago, now up to 489.³⁹ And New Mexico currently has 101 active drill rigs, up from 32 in October 2016.⁴⁰

But for the purposes of this planning decision, it is important to note that federal production accounts for just over 50% of all oil and gas produced in those counties and from 2008 to 2017 federal natural gas production in Eddy and Lea counties increased 70% while federal oil production increased by 251%.⁴¹ Federal oil and gas production in the planning area is growing at a rapid pace and BLM predicts that over the next 20 years, between 3,538 and 6,044 new wells will be completed on BLM-administered lands in the Carlsbad Field Office.⁴²

Increased production, along with depressed natural gas prices and the fact that the Permian is primarily an oil play have all contributed to the waste issue. Operators have frequently seen the production of associated gas as more of a nuisance than an asset and often flare or vent the gas rather than capture and sell it. It has not helped that pipeline infrastructure in the region is outdated and insufficient to handle the volume of production. And in some instances, existing gas pipelines are being converted to handle crude oil simply because the economics are better.⁴³

Without regulatory or economic incentives and amidst the rush to develop oil in the Permian, operators in New Mexico will continue to waste gas. According to the New Mexico Oil Conservation Division's C-115 Non-Transported Product Disposition Report, operators wasted 14,660,288Mcf of natural gas statewide in 2017.⁴⁴ And the BLM anticipates this will continue. Accounting for all on-the-books emissions control regulations, projected oil and gas development in the CFO planning area is expected to emit 46,191 metric tons per year of methane (worth roughly \$16.5 million) in 2028.⁴⁵

More stringent standards are necessary within the context of this plan to incentivize capture. As the BLM notes in its Air Resources Technical Support Document, although production is expected to increase at a rapid pace in the CFO, GHG emissions "may be offset if natural gas produced using stringent GHG emission reduction strategies (such as green completions) replaces higher GHG-emitting natural gas production within the CFO or elsewhere in New Mexico..."⁴⁶

³⁸ "Lea County, NM Permits, Production, Wells & Operators." DrillingEdge.com - Oil and Gas Data as a Service, www.drillingedge.com/new-mexico/lea-county.

³⁹ "North America Rig Count." North America Rig Count | BakerHughes.com, phx.corporate-ir.net/phoenix.zhtml?c=79687&p=irol-reportsother.

⁴⁰ *Ibid*

⁴¹ US Department of the Interior, Office of Natural Resources Revenue, Extractive Industries Transparency Initiative: <https://revenue.data.doi.gov/>

⁴² BLM Carlsbad Field Office Draft RMP Volume I – EIS p.4-269.

⁴³ Adams-Heard, Rachel. "Permian Pipeline to Temporarily Convert to Oil." *Bloomberg News*. 5 Oct. 2018.

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⁴⁵ BLM Carlsbad Field Office Draft RMP Volume I – EIS p.4-269.

⁴⁶ U.S. Bureau of Land Management.(2018). *Air Resources Technical Support Document: Carlsbad Field Office Oil and Gas Resource Management Plan Revision* at 5-3.

IV. The Draft RMP fails to adequately analyze the methane issue and establish measures to reduce the impact of methane emissions and natural gas waste.

In preparing the EIS for the Draft RMP, BLM failed to conduct the necessary NEPA analysis. BLM must quantify potential lifecycle methane emissions, analyze potential climate change impacts associated with those emissions using available tools, such as the social cost of carbon (SCC), and evaluate mitigation measures to reduce emissions and natural gas waste for each alternative. The analysis conducted in the draft is deficient.

- a. The overall approach of the DRMP towards climate change is deeply flawed, allowing the BLM to underestimate GHG emissions, ignore the impact of those emissions on climate change, and ignore the impact of climate change on the region.*

On October 6, 2018, the Intergovernmental Panel on Climate Change (IPCC) released a report warning that the environmental impacts of climate change are occurring more quickly than previously forecast and that these impacts will be more severe at greater degrees of warming.⁴⁷ The report took a comprehensive look at differences in environmental impacts between an additional warming of 1.5°C and 2°C “based on the assessment of the available scientific, technical and socio-economic literature.” The report reiterated that average global temperatures have already increased by about 1°C above pre-industrial levels due to human activities, and found that “[g]lobal warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate” due to a combination of both past and continuing GHG emissions.⁴⁸ The IPCC report emphasized that GHG emissions pose significant environmental risks and that the maximum temperature reached will be determined by cumulative net global anthropogenic CO₂ emissions.

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 (high confidence), but these emissions alone are unlikely to cause global warming of 1.5°C (medium confidence).

Reaching and sustaining net-zero global anthropogenic CO₂ emissions and declining net nonCO₂ radiative forcing would halt anthropogenic global warming on multi-decadal timescales (high confidence). The maximum temperature reached is then determined by cumulative net global anthropogenic CO₂ emissions up to the time of net zero CO₂ emissions (high confidence).⁴⁹

The report notes that future environmental impacts from climate change depend on “the rate, peak, and duration of warming,” and that impacts are greater at warming of 1.5°C than the warming of 1°C that human activities have already caused, but lower than they would be at warming of 2°C. The report found that

⁴⁷ IPCC, Global Warming of 1.5°C, Summary for Policymakers, October 6, 2018.

⁴⁸ Id.

⁴⁹ Id.

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 (high confidence), hot extremes in most inhabited regions (high confidence), heavy precipitation in several regions (medium confidence), and the probability of drought and precipitation deficits in some regions (medium confidence).⁵⁰

In addition to increasing the probability of droughts, the IPCC found that these temperature increases will also lead to an increase in their intensity or frequency. In ozone-prone areas like the CFO planning area, higher temperatures will also increase the risk of heat-related morbidity and ozone-related mortality.⁵¹

The IPCC report also examined the reductions in CO₂ emissions that would be required to avoid increased temperatures and their associated environmental impacts. It found that to keep temperatures from increasing above 1.5°C, CO₂ emissions would need to decline by about 45% from 2010 levels by 2030 and reach net zero by 2050. To stay below 2°C, emissions would have to decline by about 20% by 2030 and reach net zero by 2075. Achieving these reductions would also require “deep reductions” in methane emissions, including “broad mitigation measures in the energy sector.”⁵²

The IPCC “Global Warming of 1.5°C” report has profound implications for the CFP RMP. It documents the scientific consensus that warming of 1.5°C to 2.0°C can be expected within roughly the next decade, and that resulting environmental impacts such as extreme high temperatures and severe drought are not vague long-term threats but that they can be expected to occur within the 20-year RMP planning horizon. The report also makes clear that key to avoiding these impacts is limiting warming, and that “[l]imiting global warming requires limiting the total cumulative global anthropogenic emissions of CO₂ since the preindustrial period, i.e. staying within a total carbon budget (high confidence).” These findings leave no place for the CFO to hide from the climate implications of the preferred alternative; i.e., that it would cause significant increases in anthropogenic emissions of CO₂ and methane, that these emissions would contribute to an inexorable rise in global temperatures, that increased warming would have severe negative environmental consequences, and that many of these consequences would be likely to be experienced in the planning area. While the DRMP contains some information about GHG emissions and climate change, it ignores this larger story, and fails to live up to its air resources planning goals and objectives to “[m]anage CFO activities and development to avoid or minimize emissions of greenhouse gases.”⁵³

- b. The DRMP based its indirect end-use CO_{2e} emissions forecasts on indefensible assumptions about oil and gas production growth, and more realistic assumptions will show that these emissions will have a significant climate impact.*

⁵⁰ Id.

⁵¹ American Lung Association, State of the Air 2018,

⁵² Id.

⁵³ DRMP at 2-24

According to the DRMP,

To estimate the ultimate end-use/energy consumption emissions for a particular field office planning area the baseline and projected annual oil and gas production values must be estimated and then multiplied by appropriate emission factors to calculate CO₂e emissions.⁵⁴

Based on historical oil and gas production volumes from the Office of Natural Resources Revenue and production forecasts from the U.S. Energy Information Administration, CFO found that “2 percent growth per year for hydrocarbon production represents a reasonable National average growth that takes into consideration periods of high and low drilling activity.”⁵⁵ Further, the ONRR data also showed a 10% growth rate in the planning area from 2010 to 2015. Based on this information,

Utilizing a 2% to 10% range thus depicts the potential hydrocarbon production for the CFO, based on the national projection and the historical growth in the planning area.⁵⁶

However, readily available production data for more recent years is available from the New Mexico Oil Conservation Division (OCD). On its website, OCD provides a statistical series “County Production and Injection by Month” that shows oil and gas production volumes for Eddy and Lea Counties through August 2018.⁵⁷ This data shows much higher rates of growth, with actual recent production growth rates in SE New Mexico far outstripping the DRMP forecasts. For example, in Table 4-135, the DRMP forecasts oil production to be 89.4 million barrels in 2025. Yet production in the region was already roughly double this amount by 2017 at 162.6 million barrels. From 2016 to 2017, oil production grew from 74 to 95 million barrels or 21.6% in Lea County and 15.1% region-wide. Production surged in 2018. Based on OCD data available through August 2018, year-over-year oil production grew almost three times faster than the DRMP high growth assumption of 10% in both Lea and Eddy Counties (60 to 83 million barrels and 43 to 60 million barrels respectively and 103 to 143 million barrels combined); i.e., at roughly 28%. Indicators of continued growth include significant amounts of capital investment in the region, record-high lease sales, and continuing high numbers of APD approvals.⁵⁸ The CFO must utilize current oil and gas production, APD, and other data available from OCD and other sources in developing assumptions for indirect end-use emissions. Even at grossly underestimated levels, the resulting emissions are significant; i.e., “The CFO production would account for 3.6 % of the end use emissions of all U.S. production.”⁵⁹ At higher rates of production growth and given the increasing share of total U.S. oil production coming from the Permian Basin, GHG emissions from the CFO planning area can be expected to be a significant factor in overall U.S. GHG emissions in the coming years.

⁵⁴ DRMP at 4-270

⁵⁵ Id.

⁵⁶ Id.

⁵⁷ <https://www.wapps.emnrd.state.nm.us/ocd/ocdpermitting//Reporting/Production/CountyProductionInjectionSummary.aspx>

⁵⁸ “The BLM expects approximately 600 to 800 APDs per year to be submitted in future years, depending on economic circumstances (BLM 2014a)” DRMP at 3-81; <https://www.abqjournal.com/1218213/latest-sale-of-nm-oil-leases-sets-national-record.html>

⁵⁹ DRMP at 4-270

- c. *The BLM has failed to conduct an adequate cumulative impacts analysis.*
- i. *BLM avoids addressing the contribution that project-area GHG emissions will make to future climate change by mischaracterizing the analytic task before them as requiring linkage of project area emissions to project area climate change impacts and stating that such an analysis cannot be done.*

BLM has mischaracterized their obligation under NEPA as needing to address how project area GHG emissions would lead to project area climate change impacts. This flies in the face of the nature of climate change, as discussed further below, and the professed difficulty to conduct such an analysis—in effect, to chase GHG molecules from their point of release to the point they make a climate change impact—is neither particularly relevant nor a reasonable excuse for failing to provide the more appropriate analysis of how project-area GHGs will combine with other GHG emissions to contribute to overall climate change and how climate change is currently impacting, and will increasingly impact, the region. Fundamentally, BLM’s attempt to hide behind a professed lack of high-precision analytical tools fails to account for the flexibility afforded by NEPA to make reasonable assumptions as a component of its duty to take a hard look at impacts. NEPA, moreover, clearly forbids an agency, as BLM risks here, pretending that its actions do not cause adverse impacts. Put simply, BLM must quantify and analyze the impacts of methane waste and pollution.

In explaining its approach to climate analysis, the BLM stated that

The climate change research community has not yet developed specific tools for evaluating or quantifying end-point impacts attributable to the emissions of GHGs from a single source (i.e., existing climate prediction models are not at a scale sufficient to estimate potential impacts of climate change within the analysis area). Also, scientific literature that addresses the climate effects of individual, facility-level GHG emissions has not been identified.⁶⁰

Elsewhere BLM stated that “There is thus limited scientific capability in assessing, detecting, or measuring the relationship between emissions of GHGs from a specific single source and any localized impacts. As a consequence, impact assessment of effects of specific anthropogenic activities cannot be performed.”^{61,62}

⁶⁰ DRMP at 3-68

⁶¹ Id. at 3-69

⁶² In the Air Resources Technical Support Document, BLM also asserted that analysis of the climate impacts of project emissions is not possible.

While it is possible in many cases to quantify potential quantities of GHG emissions or the amount of carbon sequestered from particular activities, the tools necessary to quantify the incremental climatic impacts of those specific activities are presently unavailable. For example, a certain quantity of GHG emissions associated with gas production cannot be linked with a specific, measured impact of a global increase in temperature. As a consequence, impact assessment of effects of specific authorized activities (such as oil and gas development) in the CFO cannot be performed at this time. While calculating GHG oil and gas production emissions is relatively straightforward, predicting the effect of these emissions on climate change requires modeling on a global scale. Climate change is a global phenomenon; potential impacts may occur thousands of miles from GHG emission sources, such as those included in the CFO Alternatives.

Air Resources Technical Support Document (ARTSD), Carlsbad Field Office, Oil and Gas Resource Management Plan Revision, URS, April 2013, p. 5-2 and 5-3

BLM has not explicitly claimed that attributing each oil and gas well as a “single source” of GHG emissions to end-point impacts would be impossible. But neither has it made the claim that it would be impossible to “evaluate” the contribution of aggregate project emissions to future climate change, and the resulting “potential impacts of climate change within the analysis area.” It has simply dodged such analysis through its mischaracterization of the task at hand.

BLM, as noted, must both quantify and analyze the impacts of methane emissions. NEPA requires a more searching analysis than merely disclosing the amount of pollution. Rather, BLM must examine the “ecological[,]... economic, [and] social” impacts of those emissions, including an assessment of their “significance.” 40 C.F.R. §§ 1508.8(b), 1502.16(a)-(b). Absent that two-step process, BLM has failed to take the requisite hard look compelled by NEPA. Here, however, BLM takes only the first step in the required analysis; i.e., quantifying expected GHG emissions. It estimated direct CO₂ emissions of 11,547,017 mtpy and direct methane emissions of 13,235 mtpy under the preferred alternative.⁶³ It also estimated indirect end-use CO_{2e} emissions of 2,960,000,000 mt.⁶⁴ Ignoring the fact that these are unquestionably underestimates, BLM does not acknowledge that these emissions would be an incremental addition to aggregate emissions caused by past, present, and reasonably foreseeable actions that, individually and cumulatively, are responsible, at least in part, for driving future climate change, or otherwise examine the implications of intensified oil and gas development to the climate. Further, tools are in fact available to put this level of emissions into context. For example, according to the EPA GHG Equivalencies Calculator, indirect emissions from the project would be equivalent to the one year’s emissions from 733 coal plants.⁶⁵ Similarly, BLM could compare projected cumulative emissions to the carbon budgets identified in the IPCC’s October 6, 2018 report. By ignoring these tools, BLM has set up “straw man” science -- that project-area emissions cannot be linked to project-area climate impacts or specific temperature increases, and then abandoned any attempt at real climate analysis and ignored the very real contribution that projected GHG emissions will make towards global climate change.

- ii. *BLM failed to properly address the incremental and aggregate nature of GHG emissions in driving climate change.*

BLM recognizes how climate science really works; i.e. the significance of incremental emissions to the aggregate:

Research on how emissions of GHGs influence global climate change and associated effects has focused on the overall impact of emissions from regional or global aggregate sources. This approach is required primarily because GHG emissions from single sources are small relative to aggregate emissions and GHGs, once emitted from a given source, become well mixed in the global atmosphere and have a long atmospheric lifetime.⁶⁶

⁶³ DRMP at 4-269

⁶⁴ DRMP at 4-270

⁶⁵ Available at <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

⁶⁶ IT. At 4-268

Yet the agency fails to meet its obligation to analyze the cumulative impacts on the climate of the past, present, and reasonable foreseeable oil and gas development in the project area. NEPA requires a detailed analysis of “cumulative” effects, which are “the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.” 40 C.F.R. §§ 1508.7, 1508.25(c). Analysis of cumulative impacts protects against “the tyranny of small decisions,” *Kern v. BLM*, 284 F.3d 1062, 1078 (9th Cir. 2002), by confronting the possibility that agency action may contribute to cumulatively significant effects even where impacts appear insignificant in isolation. 40 C.F.R. §§ 1508.7, 1508.27(b)(2). BLM violated this requirement in the DRMP by failing to consider the reasonable foreseeable incremental and total contribution of greenhouse gas emissions from oil and gas development in the CFO planning area when added to other relevant past, present and reasonably foreseeable BLM-managed fossil-fuel extraction emissions as well as GHG emissions from non-federal sources within the CFO planning area. In the project area, oil and gas development on Federal lands are estimated to comprise only roughly half of total activity, implying that combustion of all oil and gas produced, including from state and private lands, would be equivalent to a year’s emissions from over 1,400 coal plants.⁶⁷

In its guidance to federal agencies on how to address GHG emissions and climate change in NEPA reviews, the Council on Environmental Quality tackles the issue of incremental emissions head on. As explained by CEQ,

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.⁶⁸

CEQ’s description of the nature of climate change makes it clear that framing the analysis as the relationship between project-level emissions and project area climate impacts is nonsensical. What really matters is the incremental contribution of project emissions to cumulative global emissions and that fact that these emissions will lead to a worsening of climate impacts not only globally but also in the project area. The level of oil and gas development envisioned in the DRMP would lead to very significant amounts of GHG emissions that cannot escape analysis.

⁶⁷ ARTSD, Table 1-1 at 1-2

⁶⁸ Council on Environmental Quality, 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, 81 FR 51866, August 5, 2016

- iii. *BLM has analyzed current and future impacts of climate change on the planning area but then ignored the implications of project GHG emissions for the worsening of these impacts.*

BLM's cumulative climate impacts analysis (Section 4.6.23) begins with a general summary of the conclusions of the 2016 National Climate Assessment for the Southwestern U.S., with its familiar litany of impacts including rising temperatures, reduced snowpack and streamflow, worsening drought, and increased wildfires. It then takes a closer look at climate impacts specific to the region and found that "[w]ater, vegetation, wildlife, cultural, air, and karst resources are identified as the resources most susceptible to climate change impacts in the planning area." DRMP at 4-518 In addition to describing climate change impacts, the analysis also addresses resource resiliency in the face of climate change, where "[r]esilience can be generally defined as the capacity of a resource to absorb stresses (e.g., land uses, climate change, etc.) and maintain function in the face of external stresses imposed upon it." DRMP at 4-518.

The cumulative impact analysis addresses in a definitive manner numerous specific impacts from climate change that are expected to occur for several of these resources in the planning area. The information provided by BLM is specific and worth reproducing here in full (internal citations omitted). It is difficult to comprehend, as one reads through these dire consequences of climate change on the resources that it is responsible for managing, how BLM can divorce these impacts from the massive amount of GHGs that it forecasts would be emitted from oil and gas production under the proposed action.

- One predicted consequence of climate change in the Southwest is a decrease in vegetation production, which would result in increased erosion. Additionally, a hotter and dryer climate would result in a higher frequency of severe disturbance such as wildfires. Burned areas devoid of vegetation would increase the likelihood of erosion from wind and water. Wildfires may also trigger "abrupt ecosystem transitions" that result in alterations to vegetation and "geomorphic, soil, hydrological, and biogeochemical systems."
- The combined impacts from climate change and land uses will result in a decrease in overall conditions of wildlife habitat, forage production, and water availability and quality, thereby also decreasing the resiliency of many wildlife.
- With climate change, major changes in the structure and species composition of southwestern plant communities are anticipated due to increasing temperatures and altered precipitation patterns.
- Climate change further fragments habitat and creates barriers to migration, which can result in a decrease in a species' total range or a shift in range. Range shifts will alter the composition and structure of ecological food webs. Attempts to redistribute to more favorable habitats may be hampered by fragmentation, which can prevent species movements, potentially contributing to species extinction.
- Riparian areas are expected to be significantly impacted by warming and a decrease in average annual precipitation, which will cause seasonal peak flows to occur earlier and snowpack to be reduced. Given that the Pecos River is recharged, in part,

by the Capitan Aquifer, decreased precipitation and subsequent pumping for irrigation, domestic use, etc., reduces the water table, which then results in decreased Pecos River flow.

- The general effect of climate change on the southwestern United States will be a drier and warmer climate. The impact of that effect on the cave and karst environments could be multi-fold. With the increased desertification of the karst landscape there would be less recharge of the aquifers. This would then result in decreasing water levels in the karst aquifers.
- A warming climate associated with climate change can potentially increase ground-level ozone concentrations on a regional basis. This could present future problems for compliance of ozone standards and cause ozone concentration exceedances. Without accounting for climate change effects, models indicate that, by 2021, areas may be in exceedance of the new ozone standard of 70 ppb due to foreseeable development (. Combined with climate change, even greater exceedances leading to non-attainment are likely to occur. DRMP at 4-520 to 4-524.

In addition to identifying these impacts on resources from climate change, BLM has analyzed “anticipated land use impacts to each of these resources’ resiliency in the context of a changing climate scenario as described above.” In Table 4-242, it provides a graphical summary of “whether anticipated land uses will increase or decrease resource properties’/attributes’ resiliency.” It states that “[j]ustification of these estimates of increase or decrease in resiliency is provided in some of the most current peer-reviewed science literature.” DRMP 4-519.

Table 4-242. Anticipated Land Use Impacts to Resource Resiliency in the Context of Climate Change

	Groundwater	Soils	Vegetation	Karst	Wildlife	Riparian	Air
Leasable minerals	↓	↓	↓	↓	↓	↓	↓
Locatable minerals	↓	↓	↓	↓	↓	↓	↓
Salable minerals	↓	↓	↓	↓	↓	↓	↓
Land use authorizations	↓	↓	↓	↓	↓	↓	–
Renewable energy	↓	↓	↓	–	↓	↓	↑
Grazing	↓	↓	↓	↓	↓	↓	↓
OHV use	↓	↓	↓	↓	↓	↓	↓

↑ = increase in resource resiliency due to land use.

↓ = decrease in resource resiliency due to land use.

The picture couldn’t be more clear. The resources of the CFO planning area will be increasingly and severely compromised by climate change, and these impacts will be compounded by land uses envisioned by the plan. Yet BLM fails to make any connection between the climate impacts that it has identified and the fact that oil and gas development will lead to significant GHG emissions that will drive further climate change. BLM is not helpless here. As discussed below, it is obligated to consider alternatives that would minimize or halt further leasing of lands for oil and gas extraction to reduce the end-use GHG emissions that threaten our climate. And, while direct methane emissions are not as significant a source of GHG emissions as indirect combustion emissions, BLM

should also incorporate the cost-effective methane mitigation measures included in Alternatives A and B into all of the alternatives considered under the RMP revision.

Finally, BLM has erred in failing to use the most current science to analyze the impacts of climate change on the planning area, as required by NEPA,⁶⁹ instead relying on the Third National Climate Assessment. In August 2017, a Climate Science Special Report was released as Volume 1 of the Fourth National Climate Assessment.⁷⁰ As Judge Armijo found in a recent challenge to a Santa Fe National Forest RMP revision, “Accordingly, since the date of the ARTSD (2013), substantial progress may have been made in assessing the potential global and regional effects of climate change. On remand, in considering the potential impacts of the full amount of greenhouse gas emissions which are indirect effects of issuing the leases in this case, BLM must not rely on outdated scientific tools and analyses.”⁷¹ The 2017 Special Report contains updated information on climate change attribution, temperature change, precipitation, extreme storms, and drought, floods and wildfire that BLM must use this updated information in conducting its analysis.

- iv. *While projected GHG emissions are used as a proxy for the proposed action’s climate change impacts in keeping with BLM standard practice, several other tools are also available that are much more effective in putting emissions in context in terms of both contributing to future climate change and estimating the costs of climate impacts. These tools should have been used.*

As discussed above, BLM claims that because “there are difficulties in attributing specific climate change impacts to any given project or activity and quantifying those impacts,” it has used “projected GHG emissions [to] serve as a proxy for a proposed action’s climate change impacts.”⁷² It then proceeds to provide historical data about New Mexico GHG emissions.

According to information in Inventory of New Mexico Greenhouse Gas Emissions: 2000–2007 (NMED 2010), total CO₂e emissions in 2007 were estimated to be 76.2 million metric tons. As a point of comparison, CO₂e emissions for the United States in 2007 totaled 7,263.2 million metric tons (EPA 2013c). New Mexico GHG emissions represent about 10.5% of the total United States emissions.⁷³

BLM then proceeds to compare estimated project direct emissions with New Mexico and U.S. emissions, finding that project emissions would be roughly 17% of statewide emissions and 0.2% of national emissions.

Annual estimated 2007 New Mexico GHG emissions were 76.2 million metric tons of CO₂e. There is little difference in CO₂e emissions among the alternatives, with

⁶⁹ An EIS must provide a “full and fair discussion of significant environmental impacts.” 40 C.F.R. § 1502.1. The environmental information made available to the public “must be of high quality.” 40 C.F.R. § 1500.1(b). “Accurate scientific analysis” proves “essential to implementing NEPA.” *Id.* NEPA requires an agency to ensure “scientific integrity” in the analyses contained in an EIS. 40 C.F.R. § 1502.24.

⁷⁰ Available at <https://science2017.globalchange.gov/>

⁷¹ San Juan Citizens All. v. United States Bureau of Land Mgmt., 326 F. Supp. 3d 1227, 1248 (D.N.M. 2018)

⁷² DRMP at 4-268

⁷³ DRMP at 3-69

Alternatives A and B producing slightly higher CO₂e emissions. Maximum GHG emissions are estimated to be approximately 17% of 2007 New Mexico GHG emissions. The maximum estimated GHG emissions are approximately 0.2% of total U.S. 2008 CO₂e emissions of 6,821E+06 mtpy.⁷⁴

In its analysis of indirect emissions, BLM drops comparison with statewide totals. This is unsurprising, as indirect emissions over the 20-year period are roughly 40 times greater than statewide emissions in 2007. For comparison with national emissions, BLM reports that “CFO production would account for 3.6% of the end use emissions of all U.S. production.”⁷⁵

This is the extent of BLM’s “analysis” of the climate change impacts from the proposed action. Yet several tools are, as noted above, available that are much more effective in putting emissions in context in terms of both contributing to future climate change and estimating the costs of climate impacts.

One such tool is the EPA GHG Equivalencies Calculator. The Calculator was used above to determine that oil and gas development over the 20-year planning period would release the same amount of GHG emissions as 733 coal plants in one year. Other comparisons available from the Calculator are that project direct and indirect emissions would equal annual GHG emissions from 634 million cars or the annual energy use of 320 million homes. This type of comparative information is far more conducive to informed decision-making than percentages of state or national emissions.

Another measuring standard available to BLM for analyzing the magnitude and severity of estimated project GHG emissions is to apply those emissions to the remaining global carbon budget. A “carbon budget” offers a cap on the remaining stock of greenhouse gases that can be emitted while still keeping global average temperature rise below scientifically-based warming thresholds beyond which climate change impacts are highly likely to result in severe and irreparable harm to the biosphere and humanity.⁷⁶ Carbon budgeting gets closer to the question of climate impacts, as opposed to incremental emissions, since it is linked directly to increasing temperatures. According to the recent IPCC report, “using global mean surface air temperature, as in AR5, gives an estimate of the remaining carbon budget of 580 GtCO₂ for a 50% probability of limiting warming to 1.5°C, and 420 GtCO₂ for a 66% probability (*medium confidence*).”⁷⁷ Forecasted direct and indirect emissions of almost 3 GtCO₂ from oil and gas development in the project area would consume between 0.5 and 0.7% of the remaining global carbon budget.

BLM’s failure to apply available tools that could be utilized to analyze the cumulative significance and severity of planning area emissions and associated climate impacts deprive the public of important information on the cumulative greenhouse gas emissions and true climate implications of plan implementation. *See ONDA*, 625 F.3d at 1099-100 (requiring agencies to “take a ‘hard look’

⁷⁴ DRMP p. 4-268

⁷⁵ DRMP at 4-270

⁷⁶ The Paris Agreement states that global warming must be held “well below 2°C above pre-industrial levels” with a goal to “limit the temperature increase to 1.5°C.” U.N. Framework Convention on Climate Change, Conference of the Parties, Adoption of the Paris Agreement, Art. 2, U.N. Doc. FCCC/CP/2015/L.9 (Dec. 12, 2015), *available at*

http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

⁷⁷ IPCC 2018

at how the choices before them affect the environment, and then to place their data and conclusions before the public”). They also operate – seemingly by design – to deprive BLM of any impetus to take action at scale to address the climate crisis. While climate change presents a global problem, the solution to that problem rests, in part, with federal agencies who are responsible for fossil fuel production operations, in particular, here, BLM given the vast scope of development occurring and reasonably foreseeable in the CFO planning area.

- d. BLM failed to use the social cost of carbon (SCC) and social cost of methane (SCM) when analyzing potential climate impacts and provided insufficient justification for its omission.*

BLM failed to use SCC in its analysis of potential impacts. The SCC is a leading tool for quantifying the climate impacts of proposed federal actions. It is an estimate, in dollars, of the long-term damage caused by a one ton increase in carbon dioxide (CO₂) emissions in a given year; or viewed another way, the benefits of reducing CO₂ emissions by that amount in a given year. The SCC is intended to be a comprehensive estimate of climate change damages that includes, among other costs, the changes in net agricultural productivity, risks to human health, and property damages from increased flood risks. Critically, the protocol not only contextualizes costs associated with climate change, but can also be used as a proxy for understanding climate impacts and to compare alternatives.

In 2010, an interagency working group was convened by the Council of Economic Advisers and the Office of Management and Budget to design an SCC modeling exercise and develop estimates for use across the federal government. The resulting SCC estimate was developed through a rigorous multi-agency process based on generally accepted research methods and years of peer-reviewed scientific and economic studies. The interagency group was comprised of scientific and economic experts from the White House and federal agencies, including: The Council on Environmental Quality, National Economic Council, Office of Energy and Climate Change, Office of Science and Technology Policy, EPA, and the Departments of Agriculture, Commerce, Energy, Transportation, and Treasury. The interagency group identified a variety of assumptions, which were then used to estimate the SCC using three integrated assessment models, which each combine climate processes, economic growth, and interactions between the two in a single modeling framework. The working group presents values for social costs from 2015 to 2050, assuming discount rates of 5%, 3%, 2.5% and the 95th percentile of the 3% discount rate.⁷⁸ These values range from \$11 to \$212 (in 2007 dollars per metric ton of carbon dioxide).⁷⁹ These figures do not reflect the full range of climate impacts and accordingly provide a conservative estimate of the costs from carbon emissions.

The EPA also developed a companion protocol called the Social Cost of Methane (SCM), focusing on methane emissions. The 2010 SCM has been estimated to be between \$370 and \$2,400 per ton of

⁷⁸ Interagency Working Group on Social Cost of Carbon, United States Government, Technical Support Document: - Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis - Under Executive Order 12866 at 2 (Aug. 2016 revision). Although President Trump directed the Office of Information and Regulatory Affairs to withdraw this metric, it remains the best available tool for complying with the legal requirement to analyze the effects of greenhouse gas emissions. See Exec. Order No. 13,783, 82 Fed. Reg. 16,093, 16.095-96 (Mar. 28, 2017) at 2-3.

⁷⁹ *Ibid.*

methane in 2007 dollars.⁸⁰ The significantly higher social cost estimates for an additional ton of methane relative to carbon dioxide is due to the significantly larger radiative forcing generated by methane which has a global warming potential of between 28 and 87 times that of carbon dioxide.

In the draft RMP/EIS, BLM has declined to apply the SCC protocol to analyze the climate impacts from this planning process, claiming that the agency need not undertake a SCC analysis 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 carbon-based energy 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.”⁸¹ None of these rationales provides a non-arbitrary reason for BLM’s failure to conduct a SCC/SCM analysis.

First, the concept that the SCC protocol cannot be utilized in non-rulemaking procedures, such as NEPA analyses and project decisions, has been rejected by the courts. *See High Country Conservation Advocates v. United States Forest Serv.*, 52 F. Supp. 3d 1174, 1192 (D. Colo. 2014) (“the agencies argue that the protocol is provisional and designed for rulemakings, not NEPA documents... even had such reasons been included [in the EIS], they do not explain why these agencies believed the protocol was inaccurate or not useful in this instance”).

Second, while President Trump has disbanded the IWG for political reasons, Exec. Order. No. 13,783 § 5(b), the IWG’s estimates still reflect the consensus science and economics, and BLM has not explained why the withdrawal of the IWG and supporting documents enables it to ignore the scientific and economic evidence underlying the SCC estimates.⁸²

Third, while BLM is correct that NEPA does not require cost-benefit analysis, courts have routinely held that it is arbitrary and capricious for an agency to quantify benefits of its actions while ignoring available means of quantifying the costs of its actions. *Mont. Env’tl. Info. Ctr. v. United States Office of Surface Mining*, 274 F. Supp. 3d 1074, 1095 (D. Mont. 2017) (holding that it is arbitrary and capricious for an agency to quantify the benefits of an action without quantifying the costs of climate impacts, even though such an analysis is possible with the SCC protocol); *High Country Conservation Advocates*, 52 F. Supp. 3d at 1192 (same); *see also Michigan v. EPA*, 135 S. Ct. 2699, 2707 (agencies must consider the advantages *and* disadvantages of their decisions); *Center for Biological Diversity v. NHTSA*, 583 F.3d at 1200 (holding it arbitrary to consider an artificially low cost to greenhouse gas emissions); *Hughes River Watershed Conservancy v. Glickman*, 81 F. 3d 437, 446–48 (4th Cir. 1996) (agencies cannot rely on inaccurate economic assumptions); *Sierra Club v.*

⁸⁰ Interagency Working Group on Social Cost of Greenhouse Gases, United States Government. 2016. Addendum to Technical Support Document on Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866: Application of the Methodology to Estimate the Social Cost of Methane and the Social Cost of Nitrous Oxide. Available at: https://archive.epa.gov/epa/sites/production/files/2016-12/documents/addendum_to_sc-ghg_tsd_august_2016.pdf.

⁸¹ BLM Carlsbad Field Office Draft RMP Volume I – EIS p. 2-82.

⁸² In fact, some agencies under the current administration have continued to use the IWG’s estimates in both NEPA and regulatory analyses. *E.g.*, U.S. Dep’t of Interior, Bureau of Ocean Energy Mgmt., *Draft Environmental Impact Statement: Liberty Development Project* at 3-129, 4-246 (Aug. 2017) (“BOEM, Liberty Development Project”) (calling the social cost of carbon “a useful measure” and applying it to analyze the consequences of offshore oil and gas drilling); 82 Fed. Reg. 31,808, 31,811, 31,857 (July 10, 2017) (Department of Energy using the IWG’s estimates for carbon and methane emissions to analyze energy efficiency regulation, and describing the SCM as having “undergone multiple stages of peer review”).

Sigler, 695 F.2d 957, 979 (5th Cir. 1983) (agencies must consider both costs and benefits of their actions); *California v. BLM*, 277 F. Supp. 3d 1106, 1122–23 (N.D. Cal. 2017) (same).

Finally, whether BLM is able to quantify the full benefits of fossil fuel development or not, it is arbitrary to treat the value of climate harms as *zero* when the impact of climate change is certainly not zero and the SCC provides a methodology for that analysis. *High Country Conservation Advocates*, 52 F. Supp. 3d at 1192 (“[B]y deciding not to quantify the costs at all, the agencies effectively zeroed out the cost in its quantitative analysis”); *CBD v. NHTSA*, 538 F.3d at 1200 (citing a range of values for the value of carbon emissions reductions, and noting that it “is certainly not zero”). BLM’s failure to evaluate the climate impacts of its actions using available tools, such as the SCC/SCM protocol, unlawfully and arbitrarily and capriciously ignores the negative climate impacts of the plan.

For additional critiques of the agencies failure to utilize SCC please see the Institute for Policy Integrity’s comments on the Draft Carlsbad RMP.

- e. The preferred alternative in the Draft RMP does not include adequate waste minimization management actions and the EIS does not sufficiently evaluate the mitigation potential of such requirements under each alternative.*

The Draft RMP establishes a number of goals and objectives related to GHG emissions and natural gas waste. In dealing with air resources, the Draft includes as a goal to “Manage CFO activities and authorized uses to avoid or minimize emissions of greenhouse gases,” which is reiterated as an objective as well. Similarly, the agency identifies “environmentally sound exploration and development” as a goal for managing leasable minerals. We are encouraged by the inclusion of these goals but are discouraged by the failure to include specific management actions that would lead to reduced GHG emissions and, to the degree it is possible, environmentally sound development in the preferred alternative.

The four alternatives identified by BLM fall into two distinct categories. Alternatives A and B prioritize conservation and ecosystem preservation over resource extraction, while alternatives C and D promote the development of fluid minerals and other natural resources. This conceptual distinction is made apparent in how each alternative addresses emissions and natural gas waste.

Alternatives A and B include a suite of management actions that could significantly reduce gas waste and methane emissions. Among those identified in the Draft are the requirement to utilize green completion techniques for every well, install vapor recovery units at new facilities, implement emission controls for storage vessels and glycol dehydrators that would reduce emissions by 95%, ensure at least 70% of gas compression at compressor stations and well heads would be powered by electricity and require all pneumatic controllers at gas gathering and boosting stations, well sites, and gas processing plants to meet EPA NSPS requirements. Conversely, alternative D and the preferred alternative do not include any of these management actions with the exception of the pneumatic controller requirement.

The inclusion of the emission control requirements identified in alternatives A and B in the final RMP would result real and significant emission reduction. According to BLM's own analysis of future development in the Carlsbad field office, over the next 20 years, between 3,538 and 6,044 new wells will be completed on BLM-administered lands in the Carlsbad Field Office. Accounting for all on-the-books emissions control regulations, these sources are expected to emit 35,797 tpy VOC in 2028 and 46,191 metric tons per year of methane (worth roughly \$16.5 million) in 2028.⁸³ However, if more stringent emission controls are applied - as recommended in Alternatives A and B of the Draft Carlsbad RMP - these sources are expected to contribute only 7,391 tpy VOC in 2028 and 13,235 metric tons per year of methane in 2028.⁸⁴ Based on the goals and objectives identified by BLM in the Draft plan, the decision to not include the emission reduction management actions of alternatives A and B in the preferred alternative appears arbitrary. At a minimum, the final RMP should incorporate all of the emission reduction management actions identified in alternatives A and B as mandatory measures.

V. BLM must develop and include waste minimization stipulations and conditions of approval in the RMP to mitigate impacts from associated methane emissions.

Importantly, both alternatives A and B fail to include waste reduction measures as comprehensive as those included in BLM's 2016 rule and are not sufficient to ensure the agency is minimizing waste of publicly owned resources. BLM's rescission of the 2016 Methane Waste Rule was, of course, premised on a national-level regulatory analysis and expressly emphasized that it would further address methane and other concerns through the agency's tiered planning and decision-making approach (inclusive of RMPs). Since this analysis did not supplant that tiered approach, we see no good reason, as we note above, why the Carlsbad Field Office should not evaluate, as reasonable alternatives, the adoption of the 2016 rule's regulatory provisions as "reasonable measures" mandated for the CFO planning area through the RMP. 40 C.F.R. 1502.14. Regardless, in the final plan, the agency must develop and include stipulations and conditions of approval to minimize emissions and natural gas waste, and the 2016 Methane Waste Rule's provisions are a reasonable place to start, would complement existing alternatives analysis regarding methane mitigation action provided by Alternatives A and B that should be integrated into each and every action alternative, and therefore should be evaluated for application in the planning area before the RMP is finalized.

a. BLM has exercised its authority regarding capture of wasted gas prior to issuance of the 2016 Final Rule.

In the absence of the 2016 Waste Rule, BLM is still required to take proactive steps to minimize waste of taxpayer owned resources and manage public lands in a balanced manner. This is evidenced by the fact that some BLM field offices had already implemented unique measures to incentivize capture and reduce waste prior to finalization of the 2016 Final Rule.

⁸³ BLM Carlsbad Field Office Draft RMP Volume I – EIS p.4-269.

⁸⁴ *Ibid*

To fulfill its waste prevention mandate, in June of 2017, BLM finalized an environmental assessment proposing to evaluate pending Sundry Notice requests to flare in the North Dakota Field Office to ensure direct capture of or mitigation of impacts from associated gas from oil wells in the Bakken in western North Dakota.⁸⁵ The field office, according to this EA, will determine the environmental and social impacts from flaring and identify any design features and mitigation measures that may need to be applied to future flaring from new facilities as Conditions of Approval. The EA reiterated BLM's authority to regulating venting and flaring stating, "The BLM has the authority to protect the viewsheds of cultural and historic properties for federally administered wells on both federal and non-federal surface under the National Historic Preservation Act (NHPA), and 36 CFR 800 – Protection of Historic Properties. In addition, mitigation requirements for venting and flaring within the viewsheds of historic or cultural properties are authorized under the NEPA, section 6.8.4."⁸⁶ According to the EA, the agency will carry out this authority by, "analyz[ing] 1,7701 pending SN requests (Appendix A) to flare oil-well gas from Federal and Indian oil wells along with disclosing the reasonably foreseeable impacts from flaring in the western portion of North Dakota, and identify mitigation measures for flaring from future production facilities."⁸⁷ Those potential mitigation measures include the following:

- Construct a gathering pipeline which will ultimately be connected to a trunk pipeline;
- Liquefy the gas on location and store on location until it can be transported via truck to a pipeline injection location;
- Reinject the natural gas into a formation for possible future use;
- Reinject the natural gas into the reservoir for secondary enhanced oil recovery;
- Beneficial use on lease;
- Camouflaging of flare using vegetation or architectural structures;
- Reduce flare stack height;
- Restriction of active flaring at night;
- Coordination with the appropriate SMA would be required for future flaring requests within the viewshed of a cultural or historic property.

Similarly, both the Price Field Office in preparing the San Rafael Desert MLP and the Royal Gorge Field Office in preparing the Eastern Colorado RMP drafted stipulations based on the requirements in the 2016 final rule and other successful waste minimization strategies to address waste at the planning level.

While the San Rafael Desert MLP will not be moving forward, the preliminary alternatives released by the Price Field Office for the San Rafael Desert MLP address the issues of venting and flaring under stipulation AQ-11.⁸⁸ The stipulation explicitly calls out the requirement to eliminate venting and flaring of associated gas and to submit a waste minimization plan along with APDs. Stipulation

⁸⁵ Bureau of Land Management, North Dakota Field Office, *Environmental Assessment: Sundry Notice Flaring Requests* (June 2017). Available at: https://eplanning.blm.gov/epl-front-office/projects/nepa/62240/108472/132791/NDFO_Flaring_EA.pdf

⁸⁶ Id. at 33

⁸⁷ Id. at 9

⁸⁸ See stipulation AQ-11 at: https://eplanning.blm.gov/epl-front-office/projects/nepa/61781/93139/112240/SRD_MLP_Chapter_2_Alternatives_-_Public_Review.pdf

AQ-11 illustrates how BLM can draft a stipulation to address the flaring, venting and waste minimization plan requirements of the rule:

In the absence of a pipeline, to capture gas associated with production from an oil well, use of a combustor or other best available technologies would be required. To minimize impacts on air quality and AQRVs, as well as minimize emissions of greenhouse gases, venting or open flaring would be prohibited except in the limited circumstances identified in the BLM's methane waste prevention rule. Evaluation of all reasonable and technically feasible gas capture technologies would be required as part of operator plan approvals. In the case of an exception, a visual screen must be used to minimize sky glow, glare, and adverse visual effects on night sky resources.⁸⁹

Similarly, the Royal Gorge Field Office included stipulations in the preliminary alternatives for the Eastern Colorado RMP. There, the field office addressed venting and flaring in the planning area more generally. AU-23 states the Field Office will "Allow venting of gas only in emergency situations or under circumstances when capture is not technically feasible." While MA-6 reads, "Minimize flaring as much as is technically and economically feasible. Authorize flaring on a case by case basis. The BLM engineer will review requests and attach conditions of approval to any authorization. Operators must record volumes and amount of time flaring takes place, and submit the information to the BLM..."⁹⁰

The Carlsbad field office attempted to address waste prior to the 2016 rule as well, although unsuccessfully. According to a 2016 GAO report⁹¹, in Carlsbad, officials charged royalties on flared gas. Through discussion with operators they found that operators made an economic choice to flare gas associated with their oil wells rather than wait until gas gathering pipeline was available and that operators could generally restrict production at their wells without endangering the amount of oil that these wells could ultimately produce. They therefore determined that much of the flared oil-well gas was "avoidably lost." However, as noted in the preparation of the 2016 waste rule, "in spite of those payments, rates of flaring [had] not changed appreciably since 2013."⁹² The Carlsbad example highlights the flaw in relying on purely economic incentives to reduce waste – the approach used under NTL-4A- and the need for more explicit requirements.

BLM should include, in the final RMP, similarly proactive measures like those considered in North Dakota, Price, and Royal Gorge to analyze and incentivize methane capture, although we emphasize that these measures should be imposed as stipulations attached to new leases and as mandatory conditions of approval attached to drilling permits approved for existing leases.

⁸⁹ See San Rafael Desert Preliminary Alternatives, Stipulation AQ-11.

⁹⁰ Preliminary Alternatives Report, Eastern Colorado Resource Management Plan (March 2017). Available at: https://eplanning.blm.gov/epl-front-office/projects/lup/39877/98740/119608/ECRMP_PrelimAltsReport.pdf

⁹¹ United States Government Accountability Office. (2016). OIL AND GAS—Interior Could Do More to Account for and Manage Natural Gas Emissions. (GAO-16-607)

⁹² 81 Fed. Reg. 25 (February 8, 2016) at 6644.

- b. BLM must develop and include stipulations in the lease terms to reduce natural gas waste and mitigate impacts from associated methane emissions.*

In the context of this plan, BLM had the opportunity to mitigate the impacts from future natural gas waste and methane emissions by incorporating area-wide waste minimization stipulations and conditions of approval into the preferred alternative. BLM, however, failed to incorporate stipulations to address the six areas we identified above as covered under the 2016 final rule but left unaddressed by New Mexico's state regulations and the revised BLM rule. Additionally, while some of these sources of emissions may currently be covered by EPA's NSPS 0000a, that rule may soon be significantly modified. Therefore, any additional stipulations included in the final plan should not incorporate the EPA rule by reference, but instead explicitly state the requirement and provide that it be implemented as a mandatory measure even if EPA's NSPS 0000a rule is rescinded. Our recommendations include:

- Prohibiting the venting of natural gas.
- Mandating operators meet monthly capture gas percentage targets as outlined in the 2016 final rule and establishing restrictions on flaring.
- Requiring operators to report volumes of gas vented, flared and leaked.
- Requiring the capture of emissions associated with well drilling, completion and testing operations.
- Establishing waste minimization requirements for pneumatic controllers and diaphragm pumps.
- Establishing a comprehensive LDAR inspection and reporting protocol for all well production facilities similar to that of the 2016 final rule.

The revision of the 2016 waste rule, the likelihood EPA's NSPS 0000a rules will be rescinded, along with the deficient New Mexico state regulations means there are not or will not be adequate measures in place to ensure BLM meets its waste prevention mandate. The agency has failed to account for these dynamics and thus, in the DRMP, failed to take required action to fulfill its MLA and FLPMA mandates to reduce methane waste and pollution from development in the planning area. Incorporating stipulations and conditions of approval like those identified above into the final plan could reduce natural gas waste and methane emissions, increase revenue for taxpayers and the government, reduce pollution, and minimize the climate impact of future development in the Carlsbad Field Office.

- c. BLM should consider additional measures in the RMP to minimize and reduce waste.*

While the 2016 BLM rule identified specific requirements for operators that would limit emissions and natural gas waste and methane pollution, there are other strategies and ways in which the BLM can use its discretion in the planning process to limit waste. Two key strategies are available to BLM, each of which the agency should consider as a reasonable alternative pursuant to NEPA before the RMP is finalized. 40 C.F.R. § 1502.14.

The first strategy, which has been utilized by other BLM Field Offices, is phased leasing. Phased leasing is the concept of limiting the number of parcels offered for sale in a given area and/or time period or otherwise leasing parcels in a strategic manner. Phased leasing has been used effectively in a number of land-use planning decisions. We have seen phased leasing successfully incorporated into both the White River Oil and Gas RMP Amendment⁹³ and the Lander Resource Management Plan. Within the White River Oil and Gas RMP Amendment, leasing will first proceed in that portion of the planning area with the most accessible oil and gas resources and fewest potential resource conflicts, and later proceed to areas with lower development potential. In the Lander RMP, parcels in the Beaver Rim area are made available for lease starting on the outside edge of crucial winter range and no more than 5 percent surface disturbance is permitted in the township in which the parcel is located until interim reclamation goals are achieved.⁹⁴ In each of these instances, BLM was attempting to protect specific areas and minimize conflicts with other identified resource values. In this instance, the same approach could be used by the CFO to limit gas waste and methane emissions by leasing parcels in areas with sufficient existing pipeline infrastructure to handle the additional volumes of natural gas that will be brought online or in areas with access to reliable electricity which would reduce the operator's dependence on gas actuated pneumatics and other gas powered equipment.

The second strategy, phased development, is similar to phased leasing. development is used to manage the timing and location of oil and gas development in a given area. As stated by the BLM, phased development "refers to prescribing the sequence of drilling operations by geographic area to allow for the development of certain areas while restricting or temporarily restricting development of other areas. Subsequent development occurs as areas developed earlier are completed and reclaimed." Development in the planning area, including for existing (not just future) leases, could be conducted in a phased manner, again allowing for development to proceed only once sufficient pipeline capacity and other gas capture infrastructure has been built out. Requiring operators to submit waste minimization plans to demonstrate the presence of sufficient infrastructure or other means of capturing waste could be incorporated into this approach. This approach would rely on BLM exercising its existing authority to delay action on an APD or approve it with conditions related to gas capture and production levels, and to suspend the lease under 43 CFR 3103.4-4 if the lease associated with the APD is not yet producing.

We appreciate the opportunity to comment on this planning process and hope to see BLM complete necessary analysis and fully comply with applicable law and guidance prior to finalizing this plan.

⁹³ White River Oil & Gas RMP Amendment, Dinosaur Trail Master Leasing Plan, p. 2-45.

⁹⁴ Lander RMP, Record No. 2028, available at: <https://eplanning.blm.gov/epl-front-office/projects/lup/18602/49179/53513/default.jsp?projectName=Lander+Resource+Management+Plan+Revision&projectDisplayNa me=Lander+Resource+Management+Plan+Revision>, and Beaver Rim Master Leasing Plan Implementation Plan, available at: https://eplanning.blm.gov/epl-front-office/projects/lup/18602/74278/81688/Beaver_Rim_MLP_Implementation_Plan.pdf.

Sincerely,

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