

**UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND  
MANAGEMENT**

<b>Waste Prevention, Production</b>	)	<b>Docket No. BLM-2016-0001-0001, RIN</b>
<b>Subject to Royalties, and</b>	)	<b>1004-AE14</b>
<b>Resource Conservation</b>	)	
	)	<i>Via regulations.gov</i>
	)	<i>April 22, 2016</i>

We appreciate the opportunity to comment on the Bureau of Land Management’s (“BLM’s”) proposed Waste Prevention, Production Subject to Royalties, and Resource Conservation rule, 81 Fed. Reg. 6,616 (Feb. 8, 2016) (“Proposed Rule”), and submit these comments on behalf of Clean Air Task Force (“CATF”), Earthjustice, Environmental Integrity Project, Environmental Law and Policy Center, Natural Resources Defense Council (“NRDC”), and Sierra Club (“Joint Environmental Commenters”).

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## I. Introduction.

Joint Environmental Commenters strongly support BLM's Proposed Rule addressing the waste of oil and gas on public lands. Additionally, as set forth in these comments, we recommended targeted improvements to ensure that the rule minimizes waste, obtains a fair return to taxpayers, better protects the public health and welfare of all Americans, and reduces greenhouse gas ("GHG") emissions to the greatest extent possible.

The United States Department of the Interior ("DOI") is tasked with the oversight and management of our nation's publicly owned natural resources. To that end, BLM manages 245 million acres of land, and 700 million acres of subsurface estate. 81 Fed. Reg. at 6,616. The more than 100,000 federal onshore oil and gas wells account for 11% of the nation's natural gas supply and 5% of its oil. The production value of this oil and gas exceeds \$27.2 billion. 81 Fed. Reg. at 6,616.

To ensure that operators are held to a higher standard when producing oil and gas from publicly owned reserves, BLM has a statutory duty to ensure that lessees "use all reasonable precautions to prevent the waste of oil or gas." 30 U.S.C. § 225. Despite this charge, federal oil and gas wells are wasting significant quantities of gas. BLM estimates that between 2009 and 2014 operators on federal leases wasted 375 billion cubic feet ("Bcf") of gas—approximately enough to serve all the households in Colorado, Montana, New Mexico, Utah and Wyoming combined for a year. 81 Fed. Reg. at 6,616. As BLM acknowledges, this is likely a substantial underestimate. *Id.* at 6,633; *see also infra* Section II.B. Given that technology has significantly advanced since the last time BLM revised its rules addressing the waste of oil or gas in 1980, much of this loss is unnecessary, particularly the waste of gas associated with flaring, venting, and leaks.

The urgency with which the public needs these regulations cannot be understated. Wasting oil and gas does not just deprive the public of revenue by allowing operators to avoid royalty payments, it also releases thousand of tons of greenhouse gases and other dangerous air pollutants. *See infra* Section II.B. The Environmental Protection Agency's ("EPA's") most recent draft of its Greenhouse Gas Inventory ("GHG Inventory") shows that the oil and gas sector is the single largest contributor of methane emissions nationwide.<sup>1</sup> In 2014, oil and gas sources accounted for 290.2 million metric tons ("MMT") carbon dioxide equivalent ("CO2e") of methane, the highest of the most recent five years for which we have information.<sup>2</sup>

Moreover, oil and gas sources are most likely much greater contributors to nationwide emissions than the GHG Inventory suggests. The GHG Inventory relies on an outdated 100-year global warming potential for methane, which assumes that it has 25, rather than 36, times the warming potential of carbon dioxide, fails to account for methane's even more significant global

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<sup>1</sup> EPA, *U.S. Greenhouse Gas Inventory Report: 1990-2014* at ES-6, Table ES-2 (2016), available at <https://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2016-Main-Text.pdf> ("2016 GHG Inventory").

<sup>2</sup> *Id.*

warming potential of 87 over a 20-year timeframe, and likely underestimates the actual emissions from the sector. *See infra* Section II.B.

BLM's Proposed Rule also is necessary for the U.S. to meet its international climate commitments. President Obama announced in November 2014 a bilateral agreement with President Xi Jinping of China in which the United States committed to a 26% to 28% GHG reduction by 2025, relative to 2005 levels.<sup>3</sup> The President's Climate Action Plan likewise includes a 17% reduction from 2005 levels by 2020.<sup>4</sup> To aid in achieving these goals, the Administration committed to cut oil and gas sector methane emissions 40% to 45% below 2012 levels by 2025.<sup>5</sup> BLM's Proposed Rule is an important and necessary step—but not nearly sufficient—toward the goal of a 40% to 45% reduction.<sup>6</sup>

For these reasons, we urge BLM to finalize the Proposed Rule with targeted improvements without delay.

## **II. BLM Rules are Necessary to Reduce Venting, Flaring, and Leaks from Federal and Tribal Leases.**

### **A. New Rules Are Necessary to Prevent Waste of a Valuable Publicly-Owned Natural Resource.**

The Proposed Rule and the improvements set forth in these comments are essential to prevent waste of natural gas, which was responsible for one third of electricity generation in the United States in 2015<sup>7</sup> and approximately half of the fuel used for space heating.<sup>8</sup>

As BLM notes, data reported to the Office of Natural Resources Revenue ("ONRR") reveals that flaring and venting on federal and Indian lands wasted 375 Bcf of natural gas between 2009 and 2014—enough to serve around 5 million households for a year. 81 Fed. Reg.

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<sup>3</sup> Press Release, The White House, U.S.-China Joint Announcement on Climate Change (Nov. 11, 2014), available at <https://www.whitehouse.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change>.

<sup>4</sup> Exec. Office of the President, *The President's Climate Action Plan* 4 (June 2013), available at <https://www.whitehouse.gov/sites/default/files/image/president27climateactionplan.pdf>.

<sup>5</sup> Press Release, The White House, Fact Sheet: Administration Takes Steps Forward on Climate Action Plan by Announcing Actions to Cut Methane Emissions (Jan. 14, 2015), available at <https://www.whitehouse.gov/the-press-office/2015/01/14/fact-sheet-administration-takes-steps-forward-climate-action-plan-anno-1>; see also The White House, *U.S. Canada Joint Statement on Climate, Energy, and Arctic Leadership* (Mar. 10, 2016), <https://www.whitehouse.gov/the-press-office/2016/03/10/us-canada-joint-statement-climate-energy-and-arctic-leadership>.

<sup>6</sup> CATF, *Mind the Gap: Closing the Methane Emissions Gap Between the Obama Administration's Promise and Proposals* 4, Fig. 2 (2016), available at [http://www.catf.us/resources/publications/files/Mind\\_the\\_Gap.pdf](http://www.catf.us/resources/publications/files/Mind_the_Gap.pdf).

<sup>7</sup> Energy Information Admin., *What is U.S. Electricity Generation by Energy Source?* (2015), <https://www.eia.gov/tools/faqs/faq.cfm?id=427&t=3>.

<sup>8</sup> Energy Information Admin., *Household Heating Fuels Vary Across the Country* (2011), <http://www.eia.gov/todayinenergy/detail.cfm?id=3690>.

at 6,631. That number, large as it is, does not include natural gas lost to leaks or from operation of associated oil and gas-well equipment, such as storage vessels, compressors, glycol dehydrators or pneumatic devices. *Id.* BLM estimates that in 2013 alone, leaks and other fugitive emissions on BLM-administered leases led to 4.35 Bcf of lost natural gas, with an additional 5.4 Bcf of natural gas lost due to pneumatic controllers, about 2.5 Bcf lost due to pneumatic pumps, 2.77 Bcf lost due to storage vessels, and 3.26 Bcf lost due to well maintenance and liquids unloading. 81 Fed. Reg. at 6,620–23. That amounts to nearly 20 Bcf more natural gas lost from oil and gas production operations in a single year.

Other studies and sources of data suggest that BLM may be substantially underestimating the extent of wasted gas. *See id.* at 6,633. EPA’s 2016 GHG Inventory,<sup>9</sup> released on April 15, 2016, provides estimates of total methane emissions from the oil and gas sector that are 34% higher than previous estimates, reflecting improvements in available data.<sup>10</sup> However, even the 2016 GHG Inventory likely underestimates the total amount of methane that is emitted by the oil and gas sector because it relies on a “bottom-up” approach to quantify the sector’s emissions. The bottom-up approach involves estimating the average emissions associated with a specific source (e.g., annual emissions from a continuous bleed pneumatic controller), and multiplying those emissions by the estimated number of that particular source to determine the total nationwide emissions from that source. This contrasts with “top-down” approaches where atmospheric concentrations of methane are sampled in areas with heavy oil and gas development, and the oil and gas sector’s contribution to those levels are estimated based on isotopic analysis. Comparisons between the bottom-up GHG Inventory and top down studies suggest that the GHG Inventory and other bottom-up estimates are significantly underestimated.<sup>11</sup> Other top-down analyses support this conclusion. For example, one top-down analysis of emissions of Colorado’s Denver-Julesburg Basin estimates an emission rate of 2.6% to 5.6%.<sup>12</sup> Another study of Utah’s Uinta Basin indicated an emission rate of 6% to 12%,<sup>13</sup> as compared to the

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<sup>9</sup> EPA, 2016 GHG Inventory, *supra* note 1, at ES-13.

<sup>10</sup> *See, e.g.,* Env’t Def. Fund, *New EPA Stats Confirm: Oil & Gas Methane Emissions Far Exceed Prior Estimates* (Apr. 15, 2016), <https://www.edf.org/media/new-epa-stats-confirm-oil-gas-methane-emissions-far-exceed-prior-estimates>; *see also* A.R. Brandt et al., *Methane Leaks from North American Natural Gas Systems*, 343 *Science* 733 (2014), available at <http://www.novim.org/images/pdf/ScienceMethane.02.14.14.pdf>; Gina McCarthy, *Remarks on Climate Action at CERA in Houston, Texas* (Feb. 24, 2016), available at <https://yosemite.epa.gov/opa/admpress.nsf/8d49f7ad4bbcf4ef852573590040b7f6/5c432a7068e191e985257f630054fea8!OpenDocument> (acknowledging that “methane emissions from existing sources in the oil and gas sector are substantially higher than we previously understood”).

<sup>11</sup> Brandt et al., *supra* note 10, at 733.

<sup>12</sup> Gabrielle Pétron et al., *A New Look at Methane & Non-Methane Hydrocarbon Emissions from Oil and Natural Gas Operations in the Colorado Denver-Julesburg Basin*, 119 *J. Geophysical Research* 6836, 6850 (2014), available at <http://onlinelibrary.wiley.com/doi/10.1002/2013JD021272/epdf>.

<sup>13</sup> Anna Karion et al., *Methane Emissions Estimate from Airborne Measurements Over a Western United States Natural Gas Field*, 40, *Geophysical Research Letters* 4393, 4393 (2013), available at <http://onlinelibrary.wiley.com/doi/10.1002/grl.50811/full>.



approximately 1.4% assumed in the 2012 GHG Inventory.<sup>14</sup> Similarly, a recent study sponsored by the Environmental Defense Fund (“EDF”) indicates sector-wide emissions 1.5 to 2 times EPA’s reported estimates.<sup>15</sup>

Without regulation, the problem of natural gas waste will only get worse. BLM reports that natural gas waste on BLM-administered leases is “growing.” 81 Fed. Reg. at 6,631. Between 2009 and 2013, gas flaring from oil wells increased by 292%, and applications to vent or flare gas on BLM-administered leases increased by over 100% between 2011 and 2014. *See id.* One study indicates that 90% of oil and gas emissions in 2018 will come from oil and gas wells already operational in 2012, highlighting the need to limit the waste of natural gas from existing wells. *See id.*

Wasting natural gas not only unnecessarily wastes a publicly-owned resource, it also results in lost royalty revenue. BLM estimates that, “if captured, the gas currently lost from BLM-administered leases would provide an additional \$49 million in royalties each year to the Federal Government, States and tribes.” 81 Fed. Reg. at 6,627. These are dollars that could be used to fund schools, health care, and needed infrastructure improvements.

Waste of natural gas also creates the need for more drilling, which affects local communities, public health, and the climate. *See infra* Sec. II.B.

The significant waste of natural gas—and loss of associated royalty payments—is not adequately addressed by existing regulations. BLM’s existing rules governing waste of natural gas, Notice to Lessees 4a (“NTL-4a”), 44 Fed. Reg. 76,600 (Dec. 27, 1979), were developed in 1979, long before the current “boom” in hydraulic fracturing and associated technology updates came into place, *see* 81 Fed. Reg. at 6,628. As BLM explains, in the more than 36 years since NTL-4A was issued, “technologies and practices for oil and gas production have advanced considerably.” *Id.* So, too, have technologies to prevent or minimize wasted natural gas, such as technologies for limiting vapor leaks from storage vessels and pneumatic devices, leak detection, and capture of natural gas from wellheads. *See id.* “Not surprisingly,” as BLM states, “NTL-4A neither reflects today’s best practices and advanced technologies, nor is particularly effective in requiring their use to avoid waste.” *Id.*

EPA regulations do limit, to some degree, venting, flaring and leaking of natural gas, but those regulations do not cover many important sources of wasted natural gas.<sup>16</sup> EPA’s current rules limit venting and flaring from well completions at new natural gas wells and associated infrastructure. EPA’s recently proposed New Source Performance Standards (“NSPS”) rule

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<sup>14</sup> *See* U.S. Dep’t of Energy, *Fact Sheet: Natural Gas Greenhouse Gas Emissions* (2014), available at <http://energy.gov/sites/prod/files/2014/07/f18/20140729%20DOE%20Fact%20sheet%20Natural%20Gas%20GHG%20Emissions.pdf>.

<sup>15</sup> David R. Lyon et al., *Constructing a Spatially Resolved Methane Emission Inventory for the Barnett Shale Region*, 49 *Envtl. Sci. Tech.* 8147, 8147 (2015) available at <http://pubs.acs.org/doi/pdf/10.1021/es506359c>; *see also* Anna Karion et al., *Aircraft-Based Estimate of Total Methane Emissions from the Barnett Shale Region*, 49 *Envtl. Sci. Tech.* 8124 (2015), available at <http://pubs.acs.org/doi/pdf/10.1021/acs.est.5b00217>.

<sup>16</sup> Although EPA has the authority to regulate these sources, it has not done so to date.

would similarly limit venting from well completions at new oil wells and would limit leaks from wells sites, compressor stations and pneumatic pumps. But EPA’s rules do not limit venting or flaring from *existing* wells—which, as noted above, are currently losing billions of cubic feet of natural gas every year.<sup>17</sup> Nor do they limit venting or flaring of casinghead gas during normal production operations at new wells, which can be a significant source of wasted natural gas.<sup>18</sup> BLM’s Proposed Rule would do both. Likewise, EPA’s rules do not cover well maintenance or liquids unloading activities, whereas BLM’s Proposed Rule does limit waste from those operations. The upshot is that, even if EPA’s recently proposed NSPS rule is finalized, BLM’s Proposed Rule will allow capture of—and generate between \$14.5 and \$20.5 million in royalties from—an additional 29 to 41 Bcf of natural gas that would otherwise be wasted.<sup>19</sup>

Some states have promulgated regulations that address emissions from oil and gas production; however, these regulations are likewise inadequate to address the problem of wasted natural gas. *See, e.g.*, 81 Fed. Reg. at 6,618. The rules vary widely by state and lack the scope and breadth of BLM’s Proposed Rule, highlighting the need for comprehensive, uniform regulations that apply across all BLM-administered leases. *See id.* None of the states address all three potential avenues for emissions from oil and gas production (flaring, venting, and leaks), and many of the states are not comprehensive in their regulation of even one of these three avenues for waste. *Id.* Furthermore, state regulations do not apply to BLM-administered leases on Indian lands. *Id.* at 6,636.

In short, natural gas is being burned up or released into the air in alarming and growing quantities, wasting that publicly-owned natural resource and associated royalties. Existing regulations do not adequately address this problem. Therefore, BLM’s Proposed Rule, along with the improvements suggested below, is necessary.

## **B. New Rules Are Necessary to Protect Local Communities, Public Health, and the Public Lands.**

BLM’s rule and the proposed improvements are also necessary to help address the environmental harm caused by air pollution from oil and gas development on public lands. Flaring, venting, and leaks on federal and tribal leases are contributing to climate change, smog pollution, toxic air pollution and other environmental problems with serious ramifications for the

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<sup>17</sup> Although EPA’s proposed rule includes Control Technique Guidelines that states may choose to apply to existing sources of methane emissions in ozone nonattainment areas, the guidelines are not mandatory, and the vast majority of oil and gas production on BLM-administered leases is outside of nonattainment areas.

<sup>18</sup> *See, e.g.*, CATF, NRDC, & Sierra Club, *Waste Not: Common Sense Ways to Reduce Methane Pollution from the Oil and Natural Gas Industry* at Technical App’x A-17 (2014), available at [http://www.catf.us/resources/publications/files/WasteNot\\_Appendix.pdf](http://www.catf.us/resources/publications/files/WasteNot_Appendix.pdf) (“Waste Not”).

<sup>19</sup> BLM, *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)* 9 (Jan. 14, 2016) (“RIA”). The royalties were calculated using the same assumptions as used by BLM: natural gas price of \$4/Mcf, royalty rate of 12.5%. *See* RIA at 3.

public lands that BLM is charged with protecting. *See* 81 Fed. Reg. at 6,617. As discussed above, EPA and state regulations do not address many sources of pollution. We encourage BLM to explicitly expand the purpose of the rule to include the important goals of reducing greenhouse gas emissions and air pollution. *Id.* at 6,627.

These comments include a brief discussion of some of the impacts of oil and gas development on federal and tribal leases, and also incorporate by reference the following comments that our organizations and others have filed in past rulemaking proceedings with additional relevant information:

- *See* Cal. Cmty. Against Toxics et al., *Comments on and Supplement to Petitioners' 2012 Petition for Reconsideration on Oil and Natural Gas, National Emission Standards for Hazardous Air Pollutants*, Dkt. No. EPA-HQ-OAR-2015-0747-0001 at 2–8 (Mar. 11, 2016) (“HAPs Rulemaking Petition”) (discussing Diane A. Garcia-Gonzales & Seth B.C. Shonkoff, *Hazardous Air Pollutants from Oil and Gas Development in the United States: A Systematic Review of the Peer Reviewed Literature from 2012–2015* (Mar. 2016) (air toxics))
- Clean Air Task Force et al., *Comments on Oil and Natural Gas Sector: Emission Standards for New and Modified Sources*, Dkt. No. EPA-HQ-OAR-2010-0505 at 7–9 (Dec. 4, 2015) (methane emissions and climate impacts)
- CATF, *Comments on Oil and Natural Gas Sector: Control Techniques for the Oil and Natural Gas Industry*, Dkt. No. EPA-HQ-OAR-2010-0505 at 2–7 (Dec. 4, 2015) (ozone-induced health impacts)
- Diné Citizens Against Ruining Our Env't. et al., *Comments on Review of New Sources and Modifications in Indian Country: Federal Implementation Plan for Managing Air Emissions from True Minor Sources Engaged in Oil and Natural Gas Production in Indian Country*, Dkt. No. EPA-HQ-OAR-2014-0606 at 5–14 (Dec. 4, 2015) (ozone-induced health and ecosystem impacts, air toxics, visibility, and climate impacts)
- Earthjustice et al., *Comments on Source Determinations for the Oil and Natural Gas Sector*, Dkt. No. EPA-HQ-OAR-2013-0685 at 5–8 (Dec. 4, 2015) (ozone-induced health impacts, nitrogen deposition, visibility, climate impacts, and environmental justice)
- Am. Lung Ass'n et al., *Comments on EPA's Proposed Revisions to the National Ambient Air Quality Standards for Ozone*, Dkt. No. EPA-HQ-OAR-2008-0699 at 20–49, 51–116, 189–93, 204–09 (Mar. 17, 2015) (ozone-induced health and ecosystem impacts)
- CATF, *Comments on Managing Emissions from Oil and Natural Gas in Indian Country: Advanced Notice of Proposed Rulemaking*, Dkt. No. EPA-HQ-OAR-2011-0151 at 2–11 (June 5, 2014) (ozone-induced health and ecosystem impacts, visibility, and nitrogen deposition)

- Earthjustice, *Petition for Listing and Rulemaking Under Section 112 of the Clean Air Act to Establish an Area Source Category for Oil and Gas Production Wells and Associated Equipment and to Set National Emission Standards for Hazardous Air Pollutant Emissions* at 22–50 (May 13, 2014) (air toxics).

## 1. Greenhouse Gas Emissions.

Methane wasted by the oil and gas sector is one of the nation’s top industrial contributors to climate change. According to the Intergovernmental Panel on Climate Change (“IPCC”), more than one-third of anthropogenic warming is due to short-lived climate pollutants such as methane.<sup>20</sup> EPA’s 2016 GHG Inventory, released on April 15, 2016, shows that oil and gas systems are the largest anthropogenic source of methane emissions in the United States.<sup>21</sup>

In fact, oil and gas sources are most likely much greater contributors to nationwide methane emissions than the 2016 GHG Inventory suggests for several reasons. First, as discussed above, EPA’s GHG Inventory relies on “bottom up” emissions estimates that are likely underestimated. Second, based on the IPCC’s Fourth Assessment Report (“AR4”) from 2007, EPA used a 100-year global warming potential of 25 times the warming potential of carbon dioxide.<sup>22</sup> However, this is not representative of the IPCC’s most recent conclusions on the impacts of methane. In 2013, the IPCC released its Fifth Assessment Report (“AR5”), and revised the 100-year global warming potential for methane from 25 to 36.<sup>23</sup> Using 36 as the global warming potential would lead to a 44% increase in CO<sub>2</sub>e from what the 2016 GHG Inventory currently shows. Third, both the 100-year and 20-year global warming potential must be considered because of the substantial impacts of methane over the short term. Methane stays in the atmosphere for an average of 12 years before it decays into carbon dioxide,<sup>24</sup> so its impacts are concentrated in the short-term. AR5 reports a 20-year global warming potential of 87 for methane,<sup>25</sup> corresponding to roughly 896 MMT CO<sub>2</sub>e from domestic oil and gas operations in 2014.

BLM estimates that between 2009 and 2014 operators on federal leases wasted 375 billion cubic feet (“Bcf”) of gas, including methane—approximately enough to serve all the households in Colorado, Montana, New Mexico, Utah and Wyoming combined for a year. 81 Fed. Reg. at 6,616. Thus, federal and Tribal leases are responsible for a significant amount of the greenhouse gas pollution. For example, satellite imagery indicates that the San Juan Basin—

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<sup>20</sup> Gunnar Nyhre & Drew Shindell et al., *Antropogenic and Natural Radiative Forcing* 714 in IPCC, *Climate Change 2013: The Physical Science Basis*, Contribution of Working Group 1 to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (T.F. Stocker et al., eds., 2013), available at [http://www.climatechange2013.org/images/report/WG1AR5\\_Chapter08\\_FINAL.pdf](http://www.climatechange2013.org/images/report/WG1AR5_Chapter08_FINAL.pdf).

<sup>21</sup> EPA, 2016 GHG Inventory, *supra* note 1, at ES-13.

<sup>22</sup> *Id.* at ES-3, Table ES-1.

<sup>23</sup> Nyhre & Shindell et al., IPCC, *supra* note 20, at 714 table 8.7. Methane’s global warming potential of 36 reflects the full impacts from fossil-based sources and includes impacts from methane’s oxidation to carbon dioxide.

<sup>24</sup> *Id.*

<sup>25</sup> *Id.*

an area with significant oil and gas development on federal and tribal leases—has the highest concentration of methane emissions in the country, a phenomenon known as the “Four Corners Methane Hot Spot.”<sup>26</sup> According to a recent National Aeronautics and Space Administration (“NASA”) study, space-based observations between 2003 and 2009 reveal that emissions unaccounted for in EPA’s methane emissions inventory from the Four Corners region account for 10% of EPA’s estimated methane emissions nationwide, due to natural gas and coalbed methane development.<sup>27</sup>

Other information also suggests that the source of the hotspot is oil and gas development in the region. EPA’s GHG Inventory shows that the oil and gas sector contributes a significant quantity of methane emissions to the Four Corners region.<sup>28</sup> Based on the GHG Inventory data, EPA has already identified the San Juan Basin as one of the top five basins for reported greenhouse gas emissions nationwide, and the largest source of greenhouse gas emissions from pneumatic devices nationwide.<sup>29</sup>

There is also evidence that oil and gas development on federal and tribal leases in the Uinta Basin is leaking a significant amount of methane into the atmosphere. A study headed by the National Oceanic and Atmospheric Administration (“NOAA”) found that in February 2012 oil and gas development in the Uinta Basin was leaking 6% to 12% of the natural gas produced.<sup>30</sup>

In addition to the oil and gas industry’s methane emissions, the ozone formed by its volatile organic compound (“VOC”) and nitrogen oxide (“NOx”) emissions also contributes substantially to climate change over the short term. According to the United Nations Environment Program (“UNEP”), behind carbon dioxide and methane, ozone is now the third

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<sup>26</sup> Jonathan Thompson, *Unlocking the Mysteries of the Four Corners Methane Hot Spot*, High Country News (Aug. 31, 2015), available at <http://www.hcn.org/issues/47.15/in-the-southwests-four-corners-methane-has-a-dark-side>; Jonathan Thompson, *NASA Finds Methane Hot Spot Over Four Corners*, High Country News (Oct. 12, 2014), available at <http://www.hcn.org/articles/nasa-finds-methane-hot-spot-over-four-corners>.

<sup>27</sup> Eric A. Kort et al., *Four Corners: The Largest US Methane Anomaly Viewed from Space*, 41 Geophysical Research Letters 6,898, 6,898–6,900, 6,902 (2014).

<sup>28</sup> EPA, *2014 Greenhouse Gas Emissions from Large Facilities* (Aug. 16, 2015), <https://ghgdata.epa.gov/ghgp/main.do> (search for Data Year 2014, All Emitters, and filter by Greenhouse Gas = methane and county level data).

<sup>29</sup> EPA, *2011-2014 GHGRP Industrial Profiles: Petroleum & Natural Gas Systems* 10, 13 (2015), available at [http://www2.epa.gov/sites/production/files/2015-11/documents/subpart\\_w\\_2014\\_data\\_summary\\_10-12-15\\_508\\_km.pdf](http://www2.epa.gov/sites/production/files/2015-11/documents/subpart_w_2014_data_summary_10-12-15_508_km.pdf).

<sup>30</sup> Karion et al. (2013), *supra* note 13, at 4396; see also Brian Maffly, *Uinta Basin Gas Leakage Far Worse than Most Believe*, Salt Lake Trib. (Aug. 5, 2013), available at <http://archive.sltrib.com/story.php?ref=/sltrib/news/56692751-78/basin-carbon-emissions-gas.html.csp>; Press Release, Cooperative Inst. for Research in Env’tl. Scis., CIRES, NOAA Observe Significant Methane Leaks in a Utah Natural Gas Field (Aug. 5, 2013), available at <http://cires.colorado.edu/news/cires-noaa-observe-significant-methane-leaks-utah-natural-gas-field>.

most significant contributor to human-caused climate change.<sup>31</sup> This rulemaking presents a significant opportunity for BLM to reduce the climate change impacts of oil and gas development on federal and tribal leases.<sup>32</sup>

BLM must be concerned with greenhouse gas emissions because the impacts of climate change on public lands are particularly acute. As EPA recognized in its formal finding that greenhouse gases, including methane, endanger the public health and welfare, “climate change has very likely increased the size and number of wildfires, insect outbreaks, and tree mortality in the Interior West, the Southwest, and Alaska, and will continue to do so.”<sup>33</sup> EPA further found that “climate change will likely further constrain already over-allocated water resources in some regions of the United States, increasing competition among agricultural, municipal, industrial, and ecological uses.”<sup>34</sup> Finally, EPA concluded that climate change “leads to predominantly negative consequences for biodiversity and the provisioning of ecosystem goods and services for ecosystems and wildlife important for public welfare in the U.S., both for current and future generations.”<sup>35</sup>

In the Environmental Assessment (“EA”) for the Proposed Rule, BLM summarized the specific impacts that climate change is having and will continue to have in the regions where public lands are predominantly located.<sup>36</sup> In the Great Plains, climate change is predicted to increase energy demand and to “add stress to limited water resources.”<sup>37</sup> In the Southwest, “drought and increased temperatures due to climate change have caused extensive tree deaths and winter warming has exacerbated bark beetle outbreaks by allowing more beetles, which normally die in cold weather, to survive through the winters, reproduce, and infect more trees.”<sup>38</sup> Climate change has also caused an increase in the number and severity of wildfires in the region, which in turn “contribute to an upslope shift of vegetation, spread of invasive plants, and conversion of forests to woodland or grassland.”<sup>39</sup> In Alaska, the impacts of climate change “are already pronounced, including earlier spring snowmelt, reduced sea ice, widespread glacier retreat, warmer permafrost, drier landscapes, and more extensive insect outbreaks and

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<sup>31</sup> UNEP & World Meteorological Organization, *Integrated Assessment of Black Carbon and Tropospheric Ozone: Summary for Decision Makers* (2011), available at [http://www.unep.org/dewa/Portals/67/pdf/BlackCarbon\\_report.pdf](http://www.unep.org/dewa/Portals/67/pdf/BlackCarbon_report.pdf).

<sup>32</sup> Assuming EPA finalizes its proposed NSPS rule, the Proposed Rule is estimated to reduce methane emissions by 164,000 to 169,000 tons/year over the next ten years. BLM, *Environmental Assessment: Waste Prevention, Production Subject to Royalties, and Resource Conservation*, DOI-BLM-WO310-2015-XXX-EA at 38 (Jan. 22, 2016) (“EA”). Incorporating the changes proposed in these comments would significantly increase the emissions reductions achieved by the rule.

<sup>33</sup> 74 Fed. Reg. 66,496, 66,532 (Dec. 15, 2009).

<sup>34</sup> *Id.* at 66,533.

<sup>35</sup> *Id.* at 66,534.

<sup>36</sup> EA, *supra* note 32, at 24.

<sup>37</sup> *Id.*

<sup>38</sup> *Id.*

<sup>39</sup> *Id.* at 24–25.



wildfire.”<sup>40</sup> Melting permafrost can lead to subsidence and damage to public infrastructure.<sup>41</sup> Additionally, melting sea ice has impacted the life cycles of many animals, driving them onshore and increasing “competition for food” and other negative impacts.<sup>42</sup> Climate change is having and will continue to have impacts to the public land resources that BLM is charged with protecting.

## 2. Ozone Pollution.

Ozone pollution is increasingly becoming a problem in relatively sparsely populated areas in the West as a result of oil and gas development. The oil and gas sector emits VOCs and NO<sub>x</sub>, which react in the atmosphere to form ground-level ozone, the primary component of smog.<sup>43</sup> Ozone is a dangerous air pollutant that impairs breathing, aggravates asthma, increases emergency room visits, and may lead to premature deaths.<sup>44</sup> Ozone pollution not only harms public health, but also caused more damage to plants and important ecosystems than all other air pollutants combined.<sup>45</sup>

After several years of delay, EPA recently strengthened the 8-hour ozone National Ambient Air Quality Standard (“NAAQS”) by lowering it from 75 parts per billion (“ppb”) to 70 ppb.<sup>46</sup> However, significant public health impacts may still occur even in areas that are in attainment with the updated standard.<sup>47</sup> Due to concerns over the health impacts at ozone levels below the current NAAQS, particularly to sensitive populations like children, asthmatics, and people with lung and heart disease, the American Thoracic Society and EPA’s own Clean Air

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<sup>40</sup> *Id.* at 25.

<sup>41</sup> *Id.*

<sup>42</sup> *Id.*; see also BLM, *Climate Change: BLM’s Response*, <http://www.blm.gov/wo/st/en/prog/more/climatechange.html> (last updated Dec. 20, 2012); DOI, *Climate Change Adaptation Plan 2* (2014), available at [https://www.doi.gov/sites/doi.gov/files/migrated/greening/sustainability\\_plan/upload/2014\\_DOI\\_Climate\\_Change\\_Adaptation\\_Plan.pdf](https://www.doi.gov/sites/doi.gov/files/migrated/greening/sustainability_plan/upload/2014_DOI_Climate_Change_Adaptation_Plan.pdf); K.B Kemp et al., *Managing for Climate Change on Federal Lands of the Western United States: Perceived Usefulness of Climate Science, Effectiveness of Adaptation Strategies, and Barriers to Implementation*, 20 *Ecology & Soc’y* 17 (2013), available at <http://www.ecologyandsociety.org/vol20/iss2/art17/ES-2015-7522.pdf>.

<sup>43</sup> Assuming EPA finalizes its proposed NSPS rule, the Proposed Rule will reduce VOC emissions by 391,000 to 411,000 tons/year over the next ten years. EA, *supra* note 32, at 42.

<sup>44</sup> 73 Fed. Reg. 16,436, 16,476 (Mar. 27, 2008).

<sup>45</sup> See EPA, *Ecosystem Effects of Ozone Pollution*, <https://www.epa.gov/ozone-pollution/ecosystem-effects-ozone-pollution> (last updated Mar. 4, 2016); U.S. Dep’t of Agric., *Effects of Ozone Air Pollution on Plants*, <http://www.ars.usda.gov/Main/docs.htm?docid=12462> (last updated Mar. 17, 2012).

<sup>46</sup> See 80 Fed. Reg. 65,292, 65,292 (Oct. 26, 2015).

<sup>47</sup> Letter from Dr. H. Christopher Frey, Chair, Clean Air Scientific Advisory Committee, to Gina McCarthy, Administrator, EPA, at ii (June 26, 2014), available at [https://yosemite.epa.gov/sab/sabproduct.nsf/5EFA320CCAD326E885257D030071531C/\\$File/EPA-CASAC-14-004+unsigned.pdf](https://yosemite.epa.gov/sab/sabproduct.nsf/5EFA320CCAD326E885257D030071531C/$File/EPA-CASAC-14-004+unsigned.pdf).

Scientific Advisory Committee and Children's Health Protection Advisory Committee advocated for a 60 ppb ozone standard rather than 70 ppb.<sup>48</sup>

Oil and gas sources account for the majority of ozone precursor emissions in many areas with significant amounts of federal and tribal oil and gas development.<sup>49</sup> Such development is leading to ozone pollution at levels that are harmful to public health and the environment in many areas of the West, including pollution in excess of federal standards.<sup>50</sup>

For example, in 2012, EPA designated Wyoming's Upper Green River Basin ("UGRB") as an ozone nonattainment area. Wyoming recommended designation after the UGRB began experiencing wintertime ozone spikes well in excess of the federal standard.<sup>51</sup> EPA agreed with Wyoming's conclusion that the elevated ozone concentrations in the area were "primarily due to local emissions from oil and gas development activities," and that they occurred primarily in the wintertime in the presence of snow and low inversion layers in an area constrained by natural geographic boundaries.<sup>52</sup> EPA recently determined that the UGRB had attained the 75 ppb NAAQS for ozone by the attainment date.<sup>53</sup> Wyoming adopted regulations for the UGRB that

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<sup>48</sup> Am. Lung Ass'n et al., *Comments on EPA's Proposed Revisions to the National Ambient Air Quality Standards for Ozone*, Dkt. No. EPA-HQ-OAR-2008-0699 at 20–49, 51–116, 189–93, 204–09 (Mar. 17, 2015) (ozone-induced health and ecosystem impacts).

<sup>49</sup> See generally A. Bar-Ilan et al., *A Comprehensive Emissions Inventory of Upstream Oil and Gas Activities in the Rocky Mountain States* (2013), available at <https://www3.epa.gov/ttnchie1/conference/ei20/session6/abarilan.pdf>.

<sup>50</sup> Eduardo P. Olauger, *The Potential Near-Source Ozone Impacts of Upstream Oil and Gas Industry Emissions*, 62 J. Air & Waste Mgmt. Ass'n 966, 976 (2012).

<sup>51</sup> Letter from Dave Freudenthal, Wyo. Governor, to Carol Rushin, EPA Region 8 Acting Reg'l Adm'r 2 (Mar. 12, 2009). For example, the UGRB exceeded the federal standard fourteen times during 2008. Russell C. Schnell et al., *Rapid Photochemical Production of Ozone at High Concentrations in a Rural Site During Winter*, 2 Nature Geoscience 120, 120 (2009). During the winter of 2008, a team led by NOAA scientists measured hourly average ozone concentrations above 140 ppb, which averaged out to 122 ppb over an eight-hour period. *Id.* The study attributed elevated ozone concentrations to NOx and VOC emissions from natural gas production in the area. *Id.* at 122. The Wyoming Department of Environmental Quality ("WDEQ") conducted annual studies between 2005 and 2011, finding thirteen NAAQS exceedances in 2011 alone. Courtney Hall et al., Utah State Univ. Commercialization & Reg'l Dev., *Final Report: Upper Green River Basin Winter Ozone: Summary of Public Information About the Wyoming Phenomenon* 6 (2012), available at [http://rd.usu.edu/files/uploads/2012\\_summary\\_ugrb.pdf](http://rd.usu.edu/files/uploads/2012_summary_ugrb.pdf).

<sup>52</sup> EPA, *Technical Support Document, Wyoming Area Designations for the 2008 Ozone National Ambient Air Quality Standards* 4, 24 (2012).

<sup>53</sup> EPA, *Determinations of Attainment by the Attainment Date, Extensions of the Attainment Date, And Reclassification of Several Areas for the 2008 Ozone National Ambient Air Quality Standards* 5, 14, 57–58 (Apr. 11, 2016) (forthcoming in Federal Register), available at <https://www.epa.gov/sites/production/files/2016-04/documents/20160411fr.pdf>.



are very similar in many respects to the Proposed Rule.<sup>54</sup> EPA will not make attainment designations for the area under the revised 70 ppb standard until October 2017.<sup>55</sup>

Although not currently designated as a nonattainment area due to the lack of regulatory monitors, the Uinta Basin also has wintertime ozone pollution well-above the federal standard designed to protect public health. A recent study concluded that oil and gas sources contribute 98 to 99% of emissions of VOCs in the Uinta Basin.<sup>56</sup> Most of this development is occurring on federal and tribal leases.<sup>57</sup> In 2010, 2011, and 2013, monitors recorded 8-hour ozone highs of 123, 139, and 141 ppb—exceeding the current standard by 76%, 99%, and 101% respectively.<sup>58</sup>

Data from EPA’s published 2012-14 design values—which are three year averages used to determine whether an area is in compliance with the NAAQS—shows that there are many counties in the West with BLM administered oil and gas development and 2012-14 design values above 60 ppb.<sup>59</sup>

<b>State</b>	<b>County</b>	<b>2012-2014 Design Value (ppb)</b>
Colorado	Garfield	63
Colorado	Jackson	60
Colorado	La Plata	68
Colorado	Mesa	66
Colorado	Moffat	64
Colorado	Montezuma	67
Colorado	Rio Blanco	74
New Mexico	Eddy	71

<sup>54</sup> See 81 Fed. Reg. at 6,618–22.

<sup>55</sup> EPA, *Learn About Ozone Designations*, <https://www.epa.gov/ozone-designations/learn-about-ozone-designations#process> (last updated Feb. 29, 2016).

<sup>56</sup> D. Helmig et al., *Highly Elevated Atmospheric Levels of Volatile Organic Compounds in the Uintah Basin, Utah*, 48 Env’tl. Sci. Tech. 4,707, 4,713 (2014), available at <http://pubs.acs.org/doi/abs/10.1021/es405046r>.

<sup>57</sup> See BLM Vernal Field Office, *Greater Uintah Basin: Oil and Gas Cumulative Impacts Technical Support Document* at 13, table 4-1 (Mar. 2012), available at [http://www.blm.gov/style/medialib/blm/ut/vernal\\_fo.Par.57849.File.dat/GCW%20Cums%20TSD%2003-22-12%20final.pdf](http://www.blm.gov/style/medialib/blm/ut/vernal_fo.Par.57849.File.dat/GCW%20Cums%20TSD%2003-22-12%20final.pdf) (indicating that the number of foreseeable new federal and Indian wells in the Uinta Basin was 25,721, while only 2,696 new wells were expected on other lands in the Basin).

<sup>58</sup> EPA, *Monitor Values Report*, [https://www3.epa.gov/airdata/ad\\_rep\\_mon.html](https://www3.epa.gov/airdata/ad_rep_mon.html) (last visited Apr. 18, 2016); see also Utah Dep’t of Env’tl. Quality, *Ozone in the Uinta Basin: Ozone Standards and Development of a State Implementation Plan*, <http://www.deq.utah.gov/locations/U/uintahbasin/ozone/sip/sip.htm> (last visited Apr. 19, 2016) (describing elevated ozone level and results of Uinta Basin Ozone Study); Seth Lyman et al., Utah State University, *Final Report: 2013-14 Uintah Basin Winter Ozone Study* 6 (Oct. 31, 2014), available at [http://rd.usu.edu/files/uploads/2014\\_ubos\\_final\\_report.pdf](http://rd.usu.edu/files/uploads/2014_ubos_final_report.pdf).

<sup>59</sup> EPA, *2014 Design Value Reports: Ozone* (July 20, 2015), available at [http://www3.epa.gov/airtrends/pdfs/Ozone\\_DesignValues\\_20122014\\_FINAL\\_08\\_03\\_15.xlsx](http://www3.epa.gov/airtrends/pdfs/Ozone_DesignValues_20122014_FINAL_08_03_15.xlsx) (county level data is available at tab four of the spreadsheet).

New Mexico	Lea	65
New Mexico	Sandoval	63
New Mexico	San Juan	68
Oklahoma	Caddo	66
Oklahoma	Comanche	73
Oklahoma	Dewey	70
Oklahoma	Kay	73
Oklahoma	Mayes	69
Oklahoma	Pittsburg	69
Utah	Carbon	68
Utah	Duchesne	77
Utah	San Juan	67
Utah	Uintah	76
Wyoming	Campbell	63
Wyoming	Carbon	62
Wyoming	Fremont	64
Wyoming	Sublette	64
Wyoming	Sweetwater	64
Wyoming	Uinta	63

Furthermore, due to a lack of monitoring in many rural areas, there is an incomplete picture of ozone levels in many areas with significant oil and gas development on federal and tribal lands.<sup>60</sup> However, where such data is available for ozone, it shows that there is reason to be concerned. For example, in 2014 the Forest Service used a portable monitor to measure ozone at 23 remote sites in Utah and Colorado that cannot support year-round monitoring stations.<sup>61</sup> It found that 60% of the sites had design values exceeding the then-applicable 75 ppb NAAQS, and 78% had design values above the current standard of 70 ppb.<sup>62</sup> It found eight-hour average ozone concentrations up to 101.5 ppb, and averages above 80 ppb at eight sites.<sup>63</sup> All seven sites noted for being “close to or downwind from oil and gas development” had eight-hour ozone concentrations above 70 ppb.<sup>64</sup>

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<sup>60</sup> Annmarie G. Carlton et al., *The Data Gap: Can a Lack of Monitors Obscure Loss of Clean Air Act Benefits in Fracking Areas?*, 48 *Envtl. Sci. Tech.* 893, 893 (2014) (concluding that “the extent to which these increased [oil and gas] emissions impact air quality, especially in highly developed shale gas regions where there are no air monitors, represents a substantial data gap and hinders effective air quality management.”).

<sup>61</sup> Robert C. Musselman & John L. Korfmacher, *Ozone in Remote Areas of the Southern Rocky Mountains*, 82 *Atmospheric Envt.* 383, 384–85 (2014).

<sup>62</sup> *Id.* at 386.

<sup>63</sup> *Id.*

<sup>64</sup> *Id.* at 388.

Ozone pollution greatly affects public lands recreation and resources.<sup>65</sup> For example, the public lands are used extensively for outdoor recreation, such as hiking and mountain biking. The health risks associated with ozone pollution are greater for those exerting themselves in the outdoors.<sup>66</sup> Indeed, public health officials recommend that people stay indoors and avoid strenuous exercise during high ozone episodes.<sup>67</sup>

Scientific research shows that trees and other vegetation on public lands also are at risk due to ozone pollution.<sup>68</sup> Ozone exposure has been causally linked to decreased photosynthesis, changes in plant reproduction, decreased plant growth, decreased ecosystem productivity, decreased crop yield, and changes in ecosystem composition.<sup>69</sup> Ozone also increases the susceptibility of sensitive plants to disease, insect damage, and severe weather.<sup>70</sup> Moreover,

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<sup>65</sup> Moreover, as BLM acknowledges in the EA for the Proposed Rule, noise and light pollution from flaring negatively impacts recreation opportunities on public lands. See EA, *supra* note 32 at 29, 48.

<sup>66</sup> W.F. McDonnell et al., *Long-term Ambient Ozone Concentration and the Incidence of Asthma in Nonsmoking Adults: the AHSMOG Study*, 80 *Envtl. Res.* 110 (1999); P.L. Kinney, G.D. Thurston, & M. Raizenne, *The Effects of Ambient Ozone on Lung Function in Children: A Reanalysis of Six Summer Camp Studies*, 104 *Envtl. Health Perspectives* 170 (1996); B. Brunekreef et al., *Respiratory Effects of Low-level Photochemical Air Pollution in Amateur Cyclists*, 150 *Am. J. of Respiratory and Critical Care Med.* 962 (1994); D.M. Spektor et al., *Effects of Ambient Ozone on Respiratory Function in Active, Normal Children*, 137 *Am. R. of Respiratory Disease* 313 (1988).

<sup>67</sup> See, e.g., EPA, *Air Quality Index Basics*, <https://www.airnow.gov/index.cfm?action=aqibasics.aqi#very> (updated Jan. 28, 2016); Utah Dep't of Health, *AQI: Air Quality Index*, <http://health.utah.gov/utahair/AQI/> (updated Dec. 17, 2015); WDEQ, *Ozone Health Information*, <http://deq.wyoming.gov/aqd/ozone/resources/ozone-health-information/> (last visited Apr. 14, 2016).

<sup>68</sup> See BLM Idaho, *Air Resources*, <http://www.blm.gov/id/st/en/prog/aquatics/air.html> (last updated Oct. 19, 2015); Michael de Yoanna, *How Plants Show the Strains of Ozone Pollution*, *Colo. Pub. Radio* (July 29, 2014), <http://www.cpr.org/news/story/how-plants-show-strains-ozone-pollution>; U.S. Forest Serv., Nat'l Park Serv., & Fish & Wildlife Serv., *Federal Land Managers' Air Quality Related Values Workgroup (FLAG) Phase I Report* 75–84 (2000), <https://www.nature.nps.gov/air/Pubs/pdf/flag/FlagFinal.pdf>; see also 80 *Fed. Reg.* at 65,376–77; EA at 26.

<sup>69</sup> 80 *Fed. Reg.* 65,292, 65,369–410 (Oct. 26, 2015); see also Fitzgerald L. Booker, Joseph E. Miller, & Edwin L. Fiscus, *The Ozone Component of Global Change: Potential Effects on Agricultural and Horticultural Plant Yield, Product Quality and Interactions with Invasive Species*, 51 *J. Integrative Plant Biology* 337, 342–43 (2009) (ozone can reduce crop yields by up to 15%); D.G. Lombardozzi, G. Bonan & J.P. Sparks, *Integrating O<sub>3</sub> Influences on Terrestrial Processes: Photosynthetic and Stomatal Response Data Available for Large-Scale Modeling*, 10 *Biogeosciences* 6815, 6823 (2013).

<sup>70</sup> EPA, *Ecosystem Effects of Ozone Pollution*, <https://www.epa.gov/ozone-pollution/ecosystem-effects-ozone-pollution> (last updated Mar. 4, 2016).

climate change feedbacks will likely increase ozone levels, causing further damage to vegetation on public lands.<sup>71</sup>

### 3. Hazardous Air Pollutants.

Hazardous air pollutants (“HAPs”), also known as air toxics, are pollutants which “present . . . a threat of adverse human health effects (including but not limited to, substances which are known to be, or may reasonably be anticipated to be, carcinogenic, mutagenic, teratogenic, neurotoxic, which cause reproductive dysfunction, or which are acutely or chronically toxic) or adverse environmental effects.”<sup>72</sup>

Several HAPs emitted by the oil and gas sector, including benzene, toluene, ethyl benzene, and xylene (collectively, “BTEX”), are known or suspected carcinogens.<sup>73</sup> The oil and gas sector also emits several other HAPs, including acrolein, methylene chloride, arsenic, polycyclic aromatic hydrocarbons, mercury, formaldehyde, and n-hexane.<sup>74</sup> Some of these HAPs are persistent in the environment and bioaccumulate, building up in fish and the soil, which can cause significant harms to environmental resources that members of the public, and especially tribal members, rely on for subsistence, cultural, recreational, aesthetic, and other values.<sup>75</sup>

A growing body of scientific literature has documented increased risk to human health from exposure to oil and gas sector air toxics.<sup>76</sup> Four studies in Colorado have identified adverse impacts of exposure to oil and gas sector air toxics. One study found elevated cumulative cancer risks for people living within 0.5 miles of wells of 10/million people, as well as likely chronic

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<sup>71</sup> Robert L. Beschta et al., *Adapting to Climate Change on Western Public Lands: Addressing the Ecological Effects of Domestic, Wild, and Feral Ungulates*, 53 *Envtl. Mgmt.* 1,039, 1,040 (2012).

<sup>72</sup> 42 U.S.C. § 7412(b)(2).

<sup>73</sup> EPA, *Regulatory Impact Analysis: Final New Source Performance Standards and Amendments to the National Emission Standards for Hazardous Air Pollutants for the Oil and Natural Gas Industry* at 4-14 (Apr. 2012) (“2012 OOO RIA”); see also NRDC, *Drilling Down: Protecting Western Communities from the Health and Environmental Effects of Oil and Gas Production* at v–vi (2007). Assuming EPA finalizes its proposed NSPS rule, BLM estimates that the Proposed Rule will reduce HAPs emissions by 2,261 to 2,457 tons/year over the next ten years. EA, *supra* note 32, at 43.

<sup>74</sup> HAPs Rulemaking Petition at 35–37 (describing these HAPs and their adverse human health impacts).

<sup>75</sup> See, e.g., Nat’l Park Serv., *The Fate, Transport, and Ecological Impacts of Airborne Contaminants in Western National Parks* at 4-8 to 4-42, 5-1 to 5-21, 5-61 to 5-67 (2008), available at [http://www.nature.nps.gov/air/studies/air\\_toxics/docs/2008FinalReport/WACAP\\_Report\\_Volume\\_I\\_Main.pdf](http://www.nature.nps.gov/air/studies/air_toxics/docs/2008FinalReport/WACAP_Report_Volume_I_Main.pdf).

<sup>76</sup> See Bernard D. Goldstein et al., *The Role of Toxicological Science in Meeting the Challenges and Opportunities of Hydraulic Fracturing*, 139 *Toxicological Sci.* 271, 275–77 (2014); Miriam Rotkin-Ellman, NRDC, *More Fracking Fumes: Studies Repeatedly Find Unsafe Levels of Air Pollution Near Fracking Sites* (Dec. 16, 2014), <https://www.nrdc.org/experts/miriam-rotkin-ellman/more-fracking-fumes-studies-repeatedly-find-unsafe-levels-air-pollution>; HAPs Rulemaking Petition at 37–43.

non-cancer health impacts.<sup>77</sup> Another public health study found elevated cancer rates of up to 100 cases/million people near wells in Garfield County, likely due to benzene exposure, and identified oil and gas operations as the likely source of the benzene.<sup>78</sup> A third study found higher rates of birth defects, particularly congenital heart defects, among babies born to mothers living within a ten mile radius and near higher densities of natural gas wells.<sup>79</sup> Finally, a study by NOAA scientists found emissions of benzene, a known carcinogen, at levels seven times greater than reflected in a state inventory.<sup>80</sup>

Evidence from oil and gas producing basins that include substantial federal leasing also reveals concerning health impacts from exposure to air toxics. For example, a recently published study, conducted in conjunction with communities, reported the results of air testing near oil and gas production facilities in five states, including areas of Wyoming with significant amounts of federal and tribal lands.<sup>81</sup> This testing found levels of volatile organic compounds and hydrogen sulfide that were above safety thresholds established to protect people from respiratory and neurological problems for short duration exposures. Repeated and chronic exposures at the levels found in this study have been linked to severe harm to the nervous system and lungs, blood disorders, birth defects, and cancer.<sup>82</sup>

In the Uinta Basin, researchers estimated the total annual mass flux of VOCs from the surveyed gas fields to be equivalent to the emissions from 100 million cars.<sup>83</sup> The benzene levels measured in this study also exceeded health standards set by the Agency for Toxic Substances Disease Registry and the California Environmental Protection Agency to protect against harm to the developing fetus, immune system and blood.<sup>84</sup>

#### 4. Visibility Impacts.

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<sup>77</sup> Lisa M. McKenzie et al., *Human Health Risk Assessment of Air Emissions from Development of Unconventional Natural Gas Resources*, 424 Sci. Total Env't 79, 80–83 (2012).

<sup>78</sup> Raj Goyal, Colo. Dep't of Pub. Health & Env't, *Garfield County Air Toxics Inhalation; Screening Level Human Health Risk Assessment* 22–23, 29–30, 39–40, 56 (2007).

<sup>79</sup> Lisa M. McKenzie et al., *Birth Outcomes and Maternal Residential Proximity to Natural Gas Development in Rural Colorado*, 122 Env'tl. Health Persps. 412, 412–16 (2014); Miriam Rotkin-Ellman, NRDC, *New Study Finds Worrisome Pattern of Birth Defects in Fracking Communities* (Feb. 4, 2014), <https://www.nrdc.org/experts/miriam-rotkin-ellman/new-study-finds-worrisome-pattern-birth-defects-fracking-communities>.

<sup>80</sup> Pétron et al., *supra* note 12, at 6,836.

<sup>81</sup> Gregg P. Macey et al., *Air Concentrations of Volatile Compounds Near Oil and Gas Production: A Community-based Exploratory Study*, 13 Env'tl. Health 82, 88 (2014).

<sup>82</sup> See Tanja Srebotnjak & Miriam Rotkin-Ellman, NRDC, *Fracking Fumes: Air Pollution from Hydraulic Fracturing Threatens Public Health and Communities* 4 (2014), available at <https://www.nrdc.org/sites/default/files/fracking-air-pollution-IB.pdf>; see also Miriam Rotkin-Ellman, *More Fracking Fumes: Studies Repeatedly Find Unsafe Levels of Air Pollution Near Fracking Sites* (Dec. 16, 2014), <https://www.nrdc.org/experts/miriam-rotkin-ellman/more-fracking-fumes-studies-repeatedly-find-unsafe-levels-air-pollution>.

<sup>83</sup> Helmig et al., *supra* note 56, at 4,707.

<sup>84</sup> *Id.* at 4,712.

Oil and gas development on federal and tribal leases also impacts visibility at national parks, national monuments, wilderness areas, and other public lands.<sup>85</sup> For example, modeling shows that, even under a low-development scenario, emissions from new oil and gas development across all BLM Colorado field offices are projected to contribute to visibility impairment at Dinosaur and Bandelier National Monuments; Arches, Black Canyon of the Gunnison, Canyonlands, Capitol Reef, Great Sand Dunes, Mesa Verde, Petrified Forest, and Rocky Mountain National Parks; and 13 wilderness areas.<sup>86</sup>

Oil and gas activities in the San Juan Basin are contributing to visibility issues at several Class I areas, including Mesa Verde National Park.<sup>87</sup> Published scientific evidence first documented visibility impacts likely attributable to oil and gas development in the San Juan Basin many years ago.<sup>88</sup> Building on that body of evidence, the Final Environmental Impact Statement (“FEIS”) for BLM’s 2015 Resource Management Plan (“RMP”) for the Tres Rios Field Office (“TRFO”) comprehensively considered visibility issues caused by oil and gas development in the region.<sup>89</sup> According to BLM, oil and gas drilling and production activities will have the greatest impacts on air quality in the region of any management action.<sup>90</sup> By 2018, BLM estimated that the oil and gas industry would be the source of 37% of the region’s NOx emissions and 70% of the region’s VOC emissions.<sup>91</sup> BLM concluded that with existing levels of oil and gas development, the area already violates the Clean Air Act’s visibility rules.<sup>92</sup> With future development, Canyonlands National Park, Mesa Verde National Park, and Weminuche

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<sup>85</sup> See generally EA, *supra* note 32, at 26–27, 44.

<sup>86</sup> Krish Vijayaraghavan et al., *Colorado Air Resource Management Modeling Study (CARMMMS) with Updated Mancos Shale Modeling: 2021 Modeling Results for the High, Low and Medium Oil and Gas Development Scenarios* 35 (2012), available at [http://www.blm.gov/style/medialib/blm/co/information/nepa/air\\_quality/carmms\\_results\\_-\\_2008.Par.19876.File.dat/BLM\\_CARMMMS\\_1.5\\_Modeling\\_Final\\_Report\\_with\\_Appendices.pdf](http://www.blm.gov/style/medialib/blm/co/information/nepa/air_quality/carmms_results_-_2008.Par.19876.File.dat/BLM_CARMMMS_1.5_Modeling_Final_Report_with_Appendices.pdf); see also *id.* at 22–24, 142–67 (contributions of new and existing oil and gas sources across all Colorado field offices to visibility impairment in these Class I areas in low, medium, and high development scenarios).

<sup>87</sup> See BLM, TRFO, *Approved Resource Management Plan* at II-2 (Feb. 27, 2015), available at [http://www.blm.gov/style/medialib/blm/co/field\\_offices/san\\_juan\\_public Lands/land\\_use\\_planning/approved\\_lrmp.Par.61853.File.dat/Part%20II%20-%20RMP%20Chapter%201.pdf](http://www.blm.gov/style/medialib/blm/co/field_offices/san_juan_public Lands/land_use_planning/approved_lrmp.Par.61853.File.dat/Part%20II%20-%20RMP%20Chapter%201.pdf) (map of portion of San Juan Basin).

<sup>88</sup> See Marco A. Rodriguez, Michael G. Barna & Tom Moore, *Regional Impacts of Oil and Gas Development on Ozone Formation in the Western United States*, 59 J. Air & Waste Mgmt. Ass’n 1,111, 1,111 (2009).

<sup>89</sup> See BLM & U.S. Forest Serv., *Tres Rios Field Office & San Juan Nat’l Forest Land and Resource Management Plan: Final Environmental Impact Statement* 338–78 (Sept. 2013), available at [http://www.blm.gov/style/medialib/blm/co/field\\_offices/san\\_juan\\_public Lands/land\\_use\\_planning/proposed\\_lrmp.Par.1895.File.dat/Volume%20I%20FEIS%20Final%20Chapter%20Three%20Affected%20Environment.pdf](http://www.blm.gov/style/medialib/blm/co/field_offices/san_juan_public Lands/land_use_planning/proposed_lrmp.Par.1895.File.dat/Volume%20I%20FEIS%20Final%20Chapter%20Three%20Affected%20Environment.pdf) (“TRFO FEIS”).

<sup>90</sup> *Id.* at 339.

<sup>91</sup> *Id.* at 341–42.

<sup>92</sup> *Id.* at 363.



Wilderness are projected to have visibility impacts above the allowable threshold.<sup>93</sup> BLM developed a number of mitigation measures to reduce visibility impacts to these areas.<sup>94</sup>

Oil and gas development in the Bakken region, much of which consists of federal lands, federal mineral estate, and Indian country,<sup>95</sup> is also negatively impacting visibility in several Class I areas, including Theodore Roosevelt National Park.<sup>96</sup> A February 2016 study publishing the results of a multi-year monitoring effort concluded that “oil and gas emissions are impacting air quality at [Theodore Roosevelt National park and other Class I areas] with larger effects observed in those areas near the most extensive oil and gas development.”<sup>97</sup> An earlier report by the same research group concluded that “[t]he occurrence of such high fine particle concentrations in the Bakken region is a clear indicator of a significant air quality impact and occurrence of regional haze.”<sup>98</sup>

## 5. Particulate Matter.

Oil and gas activities, including flaring, also emit coarse and fine particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) and fine particulate precursors like sulfur dioxide (SO<sub>2</sub>), VOCs, and NO<sub>x</sub>.<sup>99</sup> As BLM explains in the Proposed Rule’s EA, particulates are harmful to public health, contribute to visibility problems, and may cause acid rain.<sup>100</sup> Not only are particulate emissions

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<sup>93</sup> *Id.* at 362.

<sup>94</sup> *Id.* at 364.

<sup>95</sup> See T.T. Taber & S.A. Kinney, *Land Use and Ownership, Williston Basin* at Fig. WM-2 to Fig. WM-3, in U.S. Geological Survey, Survey Professional Paper 1625-A (1999), available at <http://pubs.usgs.gov/pp/p1625a/Chapters/WM.pdf> (map of federal and Indian lands and minerals in the Bakken region).

<sup>96</sup> See Melanie D.G. Kaplan, Nat’l Parks Conservation Ass’n, *Drilling Down*, (2014), <https://www.npca.org/articles/958-drilling-down>; see also Dakota Res. Council, *The Threats to Theodore Roosevelt National Park: Fact Sheet 2014* (2014), available at <http://drcinfo.org/wp-content/uploads/2014/08/The-Threats-To-Theodore-Roosevelt-National-Park-final.pdf>; Phil Taylor, *Bakken Boom Linked to Haze at Theodore Roosevelt Park*, Greenwire (Nov. 7, 2013), available at <http://www.eenews.net/stories/1059990151>.

<sup>97</sup> A.J. Prenni et al., *Oil and Gas Impacts on Air Quality in Federal Lands in the Bakken Region: an Overview of the Bakken Air Quality Study and First Results*, 16 *Atmospheric Chemistry & Physics* 1,401, 1,414 (2016).

<sup>98</sup> Jeffrey Collett & Sonia Kreidenweis, *Characterizing Sources, Transport, and Deposition of Atmospheric Reactive Nitrogen in National Parks* 14 (2014).

<sup>99</sup> See EA at 26.

<sup>100</sup> *Id.* at 26–28.

harmful to public health, but they also can cause soot damage to cliff paintings and other cultural artifacts located on public lands.<sup>101</sup>

## **6. Nitrogen Deposition.**

Oil and gas development, and flaring specifically, also results in emissions of nitrogen dioxide, which in turn leads to nitrogen deposition.<sup>102</sup> BLM's TRFO specifically discussed how oil and gas activities in the San Juan basin contributed to nitrogen deposition on public lands, including Mesa Verde National Park.<sup>103</sup> The damaging effects of nitrogen deposition also have been documented in Dinosaur National Monument, as well as at Arches and Canyonlands National Parks. When commenting on BLM's proposed permitting of oil and gas wells in the White River Field Office Resource Management Area, the National Park Service explained that "the current cumulative nitrogen deposition impacts are a substantial concern in Dinosaur [National Monument]."<sup>104</sup> In Rocky Mountain National Park, the effects of nitrogen deposition have crossed a damaging threshold. "Observed ecosystem changes include changes in the chemistry of old-growth, Engelmann spruce forests and other alpine vegetation, shifts in population of lake diatoms, excess [nitrogen] leakage into lakes and streams, and alterations in biogeochemical cycling associated with increased microbial activity in high elevation soils and talus."<sup>105</sup>

BLM's Proposed Rule, along with targeted improvements, will help reduce these environmental harms. We urge BLM to define the purpose of the rule as not only reducing waste, but also greenhouse gases and air pollution.

## **III. BLM Has Broad Authority to Prevent Waste and Reduce Pollution from Oil and Gas Development.**

Both the Mineral Leasing Act ("MLA") and the Federal Land Policy and Management Act ("FLPMA") give BLM broad legal authority to adopt regulations preventing wasteful venting, flaring and leaks, and to reduce air and climate pollution from oil and gas development.

The MLA directs DOI to require "all reasonable precautions" to prevent waste, and empowers the agency to promulgate rules and "do any and all things necessary" to carry out that purpose. 30 U.S.C. §§ 189, 225. Importantly, the focus of this mandate is on conserving a

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<sup>101</sup> See, e.g., Krista Deal et al., *Wildland Fire in Ecosystems: Effects of Fire on Cultural Resources and Archaeology* 18 (2012) (describing impacts of particulate deposition on cultural resources); BLM, *Final EIS West Tavaputs Plateau Natural Gas Full Field Development Plan* at 4-239 to 4-244 & App. G at 14–18, 35–40 (2010), available at [http://www.blm.gov/ut/st/en/fo/price/energy/Oil\\_Gas/wtp\\_final\\_eis.html](http://www.blm.gov/ut/st/en/fo/price/energy/Oil_Gas/wtp_final_eis.html) (describing impacts of dust and other pollutants related to oil and gas development on cultural resources, including rock art, in Utah).

<sup>102</sup> See generally EA, *supra* note 32 at 27–28.

<sup>103</sup> See, e.g., TRFO FEIS, *supra* note 89, at 359.

<sup>104</sup> Memorandum from Reg'l Dir., Intermountain Region, Nat'l Park Serv., to Planning and Env'tl. Coordinator, BLM 9 (2013).

<sup>105</sup> Nat'l Park Serv. et al., *Rocky Mountain Atmospheric Nitrogen and Sulfur Study Report* at S-2 (2009), available at [http://www.nature.nps.gov/air/Pubs/pdf/RoMANS\\_V1\\_20100218.pdf](http://www.nature.nps.gov/air/Pubs/pdf/RoMANS_V1_20100218.pdf).



public resource and protecting taxpayers—not simply requiring measures that are economically reasonable from the individual company’s perspective. BLM’s obligation under the MLA thus is measured according to the conservation of public minerals and not based on each company’s bottom line or the economics of a single project. This mandate means that the MLA not only gives BLM legal authority to adopt the Proposed Rule, but also requires the agency to strengthen the proposal in several respects. As proposed, several terms would allow companies to waste oil and gas for the sake of administrative convenience or other reasons not contemplated by the statute.

Moreover, BLM’s legal authority is not limited solely to prevention of waste. DOI also has authority under the MLA to conserve natural resources, “safeguard the public welfare” and protect “the interests of the United States.” *See* 30 U.S.C. § 187. As courts have made clear, this broad authority encompasses protection of the environment, giving BLM the authority and obligation to reduce greenhouse gases and other air pollutants emitted by oil and gas operations.

BLM also has broad authority under FLPMA to regulate activities on public lands that affect the quality of the environment, including the air and atmosphere. 43 U.S.C. §§ 1701(a)(8), 1702(c), 1732(a), (b); *see also* 81 Fed. Reg. at 6,629. This includes the authority to regulate greenhouse gases, emissions that lead to smog pollution, and toxic air pollutants. By directly addressing these significant issues, BLM can strengthen the justification for the rule and more accurately account for its full benefits. FLPMA also provides authority for BLM to go further in reducing emissions than it has in the Proposed Rule.

#### **A. BLM Must Prevent Waste Under the Mineral Leasing Act.**

The MLA “rests on the fundamental premise that the public should benefit from mineral production on public lands.” 81 Fed. Reg. at 6,629. Preventing companies from wasting publicly-owned oil and gas is a central part of meeting that statutory goal. Accordingly, the MLA directs that lessees be required to “use all reasonable precautions to prevent waste of oil or gas.” 30 U.S.C. § 225; *see also id.* § 187 (requiring all leases to include provisions “for the prevention of undue waste”). As BLM observes, “the MLA requires the BLM to ensure that lessees ‘use all reasonable precautions to prevent waste . . . .’”<sup>106</sup> The MLA also authorizes DOI to promulgate rules and “do any and all things necessary” to carry out that purpose (and other purposes of the MLA). 30 U.S.C. § 189.

BLM exercises this authority by requiring in the standard lease form that the lessee “shall prevent unnecessary . . . loss of, or waste of leased resources.”<sup>107</sup> And courts have long recognized that the requirement to prevent waste gives DOI authority to require measures similar to those in the Proposed Rule. *See, e.g., Ctr. for Biological Diversity v. BLM*, 937 F. Supp. 2d 1140, 1160–61 (N.D. Cal. 2013) (noting that technologies, including replacing wet seals on compressors with dry seals, “may certainly prevent waste”); *Forbes v. United States*, 125 F.2d 404, 409–10 (9th Cir. 1942) (rejecting challenge to well plugging and abandonment regulation

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<sup>106</sup> EA, *supra* note 32, at 3.

<sup>107</sup> BLM, Offer to Lease and Lease for Oil and Gas at § 4 (Oct. 2008), available at [www.blm.gov/style/medialib/blm/noc/business/eforms.Par.71287.File.dat/3100-011.pdf](http://www.blm.gov/style/medialib/blm/noc/business/eforms.Par.71287.File.dat/3100-011.pdf) (“Form 3100-11”).

intended, among other grounds, to prevent “gas and oil escap[ing] at the surface[.]”). Thus, BLM has clear legal authority to adopt regulations controlling waste.

BLM’s authority to control waste is not limited to what is economic to recover from the perspective of an operator. Instead, the point of preventing waste has been to *maximize the recovery from a given pool for the benefit of the public*. For example, BLM defines “waste of oil and gas” as:

[A]ny act or failure to act by the operator that is

[a] not sanctioned by [BLM] as necessary for proper development and production and

[b] which results in:

(1) [a] reduction in the quantity or quality of oil and gas ultimately producible from a reservoir under prudent and proper operations; or

(2) avoidable surface loss of oil or gas.

43 C.F.R. § 3160.0-5. This regulation does not define waste solely based on the economics of the operator. Instead, whether a practice represents waste turns on: (a) whether BLM has authorized or sanctioned a practice, (b) the losses of oil or gas and “the quantity or quality of oil and gas ultimately producible from a reservoir,” and (c) BLM’s determination of what is avoidable under “proper development and production” practices. *Id.* While cost of control may be a factor, it is not the only one. Under this definition, leaks, venting and/or flaring can represent waste even where a particular operator cannot economically capture them.

Similarly, NTL-4A forbids routine gas flaring unless BLM approves an application showing *both* that (a) the expense of capturing the gas is “not economically justified,” and that (b) requiring such capture would lead to the abandonment of the operation “and *ultimately to a greater loss of equivalent energy* than would be recovered if the venting or flaring were permitted to continue.” NTL-4A ¶ IV (emphasis added). NTL-4A thus requires consideration of not only the operator’s economics, but also the impact on conservation of publicly-owned minerals. *See, e.g., Maxus Explor. Co.*, 122 IBLA 190, 196–97 (1992) (charging royalties for unapproved gas venting under NTL-4A, except where the venting prevented drainage of federal oil by non-federal wells); *see also* 43 C.F.R. § 3161.2 (directing BLM authorized officer “to require that all operations be conducted in a manner which . . . results in the maximum ultimate recovery of oil and gas with minimum waste”).

BLM’s authority to prevent waste by requiring the use of certain technology, moreover, is not limited to “those measures considered generally prudent by the ‘oil industry’” on cost or effectiveness grounds. *Southland Royalty Co.*, IND-32-O&G, 1982 WL 961436, at \* 2 (1982). Such a standard “would not be sufficient to meet the clearly stated objectives” of DOI regulations and the MLA. *Id.* Instead, BLM “has broad discretion under the regulations to

require those measures necessary to . . . prevent the loss of natural resources produced from Federal and Indian lands.” *Id.*<sup>108</sup>

BLM recognizes this point in its discussion of venting and flaring from oil wells:

A focus on oil development rather than gas capture may be a rational decision for an individual operator, but it does not account for the broader impacts of venting and flaring, including the costs to the public of losing gas that would otherwise be available for productive use, the loss of royalties that would otherwise be paid to States, tribes and the Federal Government on the lost gas, and the air pollution and other impacts of gas wasted through venting and flaring. . . . Thus, *a decision to vent or flare that may make sense to the individual operator may constitute an avoidable loss of gas and unreasonable waste when considered from a broader perspective and across an entire field.*”

81 Fed. Reg. at 6,638 (emphasis added).

In fact, the MLA’s “all reasonable precautions” standard not only gives BLM the authority to regulate waste, it also requires that the Proposed Rule be strengthened in several respects. BLM acknowledges it has a “responsibilit[y] under the MLA . . . to ensure that lessees ‘use *all reasonable precautions* to prevent waste of oil or gas developed in the land.’”<sup>109</sup> 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 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)).

A number of the proposed provisions fall short of satisfying the MLA’s “all reasonable measures” mandate, including its requirements for venting and flaring, royalties, exceptions for existing leases, exceptions for storage vessels, and approach to emissions from pipelines on rights-of-way. These are discussed below.

#### **B. Other Provisions of the MLA Give BLM Authority to Regulate Waste and Protect the Environment.**

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<sup>108</sup> *Southland* applied an earlier version of DOI regulations. *Id.* Those regulations, published in 1974, also did not limit waste to what was economical for the operator to capture. For example, the 1974 regulations defined “waste of oil or gas” to include “the loss or destruction of oil or gas after recovery thereof such as to prevent proper utilization and beneficial use thereof . . . .” 30 C.F.R. § 221.1(n)(1) (1974).

<sup>109</sup> EA, *supra* note 32, at 7 (emphasis added); *see also id.* at 3 (noting that “the MLA requires the BLM to ensure that lessees ‘use all reasonable precautions’” against waste); 30 U.S.C. § 225.

In addition to the waste requirements, several other provisions of the MLA give BLM authority to adopt the Proposed Rule and the revisions set forth in these comments. The MLA authorizes DOI “to prescribe necessary and proper rules and regulations and to do any and all things necessary to carry out and accomplish the purposes of [the MLA].” 30 U.S.C. § 189. More than 50 years ago, the Supreme Court explained that section 189 authorized DOI to impose “exacting restrictions and continuing supervision” over oil and gas development on public lands, and to issue “rules and regulations governing in minute detail all facets of the working of the land.” *Boesche v. Udall*, 373 U.S. 472, 477–78 (1963) (citing 30 U.S.C. § 189).

The purposes of the MLA include “protection of the interests of the United States and . . . safeguarding of the public welfare.” 30 U.S.C. § 187 (requiring lease terms for these purposes).<sup>110</sup> Section 187’s public welfare goal gives BLM “broad authority to set lease terms to prevent environmental harm.” *NRDC v. Berkland*, 458 F. Supp. 925, 936 (D.D.C. 1978). Carbon pollution falls within the environmental impacts that BLM may regulate to protect the “public welfare.” EPA, for example, has determined that greenhouse gases (including methane) “in the atmosphere may reasonably be anticipated . . . to endanger public welfare.” 74 Fed. Reg. at 66,497. Ample evidence demonstrates that climate change resulting from methane and other greenhouse gases is already having numerous adverse impacts on public welfare, including increasing the size and number of wildfires, reducing water supplies, and harming biodiversity. See *supra* Section II.B.1.

Similarly, a primary purpose of the MLA is conservation of natural resources. *Boesche*, 373 U.S. at 481 (noting that “dominant theme” of the Congressional debates over the MLA in 1920 was “[c]onservation through control”) (citing H.R. Rep. No. 1138, 65th Cong., 3d Sess. 19 (internal alterations omitted)); see also 30 U.S.C. § 226(g) (directing DOI to “regulate all surface-disturbing activities” for purposes of “conservation of surface resources”). Courts have interpreted the MLA’s “conservation” goal as covering environmental protection, as well as conservation of oil and gas. *Copper Valley Machine Works, Inc. v. Andrus*, 653 F.2d 595, 601 (D.C. Cir. 1981) (MLA phrase authorizing DOI to act “in the interest of conservation of natural resources” includes prevention of environmental harms); *Hoyle v. Babbitt*, 129 F.3d 1377, 1380 (10th Cir. 1997) (same); see also *Gulf Oil Co. v. Morton*, 493 F.2d 141, 145-46 (9th Cir. 1975) (construing term “conservation of [ ] natural resources” in Outer Continental Shelf Lands Act in

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<sup>110</sup> Although a later clause of § 187 states that “[n]one of such provisions shall be in conflict with the laws of the State in which the leased property is situated[,]” this does not mean that BLM’s regulations are dictated by state law as some industry commenters have suggested. Indeed, such an interpretation would flip the purpose of the MLA—which is to “at all times conserve the interests of the Federal Government in the property”—on its head. H.R. Rep. No. 65-563, at 13 (May 14, 1918); see also H.R. Rep. No. 66-398, at 10 (Oct. 21, 1919); H.R. Rep. No. 65-1138, at 13 (Feb. 25, 1919). Courts have repeatedly explained that § 187 does not limit federal authority. For example, in a case affirmed by the Supreme Court, the Ninth Circuit held that § 187 does not make state law superior to federal law governing federal mineral leases. *Ventura Cty. v. Gulf Oil Corp.*, 601 F.2d 1080, 1085 (9th Cir. 1979), *aff’d*, 445 U.S. 947 (1980). The court was explicit that the clause only requires DOI to “observe” state standards when drafting the terms of federal leases, and “is not a recognition of concurrent state jurisdiction” over federal mineral leases. *Id.*; see also *Kirpatrick Oil & Gas Co. v. United States*, 675 F.2d 1122 (10th Cir. 1982).

same manner); 81 Fed. Reg. at 6,629 (citing 30 U.S.C. § 226(g) as legal authority for Proposed Rule).

BLM exercises its public welfare and conservation authority by including a provision in every oil and gas lease that requires operators to “minimize[] adverse impacts to the land, air, and water . . . and other resources.”<sup>111</sup> The provision also directs that the “[l]essee shall take all reasonable measures deemed necessary by lessor to accomplish the intent of this section.” *Id.* Adoption of the Proposed Rule would likewise represent a valid exercise of this authority.

Second, section 187 also requires that leases include conditions “insuring the exercise of reasonable diligence, skill, and care in the operation of said property.” BLM exercises this authority by requiring in the standard lease form that the lessee “shall exercise reasonable diligence in developing and producing . . . .”<sup>112</sup> As discussed below, the limits on venting and flaring, and requirements for controlling leaks, represent good management practices and apply current technology that is already widely used and available at low cost. The use of these measures represents “reasonable diligence, skill and care” in operations, and should be required.

Courts have repeatedly recognized that these MLA provisions give DOI authority to regulate on a wide variety of issues. *See Devon Energy Corp. v. Kempthorne*, 551 F.3d 1030, 1033 (D.C. Cir. 2008) (explaining that the MLA was intended in part “to promote wise development of natural resources . . . that ‘belong’ to the public” (quotations omitted)); *Indep. Petroleum Ass’n of Am. v. DeWitt*, 279 F.3d 1036, 1039 (D.C. Cir. 2002) (recognizing that BLM has “sweeping authority” under the MLA); *Ventura Cty.*, 601 F.2d at 1083 (explaining that the MLA provides for “extensive regulation of oil exploration and drilling”); *Harvey v. Udall*, 384 F.2d 883, 885 (10th Cir. 1967) (explaining that the MLA’s purpose is to provide for “the orderly development of the oil and gas deposits in the publicly owned lands of the United States” (quotations omitted)); *Getty Oil Co. v. Clark*, 614 F. Supp. 904, 916 (D. Wyo. 1985) (section 189 “grants the Secretary broad powers and authority commensurate with the broad responsibilities imposed upon his office”); *Mountain States Legal Found. v. Andrus*, 499 F. Supp. 383, 388 (D. Wyo. 1980) (discussing BLM’s “broad power” under the MLA).<sup>113</sup>

This broad delegation from Congress provides BLM ample authority to adopt the Proposed Rule with improvements as an environmental protection measure and a requirement to ensure that operators use good development practices.

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<sup>111</sup> Form 3100-11, *supra* note 107, at § 6.

<sup>112</sup> *Id.* § 4.

<sup>113</sup> Similarly, other courts have recognized the agency’s authority to adopt regulations addressing many issues that (unlike waste) are not explicitly required by the MLA’s statutory language. *See, e.g., Geosearch, Inc. v. Watt*, 721 F.2d 694, 696–97 (10th Cir. 1983) (upholding regulations issued pursuant to § 189 that went beyond the “literal words of the statute”); *see also Enron Oil & Gas Co. v. Lujan*, 978 F.2d 212, 214 (5th Cir. 1992) (recognizing DOI’s authority under § 189 to adopt regulations governing royalty collection); *Arch Mineral Corp. v. Lujan*, 911 F.2d 408, 415 (10th Cir. 1990) (rejecting challenge to BLM’s authority under § 189 to administratively collect unpaid royalties and rents).

**C. BLM Has Broad Authority Under FLPMA to Regulate Air and Climate Pollution from Oil and Gas Development on Federal and Tribal Leases.**

As BLM recognizes in the Proposed Rule, Congress also granted BLM broad authority to regulate activities authorized on public lands under numerous of FLPMA's provisions. *See* 81 Fed. Reg. 6,629. For example, FLPMA provides that BLM must manage public lands "in a manner that will protect the quality of the scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values." 43 U.S.C. 1701(a)(8). As the Tenth Circuit has explained, section 1701(a)(8) "requires that the public lands be managed for many purposes . . . and for many members of the public." *Pub. Lands Council v. Babbitt*, 167 F.3d 1287, 1299-1300 (10th Cir. 1999).<sup>114</sup>

FLPMA also provides that BLM "shall manage the public lands under principles of multiple use and sustained yield." 43 U.S.C. § 1732(a). Multiple use includes "watershed, wildlife and fish, and natural scenic, scientific, and historical values." *Id.* § 1702(c). Under multiple use management, BLM must manage public lands to prevent "permanent impairment to the . . . quality of the environment." *Id.*

Additionally, FLPMA states that BLM "shall, by regulation or otherwise, take any action necessary to prevent unnecessary or undue degradation of the lands." 43 U.S.C. § 1732(b); *see also Ctr. for Biological Diversity v. U.S. Dep't of the Interior*, 623 F.3d 633, 644 (9th Cir. 2010) ("FLPMA and its implementing regulations require the Secretary to 'take any action necessary' to prevent [unnecessary or undue degradation]."); *Mineral Pol'y Ctr. v. Norton*, 292 F. Supp. 2d 30, 42 (D.D.C. 2003) ("FLPMA, by its plain terms, vests the Secretary of the Interior with the authority—and indeed the obligation—to disapprove of an otherwise permissible mining operations because the operation . . . would unduly harm or degrade the public land.").

FLPMA also provides that BLM "shall promulgate rules and regulations to carry out the purposes of th[e] Act." 43 U.S.C. § 1740. These purposes include protecting the quality of the air, atmospheric values, and the environment under § 1701(a)(8), implementing the multiple use mandate under § 1732(a), and preventing unnecessary and undue degradation of the public lands under § 1732(b).

These provisions authorize BLM's Proposed Rule and similarly support the revisions advocated by the Joint Environmental Commenters. Air pollution from oil and gas activities on federal and tribal leases harms the public land values that BLM is charged with protecting, such as recreation, scenery, vegetation, and cultural and archeological resources on the public lands. *See supra* Section II.B. Oil and gas development also contributes to climate change, which permanently impairs the quality of the public lands environment by, for example, increasing drought and wildfires and destroying species' habitat. *See supra* Section II.B.1. This degradation of the public lands is both unnecessary and undue—there are effective solutions that the oil and gas industry can implement to address these problems. Under FLPMA's plain

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<sup>114</sup> FLPMA also declares a Congressional policy that the federal government must "receive fair market value of the use of the public lands and their resources." 43 U.S.C. § 1701(a)(9). This bolsters BLM's authority to prevent waste of publicly-owned resources.

language, BLM has authority to regulate both air pollution and climate change emissions from activities authorized on and affecting the public lands.

BLM has long recognized its authority to regulate air pollution and greenhouse gas emissions on public lands. For example, BLM's Manual 7300, setting forth policies for BLM's Air Resource Management Program, acknowledges BLM's authority over the air resource under the FLPMA provisions discussed above, including FLPMA's policy provisions, the multiple use mandate, and the requirement to prevent unnecessary and undue degradation.<sup>115</sup> The Manual states:

The BLM recognizes air as a valuable natural and public resource that needs to be protected through prudent management and appropriate mitigation. Where . . . BLM-authorized activities have the potential to affect the air resource, which includes climate and air quality and any associated air-quality-related-values, these activities . . . will be managed at an appropriate scale, consistent with BLM planning objectives, and in compliance with Federal laws.<sup>116</sup>

In 2011, BLM entered into a Memorandum of Understanding (MOU) with the EPA and the U.S. Department of Agriculture regarding air quality impacts from oil and gas development.<sup>117</sup> In the MOU, BLM explicitly recognized that the multiple use and sustained yield mandate requires BLM to "manage the public lands in a manner that will protect the quality of air and atmospheric values, among others."<sup>118</sup>

Indeed, BLM has regulated hydrogen sulfide and sulfur dioxide emissions from oil and gas operations for decades through Onshore Order No. 6. *See* 55 Fed. Reg. 48,958, 48,968 (Nov. 23, 1990); *see also* 43 C.F.R. § 3164.1(b) (establishing that Onshore Order No. 6 is legally binding). The purpose of Onshore Order No. 6 is to "protect public health and safety" by establishing "uniform national requirements and minimum standards of performance." 55 Fed. Reg. at 48,968. Onshore Order No. 6 establishes detailed standards, including plan submission, monitoring, and technology standards (such as flare specifications), with different requirements based on the level of exposure expected for any occupied residence, school, church, park, or other areas where the public could reasonably be expected to frequent. *Id.* at 48,970–75; *see also* 43 C.F.R. § 3272.12(a)(6) (requiring air pollution measures for geothermal leasing); *id.*

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<sup>115</sup> BLM, Manual 7300 – Air Resource Management Program, at § 7300.03 (2009) (Authority), available at [http://www.blm.gov/style/medialib/blm/wo/Information\\_Resources\\_Management/policy/blm\\_manual.Par.90249.File.dat/MS-7300.pdf](http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.90249.File.dat/MS-7300.pdf) ("Manual 7300").

<sup>116</sup> *Id.* § 7300.06.A.1 (Policy); *see also id.* § 7300.01 (Purpose) (recognizing that the "air resource consists of air quality and climate and includes all atmospheric components of climate change").

<sup>117</sup> U.S. Dep't of Agric., DOI & EPA, Memorandum of Understanding Regarding Air Quality Analyses and Mitigation for Federal Oil and Gas Decisions through the National Environmental Policy Act Process (2011), available at <https://www.epa.gov/sites/production/files/2014-08/documents/air-quality-analyses-mou-2011.pdf>.

<sup>118</sup> *Id.* at 7; *see also id.* at 3 (acknowledging that "air resources are important and merit protection" using BLM's legal authorities).

§ 3930.20(a) (requiring oil shale mining to be consistent with protection of air quality); *id.* § 2802.11(b)(2) (requiring BLM to consider impacts to air quality before granting rights of way); *id.* §§ 3591.1(b)(3), § 3590.2(d) (requiring lessees of non-coal minerals to take all steps necessary to avoid, minimize, or repair air pollution).

BLM also regulates air quality through its resource management plans (“RMPs”), the primary planning tool that governs activities on public lands. Under FLPMA, in all RMPs BLM must “provide for compliance with applicable pollution control laws, including State and Federal air, water, noise, or other pollution standards or implementation plans.” 43 U.S.C. § 1712(c)(8).<sup>119</sup> However, BLM often sets additional air quality goals in RMPs that go beyond this minimum requirement, such as protecting “public health and safety and sensitive natural resources” and “minimiz[ing] emissions which may add to acid rain . . . or reduce visibility.”<sup>120</sup> The TRFO RMP sets specific goals for visibility at nearby Class I and Class II areas and controlling dust to minimize dust-on-snow events.<sup>121</sup>

Additionally, BLM routinely imposes emission control requirements on oil and gas development projects to protect air quality. The TRFO RMP sets forth specific standards to mitigate oil and gas emissions that will apply to all approved site-specific projects, including requirements for engines, green completions, storage tank controls, and low or no-bleed pneumatics.<sup>122</sup> For more than a decade, BLM has required operators in Wyoming’s Jonah Infill Development Area to use low-emission diesel engine technologies on their drill rigs, and to submit annual plans demonstrating how they will achieve at least 80% emissions reduction at their facilities.<sup>123</sup> Similarly, in approving the Greater Natural Buttes development in the Uinta

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<sup>119</sup> BLM also has specific obligations under the Clean Air Act. For example, as a federal land manager, BLM must “protect the air quality related values (including visibility) of any [public] lands within a class I areas and to consider, in consultation with the [EPA] Administrator, whether a proposed major emitting facility will have an adverse impact on such values.” 42 U.S.C. § 7475(d)(2)(B). BLM must also consider potential air quality impacts on the public lands through the New Source Review permitting process. *Id.* § 7475(d)(2). And BLM must conduct conformity analyses prior to approving activities within designated non-attainment or maintenance areas. *Id.* § 7506. However, nothing in the Clean Air Act limits BLM’s FLPMA authority. See Manual 7300 at § 7300.03 (recognizing BLM has authority to regulate air resources under both the CAA and FLPMA).

<sup>120</sup> BLM Pinedale & Rock Springs Field Offices, *Final Environmental Impact Statement: Jonah Infill Drilling Project Sublette County, Wyoming* at 4-3 to 4-4 (Jan. 2006), available at <http://www.blm.gov/style/medialib/blm/wy/information/NEPA/pfodocs/jonah.Par.6205.File.dat/10chap4.pdf> (emphasis added).

<sup>121</sup> BLM TRFO, *Resource Management Plan and Record of Decision* at II-63 (Feb. 27, 2015), available at [http://www.blm.gov/style/medialib/blm/co/field\\_offices/san\\_juan\\_public\\_land/land\\_use\\_planning/approved\\_lrmp.Par.66402.File.dat/Part%20II%20-%20RMP%20Chapter%202.pdf](http://www.blm.gov/style/medialib/blm/co/field_offices/san_juan_public_land/land_use_planning/approved_lrmp.Par.66402.File.dat/Part%20II%20-%20RMP%20Chapter%202.pdf) (“TRFO RMP & ROD”).

<sup>122</sup> *Id.* at II-64.

<sup>123</sup> BLM Pinedale & Rock Springs Field Offices, *Record of Decision: Jonah Infill Drilling Project Sublette County, Wyoming* at A-3 (Mar. 14, 2006), available at [http://www.blm.gov/style/medialib/blm/wy/information/NEPA/pfodocs/jonah.Par.2074.File.dat/00rod2\\_a.pdf](http://www.blm.gov/style/medialib/blm/wy/information/NEPA/pfodocs/jonah.Par.2074.File.dat/00rod2_a.pdf).



Basin, BLM required the operator to utilize a list of emissions control technologies on both new and existing sources that are similar to those required under BLM's proposed waste rule.<sup>124</sup> BLM imposed requirements beyond the EPA regulations that were in effect at the time because of concern about high ozone levels in the Uinta Basin.<sup>125</sup> The FLPMA provisions discussed above provide BLM with ample authority to set air quality goals in RMPs, to regulate oil and gas emissions at the project level, and to adopt the Proposed Rule.

DOI has also adopted policies requiring consideration of the impacts of climate change on public resources. *See* Secretarial Orders 3289 & 3226.<sup>126</sup> Critical to those efforts is consideration of the emissions from activities authorized on public lands. For example, BLM must consider the climate change impacts in connection with "planning and management activities associated with oil, gas and mineral development on public lands."<sup>127</sup> When making decisions pursuant to Secretarial Order 3226, BLM should evaluate "how BLM land management practices may . . . contribute to the potential effects of climate change, including but not limited to emissions, sequestration, or mitigation of greenhouse gases."<sup>128</sup>

BLM has begun considering the climate change impacts of oil and gas development on public lands and placing limits on greenhouse gas emissions. For example, the TRFO RMP states as a desired objective: "Administrative and permitted activities emit the lowest practicable greenhouse gas emissions and have the smallest ecological footprint possible to promote sustainable natural resource management."<sup>129</sup> The RMP also requires green completion technology for oil and natural gas wells to "prevent venting and most flaring of methane gas and

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<sup>124</sup> BLM Vernal Field Office, *Greater Natural Buttes Final Environmental Impact Statement* at 4-15 (March 2012), available at [http://www.blm.gov/style/medialib/blm/ut/vernal\\_fo/planning/greater\\_natural\\_butttes/gnb\\_feis\\_ii.Par.16945.File.dat/d\\_Chapter\\_4.pdf](http://www.blm.gov/style/medialib/blm/ut/vernal_fo/planning/greater_natural_butttes/gnb_feis_ii.Par.16945.File.dat/d_Chapter_4.pdf) ("GNB FEIS"); *see also* BLM Vernal Field Office, *Greater Natural Buttes Record of Decision* at B-3 (May 2012) [http://www.blm.gov/style/medialib/blm/ut/vernal\\_fo/planning/greater\\_natural\\_butttes/record\\_of\\_decision.Par.23803.File.dat/Appendix%20B.pdf](http://www.blm.gov/style/medialib/blm/ut/vernal_fo/planning/greater_natural_butttes/record_of_decision.Par.23803.File.dat/Appendix%20B.pdf) (incorporating these requirements into the project's record of decision); EA, *supra* note 32, at 26. These controls include, among other things, 95% efficient emissions controls on some new and existing storage tanks, low-bleed pneumatic devices for all new and existing pneumatics within six months, and an annual inspection and maintenance requirement to reduce VOC emissions.

<sup>125</sup> GNB FEIS, *supra* note 124, at 4-15; *see also id.* at 3-4 to 3-6 (describing extreme ozone events in the area).

<sup>126</sup> Secretarial Order No. 3226 at § 3 (Jan. 19, 2001), available at <http://elips.doi.gov/ELIPS/0/doc/291/Page1.aspx>; Secretarial Order No. 3289, at §§ 1, 4(b) (Sept. 14, 2009), available at [www.doi.gov/sites/doi.gov/files/migrated/whatwedo/climate/cop15/upload/SecOrder3289.pdf](http://www.doi.gov/sites/doi.gov/files/migrated/whatwedo/climate/cop15/upload/SecOrder3289.pdf). Secretarial Order 3289 reinstated the provisions of Secretarial Order no. 3226.

<sup>127</sup> Secretarial Order No. 3226 § 3.

<sup>128</sup> Manual 7300, *supra* note 115, at § 7300.06.C (Climate and Climate Change).

<sup>129</sup> TRFO RMP & ROD, *supra* note 121, at II-63.

other air pollutants into the atmosphere.”<sup>130</sup> Other RMPs from the Bakersfield Field Office in California and the Billings Field Office in Montana have similar requirements.<sup>131</sup>

#### **D. BLM Has Authority to Regulate Waste and Pollution on Tribal Leases.**

BLM has authority to regulate oil and gas development on tribal leases under the Indian Mineral Leasing Act (“IMLA”) and Indian Mineral Development Act (“IMDA”). The IMLA authorizes the Secretary of Interior to promulgate regulations governing “[a]ll operations under any oil, gas, or other mineral lease . . . affecting restricted Indian lands.” 25 U.S.C. § 396d. The Bureau of Indian Affairs (“BIA”) has promulgated regulations requiring lessees to “[h]ave due regard for the prevention of waste of oil or gas or other minerals,” 25 C.F.R. § 211.47(d), and “[c]arry out, at the lessee's expense, all reasonable orders and requirements of the authorized officer relative to prevention of waste[.]” *id.* § 211.47(g). BIA regulations also recognize that BLM’s operating regulations apply to all oil and gas leases and drilling permits issued under the IMLA. 25 C.F.R. § 211.4; *see also id.* § 211.48(b) (“[W]ritten permission must be secured from the Secretary before any operations are started on the leased premises, in accordance with applicable rules and regulations in . . . 43 CFR part[] 3160 . . . and Orders or Notices to Lessees (NTLs) issued thereunder.”).<sup>132</sup>

Although Congress exempted tribal lands from FLPMA’s definition of “public lands,” *see* 43 U.S.C. § 1702(e)(2), FLPMA also authorized the Secretary of Interior to delegate her authority under “any other applicable law” to BLM, 43 U.S.C. § 1731(a). And the Secretary has done so. One of the other applicable laws that the Secretary of Interior is charged with implementing is the IMLA. *See* 25 U.S.C. § 396 (“[T]he Secretary of the Interior is authorized to perform any and all acts and make such rules and regulations as may be necessary for the purpose of carrying the provisions of this section into full force and effect[.]”). As noted above, the Secretary has made Indian lessees subject to BLM regulations. 25 C.F.R. §§ 211.4, 211.48(b). Thus, the Secretary has used her FLPMA authority to delegate BLM her IMLA authority to regulate oil and gas development on tribal lands.

#### **E. Nothing in the Clean Air Act Prevents BLM from Regulating Waste, Air Pollution, or Greenhouse Gas Emissions.**

Given BLM’s expansive authority under the MLA, FLPMA, IMLA and IMDA, there is no merit to industry’s claims that BLM lacks authority to regulate waste because doing so

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<sup>130</sup> *Id.* at II-64.

<sup>131</sup> *See* BLM, Billings Field Office, *Approved Resource Management Plan* at 3-3, H-11 to H-14, (Sept. 2015), available at [http://www.blm.gov/style/medialib/blm/mt/blm\\_programs/planning/2015rmp.Par.30747.File.dat/BIFO\\_ARMP\\_508A.pdf](http://www.blm.gov/style/medialib/blm/mt/blm_programs/planning/2015rmp.Par.30747.File.dat/BIFO_ARMP_508A.pdf); BLM, Bakersfield Field Office, *Record of Decision and Approved Resource Manage Plan* 188–192, 222–23 (Dec. 2014), available at [http://www.blm.gov/style/medialib/blm/ca/pdf/bakersfield/planning/Bakersfield\\_ARMP\\_ROD.Par.35153.File.dat/Bakersfield\\_ROD-ARMP.pdf](http://www.blm.gov/style/medialib/blm/ca/pdf/bakersfield/planning/Bakersfield_ARMP_ROD.Par.35153.File.dat/Bakersfield_ROD-ARMP.pdf).

<sup>132</sup> BLM has similar authority under the IMDA. *See* 25 U.S.C. § 2107 (directing the Secretary to promulgate regulations); 25 C.F.R. §§ 225.4, 225.1(c) (BIA regulations providing that BLM regulations apply to IMDA mineral agreements)

imposes limits on air pollution and greenhouse gas emissions, which—they argue—is the exclusive province of the EPA, states, and tribes under the Clean Air Act.

BLM's role as a federal land manager under the MLA and FLPMA is different from EPA's, states', and tribes' roles as environmental regulators under the Clean Air Act. BLM's regulatory authority stems from the Property Clause. U.S. Const. Art. IV, § 3, cl. 2. Congress's powers over federal lands and minerals under the Property Clause are "complete" and "plenary." *Kleppe v. New Mexico*, 426 U.S. 529, 535–41 (1976); *Wyoming v. United States*, 279 F.3d 1214, 1227 (10th Cir. 2002). Exercising this expansive authority, Congress made BLM the "proprietor . . . over the public domain." *Kleppe*, 426 U.S. at 540; *see also Defs. of Wildlife v. Andrus*, 627 F.2d 1238, 1248 (D.C. Cir. 1980). In this role, BLM has broad authority to regulate development of federal minerals and activities located on federal lands and to prevent waste. *See supra* Section III.A and B. BLM also has broad authority to regulate the environmental impacts of these activities, including those affecting air quality and climate. *See supra* Section III.c.

As discussed above, BLM's Proposed Rule is necessary to meet its statutory obligation to prevent waste under the MLA and also to ensure adequate protection of public land values under FLPMA. Although there may be some overlap in the types of activities regulated by BLM to protect public lands and by EPA, the states, or tribes in regulating air quality and greenhouse gas emissions, BLM's Proposed Rule addresses many sources of pollution that are not covered by existing rules. *See supra* Section II.A. Moreover, any overlap does not abrogate BLM's responsibilities under the MLA and FLPMA. The Supreme Court acknowledged that federal agencies may have overlapping authority in *Massachusetts v. EPA*, 549 U.S. 497, 531–32 (2007). The Court held that although EPA's duty to regulate carbon dioxide emissions from motor vehicles might overlap with the Department of Transportation's duty to set mileage standards, that overlap "in no way licenses EPA to shirk its environmental responsibilities" to protect the public's health and welfare. *Id.* ("The two obligations may overlap, but there is no reason to think the two agencies cannot both administer their obligations and yet avoid inconsistency."); *see also Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1219 (9th Cir. 2008) (same); *Cent. Valley Chrysler-Jeep, Inc. v. Goldstene*, 529 F. Supp. 2d 1151, 1163, 1166, 1167 (E.D. Cal. 2007) (same); *Green Mountain Chrysler Plymouth Dodge Jeep v. Crombie*, 508 F. Supp. 2d 295, 302, 310 (D. Vt. 2007) (same).<sup>133</sup>

Courts have also recognized this principle outside of the environmental context. The D.C. District Court recently upheld a Commodity Futures Trading Commission ("CFTC") rule regulating derivatives trading, overruling objections that it was redundant with a Securities and Exchange Commission ("SEC") regulation. *Inv. Co. Inst. v. U.S. Commodity Futures Trading*

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<sup>133</sup> The U.S. Supreme Court's decision in *Am. Electric Power Co. Inc. v. Connecticut*, 131 S. Ct. 2527 (2011) (*AEP*), is not to the contrary, as some industry commenters have suggested. In *AEP*, the Court held that the Clean Air Act had displaced plaintiffs' federal common law right to seek relief from carbon dioxide emissions from power plants. *Id.* at 2537. The case did not involve the authority of two different federal agencies under two different statutory regimes. Indeed, *AEP* makes clear that EPA is not the only agency with a responsibility to regulate greenhouse gases. The Court discussed regulations jointly promulgated by EPA and the Department of Transportation to reduce greenhouse gas emissions from motor vehicles. *Id.* at 2533.

*Comm’n*, 891 F. Supp. 2d 162, 198 (D.D.C. 2013). The court recognized that while the SEC and CFTC share many of the same regulatory objects, they “have different regulatory authority and purposes.” *Id.* The D.C. Circuit upheld this conclusion on appeal, noting that any issues posed by the two agencies regulating the same practice were ameliorated because the CFTC had taken steps to harmonize its rule with the SEC’s rules. *Inv. Co. Inst. v. Commodity Futures Trading Comm’n*, 720 F.3d 370, 377–78 (D.C. Cir. 2013).

The same is true here. BLM has an independent obligation to regulate waste that is not shared by EPA. BLM also has an obligation to protect the environment and public lands from activities it authorizes. While there may be some overlap in terms of the oil and gas activities that may be regulated, any such overlap does not prevent BLM from regulating.<sup>134</sup> As BLM has recognized in its Manual, the MOU with EPA, and by regulating air emissions in RMPs and site-specific projects, both agencies have a role to play in regulating oil and gas activities. *See supra* Section III.C. Moreover, BLM is taking specific steps to harmonize its rules with EPA’s and is providing accommodation for states that have already regulated at least as stringently as the Proposed Rule through the variance provision. Therefore, there is no support for the argument that BLM cannot regulate because air quality is the exclusive province of EPA and the states.

#### **F. BLM’s Legal Authority to Regulate Extends to Existing Leases.**

BLM has ample authority to update its operating regulations and waste prevention requirements for both existing and new leases, as it has proposed. Additionally, the final rule should not provide any special carve-outs for flaring or other activities on existing leases. *See infra* Section IV.D.

Lessees’ rights are defined by the MLA, which anticipates that regulations will “govern[] in minute detail all facets of the working of the land.” *Boesche v. Udall*, 373 U.S. 472, 477–78 (1963). The MLA also requires companies to submit to “exacting restrictions and *continuing supervision*” by BLM. *Id.* (emphasis added).

BLM’s continuing authority is reflected in the standard lease form, which incorporates by reference all “applicable laws” and DOI “regulations and formal orders in effect as of lease issuance.”<sup>135</sup> Further, the lessees’ rights are subject to “regulations . . . hereafter promulgated when not inconsistent with lease rights granted or specific provisions of this lease.”<sup>136</sup>

The “lease rights granted” by BLM do not include a right for companies to avoid new operating requirements over the life of the lease. The lease grants the company “the exclusive right to drill for, mine, extract, remove and dispose of all the oil and gas . . . in the lands [under lease] together with the right to build and maintain necessary improvements thereupon for the term” of the lease.<sup>137</sup> This provides the right to use the land for some level of development, *see*

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<sup>134</sup> This is also true for many other resources. For example, BLM has policies regulating sensitive wildlife species on public lands that co-exist with regulation under the Endangered Species Act, 16 U.S.C. §§ 1531–1544, and state wildlife regulation.

<sup>135</sup> Lease Form 3100-11, *supra* note 107.

<sup>136</sup> *Id.*

<sup>137</sup> *Id.*

43 C.F.R. § 3101.1-2 (discussing “surface use rights” under the lease), but does not constrain BLM’s authority to regulate that development. Thus, the fact that a new regulation imposes additional operational requirements does not make it “inconsistent with lease rights granted or specific provisions of this lease.”<sup>138</sup>

Moreover, several lease terms expressly give BLM continuing authority to impose operational requirements preventing waste and protecting natural resources. Section 6 of the lease form requires the lessee to “take all reasonable measures *deemed necessary by lessor* to” minimize impacts to land, air water and other resources.<sup>139</sup> Under section 4, the lessee is required to “prevent unnecessary damage to, loss of, or waste of leased resources.”<sup>140</sup> Section 4 also authorizes BLM “to specify rates of development and production in the public interest . . . if deemed necessary for proper development and operation . . . .”<sup>141</sup> New regulations are appropriate under sections 4 and 6 so long as they are “reasonable” and prevent “unnecessary” waste or damage to natural resources. As discussed elsewhere, the Proposed Rule meets those criteria.

The lease form also incorporates all laws and regulations in effect when the lease was issued.<sup>142</sup> Those existing laws and regulations give BLM broad authority to require new controls to prevent waste and protecting natural resources. For example, the MLA requires that the lessee take “all reasonable precautions to prevent waste.” 30 U.S.C. § 225. BLM’s current regulations also require that an operator “conduct[ ] all operations in such a manner as to prevent avoidable loss of oil and gas.” 43 C.F.R. § 3162.7-1(d). Other regulations mandate that all operations be conducted in a manner which . . . results in the maximum ultimate economic recovery of oil and gas with minimum waste.” *Id.* § 3162.1(a); *see also id.* § 3161.2 (similar direction to BLM). These laws do not impose a standard of care set at the time of lease issuance. Instead, they mandate “all reasonable measures” to prevent and minimize waste and to avoid lost oil and gas—a standard that necessarily changes over time.

Similarly, existing regulations give BLM broad authority to impose new requirements for protection of the environment and natural resources. They require operators to follow “all laws, regulations, BLM orders, notices and instructions” regarding a variety of operational issues, including prevention of waste and protection of the environment. *Id.* § 3162.1(a). In addition, the rules require the operator to “comply with the pertinent orders of [BLM] and other standards and procedures as set forth in the applicable laws, regulations, lease terms and conditions, and the approved drilling plan,” as well as to “conduct operations in a manner which protects the mineral resources . . . and environmental quality.” *Id.* § 3162.5-1(a). These regulations, which are incorporated into the lease, mandate compliance with *all* laws, regulations and BLM orders – not just those in effect when the lease is issued.

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<sup>138</sup> *Id.*

<sup>139</sup> *Id.* § 6 (emphasis added).

<sup>140</sup> *Id.* § 4.

<sup>141</sup> *Id.* § 4.

<sup>142</sup> *Id.*

Case law confirms that BLM can impose new operating and waste control regulations on existing leases, even where it increases the lessee's costs. In *Century Explor. New Orleans v. United States*, 745 F.3d 1168 (Fed. Cir. 2014) ("*Century II*"), the Federal Circuit upheld a new DOI regulation that increased the bond required for offshore oil and gas leases. A lessee argued that the regulation breached its existing lease by dramatically increasing the bond on that lease by \$115 million. *Id.* at 1169, 1176. The court rejected this argument because the Outer Continental Shelf Lands Act (like the MLA) authorizes the government to adopt regulations preventing waste and conserving natural resources, and the lease rights were subject to those laws. *Id.* at 1169, 1176–77.

Other courts have reached the same conclusion. *See, e.g., Union Oil Co. v. Morton*, 512 F.2d 743, 748–49 (9th Cir. 1975) (rejecting argument that any new regulation resulting in denial of approval to construct drilling platform was breach of existing lease); *Pauley Petroleum, Inc. v. United States*, 591 F.2d 1308, 1322 (Ct. Cl. 1979) (DOI may suspend drilling operations and regulate existing leases in the interests of conservation); *Sun Oil v. U.S.*, 572 F.2d 786, 741–42 (Ct. Cl. 1978) (lease language similar to Form 3100-11 authorized DOI to impose "reasonable" new requirements on existing lease).

For these reasons, existing lessees also have no claim that the proposed regulations would represent a compensable taking of property. To state a takings claim, lessees must demonstrate that the government has taken "the sticks in the bundle of rights that defines the owner's" property rights. *Am. Pelagic Fishing Co., L.P. v. United States*, 379 F.3d 1363, 1376 (Fed. Cir. 2004). Accordingly, a takings claim involving an oil and gas lease turns on whether the lease conveyed the right claimed by the plaintiff. *See, e.g., Del-Rio Drilling Programs, Inc. v. United States*, 146 F.3d 1358, 1364 (Fed. Cir. 1998) (claim for taking of oil and gas lease required assessment of the laws applicable to that lease because they defined scope of the property right). When a plaintiff claims a taking of rights it never possessed, the taking claim fails at the threshold. *See Am. Pelagic*, 379 F.3d at 1383 ("American Pelagic thus did not possess the property right that it asserts formed the basis for its takings claim. In the absence of that property right, its claim is fatally defective"); *see also, e.g., Del-Rio Drilling*, 146 F.3d at 1364–67 (claim for taking of oil and gas lease). Because BLM has legal and contractual authority under existing leases to update its operational regulations to control waste, exercising that power does not take any property right of the lessees. *See Del-Rio Drilling*, 146 F.3d at 1364 (if government has right to deny right-of-way across oil and gas lease, takings claim based on denial of access fails because lessee "will not have shown that it was deprived of any property interest"); *see also Celeste Grynberg*, 169 IBLA 178, 181 (2006) (rejecting argument that lessee had vested property right preventing lease cancellation because BLM had right to do so).<sup>143</sup>

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<sup>143</sup> Likewise, any suggestion that the proposed regulations would breach existing lease contracts should be dismissed. *See Griffin & Griffin Explor., LLC v. United States*, 116 Fed. Cl. 163, 176–177 (2014) (BLM did not breach contract by cancelling leases because it had authority to do so under existing regulations). Industry representatives sometimes cite two cases as limiting BLM's authority over existing leases: *Mobil Oil v. United States*, 530 U.S. 604 (2000), and *Amber Res., Inc. v. United States*, 538 F.3d 1358 (Fed. Cir. 2008). Neither case is applicable here. Both *Mobil Oil* and *Amber* involved new statutes that were not incorporated into lease terms, and that had the effect of foreclosing *any* development of an offshore lease. *Century II*,

A contrary rule that prevented BLM from applying updated waste and operating requirements to existing leases would be inconsistent with the MLA. DOI last updated its venting and flaring standards decades ago. BLM is currently using NTL-4A, which the U.S. Geological Survey issued in December 1979. *See* 44 Fed. Reg. at 76,600. But what constitutes a reasonable measure to prevent waste is far different today than it was during the Carter administration. As BLM notes, “[w]hile oil and gas production technology has advanced dramatically in recent years, BLM’s requirements to minimize waste have not been updated in over 30 years.” 81 Fed. Reg. at 6,616. Limiting waste control on existing leases to what is provided in decades-old standards would fall far short of imposing all reasonable measures for the prevention of waste, as required by the MLA.

Joint Commenters strongly believe that BLM has ample authority to apply the requirements of the Proposed Rule – with the changes suggested in these comments – to all existing leases. However, any argument attempting to prevent the application of the rule to existing leases on the basis that the BLM was in breach of the terms of those leases would necessarily fail. Regardless of the specific provisions of the MLA and existing leases, the sovereign acts doctrine allows BLM to issue new environmental and waste prevention regulations even where they may affect existing lease contracts. The sovereign acts doctrine “provides that ‘the United States when sued as a contractor cannot be held liable for an obstruction to the performance of the particular contract resulting from its public and general acts as a sovereign.’” *Conner Bros. Constr. Co. Inc. v. Geren*, 550 F.3d 1368, 1371 (Fed. Cir. 2008) (quoting *Horowitz v. United States*, 267 U.S. 458 (1925)). The doctrine is “designed to balance the Government’s need for freedom to legislate with its obligation to honor its contracts.” *Id.* (quotation omitted). Where the government regulates in a “public and general” manner to promote the broad public interest, the incidental impacts on existing contracts do not subject it to liability. *Id.* at 1375.

Here, BLM is acting as a sovereign in the public interest: the Proposed Rule represents an important measure to address climate change. The Proposed Rule’s impacts on particular lessees also is only incidental, rather than being directed to existing lease contracts. This is illustrated by the fact that the proposed regulations would apply not only to existing leases, but also to future leases and to operators and contractors who have not directly contracted with BLM. *See id.* at 1375–76 (governmental action’s effect on existing contract “incidental” where it “is sufficiently broad to affect” persons that are not party to that contract). Under the sovereign act doctrine, BLM’s issuance of new regulations that may increase operating costs for existing lessees cannot make the agency liable for breach of contract. *See, e.g., Yankee Atomic Elec. Co. v. U.S.*, 112 F.3d 1569, 1572–73, 1579–80 (Fed. Cir. 1997) (government not liable under existing uranium enrichment contracts where it assessed \$3 million in taxes under new law to clean up contamination at enrichment sites); *Century Explor. New Orleans, LLC v. U.S.*, 110 Fed. Cl. 148,

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745 F.3d at 1169–70, 1177–78. As *Mobil Oil* explained, the new statutes “were changes of a kind that the [lease] contracts did not foresee [and the changes were not] authorized by any other contractually cross-referenced provision” of law. *Mobil Oil*, 530 U.S. at 620; *see also Amber*, 538 F.3d at 1373 (same). BLM’s Proposed Rule is nothing like *Mobil Oil* or *Amber*. The MLA, current regulations, and existing leases give BLM ample authority to update its operational and waste prevention requirements.

175–82 (2013), *aff'd*, *Century II*, 745 F.3d at 1168 (even if new requirements imposed on offshore oil and gas operations following Deepwater Horizon incident breached existing leases, DOI was shielded from liability by sovereign acts doctrine). BLM’s proposed regulations are precisely the kind of general act protected by the sovereign acts doctrine.

**IV. BLM’s Proposed Flaring Requirements do not Go Far Enough to Ensure All Reasonable Precautions To Prevent Waste of Oil or Gas are Taken.**

Joint Environmental Commenters are encouraged that BLM has proposed to address the large amounts of unnecessary waste attributable to current flaring practices. The venting and flaring of associated gas from oil wells is one of the largest sources of waste from federally managed land. Waste caused by venting and flaring not only deprives the public of the economic value of natural resources, but also adversely impacts the public’s health and welfare. Reducing the waste associated with flaring will help achieve a higher economic return for the public, and minimize the amount of harmful pollution that is emitted.

According to BLM’s own estimates, about 76 Bcf of natural gas was wasted via flaring on federal and Indian land in 2013, with about 71 Bcf attributed to flaring of oil-well gas.<sup>144</sup> This number is staggering considering that much of the flaring occurred at wells that were, or could be, connected to pipelines that could transport the gas to market. Between September 2012 and August 2014, 887 out of 1292 applications to vent or flare gas in North Dakota were from wells that were already connected to a pipeline. 81 Fed. Reg. at 6,638. This complete failure to keep flaring of associated gas in check resulted in a 467% increase in the flaring of oil well gas between 2009 and 2013 even though flaring from gas wells *decreased* by 75% over that same period.<sup>145</sup>

As described in more detail below, claims by oil and gas industry representatives that increased flaring is unavoidable because of issues caused by pipeline infrastructure or lack of capacity merely deflect operators’ own responsibility to plan drilling in a responsible manner. They also ignore the availability of other, non-pipeline technologies that can capture the gas and other liquids, thereby minimizing waste. An array of technologies exist to capture gas and sell it on the market—or put it to productive use—when a pipeline is unavailable. Moreover, operators know that producing oil wells will have associated gas, particularly in the early stages of a well. Therefore, BLM should require operators to plan their wells and schedule production to prevent the waste of gas, whether through capture or production curtailment. Simply put, the failure to have sufficient pipeline capacity available at a well site does not warrant flaring large volumes as is prevalent on federal and Indian land.

Unfortunately, the Proposed Rule fails to require lessees to use all reasonable precautions to reduce wasteful flaring. *See* 30 U.S.C. § 225. Our primary concerns include the following shortcomings that will substantially reduce the effectiveness of the regulations as proposed:

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<sup>144</sup> RIA, *supra* note 19, at 199.

<sup>145</sup> *Id.* at 200.



- BLM should not adopt a blanket flaring allowance for all wells. Such an allowance is inconsistent with the MLA and will allow operators in many parts of the country to unnecessarily flare. If a flaring allowance is adopted, it should be limited to those areas where large amounts of flaring are currently occurring, such as North Dakota, South Dakota and New Mexico. In other parts of the country, operators should be required to get individual approvals for any flaring, and any such approvals should not allow flaring above a threshold (to be determined by BLM as discussed below).
- The final rule should adopt a flaring limit substantially more stringent than the proposed 1,800 Mcf/month level. The limit should be: (a) set at a substantially lower level (e.g., 1,200 Mcf/month), (b) structured so that it ratchets down further over time, and (c) calculated for each well rather than by averaging all wells on a lease.
- By excluding non-development wells, and by poorly defining development wells, the Proposed Rule leaves an enormous loophole that could undercut the effectiveness of the proposed flaring limits.
- The other exemptions to flaring and venting limits are substantially overbroad and should be eliminated or narrowed.
- BLM should revise the provisions for when estimation of volumes of gas flared is permitted, rather than actual metering of gas.

Each of these issues is discussed below. We urge BLM to revise the Proposed Rule to resolve them in its final regulations.

**A. BLM's Proposal to Automatically Allow Flaring up to 1,800 Mcf/Month is Inconsistent with its Legal Duties.**

Joint commenters propose that BLM adopt a final rule that continues to require operators to obtain individual flaring approvals from BLM, based on a showing that such flaring is justified and does not constitute waste, and mandates that such approvals may not permit flaring above an established limit. This approach is necessary to satisfy BLM's charge to ensure that operators use all reasonable precautions to minimize waste.

We understand that BLM has concerns about the administrative burden of continuing to require individual flaring approvals. A desire to address administrative burden, however, should not eclipse BLM's substantive duty to address waste. This is especially true when the concern with administrative burden can be addressed to some degree without establishing a nationwide blanket allowance for flaring that would allow significant waste to continue, as the Proposed Rule would do.

Under BLM's existing procedures, routine venting and flaring is generally prohibited except when approved in writing by BLM. NTL-4A ¶ IV. The proposed regulation would, for

the first time, allow all operators to flare up to 1,800 Mcf each month per well on a lease, averaged over a leasehold – regardless of whether it is wasteful or economically unnecessary for the operator. *See* 81 Fed. Reg. at 6,682 (proposed 43 C.F.R. § 3179.6(b)). This universal flaring allowance is inconsistent with the MLA because it would authorize unnecessary waste and fails to require “all reasonable precautions” to prevent wasteful flaring.

By allowing every well to flare without BLM approval, the Proposed Rule will allow many companies to flare gas from oil wells when it is unnecessary and constitutes waste. In some circumstances, it may be entirely economical for the operator to connect an oil well to a gas gathering line. But under the Proposed Rule, the operator can choose not to do so because the provisions would allow it to flare instead without any additional justification or review. Operators often will direct capital to other activities, such as drilling more wells, rather than investing in pipelines and other infrastructure to capture and use associated gas, even when the latter investments would have a positive rate of return.

In fact, by eliminating the requirement for individual operators to justify proposed flaring, the exemption could allow *more* flaring. BLM estimates that the overwhelming majority of routine oil well flaring currently occurs in just three states: North Dakota, South Dakota, and New Mexico. *Id.* at 6,619. But under the Proposed Rule, oil well operators in Colorado, Wyoming, and other states could begin flaring without BLM approval if doing so is less expensive than capturing the associated gas, or when operators simply have not adequately planned required infrastructure to be in place at the time a well is completed. A substantial number of operations will probably make the choice to flare: according to the Proposed Rule, 84% of current flaring operations fall under the 1,800 Mcf threshold. *Id.* at 6,639.

As an initial matter, Joint commenters’ recommended approach would address administrative burden concerns because establishing a maximum flaring threshold, available on case-by-case basis, would incentivize operators that expect to produce large amounts of gas above the threshold from new wells to build out gathering infrastructure capable of capturing all of the gas produced. Knowing that there is an upper limit on flaring, these operators would have to build out gathering equipment to capture the volume of gas that is predicted to be in excess of the flaring limit. Once the operator makes this initial investment, the cost of adding the marginal capacity to bring flaring down to zero is very limited. This is because the largest costs, as explained by BLM, are laying the pipeline to tie the well into the existing infrastructure. As a result, these operators would have little incentive to continue to flare, and so would likely not seek flaring approval (or if they did, would have difficulty justifying flaring).

If BLM does adopt a flaring allowance that does not require individual approval, it should be limited to those areas where large amounts of routine flaring are occurring—such as North Dakota, South Dakota and New Mexico – and should be set at a sufficiently stringent level so as to reduce waste due to flaring in these states. These states account for 90% of all flaring on public and tribal lands—and North Dakota alone is responsible for more than 60% of all flaring.<sup>146</sup> In the rest of the country where flaring is less prevalent, BLM should retain its existing requirement to obtain individual approval, while also imposing the standard flaring

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<sup>146</sup> RIA, *supra* note 19, at 202.

limit. Under such an approach, in states other than New Mexico, North Dakota and South Dakota, BLM would both: (a) preclude any flaring in excess of the standard limit, and (b) require any operator seeking to flare up to that limit to demonstrate to BLM that it is justified and does not represent waste.

**B. The Flaring Limit Must Be Substantially More Stringent than BLM's 1,800 Mcf per Month Proposal**

Moreover, BLM's proposed flaring limit of 1,800 Mcf/month should be substantially strengthened. As proposed, the standard is arbitrary and capricious and fails to require all reasonable precautions to prevent waste.

First, BLM's own analysis demonstrates that a maximum allowance much lower than 1,800 Mcf/month is reasonable and cost-effective. Second, BLM must include a mechanism in the final rule by which the flaring limit ratchets down in future years so that the final rule continues to minimize waste and environmental harm. Third, compliance with the flaring limit should not be calculated by averaging flaring across multiple wells on a lease. Instead, each well should be required to meet the limit. Fourth, the record shows that BLM has significantly overestimated the costs of reducing flaring at wells. As a result, far more must be required to ensure that operators take all reasonable measures to prevent waste.

**1. A Flaring Allowance of 1,800 Mcf per Month Is Far Too High**

BLM apparently proposes a limit of 1,800 Mcf because that is the figure used by state regulators in Wyoming and Utah. 81 Fed. Reg. at 6,619.<sup>147</sup> However, BLM's own analysis also shows that setting the threshold at a much lower threshold would be feasible and cost-effective. Selecting 1,800 Mcf/month instead of a reasonable lower limit is inconsistent with BLM's duty under the MLA.

For example, BLM's analysis shows that a flaring limit of 1,200 Mcf/month would be cost-effective, with benefits ranging from \$1 million to \$34 million per year, 5.8 Bcf of reduced natural gas waste, and conserving 42 to 54 million gallons of natural gas liquids.<sup>148</sup> Moreover, a 1,200 Mcf/month flaring limit would achieve highly cost-effective reductions in carbon emissions. BLM's analysis finds that (once fully phased-in in 2020-2026), a standard of 1,200 Mcf would reduce flaring by 80%. 81 Fed. Reg. 6,639. Based on BLM estimates that about 76 Bcf of gas was flared from BLM-administered wells in 2013, *id.*, an 80% reduction would avoid 6.1 million metric tons of carbon dioxide emissions. Using a discount rate of 7%, the measure would be extremely cost-effective, as it would reduce emissions for about \$1 per ton of carbon dioxide—well below even the most conservative estimates of the social cost of carbon. Given BLM's own calculations, a flaring limit of 1,200 Mcf qualifies as a “reasonable precaution” for

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<sup>147</sup> See also, Wyoming Operational Rules, Drilling Rules, Ch. 3, Section 39(b), at 3-54, available at <http://sos.wy.state.wy.us/Rules/RULES/9584.pdf> (last viewed March 16, 2016) (“WY Operational Rules”); Utah R649-3-20, Gas Flaring or Venting Section 1.1, available at <http://www.rules.utah.gov/publicat/code/r649/r649-003.htm#T20>. (“Utah Flaring Rules”).

<sup>148</sup> RIA, *supra* note 19, at 60-62.

preventing waste. There may also be other limits – even lower than 1,200 Mcf/month – that would be reasonable to require.

BLM does not claim that 1,800 Mcf/month is the lowest flaring level that is reasonable to achieve. *Id.* at 6,639. Instead, BLM attempts to justify that flaring allowance as appropriate because “this limit would effectively maximize flaring reductions while minimizing the number of affected leases,” noting consistency with Utah and Wyoming permit rules. *Id.* at 6,640. But the MLA requires BLM to require “all reasonable precautions” to prevent waste. BLM may not reject a more effective waste control option that it recognizes as reasonable in order to minimize the number of leases affected. When reducing flaring to levels well below 1,800 Mcf/month can reasonably be done BLM cannot reject that option in order to allow operators to continue unnecessary flaring. 30 U.S.C. § 225.

The 1,800 Mcf limit, moreover, would have limited effectiveness in reducing flaring. While BLM estimates that the Proposed Rule would reduce flaring at wells under BLM’s jurisdiction by up to 74%, it acknowledges “substantial uncertainty” about this estimate. 81 Fed. Reg. at 6,619. Our analysis of flaring rates in North Dakota indicates that the reduction in flaring would be far smaller.

We analyzed flaring from wells on Federal lands and wells producing from the Federal mineral estate in North Dakota in 2015. This analysis shows that reducing flaring at those wells to 1,800 Mcf/month/well, averaged over a lease, would only reduce flaring by 28%.<sup>149</sup> There are two reasons for this smaller reduction. First, many of the wells flaring gas in North Dakota are relatively low-producing—less than the proposed standard of 1,800 Mcf/month/well, or close to it. Those wells could continue their current level of flaring. Second, as BLM has recognized, many wells flaring gas are connected to pipelines, yet continue to flare a portion of, or all of, the gas they produce due to lack of capacity in gathering pipelines, pressure imbalance between the well and the pipeline, or similar issues resulting from lack of investment in gathering infrastructure.<sup>150</sup> As a result, while some operators will accelerate the installation of a pipeline or utilize alternative capture approaches in response to the proposed standard, much of the flaring going on today would continue, as operators would not be required to curb such flaring to meet BLM’s proposed standard. Indeed, Lynn Helms, Director of North Dakota’s Department of Mineral Resources, has noted that BLM’s standard is not appropriate for North Dakota’s unconventional wells, because it would allow 100% flaring from older wells, which may very occur as they get “bumped off” of pipeline systems with insufficient capacity when newer wells are hooked into the pipelines:

We think that’s something that needs to be changed. Otherwise a 5 year old well

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<sup>149</sup> See L. Fleischman, *Description of Methodology for CATF Analysis of Flaring in North Dakota* (April 2016) (“CATF North Dakota Flaring Analysis”). For this calculation we simply assumed that operators will reduce flaring from wells to the threshold, averaged across wells in the lease. BLM’s calculation is based on a more complex model of operator response.

<sup>150</sup> *Id.*; see also Carbon Limits, *Improving Utilization of Associated Gas in U.S. Tight Oil Fields* (rev. Oct. 2015), available at [http://www.catf.us/resources/publications/files/Flaring\\_Report.pdf](http://www.catf.us/resources/publications/files/Flaring_Report.pdf) 8-9 (2015) (“Carbon Limits 2015”).

could just be bumped off the gathering system with no consequences whatsoever. It could flare 100% of its gas and that space would be taken up by new wells. That's not a very workable rule and it was built on conventional gas wells in Utah and Wyoming, probably needs to be changed. That's one of the most significant differences and would cause probably the most interference between North Dakota's rules and regulations on flaring and the BLM rule.<sup>151</sup>

While a well producing 1,800 Mcf/month is relatively low producing—typical of a tight oil well in North Dakota about 5 years after completion—the waste and accompanying pollution created by flaring 1,800 Mcf/month is significant. When the very large number of wells flaring at these “low levels” is considered, the waste and pollution occurring as a result of this standard is clearly excessive and harmful. Indeed, reducing flaring during 2015 to 1,800 Mcf/month/well, averaged over a lease, at all BLM-administered wells in North Dakota alone would still mean 10.4 Bcf of gas would have been flared—enough to heat 138,000 houses.<sup>152</sup> This flaring would produce as much carbon dioxide as the yearly emissions from over 222,000 cars while entirely wasting the energy content of the gas.<sup>153</sup>

Indeed, a review of North Dakota data provides a stark illustration of the need to strengthen the federal proposal. North Dakota has established a requirement for each operator to capture at least 88% of production by November 2018 (approximately when BLM's proposed standard of 1,800 Mcf/month/well will come into effect) and at least 91% of production by November 2020.<sup>154</sup> While North Dakota's limits are far too lenient (allowing operators to waste nearly 10 percent of production after 2020), in practice BLM's 1,800 Mcf limit would allow even more wasteful flaring than is permitted by the North Dakota standard.

We examined 2015 production data from all wells in North Dakota.<sup>155</sup> We considered the months with highest production, when BLM's proposed standard (based on Mcf/month/well) will be most stringent relative to North Dakota's standard (based on percentage of gas captured). We found that these wells produced an average of 16,228 Mcf in the second month after completion, and 14,193 Mcf in the third month after completion. Average production for all other months is lower. Since operators will have wells with various ages, an operator's production per well will almost always be significantly lower than these maximum levels.

The North Dakota standard will allow operators to flare 12% of their production, starting in 2018, and 9%, starting in 2020. Applying these percentages to the highest production month as a theoretical maximum, North Dakota's standard will require operators to flare no more than 1,947 Mcf/month/well (12 percent of 16,228 Mcf/well) beginning in 2018, and a maximum of 1,461 Mcf/month/well (9 percent of 16,228 Mcf/well) beginning in 2020. These maximum figures are similar to BLM's 1,800 Mcf/month proposal. But because operators have wells with

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<sup>151</sup> L. Helms, North Dakota Director's Cut Presentation, (Feb. 2016), *video available at* <https://www.youtube.com/watch?v=p-7c-mA1r2I>.

<sup>152</sup> See CATF North Dakota Flaring Analysis, *supra* note 149.

<sup>153</sup> *Id.*

<sup>154</sup> *Id.*

<sup>155</sup> *Id.*

a mix of ages (and therefore production rates), their overall production, and therefore allowable flaring under North Dakota rules, is much lower than these maximum figures. As a result, BLM's proposed rate of 1,800 Mcf/month/well will in practice be less stringent than North Dakota's standard—and will likely allow operators to flare more than 10% of production on many wells.

BLM's justifies phasing-in the standard of 1,800 Mcf/month/well by stating it would “maximize[ ] net benefits at a mid-point discount rate.”<sup>156</sup> But BLM's analysis shows that in 2017, the first year the rules will be implemented, the first year flaring limit of 7,200 Mcf/month/well will only impact an estimated 19% of leases.<sup>157</sup> In 2019, when the lowest flaring limit of 1,800 Mcf/month/well is reached, only an estimated 40% of leases will be impacted. In other words, the majority of federal leases will not be impacted by the rules. BLM has not explained how the proposal complies with its statutory duty to require lessees to use all reasonable precautions to reduce waste.

## **2. BLM Should Build in a Mechanism that Automatically Ratchets Down the Allowable Flaring Level.**

The 1,800 Mcf/month allowance is problematic for another reason: it sets a flat limit that will remain in effect indefinitely, even when technology and other developments make it reasonable for operators to meet far stricter standards. As a result, BLM's 1,800 Mcf limit will allow unreasonable and excessive flaring in the future. Instead, BLM must structure the allowance so that it continues to tighten over time until routine associated gas flaring, as a means to dispose of it, is prohibited. This is particularly critical for development wells constructed after the effective date of the regulation. For future development, operators can readily plan and install infrastructure to capture and utilize the gas instead of wasting it. North Dakota, in fact, takes a similar approach. North Dakota's flaring limits standard began ramping down the amount of allowable flaring in 2014 and is phased in over almost six years.<sup>158</sup>

Joint Environmental Commenters recommend that BLM require an automatic ratcheting down of the flaring limit over time. For example, one mechanism might require that, after the rule has been in effect for years, operators must reduce their flaring volumes to below the average amount flared per well for all of the wells in the same regional office (a figure which would be calculated by BLM and provided to the operators). A similar reduction could be required every few years thereafter.

## **3. BLM's Proposal to Allow Operators to Average Flaring Rates Across a Lease is Arbitrary and Capricious.**

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<sup>156</sup> RIA, *supra* note 19, at 61.

<sup>157</sup> *Id.* at 63.

<sup>158</sup> N.D. Indus. Comm'n, Order No. 24665 (July 1, 2014) [hereafter NDIC Order No. 24665], *available at* <https://www.dmr.nd.gov/oilgas/or24665.pdf>; N.D. Indus. Comm'n, Order No. 24665 Policy/ Guidance Version 102215, *available at* <https://www.dmr.nd.gov/oilgas/GuidancePolicyNorthDakotaIndustrialCommissionorder24665.pdf>.

A third flaw with the proposed flaring allowance is that it would allow operators to average flaring rates across a lease. We are concerned that this may allow operators to meet the flaring limit without actually reducing the amount of gas being flared from some or all wells. On leases with large numbers of wells that either do not flare or flare significantly below the threshold, new wells may be able to flare significant volumes while remaining below the flaring threshold due to this proposed averaging approach. Some leases will include older wells producing at levels well below 1,800 Mcf/month. Even if all of the gas from these wells is flared, they would still pull the average flaring rate for the lease down, allowing higher flaring from higher-producing wells. (Conceivably this could even incentivize operators to keep older, non-economic wells in production, instead of plugging the wells and reclaiming surface sites, in order to keep averages down.) Indeed, as discussed above, BLM estimates that flaring on 60% to 81% of leases is already below the proposed thresholds.

This approach is also inconsistent with—and more lenient than—the state permit rules that BLM cites as the basis for the proposal. Both Wyoming and Utah establish rates for individual wells, not a collection of wells.<sup>159</sup> If those two states can do so, BLM can also calculate its flaring limit on a well-by-well basis that is no less rigorous.

We also request that BLM do an assessment of potential flaring limits when calculated on a well-by-well basis, and perform a comparative analysis of the reductions that could be achieved under each scenario. If BLM still choose to allow for averaging to accommodate operators, it must establish a discount factor to account for the gap between averaging and a single source rate.<sup>160</sup>

#### **4. BLM Has Overestimated the Costs of Compliance With the Proposed Flaring Allowance.**

Furthermore, we believe that BLM has overestimated the cost to operators of complying with the standards by calculating them based on a well's distance to a gas processing plant ("GPP"), rather than to the closest point on an existing gas gathering system. The gathering system points are much closer to well pads than GPPs, making gathering lines much cheaper to construct than BLM assumes. But by calculating costs according to distance from the GPP, BLM arbitrarily skews its cost analysis against more stringent flaring limits.

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<sup>159</sup> WY Operational Rules, Utah Flaring Rules, *supra* note 147.

<sup>160</sup> In order to accomplish this, the agency must evaluate the waste from every well. Other agencies have recognized that averaging across multiple units decreases the stringency of standards. For example, EPA has concluded that "a discount factor" is necessary to "[en]sure at least the same air quality benefit as point by point compliance" when multi-source averaging is part of the standard. 59 Fed. Reg. 19,402, 19,425 (Apr. 22, 1994). While this is in the context of section 112 of the Clean Air Act, 42 U.S.C. § 7412, this is comparable to BLM's statutory charge. Under section 112, EPA must establish the *maximum* available control technology pursuant to methods established by the statute. See 42 U.S.C. § 7412. Similarly, here BLM must ensure that *all* reasonable precautions are taken to prevent waste. Thus, BLM is charged with analyzing how to achieve the maximum reduction of waste by looking at all of the available controls and methods.



Many operators will utilize gathering pipelines to comply with a gas capture standard, as they have in North Dakota, and as BLM encourages operators to do by requiring submission of a gas capture plan. However, BLM did not consider how far existing gathering pipelines systems extend in the model it used to calculate the costs and benefits of the Proposed Rule. While we agree with BLM that compressed natural gas (“CNG”) trucking, natural gas liquids (“NGL”) recovery, and other onsite capture technologies will give operators of wells important flexibility in getting gas to market, we note that even for wells that are somewhat distant from GPPs, the vast majority will be much closer to a point where new gathering pipelines can tie into existing gathering systems. BLM notes that the Carbon Limits study concluded that gas gathering is feasible for a group of nearby pads if they are within 20 miles of a market.<sup>161</sup> However, the same table from the Carbon Limits shows that gathering is feasible for even a single well when it is within a few miles of a market—in this case, a point where new pipes can be tied into gathering systems.<sup>162</sup>

In justifying the 1,800 Mcf/month/well standard, BLM notes that the stricter 1200 Mcf/month/well standard is more costly (lower net benefits) than the less stringent standards at the higher 7% discount rate.<sup>163</sup> For this option at this discount rate, the costs, net of benefits, are dominated by Case 4 – controlling waste from wells at isolated leases that are more than 20 miles from a GPP. For example, in 2020, the total estimated nationwide net cost for this option is \$8.09 million, and Case 4 accounts for \$6.24 million of this total, despite only accounting for 8 of 1,435 leases.<sup>164</sup> But this analysis is arbitrary because the distance to GPP is not the relevant metric. The gas from these wells can also be recovered if they are tied into any existing gathering system. As our analysis discusses below, many of these wells are substantially closer to an existing gathering system than a GPP and can likely be tied in to recover gas at a fraction of the cost that BLM projects.

We examined the geographic patterns of BLM-administered wells in North Dakota which flared all of their gas in 2015 and were located more than 20 miles from a GPP. (No wells in North Dakota are more than 50 miles from a GPP). We only considered wells from isolated leases (where all wells on the lease flared all gas for all months with production in 2015). 30 wells fit these criteria.<sup>165</sup> We compared the locations of these wells to the locations of wellpads where gas was being sold via pipeline at the beginning of the year. The median distance between wells on these unconnected leases and wellpads selling gas was 2.49 miles. To be conservative, since various barriers may inhibit operators from selling gas into gathering systems at some points, we considered the median distance between the unconnected wells and the third-closest connected pad, which was 3.78 miles.<sup>166</sup> All isolated wells flaring at 1,200 Mcf/month or higher in 2015 were in the bottom half of the distance distribution (that is, they were all closer to

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<sup>161</sup> RIA, *supra* note 19, at 52.

<sup>162</sup> *Id.*

<sup>163</sup> *Id.* at 61.

<sup>164</sup> Calculated from Table 11b of RIA.

<sup>165</sup> See CATF North Dakota Flaring Analysis, *supra* note 149.

<sup>166</sup> *Id.*

neighboring wells than the median values above), but we use the median values to be conservative.

A four-inch pipeline (large for branch lines of gathering systems) may cost about \$360,000 per mile, in 2010 dollars,<sup>167</sup> or \$387,000 in current dollars,<sup>168</sup> so 3.78 miles of gathering pipeline will cost about \$1,460,000. This amount is less than even a conservative estimate of the value of the gas produced over the lifetime of a wellpad. This is considerably less than the net present value of the gas expected from the wells. Most wells drilled in recent years have been on pads with two or more wells, so we calculated the net present value (NPV) of a pad with two new wells using average 2015 production from North Dakota wells of various ages, and using a gas price of \$3/Mcf. The latter figure is conservative since gas prices are projected to be well above this by 2020.<sup>169</sup> The calculated NPV of just the first six years of gas from a two North Dakota wells is \$1,770,000 using a 3% discount rate, or \$1,668,000 using a 7% discount rate.

In other words, even with very conservative assumptions such as a low gas price,<sup>170</sup> pipelines will frequently pay for themselves, even for wells on unconnected leases distant from GPPs, because most of these wells are sufficiently close to existing gathering systems. Operators will respond to a tighter standard – particularly one that tightens over time – by ensuring that pipelines are in place to capture gas from any wells that will be producing large amounts of gas in future years. Yet BLM has not factored these profits into their calculation of the costs of the Proposed Rule. The costs calculated by BLM would drop, and benefits would rise, if BLM had considered the economics of pipelines, especially for Case 4. If BLM had properly considered the value of capturing gas via pipelines, costs would be far lower (or even negative) for the more stringent 1200 Mcf/month/well standard when calculated with the higher 7% discount rate.

In summary, the 1,800 Mcf/month/well flaring threshold, as proposed, is not sufficiently ambitious and will continue to allow significant waste of federal resources and loss of revenue in a manner inconsistent with the MLA. *See* 30 U.S.C. § 225. BLM's analysis shows that tighter standards are cost-effective, and with limited phase-in times, they will be feasible. Operators will then be able to react to the standard by accelerating the development of gas gathering systems so that infrastructure is in place in time to meet deadlines. This has happened in North Dakota, where after years where the flaring rate persisted at extremely high levels, the rate finally dropped when enforceable standards were put in place.<sup>171</sup> As BLM has noted, operators have a range of options, beyond traditional gas gathering, for utilizing or capturing associated

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<sup>167</sup> *See* RIA, *supra* note 19, at 46.

<sup>168</sup> Adjusted to November 2015 prices using the Nelson-Farrar index.

<sup>169</sup> EIA predicts that 2020 gas prices will be over \$4/Mcf. *See* EIA, *Annual Energy Outlook*, Table 61, available at: <http://www.eia.gov/forecasts/aeo/data/browser/#/?id=72-AEO2015>.

<sup>170</sup> In addition to the low gas price, we have made other conservative assumptions such as using the cost of a 4-inch pipeline, instead of a smaller pipeline, only considering the first 6 years of production in calculating the NPV of gas from wells, and considering the distance to the third-closest wellpad (in most cases operators will be able to tie into gathering systems at the closest point).

<sup>171</sup> CATF North Dakota Flaring Analysis, *supra* note 149.

gas.<sup>172</sup> Any operators who encounter delays or barriers to completion of gathering pipelines will be able to utilize these other means of utilizing or capturing gas.

### **C. Definition of Development Well.**

BLM's application of the flaring limits only to development wells is another major shortcoming in the proposal. BLM proposes to define *development oil well or development gas well* as:

a well drilled to produce oil or gas, respectively, from an established field in which hydrocarbons have been discovered and are being produced at a profit or expected profit. For purposes of this subpart, the BLM will determine when a well is a development oil well or development gas well in the event of a disagreement between the BLM and the operator.

81 Fed. Reg. at 6,682 (proposed 43 C.F.R. § 3179.3). This creates a potentially enormous loophole that could allow a significant number of wells to be exempted from the proposed flaring reduction requirements. Specifically, the proposal that a development well can be identified on the basis of whether or not hydrocarbons are “being produced at a profit or expected profit” is extremely problematic. Whether or not a well is profitable is related not only to often volatile and unpredictable commodity prices but also to an operator's internal financial metrics (e.g. rate of return), tax structure, hedges, purchasing contracts, and other factors—all of which are often proprietary information to which BLM will not have access in order to independently determine the profitability of any given well. In addition, operators may drill wells at a loss if necessary in order to hold a lease or for other reasons unrelated to profitability.

For these reasons, we recommend that BLM revise the definition to omit all reference to profitability. Instead, BLM should use a definition consistent with those EPA uses in the existing and proposed NSPS rules, which define an exploratory well as a well drilled outside known fields or the first well drilled in an oil or gas field where no other oil and gas production exists, a delineation well as a well drilled to determine the boundary of a field or producing reservoir, and which classify all wells that do not meet these definitions as development wells.

Further, the proposal does not appear to impose any requirements limiting flaring on non-development wells. An approach that does not address flaring from non-development wells would plainly fail to require all reasonable precautions against wasteful flaring. *See* 30 U.S.C. § 225. Instead, BLM should consider requiring prior approval for flaring from non-development wells, under a standard similar to NTL-4A. In addition, charging royalties on flared gas also would provide an effective incentive to minimize flaring from non-development wells.

### **D. Other Exceptions to the Proposed Flaring Limits.**

The Proposed Rule also includes exceptions to the flaring limits for (a) emergencies, and (b) existing leases. These exemptions undercut the rule and fall short of requiring all reasonable

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<sup>172</sup> RIA, *supra* note 19, at 47-48.

precautions to prevent waste. As a result, they should be substantially narrowed and/or eliminated.

### **1. Emergency Exception to the Prohibition on Venting Gas.**

BLM proposes to set a general prohibition on the venting of gas, requiring instead that an operator must flare the gas. 81 Fed. Reg. at 6,682 (proposed 43 C.F.R. § 3179.6(a)). Among the four exceptions to this requirement is “[u]nder emergency conditions when the loss of gas is uncontrollable or venting is necessary for safety, subject to § 3179.105.” *Id.* (proposed 43 C.F.R. § 3179.6(a)(2)). Overall, Joint Environmental Commenters support BLM’s attempts through the Proposed Rule to reduce the venting of gas on federal and Indian leases, clarify existing requirements, and better quantify the amount of gas released through venting. With certain additional changes, the proposed emergency exception could be stronger and better ensure the achievement of BLM’s goals and obligations.

The emergency exception proposed at 43 C.F.R. § 3179.105 has several important and positive provisions that Joint Environmental Commenters support. For example, the requirements that an operator must report all volumes of vented gas under § 3179.8 and submit a Sundry Notice for excessive venting under § 3179.105(d) are both moves in the right direction toward greater quantification of venting on federal lands and fuller public disclosure. *Id.* at 6,681, 6,684 (proposed 43 C.F.R. §§ 3179.8, 3179.105(d)). Additionally, BLM’s description of the events that do not constitute emergencies—including repeat failures of the same equipment, scheduled maintenance at the well or connected downstream facilities, and failure to limit production—are important limitations on improper claims of the exception. *Id.* at 6,684 (proposed 43 C.F.R. § 3179.105(c)).

As these provisions will help to limit venting and increase BLM’s and the public’s knowledge of the full extent of vented gas, BLM should not weaken these provisions. Additionally, there are several improvements that BLM should make to the Proposed Rule to strengthen these provisions and better ensure the reduction of vented gas on BLM lands.

#### **a. BLM Must Clarify and Define Certain Terms within the Emergency Exception**

There are several undefined terms and provisions that require further detail and clarification.

First, and most significant among these, is that the emergency exception under proposed § 3179.105 allows venting “for up to 24 hours per incident,” but does not define what constitutes an “incident.” *Id.* (proposed 43 C.F.R. § 3179.105(b)). It matters greatly whether an emergency venting incident involves only one piece of equipment or multiple pieces, as the latter will constitute greater emissions. BLM should address this by defining or phrasing the term “incident” to make it clear that it contemplates an emergency release from one piece of equipment. For example, BLM could mirror its language in section 3179.105(a) to define incident as “a temporary, short-term, infrequent, and unavoidable emergency venting or flaring

of gas from one piece of equipment.” *See id.* (proposed 43 C.F.R. § 3179.105(b)). Alternatively or additionally, BLM could add a volume limit to an incident. As BLM cited in the RIA, Montana’s regulations limit venting not only to 72 hours maximum, like the Proposed Rule, but also to a rate of 20 Mcf per day.<sup>173</sup>

Second, among the description of events that “do not constitute emergencies,” the proposed rule lists “[s]cheduled maintenance.” 81 Fed. Reg. at 6,684 (proposed 43 C.F.R. § 3179.105(c)(4)). This is a good provision, as there is no excuse for an operator to claim an unavoidable emergency during scheduled maintenance. Joint Environmental Commenters particularly support how BLM described this provision in the preamble: “In addition, this proposed section would clarify that scheduled maintenance does not constitute an emergency, even when it is outside of the operator’s control. For example, the fact that a downstream gas processing plant goes down for maintenance would not constitute an emergency that allows an operator to flare royalty-free.” *Id.* at 6,667. Operators of wells, storage vessels, and other upstream and midstream facilities commonly own, have contractual agreements with, or otherwise communicate with connected downstream facilities. BLM rightly determined that scheduled maintenance at downstream facilities should not constitute an emergency. However, BLM did not include this important provision in the proposed regulation. To be clear and ensure application of the rule as BLM intended, BLM should correct the regulation to use its same language from elsewhere in the preamble: “scheduled maintenance (whether by the operator or downstream facilities).” *Id.* at 6,643.

**b. BLM Should Limit the Emergency Exception to Less than 72 Hours per 30-Day Period.**

The Proposed Rule limits the emergency exception to “no more than three emergencies for any lease, unit, or CA within a 30-day period”—or, in other words, a maximum of 72 hours. *Id.* at 6,684 (proposed 43 C.F.R. § 3179.105(b)). While this is an improvement over the emergency exception in NTL-4A, which allowed a maximum of 144 hours, BLM should limit the emergency exception even further.

Almost 40 years have passed since BLM promulgated NTL-4A, and the oil and gas industry’s flaring and venting on BLM lands have increased vastly over those decades. Between 2009 and 2013, as BLM states in the preamble, reported amounts of flaring at oil wells on federal and Indian leases increased 292%. *Id.* at 6,631. Similarly, applications to flare or vent gas have increased by orders of magnitude in the last decade; BLM received 50 such applications in 2005, 611 applications in 2011, and 1,248 applications in 2014. *Id.* In light of these substantial increases since 1979 (and particularly the recent trend at oil wells), reducing the total allowable hours of emergency venting and flaring by only half—from 144 hours to the proposed 72 hours—seems unlikely to achieve BLM’s goals. More reductions are necessary.

The most obvious option would be to reduce the total emergency hours further. As currently written, an operator may have emergency flaring or venting for up to 72 hours per 30-day period, or roughly 10% of the time. Up to three days of emergencies for every month is an

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<sup>173</sup> *See* RIA, *supra* note 19, at 23 (citing Mont. Admin. R. 36.22.1219).

excessive portion of normal operations and pushes the common definition of “emergency.” Commenters propose that BLM revise the emergency exception to allow up to three incidents in a 30-day period, but with a total of 24 hours of venting or flaring across all three incidents. This would provide flexibility to allow up to a 24-hour-long incident, while also significantly cutting the total flaring and venting on federal leases. It is also much more liberal than what certain state authorities allow. As BLM noted in the RIA, Alaska currently limits emergency venting and flaring to one hour.<sup>174</sup> For any emergency venting or flaring beyond this limit, the operator must submit a supplemental report and explain “why the gas was flared or vented, list the beginning and ending time of the flaring or venting, report the volume of gas flared or vented, and describe actions taken to comply.”<sup>175</sup> The result of this program has been that operators now flare only 0.4% of produced gas.<sup>176</sup> Montana’s regulations take an even stricter stance, requiring that “[a]fter completion of a gas well, *no gas shall be permitted to escape* into the air, except that required for periodic testing or cleaning of the well bore.”<sup>177</sup>

Alternatively, BLM could place an additional non-time-related limit on venting and flaring, in order to further tighten the hourly limit. For example, as discussed above, Montana includes a 72-hour limit on venting at a rate of 20 Mcf per day.<sup>178</sup> This places an upper limit of 60 Mcf on vented gas, thereby providing a greater degree of certainty as to how much gas an operator may vent over the full 72 hours.

## **2. BLM Should Eliminate Its Proposals to Allow Higher Flaring Limits on Existing Leases.**

The Proposed Rule also includes two exemptions for existing leases. These exemptions should be eliminated from the final regulations. As discussed above, BLM has ample authority to apply new flaring limitations to existing leases.

Moreover, if BLM does retain any exemptions for existing leases, they must be substantially narrowed. As proposed, the flaring exemptions are overbroad and inconsistent with the MLA.

### **a. Proposed Section 3179.7(a) Is Unnecessary and Overbroad.**

The Proposed Rule would allow higher levels of flaring on existing leases where compliance with the 1,800 Mcf/month limit would “cause the operator to cease production” and abandon “significant recoverable oil reserves.” 81 Fed. Reg. at 6,682-83 (proposed 43 C.F.R. §

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<sup>174</sup> See RIA, *supra* note 19, at 23 (citing Alaska Admin. Code tit. 20, § 25.235(b)).

<sup>175</sup> Alaska Admin. Code tit. 20, § 25.235(b).

<sup>176</sup> See RIA, *supra* note 19, at 23.

<sup>177</sup> *Id.* at 23-24; Mont. Admin. R. 36.22.1219 (emphasis added).

<sup>178</sup> See RIA, *supra* note 19, at 23.

3179.7).<sup>179</sup> This “significant reserves” test is overbroad and would allow unnecessary and unreasonable flaring.

First, Joint Commenters do not believe the exemption is consistent with BLM’s statutory obligations or goals under the proposed rule. In the preamble to the Proposed Rule, and specifically in the section pertaining to the exemption, BLM states that it has a “statutory obligation to reduce waste of natural gas from venting, flaring, and leaks.” 81 Fed. Reg. at 6,640. As BLM elaborates in the RIA, “[f]laring, venting, and leaks waste a valuable resource that could be put to productive use, and deprive American taxpayers, tribes, and States of royalty revenues.” These uncaptured emissions also “harm[] local communities and surrounding areas through visual and noise impacts from flaring, and regional and global air pollution problems of smog, particulate matter, toxic air pollution (such as benzene, a carcinogen) and climate change.”<sup>180</sup>

Given BLM’s statutory obligations, it is inappropriate to consider the abandonment of recoverable oil reserves as the central factor in determining whether an operator should be allowed to exceed limits on flaring. While flared, vented, and leaked natural gas is clearly wasted and lost as a resource, oil reserves that are yet to be produced are not. The operator who shuts in a well may return to develop the reserves later when the economic calculations change, or the operator may sell the lease to another operator better situated to bear the costs of needed controls.

Put another way, shutting in a well for economic reasons generally does not reduce the “maximum ultimate recovery” of oil and gas from those lands. *See* 43 C.F.R. §§ 3161.2, 3162.1(a). The oil and gas production from that well is not lost—instead, it is deferred until market conditions and other factors change. BLM’s regulatory impact analysis explains:

Any curtailed production is not lost. Rather, it is deferred from the present to the future. We expect any potential deferment to be temporary, with the amount and duration of the deferment depending on the operator’s response, the individual characteristics of the well, and the readiness of the operator to deliver the gas to the market or bolster existing infrastructure to meet levels of production, among other factors. Any curtailment would slow the flaring of oil-well gas, a substantial portion of which would be conserved for potential delivery to the market. The deferment of production receipts from the present to the future would pose a cost to the operator, but the additional receipts from conserved gas that would not have been otherwise realized would pose a benefit to the operator.<sup>181</sup>

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<sup>179</sup> Operators may also invoke the exemption for three other sets of requirements under the proposed rule: for pneumatic controllers, pneumatic pumps, and storage vessels. 81 Fed. Reg. at 6,684–85 (proposed 43 C.F.R. §§ 3179.201(b)(3), 3179.202(c)(2)(i), 3179.203(c)).

<sup>180</sup> RIA, *supra* note 19, at 156.

<sup>181</sup> *Id.* at 48-49.



In other words, BLM should not as a general matter consider the cessation of production as justification for allowing waste of natural gas by leaking, venting, or flaring.<sup>182</sup>

North Dakota's attempts to address flaring and venting help to demonstrate this principle in practice. Where an operator is unable to meet flaring reduction targets, the North Dakota Industrial Commission ("NDIC") has ordered that the operator's production will be restricted. NDIC will restrict an operator's oil production to 200 barrels per day if the operator fails to meet the applicable target capture rate and to 100 barrels per day if the operator's capture rate is lower than 60 percent. *See* 81 Fed. Reg. at 6,634. Where the goal is to prevent waste of natural gas, consideration of oil production should be subordinate to the adoption of appropriate controls on flaring, venting, and leaks.

Moreover, the exception as proposed does not consider whether the "significant" oil reserves left in the ground would exceed the value of wasted gas. Where an operator is flaring huge quantities of gas to produce limited volumes of oil, that constitutes waste and shutting in the well represents a reasonable measure to prevent waste. 30 U.S.C. § 225. The Proposed Rule, however, would authorize BLM to let that well continue wasteful flaring.

The proposed exemption, in fact, appears to weaken BLM's existing standard in Notice to Lessees 4A. NTL-4A allows flaring only where conserving the gas (a) is "not economically justified," (b) would lead to the "premature abandonment of recoverable oil reserves, and (c) *"ultimately to a greater loss of equivalent energy than would be recovered if the venting or flaring were permitted to continue."* NTL-4A ¶ IV.B (emphasis added).<sup>183</sup> This third requirement is missing from the Proposed Rule. The exemption thus omits an important consideration: not just that the requirements would lead to abandonment of recoverable oil reserves, but also "ultimately to a greater loss of equivalent energy than would be recovered if the venting or flaring were permitted to continue." *See* 81 Fed. Reg. at 6,628 (quoting NTL-4A ¶ IV.B).

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<sup>182</sup> There may be exceptional circumstances, such as where federal oil reserves are being drained from non-federal wells. *See, e.g., Maxus Explor. Co.*, 122 IBLA 190, 196 (1992). But in general, oil left in the ground today will not be lost to the public in the future.

<sup>183</sup> In full, the NTL-4A provision states:

The Supervisor may approve an application for the venting or flaring of oil well gas if justified either by the submittal of (1) an evaluation report supported by engineering, geologic, and economic data which demonstrates to the satisfaction of the Supervisor that the expenditures necessary to market or beneficially use such gas are not economically justified and that conservation of the gas, if required, would lead to the premature abandonment of recoverable oil reserves and ultimately to a greater loss of equivalent energy than would be recovered if the venting or flaring were permitted to continue or (2) an action plan that will eliminate venting or flaring of the gas within 1 year from the date of application.

NTL-4A ¶ IV.B.

Second, Joint Environmental Commenters believe that the exemption is simply not necessary. BLM already has the tools to accommodate situations where controlling the waste is economically infeasible for a particular company: operations and production can be suspended by BLM. 43 C.F.R. § 3103.4-4(a). The MLA authorizes such suspensions (subject to certain limitations) when they will serve the conservation of oil and gas and other resources. 30 U.S.C. § 209. BLM's Proposed Rule, in fact, contemplates the use of such suspensions in certain circumstances. 81 Fed. Reg. at 6,683. Moreover, the standard lease form gives BLM a similar tool: it authorizes BLM "to specify rates of development and production in the public interest." Form 3100-11 § 4. Both lease suspensions, and orders limiting rates of production, can be used to address existing leases that cannot currently capture all their associated gas.

Moreover, the exemption is also unnecessary because BLM has repeatedly demonstrated that the requirements of the proposed rule have net benefits, in light of the reasonable costs of the controls and the market value of the captured natural gas. Overall, BLM has stated that "the benefits of this rule outweigh its costs by a significant margin"—ranging from \$115 to \$188 million. *Id.* at 6,625, 6,671. And "the cost impacts on individual operators would be small, even for businesses with less than 500 employees." *Id.* at 6,624. In fact, even without the cost savings factored in, the average costs for a small operator would increase only by \$31,300 to \$37,500, resulting in a roughly 0.1% decrease in profit margin in 2020. *Id.*

Each of the four requirements subject to the "significant recoverable oil reserves" exemption provides significant cost savings to operators, due to the increased gas production through capture and resale. For example, the cost savings would be \$40–58 million per year for the flare requirements; \$9 to \$11 million per year for the pneumatic controller requirements; \$1.5 to \$1.9 million per year for the pneumatic pump requirements; and \$0.1 to \$0.2 million per year for the storage vessel requirements (all at 7 percent discount rate). *Id.* at 6,643, 6,652–54. Compared to the costs, all of these requirements result in scenarios of net benefits, with the exception of one scenario for the flaring requirements, which ranges from negative \$10 to positive \$8 million per year. *Id.* In light of these overall net benefits and relatively low costs of implementation, Joint Commenters believe that the exemption is not needed.

This exemption also is unnecessary because BLM has legal authority to require capture of wasted gas on existing leases, even where doing so would render the operation uneconomic for the operator. Lessees, in fact, cannot claim *any* right to flare under current law or administrative practice. NTL-4A does not authorize venting or flaring, except under limited circumstances of short duration (e.g., emergencies, initial production tests, 24-hour well purging). Instead, flaring generally is permitted only where approved by BLM, and gives the agency discretion to approve or deny those requests. NTL-4A ¶¶ III, IV (BLM "may approve" application to flare); 81 Fed. Reg. at 6,628. And as noted above, even where capturing the gas would lead to the operator ceasing operations, flaring or venting cannot be approved unless it will result in greater ultimate recovery of energy for the federal taxpayer and the public.

Any suggestion that existing leases give operators a right to flare where necessary to avoid curtailing production would be specious. When companies entered those lease contracts, the benefit of their bargain did not include any right to vent or flare. *See Mobil Oil*, 530 U.S. at 621 (analyzing new limits in terms of whether they deprived existing lessees of "the benefit of

their bargain”). In considering what existing lessees reasonably expected they had bargained for, BLM should bear in mind how long venting and flaring has been considered waste. *See Hunt Constr. Grp., Inc. v. U.S.*, 281 F.3d 1369, 1373 (Fed. Cir. 2002) (evidence of past trade practice is used to interpret contract terms).

BLM’s Proposed Rule does not target a new problem—wasteful venting and flaring of natural gas have been an issue for almost as long as companies have been developing oil and gas in this country. Commentators in the 1950s decried how the “long struggle to prevent flaring of casinghead gas” had been hindered due to “dragging of the feet” by operators objecting to the cost of capturing such gas. Howard R. Williams, *Conservation of Oil and Gas*, 65 Harv. L. Rev. 1155, 1183 (May 1952). As one modern commentator notes, “[o]ne of the most wasteful practices in the history of the production of oil has been the permitted, or even required, flaring of casinghead gas.” 1 Summers Oil and Gas § 4:33 (3d ed. 2015).

Historically, courts have upheld venting and flaring limits that are at least as aggressive as those in the Proposed Rule, even when they required shutting in wells. For example, the U.S. Supreme Court more than a century ago upheld an Indiana law that barred companies from venting natural gas for longer than two days. *Ohio Oil Co. v. Indiana*, 177 U.S. 190 (1900). The company challenging the law argued that it was drilling for oil and that its existing operations would be economically and technically infeasible unless it could continue venting the associated natural gas. *Id.* at 199–200. The company asserted that the limit represented an unlawful taking of property by making it “practically impossible to profitably extract the oil.” *Id.* at 211. The Court summarily dismissed this as a claim that to make a profit, “one who made no use of the gas . . . must be allowed to waste the gas into the atmosphere.” *Id.* The court held that this issue “go[es] not to the power to make the regulations, but to their wisdom.” *Id.* The same is true here.

Similarly, the Texas Supreme Court in 1953 rejected an argument that the state’s Railroad Commission “cannot define the flaring of gas as waste,” and order flaring wells to be shut in, “unless it first finds that the flaring operators have not been diligent in their efforts to make some productive use of the gas.” *R.R. Comm’n of Tex. v. Rowan Oil Co.*, 259 S.W.2d 173, 176 (Tex. 1953). The court held that the agency’s duty was to conserve “all the natural resources of this State” and that “the question of waste cannot be measured by any such test as diligence” of the operator. *Id.* at 176–77. The court explained:

For example, a wildcat well in a remote section of the State might bring in a new field with a very high ratio of gas. Is the Railroad Commission required to study each operator’s capital structure, etc. to determine whether a failure to construct a pipeline or a gasoline plant is a lack of diligence? Is one operator who has the capital to be held to a different standard from another who does not have available capital? The Railroad Commission’s hands should not be tied so that it could not prevent the flaring of a great amount of gas in order to recover a small amount of oil even though there were no immediate market for the gas and even though no one could be blamed for the lack of market. A particular operator’s capabilities or willingness to risk the construction of pipe lines or gasoline plants are not a limitation on the powers of the Railroad Commission to define waste . . . .

*Id.* at 177.<sup>184</sup>

Given this history, existing law and the terms of NTL-4A, an existing lessee cannot claim that BLM would be breaching its lease by banning wasteful flaring or venting—even where halting it is not economical for a particular operator.

For all these reasons, the section 3179.7(a) exemption for existing wells should be eliminated or substantially narrowed so that it does not allow wasteful flaring that fails to ensure “maximum ultimate recovery” of public oil and gas resources.

**b. The Renewable Two-Year Flaring Exemption at Section 3179(d) Would Violate the MLA by Allowing Unreasonable Waste.**

The Proposed Rule’s second exemption for existing leases is even more overbroad. Section 3179.7(d) would provide “a complete exemption” from the 1,800 Mcf limit if the operator submits an affidavit certifying that (a) the lease (or unit or communitized area) is more than 50 miles from a gas processing plant, (b) the lease is not connected to a gas pipeline, and (c) the operator is flaring a great deal of gas (50% over the regulatory limit). 81 Fed. Reg. at 6,641, 6,683 (proposed 43 C.F.R. § 3179.7(d)). The exemption could be renewed indefinitely every two years. *Id.*

This proposed exemption falls far short of requiring all reasonable measures to prevent waste. It presumes that operators in those circumstances are justified in flaring large volumes of gas and that doing so is not waste. This assumption is arbitrary and capricious because it fails to consider a number of relevant factors, such as:

- Whether the size and revenues from operations are large enough to support the cost of a pipeline connection. Natural gas prices, or the volume of oil production from a large unit or communitized area, may make it economic for the operator to do so.
- Whether using other capture technologies is reasonable. BLM notes, for example, that “[i]n some cases the effectiveness and affordability of on-site capture technology may mean that an operator could avoid flaring gas from a well not connected to capture infrastructure.” 81 Fed. Reg. at 6,642.
- Even where a processing plant is more than 50 miles away, there may be pipelines substantially closer to the leases that can reasonably be connected to collect the gas.

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<sup>184</sup> See also Howard R. Williams, *Problems in the Conservation of Gas*, 2 RMMLF-INST 13 (1956) (noting that the federal government “has a paramount interest in the prevention of waste, and that waste in this context is not defined exclusively in economic terms. The public interest in the prolongation of the period of availability [or oil and gas] justifies such conservation measures as . . . the requirement that casinghead gas be utilized for some economic purpose”).

- Whether the operator took reasonable precautions to plan its development in a manner that minimized the need for flaring. As drafted, the exemption would apply to new development on leases that are not currently in production. This would provide an incentive for poor planning in many areas.
- Whether the flaring exemption will “result [ ] in the maximum ultimate recovery of oil and gas” from that lease. 43 C.F.R. § 3161.2. This overbroad exemption could allow low-producing oil wells in certain areas to waste natural gas that far exceeds the value of the produced oil.

For all these reasons, the proposed Section 3179.7(d) exemption is arbitrary and capricious, inconsistent with the MLA, and should be eliminated.

#### **E. BLM Must Require Operators to Accurately Monitor and Report All Volumes of Gas Vented and Flared From Wells.**

BLM must clarify the final rule to clearly require operators to report all volumes of gas vented and flared from wells and to report releases based on actual measurements of the volume of gas released. BLM is required by the MLA to “use all reasonable precautions to prevent waste.” 30 U.S.C. § 255. Further, BLM has a statutory duty to issue regulations that assure that BLM can accurately assess royalties on oil and gas production. 30 U.S.C. § 1711. As described below, accurate metering of gas that is flared and vented from all flares is a reasonable precaution to prevent waste, and BLM’s failure to extend this requirement to all wells is arbitrary and capricious. BLM must also clarify that operators must report venting and flaring from all release points at a well. Amending the proposed rule as recommended by commenters is necessary to ensure that lessees “use all reasonable precautions to prevent waste,” and assure compliance with BLM’s proposed regulatory scheme.

If BLM determines, contrary to the evidence provided by Commenters, that operators of wells with low volumes of venting and flaring should be permitted to estimate releases, it must lower the threshold for requiring operators to switch to actual monitoring to assure compliance with the applicable limits on flaring that are finalized by BLM. Further, BLM must require operators to use estimation techniques that provide accurate and reliable estimates of releases, provide guidance on the proper usage of the approved estimation techniques, and collect any necessary process information and well data necessary for BLM to verify that an operator properly used these techniques to develop a reasonably accurate estimate the volume of gas vented and flared. Additionally, BLM must make clear that the requirement to measure the amount of gas vented or released is triggered based on the total volume of gas vented or flared from a well, as opposed to the volume of gas flared or vented from a single flare stack or manifold. Finally, BLM must specify that operators that report that a well vents or flares gas in excess of the threshold for triggering actual measurement shall install the equipment necessary to actually measure releases within 10 days and report releases based on actual measurement in the following required monthly report to BLM.

##### **1. BLM Must Require Operators to Accurately Monitor the Volume of Gas Vented or Flared from All Wells.**

BLM must require all lease operators to meter the actual volume of gas vented or flared from manifolds or flare stacks at wells. The MLA and Federal Oil and Gas Royalty Management Act together require the BLM to finalize monitoring and reporting requirements that ensure that lessees “use all reasonable precautions to prevent waste of oil or gas developed in the land,” 30 U.S.C. § 225, and enable the agency to “accurately determine oil and gas royalties, fees, deposits, and other payments owed, and to collect and account for such amounts in a timely manner.” 30 U.S.C. § 1711. Accurate monitoring is necessary, as opposed to estimating releases, to satisfy these congressional directives because installing meters to measure the volume gas released qualifies as “reasonable precaution,” and because metering is necessary to determine oil and gas royalties accurately. More accurate monitoring would also include the added benefit of improving the accuracy of EPA’s Greenhouse Gas Reporting Program.

BLM’s determination to not require accurate monitoring is arbitrary and capricious. The agency did not even attempt to evaluate whether requiring the metering of all releases would be a reasonable precaution to reduce waste or help the agency accurately assess royalties. The only rationale BLM provides is the following statement: at wells estimated to release less than 50 Mcf “any additional accuracy provided by meters *may* not be cost justified.” 81 Fed. Reg. at 6,642 (emphasis added). As a primary matter, BLM’s vague statement does not answer the regulatory question of whether actual metering is a reasonable precaution to minimize waste. Without making this determination, BLM’s proposal to not require monitoring is arbitrary and capricious. Further, as a matter of logic, it is clear that if the costs *may* not be justified they also may in fact be justified. BLM simply has failed to conduct the necessary evaluation required by its charge. As discussed below, metering is a reasonable precaution because it provides valuable increased accuracy at a low cost.

Accurate monitoring qualifies as a reasonable precaution to minimize waste because installing metering devices is inexpensive as compared to the expected value of oil and gas produced from the well. According to the BLM, metering each well costs approximately \$7,500.<sup>185</sup> As discussed above, Commenters calculated the net present value of the first five years of gas from a single average North Dakota well to be \$838,000 using a 3% discount rate, or \$801,000 using a 7% discount rate.<sup>186</sup> Thus, the cost of metering a well is less than 1% of the net present value of gas produced by a new well. This calculation also does not take into account the substantial public benefits of metering. Accurate metering would help BLM assure compliance and accurately determine when royalties are due (as required by the Federal Oil and Gas Royalty Management Act). Further, improving compliance would help further reduce methane emissions, one of the Administration’s central goals for pursuing this rulemaking.

Moreover, looking at the marginal benefit of metering versus estimation methods as BLM suggests is the proper metric, the increased accuracy from metering justifies this additional small cost. In 2010, the GAO issued a report finding that operators of oil and gas leases

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<sup>185</sup> RIA, *supra* note 19, at 69.

<sup>186</sup> See CATF North Dakota Flaring Analysis, *supra* note 149.

significantly underestimated venting and flaring of natural gas.<sup>187</sup> The GAO attributed the underestimation to a variety of factors including inaccurate estimation techniques as well as incomplete reporting.<sup>188</sup> A guidance document produced for the World Bank by Clearstone Engineering also identifies the shortcomings of estimating gas volumes.<sup>189</sup> Under the best conditions, estimation techniques are expected to have a margin of error of 10%.<sup>190</sup> But the accuracy of estimation techniques is fundamentally dependent on the assumptions used.<sup>191</sup> If variability at the well causes the physical properties of the produced hydrocarbons to change (e.g., the gas to oil ratio, the flow rate, and the operating pressure), estimates of venting and flaring based on the original properties can be off by 400% or more.<sup>192</sup> Assuming a conservative gas price of \$3/Mcf, the value of gas flared at the currently-proposed measurement threshold of 50 Mcf/day is \$54,750 each year. Even using an optimistic assumption that the average estimation error is only 15%, the error in estimation would eclipse the cost of a meter after a single year. BLM failed entirely to consider this important information on estimation inaccuracies and their potential costs. For the above reasons, BLM should revise the final rule to require operators to measure the volume of gas flared from all wells at all leases.

## **2. BLM Must Require Operators to Report Venting and Flaring From All Release Points at a Well.**

BLM's final rule must clarify the specific release points at a well that operators must report releases from. While the Proposed Rule clearly states that operators must report *all* volumes of gas vented or flared from wells, the proposal creates some ambiguity by only requiring operators to meter releases from a well if the estimated releases from a flare stack or a manifold exceeds 50 Mcf per day. *See* 81 Fed. Reg. at 6,683 (compare proposed 43 C.F.R. § 3179.8(a) with § 3179.8(b)(1)). Because BLM clearly specifies that volumes from well sources are required to be metered when releases from a flare stack or manifold exceed a certain threshold, it creates confusion with regards to whether operators must report releases from other sources at a well site. Further, leaseholders have previously been confused about when and from what sources of flaring and venting must be reported. The GAO's 2010 report determined that BLM's failure to provide clear and uniform guidance on reporting requirements was a major factor contributing to the confusion and ultimate underreporting of releases.<sup>193</sup>

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<sup>187</sup> GAO, *Oil & Gas Management: Interior's Oil and Gas Production Verification Efforts Do Not Provide Reasonable Assurance of Accurate Measurement of Production Volumes* GAO-10-313 (March 2010) ("GAO 2010").

<sup>188</sup> *Id.* at 26.

<sup>189</sup> Clearstone Engineering Ltd., *Technical Report: Guidelines on Flare and Vent Measurement* 14 (2008), available at [http://siteresources.worldbank.org/INTGGFR/Resources/Guidelines\\_Flare\\_Vent\\_Measurement.pdf?resourceurlname=Guidelines\\_Flare\\_Vent\\_Measurement.pdf](http://siteresources.worldbank.org/INTGGFR/Resources/Guidelines_Flare_Vent_Measurement.pdf?resourceurlname=Guidelines_Flare_Vent_Measurement.pdf) ("Clearstone 2008").

<sup>190</sup> *Id.*

<sup>191</sup> *Id.* at 14–15

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

<sup>193</sup> GAO 2010, *supra* note 187, at 26.



Specifically, Joint Environmental Commenters are concerned that operators may fail to report estimated releases from pressure relief devices or other vents on separators used at wells. Based on our review of multiple permit applications, operators most frequently route produced oil and gas directly to a separator, which separates gas phase hydrocarbons from liquid phase hydrocarbons.<sup>194</sup> Separators operate at pressure and are equipped with multiple pressure relief devices that can release gas when there is a pressure imbalance in the vessel.<sup>195</sup> At some wells, these releases may be frequent because of the unpredictable and highly variable flow of produced hydrocarbons. While Joint Environmental Commenters are particularly concerned about potential releases from separator pressure relief devices going unreported, we urge BLM to amend the rule broadly and make clear that operators must report venting and flaring from all sources at the well and identify the most common release points the reporting requirement applies to.

Further, Joint Environmental Commenters urge BLM to require operators to install monitors that are capable of identifying when gas is being released from pressure relief devices or other vents on a separator and calculating the volume of gas released. Because these releases are irregular and may only occur during certain types of flow conditions at a well, it is difficult to use estimation methodologies to predict the frequency of releases and the quantity of gas that is released.

### **3. If BLM Maintains an Exception Allowing Estimation of Flaring and Venting, It Must Lower the Threshold Volume that Triggers the Requirement for Actual Measurement.**

While Joint Environmental Commenters strongly believe that requiring actual monitoring at all wells is reasonable precaution to prevent waste, if BLM finalizes a rule that allows estimation at wells that vent or flare lower volumes of gas, the agency must lower the trigger for requiring actual measurement. Lowering the threshold would help account for errors inherent in estimation of gas volumes and ensure that operators measure, rather than estimate gas volumes at levels which approach the 1800 Mcf/month flaring limit. Such a trigger is also necessary to assure compliance with BLM's duty to accurately determine royalties pursuant to the Federal Land Oil and Gas Royalty Management Act.

The proposed rule would require metering only where “the operator estimates that the volume of gas vented or flared from a flare stack or manifold equals or exceeds 50 Mcf per day.” The BLM notes that it selected 50 Mcf/d as the measurement threshold because “as the volume of gas flared nears 60 Mcf/d it is effectively nearing the 1,800 Mcf/month limit, and at that point

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<sup>194</sup> Anadarko E&P Onshore LLC, *Air Permit Application - Trinity St. 3569-36-T2H*, at 5 (Jan. 15, 2016); Antero Resources Corporation, *Confor Well Pad – General Permit Registration G70-A Modification Application*, Attachment D (Oct. 12, 2015); Helis Oil & Gas Company, LLC, *Chapter 6 Section 2 Application for Henery 3W-12/24H Well Pad* 61 (Jan. 8, 2016).

<sup>195</sup> See, e.g., Petrowiki, Separator Process Control, [http://petrowiki.org/index.php?title=Separator\\_process\\_control&printable=yes](http://petrowiki.org/index.php?title=Separator_process_control&printable=yes) (last visited April 20, 2016).

accurate measurement of that volume becomes increasingly important for compliance and enforcement purposes.” 81 Fed. Reg. at 6,642.

Setting aside whether 1,800 Mcf/month is an appropriate limit (as discussed above, Commenters believe it is not appropriate), the 50 Mcf/d threshold does not adequately account for the observed margin of error in estimates of gas flow volumes. As discussed above, there is a significant body of evidence showing that estimated gas flow volumes have significant margins of error. Adjusting the proposed threshold for measurement of gas from 50 Mcf/d to 40 Mcf/d, for instance, would significantly reduce the potential for situations where actual emissions exceed the limits on flaring and venting that BLM is proposing but are undetected because of inaccurate estimates. Such a revised threshold would provide a buffer which would encompass a more realistic margin of error around operator estimates. It would also widen the distance between the measurement threshold and the flaring limit, so that relatively small differences in an estimate do not trigger both the installation of a metering device and the imposition of flaring limits.

The BLM’s selected threshold of 50 Mcf/d sums to 1,550 Mcf in a month of thirty-one days. At this level, an error of just over 16% in the estimate could mean that flaring is, in reality, over the 1,800 Mcf/month threshold. Without strict conditions on when estimates are allowed (which could preclude the use of estimates altogether for many wells) it is unrealistic to assume that estimates will consistently achieve this level of accuracy. This is especially troubling because operators would have a significant incentive to submit a low-end estimate in such a situation, as doing so would allow them to both avoid installation of a measurement device *and* avert any limitations on flaring.

#### **4. BLM Must Include Clear Guidelines on the Estimation Methodologies Operators May Use and the Proper Use of Those Methods.**

If BLM allows operators to estimate the volume of gas that is vented or flared from a well, the agency must provide clear requirements for the estimation methods that operators may use and the proper use of those methods. As discussed above, estimation methods for calculating the volume of gas vented or flared from a well only produce valid estimates under specific circumstances. Even under ideal conditions, such estimates are accompanied by a significant margin of error, which cannot be disregarded. The BLM notes in the preamble to the proposed rule that:

Estimation . . . involves the use of known well or reservoir information such as periodic well tests or a well’s gas to oil ratio to estimate a well’s gas production rate. For example, if a production flow test is conducted monthly on a well, one might presume the well continued producing gas at the tested rate for the entire month. Similarly, if a well has a gas to oil ratio that is uniform over time, the operator could estimate the rate of gas production based on the measured rate of oil production and the gas to oil ratio. Gas volume estimation using these protocols is suitable for reporting flared gas volumes in many cases.

81 Fed. Reg. at 6,666 n.368. While the BLM implicitly acknowledges that these estimation techniques may only be appropriate under certain circumstances (e.g. if the gas to oil ratio is uniform over time), the rule does not provide any rules specifying which estimation techniques are permissible, or the proper use of these techniques. Nor does the proposed rule include other conditions or limitations on an operator's choice of estimation technique or the circumstances in which certain techniques may be used in order to ensure that estimates are unbiased and provide a minimum level of precision.

The GAO highlighted this problem of underestimated reporting of venting and flaring emissions in its 2010 report on opportunities to reduce this source of lost royalties and wasted natural resources.<sup>196</sup> Specifically, the GAO faulted the BLM for the absence of an agency-wide policy on oil and gas measurement, noting that it resulted in inconsistent application at the field level, by staff who may or may not have any expertise in such technologies.<sup>197</sup> Guidance from the World Bank, discussed above, noted that estimations of gas volumes using data on gas to oil ratio “may become erratic at certain critical flow rates (e.g., due to slug flow conditions, reciprocating pumping actions, gas breakthrough in the reservoir, and other effects).”<sup>198</sup> The guidance goes on to explain that in order to obtain reliable results, such an estimate should be based on “at least a 24-hour continuous test conducted at the normal production rate” and longer tests may be needed if the “data are erratic or noteworthy transient effects are apparent.”<sup>199</sup> Further in certain contexts estimation techniques are inherently inaccurate. For example, the mass balance methodology for estimating venting and flaring from oil wells has margin of error that ranges between 15 and 25%.<sup>200</sup> Because of this margin of error, estimates at facilities with low levels of flaring (the exact type of well where the proposal would allow estimation) can be meaningless.<sup>201</sup>

The BLM should address its longstanding failure to provide clear guidance by codifying the estimation methods that operators may use to report venting and flaring releases from wells and the proper usage of these methods in order to ensure a minimum standard of precision and reliability.<sup>202</sup> In an analogous context, EPA recently published the *Emissions Estimation Protocol for Petroleum Refineries*.<sup>203</sup> This guidance document specifically lays out the preferred

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<sup>196</sup> See GAO 2010, *supra* note 187, at 26 (“BLM’s approval process for variances from its measurement regulations are not centralized and approvals are not reviewed by specialized measurement staff; in some instances inconsistent decisions have been made, raising the risk that oil and gas measurements were inaccurate.”).

<sup>197</sup> *Id.*

<sup>198</sup> Clearstone (2008), *supra* note 189, at 14.

<sup>199</sup> *Id.*

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

<sup>201</sup> *Id.*

<sup>202</sup> The guidance document also specifies supporting documentation that should be consulted to determine the accuracy of such an estimate. *Id.* BLM should ensure that it is provided with such information in order to be able to verify that any operator estimates were conducted properly, using an approved method, are expected to yield reasonably accurate results.

<sup>203</sup> RTI, *Emissions Estimation Protocol for Petroleum Refineries* (April 2015), available at <https://www3.epa.gov/ttn/chief/efpac/protocol/Protocol%20Report%202015.pdf>.

methodology for estimating emissions from petroleum refineries, the proper usage of these methodologies, and the specific data or information that operators must collect to estimate emissions accurately.<sup>204</sup> EPA published this document in response to findings that emissions reported from refineries were inaccurate, in part because of a misuse of the available estimation methods and lack of regulatory guidance on the proper usage of the methods.<sup>205</sup> Similarly, BLM can reduce at least some of the inaccuracy in operator reports estimating the volume of gas that is flared or vented by providing clear guidance to the industry.

#### **5. BLM Should Clarify the Proposed Rule to Address Situations in which Multiple Flare Stacks or Manifolds are Associated with a Single Well.**

Currently the proposed rule requires measurement only if the “volume of gas *vented or flared from a flare stack or manifold* equals or exceeds 50 Mcf per day.” 81 Fed. Reg. at 6,683 (proposed 43 C.F.R. § 3179.8(b)). However, the flaring limits provided in proposed section 3179.6 apply based on the “total volume of gas flared or vented over a production month” from a given well.<sup>206</sup>

While it may be uncommon for a well to vent and flare gas at more than one flare or other release point, it is certainly not impossible. Under the current proposal, if gas from a well is routed to multiple flares, such flares could fall below the 50 Mcf/d measurement threshold even though the total flaring attributable to the well is well above the 1,800 Mcf/month limit.<sup>207</sup> This would lead to a situation in which estimates are being relied upon to determine whether the flaring limits were met. BLM must amend the rule to address this situation and ensure that metering is required at any flare stack or manifold that receives gas from a well near the flaring limits.

#### **6. BLM Must Clarify How and When the Requirement to Meter Releases from Wells is Triggered**

BLM’s proposal requires operators to measure releases from a well if the operator estimates that the amount released from a flare stack or manifold exceeds 50 Mcf/d. First, BLM

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<sup>204</sup> *Id.*

<sup>205</sup> See Office of Inspector Gen., EPA, *EPA Can Improve Emissions Factors Development and Management* (March 2006); Memorandum from Brenda Shine, EPA, on Potential Low Bias of Reported VOC Emissions from the Petroleum Refining Industry to EPA Docket NO. EPA-HQ-OAR-2003-0146 (July 27, 2007); see also Request for Correction of Information Under the Data Quality Act and EPA’s Information Guidelines from Bill White, Mayor of the City of Houston, to EPA, Information Quality Guidelines Staff (Jul. 9, 2008).

<sup>206</sup> Or, if more than one well exists on a given lease, unit or communitized area, the proposed rule sets the flaring limit based on the average flaring across all of the “development oil wells contributing production for at least 10 days during that month.” 81 Fed. Reg. at 6,682 (proposed 43 C.F.R. § 3179.6(b)).

<sup>207</sup> For instance, if two separate flaring stacks or manifolds each combusted 35 Mcf/d from the same well, 2,100 Mcf would be attributable to the well in a 30-day month.

should make clear that once the requirement to measure releases from a well is triggered the operator must continue to actually measure the releases even if actual amount released falls below the threshold amount at some point in the future. BLM should not allow operators to revert to less-accurate estimation techniques. Second, BLM should clarify that an operator must start measuring releases within 10 days of submitting a report to BLM that estimates that the volume of gas vented and flared from the well exceeds the measurement threshold and report releases based on actual measurement in the following required monthly report to BLM.

## **V. BLM Must Amend its Leak Detection and Repair Provisions in a few Critical Ways**

Joint Environmental Commenters are encouraged by BLM's proposed standards for leak detection and repair ("LDAR"). Gas unintentionally or negligently leaking from various components and pieces of equipment – including pneumatic controllers – on wellsites and at compressor stations is a large contribution to natural gas waste. A staggering amount of the future waste from leaks will likely originate from existing sources. Indeed, EPA's 2016 GHG Inventory estimates that almost 2.4 million metric tons of methane leaked from oil and natural gas production activities in 2014.<sup>208</sup> To prepare the update to the GHG Inventory, EPA analyzed recent data and concluded that estimates of emissions from oil and gas production, including leaks, in previous editions of the GHG Inventory were considerably underestimated; as a result the 2016 GHG Inventory numbers represents a massive increase in EPA's estimate. The previous estimate for leaks from oil and gas production (for 2013, published in 2015) was 85% lower.<sup>209</sup> Since BLM used the 2015 GHG Inventory to prepare its estimates of leak emissions,<sup>210</sup> the Bureau's estimate of leak emissions from BLM-administered wells is certainly too low.<sup>211</sup>

Optical gas imaging ("OGI") technology allows timely and comprehensive surveys to detect leaks on both wellpads and compressor stations.<sup>212</sup> The gas that is conserved by repairing leaks can be significant, sometimes producing net cost savings for the operator. BLM's proposed LDAR requirements would begin to reduce some of the waste caused by leaks.

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<sup>208</sup> Based on analysis by Clean Air Task Force of the 2016 GHG Inventory. The methodology to extract emissions due to leaks from static components from the overall *Inventory* is described in Waste Not (2014), *supra* note 18, at Technical Appendix 1.

<sup>209</sup> Based on analysis by Clean Air Task Force of 2015 GHG Inventory; methodology described in Waste Not (2014), *supra* note 18, at Technical Appendix 1. The substantial increase in the estimate of emissions was due to the incorporation of new data into EPA's analysis, and does not reflect a trend in emissions between 2013 and 2014 (EPA's most current estimate of leak emissions for 2013 is also higher, by a similar factor, than the estimate of leak emissions for that year that EPA published in the 2015 Edition of the GHG Inventory). Nevertheless, there is a small upward trend in leak emissions for oil and gas production in EPA's current GHG Inventory.

<sup>210</sup> RIA, *supra* note 19, at 220.

<sup>211</sup> The emissions increase from 2013 to 2014 includes increases in emissions from leaks at both wellpads and gathering compressor stations.

<sup>212</sup> ICF International, *Economic Analysis of Methane Emission Reduction Opportunities in the U.S. Onshore Oil and Natural Gas Industries*, 3-10 to 3-11 (2014), available at <http://www.edf.org/energy/icf-methane-cost-curve-report> ("ICF 2014").

We commend BLM for recognizing that any facility can have significant leaks, and that the potential leaks from a site are not a function of the site's production, in requiring LDAR at all BLM-administered well sites, including stripper (or low-producing) wells. 81 Fed. Reg. at 6,649. BLM must finalize a standard that applies to all wells, including low-producing wells, in order to prevent the harmful and wasteful leaks that inevitably occur<sup>213</sup> from these wells and well sites.

However, BLM falls short of minimizing the waste from leaks in two critical ways. First, BLM must change the way in which the frequency of LDAR surveys is determined. BLM's current proposal bases the frequency of surveys based on the number of leaks detected in the prior two surveys. 81 Fed. Reg. 6,686 (proposed 43 C.F.R. § 3179.303(a)). BLM's final rule must require LDAR surveys to be performed quarterly for all wells. Second, BLM currently proposes to allow operators operating less than 500 wells within the jurisdiction of a single field office to use portable analyzers instead of OGI. *Id.* at 6,685 (proposed 43 C.F.R. § 3179.302(b)). BLM should instead require all operators to use OGI.

#### **A. BLM Must Require Fixed, Quarterly LDAR Inspections At All Wells**

BLM's Proposed Rule sets a baseline monitoring frequency that is semi-annual. The proposal would increase or decrease the required frequency of LDAR surveys based on the number of leaks detected in the prior two surveys, ranging from quarterly to annual. *Id.* at 6,686 (proposed 43 C.F.R. § 3179.303(a)). BLM must finalize a rule that mandates quarterly LDAR inspections at all wells regardless of the number of leaks detected during prior surveys. BLM's approach for ratcheting down LDAR requirements is similar to EPA's proposed standards of performance for LDAR at well sites and compressor stations, which bases the frequency on the *percentage* of leaking components, and fails for the same reason. Not only is BLM's approach arbitrary because the amount of waste from leaks is at best loosely correlated with the number of detected leaks at a given facility, but basing the frequency of the survey on the number of leaks detected misaligns incentives for the operator to even detect leaks. Further, one of the principle advantages of OGI technology, which BLM will allow operators to use, is that it enables surveys to be conducted quicker and with less personnel enabling operators to perform LDAR surveys more frequently. BLM must require fixed, quarterly LDAR surveys to truly minimize waste.

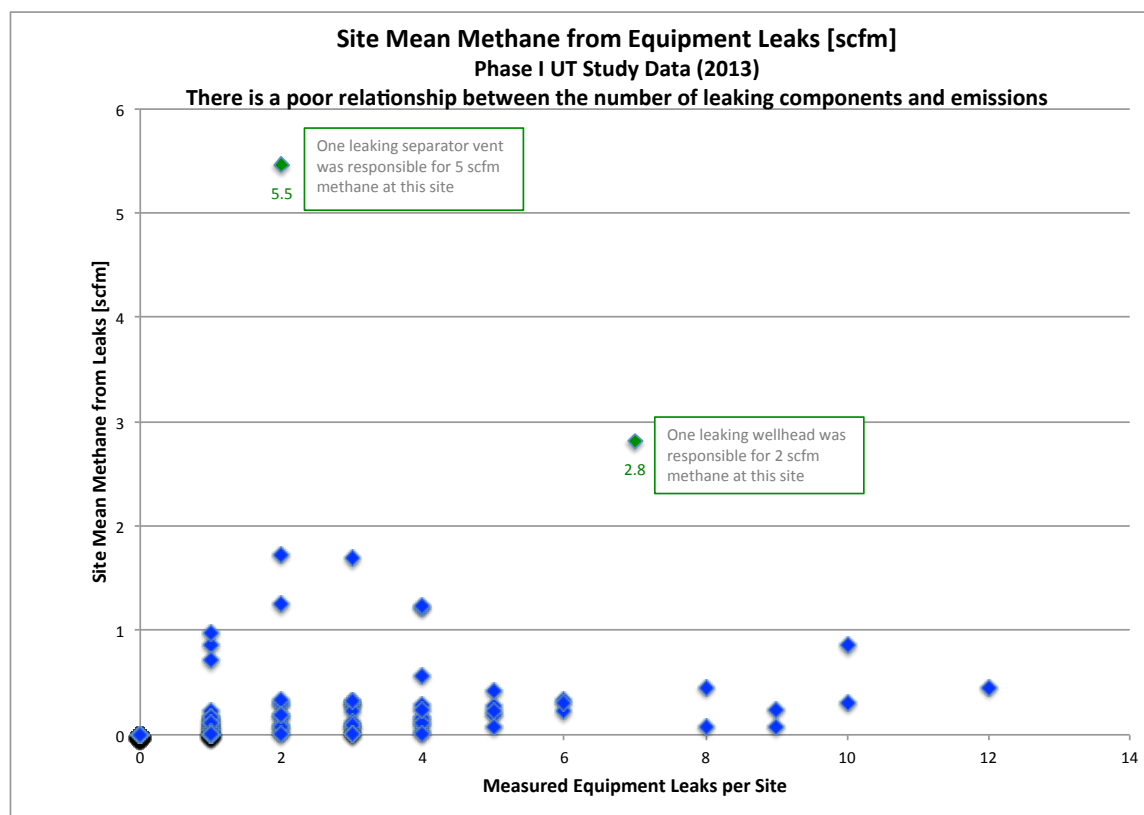
Evidence shows that BLM's proposed metric for determining the frequency – the number of leaks detected at a particular facility – is inappropriate. If the waste from leaking components or equipment was actually homogenously distributed, BLM's approach could be an appropriate way to determine the frequency. However leaking components are not distributed across facilities in this way. Instead, as shown below in Figure 1, waste from leaks follows a

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<sup>213</sup> See D. Zavala-Araiza et al., *Toward a Functional Definition of Methane Super-Emitters: Application to Natural Gas Production Sites*, 49 Environ. Sci. Technol., 8167–8174 (2015), available at <http://pubs.acs.org/doi/pdfplus/10.1021/acs.est.5b00133> (“Zavala-Araiza 2015”).

heterogeneous distribution, where even one leak can account for a lion's share of the waste.<sup>214</sup> The number of leaking components or equipment cannot accurately predict the volume of wasted gas, and therefore cannot be used as a metric to determine the frequency of LDAR inspections.

**Figure 1**



Additionally, using the number of detected leaks as the metric to determine the frequency of LDAR inspections provides operators with an incentive to not detect leaks. Our concern over this misaligned incentive is well founded. In 2007, EPA found “significant widespread non-compliance” with LDAR requirements at petroleum refineries and other facilities.<sup>215</sup> EPA noted that “[e]xperience has shown that poor monitoring rather than good performance has allowed facilities to take advantage of the less frequent monitoring provisions.”<sup>216</sup> In other words, operators implemented their LDAR programs so poorly that their reported leaks were artificially low so that future inspections could be skipped. BLM’s proposed LDAR requirements would create exactly the dynamic, and would thus be less effective at reducing waste. To combat this,

<sup>214</sup> See D. Allen et al., *Measurements of methane emissions at natural gas production sites in the United States*, 110 Proc. Natl. Acad. Sci. 44 (2013), available at <http://www.pnas.org/content/110/44/17768.full> (“Allen (2013)”).

<sup>215</sup> EPA, *Leak Detection and Repair: A Best Practice Guide*, 1 (Oct. 2007), available at <http://www2.epa.gov/sites/production/files/2014-02/documents/ldarguide.pdf> (last viewed April 11, 2016) (“LDAR Practice Guide”).

<sup>216</sup> *Id.* at 23.



EPA’s Best Practices Guide recommends that companies should monitor more frequently “[t]o ensure that leaks are still being identified in a timely manner and that previously unidentified leaks are not worsening over time.”<sup>217</sup> Thus, to ensure that the waste of gas originating from easily detectable and repairable leaks is minimized, BLM must require LDAR surveys on a fixed frequency. As discussed below, quarterly inspections are appropriate for these types of facilities; the semi-annual base frequency that BLM has proposed is inappropriate because it would allow significantly more loss of gas than quarterly inspections, and would those allow preventable waste.

Joint Environmental Commenters recommend that BLM follow the lead of the states such as Colorado and Wyoming that already require quarterly surveys at oil and gas facilities. Many of those states don’t just address new facilities, but also require quarterly surveys at existing facilities. In Colorado, owners or operators of well pads or compressor stations with the potential to emit over 12 tons per year (tpy) of VOC must perform LDAR surveys at least quarterly.<sup>218</sup> Noble Energy found the cost effectiveness of Colorado’s LDAR program – which determines survey frequency based on the facility’s potential to emit – to be very reasonable, “between approximately \$50/ton and \$380/ton” at well production facilities.<sup>219</sup> Though the low end of that cost is based on a one-time survey for the smallest facility, the high end is based on *monthly* inspections and is still reasonable. Statewide, Colorado’s rule demonstrated the cost-effectiveness of quarterly inspections: for mid-sized compressor stations, many of which are located in the production segment and is thus very relevant for BLM, the abatement cost was calculated at \$746 per metric ton of methane, and for well site inspections, the cost was \$831 per metric ton of methane.<sup>220</sup>

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<sup>217</sup> *Id.*

<sup>218</sup> 5 C.C.R. 1001-9 §§ XVII.F(3), Table 3 (compressor stations), XVII.F(4), Table 4 (well pads). The definition of VOC in Colorado includes methane. *See id.* § II(B) (all “hydrocarbon emissions from oil and gas operations, including methane and ethane” are subject to section XVII).

<sup>219</sup> *Rebuttal Statement of Noble Energy, Inc. and Anadarko Petroleum Corporation in the Matter of Proposed Revisions to Regulation Number 3, Parts A, B, and C, Regulation Number 6, part A, and Regulation Number 7 Before the Colorado Air Quality Control Commission*, at 7 (Jan. 30, 2014).

<sup>220</sup> *See* Colorado Air Pollution Control Division, *Cost-Benefit Analysis for Proposed Revisions to AQCC Regulations No. 3 and 7* (February 7, 2014), at 28, Table 34. (“CAPCD Cost-Benefit”). Cost effectiveness for compressor stations is calculated as net annual leak inspection and repair costs in Table 26 (adjusted from \$3.5/Mcf to \$4/Mcf of gas savings) divided by methane reductions in Table 32 (converted from short tons to metric tons and assuming methane is 86.1% of CH<sub>4</sub>/ethane); cost effectiveness for well sites is calculated as net annual leak inspection and repair costs in Table 30 (adjusted from \$3.5/Mcf to \$4/Mcf of gas savings) divided by methane reductions in Table 35 (converted from short tons to metric tons and assuming methane is 86.1% of CH<sub>4</sub>/ethane).

Similarly, Wyoming requires quarterly surveys at new and modified wellsites with the potential to emit four tpy of VOCs from leaks.<sup>221</sup> Moreover, the state established a permit-by-rule for existing wellsites in the UGRB nonattainment area that required a survey frequency of no less than quarterly.<sup>222</sup> Jonah Energy has publically supported this quarterly LDAR monitoring requirement in Wyoming, and already implements a more stringent monthly OGI LDAR surveys at its own production facilities.<sup>223</sup>

Other states have also adopted LDAR programs that require quarterly surveys at facilities that are within the scope of BLM's Proposed Rule:

- Pennsylvania. Requires operators of natural gas processing plants and gathering and boosting compressor stations to perform quarterly surveys.<sup>224</sup>
- Ohio. Requires quarterly surveys at unconventional well sites.<sup>225</sup>
- Utah. Also requires quarterly surveys at well sites and storage tank batteries.<sup>226</sup>

The costs of requiring quarterly inspections is reasonable, and is even more so considering the limitations of BLM's analysis. Based on EPA's 2015 GHG Inventory, BLM estimates that leaks resulted in approximately 4.35 Bcf of wasted natural gas.<sup>227</sup> As discussed above, because the 2015 GHG Inventory underestimated leaks from oil and natural gas production compared to the 2016 GHG Inventory,<sup>228</sup> BLMs estimate of waste from leaks at BLM

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<sup>221</sup> Wyo. Dep't of Env'tl. Quality, Oil and Gas Production Facilities: Chapter 6 Section 2 Permitting Guidance (June 1997, Revised Sept. 2013) ("WY Permitting Guidance"), 22, 37 *available at*, at 22, 37.

<sup>222</sup> Wyoming Department of Environmental Quality, Air Quality Division Standards and Regulations, Nonattainment Area Regulations, Ch. 8, Sec. 6(f), at 8-90, *available at* <http://soswy.state.wy.us/Rules/RULES/9868.pdf> (last viewed April 12, 2016).

<sup>223</sup> Comments submitted to Mr. Steven A. Dietrich from Jonah Energy LLC on Proposed Regulation WAQSR, Chapter 8, Nonattainment Area Regulations, Section 6, Upper Green River Basin Permit by Rule for Existing Sources (April 13, 2015) ("each month, Jonah Energy conducts infrared camera surveys using a forward-looking infrared camera ("FLIR") camera at each of our production facility locations.").

<sup>224</sup> Pa. Dep't of Env'tl. Prot., General Permit for Natural Gas Compression and/or Processing Facilities (Pennsylvania GP-5), Section H.2, *available at* <http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-105881/2700-PM-BAQ0205%20GP-5%20Permit%20SAMPLE.pdf> (last viewed April 12, 2016).

<sup>225</sup> Ohio Env'tl. Prot. Agency, General Permit 12.1(C)(5)(c)(2), 12.2(C)(5)(c)(2) ("Ohio General Permit"), *available at* [http://epa.ohio.gov/Portals/27/oil%20and%20gas/GP12.1\\_PTIOA20140403final.pdf](http://epa.ohio.gov/Portals/27/oil%20and%20gas/GP12.1_PTIOA20140403final.pdf) (last viewed April 12, 2016).

<sup>226</sup> Utah Department of Environmental Quality, Division of Air Quality, *Approval Order: General Approval Order for a Crude Oil and Natural Gas Well Site and/or Tank Battery*, II.B.10 (June 5, 2014) ("Utah General Permit"), *available at* <http://www.deq.utah.gov/Permits/GAOs/oilgas/oilgasgao.htm>.

<sup>227</sup> RIA, *supra* note 19, at 19, Table 6.

<sup>228</sup> See *supra* Sec. II.B.

sites is too low. Furthermore, to calculate the waste reductions that a given LDAR program could achieve at a particular location, BLM relied on the reductions from EPA's NSPS Subpart OOOOa Technical Support Document ("TSD").<sup>229</sup> However, there were several flaws in EPA's estimates, which rely on simulations of leaks from well sites using a model plant approach. EPA's model plant of a well site failed to attribute any fugitive emissions to storage tanks, which are of course ubiquitous at well sites, and a significant source of malfunction emissions, and the model itself is smaller and lower-emitting than well pads that operators have been constructing over the past several years.<sup>230</sup> Moreover, this overly conservative estimation approach is further compounded by the reliance on data from Gas Research Institute 1996 study to develop emissions profiles.<sup>231</sup> EPA's reliance on this approach for its proposed NSPS rule was misplaced, as is BLM's reliance on that approach for its Proposed Rule.<sup>232</sup> Instead, BLM must use more up-to-date data from the many studies that have been undertaken since 1996. Until it does so, it will not accurately capture the volume of wasted gas that will be conserved which will, in turn, negatively impacts BLM's cost analysis.

Further, OGI monitoring is most effective when performed frequently. While OGI monitoring is less sensitive for detecting smaller leaks than properly executed Method 21 inspections, it makes up for that in part by enabling operators to detect leaks early and fix them quickly.<sup>233</sup> For example, one study concluded "the amount of emissions released by smaller leaks possibly missed by OGI technology-assisted surveys are offset by the faster identification (and repair) of larger leaks when surveys are conducted on a *more frequent* basis."<sup>234</sup> OGI also allows inspectors to precisely identify the location of leaks, which can aid in rapid repair, so that leaks waste gas for a shorter period of time.<sup>235</sup> This advantage is diluted if OGI inspections are not frequent. Therefore, commenters strongly urge BLM to require quarterly monitoring at all well sites.

#### **B. BLM Must Ensure that Low-Producing Wells Perform LDAR Surveys with the Same Frequency as Other, Higher Producing Wells**

Joint Environmental Commenters strongly agree with BLM's decision to not exclude exempt low producing – or stripper – wells from complying with LDAR requirements. 81 Fed. Reg. at 6,649. Such an exclusion would be arbitrary and is wholly unsupported by the record. As BLM recognizes, the leak rate at wells is not correlated with the production level, and even "low-yield wells can leak at significant rates" resulting in large amounts of easily prevented

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<sup>229</sup> RIA, *supra* note 19, at 107, Table 31 n.2.

<sup>230</sup> See Joint Comments on Proposed EPA NSPS Subpart OOOOa at 43–45.

<sup>231</sup> *Id.*

<sup>232</sup> *Id.*

<sup>233</sup> EPA, Technical Support Document: Optical Gas Imaging Protocol (Draft) (2015) ("OGI Protocol").

<sup>234</sup> *Id.*

<sup>235</sup> Target Emission Services *LDAR Case Study: Comparison of Conventional Method 21 vs. Alternative Work Practices (Optical Gas Imaging)*, Presentation at 2015 Gas Technology Institute Conference, 7,8, available at <http://www.gastechnology.org/CH4/Documents/13-Terence-Trefiak-CH4-Presentation-Oct2015.pdf> ("Target Presentation").

waste. *Id.*<sup>236</sup> Table 2 shows an analysis of the nationwide prevalence of low-producing wells, using the 15 barrels of oil equivalent per day (“BOE/d”) threshold that EPA used in Proposed NSPS Subpart OOOOa as a threshold for low-producing wells. By nationwide count, 74% of existing gas wells and 83% of existing oil wells produce less than 15 BOE/d. The ratio of low-producing wells to all wells is probably similar on federal and Indian lands to these nationwide figures. As shown below, any exclusion of low-producing wells from LDAR requirements would therefore exclude a tremendous number of wells, and would therefore allow large amounts of waste from leaks at these wells to continue unabated. We therefore strongly urge BLM to finalize a rule that does not allow such waste to occur.

Table 2 also shows that emissions from these wells actually comprise a disproportionately large portion of waste from wells, based on a nationwide analysis of GHGRP data. Finally, the table shows that a significant portion of major operators gas and oil wells are below the 15 BOE/d threshold – 66% and 71%, respectively. BLM decision to not exempt these wells takes a much needed step to reduce the waste from the oil and gas sector.

**Table 2: Nationwide Existing Well Counts and Calculated Emissions<sup>237</sup>**

Existing wells	Gas Wells				Oil Wells				Total	
			% Breakdown				% Breakdown		% Breakdown	
	> 15 BOED	<= 15 BOED	> 15 BOED	<= 15 BOED	> 15 BOED	<= 15 BOED	> 15 BOED	<= 15 BOED	> 15 BOED	<= 15 BOED
National Emissions (Mg CH <sub>4</sub> )	67,868	284,539	19%	81%	7,617	71,691	10%	90%	17%	83%
Existing well counts	112,921	316,786	26%	74%	85,967	414,239	17%	83%	21%	79%
Major Operators (well count)	70,728	138,243	34%	66%	56,286	137,857	29%	71%	32%	68%
Minor Operators (well count)	42,193	178,543	19%	81%	29,681	276,382	10%	90%	14%	86%

Moreover, published research supports BLM’s decision by showing that low producing wells can be responsible for substantial emissions. Zavala-Araiza et al. performed an analysis illustrating that the probability of a production site being among the highest emitting sites does not increase uniformly with production volume.<sup>238</sup> Zavala-Araiza et al. classified productions sites in the Barnett Shale production region in Texas, with the two lower production cohorts representing wells that produce less than 10 Mcf/day and 10-100 Mcf/day. By comparison, 15 BOE/d is roughly equivalent to 87 Mcf/day, so most of the wells in these two cohorts would be excluded from LDAR under EPA’s proposed 15 BOE/d threshold. The well pads in these two groups accounted for 33% of total Barnett Shale emissions, with 76% of those emissions attributable to sites with avoidable operating conditions.<sup>239</sup> Moreover, the emission rate from the sites that would fall below a 15 BOE/d threshold was 1.90 kg of methane per hour (kg CH<sub>4</sub>/y), and 30% of these were classified as functional super-emitters<sup>240</sup> with emissions representing

<sup>236</sup> See also Zavala-Araiza, *supra* note 213, at 8167–8174.

<sup>237</sup> Analysis conducted by EDF using 2013 data from 40 CFR Part 98 Subpart W reported data, DrillingInfo HPDI data, and the US EPA GHG Inventory.

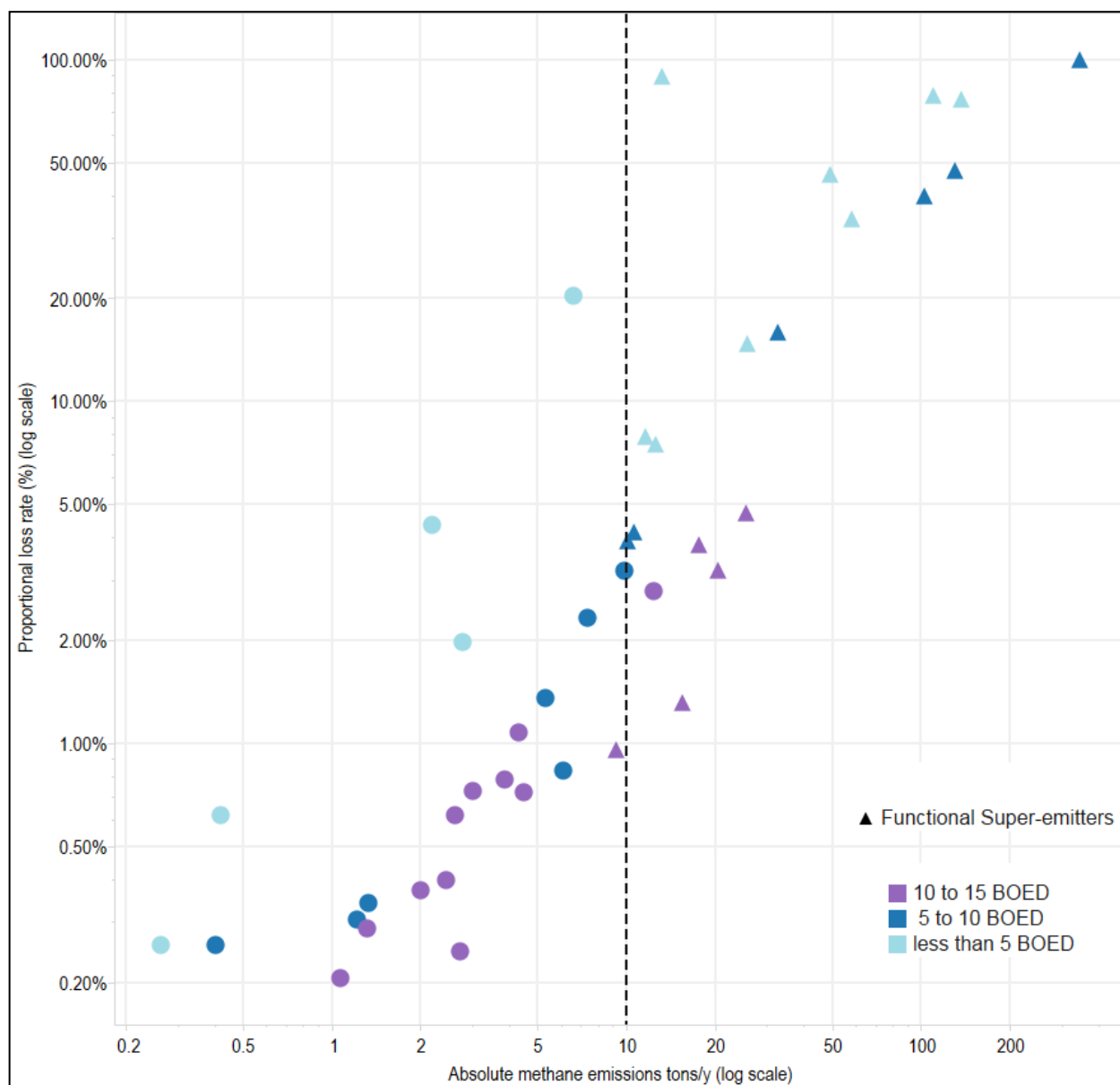
<sup>238</sup> Zavala-Araiza (2015), *supra* note 213, at 8167-8174.

<sup>239</sup> *Id.*

<sup>240</sup> Disproportionately unusual, but extremely large leaks.

between 1% and 100% of the production. This is higher than the central emission factor of 1.03 kg CH<sub>4</sub>/h derived by Zavala-Araiza et al.,<sup>241</sup> and far higher than the emissions estimated by BLM, relying on EPA's model-plant analysis. Thus, low producing sites are at least as likely to have significant waste as sites with higher volumes of production. And, based on high proportional loss rates, LDAR surveys could significantly reduce natural gas waste at those facilities.

**Fig. 1: Proportional Loss Rate (emissions as a percent of produced gas) Versus Absolute Methane Emissions (tons methane per year) for Facilities and Functional Super-Emitters in Various Production Categories**



<sup>241</sup> *Id.*

Additionally, Figure 1 above shows measured waste emissions from Barnett shale production sites where production per well was less than 15 BOE/d. The x-axis shows absolute methane emissions in short tons per year, while the y-axis shows proportional loss rate (methane emissions divided by methane production). Triangles correspond to sites classified as functional super-emitters by Zavala-Araiza, (2015), meaning their emissions represent 1% to 100% of their production. The black dotted line represents the average emission factor determined by Zavala-Araiza, (2015) for all the production sites (and all production levels) in the Barnett Shale. The figure shows that many of the sites with production less than 15 BOE/d are classified as super-emitters and are associated with high absolute emissions. With high emissions (12 of the well sites are classified as functional super-emitters and emit *over 5% of production*) an instrumental LDAR program, such as with OGI, can significantly reduce waste from these sites and is a reasonable precaution required by the MLA. The colors of the markers correspond to production level, in cohorts below 15 BOE/d. As indicated, functional super-emitters are distributed across all production tiers, indicating no direct correlation between production and absolute emissions or between production and proportional loss rate. In fact, sites producing less than 5 BOE/d are some of the highest emitters in both percentage terms *and absolute terms*. This shows that there is no appropriate production threshold on which BLM should base applicability of an LDAR program.

There is also little or no correlation between low production and the size of the company. We examined data from the HPDI Database to evaluate this claim, analyzing wells above and below a 15 BOE/d threshold (as well as lower thresholds). We then examined ownership profiles of these wells, classifying wells owned by the top 100 oil and natural gas producers as well as other smaller producers. Importantly, this is a very conservative approximation of small-business ownership profile, as many of the producers that fall outside of the top 100 nonetheless have more than 500 employees, the threshold for small business status for oil and natural gas exploration/production.<sup>242</sup> Moreover, even companies in the oil and gas sector with fewer than 500 employees can have significant revenues—sometimes in excess \$1 billion annually.<sup>243</sup>

Our analysis demonstrates that wells producing less than 15 BOE/d are owned by both large and small producers. In particular, major operators own approximately one third of such wells (35 percent of new gas wells and 29 percent of new oil wells).<sup>244</sup> Thus, EPA's assumption that small businesses own lower-producing wells contradicts the actual data – a significant number of low-producing wells are owned by the largest oil and gas production firms.

We also analyzed the economics of requiring semi-annual inspections at low producing

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<sup>242</sup> RIA, *supra* note 19, at 154.

<sup>243</sup> See, e.g., Forbes, *The World's Biggest Public Companies #1,660 Ultra Petroleum* (2011), <http://www.forbes.com/companies/ultra-petroleum/> (Ultra Petroleum has 108 employees); see also Ultra Petroleum Corp., *SEC Form 10-K* at 40 (2014), available at <http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9NTc1NzA4fENoaWxkSUQ9Mjc5MzYzfFR5cGU9MQ==&t=1> (Ultra Petroleum has \$1.23 billion in annual revenues).

<sup>244</sup> Analysis conducted by EDF using 2013 data from 40 CFR Part 98 Subpart W reported data, DrillingInfo HPDI data, and the US EPA GHG Inventory.

wells by comparing the cost of LDAR to the total revenue produced from the single low-producing well. For this analysis, we used EPA’s assumed cost of LDAR and calculated revenue assuming different oil and natural gas prices. We classified low producing wells into three categories based on production rates: 15 BOE/d; a 10 BOE/d; and a 5 BOE/d. Tables 3 and 4 below set forth the results, showing that LDAR costs are a mere fraction of that well’s annual revenue, irrespective of its daily production rate. Our estimates are also highly conservative, since we assumed that an operator only owns one low producing well, when operators are actually often likely to own a mix of higher- and lower-producing wells across which costs can be shared. (Even an operator with just two low-producing wells would have lower proportional costs per well.) Furthermore, these costs a low proportion of revenue in the single-well scenario, even assuming low prices for oil and gas. We note that the US Energy Information Administration projects wellhead prices in 2020 of \$75/barrel of oil and \$4.88/million British thermal units of gas (roughly equivalent to \$4.88/Mcf).<sup>245</sup>

**Table 3: LDAR Cost as a Percentage of Revenue at Six Price Points for Crude Oil**

	Annual Production  (BOE/yr)	Crude Oil Spot Price (\$/bbl)					
		\$40.00	\$50.00	\$60.00	\$70.00	\$80.00	\$100.00
		ANNUAL REVENUE PER WELL <sup>1</sup>					
Oil well 15 BOE/day	5,475.0	\$175,200	\$219,000	\$262,800	\$306,600	\$350,400	\$438,000
Oil Well 10 BOE/day	3,650.0	\$116,800	\$146,000	\$175,200	\$204,400	\$233,600	\$292,000
Oil Well 5 BOE/day	1,825.0	\$58,400	\$73,000	\$87,600	\$102,200	\$116,800	\$146,000
		LDAR COST AS % OF REVENUE <sup>2</sup>					
Oil well 15 BOE/day		0.91%	0.73%	0.61%	0.52%	0.46%	0.37%
Oil Well 10 BOE/day		1.37%	1.10%	0.91%	0.78%	0.68%	0.55%
Oil Well 5 BOE/day		2.74%	2.19%	1.83%	1.56%	1.37%	1.10%

<sup>1</sup> Assumes 20% royalties

<sup>2</sup> Annual cost of OGI semi-annual LDAR: \$1,599 per well (net of methane credits), EPA TSD Table 5-15

<sup>245</sup> See EIA, *Annual Energy Outlook*, *supra* note 169.



**Table 4: LDAR Cost as a Percentage of Revenue at Five Price Points for Natural Gas**

	Average Annual Production <sup>1</sup> (mill SCF/yr)	Well Head NG Price (\$/1000 CF)				
		\$2.50	\$3.00	\$3.50	\$4.00	\$4.50
		ANNUAL REVENUE PER WELL <sup>2</sup>				
Low Producing Wells (<15 BOE/day)	23.1	\$46,138	\$55,365	\$64,593	\$73,820	\$83,048
Other Wells	61.2	\$122,444	\$146,933	\$171,422	\$195,911	\$220,400
		LDAR COST AS % OF REVENUE <sup>3</sup>				
Low Producing Wells (<15 BOE/day)		3.47%	2.89%	2.48%	2.17%	1.93%
Other Wells		1.31%	1.09%	0.93%	0.82%	0.73%

<sup>1</sup> Based on data in RIA Table 2-5

<sup>2</sup> Assumes 20% royalties

<sup>3</sup> Annual cost of OGI semi-annual LDAR: \$1,599 per well (net of methane credits), EPA TSD Table 5-15

Given the potentially significant emissions from these sources, we strongly urge BLM to finalize a rule that does not include any exemption for low production wells. As shown above, these low production rate wells are the source of large quantities of wasted resource. Doing so would not ensure that operators take all reasonable precautions to prevent the waste of oil and gas, in violation of BLM's statutory duty. 30 U.S.C. § 225.

### C. BLM Must Require All Operators to Use OGI Technology

Joint Environmental Commenters are encouraged that BLM's proposed rule would require at least some operators to use OGI technology (or an equivalent technology that is approved by BLM) to perform LDAR surveys for some operators. 81 Fed. Reg. at 6,685 (proposed 43 C.F.R. § 3179.302(b)). However, we are concerned that BLM's proposed exemption allowing operators with less than 500 wells within the jurisdiction of a single field office to use portable analyzers fails to require *all* lessees to take reasonable necessary precautions to reduce waste. *Id.* We believe this would have adverse impacts to the minimization of waste from leaks because OGI has significant advantages over Method 21 when it comes to detecting leaks at a facility.

In addition to the speed and cost advantages of OGI over Method 21, OGI allows operators to more comprehensively and efficiently scan a facility. OGI allows operators to scan sources like thief hatches with worn seals that may not even be detected using Method 21 or



other non-instrument based methods without climbing on top of a tank.<sup>246</sup> As a result, fewer components will be classified as “unsafe to monitor” when using OGI than when using Method 21.<sup>247</sup> OGI also allows operators to precisely identify the source of leaking gas, speeding repair, and to scan large components such as pipes and tanks for leaks due to corrosion and cracks at a distance from connections that would be scanned under Method 21. Leaks from these sources can be very significant<sup>248</sup> and are unlikely to be identified with Method 21. Indeed, five states (Colorado, Wyoming, Pennsylvania, Ohio, and Utah) have all established OGI-based LDAR programs. We believe OGI is the best method to detect leaks, in addition to being the most efficient, and should be required for all operators.

Despite the advantages that OGI presents in preventing waste, BLM “believes it is appropriate . . . to allow operators with fewer wells to use portable analyzers instead [of OGI].” 81 Fed. Reg. 6,647. This is a flawed rationale. It assumes that it is not cost-effective for operators to spread the costs of OGI technology across a smaller number of wells. But there is no evidence to support this assumption. It is important to note that third-party contractors already are providing LDAR services to the oil and gas production industry, so producers can obtain inspection services from these firms rather than investing in OGI cameras and training. For firms with very small numbers of wells, hiring a contractor may be less expensive than investing in OGI for in-house use. Moreover, BLM’s assumption ignores the fact that field office boundaries are arbitrary constructs. Many are often located close together, and there is no reason to assume that it would be particularly costly for operators to transport OGI technology across field office boundaries. There is no basis to assume that it is prohibitively costly for any operator to use OGI technology.

In any event, BLM’s proposed approach would result in giving many operators, both large and small, the option to use less-effective portable analyzers. This is evidenced by our analysis, included in our analysis of North Dakota<sup>249</sup>, to these comments, of the number of wells that are located within the boundaries of various field offices in Colorado, Wyoming, North

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<sup>246</sup> Consent Decree *U.S. v. Noble Energy*, (No. 1:15 cv 00841, D. CO., April 22, 2015) (“Noble Energy Consent Decree”), available at <https://www.epa.gov/sites/production/files/2015-04/documents/noble-cd.pdf>. See also EPA Compliance Alert, *EPA Observes Air Emissions from Controlled Storage Vessels at Onshore Oil and Natural Gas Production Facilities* (Sept. 2015), available at <http://www2.epa.gov/sites/production/files/2015-09/documents/oilgascompliancealert.pdf> (“EPA Compliance Alert 2015”).

<sup>247</sup> See Target Presentation,, *supra* note 235, at 7.

<sup>248</sup> Clearstone Engineering, *Cost-Effective Directed Inspection and Maintenance Control Opportunities at Five Gas Processing Plants and Upstream Gathering Compressor Stations and Well Sites* (2006), available at [http://www.epa.gov/gasstar/documents/clearstone\\_II\\_03\\_2006.pdf](http://www.epa.gov/gasstar/documents/clearstone_II_03_2006.pdf) (“Clearstone 2006”).

<sup>249</sup> See CATF North Dakota Flaring Analysis, *supra* note 149.

Dakota, New Mexico and Utah.<sup>250</sup> For example, in Colorado’s Grand Junction Field Office (“GJFO”), not a single individual operator would be required to use OGI.<sup>251</sup> The operators that are exempted in within GJFO include Chevron USA Inc.—clearly not a small operator.<sup>252</sup> Additionally, there are two different Oxy USA entities that each have less than 500 wells, but combined would have over 500 wells: Oxy USA WTP LP and Oxy USA Inc. in GJFO.<sup>253</sup> This highlights another loophole in BLM’s approach: a single, large company that is not intended to be exempted from using OGI may have various subsidiaries operating within a field office that each operate less than 500 wells, thereby allowing them to escape the mandatory use of OGI.

Additionally, the effect of BLM’s exemption would allow different treatment of the same company in different states. XTO Energy—another large company, and a subsidiary of the even larger ExxonMobil, which had earnings of \$16.2 billion in 2015,<sup>254</sup> would be exempted from using OGI in New Mexico’s Farmington Field Office, Colorado’s White River, Tres Rios and Royal Gorge Field Offices, and Utah’s Moab Field Office, but would be required to use it in Utah’s Vernal Field Office and the North Dakota Field Office.<sup>255</sup> Similarly, Devon Energy, another operator that cannot be reasonably classified as small, would be exempted from the OGI requirement in both Wyoming’s Buffalo and Casper Field Offices.<sup>256</sup> It is entirely unreasonable to claim that it would be too expensive for XTO to transport the OGI technology between adjacent field offices within Utah, or from Utah or North Dakota to Colorado or New Mexico. Examples like these are littered throughout the field offices in these five states.<sup>257</sup> Just as egregious is the fact that, despite having 947 wells in Colorado, XTO would not be required by

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<sup>250</sup> See Ava C. Farouche, Earthjustice, *Analysis of Producing Wells by Operator Within the Jurisdiction of Selected BLM Field Offices in Colorado, New Mexico, North Dakota, Utah, and Wyoming* 4 (Apr. 22, 2016) (attached). The Field Offices analyzed are: North Dakota; Buffalo, WY; Casper, WY; Roswell, NM; Farmington, NM; Colorado River Valley, CO; Grand Junction, CO; Royal Gorge CO; Tres Rios, CO; White River Valley CO; Vernal, UT; Price, UT; Monticello, UT; and Moab, UT. *Id.* at 5–13. Within these field offices, only a handful of operators would be required to use OGI: six in Utah (Resolute Natural Resources Co., EOG Resources, Kerr-McGee, Newfield Production, QEP Energy, and XTO Energy), one in Colorado (WPX Energy Rocky Mountain LLC), and nine in New Mexico (BP America, Burlington Resources, ConocoPhillips, Dugan Prod. Corp., Energen Resources, Enervest Operating, Pre-Ongard, WPX, and XTO). *Id.* No operators in North Dakota or in the Wyoming field offices we surveyed would be required to use OGI. Only a few operators would be required to use OGI in multiple states.

<sup>251</sup> See *id.* at 5.

<sup>252</sup> See *id.*

<sup>253</sup> See *id.*

<sup>254</sup> Press Release, ExxonMobil, ExxonMobil Earns \$16.2 Billion in 2015; \$2.8 Billion During Fourth Quarter (Feb. 2, 2016), available at <http://news.exxonmobil.com/press-release/exxonmobil-earns-162-billion-2015-28-billion-during-fourth-quarter>

<sup>255</sup> See Farouche, *supra* note 250, at 6–11.

<sup>256</sup> See *id.* at 12–13; see also Devon Energy Corp., *SEC Form 10-k* at 7, 29 (2015), available at <http://www.sec.gov/Archives/edgar/data/1090012/000119312516466687/d109858d10k.htm> (Devon has 6,600 employees and \$13.145 billion in annual net revenue).

<sup>257</sup> See Farouche, *supra* note 250, at 5–13.

BLM's proposal to use OGI, because it has less than 500 wells within the jurisdiction of any one field office.<sup>258</sup>

Moreover, our analysis provides a conservative estimate, because we look only at the total number of producing wells within a field office's boundaries.<sup>259</sup> We did not limit our analysis to only those wells that are producing from the federal or Indian mineral estate. We limited our analysis in this way because it is unclear what BLM means by the word "jurisdiction" in the Proposed Rule. *See* 81 Fed. Reg. at 6,669 (proposed 43 C.F.R. § 3179.302(b)). It is thus unclear whether the OGI requirement applies to all operators with more than 500 wells within the geographic boundaries of a field office, or if it only applies to operators with more than 500 wells on federal and Indian lands and/or mineral estate within a field office. BLM should clarify the meaning of "jurisdiction" in the final rule. BLM should not choose the latter jurisdiction, because it would mean that even more operators would be exempted from using OGI. And BLM's flawed assumption that using OGI is too expensive for small operators would be even further attenuated from reality if the 500 well/field office threshold only applied to operators on public lands. There is no reason that operators cannot spread costs by using the same OGI devices on both public and private lands that are immediately adjacent to one another.

OGI is part of the reasonable precaution that all operators must take to ensure that waste from leaks are minimized. 30 U.S.C. § 225. BLM must require OGI technology at all wells and remove the threshold that allows portable analyzer devices to be used. If BLM feels that an exemption for smaller operators must be included in the final rules, BLM must significantly narrow the exemption and only allow the use of portable analyzers for a short, defined period of time after the effective date of the rule. In such case, BLM must also analyze the number of leaks that operators report identifying with Method 21 and with OGI, to ensure that operators are using these techniques diligently to find all identifiable leaks and thus minimize waste.

**D. BLM Must Develop and Require Operators to Comply with a Basic Protocol to Assure that OGI Surveys are Performed in a Manner that can Effectively Detect Leaks.**

The effectiveness of any LDAR program is dependent on whether the equipment operator is using the equipment effectively or not, regardless of the type of technology used. For example, one study of OGI technology found that trained operators missed 2 out of 10 of the largest leaks at the facility even though the OGI equipment would have been sensitive enough to detect the leak.<sup>260</sup> Based on this, the study concluded that the effectiveness of OGI is highly dependent on the level of care and attention applied by the technician.<sup>261</sup> Further, as explained in the context of traditional Method 21, EPA has found that operators often fail to detect leaks

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<sup>258</sup> *See id.* at 5–7.

<sup>259</sup> *See id.* at 4.

<sup>260</sup> D. Picard, et. al., *Directed Inspection and Maintenance Leak Survey at a Gas Fractionation Plant Using Traditional Methods and Optical Gas Imaging*, Paper No. 06-A-119-AWMA, 11-12, available at [http://www.flir.com/uploadedFiles/Thermography\\_USA/Industries/OGI/4\\_Fashimpaur\\_2006\\_AWMA.pdf](http://www.flir.com/uploadedFiles/Thermography_USA/Industries/OGI/4_Fashimpaur_2006_AWMA.pdf).

<sup>261</sup> *Id.* at 10.

because of poor implementation. BLM must take reasonable precautions to assure that OGI monitoring is effective by requiring operators to comply with certain specified monitoring protocols. The available studies show that important factors regarding the effectiveness of OGI include, but are not limited to:

- the distance between the potential leaking equipment and the OGI camera;
- the weather conditions during the OGI survey; and
- the time of day during the OGI survey is performed.

Based on these factors BLM should establish a maximum viewing distance between the OGI camera and the potential leaking source. According a review of several studies, OGI effectiveness decreases as the distance between the camera and operator increases.<sup>262</sup> Further, BLM should specify that monitoring should not be conducted on cloudy days, rainy days, foggy days, or days with extreme cold as these conditions decrease the sensitivity of the equipment.<sup>263</sup> Finally, BLM should require operators to be adequately trained in the proper use of the technology.<sup>264</sup> Alternatively, BLM must specifically require operators to demonstrate compliance with an EPA issued protocol specifying the proper use of OGI technology for LDAR surveys, if and when one is finalized.

**E. BLM Must Provide Notice and an Opportunity for Public Comment on Alternative LDAR Programs.**

The proposed LDAR program is a fundamental component of BLM's proposed rule to reduce waste and the environmental impacts of oil and gas extraction on federal and Indian lands. BLM's proposal generally requires operators to use OGI technology to perform LDAR surveys. As discussed above, Joint Environmental Commenters believe that quarterly OGI LDAR surveys are an extremely cost-effective way to reduce waste from BLM managed wells. But the Proposed Rule would also allow operators to use alternate leak detection devices, methods, or programs by application to the agency. 81 Fed. Reg. 6,685-686. Under this provision, operators would be permitted to use alternate LDAR methods after submitting a Sundry Notice to the agency showing, to the agency's satisfaction, that the alternative would meet or exceed the effectiveness of BLM's proposal. *Id.* at 6,686. These requirements do not provide any opportunity for notice and comment and reduce the transparency of BLM's proposal contrary to the agency goals. 81 Fed. Reg. 6,618 ("Updating and clarifying the regulations will make them more effective, more transparent, and easier to understand.") BLM has aimed to achieve these goals elsewhere in its proposed rule and should do the same with regards to the provisions allowing operators to apply for alternate LDAR plans.

**F. BLM Should Explicitly Require Operators To Inspect Intermittent-Bleed Pneumatic Controllers For Continuous Emissions During LDAR Inspections.**

Intermittent-bleed pneumatic controllers are ubiquitous at oil and gas production sites. These devices, which are not subject to proposed § 3179.201, are designed to only vent natural

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<sup>262</sup> OGI Protocol, *supra* note 230.

<sup>263</sup> *Id.*

<sup>264</sup> *Id.*

gas while actuating. However, it is very well documented that intermittent-bleed pneumatic controllers frequently emit natural gas continuously.<sup>265</sup> This continuous loss of gas serves no useful purpose and is wasteful.

This type of waste is readily identified with OGI. Operators can monitor each intermittent-bleed pneumatic controller for continuous emissions. If the device is only venting gas during actuation (which only lasts for at most a few minutes) that will be confirmed when visible emissions cease. Broken intermittent-bleed controllers can then be repaired or replaced.

We are concerned that, since intermittent-bleed pneumatic controllers are designed to vent gas during actuation, some operators may not consider this waste to be a “leak” and choose not to inspect intermittent-bleed pneumatic controllers or repair them if this wasteful condition exists. BLM should explicitly require operators to inspect each intermittent-bleed pneumatic controllers during LDAR inspections and repair any devices that are emitting continuously.

## **VI. Storage Vessels**

Storage vessels release gas vapors to the atmosphere when the internal pressure of the storage vessel exceeds the design pressure of the equipment. When the pressure inside the storage vessel exceeds the design limit, the gas is released from a pressure relief device, thief hatch, or other device. These emissions can be controlled by equipping the storage vessel with a closed vent system that routes the gas to a flare or other combustion device or a vapor recovery unit (VRU).

BLM estimates that oil and gas operations on federal and Indian lands vented 2.77 Bcf of natural gas from storage tanks in 2013, approximately 12.7% of the gas vented from BLM administered leases.<sup>266</sup> At \$4.00/Mcf and a royalty rate of 12.5%, nearly 1 million in taxpayer revenue was lost. Further, the wasted gas contributed to environmental damage, releasing nearly 1.5 million tons of greenhouse gases and 12,515 tons of VOCs into the atmosphere.<sup>267</sup> BLM’s proposed rule will help minimize this waste and pollution by requiring operators to control emissions using VRUs, flares, or other combustion devices.

Commenters strongly support BLM’s proposed requirements to control these emissions. According to BLM’s analysis, these requirements will reduce venting from storage vessels by 40 million scf per year and methane emissions by 7,000 tons per year. 81 Fed. Reg. at 6,654. To assure that BLM actually achieves its waste reduction goals, commenters urge BLM to:

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<sup>265</sup> See Joint Comments on Proposed EPA NSPS Subpart OOOOa at 34-35.

<sup>266</sup> RIA, *supra* note 19, at 19, Tbl. 6.

<sup>267</sup> According to BLM’s estimate, storage tanks vented 1.82 Bcf of natural gas at gas wells and 0.95 Bcf of natural gas at oil wells. Commenters calculated the total mass of GHGs and VOCs vented based on the average gas composition for completions and recompletions of gas and oil well, according to EPA. See EPA, *Composition of Natural Gas for use in the Oil and Natural Gas Sector*, Memo from Heather P. Brown to Bruce Moore, EPA, OAQPS, S PPD, at 11 Tbl. 8 (Jul. 28, 2011) EPA-HQ-OAR-2010-0505-0084. Commenters adjusted the global warming potential of methane based IPCC findings that methane has 36 times more global warming potential than carbon dioxide on 100-year time frame. AR5, *supra* note 20.

- Clarify that the storage vessel control requirement applicability threshold applies based on total cumulative VOC emissions from all storage vessels located at a single well pad or site.
- Require oil and gas operators to monitor venting from thief hatches and pressure relief devices on storage vessels and monitor to assure that flares are operated with a flame (i.e., lit) at all times.

Additionally, commenters urge BLM to strengthen the proposed rules by requiring:

- Operators to limit the volume of gas flared from storage vessels
- Operators to control emissions from storage vessels using VRUs instead of flares.
- Operators to achieve 98% destruction efficiency if they control emissions from storage vessels using flares.

**A. Control Requirement Applicability for Storage Vessels must be Based on Total Emissions from All Tanks that Serve a Single Well Pad or Site.**

BLM must require operators to control releases from all storage vessels located at a single well site or well pad if cumulatively, they release equal to or greater than six tons of VOCs per year. As proposed, BLM would only require operators to control storage vessels that individually release more than 6 tons of VOCs per year. 81 Fed. Reg. at 6,685. Finalizing an applicability threshold for controlling waste from storage vessels based on a single vessel's potential emissions is arbitrary and capricious because BLM's cost analysis evaluates the effectiveness of controls based on the total emissions from all storage vessels that serve a well site or well pad.<sup>268</sup> Also, data we collected demonstrates that operators frequently control multiple storage vessels and control releases from these units using a single control device. Therefore, BLM should revise the proposed rule to require operators to determine the applicability of control requirements for storage vessels based on the potential VOC emissions from all storage vessels at a single well pad or well site.

BLM's cost analysis evaluates the costs of the proposed storage vessel control requirements assuming that the operator will comply by installing a single control device per well site or well pad because "each well site only has one storage vessel."<sup>269</sup> BLM also assumes that each storage vessel subject to control would be equipped with a dedicated control device.<sup>270</sup> Nevertheless, BLM's proposal would allow operators to determine applicability based on the emissions potential of a single storage vessel regardless of the number of storage vessels at the well site or well pad or the total amount of emissions released from these storage vessels. 81 Fed. Reg. at 6,685. An applicability threshold that narrowly looks at whether a single storage vessel releases more than 6 tons of VOCs per year creates a situation where a well site or pad that has multiple storage vessels that cumulatively release more than 6 tons of VOCs per year and can be controlled cost effectively with a single control device may not be controlled because

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<sup>268</sup> RIA, *supra* note 19, at 90, 91 Tbl. 21 fn. 2.

<sup>269</sup> *Id.*

<sup>270</sup> *Id.* at 90.

individually each storage vessel may release less than the 6 tpy VOC threshold. Therefore, BLM's proposed applicability threshold is arbitrary and capricious.

Oil and gas industry permits from several states confirm that operators often use multiple storage vessels to contain the production from a single well site or well pad.<sup>271</sup> Further, these permits show that many operators use a single VRU, flare, or enclosed combustor to control emissions from multiple storage vessels.<sup>272</sup> Also, Colorado specifies that a storage vessel is “a fixed roof storage vessel or series of storage vessels that are *manifolded* together via liquid line.”<sup>273</sup> Neither actual permitting data, operator practices, nor state regulatory scheme support BLM's assumption that each well site is served by a single storage vessel or that operators equip each storage vessel with a dedicated control device. Instead, the data and other evidence makes clear that well sites often have multiple storage vessels and that a single flare or VRU can be used for more than one storage vessel at a facility.

Commenters recommend that BLM revise the proposed rule by requiring operators to determine the applicability of § 3179.203 based on total emissions from all storage vessels at a well site or well pad. Specifically, commenters recommend that BLM amend the language as follows:

§ 3179.203(a)(3): contains production from a well site or pad that has a rate of total VOC emissions equal to or greater than 6 tons per year (tpy) from all storage vessels that receive or are capable of receiving production from the same well site or pad, in parallel and/or sequence.

**B. BLM Must Require that Operators Assure that Storage Vessels are being Controlled Effectively**

BLM must finalize requirements for operators to monitor releases from storage vessels and assure compliance with BLM's proposed prohibition on venting tank vapor gas directly to the atmosphere. Pursuant to the MLA, BLM is required to ensure that lessees use “all reasonable

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<sup>271</sup> See e.g. South Western Energy, *Class I Modification – Alan Degarmo Pad, Permit # R12-3037A, Class I Administrative Update*, at 1 (Mar. 9, 2016) (identifying that the well has three 400 bbl condensate storage vessels); Chesapeake Appalachia, LLC, *Linda Greathouse Pad – Permit # R13-2978C, Class II Administrative Update*, at 5 (Nov. 10, 2014) (authorizing the operation of three 400 barrel condensate tanks at the well pad). Antero Resources Corporation, *Confor Well Pad – General Permit Registration G70-A Modification Application*, at B-1 (Oct. 12, 2015) (identifying that the well pad routes condensate to 10 storage vessels); Anadarko E&P Onshore LLC, *Air Permit Application - Trinity St. 3569-36-T2H*, at 7 (Jan. 15, 2016) (requesting authorization to operate six (6) 400 barrel oil tanks); Helis Oil & Gas Company, LLC, *Chapter 6 Section 2 Application for Henry 3W-12/24H Well Pad*, at 61 (Jan. 8 2016) (requesting authorization to operate six (6) 400 barrel oil storage tanks to contain produced oil from a single well site); Extraction Oil and Gas, LLC, *Raindance Pad, Draft Permit Number 15WE1235*, at 1 (authorizing operation of five (5) 400 barrel condensate storage tanks for the Weld Production Facility).

<sup>272</sup> *Id*; see also EPA, Consent Decree for Noble Energy, *supra* note 246.

<sup>273</sup> 5 C.C.R. 1001-9 § XVII.A.15 (emphasis added).

precautions to prevent waste.” 30 USC § 255. As discussed below, monitoring equipment is readily available on the market to help operators identify prohibited releases from storage vessels and take necessary corrective actions to reduce waste. Further, BLM must accurately determine oil and gas royalties pursuant to the Federal Oil and Gas Royalty Management Act (“FOGRMA”). 30 USC § 1711. Monitoring of releases from storage vessels is necessary to satisfy this mandate because BLM’s proposed rule would prohibit the direct release of gas from a storage vessel, making this gas “avoidable loss.” 81 Fed. Reg. at 6,682. As such, this gas would be subject to royalty requirements and monitoring is necessary to determine when these releases occur and the quantity of gas released.

To satisfy these requirements, commenters recommend that BLM require operators to:

- Equip storage vessel release points (e.g. thief hatches, pressure relief devices, and other openings that allow gas to vent directly to the atmosphere) with monitors that record when a thief hatch opens, the duration of the release, the pressure before and after the release, and any other information necessary to determine the quantity of gas released. Further, these monitors should be capable of notifying the operator of the release in real-time.
- Report any release of waste gas detected by the monitoring equipment to BLM on a monthly basis.
- Equip flares, enclosed combustors, or other combustion devices with monitoring equipment to detect the presence of a flame and record any periods when gas is being routed to the flare but a flame is not present.
- Report any release of gas from a flare when a flame was not present to BLM on a monthly basis.

Recent investigations demonstrate that additional monitoring is necessary to assure that storage vessels do not release gas to the atmosphere from thief hatches and other pressure relief devices. In 2015, EPA issued a broad compliance alert to the industry, explaining that federal and state inspectors “have observed numerous instances of detectable emissions from controlled oil and natural gas storage vessels.”<sup>274</sup> Based on EPA’s review of the evidence, the excess emissions were caused by 1) inadequate design and sizing of vapor control systems; and 2) inadequate vapor control system operation and maintenance practices.<sup>275</sup> EPA has settled at least one case against an oil and gas operator for these emissions problems.<sup>276</sup> A 2016 EDF study found similar problems at storage vessels, where “over 90% of almost 500 detected sources were from tank vents and hatches. . . demonstrating that tank emission control systems commonly underperform.”<sup>277</sup> The EDF study also found several instances where uncombusted gas was being released directly from flares.<sup>278</sup>

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<sup>274</sup> EPA Compliance Alert, *supra* note 246.

<sup>275</sup> *Id.*

<sup>276</sup> Noble Energy Consent Decree, *supra* note 246.

<sup>277</sup> David R. Lyon et. al, *Aerial Surveys of Elevated Hydrocarbon Emissions from Oil and Gas Production Sites*, 1 Env’tl. Sci. Tech. (2016).

<sup>278</sup> *Id.*



Monitoring devices necessary to assure compliance are readily available on market. Commenters, using a simple Google search, found several vendors that provide monitoring devices for pressure relief devices, thief hatches, and other devices that detect when operators vent gas from storage vessels directly to the atmosphere, even when such vessels are equipped with control equipment.<sup>279</sup> Similarly, commenters found several equipment manufacturers that market monitoring equipment that can detect the presence of flame at a flare or other combustion device and determine whether gas flow to the flare exists.<sup>280</sup> BLM should require operators to utilize these or similar technologies to help assure compliance with the proposed prohibition on venting gas from storage vessels to the atmosphere.

### **C. BLM Must Establish Standards or Limits to Minimize Flaring and Venting From Storage Vessels.**

BLM must establish standards or limits to minimize the amount of gas vented or flared from storage vessels in addition to the control requirements proposed control requirements. Natural gas waste from storage vessels is caused by three principle phenomenon:

- Flashing losses: Oil and condensate added to storage vessel includes some amount of entrained gas. This is referred to as associated gas. While in most cases the produced oil and gas will be routed through a separator to separate the liquid and gas phases, depending on the design, some amount of entrained gas will remain in the product as it is dropped into the storage vessel. Within the storage vessel, the entrained gas will offgas from the oil or condensate, increasing the pressure in the storage vessel. Depending on the design of the storage vessel, at a certain point the gas must be released to the atmosphere or a control device.
- Breathing losses: Ambient temperature fluctuations cause the gas inside the storage vessel to expand. As the gas expands within the storage vessel it increases the internal pressure of the storage vessel and at a certain point must be released to the atmosphere or a control device.

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<sup>279</sup> See e.g. Emerson, Emerson's Pressure Relief Device Monitoring Solutions: Keep Your Plant In Compliance with Regulations, available at <http://www2.emersonprocess.com/en-US/plantweb/wireless/applications/Documents/Flyer-for-PRD-Campaign-final.pdf>; Sensor Solutions, Thief Latch Detection Systems, available at [http://www.sensorso.com/home/AN112\\_Thief%20Hatch%20Latch%20Detection%20Systems.pdf](http://www.sensorso.com/home/AN112_Thief%20Hatch%20Latch%20Detection%20Systems.pdf); Oleum Tech, Thief Hatch Switch Kit: Real-time Thief Hatch Open/Close Detection System, available at <http://www.oleumtech.com/oleumtech-products/thief-hatch-switch-kit/>; Eagle Automation, Thief Hatch Sensors: Ensure That Thief Hatches Are Closed for Safety And to Reduce Emissions, <http://www.eagleautomation.com/index.php/environmental-compliance/thief-hatch-sensors>.

<sup>280</sup> Aereon, Sentinel Ultraviolet Flame Monitor, available at <http://www.aereon.com/flare-systems/combustion-equipment-accessories/flame-monitoring>; John Zink, VCU Design Features, available at <http://www.johnzink.com/products/vapor-control-technology/vapor-combustion/design-features/>; Reef Process Systems, Enclosed Vapor Combustor, available at <http://reefps.com/enclosed-vapor-combustor/>.

- Working losses: The addition of liquid to a tank will reduce the vapor space inside of tank compressing the gases. This will increase the internal pressure of the tank and at certain point the gas must be released to the atmosphere or a control device.
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While commenters strongly support BLM's proposed monthly limit on flaring from developmental oil wells, and as discussed elsewhere, we encourage BLM to lower this limit. BLM must also assure that this limit does not incentivize operators to increase releases of associated gas from storage vessel flashing losses.

Operators have a certain amount of control over the amount of entrained gas that remains in produced oil or condensate after processing the produced material through a separator.<sup>281</sup> A few of the key variables that impact the volume of entrained gas that remains in the condensate or oil after passing through the separator include retention time, pressure drop, and the number of stages of separation.<sup>282</sup> Without any regulation, the decision on these parameters is solely based on the cost of the separation equipment, the physical footprint of the separator, and the economic incentive to reduce the amount liquid hydrocarbons in the associated gas that is released from separator.<sup>283</sup> Operators have a strong economic incentive to minimize the liquid carryover, the liquid hydrocarbon droplets that are mixed in with the associated gas, because the liquids have a higher sales value. Unsurprisingly, operators optimize their separators to reduce the liquid carryover.<sup>284</sup> Unfortunately, this has a negative impact on the amount of associated gas that remains in the liquid that is dumped from the separator to storage vessels at the site because both factors are a partially a function of the operating pressure of the separator. Higher operating pressure within the separators will generally minimize liquid carry over but at the same time increase associated gas in the liquid sent to the storage vessel.

BLM's proposed rule limits the volume of gas that operators may vent from developmental oil wells. Because this limit will apply to the gas volume that is routed from the separator to flares, it may create a perverse incentive for operators to calibrate separators in a manner that keeps as much associated gas entrained in the liquid until the liquid is dumped into a storage vessel. Once the liquid is dumped into the storage vessel, the associated gas will naturally separate from the solution (flash) and must be vented or controlled.

Gas that would be re-routed to be released from the condensate tank rather than the well will still constitute waste, and BLM must address this potential unintended consequence of its rulemaking. Fortunately, there are several cost-effective and reasonable options for BLM to solve this problem. Commenters recommend that BLM set a separate flaring and venting limit for storage vessels or broaden the proposed limit for developmental oil wells to include storage vessels. Alternatively, BLM should finalize limits on minimum retention time and maximum exit pressure for separators.

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<sup>281</sup> Penn State, Department of Energy and Mineral Engineering, *Design and Optimization of Separators*, available at [https://www.e-education.psu.edu/png520/m20\\_p3.html](https://www.e-education.psu.edu/png520/m20_p3.html).

<sup>282</sup> *Id.*

<sup>283</sup> *Id.*

<sup>284</sup> *Id.* ("A successful hydrocarbon separation maximizes production of condensate or oil, and enhances its properties"); see also Petrowiki.org, Separator Sizing, available at [http://petrowiki.org/Separator\\_sizing](http://petrowiki.org/Separator_sizing).

If, contrary to the evidence, BLM does not believe that this will be a problem, commenters strongly urge the agency to require operators to report venting and flaring from storage vessels. As discussed elsewhere, this data will enable the agency and the public to evaluate the seriousness of the problem and determine if additional regulations are necessary.

**D. BLM Must Require Operators to Control Emissions from Storage Vessels Using Vapor Recovery Where Technically Feasible.**

BLM must require operators to use VRUs and other control technologies that can recover gases from storage vessels for productive use rather than destruction through flaring. BLM is required to use all reasonable precautions to prevent waste of natural resources such as oil and natural gas. 30 USC § 225. Accordingly, BLM's final rule must differentiate between the use of VRUs, flares, and enclosed combustors to control waste from storage vessels and require operators to use VRUs wherever technically feasible. According to BLM's analysis, VRUs are capable of capturing 95% of the gas released from storage vessels and routing the product into sales lines. 81 Fed. Reg. 6,653, RIA at 92. Using this technology, operators can reduce waste from storage vessels by 95%. *Id.* In contrast, burning storage vessel releases, while controlling methane releases, does not in fact reduce waste. *Id.* But, BLM's proposed rule does not differentiate between the two control technologies and allows operators to use either option to comply with the control requirements for storage vessels. 81 Fed. Reg. 6,685. Given BLM's mandate to reduce waste and effectively manage natural resources, the agency's failure to differentiate between VRUs and flares is arbitrary and capricious.

In addition to reducing waste, BLM must comply with its Congressional mandate to manage public lands "in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archeological values. 30 U.S.C. § 1701(a)(8). To comply with this mandate, BLM must require operators to utilize VRUs wherever technically feasible. VRUs are more effective at reducing environmental impacts as compared to flares. Commenters have calculated that VRUs release 2 to 3.5 times fewer GHG emissions than flares. *See* Table 5: Comparing GHG Releases from VRUs and Flares. This conclusion assumes that VRUs have a methane control efficiency of 95%, whereas flares have a control have a methane control efficiency of 98% but also release significant amounts of CO<sub>2</sub> from the combustion of methane and other VOCs in the methane gas. Applying BLM's assumption that flares are only 95% efficient would further demonstrate that VRUs are a superior control technology.

**Table 5: Comparing GHG Releases from VRUs and Flares<sup>285</sup>**

Control Type	GHGs Released (vented + combusted) (tons/MCF)	GHG Control Efficiency
VRU gas well	0.031	95%
Flare gas well	0.073	89%
VRU oil well	0.018	95%
Flare oil well	0.065	82%

Commenters urge BLM to satisfy its dual Congressional mandates to reduce waste and minimize environmental damage by requiring operators to use VRUs to control emissions wherever possible. Specifically, commenters recommend that BLM amend the proposed rule as follows:

§ 3179.203(c): No later than 6 months after the effective date of this section, the operator must route all tank vapor gas from a storage vessel that is subject to this section to ~~a combustion device or continuous flare, or to a sales line~~ unless the operator submits a technical analysis to the BLM through a Sundry Notice demonstrating that, and the BLM agrees, that the use of a vapor recovery unit or other gas recovery method is technically infeasible. If the BLM agrees that at vapor recovery device is technically infeasible, the operator must route all tank vapor gas from a storage vessel to combustion device or continuous flare unless the operator further demonstrates in its submission, ~~submits through an economic analysis to the BLM through a Sundry Notice that demonstrates,~~ and the BLM agrees, based on the information identified in § 3179.7(b), that compliance with this requirement would impose such costs as to cause the operator to cease production and abandon significant recoverable oil reserves under the lease.

Commenters urge BLM to further incentivize operators to capture gas by requiring them to pay royalties on any gas that is flared from storage vessels unless the operator can demonstrate that the use of VRUs is not technically possible. As described above, the loss of gas from storage vessels is avoidable with the use of VRUs but not with the use of flares. Therefore, storage vessel releases that are routed to use flares, where it is feasible to deploy a VRU, should be defined as an avoidable loss and subject to royalties. BLM has adopted this approach for several other components of the rule, including the prohibitions on flaring from developmental oil well and the requirement to recover gas from liquids unloading. *See e.g.* 81 Fed Reg. at 6,683

<sup>285</sup> Commenters calculated the rate of GHG emissions from VRUs and flares at oil and gas wells using BLM's assumption that both technologies have 95% control efficiency and that flares convert hydrocarbon compounds in the gas into CO<sub>2</sub>. The calculated methane releases are adjusted based on Commenters used EPA data provided in Memo labeled Composition of Natural Gas for use in the Oil and Natural Gas Sector (EPA-HQ-OAR-2010-0505-0084) for the assumed gas composition of the vent gas. Commenters are submitting an Excel spreadsheet labeled "GHG Releases From VRUs and Flares" showing our calculations.

(Operators may seek approval for an alternate flaring rate “if the operator demonstrates . . . that the applicable limit . . . would impose such costs as to cause the operator to abandon significant recoverable oil reserves under the lease.”; 81 Fed. Reg. at 6,685 (“the operator must use practices that maximize the recovery of gas and must flare gas not recovered except where such practices or flaring are technically infeasible or unduly costly”). To further incentivize the use of VRUs, commenters recommend that BLM waive royalties on any gas recovered using VRUs.

**E. BLM must Require Oil and Gas Operators using Flares to Reduce Emissions from Vessels to Comply with a 98% Destruction Efficiency Requirement.**

BLM must clearly require flares to achieve 98% destruction efficiency. Flares and external combustors used to reduce emissions from storage vessels are capable of achieving 98% destruction efficiency. A multitude of vendors for oil and gas flares and enclosed combustors warrant that their units can achieve 98% destruction efficiency.<sup>286</sup> Also, many operators represent in their Clean Air Act permit applications that the flares and internal combustors achieve 98% destruction efficiency.<sup>287</sup> BLM incorrectly assumes, however, that flares only achieve 95% control efficiency. 81 Fed. Reg. 6,653; RIA at 92. BLM’s has not provided any support for this assumption in the preamble to the proposed rule or the supporting documentation. While BLM’s proposal does not specifically reference EPA’s NSPS Subpart OOOO rule analysis, it does parallel EPA’s flawed assumption about flare destruction efficiency. In its analysis, EPA incorrectly assumed that flares at oil and gas facilities only achieve 95% destruction efficiency, citing to a Colorado regulatory document.<sup>288</sup> The document EPA references, *Initial Economic Impact Analysis for Proposed State-Only Revisions to the Air Quality Control Commission’s Regulation Number 7*, does not provide any data or support for the assumption that flares or combustors installed at oil and gas are limited to 95% destruction efficiency.<sup>289</sup> Therefore, even if BLM relied on EPA’s analysis, it is unsupported by any data and arbitrary and capricious. BLM must address this deficiency and clearly require operators using flares to achieve 98% destruction efficiency.

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<sup>286</sup> Reef, Enclosed Vapor Combustor, <http://reefps.com/enclosed-vapor-combustor/>; Abutec, Oil & Gas Production: Enclosed Combustors, <http://abutec.com/products/upstream-oil-gas/oil-gas-production-enclosed-combustors/>; Leed Fabrication, Combustors & Flares, <http://www.leedfab.com/Combustors-Enclosed-Flares.aspx>.

<sup>287</sup> Antero Resources Corporation, *Bee Lewis Well Pad, General Permit Application G70-A Class II Administrative Update*, at 40 (Feb. 27, 2015); Noble Energy, *Web 22 Production Facility, Application for General Permit Registration*, at 23 (compares maximum uncontrolled emissions for unit 6S-TK5 to maximum controlled emissions).

<sup>288</sup> EPA, *Oil and Natural Gas Sector: Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution: Background Technical Support Document for Proposed Standards*, EPA-453/R-11-022, 7-15 (July 2011) (“For this analysis, the types of combustors installed for the oil and gas sector are assumed to achieve 95% efficiency”).

<sup>289</sup> Colorado Department of Public Health and Environment, Air Quality Control Commission, *Initial Economic Impact Analysis for Proposed State-only Revisions to the Air Quality Control Commission’s Regulation Number 7, “Emissions of Volatile Organic Compounds,” Sections I, XII and XVIII* (Sept. 18, 2008).

Further, BLM must require operators to comply with monitoring requirements necessary to assure that flares achieve 98% destruction efficiency. Extensive data shows that flares only achieve this level of control when the gas at the flare tip has sufficiently high heat value.<sup>290</sup> EPA has found through studies at petroleum refineries and chemical plants that destruction efficiency can drop significantly when the heat value drops below an empirical threshold. *Id.* BLM should determine the heat value threshold that is necessary to assure that flares used to control waste from storage vessels at oil and gas wells achieve 98% destruction efficiency and set that value as an operating limit for flares to comply with the proposed rule. Further, BLM should require operators to install monitoring equipment on their flares to continuously measure the heat value of the waste gas to assure that the flare is operating properly.

## **VII. Proposed Requirements for Well Maintenance and Liquids Unloading**

Commenters are encouraged that BLM has proposed to address the massive waste associated with liquids unloading and downhole well maintenance events. 81 Fed. Reg. at 6,685 (proposed 43 CFR § 3179.204). The venting of natural gas from liquids unloading and downhole well maintenance events constitutes a large source of uncontrolled methane emissions in the oil and gas industry. Based on data from the 2015 GHG Inventory, BLM estimates that 3.26 Bcf of natural gas was vented during liquids unloading operations on federal and Indian leases in 2013. *Id.* at 6,654. This volume is roughly 15% of all the gas vented on federal and Indian leases in 2013 and higher than the volume of gas vented during well completions, from storage tanks, from pneumatic pumps, from gas engines, or from compressors.<sup>291</sup>

To address this significant source of waste, BLM proposes to require that all new wells “use practices that maximize the recovery of gas for sale and must flare gas not recovered,” except where such practices are infeasible or unduly costly. *Id.* at 6,685 (proposed 43 CFR § 3179.204(a)). Commenters largely support this proposed requirement and urge BLM to adopt the needed controls, with certain revisions and strengthened standards.

### **A. BLM Should Adopt the Requirement that Wells Maximize Recovery of Gas during Liquids Unloading and Well Maintenance.**

Of the 3.26 Bcf of natural gas lost in 2013 during liquids unloading operations, over 66% was from wells operating without plunger lifts.<sup>292</sup> What makes this figure more striking is the fact that a small minority of wells was responsible for this disproportionately high share; just 18% of the total number of wells that vented during liquids unloading events caused 66% of the

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<sup>290</sup> EPA, *Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards; Final Rule*, 80 Fed. Reg. 75189 (Dec. 2015).

<sup>291</sup> RIA, *supra* note 19, at 3.

<sup>292</sup> BLM estimates that 3.26 Bcf of gas was lost in 2013 from liquids unloading events, with 2.16 Bcf attributable to wells without plunger lifts. 81 Fed. Reg. at 6,654.

waste.<sup>293</sup> As demonstrated by Table 6 below, data from EPA’s Greenhouse Gas Reporting Rule (GHGRP) and Allen (2015) Liquids Unloading both demonstrate that wells conducting liquids unloading operations without plunger lifts are responsible for significantly more methane waste than wells equipped with plunger lifts.

**Table 6: Liquids Unloading Data Requested by EPA**

	2014 Subpart W <sup>[a]</sup>		Allen (2015) Liquids Unloading		
	<i>With Plunger Lifts</i>	<i>Without Plunger Lifts</i>	<i>Manual Plunger Lifts</i>	<i>Automatic Plunger Lifts</i>	<i>Without Plunger Lifts</i>
Methane Emissions Per Unloading Event	0.0002 – 16.0 Mg/event	0.002 -118.7 Mg/event	0.004 –0.94 Mg/event	0.001 – 0.15 Mg/event	0.011 – 2.6 Mg/event
Average Methane Emissions per Unloading Event	0.33 Mg/event (0.06 Mg/event <sup>[b]</sup> )	1.16 Mg/event (0.29 Mg/event <sup>[b]</sup> )	0.186 Mg/event	0.024 Mg/event	0.414 – 0.674 Mg/event <sup>[c]</sup>
Average Number of Unloading Events Per Year	67 events/well (range from 1 – 3,316 events)	14 events/well (range from 1- 2,008 events)	<100 events/well	1,870 events/well	<50 events/well <sup>[d]</sup>

[a] Figures only reflect reported data for wells with non-zero well count, events, and emissions values.

[b] Value represents the geometric mean of the reported data.

[c] The low end of the range corresponds to wells with fewer than 10 events per year and the higher end to those with fewer than 50 events per year.

[d] 1.1% of wells without plunger lifts undergo more than 50 events per year.

Operators that conduct liquids unloading without plunger lifts commonly shut-in the well temporarily to increase the pressure, then vent the accumulated gas and liquids to “purge” the liquids. 81 Fed. Reg. at 6,654–55. As demonstrated in the above table, this uncontrolled method of liquids unloading releases a vast amount of natural gas. By contrast, the installation and proper operation of a plunger lift can reduce these emissions by as much as 95%, with an added positive payback to operators when taking into account sale of the captured gas.<sup>294</sup> Applying this 95% control efficiency to BLM’s 2013 numbers—and assuming that new uncontrolled wells will vent at similar levels to the existing 2013 wells—the application of plunger lifts could save over 2 Bcf of natural gas venting every year on federal and Indian lands.

Plunger lifts are not the only available technology to control the waste from liquids unloading events. Other solutions are also available, such as installing velocity tubing or using

<sup>293</sup> RIA, *supra* note 19, at 84. See also D.T. Allen et al, *Methane Emissions from Process Equipment at Natural Gas Production Sites in the United States: Liquids Unloading*, 49 Environ. Sci. Technol. 641–48 (2015), available at <http://pubs.acs.org/doi/ipdf/10.1021/es5040156> (last viewed April 15, 2016) (“Allen (2015) Liquids Unloading”) (less than 20 percent of wells, including those with and without plunger lifts, account for the majority of emissions).

<sup>294</sup> See EDF, *Oil and Natural Gas Sector: Liquids Unloading Processes Peer Review Responses of Environmental Defense Fund 1* (June 22, 2014) (citing ICF (2014)), available at <https://www3.epa.gov/airquality/oilandgas/2014papers/attachmenti.pdf> (“EDF Liquids Unloading Peer Review”).



compressor engines to lower the pressure differential between the reservoir and the wellhead.<sup>295</sup> When the aforementioned technologies are insufficient to lift liquids, creating artificial lift can successfully remove liquids from wells with little or zero emissions. Furthermore, although capture technology must always take priority over wasteful combustion, flaring may be an option to reduce emissions from liquids unloading where an operator cannot make use of other technologies and would otherwise have no choice but to vent gas released during the event. BLM has demonstrated that the costs for all of these technologies are reasonable. 81 Fed. Reg. at 6,655.

These requirements line up well with what the leading state authorities have implemented. For example, as BLM stated, Colorado “allows an operator to vent during unloading of liquids from the wellbore only after the operator has unsuccessfully attempted to unload liquids without venting” and requires that an operator representative remain on site during the unloading event. *Id.* These provisions specifically require an operator to “minimize hydrocarbon emissions and the need for well venting associated with downhole well maintenance and liquids unloading” and that any venting be limited “to the maximum extent practicable.”<sup>296</sup> Wyoming also requires that the operator “minimize VOCs and HAPs to the extent practicable during venting associated with liquids unloading” and remain on site during manual liquids unloading events.<sup>297</sup>

For these reasons, BLM’s proposed requirement that all new wells use technologies and practices that maximize the recovery of gas for sale is an important one that will curb the natural gas waste of the small but significant minority of wells that conduct liquids unloading without plunger lifts. Commenters urge BLM to finalize this standard.

## **B. BLM Should Adopt the Flaring Requirement and Require Optimization of Plunger Lift Systems**

In addition to the requirement that an operator use practices that maximize the recovery of gas for sale, BLM has proposed a requirement that an operator “must flare gas not recovered.” 81 Fed. Reg. at 6,685 (proposed 43 C.F.R. § 3179.204(a)). Additionally, BLM has requested comment “on whether BLM should also require that wells with automatic control systems optimize the automatic settings so as to minimize venting.” *Id.* at 6,655. Both of these requirements are key to ensuring that the control technologies employed by operators are effective and that emissions from liquids unloading operations are minimized. BLM should

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<sup>295</sup> EPA, *Lessons Learned from Natural Gas STAR Partners: Options for Removing Accumulated Fluid and Improving Flow in Gas Wells*, at 12, available at [http://www3.epa.gov/gasstar/documents/ll\\_options.pdf](http://www3.epa.gov/gasstar/documents/ll_options.pdf) (last viewed April 15, 2016) (BP demonstrated that equipping plunger lifts with smarter automation reduced waste from over 4 Bcf/year to less than 0.01 Bcf/year).

<sup>296</sup> See EDF, *Comments on Proposed Regulation Order Article 3: Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities: Part II of Comments 8* (May 22, 2015), available at [http://www.arb.ca.gov/cc/oil-gas/meetings/EDF\\_5-22-15.pdf](http://www.arb.ca.gov/cc/oil-gas/meetings/EDF_5-22-15.pdf).

<sup>297</sup> *Id.*



adopt an optimization requirement and retain the flaring requirement, provided that the operator must maximize all potential recovery of gas before flaring the remainder.

As BLM's 2013 emissions numbers demonstrate, natural gas emissions can still occur even with plunger lifts in place. While 2.16 Bcf of the 2013 emissions were from uncontrolled operations, 1.1 Bcf were from wells with plunger lifts installed. *Id.* at 6,654. Based on the findings of other studies, it is likely that the wells responsible for these emissions were a small minority of the whole. For example, a survey by the American Petroleum Institute and America's Natural Gas Alliance found that 78.9% of wells with plunger lifts do not vent.<sup>298</sup> And based on a combined data set from numerous sources, the Environmental Defense Fund (EDF) found that roughly 8% of wells with plunger lifts accounted for over half the emissions. In fact, several wells with plunger lifts were some of the highest-emitting wells in EDF's overall dataset of wells with and without plunger lifts.<sup>299</sup> These high emissions are "frequently due to plunger lifts that are not operated in an optimal fashion or are malfunctioning."<sup>300</sup>

There are two main solutions to address the problem of continuing emissions from wells with plunger lifts. First, as BLM has proposed, a mobile or stationary flare can effectively reduce vented emissions not addressed by the plunger lift.<sup>301</sup> BLM should retain this requirement, along with a requirement that the flare have a destruction efficiency of 95% or higher. However, as commenters noted above, the capture of natural gas must always take priority over combustion, especially given BLM's statutory obligation to prevent waste. For this reason, the second solution—optimizing plunger lift systems—is especially important. Optimization can increase the effectiveness of plunger lift systems and dramatically reduce their emissions. Such optimization includes smart automation and changes in operational practices.<sup>302</sup> See 81 Fed. Reg. at 6,654–55. Optimization has been shown to reduce emissions from the highest-emitting wells with plunger lifts by over 99%.<sup>303</sup>

While BLM should retain the flaring requirement to ensure that any unrecovered gas is ultimately not emitted, BLM should also adopt a requirement that operators ensure that their plunger lift systems are operating optimally and capturing as much gas as possible.

### **C. BLM Should Prohibit Purging at Existing Wells**

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<sup>298</sup> *Id.* at 9.

<sup>299</sup> *Id.* at 7.

<sup>300</sup> *Id.* at 10.

<sup>301</sup> See EDF, Comments on Proposed Regulation Order Article 3, *supra* note 296. In its comments on a similar rulemaking by the California Air Resources Board, EDF conducted an analysis that found stationary flares to be a more cost-effective practice than mobile flares at wells with automatic plunger lifts.

<sup>302</sup> See EPA, *Lessons Learned from Natural Gas STAR Partners: Options for Removing Accumulated Fluid and Improving Flow in Gas Wells*, *supra* note 295, at 12 (citing BP's reduction of waste from over 4 Bcf/year to less than 0.01 Bcf/year by equipping plunger lifts with smarter automation).

<sup>303</sup> See *id.*; "EDF Liquids Unloading Peer Review," *supra* note 294, at 10 (citing BP, *Managing Venting for Liquids Unloading* (Feb. 11, 2014)).

In the proposed rule, BLM has set certain prohibitions, controls, and reporting requirements with regard to liquids unloading by well purging. *See* 81 Fed. Reg. at 6,685 (proposed 43 C.F.R. § 3179.204(b)-(e)). Namely, BLM has prohibited purging at new wells with certain exceptions, required a person or automatic system to be present on site during purging, and required the submittal of notices and recordkeeping before and after purging. *Id.* These are all positive developments, as well purging is an outdated and wasteful method of liquids unloading that should be phased out. BLM should adopt these requirements, with the added requirement of applying the prohibition on purging to certain high-emitting existing wells.

Currently, the proposed rule applies the prohibition on purging only to “wells drilled after the effective date of this section.” *Id.* (proposed 43 C.F.R. § 3179.204(b)). In supporting its exclusion of existing wells from the prohibition on purging—and in requesting comment on this exclusion—BLM stated that certain alternatives to purging are “less costly to plan and install at the design stage,” and that certain options “may make less sense at a well that is already nearing the end of its productive life.” *Id.* at 6,655. For several reasons, commenters believe that BLM should not categorically exclude existing wells from the prohibition on purging.

First, as discussed above, several datasets have shown that a small minority of wells are responsible for a disproportionate share of venting during liquids unloading events. The data is highly skewed, with 7% of wells operating without plunger lifts accounting for over half the emissions.<sup>304</sup> In other words, the worst actors are responsible for most of the problem. BLM should address this by applying the purging prohibition to these high-emitting wells. A simple approach could be to use the proposed rule’s existing framework. BLM has already proposed that an operator must notify BLM by Sundry Notice if the “cumulative duration of well purging events for a well exceeds 24 hours during any production month,” or if the “estimated volume of gas vented in liquids unloading by well purging operations for a well exceeds 75 Mcf during any production month.” 81 Fed. Reg. at 6,685 (proposed 43 C.F.R. § 3179.204(e)). Where an operator submits such a Sundry Notice, BLM should apply the purging prohibition to the operator. This would efficiently apply the requirement to the wells that need it the most.

Second, if BLM’s concern is with regard to applying the requirement to wells nearing the end of their productive lives, it should revise the applicability language to read “wells completed or recompleted after the effective date of this section.” To extend an older well’s productive life, operators often opt to refracture the well. In order to address the potential waste from these newly productive wells, BLM should amend the purging prohibition to include them.

#### **D. BLM Should Ensure that Operators Report to BLM the Volumes of Gas Captured, Vented, and Flared**

BLM has included a robust set of recordkeeping and reporting requirements with respect to gas vented and flared during liquids unloading events. *Id.* (proposed 43 C.F.R. § 3179.204(c), (d), (e), (g)). Commenters support these requirements and urge BLM to adopt them with two revisions.

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<sup>304</sup> EDF Liquids Unloading Peer Review, *supra* note 294, at 6.

First, under section 3179.204(g) BLM should require operators not only to report the volume of gas vented during liquids unloading, but also to report the volume of gas captured and flared. This data will help BLM and the public to better assess whether the rule's requirements are working and how efficiently operators are maximizing gas capture.

Second, under section 3179.204(c), BLM has required that an operator must retain certain records with respect to purging “for the period required under § 3162.4–1 of this title and make them available to the BLM, upon request.” In order to increase public access to this information, BLM should require the operator to submit this information. As BLM stated in the preamble, “[t]he BLM believes it is appropriate for the public to have access to information on venting and flaring from BLM-administered leases. The BLM also wants to be as responsive to reasonable public requests as possible given resource constraints.” *Id.* at 6,661. The information will be much more available to the public in BLM's hands than on site with the operator.

### **VIII. The Proposed Rule Should be Amended to Include Facilities on Rights-of-Way.**

The Proposed Rule would cover only “onshore wells, tanks, compressors, and other facilities located on a Federal or Indian lease or a federally approved unit or [communitized area]” and those “gas lines [that are] located on a federal or Indian lease or federally approved unit or [communitized area] that are owned or operated by the operator of the lease, unit or communitization agreement.” 81 Fed. Reg. at 6,680 (proposed 43 C.F.R. § 3178.2(a)(5), (6)); *Id.* at 6,682 (proposed § 3179.2 (a)(5), (6)). The proposal would therefore exclude pipelines and associated sources at centralized gathering facilities (such as leaks, compressors, and tanks) that are located on an approved right of way (“ROW”). The Proposed Rule should be amended to cover all facilities present on federal lands and ROWs, as application of requirements such as LDAR and those related to storage vessels and pneumatics to these sources represents a significant opportunity to reduce waste and protect air quality and the climate.

The Proposed Rule's failure to address waste from facilities located on ROWs is arbitrary and capricious. BLM has the authority and duty, under the MLA, to impose requirements on pipelines and other facilities on ROWs such as those in the Proposed Rule. *See* 30 U.S.C. § 185(h)(2) (providing that DOI “shall issue regulations or impose stipulations” related to ROWs granted under the MLA, “which shall include . . . requirements designed to control or prevent [] damage to the environment”). The MLA provides BLM with authority to apply such requirements to both new and existing facilities. *Id.* (“Such regulations shall be applicable to every right-of-way or permit granted pursuant to this section, and may be made applicable by the Secretary or agency head to existing rights-of-way or permits, or rights-of-way or permits to be renewed pursuant to this section.”). Even if other federal agencies may also have authority over various aspects of these facilities, that does not preclude or supersede BLM's obligations under the MLA, 30 U.S.C. §§ 185(h)(2) and 225, as the Supreme Court has recognized that federal agencies may have overlapping authority, *Massachusetts*, 549 U.S. at 531–32.

There is evidence to indicate that emissions from pipelines and related facilities on ROWs that are not covered by the Proposed Rule could be significant. BLM notes that there are

more than 33,700 approved ROWs under the MLA.<sup>305</sup> Presumably there are tens of thousands (or perhaps even hundreds of thousands) of miles of pipelines, as well as numerous other facilities, such as centralized gathering facilities, compressors, and tanks on these rights-of-way.

BLM appears to have made a determination not to cover pipelines and other related facilities in ROWs because it “believes that there are only a small number of sources of lost gas on BLM-managed rights-of-way, and that these sources do not contribute significantly to the problem of waste.” 81 Fed. Reg. at 6,662. However, this conclusion does not appear to be supported by the available evidence, as discussed below. Moreover, BLM admits that “losses from sources located on rights-of-way could be addressed through available technologies and practices, such as LDAR programs.” *Id.*

In the preamble to the Proposed Rule, BLM states that it “analyzed potential losses from compressors, as the likely largest sources of loss located on BLM-managed rights-of-way.” *Id.* BLM provides no basis for its conclusion that compressors are likely the largest source. BLM goes on to estimate that there are 386 compressors on ROWs, stating that “most of these are believed to be small compressors used for gathering systems.” *Id.* Again, BLM provides no basis for its estimate of the number of compressors, nor its assumption that those present on ROWs are mostly small. BLM then estimates that these compressors are responsible for the release of only 47 MMcf on natural gas per year. BLM appears to have arrived at this figure by merely multiplying the emissions factor for small compressors by 386. However, this calculation arbitrarily assumes that *all* compressors on BLM lands are small. Yet the emissions factor for a large compressor is more than 56 times higher than the emissions factor for a small compressor.<sup>306</sup> Even a small number of large compressors on ROWs would dramatically affect this estimate.

BLM also completely fails to analyze the emissions from any other sources on ROWs. Nor does BLM provide any other evidence to indicate that the many thousands of miles of pipelines and associated facilities on ROWs do not contribute significantly to waste on federal lands. BLM must require “all reasonable precautions” to prevent waste from those sources, as required by the MLA. 30 U.S.C. § 225. BLM’s failure to do so is arbitrary and capricious and runs contrary to its statutory duties. BLM should analyze emissions from pipelines and related facilities on ROWs to determine their magnitude. For instance, BLM’s own RIA indicates that, on federal and Indian leases, pipelines account for 1.35 Bcf of natural gas releases, or 42% of fugitive emissions.<sup>307</sup> Based on this estimate, it is likely that the many thousands of miles of pipelines present on BLM-managed ROWs contribute significantly to fugitive emissions on federal lands. BLM must estimate these emissions and determine whether there are any reasonable measures that can be taken to address waste from pipelines.

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<sup>305</sup> *Id.* See also, BLM, *Public Land Statistics, 2014*, Table 3–4 available at, [http://www.blm.gov/public\\_land\\_statistics/pls14/pls2014.pdf](http://www.blm.gov/public_land_statistics/pls14/pls2014.pdf) ((showing 33,722 approved MLA rights-of-way).

<sup>306</sup> RIA, *supra* note 19, at Appendix A-4, 179.

<sup>307</sup> RIA, *supra* note 19, at Appendix A-9, Table 21, 221.

We appreciate that BLM has asked for comment on its proposed approach and strongly urge the Bureau to finalize a rule that applies requirements such as LDAR and those related to storage vessels and pneumatics to the same sources on ROWs. BLM has clear authority, and a duty, under the MLA, to do so. We recommend that BLM apply the full suite of rules to all sources on ROWs immediately upon the effective date of the rule. However, at a very minimum, BLM should require that the Proposed Rule's requirements are applied to centralized gathering facilities and compressors on any newly-granted or renewed MLA ROW, given that these sources likely contribute significantly to fugitive emissions and the agency admits that LDAR would effectively address waste from these sources.

#### **IX. BLM Should Include a Clear, Transparent, and Rigorous System of Enforcement in the Proposed Rule.**

BLM should set forth an explicit, predictable schedule of enforcement actions for non-compliance with the waste prevention rules. The Proposed Rule does not address when enforcement action will be taken, and what penalties or other enforcement tools will be used. BLM should make clear that it will use a full range of tools to ensure compliance with the waste prevention rules.

BLM has broad authority to levy monetary assessments, 43 C.F.R. § 3163.1(a)(1), (2), and civil penalties, *id.* § 3163.2, and use a range of other enforcement actions, including shutting down operations, *id.* § 3163.1(a)(3), entering the lease to perform work at the expense of the operator, *id.* § 3163.1(a)(4), causing forfeiture of the operator's bond, *id.* § 3163.1(a)(5), and cancelling the lease, *id.* §§ 3163.1(a)(5), 3163.2(j). While BLM currently has certain regulatory caps on the level of monetary assessments and civil penalties chargeable by the agency, the Bureau is considering revising these caps upwards. *See* 80 Fed. Reg. 22,148 (Apr. 21, 2015). Any schedule of enforcement actions should incorporate such revisions. Moreover, where actual loss or damage has occurred as a result of the operator's noncompliance, BLM has independent authority to levy monetary assessments corresponding to the actual amount of such loss or damage, which is not governed by the caps. 43 C.F.R. § 3163.1(a)(6). Where an operator's noncompliant actions have resulted in a loss of marketable hydrocarbons, the value of these hydrocarbons should be charged to the operator.

As DOI already does for offshore leases, BLM should set out a clear schedule of enforcement actions which classifies violations as major or minor<sup>308</sup> and sets forth a predictable and escalating series of consequences for noncompliance—whether in the final rule or an accompanying guidance document. In doing so, BLM should have due regard for the likelihood that violations of the waste prevention rules will have immediate, substantial and adverse impacts on the environment, oil and gas production from public lands, and federal and tribal royalty income. *See* 43 C.F.R. § 3160.0–5 (“Major violation means noncompliance that causes

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<sup>308</sup> *See also* 54 Fed. Reg. 8,086 (Feb. 24, 1989) (publishing Onshore Oil and Gas Order No. 4, which sets forth a number of potential violations and classifies them as minor or major); 54 Fed. Reg. 8,100 (Feb. 24, 1989) (publishing Onshore Oil and Gas Order No. 5, which also classifies a number of potential violations as minor or major).

or threatens immediate, substantial, and adverse impacts on public health and safety, the environment, production accountability, or royalty income.”).

Additionally, BLM should include a formalized mechanism in the final rule for members of the public to report and track alleged violations. As noted in Section V above, as a practical matter, it is impossible for government regulators to monitor and inspect equipment and pipelines regularly enough to detect all leaks and venting. Members of the public and watchdog organizations can provide valuable information to BLM staff about the occurrence of leaks and other violations. BLM should take advantage of this information source by creating a formal complaint submission and tracking process. This process should allow members of the public to track inspections and enforcement actions taken in response to their reporting, and BLM should ensure that all credible reports are investigated.

#### **X. BLM Must Narrow or Eliminate the Proposed Exemptions from Royalties.**

BLM indicates that the Proposed Rule would recover only a small fraction of the royalties that could be paid from gas lost on federal leases. *See* 81 Fed. Reg. at 6,627 (noting that if captured, the gas currently lost would yield an additional \$49 million in royalties each year), 6,625 (estimating that the proposed rule will produce only \$9 to \$17 million in royalties/year, depending on what assumptions are used). To meet its waste-control obligations under the MLA, BLM must substantially increase the types of losses that are subject to royalties. Charging royalties on venting and flaring, as well as other losses, represents a reasonable and very effective measure to reduce wasteful practices. Failing to use that tool shortchanges the public and fails to comply with the MLA.

Commenters urge BLM to reconsider and finalize a rule that eliminates the distinction between “avoidable” and “unavoidable” losses, and instead charges royalties on *all* gas vented, flared or otherwise lost. DOI determined in the 1970s that this approach was required by the plain language of the MLA. The same is true today.

Alternatively, BLM at a minimum should adopt a royalty “add-on” for excessive venting and flaring similar to what is discussed in the proposal, but combine the add-on with a rule charging royalties on all venting and flaring. Such an approach would create much more robust incentives to reduce venting and flaring, and to comply with the regulations.

#### **A. BLM Must Make Greater Use of Royalties as a Reasonable Measure to Prevent Waste.**

BLM notes that “market-based mechanisms, such as royalty imposition, can be highly effective policy instruments.” 81 Fed. Reg. at 6,644. If operators must pay royalties on all vented or flared gas, or all losses of gas, it creates a substantial incentive for them to adopt new capture technologies promptly. Imposition of royalties also can be expected to drive down the costs of capture technologies and infrastructure more quickly as contractors compete to meet the increased demand for that equipment. Moreover, companies will better plan future development to minimize venting and flaring if they know it will be subject to royalties. The Congressional

Budget Office (“CBO”) predicts that charging increased royalties would be unlikely to cause any significant reduction in exploration and production on public lands.<sup>309</sup>

The Proposed Rule, however, makes only limited use of royalties as a tool to reduce venting, flaring or other losses. For example, instead of charging royalties on *all* vented or flared gas, the Proposed Rule would charge royalties only where the operator is negligent or has failed to follow regulations or other requirements. 81 Fed. Reg. at 6,682 (proposed 43 C.F.R. §§ 3179.4, 3179.5). This approach fails to require all reasonable precautions to prevent waste, as required by the MLA. 30 U.S.C. § 225.

BLM’s rationale for not taking a more expansive approach does not withstand scrutiny. BLM states that “we do not believe that royalties on flared gas alone would curtail flaring. At current gas prices, oil prices, and royalty rates, applying royalties to flared gas does not provide a sufficient incentive for operators to invest in gas capture to any appreciable degree.” 81 Fed. Reg. at 6,644. This rationale is arbitrary and capricious.

First, imposition of royalties does not have to be the *only* measure used to prevent waste—it can and should be imposed along with the other requirements of the proposed rules. If BLM both (a) strictly limits the amount of venting and flaring permitted and imposes other measures to prevent losses, and (b) also charges royalties on any venting, flaring or losses that do occur, the royalties would supplement the regulatory limits. That royalty supplement would incentivize operators to meet or exceed the limits imposed by the regulatory requirements and thus improve their effectiveness.

Second, the benefit of charging royalties cannot be dismissed because of currently low natural gas prices. BLM’s existing regulations have been in effect for more than 30 years, and the Proposed Rule may also remain in force for decades. Natural gas prices are likely to rebound at some point in the future, which will greatly increase the incentive value of royalties.

Moreover, the possibility that the Proposed Rule will remain in effect for many years underscores the importance of supplementing its requirements with royalty incentives. The regulatory standards in the Proposed Rule, such as the 1,800 Mcf/month flaring limit, are based on BLM’s assessment of what is reasonable in 2016. But a decade from now, capture and control options will likely be available in more locations and at lower costs than today. Assuming the regulation and its 1,800 Mcf limit do not change over that period, operators in the year 2026 will be flaring far more than is reasonable or necessary. But if BLM charges royalties on that flaring, operators are likely to continually improve their gas capture above and beyond what is required by outdated regulatory limits. In other words, the waste-control benefits of imposing royalties on all flared gas are likely to be considerably greater in 2026 than they are today.

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<sup>309</sup> See CBO, *Options for Increasing Federal Income From Crude Oil and Natural Gas on Federal Lands* 33 (Apr. 2016), available at [https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/51421-oil\\_and\\_gas\\_options.pdf](https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/51421-oil_and_gas_options.pdf) (decrease in production from increasing royalty rates “would in all likelihood be small or negligible”).

BLM appears to recognize the value of imposing royalties as a supplement to regulatory requirements: it has requested comment on the concept of a royalty “adder” for new leases that would substantially increase the royalty rate where the operator has routinely flared during the previous year. 81 Fed. Reg. at 6,660. This approach would represent a step in the right direction, but much more is required.

**B. BLM Should Eliminate the Distinction Between “Avoidable” and “Unavoidable” Losses and Charge Royalties on *All* Gas Vented, Flared or Otherwise Lost.**

We believe that a fundamental change is required away from the Proposed Rule’s approach to royalties. BLM should eliminate the distinction between “avoidable” and “unavoidable” losses, *see* 81 Fed. Reg. at 6,629–30; NTL-4A ¶¶ II.A, II.C, and simply charge royalties on *all* gas vented, flared or otherwise lost. Distinguishing between avoidable and unavoidable losses is inconsistent with the plain language of the MLA, and shortchanges the American taxpayers.

DOI took a different approach in the 1970s, and charged royalties for all vented, flared and lost gas under Notice to Lessees 4 (“NTL-4”), the predecessor to NTL-4A. *See Marathon Oil v. Andrus*, 452 F. Supp. 548, 549–50 (D. Wyo. 1978). The agency did so based on the MLA’s requirement that royalties be charged on the “amount or value of the production removed or sold from the lease.” 30 U.S.C. § 226(b), (c). As DOI explained, oil or gas “removed from the lease” includes production “transported from the lease” by pipeline or other conveyance, but also production “disposed of in some other manner.” Production is “removed from the lease,” and thus subject to royalty under 30 U.S.C. § 226, when oil or gas “through an action or failure to act by the lessee, is lost from the lease by escape through venting or leaking, [or] through consumption in a flare.”<sup>310</sup>

When it eliminated the avoidably/unavoidably lost distinction for royalties in NTL-4, DOI recognized that it was departing from the agency’s past practice. DOI, however, reviewed the history of the MLA, which demonstrates that when Congress intended to exempt unavoidably lost oil or gas from royalties, it did so in clear statutory language. As originally enacted, the MLA did not require royalties under certain types of leases for oil and gas “unavoidably lost.” *See* 1976 Solicitor’s Opinion at \*2–\*4. That exemption was not included in 30 U.S.C. § 226, however. *Id.* at \*6. DOI concluded that the agency’s prior administrative practice of distinguishing between avoidable and unavoidable losses for leases under Section 226 had been incorrect, *id.* at \*5, and that charging royalties on all lost gas was “compelled by the statute.” *Atl. Richfield Co.*, 1977 WL at \*5.

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<sup>310</sup> DOI Office of the Solicitor, *Response to Feb. 17, 1976 Request from the General Accounting Office: Interpretation of Mineral Leasing Act of 1920, and Outer Continental Shelf Lands Act Royalty Clause*, 1976 WL 14459, at \*1, \*6 (Oct. 4, 1976) (“1976 Solicitor’s Opinion”); *see also Atl. Richfield Co.*, GS-92-O&G, 1977 WL 410351, at \*8 (June 27, 1977) (DOI decision rejecting challenge to NTL-4).



Section 226 has the same language today, and as such it does not exempt “avoidable” losses from royalties. BLM should impose royalties on all vented, flared or lost oil or gas, without limitation. This approach would generate significant royalty revenue for the public. It also would significantly increase operators’ incentives to avoid such losses, for all the reasons described above.

BLM abandoned its plain language interpretation of the MLA in 1979 when it issued NTL-4A and resurrected the royalty exemption for unavoidable losses. 44 Fed. Reg. 76,600 (Dec. 27, 1979). BLM’s reversal and issuance of NTL-4A followed a district court decision from Wyoming, which ruled that BLM’s decision to assess royalties on unavoidably lost oil or gas was contrary to the MLA. *See Texaco, Inc.*, 135 IBLA 112, 113 (1996) (discussing the history of NTL-4 and NTL-4A). The District of Wyoming reached this holding based DOI’s history of interpreting the statute in a different manner. *Marathon Oil*, 452 F. Supp. at 550–53.

The 1978 district court decision in *Marathon Oil*, however, does not control BLM today. First, as a district court opinion it was never controlling in the 49 states outside Wyoming.<sup>311</sup> Second, *Marathon Oil* is inconsistent with subsequent Supreme Court precedent. The Supreme Court has held that an agency may change its interpretation of a statute, and so long as it provides a reasoned explanation for that change it is entitled to deference. *Fed. Comm’n v. Fox News Television Stations, Inc.*, 556 U.S. 502, 514–16 (2009). The Wyoming district court failed to give DOI the required deference. After the Supreme Court’s 2009 *Fox News* decision, *Marathon Oil* is no longer good law, even in Wyoming.<sup>312</sup>

Thus, BLM should impose royalties on all venting, flaring and other losses of oil and gas under the plain language of 30 U.S.C. § 226.

**C. In The Alternative, BLM Should Assess Royalties on All Vented and Flared Gas, with an “Adder” for Excessive Venting and Flaring.**

Alternatively, BLM at a minimum should charge royalties on all vented and flared gas, combined with a royalty “adder” for excessive venting and flaring. Such an approach could be

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<sup>311</sup> Another district court in California ruled that NTL-4 was invalid as applied to oil and gas used on-lease for production purposes. *Gulf Oil Corp. v. Andrus*, 460 F. Supp. 15, 17–18 (C.D. Cal. 1978) (cited in 81 Fed. Reg. at 6,629). *Gulf Oil* did not address the MLA’s royalty requirements for unavoidably lost oil and gas. *Id.*

<sup>312</sup> *Marathon Oil* is not controlling for another reason. Nine years after that decision, in 1987, Congress enacted FOGRMA, 30 U.S.C. §§ 1701–1758. FOGRMA provides BLM with a mechanism to charge royalties on all venting, flaring and losses of oil and gas that was not part of the MLA at the time of the *Marathon Oil* decision. FOGRMA states that a lessee is liable for royalty payments “on oil or gas lost or wasted from a lease site when such loss or waste is due to . . . the failure to comply with any rule or regulation, order or citation issued” under the mineral leasing laws. 30 U.S.C. § 1756. BLM can apply this provision by revising its Proposed Rule to impose a blanket prohibition on *any* venting, flaring or other losses of oil or gas, but provide that if the operator complies fully with the regulatory provisions no penalties or other sanctions will be imposed other than an assessment or royalties.

done by (a) defining “avoidable losses” to include *all* venting and flaring,<sup>313</sup> with (b) a royalty adder imposed on new leases when gas is vented or flared as the result of operator negligence, or when it exceeds requirements imposed by the regulation (e.g., greater than 1,800 Mcf/month). As contemplated in BLM’s proposal, the adder would increase the royalty on all production removed or sold from the lease: for example, a 4% adder would increase the royalty rate on all production from 12.5% to 16.5%. *See* 81 Fed. Reg. at 6,660.

As explained above, this would provide a powerful incentive for operators to adopt new capture technologies promptly without burdening BLM with reviewing and revising its rules as frequently as would be necessary otherwise. An adder would also substantially increase the incentive for operators to ensure that they are complying with the other requirements of the regulations. Further, an adder will not impose an unreasonable burden on companies. Companies will simply adjust their bids on leases to reflect that they will no longer be subsidized for the expense of limiting their venting and flaring. In contrast, the Proposed Rule exempting most such losses from royalties is contrary to the MLA and fails to ensure that operators use “all reasonable precautions” to prevent waste.

## **XI. Variances.**

If BLM chooses to allow states and tribes to obtain variances from part or all of the Proposed Rule, *see* 81 Fed. Reg. at 6,686 (proposed 43 C.F.R. § 3179.401), the variance provision must be strengthened.<sup>314</sup>

First, the requirement that variances may be granted only if a state or tribe’s regulations “meet or exceed[]” the Rule’s requirements is critical. *Id.* (proposed 43 C.F.R. § 3179.401(b)). A variance would never be appropriate if the alternative was less effective in reducing waste than the Proposed Rule. We support BLM including criteria that must be included in variance requests. *Id.* (proposed 43 C.F.R. § 3179.401(a)(2)(i)–(iv)). These criteria will aid BLM in determining whether to grant a variance. But BLM must clarify how it will use these criteria to make such a determination, based on quantifiable criteria that can be reviewed by the public.

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<sup>313</sup> BLM has the authority to define all venting or flaring as “avoidable losses” on existing leases. The lease form sets the royalty *percentage rate* according to a specific figure (e.g., 12.5%) or “as specified in regulations at the time this lease is issued.” Form 3100-11 § 2. But the lease does not limit the *method of calculating the royalty* to what was provided in the regulations in effect at the time the lease is issued. *See id.* (providing that “royalties must be computed in accordance with regulations on production removed or sold,” without reference to the date of lease issuance).

<sup>314</sup> The Joint Environmental Commenters appreciate that the Proposed Rule does not allow individual operators to obtain variances, unlike BLM’s hydraulic fracturing rule. 43 C.F.R. § 3162.3-3(k). Individual operator variances defeat the Proposed Rule’s purpose of nationwide consistency. *See, e.g.,* 81 Fed. Reg. at 6,627, 6,644, 6,647, 6,665. They are difficult to enforce, because they potentially create a patchwork of regulatory requirements. They also increase BLM’s administrative burden, because there are far more operators to request variances than there are states and tribes.

In addition, the Proposed Rule appropriately provides that variances can be granted from individual provisions of the Rule, and within discrete geographic areas, without granting a variance from the entire Rule or within an entire State. *Id.* (proposed 43 C.F.R. § 3179.401(a)(1)). The fact that a state or tribe has equally strong regulations applying to some, but not all, sources should not justify granting the state or tribe a categorical variance from all aspects of the Rule.

We are concerned, however, that the provision as written lacks transparency, provides no public process, would be difficult to enforce, and is much too vague. We therefore ask BLM to: (1) provide public notice and process on variance requests; (2) eliminate the administrative review exemption; (3) provide for federal enforcement with a formalized role for public reporting of violations and suspected leaks; (4) identify criteria for granting a variance; and (5) specify when and why BLM would rescind or modify a variance.<sup>315</sup>

**A. BLM Should Increase Transparency by Requiring Public Notice and Comment.**

The Proposed Rule's variance provision does not provide any public process. *See* 81 Fed. Reg. at 6,686 (proposed 43 C.F.R. § 3179.401). It does not even require notice to the public, including operators, when a state or a tribe requests a variance. Because they may apply statewide, variances will have broad impact on residents. The parties most knowledgeable about, and most impacted by state and tribal regulations will be unable to provide BLM with relevant information about whether a variance should be granted.

The lack of any public process runs directly counter to President Obama's directive that his "Administration is committed to creating an unprecedented level of openness in Government." 74 Fed. Reg. 4,686, 4,686 (Jan. 21, 2009). "Public engagement enhances the Government's effectiveness and improves the quality of its decisions. Knowledge is widely dispersed in society, and public officials benefit from having access to that dispersed knowledge." *Id.*

DOI implements these goals through its Open Government Initiative. Improving transparency around extractive industry royalty payments is a centerpiece of the Initiative, as part of a global effort to "strengthen the accountability of natural resource revenue reporting[.]"<sup>316</sup> The Initiative also sets goals for improving notice and increasing participation. *See id.* at 16–17, 21. The Proposed Rule directly contradicts to these goals.

BLM should create a transparent process for notice and public comment on state and tribal variance proposals. First, when it receives a variance request, a BLM State Office should

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<sup>315</sup> BLM should also clarify whether tribes are subject to the same process as states, given BLM's unique trust responsibility towards tribes and existing regulations that arguably allow tribal variances. *See* 25 C.F.R. § 211.29.

<sup>316</sup> DOI, *Open Government Plan 3.0* at 12 (June 2014), available at <https://www.doi.gov/sites/doi.gov/files/migrated/open/upload/USDO-Open-Government-Plan-3-0-Accessible-6-13-2014.pdf>.

provide notice both on its website and in the Federal Register. Second, there should be a 60-day comment window running from the date notice is provided. Third, BLM should hold public hearings on the variance request.

Finally, a BLM State Director should provide substantive responses to all comments she receives alongside the State Director's final decision on the variance request. A decision to exempt all federal or tribal wells in an entire jurisdiction could dramatically affect whether the goals of the Proposed Rule are met and should not be made without the information that a public notice and comment process provides. For instance, BLM notes that over 90% of flaring on federal leases occurred in North Dakota, South Dakota and New Mexico. *See* 81 Fed. Reg. at 6,619. A variance of flaring provisions in any one of these states could significantly alter the flaring reductions achieved by the Proposed Rule if there is any evidence that such a variance would not, in fact, ensure that the operators in the jurisdiction "meet or exceed[]" the BLM standards.

#### **B. BLM Should Eliminate the Administrative Review Exemption.**

Further reducing transparency, the Proposed Rule provides that the State Director's decision to grant or deny a variance "is not subject to administrative appeal under 43 C.F.R. part 4." 81 Fed. Reg. at 6,686 (proposed 43 C.F.R. § 3179.401(b)). The DOI has a well-established process for reviewing State Director decisions through the Office of Hearings and Appeals and the Boards of Indian and Land Appeals. The Proposed Rule provides no explanation for this provision, and given the importance of a decision on whether to grant a variance has on the public, we can see no reason to exempt variance decisions from the same procedures that apply to other BLM decisions. This exemption will likely result in interested parties appealing instead to federal courts, which will likely result in a more costly and lengthy proceeding. This exemption should be eliminated in the final Rule.

#### **C. Any Variance Granted Must Be Practically Enforceable.**

The Proposed Rule does not address how enforcement is impacted by a variance. BLM should clarify that it retains authority to enforce the Rule and any state law approved under the variance. Although states and tribes should also be allowed to enforce their regulations, BLM is in the best position to oversee venting and flaring on federal lands. States may lack the resources to expand their enforcement programs to federal lands or they may have enforcement priorities that differ from those of BLM. Tribes may also lack enforcement resources if they have historically relied on federal enforcement. And states' and tribes' enforcement programs may be less successful than BLM's. It is therefore crucial that BLM maintain complete authority to enforce state regulations that are the basis for a variance on federal lands. Such coordinated activity between state and federal regulators is hardly unprecedented. For example, in Colorado, the state Oil and Gas Conservation Commission ("COGCC") has a memorandum of

understanding with BLM describing how the agencies will coordinate their administration of dual permitting systems of federal lands.<sup>317</sup>

Moreover, BLM should provide a mechanism for members of the public to be involved in enforcement. As a practical matter, it is impossible for government regulators to monitor and inspect equipment and pipelines regularly enough to detect all leaks and venting. The public can play an active role and be an incredibly valuable source of information about where leaks and other violations may be occurring. Some members of the public may even have access to leak-detection technologies such as OGI. BLM should take full advantage of monitoring by citizens and watchdog organizations and create a formal complaint process for the public to submit information about likely violations. Under this process, BLM should be required to investigate all credible complaints filed by the public. Additionally, members of the public should be able to track BLM inspections and enforcement actions that relate to the allegations that they report. Joint Environmental Commenters fully support a more detailed proposal for citizen enforcement submitted by Earthworks et al. that discusses the role citizen groups can play in enforcement and third-party LDAR verification using OGI technology.

#### **D. Variances Should Only Be Granted Based on Clear, Quantifiable Conditions.**

The Proposed Rule's criteria for granting variances are too vague. Successful cooperative federalism regimes must include clear criteria to ensure that state programs meet federal baselines.<sup>318</sup> Yet the Proposed Rule states only that the State Director should consider "all relevant factors," and must determine that the state or tribal regulations "meet[] or exceed[] the requirements of the provision(s)" from which a variance is requested, and are "consistent with the terms of the affected Federal or Indian leases and applicable statutes." 81 Fed. Reg. at 6,686 (proposed 43 C.F.R. § 3179.401(b)).

BLM should first clarify what factors are "relevant." Relevant factors should include:

- volume of venting reduced (including total gas, methane, and VOC volume);
- amount of flaring reduced;
- impact on royalties;
- frequency of inspections;
- timeframe for repairing leaks;
- what equipment, processes, and components are covered by the state or tribe regulations;
- any loopholes or exceptions in the state and tribal regulations;
- although BLM should maintain primary enforcement authority, the state or tribe's proven effectiveness in enforcing its regulations;
- the state or tribe's proven effectiveness in cooperating with federal regulators in other regulatory endeavors;

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<sup>317</sup> BLM Colo. State Office, U.S. Forest Serv., Rocky Mountain Region, & COGCC, *Memorandum of Understanding* at ¶¶ B, H, I (2009), available at [http://www.oilandgasbmps.org/docs/CO119\\_blm\\_cogcc\\_usfs\\_permitting\\_mou\\_2009.pdf](http://www.oilandgasbmps.org/docs/CO119_blm_cogcc_usfs_permitting_mou_2009.pdf).

<sup>318</sup> See Robert L. Glicksman, *From Cooperative to Inoperative Federalism: The Perverse Mutation of Environmental Law and Policy*, 41 Wake Forest L. Rev. 719, 740–41 (2006).

- penalties assessed for regulatory violations;
- whether waste reductions are greater than those achieved under the Rule;
- any administrative burdens on federal officials caused by granting the variance, such as BLM staff being responsible for enforcing different regulatory regimes in different areas under their jurisdiction; and
- any demonstrable administrative burdens on state or tribal officials absent the variance.

BLM should also clarify that “meet[ing] or exceed[ing]” the Rule’s requirements is a *quantitative* issue rather than a qualitative assessment. States should be required to demonstrate that the volume of total natural gas waste, methane emissions, VOC emissions, and flaring will be equal to or lower than the volumes allowed under the rule BLM finalizes. This must be based on more than the state or tribe’s regulatory text. States and tribes should be required to provide data proving the volumes of gas captured in prior years. The mere fact that a state or tribe has regulations addressing waste is insufficient.

Finally, BLM should add “and regulations” after “and applicable statutes” in proposed 43 C.F.R. § 3179.401(b), because federal and Indian leases are also subject to federal regulations. BLM should also clarify that the applicable statutes and regulations include not only those governing BLM’s own operations, but also those of other federal agencies, such as EPA.

#### **E. BLM Should Specify When and Why It Will Modify or Rescind a Variance.**

The Proposed Rule provides that “BLM reserves the right to rescind a variance or modify any condition of approval.” 81 Fed. Reg. at 6,686 (proposed 43 C.F.R. § 3179.401(d)). BLM should review each variance every time there is any change in a state regulation that is the basis for the variance, and at least every two years, in order to ensure that the state’s provisions still satisfy the criteria of “meet[ing] or exceed[ing]” the Rule and that the variance thus warrants being continued. For example, if the Rule includes provisions that become stronger over time, then state and tribal variances should also be modified to ensure that they meet or exceed the stronger provisions. Analogously, if a state or tribe adopts stronger regulations after their variance is approved, their variance should be modified to reflect this. Receiving a variance should not prevent states and tribes from adopting more stringent requirements over time.

BLM should also provide the same transparent notice and comment procedure when a variance is modified that is described above for when the variance is first granted.

## **XII. The Social Costs of Methane and Carbon.**

The Joint Environmental Commenters support BLM including the social costs of methane (“SCM”) and carbon (“SCC”) in its cost-benefit analysis. *See* 81 Fed. Reg. at 6624–25. As multiple courts have recognized, doing so is necessary to accurately calculate the Proposed Rule’s costs and benefits. Moreover, it is appropriate for BLM to use separate metrics for the SCM and the SCC, because of scientific distinctions between methane and carbon’s impacts. Finally, we support BLM’s reliance on Marten et al.’s study for calculating the SCM, although we encourage BLM to build on its conservative estimates to better incorporate a complete picture of the benefits of methane emissions reductions.

NRDC, along with several other organizations, submitted thorough comments analyzing EPA's approach to the social cost of methane and carbon in the agency's NSPS rule.<sup>319</sup> Because BLM follows the same approach as EPA in these comments, we fully incorporate these comments by reference. We also briefly summarize key points of that analysis below.

**A. BLM Must Assess Both the Benefits of Reducing Methane Emissions and the Costs of Increasing Carbon Dioxide Emissions.**

It is necessary for BLM to consider the social costs of both methane and carbon in order to accurately calculate the Proposed Rule's costs and benefits. Although courts review an agency's "cost-benefit analysis deferentially," *Nat'l Ass'n of Home Builders v. EPA*, 682 F.3d 1032, 1040 (D.C. Cir. 2012), it is arbitrary and capricious for agencies to overlook a major cost or benefit associated with a regulation, *see, e.g., Sec. Indus. & Fin. Mkts. Ass'n v. U.S. Commodity Futures Trading Comm'n*, 67 F. Supp. 3d 373, 432–33 (D.D.C. 2014). BLM thus cannot omit the benefits of methane emissions reductions or the costs of carbon emissions from its analysis.

Courts have recognized this, and required agencies to consider the benefits associated with greenhouse gas emissions reduction for nearly a decade. The Ninth Circuit held that an agency's "decision not to monetize the benefit of carbon emissions reduction was arbitrary and capricious." *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1203 (9th Cir. 2008). The court explained that the agency "cannot put a thumb on the scale by undervaluing the benefits and overvaluing the costs of more stringent standards," which it did by failing to analyze the benefits of carbon emissions reductions. *Id.* at 1198. Although the agency had some discretion in its approach, the court explained that "the value of carbon emissions reduction is certainly not zero." *Id.* at 1200.

Just as cost-benefit analyses cannot omit the benefits of greenhouse gas emissions reductions, they also cannot omit the costs of greenhouse gas emissions caused directly and indirectly by an agency action. *High Country Conservation Advocates v. U.S. Forest Serv.*, 52 F. Supp. 3d 1174, 1189–93 (D. Colo. 2014) (*HCCA*). As the *HCCA* court explained, the SCC is an "available . . . tool . . . expressly designed to assist agencies in cost-benefit analyses associated with rulemakings[.]" *Id.* at 1190. In that case, the agency had included the SCC in its draft analysis, but omitted it from the final analysis. *Id.* at 1190–91. However, the agency continued to quantify the benefits of the fossil-fuel extraction at issue. *Id.* at 1191. The court thus overturned the agency's analysis because "[i]n effect the agency prepared half of a cost-benefit analysis, incorrectly claimed that it was impossible to quantify the costs, and then relied on the anticipated benefits to approve the project." *Id.*

The *HCCA* court is not alone. At least three other district court cases have held that agencies must assess the impacts of combusting fossil fuels when they approve their extraction.

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<sup>319</sup> Env'tl Def. Fund, Inst. for Pol'y Integrity at N.Y. Univ. School of L., NRDC, & Union of Concerned Scientists, *Joint Comments on the Social Cost of Carbon and Social Cost of Methane* 36 (Dec. 4, 2015).

*Diné Citizens Against Ruining Our Env't v. U.S. Office of Surface Mining Reclamation & Enft* [(“OSMRE”)], 82 F. Supp. 3d 1201, 1212–17 (D. Colo. 2015), *partially vacated and appeal dismissed as moot on other grounds*, 2016 WL 1237955 (10th Cir. Mar. 30, 2016); *WildEarth Guardians v. OSMRE*, No. CV 14-103-BLG-SPW, 2015 WL 6442724, at \*7 (D. Mont. Oct. 23, 2015), *report & recommendation adopted in part*, 2016 WL 259285, at \*2 (D. Mont. Jan. 21, 2016); *WildEarth Guardians v. OSMRE*, 104 F. Supp. 3d 1208, 1229–31 (D. Colo. 2015).

BLM appropriately followed the requirements identified by these court decisions in its cost-benefit analysis. The Bureau used the SCM to estimate the benefits of the methane emissions reductions caused by the Proposed Rule under a range of potential scenarios.<sup>320</sup> And it used the SCC to estimate the costs of carbon dioxide emissions caused by the Proposed Rule resulting in more natural gas being captured and combusted.<sup>321</sup> We support BLM taking these common sense steps to paint a complete picture of the costs and benefits of the Proposed Rule, including its impact on greenhouse gas emissions.

Moreover, accurately calculating the costs and benefits of greenhouse gas emissions is consistent with two Secretarial Orders. Secretarial Order 3226, which was reinstated by Secretarial Order 3289, requires BLM to “consider and analyze potential climate change impacts when . . . making major decisions regarding the potential utilization of resources . . . includ[ing] . . . management activities associated with oil, gas and mineral development on public lands[.]”<sup>322</sup> Similarly, Secretarial Order 3289 requires BLM to “provide state-of-the-art science to better understand the impacts of climate change” and “develop a unified greenhouse gas emission reduction program.”<sup>323</sup> Accurately analyzing state-of-the-art science about the climate impacts of a major decision to update regulations managing oil and gas development on public lands is fully compatible with, and likely required by, these Secretarial Orders.

## **B. BLM Must Use Distinct Values for the SCM and the SCC.**

Methane and carbon dioxide are distinct greenhouse gases with different atmospheric lifetimes, chemical reaction pathways, and radiative forcing effects.<sup>324</sup> As the U.S. Forest Service recently explained, because “SCC values are designed to be applied only to carbon dioxide emissions and not methane emissions[.] . . . it is not necessarily appropriate to apply SCC values to . . . emissions for methane.”<sup>325</sup> Indeed, at least twelve published studies, the earliest of which was published in 1993, have calculated the SCM.<sup>326</sup> In addition to their

<sup>320</sup> See RIA, *supra* note 19, at 5, 7, 32–42, 130, 137, 149.

<sup>321</sup> See *id.* at 4, 5, 32, 75, 182.

<sup>322</sup> Secretarial Order No. 3226, *supra* note 126, at § 3.

<sup>323</sup> Secretarial Order No. 3289, *supra* note 126, at §§ 1, 4(b).

<sup>324</sup> Nyhre & Shindell, IPCC, *supra* note 20, at 672–74, 676–77, 731.

<sup>325</sup> U.S. Forest Serv., *Rulemaking for Colorado Roadless Areas: Supplemental Draft Environmental Impact Statement* at E-25 (Nov. 2015), available at [http://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/fseprd485194.pdf](http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd485194.pdf).

<sup>326</sup> Alex L. Marten et al., *Incremental CH<sub>4</sub> and N<sub>2</sub>O Mitigation Benefits Consistent with the US Government’s SC-CO<sub>2</sub> Estimates*, 15 Climate Policy 272, 279 (2015) (citing eleven prior studies estimating the SCM).



different impacts on climate change, carbon dioxide and methane also have different non-climate impacts. For example, methane accelerates tropospheric ozone formation, while carbon dioxide does not.<sup>327</sup> And carbon dioxide contributes directly to ocean acidification, but methane does not.<sup>328</sup>

BLM recognizes as much in the RIA, which repeats analysis initially conducted by EPA.<sup>329</sup> The alternative to using distinct values for the SCM and the SCC is to calculate the SCM by multiplying the SCC by methane's GWP.<sup>330</sup> But there are many drawbacks to this approach.<sup>331</sup> Several studies have found that it undervalues the SCM because it ignores non-linear relationships between emissions and monetized damages.<sup>332</sup> Moreover, methane has greater radiative forcing, but a shorter atmospheric lifetime, than carbon dioxide.<sup>333</sup> Thus, relative to carbon dioxide, methane has much greater climate impacts in the near term than in the long term. As the IPCC explains, "user related choices such as the time horizon can greatly affect the numerical values [of GWP] for CO<sub>2</sub> equivalents."<sup>334</sup> Because a GWP-based approach to calculating the SCM requires making value judgments inherent in these user-related choices, this can result in undervaluing the SCM. As EPA explains, "the temporal independence of the GWP could lead the GWP approach to underestimate the [SCM] with a larger downward bias under higher discount rates."<sup>335</sup>

It is thus appropriate for BLM to use distinct values and methodologies for the SCM and the SCC. We support BLM following EPA's lead and recognizing the importance of this distinction. Alternatives such as a GWP-based approach would substantially undervalue the Rule's benefits, and result in an inaccurate cost-benefit analysis. Furthermore, we urge BLM to use a 20-year GWP of 87 because a short-term measure of climate impacts is most effective when considering policies that can avoid significant warming within the time horizon of the United States' international commitment to reduce greenhouse gas emissions.

### **C. BLM's SCM Methodology Is Sound, but Could Be Improved.**

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<sup>327</sup> J. Jason West et al., *Global Health Benefits of Mitigating Ozone Pollution with Methane Emission Controls*, 103 Proc. Nat'l Academy of Sci. 3988, 3988 (2006).

<sup>328</sup> See EPA, *Ocean Acidity* (May 2014), [https://www3.epa.gov/climatechange/pdfs/print\\_acidity-2015.pdf](https://www3.epa.gov/climatechange/pdfs/print_acidity-2015.pdf).

<sup>329</sup> See RIA, *supra* note 19, at 33 (explaining that subsequent discussion is "pulled directly from" EPA's regulatory impact analysis for the proposed NSPS rule); see also EPA, *Regulatory Impact Analysis of the Proposed Emission Standards for New and Modified Sources in the Oil and Natural Gas Sector* (Aug. 2015), available at [https://www3.epa.gov/airquality/oilandgas/pdfs/og\\_prop\\_ria\\_081815.pdf](https://www3.epa.gov/airquality/oilandgas/pdfs/og_prop_ria_081815.pdf) ("EPA Proposed OOOOa RIA").

<sup>330</sup> *Id.* at 35.

<sup>331</sup> See *id.*

<sup>332</sup> *Id.* at 36.

<sup>333</sup> Nyhre & Shindell, IPCC, *supra* note 20, at 618.

<sup>334</sup> *Id.* at 714.

<sup>335</sup> RIA, *supra* note 19, at 36.

In the RIA, BLM calculates the SCM using an analysis conducted by Marten et al., which uses the same techniques as the Interagency Working Group (“IWG”) developed to estimate the SCC.<sup>336</sup> It is reasonable and advisable for BLM to rely on this study because, although it takes a conservative approach, it represents the first set of published SCM estimates in peer-reviewed literature that is consistent with the modeling assumptions and methodology used by the IWG.<sup>337</sup> The IWG is an interagency team of experts charged with developing a metric for estimating the SCC.<sup>338</sup> Moreover, it has already been used by EPA on multiple occasions.

Marten et al. builds on the IWG’s methodology by using the same three integrated assessment models, five socioeconomic emissions scenarios, equilibrium climate sensitivity distribution, three constant discount rates, and aggregation approach.<sup>339</sup> Thus, the key assumptions underlying Marten et al.’s methodology have already been thoroughly vetted through the IWG’s transparent, consensus driven, and publically reviewed process.<sup>340</sup> Although Marten et al. use the same basic assumptions and methodology as the IWG’s SCC estimates, Marten et al. account for methane’s unique properties, including its atmospheric lifetime, radiative forcing, and the nonlinear linkages between methane emissions and monetized damages.<sup>341</sup> It thus avoids the disadvantages inherent in a GWP-based approach.

EPA, which BLM acknowledges is the expert agency in such matters,<sup>342</sup> has thoroughly vetted Marten et al.’s approach, and now consistently relies on it in rulemakings. In addition to the peer review that Marten et al.’s article underwent prior to publication, EPA conducted its own peer review, which agreed with Marten et al.’s estimates, methodology, and results.<sup>343</sup> Thus, EPA chose to rely on Marten et al. as the basis for its estimates of the SCM in the Regulatory Impact Analysis for its proposed NSPS rule,<sup>344</sup> and for its proposed municipal solid waste landfill NSPS rule.<sup>345</sup>

Given the strong credentials supporting the use of Marten et al., and EPA’s strong endorsement, we support BLM’s reliance on Marten et al. However, we note that Marten et al. takes a conservative approach, and likely underestimates the SCM. First, because it is based on the IWG’s SCC model, Marten et al. shares the IWG’s limitations, including omitting some

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<sup>336</sup> *Id.* at 32, 37. Note that EPA’s regulatory impact analysis refers to the paper as “Marten et al. (2014),” because it relied on a pre-publication version of the paper put online in 2014, prior to print publication in 2015.

<sup>337</sup> *Id.* at 37.

<sup>338</sup> *Id.*

<sup>339</sup> Env’t Def. Fund et al., *supra* note 319, at 36.

<sup>340</sup> *Id.*

<sup>341</sup> *Id.*

<sup>342</sup> See RIA, *supra* note 19, at 40.

<sup>343</sup> *Id.* at 39.

<sup>344</sup> See EPA Proposed OOOOa RIA, *supra* note 329, at 4-14 to 4-16.

<sup>345</sup> EPA, *Regulatory Impact Analysis for the proposed Revisions to the Emission Guidelines for Existing Sources and Supplemental Proposed New Source Performance Standards in the Municipal Solid Waste Landfills Sector* at 4-5 to 4-15 (Aug. 2015), available at [www3.epa.gov/airtoxics/landfill/20150810\\_landfills\\_ria.pdf](http://www3.epa.gov/airtoxics/landfill/20150810_landfills_ria.pdf).

damages, flawed socioeconomic assumptions, and underestimating the potential for catastrophic damages.<sup>346</sup> Moreover, IWG, and thus Marten et al., assumes climate adaptation over time, but there is less opportunity for adaptation to the more rapid methane-induced warming.<sup>347</sup> Marten et al. also ignores methane's contribution to tropospheric ozone formation, which is a public health hazard and suppresses vegetation growth.<sup>348</sup> And the paper does not fully reflect the effects of methane oxidizing in the atmosphere and becoming carbon dioxide.<sup>349</sup> Finally, Marten et al., and thus BLM for the purposes of its RIA, assume that methane's 100-year GWP is 25.<sup>350</sup> As explained above, this is an outdated figure based on AR4. *See supra* Section II.B. BLM should instead rely on the updated 100-year GWP value of 36 from AR5.<sup>351</sup>

Thus, although it is reasonable for BLM to rely on Marten et al. for its SCM analysis, BLM should further refine Marten et al.'s analysis by addressing these issues that result in undervaluing the SCM. In particular, BLM should fully account for the fact that methane oxidizes in the atmosphere to become carbon dioxide. BLM is already accounting for methane oxidizing through combustion in calculating the Rule's costs. There is no reason not to do so when calculating the Rule's benefits, as well.

#### **XIV. Pneumatic controllers and Pumps**

Pneumatic controllers and pumps in oil and gas production account for a very large quantity of the oil and gas sector's total methane waste. EPA's 2016 GHG Inventory estimates nationwide emissions of 2.7 million metric tons of methane from this equipment just at wellpads, or 27% of all methane from the oil and gas sector, in 2014.<sup>352</sup> BLM estimates a total of 7.83 Bcf of natural gas was lost from pneumatic pumps and controllers from federal and Indian leases.<sup>353</sup> This figure is an underestimate, as described below.

Given the high level of waste of natural gas from pneumatic controllers and pumps, it is critical that BLM address this class of equipment. Joint Commenters support BLM's proposed standards requiring operators of federal and Indian leases to replace high-bleed continuous-vent pneumatic controllers with low-bleed devices, and to replace pneumatic chemical injection pumps (CIPs) with non-emitting pumps or control emissions from the CIPs. These are feasible, proven measures that will reduce loss of gas at very low (or negative) cost.

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<sup>346</sup> *See* Env't'l Def. Fund et al., *supra* note 319, at 36 (discussing *id.* at 28–35); *see also* Sierra Club, *Comments on the Interagency Working Group's (IWG) Technical Support Document: Social Cost of Carbon (SCC) for Regulatory Impact Analysis Under Executive Order 12866*, Dkt. No. OMB-2013-0007-0083 at 7–15 (Feb. 26, 2014), *available at* <https://www.regulations.gov/#!documentDetail;D=OMB-2013-0007-0083>.

<sup>347</sup> Env't'l Def. Fund et al., *supra* note 319, at 36–37.

<sup>348</sup> *Id.* at 37.

<sup>349</sup> *Id.*

<sup>350</sup> *See* RIA, *supra* note 19, at 38 n.42.

<sup>351</sup> Nyhre & Shindell, IPCC, *supra* note 20, at 714.

<sup>352</sup> 2016 GHG Inventory, *supra* note 1, at Annex 3, Tables A-127 and A-134.

<sup>353</sup> 5.37 Bcf from pneumatic controllers and 2.46 Bcf from pneumatic pumps. *See* RIA, *supra* note 19, at 207 and 211.

However, BLM's proposal does not address the most wasteful type of pneumatic equipment: intermittent-bleed pneumatic controllers. We urge BLM to finalize standards that address loss of gas and harmful emissions from these devices. Furthermore, BLM should strengthen standards for continuous-bleed pneumatic controllers and CIPs by ensuring that operators use technologies which do not vent gas, capture gas vented from these devices for beneficial use, or control emissions from the devices, whenever possible.

#### **A. Pneumatic Controllers**

BLM proposes to require operators of federal and Indian leases to replace existing high-bleed, continuous-vent pneumatic controllers with low-bleed controllers, which vent less than 6 standard cubic feet per hour (scfh), with certain exceptions. Operators must replace the high-bleed controllers within 1 year, except at wells with estimated remaining productive life of less than 3 years, where operators have 3 years to replace controllers. 81 Fed. Reg. at 6,684 (proposed 43 C.F.R. § 3179.201).

We support this proposed provision. As described below, it is very feasible and highly cost-effective, as proven by several analyses and the simple fact that two states have required essentially identical measures, and no evidence has emerged of problems occurring as a result of the mandated replacements.

However, BLM should go further to reduce unnecessary and wasteful loss of gas from pneumatic controllers. First, the proposed standards for continuous-bleed pneumatic controllers are not sufficiently protective, because they only limit loss of gas by requiring that continuous-bleed controllers be "low-bleed," meaning that they vent, according to a manufacturer's specification, 6 scfh or less. While lower emitting than "high-bleed" pneumatic controllers, low-bleed controllers often emit at higher than 6 scfh. We recommend BLM strengthen its approach, and recognize that emissions from all types of pneumatic controllers can be essentially eliminated at many types of facilities using two basic approaches:

- Use inherently zero-venting technologies, such as air driven pneumatic controllers or electric controllers, especially solar-powered controllers and actuators, instead of natural gas-driven pneumatic controllers.
- Reduce venting from natural gas driven pneumatic controllers by routing bleed gas to a process, such as a vapor recovery unit (VRU) or on-site fuel line, or a control device.

Accordingly, the loss of gas from low-bleed controllers – due to both their normal operations and improper functioning – can be minimized. Nevertheless, BLM does not require operators to even consider the use of these zero-emitting technologies or the simple strategy of routing vented gas to beneficial use, even though these approaches may be feasible at many leases. Finally, BLM's proposal does not require operators to ensure that pneumatic controllers are performing properly, so wasteful loss of gas from improperly functioning devices will continue indefinitely in many cases.

Second, the proposed standards only apply to continuous-bleed pneumatic controllers and thus do not address wasteful loss of gas from intermittent-bleed pneumatic controllers, which are a very significant source of methane loss. The two approaches described above – inherent zero-emitting technologies and route to process/control – can also apply to intermittent-bleed controllers, so venting from these devices can be essentially eliminated at many sites. Additionally, as outlined for continuous bleed devices, above, operators should be required to ensure the devices are properly functioning as part of compliance demonstrations.

In sum, BLM should strengthen the proposed standards, as discussed in detail below, by requiring operators to use zero-venting technologies, such as air-driven or electric controllers, at oil and gas facilities where this is feasible. At facilities where zero-emitting technologies are not feasible, operators should be required to capture gas vented from all gas-driven pneumatic controllers and route them to a VRU or use them for fuel gas, if appropriate equipment is available on site. If this equipment is not available, but a control device is available, gas vented from all pneumatic controllers should be routed to that device. Finally, for those sites where none of these approaches are feasible, EPA should require that any pneumatic controllers (both continuous-bleed and intermittent-bleed) be low-venting, and require that operators regularly inspect and measure emissions from controllers to ensure that they are performing as such.

### **1. Current Loss from Pneumatic Controllers and Emissions Factors.**

According to the 2016 GHG Inventory, pneumatic controllers in oil and natural gas production vented over 2.7 million metric tons of methane in 2014.<sup>354</sup> Because of the methodology EPA used to estimate production emissions for pneumatic controllers, these estimates represent emissions only from wellpads (venting from pneumatic controllers at natural gas gathering compressor stations are not included).<sup>355</sup> BLM estimates that 5.37 Bcf of gas was vented from pneumatic controllers at federal and Indian leases in 2013. 81 Fed. Reg. at 6,651. However, this is certainly a significant underestimate for two reasons.

First, BLM's estimate is based on the 2015 GHG Inventory.<sup>356</sup> Based on industry reports of equipment counts to EPA's Greenhouse Gas Reporting Program (GHGRP), EPA found that emissions estimates for pneumatic controllers were dramatically underestimated in the 2015 GHG Inventory (and in earlier editions of the GHG Inventory). Therefore, EPA significantly increased its estimate of emissions from pneumatic controllers at oil and gas production sites in the most recent draft of the GHG Inventory.<sup>357</sup> Second, analysis of GHGRP data shows that emissions from these devices are disproportionately high in four Western US oil and gas

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<sup>354</sup> 2016 GHG Inventory, *supra* note 1.

<sup>355</sup> *Id.* at 3-75—3-77.

<sup>356</sup> See RIA, *supra* note 19, at 77.

<sup>357</sup> Emissions from pneumatics in the oil and gas production segment increased from 0.8 million metric tons in the 2015 GHG Inventory to 2.7 million metric tons in the 2016 GHG Inventory. Compare EPA, *U.S. Greenhouse Gas Inventory Report: 1990-2013*, at A-133 and A-126, available at <https://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2015-Main-Text.pdf> ("2015 GHG Inventory"), with 2016 GHG Inventory, *supra* note 1, at Annex 3, Tables A-129, A-136, A-137, and A-149.

production basins where most wells are on federal or Indian leases.<sup>358</sup> This indicates that wells that BLM administers lose more gas from these devices, per unit of oil or gas production, than the nationwide average. Combined, these factors indicate that BLM's figure for loss of natural gas from pneumatic controllers is far too low.

Furthermore, several recent studies have also shown that pneumatic controllers often improperly vent more gas, or far more gas, than they are designed to vent. In order to minimize waste, BLM must consider this information and finalize standards that ensure that waste of gas from pneumatic controllers is truly minimized.

Both EPA's GHGRP and the GHG Inventory use emissions factors derived<sup>359</sup> from the EPA / Gas Research Institute study (EPA/GRI study) of natural gas industry methane emissions published in the 1990s.<sup>360</sup> Allen et al. (2013) reports results on measurements of emissions from 305 pneumatic controllers at 150 natural gas production sites.<sup>361</sup> Alarming, Allen et al. (2013) reports that pneumatic controllers that site operators classified as "low-bleed controllers" and intermittent-bleed controllers vented on average of 270% and 29%, respectively, more methane per controller than the emissions factor used by EPA to calculate venting for the GHG Inventory and the GHGRP.<sup>362</sup>

Allen et al. (2015) reports the results of a new set of measurements of venting from 377 pneumatic controllers at 65 oil and natural gas production sites (largely natural gas sites).<sup>363</sup> These measurements indicated a lower overall average level of venting for individual pneumatic controllers (5.5 scfh of whole gas) than reported by Allen *et al.* (2013), the GHG Inventory, or the GHGRP.<sup>364</sup> Allen et al. (2015) attribute the lower venting per controller (as compared to Allen et al. (2013)) primarily to the large number of controllers they observed that did not emit. Allen et al. (2015) also reports that the well sites they surveyed had 2.7 pneumatic controllers per well,<sup>365</sup> which is a higher figure than the ratio of natural gas production pneumatic controllers to gas wells (1.8) in the GHG Inventory.<sup>366</sup> As Allen et al. (2015) discuss, it is possible that well site operators are often not counting intermittent-bleed pneumatic controllers that rarely actuate, such as controllers for emergency shut-off devices, in their counts of pneumatic controllers for purposes such as greenhouse gas reporting.<sup>367</sup> Previous research efforts may have similarly

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<sup>358</sup> Clean Air Task Force, *Pneumatic Controller Emissions on Federally Managed Lands* (2016)

<sup>359</sup> Clean Air Task Force, *Comments on Expert Draft of 2014 US Greenhouse Gas Inventory*, 3.

<sup>360</sup> GRI-EPA, *Methane Emissions from the Natural Gas Industry, Volume 12: Pneumatics*, (June 1996), available at: [http://epa.gov/gasstar/documents/emissions\\_report/12\\_pneumatic.pdf](http://epa.gov/gasstar/documents/emissions_report/12_pneumatic.pdf).

<sup>361</sup> Allen 2013, *supra* 214

<sup>362</sup> *Id.*

<sup>363</sup> D.T. Allen et al., *Methane Emissions from Process Equipment at Natural Gas Production Sites in the United States: Pneumatic Controllers*, 49 *Environ. Sci. Technol.* 633–640 ("Allen 2015 Pneumatics").

<sup>364</sup> *Id.*

<sup>365</sup> *Id.*

<sup>366</sup> 456,140 gas wells and 834,919 controllers. See 2016 GHG Inventory, *supra* note 1, at Table A-134.

<sup>367</sup> Allen 2015 Pneumatics, *supra* note 363, at 633–40.

undercounted these controllers. When these controllers are included, average emissions per controller decreases, but Allen et al. (2015)’s finding regarding pneumatic controller counts balances this effect. However, as we discuss below, emissions from controllers that rarely actuate can be quite significant, due to improperly functioning equipment.

## 2. Data for emissions from specific types of pneumatic controllers.

Data from the GHG Inventory provides information on the distribution of emissions by type of pneumatic controller. As shown in Table 7, the great majority of reported emissions from oil and natural gas production pneumatic controllers originates from intermittent-bleed controllers.

**Table 7**<sup>368</sup>

2014 reported national emissions		Metric tons methane			
		Low Bleed	Intermittent Bleed	High Bleed	Total
Gas Production	Metric tons methane (%)	40,000 (4%)	932,000 (84%)	132,000 (12%)	<b>1,104,000</b>
	Number of controllers (%)	226,280 (27%)	579,633 (69%)	29,006 (3%)	<b>834,949</b>
Oil Production	Metric tons methane (%)	48,000 (3%)	1,332,000 (85%)	188,000 (12%)	<b>1,568,000</b>
	Number of controllers (%)	300,940 (25%)	868,079 (72%)	42,221 (3%)	<b>1,211,240</b>

As mentioned above, Allen *et al.* (2013) reported that emissions from low-bleed controllers and intermittent-bleed controllers in natural gas production emitted on average 270% and 29%, respectively, more methane per controller than the emissions factor used by EPA to calculate emissions for the GHGRP.<sup>369</sup> This suggests that nationwide emissions for these types of controllers in the production segment are higher, by similar percentages, than reported by the GHGRP. This would make the strikingly high portion of emissions from intermittent-bleed controllers even higher.

Allen 2015 Pneumatics reports very low emissions per “intermittent vent” pneumatic controller – 2.2 scfh.<sup>370</sup> While this figure is lower than they emissions factor for intermittent-bleed controllers used in the USGHGI and GHGRP, these emissions factors are not comparable,

<sup>368</sup> EPA, 2016 GHG Inventory, *supra* note 1, at Tables 3-42 and 3-52, Annex 3 Tables A-134 and A-127.

<sup>369</sup> Allen 2015 Pneumatics, *supra* note 363.

<sup>370</sup> *Id.*



primarily because Allen 2015 Pneumatics systematically treated many devices which were probably functioning improperly (and therefore high-emitting) intermittent-bleed controllers as continuous-bleed controllers in their analysis.<sup>371</sup>

***Specified bleed rate and behavior vs. observed venting rate.*** Several recent studies report that pneumatic controllers often vent more than they are designed to vent.

- Allen 2015 Pneumatics. As part of this study, an expert group reviewed the behavior of the 40 controllers with the highest vent rates in the study, which were responsible for 81 percent of the gas loss from all controllers in the study (377 controllers). The expert group concluded that “many of the devices in the high emitting group were behaving in a manner inconsistent with the manufacturer’s design.”<sup>372</sup> Of the forty highest venting controllers, 28 were judged to be operating incorrectly due to equipment issues. The study reported that many devices observed to actuate, i.e. intermittent-bleed controllers, also vented continuously.
- Allen et al. (2013). As noted above, this study reported that venting rates from low-bleed pneumatic controllers were 270% higher than EPA’s emissions factor for these devices – 5.1 scfh.<sup>373</sup> Many low-bleed controllers are specified to vent far less than this: EPA’s Gas Star program has documented many low-bleed controller models with bleed rates of less than 3 scfh,<sup>374</sup> and of course the emissions factor used by EPA for low-bleeds (1.39 scfh), 40 C.F.R. § 98.233(a), implies that many low-bleeds are expected to vent at a very low level. Assuming that some low-bleed controllers are performing as specified, the high emissions rate observed by Allen *et al.* (2013) implies that many “low-bleed pneumatic controllers” are in fact venting more than the design threshold of 6 scfh for low-bleeds, 40 C.F.R. § 60.5390(c)(1) – or much more than 6 scfh – simply to raise the average venting rate to 5.1 scfh.
- City of Fort Worth Study. The Fort Worth Study measured venting rates from 489 intermittent pneumatic controllers, using infrared cameras, Method 21, and a HiFlow sampler for quantification, and found that many of these controllers were venting constantly and at very high rates, even though these devices were used to operate separator dump valves and were not designed to vent in between actuations.<sup>375</sup> Average venting rates for the controllers in the Fort Worth Study were at a rate that approaches the average venting rate of a high-bleed pneumatic controller. According to the study

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<sup>371</sup> D. McCabe and L. Fleischman, (2015) *Average Emissions from Intermittent-Vent Pneumatic Controllers as Reported by Allen et al. (2015)*,

<sup>372</sup> Allen 2015 Pneumatics, *supra* note 363.

<sup>373</sup> Allen *et al.* (2013) *supra* note 214.

<sup>374</sup> EPA, *Lessons Learned from Natural Gas Star Partners: Options for Reducing Methane Emissions from Pneumatic Devices in the Natural Gas Industry*, Appendix 1 (2006), available at [http://www3.epa.gov/gasstar/documents/ll\\_pneumatics.pdf](http://www3.epa.gov/gasstar/documents/ll_pneumatics.pdf).

<sup>375</sup> ERG and Sage Environmental Consulting, LP, *City of Fort Worth Natural Gas Air Quality Study, Final Report*. (July 13, 2011) (“Fort Worth Study”), available at <http://fortworthtexas.gov/gaswells/default.aspx?id=87074>.



authors, these emissions were frequently due to improperly functioning or failed controllers.<sup>376</sup>

- British Columbia Study. The Prasino study of pneumatic controller emissions in British Columbia also noted the potential for maintenance issues to lead to abnormally high bleed rates.<sup>377</sup> Although the researchers did not identify a cause for these unexpectedly high venting rates, the results are consistent with the observation that maintenance and operational issues can lead to high emissions.
- The Carbon Limits Study. The Carbon Limits Report confirms that pneumatic controllers often function improperly and vent at excessive rates.<sup>378</sup>

Natural gas-driven pneumatic controllers vent a very large amount of gas nationwide and at federal and Indian leases; BLM's estimate of gas loss from pneumatic controllers (5.37 Bcf / year), 81 Fed. Reg. at 6,682, is certainly a significant underestimate. Intermittent-bleed pneumatic controllers contribute a large portion of these emissions. Furthermore, research indicates that pneumatic controllers often function improperly and as a result vent significantly more gas than they are designed to vent.

There are multiple approaches to significantly reduce gas loss from pneumatic controllers. BLM must therefore issue standards to minimize these wasteful losses. BLM proposes to require operators of federal and Indian leases to replace existing high-bleed, continuous-vent pneumatic controllers with low-bleed controllers, which vent less than 6 standard cubic feet per hour (scfh), with certain exceptions. Operators must replace the high-bleed controllers within 1 year, except at wells with estimated remaining productive life of less than 3 years, where operators have 3 years to replace controllers. 81 Fed. Reg. at 6,684 (proposed 43 C.F.R. § 3179.201).

These augmented standards build upon a proven and successful approach taken by EPA and States to reduce emissions from continuous-bleed pneumatic controllers. As BLM's calculations show, these standards are extremely cost-effective: BLM calculates that the standards will reduce methane emissions by over 43,000 tons per year, while saving industry \$3 million - \$7 million per year (depending on the year and the discount rate used). 81 Fed. Reg. at 6,652. These figures are certainly underestimates, since they are based on an underestimate of the current loss of gas from pneumatic controllers, as discussed above. Finally, the savings to

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<sup>376</sup> See *id.* at 3-99 to 3-100 ("Under normal operation a pneumatic valve controller is designed to release a small amount of natural gas to the atmosphere during each unloading event. Due to contaminants in the natural gas stream, however, these controllers eventually fail (often within six months of installation) and begin leaking natural gas continually").

<sup>377</sup> See, The Prasino Group, *Determining bleed rates for pneumatic devices in British Columbia: Final Report*, 19 (Dec. 18, 2013) ("Certain controllers can have abnormally high bleed rates due to operations and maintenance; however, these bleed rates are representative of real world conditions and therefore were included in the analysis.").

<sup>378</sup> EDF, *Oil and Natural Gas Sector Leaks Peer Review Responses of Environmental Defense Fund*, 17 (June 16, 2014).

society as a whole are much higher, due to the benefits of reducing methane emissions, as BLM has noted.

As we have documented previously, calculations by States and in other reports have confirmed these low costs.<sup>379</sup> The record also shows that it is very feasible to use low-bleed controllers instead of high-bleed controllers. For example, Colorado standards first required operators to replace existing high-bleed controllers with low-bleed controllers in the urban portions of the Denver-Julesburg basin in 2009.<sup>380</sup> The 2009 Colorado standard contained provisions allowing operators to keep high-bleed controllers in service if they showed that doing so was necessary for “safety and/or process purposes.”<sup>381</sup> No operator requested such an exemption,<sup>382</sup> and there is no evidence indicating that these requirements have caused any operational problems. These replacements have reduced annual methane emissions in the Denver-Julesburg basin by thousands of tons per year.<sup>383</sup> Certainly, BLM’s proposal to require that operators replace high-bleed continuous-vent pneumatic controllers with low-bleed controllers is very feasible and cost-effective.

Beyond the standards reflected in BLM’s proposal, it is also feasible to use zero-bleed devices at facilities with access to grid or solar electricity. Indeed, Colorado requires the use of zero-bleed devices at all new facilities where “on-site electrical grid power is being used and use of a no-bleed pneumatic controller is technically and economically feasible.”<sup>384</sup> While Colorado’s requirement is limited to sites where grid power is in use, operators also can utilize solar or other non-grid sources of electricity to power pneumatic controllers, as described below. Similarly, the Ohio EPA recently released a draft general permit that requires all pneumatic controllers located between the wellhead and the point of custody transfer to an oil pipeline or a natural gas transmission line or storage facility to be no bleed or non-gas driven.<sup>385</sup>

Furthermore, BLM should consider reducing waste from pneumatic controllers by routing vented gas from them to a process (i.e., capture or beneficial use of the gas) or a control device. Wyoming requires operators of new and existing pneumatic controllers to either route emissions to a closed loop system or limit emissions to low-bleed levels.<sup>386</sup> BLM’s proposal has also failed to address waste from intermittent-bleed pneumatic controllers in any way. Lastly, BLM has not required operators to ensure that controllers are performing properly, and not wastefully losing gas at rates above design values.

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<sup>379</sup> See Waste Not, *supra* note 18, at 26 and Technical Appendix 2.

<sup>380</sup> 5 C.C.R. § 1001-9 XVIII (2009), available at <https://www.sos.state.co.us/CCR/GenerateRulePdf.do?ruleVersionId=2772&fileName=5%20CCR%201001-9>.

<sup>381</sup> *Id.* § 1001-9 XVIII.C.3 (2009).

<sup>382</sup> Email from Daniel Bon, CDPHE, to David McCabe, Clean Air Task Force, 1 November 2013.

<sup>383</sup> Waste Not, *supra* note 18, at 32.

<sup>384</sup> 5 C.C.R. 1009-1 § XVIII.C.2.a.(ii), *supra* note 381.

<sup>385</sup> Ohio EPA, General Permit 18.1. Template, C.1.(c)(1), *available at* <http://epa.ohio.gov/dapc/genpermit/permitsec.aspx>.

<sup>386</sup> WY Permitting Guidance, *supra* note 221, at 11.

Because BLM has omitted several important sources of natural gas waste for which controls exist, and more effective options for reducing waste exist for many – if not most – pneumatic controllers, BLM must strengthen the proposed standards. Doing so will address waste from intermittent-bleed pneumatic controllers along with better controlling continuous bleed controllers than under BLM’s current proposal.

### **3. BLM Should Consider More Protective Approaches to Reducing Waste from Pneumatic Controllers.**

BLM’s proposed standards fail to properly account for the availability of either zero-venting technologies or approaches to reduce waste by routing vented gas from controllers to process or control. While BLM discusses the use of instrument air and solar-powered controllers, and the practice of routing emissions from pneumatic controllers to a process or control device, 81 Fed. Reg. at 6,651, no clear reasoning is given for not requiring these technologies, despite the fact that they reduce waste more than the use of low-bleed pneumatic controllers, and they can also be used to eliminate wasteful venting from intermittent-bleed pneumatic controllers. The proposed standards themselves are silent on these approaches, despite the fact that these approaches truly minimize waste (or eliminate it altogether): BLM does not even require operators to assess if they are feasible on the lease.

As such, BLM is failing to utilize the many feasible options operators have to minimize waste from pneumatic controllers by using inherently zero-venting technology, by capturing vented gas from controllers for sales or for use on site, or by routing vented gas from controllers to a control device. These options are discussed below.

*Inherently zero-emitting technologies.* Instrument air systems and other inherently non-emitting sources, such as electric actuators, could be feasible at many facilities, despite remote locations. While sufficient electrical service may not be available at many sites, some do have sufficient access,<sup>387</sup> or may be able to use other approaches to generate power, either for instrument air or for electric actuators. Other sites may be able to use closed-loop gas-driven controllers, a different zero-emissions technology.

- Grid connection. At sites that are connected to the electric grid, or with power available nearby, instrument air systems can replace gas driven pneumatic controllers. For even modest facilities, instrument air will be cost-effective when power is available.<sup>388</sup> While connection to the grid may not be the norm at federal and Indian leases, BLM should not ignore this option for those leases where power is available.
- On-site generator. Many sites produce power for on-site use using a natural gas-powered generator. Building out an instrument-air pneumatic system would be feasible in such cases. Beyond a traditional gas-powered generator, innovative technologies can bring electricity to remote sites. For example, thermoelectric generators are available that can

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<sup>387</sup> See 5 C.C.R. 1009-1 § XVIII.C.2.a.(ii), *supra* note 381.

<sup>388</sup> Joint Comments to EPA OOOOa, *supra* note 230, at 91.

be used to convert waste heat in compressor exhaust to electricity at remote oil and gas sites.<sup>389</sup>

- Solar-generated with battery storage. Natural gas-driven devices can be replaced with electric actuators with low electricity requirements. Such devices are engineered by a variety of companies, and the technology continues to advance. One company has installed over 3,000 electric actuators at oil and gas sites in a variety of applications (dump valves, gas lift valves, separators, pressure valves, and compressor scrubbers)<sup>390</sup>. In many geographic locations, the solar resource is sufficient to power these actuators.<sup>391</sup> Another firm has installed hundreds of solar-powered actuator systems since 2008, primarily in Canada.<sup>392</sup>
- Closed-loop pneumatic actuators. Some pneumatic controllers use pressurized natural gas to operate but are designed to vent exhaust gas back into the line, as a “closed-loop” option. Assuming that the device does not leak, this is a zero-vent technology, though it may be limited in applicability.<sup>393</sup>

Electricity availability at sites is increasing and the power required for zero-bleed pneumatic alternatives is decreasing. As a result, many federal and Indian leases will be able to install zero-bleed pneumatic alternatives at low net cost. Thus, BLM should revise its rule to account for the availability of such technologies.

*Route to process or control.* Vented gas from pneumatic controllers can, alternatively, be conserved by routing the gas to a process, such as an on-site VRU or fuel lines for an on-site engine, boiler, or heater. A second option, inferior to routing to process but certainly preferable to uncontrolled venting, is routing the emissions to a control device. The general approach of

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<sup>389</sup> See, e.g. Alphabet Energy, Oil and Gas Products, available at [https://www.alphabetenergy.com/product\\_category/oil-and-gas/](https://www.alphabetenergy.com/product_category/oil-and-gas/).

<sup>390</sup> See e.g. Exlar presentation at Natural Gas Star Annual Implementation Conference, November 18, 2015. Included here as an exhibit, will soon be posted on Gas Star website. Exlar. *Industries and Applications: Oil and Gas Industry* (2014), available at <http://exlar.com/industry/oil-gas-applications/>, <http://exlar.com/pdf/?pdf=/content/uploads/2014/10/Exlar-Eliminates-Methane-Emmissions.pdf>

<sup>391</sup> See, e.g., *id.* at 16.

<sup>392</sup> Calscan, *Bear Solar Control System*, available at, <http://www.calscan.net/pdf/Bear%20Control%20System%201v25.pdf>.

<sup>393</sup> EPA TSD, *supra* note 288, at 131. Note that API, in their comments on EPA’s White Paper on Pneumatic Controllers, corrected EPA’s statement in the White Paper that closed-loop controllers are only applicable “in applications with very low pressure.” API stated, “Zero bleed controllers (integral controllers) are not limited to applications ‘with very low pressure’ and can operate over a wide range of pressures provided that the pressure downstream of the controller is sufficiently lower than the pressure upstream of the controller for the controller to function and allow upstream gas to discharge into the process flow downstream... They are common in high pressure applications.” API, *API Comments on Oil & Natural Gas Sector Pneumatic Devices*, 9 (June 14, 2014).

route to process or control is similar to that BLM has taken in the proposed standards for pneumatic pumps on federal and Tribal leases, 81 Fed. Reg. at 6,684–6,685 (proposed 43 C.F.R. § 3179.202), although as noted below, BLM should strengthen those proposed standards. Wyoming’s recent rules for existing pneumatic controllers in the UGRB allow operators of existing high-bleed controllers to route emissions “into a sales line, collection line, fuel supply line, or other closed loop system.”<sup>394</sup> Some operators have chosen to route emissions from pneumatic controllers to fuel lines in Wyoming.<sup>395</sup> Additionally, the California Air Resources Board (CARB) released a Proposed Regulation Order in February 2016, which would prohibit venting from any continuous-bleed pneumatic controller installed after 1 January 2015.<sup>396</sup> To control emissions from these devices, CARB included as a compliance option: “Collect all vented natural gas with the use of a vapor collection system.”<sup>397</sup> This approach would work for all types of pneumatic controllers.

Furthermore, as with pneumatic pumps, this approach would be very cost-effective, or even save operators money. In the supporting documentation for Proposed NSPS Subpart OOOOa, EPA estimates that the capital and installation cost of routing gas from a pneumatic pump to an existing VRU is \$2,000; the annualized cost is \$285.<sup>398</sup> These cost outlay estimates are equally applicable to the costs of routing gas from a pneumatic controller to process or control. A single intermittent bleed controller, venting at the average rate for pneumatic controllers as estimated by the GHGRP (13.5 scfh), is losing 118 Mcf of natural gas per year to the atmosphere, which has a value (at \$4 per Mcf) of \$473. Therefore, routing gas from intermittent-bleed controllers to a VRU would have a negative cost. If intermittent-bleed controllers are venting at the rates reported in Allen *et al.* (2013), 17.4 scfh, then the cost savings from this approach would be even more striking. Finally, we consider the venting rate estimates from Allen *et al.* (2015), which reported that oil and gas pneumatic controllers vent an average of 5.5 scfh, but also found that sites have an average of 2.7 pneumatic controllers per well. Even for a single well site with just two controllers, below the average, two pneumatic controllers each venting 5.5 scfh are losing 96 Mcf per year, with a value of \$384. The cost of routing two controllers to a VRU would only be slightly higher than the cost of routing a single controllers to the VRU on a small site such as a single well pad, so even with the lower venting rates reported

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<sup>394</sup> 020-020-008 Wyo. Code R. § 6(d).

<sup>395</sup> This approach is described in the Permit Analyses for QEP Energy Company. See Wyoming DEQ, Div. of Air Quality, *Permit Application Analysis: AP-12533, Mesa 3-22 PAD* (Nov. 10, 2011); Wyoming DEQ, Div. of Air Quality *Permit Application Analysis: AP-15216, Mesa 7-8 PAD* (Oct. 22, 2013). These examples were found in a review of a small number (23) of Wyoming oil and gas production facility air permits. Because of the small number of permits that were reviewed, we are unable to estimate how widespread this approach is in Wyoming.

<sup>396</sup> See California Air Resources Board (CARB), *Proposed Regulation Order, Subarticle 13: Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities*, §95668(f), available at [http://www.arb.ca.gov/cc/oil-gas/meetings/Draft%20ARB%20OG%20Regulation\\_Feb%201%202016%20Clean.pdf](http://www.arb.ca.gov/cc/oil-gas/meetings/Draft%20ARB%20OG%20Regulation_Feb%201%202016%20Clean.pdf) (“CARB Proposed Standards for Oil and Gas”).

<sup>397</sup> *Id.* at §95668(f)(6)(A).

<sup>398</sup> EPA TSD, *supra* note 288, at 164.

by Allen et al. (2015), the increased revenue from capturing gas from pneumatic controllers would exceed the cost of doing so.

#### **4. BLM Should Strengthen the Proposed Standards to Address Intermittent-bleed Controllers.**

BLM's proposal does not address intermittent-bleed pneumatic controllers, despite the fact that these devices are the source of the majority of gas lost from pneumatic controllers (see Table 7). BLM does not provide specific justification for allowing intermittent-bleed controllers to continue wasteful venting of natural gas at federal and Indian leases, but instead simply lists intermittent-bleed devices alongside other venting equipment not addressed in the proposal and explaining that,

The proposal does not currently extend to these sources for one of two reasons: Either we do not believe that the source commonly occurs on BLM-administered leases, or we are still reviewing possible approaches to reduce venting from the source.

81 Fed. Reg. at 6,657. Given the ubiquity of intermittent-bleed controllers at oil and natural gas production sites, these devices certainly are commonly present on BLM-administered leases. Therefore we assume that BLM is still reviewing possible approaches from intermittent-bleed pneumatic controllers.

Intermittent-bleed controllers vent large amounts of natural gas from BLM-administered leases. We examined data reported by industry to EPA's GHGRP from four western US oil and gas production basins (San Juan, Piceance, Green River, and Uinta) where production is dominated by BLM-administered leases. We compared data for production from federal leases in these basins, obtained from the Office of Natural Resources Revenue, to data for production in the basins as a whole, to estimate the portion of wells that are on BLM-administered leases in these basins.

From this analysis, we estimate that 63-79% of emissions from these basins originates from BLM-administered wells.<sup>399</sup> Combining this data with the emissions from intermittent-bleed pneumatic controllers in these basins reported to EPA's GHGRP, we estimate that 9.2 – 11.5 Bcf of gas was lost from intermittent-bleed pneumatic controllers at BLM-administered leases, just in these four basins.<sup>400</sup>

Moreover, as noted above, intermittent-bleed controllers often improperly function and vent continuously. For example, Allen 2015 Pneumatics provide time traces of the emissions from the 40 highest-emitting pneumatic controllers that they measured. These 40 controllers represented only 11 percent of the controllers measured in the study, but they accounted for 81 percent of the emissions. At least eleven of these 40 controllers were intermittent bleed

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<sup>399</sup> Clean Air Task Force (2016), "Pneumatic Controller Emissions on Federally Managed Lands."

<sup>400</sup> *Id.*

controllers that were improperly functioning.<sup>401</sup> For example, one controller (i.d. number CZ10-PC01) only actuated twice during a 30-minute measurement period, but emitted (over the entire period) at an average rate of 43.2 scfh of whole gas.<sup>402</sup> Given the fact that venting from individual, supposedly intermittent controllers are significant, and the very large number of such controllers in use, loss of gas from these devices is very substantial and will often be wasteful.

BLM must address this waste. The approaches described above – use of zero-venting technologies and route to process or control – are just as feasible as a means of capturing vented gas from intermittent-bleed controllers as continuous-bleed controllers.

We urge BLM strengthen standards for pneumatic controllers in several respects. First, BLM should require zero-bleed controllers at leases where electricity is available (from the grid or generated on site). Electricity is often available at large production facilities and sites of all sizes in urbanized areas. BLM should also require operators to use solar-powered controllers if feasible, especially for newly developed wellpads. Alternatively, operators should conserve gas by routing vented gas to a process instead of losing it to the atmosphere. The standards should require operators of sites without access to electricity to route gas from pneumatic controllers to a process such as to a VRU or fuel line, if available on site. If routing to a process is not available at a site, operators should route gas to a control device, though this approach is less protective than standards based on zero-bleed devices.

For specific cases where pneumatic controllers are required at sites where neither zero-bleed technology or route to process approaches are feasible, BLM must set standards for all pneumatic controllers (continuous-bleed and intermittent-bleed) that ensure minimization of *actual* loss of gas. It can do so via two improvements. First, BLM should require controllers of both types to vent below six scfh. BLM's proposed standard already would require a lower design bleed rate for continuous-bleed controllers. Properly designed and well-functioning intermittent-bleed controllers can vent below 6 scfh in many applications.<sup>403</sup> Indeed, Wyoming requires that *all* pneumatic controllers emit below 6 scfh, regardless of whether they are continuous-bleed or intermittent-bleed, at new and modified facilities.<sup>404</sup>

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<sup>401</sup> See Allen 2015 Pneumatics, Supporting Information, section S-8. Controllers LB05-PC03, LB05-PC01, LB07-PC02, LB03-PC01, CZ10-PC01, XQ01-PC04, GZ04-PC03, LB07-PC04, AP01-PC12, CZ11-PC01, and CZ08-PC02 all show actuations and were assessed as improperly functioning (i.e., “equipment issues”).

<sup>402</sup> See Allen 2015 Pneumatics, *supra* note 363, at Supporting Information, 94.

<sup>403</sup> In their comments on EPA's 2012 oil and gas new source performance standards, the American Petroleum Institute (“API”) stated, “[a]chieving a bleed rate of < 6 SCF/hr with an intermittent vent pneumatic controller is quite reasonable since you eliminate the continuous bleeding of a controller.” In fact, API advocated intermittent-bleed devices to achieve the 6 scfh bleed rate, rather than continuous low-bleed devices. See API, *Technical Review of Pneumatic Controllers*, 7 (Oct. 10, 2011).

<sup>404</sup> WY Permitting Guidance, *supra* note 221, 11. This requirement is applied to intermittent-bleed controllers in addition to continuous-bleed controllers. See Email from Mark Smith, WDEQ, to David McCabe (September 2014).

In addition, since pneumatic controllers often improperly function and wastefully vent more than designed as discussed above in Section V, BLM must ensure that any controllers venting natural gas continue to operate as designed over their service lifetime. As a first measure, all intermittent-bleed gas-driven controllers must be inspected as part of frequent and comprehensive leak detection and repair (LDAR) surveys to ensure that they are not continuously venting, as we have described above in Section V.A.

Furthermore, pneumatic controllers, when operating properly, vent natural gas, but pneumatic controllers of all types frequently waste gas by venting excessively. BLM must ensure that the venting rate of controllers is regularly measured to ensure that this is not occurring. Such volumetric flow measurements can be done at low cost. CARB's Proposed Regulation Order would require that operators of any continuous-bleed pneumatic controllers which are kept in service measure the actual volumetric vent rate using a high volume sampler, bagging, or calibrated flow measuring instruments beginning in 2018.<sup>405</sup> Any controller venting at a higher rate than 6 scfh must be repaired or replaced within 14 days.<sup>406</sup> Measuring the volumetric or mass flow rate from a pneumatic controller with methods such as a high volume sampler, bagging, or calibrated flow measuring instruments gives a real value for emissions, while hydrocarbon concentration (such as would be measured while carrying out Method 21) is only weakly correlated with emissions.<sup>407</sup> Some leak-detection service providers routinely measure emissions from leaks with high volume samplers,<sup>408</sup> indicating that the cost of these measurements is quite reasonable. BLM should require operators to regularly measure the volumetric flow of emissions from controllers that vent natural gas to the atmosphere as part of their requirement that operators "ensure that pneumatic controllers are functioning with manufacturers' specifications." 81 Fed. Reg. at 6,684 (proposed 43 C.F.R. § 3179.201(d)).

We recognize that certain intermittent-bleed pneumatic controllers should actuate only very rarely. For example, Allen 2015 Pneumatics observed that controllers for emergency shut-off devices made up 12% of the population of controllers that they studied. It may be reasonable to exclude some intermittent-bleed devices from control requirements for vent gas, if operators can demonstrate that actuation is very uncommon. (If facilities have instrument air installed, however, the costs of connecting that air supply to every intermittent-bleed controller are very low, so that should be required.) However, even very rarely actuating controllers should still be subject to monitoring during leak detection inspections to ensure that the devices are not wastefully losing gas even when they are not actuating.

While specific treatment of intermittent-bleed actuators that very rarely actuate may be warranted, the fact that some controllers very rarely actuate cannot be used to justify inaction for the entire class of intermittent-bleed controllers. In addition to the fact that intermittent-bleed controllers frequently function improperly, as discussed above, some simply actuate very frequently. Of the 377 controllers studied by Allen et al. (2015), 24 were intermittent-bleed

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<sup>405</sup> See CARB Proposed Standards for Oil and Gas, *supra* note 396, at § 95668(f)(2)(C).

<sup>406</sup> *Id.* § 95668(f)(2)(D).

<sup>407</sup> Clearstone Engineering *et al.* (2006) at 3.

<sup>408</sup> Carbon Limits, *Quantifying Cost-effectiveness of Systematic Leak Detection and Repair Programs Using Infrared Cameras*, 10 (2014), available at [http://www.catf.us/resources/publications/files/Carbon\\_Limits\\_LDAR.pdf](http://www.catf.us/resources/publications/files/Carbon_Limits_LDAR.pdf).



controllers that actuated at least 10 times during the sampling period, which was typically 15 minutes. Four actuated over fifty times while sampled. These controllers can vent gas at high levels – five of the forty highest venting controllers studied by Allen et al. (2015) are intermittent-bleed controllers that were assessed to be operating properly. Since there are available approaches to avoid this loss of gas, it is wasteful and BLM must issue appropriate standards to avoid this type of waste.

## **B. Pneumatic Pumps**

BLM has proposed standards to minimize waste of natural gas from pneumatic pumps. 81 Fed. Reg. at 6,684 – 6,685 (proposed 43 C.F.R. § 3179.202). Pneumatic pumps use the energy of high-pressure natural gas to pump a liquid, typically venting low-pressure natural gas to the atmosphere. The proposed measures would require operators of federal and Tribal leases to replace pneumatic chemical injection pumps and pneumatic diaphragm pumps with zero-emissions pumps or route the gas vented from the pneumatic pumps to flare devices unless operators notify BLM that doing so is infeasible. 81 Fed. Reg. at 6,684 (proposed 43 C.F.R. § 3179.202(a)-(c)). Notably, these standards do not apply to glycol assist pumps (which often vent *via* the glycol regenerator), so methane and other pollutants from the natural gas powering the pump is ultimately wasted from the vent stack of the dehydrator instead of directly from the pump.<sup>409</sup> We also will discuss BLM’s decision to exempt glycol circulation pumps from the standards. Otherwise, we will generally use the term “pneumatic pumps” to refer to pneumatic chemical injection pumps and pneumatic diaphragm pumps collectively.

We support the proposed measures. BLM estimates that pneumatic pumps of all types, including glycol circulation pumps, lose about 2.5 Bcf of gas per year (81 Fed. Reg. at 6,651), of which 0.65 Bcf is lost from chemical injection pumps, including pneumatic diaphragm pumps.<sup>410</sup> As noted elsewhere in these comments, this is an underestimate, since BLM’s estimate is based on the 2015 GHG Inventory<sup>411</sup> and EPA has significantly increased its estimate of emissions from chemical injection pumps at oil and natural gas production sites in 2016 GHG Inventory.<sup>412</sup> The measures that BLM is proposing will be very inexpensive. The net cost to industry will be less than \$1 million per year (considering costs and increased revenue from conserved gas). 81 Fed. Reg. at 6,653 (subtracting “cost savings” from “total costs”). The measures will conserve about 0.5 Bcf of natural gas per year, preventing 16,000 – 17,000 tons per year of methane pollution. *Id.*

However, BLM must strengthen its proposal in order for the standards to minimize waste. First, zero-emitting pneumatic pumps are generally feasible at well sites, as BLM has

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<sup>409</sup> See API, Technical Review of Pneumatic Controllers,, *supra* note 403, at 12. See also Kimray, Inc., *Glycol Pumps Product Bulletin*, at 3 (July 2011), available at: <https://kimray.com/Portals/0/Documents/PB0004.pdf>.

<sup>410</sup> RIA, *supra* note 19, at 211.

<sup>411</sup> *Id.*

<sup>412</sup> The 2015 GHG Inventory estimated that pneumatic pumps in oil and gas production vented 296 Gg of methane, while the recently released 2016 GHG Inventory estimates that they vented 423 Gg methane. See tables 2015 GHG Inventory, *supra* note 357, at A-126 and A-133, 2016 GHG Inventory, *supra* note 1, at tables A-127 and A-134.

determined. As proposed, nonetheless, BLM has given operators sole discretion to determine if zero-emitting pumps are feasible on leases. Operators who decide that zero-emitting pumps are not feasible must simply submit a Sundry Notice to BLM notifying BLM of their determination. 81 Fed. Reg. at 6,684 (proposed 43 C.F.R. § 3179.202(c)(1)).

Second, the Proposed Rule does not properly utilize the fact that gas vented from pneumatic pumps can readily be routed to equipment that captures or uses the gas. EPA's proposed NSPS Subpart OOOOa allows operators to route vented gas from affected pneumatic pumps to be captured with a VRU or routed to use on site, such as a fuel gas line for a compressor or boiler. 80 Fed. Reg. at 56,666 (proposed 40 C.F.R. § 60.5393a(b)). These options, which we collectively refer to as "route to process" below, either return gas into pipelines for sale or use it beneficially on-site, displacing the use of other gas that would have been used instead to heat a boiler or power an engine, etc. As such, they conserve gas and are less wasteful, compared to routing vented gas to a flare. They also reduce pollution, compared to routing emissions to a flare. Unfortunately, BLM's proposal does not allow this option for at leases when operators determine that the use of a zero-emitting pump is not feasible or is economically infeasible. At these leases, if routing to process is feasible but a flare is present, operators would be required to route the gas vented from pneumatic pumps to the flare, despite the availability of the process.

Additionally, when operators who determine that the use of a zero-emitting pump is not feasible or is economically infeasible have a process available at the lease (so gas could be captured or beneficially used) but do not have a flare, they are still free to vent the gas to the atmosphere. This is wasteful since the gas could be captured or used, and harmful since the gas is being vented.

BLM must tighten the proposed standard so operators cannot simply determine themselves that zero-emitting pumps are not feasible on leases. At a minimum, operators should be required to receive assent from BLM for this determination, as is required if operators determine that replacement of pneumatic pumps with zero-emitting pumps would impose such costs that operators would abandon resources. 81 Fed. Reg. at 6,684 – 6,685 (proposed 43 C.F.R. § 3179.202(c)(2)(i)) (stating that the requirements of the standard do not apply in this case if (among other requirements) the operator submits a Sundry Notice to BLM that "Provides an economic analysis that demonstrates, *and the BLM agrees..*").

Additionally, similar to the approach we suggest for pneumatic controllers above in Section XIV, BLM should require when it is determined that zero-emitting pumps are infeasible or overly costly, operators route emissions from pneumatic pumps to a process such as to a VRU or fuel line, whenever it is available on a lease. If routing to a process is not available at a lease, operators should route emissions to a control device, such as an incinerator or enclosed combustor, if present. If a control device is not present, operators should route emissions to a flare, if available. Only if none of these options are available should operators be allowed to vent gas from pneumatic pumps to the atmosphere. This simple hierarchy of decisions will ensure that waste of gas is minimized, and harmful pollution is minimized.

BLM also estimates that glycol assist pumps, also referred to as “Kimray Pumps,” lose 1.81 Bcf of natural gas from federal and Indian leases per year.<sup>413</sup> While control of emissions from these pumps is more complex than control of emissions from chemical injection pumps (because the natural gas used to drive the pump is emitted via the dehydrator vent stack), there are a number of options to reduce emissions from these pumps. EPA has noted that electrification is an option for these pumps (80 Fed. Reg. at 56,627). A secondary option is the use of a low pressure glycol separator, which can separate methane-rich gas from the glycol before it enters the regenerator.<sup>414</sup> If this is done, the gas can be used to fuel the boiler on the regenerator or otherwise consumed for fuel on-site.<sup>415</sup>

For leases where electricity is present (including sufficient electricity generated on-site), BLM should require that glycol circulation pumps not emit any natural gas, since electric pumps are available for this purpose. BLM should consider requiring the use of low pressure glycol separators at other sites, since the methane separated from the glycol in this way can typically be directed to the boiler for the regenerator. It is important to consider that some natural gas dehydrators have emissions controls installed that control emissions of VOC, but do not control emissions of methane. If vented natural gas from a glycol circulation pump is routed into a glycol regenerator, the methane from the natural gas may be emitted to the atmosphere even if there are VOC controls on the dehydrator.

#### **XV. BLM Must Require Operators to Report Losses from Storage Vessels, and Pneumatic Pumps and Controllers, and Separators and Make This Data Available Online.**

BLM should require complete reporting of all waste of natural gas from all equipment at oil and gas leases on Federal and Indian land, including storage vessels, pneumatic pumps and controllers, and separators. As currently written, the reporting provision of section 3179.8 applies only to flaring and venting “from wells.” 81 Fed. Reg. at 6,683 (proposed 43 C.F.R. § 3179.8(a)). Yet, as BLM acknowledges in the preamble, “[c]urrently, relatively little information on waste from venting and flaring at specific sites is directly provided to the public.” *Id.* at 6,661. For this reason, BLM has requested comment on whether to extend reporting requirements to losses of gas from equipment other than wells, “such as from storage vessels or pneumatic controllers and pneumatic pumps. Several other categories of information may also generate public interest.” *Id.* Commenters strongly support extending reporting to all equipment and processes that lose gas on Federal and Indian leases and urge BLM to include such reporting in the final rule. If there is enough gas waste from these sources to warrant establishing controls for them, then reporting this waste to BLM and the public is just as warranted.

Requiring operators to report releases from all equipment and processes on Federal and Indian leases will help reduce waste, minimize environmental impacts, and enable the agency to accurately assess whether it should further regulate this source of waste in the future. Right-to-

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<sup>413</sup> RIA, *supra* note 19, at 211.

<sup>414</sup> Kimray, Inc., *Glycol Pumps Product Bulletin*, *supra* note 409, at 3.

<sup>415</sup> *Id.*

know laws are widely credited as having enormous environmental benefits—both in terms of increasing information available to the public, regulators, and industry and in actually reducing the reported releases— while imposing relatively little expense on industry or the implementing agency. For example, EPA’s Toxics Release Inventory (TRI) is widely acknowledged as having enormous environmental benefits by providing industry with cheap incentives to reduce emissions simply through public reporting.<sup>416</sup> Ten years after the TRI’s establishment, “toxic emissions in the United States had been reduced by more than 60 percent, even though the U.S. economy boomed during the 1990s. Indeed, many companies actually saved tens of millions of dollars in the process of reducing or eliminating their toxic emissions.”<sup>417</sup> And as EPA found in a recent review of the TRI program, many corporations have used TRI data “to track their environmental progress, and in some cases have included these analyses in their sustainability reports.”<sup>418</sup>

Similarly, the data BLM collects through this reporting will help the public and the agency better understand the quantity of gas that is wasted from all parts of the oil and gas industry. As BLM states in the preamble to the rule, expanding the proposed reporting requirements will help improve transparency about the use, or in fact waste, of public resources. 81 Fed. Reg. at 6,661. With this data, BLM and other stakeholders will be able to evaluate whether these gas losses are worth targeting for reduction or if limited resources should be spent elsewhere. Currently there is an incredible dearth of data on these releases. Many facilities are exempt from EPA reporting requirements because they qualify as minor sources, and the oil and gas extraction industry does not yet report to the TRI. While individually these sources may escape regulatory oversight from EPA, BLM has a statutory obligation to address the waste from these sites. Collecting and making this information public is the first step towards determining if BLM must take additional regulatory action to carry out its duties to reduce waste, minimize environmental impacts, and verify royalty payments.

BLM has also requested comment “on the types of data that are most useful to the public: and “the most efficient and least burdensome approaches to making appropriate data available to the public.” *Id.* Commenters propose that operators enter and submit data on gas losses in an online electronic form posted to a BLM-hosted public website, in order that BLM and the public

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<sup>416</sup> Environmental Working Group, *Stolen Inventory (National): About the TRI* (Jan. 2006), <http://www.ewg.org/research/stolen-inventory-national/about-tri>; Center for Progressive Reform, *CPR Perspective: The Public Right to Know* available at <http://www.progressivereform.org/perspright.cfm> (“right to know laws have become one of the most innovative and effective means for protecting the environment and public health”); EPA, *Pollution Prevention Policy Statement* (Jun. 2003) (“pollution prevention is motivated in part by public information, one of EPA’s most important tasks is to collect and disseminate “user-friendly” data that measures progress in reducing waste at its source”) available at <https://www.epa.gov/p2/pollution-prevention-policy-statement>.

<sup>417</sup> Stuart L. Hart, *Capitalism at the Crossroads: Next-Generation Business Strategies for a Post-Crisis World* 27 (3d ed. 2010).

<sup>418</sup> EPA, *The Toxics Release Inventory in Action: Media, Government, Business, Community and Academic Uses of TRI Data* 10 (2013), available at [https://www.epa.gov/sites/production/files/documents/tri\\_in\\_action\\_final\\_report\\_july\\_2013.pdf](https://www.epa.gov/sites/production/files/documents/tri_in_action_final_report_july_2013.pdf).

may review and download the data in a standardized spreadsheet format. Providing the data online will increase transparency, accountability, and promote informed participation by the public. This Administration has committed itself and all executive departments and agencies to these goals as part of its Open Government Directive from 2009.<sup>419</sup> Further, the BLM's default position should be to make data available online and in a machine readable format pursuant to President Obama's Executive Order 13,642.<sup>420</sup>

The most useful data would include the operator name, name and location of lease, source of emissions (i.e., equipment or process), type of emission (e.g., flaring, venting, leak), date of emission, and volume of emission. To that same end, in other instances in the Proposed Rule where BLM has required the submittal of a Sundry Notice, BLM should require the simultaneous submittal of relevant emissions data through the form, in order that this information is also publicly available in a standard format online. *See, e.g., id.* at 6,685 (proposed 43 C.F.R. § 3179.204(e)).

Having data in a standard format will allow for quick public access and easier analysis and is already the preferred format of similar release reporting, such as the TRI and the Texas Commission on Environmental Quality's (TCEQ) Air Emission Event Report Database.<sup>421</sup> As BLM has stated, the status quo only allows for public access to data "through a request under the Freedom of Information Act (FOIA), but this can be more time-consuming and costly than accessing information publicly posted on Web sites." 81 Fed. Reg. at 6,661. Requiring electronic reporting in a standardized format to a public website will correct this shortcoming and increase public access to important information.

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<sup>419</sup> Memorandum from Peter Orszag, Director, White House Office of Management and Budget, to the Heads of Executive Departments and Agencies (Dec. 8, 2009).

<sup>420</sup> Exec. Order No. 13,642, Making Open and Machine Readable the New Default for Government Information (May 9, 2013).

<sup>421</sup> *See* TCEQ, Air Emission Event Report Database, <http://www2.tceq.texas.gov/oce/eer/> (last visited April 21, 2016).

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**UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT**

<b>Waste Prevention, Production</b>	)	
<b>Subject to Royalties, and</b>	)	<b>Docket No. BLM-2016-0001-0001,</b>
<b>Resource Conservation</b>	)	<b>RIN 1004-AE14</b>
	)	
	)	<i>Via Google Drive</i>
	)	<i>&amp; FedEx Overnight Delivery</i>
		<i>April 22, 2016</i>

**APPENDIX  
TO APRIL 22, 2016 COMMENTS OF CLEAN AIR TASK FORCE ET AL. REGARDING  
BLM'S PROPOSED WASTE PREVENTION, PRODUCTION SUBJECT TO  
ROYALTIES, AND RESOURCE CONSERVATION RULE,  
81 FED. REG. 6,616 (FEB. 8, 2016)**

*This Appendix consists of attachments to comments submitted by Clean Air Task Force et al. on BLM's proposed Waste Prevention rule. Due to their large volume and size, these documents have been uploaded to a shared document site, Google Drive. They can be accessed and downloaded at:*

*<https://drive.google.com/folderview?id=0B1HlooQCQ8QgbylOekZGMEhWRDg&usp=sharing>*

*Joint Environmental Commenter shave also submitted these through certified FedEx shipping on the enclosed USB drive. Below is a list of all the documents included on the enclosed USB drive. All of these documents are cited in our comments, and we fully intend for BLM to incorporate them into its rulemaking docket for consideration.*

*Please feel free to contact us with any questions or concerns.*

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