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The Honorable Tracy Stone-Manning, Director  
U.S. Department of the Interior  
Bureau of Land Management  
1849 C St. NW  
Room 5646  
Washington, DC 20240

**RE: Project Canary Comments on the Bureau of Land Management’s Waste Prevention,  
Production Subject to Royalties, and Resource Conservation Rule  
Docket RIN 1004-AE79 Docket No. BLM-2022-0003**

Dear Director Stone-Manning:

Project Canary PBC (“Project Canary”) is pleased to comment on the Bureau of Land Management’s (“BLM”) Proposed Rule: Waste Prevention, Production Subject to Royalties, and Resource Conservation (the “Proposed Rule”).

Project Canary, based in Denver, Colorado, is a mission-driven B Corporation accountable to a triple bottom line of people, planet, and profit. We believe it is possible to create a financially successful, self-sustaining business that “does well and does good.” Our goal is to mitigate climate change by enabling the oil and gas industry to operate on a cleaner, more efficient, more sustainable basis. Our proven technologies provide real-time emissions monitoring and rigorous, independent certification of oil and gas well sites for responsible operations. Project Canary solutions help energy companies collect, manage, operationalize, and benefit from real-time environmental data.

The foundation of Project Canary’s solutions is continuous monitoring technology. When combined with an integrated, real-time dashboard, it provides companies with rapid detection and notification of unintentional releases from oil and gas locations, significantly reducing the duration of leaks and thereby reducing losses of valuable product. The monitoring technology we provide has been in use since 2019 on oil and gas facilities across the United States in every major producing basin. Our technology alerts companies as soon as a leak threshold is reached. Companies then determine the cause of the leak and take further action as appropriate. The use of continuous real-time monitoring in this manner significantly reduces emissions from the oil and gas sector when compared with traditional intermittent Optical Gas Imaging (“OGI”) camera inspection programs. Project Canary is engaged in a partnership with the Payne Institute at the Colorado School of Mines to develop a collaborative environment for oil and gas companies and other stakeholders to share best practices and insights garnered through continuous monitoring.<sup>1</sup>

## I. Executive Summary

Project Canary applauds BLM’s Proposed Rule and respectfully submits the enclosed comments identifying how BLM could more effectively leverage advanced technology to fulfill the agency’s statutory mandates. We agree that the existing Notice to Lessees and Operators of Onshore Federal and Indian Oil and Gas Leases: Royalty or Compensation for Oil and Gas Lost (“NTL-4A”) has proven inadequate to prevent venting, flaring, and leaks that waste the public’s resources and assets. As noted in the Proposed Rule’s preamble,<sup>2</sup> NTL-4A does not reflect the significant technological developments that have occurred in the four decades that have passed since it was originally issued—developments such as the dramatic advancements in leak detection, monitoring, and measurement technology that are now commercially available to reduce waste. Thus, we strongly support BLM’s incorporation of “relevant advances in technology” in the Proposed Rule as a factor for “reasonable measures to prevent waste.” This inclusion provides a critical update while maintaining flexibility to account for further technological developments.

While the Proposed Rule addresses significant shortcomings in the existing regulation of resource waste, the Rule could be improved to further BLM’s resource conservation and compensation, and stewardship goals in at least three ways. First, the Final Rule should explicitly state that operator use of direct measurement and continuous monitoring technology constitutes a “reasonable precaution[] to prevent waste” and a “prudent and reasonable step[] to avoid waste” for purposes of defining avoidably lost gas. Second, the Final Rule should incentivize operator use of direct measurement and continuous monitoring technology in waste minimization plans and Leak Detection and Repair (“LDAR”). Third, BLM should require operators, where feasible, to measure, not estimate, and then report volumes of gas lost to leaks, venting, and flaring. Adoption of these recommendations would allow BLM to better leverage advanced leak detection technology and further its waste prevention and resource stewardship mandates.

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<sup>1</sup> <https://www.minesnewsroom.com/news/colorado-school-mines-payne-institute-public-policy-launch-responsible-gas-initiative>

<sup>2</sup> <https://www.federalregister.gov/d/2022-25345/p-23>

## II. Background

Project Canary is one of a growing number of companies providing site-level direct measurement and continuous monitoring technology to help oil and gas operators rapidly identify gas leaks from production equipment. Project Canary's system quantifies and uploads high-fidelity data to the cloud, 24 hours a day, 7 days a week. Strategically placed sensors on oil and gas well sites measure wind speed and wind direction, detect gas leaks, and transmit that data in real-time to operators. These high-fidelity data allow operators to pinpoint leaks quickly and initiate prompt corrective action.

These advantages result in cost savings to the operator by preventing additional escaped gas and by facilitating compliance with multiple agency regulations, including the Proposed Rule. For these reasons, direct measurement and continuous monitoring technology have been broadly adopted in the energy sector. A recent U.S. Government Accountability Office investigation found that entities within the oil and gas industry are already voluntarily utilizing continuous monitoring technologies to detect and reduce methane emissions.<sup>3</sup> Project Canary alone has deployed over 1,800 devices serving more than 55 customers across the U.S., Canada, and the U.K. in the upstream, midstream, and LNG segments, and in utility markets.

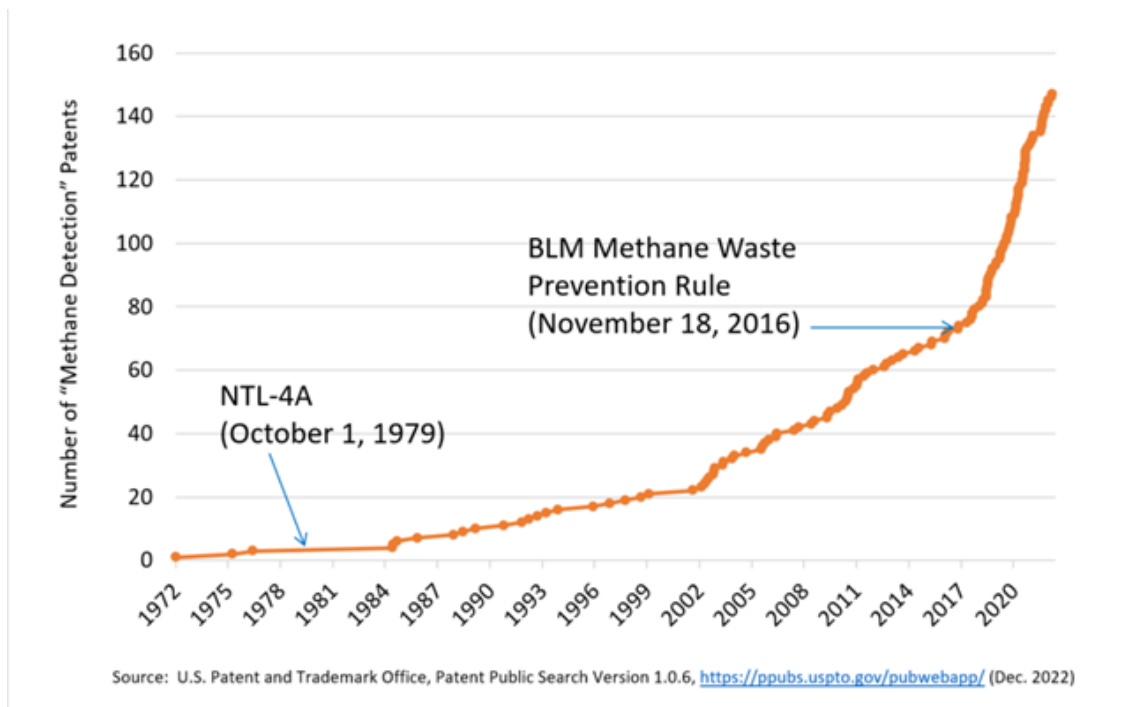
Advancements in technology have substantially expanded the capabilities and availability of direct measurement and continuous monitoring services. The chart below illustrates that the number of "methane detection" patents has doubled since the proposed 2016 Waste Prevention Rule ("the 2016 Rule") and has increased fifty-fold since the publication of NTL-4A in 1979. Indeed, last year, the U.S. House Committee on Science, Space, and Technology acknowledged that "[r]ecent technological advances" have allowed scientists "to use newly sophisticated methane detection and quantification technologies to actually measure methane emissions from oil and gas operations."<sup>4</sup> Moreover, the gas sensing technology in systems like Project Canary's has rapidly developed to provide increased detection accuracy and opportunities for miniaturization and portability of devices that can be implemented at the site level.<sup>5</sup> In sum, oil and gas operators today have access to widely available, highly accurate, and cost-effective direct measurement and continuous monitoring options to prevent waste.

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<sup>3</sup> U.S. Government Accountability Office, *Oil and Gas: Federal Actions Needed to Address Methane Emissions from Oil and Gas Development*, at 15-16 (Apr. 2022), <https://www.gao.gov/assets/gao-22-104759.pdf>.

<sup>4</sup> House of Representatives Committee on Science, Space, & Technology, *Seeing CH<sub>4</sub> Clearly: Science Based Approaches to Methane Monitoring in the Oil and Gas Sector*, at 13-14 (June 2022).

<sup>5</sup> University field testing of Project Canary's onsite continuous monitoring units demonstrated that the devices detect methane leaks with nearly perfect accuracy and can measure the volume of those leaks with minimal quantification error (6%). See METEC Testing Results August 2021; Project Canary, *A Quantitative Overview to Continuous Monitoring of Methane Emissions* (2021); Shan Lin et al., *Improvement of the Detection Sensitivity for Tunable Diode Laser Absorption Spectroscopy: A Review*, *Frontiers in Physics* (Mar. 1, 2022), <https://www.frontiersin.org/articles/10.3389/fphy.2022.853966/full>.



The broad adoption evident in the energy sector is driven in part by cost-effectiveness. For example, the cost of deployment of Project Canary’s systems at well sites represents a fraction of one percent of the price operators realize from the commodities produced.<sup>6</sup> Operators with this technology earn increased revenue from recapturing potentially lost gas. Indeed, given recent commodity prices, quickly stemming the loss of gas from leaks is even more economically desirable for operators than in the past.<sup>7</sup> The use of continuous monitoring also can enable operators to produce “certified” or “responsibly sourced” gas, which can earn a premium over commoditized gas prices.<sup>8</sup> As discussed further in Section IV.B.4 below, investment in direct measurement and continuous monitoring technology can generate cost savings not only by reducing leaks but also by streamlining compliance with existing and proposed reporting laws and regulations. Direct measurement and continuous monitoring also can help operators avoid potential penalties, such as the methane emissions charge of up to \$1,500 per metric ton (~\$23/mcf) of excess methane emissions under the Inflation Reduction Act’s (“IRA”) Methane Emissions Reduction Program (MERP).

In short, direct measurement and continuous monitoring technology that helps prevent waste is widely available and cost-effective and should be incorporated into the Final Rule. Data generated by this technology also facilitates more precise reporting of gas lost due to venting,

<sup>6</sup> Based on Project Canary business experience, monitoring can be less than \$0.01 for high volume dry gas basins and \$0.06-0.08 per barrel of oil equivalent for more liquids-rich basins on a per mcf basis.

<sup>7</sup> “Pathways for reducing methane emissions from the oil and gas sector are well known and understood. A large proportion of the abatement options come at a low cost ... In many cases, the cost of mitigating methane from oil and gas operations is lower than the recent market value of the captured gas [even] based on average prices from 2017-2021 rather than the elevated price levels seen in late 2021 and early in 2022.” IEA Methane Tracker Data Explorer (February 23, 2022).

<sup>8</sup> Based on Project Canary business experience, premiums paid in the market for “certified” or “responsibly sourced gas”, which usually requires continuous monitoring, typically range in the \$0.01 – 0.05 per mcf.

flaring, and leaks—resulting in more accurate assessment and collection of royalty payments for BLM.

### III. Thematic Comments

A. *Direct measurement and continuous monitoring technology will help BLM meet statutory mandates to prevent waste.*

The Proposed Rule does not fully take advantage of widely available, cost-effective technology that would help BLM fulfill its statutory mandates to prevent waste of resources and assess royalties on resources produced on federal lands. For example, in its current form, § 3179.9(a) of the Proposed Rule allows operators to report *estimated* volumes of gas vented or flared. Similarly, §3179.303 of the Proposed Rule does not require operators to determine volumes of gas leaked at all, whether by estimation or measurement. Requiring operators to directly measure, where feasible, the volumes of gas leaked, vented, or flared would better align with existing federal statutory mandates. And requiring operators to record and report volumes of gas leaked under LDAR programs, where feasible, will facilitate an accurate assessment of gas that is avoidably lost.

Direct measurement of leaked, vented, and flared gas provides higher quality data to the Office of Natural Resources Revenue (and to BLM itself) which in turn can be used to meet the statutory mission of accurately assessing and collecting royalty payments. The Mineral Leasing Act (“MLA”) requires royalties to be paid on the value of oil and gas production removed or sold from leased public lands.<sup>9</sup> Moreover, the Federal Oil and Gas Royalty Management Act of 1982—which was enacted for the purpose of ensuring that oil and gas on public lands is properly accounted for—requires lessees to pay royalties on “oil or gas lost or wasted from a lease site when such loss or waste is due to negligence on the part of the operator of the lease, or due to the failure to comply with any rule or regulation, order or citation issued under this chapter or any mineral leasing law.”<sup>10</sup>

NTL-4A further clarifies that royalties must be paid on “avoidably” lost gas which includes those resulting from “failure of the lessee or operator to take all reasonable measures to prevent and/or control the loss.” Most recently, Section 50263 of the IRA imposed a requirement that royalties be paid on all gas produced from federal land, including all gas that is consumed or lost by venting, flaring, or negligent releases through any equipment during upstream operations, and including avoidably lost gas.

Estimates of volumes of lost gas are less accurate in accounting for potentially wasted resources than more precise measurement technology that is already utilized by a growing segment of oil and gas producers. Thus, direct measurement of lost gas is a highly valuable tool to help BLM accurately assess royalty obligations under federal statutes.

In addition to BLM’s royalty obligations, the MLA also requires lessees to “use all reasonable precautions to prevent waste of oil or gas developed in the land”<sup>11</sup> while observing rules set forth

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<sup>9</sup> 30 U.S.C. § 226(b)(1)(A).

<sup>10</sup> 30 U.S.C. § 1756 (“Expanded royalty obligations”).

<sup>11</sup> 30 U.S.C. § 225

by the Interior Department “for the prevention of undue waste.”<sup>12</sup> Waste minimization plans and LDAR programs incorporating site-level direct measurement and continuous monitoring technology allow for rapid identification and efficient repair of leaks, leading to reduced losses and waste. Using such technology is, therefore, a reasonable precaution as contemplated by the MLA to help producers avoid the undue waste of resources.

In summary, direct measurement and continuous monitoring technology enable accurate royalty accounting and promote resource conservation. Both aims are rooted in longstanding federal laws governing oil and gas operations on public lands. Expressly incorporating this technology in the Final Rule is fully within BLM’s authority as doing so would not constitute the regulation of methane emissions, air quality, or emission standards, which was the subject of the district court’s review and remand of the 2016 Rule. Instead, incorporating this technology in the Final Rule is a waste prevention measure to better preserve resources extracted from public lands and ensure that BLM is accurately recovering due compensation—all of which falls squarely within BLM’s authority.

*B. High-fidelity data from direct measurement and continuous monitoring technology will help operators comply with multiple regulations governing fugitive emissions from oil and gas production.*

In the preamble to the Proposed Rule, BLM states, “it is necessary to establish a uniform standard governing the wasteful losses of Federal and Indian gas through venting, flaring, and leaks” and it “cannot rely on a patchwork of State and EPA regulations to ensure that operators of Federal oil and gas leases consistently meet the waste prevention mandates.” It further states that “BLM cannot presuppose the outcome of [other] rulemaking process[es]” as it has its own, unique waste prevention mandate. We agree that a uniform standard is necessary for waste prevention, and we recognize BLM’s unique mandate to minimize waste and avoid loss. Direct measurement and continuous monitoring technology is the best method to meet that mandate. Importantly, it also provides a common thread to harmonize discrete regulatory objectives while enabling operators to cost-effectively comply with related, but distinct, requirements.

The landscape of state and federal oil and gas regulations is shifting towards rulemaking with direct measurement at its core. The objectives of recent, related federal rulemakings—including the Environmental Protection Agency’s (“EPA”) Supplemental Rule regarding air emissions in the oil and gas sector, the imposition of a charge on avoidably lost gas in the IRA, and the climate disclosure requirement proposals from the Securities and Exchange Commission (“SEC”) and the Department of Defense (“DOD”)—would all be advanced by direct measurement and continuous monitoring technology. Operators using these technologies could efficiently and cost-effectively provide consistent and accurate data under multiple regulatory regimes. These new rules are moving towards requiring the use of more precise measurement

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<sup>12</sup> 30 U.S.C. § 187



technology. For example, the new framework outlined in the IRA MERP relies on measurement-based performance metrics rather than previous practices that allowed emission estimates.<sup>13</sup>

Harmonization of technology standards in a consistent federal reporting system would create industry efficiencies and settle the expectations of the regulated community. The Final Rule should incentivize, encourage and, where feasible, require a shift towards direct measurement as the high-fidelity, empirical data gathered through such systems, like Project Canary's, can be submitted in compliance with multiple agencies' reporting standards. Unifying federal reporting regulations around direct measurement can even tie together state programs given the malleability of collected data. Direct measurement and continuous monitoring create a compliance solution that provides higher quality data to agencies and eases the burden of multiple, overlapping reporting obligations resulting in significant cost savings for operators.

#### IV. Specific Comments

- A. *Using direct measurement and continuous monitoring technology is a prudent, reasonable precaution to prevent loss and waste.*

In the Proposed Rule, § 3179.12(a) generally requires operators to use “all reasonable precautions” to prevent waste. Proposed § 3179.12(b) authorizes BLM to “specify reasonable measures to prevent waste as conditions of approval” of an Application for Permit to Drill (“APD”), and § 3179.12(c) authorizes BLM to order additional reasonable measures to prevent waste at existing operations. Proposed Rule § 3179.12(d) states: “Reasonable measures to prevent waste may reflect factors including but not limited to relevant advances in technology and changes in industry practice.” BLM requests comments on Proposed Rule § 3179.12, “specifically whether and to what extent the standards described in proposed paragraphs (c) and (d) provide the BLM with the appropriate flexibility to prevent waste.”

Similarly, the Proposed Rule's (§ 3179.4) definition of “unavoidably lost” gas—gas that is subject to royalties—requires that operators take “prudent and reasonable steps to avoid waste.” BLM also seeks comments on Proposed Rule § 3179.4 as to “whether the definition of ‘unavoidably lost’ can be more narrowly defined than as proposed.”

The Proposed Rule appropriately provides flexibility to incorporate advances in technology into the standard for “reasonable measures to prevent waste.” As noted above, technology has rapidly advanced in recent years to enable more accurate leak detection than ever before. Thus, while it is critical that the Final Rule incorporate flexibility to consider such advances, operators would benefit from more clarity about the types of technologies that constitute “reasonable measures.” The Final Rule should clarify that site-level direct measurement and continuous monitoring

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<sup>13</sup> IRA section 60113 requires EPA to levy a waste emissions charge on a per-ton methane intensity basis, which is not possible without highly accurate measurement of both emissions and throughput at affected facilities. The Congressional emphasis on improved quantification can also be found in the directive to EPA to develop new and improved empirical methodologies for emissions reporting under the Subpart W program. This directive makes clear that continued reliance on emission factors under Subpart W is not appropriate. Under an emissions factor methodology, two facilities with widely disparate actual emissions but similar emission factors could incur equivalent waste emissions charge liability. Such an outcome would undermine the intent of Congress to incentivize reductions by constructing a per-ton waste emissions charge.

technology qualify as both “prudent and reasonable steps to avoid waste” under § 3179.4 and “reasonable measures to prevent waste” under § 3179.12(d).

Specifically, we suggest revising Proposed Rule § 3179.12(d) as follows:

Reasonable measures to prevent waste may reflect factors including but not limited to relevant advances in technology, **such as site-level direct measurement and continuous monitoring technology**, and changes in industry practice.

BLM could also provide clarity while retaining flexibility by including a non-exhaustive list of measures the agency considers “prudent and reasonable steps to avoid waste,” including the use of site-level direct measurement and continuous monitoring technology, to support the definition of “unavoidably lost” gas in subpart § 3179.4. For example, Proposed Rule § 3179.4(b) could be revised as follows:

Lost gas is “unavoidably lost” if the operator has not been negligent; the operator has taken prudent and reasonable steps to avoid waste, **such as the implementation of site-level direct measurement and continuous monitoring technology**, the operator has complied fully with applicable laws, lease terms, regulations, provisions of a previously approved operating plan, and other written orders of the BLM; and the gas is lost from the following operations or sources [...]

Alternatively, in the Final Rule’s preamble, BLM could expressly identify site-level direct measurement and continuous monitoring technologies as examples of “prudent and reasonable steps” and “reasonable measures” to prevent and avoid waste. Additional guidance on these key concepts within the Proposed Rule would ease operator uncertainty and facilitate compliance. Direct measurement and continuous monitoring technologies are widely available, cost-effective methods to prevent and avoid gas waste while capturing potentially lost revenue. This technology is currently state of the art and is being increasingly adopted by oil and gas producers. Given the ability of site-level direct measurement and continuous monitoring to accurately identify and measure lost gas and help operators avoid waste, BLM should consider implementation of this technology to be a “prudent and reasonable step” and “reasonable measure” to prevent and avoid waste.

*B. The Final Rule should incentivize the use of site-level direct measurement and continuous monitoring technology in LDAR programs and waste minimization plans.*

The Proposed Rule would require operators, when submitting an APD for an oil well, to also submit a plan to minimize waste of natural gas from that well. Among other things, the waste minimization plan must include information demonstrating the operator’s plans to avoid the waste of gas production from any source, including leaks. BLM would have discretion to place conditions on or defer approval of an APD if BLM determined that drilling the well could result in the “unreasonable and undue waste” of gas. As proposed, however, the Proposed Rule does not identify any specific technology that could be included in waste minimization plans to avoid conditions or a deferred approval of an APD. BLM seeks comment on its definition of “unreasonable and undue waste” and whether or to what extent the Final Rule (or implementing



guidance) should spell out in additional detail how the BLM expects to make decisions to defer or deny an APD due to concerns regarding excessive waste of associated gas.

Further, the Proposed Rule would require operators to maintain an LDAR program designed to prevent the “unreasonable and undue waste” of gas, but as proposed, it would not require any specific LDAR process or equipment to be used. What it does require, at minimum, is an annual inspection of each facility. BLM seeks comment on § 3179.301 of the Proposed Rule as to “whether required LDAR inspections should be more frequent, in line with the requirements of some States and EPA, as well as data on likely costs and benefits over time.”

At the outset, the Final Rule should incentivize waste minimization plans and LDAR programs that incorporate site-level direct measurement and continuous monitoring technology. Older detection methods such as periodic OGI and airplane flyovers provide a snapshot from a specific time frame and must be deployed at the exact moment a leak forms in order to capture the full extent of the release. In contrast, continuous monitoring detects intermittent leaks within seconds, allowing the operator to promptly remedy the issue and minimize waste. These technologies would thus significantly support BLM’s mandate to prevent waste.

1. BLM should specify that waste minimization plans and LDAR programs utilizing site-level direct measurement and continuous monitoring technology are presumptively adequate for the purposes of APD review.

In the preamble to the Proposed Rule, the agency provides an example that “under proposed § 3179.12, the BLM could impose a [condition of approval] on an APD requiring the operator to use a particular instrument to detect leaks as part of its LDAR program if, due to technological advancements, changes in common industry practice, or other appropriate considerations, the failure to employ the specified instrument would constitute a failure to use all reasonable precautions to prevent waste.” We agree that BLM should impose such conditions of approval on APDs in order to prevent the waste of gas. BLM should specify that it will not impose conditions related to LDAR programs when operators plan to use site-level direct measurement and continuous monitoring technology. And BLM should clarify that when an operator includes site-level direct measurement and continuous monitoring technology in its plans to avoid the waste of gas production from leaks (under proposed § 3162.3-1(j)(6)), BLM will not determine that such plans could result in an unreasonable and undue waste of gas (under proposed § 3162.3-1(k)).

Although BLM correctly indicates that it can consider an operator’s LDAR program when evaluating an APD, the agency’s decision-making criteria are unclear.<sup>14</sup> Greater transparency as to what would constitute an adequate LDAR program or waste minimization plan, such as one

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<sup>14</sup> We acknowledge BLM’s concerns regarding compliance costs for operators to transition to using the best available LDAR technology, like direct measurement and continuous monitoring technology. To address this concern, BLM could use a phased approach. For example, BLM could require direct measurement and continuous monitoring technology as a condition of approval for new well APDs submitted after rule promulgation. Then at some point in the future, if review of LDAR annual inspection records or on-site inspections were to reveal outdated equipment being used, BLM could require operators to upgrade to best available LDAR technology. This approach is consistent with NTL-4A, which authorizes BLM to “require the installation of additional measurement equipment whenever it is determined that the present methods are inadequate.” Thus, requiring upgrades to existing operations where necessary to prevent unreasonable and undue waste is within BLM’s longstanding authority.

including site-level direct measurement and continuous monitoring technology, would help regulated entities comply. Alternatively, we recommend that BLM provide additional guidance on “reasonable measures” and standards for adequate LDAR programs within the Final Rule’s implementing guidance.

2. BLM should specify that an LDAR program with site-level direct measurement and continuous monitoring is adequate to prevent the loss of gas.

Under the Proposed Rule § 3179.301, BLM will review an operator’s LDAR program submitted in a Sundry Notice and will notify the operator if it is deemed inadequate. LDAR programs must be designed to prevent the unreasonable and undue waste of gas and provide for regular inspections. However, as noted above, the Proposed Rule lacks detail about how BLM will make this adequacy determination. BLM could provide this clarity by including a non-exhaustive list of acceptable LDAR instruments and practices as in the 2016 Rule.<sup>15</sup> This list should include site-level direct measurement and continuous monitoring technology as an approved option. The Final Rule should state that LDAR programs using direct measurement and continuous monitoring technology, are presumptively adequate, due to the superior capabilities described in these comments, unless the operator is notified otherwise by BLM within a fixed time period. By providing such additional clarity in the Final Rule, BLM could streamline both operator compliance and agency review. A timely, efficient approval process will ensure adoption of advanced measurement technology practices by providing a reliable basis for operators to invest in better measurement. Unlike the 2016 Rule’s provision requiring operators to use the listed instruments, a non-exhaustive list of agency-approved detection devices can provide guidance to operators without imposing requirements.<sup>16</sup> This formulation would avoid the criticism of the district court reviewing the 2016 Rule which found that rule’s LDAR requirements to be too stringent.

This additional clarity will help operators to comply and incentivize the use of the best available technology.

3. An LDAR program containing continuous monitoring should fulfill an operator’s annual inspection and leak repair assessment requirements.

As proposed, the Rule requires only annual inspections of production sites for leaks. Many important energy producing states – including Colorado, Pennsylvania, Ohio, and New Mexico – require more frequent LDAR inspections. Colorado, with perhaps the leading program, requires inspections as frequently as monthly.

Given the highly variable nature of leaks from upstream sources, more frequent inspections will inevitably find more leaks. However, research shows, and our own experience confirms, that periodic inspections—whether annual, semi-annual, or quarterly—significantly underestimate

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<sup>15</sup> See 81 FR 83087-88 (<https://www.federalregister.gov/d/2016-27637/p-1353>).

<sup>16</sup> See 81 FR 83087 (<https://www.federalregister.gov/d/2016-27637/p-1353>).

lost gas.<sup>17</sup> This finding underscores the importance of incentivizing *continuous* monitoring technology within LDAR programs as an alternative to periodic inspections. As discussed above, site-level direct measurement and continuous monitoring technology collects data on a continuous basis, allowing operators to quickly identify and repair leaks. This cost-effective technology is widely adopted, given the benefit to operators in minimizing losses and maximizing revenue.

As proposed, the Rule would allow flexibility as to the technology used in an LDAR program but would in all cases require, at a minimum, an annual inspection. We recommend that an LDAR program with continuous monitoring technology fulfill an operator's annual inspection obligation since continuous monitoring involves far more frequent observations and much more accurate leak detection than traditional annual inspection methods. Operators using continuous monitoring technology are alerted to leaks in real-time and some systems can pinpoint specific areas of releases. This rapid, localized detection allows operators to isolate leaks, quickly institute remedial measures, and avoid further waste of gas. Requiring operators that already use such technology to conduct an additional annual inspection would be duplicative. By allowing the annual inspection requirement to be satisfied through continuous monitoring technology, BLM achieves two objectives: (1) alleviating operator compliance burdens from annual inspections as identified in the Proposed Rule's preamble and (2) promoting superior gas conservation. And indeed, EPA has acknowledged this in its proposed Supplemental Rule by also recognizing that an operator using a continuous monitoring approach can use that method in lieu of OGI (and other) requirements.<sup>18</sup>

For the same reasons, operators should be able to use continuous monitoring technology to determine if a leak repair is effective under Proposed Rule § 3179.302. Continuous monitoring allows operators to quickly verify if leaks are correctly repaired. For example, Project Canary's continuous monitoring software includes rapid leak verification by confirming that levels have fallen back below a given threshold for a set period. This eliminates the need for operators to expend more labor in determining if a repair is effective. Thus, such technology should be recognized as an adequate system to assess leak repairs.

Continuous monitoring is significantly more effective than periodic inspections at facilitating leak detection and repair. Incentivizing the use of continuous monitoring technology through these recommendations furthers conservation of gas resources to a far greater extent than periodic survey and repair inspections, further illustrating its cost-effectiveness.

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<sup>17</sup> House of Representatives Committee on Science, Space, & Technology, *Seeing CH<sub>4</sub> Clearly: Science Based Approaches to Methane Monitoring in the Oil and Gas Sector*, at 17 (June 2022) ("Infrequent handheld LDAR surveys largely do not capture malfunctions and abnormal operating conditions, which give rise to persistent and intermittent super-emitting leaks. Innovative LDAR technologies, from aerial flyover and satellite sensors to drones and ground-based continuous monitoring sensors, hold tremendous promise for increasing the frequency of methane detection surveys and quantifying methane leaks.")

<sup>18</sup> Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review; [EPA-HQ-OAR-2021-0317; FRL-8510-04- OAR], section 60.5398b(d) an owner or operator that meets the requirements for using a valid alternative test method may use that method "in lieu of the requirements for fugitive emissions components at affected facilities."

4. BLM can reduce overall operator compliance costs by incentivizing practices that produce adaptable data for multiple regulatory obligations and recognize alternative LDAR compliance practices approved by other regulatory bodies as acceptable.

The recommendations outlined above would reduce operator compliance costs by allowing and incentivizing compliance methods that allow operators to meet their obligations under multiple state and federal LDAR regimes. As discussed above, site-level direct measurement and continuous monitoring technology provides high-fidelity data that can minimize operator burden and harmonize compliance both for operators and regulators. BLM can help operators avoid duplicative efforts. If they comport with BLM’s waste prevention authority, BLM should consider LDAR compliance practices approved by the EPA—or other agencies—to be adequate to prevent the unreasonable and undue waste of gas.

We recognize that BLM and EPA operate under distinct statutory mandates and understand BLM is setting “different (though not incompatible) LDAR standards based on a different view of cost-effectiveness.” However, it is cost-effective under BLM’s approach to allow operators to comply using highly precise, direct measurement and continuous monitoring technology because of its resource conservation capabilities. The technology’s ability to streamline compliance and reduce costs for operators is a positive byproduct.

- C. *To promote accurate accounting of both “avoidably” and “unavoidably” lost gas, BLM should require, where feasible, the measurement of lost gas from venting and flaring and the measurement and reporting of volumes of gas leaked.*

The preceding comments outline methods through which BLM could promote use of direct measurement and continuous monitoring technology to prevent waste while stopping short of requiring operators to use specific technology. However, as discussed above, requiring operators to directly measure and account for, rather than estimate, volumes of lost gas will better align with federal mandates. Such a requirement is squarely within BLM’s authority under the MLA and Federal Oil and Gas Royalty Management Act. In fact, consistent with current practice under NTL-4A, BLM already has authority to “require the installation of additional measurement equipment whenever it is determined that the present methods are inadequate” for royalty accounting on lost gas. Accordingly, Proposed Rule § 3179.9(a) and § 3179.303 should be revised to require operators to *measure* volumes of gas vented and flared, where feasible, and measure and report volumes of gas leaked.

As proposed, § 3179.9(a) states an “operator must measure *or estimate* all volumes of gas vented or flared from wells, facilities and equipment on a lease, unit PA, or communitized area and report those volumes under applicable Office of Natural Resources Revenue (ONRR) reporting requirements” (emphasis added). And the proposed leak detection inspection recordkeeping and reporting provisions in § 3179.303 do not require operators to record and report volumes of gas leaked in LDAR programs.

These proposed provisions do not fully leverage the highly accurate data generated by widely available, cost-effective direct measurement and continuous monitoring technology to support royalty accounting. We therefore propose the following revision to Proposed Rule § 3179.9(a):

The operator must measure, **where feasible, or otherwise must estimate** all volumes of gas vented or flared from wells, facilities, and equipment on a lease, unit PA, or communitized area and report those volumes under applicable Office of Natural Resources Revenue (ONRR) reporting requirements (see the ONRR Minerals Revenue Reporter Handbook for details on reporting vented and flared volumes).

For flared volumes below BLM’s proposed 1,050-Mcf-per-month threshold, we propose the following revision to Proposed Rule § 3179.9(c):

(c) For all other flares, the operator must **measure, where feasible:**

(1) Measure flared volumes in accordance with paragraph (b) of this section.

**Where such measurement is not feasible, the operator must:**

(1) Estimate flared volumes utilizing sampling and compositional analysis conducted pursuant to, or consistent with, § 3179.203(c); or

(2) Estimate flared volumes using another method approved by the BLM.

Further, BLM should retain its existing discretion to require the installation of additional measurement equipment, consistent with NTL-4A, by adding a provision to Proposed Rule § 3179.9:

**(f) Notwithstanding (a)-(e) above, BLM has authority to require the installation of additional measurement equipment whenever it is determined that the present methods are inadequate.**

And we propose that Proposed Rule § 3179.303 require operators, where feasible, to record and report *measured* volumes of lost gas due to leaks identified through operators’ LDAR programs. Accurate data about lost gas is critical to BLM’s royalty accounting. As described above, estimated data will not fully represent the extent of gas lost due to operator activities. Direct measurement, however, can. Direct measurement data reported to BLM results in a more accurate measurement of “avoidably” and “unavoidably” lost gas, leading to better royalty assessment and better accounting of public resources. Both benefits provide greater alignment with BLM’s statutory mandates.

## V. Conclusion

BLM’s Proposed Rule provides a much-needed update to existing, decades-old regulations governing venting, flaring, and leaks of oil and gas production on federal lands. Given BLM’s statutory mandate to prevent waste, the agency should take better advantage of site-level direct measurement and continuous monitoring technology both in its Final Rule and in subsequent implementing guidance to ensure the maximum amount of public gas resources, and associated royalties, are recovered. Operators can also greatly benefit from using this technology as it recaptures potentially lost revenue and streamlines compliance among multiple regulatory frameworks.

We appreciate the opportunity to submit comments on the Proposed Rule. For further discussion or questions, please feel free to contact Miles Tolbert at [miles.tolbert@projectcanary.com](mailto:miles.tolbert@projectcanary.com).

Sincerely,

A handwritten signature in black ink, appearing to read "Miles Tolbert", written in a cursive style.

Miles Tolbert  
General Counsel  
**Project Canary, PBC**