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Docket ID No: EPA-HQ-OAR-2021-0317

Re: Comments on Proposed Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review

Dear Sir/Madam:

On behalf of bp America Inc. and its affiliates (collectively, "bp"), we are pleased to submit comments in support of the Environmental Protection Agency's ("EPA's") proposal to reduce methane emissions from oil and gas operations.

I. INTRODUCTION

bp's purpose is to reimagine energy for people and our planet. Our ambition is to become a net-zero company by 2050 or sooner, and to help the world get there, too. We are committed to playing our part by delivering progressively more low carbon solutions and providing cleaner, more affordable, and reliable energy. We aim to actively advocate for policies that advance net zero.

bp has a 150-year history in America and is committed to the U.S. for the long-term. bp has a larger economic footprint in the U.S. than in any other country – it has invested more than $130 billion here between 2005 and 2020. bp's business activities support about 230,000 American jobs and contributed about $60 billion to the national economy in 2020. bp is the largest marketer of natural gas in North America and bp's U.S. onshore oil and gas business, bpx energy ("bpx"), operates sizeable acreage positions in Texas and Louisiana.

bp supports direct federal regulation of methane emissions from the oil and gas industry across the value chain. EPA regulation of new, reconstructed, modified and existing sources of methane emissions from the onshore oil and gas production, processing, transmission, and storage segments is the right thing to do for the environment and will support consistency in robust regulation across the U.S. Such regulations can build upon cost-effective solutions that are actively being developed, demonstrated and deployed across industry today.

We agree that the steps EPA proposes to reduce methane emissions are not only important to addressing climate change, but they also have the potential to improve air quality and public health for communities that have experienced a cumulative exposure to pollution impacts over time, including communities with environmental justice concerns. *See* 86 Fed. Reg. 63,110, 63, 122 (Nov. 15, 2021) ("Under the proposed rule, the EPA expects that VOC emission reductions will improve air quality and are likely to improve health and welfare associated with exposure to ozone, $PM_{2.5}$, and HAP.").

This comment letter first emphasizes the importance of harnessing technology to reduce the methane footprint of the oil and gas sector in order to contribute to global efforts to combat climate change, protect the environment and communities, and safeguard the critical role of natural gas in the energy transition.

The letter then outlines a series of detailed, constructive comments on many of the technical issues raised by both the section 111(b) proposal for new, reconstructed and modified sources and the section 111(d) proposal for existing sources. As detailed in the specific comments section, bp recommends, among other things, that EPA design its rulemaking to:

- Harness the power of innovative technology in leak detection, quantification and measurement to realize EPA's ambitious methane reduction goals;
- Establish a flexible continuous monitoring framework that is outcome oriented rather than prescriptive;
- Implement a phased approach to pneumatic controller retrofits at existing sites; and
- Utilize a matrixed approach to monitoring fugitive emissions from well sites.

Throughout these comments bp encourages EPA to design its rules with flexibility and innovation in mind. Among other things, bp believes owners and operators should have the ability to choose technologies and approaches that when combined in complementary ways result in robust and cost-effective methane emission reductions. These types of innovative technologies may include fixed wing aerial surveys, drone aerial surveys, satellites and various continuous monitoring solutions.

bp understands EPA intends to issue a supplemental proposal in 2022 with more detail, proposed regulatory language, and additional proposals, such as a new continuous monitoring framework. bp looks forward to providing input on these issues as the rulemaking progresses.

II. GENERAL COMMENTS

A. bp supports reducing methane emissions as a key lever in efforts to combat climate change.

Methane currently accounts for around one-fifth of man-made global greenhouse gas emissions. In the United States, the oil and natural gas industry is the second largest aggregate source of anthropogenic methane emissions after the agriculture sector (including livestock and manure emissions).[1] The Intergovernmental Panel on Climate Change estimates that the global surface temperature was 1.09-degrees Celsius higher in 2011-2020 than in 1850-1900, with methane emissions contributing about one-half (0.5-degrees Celsius) of that warming.[2] As EPA stated, methane has an estimated 100-year global warming potential value of 25, which "indicates that one ton of methane has approximately as much climate impact over a 100-year period as 25 tons of carbon dioxide." 86 Fed. Reg. at 63,130. Since methane has a shorter lifetime than carbon dioxide, "the emissions of a ton of methane will have more impact earlier in the 100-year timespan and less impact later in the 100-year timespan relative to the emissions of a 100-year GWP-equivalent quantity of carbon dioxide[.]" *Id.* Therefore, curbing methane emissions from oil and gas can have meaningful near-term impacts—both on climate warming and the world's ability to meet net zero by 2050 or sooner.

For these reasons, the Biden Administration has understandably made reducing methane emissions a key priority. The U.S., along with the U.K. and other nations, was instrumental at the 26th Conference of the Parties[3] in securing a Global Methane Pledge to collectively cut methane

[1] *Overview of Greenhouse Gas Emissions*, EPA, https://www.epa.gov/ghgemissions/overview-greenhouse-gases#methane (last visited Jan. 25, 2022).

[2] *IPCC, 2021: Summary for Policymakers. in:* CLIMATE CHANGE 2021: THE PHYSICAL SCIENCE BASIS. CONTRIBUTION OF WORKING GROUP I TO THE SIXTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (Valerie Masson-Delmotte, et al. eds., 2021).

[3] The 26th United Nations Climate Change Conference (COP26).

emissions across all sectors by at least 30% below 2020 levels by 2030.[4] Over 110 countries, representing nearly 50% of the sources of global methane emissions, have joined the pledge. President Biden's U.S. Methane Emissions Reduction Action Plan focuses on a whole-of-government approach "to identify and cost-effectively reduce methane emissions from all major sources."[5]

bp supports these methane emissions goals and agrees with the importance of EPA taking regulatory action now. *See* 86 Fed. Reg. at 63,152 ("The importance of taking action at this time, in accordance with the requirements of CAA section 111, to reduce the enormous amount of methane emissions from oil and gas sources, in light of the impacts on the climate of this pollution, cannot be overstated.").

B. bp is already in action to mitigate methane emissions.

We are actively reducing methane emissions by improving our operations, collaborating with our peers, and utilizing the latest emissions monitoring technologies.

Improving our U.S. onshore operations: bpx is actively engaged in finding new ways to reduce methane emissions. For example, bpx recently commissioned an electrified, highly automated, centralized processing facility in the Permian Basin. This facility, one of the largest infrastructure projects in bp's U.S. onshore history, reduces methane emissions by replacing or eliminating the need for gas-driven equipment (including compressors and generators) and reducing flaring through a sophisticated separation and compression system. bpx plans to spend upwards of $1 billion on similar infrastructure by 2025, which includes continuing to build our own electrical substation and distribution network to further electrify our operations.

Collaborating with peers: We are a member of the Oil and Gas Methane Partnership ("OGMP"), which aims to improve the monitoring, measurement and reporting of methane data, improve technical guidance, and reduce emissions. In 2019, we announced a three-year strategic collaboration with the Environmental Defense Fund to advance technologies and practices to reduce methane emissions from the global oil and gas industry.

Utilizing the latest emissions monitoring technologies: A key part of reducing methane emissions is detecting and measuring emissions. bp, for example, currently uses a combination of handheld optical gas imaging, fixed wing aerial surveys and drones, as well as several technologies in trial phase including continuous on-site monitors and satellites. We are aiming to install methane measurement at major processing sites by 2023, to publish this data, and to drive a 50% reduction in the methane intensity of our operations. To guide us, we have developed a methane measurement hierarchy.[6]

C. bp continues to support the direct federal regulation of methane emissions.

As we have stated before, a uniform federal regulatory framework, which establishes consistent minimum standards and nationally applicable guidelines, is necessary for the industry. This can increase consumer and regulator confidence that natural gas producers are acting responsibly, and that natural gas production is both safe and efficient. Voluntary actions by energy companies, although significant, are not enough to solve the methane problem and federal regulations help to level the playing field among companies and incentivize action. Moreover, a federal framework helps support the global competitiveness of American natural gas as pressure for more stringent regulations on methane grows outside the U.S. While state regulations are also

[4] *Joint US-EU Press Release on the Global Methane Pledge*, THE WHITE HOUSE (Sept. 18, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/09/18/joint-us-eu-press-release-on-the-global-methane-pledge/; *Fast Action on Methane to Keep a 1.5°C Future Within Reach*, GLOBAL METHANE PLEDGE, https://www.globalmethanepledge.org/ (last visited Jan. 4, 2022).

[5] *Fact Sheet: President Biden Tackles Methane Emissions, Spurs Innovations, and Supports Sustainable Agriculture to Build a Clean Energy Economy and Create Jobs*, THE WHITE HOUSE (Nov. 2, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/11/02/fact-sheet-president-biden-tackles-methane-emissions-spurs-innovations-and-supports-sustainable-agriculture-to-build-a-clean-energy-economy-and-create-jobs/.

[6] *See Methane Measurement*, bp, https://www.bp.com/en/global/corporate/sustainability/getting-to-net-zero/ghg-emissions/methane-measurement.html (last visited Jan. 31, 2022).

still important to achieve methane emission reduction goals, an overarching national regulatory framework for methane emissions is preferable to a patchwork of state-by-state approaches.

bp is taking a leading role in addressing the methane challenge and has supported cost-effective and efficient methane emission reductions from new, reconstructed, modified and existing sources. In comments submitted to EPA on November 25, 2019, on the Proposed Rule to Amend the Oil and Gas Sector New Source Performance Standard ("NSPS"), 84 Fed. Reg. 50,244 (Sept. 24, 2019), bp urged EPA "to continue to regulate methane emissions from new sources and to adopt a rule for existing sources." bp asserted then, and reiterates now, that voluntary actions by energy companies are not enough to solve the methane problem and that federal regulation of methane is beneficial not only for the environment, but also to reduce waste and support the global competitiveness of American natural gas. bp reaffirmed its support for federal methane regulation in a statement by David Lawler, Chairman and President of bp America, released on August 13, 2020, objecting to EPA's 2020 methane regulation changes ("Direct federal regulation of methane emissions is essential to preventing leaks throughout the industry and protecting the environment.").[7] In comments submitted to EPA on September 20, 2021, in advance of this proposed rule, bp again asserted that a federal framework is necessary to ensure regulatory certainty.[8]And in a statement released on November 2, 2021, bp applauded EPA for commencing this rulemaking to reduce methane emissions.[9]

Further, we were pleased to participate in EPA's public workshop on methane detection technology (August 23-24, 2021), in which a range of stakeholders provided perspectives on innovative technologies to detect methane emissions, and we look forward to other opportunities for constructive engagement on a variety of key technical issues.

D. EPA is authorized to regulate methane and VOC emissions from the crude oil and natural gas source category.

In EPA's 2020 final rule entitled, "Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Review," 85 Fed. Reg. 57,018 (Sept. 14, 2020) ("2020 Policy Rule"), EPA rescinded its prior regulation of methane emissions from the oil and gas sector (under the 2016 NSPS Rule). On June 30, 2021, the President signed into law a Congressional Review Act ("CRA") resolution rescinding the 2020 Policy Rule. The effect of the CRA resolution was to render the 2020 Policy Rule null and void in its entirety. By revoking the 2020 Policy Rule, including the Agency's statutory interpretations that were set forth in that rule, Congress indicated its view that EPA has statutory authority to regulate methane. We believe EPA has that authority with or without the CRA resolution.

In particular, EPA has the necessary statutory authority under section 111(b) and section 111(d) of the Clean Air Act ("CAA") to regulate methane emissions from new, reconstructed, and modified sources, as well as existing sources, in the onshore oil and gas production, processing, transmission and storage segments. EPA has broad discretion in determining the scope of the source category and bp agrees that the crude oil and natural gas source category appropriately includes the transmission and storage segment along with the production and processing segments as these segments "are a sequence of functions that are interrelated and necessary for getting the recovered gas ready for distribution." 81 Fed. Reg. at 35,832.

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[7] David Lawler, *bp America statement on methane policy rule*, bp (Aug. 31, 2020), https://www.bp.com/en_us/united-states/home/news/press-releases/bp-america-statement-on-methane-policy-rule.html.

[8] Letter from Downey Magallanes, Head of Pol'y and Fed Gov't Affs. bp, to EPA, *bp America Inc. supplemental comments in advanced of EPA's proposed rule regulating methane emissions from existing sources in the oil and gas industry under Clean Air Act Section 111(d)* (Sept. 20, 2021), https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/sustainability/advocacy-and-lobbying/bp-comments-on-epa-proposed-rule-regulating-methane-emissions.pdf.

[9] David Lawler, *bp statement on proposed methane rules*, bp (Nov. 2, 2021), https://www.bp.com/en_us/united-states/home/news/press-releases/bp-statement-on-proposed-methane-rules.html.

The 2016 NSPS Rule established an appropriate basis for promulgating regulations to control methane emissions, in addition to VOC emissions, from all of these segments. Because EPA previously determined the crude oil and natural gas source category causes or contributes significantly to air pollution, EPA is authorized to promulgate a NSPS for methane without requiring a new, pollutant-specific "endangerment" finding. Furthermore, the large amount of methane emissions from oil and gas sources and impact of methane emissions on climate change, plus the availability of cost-effective control options, provides EPA with a rational basis to regulate those emissions under section 111. Lastly, the regulation of methane emissions is not redundant with the regulation of VOC emissions because, among other reasons, regulation of methane established the predicate to regulate existing sources which emit the vast majority of methane.

E. bp believes tackling methane emissions is critical to preserve the role for natural gas in the energy transition.

We believe natural gas—increasingly decarbonized over time—has a key role to play in getting the world to net zero. Natural gas is ubiquitous—it heats homes and fires stoves; it generates the intense heat needed to make steel and cement; and it powers cars, trucks, and ships. Natural gas is also an important complement to renewable energy sources, addressing challenges with intermittency. The widespread adoption of new technologies, like carbon capture and sequestration, as well as the importance of natural gas to the development of hydrogen as an energy source, means natural gas can play an even more significant role in the transition to a lower carbon energy system. Since methane is the primary component of natural gas, controlling methane emissions through federal regulation is critical for natural gas to play its fullest role in the transition to net zero.

III. ADVANCED MEASUREMENT TECHNOLOGIES

bp commends EPA for recognizing the important role technology innovation is playing in addressing the methane challenge and for taking steps to create a more robust role for innovative technologies in the rule. Given the resource-intensive and facility-specific nature of the Alternative Means of Emission Limitation ("AMEL") process for approving advanced methane detection and measurement technologies, we believe it is critical that solutions such as alternative screening methods and continuous monitoring are incorporated as options in the fugitive emissions monitoring provisions in the final rule.

As described in Section 2 Subsection B above, bpx has been trialling and deploying innovative methane detection, measurement, and quantification technologies in the U.S. for over a decade. We are learning that these technologies can play an instrumental role in reducing emissions in our operations, and that deployment of a variety of technologies in a holistic and complementary way is critical to achieve bp's methane aims. We do not think there is a one-size-fits-all approach to effective and cost-efficient methane detection, which is why we consider the unique operational and situational needs of our assets. From there, we can customize an approach to technology deployment—often using two or more solutions that support one another through the different data they collect.

Today, bpx voluntarily deploys advanced monitoring programs that monitor all operated assets and do not discriminate based on surface equipment or potential to emit. Given our deployment of multiple detection technologies, we are able to survey our assets more frequently, and in some instances at a lower costs per wellsite than the leak detection and repair (LDAR) programs we conduct for regulatory compliance. For example, by leveraging these different technologies at varying frequencies, we are able to inspect all our U.S. onshore operated assets quarterly and more frequently inspect an increasing percentage of our entire U.S. onshore portfolio.

With technology for methane leak detection evolving at a rapid pace, and major strides being made in methane measurement and quantification, a flexible approach is paramount to capture these advancements and shift towards increased use of continuous site level measurement systems. bp encourages the EPA to consider an integrative and flexible approach when assessing technologies for regulatory compliance purposes, as different technologies are better suited to different asset types, operations and applications. EPA can maximize the effectiveness of a more

flexible monitoring approach by focusing on the desired outcome, as opposed to prescribing specific technology types. By focusing on the outcome, namely emission reductions, EPA can enable operators to leverage multiple technologies and deliver the desired emissions reduction goals in the most cost-effective, safe, and operationally efficient manner.

A. Comments on the Alternative Screening Using Advanced Measurement Technologies Proposal

bp welcomes the opportunity to use advanced measurement technologies in lieu of or as a complement to optical gas imaging ("OGI") surveys. We offer several suggestions for how EPA can strengthen the alternative screening proposal to both improve emissions reduction potential and provide greater technology flexibility.

1. EPA should establish an advanced measurement technology deployment matrix that provides a range of methane emissions detection thresholds and associated inspection frequencies.

A matrixed approach to LDAR surveys can create space for a range of innovative technologies and help avoid technology lock-in. While we appreciate the initial step EPA took to consider an advanced measurement technology option with a 10 kg/hour emission detection threshold, deployed on a bimonthly basis, we request EPA provide further information as to where this threshold and monitoring frequency originated, how it was deemed equivalent to OGI, and the model or process, including any modelling assumptions, by which this determination was made.

It is bp's view that there are combinations of emissions detection thresholds and inspection frequencies that can achieve equivalent or greater emissions reductions than semi-annual and quarterly OGI surveys. For example, LDARSim modelling by Kairos Aerospace, an aerial methane monitoring company, indicates a range of inspection frequencies and minimum detection thresholds that are estimated to be equivalent to the emissions reductions affiliated with quarterly OGI. The results indicate that a technology that monitors more frequently than the current quarterly OGI surveys can have a higher emissions detection threshold and still achieve the same emission reduction results. Therefore, we would strongly support EPA advancing its work in this space by creating a matrix with additional minimum detection thresholds/inspection frequency combinations, including a higher threshold detection technology deployed more frequently.

2. EPA should clarify regulatory text indicating follow up actions within 14 days of "receiving the data" from the alternative screening survey.

As proposed, operators have to perform the "follow-up OGI survey of all fugitive emissions components at the site within 14 days of the screening survey." 86 Fed. Reg. at 63,175. In the supplemental rule, EPA should clarify that the 14-day window for a follow-up OGI survey commences upon the operator's receipt of the advanced screening survey results from the vendor. There are situations where operators may not receive the final survey data from third-party vendors on the day of inspection. Should the language remain as written, delays in data receipt could unintentionally consume several days afforded in the 14-day window for follow-up OGI surveys. In so doing, operators would end up with less time to execute follow-up surveys. Assuming the intent is to provide operators with a full 14 days to perform the follow-up surveys, EPA should clarify that this window begins at the time of data receipt, not the survey itself.

3. EPA should clarify and streamline how operators "demonstrate" that a technology achieves the emissions detection threshold.

EPA's alternative screening proposal requires operators to verify that "the technology meets the 10 kg/hr methane detection threshold," and to include "supporting data to demonstrate the sensitivity of the measurement technology." 86 Fed. Reg. 63,110, 63,176. Industry needs clear guidance and procedures for how to demonstrate a technology meets the specified emission detection limit.

We encourage EPA consider, and take comment on, the potential role that third-party certification organizations and technology vendors can play in the verification process. EPA

already follows this approach in closely related contexts. For example, third-party organizations like the National Physical Laboratory confirm that FLIR OGI cameras can image gas at the required OOOOa concentration and flow rates. Similarly here, EPA could allow operators to rely on third-party certification organizations and technology vendors to demonstrate that their technology meets the alternative screening standard requirements.

In addition, EPA could streamline the verification process by maintaining a regularly updated list of approved technologies. With only a few proven methane technology vendors in the market today, companies may find themselves duplicating efforts in demonstrating and verifying compliance. As proposed, each individual operator would have to undertake the process of verifying their advanced screening technology for compliance, even if the technology has already been verified for use by another operator.

By maintaining a list of approved technologies, EPA could reduce these duplicative efforts. EPA currently does this for other control devices subject to OOOOa by maintaining a list of control devices where "manufacturers have demonstrated compliance with the testing requirements, including achieving a destruction efficiency of at least 95 percent." 86 Fed. Reg. at 63,246. EPA could maintain a similar list, posted on its website, for approved technologies that meet methane detection thresholds. To expedite the use of advanced methane technologies and to make alternative screening more widely available, we recommend that EPA consider pre-verifying existing, proven technologies that meet the standard in advance of the rule's compliance deadlines.

4. <u>With modifications to the OGI follow-up provisions, bp supports extending the coverage of the advanced screening requirements to include wellsites with a potential to emit between 0 to 3 tons per year of methane, as well as wellhead only sites.</u>

As noted in the introduction to Section III, bpx conducts aerial inspections of all U.S. onshore operating assets, regardless of potential to emit. In addition, there is academic evidence that significant emissions events can occur at sites with limited surface equipment, including wellhead only sites.[10] There is also evidence in the academic literature that a smaller absolute number of leak events contribute an outsized proportion of total emissions—commonly referred to as "super-emitters."[11]

Advanced measurement technologies are well-suited to support the detection of large emissions events from a diverse array of wellsite types. In a typical aerial survey with fixed-wing aircraft, for example, the vendor can readily collect data and information on all wellsites within the flight plan. Therefore, it is generally appropriate to extend the coverage of the advanced screening provisions to incorporate all wellsites into the screening process.

However, expansion of advanced screening programs to wellsites with potential to emit of 0 to 3 tonnes per year of methane, as well as wellhead only sites, is viable only if (1) EPA establishes reasonable emissions thresholds for these sites, below which the deployment of an OGI follow-up survey would not be required and (2) these sites receive the same follow-up survey exemption for intermittent leaks as described in the following section, Section III Subsection A Subpart 5.

The establishment of a reasonable emissions threshold addresses the potential for super-emitters from these sites, without creating an overburdensome program. In so doing, such an effort can help EPA and industry focus on finding "large" fugitive emissions events, while appropriately recognizing that lower potential to emit, and wellhead only sites, should be assessed separately.

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[10] *See, e.g.,* Adam R. Brandt, Garvin A. Heath, & Daniel Cooley, *Methane leaks from natural gas systems follow extreme distributions*, 50 ENVIRON. SCI. TECHNOL. 12512 (2016), https://pubs.acs.org/doi/abs/10.1021/acs.est.6b04303*;* Daniel Zavala-Araiza, Ramon A. Alvarez, David R. Lyon et al., *Super-emitters in natural gas infrastructure are caused by abnormal process conditions*, 8 NATURE COMMUNICATIONS 14012 (2017), https://www.nature.com/articles/ncomms14012; Daniel Zavala-Araiza, David R. Lyon, Ramon A. Alvarez et al., *Reconciling divergent estimates of oil and gas methane emissions*, 112 PNAS 15597 (2015), https://www.pnas.org/content/112/51/15597.

[11] 86 Fed. Reg. 63,110, 63,129 (Nov. 15, 2021) ("'Super-emitting' events, sites, or equipment, where a small proportion of sources account for a large proportion of overall emissions, can occur throughout the Oil and Natural Gas Industry and have been observed to occur in the equipment types and activities covered by this proposed action.").

5. EPA should include an OGI follow-up survey exemption in the advanced screening proposal to address proven, intermittent emissions events.

Under EPA's proposal, an OGI operator would be dispatched to a wellsite within 14 days of an emission detection from an advanced measurement survey. However, in some instances, the emissions detected during an advanced measurement survey may be intermittent ─ in some instances, not persisting beyond the duration of the survey itself. For example, water dump valve actuation or routine operational repairs may result in gas being discharged intermittently. Given the short emissions duration, these events should not require a follow-up OGI inspection. bpx estimates that approximately 75% of detected fugitive methane emissions at its U.S. onshore sites come from detections on separators, heater treaters and well heads that are intermittently venting. Given the short duration of these intermittent events, by the time an OGI operator is deployed to the site the emissions source may be resolved.

If intermittent emissions events can be corroborated by another technology or data source, and this two-step verification is appropriately documented by the operator, regulations should provide for an exemption from the follow-up OGI survey. For example, compressor or planned equipment blowdowns are permitted events that may be captured by aerial surveillance. However, based on the imagery provided by the vendor and available SCADA data we are able to determine, with sufficient confidence, that the emissions are connected to a known, planned, intermittent event. So that this exemption is employed only in appropriate circumstances, EPA may wish to require reasonable recordkeeping that would be available to regulators upon inspection.

As safety is a top priority for bp, it is important to identify opportunities that minimize our employee and contractor drive time, which is a leading cause of fatality in our industry. If we are required to send people out to sites despite having collected and recorded sufficient data evidence to demonstrate that an emissions source no longer persists, we may be creating additional and avoidable safety risk to our people.

B. Comments on the Continuous Monitoring Framework

bp welcomes and shares EPA's interest in continuous monitoring technologies and agrees that the proposed alternative screening approach is not fit for purpose with regard to continuous monitoring. As correctly recognized by EPA, "a framework for advanced measurement technologies that monitor sites continuously should be developed." 86 Fed. Reg. at 63,176. We affirmatively support EPA's development of a continuous monitoring framework and urge EPA to pursue a proposal for this framework in earnest in the supplemental rule.

Continuous monitoring technology is unlike other methane detection solutions available to industry. As such, not only does bp agree that these technologies need to be assessed separately from other advanced monitoring solutions, we believe continuous detection should be considered through an entirely different lens, which ultimately re-evaluates how technology can be leveraged to detect and mitigate methane emissions in the most effective and efficient manner possible.

As EPA contemplates a continuous monitoring framework, we discourage the tendency to compare continuous monitoring technology to OGI technology, as such a comparison cannot do justice to the fundamental paradigm shift represented by, and the significant methane leak detection and mitigation potential of, continuous monitoring. An attempt to narrowly compare the two technologies risks undermining the potential of continuous monitoring to help reduce emissions. We recognize continuous monitoring must demonstrate equivalent or greater emissions reductions compared to OGI, but that comparison should focus on the emission reduction results achieved by both technologies, i.e., a performance-based comparison, rather than a comparison based on the supposed similarities of these different approaches.

bp recognizes that continuous methane monitoring is vastly different from the low-frequency, handheld analyzers and cameras historically relied on by industry and regulators alike. As there are myriad new, complex considerations that will need to be addressed to create a well-designed continuous monitoring framework, bp offers the following thoughts for consideration and looks forward to providing further support on this important topic going forward.

1. In the supplemental proposal, EPA should define continuous monitoring in a way that appropriately addresses and reflects the inherent temporality of system readings.

Given that there is not a common definition of continuous monitoring, EPA should propose a new definition that provides clarity on what falls within this classification and is sufficiently broad to be agnostic as to specific technologies and approaches. The definition of continuous monitoring should reflect both the intended use case for such a solution, as well as the inherent temporality of the system's readings—most "continuous" monitors do not, in actuality, take continuous readings. Instead, they may activate and take readings several times per day, multiple times per hour, or potentially several times per minute.

bp believes continuous monitoring can provide a rapid, cost-competitive and autonomous alert system to notify operators of potentially anomalous, unplanned or fugitive emissions events. As an alert system, continuous monitors can trigger additional action to assess conditions and determine the appropriate course of action, including deployment of personnel for further investigation and repair.

A continuous monitor for methane is akin to a household smoke alarm. When a smoke alarm triggers in a home, the fire department is not immediately called; nor do the people in the house instantly use the fire extinguisher. Typically, the first step is to assess the situation for additional information, and then determine the appropriate course of action. Continuous monitors have the potential to provide this type of high frequency alarm and thus, as in the smoke detector analogy, must be paired with an appropriate protocol to help operators interpret and determine how to respond to these alarms.

We recognize that there may be diverse views on the use case for continuous monitors and thus the most appropriate definition. EPA might consider convening a series of workshops with stakeholders from industry, academia and civil society to capture these views and ultimately inform the definition EPA proposes for public comment. At the same time, the need to give careful thought to definitions and protocols should not be an excuse to delay the development of a continuous monitoring framework, which will be critical to achieving EPA's ambitious methane reduction goals. EPA should propose and take comment on such a framework in its supplemental proposal.

2. <u>EPA should propose a continuous monitoring standard that is performance-based, rather than prescriptive.</u>

bp encourages EPA, in its supplemental proposal, to take comment on a performance standard for continuous monitoring that delivers equivalent or greater emissions reduction outcomes than those from either OGI surveys or EPA's proposed alternative screening methodology. It is critical to recognize that there are, and will be, highly varied approaches to continuous monitoring.

Therefore, we believe a technologically agnostic performance standard for continuous monitoring systems is the most flexible and effective approach to deliver emissions reductions without stifling innovation. EPA should avoid prescribing specific parameters and specifications for continuous monitors, based on the technologies available in the market today, thus freezing this rapidly evolving technology at one moment in time.

For example, EPA should not assume that all continuous monitoring requires meteorological data or information from weather stations. Certain solutions installed on or near the fence line may need further information on wind speed and other ambient factors to triangulate the source of a methane plume. Monitors installed closer to potential emission sources may not. To presume that the continuous monitoring innovations of tomorrow will look like the solutions of today could ultimately stifle promising developments in this space.

There will be, however, key criteria that EPA may consider incorporating into a well-designed performance standard for continuous monitoring. These may include information such as: a minimum system-level detection threshold; ability to determine an emissions baseline; ability to determine a binary fugitive emissions condition; and, a system accuracy threshold (as a percentage).

3. <u>Through a multi-stakeholder consultation, EPA should develop a guideline for continuous monitoring program plans that are prepared and maintained by operators.</u>

A continuous monitoring system has the potential to detect fugitive methane emissions at a materially higher frequency than any traditional, handheld device deployed on a semi-annual or quarterly schedule. For example, a continuous monitoring system that takes three readings per day has a monitoring frequency 500-times that of semi-annual OGI surveys. While we see this as a significant upside of the technology—more visibility than previously possible—it also presents some unique challenges, particularly as it relates to sending personnel to the field to address potential emission events. EPA, in consultation with representatives from industry, technology vendors, academia, and civil society, should develop a guideline for program plans prepared and maintained by operators for their continuous monitoring systems.

As a starting point, EPA should leverage precedent and existing requirements for fugitive emissions monitoring plans in OOOOa to document continuous monitoring systems. We believe the responsibility should continue to be on operators to prepare and maintain these plans, with the plans available for inspection upon request to EPA. At a minimum, we think a transparent continuous monitoring program plan would include: (1) the number of sensors deployed; (2) type of sensor; (3) sensor placement; (4) justification for how the system delivers on the performance standard defined by EPA; (5) description of maintenance plan and procedures; and (6) downtime contingency procedures, including plan and recordkeeping if defaulting to OGI surveys or an advanced screening technology.

IV. PNEUMATIC CONTROL DEVICES

bp supports EPA's goal to replace all low and intermittent bleed pneumatics with zero-emitting devices at new and existing facilities over time. We appreciate, however, EPA acknowledging that "there could be different compliance time approaches that could be implemented for existing pneumatic controllers," 86 Fed. Reg. at 63,209, and we encourage EPA to adopt a phase-in approach for pneumatic controllers at existing sites. A phase-in approach is consistent with existing state methane emission programs and is a pragmatic, cost-effective way to achieve the ultimate goal of reducing, and ultimately eliminating, methane emissions from pneumatic controllers.

In our own operations we have implemented a program to systematically remove high bleed pneumatics and phase out any future installation. Where we have removed high bleed pneumatic devices, we have replaced them with low bleed, intermittent bleed, or instrument air devices.

In order to support this program, we have invested over $100 million of an initial $300 million portfolio-wide infrastructure investment to build out electrical infrastructure and substations to power our operations in the Permian. This electrification allows us to install instrument air devices. We anticipate over 75% of bpx energy operated wells in the Permian will be electrified by the end of 2022 and over 95% by 2023. Where we can electrify, we install instrument air devices.

Based on our experience, we encourage EPA to propose a phase-in approach to equipment retrofits so that operators can prioritize and implement retrofits over a reasonable time horizon. A phase-in approach to retrofitting allows operators to triage implementation based on resource availability, cost, and safety. This type of approach allows operators to prioritize sites that already have access to grid power, where retrofits are likely easiest and least costly. Other sites that do not have access to the grid will need additional time to assess alternative means of power or embark on electrification programs.

A phase-in approach is consistent with existing state programs in Colorado and New Mexico. These programs consider a facility's total historic percentage of non-emitting controllers and require a gradual increase of non-emitting controllers over a certain period. Colorado, for example, has implemented a phase-in for pneumatic controllers over the next two years. 5 Colo. Code Regs. § 1001-9, pt. D (III) (2021). New Mexico has proposed a slightly longer phase-in approach to be completed by 2030. Proposed N.M. Code R. § 20.2.50 (2021).

Key characteristics of a well-designed phase-in program include: (1) an ambitious yet realistic time horizon to achieve 100% zero emitting devices; (2) a tiered approach that adjusts for operators that are further ahead on existing retrofits; and (3) an exemption program for the rare circumstance where, for safety reasons, an operator must continue to operate an emitting device.

V. FUGITIVE EMISSIONS MONITORING FOR WELL SITES

bp supports EPA's co-proposed tiered approach to well site monitoring frequency with OGI, based on potential to emit. As noted above in Part III Section A Subpart 4, bp would support higher frequency leak detection monitoring programs, inclusive of lower potential to emit sites, if advanced monitoring technologies can be deployed to increase survey efficiency and mitigate safety risk.

Based on bp's current portfolio, approximately 50% of our operated assets subject to oversight under the proposed rule would fall in the >8 ton per year ("tpy") methane emissions threshold; 40% in the 3 to 8 tpy category; and, roughly 10% in the >0 and <3 tpy category. As a result, we estimate that EPA's co-proposed plan for well site monitoring with OGI, including new potential equipment costs, could cost approximately 4 to 7 times as much as current annual pad inspections required by OOOOa.

We think there is an important role for OGI in achieving methane reductions and we anticipate OGI remaining a part of our LDAR toolkit for the foreseeable future. However, we are concerned about the potential impacts of Appendix K, as written, on our upstream OGI LDAR program. As we would like to see EPA preserve a role for OGI in our upstream fugitive emissions monitoring programs at well sites, and for consistency across subparts, we encourage EPA to retain the OOOOa standards for OGI survey requirements at well sites.

OGI has both strengths and limitations that we believe EPA should consider as it continues to rely on the technology for well site emissions monitoring. OGI cameras are able to visually detect smaller emissions sources at the equipment and component level. These smaller methane emissions, which are estimated to contribute less to total emissions, can be more challenging to detect with advanced monitoring technologies such as fixed-wing aircraft and satellites. In addition, since OGI can be operated by trained field personnel, it allows for rapid mitigation—in many instances, at the time of inspection.

However, OGI provides infrequent snapshots in time and, unless augmented by other higher frequency monitoring technologies, can leave the majority of calendar days unmonitored. While we believe OGI can play a complementary role to more advanced, and higher frequency, monitoring technologies, we think the continued emphasis on OGI could have the unintended consequence of mis-prioritizing LDAR resources—particularly in light of major strides made in methane detection technologies. This is why bp welcomes the steps EPA is taking under the Alternative Screening Using Advanced Measurement Technologies proposal, as well as EPA's suggestion that it will propose a continuous monitoring framework in its supplemental proposal.

VI. CONTROL DEVICE EFFICIENCY AND OPERATION OF FLARES

bp is pleased EPA is soliciting comment on control device efficiency and operation of flares as flaring is a significant source of methane for our sector. In April 2021, bp announced our intention to eliminate routine flaring in our US onshore operations by 2025 or sooner. To achieve this goal, all newly constructed bp operated well sites are tied into gas delivery pipelines from start-up, and we do not bring new wells online unless the wells have access to a gas pipeline. We are also building centralized production facilities and converting legacy wells from high pressure systems to low pressure gas gathering systems to tie in more of our existing production into centralized facilities. Notably, since taking operational control over BHP's oil and gas assets in Texas's Permian Basin in 2019, bpx has reduced flaring intensity in the basin from 16% in the fourth quarter of 2019 to less than 1% today.

We are in action to address the efficiency and operations of our flares, including installing air assist to improve the combustion efficiency of our flares and thermocouple sensors on all flare stacks to notify bp operations teams of unlit flares. All bpx flares have auto-ignitors to attempt to remotely reignite flames that have extinguished.

Voluntary programmatic efforts like these are important, but we also support EPA exploring ways to enhance regulatory oversight through standards that incorporate assurances to reduce flaring. We welcome the opportunity to provide additional comments on flares in the supplement rulemaking.

VII. COMMUNITY MONITORING

In April 2021, bp released additional corporate sustainability aims. One of these aims is focused on helping to achieve a just transition to a net zero economy and includes building stronger relationships with local communities, based on mutual trust and respect, and supporting civic dialogue, greater transparency, and capacity building where we work.

Data and information are important inputs to aid transparency, dialogue and trust-building. bp was an early industry participant in the Environmental Defense Fund's ("EDF") Permian Methane Analysis Project ("PermianMAP"). Under this initiative, EDF—a non-profit environmental advocacy group—takes periodic methane measurements in the Delaware Basin of the Permian and publishes this information on a public website. bp reviews the PermianMAP data as it is made available and pursues any necessary mitigation actions, as appropriate. In addition, we engage constructively with EDF to share feedback and insights as a data-user.

In principle, and to the extent third-party organizations are able to contribute data that are legally collected and scientifically sound, bp believes that harnessing the power of this information can help to identify and solve problems in a transparent, efficient, and responsible way. We therefore share EPA's general interest that governments, industry, and society as a whole can benefit from the information that communities and other third-party organizations offer. We also believe it is critical that there are adequate guidelines and systems in place to verify the quality and integrity of community-generated data and that there is sufficient oversight to confirm that the information is gathered fairly and appropriately, consistent with generally applicable policies and guidance.

Thus, while we are interested in how data from community monitoring might increase visibility into methane emissions, EPA and/or state agencies must be involved in vetting the data and in notifying operators when emissions over a defined threshold are identified. To that end, before EPA moves forward with any kind of community monitoring program, EPA should develop a clear and transparent framework for overseeing the generation, integrity, and use of such data, and all stakeholders should be involved in developing the contours of such a program so that it is workable, produces results, and does not create unintended consequences that will present safety concerns.

VIII. METHANE INTENSITY PERFORMANCE STANDARDS

bp supports EPA's use of CAA section 111(d) to regulate methane emissions from existing oil and natural gas sources. We encourage EPA to design the 111(d) rule to promote flexibility and efficiency in compliance and drive technology innovation. One way to provide this flexibility is through a methane intensity standard. EPA should consider soliciting input on the potential for incorporating methane intensity standards into its OOOOc rules. EPA could solicit this feedback either in the context of the forthcoming supplemental regulatory proposal, or through convening a technical workshop or other forum to facilitate a dialog among experts from all sectors.

On September 20, 2021, bp submitted supplemental comments in advance of EPA issuing this proposal, which encouraged EPA to consider quantifying the "degree of emission limitation achievable" in the form of emission performance rates, and for EPA to consider using a "methane intensity" standard.[12] By "methane intensity" we are referring to the volume of methane emissions from a source's operated upstream oil and gas assets as a percentage of the total gas that goes to market from those operators.

States are beginning to use a methane intensity approach. For example, the Colorado Air Quality Control Commission ("AQCC") recently established a greenhouse gas intensity target for the upstream segment. 5 Colo. Code Regs. § 1001-26(IV) (2021). The AQCC defines "greenhouse gas intensity" as carbon dioxide equivalent emissions from pre-production and production as a percentage of hydrocarbon liquids and gas production. The regulation sets greenhouse gas intensity targets starting in 2025.

[12] *See* Letter from Downey Magallanes, *supra* note 8, at 4.

In order to implement a methane intensity standard we recommend EPA consider gathering additional information, identifying different standards for different segments, and evaluating the impact of using methane emissions data derived from measurement, as opposed to emissions factors. EPA could solicit input or form a working group to determine how methane intensity standards may be used and best defined, specifically with regard to 111(d) emissions guidelines. EPA could identify different methane emission performance rates – with different methane intensity standards – tailored to various segments of the oil and gas industry. Additionally, EPA could evaluate how transitioning to actual methane emissions data, as opposed to data calculations using emissions factors, may change or increase the reported methane emissions from certain sources and how to factor that into what baseline year to use. In any event, EPA should consider and seek stakeholder input on how best to take advantage of methane intensity standards as a regulatory tool that could be incorporated into the emissions guidelines, whether in the context of its supplemental proposal in this rulemaking or through other complementary mechanisms.

IX. CONCLUSION

bp appreciates the opportunity to offer comments and suggestions on this proposal and we look forward to working collaboratively with EPA on this important rulemaking effort. Should you have any questions, please contact me at Downey.Magallanes@bp.com and Isabel Mogstad at Isabel.Mogstad@bp.com.

Sincerely,

Downey Magallanes
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