WESTERN ENERGY **ALLIANCE**

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Mr. Vasco Roma
U.S. Environmental Protection Agency
Office of Air and Radiation
Office of Atmospheric Protection
Climate Change Division

Re: Use of Advanced and Emerging Technologies for Quantification of Annual Facility Methane Emissions Under the Greenhouse Gas Reporting Program, EPA-HQ-OAR-2024-0350

Dear Mr. Roma:

The Environmental Protection Agency (EPA) has integrated methane detection technology criteria and options across multiple rulemakings over the past decade. Most recently, EPA has included alternative methane detection technology options within EPA's Greenhouse Gas Reporting Program (GHGRP); New Source Performance Standards (NSPS) under Subparts OOOO, OOOOa, and OOOOb; Emissions Guidelines under subpart OOOOc; and for calculation of an entity's Waste Emissions Charge (WEC). Western Energy Alliance (Alliance) is concerned that across each of these rulemakings, the approach for evaluating and using the data and detection information from these advanced technologies has been inconsistent, and in many cases the inconsistencies disincentivize the use of better technologies for identifying and reducing methane emissions in the oil and natural gas sector. This reduction in use from rulemaking efforts that are not synchronized will likely hinder the detection and mitigation of methane emissions as compared to a more flexible and holistic approach.

Fortunately, through the Request for Information (RFI) published on August 29, 2024, EPA has seemingly responded to the numerous comments from industry, technology providers, and technical experts that these inconsistencies may ultimately lead to a decrease in application of advanced detection technologies. The Alliance believes EPA should shape its policy changes to incentivize the use of advanced detection techniques more consistently, allow for flexibility of technologies and approaches, and ensure data accuracy for calculating emissions for both subpart W and WEC. Further, the Alliance urges EPA to work with its members, third-party technology providers, and established research organizations who fundamentally understand best emissions sources and mitigation in the oil and natural gas sector. This would create an implementation structure that allows for advanced detection, quantification where beneficial, and mitigation. Specifically, the Alliance suggests that EPA develop a matrix approach recognizing that operating conditions and geographic differences create opportunities for different technologies to be more or less impactful. It should develop clear criteria for technologies that can be used in combination with each other to satisfy requirements under the OOOO rules, GHGRP, and WEC.

Working with a vibrant membership base for over 50 years, Western Energy Alliance stands as a credible leader, advocate, and champion of independent oil and natural gas companies in the West. Our expert staff, active committees, and committed board members form a collaborative and welcoming community of professionals dedicated to abundant, affordable energy and a high quality of life for all. Most independent producers are small businesses, with an average of fourteen employees.

The Alliance and its members have played an active role in providing data and tools to assist EPA in improving data collection within the GHGRP and Greenhouse Gas Inventory, and in helping shape effective regulation of oil and natural gas assets for both methane and volatile organic compounds under the NSPS and the National Emissions Standards for Hazardous Air Pollutants. The Alliance has consistently provided constructive feedback on how to improve regulatory provisions, with the intent of satisfying both EPA's goals for emissions reduction and Alliance members' goals of providing safe, reliable, and affordable energy.

A. Detection and Quantification of Atmospheric Methane Emission Events from Advanced Measurement Technologies

For methane detection, measurement, and potential quantification, EPA recognizes in the RFI that technologies have advanced significantly over the last few decades. Detection technology platforms include satellite-based monitoring, aircraft-based monitoring, drone-based monitoring, handheld detection equipment, and continuous monitoring sensors, which employ numerous different types of sensors and detectors to varying degrees of success. Developing an exhaustive list of technology applications would be fruitless given the constantly changing landscape. However, there are several evaluation factors that allow technologies to be compared against one another to establish efficacy and efficiency metrics. Equally as important as establishing a protocol for evaluating and comparing technologies is the recognition that there is no simple one-size-fits-all approach. Various technologies can and should be used in combination. Given different applications, facility types, expected emissions sources, and geographic concerns, no single technology approach will stand out as the best possible approach, especially when compared with a more comprehensive, multi-technology approach.

Detection technologies are generally compared across several factors such as probability of detection including with a lower-limit detection threshold, false positive and false negative fraction, survey time, localization precision, and localization accuracy. These and other factors are included within the Methane

Emissions Technology Evaluation Center (METEC) Controlled Test Protocol, published on April 26, 2022.[1] However, EPA's question within this RFI is a bit concerning. EPA asks specifically what technologies use transparent, open-source, and standardized methodologies for quantifying methane emissions. Most of the emissions quantification methodologies, however, are developed through commercial vendors that typically provide data processing as a service and maintain those algorithms as a competitive, trade-secret product. EPA should not place any emphasis on the quantification methodology being open-source as long as the quantification methodologies and algorithms employed produce verifiable and accurate results. The types of evaluation that can and should be performed to evaluate these technologies have been pioneered in the United States by Colorado State's METEC lab through their published protocol, and EPA should collaborate with it to better understand the capabilities of the technologies without focusing on open-source or standardization of methodologies.

More important than specific test methodologies and quantification, however, is making sure that any evaluation pathway recognizes the value and application for the wide variety of available technologies. Currently, within EPA's OOOO series of rulemakings for example, the review timeline and conditional approval process that is technology specific and applicant specific, needlessly restricts the use of advanced technologies for compliance through both an onerous process and a narrow-minded equivalency determination. Notably, the rulemaking ignores that a combination of technologies or approaches may reach the equivalent level of emissions reduction as would be achieved under the typical compliance pathway. Instead it evaluates each technology in a vacuum. Second, the process itself discourages operators from testing technologies at scale given the technology may never be approved after the application is submitted and sent to public comment. EPA could address this quickly by developing a matrix approach for technology evaluation that allows for a broad number of alternatives to be used in combination, or by providing approval for technologies that EPA currently knows are in common use. In many cases, these technologies have already been evaluated by METEC and other programs, and have been proven effective.

Most importantly for its technology evaluation, EPA fails to consider that alternative technologies can in many cases be used far more frequently than is practical for optical natural gas imaging (OGI) surveys. An aircraft that can survey an entire field, including with multiple operators, can cover thousands of production facilities in a single afternoon, and continuous monitors can be deployed which notify an operator of a leak event instantaneously. For any given site, aircraft surveys, OGI surveys, and continuous monitors can detect different sources of emissions depending on where the surveys are performed and their detection capabilities, and therefore, the net

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[1] "METEC controlled test protocol: survey emission detection and quantification," Clay Bell and Daniel Zimmerle, *Mountain Scholar,* April 26, 2022.

benefit of a combined approach may be superior to the approach outlined under OOOOb and OOOOc. By arbitrarily setting the standard of comparison as the OGI technologies established under the OOOO rules, EPA has stifled the implementation of technologies that could in many cases be more effective at mitigating methane emissions than the application of its own rules would achieve. The Alliance encourages EPA to develop an alternative methodology that allows operators and technology providers to deploy multiple technologies and not lock the industry into utilizing technologies that may become quickly obsolete absent regulatory requirements. Technology providers have commented on previous rulemakings with findings that support a matrix approach that would enable EPA to develop a more flexible alternative. Ideally, the implementation of aircraft, drones, continuous monitoring or stationary monitors could reduce the required frequency of OGI surveys as long as those technologies meet certain detection criteria.

B. Extrapolating Quantified Methane Emission Rates to Calculate Annual Emissions for GHGRP Reporting Purposes

As stated in the response in section A, there is no single technology that would be best used to estimate or quantify emissions for a single operator. Should EPA, researchers, or other organizations seek to better understand the emissions profile across an entire region, there are a wide variety of technologies that can provide useful data to that end. However, given that methane emissions in the field now represent a real financial penalty for operators through the WEC, field-wide and regional quantification approaches should not be considered dispositive for emissions information, as WEC liability must be individualized to the specific owner of the facilities in question. Additionally, as discussed above, developing the most accurate estimate of emissions for a specific facility or site requires operational data that is generally only available to the operator of the facility. These data inform other inventory measures, including the GHGRP Carbon Dioxide reporting, and for this reason, advanced detection technology will not fully replace gathering that underlying operational data.

As the Alliance noted in our comments to the 2023 Subpart W revisions, the best approach for the GHGRP would be to allow for significant flexibility in the technologies used to collect and report data, while simultaneously allowing for updated default emission factors for equipment to illuminate new information about typical sources in the production segment. Specifically, EPA should design a GHGRP that incentivizes the use of aircraft, drones, satellites, and other full-field measurement technologies by allowing operators to supplant that data for the default emissions factors or regional emissions totals where appropriate, as their success in both identifying leaks and confirming leak rates is well documented. This would incentivize operators to use technologies more frequently, gather more quantification data, reduce emissions more quickly, take credit for those mitigations through the GHGRP and ultimately eliminate or reduce their WEC, as intended by the Inflation Reduction Act (IRA). The goal should be to deliver a greater environmental benefit, i.e., reduced methane emissions, rather than to collect maximum WEC fees. After all, Congress has intrinsically given EPA a mandate, both through IRA and the Clean Air Act, to protect and improve the environment, not serve as a tax collection agency.

The benefits of allowing greater technological flexibility and advanced detection are further highlighted by the success and capabilities of continuous monitoring. Alliance members have been at the forefront of adopting continuous and near-continuous monitoring technologies and have been able to successfully use the data gathered to prioritize maintenance activities and equipment replacement or retrofit. While no single technology is a universal solution for methane emissions in the production sector, operators employing continuous monitoring equipment can in many cases prove that their equipment malfunction and failure rate is far less than emission factor-based estimates for specific emissions categories. When maintenance is informed by flexible detection technology, operators can more quickly find and fix leaks. Similarly, that same data can be used to demonstrate that overall emissions estimates for individual sites and equipment are in many cases lower than what is reported in the GHGRP, even for facilities that are not directly monitored but that may have similar design profiles. However, the GHGRP does not have a mechanism for adequately allowing for these data-backed adjustments and enabling operators to take credit for these improvements. Alliance members have gathered data from continuous monitoring equipment and are prepared to share that data with EPA in the future, should it be useful for EPA in determining how to best allow for greater flexibility.

Simultaneously, as suggested in the Alliance's comments to the OOOOb/c rulemaking and as described in the response to question A of these comments, EPA should more broadly allow for the use of alternative technologies to supplant the current compliance requirements, if an approved, specified frequency is achieved, and should avoid disincentivizing these technologies. For example, in the OOOOb/c rulemaking, EPA did not adjust the violation protocol for emissions detected by advanced technologies, nor did it increase the repair timeline. Given the large land area that can be covered by a single advanced technology, the repair timeline and violation definition as proposed would have made it prohibitively difficult for operators to effectively use many advanced technologies, ultimately decreasing their use over time. EPA should amend its rules to remove these challenges in response to this RFI to better encourage maximum use of advanced technologies.

C. Quantifying Annual Methane Emissions from Emissions Sources Below Detection Limits of Advanced Measurement Technologies

Currently, EPA employs the best methodology for considering and quantifying emissions from sources that are below the detection limits of advanced measurement technologies, namely the use of equipment specific emissions factors. However, there are some novel approaches within the technology space that have verified that if an advanced detection technique identifies a certain number of emissions using a specified detection threshold, the remainder of emissions from that study can be estimated with fair accuracy. For example, Bridger Photonics included evidence in its comments on OOOOb/c urging EPA to take into considerations the findings from a paper they published in August of 2023.[2] The paper outlines the expected overall emissions in a region given the findings of its technology, estimating that when using a detection technology with a detection threshold of 10 kg/hr, greater than 90% of the total emissions in the studied area would have been those emissions detected by the technology.

Technology use should instead focus on limiting and identifying the kinds of sources that can have a disproportionate impact on methane emissions in the oil and natural gas sector. EPA has already identified technologies to reduce emissions in the OOOO series of rules from numerous sources, including pneumatic controllers, pneumatic pumps, compressors, vents, tanks, wellheads, and others. EPA should consider that those regulations are effective at limiting emissions from this equipment and incentivize operators to verify that emissions are below a given emission factor for their specific design, as verified by detection technologies. By allowing empirical data from individual operators to inform their emissions reporting and WEC liability, EPA would incentivize the detection of many more emissions events than would be covered by mere compliance with OOOOb/c requirements.

Emissions calculations depend on more than just detection technologies. First, EPA should not require quantification of leaks volumes. While detection technologies have shown the ability to effectively detect even very small leaks, quantification from most of those technologies requires very well-controlled working conditions, engineering and production data from the site, or very specific and localized meteorologic data. Even in very well controlled environments, quantification from detection technologies still include a very large implicit error in estimations. When operators use advanced detection technology to find and repair leaks at the site level, quantification may be estimated fairly accurately through the application of engineering and production information. However, when detection is performed by a third party without access to production data, quantification estimates will inherently

[2] "Extension of Methane Emission Rate Distribution for Permian Basin Oil and Gas Production Infrastructure by Aerial LiDAR | Environmental Science & Technology," William M. Kunkel et al., *ACS Publications,* August 10, 2023.

be far less accurate. Due to this, third-party detection should not be used to adjust or amend emissions quantification estimates by operators. Third-party detection may be useful to inform EPA of a need to follow up with an operator about a specific facility or emission source, but the requisite production and meteorologic data needed to support a defensible quantification would be lacking.

Conclusion

The Alliance appreciates EPA's recognition that there is significant room for improvement in the regulatory framework with respect to advanced detection technologies. Alliance members that frequently pilot and deploy these advanced detection technologies recognize their effectiveness in detecting emissions sources and providing actionable data. EPA's current framework neither allows for nor incentivizes increased use of these technologies by locking operators into an overly rigid and technologically biased evaluation approach. Because alternative methods exist, EPA could amend its rules to allow for a combination of technologies that both comply with the OOOO series of rules and supplant its GHGRP reporting data with detection-validated data. EPA should update its rules to be far more technology agnostic than its current requirements and to better incentivize the use of advanced methane detection technologies, ultimately enhancing the mitigation of methane emissions by far more than the current rules accomplish. The Alliance welcomes the opportunity to work with EPA in developing a more technologically savvy approach to further reducing methane emissions.

Sincerely,

Kathleen M. Sgamma
President