



Project Canary, PBC
1200 17th Street
Floor 26
Denver, CO 80202

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Submitted via <http://www.regulations.gov>

The Honorable Michael S. Regan, Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

RE: 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

Dear Administrator Regan:

Project Canary, PBC (Project Canary), is pleased to submit comments on the Environmental Protection Agency’s (EPA) supplemental proposed “Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources.”¹

Project Canary strongly supports the Supplemental Proposal’s goal of promoting innovation and simplifying implementation. We commend the Agency for its innovative approach to approving new and better methods to detect and characterize sources of methane emissions. We believe, with certain modifications and robust implementation, EPA’s creation of this regime can help to promote and accommodate their development and use, which could provide a template for future innovative regulatory standards. If finalized with improvements we respectfully offer here, the Final Rule offers an outstanding opportunity for the nation to invest in a long-lasting methane

¹ 87 Fed. Reg. 74702 (Dec. 6, 2022) (“Supplemental Proposal”). Unless otherwise specified, comments that apply to the proposed NSPS OOOOb rule also apply to the EG OOOOc rule.

monitoring infrastructure to enable oil and gas production, processing, and transmission with minimum associated methane emissions.

Particularly, given the substantial potential of advanced technologies, it is important to avoid any unintended disincentives for companies to use these technologies. As proposed, the different treatment of Optical Gas Imaging (OGI) and advanced technologies may encourage companies to only use OGI rather than the advanced technologies for compliance purposes. EPA should avoid such an outcome given the environmental benefits that the Final Rule could achieve by encouraging increased use of advanced technologies. To that end, we are offering recommendations to ensure that the Final Rule achieves better alignment between the requirements for alternative test methods and those for OGI inspections. Disincentivizing the adoption of advanced technologies would defeat the Agency's goals in this proposal. The alternative test methods approach can accelerate and maximize the reduction of methane emissions, support the development of the methane measurement sector and foster a market for certified, low-emissions natural gas (i.e., differentiated gas) for both domestic and foreign consumers, harnessing the power of both the regulatory system and private markets. We urge EPA to finalize a rule that meets this promise.

I. About Project Canary

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 natural gas industry to operate on a cleaner, more efficient, more sustainable basis. Our proven solutions provide real-time emissions monitoring and rigorous independent certification of oil and natural gas well sites for responsible operations. Project Canary's solutions help energy companies collect, manage, operationalize, and benefit from real-time environmental data. 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 natural gas companies, and other external parties, to share best practices and insights garnered through continuous monitoring systems.

Project Canary, with our continuous monitoring technologies and integrated, real-time dashboard, provides companies with rapid detection and notification of unintentional releases from oil and gas locations, significantly reducing the duration of leaks and thereby, reducing emissions. The monitoring technologies we provide have been in use on oil and gas facilities since 2019 across the United States. Our technology alerts companies as soon as a leak threshold is reached, initiating further evaluation to determine the cause of the leak, and action to eliminate the leak as appropriate. The use of continuous monitoring systems in this manner significantly reduces emissions from the oil and gas sector, when compared with traditional OGI camera inspection programs.

II. Summary of Principal Comments

Project Canary's comments are designed to ensure that the Final Rule maximizes the incentives and minimizes the disincentives for owners and operators to adopt and deploy advanced technologies, and that technology developers, such as Project Canary, have a clear path to seek and obtain approval of such technologies that can satisfy the Final Rule criteria.

Project Canary's principal comments are summarized here in priority order:

- Ensure that facilities using a continuous monitoring system can set a **facility-specific baseline**. This is critical for continuous monitoring systems to be widely adopted, or adopted at all, because the specific proposed action levels do not account for normal operations and associated "authorized" methane emissions rates (noting that these emissions will be decreased by controls in other parts of the rule). If EPA were to finalize the action levels as proposed, which many existing facilities exceed under normal operations, it would significantly discourage owners and operators from adopting continuous monitoring systems, thereby eliminating significant opportunities for greater methane emissions reductions.
- Ensure that the conditional approval process is fit for purpose by **allowing minor upgrades** – a constant reality in the technology innovation sector – that do not degrade environmental performance to proceed without the burden of a full conditional approval process by either creating a separate approval process for these minor changes or by anticipating this in the individual application approvals.
- Ensure that requirements for **device health**, specifically regarding connectivity, accommodate remote production facilities and gathering and boosting facilities are that are often located in areas with less reliable access to communication systems, often limited to commercial cellular networks. The EPA should not impose an "always-connected" requirement for continuous monitors as it could disincentivize the use of such systems in these rural or remote areas that have substantial oil and gas production. While Project Canary understands the importance of timely data to compare against action levels, we encourage the EPA to allow up to 24 hours of data to be backfilled, which will still provide the operator and EPA with the information needed to take timely corrective action.
- Replace the current proposal for a **"root cause" analysis** of exceedances with an "investigative analysis" requirement that is fit for purpose and relies on the capabilities of advanced measurement technologies.

III. Project Canary's Comments on the Supplemental Proposal

A. Inclusion of Advanced Methane Detection Technologies

Project Canary strongly supports the EPA's inclusion of provisions in the Supplemental Proposal allowing operators to use advanced methane detection technologies for compliance purposes. However, the EPA has proposed to find that—at least at this time—periodic surveying with OGI and Method 21 is the “best system of emission reduction” that has been “adequately demonstrated.”

There is substantial evidence that OGI and Method 21 systems fail to detect significant volumes of intermittent leaks that occur in between surveys, including leaks that qualify as “super-emitter” events. Additionally, as a recent study focusing on detection limits for OGI cameras indicates, “[o]verall detection rates from the camera-surveyor system are substantially lower than the detection rates estimated from studies focused solely on the camera performance...”² Further, the OGI surveyor experience level can also have a large impact on OGI use efficacy: “Study results indicate that OGI survey experience significantly impacts leak detection rate: Surveyors from operators/contractors who had surveyed more than 551 sites prior to testing detected 1.7 (1.5–1.8) times more leaks than surveyors who had completed fewer surveys.”³

To the extent that it promotes greater deployment of continuous monitoring systems, the Final Rule will also advance several additional public policy objectives:

1. Making it possible, and incentivizing operators, to use alternative test methods is **critical to the Agency's ultimate goals for this rulemaking and for the impending rules for the Methane Emissions Reduction Program (MERP) and Subpart W established in §60113 of the Inflation Reduction Act**. The MERP relies on methane intensity, which is why Congress also mandated in §60113 that the EPA update Subpart W to require “accurate” and “empirical” data. Advanced technologies, such as continuous monitoring solutions, provide the greatest temporal resolution, resulting in the most representative emissions profile and methane intensity of an oil and gas facility. Compliance with these new requirements is simply not achievable without advanced technologies and continuous monitoring. A February 2023 study summarizes this well:
 - “This work presents a real-world demonstration of how [continuous monitoring systems (CMS)] can be used to reconcile top-down measurements and bottom-up inventories at the site-level. The Inflation Reduction Act requires accurate emissions estimates at this scale, and voluntary methane mitigation initiates

²Detection Limits of Optical Gas Imaging for Natural Gas Leak Detection in Realistic Controlled Conditions
Daniel Zimmerle, Timothy Vaughn, Clay Bell, Kristine Bennett, Parik Deshmukh, and Eben Thoma. *Environ. Sci. Technol.* 2020, 54, 18, 11506–11514, Publication Date: August 7, 2020.
<https://pubs.acs.org/doi/full/10.1021/acs.est.0c01285>.

³ *Id.*

such as OGMP 2.0 require source- and site-level reconciliation of measurements with inventory estimates. While accurate basin-level emission estimates can be obtained through aerial surveys with large sample sizes, site-level estimates for individual operators require detailed temporal characterization of intermittent emission events. Information on such emission events, obtained through CMS in this work, will be critical for effectively creating site-specific measurement-informed inventories.”⁴

2. Expanded monitoring infrastructure will generate additional reductions of methane emissions and additional reductions of emissions of ozone-causing volatile organic compounds (VOCs). Both the **methane and VOC reductions will have substantial health and welfare benefits** for affected communities, thereby addressing important environmental justice goals.
3. Increasing deployment of continuous monitoring systems will help the EPA develop a **more accurate methane emissions inventory** for the entire oil and gas sector. In most cases, continuous monitoring systems provide the most complete picture of emissions and offer the greatest opportunity to achieve the nation’s methane reduction goals by 2030. Because continuous monitoring systems more accurately and frequently detect leaks, increased deployment of such systems will also allow **resources for mitigation to be more effectively deployed**, thereby increasing the emission reduction impact per dollar spent.
4. Increased deployment of advanced monitoring technologies across a variety of well sites will help **develop valuable information for the EPA** about the performance of different configurations of these technologies in different settings, which will provide EPA with information to develop specific guidance on the proper operation of these systems. Greater deployment is consistent with the EPA’s mandate to promote technological innovation.
5. EPA investment in continuous monitoring system infrastructure will ensure **short-, medium- and especially long-term effective emission measurement and reductions**. As super-emitter events are reduced in the future with improved satellite and aerial technologies, unintentional basin emissions will be increasingly dominated by smaller sources, which are more effectively discovered through continuous monitoring systems.

⁴ Daniels W, Wang J(L, Ravikumar A, Harrison M, Roman-White S, George F, et al. Towards multi-scale measurement-informed methane inventories: reconciling bottom-up inventories with top-down measurements using continuous monitoring systems. ChemRxiv. Cambridge: Cambridge Open Engage; 2023. This content is a preprint and has not been peer-reviewed <https://chemrxiv.org/engage/chemrxiv/article-details/63e526b9fcfb27a31f7c0a6c>.

Below, we provide more detailed comments on particular elements of the alternative test methods provisions.

B. Matrices for Determining Equivalency

We support certain comments on the matrices for determining equivalency from the Methane Roundtable comments. The relevant sections are excerpted below:

We recommend EPA consider the following refinements to the modeling process and assumptions for the matrices to ensure the FEAST modeling is continually updated to reflect our current understanding of US emissions. Additionally, equivalency for both periodic screening technologies and continuous emission monitoring should be evaluated using the same sets of tools and assumptions to ensure that the final rule is technology neutral.

EPA should update its FEAST modeling input assumptions based on the best available studies.

EPA's FEAST modeling assumes that all super-emitter events are persistent and not intermittent under the "duration" parameter in FEAST. However, the matrices have the potential to enable technologies that can be deployed to better detect large emission events that are persistent as well as intermittent. To represent super-emitter events more accurately and better reflect the potential of advanced technologies to detect them, we urge EPA to ensure the assumptions for the final FEAST modeling reflect the best available data including any information regarding the intermittent nature of some super-emitters. EPA can rely on additional peer-reviewed studies submitted in comments that corroborate EPA's already cited studies as well as any studies published and peer-reviewed in the future.

As part of this update for the Final Rule, we recommend EPA also consider whether additional combinations of detection limits and sample frequency detections can enable a broader range of technologies if they can demonstrate equivalency to EPA's determined BSER. For example, EPA could include additional frequencies and combinations of technologies to encourage the deployment of technologies that can demonstrate equivalency with BSER.

EPA should periodically update inputs and data as information improves.

While continuing to improve, our current understanding of emissions throughout the US is imperfect. EPA's use of peer reviewed studies to develop the matrix is reasonable and appropriate recognizing the available data when EPA developed the Supplemental Proposal. However, we encourage EPA to consider any additional recent studies and refine the Final Rule accordingly, to ensure it reflects our up to date understanding of emissions and technology opportunities and constraints. Additionally, given that emissions data will continue to rapidly improve as operators use advanced technology and as EPA implements

Inflation Reduction Act funding for methane detection, it will be important to have a regulatory process and expectation that EPA will refine the matrix over time.

First, in addition to evaluating EPA's assumptions and inputs for FEAST with any additional peer-reviewed studies submitted as part of comments or released before the Final Rule, we recommend that EPA make clear in the Final Rule that it will periodically update the matrix by updating the FEAST modeling and inputs as additional data becomes available. This update can be completed, for example every three to five years, to help maintain regulatory certainty for operators and technology developers. By providing this expectation, stakeholders will have notice of this opportunity and can participate in the regulatory process. Additionally, specifying the timing for updates will also provide clarity on when EPA will need to receive proposed updates to studies and versions of modeling software to enable the Agency to rely on such new information in the periodic update.

Second, as discussed more below, EPA should make clear that as part of alternative test method approval process, site-specific emission monitoring plans, or state 111(d) plans, entities can use the most recent publicly available versions of FEAST and other models, as well as recent peer reviewed studies specific to basins within that state as modeling inputs. This way, EPA can ensure the requirements for advanced technologies reflects the best information available. For example, a state, or a group of states in a single basin, may want to submit a 111(d) plan that relies on basin specific emissions data to enable the deployment of advanced technologies best suited to reduce emissions in that area provided the emission reductions are consistent with BSER. EPA should clarify that states have the flexibility to incorporate such tailored modeling, subject to EPA approving such a plan as "satisfactory" in meeting the requirements of section 111(d) and all other applicable equivalency requirements.⁵

C. Proposed Continuous Monitoring Specific Requirements

1. *Replacement of OGI and AVO with Continuous Monitoring*

Project Canary seeks greater clarity about the replacement of OGI/Method 21 and audio, visual and olfactory inspections (AVO) if an operator adopts an approved continuous monitoring system in §60.5398b(c). The Preamble to the Supplemental Proposal states:

Lastly, we are proposing to establish a clear and streamlined pathway for technology developers and other entities to seek the EPA's approval for the use of advanced measurement technologies under this alternative screening option. Under this pathway, entities would seek approval for alternative test methods to demonstrate the performance of alternative technologies, which would replace the use of OGI and AVO for fugitive

⁵ Methane Roundtable, "Letter 1: Comments and Recommendations for the Alternative Survey Matrix" (hereinafter "Methane Roundtable Letter 1") (text under the heading: "Support the Comparison of Direct Benefits of Advanced Technologies") (citations omitted.)

emissions monitoring and the use of OGI for no identifiable emissions monitoring of covers and CVS (see section IV.K of this preamble) in both the proposed NSPS OOOOb and EG OOOOc.⁶

We respectfully request that the Agency explicitly incorporate this approach into the NSPS OOOOb and EG OOOOc regulatory language. Below is suggested regulatory text for §60.5398b:

What alternative GHG and VOC standards apply to fugitive emissions components affected facilities and covers and closed vent systems? This section provides alternative GHG and VOC standards for fugitive emissions components affected facilities in §60.5397b and alternative initial and continuous compliance requirements for covers and closed vent systems in §60.5416b. *As provided in this section, owners and operators of affected facilities may choose to demonstrate compliance with the alternative GHG and VOC standards in lieu of complying with the standards that would otherwise apply under §60.5397b and §60.5416b.* If you choose to demonstrate compliance with the alternative GHG and VOC standards through periodic screening, you are subject to the requirements in paragraph (b) of this section. If you choose to demonstrate compliance through a continuous monitoring system, you are subject to the requirements in paragraph (c) of this section. The technology used for periodic screenings under paragraph (b) of 75 this section or continuous monitoring under paragraph (c) of this section must be approved in accordance with paragraph (d) of this section.

2. Switching to the Use of a Continuous Monitoring System from Another Approved Monitoring Technology

Project Canary seeks clarification about the timeframe rules that apply when an operator switches to using a continuous monitoring system from using another approved monitoring technology.

Proposed §60.5398b(c)(3)(v) provides that an operator must install and begin conducting monitoring with a continuous monitoring system:

No later than the final date by which the next monitoring survey required by §60.5397b(g)(1)(i) through (iv) would have been required to be conducted if you were previously complying with the requirements in §60.5397b and §60.5416b.

Our understanding is that this rule requires an operator switching from use of OGI cameras to a continuous monitoring system to begin operation of the continuous monitoring system no later than the date that the next OGI survey would have been required—whether for fugitive emissions components (§60.5397b) or for covers and closed vent systems (§60.5416b). We would appreciate it if the Agency could confirm this interpretation in the Final Rule.

⁶ Supplemental Proposal, at 74740.

Also, this provision does not address a scenario in which an operator switches from using an approved alternative periodic surveying method to using a continuous monitoring system. Accordingly, we respectfully recommend the following revision:

No later than the final date by which the next monitoring survey required by §60.5397b(g)(1)(i) through (iv) would have been required to be conducted if you were previously complying with the requirements in §60.5397b and §60.5416b or **§60.5398b**.

3. Methane Mass Emissions Rate

Project Canary supports EPA's proposal in §60.5398b(c)(1) to define continuous monitoring as the ability of a system to determine and record a valid mass emissions rate at least once every twelve-hour block. However, we believe the term "valid mass emissions rate" should be defined more clearly as the language is vague and could be subject to varying interpretations. Project Canary proposes the following:

"Valid Mass Emissions Rate" means any methane rate determined by the measurement system using system data within the prescribed operating ranges provided in the monitoring system approval. Data used to calculate a methane emissions rate that is outside the prescribed parameters shall invalidate that emissions rate.

Project Canary is also providing comment on the phrase "at least once every twelve-hour block." While we are supportive of the frequency for determining a valid mass emissions rate, we believe the proposal is ambiguous regarding allowable timeframes between reporting a valid emissions rate once every twelve-hour block. For example, some measurement systems are able to calculate mass emissions rate on a much more frequent basis. In such scenarios, two valid mass emissions rates could be calculated just minutes apart, meeting the proposed language as written. To provide compliance certainty, Project Canary requests that EPA further clarify this language and specify if a minimum period of time is required between calculations of valid mass emissions rates during a twelve-hour block.

4. Device Health

Project Canary supports the inclusion of health checks for devices within the continuous monitoring system in §60.5398b(c)(1); however, we believe that, as written, the requirement is overly prescriptive and unnecessary.

This provision requires that continuous monitoring systems "must be confirmed for power and connectivity at least twice every six-hour block."

Such an "always-connected" requirement may make sense for facilities subject to Compliance Assurance Monitoring (CAM) [40 CFR Parts 64, 70 and 71] or other continuous monitoring system requirements under non-methane-related regulations. Sources subject to such requirements are of such significant size and technical complexity to justify well-connected data transfer services,

such as satellite or Supervisory Control and Data Acquisition (SCADA) systems. As such, reliable connectivity and the ability to upload or send data is necessary due to the complexity of the facilities subject to these requirements. This includes large natural gas compressor stations, gas processing plants, refineries, and power plants.

By contrast, production facilities and gathering and boosting facilities are significantly smaller in size, lower in complexity, more numerous, and often located in areas with less reliable access to communication systems, often limited to commercial cellular networks. In some instances, especially in rural or remote locations, cellular service can be interrupted for periods of time, limiting the ability to upload data to a cloud-based system as frequently as is possible in areas with strong cellular coverage. If EPA imposes an “always-connected” requirement for continuous monitors, it could disincentivize the use of such systems in some rural or remote areas that have substantial oil and gas production.

Moreover, such an “always-connected” requirement is not necessary to ensure environmental performance. An interruption in cellular service does not necessarily render a continuous monitoring system ineffective. During these situations, the continuous monitoring system is still operating, storing the data within the monitoring system until such time as the cellular connection is re-established. Once reconnection occurs, all data that wasn’t successfully uploaded will be “backfilled” to minimize, or eliminate, any data gaps.

While Project Canary understands the importance of timely data to compare against action levels, we encourage the EPA to allow up to 24 hours of data to be backfilled. As amended, the provision would read as follows:

(ii) The health of the devices used within the continuous monitoring system must be confirmed for power and connectivity at least twice every six-hour block, *provided that, if a device has the capability to backfill data during a connectivity disruption, the confirmation requirement for connectivity shall be once every 24-hour block.*

As shown in the table below, the percentage of data to be backfilled under such a rule would be less than 15 percent for the short-term action level and just over 1 percent for the long-term action level. Project Canary believes this process allows for connectivity issues outside of an operator’s control, while still providing adequate data to determine if an action level has been triggered within a reasonable period of time.

Recommended Allowable Data Backfill

Hours Backfilled	<i>Percent of Backfilled Data per Action Level Duration</i>	
	7-Day Rolling Avg	90-Day Rolling Avg
12	7.1%	0.6%
18	10.7%	0.8%
24	14.3%	1.1%

Accommodating this operational reality will still provide the operator and EPA with the information needed to take timely corrective action, even after a temporary interruption in service.

In any event, to the extent that periodic surveying with OGI and Method 21 is the “best system of emission reduction” that has been “adequately demonstrated,” continuous monitoring will provide higher quality data than OGI and Method 21 even with interruptions in cellular service from time to time. As noted in a recent study; “While fixed duration emission events may not be detected and there can be time delays in detecting continuous infinite duration emissions events, the detection efficiencies for CM networks are greater than efficiencies for periodic short duration measurements such as monthly or quarterly inspections.”⁷

5. Continuous Collection

Project Canary generally supports the inclusion of §60.5398b(c)(1)(iii) regarding allowable exceptions to the continuous collection of data. This section currently states:

The continuous monitoring system must continuously collect data as specified in paragraph (c)(1) of this section, except as specified in paragraphs (c)(1)(ii)(A) through (D) of this section:

However, we have two recommendations for revisions to this section.

First, we believe the reference to subparagraph (c)(1)(ii)(A) should reference subparagraph (c)(1)(iii)(A).

Second, in our view, the requirement in this section to “continuously collect the data” could result in confusion. Our concern is that the term “continuously collect” could be read colloquially, implying a perpetual requirement to collect data. However, paragraph (c)(1)—to which this text references—expressly defines “continuous monitoring” to establish a requirement for coverage in 12-hour blocks.

For these reasons, we recommend revising §60.5398b(c)(1)(iii) as follows:

The continuous monitoring system must ~~continuously~~ collect data as specified in paragraph (c)(1) of this section, except as specified in paragraphs (c)(1)(iii)(A) through (D) of this section:

⁷ Qining Chen, Colette Schissel, Yosuke Kimura, Gary McGaughey, Elena McDonald-Buller, and David T. Allen, Assessing detection efficiencies for continuous methane emissions monitoring systems at oil and gas production sites, *Environ. Sci. Technol.* 2023, 57, 4, 1788–1796. <https://pubs.acs.org/doi/abs/10.1021/acs.est.2c06990>.

6. *Third-Party Administration*

Project Canary is requesting additional clarity regarding the third-party provider requirement in §60.5398b(c)(2)(iii), which states:

If the continuous monitoring system is administered through a third-party provider, contact information where the provider can be reached 24-hours a day.

In many cases, an operator has a lease agreement with a technology provider to install and maintain a continuous monitoring system. However, these agreements also make clear that the operator has the day-to-day responsibility to take any corrective actions. Accordingly, Project Canary suggests the EPA provide additional clarity to the phrase “administered by a third-party” to make clear that any entity providing only installation and maintenance services is not liable for any requirements under the NSPS OOOOb or EG OOOOc regulations.

We are also asking for EPA to clarify the intent of providing contact information for an individual to be reached 24-hours a day. As the continuous emissions monitoring program is proposed with rolling 7-day and 90-day averages, we are requesting that the EPA provide additional information regarding the intent or need for a 24-hour-a-day contact. The fugitive monitoring plan submitted to the EPA will make clear how the operator is notified (email, text, or other) when an action level is exceeded and corrective action is required.

7. *Action Levels*

i. Action Levels Should be Measured Relative to a Facility-Specific Baseline

Project Canary supports EPA’s proposal in §60.5398b(c)(4)(i) to have both a short-term (7-day) and long-term (90-day) action level for continuous monitoring systems. This approach can address more significant, impactful fugitive releases, as well as smaller releases that can become significant if allowed to continue to vent unabated.

However, the specific proposed action levels do not account for normal operations and associated “authorized” methane emissions rates (noting that these emissions will be decreased by controls in other parts of the rule). If EPA were to finalize the action levels as proposed, it would significantly discourage owners and operators from adopting continuous monitoring systems, thereby eliminating significant opportunities for greater methane emissions reductions.

For these reasons, we respectfully propose a methodology—described in greater detail below—by which an operator that wants to use a continuous monitoring system at a facility can first establish the baseline emissions level at the facility.

By way of background, it is important to understand that certain ground-based, fixed continuous monitoring systems will calculate site-level methane emissions flux, inclusive of *all* methane emitting sources at a given facility, with source allocation providing a general equipment level location from where methane is emitted. These algorithms, however, could represent methane

emissions from a source that doesn't meet the definition of a fugitive emissions component, or a cover and closed vent system, such as methane slip from a compressor engine. The result could trigger an action level exceedance, while the emissions flux may be what is expected and part of normal operation, thereby disincentivizing the use of a continuous monitoring system.

For illustration of this point, methane emissions from intermittent pneumatic bleed devices using 40 CFR Part 98, Subpart W, Equation W-36 can be modified to calculate hourly methane emissions. Below is both the calculation as listed in Subpart W and its modified version (in kg/hr):

$$Mass_i = E_{s,i} * \rho_i * 10^{-3} \quad (\text{Eq. W-36})$$

Where:
 $Mass_i$ = GHG_i (either CH₄, CO₂, or N₂O) mass emissions in metric tons.
 $E_{s,i}$ = GHG_i (either CH₄, CO₂, or N₂O) volumetric emissions at standard conditions, in cubic feet.
 ρ_i = Density of GHG_i. Use 0.0526 kg/ft³ for CO₂ and N₂O, and 0.0192 kg/ft³ for CH₄ at 60 °F and 14.7 psia.

A modified version with results in units of kg/hr is shown below:

$$Mass\ Rate\ CH_4 = EF * CH_4\ frac * \rho$$

Where:

$Mass\ Rate\ CH_4$ = CH₄ mass flow rate in kg/hr

EF = Intermittent Bleed Pneumatic Device emissions factor (Subpart W, Table W-1A) in scf/hr

$CH_4\ frac$ = mole fraction of CH₄ in gas stream

ρ = density of CH₄ (0.0192 kg/scf)

$$Mass\ Rate\ CH_4 = 13.5\ scf/hr * 0.80\ frac\ CH_4 * 0.0192\ kg/scf$$

$$Mass\ Rate\ CH_4\ per\ intermittent\ bleed\ pneumatic\ device = 0.21\ kg/hr$$

Therefore, a well site with only eight intermittent bleed pneumatic devices (putting aside any other authorized methane sources) would exceed the proposed action level of 1.6 kg/hr methane mass emissions rate on an ongoing basis. Project Canary understands that the majority of multi-well sites are likely to be equipped with more than eight intermittent bleed pneumatic devices, as well as other normally operating sources of methane emissions.

This situation is likely to be exacerbated at larger locations, where more natural gas fired engines and other methane emitting sources are present. In fact, Project Canary has performed a preliminary analysis of one customer's facilities where site-level methane flux is calculated and determined that roughly 30% of those locations exceeded the 1.6 kg/hr, 90-day rolling average action level during normal operations.

Consider also, that under the proposed action levels, a lower emitting oil and gas well site could potentially have a more persistent, slightly higher volume leak of methane than a higher emitting well site and still not exceed an action level that would otherwise be triggered at the larger site.

We believe this could both disincentivize the use of continuous monitoring systems and inadvertently allow for more fugitive leaks from smaller well sites.

Because of these issues, Project Canary respectfully requests the EPA consider an alternative approach to establishing action levels. The approach, as outlined below, could be established specifically within the regulatory language in this section, or an approach could be provided and approved within the Alternative Test Methods provision and technology approval process.

Specifically, Project Canary is suggesting the following methodology for setting a baseline methane emissions rate for each wellhead-only, well site, and compressor station opting to use an approved continuous monitoring technology under §60.5398b(c)(1). Action levels would then be measured against this baseline. The methodology would work as follows:

- The owner or operator first installs and commences operation of the EPA-approved continuous monitoring system.
- When the continuous monitoring system is fully operational, a 60-day baselining period begins. During this period, the owner or operator will perform periodic, full-site Leak Detection and Repair (LDAR) inspections using an EPA-approved method, such as OGI cameras or Method 21. These inspections shall occur within 7 days of the date the continuous monitoring system is fully operational, with an additional inspection at 30 days and 60 days. The additional OGI or Method 21 inspections will verify that the site is operating without unintentional methane emissions from fugitive components, thereby establishing the site's individual baseline emissions without leaks.
- The baseline will then be determined by averaging the valid methane mass emissions rates, determined once every twelve-hour block, during the baselining period.
- Short-term and long-term action levels will then be set as the values established in §60.5398b(c)(4)(i) of this section added to the average value obtained during the 60-day baseline period.
- The determined baseline methane mass emissions rate remains valid unless and until annual actual or potential emissions from the location change by more than 5%, at which time another baselining period must be initiated.

ii. Action Levels Should Not Be Based on Methane Intensity at this Time

The EPA solicited comment on the potential use of methane intensity or production rates in the development and use as action levels for continuous monitoring systems.⁸ For the reasons discussed below, Project Canary opposes such an approach at this time.

⁸ Supplemental Proposal, at 74744 (“EPA is also aware of industry led efforts to minimize methane emissions through the entirety of the value chain using the percentage of intensity or production as a metric. The EPA is soliciting comment on the potential use of intensity or production in the development of action levels, including appropriate thresholds for setting such action levels on both a short-term and long-term basis.”)

Our general understanding of production accounting within the oil and gas industry is that there can often be a significant lag in determining the actual production volumes that flow through a given location, sometimes up to 60 days or more. Changes to production levels reported through prior period adjustments over a month in arrears have the potential to sway intensity numbers on a given location in an unpredictable manner, potentially resulting in missed action level exceedances. Although Project Canary is a proponent of methane intensity, at this time, Project Canary recommends the EPA not use either methane intensity or facility production to develop action levels.

We recognize that methane intensity is the primary metric for the MERP. However, the methane intensity metric in the MERP is calculated on an *annual* basis. It is reasonable to expect that an operator will be able to determine and report its annual production. And it is clear to us that Congress intended that there should be increasingly rigorous detection and quantification of methane emissions in the oil and gas sector. For example, the MERP requires EPA to levy the 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.

We look forward to working with the Agency and the regulated community on the issues surrounding the MERP such as this production accounting issue when the Agency issues the MERP proposed rule.

iii. Action Levels Should be Based on Mass Emission Rates, Not Concentrations

The EPA is also proposing action levels based on methane emissions rates (i.e., kg/hr) instead of methane concentration (e.g., ppmv) in order to: (1) account for upwind contributions from other sites and meteorological effects and (2) allow the Agency to evaluate the methane emissions reductions achieved by the proposed framework.⁹

Project Canary supports the proposal by the EPA to set action levels based on methane emissions rates rather than methane concentrations, in part, for the reasons provided in this solicitation. We believe that the use of methane emissions rates will more closely harmonize with other rules currently in and planned for development, including the future revision to 40 CFR Part 98, Subpart W, as required by the Inflation Reduction Act.

⁹ Supplemental Proposal, at 74744 (“The EPA is proposing methane emissions rate (i.e., kg/hr) based action levels instead of methane concentration (e.g., ppmv) based action levels (as in the Refineries NESHAP) in order to: (1) Account for upwind contributions from other sites and meteorological effects and (2) allow the Agency to evaluate the methane emissions reductions achieved by this framework, thus providing for a metric to demonstrate equivalency with the proposed fugitive emissions monitoring and repair program and proposed covers and CVS requirements in NSPS OOOOb and EG OOOOc.”)

8. Root Cause Analysis

Project Canary supports comments from the Methane Roundtable on the “root cause analysis” requirement.¹⁰

Project Canary also provides the following comments on this issue.

Project Canary supports the EPA’s proposal in §60.5398b(c)(6) that owners and operators must initiate an investigation within five calendar days of an exceedance of either the short-term or long-term action level.

However, we have concerns about the requirement that the investigation take the form of a “root cause analysis.” The term “root cause analysis” is a term of art under other non-EPA regulatory programs. It is associated with a very specific and extensive set of analysis requirements, which we believe would not be appropriate for the contexts addressed in the NSPS OOOOb and EG OOOOc regulations. This could potentially discourage operators from choosing to comply using advanced technologies.

Project Canary observes that, in our experience in the field with continuous monitoring systems, a desktop evaluation will usually suffice to identify the cause of some types of exceedances, rendering the need for onsite AVO or OGI follow-up inspections unnecessary.

We respectfully recommend that the Agency simply require an “investigative analysis” of the cause of an exceedance. Below are our specific recommendations on a workable approach.

- *Desktop or remote investigative analysis.* A desktop or remote investigative analysis could include:
 - Verbal or written communications with onsite personnel to verify the cause of an exceedance;
 - Review of remote sensing or parametric data which could indicate the cause of the exceedance; or
 - Other data acquisition methods which can adequately determine the source of the emissions and ensure the cause of the emissions has been resolved.
- *Beyond a desktop or remote analysis.* If the desktop or remote investigative analysis does not identify the cause of the exceedance, then the operator should conduct either:
 - Onsite AVO investigative analysis. If the source and cause of the emissions resulting in an exceedance of an action level cannot be determined through a desktop or remote investigative analysis, the owner or operator may perform an AVO investigative analysis to determine the cause; or

¹⁰ Methane Roundtable Letter 1, (text under the heading: “EPA should clarify what is required for a ‘root cause analysis’”) (citations omitted).

- OGI camera or Method 21 investigative analysis. If the source and cause of the emissions resulting in an exceedance of an applicable action level cannot be determined through either of the previous methods, the owner or operator shall perform an OGI camera or Method 21 inspection. The inspection can be limited in scope, based on any source localization data from the continuous monitoring system, narrowing the area where the investigation should be performed to the area most likely to be the source of the leak.

Alternatively, an operator may be able to use combinations of advanced technologies (e.g., an aerial survey to comply with the fugitive emission requirement coupled with a continuous emission data) to identify the cause.

The term “root cause analysis” is used in several sections of this Supplemental Proposal, and we suggest that EPA replace the term with “investigative analysis” and adopt our recommended approach.

9. Compliance Pathway for Deploying Advanced Technologies to Identify Emissions that Quarterly OGI May Not Otherwise Identify

Project Canary supports the recommendations of the Methane Roundtable with respect to ensuring that operators that use continuous monitoring systems are not inadvertently penalized due to the greater capability of such systems to identify not only leaks from fugitive methane components but also exceedances by non-fugitive emission components. Below is the relevant excerpt from the Methane Roundtable comments:

EPA should align requirements between OGI and advanced technologies inspections for instances where an advanced technology finds “deviations” from non-fugitive emission components. Thus, to ensure operators are not assuming additional risk for using an advanced technology that can better detect emissions, the final rule should clarify that if operators discover a process failure using an advanced technology—such as a malfunctioning flare or other failed control device—the operator should repair the failure within a specified period of time and not risk a violation. Operators should also be required to report the failure. If the detected process malfunction is corrected within that specified period and was not caused by operator error or negligence, the owners and operator should not be liable for any violation for a failure of the control device. This approach is consistent with EPA’s 2015 petroleum refinery NESHAPS, which would find a deviation only if emissions are caused by operator error or negligence, or repeat violations. We urge EPA to design the final rule to create an incentive to look for and repair emission sources through a compliance pathway for process malfunctions for advanced technologies.¹¹

¹¹ Methane Roundtable Letter 1 (text under the heading “EPA should establish a compliance pathway for deploying advanced technologies to identify emissions that quarterly OGI may not otherwise identify.”) (citations omitted).

10. Use of Camera-based CEMS

In the preamble to the Supplemental Proposal, the EPA asserts that camera-based continuous emissions monitoring systems should not be approvable alternative monitoring technologies.¹²

Project Canary is aware of camera-based continuous monitoring systems that are in use today or under development. As with other types of surveying and monitoring technologies, we anticipate rapid innovation and improvement in their capabilities. Given the developments in this area, we see no rationale for the EPA to codify a categorical preclusion of any consideration of such technologies under the alternative test method provisions—whether as periodic surveying technologies or continuous monitoring systems. Such a preclusion is inconsistent with the policy objective of promoting technology innovation that is the foundation of the rest of the Supplemental Proposal.

For these reasons, we respectfully recommend that the EPA withdraw this preclusion and instead evaluate proposed camera-based continuous monitoring systems on a case-by-case basis under the alternative test method provisions.

11. Use of Continuous Monitoring Under the Provisions for Alternative Periodic Screening Technologies

Project Canary endorses the Methane Roundtable’s recommendations that operators should be able to use continuous monitoring systems not only for the provisions specific to such systems but also under the provisions for alternative periodic screening technologies. Either option should be available to operators. The relevant excerpts from the Methane Roundtable comments are below:

EPA should ensure that owners and operators can use continuous emission monitors under the periodic screening matrix and that response requirements are technology neutral.

EPA recognizes that continuous monitoring technologies “could be valuable tools in quickly detecting large emissions events, as well as identifying when emissions at the site begin to rise”. However, EPA proposes to regulate non-visual continuous monitors separately by requiring operators to screen more frequently and at lower detection levels than required in the periodic screening matrix, and it is unclear how camera based continuous monitors can be deployed under the proposal.

¹² Supplemental Proposal, at 74744-45. (“The EPA is aware of other continuous monitoring systems using technologies that are not designed to quantify a site-level methane emissions rate (e.g., camera-based continuous monitoring systems). While the EPA believes these systems could be useful in a methane mitigation program, they are not suitable for the proposed alternative continuous monitoring approach because they are not capable of quantifying site-level methane emissions, which is the basis for the equivalency demonstration of the proposed alternative continuous monitoring approach.”).

EPA's proposed approach would discourage the use of continuous emission monitors for compliance with the rule. EPA proposes greater response requirements for operators using the continuous monitor approach by requiring operators to initiate an investigative analysis each time there is an exceedance of relatively small site-wide emission rates compared with the survey matrix's relatively large point-source emission rates. The approach also does not recognize that continuous emission monitors with valid quantification and full-site coverage can directly measure both baseline and fugitive emissions. Temporal information can easily identify when deviations from baseline emissions occur.

To ensure that the rule is technology neutral, we urge EPA not to include greater response requirements or more stringent emissions thresholds for some technologies. If a technology can detect more frequently than required in the periodic screening matrix, that should not create additional (more frequent response requirements) than would apply to an owner or operator deploying OGI or other periodic screening technologies. While a company may use a technology that collects emissions information more frequently than monthly, the obligation should be to demonstrate compliance with fugitive emission requirements no more frequently than the frequency required by the matrix based on the application detection threshold for the technology.

Therefore, we urge EPA to allow owners and operators to use both image-based and non-visual continuous monitoring technologies under the periodic screening matrix provided the technologies can meet the screening matrix's frequency and detection thresholds or equivalent thresholds based on concentration levels.

If the Final Rule allows operators to use continuous monitoring systems under the periodic screening matrix, EPA will need to approve action levels as part of the work practice standards to be submitted to EPA under Proposed OOOOb §60.5398b(d) for certain technologies rather than requiring a response with each detection. EPA correctly recognized that action levels are the right response definition for continuous monitoring systems that are capable of quantification and full-site coverage. Some non-visual continuous monitoring technologies (e.g., point and open path sensors) and periodic screening technologies (e.g., plane or drone-based mass-balance technologies) detect both allowable emissions (e.g., compressor methane slippage) and fugitive emissions because they measure site-wide emissions. Thus, the work practice standards should allow site-wide continuous monitors to quantify baseline emissions through time and identify emissions that exceed the sum of the baseline emissions plus the action levels defined in the matrix. Of note, camera-based continuous monitoring solutions do not require baseline-measurement as part of their work practice standards as they can distinguish permitted emission from process malfunctions. Thus, each work practice standard approved by EPA can include the specific criteria (e.g., a combination of emission rate and duration) that triggers a detection or action level,

which requires an owner or operator to identify the cause of the emission or process malfunction through an investigative analysis.¹³

D. Approval of Advanced Methane Detection Technologies as Alternative Test Methods

Project Canary strongly supports the proposal to approve the use of advanced methane detection technologies through the Alternative Test Methods process under 40 CFR § 60.8(b)(3) instead of the Alternate Means of Emissions Limitation (AMEL) process.

Continuous monitoring systems are being used broadly across oil and gas producing basins both in the United States and internationally. Such systems have demonstrated their value in detecting emissions from unplanned activities, guiding owners and operators to effectively and rapidly diagnose and repair leaks. This has resulted in a significant reduction in methane emissions; emissions that would have otherwise been undetected until the next periodic inspection.

While the majority of continuous monitoring systems are deployed as part of voluntary methane management programs, hundreds of monitors are being utilized to comply with state regulatory requirements—notably, Colorado’s continuous monitoring requirements for Oil and Natural Gas Pre-Production and Early-Production Operations [5 CCR 1001-9, Part D, Section VI]. This program requires owners or operators to utilize continuous monitoring solutions to monitor and detect hydrocarbon emissions which exceed pre-determined concentrations during pre-production and through early production at well sites. The Colorado Air Pollution Control Division (APCD) reviews and approves an owner or operator’s air quality monitoring plans, which must include a detailed description of the technology to be implemented and investigative analysis procedures for varying concentration exceedances.

New Mexico’s Oil Conservation Division (OCD) of the Energy, Minerals, and Natural Resources Department, in its Methane Waste Rule [19.15.27 and 19.15.28 NMAC], authorized alternative technologies to be utilized in the Advanced Leak and Repair Monitoring (ALARM) program. Use of an OCD-approved technology, including a continuous monitoring system, to detect and quickly repair leaks that may have otherwise been undetected allows owners or operators to apply for credits towards their required gas capture plan.

While these state programs are not identical to the continuous monitoring provisions in this Supplemental Proposal, they are analogous in their use of technology to more quickly identify leaks, and allow for expedited repair, reducing methane emissions to the atmosphere. Additionally, technologies approved under these programs must go through extensive review and evaluation to determine the efficacy of the systems, prior to approval.

¹³ Methane Roundtable Letter 1 (text under the heading “EPA should ensure that owners and operators can use continuous emission monitors under the periodic screening matrix and that response requirements are technology neutral.”).

The permit-like approach for AMEL is very complex and resource-intensive, and an AMEL approval only authorizes use of the alternative at the particular site for which the owner or operator applied. In comparison, the Alternative Test Methods process could be more efficient, and a technology or practice approved under the Alternative Test Methods process may be used at multiple facilities. In our view, the Alternative Test Methods process is far better suited to the current realities of methane detection technology—in which innovation and improvement is occurring at a very rapid rate.

Below we provide more detailed comments on particular proposed elements of the Alternative Test Methods process.

1. Pre-qualifications for Requesting Approval of a Technology as an Alternative Test Method

i. Requirement that Technology is “in Commercial Use”

We respectfully urge the EPA to modify certain requirements of the alternative test method requirements that apply for non-entity operators. These requirements, which are found in proposed section 60.5398b(d)(2), imply that only technologies already in commercial use will be eligible for consideration. This could have the unintended effect of stifling, rather than encouraging, innovation.

Proposed section 60.5398b(d)(2)(B)(ii)(B) provides that the “underlying technology” must have already been “applied to methane measurements or monitoring in the oil and gas sector either domestically or internationally.” And section 60.5398b(3)(2)(iii) requires that the underlying technology “must be commercially available, meaning that it has been sold, leased, or licensed, or offered for sale, lease, or license to the general public.”

These are unreasonably limiting conditions. Notably, this proposed “commercially available” requirement imposes a higher standard on alternative test methods than the §111 test for determining whether a system is the “best system of emission reduction” that has been “adequately demonstrated.”

To be the BSER, it is not required that a technology “must be in actual routine use somewhere.”¹⁴ Indeed, there are several instances in which the EPA has determined that a technology has been “adequately demonstrated” and qualifies as the BSER even where only pilot-scale data or projections were available. The Court of Appeals for the District of Columbia Circuit has upheld the validity of this approach.¹⁵

¹⁴ *Portland Cement Ass’n v. Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973) (emphasis added).

¹⁵ See *Sierra Club v. Costle*, 657 F.2d 298, 363-64 (D.C. Cir. 1981) (upholding standard that no plant was then meeting either at pilot- or commercial-scale, based on projected improvement in scrubber technology), 380-84

If EPA does not require that a technology be in current commercial use to qualify as the BSER, it makes little sense for the Agency to impose that requirement on what it intends to be innovative, technology-advancing alternatives to the BSER.

Advanced methane emissions surveying and monitoring technologies are developing rapidly. Innovations are occurring at a brisk pace. The EPA should be open to considering as “alternative test methods” pre-commercial technologies that can demonstrate their effectiveness to EPA through field and pilot testing. Once the technologies are approved by the Agency as scientifically accurate, then it will be up to the market to determine whether they are commercially viable.

ii. Clarification of “Underlying Technology”

We also encourage the EPA to more clearly define the term “underlying technology” in this section. Our interpretation is that underlying technology means a physical methane detector technology that has been shown to adequately measure methane emissions, e.g., laser-based, LiDAR, or metal oxide.

2. Approval Timetable

The effectiveness of the EPA’s proposed program to allow and promote the use of advanced methane detection technologies will depend critically on the EPA’s ability to efficiently and timely approve alternative test methods. Operators will not be comfortable investing in and using alternative technologies unless and until they have certainty that the technologies can be used for compliance.

Project Canary supports the defined 270-day deadline for approvals of requests for alternative test methods.

3. Conditional Approval

We also support the proposed approach of providing a “conditional approval” if the Agency has not acted on a request by the 270-day deadline. This approach could allow an operator to go forward with use of an alternative test method with the understanding that the EPA has not yet taken final action on its review. It would also ensure that unforeseen Agency delays do not impede deployment of these very promising technologies.

(endorsing EPA’s use of operational data from small-scale plants to project utility-scale performance of baghouse technology); *Essex Chemical Corp. v. Ruckelshaus*, 486 F.2d 427, 440 (D.C. Cir. 1973) (concluding that EPA reasonably considered “prototype testing data” and vendor guarantees to determine that system was adequately demonstrated).

However, the “conditional approval” concept will only meet the objective of promoting deployment if the risk to the operator is understood and manageable. To this end, we urge the EPA to consider certain clarifications in proposed section 60.5398b(d)(1)(iii).

First, our understanding of the language in section 60.5398b(d)(1)(iii) is that the 270-day clock starts from the date of the “request” under section 60.5398b(d)(1), and not the date that the EPA determines “completeness” pursuant to section 60.5398b(d)(1)(ii). This approach is rational in our view, and we urge the EPA to confirm this interpretation.

Second, we urge the Agency to provide more detail on how “conditional approval” under section 60.5398b(d)(1)(iii) would work. Absent this additional detail, operators may be reluctant to use methods subject to “conditional approval” status.

For example, it is not clear what consequences follow if the EPA subsequently denies approval for an alternative test method that had “conditional approval” status. We assume that such an Agency action does not result in some form of *retrospective* liability for an operator that used the “conditionally approved” alternative test method in lieu of the requirements for fugitive emissions components affected facilities in §60.5397b and covers and closed vent systems in §60.5416b. Were such retrospective liability to apply, it would defeat the Agency’s intentions for “conditional approval” because it is highly unlikely that any operator would use an alternative test method subject to that kind of risk. For these reasons, we urge the EPA to make clear that an operator is not subject to retrospective liability under such circumstances.

Operators will also want to know what *prospective* obligations they have in the event the EPA ultimately rejects a “conditionally approved” alternative test method. We assume that, in such a scenario, the operator must switch either to an approved alternative test method or to the OGI-based program required in §60.5397b or to closed vent systems as detailed in §60.5416b, as applicable. Project Canary urges the EPA to provide a reasonable grace period for the operator to modify and implement its plan for monitoring fugitive emissions, including obtaining needed equipment and contracting with service providers. For example, the EPA could establish a deadline identical to the deadline that applies under §60.5397b(f) for an initial monitoring survey of a new or modified well, i.e., within 90 days of the Agency’s notification.

A similar grace period should apply in the event that the EPA *approves* an alternative test method that had been subject to “conditional approval” but imposes work practice requirements that vary from the original alternative test method submittal. For example, the Agency could approve a particular kind of continuous monitoring technology but require more sensors than operators were using pursuant to the “conditional approval.” In such circumstances, the operators could benefit from a period of time to obtain the additional sensors needed to ensure full compliance. Here again, a 90-day period would be appropriate.

Project Canary respectfully urges the EPA to consider the foregoing clarifications and modifications to the “conditional approval” approach because they will meet the Agency’s objectives of ensuring

that unforeseen Agency approval delays do not discourage operators from using highly promising advanced methane detection technologies. While any “conditional approval” inherently subjects an operator to some risk, the Agency has an interest in ensuring that the risk is manageable.

In addition, as discussed in other sections in these comments, we respectfully request that the Agency structure the approval process so that it is more streamlined for: (1) technologies already in commercial use and (2) technologies already approved by states.

4. Approval of Minor Upgrades to Approved Alternative Test Methods

The Supplemental Proposal is silent on how the Agency will address minor changes to an already-approved alternative test method. This silence could imply that an owner or operator who wants to use a slightly-upgraded version of an already-approved technology would need to go through the full approval process outlined in §60.5398b(d)(1).

Minor upgrades to an approved technology should not trigger the full approval process. Such an approach would be inconsistent with the Agency’s objective of promoting the use of innovative technologies. For example, Project Canary and other continuous monitoring system developers and vendors regularly push out updated algorithms for the technology, thereby enhancing the system performance. Like upgrades to a smartphone, Project Canary pushes out these improvements frequently to the operators—and, like smartphone upgrades, the upgrades are cost-free. These can include enhancements to the speed of quantification calculations, exception handling, connectivity, and many additional enhancements. While these updates can be as frequent as several times per year, the underlying quantification calculation methodologies and practices remain the same. Requiring such minor upgrades, which don’t fundamentally alter the underlying quantification methodologies, to go through the full approval process is an inefficient use of resources for the regulator and the regulated community—and it could discourage owners and operators from implementing upgrades that offer better environmental performance.

Project Canary respectfully recommends that the Agency adopt a streamlined approval process for minor upgrades to already-approved alternative test methods. The EPA could define a “minor change” or “minor upgrade” as any change in the hardware or associated software of a continuous monitoring system, which may improve, but will not degrade the system’s ability to meet the requirements of §60.5398b(c). Changes in hardware or associated continuous monitoring system software that do not directly impact methane emissions quantification would not require subsequent approval from the EPA. Alternatively, EPA could pre-approve these kinds of changes as part of its approval of alternative test method.

If the Agency determines it needs to have a separate approval process for minor upgrades, it should provide that such approvals are subject to an expedited process, e.g., 60 days instead of 270 days. As with the regular process, “conditional approval” would apply if EPA has not taken final action within the 60-day period (noting our recommended changes to the “conditional approval” requirements discussed in this section of our comments).

5. *Application for an Alternative Test Method – Required Information*

We endorse the Methane Roundtable comments that EPA clarify information that companies requesting approval must include in alternative test method applications and should consider best practices and information required from methane detection approval processes in other jurisdictions, including the Colorado Alternative Approved Instrument Monitoring Methods (Alt-AIMM) process.¹⁶ We also provide specific comments below regarding the completeness determination.

6. *Application for an Alternative Test Method – Completeness Determination*

Project Canary commends the EPA's ambition to streamline the approval process for proposed alternative test methods provided in §60.5398b(d), including acknowledgement of receipt of the request within 14 days and a completeness determination within 90 days of receipt. However, we have concerns regarding the completeness determination process, and are providing the following comments.

We appreciate the EPA's planned completeness determination and notification process outlined in §60.5398b(d)(1)(ii); however, we believe that without well-defined detail of the information EPA expects to see in a request for alternative test methods, there will be unnecessary delays within the approval process. Project Canary agrees in concept with EPA's list of necessary information for consideration of an alternative test method provided in §60.5398b(d)(2) and §60.5398b(d)(3); however, the current proposal is vague when defining specific data necessary to review and approve a technology under these provisions.

As such, Project Canary encourages the EPA develop, specific for technologies requesting an alternative test method under this subpart, a thorough and complete checklist of all information EPA will expect when considering a completeness determination, as well as final approval. A detailed checklist will help applicants ensure that all necessary information is included in each request, while expediting EPA review of the applications, helping streamline the approval process.

Project Canary is also providing comments regarding the initial review for completeness described in §60.5398b(d)(1)(ii). The requirement currently states:

If the request is deficient, meaning the requirements of in paragraphs (d)(2) and (3) were not met, the request will be denied, and the Administrator will notify the requestor in writing. The requestor may choose to revise the information and submit a new request for an alternative test method.

As written, if a request for approval were denied because it was deficient, the requestor would need to submit a new request for approval with appropriate revisions, restarting the 270-day conditional approval. Without a specific and detailed application checklist, as described above,

¹⁶ Methane Roundtable, "Letter 2: Comments and Recommendations for the Alternative Test Method Approval Process" (text under the heading "Alternative Test Method Application Materials").

we believe there is too much ambiguity regarding what a request must include in order to be determined complete. This is particularly important because if a request is deemed incomplete, a completely new request must be submitted, inevitably delaying the process for approval of alternative technologies.

Project Canary also encourages EPA to provide reasonable timeframes for requestors to respond to questions and/or requests for additional information related to a request for an alternative test method, prior to denying such request. This clarification is consistent with EPA's practice. For example, in the ALT-150 approval letter, the requestor submitted additional information twice before approving the application.¹⁷

For the reasons discussed above, we recommend the following revision to §60.5398b(d)(1)(ii):

If the request is deficient, meaning the requirements of in paragraphs (d)(2) and (3) were not met, the request will be denied, and the Administrator will notify the requestor in writing. The requestor may choose to revise the information and submit a new request for an alternative test method. **The new request will not restart the 270-day period provided in subparagraph (iii).**

7. Disputed Results

Project Canary respectfully recommends that the EPA make a limited modification to section 60.5398b(d)(1)(iv), which provides that the Agency may require an operator using an approved alternative test method to demonstrate compliance with an OGI camera if the Agency “finds reasonable grounds to dispute the results obtained” by the alternative test method.

This provision appears to assume that an operator that has opted to use an approved alternative test method will continue to have OGI cameras on-site and available. That might be the case if the alternative test method is a periodic surveying technology—because the Supplemental Proposal requires that use of such technologies is coupled with periodic OGI surveys. However, there is not a similar requirement for use of approved continuous monitoring systems.

For this reason, we recommend that the EPA integrate a “grace period” between the Agency’s notification of dispute and the operator’s OGI camera survey. Such a period will make it possible for the operator to procure OGI camera surveying services if it does not already have such services. We suggest the following edits to the text:

(iv) If the Administrator finds reasonable grounds to dispute the results obtained by any alternative test method for the purposes of demonstrating compliance with a relevant standard, the Administrator may require you to demonstrate compliance according to §60.5397b for fugitive emissions components, affected facilities and §60.5416b for covers and closed vent systems **within 30 days of the Administrator’s notification to you of disputed results.**

¹⁷ See ALT-150 Approval Letter, p. 1.

8. Use of Third-Parties or States in the Approval Process

Project Canary encourages the EPA to take into consideration continuous monitoring systems that have been approved for similar purposes under state regulatory programs, at a minimum to provide expedited approval of a technology. For example, Colorado Department of Public Health and Environment's (CDPHE) Alternative Approved Instrument Monitoring Method (Alt-AIMM) program includes an extensive equivalency, and technology feasibility review, to ensure approved continuous monitoring systems will meet the LDAR objectives, meeting or exceeding an already robust OGI camera LDAR inspection program.

We encourage the EPA to not discount the significant efforts of technology providers and state regulators that demonstrate the efficacy of continuous monitoring technologies, not only expediting approval, but also adoption of approved systems resulting in greater emissions reduction more quickly.

E. Post Well Closure Planning and Monitoring Requirements

Project Canary supports the requirements at §60.5397b(1) related to well closures, and we add the following recommendations.

The nature of methane leaks is intermittent and unpredictable, and as such the EPA should require those that are taking ownership for plugging orphaned and abandoned to monitor wells both prior to and after plugging the well. As these wells are plugged by states with state funding, federal funding through the Bipartisan Infrastructure Law or by private companies, it is imperative that monitoring is conducted before and after plugging to ensure the process was successful. High-fidelity monitors and qualified personnel can record data before and after plugging to verify that the well is sealed and no longer emitting.

Operators should monitor pre-plugging and document any flow rate and concentration to determine a calculated emissions rate (grams per hour) using best available technology, such as a high-fidelity (1 gram/hour or lower), ground-based technique and instrumentation and conducted by a professional trained in that measurement methodology. For this level of fidelity, OGI is not sensitive enough to conduct a detect/non-detect for these wells. After a well is plugged, the operator should monitor the well to confirm that the plug was successful and there are no longer emissions present, whether through the wellbore itself or nearby soil. Data measurement and quality assurance criteria should meet the federal program information needs for methane measurement and allow for aggregation. Documentation should include weather/environmental conditions under which the measurement occurred, location of the detection, and the maximum emissions concentration recorded in parts per million. We recommend that multiple measurements be recorded before and after plugging the well to verify the effectiveness of the measurement.

F. State Program Requirements

Project Canary supports the EPA’s approach of providing in §60.5398c of the proposed EG OOOOc rule that states may integrate approved alternative test methods into their state plans—rather than require a state to go through a separate “equivalency” demonstration for such methods.

The EPA’s approach could be particularly important and valuable because, by the time that states are developing and submitting their EG OOOOc plans, the Agency will hopefully have approved several methods. This will make it possible for state plans to authorize or require the use of technologies that provide improved detection and more precise quantification.

Furthermore, we support the Methane Roundtable recommendation that states should have the ability to propose plan elements based on updated versions of the FEAST model or on inputs to the model that are specific to the state’s geography or basin.¹⁸

G. Interplay with the Inflation Reduction Act

The EPA has invited comments on the interplay between the proposed rule and the MERP provisions in §60113 of the Inflation Reduction Act. In Project Canary’s view, §60113 provides strong support for the inclusion of the alternative test method provisions for continuous monitoring systems in the Final Rule.

The text of §60113 makes clear that Congress intends that there should be increasingly rigorous detection and quantification of methane emissions in the oil and gas sector. For example, §60113 requires EPA to levy the 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 through a per-ton waste emissions charge.

Congress clearly intended EPA to use the funds appropriated under §60113 to financially support the deployment and adoption of the most rigorous available methane detection and quantification technologies. In particular, the appropriated funds provide a means for EPA to assist operators in

¹⁸ Methane Roundtable Letter 1 (“EPA should make clear that as part of the alternative test method approval process, site-specific emission monitoring plans, or state 111(d) plans, entities can use the most recent publicly available versions of FEAST and other models, as well as recent peer reviewed studies specific to basins within that state as modeling inputs.”).

progressing from periodic surveying with OGI cameras and Method 21 to more advanced and effective methane monitoring technologies.

The regulatory incentive of the alternative test methods may not be sufficient for some operators—including operators of marginal wells—for whom the costs of purchasing and operating such technologies exceeds the costs of OGI cameras. Many operators already have established OGI inspection programs with company-owned OGI cameras and personnel, and more frequent inspections will be additive to their current LDAR programs. In certain instances, expansion of an existing LDAR program utilizing OGI cameras, even with the need for additional cameras and personnel, will cost less than expenditures necessary to implement a continuous monitoring program. The funds appropriated through §60113 can supplement the regulatory incentives in the proposed §111 rules to bridge this gap.

§60113 clearly directs EPA to use funds to aid deployment of advanced monitoring technologies, thereby lowering their costs and expanding their availability throughout the sector. For example, §60113(a)(3)(B) requires EPA to ensure funds are dedicated to “improving and deploying industrial equipment and processes that reduce methane and other greenhouse gas emissions and waste.” And §60113(a)(3)(C) directs the Agency to use funds for “supporting innovation in reducing methane and other greenhouse gas emissions and waste from petroleum and natural gas systems.”

Project Canary submitted detailed comments on EPA implementation of the Inflation Reduction Act in its response to the EPA Request for Information on the Methane Emissions Reduction Program, Inflation Reduction Act of 2022 (Docket ID No. EPA-HQ-OAR-2022-0875) (RFI). We incorporate our response to the RFI by reference and we have attached a copy.

H. Definition of Fugitive Emissions

The Supplemental Proposal includes relevant definitions, listed in §60.5430b. The definition of “fugitive emissions” is as follows:

Fugitive emissions are defined as any indication of visible emissions observed from a fugitive emissions component using optical gas imaging or an instrument reading of 500 parts per million (ppm) or greater using Method 21 of appendix A-7 to this part.

This definition appears to be identical to what is referenced in NSPS OOOOa, §60.5397a(a)(1). However, because the Supplemental Proposal allows for alternative technologies to screen and/or monitor for fugitive emissions leaks, we believe the definition of *Fugitive Emissions* should be updated to account for emissions detected using such technologies. We propose the following definition for consideration:

Fugitive emissions are defined as any indication of visible emissions observed from a fugitive emissions component using optical gas imaging or an instrument reading of 500 parts per million (ppm) or greater using Method 21 of appendix A-7 to this

part, or any emissions detected from a fugitive emissions component using an alternative screening technology as described in Tables 1 and 2 of this Subpart, or reaching a facility-appropriate action-level as defined in 60.5398b(c)(4)(i) using an approved continuous emissions monitoring system.

I. Harmonizing Methane Regulations Across Federal Rulemakings

And finally, although not a part of this proposed rule but an integral part of the Administration's methane reduction goals, we strongly urge the EPA to collaborate closely with other federal departments that are also regulating methane emissions. The EPA has an opportunity to harmonize more effective and innovative measurement-based methane controls and policies by coordinating with other federal agencies—including the Bureau of Land Management, the Securities and Exchange Commission, the Department of Energy, the Department of the Treasury, the Federal Acquisition Regulatory Council, and the Pipeline Hazardous Materials Safety Administration—to ensure that methane-related regulations or policies implemented by those agencies also provide a pathway for deployment of advanced methane monitoring technologies including continuous emissions monitoring. This will accelerate the deployment of advanced technologies and continuous monitoring, reduce compliance costs, enable robust energy production, ensure greater reductions of methane to protect our environment from the effects of climate change and, importantly, minimize duplicative compliance requirements.

Conclusion

Project Canary commends the Agency for its innovative approach in this Supplemental Proposal and we believe, with certain modifications and robust implementation, the Final Rule can promote and accommodate the development and use of advanced technologies and continuous monitoring, support the development of the methane measurement sector and foster a market for certified, low-emissions natural gas for both domestic and foreign consumers, harnessing the power of both the regulatory system and private markets. We urge EPA to finalize a rule that meets this promise.

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We sincerely appreciate your consideration of our comments. Should you have any questions, please feel free to reach out to brian.taylor@projectcanary.com. We look forward to continuing to work with you and your staff on this important rulemaking.

Sincerely,

William Foiles
Co-Founder and Chief Operating Officer
Project Canary, PBC