DIFFERENTIATED GAS COORDINATING COUNCIL

February 13, 2023

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

RE: DGCC comments on the EPA Supplemental Proposal to Reduce Methane and Other Harmful Pollution from the Oil and Natural Gas Operations, Docket No. EPA-HQ-OAR-2021-0317-1460

Dear Administrator Regan:

The Differentiated Gas Coordinating Council (DGCC) appreciates the opportunity to provide comments on the Environmental Protection Agency's (EPA) proposed supplemental rule titled "Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review" (Supplemental Proposal).

The DGCC commends the EPA for its thoughtful proposal to reduce methane emissions from oil and gas operations. We encourage the EPA to use this opportunity to establish strong, consistent standards that will drive down oil and gas sector emissions across the board, while also ensuring flexible, cost-effective compliance options for operators throughout the U.S.

Particularly, as a coalition that represents upstream, midstream, and downstream segments of the oil and gas industry; competing technology innovators; academics; and emerging digital solution platforms, we commend the agency for its innovative approach to approving new and better methods to detect and characterize sources of methane emissions and for employing these new tools for methane identification and quantification, particularly for super-emitters. 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 innovation-conducive regulatory standards.

At the same time, we believe it is important for the EPA to recognize the role of private actors and voluntary markets in reducing methane emissions beyond what will be required by such regulatory standards. New measurement technologies have become available that are enabling the monitoring and detection of methane leaks at a level never before seen. Operators are using these technologies to certify their products as "differentiated"—having lower environmental attributes—from their competitors. This certification process meets consumer demand for verifiably low-emission fuels. Gas producers will continue to be incentivized to go above and beyond the EPA's regulatory standards to take advantage of this new voluntary market.

For these reasons, we urge the EPA to ensure that its supplemental rule does not inadvertently hinder or discourage additional voluntary efforts to reduce methane emissions greater than what is called for by regulation. Such voluntary market measures will play a critical role in supporting a healthy environment while also fostering innovation and economic growth.

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I. Executive Summary

The EPA's Supplemental Proposal is a positive first step, yet is not sufficient to address all methane emissions across the natural gas sector. Voluntary gas markets recognize and reward operators who go beyond the minimum regulatory requirements. By independently certifying and installing monitoring devices, operators can detect and repair leaks rapidly. According to estimates from the EPA's Greenhouse Gas Reporting Program (GHGRP), the natural gas industry's average methane intensity rate was 0.51% in 2020.[1] However, some operators produce gas with a methane intensity as low as 0.032%, a dramatic improvement compared to the industry average.[2]

This voluntary market will be a significant help in the EPA's efforts to reduce methane emissions and the EPA must ensure its standards are flexible enough to ensure the market's success. For this reason, the DGCC strongly applauds the EPA's inclusion of the survey matrix for alternative screening approaches and an innovative alternative test method approval process in the Supplemental Proposal. The process provides operators an option to comply with EPA's standards with advanced technologies that provide for additional emissions reduction and hereby lower methane intensity. The commercial availability of advanced technologies such as aircraft surveillance and site-level direct measurement utilizing advanced monitoring

[1]Clean Air Task Force. (July 2022). *Benchmarking Methane and Other GHG Emissions of Oil and Natural Gas Production in the United States*. https://cdn.catf.us/wp-content/uploads/2022/07/14094726/oilandgas_benchmarkingreport2022.pdf.
[2]PureWest Energy. (2022, December 9). *2021 Environmental, Social and Governance Report*. https://purewest.com/corporate-responsibility/

technology is already helping reduce methane emissions throughout the oil and gas value chain. The alternative test method approval process fosters continued development in the voluntary market by moving away from the traditional top-down regulatory model. The EPA must recognize the importance of this provision and its economic and environmental benefits.

The effectiveness of the EPA's proposed program to allow and promote the use of advanced methane detection technologies will also 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. In addition, the DGCC offers several specific comments on ways to improve upon the alternative test method program and specific technical comments that identify areas for EPA to better align the matrix requirements to encourage owners and operators to use advanced technologies to ensure greater and more cost-effective emission reductions.

The EPA must also be mindful of how the Supplemental Proposal may interplay with the enactment of the Inflation Reduction Act's (IRA) methane-related provisions, first and foremost of which is the Methane Emissions Reduction Program (MERP). Under the MERP, Congress directs the EPA to revise the GHGRP Subpart W reporting requirements to ensure empirical data is used to accurately quantify the oil and gas sector's greenhouse gas emissions, a direction that aligns with the use of new measurement technologies such as continuous emissions monitoring systems. The EPA should leverage the Supplemental Proposal to expand the use of these advanced technologies to ensure such empirical data is available across the industry.

The Supplemental Proposal also raises questions about the equivalency of state-level methane policies. The DGCC encourages the EPA to take into consideration alternative technologies, including continuous monitoring systems, that have been approved for similar purposes under state regulatory programs. At a minimum, the EPA should provide expedited approval of such technology. We encourage the EPA to not discount the significant efforts of technology providers and state regulators to demonstrate the efficacy of these technologies, not only expediting approval, but also the adoption of approved systems resulting in greater emissions reduction in a much shorter period.

Finally, the EPA has an opportunity to establish a high bar and coordinate a move to more measurement-based assessments of methane impacts by ensuring the Supplemental Proposal is harmonized with other federal regulations pertaining to methane emissions. By coordinating with other federal agencies promulgating methane-related regulations (e.g., Bureau of Land Management [BLM], Securities and Exchange Commission [SEC], Department of Energy [DOE], Department of the Treasury [Treasury], Federal Acquisition Regulatory Council [FAR Council], etc.), the EPA can avoid duplicative or conflicting regulatory regimes. This will set a high bar for measurement-based assessments of methane impacts, which will reduce compliance costs, enable robust energy production, and protect our environment from the damaging effects of climate change.

II. Background

The DGCC is an ad hoc coalition of stakeholders across the natural gas supply chain dedicated to expanding the market for low methane, "differentiated" natural gas. Its members include academics; downstream, midstream, and upstream energy producers; gas customers; and technology companies. The DGCC's goal is to facilitate a pathway for regulators, utilities, and gas consumers to accept differentiated gas as an important option to meet their climate goals.

The DGCC's members are part of a growing number of industry stakeholders who provide, utilize, certify, and validate site-level direct measurement and advanced monitoring technology to help reduce methane emissions throughout the oil and gas value chain. These advanced systems quantify and upload high-fidelity data to the cloud, in some cases 24 hours a day, 7 days a week. The use of high-fidelity data allows operators to detect leaks quickly and initiate prompt corrective action. Above all these data are used to ensure natural gas consumers have confidence that the gas they buy has the lowest possible environmental attributes possible.

These advantages result in cost savings to the operator by preventing additional escaped gas and by facilitating compliance with multiple agency regulations, including the Supplemental Proposal. For these reasons, direct measurement and advanced monitoring technology are well on their way to being broadly adopted in the oil and gas industry. A recent U.S. Government Accountability Office investigation found that entities within the oil and gas industry are already voluntarily utilizing advanced monitoring technologies to detect and reduce methane emissions.[3]

New technologies, including hand-held and drone-based optical gas imaging, manned aircraft, satellite, etc., have substantially expanded the capabilities and availabilities of direct measurement and advanced monitoring services. The chart below (Figure 1) illustrates that the number of "methane detection" patents has doubled since the EPA last promulgated methane rules in 2016.

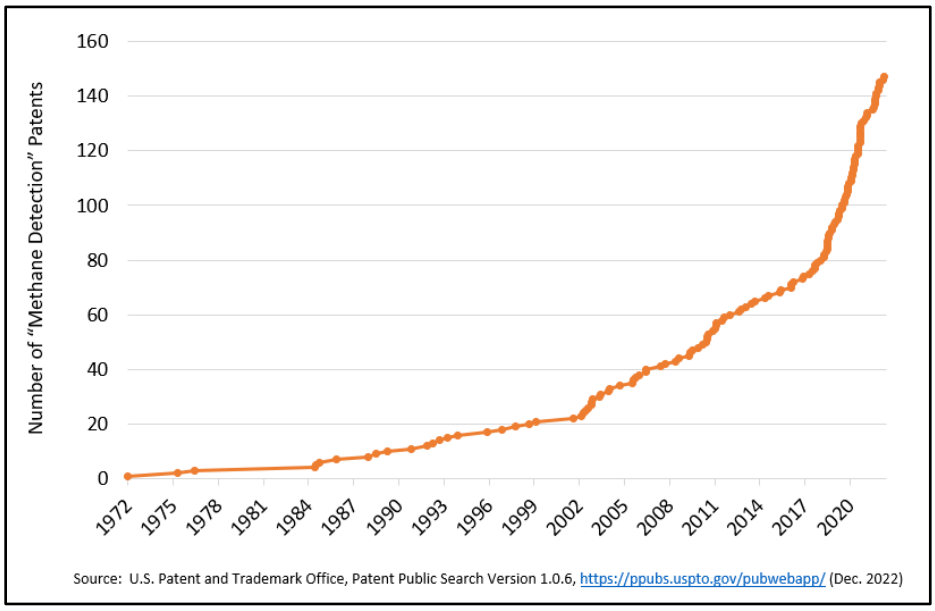

Figure 1. Methane Detection Patents, 1972-2022

[3]U.S. Government Accountability Office. (2022, April). *Oil and Gas: Federal Actions Needed to Address Methane Emissions from Oil and Gas Development*. https://www.gao.gov/assets/gao-22-104759.pdf

A voluntary differentiated gas market is growing rapidly (Figure 2) thanks to the adoption of these new tools, along with the expanded use of certifiers, rating agencies, registries, and standards bodies. These entities provide the framework for such a market to exist. They allow producers to fully know the standards and metrics they must meet, and they ensure buyers have the data needed to make informed decisions on their energy purchases. In a world looking to reconcile climate change and the continued use of fossil fuels, energy products with smaller greenhouse gas footprints have a competitive advantage.

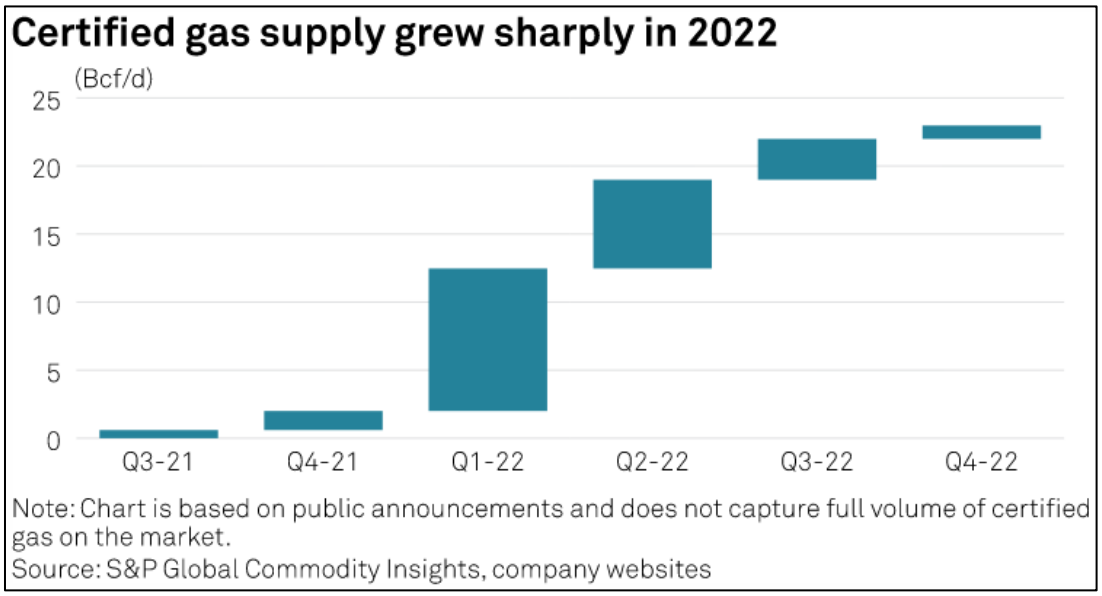

Figure 2. Growth of the voluntary differentiated gas market[4]

Ultimately, consumers are driving the growth of this new market. In December, Williams reached an agreement with Coterra Energy Inc. and Dominion Energy Inc. to provide differentiated gas from the shale patch in Northeast Pennsylvania to consumers in Virginia and North Carolina.[5] In November, PureWest Energy signed a deal to provide a large west coast buyer with 30,000 million British thermal units per day (MMBtu/d) for one year.[6]

U.S. liquified natural gas (LNG) exporters are also under pressure to reduce their product's environmental attributes, especially in the European market. In December 2022, the European Commission proposed strict methane rules requiring the measurement, reporting, and verification (MRV) and leak detection and repair (LDAR) of energy sector methane emissions and import reporting requirements.[7] The rules would also prohibit oil and gas operations from venting and flaring unless technically necessary.[8] These regulations are currently being negotiated with Members of Parliament and will be finalized sometime this year. As such, buyers in the European Union (EU) are seeking out energy products with the lowest methane intensity possible.

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[4]Raymond, H. (2023, January 11). *Blue hydrogen: The Future of Certified Gas?* S&P Global Commodity Insights. https://www.spglobal.com/commodityinsights/en/market-insights/blogs/natural-gas/011123-blue-hydrogen-the-future-of-certified-gas

[5]Baker, A. (2022, December 15). *Williams, Coterra and Dominion joining forces to Procure Certified Natural Gas.* Natural Gas Intelligence. https://www.naturalgasintel.com/williams-coterra-and-dominion-joining-forces-to-procure-certified-natural-gas/

[6]PureWest Energy. (2022, December 17). *PureWest to supply West Coast End-user with Certified Gas.* https://purewest.com/news/purewest-to-supply-west-coast-end-user-with-certified-gas/

[7]European Council. (2022, December 19). *Member States agree on new rules to slash methane emissions.* https://www.consilium.europa.eu/en/press/press-releases/2022/12/19/member-states-agree-on-new-rules-to-slash-methane-emissions/

[8]European Parliament. (n.d.). *Methane emissions.* Energy. https://energy.ec.europa.eu/topics/oil-gas-and-coal/methane-emissions_en

However, LNG is still an important part of the EU's energy mix for the foreseeable future. In June 2022, Southwestern Energy Company and Uniper—a large German energy supply company—signed a multi-year deal for differentiated gas.[9] In December 2022, Engie—a major EU energy utility that had previously rejected U.S. LNG for being too methane intensive—signed a 15-year deal with Sempra Infrastructure to procure 0.875 million tons of differentiated LNG per year.[10] Gas buyers at home and abroad are recognizing the critical role differentiated gas will play to meet their energy needs while mitigating their climate risks.

Our coalition aims to rapidly enable and scale this burgeoning differentiated gas market. To do so, we not only aim to establish trust, transparency, and transactability within the market itself but also ensure harmonization between the various U.S. agencies that regulate methane. Doing so will allow the U.S. to meet its climate security and energy security needs as quickly as possible.

III. Key Points

A. Treatment of Alternative Technology in the "Matrix"

The DGCC aligns itself with comments made by the Methane Roundtable, a diverse group of oil companies, technology companies, academics, and a non-governmental organization dedicated to addressing global methane pollution, as found 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.*
>
> *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 site-wide emission rates that are relatively small compared with the survey matrix's point-source emission rates. Additionally, there is no parallel to the long-term action level in the [optical gas imaging (OGI)] or periodic survey matrix.*
>
> *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*

[9] Southwestern Energy Company. (2022, June 14). *Southwestern Energy, Uniper execute supply agreement for RSG*. BusinessWire. https://www.businesswire.com/news/home/20220613005883/en/

[10] Sempra. (2022, December 6). *Sempra Infrastructure Announces Agreement with ENGIE for Supply of U.S. LNG from Port Arthur LNG Phase 1*. Sempra. https://www.sempra.com/sempra-infrastructure-announces-agreement-engie-supply-us-lng-port-arthur-lng-phase-1

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 or column density 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 that requestors submit 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.

1. Greater Flexibility for Advanced Technologies with FEAST Modeling

The Supplemental Proposal provides guidance about how continuous monitors should be used with action levels corresponding to 7-day and 90-day rolling average windows. Many continuous monitors are used to find leaks quickly and measuring a leak for 90 days before acting is not consistent with the best use of many continuous monitors. More effective continuous monitoring would occur with different durations of rolling average windows.

To address this concern, we recommend that in addition to the prescribed 7-day and 90-day rolling average windows, EPA make clear that requestors can submit Fugitive Emissions Abatement Simulation Toolkit (FEAST) modeling as part of their applications (under proposed OOOOb §60.5398b(d)) with different rolling average windows, customized to maximize the effectiveness of the continuous monitoring technology. Some continuous monitors are most effective when deployed using two rolling average windows, but other continuous monitors are most effective when deployed using a different number of rolling average windows. In all cases, FEAST modeling would ensure that the action levels are set corresponding to the number and duration of rolling average windows to ensure that the resulting emissions reductions are equivalent to the best system of emission reduction (BSER).

Additionally, EPA should make clear in the Final Rule that requestors can submit applications for a combination of periodic screening technologies and continuous monitoring technologies. Such applications should include FEAST modeling with the same input emissions distribution EPA uses in the Final Rule to enable EPA to evaluate those applications within the proposed 270 days alternative test method approval process.

2. Improve Utilization of Advanced Technologies Using FEAST Modeling

Proposed Tables 1 and 2 to Subpart OOOOb of Part 60 (presented as Tables 20 and 21 in the Supplemental Proposal) provide survey matrices for alternative periodic screening approaches based on EPA's FEAST modeling and simulations. The matrices provide guidance on five minimum screening frequencies versus their corresponding minimum detection thresholds of screening technology, which are expressed as a 90% probability of detection threshold. In developing the detection limits for the matrix, EPA makes two critical assumptions in its FEAST modeling:

1. The statistical distribution of fugitive emissions, of super emitters and their intermittency
2. All emissions at a site at and above the detection limit listed in the matrix are detected with a 90% probability by the advanced technology for every screening and that no emissions are detected below the listed detection limit.

The second assumption in EPA's FEAST modeling is a disincentive for operators to utilize advanced technologies if the currently proposed language is interpreted by EPA as requiring alternative technologies to detect emissions from every fugitive component, cover, or closed vent system (CVS) at a site at 90% probability of detection for every screening. Advanced technologies may not be able to guarantee this due to technology-specific circumstances related to site coverage and visual obstruction.
At the same time, alternative technologies will detect significantly more emissions than assumed by EPA in its FEAST modeling due to the impact of the complete probability of the detection curve, which EPA's FEAST modeling does not currently consider. These incremental detections, due to the probability of the detection curve, can more than offset reduced detections due to visual obstruction or other coverage-related issues. Alternatively, an advanced technology solution provider may offset site coverage limitations with a lower limit of detection than required under the matrix.

A guarantee of detecting emissions from every fugitive component, cover, or CVS at a site at a 90% probability for every screening inspection may not be possible for many sites. Examples are:

- Venting from compressor rod packing at compressors that are covered by a roof may not be detectable by plane surveys due to lack of line of sight to the vent and the vent plume will be too dilute for detection once it is blown sideways out under the roof.
- An emissions plume from methane emissions slippage at compressors may frequently cover up underlying fugitive emissions from fugitive components in the vicinity of a compressor and make them undetectable by visual aerial detection. Any fugitive emissions will intermingle with the methane emissions slippage and will then be considered a permitted emission from the compressor instead of being detected.
- Emissions from high-up sources such as thief hatches on tall tanks may not drift down towards point sensors or reflector installations of open path detectors installed lower to the ground.
- Continuous installed OGI cameras may not have a direct line of sight to yard piping or other fugitive components due to visual obstruction behind storage vessels or other large structures.

Challenges with site coverage also exist for OGI inspections as EPA proposes exemptions for "Unsafe to inspect" or "Difficult to inspect" components in its OGI inspection requirements for covers and CVS.

Concurrently, advanced technologies do not have a fixed "cutoff value" for a detection limit as is assumed in EPA's FEAST modeling, but instead a probability of detection curve that will detect emissions at lower emission rates at a probability below 90%. This will result in very significant additional emissions reductions as the frequency of emission events occurring is larger at lower emission rates. Alternatively, some advanced

technologies will also have a 90% probability of detection limits that are below EPA's matrix limit while still suffering from the site coverage constraints as described above.

The FEAST and Highwood Emissions Management's Leak Detection and Repair Simulator (LDARSim) models are capable today of modeling these limitations.[11] Specifically, they can model the incremental detection capabilities of advanced technologies due to their probability of detection curve or due to lower detection levels and they can model the reduced detection due to technology-specific limitations in site coverage.

EPA could consider making assumptions in their FEAST modeling of on-site coverage and probability of detection curves. However, this may be challenging to implement in a technology-neutral way as the specifics of site coverage and of the shape of a probability of detection curve vary by advanced technology.

Instead, we recommend that EPA clarify that advanced technology solution providers can submit to EPA, under the alternative test method approval process, technology-specific FEAST modeling to demonstrate that their alternative test method and related work practice utilizing a combination of site-coverage parameter and probability of detection curve or improved detection limit results in equivalent or greater emission reductions compared to the matrix (combination of detection limit and screening frequency), which EPA has demonstrated is equivalent to BSER. The newly introduced site coverage parameter will become a part of the technology-specific work practice that has to be followed by operators for all sites. EPA should make clear that applicants can make this demonstration if they use EPA's assumptions in the Final Rule's FEAST modeling for the statistical distribution of fugitive emissions and for super emitters and their intermittency while being permitted to introduce an explicit parameter for less than 100% site coverage (and a corresponding coverage requirement in the technology-specific work practice) and for either using a lower detection limit then required by the matrix or for modeling a full probability of detection curve instead of a cutoff value.

3. Flexible Screening of Alternative Technologies Using FEAST

There are currently no provisions pertaining to the simultaneous deployment of combinations of alternative technologies. Deploying alternative technologies in combination can allow the complementary strengths of the different technologies to be combined in practice. More effective monitoring can occur in many situations if different technologies are combined. Studies show examples of how periodic screening technologies and continuous monitoring technologies can be deployed in combination to achieve particularly effective monitoring.[12]

Moreover, some operators may be willing to agree to a faster response time to detected emissions than required by EPA. The response time assumption is a significant variable in FEAST modeling—a faster response will increase the reduction of emissions. An example is a faster response to abnormal emissions from abnormal venting from fugitive components, covers, or CVSs.

Finally, EPA's proposed rule includes only five combinations of detection limit and screening frequency for the screening matrix. This limits the flexibility of deployment of existing or future advanced technologies. For example, advanced technologies may be more cost-effective when deployed at a different combination of detection limit and screening frequency than anticipated by the EPA.

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[11] LDARSim. (N.D.) Highwood Emissions Management. https://highwoodemissions.com/ldarsim/

[12] Cardoso-Saldaña, F.J. (2022, Nov. 15). *Tiered Leak Detection and Repair Programs at Oil and Gas Production Facilities*. ExxonMobil Upstream Research Company. https://chemrxiv.org/engage/chemrxiv/article-details/636d4595afea7fcd1c9f5f67

We recommend that EPA clarify that advanced technology solution providers can submit to EPA, under the alternative test method approval process, technology-specific FEAST modeling to demonstrate that their alternative test method and related work practice utilizing: 1) a combination of screening technologies, 2) different requirement for operator response times to alarms, or 3) a different combination of detection limit and screening frequency. The EPA has demonstrated such practices are equivalent to BSER.

The newly introduced parameters (e.g., a combination of screening technologies, response times, detection limits, and screening frequencies) will then become a part of the technology-specific work practice that has to be followed by operators for all sites utilizing this technology. EPA should make clear that applicants can make this demonstration if they use EPA's assumptions in the Final Rule's FEAST modeling for the statistical distribution of fugitive emissions and for super emitters and their intermittency, while being permitted to introduce explicit parameters accounting for the combination of multiple screening technologies, for a different response time for operators to alarms or for different combinations of detection limit and screening frequency.

B. Action Levels

1. Action Levels Should be Based on Mass Emission Rates, not Concentration

From EPA's solicitation:

> *The EPA is proposing to standardize two action levels: (1) A long-term action level to limit emissions over time and (2) a short-term action level to identify large leaks and malfunctions.*

From EPA's solicitation:

> *The EPA is 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.*

The DGCC 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 Title 40 of the Code of Federal Regulations, Part 98, Subpart W, as required by the IRA.

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

From EPA's solicitation:

> *Based on data generated through the FEAST model, the EPA is proposing an action level of 1.2 kg/hr for sites consisting of only wellheads and 1.6 kg/hr for all other well sites and compressor stations with equipment. This long-term action level would be based on a rolling 90-day average, where the 90-day average would be recalculated each day. The EPA is also proposing a short-term action level of 15 kg/hr for sites consisting of only wellheads and 21 kg/hr for other well sites and compressor stations. The short-term action levels would be based on a rolling 7-day average—with the 7-day average recalculated each day. The EPA is soliciting comment on these metrics, which are summarized in the table below.*

The DGCC 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, as addressed in our comments above, the specific proposed action levels do not account for normal operations and associated "authorized" methane emissions rates. 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 an additional 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. The approach, as generally 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, the DGCC suggests the following methodology for setting a baseline methane emissions rate for each wellhead-only and well site 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 the 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 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 should be initiated.
- The owner or operator may update the baseline voluntarily at any time.

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

From EPA's solicitation:

> *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.*

The DGCC is providing comments on the potential use of methane intensity or production rates in the development and use as action levels for continuous monitoring systems. 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 unpredictably sway intensity numbers on a given location, potentially resulting in missed action levels. Although the DGCC is a proponent of methane intensity, at this time, the DGCC recommends the EPA not implement an action level determination utilizing either methane intensity or facility production.

We recognize that methane intensity is the primary metric for the IRA's 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 measurements 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.

C. Root Cause Analysis

From EPA's solicitation:

> *The EPA is proposing that owners and operators must initiate a root cause analysis within 5 calendar days of an exceedance of either the short-term or long-term action level. The EPA solicits comment on the root cause analysis. proposed timing to perform the initial periodic screening survey, including information to support different timeframes.*

The DGCC aligns itself with comments made by the Methane Roundtable, as found below:

> *EPA should require operators to detect and correct all emissions from process malfunctions and fugitive emissions efficiently and effectively.*
>
> *Under the periodic screening matrix portion of the Supplemental Proposal, if operators confirm a detection of emissions using an advanced technology, they would be required to conduct a sitewide OGI sweep of the fugitive emission component affected facilities and OGI inspections of closed vent systems (CVS) and covers to localize the emissions and leaks. If that OGI survey demonstrates the confirmed detection was caused by fugitive emissions, the operator must repair that leak. If the OGI survey demonstrates that the confirmed detection was caused by a process malfunction (of a cover, CVS, or control device) then the operator "must initiate a root cause analysis to determine the cause of such failure and to determine appropriate corrective action".*
>
> *This Supplemental Proposal does not require operators to conduct this additional OGI sweep when monitoring fugitive emissions with OGI because OGI can sufficiently identify the location of the leaking component. Some advanced technologies can similarly identify the location of the leaking fugitive emission component or process malfunction, thereby rendering follow up OGI duplicative for the purposes of identifying the source or cause. To identify the emission source, an operator might use the advanced technology's spatial and temporal information in conjunction with data analysis of process or runtime data. 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 emission. A mandatory OGI sweep will create a disincentive for operators to deploy advanced technologies for compliance with the rule if that advanced technology can localize the emission to a component, identify the emission as normal or abnormal, or identify its root cause.

Rather, we recommend that EPA design the Final Rule to allow operators to choose the most effective follow up response based on the advanced technology's capability to identify the emission cause. EPA should consider providing more choices on how to respond when emissions are detected, similar to the approach used in the fenceline monitoring work practice promulgated by EPA in 2015 as part of the NESHAP for the petroleum refinery sector. Under that rule, if an operator determines an action level exceedance, the operator must initiate an investigative analysis which may include: leak detection using Method 21, leak detection using OGI, or employing progressively more frequent sampling using Method 325A and 325B. In the preamble of that rule, EPA stated that "the premise of the fenceline monitoring is to provide the refinery owners or operators with the flexibility to identify the most efficient approaches to reduce the emissions that are impacting the fenceline level." We recommend providing similar options for operators to use advanced technologies to efficiently fix leaks in the Final Rule.

We recommend that the Final Rule require that if an advanced technology confirms an emission detection, the operator should identify the emission source or cause. The Final Rule need not specify only one option to identify the component releasing the emissions. Instead of automatically requiring a sitewide OGI sweep, the Final Rule should require operators to use:

- *an advanced technology that EPA approves to identify the emission source or cause;*
- *an advanced technology combined with any relevant process data analysis to identify the emission source or cause;*
- *advanced technology coupled with a continuous emission monitor to identify the emission source; or*
- *OGI or Method 21 to identify the emission source.*

Once the operator identifies the emissions source, the operator's obligation should be to repair all sources of fugitive emissions and initiate an investigative analysis (discussed more fully below) for all process malfunctions. EPA can establish the requirements for an advanced technology's capability to localize a confirmed emission detection through work practice standards in the alternative test method approval process. If a sitewide OGI inspection sweep is performed to identify the emission component source, we agree with EPA that such an OGI sweep would satisfy any required annual OGI screen if that is required for that specific technology or under the matrix.

More specifically, the DGCC supports the EPA's proposal in §60.5398b(c)(6) that owners and operators must initiate an investigation within 5 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 takes the form of a "root cause analysis." The term "root cause analysis" is a term of art under other non-EPA regulatory programs and 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 OOOOb and OOOOc regulations. We question whether this is what the agency intends.

Instead of importing a term from a distinct regulatory regime, we respectfully recommend that the agency simply require an "investigative analysis" of the cause of an exceedance. If the EPA intends that such an analysis have particular elements, it should specify them.

When advanced technologies such as continuous emissions monitoring systems (CEMS), are utilized, desktop evaluation will usually suffice to identify the cause of some types of exceedances, negating the need for onsite audio, visual, and olfactory (AVO) or OGI follow-up inspections. Initiating an investigative analysis in response to the exceedance of an applicable action level may be conducted as follows:

- 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 emissions has been resolved.
- 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
  - 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.

The term "root cause analysis" is used in several sections of this Supplemental Proposal, and we suggest EPA adopt our suggested approach throughout the proposal.

D. Alternative Test Method Approval

1. 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.

The DGCC supports the defined 270-day deadline for approvals of requests for alternative test methods.

2. Conditional Approval

We also support the proposed approach of providing "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 the use of an alternative test method with the understanding that the EPA has not yet taken final action on its review.

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 the 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 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.

We are also supportive of the concept of providing a "conditional approval" for an alternative test method if the agency has failed to provide the requestor with a decision on approval or disapproval within 270 days. Such an approach could help ensure that unforeseen agency delays do not impede the deployment of these very promising technologies.

However, 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 the OGI-based program required in §60.5397b or closed vent systems in §60.5416b, as applicable. The DGCC urges the EPA to provide a reasonable grace period for the operator to modify 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 if 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 advanced technology but require more sensors than operators were using subject to "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.

The DGCC 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, 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.

3. Disputed Results

From EPA's solicitation:

> *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.*

The DGCC 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 the use of such technologies is coupled with periodic OGI surveys. However, there is no similar requirement for the use of approved advanced technology 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**.

4. Approval of Minor Upgrades

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 [section]§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, continuous monitoring system developers and vendors, including members of the DGCC, regularly push out updated algorithms for the technology, thereby enhancing the system performance, such as speed of quantification calculations, exception handling, connectivity improvement, and many other potential upgrades. While these updates can be as frequent as several 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.

The DGCC respectfully recommends that the agency adopt a streamlined approval process for minor upgrades to already-approved alternative test methods. First, 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 approve these kinds of changes when they approve an alternative methodology application. A full approval process would be inconsistent with the realities of these kinds of technology upgrades.

E. Inflation Reduction Act Interplay

From EPA's solicitation:

> *The IRA establishes a waste emissions charge for methane from applicable facilities that report more than 25,000 metric tons of CO2 equivalent per year to the Greenhouse Gas Reporting Program (GHGRP) petroleum and natural gas systems source category (GHGRP Subpart W) and that exceed statutorily specified waste emissions thresholds. The IRA specifies certain exemptions and flexibilities related to the charge. What issues should EPA consider related to waste emissions charge implementation?*

The IRA provides support for the inclusion of the alternative test method provisions in the Supplemental Proposal.

The text of IRA §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 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 exceed 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, the expansion of an existing LDAR program utilizing OGI cameras, even with the need for additional cameras and personnel, will cost less than the expenditures necessary to implement

a CEMS program. The funds appropriated through §60113 can supplement the regulatory incentives in the proposed Clean Air Act §111 rules to bridge this gap.

§60113 clearly directs EPA to use funds to aid the 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."

The DGCC submitted comments on how the EPA should implement the IRA in its response to the EPA's request for information on the implementation of the IRA's MERP (Docket ID No. EPA-HQ-OAR-2022-0875) (RFI). We incorporate our response to the RFI by reference and we have attached a copy.

F. State Equivalency

From EPA's solicitation:

> *The EPA solicits comment on the EPA's proposed state program equivalency demonstration methodology and evaluating criteria for when state plans may include standards of performance based on an equivalency demonstration. Specifically, the EPA solicits comments on other criteria than what the EPA is proposing should be considered; and whether there are other additional qualitative factors/criteria need to be included to make an effective stringency evaluation for different types of different design, equipment, work practice, and/or operational standards.*

The DGCC encourages the EPA to take into consideration alternative technologies including 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, the 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 these technologies, not only expediting approval, but also the adoption of approved systems resulting in greater emissions reduction more quickly.

Furthermore, the DGCC supports the EPA's approach of providing in [section]§60.5398c of the proposed emissions guidelines (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 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.

G. Harmonization

The DGCC urges the EPA to coordinate with other federal entities to finalize the Supplemental Proposal in a way that promotes harmony between the various regulatory, financial, and procurement actions related to the detection, remediation, and reporting of methane emissions. By coordinating with other federal agencies (e.g., BLM, SEC, DOE, Treasury, FAR Council, etc.), the EPA can avoid creating duplicative or conflicting federal actions.

Such inter-agency coordination would promote regulatory certainty in the oil and gas sector, which would allow the adoption of advanced emissions detection technologies and methane abatement practices to accelerate. This could significantly improve the Supplemental Proposal's outcomes in terms of emissions reductions, cost-to-benefit calculations, and industry compliance. This is an opportunity for the EPA to set a high bar for itself and other agencies and coordinate a move to more measurement-based assessments of methane impacts.

IV. Conclusion

The EPA's Supplemental Proposal is a firm step into a low-methane future for the oil and gas industry. However, the Agency cannot neglect the importance of voluntary actions, commitments, and transactions that go above and beyond the scope of the Supplemental Proposal. Customers, investors, and other stakeholders are already demanding higher environmental performance from oil and gas companies, especially as it pertains to methane emissions. The differentiated gas market is enabling operators to meet these demands efficiently and transparently. The DGCC urges the EPA to take into consideration our comments and to ensure the differentiated gas market is supported by the Supplemental Proposal.

Sincerely,

Tom Hassenboehler
Executive Director
Differentiated Gas Coordinating Council

DIFFERENTIATED GAS COORDINATING COUNCIL

Contact Information:
Michael Yancey, COEFFICIENT, yancey@co2efficient.com

About the Differentiated Gas Coordinating Council:
Established in 2022, the DGCC is an ad hoc coalition of stakeholders across the natural gas supply chain dedicated to expanding the market for low methane, "differentiated" natural gas. Its members include academics; downstream, midstream, and upstream energy producers; gas customers; and technology companies. The DGCC's goal is to facilitate a federal pathway for state regulators, utilities, and gas consumers to accept differentiated gas as an important option to meet their climate goals. We believe that the adoption of differentiated gas is the best way to rapidly reduce methane emissions in the oil and gas sector—a win for American energy producers, energy consumers, and the climate.