DIFFERENTIATED GAS COORDINATING COUNCIL

June 2, 2023

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

RE: DGCC response on the EPA's Listening Questions pertaining to the implementation of the Inflation Reduction Act's Methane Emissions Reduction Program [60113].

Dear Administrator Regan:

The Differentiated Gas Coordinating Council (DGCC) appreciates the opportunity to respond to the Environmental Protection Agency's (EPA) questions posed during the Agency's May listening sessions regarding the implementation of the Inflation Reduction Act's (IRA) Methane Emissions Reduction Program (MERP).

The DGCC is a coalition of stakeholders across the natural gas value chain dedicated to expanding the differentiated natural gas market. The DGCC's goal is to facilitate a pathway for regulators, utilities, and gas consumers to utilize differentiated gas as an important option to meet their climate goals. We believe adopting differentiated gas is the best way to rapidly reduce methane emissions in the oil and gas sector – a win for energy producers, energy consumers, and the climate.

Methane is a potent greenhouse gas, causing 80 times more warming than carbon dioxide over a two-decade period.[1] However, methane dissipates in the atmosphere much quicker than carbon dioxide, meaning that the more methane emissions avoided the higher the climate impacts.[2] In 2020, methane made up 11% of U.S. greenhouse gas emissions, 32% of which came from the oil and gas sector.[3] However, recent advances in detection and measurement technologies, combined with advances in data analytics, make this challenge solvable today.

Differentiated gas, also known as certified gas, is natural gas that is marketed and sold based on its verifiable environmental properties, particularly the intensity of methane emissions throughout the value chain. In a world looking to reconcile climate change and the continued use of fossil fuels, energy products with smaller greenhouse gas footprints will have a competitive advantage. The reliable verification of a cleaner product means that such a product can be sold at a premium.[4] To participate in this market, oil and gas companies track,

[1] *See* Importance of Methane.
[2] *See* "Greenhouse Gases: How Long Will They Last?"
[3] *See* "Overview of Greenhouse Gases."
[4] *See* "U.S. Can Ensure Climate Security With Differentiated Natural Gas."

quantify, and communicate their methane and carbon dioxide emissions to investors, customers, and regulators.

More than 70% of methane emissions in oil and gas operations are avoidable, and 45% are avoidable at no net cost.[5] Energy companies can detect and stop leaks as they occur, minimize routine flaring, and identify and replace problematic equipment. In 2019, oil and gas companies operating on U.S. public and tribal lands alone wasted $500 million worth of gas, and 163 billion cubic feet of methane—the equivalent of almost two million cars on the road a year.[6] Mitigating methane emissions through differentiated gas has the potential to quickly reduce emissions with little pain. Differentiated gas can both enable the long-term viability of the oil and gas sector and enable carbon-free energy sources like hydrogen.

Differentiated gas markets have recognized and rewarded natural gas producers 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, the natural gas industry's average methane intensity rate was 0.51% in 2020.[7] However, some operators produce gas with a methane intensity as low as 0.032%, a dramatic improvement compared to the industry average.[8]

As such, DGCC recommends the EPA use the funds appropriated by Congress in Section 60113 of the IRA to prioritize funding the deployment of advanced monitoring technologies, including continuous emission monitors, thereby lowering their costs, increasing economies of scale, and expanding their availability throughout the oil and natural gas sector.

On the following pages, please find our responses to questions posed by the EPA during its May listening sessions considering the prioritization and implementation of the MERP.

[5] *See* International Energy Agency's "Slashing methane emissions is crucial for the climate."
[6] *See* EDF, "New Study Quantifies Natural Gas Wasted on U.S. Public and Tribal Lands," and EPA, "Greenhouse Gas Equivalencies Calculator."
[7] *See* Clean Air Task Force's report Benchmarking Methane and Other GHG Emissions of Oil and Natural Gas Production in the United States, July 2022.
[8] *See* PureWest Energy's 2021 Environmental, Social and Governance Report.

EPA Questions and DGCC Responses

Question 1: Which listed actions in the Methane Emissions Reduction Program should be prioritized for financial and technical assistance?

Response: MERP-funded assistance programs should focus on achieving methane emissions reductions that go beyond the bare-minimum compliance standards expected to be set by upcoming OOOOa/b/c methane regulations. One option is to create a market-based incentive that generates a price premium for natural gas that has a lower emissions intensity than what is required. Specifically, we recommend that EPA utilize the funding to facilitate a large-scale grant program to establish a nationwide market for differentiated natural gas.[9] A market must be built on the principles of trust, transparency, and transactability. This means that the entire value chain for natural gas—from producers to exporters—needs easy access to credible data on emissions intensity.

Question 2: What methane mitigation technologies and practices should EPA prioritize for financial assistance to achieve near-term emission reductions?

Response: There are two distinct needs in creating a market for differentiated gas in the U.S. The first need is for high-quality data on emissions. In its proposed supplemental methane rule, EPA noted that super-emitters at upstream and midstream oil and gas facilities contribute disproportionately to overall methane emissions and that fast detection is crucial for fast repair of these super-emitters.[10] EPA highlighted that continuous monitoring solutions are well suited to address the super-emitter problem; DGCC supports this assessment.[11] Super-emitting events occur in a sporadic nature, as they are related primarily to process malfunctions; there are a large number of potential root causes that create these malfunctions.[12] The oil and gas industry is highly diverse with a wide range of equipment types, degrees of automation, and operating philosophies, and the size of sites varies widely. Because of this technical and operational diversity, the root causes of super-emitters vary widely from operator to operator and from production basin to production basin. This diversity of equipment and operating practices makes a direct assistance program focused on mitigation challenging to implement cost-effectively. It would require numerous narrow, specialized programs tailored to individual technical and operational circumstances, each with substantial administrative overhead.

[9] *See* DGCCouncil.com/what-is-differentiated-gas.
[10] *See* epa.gov/controlling-air-pollution-oil-and-natural-gas-industry/epa-issues-supplemental-proposal-reduce.
[11] *Id*.
[12] *See* EDF study at business.edf.org/files/TRP_Case_Study.pdf.

Instead of funding specialized mitigation programs, we recommend that EPA prioritizes its MERP funding to develop a combined detection and mitigation approach. Specifically, we recommend that EPA focus on the fast detection of super-emitters with continuous monitoring and tie the disbursement of funding to a requirement for operators to follow through on repairs of the detected emissions. This is expected to be a more cost-effective way to achieve actual reductions and it should be more easily administered and scaled faster by EPA than supporting narrow, technically specialized mitigation solutions.

To ensure that repairs of detected emissions are conducted by operators, no new protocols need to be established. A MERP grant program may instead refer to EPAs established leak follow-up and repair requirements in its current and upcoming regulations under OOOOa/b/c. To qualify potential continuous monitoring solutions as suitable and to ensure that high-quality work practices are in place that guarantee actual emission reductions, EPA may require a continuous monitoring solution to be approved as an "alternative test method" under EPAs upcoming OOOOa/b/c regulations to be eligible for grant funding. Continuous monitoring may also support the oil and gas industry by providing direct measurements to calculate the implementation of the methane fee and by reducing payments due to the fast detection of emissions.

To achieve "near-term emission reductions," EPA may prefer to prioritize the implementation of a continuous monitoring grant program through oil field service providers and/or continuous monitoring technology providers, instead of or in addition to providing funding directly to operators. The rationale is that this approach will provide for economies of scale, leading to greater uptake by small- and medium-sized operators which will reduce EPA's overall program administration cost. While large oil and gas companies possess capabilities for grant administration and implementation, the vast majority of oil and gas companies do not. Most operators are unlikely to apply to a grant program for lack of project management capacity.

Simultaneously, oil field service companies and continuous monitoring providers already established business relationships with many oil and gas companies and are in an excellent position to scale continuous monitoring. In particular, a grant program that is structured to offset most or all of the incremental cost of continuous monitoring (relative to regulatory-required optical gas imaging [OGI] inspections) would allow oil field service companies and continuous monitoring service providers to provide continuous monitoring at little or no extra cost on the condition that detected emissions need to be

mitigated by the operator themselves. On the assumption that a MERP grant program and implementation guidelines are available by the end of 2023, such a grant program approach may allow scaling of continuous monitoring to over 10,000 sites in 2024 and to 50,000 sites by 2026 resulting in Methane emission reductions equivalent to 1 million tons of carbon dioxide equivalents (CO_2e) in 2024 and 7 million CO_2e ton reductions in 2026. These reductions would be incremental to the reductions achieved by the EPA Methane emissions regulation.[13]

The second need is a proof-of-concept demonstration project that involves the entire value chain including gas producers, distributors, and buyers, as well as technology providers, independent certifiers, and registries. As demonstrated by the Department of Energy's Regional Clean Hydrogen Hubs grant program, a differentiated gas demonstration project could function as a catalyst to convene the necessary group of market participants to demonstrate both best practices and the potential of a market in differentiated gas to reduce methane emissions.[14] Funding could support the overall administration of a demonstration project and be awarded based on discrete performance metrics concerning emissions reduction.

A large-scale grant program for a demonstration project based on continuous monitoring at upstream oil and gas sites will lead to a significant incremental reduction of methane and co-located volatile organic compound (VOC) emissions and will therefore significantly improve health outcomes in low-income and disadvantaged communities.

Question 3: What methane monitoring technologies and research should EPA prioritize for financial assistance to meet near-term monitoring needs?

Response: In addressing near-term methane monitoring needs, the EPA should prioritize financial assistance for specific methane monitoring technologies and research strategies that are geared towards reducing cost barriers for oil and gas operators and fostering innovation in the field. Methane monitoring technologies matured to the point where many solutions are either

[13] The reduction assumes 11,000 upstream sites with continuous monitoring installed by the end of 2024, for an effective annual average of 5,500 sites for 2024. Emissions reduction is calculated as 5,500 sites, multiplied by 6 tons per year methane reduction (as per Highwood Emissions study), multiplied by 30 Global Warming Potential of methane (GWP), which equals 990,000 tons of carbon dioxide equivalent (CO_2e) reduced in 2024. It is further assumed that 20,000 sites are added each in 2025 and 2026. The 2026 calculation assumes continuous monitoring operation at 40,000 sites for an entire year (30,000 from the prior years and half of the 2026 addition). The emissions reduction is calculated as 40,000 sites, multiplied by 6 tons of methane per year, multiplied by 30 GWP, which equals 7.2 million tons of CO_2e. The reductions of continuous monitoring are on top of reductions due to quarterly optical gas imaging inspections as per the upcoming Environmental Protection Agency regulations as newly developed super emitters and intermittent emissions are detected and mitigated quickly.

[14] For more information on Hydrogen Hubs, see energy.gov/oced/regional-clean-hydrogen-hubs.

commercially available or at least in a field demonstration phase. However, the actual adoption of monitoring solutions (other than OGI and plane-based inspections) by oil and gas operators is very small, and more than 99% of sites are not covered by advanced monitoring solutions today. A key reason for this is the incrementally higher cost of advanced monitoring solutions compared to regulatory-required OGI inspections. We recommend assisting with methane monitoring technologies based on reducing the cost of methane monitoring to operators—not on basic research. There are two main approaches to cost reduction: 1) support of economies of scale and 2) support of technology-driven cost reductions.

The large-scale grant program for continuous monitoring described under Question 2 can be expected to drive costs down due to economies of scale, in addition to the cost reduction provided by the grant itself.

In addition to the deployment-focused program, DGCC recommends that MERP support cost reduction by grants focused on technology advancement. The approach here should be to enable measurement solution providers, which are mostly small startups, to develop a "Version 2.0" of an existing solution that has already been demonstrated in the field and is commercially available. Due to the small size of the methane monitoring market, startups usually do not have the funding to conduct further innovation of their respective solution. We recommend the EPA fund projects that will result in near-term cost reduction of at least 25% specifically due to technical and design improvements (i.e., excluding reduction due to scaling production volumes) while maintaining or improving detection performance.

To achieve a high economy of scale, and to achieve significant near-term methane emissions reductions, we recommend that continuous monitoring grant programs are implemented directly by EPA and not at the state level. This applies both to a large-scale grant program for continuous monitoring as outlined in question 2 as well as grants focused on technology advancement for cost reduction. See also the response to question 5 regarding research support for calculation methods for the uncertainty of methane intensity claims and anonymized data collection on methane emissions.

Question 4: Are there areas of financial and technical assistance for methane mitigation from marginal conventional wells that should be prioritized?

Response: Marginal wells (and lower-producing non-marginal wells) remain a significant contributor to overall emissions as the prevalence of emissions and of super-

emitters is proportional not to the amount of production but to the amount of equipment at a site. We recommend prioritizing marginal wells with significant equipment for the at-scale deployment of continuous monitoring and demonstration projects (see program proposed in Question 2.)

Question 5: Are there emerging monitoring and mitigation technologies that should be prioritized for financial assistance to support innovation and encourage methane emissions reduction efforts?

Response: To spur innovation and boost methane emissions reduction efforts, it is critical to prioritize financial assistance for emerging monitoring and mitigation technologies, with a particular emphasis on establishing calculation methods for methane intensity claims and collecting comprehensive data on methane emissions. While the majority of MERP funding should be directed towards the at-scale deployment of continuous monitoring that supports a differentiated gas demonstration project, as described in Question 2, DGCC supports financial assistance under MERP for innovation related to methane emissions reduction efforts. We would like to highlight the need for two efforts in particular:

1. A study on establishing calculation methods for the uncertainty of methane intensity claims (i.e., lifecycle analysis of methane emissions across the oil and gas industry).

2. An ongoing, long-term program to collect statistically relevant data on methane emissions to advance the understanding of root causes, improve the quality of methane intensity calculations and improve the accuracy of the EPA greenhouse gas registry.

Calculation methods for the uncertainty of methane intensity claims (life cycle analysis of oil and gas methane emissions).

A) **Problem**: Methane intensity of natural gas or oil is an end-to-end metric that combines data from many different measurement data sources, emission factors, engineering calculations, etc. from many companies across the oil and gas value chain. Like any type of complex system, uncertainty is inherent for each of these data points. There is uncertainty related to the way data is combined from multiple sources for both individual sites and throughout the value chain. Inspection methods also introduce uncertainty because they are only used a few times per year and therefore miss emissions. Moreover, measurement will always be incomplete, so techniques are required for extrapolating direct measurement data which introduces another type of

uncertainty. We recommend a scientifically based, statistical method to calculate the uncertainty of methane intensity claims that takes all these factors into account. As an example of the desired outcome, a producer should be able to state to an end customer that a cargo of liquefied natural gas has a methane intensity of 0.2% with a ±0.06% uncertainty band at a 95% confidence interval as determined based on a commonly accepted measurement and reconciliation method.

B) Benefit and applicability: A universally accepted method for uncertainty calculation of methane intensity is a key foundation for long-term emissions reduction efforts of all types, because, as the saying goes, "one cannot manage what one cannot measure." The calculation of methane emissions across the oil and gas value chain will have broad applicability across many methane-related initiatives:

- Accurately calculating the effectiveness of deployment of MERP funding.
- Comparing the relative benefit of different emissions reduction methods.
- Implementation of methane fee.
- Implementation of 45V tax credits for hydrogen produced from natural gas.
- Implementation of the Security and Exchange Commission's proposed "Enhancement and Standardization of Climate-Related Disclosures for Investors" rule.
- Credibility and growth of the market for differentiated gas.
- Implementation of OGMP 2.0, GTI Veritas, and other protocols.[15]
- International efforts to improve methane emissions accounting.
- Potential future carbon markets for methane emissions mitigation in developing countries by voluntary carbon credits.
- Implementation of a potential carbon border adjustment mechanism (CBAM) for oil and gas.

C) Status: Currently, the methods for calculating uncertainty for methane intensity are at an early stage. OGMP 2.0, GTI Veritas, and various academics published initial studies, but these are at an early stage and there is wide agreement that significantly more work is needed.

D) Expected outcome: The expected outcomes are industry-wide accepted methods as well as related, publicly available computer simulation tools that calculate aggregate uncertainty of methane intensity claims for oil and gas. These methods should consider:

[15] *See* ogmpartnership.com and veritas.gti.energy.

- Uncertainty of measurement methods conveyed in standardized metrics (e.g., the detection threshold taking into account probability of detection, varying weather conditions, the installation location of the measurement technology at a site, known limitations of technology in certain conditions, quantification accuracy, etc.).
- Uncertainty introduced by inspection methods versus continuous methods and related statistical approaches to extrapolate data.
- Appropriate statistical methods for combining top-down and bottom-up measurement data, taking into account the lower detection threshold of measurement equipment used so that emissions below are accurately represented.
- Appropriate methods for considering the intermittency and variable duration of super-emitters, also related methods on how to measure intermittency and variable duration.
- Accounting for uncertainty in the measurement of fuel gas use, compressor load settings, methane slip, and other related variables.
- Appropriate methods and guidance for categorizing sites by type and appropriate methods for combining uncertainty metrics for multiple sites of each type of site (i.e., dry gas upstream sites)
- Appropriate methods for combining uncertainty metrics for multiple sites of different types (i.e., upstream, midstream, and downstream).
- Appropriate methods for sample size determination and for extrapolating directly measured data to non-measured populations.

E) Study Approach: This subject is a very complex technical topic and will require broad collaboration for success. We recommend a blue-ribbon panel of technical subject matter experts with collaboration from other federal agencies and national labs where appropriate. Combining experts with very strong statistical expertise with subject experts on methane measurement will be crucial to the success of such a panel.

Program to collect statistically relevant data on methane emissions.

EPA should provide funding for the systematic collection of data on the frequency, duration, and root cause of super-emitters in upstream and midstream oil and gas facilities. The data should be anonymized and made publicly available to improve the oil and gas industry's understanding of root causes and to serve as reference data for improvements in the calculation of emission factors and for differentiated gas certification. Data collection at a statistically significant scale should be funded by EPA in multiple studies for

different applications (i.e., complex upstream sites, midstream sites, etc.) Data anonymization and hosting may be done by suitable third parties such as EEMDL (Energy Emissions Modeling and Data Lab) or others.[16]

Question 6: **What kinds of technical assistance would be most valuable?**

Response: The most valuable technical assistance would involve supporting the development of monitoring and mitigation technologies, particularly those that address significant emission contributors like intermittent flare outages, and providing support for small to medium-sized operators to access assistance programs. To achieve the highest impact assistance for emissions mitigation and reduction, the EPA can provide grant support for monitoring and mitigation technologies as it provides permanent infrastructure for sustained emissions reductions that will endure far beyond the program's end date (*see* Question 2). Technical assistance beyond grant support for continuous monitoring may be impactful in specific circumstances.

One candidate for technical assistance is intermittent flare outages. Unlit flares are a major contributor to upstream methane emissions. The underlying technical reasons are often related to the use of the wrong blower settings by field operators. Operators frequently optimize blower settings manually to achieve a visually clean burning flare, disregarding flare manufacturer recommendations. By doing so, they unwittingly increase the risk of flare-outages under low-flow operational conditions. There is a widespread lack of knowledge among field operators around this topic as methane venting from unlit flares is not visible to the naked eye. These malfunctions tend to be intermittent and tend to not get detected by process monitoring solutions as the pilot light stays on while the flare is out. Implementation of technical assistance may be best done through existing organizations such as OneFuture or The Environmental Partnership, through manufacturers of flares, and oil and gas industry associations.[17] Programs should be focused on field operators, conducted regionally in every production basin, and could be financially supported by EPA to maximize reach.

Another area of technical assistance could be financial and technical assistance to support grant applications and planning studies directly or via third parties that support program uptake by small and medium size operators. Small and medium operators may be less likely to apply for assistance programs due to a

[16] *See* eemdl.utexas.edu.
[17] *See* onefuture.us and theenvironmentalpartnership.org.

lack of capacity and capabilities. Many marginal wells are operated by small operators with very limited resources.

Question 7: How can financial assistance be used to mitigate the health effects of methane and other greenhouse gas emissions in low-income and disadvantaged communities?

Response: Financial assistance can be crucial in mitigating the health impacts of methane and other greenhouse gas emissions in low-income and disadvantaged communities, particularly by reducing emissions at nearby upstream oil and gas sites through large-scale, continuous monitoring programs. Communities living near upstream oil and gas sites are typically economically disadvantaged.[18] Emissions at upstream sites in most cases consist of both methane and VOCs at the same time. A recent study highlights that the value of VOC reduction at upstream sites in terms of improved health of neighboring communities may be even larger than the climate benefit of methane reductions.[19]

Implementing a large-scale grant program for a demonstration project based on continuous monitoring at upstream oil and gas sites as described under Question 2 will lead to a significant incremental reduction of methane and co-located VOC emissions and will therefore significantly improve health outcomes in low-income and disadvantaged communities.

Thank you for considering our thoughts as the EPA moves forward with implementing the IRA's MERP.

Sincerely,

Tom Hassenboehler
Executive Director
Differentiated Gas Coordinating Council

[18] *See* link.springer.com/article/10.1007/s11111-022-00403-2.
[19] *See* iopscience.iop.org/article/10.1088/2752-5309/acc886/meta.

DIFFERENTIATED GAS COORDINATING COUNCIL

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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.

More information can be found at www.DGCCouncil.com.