Trinity Consultants

NAVIGATING THE METHANE EMISSION LANDSCAPE

Pursuing compliance with stringent new rules, minimizing waste, and maximizing return on investment

Introduction

Consumer demand for oil and natural gas continues to grow: Driven primarily by fast-growing Asian markets, global gas demand is forecasted to increase by 2.5% in 2024, with the U.S. projected to lead in new LNG export capacity[1] while the global demand for oil is expected to increase by about 1-million-barrels-per-day.[2] This boost in demand coincides with a push by internal and external stakeholders for the industry to produce these necessary commodities in the most environmentally beneficial way.

The U.S. Environmental Protection Agency (EPA) has taken action in recent years to sharply reduce methane and other pollutants from oil and natural gas operations. The latest suite of regulations includes emission standards for new sources, emission guidelines for existing sources, updates to emission reporting requirements, and the proposed implementation of a methane tax.

This comprehensive approach aims to mitigate climate impact (as methane is responsible for approximately one-third of current warming from greenhouse gases[3]) and improve air quality. The regulations are the latest and largest shift for the industry, which has historically been incentivized for increasing production, but more recently has faced external pressure from both regulators and investors to minimize the impact on the environment.

EPA projects full implementation of the methane rules will achieve emission reduction of nearly 80% through 2038.

But while the methane rules represent a significant step toward environmental protection and increased accountability within the oil and gas industry, the complexity of the regulations will increase compliance risk as well as the financial, resource, and capital burden for large and small operators alike. The final rules will also rely on independent third-party monitoring to

[1] iea.org/reports/gas-market-report-q3-2024
[2] iea.org/reports/oil-market-report-july-2024
[3] epa.gov/newsreleases/biden-harris-administration-finalizes-standards-slash-methane-pollution-combat-climate

find very large methane sources and push the industry toward more accurate measurement and reporting of methane emissions.

The challenge at hand for many owners and operators is to take steps to ensure compliance with new methane regulations but to do so in a way that takes into consideration internal emission reduction commitments as well as any liabilities and opportunities they have. With a proactive approach, operators can mitigate the compliance risk associated with the impact of these regulations and minimize the workload and financial impact, while ensuring ongoing operational flexibility.

"America's natural gas and oil companies are mindful of the responsibilities associated with delivering the energy that's fundamental to the lives we want to live – while doing it in ways that protect the environment, lower emissions and reduce the risks of climate change. Companies are committed to continuous improvement and innovation to advance sustainability."

– American Petroleum Institute

Source: https://www.api.org/news-policy-and-issues/sustainability

Why It Matters

The methane reduction regulations are designed to reduce methane and other air pollutants. The main component of natural gas, methane, is the most abundant greenhouse gas after carbon dioxide.[4] EPA projects that the new methane rules will prevent approximately 58 million tons of methane emissions through 2038 from oil and gas operations across the United States. Through the implementation of the methane rules, EPA forecasts savings of up to $1 billion in lost commercial value from recovered natural gas. In addition to the value estimated from recovered natural gas, EPA projects significant improvements through reduced ozone exposure, another cited benefit of the methane rules. While oil and gas have historically been encouraged through tax credits and other incentives to increase production, recent commitments have affirmed the industry's desire to do so while protecting the environment. Industry leaders are actively seeking ways to drive changes that are both financially efficient and compliant with EPA timelines and regulations, which have arguably changed the playing field.

An Overview of the Methane Reduction Regulations Affecting Oil & Gas

The methane rules include the following: final New Source Performance Standards (NSPS), final Emissions Guidelines (EG), final changes to greenhouse gas (GHG) reporting, and a proposed waste emission charge (WEC).

[4] https://www.epa.gov/gmi/importance-methane

NSPS OOOOb and EG OOOOc

Section 111 of the Clean Air Act authorizes EPA to develop the NSPS, which are technology-based standards that apply to specific categories of stationary sources. These standards can be found in Part 60 of Title 40 of the Code of Federal Regulations (CFR). Section 111 also authorizes EPA to develop emission guidelines for existing stationary sources.

For the first time, EPA's new methane regulations cover existing oil and gas sources, rather than just new sources. Furthermore, these standards include requirements for emission sources previously not regulated for this source category. Applicability is determined from: (1) the construction, modification, or reconstruction date; (2) the type of affected facility; and (3) the location within the affected source category.

- NSPS Subpart OOOOb strengthens the requirements under CAA Section 111(b) for methane and VOC emissions that commenced construction, modification, or reconstruction after Dec 6, 2022.
- EG Subpart OOOOc creates the first nationwide emission guideline for states to limit methane pollution from existing designated facilities where construction commenced on or before Dec 6, 2022.

The NSPS regulations, with minor exceptions, are immediately applicable, while the implementation of the emission guidelines for existing sources will occur over the next several years. Note that modifications—for example, equipment upgrades, expansions, or process changes—made after the NSPS applicability date immediately trigger compliance requirements. With the NSPS initial compliance period ending in 2025, the industry must implement comprehensive compliance requirements to avoid penalties and non-compliance concerns. To further complicate matters, most O&G-producing states, including Oklahoma, Texas, Pennsylvania, New York, and New Mexico, have regulations that differ from these EPA rules.

Methane Accounting

The NSPS and EG regulations also intersect with rules targeting methane accounting to implement the Inflation Reduction Act (IRA):

- Subpart W of the Greenhouse Gas Reporting Program (GHGRP) in 40 CFR Part 98 addresses emissions from petroleum and natural gas systems. The most recent amendments are designed to improve reporting accuracy, transparency, and data collection based on empirical data. Full implementation of the rule will occur starting Jan 1, 2025.
- The IRA includes the framework for a Methane Emission Reduction Program (MERP), which will apply to facilities that emit more than 25,000 mt CO_2e/yr under Subpart W. EPA issued a proposed Waste Emissions Charge (WEC) rule, which establishes methane emissions thresholds for each applicable segment of the oil and gas sector on an emissions intensity basis. The proposed WEC rule relies on Subpart W for inputs to the WEC calculation. The WEC filing will be due by March 31 of each year for the prior calendar year, with a proposed fee of: $900/mt for 2024, $1,200/mt for 2025, and $1,500/mt for 2026 and beyond.

Although not a direct emission limitation on methane, these regulations have been designed to ensure proper accounting of methane emissions and charge operators for excess emissions.

Challenges and Implications

With the increased regulatory burden, challenges and uncertainties surrounding implementation and enforcement increase risk, and full compliance will create a significant financial, resource, and capital burden for the industry. The combined and incongruent application of multiple regulations at the state and federal level means that operators must navigate a complex web of requirements. Operators need to address emission reduction measures, monitoring, reporting, and compliance simultaneously, which can be onerous due to their interconnected nature. This makes it essential for operators to understand how these rules overlap and adapt practices accordingly.

The stricter methane regulations will also require operators to invest in emission reduction technologies and the associated compliance monitoring obligations. Societal and environmental pressures are driving a shift toward sustainability and emissions reduction on pace with historic incentives that supported the speculative nature of the industry during a time of price and production uncertainty.

Operators must balance economic viability with environmental responsibility, as the costs associated with compliance can strain profit margins, especially for smaller operators. While some companies recognize the long-term benefits and are proactively embracing the transition, others are finding it difficult to envision a path forward that manages the delicate balancing act required to adapt to new regulations while maintaining profitability.

Smaller operators, for example, may face proportionally higher compliance costs due to limited resources and economies of scale. They may have less flexibility than their larger counterparts to invest in technology and adapt their processes. Compared to larger operators, who may have people on staff with the expertise and experience needed to navigate the changes, smaller operators may face greater enforcement risks if they fail to comply.

The challenges for operators of all sizes are found in three areas affected by the new methane regulations: asset management, compliance implementation, and risk.

Asset and Data Management

The first step in evaluating the impact of these rules on operations is to determine the universe of impacted sources. This process can be complex and time-consuming, and the challenge is heightened by a lack of resources. Diverse facilities such as well pads, pipelines, compressor stations, and centralized storage facilities have unique emission sources, and emissions vary based on equipment type, age, last service date, and maintenance practices. Gathering data from remote sites, especially in large-scale operations, poses logistical challenges. Resources are spread thin, and teams may not have the comprehensive regulatory and environmental health

and safety (EHS) knowledge held by their counterparts at refineries and chemical plants. This makes communication between operations and environmental staff of paramount importance.

The challenge related to asset management does not stop there, though; it also includes the need to manage change. Facilities evolve over time due to maintenance, upgrades, and other factors, which means operators must continuously update their inventories. The addition of a single process controller, for example, could trigger the need to bring the collection of controllers at a facility up to current standards, and operators will need to understand these complexities to navigate compliance.

In addition to physical inventory, asset management is increasingly focused on methane emissions as an asset. This includes the systematic measurement, documentation, and tracking of methane emissions. This process helps oil and gas operators identify emission hotspots, assess trends, set targets, and evaluate the effectiveness of mitigation efforts.

Accurately tracking and reducing methane emissions requires data. Good data. Lots of good data. Effective data management plays a key role in enabling organizations to meet these emerging regulatory demands, make informed decisions and take targeted action. A sound data management strategy must go hand in hand with compliance and risk strategies. Traditional operational measurements like hour and fuel meters require more intense data quality control. Periodic data measurements like leak detection surveys demand tedious and discipline tracking. Emerging data management such as aerial methane-sensors will challenge new ways of quantifying methane emissions. With so many evolving industry elements, methane data management must also be ready to evolve.

With impending compliance deadlines, oil and gas leaders need to understand the current sources and emission levels as well as what actions to take over the next year (and more).

Take Action

Leverage checklists and data collection tools to simplify the inventory process and educate staff on impacted sources as well as changes in equipment or operations that may trigger additional requirements. Assess the changes your organization will need to make (and the financial impact of those changes) in order to meet immediate compliance deadlines and future applicable requirements. You may determine, for example, that WEC obligations may result in pulling existing source compliance obligations forward to reduce exposure or re-prioritizing methane reduction actions to reduce WEC obligations.

How a Partner Can Help with Asset Management

1. Site audits
2. Calculation of baseline emissions
3. Develop emissions management tools
4. Evaluation of proposed projects
5. Management of change review

Compliance Implementation

Once the asset inventory is established, the next hurdle is preparing and implementing a compliance strategy. This starts with applicability determinations identifying the requirements for sources and associated compliance monitoring. Given the newness of the rules, scrutiny needs to be placed on regulatory language and interpretations to ensure that the path is correct.

Determining compliance requirements helps operators develop the roadmap, but the effort doesn't end there. With industry stakeholders all reacting to these rules, identifying and obtaining the personnel to implement the plan--including equipment vendors, testing contractors, and field staff trained on the new requirements--is an immediate challenge.

Additional personnel hours are needed to develop compliance tracking tools, analyze data, and design template reports.

Capital plans need to incorporate a review of the methane regulations with facility designs changed or updated to incorporate the necessary monitoring equipment, testing ports, and more. Future capital plans will need to address the remaining useful life of the equipment and how and when upgrades will be needed to comply with emission standards for new sources. In addition, the capital review process may need historical review, as NSPS Subpart OOOOb is applicable dating back to the rule proposal date; modifications operators have already made can trigger requirements that were not envisioned at the time.

Take Action

Evaluate the applicability of existing sources and proposed projects. Once you identify your compliance requirements, develop a plan for resource needs (both staffing and capital) for initial and continuous compliance obligations. Make sure your management of change (MOC) process includes built-in reviews to ensure that you have a formal process to evaluate whether a change triggers any environmental or safety requirements and that the necessary steps (e.g., permit revisions, inventory updates, and monitoring requirements) are addressed.

How a Partner Can Help with Compliance Implementation

1. Applicability determinations
2. Compliance obligations
3. Resource allocation (staffing and capital)
4. Compliance gap analysis
5. Staff training

Risk

Meeting the new methane standards will require significant operational changes, as non-compliance poses the risk of penalties and reputational damage. The risks include the selection, installation, and maintenance of new monitoring technologies and control measures; uncertainty over evolving compliance requirements; and costs associated with upfront investments and ongoing operational expenses related to compliance.

Operators must implement leak detection and repair (LDAR) programs, upgrade equipment, and monitor operations and emissions closely. The increase in data collected as part of these rules also increases the risk of non-compliance. Additional resources (more staff, external consultants, and software investments) will be required to handle the workload associated with managing data, tracking emissions, submitting accurate reports, and more.

Companies will need to identify risks and strategies to address those that pose critical threats to operations. Organizations will also need to adapt emission reduction goals through the lens of these new regulations and evaluate different scenarios based on investment choices.

The oil and gas industry often attracts people who are comfortable operating amid uncertainty and an elevated risk profile. However, the current regulatory environment expects 100% certainty and supporting documentation when evaluating environmental compliance. Underreporting emissions based on assumptions or data from similar sources will result in penalties—with interest on the unpaid tax. The oil and gas industry has been and will continue to be a priority for EPA compliance enforcement.

Take Action

Devise a longer-term strategy for risk management that considers the interconnectedness of your facilities, best practices for mitigation, and more. Consider forging a partnership with external experts who have strong relationships outside of oil and gas, including with regulators, to gain insight into methane reduction strategies and potential regulation headed your way. Partners can also help you navigate a path forward that allows you to avoid making knee-jerk decisions focused solely on immediate regulatory compliance and instead think about how your mitigation measures will play into future liabilities and opportunities you may have.

How a Partner Can Help with Risk

1. WEC risk assessment
2. Facility roll-out plans
3. PM/operation improvement plans
4. Methane reduction strategies
5. Navigating enforcement

Conclusion

The new methane regulations have created a very real sense of urgency across the industry, with leaders increasingly realizing that a proactive approach to compliance is imperative. Waiting until the end of the year to calculate your WEC exposure or taking action in the days leading up to a compliance date is too late--you'll be left scrambling to effect change to reduce your fees and noncompliance for the following year. By taking action now to conduct an asset inventory, evaluate compliance obligations, establish MOC processes that will help you navigate applicability, and manage risk with an eye toward the future, you can position your organization on a faster, easier path towards a viable future.

As environmental regulations for the sector become more demanding, a partner can help you understand and adapt to the increasingly complicated web of compliance requirements. With a 40-year legacy of excellence in specialized and localized environmental consulting, Trinity Consultants is well-positioned to partner with operators of all sizes. We efficiently integrate our technical proficiency and regulatory expertise with sector-specific insights to empower clients to comply with the stringent new rules, minimize waste, and maximize their return on investment. Learn more about how Trinity Consultants is navigating oil and gas leaders through these challenges. Contact us at **800.229.6655**.