

## **LEANING IN: MOVING AHEAD OF REGULATIONS FOR NATURAL GAS EMISSIONS**

By Morgan D. Bazilian, Jim Crompton, and Jordy Lee

The natural gas industry is facing a number of headwinds. These challenges include decarbonization, electrification, and digitization. More recent pressure stems from low and volatile prices, supply gluts, heavy debt loads, and a nascent oil “war”.

One of the key areas challenging the gas industry is methane and VOC emissions. The IEA reports that methane emissions from the oil and gas sector reached close to 80 million tons in 2017, or nearly 6% of global energy sector greenhouse gas emissions. To manage emissions and ensure the success of the industry, there are several emerging technologies for quantifying and identifying leaks. Those range from on-site leak detection and repair cameras and deployable drones, all the way up to satellite imaging.

These digital solutions seek to not only address the challenge of managing methane emissions and air quality at drilling and production facilities, but also the prevention of leaks during natural gas distribution and regasification. How is the concept of this “digital canopy” achieved? The first element to address is transparency.

### **TRANSPARENCY**

Operators, regulators and the community at large are asking a lot of questions about methane emissions from natural gas operations—it has emerged as one of the highest priorities for industry and the public.

On one hand, the industry must satisfy the big environmental, social and governance (ESG) investors who are rewarding companies with progressive climate policies and dumping the stocks of those firms without. On the other, they are under considerable pressure from shareholders and private equity to produce returns. As a result, how energy companies navigate this maze could determine the winners and losers in a lower-carbon, lower commodity price future.

Establishing trust and earning a “social license to operate” is an essential and complex first step. This often will need to go beyond being in compliance with the existing rules of the responsible regulator. It means being a good neighbor, from a safety perspective, from an environmental perspective, from a permit compliance perspective and from an investor perspective. Transparency is an essential ingredient for social license, and emissions monitoring is core to this.

Learning from existing industry precedents, such as those for chemicals registry under [FracFocus](#), is a second step. As of 2018, 23 states use FracFocus as a way for the public to see chemical disclosures used in hydraulic fracturing. However, because the fracture fluids are developed by individual operators, the full list of chemicals are often protected by “trade secret” laws and limited in their transparency.

The withholding of even a small amount of information has somewhat limited trust in this voluntary data. A refined approach is needed.

## **RESPONSIBLE GAS**

The demand for responsible gas is growing rapidly.

[A relatively new initiative organized by the Edison Electric](#) Institute and the American Gas Association has created a voluntary framework for the whole gas supply chain. They will consider several categories of sustainability topics, including: methane and air emissions, water, chemical use, and community and safety. The Initiative’s guiding principles are helpful, such as committed to continuous improvement; build on existing programs; promoting consistent approaches; and develop common tools and metrics. [The initial focus will be on methane from production through distribution.](#) They note, “Using the NGSi protocol, companies will calculate and report methane emissions intensity based on total corporate methane emissions and throughput for each segment in which they operate.”

Existing methodologies that are relevant include the [EPA’s Methane Challenge](#) and the EPA Greenhouse Gas Reporting program (specifically the sections on associated venting, associated flaring, combustion units, compressors, liquids unloading, flare stacks, controller vents, chemical injection, well venting during completions/workovers, and degassing vents).

Industry led initiatives for air emissions monitoring and estimation are also starting to be implemented. Multiple international oil companies (i.e., [BP](#), [ConocoPhillips](#), [Dominion](#), [Exxon](#), and [Shell](#)), have set targets to restrict emissions or limit emissions intensity through the Methane Guiding Principles, the [Oil and Gas Climate Initiative](#), and the Oil & Gas Methane Partnership (OGMP). These

in turn have started to involve non-profits (i.e., [EDF](#), [CDP](#), [EEI](#), and [One Future](#)), who report developmental changes and quantitative impacts of flaring and natural gas projects. Of the environmental organizations, EDF has done the most work on this topic. [Their 16 studies](#) upstream, midstream and downstream in some detail.

Policy and regulation looking to accelerate development are not universal but also reflect established interests. In North America, Canada has introduced regulations to cut methane emissions by the year 2025, with Alberta, British Columbia and Saskatchewan placing additional regulations on venting and flaring, which incentivizes natural gas capture and use. Colorado, California, Ohio, Pennsylvania, Utah and Wyoming have also developed their own standards for methane emission monitoring, and while they reflect their individual state's goals and interest in natural gas, they all require inspection of facilities at some level.

[In 2018, the first gas sold as “responsible” was sold by Southwestern Energy to New Jersey Resources](#). New Jersey said that they purchased at a premium. Given historically low natural gas prices, the timing should be good to implement such a program. Estimates relaying the costs of natural gas losses vary, but in the U.S. alone value lost was [~\\$2 billion/year in 2015](#), not including market effects and externalities related to emissions. With the inclusion of premiums, natural gas capture is likely to have even greater monetary incentives. The gas was certified by Independent Energy Standards. The program is called the Trustwell Responsible Gas Program. A related standard, the EO100 for responsible energy is put out by a company called [Equitable Origin](#). There is a separate standard for conventional and shale plays.

The demand for responsible gas is growing rapidly and initial frameworks for establishing a thriving gas industry are already in place. With an existing infrastructure for transportation and extraction, regulations trying to limit venting and flaring, and an entire industry (and its investors) looking for positive developmental changes, responsible natural gas provides a solution to numerous challenges.

Key to a functioning certification or standard is good data; it should include inputs from continuous monitoring and calibrated with operational data, and meteorological data. Currently that type of data effort is ahead of regulations. That is exactly where the industry should aim to be in order to secure its future.

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Morgan Bazilian is the Director of the Payne Institute and a Professor of public policy at the Colorado School of Mines. Previously, he was lead energy specialist at the World Bank. He has over two decades of experience in the energy sector and is regarded as a leading expert in international affairs, policy and investment. He is a Member of the Council on Foreign Relations.

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Jim was a Distinguished Lecturer for the Society of Petroleum Engineers in 2010-2011, speaking on the topic of “**Putting the Focus on Data.**” He is a frequent speaker at SPE conferences on Digital/Intelligent Energy and the Data Foundation. His interests lie in the full spectrum of the information value chain from data capture, data management, data visualization, data access, modeling and analytics, simulations and serious gaming.

Jim graduated from the **Colorado School of Mines** (BS in Geophysical Engineering in 1974 and MS in Geophysics in 1976) before joining Chevron in Denver, Colorado. He later earned an MBA degree (1996) from **Our Lady of the Lake University** (San Antonio, Texas).

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