

NOVEMBER, 2019

# White Paper

## Transform Your EHS Function into a Profit Center

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Fugitive Methane and VOC Emissions:  
An Urgent Challenge for the Oil & Gas Industry



Oil and gas producers are coming under pressure to reduce fugitive emissions of methane and VOCs from three primary sources:



**Regulators.** 20% of all oil & gas wells are in states actively working on legislation for mandatory continuous monitoring of methane and VOCs.



**Investors.** Concerns of both public and private investors have put pressure on oil and gas operators to quantify and mitigate their climate impact.



**Industry and others.** Companies are losing over \$2B per year of product to unintended gas emissions, negatively impacting profits, royalty owners and tax revenue.

# The Challenge



# The Growing Chorus of Anti-Methane Voices



Oil and gas drilling, production and transportation activities are coming under greater scrutiny by regulators and other stakeholders. Methane is classified by the Environmental Protection Agency (EPA) as a greenhouse gas that is emitted to the atmosphere during routine operation of production, processing, storage, transmission, and distribution of natural gas and the production, refinement, transportation, and storage of crude oil.

- EPA reported that methane in 2017 accounted for 10.2% of all U.S. greenhouse gas emissions from human activities.
- EPA attributed 31% of methane emissions to natural gas and petroleum systems.
- The Environmental Defense Fund estimated that methane is 84 times more potent than CO<sub>2</sub> in the long-term as a greenhouse gas.

Legislators and regulators are taking increased notice to these and other data points, and more importantly, taking action.

- The City of Berkeley, California has banned the use of natural gas appliances in new homes.
- The utility Con Edison in New York has imposed a moratorium on new natural gas hookups across a large swath of Westchester because of that state's ban on natural gas pipeline construction, which limits the supply.
- The City of Seattle is considering adopting a ban on natural gas appliances similar to Berkeley's.

These examples are not isolated anecdotes, but growing data points on what is becoming a trend towards limiting, or even eliminating, natural gas as an energy source for residential and commercial use.

This trend presents the natural gas industry with an existential threat, and therein lies the opportunity.

# The RSG Opportunity

## DID YOU KNOW?

Responsibly Sourced Gas (RSG) is becoming an important market segment for both the upstream industry and natural gas consumers, including utilities, businesses and households.

The most common source of methane emissions from the oil and gas industry is unintended leaks in oil and gas production systems, pipelines, storage tanks and other sources. The industry has come a long way in reducing these fugitive emissions, but is now under pressure to do more.

RSG gas is natural gas that has been certified that it is sourced from wells exhibiting methane leakage of less than 0.20% of total production volume, representing the cleanest producing operations in the world. Oil and gas producers using the Project Canary solution to continuously monitor methane and VOCs can sell gas that is certified as “Responsibly Sourced”. This gas sells at a premium to utilities that take part.

Responsibly Sourced Gas is needed as part of the pathway to a low carbon economy, and this paper covers how some natural gas producers and consumers aren’t waiting for government mandates.



## Responsibly Sourced Gas

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# Early Movers

### Southwestern Energy Earning Higher Prices for RSG Gas.



In September 2018, New Jersey Natural Gas (NJNG) agreed to purchase Responsibly Sourced Gas from Southwestern Energy Co. at a premium indexed to local Appalachian index prices. New Jersey Natural Gas (NJNG), a subsidiary of New Jersey Resources, serves more than 525,000 customers in a state where environmental activist groups are becoming increasingly vocal. The utility cited a need to reduce its carbon footprint as the primary driver for purchasing gas from a number of wells in West Virginia operated by Southwestern and certified by an independent party.

### Virginia Gas Moves to 100% RSG



Virginia Natural Gas (VNG) recently announced that it aims to be the first natural gas utility in America to provide its customers with natural gas that is 100% sourced, transported and distributed by companies that have pledged to reduce greenhouse gas emissions to less than 1% across the natural gas value chain. On November 1, 2019, the utility plans to purchase one-fifth of its annual natural gas supply from selected wells operated by Southwestern Energy certified as "responsibly sourced" by an independent third party. VNG said in a press release, "Stakeholders want to know we're working to be a part of the climate solution. This independent third-party certification using state-of-the-art wells provides both transparency and accountability,"

These large commercial consumers of natural gas have taken the lead on the path to a low-carbon society.



*"Intel exercises leadership in both reducing our own carbon footprint and in working with others to influence other on development of sound public policies"*

-Intel



*"In the race against climate change, there isn't a moment to lose. That's why Nike is signing on to the Fashion Industry Charter for Climate Action, a commitment under the United Nations Framework Convention on Climate Change."*

- Nike



*"Through ESG initiatives, our goal is not only minimizing our own footprint or mitigating risk, but to inspire collective action to help transform the sector for long-term environmental, social and economic sustainability"*

- WalMart



## Head to Head

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# RSG vs. Carbon Offsets

RSG and purchasing carbon offsets represent two paths to reducing upstream emissions. The chart below compares the cost of these alternatives for a typical restaurant that wants to use natural gas for cooking, but also wants to contribute to a low-carbon economy.

	2	1
	Status Quo and Offsets	RSG and Offsets
RSG Cost	0	\$23.88
Upstream Offset	\$96.13	\$31.04
Total Cost	\$96.13	\$54.94
RSG Cost reduction		43%

### Assumptions:

- This analysis assumes only offsetting upstream methane emissions/leaks, and not the use of natural gas for cooking.
- The required offset is 0.1592 Mcf/year per square foot of raw gas usage (EIA).
- 2,500 square foot restaurant.
- Carbon tax/offset \$19.80 per CO<sub>2</sub>e MT.
- RSG price \$0.05/Mcf.
- "Status quo" uses industry average upstream emission/leak rate of 0.619%, RSG 0.2%.
- Does not take into account possible midstream emissions/leaks.

The Status Quo + Offsets scenario cost the restaurant owner \$96.13 annually, while purchasing RSG Gas + Offsets costs only \$54.94 for a savings of 43%.

RSG also reduces the risk of consumers, utilities and upstream producers being exposed to the volatility of the nascent carbon offset market, which is illiquid and highly volatile.



## RSG Certification - The Ideal Solution

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Responsibly Sourced Gas is a simple and affordable way for upstream producers of oil and natural gas to provide a differentiated product at a premium price. To achieve RSG certification, an oil and natural gas producer must commit specific wells or production pads to a methane intensity (leakage rate) of 0.20% or less of total production volume.

# Canary's Role

The Project Canary solution facilitates RSG certification with continuous monitoring of designated well sites using sensitive, rugged sensors to collect and report data every few minutes.

The Project Canary Environmental Data Platform is reliable, independent and currently capable of processing 5,000 events per second.

Project Canary's solution is simple, reliable, rugged and affordable. The table on the right illustrates the differences between traditional leak monitoring practices and the Project Canary solution.


Continuous monitoring and independent data give oil and natural gas producers the ability to monitor methane and VOC emissions in real-time, fix leaks in hours or days instead of weeks and affords them the evidence they need to prove their operations are fulfilling RSG certification requirements.

		IR Camera	Drones	Satellite
Continuous monitoring	✓			
Methane detection	✓	✓	✓	✓
VOC detection	✓			
PM2.5	✓			
Independent data	✓			
Socially responsible B-Corp	✓			
Wellsite safe	✓	✓	✓	✓
No moving parts	✓	✓		

Based on recent commercial transactions, we believe there is a strong case for an RSG market premium of \$0.05 per Mcf, net of the monitoring costs required for RSG certification.

**The EHS department can become a profit center by leading the way to evaluating, developing and managing an RSG certification program.**





## Additional Benefits of RSG

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In addition to the RSG premium, producers of RSG gas are positioned to realize other benefits:



### Keep it in the pipe and sell it.

Leaks represent lost economic value to oil and natural gas producers, royalty owners and governments. Being able to fix a leak in hours, instead of waiting for weeks between monthly site inspections results in incremental revenue and profits.



### Avoid expensive fines and settlements.

Leaks of methane and VOCs can result in large fines for oil and natural gas producers. In August 2018, the LA Times reported that Southern California Gas Co. had agreed to a \$119.5 million settlement for claims stemming from a methane leak at its Aliso Canyon facility. In 2016, SoCal Gas paid \$4.0 million to settle claims of failing to notify authorities about a leak and as part of the settlement with county authorities, the utility agreed to install eight infrared methane leak-detection systems, real-time pressure monitors at each storage well and hire six full-time employees to monitor those detection systems.



### Improved quality of life.

Reducing methane intensity improves the quality of life for those living in proximity of oil and gas operations, oilfield workers and enhances air quality.



# Get In Touch With Us

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Project Canary, based in Denver, Colorado, is a mission-driven B-Corporation accountable to a double bottom line of profit and the social good. We believe it is possible to create a financially successful, self-sustaining business that “does well and does good.”

Our goal is to mitigate climate change by helping the oil and gas industry operate on a cleaner, more efficient, more sustainable basis. Our proven technology monitors emissions of methane and VOC on a near-real-time basis, enabling energy producers to rapidly and effectively identify and remediate fugitive emissions.

**The Project Canary solution is continuous, rugged, simple and affordable.**



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Schedule a meeting or call Project Canary today to learn how we can help you develop a Responsibly Sourced Gas program.