



## Responsibly Sourced Gas: Time to Change the Natural Gas Industry's Narrative

Thomas N. Russo

**T**he majority of companies in the natural gas and liquefied natural gas (LNG) industry seem fixated on promoting natural gas as the clean “bridge fuel” to further deployment of renewable energy technologies. While natural gas emits far less carbon dioxide (CO<sub>2</sub>) than coal or oil used to generate power and heat, it is still a “fossil fuel” that contributes to the adverse effects on climate. Fossil-fuel opponents are increasingly skeptical of the climate benefits reported by the US natural gas and LNG industry. These opponents often cite a study<sup>1</sup> released in April 2020 that showed methane emissions from the Permian basin of West Texas and New Mexico, one of the largest oil-producing regions in the world, are more than two times higher than federal government estimates.

<sup>1</sup> Zhang, Y., et al. (2020, April 22). Quantifying methane emissions from the largest oil-producing basin in the United States from space. *Science Advances*. Retrieved from <https://advances.sciencemag.org/content/6/17/eaaz5120>

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This author believes the time has come for the natural gas and LNG industry to recognize that the “bridge” for natural gas may be much shorter than previously thought. It’s time for the industries and individual companies to shelve slogans and take action to distinguish US natural gas from other global sources by embracing a narrative of “responsibly sourced gas (RSG).” To do otherwise increases the risk that natural gas and LNG will fall victim to the growing movement to decarbonize the heating, power and transportation sectors via an all electrification strategy. Federal and state policy makers, regulators and lawmakers could begin questioning whether US natural gas and LNG industries could even play a role in the clean energy economy envisioned by the Biden Administration and evidenced by the Biden-Sanders Climate Action Plan.

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### WHAT IS RESPONSIBLY SOURCED GAS?

RSG should not be confused with renewable natural gas that may be sourced from methane emissions from landfills, livestock and agricultural wastes, and domestic waste water facilities.<sup>2</sup> What distinguishes RSG from natural gas

<sup>2</sup> Russo, T.N. (2020, May). Regulatory challenges facing renewable natural gas. *Natural Gas & Electricity Journal*.

normally produced in shale basins are the steps taken by producers to reduce methane emissions, flaring and impacts on land, water and people. Continuous monitoring and independent verification of the aforementioned steps to reduce impacts are critical to assure consumers that the production process is meeting quality standards.

RSG is not just another slogan or empty commitment without metrics to decarbonize natural gas. While the RSG industry is in a nascent stage of development, it is gaining traction. For example, the ONE Future Coalition (ONE Future)<sup>3</sup> is a group of 33 natural gas companies<sup>4</sup> representing 15 percent of the US natural gas supply chain. The coalition voluntarily committed to reducing methane emissions across the natural gas supply chain to 1 percent or less by 2025. ONE Future's member companies beat their 1 percent goal in 2019 with a registered methane intensity number of 0.33 percent.

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While ONE Future's efforts are notable, it needs to expand membership and go beyond just reducing methane emissions. The coalition should also implement a state-of-the-art continuous monitoring and independent verification and certification program for RSG that documents reductions of emissions and environmental impacts on land, water and communities from hydraulic fracking, flaring, and construction and operation of infrastructure across the supply chain. The program would provide useful information to skeptical consumers and demonstrate to policy makers that the US natural gas and LNG industries

are serious about decarbonization. ONE Future should also educate State Public Utility Commissions (PUC) and natural gas consumers that they can play a role in reducing their carbon footprint by purchasing RSG.

When US energy companies embrace RSG they are commoditizing natural gas and distinguishing it from gas produced and exported by other countries. This can result in higher profit margins and also meets the demand by consumers, importing countries and environmental, sustainability and governance (ESG) investors who wish to do their part to address climate change.

Natural gas utilities and LNG importing countries can actually play a larger role by increasing the demand for RSG. This could bolster the claims of industry and consumers regarding the benefits of using natural gas and LNG to displace traditional dirtier fuels like coal and oil in the power, heating and transportation sectors. US LNG exporters could also embrace RSG by joining ONE Future and sourcing RSG preferentially from gas producing basins that have continuous monitoring and independently confirmed environmental abatement measures. State regulators could level the playing field by promulgating green tariffs that allow natural gas consumers a choice to select RSG, just as many electric utilities currently allow their customers to select green power.

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## **ENVIRONMENTAL MONITORING AND INDEPENDENT CERTIFICATION ARE KEY**

Technologies exist today to monitor and measure progress in reducing methane, CO<sub>2</sub> emissions, flaring and other environmental impacts associated with oil and natural gas production. For example, Project Canary is a leading provider of continuous emissions monitoring for the oil and gas industry. The company now referred to as Project Canary, an IES company, has joined forces with Independent Energy Standards (IES) to document independent

<sup>3</sup> See <https://onefuture.us/>

<sup>4</sup> ONE Future members include Antero Resources, Apache, Ascent Resources, Atmos Energy, Berkshire Hathaway Pipeline Group, BHP, Boardwalk Pipeline Partners, LP, Caerus Oil and Gas, ConEdison, Crestwood, Dominion Energy, Duke Energy, Eagle-Claw Midstream, Enbridge Inc., Encino Acquisition Partners, Equinor, Equitrans Midstream Corporation, EQT, Hess, Kinder Morgan, National Grid, New Jersey Natural Gas, NW Natural, ONE Gas, Inc., ONEOK, Southern Company Gas, Southern Star, Southwestern Energy, Summit Utilities, TC Energy, Williams, Woodland Midstream, and Xcel Energy.

performance reports to RSG producers, sellers, buyers and ESG investors.<sup>5</sup> The combined companies offer the TrustWell™ certification to document RSG performance that is commonly called TrustWell™ gas or RGS.<sup>6</sup> Currently the TrustWell™ RGS service measures 300 engineering points of drilling rigs and is verified independently by IES via on-site inspections and document reviews. IES in turn undergoes periodic audits of its procedures. Ideally, the TrustWell™ RSG should also include the entire natural gas supply chain, including gathering systems, treatment and gas processing plants, storage, LNG terminals, and transmission and distribution pipelines to ensure the quality of RSG and reduce the carbon intensity of the RSG even further.

Equitable Origin (EO) offers a multi-stakeholder standard and certification system for the energy sector—the EO100™ Standard for Responsible Energy Development. The EO100™ Standard is the foundation of the Equitable Origin system and provides a framework for implementing and verifying enhanced ESG performance, greater transparency, more accountability, and better outcomes for local stakeholders in energy projects. The EO100™ Certification process is based on independent, third-party assurance performed by Equitable Origin-approved assessors.<sup>7</sup>

According to Jory Caulkins, Executive Chairman of IES, the biggest challenge for the nascent RGS market is likely the entrance of new groups and environmental standards that are trying to “lower the bar” in their definition of RSG. For example, other standards and groups might focus only on emissions and not include standards for water, land and community or have lower thresholds for verification or lack independent verification altogether. If that occurs, Caulkins believes that RSG risks being broadly accused of greenwashing, that is, conveying a false impression or providing misleading information about how a company’s products are more environmentally sound. This is a valid point. In previous research on lithium battery

technology, Russo and Kim<sup>8</sup> determined that lithium-ion batteries requiring the mining of nickel, cobalt, lithium and graphite outside of the US does cause significant adverse environmental and social impacts not accounted for or recognized by many US and EU policy makers and environmental groups.

The costs of continuous monitoring have become more affordable. For example, Troposphere Monitoring, recently acquired by Project Canary, claims that its infrared spectrometer detects, identifies, and quantifies methane, hydrocarbons, and other byproduct gases at precisions of 200 parts per billion (ppb) and higher. The stationary sensors are installed upwind of or around a site’s fence line, are self-powered, and send data directly to the company’s cloud servers.<sup>9</sup>

Caulkins indicated that approximately 10 to 12 RSG transactions have been undertaken. Southwest Energy is selling TrustWell™ RSG to New Jersey Natural Gas<sup>10</sup> and Virginia Natural Gas, a subsidiary of the Southern Company. The latter company plans to source 100 percent of its gas as RSG by 2025.<sup>11</sup> On November 10, 2020, VGS, a Vermont gas utility announced that it will be purchasing the Equitable Origin EO100™ certified RSG from Seven Generations Energy, an energy producer dedicated to responsible development in Alberta, Canada.<sup>12</sup>

Besides the apparent benefits of decarbonization, RSG has a large number of benefits for US natural gas producers and consumers and countries that import pipeline gas and LNG from the US (Table 1).

<sup>5</sup> Independent Energy Standards Corporation (2020, August 5). Project Canary merges with independent energy standards. Retrieved from <http://bit.ly/3njDOAy>

<sup>6</sup> See <https://ies.co/trustwell/>

<sup>7</sup> See <https://www.equitableorigin.org/>

<sup>8</sup> Russo, T.N., & Kim, K.M. (2019, November). Is electric battery storage overrated as a clean technology? *Natural Gas & Electricity Journal*.

<sup>9</sup> Kemp, C.E., Ravikumar, A.P., & Brandt, A.R. (2016). Comparing natural gas leakage detection technologies using an open-source “virtual gas field” simulator. *Environmental Science & Technology*. DOI: 10.1021/acs.est.5b06068.

<sup>10</sup> Southwestern Energy. *More buyers to pay premium for ‘responsibly’ produced natural gas*. Retrieved from <https://www.swn.com/featured/more-buyers-to-pay-premium-for-responsibly-produced-natural-gas/>

<sup>11</sup> Virginia Natural Gas. *Virginia Natural Gas raises the bar on lowering emissions, signs deal for next generation natural gas*. Retrieved from <https://www.virginianaturalgas.com/company/press-room/virginia-natural-gas-raises-the-bar-on-lowering-emissions-signs.html>

<sup>12</sup> VGS. *VGS takes next step in journey to net zero with partnership to purchase responsibly sourced natural gas*. Retrieved from <http://bit.ly/3gYcqW5>

## DARK CLOUDS ON THE HORIZON

The challenges to US natural gas and LNG exporters are growing larger every day at the international, national, state and local levels. For example, speaking at an online summit on the fifth anniversary of the Paris climate agreement, Xi Jinping, President of the People's Republic of China, stated that by 2030 China would reduce its carbon intensity by more than 65 percent. That goal means that as China's economy grows, so will its emissions, but at a slower rate than before.<sup>13</sup>

The European Union reached agreement with its member nations to slash CO<sub>2</sub> emissions by 55 percent over the next decade, relative to 1990 levels. The United Kingdom also stated it would cut its emissions by 68 percent by 2030 and would also stop funding fossil fuel projects abroad with its taxpayer money. Canada said it would substantially increase its levy on CO<sub>2</sub> to \$170 per ton.

The Biden Administration announced that the US will rejoin the Paris Agreement on day one of his

presidency.<sup>14</sup> Not to be outdone by China and the EU, President-elect Biden has articulated very clearly in the Biden-Sanders Climate Action Plan that his administration will curb methane emissions and rely on renewable energy to decarbonize the US economy.

While many oil and gas industry executives might question the President-elect's ability to curb methane emissions or flaring on private land, he has considerable power on federal land to reduce and/or delay the number of drilling permits and require existing wells to reduce methane emissions and flaring from their gathering systems. Continuous monitoring and methane emission abatement could very well become standard conditions of any new drilling permits. A very different and proactive Federal Energy Regulatory Commission (FERC) could take up revising the agency's 1999 Natural Gas Pipeline Policy Statement and possibly require continuous monitoring of methane leaks when issuing certificates of public convenience and necessity for interstate natural gas pipelines, new LNG export terminals and additional LNG trains. In addition, the Pipeline and Hazardous Materials Safety

<sup>13</sup> Sengupta, S. (2020, December 12). China, in nudge to U.S., makes a new promise to tackle global warming. New York Times. Retrieved from <http://nyti.ms/383KpbA>

<sup>14</sup> Biden-Harris Transition. (2020, December 12). *Statement by President-elect Joe Biden on the five-year anniversary of the Paris Agreement* [press release]. Retrieved from <http://bit.ly/3meJeLC>

**Table 1.** Benefits of Responsibly Sourced Gas compared to a "Business as Usual" case.

Benefit	High	Medium	Low
1. Attract Environmental, Sustainability & Governance Investments	X		
2. Increased profit margins and decommoditization of natural gas	X		
3. Addresses needs of residential, commercial, industrial and power users who want to reduce their carbon footprints		X	
4. Reduction in environmental and social impacts with climate change benefits	X		
5. Reduced flaring of natural gas and waste	X		
6. Carbon pricing effects in electricity markets if carbon intensity is considered			X
7. Improved perception and acceptance by countries importing US pipeline gas and LNG for energy security and coal/oil-to-gas power switching		X	
8. Allows State Public Utility Commissions to promote consumer choice, de-commoditization of natural gas, and broadens decarbonization efforts	X		
9. Reduced state and federal regulatory fines and penalties associated with flaring and future methane regulations			X
10. Production of hydrogen with reduced carbon intensity			X
11. Improved public perception		X	

Source: Russo on Energy LLC



Administration (PHMSA) could also turn its attention to the 400 underground natural gas storage facilities in an attempt to avoid methane leaks such as the one that occurred at SoCal Gas' Aliso Canyon Gas Storage facility in California in October 2015.

Renewable energy and electric storage technologies and the rise of carbon pricing in wholesale electricity markets regulated by FERC and in EU and Asian electricity markets are existential threats to the US natural gas industry. Carbon pricing in US wholesale electricity markets will adversely affect natural gas-fired power generators unless the tariffs distinguish between the carbon intensity of natural gas. If they do, the gas power generators who use RSG should be more competitive than their counterparts.

US LNG exporters may be especially vulnerable as carbon prices increase in the EU and are contemplated by the top LNG importing countries China, Japan and South Korea.<sup>15</sup> According to a recent Reuters survey of eight analysts, EU

carbon allowances are up 18.2 and 31.3 percent, respectively, from forecasts in July 2020. The average forecast for prices in 2023 was 46.15 euros/tonne.<sup>16</sup> The EU's carbon trading system has proven its effectiveness. With the recent announcements at the 5<sup>th</sup> anniversary of the Paris Agreement, China, Japan and South Korea are very likely to choose carbon pricing as a tool to achieve their net zero carbon climate goals.

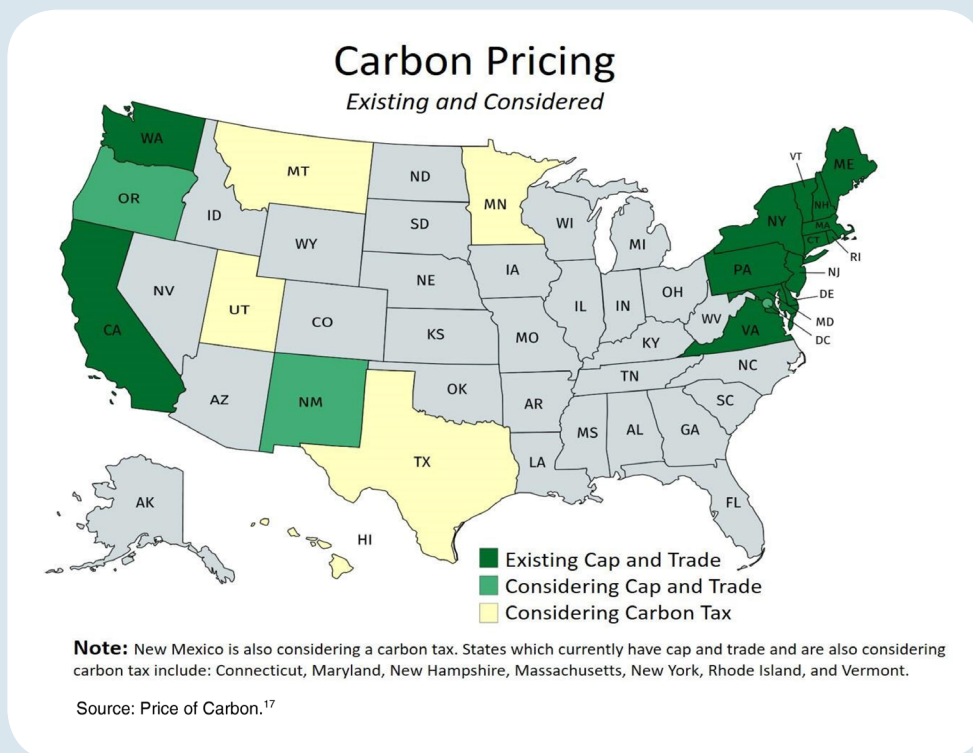
Many state clean energy plans such as California, New York, New Jersey and Maryland are discounting the role that natural gas will play in the electricity sector and embracing carbon pricing that will adversely affect natural gas-fired power generation. California has long had a successful carbon cap-and-trade program on the West Coast for years. On the East Coast, the Regional Greenhouse Gas Initiative (RGGI) is adding the state of Virginia in 2021. Other states are considering carbon taxes or cap-and-trade programs (**Figure 1**).

<sup>15</sup> Twidale, S., & Abnett, K. (2020, November 24). Carbon pricing rises as world's weapon of choice in climate fight. *Japan Times*. Retrieved from <https://www.japantimes.co.jp/news/2020/11/24/world/science-health-world/carbon-pricing-rises-climate-change/>

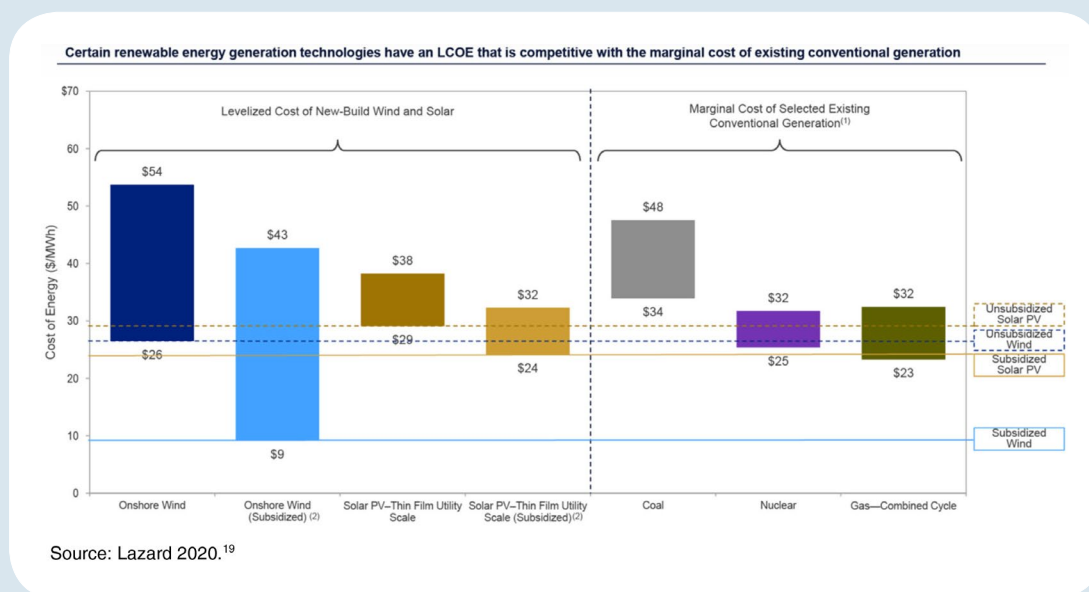
<sup>16</sup> Twidale, S. (2020, October 16). Analysts sharply raise EU carbon price forecasts on tougher climate goals. *Reuters*. Retrieved from <http://reut.rs/34nr7x4>

<sup>17</sup> *Price on carbon*. Retrieved from <https://priceoncarbon.org/business-society/state-actions/>

**Figure 1.** Status of State Carbon Pricing Programs in the US



**Figure 2.** Levelized Cost of Energy Comparison- Renewable Energy versus Marginal Cost of Selected Existing Conventional Generation



The Biden-Sanders Plan recommended eliminating carbon pollution from power plants by 2035 by installing 500 million solar panels and 60,000 wind turbines onshore and offshore.<sup>18</sup> The plan focuses solely on electrification and it could be construed that the Biden Administration sees no real role for natural gas in a US clean energy economy. The emphasis on renewable energy in the plan and steep declines in the cost of wind and solar energy combined are competitive with natural gas combined cycle power plants, which have been a source of growth for the natural gas and LNG industry<sup>19</sup> (Figure 2).

The combination of carbon pricing, the declining cost of renewables and federal and state policies will definitely be challenging for a “business as usual” narrative and require bold action by US natural gas and LNG companies if they hope

to play an increasing role in the evolving energy economy.

## CONCLUSIONS

The US natural gas and LNG industry are at a crossroad. The industry faces global and national imperatives to decarbonize, competition from low-cost wind and solar energy and the need to embrace ESG goals to attract needed capital and investment. Given the above, the choices for the industry are stark:

1. Continue to defend a “business as usual” narrative of natural gas as a “bridge fuel” that could prove to be relatively short and is proving more difficult to support at both the federal and state level;
2. Pursue new technologies such as renewable natural gas, hydrogen blending, methanation, blue hydrogen with carbon capture, use and storage that may pay off in the future;
3. Pursue a more affordable RSG strategy that uses proven and affordable technologies and independent verification now that could scale up quickly and provide natural gas customers and LNG importing countries the ability to decarbonize their operations and economies; or
4. Pursue a combination of all of the above.

<sup>18</sup> Whieldon, E. (2020, July 9). Biden-Sanders task force’s climate plan excludes fracking ban, sees FERC role. *S&P Global Intelligence -Platts*. Retrieved from <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/biden-sanders-task-force-s-climate-plan-excludes-fracking-ban-sees-ferc-role-59376934>

<sup>19</sup> Lazard. 2020 *levelized cost of energy and storage*. Retrieved from <https://www.lazard.com/perspective/levelized-cost-of-energy-and-levelized-cost-of-storage-2020/>