

SETTING THE RECORD STRAIGHT ON LNG EXPORTS:

Environmental Opposition Contradicts Studies on Natural Gas Realities

By Margo Thorning, Ph.D



As support for lifting restrictions on liquefied natural gas (LNG) exports has gained momentum in Washington and across the country, opponents of exporting abundant U.S. shale gas have doubled down by distorting the facts about the benefits of the United States' energy resources.

According to the Energy Information Administration (EIA), the United States is ranked fourth in the world for technically recoverable shale gas and we are slated to become a net exporter of LNG by 2020. By exporting our abundant shale gas resources, we will continue to revitalize Main Street, power key industries, create thousands of jobs across the economy and increase global access to the cleanest burning fossil fuel.

The broad benefits of U.S. LNG exports to the nation's security, economy and the environmental impacts have been outlined in detail by both government and non-governmental sources. Below is a point-by-point rebuttal to address oft-repeated concerns related to the export of our natural gas, and to correct the record on the impacts of LNG exports on the environment. Statements by opponents that LNG exports will worsen global GHG emissions, that potential for local environmental impacts should preclude exports, and that investment in natural gas will prevent growth in renewable energy are not supported by research and analysis. With broad bipartisan support for increased exports and the clock ticking as other nation's LNG projects advance to fill the need for energy resources around the world, it is time for federal regulators to remove red tape preventing the construction of U.S. LNG export terminals.

Myth: LNG Exports Will Worsen Trends in Global GHG Emissions

Fact: As the cleanest burning fossil fuel, the increased use of natural gas for power generation in developing and developed nations around the globe has the potential to significantly slow the growth of global greenhouse gas emissions by displacing CO₂ emissions associated with coal-based power generation. We have already seen natural gas contribute to such outcomes in the United States. Natural gas is cleaner than coal – the dominant global energy source for power generation – with 80% fewer NO_x emissions, and virtually no sulfur dioxide, mercury or particulate pollution.¹

Opponents of fossil fuels have falsely attempted to make the case that energy projects, like LNG exports, are a threat to international climate goals. For example, some groups such as the Chesapeake Climate Action Network, have argued that a recent report by the U.S. Department of Energy's National Energy Technology Laboratory (NETL) shows that U.S. LNG exports to Asia would be worse for the environment than coal if one considers the global warming potential of the gases over a 20-year period in the atmosphere.²

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In fact, NETL considers as default the 100-year basis for the global warming potential of the gases studied (and only includes some analysis with the 20-year factor). The NETL analysis shows that when the global warming potential of LNG exports is measured over a 100-year basis, natural gas has lower emissions than coal.³ Since the various GHG gasses have different global warming potential and remain in the atmosphere for different amounts of time, many experts conclude that a 100-year time period is most appropriate for assessing the impact of the different gasses.⁴ When comparing equal emissions scenarios, the NETL study found that exporting U.S. LNG for power generation overseas would result in lower global greenhouse gas emissions compared to scenarios where regionally sourced coal is used for power generation.⁵

Moreover, the NETL model does not use the most recent EPA data nor the most recent process data, which shows even greater environmental benefits of liquefied natural gas. In comments submitted to NETL, the American Petroleum Institute (API) noted – while outlining the clear benefits of natural gas liquefaction, storage, and ship loading – that the NETL study used 2005 data derived from an Australian facility. The determination was that such a model was “not representative of the newer designs and higher efficiency liquefaction technologies proposed for the new U.S. export terminals.” As a result, “using the more realistic GHG intensities for these new liquefaction technologies would lead to reduced GHG emissions from this part of the operations chain by 30 – 70 percent.”⁶

Larry Summers, former Director of the National Economic Council for the Obama Administration, was the latest expert on the topic to outline that we should not hoard natural gas in the United States if our interest is lower global emissions. Summers stated, “Nobody says export policy is our environmental salvation, but it will represent environmental improvement and that is [a] sufficient case for it to move forward.”⁷

Myth: LNG Exports Should be Curbed Due to Potential for Local Environmental Impacts

Fact: Mounting evidence demonstrates that technological advancements are producing improved protections to the local environment including air and groundwater quality throughout the natural gas development process.

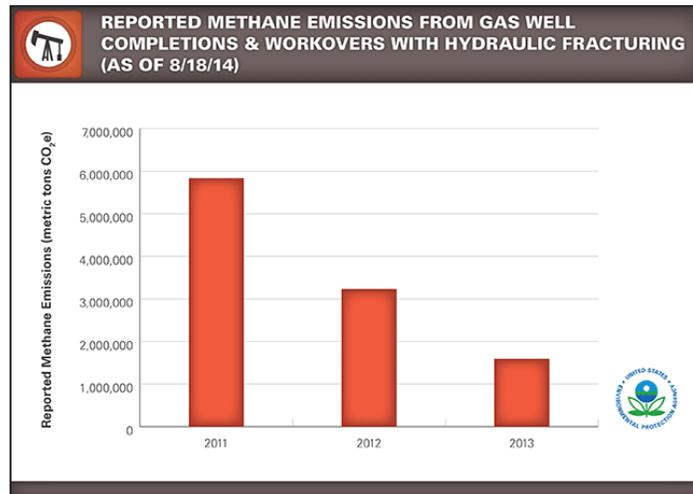
Regarding emissions, the U.S. natural gas industry is employing advanced technology to capture methane. A study by the Environmental Defense Fund and the University of Texas observed that natural gas wells captured 99 percent of escaping methane,⁸ resulting in 97 percent lower emissions rates than EPA estimates.⁹ The study also found methane emissions associated with natural gas extraction are equivalent to 0.42 percent of total natural gas produced, and are much lower than the 1.6 percent figure used in the before mentioned NETL study.¹⁰

Ongoing technology advancements and best practices have and will continue to improve the capture of methane throughout the production and distribution process. Since 1990 there has been a 90 percent drop in methane emissions as a direct result of pipeline and other technology upgrades, according to the American Gas Association,¹¹ and a recent EPA report shows that methane emissions from gas well completions and workovers with hydraulic fracturing fell more than 70 percent between 2011 and 2013 (*as noted in Figure 1*).¹² This trend is projected to continue as technology advancements are implemented in the development of America’s abundant natural gas resources.

At the state level, the University of Michigan produced a report on hydraulic fracturing technology late last year concluding that as a result of adherence to best practices, “the probability of significant methane leakage in deep shale drilling, completion, hydraulic fracturing, testing, and production in Michigan is quite low.”¹³ Former Secretary of Energy Steven Chu came to the same conclusion in 2013 when he said that “[Hydraulic fracturing] is something you can do in a safe way,” and added it was a “false choice” to say the country has to decide between natural gas development and preserving the environment.¹⁴

This conclusion also applies to groundwater analysis. While some continue to raise concerns about potential impacts of natural gas development on local water supplies, the facts demonstrate that technical advancements and safe practices paint a different picture.

Figure 1. Reported Methane Emissions from Gas Well Completions & Workovers with Hydraulic Fracturing



Source: [Environmental Protection Agency](#), "Greenhouse Gas Reporting Program: Petroleum and Natural Gas Systems"

Former EPA Administrator Lisa Jackson commented in 2011 that she was "not aware of any proven case where the [hydraulic fracturing] process itself has affected water."¹⁵ In addition, another report published by the University of Michigan last year affirmed that the hydraulic fracturing process can co-exist with a healthy environment. Developed with input from environmental organizations, academia, industry representatives, and state regulators, the reports states that, "Data gathered from hydraulically stimulated wells in other states does not show evidence of hydraulically-induced fractures extending into overlying fresh water aquifers."¹⁶ Also, a recent study by the Department of Energy, which examined drilling sites across Pennsylvania, found no evidence of local contamination from natural gas development.¹⁷ And the *Journal of Unconventional Oil and Gas Resources* affirmed the findings that the hydraulic fracturing process does not pose a serious risk to water supplies.¹⁸

Myth: LNG Exports Prevent Growth in Renewable Energy

Fact: To meet growing demand for energy across the world, both conventional and renewable energy sources will play a role, according to data from the Energy Information Administration (EIA) and International Energy Agency (IEA). Restricting U.S. LNG exports to incentivize renewable energy investments abroad disregards basic market principles, including the costs and availability of renewable sources.

As Brookings Institution scholar Charles Frank notes in a report discussing the costs and benefits of various energy sources, "nuclear, hydro, and natural gas combined cycle have far more net benefits than either wind or solar" when it comes to reliability. He goes on to note that, to date, some renewable technologies "suffer from a very high capacity cost per megawatt, very low capacity factors and low reliability, which result in low avoided emissions and low avoided energy cost per dollar invested."¹⁹ Despite these factors, renewable electricity generation in the U.S. is projected to increase by 69 percent over the 2012 – 2040 period according to the EIA.²⁰ Much of that increase will be driven by state's renewable portfolio standards as well as by federal and state subsidies for renewable energy.²¹

Given that global demand for energy is projected to increase by 56 percent through 2040, policies that discourage the use and export of abundant domestic natural gas can have negative consequences for both U.S. and global economic and job growth. Meanwhile, the data show²² there is room for growth in both traditional and renewable energy markets. When determining which fuels are most economically advantageous and applicable for wide-scale energy use, market competition cannot be replaced by needlessly restrictive federal policy.

Conclusion:

Abundant U.S. natural gas resources provide immediate and long-lasting benefits. While vigilance in all energy production is paramount, natural gas is poised to continue to reduce greenhouse gas emission growth from power generation around the globe while benefiting local U.S. communities and the nation as a whole. As technology advancements continue and previously out-of-reach domestic resources are developed, the facts are clear: LNG exports will bolster U.S. economic prosperity and security while helping to supply the international community, including our allies in Europe, with reliable and clean energy.

Endnotes

- 1 [America's Natural Gas Alliance](#), "Nat Gas 101," 2012.
- 2 [Chesapeake Climate Action Network](#), "U.S. Department of Energy report confirms: U.S. LNG exports to Asia would likely be WORSE than coal for the atmosphere for decades to come," March 2014.
- 3 [National Energy Technology Laboratory](#), "Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States," by Timothy Skone, see Figures 6-6 and 6-7.
- 4 [According to the EPA](#), although methane is a potent GHG, it is unlike carbon dioxide (CO₂) and other leading pollutants because it remains in the atmosphere for a shorter period of time — an estimated 12 years before dissipating. In contrast, CO₂ can remain in the atmosphere for thousands of years. The Environmental Protection Agency rates methane as the second most prevalent greenhouse gas, accounting for about 9 percent of all U.S. GHG emissions from human activities. Carbon dioxide emissions dwarfs methane, accounting for 82 percent of GHGs from human activities. (See Natural Gas Supply Association, "Natural Gas Lifecycle Analysis: The Cleanest Fossil Fuel," September 20, 2014.)
- 5 [National Energy Technology Laboratory](#), "Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States," by Timothy Skone, May 2014, p.9
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- 8 [Huffington Post](#), "Shale Gas Study Showing Minimal Methane Leakage Exposes Rifts in Enviro Movement," by Jon Entine, Senior Fellow, Center for Health & Risk Communication, George Mason University, September 27, 2013.
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- 15 [Statement given by Lisa Jackson](#), Administrator of the Environmental Protection Agency (EPA) before the House Committee on Oversight and Government Reform, May 2011.
- 16 [University of Michigan](#), "Hydraulic Fracturing in The State of Michigan: Geology Technical Report," September 3, 2013, p.12.
- 17 [Associated Press](#), "DOE Study: Fracking Chemicals Didn't Taint Water," by Kevin Begos, July 19, 2013.
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- 19 [Brookings Global Economy and Development](#), "The Net Benefits of Low and No-Carbon Electricity Technologies," by Charles Frank Jr., May 2014.
- 20 [Energy Information Agency](#), "Renewable electricity projections show growth under alternative assumptions in AEO2014," Gwen Bredehoeft, May 2014.
- 21 See http://www.eia.gov/forecasts/aeo/section_issues.cfm#elec_proj for an overview of the subsidies for renewable energy.
- 22 [Energy Information Agency](#), "Annual Energy Outlook 2014 with projections to 2040," April 2014, Figure ES-5.