

October 21, 2019

U.S. Department of Energy (FE-34)  
Attn: LCA GHG Update Comments  
Office of Regulation, Analysis, and Engagement  
Office of Fossil Energy  
P.O Box 44375  
Washington, DC 20026-4375

**SUBJECT: *Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States: 2019 Update* — Comments of the American Petroleum Institute**

These comments are submitted by the American Petroleum Institute (API) in response to the request by the Department of Energy (DOE) for comments on the report “Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States: 2019 Update” (herein referred to as the “*2019 LCA of U.S. LNG Update*”) published in the *Federal Register* on September 19, 2019.

**I. Statement of Interest**

API is a national trade association that represents over 625 companies involved in all aspects of the oil and natural gas industry. API’s members include owners and operators of LNG import and export facilities in the United States and around the world, as well as owners and operators of LNG vessels, global LNG traders, and manufacturers of essential technology and equipment used all along the LNG value chain. Our members also have extensive experience with the drilling and completion techniques used in shale gas development and in producing America’s natural gas resources in a safe and environmentally responsible manner.

**II. Results of 2019 LCA of U.S. LNG Update**

API applauds the DOE and the National Energy Technology Laboratory (NETL) for undertaking this study. It is a timely update of the first study, also completed by DOE and NETL, back in 2014. It also complements a series of five additional LNG-focused reports completed by DOE since 2012, including mostly recently the “*Macroeconomic Outcomes of Market Determined Levels of U.S. LNG Exports*” published in June 2018. Those important studies found a consistently positive relationship between rising U.S. LNG exports and measures of economic performance, confirming that U.S. LNG exports are a net benefit to the U.S. economy and clearly in the public interest. API strongly agrees with the conclusions of those studies.

As with the first report from 2014, the *2019 LCA of U.S. LNG Update* compares life cycle GHG emissions from U.S. LNG exports to regional coal and other imported natural gas for electric

power generation in both Europe and Asia. The 2019 study offers a few critical updates to the assumptions and methodologies used in the 2014 study, but the overall conclusions remain unchanged. The 2019 study, like the 2014 study, concludes that for all scenarios examined, “the generation of power from natural gas has lower life cycle GHG emissions than power generation from regional coal.”<sup>1</sup>

The results pertaining specifically to U.S. LNG are just as clear, with the study finding “the use of U.S. LNG exports for power production in European and Asian markets will not increase GHG emissions from a life cycle perspective, when compared to regional coal extraction and consumption for power production.”<sup>2</sup>

Notably, the *2019 LCA of U.S. LNG Update* utilizes the most up to date methodology pertaining to assessing GHG emissions. Specifically, in comparison to the 2014 study, the 2019 report updated the 100-year global warming potential (GWP) for methane to reflect the current Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report (AR5). In doing so, the results clearly show the life cycle emissions of U.S. LNG to be lower than coal for use in the power sector.

The 2019 study also uses updated assumptions for upstream production, as well as the various processes throughout the U.S. LNG value chain. In fact, the 2019 study incorporated more recent and accurate data that lowers liquefaction LCA emissions by a third, while the LNG regasification emissions are a quarter of those from the original study. These reductions reflect the advances in technology since the 2014 NETL study was performed and a continued focus by the industry to enhance the emission efficiencies of their operations.

In fact, similar efforts are being made on the natural gas extraction and processing component of the value chain. While the *2019 LCA of U.S. LNG Update* estimates emissions based on the use of older equipment with higher leakage rates, the natural gas industry continues to improve its environmental performance by adopting a host of new technologies focused on limiting methane emissions from upstream operations. Efforts are particularly focused on using advanced monitoring technologies to find and repair leaks, replacing higher-emitting process control equipment and implementing best practices to minimize emissions throughout the production process.

As such, API believes this study likely overestimates the emissions associated with the natural gas extraction and processing stage. Incorporating assumptions for the use of new, low-leak equipment would, in turn, show an even greater benefit of using U.S. LNG compared to coal.

### **III. Additional Studies Examining Life Cycle Emissions of LNG**

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<sup>1</sup> DOE. *2019 LCA of U.S. LNG Update*. Page 21.

<sup>2</sup> DOE. *2019 LCA of U.S. LNG Update*. Page 32.

Beyond the *2019 LCA of U.S. LNG Update* and the 2014 study that preceded it, a multitude of additional studies from other entities have similarly concluded that natural gas, including U.S. LNG, offers lower life cycle GHG emissions as compared to power generation from coal.

One of the more recent and comprehensive studies was completed by the International Energy Agency (IEA) in mid-2019. The report, titled *The Role of Gas in Today's Energy Transitions*,<sup>3</sup> found that beyond theory, natural gas has already played a tangible role in reducing carbon emissions. The study estimates that, “since 2010, coal-to-gas switching has saved around 500 million tonnes of CO<sub>2</sub> — an effect equivalent to putting an extra 200 million EVs running on zero-carbon electricity on the road over the same period.” The study is consistent with emission trends in the U.S. over the past decade, where the increased use of natural gas in the power sector has lowered total U.S. emissions to levels not seen in 25 years.

It also concluded there is an even greater opportunity going forward, estimating “there is potential in today’s power sector to reduce up to 1.2 gigatonnes of CO<sub>2</sub> emissions by switching from coal to existing gas-fired plants[.]” Notably, the analysis “took into account both CO<sub>2</sub> and methane emissions and shows that, on average, coal-to-gas switching reduces emissions by 50% when producing electricity and by 33% when providing heat.”

Combined, the growing list of these studies are establishing a clear consensus on the very important role natural gas can play in reducing GHG emissions around the world—a conclusion perfectly consistent with the *2019 LCA of U.S. LNG Update*.

#### **IV. The Comprehensive Benefits of U.S. LNG**

The increased use of LNG offers multiple benefits to importing countries. With global emissions on the rise, increased use of U.S. natural gas around the world could help make the world’s air cleaner. Many countries rightly view natural gas as a critical fuel for the future and understand that it will play an outsized role in making their energy systems cleaner, more reliable and more efficient. The economic benefits of increased natural gas use extend to the industrial sector, where it is increasingly relied upon as a clean and efficient fuel and feedstock for a wide variety of industrial and commercial operations.

Beyond environmental benefits, a similar consensus has emerged regarding the economic benefits of U.S. LNG. The DOE itself has completed five studies since 2012, all of which show U.S. LNG exports provide a net benefit to American consumers and workers. These results are entirely consistent with an API study published in 2017, the key findings of which include:

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<sup>3</sup> International Energy Agency, *The Role of Gas in Today's Energy Transitions*, 2019. <https://www.iea.org/publications/roleofgas/>

- Increased LNG export volumes equivalent to as much as 16 bcf/d in 2040 could support between 220,000 to 452,000 additional jobs and add \$50 to \$73 billion to the U.S. economy.
- The potential global market is now estimated to be 32 Tcf by 2040, which is much bigger than the 22 Tcf estimated in 2013.
- Increased LNG exports are estimated to have a minimal effect on the price of natural gas. Projected price impacts of LNG exports are anticipated to be half of earlier 2013 estimates due to efficiency gains and advances in energy production technology.

The increased availability of U.S. LNG is not only good for the United States, but for our trading partners, as well. Increasing the global use of American-sourced natural gas enhances our national security here at home and abroad by providing a reliable alternative to our allies around the world, who would otherwise rely more heavily on foreign energy supplies.

As such, API again applauds the DOE's continued focus on the vital issue of U.S. LNG exports and its ongoing efforts to bolster the position of the United States as a dependable LNG supplier in this rapidly expanding global market. Further, API believes that the conclusions of the *2019 LCA of U.S. LNG Update* make a significant contribution to the growing consensus that natural gas offers considerable advantages, including in terms of GHG emission reductions, as compared to competing fuels.

Respectfully submitted,

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