

# GAO Highlights

Highlights of [GAO-16-104](#), a report to congressional committees

## Why GAO Did This Study

More than 30 companies have received approval from DOE for large-scale exports of U.S. LNG—natural gas cooled for transportation—beginning in 2015 or 2016 via specialized LNG carriers.

Congress is considering whether to propose legislative language that would require U.S. LNG be exported via U.S.-built-and-flagged carriers with the goal of supporting U.S. shipbuilders and mariners. Congress included a provision in statute for GAO to review the number of vessel-construction and operating jobs that would be created in the U.S. maritime industry each year in 2015 through 2025 if exported LNG were required to be carried (1) before December 31, 2018, on vessels documented under the laws of the United States and (2) after such date, on vessels documented under the laws of and constructed in the United States. This report discusses (1) DOE and industry expectations for the market for U.S. LNG exports and (2) how the proposed requirement could affect jobs in the U.S. maritime industry and the broader U.S. economy.

GAO reviewed and analyzed economic forecasts of the LNG market and interviewed relevant stakeholders including officials from DOD, DOE, the Department of Transportation, Coast Guard, and the U.S. Trade Representative; representatives of mariner groups, three U.S. shipyards that expressed interest in this market, the five U.S. liquefaction facilities that are under construction, and economic-research firms that have studied the LNG market.

View [GAO-16-104](#). For more information, contact Susan A. Fleming at (202) 512-2834 or [flemings@gao.gov](mailto:flemings@gao.gov).

December 2015

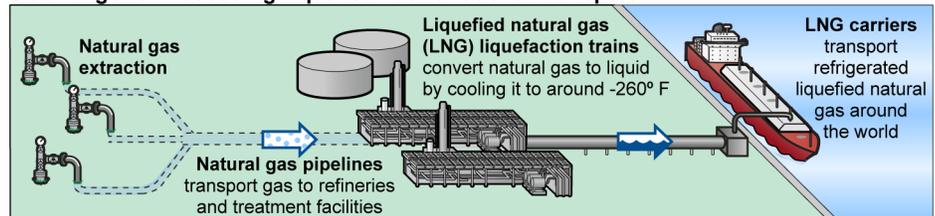
## MARITIME TRANSPORTATION

### Implications of Using U.S. Liquefied-Natural-Gas Carriers for Exports

## What GAO Found

According to Department of Energy (DOE) and industry expectations, in the next few years the United States is expected to change from a net importer of natural gas to a net exporter, with those exports destined for different regions of the world, especially Asia. Five large-scale U.S. liquefaction facilities—necessary for conversion of natural gas to liquefied natural gas (LNG) (see fig. below)—are under construction with a projected capacity to export more than 12 percent of U.S. natural gas production in 2020. According to representatives from these five facilities, their liquefaction capacity has already been sold mainly through 20-year contracts and their customers are responsible for transporting the LNG to export markets. Based on estimates from these liquefaction facilities, transport of the full capacity of these liquefaction facilities will require about 100 or more LNG carriers. Currently operating LNG carriers are nearly all foreign built and operated. LNG carriers have not been built in the United States since before 1980, and no LNG carriers are currently registered under the U.S. flag.

#### Obtaining and Processing Liquefied Natural Gas for Transport



Source: GAO. | GAO-16-104

The proposed requirement to transport exports of LNG via U.S.-built-and-flagged carriers could expand employment for U.S. mariners and shipbuilders if it does not reduce the expected demand for U.S. LNG. According to representatives of U.S. mariner groups, between 4,000 and 5,200 mariners would be needed to operate the estimated 100 LNG carriers needed to transport the five U.S. facilities' full capacity of LNG once the five are fully operational. Based on the current capacity of U.S. shipyards we spoke with, building 100 carriers would likely take over 30 years, with employment in U.S. shipyards increasing somewhat or becoming more stable, according to shipyard representatives. Department of Defense (DOD) officials also indicated that any policy or requirement that increases and stabilizes jobs in the U.S. maritime industry could support military readiness. However, according to industry representatives, U.S. carriers would cost about two to three times as much as similar carriers built in Korean shipyards and would be more expensive to operate. Based on GAO analysis, these costs would increase the cost of transporting LNG from the United States, decrease the competitiveness of U.S. LNG in the world market, and may, in turn, reduce demand for U.S. LNG. The extent of these effects depends on customers' circumstances and business decisions. For example, several stakeholders told us implementing the proposed requirement may prompt customers to attempt to modify, renegotiate, or terminate their existing contracts for liquefaction. Additionally, limited availability of U.S. carriers in the early years of construction may decrease the amount of LNG that could be exported from the United States for a period of time, leading customers to seek alternate sources. Further, a reduction in the level of expected U.S. LNG exports could impact the broader U.S. economy, including potential job and profit losses in the oil and gas sector.