

# **ATTACHMENT DD**



# The U.S. Can Increase LNG Exports to Europe

## *No New Contracts or Infrastructure Are Required*

### Introduction

On March 25, political leaders from Europe and the U.S. announced plans to boost Europe's liquefied natural gas (LNG) imports by at least 15 billion cubic meters (bcm) this year, to help replace declining gas imports from Russia.<sup>1</sup> They also stated a longer-term ambition to boost the EU's demand for U.S. LNG by 50 bcm annually through 2030. The announcement did not specify where additional LNG would be sourced, and U.S. officials made no firm commitments to ship specific volumes of LNG to Europe.

**An IEEFA analysis finds that the U.S. LNG industry has the capacity to boost gas exports to Europe by at least 15 bcm this year and more through 2030—without signing any new contracts or building any new infrastructure beyond what is already under construction.**

The six fully operational LNG liquefaction terminals in the U.S. can collectively export up to 82 million metric tons (MMt) of LNG per year, or roughly 112 bcm of gas.<sup>2</sup> This represents an increase of almost 6 MMt of LNG (8 bcm of gas) over 2021 levels, due to the recent completion of an additional liquefaction train at the Sabine Pass LNG terminal.

In addition, the U.S. LNG industry operated at slightly less than full capacity in 2021, but is on track to operate at full capacity for 2022, boosting total U.S. LNG exports by several million tons this year.

The completion of the Calcasieu Pass LNG terminal, expected later this year, would add 12 MMt of annual liquefaction capacity (16 bcm of gas) to the U.S. LNG fleet, 3.75 MMt of which (5.1 bcm of gas) is contracted to be sold to Europe. Calcasieu Pass is already partially operational, shipping its first commissioning cargoes in early March, and could potentially export several million metric tons of LNG into the global market this year as it ramps up. Still more liquefaction capacity will be online by 2025, when the 15.6 MMt/year (21.4 bcm of gas) Golden Pass LNG export facility is expected to commence operations. Although Golden Pass LNG's output is contracted to Ocean LNG (an affiliate of ExxonMobil and Qatar Petroleum, the two

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<sup>1</sup> The White House. [Joint Statement between the United States and the European Commission on European Energy Security](#). March 25, 2022.

<sup>2</sup> Where not otherwise cited, data from this report is sourced from IHS Markit. For this report, IEEFA abbreviates million metric tons as "MMt." The U.S. LNG industry typically reports shipments in million metric tons, but European gas imports are typically reported in billion cubic meters. In this report we report both measures.

companies partnering to develop the facility), Ocean LNG has the flexibility to ship LNG to destinations of its choosing.

In short, the U.S. LNG industry—which includes six fully operational plants, one that is partially operational, and one that will come online by 2025—has the capacity to boost its total LNG exports this year and beyond, and to direct substantial LNG volumes to Europe, without sanctioning any new infrastructure or entering into new long-term sales contracts with European buyers.

## Existing LNG Contracts Offer no Impediment to Higher LNG Sales to Europe

There are no legal or contractual barriers that would prevent a significant growth in exports of U.S. LNG to Europe either this year or through 2030. In fact, significant growth in U.S. LNG exports to Europe is already underway.

Most U.S. LNG is sold under long-term contracts to specific buyers. It is these contract holders—not the liquefaction companies or the U.S. government—who control where the LNG is shipped. This fact likely made it difficult for White House officials to commit to specific volumes of U.S. LNG shipments to Europe this year.

All told, U.S. LNG producers are contractually obligated to sell 63.3 MMt of LNG (86.7 bcm of gas) to specific third-party buyers in 2022, out of a total of 82 MMt of LNG liquefaction capacity (112.3 bcm of gas). Just under half of these contracted volumes are with Asian and European gas and power utilities, such as KOGAS in South Korea, Osaka Gas and Kansai Electric in Japan, ENDESA in Italy, and EDF in France. These long-term utility contracts are weighted heavily towards Asian buyers. (See Table 1.)

**Table 1: U.S. LNG Third-Party Sales Contracts, 2022, by Assumed Destination**

	MMt	Bcm
<b>Asia</b>	27.4	37.5
<b>Europe</b>	4.0	5.5
<i>EU only (excluding UK)</i>	2.3	3.1
<b>Multiple/Flexible</b>	31.9	43.7
<b>Total Contracted Volumes</b>	<b>63.3</b>	<b>86.7</b>
<b>Total U.S. LNG Export Capacity</b>	<b>82.0</b>	<b>112.3</b>
<b>Potential U.S. Spot Sale Volumes</b>	<b>18.7</b>	<b>25.6</b>

Source: IEEFA based on IHS Markit.

Note: For this analysis, contracted sales between Cheniere-owned LNG terminals and Cheniere Marketing are considered potential spot sales, rather than third-party contracts.

However, more than half of U.S. LNG under contract is sold to global LNG traders, such as Shell, BP, TotalEnergies, and Trafigura, who are free to direct cargoes to any destination of their choosing, consistent with contracts they may have signed with

their customers. In addition, the U.S. LNG industry has reserved about 18.7 MMt of LNG (25.6 bcm of gas) of uncontracted liquefaction capacity for short-term contracts and spot market sales, offering additional flexibility in destinations for U.S. LNG.

Counting contracted LNG with flexible destinations, spot sale volumes, and pre-existing commitments with European buyers, almost 55 MMt of U.S. LNG (75 bcm of gas) could be available to Europe this year. Destination flexibility in current contracts would allow for a significant increase in U.S. LNG shipments to Europe from their 2021 level of 22.2 MMt (30.4 bcm of gas), without any new long-term sales contracts. (See Table 2.) European buyers also can negotiate with Asian contract holders to secure additional imports of U.S. LNG.

The U.S. is already on pace for a massive year-over-year increase in LNG exports to Europe in 2022. During the first quarter of 2022, the U.S. shipped 13.4 MMt of LNG (18.3 bcm of gas) to the EU and UK, compared with a total of 18.7 MMt of LNG (25.6 bcm of gas) during all of 2021. If the pace for the first quarter of 2022 is maintained for the rest of the year, the U.S. would supply the EU and UK with more than 53 MMt of LNG this year (73 bcm of gas), an increase of roughly 35 MMt of LNG (48 bcm of gas) compared with 2021.<sup>3</sup>

Said differently, if the first-quarter pace were to continue for the remainder of 2022, the U.S. would boost its year-over-year exports of LNG to Europe by roughly 48 bcm this year—nearly matching the 50 bcm long-term increase called for by the White House and European leaders—all without signing new long-term contracts or building additional export infrastructure. The flexibility offered by existing U.S. LNG contracts has already allowed for a substantial boost in LNG supplies to Europe with existing infrastructure.

## **Rising LNG Sales to Europe Have Tightened Global Gas Markets and Boosted Gas Prices**

Europe's appetite for LNG has been boosted by an escalating political and economic imperative to reduce the continent's dependence on Russian gas. Gazprom, the Russian state-owned enterprise with a monopoly on pipeline gas shipments to the EU, began curtailing shipments of gas to Europe last summer, and reduced gas stockpiles at its European storage facilities in the fall.<sup>4</sup> This market manipulation created shortfalls in EU gas markets that boosted the continent's demand for alternate sources of gas, including LNG. Russia's invasion of Ukraine in February triggered renewed political urgency for reducing the continent's reliance on Russian fossil fuels.

EU leaders have now outlined ambitious policies to reduce the continent's overall gas consumption by accelerating the deployment of renewables, energy efficiency,

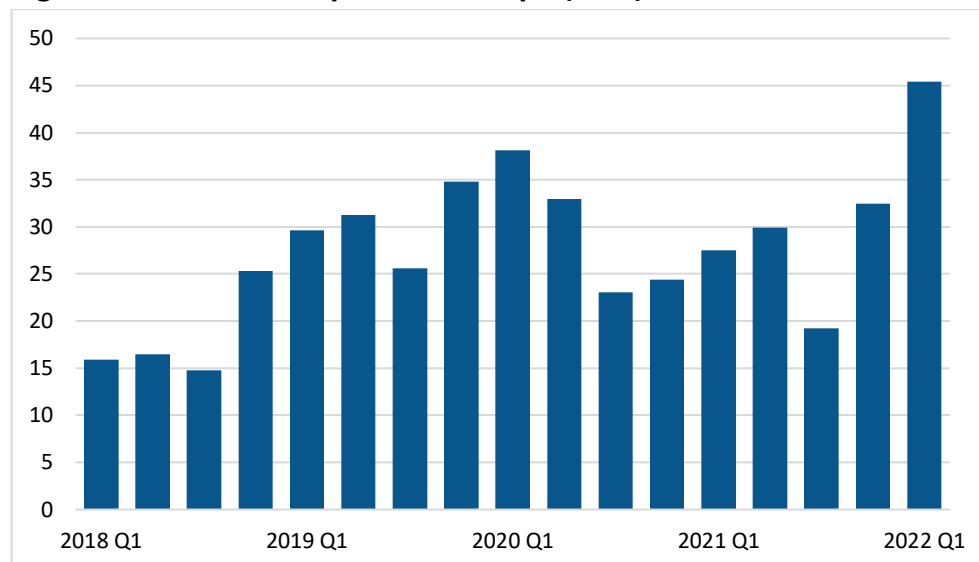
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<sup>3</sup> This report combines UK and the EU, because some UK LNG import capacity can be used to supply the EU with U.S.-sourced gas.

<sup>4</sup> S&P Global. [Europe's energy crisis deepens as Russia cuts gas exports](#). November 21, 2021. Also see: Financial Times. [Gazprom's low gas storage levels fuel questions over Russia's supply to Europe](#). October 27, 2021.

and conservation measures.<sup>5</sup> These policies build on prior commitments to reduce the continent's fossil fuel consumption and emissions. At the same time, the continent plans to quickly ramp up LNG imports to help replace purchases of Russian gas. The European Commission, the executive branch of the EU, now aims to reduce Russian gas imports by 65% this year alone, through a combination of demand reduction and securing alternative gas supplies.

**Figure 1: Total LNG Imports to Europe (bcm)**



Source: IHS Markit.

Note: for this chart, Europe includes Turkey and other non-EU European countries.

In response to high prices and surging appetite for alternatives to Russian gas, quarterly LNG shipments to Europe (including Turkey) surged all-time highs during the first quarter of 2022. (See Figure 1.) Europe's skyrocketing demand has already had four key effects on global gas markets.

First, it has helped boost global LNG prices to their highest level in history. Europe is now bidding against buyers from the rest of the world, particularly wealthy Asian nations, for a limited supply of global LNG. The resulting bidding war has spurred LNG spot prices to all-time highs during the winter months of 2021 and early 2022. Increased LNG demand in Europe coincided with the global economic rebound from the COVID pandemic and other factors, such as high European carbon prices,

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<sup>5</sup> European Commission. [REPowerEU: Joint European Action for more affordable, secure and sustainable energy](#). March 8, 2022.

which have boosted gas demand in Europe and beyond.

Second, the growth in European LNG demand has constrained the amount of LNG that is available to the rest of the world. Europe's appetite for LNG has led Asia and the Americas to cut back on their LNG purchases. All told, Europe (including Turkey) imported an additional 17.9 bcm of gas as LNG in the first quarter of this year, compared to the year-ago quarter. Meanwhile, imports by Asian buyers fell by about 5.6 bcm over the same period, and shipments to the Americas fell by 1.5 bcm. Supply constraints, high prices, cargo cancellations, and intense competition for limited LNG supplies have begun to tarnish the fuel's reputation as a reliable and stable energy source, and could force developing nations to rethink the role of LNG in their future economic growth plans. This is particularly true for countries such as Pakistan, which are facing two simultaneous challenges: Suppliers have been canceling LNG deliveries to Pakistan to chase higher prices in Europe,<sup>6</sup> even as the government wrestles with the skyrocketing cost of fossil fuel subsidies that cushion domestic consumers from high international prices.<sup>7</sup>

Third, Europe's rising call on U.S. LNG exports has lifted domestic natural gas prices for U.S. consumers and utilities.<sup>8</sup> U.S. gas production is now higher than it was in 2019,<sup>9</sup> and domestic consumption of gas is lower.<sup>10</sup> But a spike in gas demand for exports has kept U.S. gas prices at their highest level in years.<sup>11</sup> On April 5, 2022, U.S. natural gas prices reached \$6.14 per million British thermal units (MMBtu) during intra-day trading,<sup>12</sup> up from \$2.43/MMBtu the prior year. As the U.S. exports more and more natural gas to global markets, it is importing higher gas prices as a result. Further growth to U.S. LNG export infrastructure creates a risk of even higher prices. As gas industry analyst Sheetal Nasta remarked last fall, when global LNG prices started to spike, the lack of spare LNG export capacity "is likely the only thing reining in Henry Hub prices from following European and Asian gas/LNG prices to the moon."<sup>13</sup>

Fourth, rising EU demand for LNG coupled with sky-high prices on spot markets, has raised the specter that European gas buyers will lock-in long-term LNG purchase contracts that could make it far more difficult to achieve the continent's long-term climate goals. The existing U.S. LNG terminals were all anchored by 20-year purchase commitments that allowed LNG companies to secure financing for multi-billion-dollar export terminals. If European utilities sign new long-term LNG sales

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<sup>6</sup> S&P Global. [Gunvor backs out of LNG deliveries to Pakistan for April-June deliveries: officials](#). March 28, 2022.

<sup>7</sup> Reuters. [Pakistan confident of defending \\$1.5 billion fuel subsidy at IMF review](#). March 4, 2022.

<sup>8</sup> Institute for Energy Economics and Financial Analysis. [Booming U.S. natural gas exports fuel high prices](#). November 4, 2021.

<sup>9</sup> U.S. Energy Information Administration. [Natural Gas Gross Withdrawals and Production: Dry Production](#). Accessed April 5, 2022.

<sup>10</sup> U.S. Energy Information Administration. [Natural Gas Consumption by End Use: Volumes Delivered to Consumers](#). Accessed April 5, 2022.

<sup>11</sup> U.S. Energy Information Administration. [Henry Hub Natural Gas Spot Price](#). Accessed April 5, 2022.

<sup>12</sup> Bloomberg. [Energy: Crude Oil & Natural Gas](#). Accessed April 5, 2022.

<sup>13</sup> RBN Energy. [Hear My Train A Comin', Part 2 - Rising LNG Exports Hitch U.S. Gas To Soaring TTF, JKM Prices](#). September 27, 2021.

contracts with U.S. suppliers, they could jeopardize the EU's ability to meet its ambitious emissions reduction targets, particularly its commitment to reduce total greenhouse gas emissions by at least 55 percent below 1990 levels by 2030.<sup>14</sup>

**Table 2: Volumes of U.S. LNG Imports**

Imports of US LNG (Million Metric Tons)							
	2016	2017	2018	2019	2020	2021	2022-Q1
Europe*	0.3	2.0	2.7	13.3	19.2	22.2	16.1
Of which, EU	0.2	1.4	1.5	10.2	13.3	15.8	10.1
Of which, UK		0.1	0.9	2.2	3.6	2.9	3.3
Japan-Korea-Taiwan		3.2	7.4	9.6	11.8	17.6	3.8
Other Asia	0.6	2.0	3.5	3.4	7.8	16.0	1.2
Americas	1.7	4.3	6.1	7.2	6.1	12.6	1.3
MENA	0.4	1.4	1.3	1.2	1.0	0.9	0.1
<b>Grand Total</b>	<b>3.0</b>	<b>12.9</b>	<b>21.0</b>	<b>34.6</b>	<b>45.9</b>	<b>69.3</b>	<b>22.6</b>
Imports of US Gas as LNG (Billion Cubic Meters)							
	2016	2017	2018	2019	2020	2021	2022-Q1
Europe	0.5	2.8	3.7	18.2	26.3	30.4	22.1
Of which, EU	0.2	1.9	2.1	14.0	18.2	21.7	13.9
Of which, UK		0.1	1.2	3.0	4.9	4.0	4.5
Japan-Korea-Taiwan		4.3	10.2	13.1	16.1	24.1	5.3
Other Asia	0.8	2.8	4.8	4.6	10.7	21.9	1.7
Americas	2.3	5.9	8.4	9.8	8.4	17.3	1.7
MENA	0.5	1.9	1.8	1.7	1.4	1.2	0.1
<b>Grand Total</b>	<b>4.1</b>	<b>17.7</b>	<b>28.8</b>	<b>47.4</b>	<b>62.9</b>	<b>94.9</b>	<b>30.9</b>

Source: IHS Markit. Shipments received may not match liquefaction volumes because of timing and boil-off.

Note: \*Europe includes Turkey.

## Conclusion

The U.S. LNG industry was built on long-term supply arrangements that offer tremendous flexibility in where LNG can be shipped. As Europe's appetite for alternatives to Russian gas has grown, the U.S. LNG industry has responded by shipping the majority of its cargo to European buyers. The increase in LNG shipments to the EU was entirely a result of voluntary transactions between willing buyers and sellers, rather than the result of policy directives by government officials in the U.S. or Europe.

<sup>14</sup> Sustainable Development Solutions Network. [European Commission launches proposals to reach 55% emissions reduction by 2030](#). July 30, 2021.

If shipment patterns during the first quarter of 2022 continue, the U.S. LNG industry will far exceed the short-term target, set by officials from the EU and the White House, of boosting U.S. LNG shipments to the EU by 15 billion cubic meters this year. The industry is on track to achieve this result without the approval or construction of any new, previously unplanned LNG infrastructure in the U.S. In fact, it is conceivable that the U.S. could get close to the longer-term target of boosting US gas shipments to the EU by 50 bcm this year, particularly if alternative supply routes, such as imports via the UK, are considered. Once additional U.S. LNG terminals that are currently under construction are completed, the U.S. LNG industry's capacity to ship LNG to the E.U. could rise even further.

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However, Europe's increasing appetite for U.S. LNG comes at a cost—for Europe, for the U.S., and for the world. For Europe, LNG imports are inherently more expensive for the EU than the Russian gas they replace. At the same time, U.S. consumers are now paying much more for their natural gas, because rising LNG exports have contributed to supply shortfalls and tight gas markets in the U.S. Meanwhile, Europe's rising appetite for LNG has dramatically boosted global LNG prices, and there are signs that high prices and cargo cancellations have already started to suppress LNG demand in Asia and the Americas.

The Intergovernmental Panel on Climate Change recently issued a sobering warning on the construction of new fossil fuel infrastructure. Put simply, if the world's existing fossil fuel infrastructure continues to be used as designed, total global climate-warming emissions will exceed the levels needed to limit global warming to 1.5°C. This serves as a powerful rationale not to move forward with additional U.S. LNG infrastructure. But perhaps just as important to policymakers is that recent import patterns suggest that no new LNG infrastructure is needed to send significant new volumes of LNG to Europe; the market has already started to achieve this result without any new LNG infrastructure.



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The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. [www.ieefa.org](http://www.ieefa.org)

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