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Argus White Paper: US natural gas exports to Mexico and border pricing



Emerging demand for natural gas in Mexico combined with declining production in the country have prompted US producers and marketers to increase gas exports to generators, utilities, and other end-users of natural gas in Mexico. The expansion of this trade flow means that understanding the price of gas at the US-Mexico border is more important than ever. Argus has monitored these market developments and concluded that adequate information exists to assess daily natural gas prices at the border, which it began publishing in June 2019.

Background

Regulatory reforms to Mexico's energy sector explain at least partly why natural gas prices at the US border are increasingly important for the market.

The Mexican congress voted in late 2013 to liberalize the energy sector, and the administration of President Enrique Peña Nieto began to put reforms in place. These had many objectives, such as reducing the market power of state-owned oil and gas company Pemex in the gas sector, along with diversifying the country's fuel consumption mix.

The regulatory reforms helped spur new demand for natural gas in Mexico. State-owned utility CFE began phasing out the use of refined products for power generation and began building new gas-fired units throughout the country.

The reforms also led to increased interest in Mexico's natural gas market as a potential business opportunity. International trading houses and US gas marketing firms opened offices in Mexico to develop a broader customer base that could take advantage of market deregulation.

In parallel to these developments, US gas production near the border began to surge in the middle of this decade, first in the Eagle Ford shale in south Texas and then in the Permian basin in west Texas and southeastern New Mexico. Mexico became a key market for these burgeoning supplies.

Mexico has long relied on natural gas from the US, but trade in the fuel between the countries looks very different now compared with a decade ago.

Mexico has rapidly increased its imports of US natural gas in the last decade as its own production has declined. Imports of pipeline gas nearly tripled to 1.9 trillion cf (Tcf) in 2018 compared with 2013. In the past three years, pipeline imports have increased by 84pc to as high as 5bn cf/d (Bcf/d).

LNG imports from the US augment that supply, providing an additional 182 Bcf of natural gas equivalent in 2018, or roughly one standard-sized cargo of LNG a week. Mexico's US LNG imports amount to 0.5 Bcf/d of natural gas equivalent on an average daily basis.

Pipeline interconnections between the countries have expanded in recent years. One notable new pipeline, Net Mexico, moves more than 2.1 Bcf/d from many US Gulf coast interstate and intrastate pipelines to the border at Rio Grande, Texas, into the Los Ramones pipeline in Tamaulipas state.

LNG

Even before Mexico enacted its energy sector reforms in 2014, the development of three LNG regasification facilities began to change the country's natural gas market.

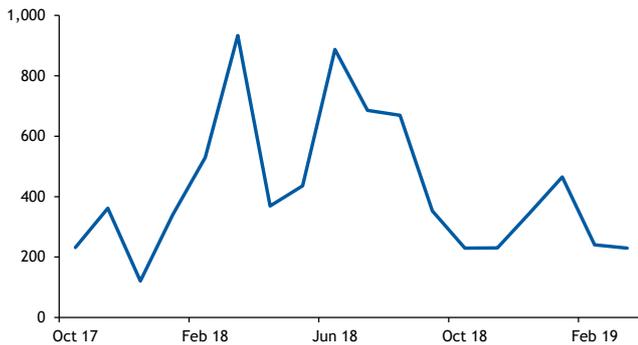
The Costa Azul terminal in the state of Baja California opened in 2008 and generally has been used sparingly. The Altamira terminal in southern Tamaulipas state opened in 2006 and

Natural gas/LNG
illuminating the markets

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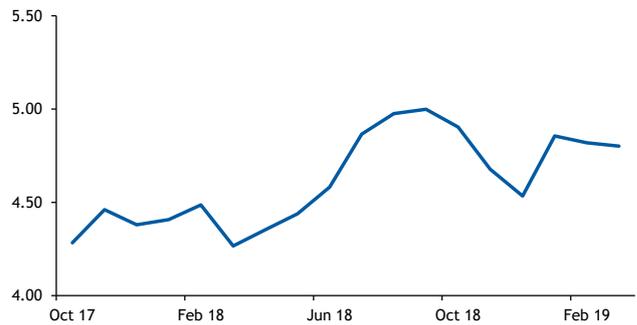
US LNG exports to Mexico

mmcf/d



US pipeline exports to Mexico

Bcf/d



was the workhorse LNG facility for the country for many years. The Manzanillo terminal on the Pacific coast took its first import cargo in 2013 and its receipts now exceed those of Altamira. This terminal serves the densely populated part of the country that includes Mexico City, where gas infrastructure is highly constrained.

US LNG exports began from Cheniere Energy's Sabine Pass terminal in Louisiana in 2016, and the US has already become the largest LNG exporter to Mexico. With the recently expanded Panama Canal, the one-way voyage from Sabine Pass to the Manzanillo terminal has been more than halved from 27 days using the previous route around Cape Horn, to just 10 days.

Pipelines

Burgeoning LNG imports meant that the many natural gas pipeline connections between the US and Mexico operated well below capacity. But the development of the Eagle Ford shale in south Texas, coinciding with the use of horizontal drilling, quickly upended the status quo.

It is important to note that the natural gas industry in Mexico is regulated in a manner different from its northern neighbor. US pipelines crossing the border connect either with pipelines that are owned privately or were owned by Pemex. Some of the largest private-sector pipeline operators in Mexico are Lenova, TC Energy and Fermaca. These firms and others are pursuing new projects in the country, although large state-owned entities such as Pemex and CFE are also financing new gas lines to their facilities.

In the wake of the energy sector reforms, Mexico has attempted to rapidly change its national energy policy. The country's energy regulator, the CRE, is a body of political appointees that sets broad policy goals to incentivize downstream fuel and electricity generation markets. The CRE approves permits for natural gas transmission and distribution. In 2015, the regulator removed the price cap for first-hand sales of natural gas that Pemex charged customers. Pemex remains a significant market participant

and the first-hand sales price is an important component in legacy contracts.

Pemex has turned over control of its gas pipelines to a new government agency called Cenagas. This agency is responsible for running the pipelines in a non-discriminatory, open-access manner, and for removing operational bottlenecks. The Cenagas system is called Sistrangas and has a capacity of about 8 Bcf/d. With the addition of new pipelines and interconnections, Sistrangas should be able to move 12 Bcf/d in a couple of years.

Tariffs were revised in 2018 on the extensive Sistrangas pipeline network to reroute flows for economic development and to serve more markets. This move is intended to be a step towards better integration of the system.

Net Mexico is owned by NextEra Energy Resources and delivers gas into the Los Ramones system, which extends into central Mexico to the Tamazunchale pipeline north of Mexico City. The Los Ramones Phase II South pipeline has run at partial capacity since 2016, and the region continues to rely on imported LNG. Gas consumption is high around Mexico City as well, but demand in the area is served more through LNG imports and gas produced locally by Pemex from the Bay of Campeche.

Other pipelines to Mexico were built specifically to serve new gas-fired generation. For example, El Paso Natural Gas brought a sizeable lateral, Sierrita, into service in 2015 to take gas from its south mainline in Arizona to the border of Sonora state. Energy Transfer Partners' Comanche Trail pipeline started up in 2017 and ships Permian basin gas to El Paso county, Texas, delivering supplies to power plants in Chihuahua state. The company's Trans-Pecos pipeline delivers Permian gas to end-users in Chihuahua.

Mexico's energy ministry, Sener, publishes index reference prices based on the average price of reported transactions in specific parts of the country, in an attempt to bring price transparency to the market.

Future of the gas business

Some market experts believe there could be challenges to opening up natural gas markets in Mexico. President Andres Manuel Lopez Obrador, elected in 2018, has vowed to review existing natural gas contracts between CF Energia, the state-owned generator's gas trading arm, and privately owned pipelines. But it is unclear if his administration wants to involve itself in changing the flow of natural gas. Lopez Obrador has failed to secure approval in the Mexican congress for some of his measures, owing in part to industry opposition.

Pipeline construction can be a slow process in Mexico, but hopes for a more robust market hinge on a few key projects. The recently completed Sur de Texas-Tuxpan pipeline will take gas from south Texas and run offshore, southbound through the Gulf of Mexico, to two interconnections. One of these is at Altamira, near the LNG receiving terminal, in southern Tamaulipas state. The other is at Tuxpan, a city in Veracruz state near the Gulf.

Additional pipeline projects are being developed elsewhere. Fermaca is expanding its system with a network of pipelines from El Encino in Chihuahua to Villa de Reyes in San Luis Potosi. Other private-sector operators have been building pipelines with interconnections at El Encino as well. A pipeline south of the US border from Samalayuca to Sasabe in Sonora state may also come on line this year.

Argus brings clarity to market changes

Companies involved in Mexico's natural gas market are transacting to obtain gas on a daily or monthly basis, at a variety of locations, using various pricing mechanisms.

Since a substantial portion of the gas will be used for power generation, prices at the US-Mexico border will depend on US daily markets. *Argus* data, based on transparent markets for gas and pipeline carriage, are needed to make well-informed decisions. The *Argus* Natural Gas Americas service is your trusted daily service for the latest natural gas market news, prices, data and trends.

Argus Natural Gas Americas provides daily prices, news and analysis on more than 120 hubs and over 90 bid week index calculations each month. This service helps you determine how much to pay for gas and how much is available, and informs you about trends in capacity and constraints on the pipeline grid.

Argus has elected to publish prices for natural gas at certain areas on the US-Mexico border that experience significant shipments of natural gas. The area prices are calculated by adding relevant daily volume-weighted transportation costs to daily price indexes for gas at the nearest regional markets in the US. These areas are south Texas, west Texas-Arizona and California.

Transportation costs are calculated for each location as a volume-weighted average of capacity release costs — a shipper's firm capacity resold to another party on either a temporary or permanent basis — and maximum tariff transportation costs. *Argus* calculates the capacity release transportation cost for scheduled volumes up to the total released capacity at each location using transactions disclosed on the public electronic bulletin boards (websites) of FERC-regulated pipelines.

The transportation cost calculations assume released capacity volumes would always be the first to flow. Where capacity release transactions do not exist, or for scheduled volumes exceeding the total released capacity, *Argus* calculates the transportation costs as the maximum tariff transportation costs. *Argus* calculates the maximum tariff transportation costs by combining the fuel charge, the commodity charge and the demand charge for firm transportation, also called the reservation rate, where applicable.

The complete methodology for the US-Mexico border natural gas prices and all of the indexes in *Argus* Natural Gas Americas can be found by [clicking here](#).

For more information about *Argus*' natural gas services and products, please contact us at moreinfo@argusmedia.com

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