

# Cross-Border Pipelines Link U.S. Natural Gas Producers, Mexican Electricity Users

By Rachel Brasier and Jesse Thompson

**M**exican energy reforms have opened the door to shale gas from the United States—and imports are booming. U.S. natural gas production reached a record high in July 2015, largely due to increased shale drilling since 2010 in the Marcellus field in the northeastern U.S. and the Permian and Eagle Ford basins in Texas. The supply boom, which far outpaced domestic demand growth, led to a surfeit of natural gas and a roughly two-thirds drop in prices.

Meanwhile in Mexico, reforms that began in 2014 broke the monopoly held by the state energy company, Pemex, on electricity generation. The changes also emphasized cleaner fuels, such as natural gas, and promoted rental of pipeline capacity to private enterprise. As a result, Mexico emerged as an attractive destination for excess U.S. gas supplies.

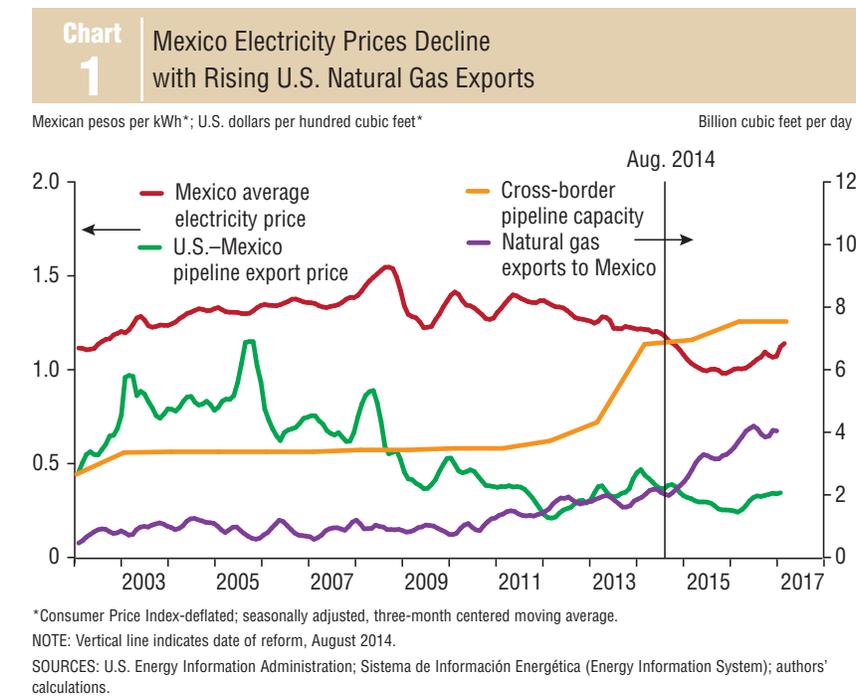
## Export Infrastructure Developed

Natural gas prices averaged over \$8 per thousand cubic feet from 2004 to 2008—before the shale gas boom from hydraulic fracturing, or fracking, took off in 2010. Liquefied natural gas (LNG) import terminals had been built in anticipation of a need for less-expensive foreign natural gas for domestic consumption.

Plans changed when U.S. gas prices sank to around \$3 under the weight of new gas production from shale deposits. Firms took another look at the LNG terminals they'd been building and began reversing the flow of gas—turning LNG import terminals into export facilities and building new pipelines from newly active areas such as the Eagle Ford. (For more on LNG exports, see “Go Figure” on page 19).

A portion of the expansion involved Mexico. The total capacity of all U.S.–Mexico pipelines was 3.7 billion cubic feet per day (bcf/d) in 2011. It grew to 7.8 bcf/d last year and is expected to double by 2019.

U.S. natural gas exports to Mexico,



reflecting the new pipeline capacity, increased from 1.4 bcf/d in 2011 to 3.8 bcf/d in 2016.<sup>1</sup> In 2016, more than 1 billion cubic feet of U.S. natural gas exports per day on average moved through Rio Grande City, Texas, where the NET Mexico pipeline connects with Mexico's Los Ramones project. This represents only half of the Los Ramones pipeline's capacity to transport U.S. natural gas from the Eagle Ford to Nuevo León, Mexico, and beyond to San Luis Potosí, deep in the country's interior.

## Natural Gas Use Rises

Mexico seeks to more fully realize the advantages of this trade by increasing access farther from the border to relatively inexpensive U.S. natural gas supplies. Pipelines under construction will add an estimated 3.8 bcf/d of capacity to the Mexican side of the network, bringing additional natural gas from the Texas border to central Mexico.

Much of that gas is used for electricity generation, substituting for more expensive and polluting fuels. The industrial sector consumes more

electricity than any other, although residential and service sector use is growing fast. Deregulation allowed changes in natural gas prices to be passed through to Mexican customers, and this can be seen in inflation-adjusted market prices for electricity in Mexico (see chart).

Several potential obstacles could slow the growth in natural gas exports to Mexico. The country is working to promote greater use of wind and solar energy. Also, Mexico itself has one of the world's largest natural gas reserves—an estimated 545 trillion cubic feet, mainly in the northern Burgos region along the U.S. border.

If natural gas prices warrant and regulations further ease, U.S. hydraulic fracturing and horizontal drilling technology may flow across the border, and Mexico could experience a shale-gas production boom of its own—potentially shifting demand from U.S. natural gas to U.S. oilfield services.

## Note

<sup>1</sup>Texas exported over 3.1 bcf/d of natural gas to Mexico in 2016—16 percent of its total marketed production.