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U.S.-Mexico Oil Swaps Unlock Avenue For U.S. Light Crude

Department Of Commerce Rule Will Bolster Refinery Efficiency And Fuel Debate Over Lifting Oil Export Ban

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Policy Brief

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Key Takeaways:

- Light tight oil production from unconventional resources has prompted industry to seek export avenues
- Approval of U.S.-Mexico crude oil swaps provides an additional market for light crude and increases its value given the current limitations in U.S. refinery capability
- Oil exchange transactions will potentially enhance refinery utilization in the United States and Mexico
- Crude exports could hurt U.S. refiners who are currently exploiting lower feedstock costs if world price exceeds current crude price in the U.S.

Entities Mentioned:

- American Petroleum Institute
- Bureau of Industry and Security
- Department of Commerce
- Department of the Interior
- Energy Information Administration
- Independent Petroleum Association of America
- Government Accountability Office
- Petróleos Mexicanos
- Producers for American Crude Oil Exports

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Insight for Industry –U.S.-Mexico Crude Oil Exchange Approval Underscores Need for Avenues to Tackle Surplus Production

On August 14, 2015, the U.S. Department of Commerce (DOC) Bureau of Industry and Security (BIS) announced the approval of licenses for limited exchanges of crude oil between the U.S. and Mexico; namely, swapping Mexico's heavy grade crude with lighter grade U.S. crude. The decision addresses the mismatch between the light sweet crude oil produced in the United States and its refinery configuration that is better suited to process heavy crudes.

Additionally, the oil swaps could enable Mexico's state-owned company, Petroleos de Mexico (Pemex), to achieve higher gasoline yields from their refineries, which are configured for light crude processing. This could potentially displace Mexico's imports of refined products.

The decision to approve swap transactions does not represent a change in law and is based on language in the 1975 Energy Policy Conservation Act, which directs DOC to consider historical trade relations with Canada and Mexico when limiting crude exports. The BIS regulations have long permitted U.S. crude exports to Canada, and to date, the domestic light crude oil glut has been absorbed by the U.S. refining industry and Canadian exports. But the new U.S.-Mexico swaps approval underscores the growing pressure to ease the ban on U.S. crude exports given the growing glut of light sweet crude produced but not fully processed in the country. This mismatch has been the driving force in the debate: while some argue that lifting the export ban would stimulate the U.S. domestic economy and its geopolitical standing, others fear higher crude prices could hurt those U.S. refiners who benefit from lower feedstock costs.

The exchanges with Mexico, however, fall far from an overall ban in crude exports: the BIS allows only barrel-for-barrel swaps, to be processed exclusively in the U.S. or Mexico. Although the initial volumes are uncertain yet, Pemex has said it would swap up to 100,000 barrels per day when engaging in talks with the DOC in December 2014, or roughly 0.5% of the daily volume of oil refined in the U.S. in 2015. Given the limited amount of exchanges—which do not increase the total supply of oil—the swaps are unlikely to have any significant impact on the price differential between WTI and Brent. While the approval could boost the productivity of Mexican refineries slightly and help some U.S. producers with a surplus of light crude, its real significance remains to be seen depending on whether this symbolic decision leads to a wider repeal of the export ban in the future.

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Stakeholders in Industry and Congress Commend Oil Swap Transactions for Easing Long-Standing Crude Oil Export Restrictions

Major industry groups, including the Independent Petroleum Association of America (IPAA), Producers for American Crude Oil Exports, and American Petroleum Institute (API) welcomed the BIS decision. For IPAA, lifting the ban on crude oil exports has been a top priority for 2015. The API underscored the importance of preserving the competitive U.S. position as the world's top oil

and gas producer at a time when the country is working on efforts to allow Iranian crude into the global market.

In Congress, policymakers from both parties have expressed support for the BIS decision, and the rulemaking will add further momentum to congressional efforts lift U.S. export restrictions. Senate Energy and Natural Resources Committee Chairman Lisa Murkowski (R-AK), who has advocated for ending the 40-year old ban on crude oil exports since 2014, said the decision was a positive step toward the liberalization of U.S. trade policies. Senator Heidi Heitkamp (D-ND) called the swap agreement a landmark decision that demonstrates that efforts to lift the crude export ban are gaining traction and changing policy.

Similarly, both Rep. Henry Cuellar (D-TX) and Rep. Will Hurd (R-TX) stated that the swap agreement will be mutually beneficial to both countries with significant benefits to Texas, where shale production from Eagle Ford, Permian Basin, and Barnett has revived the petroleum industry and contributed substantially to the national economy. The BIS decision is a strong step toward North American energy security in the light of Mexico's recent energy reforms--including the end to the long-standing monopoly of Pemex over Mexico's oil exploration and production--that have opened broader opportunities to strengthen energy trade.

Oil Exchanges do not Require Legal Change just as Condensate Exports are Not Subject to Export Restrictions

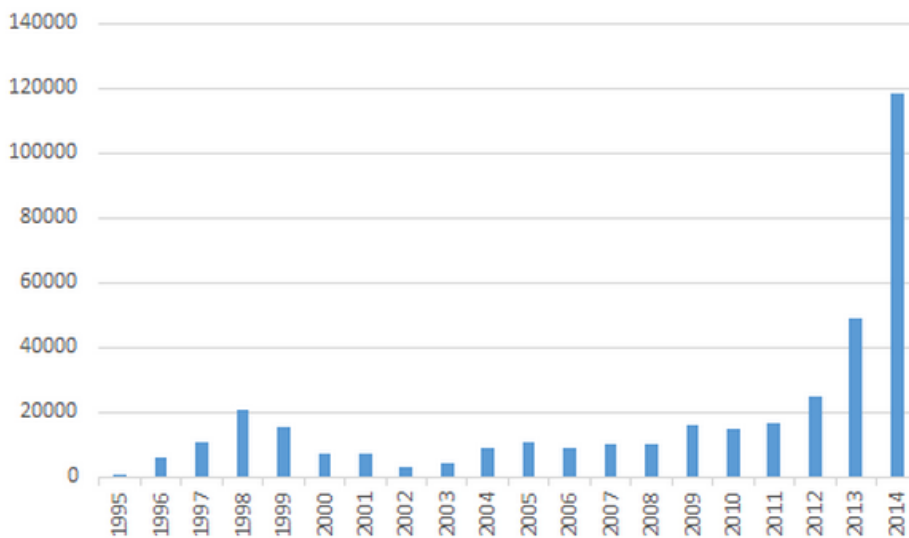
Current law prohibits crude oil exports with minimal exceptions, and during 2014, the BIS undertook several measures to facilitate limited overseas sales within the existing regulations. In December 2014, the Bureau provided clarifications that condensate—light hydrocarbons within the boiling range of gasoline that has been processed through a crude oil distillation tower— is not considered crude oil and therefore not subject to export restrictions. The BIS also stated that companies may request a commodity classification to determine if their lease condensate has undergone sufficient processing to be considered a petroleum product. The Bureau provided a list of factors that it considers in its decision-making, including changes during the distillation process, change in API gravity between input and output processes, change in hydrocarbon percentage, and possible product uses other than those allowing export classification. In 2014, two NYSE-listed companies, Pioneer Natural Resources and Enterprise Products Partners, received permission from the BIS to export processed condensate.

The BIS crude export regulations allow for exchanges with adjacent and non-adjacent foreign states subject to certain criteria distinct to each transaction. While it is difficult to obtain crude export licenses for non-adjacent foreign state exchanges, adjacent foreign state exchanges could be approved based on “convenience and increased efficiency of transportation.” Crude oil exported through an adjacent foreign state transaction may not be re-exported to other countries.

In 2014, BIS provided clarifications that condensate—light hydrocarbons within the boiling range of gasoline that has been processed through a crude oil distillation tower – is not considered crude oil and therefore not subject to export restrictions

Current law permits unlimited oil exports from the U.S. to Canada, although an application must be approved for each transaction. This provision has made Canada the primary destination for U.S. crude oil exports, which have risen steadily since 2010 and exceeded 570,000 bbl/d in May 2015 (Figure 1).

Figure 1 - U.S. Exports of Crude Oil to Canada (thousand barrels)



Source: EIA

Additionally, the Energy Policy and Conservation Act of 1975 allows BIS to issue licenses for crude oil exports that are:

- from Alaska's Cook Inlet;
- to Canada for consumption within the country;
- related to refining or exchange of Strategic Petroleum Reserve;
- comprising certain California crude oil up to 25,000 barrels per day (bbl/d);
- consistent with certain international agreements;
- consistent with findings made by the President under certain laws;
- comprising foreign-origin crude oil not commingled with that of U.S. origin.

Apart from the exceptions, BIS considers export license applications for crude oil exchanges on a case-by-case basis and issues approvals if they are consistent with the national interest. The BIS also considers the area of production and mode of transportation, issuing approvals if the President makes findings under applicable laws.

BIS Measure Would Partially Address Refining Mismatch and Light Oil Price Discount

The U.S. oil abundance is attributed to light tight oil production from unconventional resources. As U.S. refineries are better suited to process heavy crude, U.S. companies can trade their shale-derived light sweet crude for Mexico's heavy crude. Mexican oil refineries are better equipped to process

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light crude. Though crude oil exchanges may not fully solve the mismatch between refinery capability to process heavy crudes and record production of lighter crudes, they would partially alleviate the glut.

The market value of a crude stream reflects its density and sulfur content. Density ranges from light to heavy, while sulfur content is characterized as sweet or sour. Crude oils that are light (lower density) and sweet (low sulfur content) are priced higher than heavy, sour crude oils, because gasoline and diesel fuel, which typically sell at a significant premium to residual fuel oil, can be more easily and cheaply produced using light, sweet crude oil. Additionally, processing of light sweet grades is relatively less sophisticated and less energy-intensive. Sweet crude is the most common type of oil produced from domestic shale plays; however, numerous U.S. refineries have invested significantly to process heavy, sour crudes.

Over the past 25 years, the U.S. has spent more than \$85 billion to reconfigure its refineries to process heavy oil imported from Venezuela, Mexico, and Canada. Despite having the world's largest refining capacity with 139 operating facilities, the U.S. refinery system's limited ability to process light crude justifies selling it at the global market price. Gulf coast refineries currently process light, sweet crude by blending it with heavier sour crude oils. Refineries can make substantial investments to process lighter crude, alleviating some of the downward pressure on domestic oil prices. However, refiners would be forfeiting significant opportunity costs, as they would not be utilizing expensive, complex equipment designed for heavier blends and, additionally, would be producing lesser amounts of high value products, including jet and diesel fuel. To improve profitability while processing greater quantities of light sweet crude, refiners charge a significant discount on oil producers rather than raising costs to consumers. When domestic refiners can no longer increase light crude processing capacity, they will further increase their discount on their light crude acquisition prices at the expense of domestic producers. Studies suggest that light oil supply will exceed refining capacity when U.S. oil production reaches somewhere around 11 million bbl/d; in May 2015, the figure stood at 9.5 million bbl/d.

Gulf coast refineries currently process light, sweet crude by blending it with heavier sour crude oils

Crude Exports Augment Ongoing Expansion of U.S.-Mexico Energy and Hydrocarbon Trade

Mexico is currently the third largest crude oil supplier to the U.S. after Canada and Saudi Arabia (Table 1). At the same time, Mexico is a net importer of refined petroleum products, such as gasoline and diesel fuel, due to its inadequate refining capacity to meet domestic demand and lack of investments to process heavy crudes such as its Maya crude. Mexico exports heavy crude to U.S. Gulf Coast refineries and then imports refined products. It has six refineries with a total capacity of 1.54 million barrels per day, but capacity has reduced in recent years due to operating mishaps.

Table 1 - U.S. Crude Petroleum Oil Imports in 2014

Country	Value (Billions of \$)	Percentage of Total
Canada	83.2	34%
Saudi Arabia	44.9	18%
Mexico	27.7	11%
Venezuela	25.9	10%
Iraq	13.6	5%
Other Countries	51.8	21%
Total	247.0	

Source: CRS

Mexico's 2013 energy reform, which opens oil and natural gas markets to foreign investments, including investments that are active in the Gulf of Mexico (GOM), supports long-term expansion of the U.S.-Mexico energy trade. Mexican activity in the GOM region is limited compared to the United States, partly due to lack of technical capacity for effective exploration and development in deepwater. Hence, the reforms open significant opportunities for infrastructure development, oil services, and downstream industries in the oil and natural gas sectors. Growth in Mexico's refining industry would benefit some U.S. companies, while the resultant decline in Mexican imports could cause U.S. refiners to lose supplies and market share.

Although Mexico's first oil and gas block auction after the recent reform – held on July 15 – fell short of expectations with only 2 of 14 blocks auctioned, subsequent auctions for deepwater oil fields are expected to attract more interest from major players, and successful auctions will provide opportunities for U.S. energy and service infrastructure companies under the U.S.-Mexico Transboundary Agreement.

The U.S.-Mexico Transboundary Hydrocarbons Agreement, ratified in December 2013, establishes a framework for U.S. offshore oil and gas companies and Mexico's Pemex to jointly develop transboundary resources straddling the marine border and also opens resources in the Western Gap that were previously off limits to both countries under a moratorium. It unlocks approximately 1.5 million acres of U.S. Outer Continental Shelf (OCS) for exploration and production activities and removes uncertainties regarding development of transboundary GOM resources. In addition, the Department of the Interior's (DOI) proposed 2017-2022 offshore lease program prioritizes GOM development over Alaskan, Atlantic, and Pacific areas taking into account Mexico's energy reforms. The DOI expects the region-specific approach will balance sales more effectively while providing greater flexibility to industry, including the ability to respond to the Mexican government's recent energy reforms that have the potential to meaningfully change decisions concerning GOM exploration and development. Overall, the program is projected to

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unlock approximately 80 percent of estimated undiscovered technically recoverable oil and gas resources on the OCS.

The opening of Mexico's energy sector to foreign investors could have implications for the ongoing trade negotiations for a Trans-Pacific Partnership agreement (TPP), involving the U.S., Mexico, and Canada. The 1994 North American Free Trade Agreement (NAFTA) removed significant investment barriers and facilitated strong trade and supply chain linkages between the U.S. and Mexico. Though NAFTA provided for explicit country-specific reservations including Mexico's reservations related to crude oil and natural gas development, energy remains a central component of the U.S.-Mexico trade. Since 2006, Mexico's declining production and rising demand have resulted in reduced crude oil imports to the U.S. Additionally, recent oil price declines caused Mexican oil imports in 2014 to reach their lowest level, falling from a high of \$39.6 billion in 2011 to \$27.7 billion in 2014.

Mexico's Crude Oil Exchange Proposal Facilitated by its 2013 Energy Reform

Mexico's 2013 energy reform allows Mexican refineries to import and process non-Mexican crude oils for the first time in decades. On January 8, 2015, Pemex announced its interest to increase Mexico's gasoline production for domestic use by importing and refining light crude from the U.S. The Mexican government proposed an exchange transaction whereby heavy, sour crude oil from Mexico would be exchanged for light, sweet crude oil from the U.S. Pemex applied for a license to export 100,000 bbl/d of light crude and condensate in exchange for Mexican heavy crude.

Mexico's recent energy reform, which ended approximately 75 years of state control over the energy industry, intends to attract significant private investment into the country's oil and gas industry and electric sector. The reform is expected to reshape the state-owned oil company Pemex, reversing a decade-long decline in oil production. According to the Mexican government, the energy reforms will result in lower energy prices, create 500,000 jobs, and add one percentage point to the country's GDP growth rate by 2018. In 2013, Mexico produced 2.90 million bbl/d of total liquids, a substantial decline from its peak of 3.85 million bbl/d in 2004. Crude oil is a significant component of Mexico's liquid fuels production, accounting for at least 85 percent of production in the past two decades. In April 2014, Mexico's crude production was approximately 2.5 million bbl/d, the lowest monthly average since 1995. The energy reform allows Pemex to partner with international companies that have the experience and capital required to explore and develop Mexico's deepwater and shale resources. These partnerships, the government hopes, will help increase the country's total oil production.

Need for Export Avenues Intensifies the Debate on Repealing Broader Oil Export Ban

The BIS decision points to the need for export avenues to absorb growing U.S. oil production which threaten to overwhelm the nation's refining capability. The dramatic increase in domestic oil production over the past decade – facilitated by drilling technology improvements unlocking unconventional oil

Mexico's recent energy reform, which ended approximately 75 years of state control over the energy industry, intends to attract significant private investment into the country's oil and gas industry and electric sector

sources – has sparked the crude oil export debate, as laws governing crude oil exports are inconsistent with current trends.

The crude oil export ban dates back to the 1973 Arab oil embargo, when the Emergency Petroleum Allocation Act set price controls and allocated oil to the end users in the U.S. In 1975, the Energy Policy and Conservation Act prohibited crude oil and natural gas export with some exceptions.

The U.S. is considering legislative proposals to revise U.S. crude oil export policy, expedite energy infrastructure development, and issues related to cross-border natural gas pipelines. In February, a group of 21 Senators led by Sen. Murkowski and Sen. Heitkamp wrote to the DOC requesting expansion of U.S.-Mexico energy relationship by issuing a finding that oil exports to Mexico are in the national interest, similar to the 1985 export conditions established for Canada. The letter also requested approval of Pemex's application for a swap transaction involving imports of heavy Mexican crude oil in exchange for exports of lighter grade U.S. crude.

The Offshore Production and Energizing National Security Act of 2015 (OPENS) introduced by Sen. Murkowski includes provisions to reform the administration of U.S. OCS. Other bills introduced in the current session include:

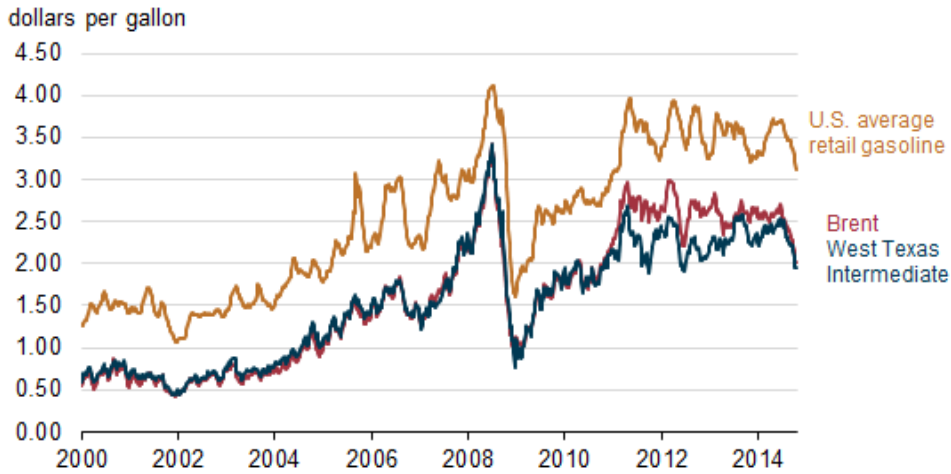
- H.R. 156 –Crude Oil Export Act, sponsored by Rep. Michael McCaul (R-TX)
- H.R. 702 – To Adapt to Changing Crude Oil Market Conditions, sponsored by Rep. Joe Barton (R-TX)
- H.R. 428 – Export American Natural Gas Act of 2015, sponsored by Rep. Ted Poe (R-TX)
- H.R. 161 – Natural Gas Pipeline Permitting Reform Act sponsored by Rep. Mike Pompeo (R-KS) – approved by the U.S. House of Representatives in January

Supporters of lifting the crude oil export ban largely emphasize benefits to the U.S. geopolitical strength and the domestic economy. They also stress that oil exports would help reduce domestic gasoline prices despite possible future price increases due to other factors such as increased global demand and unpredictable supply disruptions.

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A July report from the Government Accountability Office (GAO) found that removing crude oil export restrictions would likely increase domestic crude oil prices, moving them closer to international prices. On the other hand, consumer fuel prices could decrease if exports caused international prices to decrease. According to EIA, relaxation of crude oil export restrictions and the resulting impact on the U.S. gasoline prices depends on its effect on international crude prices, such as Brent, rather than its effect on domestic crude prices (Figure 2). The relaxation could increase prices of domestically produced oil; if higher domestic crude prices prompt increased U.S. production, the resulting increase in global crude oil supply could reduce the global crude prices.

Figure 2 - U.S. Weekly Retail Gasoline Price and Spot Prices of Benchmark Crude Oils (2000-2014)



Source: EIA

However, regional differences in consumer fuel price implications could cause price increases in some regions—particularly the Midwest and the Northeast—due to changing transportation costs and potential refinery closures. In production areas with limited connections to refining centers, infrastructure constraints have contributed to discounted prices for some domestic crude oils. Removing export restrictions could cause some refiners to ship oil to their refineries in Europe at a lower cost than supplying U.S. East Coast refineries, thereby negatively impacting the ability of domestic refineries to compete with foreign refineries.

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