Defining the Debate: Crude Oil Exports

Trisha Curtis, Director of Research Upstream and Midstream
Energy Policy Research Foundation, Inc. (EPRINC)
Brookings Task Force
February 28th, 2014
About EPRINC

- www.eprinc.org
- Rin App http://eprinc.org/2014/02/rins-around-rosy-app-available-ios/
Nature of Topic

Timeline of Discussion

- Talk during past few years in analyst and think tank community
- Adam Seminski publically talks about crude oil exports in 2012
- During the course of 2013 several new pipelines came online to alter the flow of crude from the Permian to the Gulf Coast (historically Permian to Cushing) in addition to new pipeline capacity from the Cushing to the Gulf, Eagle Ford production passes 1 mbd, and refinery maintenance coupled with rising production pressures LLS prices in Nov 2013

What’s Happening

- Large volumes of light sweet crude and condensate of varying grades (in addition to NGLs) came on the market with limited infrastructure options
- Refineries in the Gulf are beginning to see the pressure of too many light ends and their capability to handle increasing volumes of light sweet crude
- Gasoline demand is relatively flat in the U.S. so there is only so much need for gasoline blending components and condensate
- Natural gasoline from NGLs is in more demand from Canada as a diluent
The Debate, Speculative Impacts, Issues

• Major producers such as Shell and Exxon have come out in support of lifting the ban on exports, but refiners are mixed. Both PES and PBF of the East Coast have come out against crude oil exports while AFPM has come out in support of lifting the ban.
  • East Coast refineries benefit from discounts and have invested in crude by rail
  • Gulf Coast refineries export a considerable amount of product
• While discussion and debate on this topic is beginning to take place in both the U.S. and abroad, word from the actual regulatory bodies has been limited. Current discussions around crude oil exports and their direct impact are therefore highly speculative
• Should exports be allowed the impact on the market would depend on the nature of the export permits and their transparency. What type of hydrocarbons exported? i.e. crude or condensate and the volumes allotted
• Trouble defining “crude oil” and “condensate”
• While there is potential to export small volumes from the East Coast and the West Coast, the bulk of exports would likely be dispatched from the Gulf Coast
Impacts and Issues.....continued

• Both crude and condensate exports would advantage Gulf Coast producers in the Eagle Ford and the Permian Basin where there would be a relatively low cost to transport crude or condensate to the Gulf and then export it
• Condensate exports would highly benefit Eagle Ford (Gulf Coast) producers and potentially condensate production in the Utica (Ohio)
• WTI prices would likely increase, however, the degree to which the Brent WTI spread would narrow depends on the volume and market impact of exports
• Gulf Coast prices would likely move up and stay at parity with Brent prices
• Crude exports would not likely solve the infrastructure dilemmas facing northern landlocked crudes in the Bakken and in Canada due to the lack of pipeline capacity from the region to the coasts
  • While WTI prices would likely increase there would still be a pricing differential for those crudes without adequate transportation means to Cushing or the Gulf Coast.
  • It could alter incentives to move crude oil into Cushing
  • Crude by rail issues remain
  • There are winners and losers in the upstream, midstream, and downstream
North American Oil Production and Forecast

Dec 2013 Oil Production
U.S. 7.9 mbd
Canada 3.7 mbd

Source: EIA, Canadian CAPP forecast, EPRINC U.S. forecast, EPRINC Mexico, and EPRINC estimates
Jan 2014 EPRINC’s Forecast for Major U.S. Shale Plays

EPRINC forecasts an additional 2.5 mbd by 2020

Source: HPDI data with EPRINC forecast estimates
U.S. Total Imports, U.S. Production, U.S. Canadian Imports

U.S. Imports 7.8 mbd
U.S. Production 7.9 mbd
Canadian Imports 2.8 mbd

Source: EIA
Shale Oil Play Production

Source: HPDI Feb 2013
Simple vs. Complex

Total Coking Capacity vs. Atmospheric Crude Distillation Capacity by PADD

Cokers = Heavy refining capability

Source: AFPM map, EIA data for graph
Domestic vs. Imported RAC

Source: EIA
Regional Pricing Disparities

- **Western Canadian Select** - $25 to WTI

Source: Flint Hills, EIA, CME Group, and estimates
Geology of the Eagle Ford = Varying Liquid Grades

Source: Momentum Oil and Gas LLC, DUG Eagle Ford Conference Presentation Oct 2011; EOG Investor Presentation Feb 2014;
Those differences are impacting prices

# FLINT HILLS RESOURCES CRUDE OIL POSTINGS
P.O. BOX 2917, WICHITA, KS 67201

Effective 7:00 A.M., on dates shown below, and subject to its division orders as amended and supplemented, contracts and other agreements, FLINT HILLS RESOURCES, LP will pay the following prices per barrel of 42 U.S. gallons for merchantable crude oil purchased and delivered into pipelines or facilities authorized by FLINT HILLS RESOURCES, LP, in the fields or area designated below. The following prices are for informational purposes only, do not constitute an offer, and are subject to change or revisions without notice.

<table>
<thead>
<tr>
<th>Effective Date</th>
<th>Bulletin</th>
<th>02/18/14</th>
<th>02/19/14</th>
<th>02/20/14</th>
<th>02/21/14</th>
<th>02/24/14</th>
<th>02/25/14</th>
<th>02/26/14</th>
<th>EDQ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>20140028</td>
<td>20140029</td>
<td>20140030</td>
<td>20140031</td>
<td>20140032</td>
<td>20140033</td>
<td>20140034</td>
<td></td>
</tr>
<tr>
<td>TEXAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-----</td>
</tr>
<tr>
<td>Eagle Ford Condensate, equal to or greater than 60 API</td>
<td>91.7500</td>
<td>92.5000</td>
<td>92.2500</td>
<td>91.5000</td>
<td>92.0000</td>
<td>91.0000</td>
<td>91.7500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eagle Ford Light, equal to or greater than 50 API and less than 60 API</td>
<td>96.7500</td>
<td>97.5000</td>
<td>97.2500</td>
<td>96.5000</td>
<td>97.0000</td>
<td>96.0000</td>
<td>96.7500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eagle Ford Sour</td>
<td>96.0000</td>
<td>96.7500</td>
<td>96.5000</td>
<td>95.7500</td>
<td>96.2500</td>
<td>95.2500</td>
<td>96.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eagle Ford West Condensate, equal to or greater than 60 API</td>
<td>91.7500</td>
<td>92.5000</td>
<td>92.2500</td>
<td>91.5000</td>
<td>92.0000</td>
<td>91.0000</td>
<td>91.7500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eagle Ford West Light, equal to or greater than 50 API and less than 60 API</td>
<td>96.7500</td>
<td>97.5000</td>
<td>97.2500</td>
<td>96.5000</td>
<td>97.0000</td>
<td>96.0000</td>
<td>96.7500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eagle Ford West Sour</td>
<td>96.0000</td>
<td>96.7500</td>
<td>96.5000</td>
<td>95.7500</td>
<td>96.2500</td>
<td>95.2500</td>
<td>96.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eagle Ford West, crude oil less than 50 API</td>
<td>98.2500</td>
<td>99.0000</td>
<td>98.7500</td>
<td>98.0000</td>
<td>98.5000</td>
<td>97.5000</td>
<td>98.2500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eagle Ford, crude oil less than 50 API</td>
<td>98.2500</td>
<td>99.0000</td>
<td>98.7500</td>
<td>98.0000</td>
<td>98.5000</td>
<td>97.5000</td>
<td>98.2500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Giddings Sweet Texas</td>
<td>97.0000</td>
<td>97.7500</td>
<td>97.5000</td>
<td>96.7500</td>
<td>97.2500</td>
<td>96.2500</td>
<td>97.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulf Coast Mix</td>
<td>97.0000</td>
<td>97.7500</td>
<td>97.5000</td>
<td>96.7500</td>
<td>97.2500</td>
<td>96.2500</td>
<td>97.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearsall Sweet</td>
<td>96.7500</td>
<td>97.5000</td>
<td>97.2500</td>
<td>96.5000</td>
<td>97.0000</td>
<td>96.0000</td>
<td>96.7500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Texas Heavy</td>
<td>98.2500</td>
<td>99.0000</td>
<td>98.7500</td>
<td>98.0000</td>
<td>98.5000</td>
<td>97.5000</td>
<td>98.2500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Texas Light Sweet</td>
<td>98.2500</td>
<td>99.0000</td>
<td>98.7500</td>
<td>98.0000</td>
<td>98.5000</td>
<td>97.5000</td>
<td>98.2500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Texas Sour</td>
<td>96.0000</td>
<td>96.7500</td>
<td>96.5000</td>
<td>95.7500</td>
<td>96.2500</td>
<td>95.2500</td>
<td>96.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Texas Sweet</td>
<td>98.2500</td>
<td>99.0000</td>
<td>98.7500</td>
<td>98.0000</td>
<td>98.5000</td>
<td>97.5000</td>
<td>98.2500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Texas Valley Sweet</td>
<td>97.0000</td>
<td>97.7500</td>
<td>97.5000</td>
<td>96.7500</td>
<td>97.2500</td>
<td>96.2500</td>
<td>97.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Texas Gulf Coast</td>
<td>97.2500</td>
<td>98.0000</td>
<td>97.7500</td>
<td>97.0000</td>
<td>97.5000</td>
<td>96.5000</td>
<td>97.2500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Texas/New Mexico Intermediate</td>
<td>99.0000</td>
<td>99.7500</td>
<td>99.5000</td>
<td>98.7500</td>
<td>99.2500</td>
<td>98.2500</td>
<td>99.0000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Flint Hills Resources
Regional Discounts Matter with High Cost Production

Source: ITG Investment Presentation Nov 2012
Total U.S. Crude Oil Exports

U.S. Exports to Canada of Crude Oil Mbbl/d

Source: EIA
U.S. Exports of Petroleum and Petroleum Product

Source: EIA
Infrastructure Challenges will Remain

- Severely limited due to lack of Keystone XL and lack of historical build out to the coasts – system designed to import into the Gulf and move up

- New markets
- Diversification
- Neat Barrels
- Nimble - Quickly adjustable
- Optionality for Canadian and U.S. crude, NGLS, and other petroleum products

Source: EPRINC Maps using Hart Energy data and ArcGIS Mapping software