Light Crudes and Condensates in Turmoil: Production, Exports, Splitters and Blending
Light Crudes and Condensates in Turmoil

- Oil prices remain ~ $50/bbl, but the oil-directed rig count is up by more than 110
- U.S. crude oil production is down about 1.0 MMb/d since January 2015, but over the past three months has stabilized
- Most of the decline in crude production over the past two years was condensate and light sweet crude oil
- Crude exports are now legal, but exports have not increased, averaging about 500 Mb/d, the same as 2015
- Most exports are condensate and light sweet crude oil grades
- Condensate markets have tightened with exports competing with new condensate splitters and refineries upgraded to increase light crude capacity
Gas, NGL and Crude Prices

Shale 1.0 – Inception to Q4 2014

Shale 2.0

Natural Gas
Crude Oil
NGLs

PRE-SHALE

SHALE GAS

WET GAS

SHALE OIL

$0 $20 $40 $60 $80 $100 $120 $140

$ per Bbl

$0 $5 $10 $15 $20 $25

$ per MMBtu

U.S. Rig Counts Trend With Commodity Prices

Oil Price and Rig Count

$/Bbl

$140
$120
$100
$80
$60
$40
$20
$0


WTI
Oil Rigs

Gas Price and Rig Count

$/MMbtu

$14
$12
$10
$8
$6
$4
$2
$0


HH
Gas Rigs

Source: Baker Hughes; CME/ Nymex
Production of Natural Gas, NGLs & Crude Oil

U.S. Lower 48 Dry Gas Production

U.S. NGL Production From Gas Processing

U.S. Crude Oil Production

Source: EIA/RBN
Oil and Gas Production Added Per Rig

- **Eagle Ford**: +405%
- **Bakken**: +244%
- **Niobrara**: +740%
- **Marcellus/Utica**: +559%

Source: EIA
Active Rigs- October 7th 2016

Rigs
- Oil
- Gas
- 4-6
- > 6
Eagle Ford Production and Rig Count

Source: EIA, Baker Hughes

Production (Mb/d)

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BOE IP by Top Eagle Ford Counties

- DEWITT
- WEBB
- KARNES
- LA SALLE
- LIVE OAK
- LAVACA
- McMULLEN
- GONZALES
- BEE
- ATASCOSA
- FRIO
- ZAVALA
- FAYETTE
- WILSON
- MAVERICK

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Eagle Ford Crude and Condensate Production

- Crude
- Condensate & Super Light (>50 API)
Lower-48 Production Growth Was Light Crude & Conde

<table>
<thead>
<tr>
<th>Year</th>
<th>Condensate &gt;55.0</th>
<th>Superlight 50.1-55.0</th>
<th>Light 40.1-55.0</th>
<th>Medium 30.1-40.0</th>
<th>Heavy &lt;=30.0</th>
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<td>2011</td>
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<td>2016 YTD</td>
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</table>

Source: EIA/ RBN
Condensate and Light Crude Now Declining Faster

Source: EIA
U.S. Condensate Splitter Capacity

<table>
<thead>
<tr>
<th>Company Location</th>
<th>Company</th>
<th>Capacity Mb/d</th>
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<tbody>
<tr>
<td>Corpus Christi</td>
<td>Phillips 66</td>
<td>110</td>
</tr>
<tr>
<td>Corpus Christi</td>
<td>Targa/Noble Group</td>
<td>36</td>
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<tr>
<td>Beaumont</td>
<td>Oil Tanking</td>
<td>50</td>
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<tr>
<td>Corpus Christi</td>
<td>Cheniere</td>
<td>100</td>
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<tr>
<td>Corpus Christi</td>
<td>Castleton?</td>
<td>100</td>
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<tr>
<td>Total</td>
<td></td>
<td>446</td>
</tr>
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</table>

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Production, Imports and Transport Modes

U.S. Crude Production & Imports

Refinery Crude Receipts By Transport Mode

Source: EIA/RBN (2016 Est.)
U.S. Crude Oil Production Forecast Scenarios

Crude Oil: WTI Cushing

- Growth
- Cutback
- Contraction

- 2000-2007
- 2016-2021 Growth
- 2016-2021 Contraction

- 2008-2015
- 2016-2021 Cutback

- $35 - $70 /

- 370 Mb/d/y
- (389) Mb/d/y

- 2016-2021
- 2016-2021 Growth
- 2016-2021 Contraction
Crude Oil Production by Basin

Growth  Cutback  Contraction

Total Crude Oil Production

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Last Time It Took 14 Years…..

CME/NYMEX Crude Oil Price – WTI Cushing

Operation Desert Storm
Another 14 Years?

CME/NYMEX Crude Oil Price – WTI Cushing

$/Bbl

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We have entered the next phase of the shale revolution
Shale development has concentrated in just a few counties, primarily due to the economics driven by high IP rates
Most of the decline in crude production over the past two years was condensate and light sweet crude oil
Crude exports are now legal, but exports have not increased, averaging about 500 Mb/d, the same as 2015
Most exports are condensate and light sweet crude oil grades
Condensate markets have tightened with exports competing with new condensate splitters and refineries upgraded to increase light crude capacity
The level of future crude oil production varies significantly depending on the outlook for prices
Crude oil prices may trade in a relatively narrow range for years to come
The Domino Effect

“This book is about understanding energy markets: prices, flows, infrastructure, value, and economics.”

New book about energy markets
From Rusty Braziel

www.thedominoeffect.com