AGENDA

Three key parts to this presentation:

1. Crude Oil Market Analysis
2. Natural Gas Market Supply/Demand
3. Piceance Activity & Production Forecast
KEY TAKEAWAYS

- The economics of US production continue to support higher supply and even a slightly improvement in prices translates into significant production gains.

- Demand is also growing, but the growth is at a slower rate than that of production.

- For Crude Oil, inventory normalization is necessary for sustained price recovery. However, even if the OPEC quotas are extended, US production will serve as a cap on how high prices can go.

- For natural gas, normal weather will be key to keep prices in the $2.85-$3.15 per MMBtu range over the next five years. Significant production growth is expected throughout 2018 as pipeline capacity from the Northeast comes online. However, some bottlenecks have started to develop in the Southeast region as production growth from the Marcellus, Permian and Anadarko tries to find a home in LNG and Mexico exports.

- In line with crude oil and natural gas, NGL production is expected to grow in the next five years as demand also increases in the form of ethane and LPG exports.

- Drillinginfo estimates the long-term price equilibrium at $60/Bbl WTI for crude oil and $2.85/MMBtu for natural gas. These prices are expected to materialize starting in 2020 and support production growth in all commodities at a rate to meet projected demand growth.
KEY TAKEAWAYS

- The global supply/demand imbalance has shifted to a deficit thanks to great compliance with OPEC quotas. However, a large portion of the OPEC quotas were undermined by the production growth from non-quota carrying OPEC members (Nigeria & Libya) & the US.

- The deficit was 840 MBbl/d in Q2 and only 9 MBbl/d in Q3 according to the latest IEA data. Although OPEC compliance has been very high, overall OPEC production has grown 755 MBbl/d since the low point in March.

- Although there currently exists a deficit, global inventories are not being drawn down quickly enough to normalize to levels from prior to the price crash. Without inventory normalization, prices can’t rise sustainably.

- US production economics are among the best in the world. The rig count has increased (1056 active rigs) from the low point in May 2016 (433). Almost half of the rig additions were into the Permian, but there exist attractive economics in the sweet spots of all shale basins across the country.

- Permian production growth is expected to be robust, surpassing 5 MMBbl/d by 2025. Houston & Beaumont refineries are the primary destination for Permian crude oil currently, but exports will be the primary disposition 2020+.

- Essentially all incremental production growth from the US moving forward will be exported. Currently, Corpus Christi and Houston are the main points for exports.

- Moving forward, Corpus Christi is expected to be the largest point for exports as new pipelines to Corpus Christi come online (EPIC & South Gateway).

- Light crude oils (44-50°API & 50+°API) will be those that are exported. The US refining infrastructure will continue to refine heavies, which they are configured for.
GLOBAL SUPPLY/DEMAND IMBALANCE

Start of persistent oversupply.

Peak oversupply.

Supply outages.

1Q oversupply.

2Q

3Q implied.

Supply/Demand Imbalance (MMBbl/d)

Crude Oil & Petroleum Products (MMBbl/d)

1Q2010 1Q2011 1Q2012 1Q2013 1Q2014 1Q2015 1Q2016 1Q2017 1Q2018

Supply/Demand Imbalance (RHS)

Demand

Supply

IEA Demand Forecast

Source: IEA

Copyright © 2017, Drillinginfo. All rights reserved. All brand names and trademarks are the properties of their respective companies.
DEMAND GROWTH: NOT FAST ENOUGH

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4Qo4Q MMBbl/d</td>
<td>+1.67</td>
<td>+0.94</td>
<td>+1.15</td>
<td>+1.50</td>
<td>+1.50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Demand Growth (%)</th>
<th>1Q2011</th>
<th>1Q2012</th>
<th>1Q2013</th>
<th>1Q2014</th>
<th>1Q2015</th>
<th>1Q2016</th>
<th>1Q2017</th>
<th>1Q2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand Change from Previous Quarter (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avg. Monthly WTI Prompt (RHS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: EIA, IEA

Copyright © 2017, Drillinginfo. All rights reserved. All brand names and trademarks are the properties of their respective companies.
### OPEC Quotas: Strong Compliance

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Saudi Arabia</td>
<td>10,058</td>
<td>9,960</td>
<td>9,975</td>
<td>9,940</td>
<td>9,975</td>
<td>+118</td>
<td>-169</td>
</tr>
<tr>
<td>Iraq</td>
<td>4,351</td>
<td>4,490</td>
<td>4,462</td>
<td>4,520</td>
<td>4,494</td>
<td>-169</td>
<td>-143</td>
</tr>
<tr>
<td>UAE</td>
<td>2,874</td>
<td>2,930</td>
<td>2,913</td>
<td>2,930</td>
<td>2,905</td>
<td>-56</td>
<td>-31</td>
</tr>
<tr>
<td>Kuwait</td>
<td>2,707</td>
<td>2,700</td>
<td>2,702</td>
<td>2,710</td>
<td>2,700</td>
<td>-3</td>
<td>+7</td>
</tr>
<tr>
<td>Venezuela</td>
<td>1,972</td>
<td>1,990</td>
<td>1,942</td>
<td>1,940</td>
<td>1,890</td>
<td>+32</td>
<td>+62</td>
</tr>
<tr>
<td>Angola</td>
<td>1,673</td>
<td>1,680</td>
<td>1,644</td>
<td>1,660</td>
<td>1,641</td>
<td>+13</td>
<td>+32</td>
</tr>
<tr>
<td>Algeria</td>
<td>1,039</td>
<td>1,060</td>
<td>1,055</td>
<td>1,060</td>
<td>1,046</td>
<td>-21</td>
<td>-7</td>
</tr>
<tr>
<td>Qatar</td>
<td>618</td>
<td>610</td>
<td>612</td>
<td>610</td>
<td>616</td>
<td>+8</td>
<td>+2</td>
</tr>
<tr>
<td>Ecuador</td>
<td>522</td>
<td>540</td>
<td>536</td>
<td>540</td>
<td>536</td>
<td>-18</td>
<td>-14</td>
</tr>
<tr>
<td>Gabon</td>
<td>193</td>
<td>180</td>
<td>186</td>
<td>190</td>
<td>201</td>
<td>+3</td>
<td>-8</td>
</tr>
<tr>
<td>Iran</td>
<td>3,797</td>
<td>3,840</td>
<td>3,826</td>
<td>3,840</td>
<td>3,827</td>
<td>-43</td>
<td>-30</td>
</tr>
<tr>
<td>OPEC 11</td>
<td>29,804</td>
<td>29,980</td>
<td>29,853</td>
<td>29,940</td>
<td>29,831</td>
<td>-136</td>
<td>-27</td>
</tr>
</tbody>
</table>

**Compliance (%)**

<table>
<thead>
<tr>
<th>Month</th>
<th>IEA</th>
<th>OPEC (Secondary Sources)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JAN 2017</td>
<td>99%</td>
<td>99%</td>
</tr>
<tr>
<td>FEB 2017</td>
<td>97%</td>
<td>97%</td>
</tr>
<tr>
<td>MAR 2017</td>
<td>99%</td>
<td>99%</td>
</tr>
<tr>
<td>APR 2017</td>
<td>92%</td>
<td>92%</td>
</tr>
<tr>
<td>MAY 2017</td>
<td>95%</td>
<td>95%</td>
</tr>
<tr>
<td>JUN 2017</td>
<td>84%</td>
<td>84%</td>
</tr>
<tr>
<td>JUL 2017</td>
<td>86%</td>
<td>86%</td>
</tr>
<tr>
<td>AUG 2017</td>
<td>85%</td>
<td>85%</td>
</tr>
<tr>
<td>SEPT 2017</td>
<td>88%</td>
<td>88%</td>
</tr>
</tbody>
</table>

Total OPEC 11 Pledged Cuts = 1,164 MBbl/d
Compliance (%) = (1,164 MBbl/d + Cuts) / 1,164 MBbl/d

Sources: OPEC, IEA

Copyright © 2017, Drillinginfo. All rights reserved. All brand names and trademarks are the properties of their respective companies.
NORMALIZATION: NOT QUICK ENOUGH

ASSUMPTIONS
Non-OPEC, Non-US Production → Flat
IEA Quarterly Demand Estimates

Source: IEA, DI
Drillinginfo expects production growth throughout the next five years. US production will surpass 10 MMBbl/d in early 2018 and eclipse 12 MMBbl/d before mid-2020.

Production could grow faster than forecasted if the following upside risk scenarios materialize:
- US rig count continues to rise.
- Efficiencies drive well productivity even higher in major basins like the Permian & Anadarko.

Production would slow down if the following downside risk scenarios materialize:
- Global demand does not grow at a fast enough pace to soak up growth, which would consequently lead to lower prices.

The DI WTI price forecast has been revised down for 2018 based on the persistent stock overhang and the currently curtailed production from OPEC and non-OPEC members that can come back on to the market quickly after quotas expire. The efficiency gains have also pushed down the long-term equilibrium price level to $60/Bbl.
Natural Gas Market Overview

Supply
NATURAL GAS: KEY TAKEAWAYS

- **Short Term Dynamics:**
  - In 2017, we have seen natural gas dry production recovered from the lows seen in the first quarter. September marked the largest monthly gain of the year with an over 1.0 Bcf/d increase over August levels driven in part by the partial start of Rover pipeline.
  - Dry gas production is expected to grow significantly during the 1st quarter of 2018 as pipeline takeaway capacity becomes available out of the Northeast, resulting in an increase of nearly 5.5 Bcf/d in Dec17 over Dec 16.
  - On the demand side, LNG exports has posted the largest gain by sector, with Sabine Pass Trains 1-3 reaching sendout as high as 2.86 Bcf/d. LNG exports are expected to increase further starting in 4Q as Train 4 becomes fully operational.
  - Summer demand was lower-than-expected due to cooler-than-normal temperatures and most importantly the increase in the use of renewables. Solar, wind and hydro saw record high utilization last summer.
  - Storage inventories are expected to end the injection season at +/- 3.8 Tcf, in line with the 5-year average.
  - Natural gas prices settled within a tight range during the summer between $2.96-$3.24 per MMBtu. Year-to-date (Jan-Oct) prices average $3.15 per MMBtu and with the peak demand season ahead, expect prices to trade higher over the 4Q2017 and 1Q2018.

- **Long Term Forecast:**
  - Over the next 5 years, significant natural gas production growth is expected in the Permian, Anadarko, and Marcellus/Utica.
  - Significant demand growth is also expected led by LNG exports and potential upside from the Industrial sector. Demand will continue to put a lid to production gains.
  - Drillinginfo continues to expect gas prices to average $3.25/MMBtu in 2017, but decline starting in 2018 as the price of crude oil increases, driving an increase in associated gas production. Additionally, producer efficiencies are proving that more production can come online at even lower prices.
  - The long-term price equilibrium for natural gas is $2.85 per MMBtu under a $60 WTI.
Dry Gas Production: 18 Bcf/d Growth by 2021

Following the first yearly decline in the last 10 years, natural gas production growth has resumed this year. In 2017, a 1 Bcf/d increase year-over-year is expected and 5.5 Bcf/d gain when comparing Dec 17 vs Dec 16.

The majority of the volume growth in 2017 is expected to materialize during the last quarter of the year as takeaway pipeline capacity in the Northeast becomes available.

An even larger increase is expected in 2018 with additional capacity debottlenecking the Marcellus/Utica and strong associated production growth from the Permian and Anadarko.

The Haynesville and Eagle Ford are two other key basins contributing to production growth in the U.S.

<table>
<thead>
<tr>
<th>Production Growth (Bcf/d)</th>
<th>Dec over Dec</th>
<th>Annual Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>-1.5</td>
<td>-1.0</td>
</tr>
<tr>
<td>2017</td>
<td>5.4</td>
<td>1.0</td>
</tr>
<tr>
<td>2018</td>
<td>4.7</td>
<td>6.2</td>
</tr>
<tr>
<td>2019</td>
<td>4.0</td>
<td>4.4</td>
</tr>
<tr>
<td>2020</td>
<td>2.0</td>
<td>3.0</td>
</tr>
<tr>
<td>2021</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td><strong>2017-21</strong></td>
<td><strong>16.5</strong></td>
<td><strong>15.3</strong></td>
</tr>
</tbody>
</table>
Associated Gas: Commodities Tied Together at Drillbit

[Graph showing dry gas production (Bcf/d) from 1/1/2017 to 1/1/2021 with different colored lines representing different price scenarios: $70/Bbl, $60/Bbl, $50/Bbl, $40/Bbl.]

- 1/1/2017: 6.1 Bcf/d
- 1/1/2018: 2.3 Bcf/d
- 1/1/2019: 1.5 Bcf/d

Source: DI ProdCast

© 2017 Drillinginfo, Inc. All rights reserved. All brand names and trademarks are the properties of their respective companies.
Henry Hub Breakevens – Key Gas Plays

Henry Hub Breakevens at $60 WTI

Key Assumptions: 15% MARR, Current Type Curves, Current D&C Costs

Source: DI ProdCast
Henry Hub Breakevens – Key Gas Plays Economic Under $5

Henry Hub Breakevens at $60 WTI

Key Assumptions: 15% MARR, Current Type Curves, Current D&C Costs

Source: DI ProdCast
Natural Gas Market Overview

Demand
Natural gas demand is also growing in the U.S. However, the pace is slower than that of supply.

Total demand is expected to increase by over 12 Bcf/d in 2021 compared to 2017 levels with upside potential for higher demand than currently anticipated from LNG and Mexico exports as well as Industrial demand.
Total Demand: 20-Year Outlook

US Demand by Sector

Supply

Bcf/d


Sources: EIA, DI Analysis

Copyright © 2017, Drillinginfo. All rights reserved. All brand names and trademarks are the properties of their respective companies.
Natural Gas Demand – Winter Outlook

Natural gas demand peaks every winter due to heating demand. Significant variations from normal weather will have a major impact in demand levels this winter and ultimately in gas prices.

Over the past five years, the market has seen mild and colder-than-normal demand seasons. The past two winters have been mild, which followed a cold winter during the 2013-14 season.

In Chart 10, total demand (res/com, industrial, power) scenarios are presented to illustrate weather impact, which shows an average +/- 5 Bcf/d gas demand variation when compared to normal:

**Demand Scenarios**
1) 2015-’16 (mild winter)
2) Normal (10yr avg by month)
3) 2013-’14 (cold winter)

**Variations from Normal- Winter Totals**
- Cold Winter Demand +5.8 Bcf/d
- Normal Demand = 74.2 Bcf/d
- Mild Winter Demand -4.6 Bcf/d

Sources: NOAA Weather, DI Analysis
Working Gas Storage Inventories

The U.S. natural gas market resets every fall and prices will do whatever they need to do to keep inventories at a sufficient level (and not too high).

The current injection season (April-Oct) is about to end and working gas inventories will reach +/- 3.8 Tcf. This level is higher than DI’s expectation of 3.7 Tcf at the beginning of the season due to a mild/cooler-than-normal summer.

Looking ahead, two projections are presented in Chart 11 for working inventories on April 1 (end of the winter).

1) If withdrawals this winter are at the 5-year average, inventories will end at 1.6 Tcf.
2) If a mild winter materializes, similar to 2015-16, inventories will reach 2.3 Tcf, and near the 5-year max of 2.47 Tcf.

DI expects gas storage inventories by April 1, 2018 to reach 1.9 Tcf, assuming normal weather.
We continue to track 46 large industrial projects scheduled to come online in the next 5 years including ammonia, methanol, ethylene, and propylene production facilities.

The table on this page displays the 18 projects expected to come online in the next 2 years that have made significant progress towards completion. In the reference efficiency case, these projects represent 1.2 Bcf/d of natural gas demand at full utilization. There is some uncertainty around gas efficiency of these plants with the low case forecast being 0.8 Bcf/d and the high case being 1.5 Bcf/d at full utilization.

Other announced projects add up to another 0.9 Bcf/d in the reference efficiency case.

Seven projects (2 ammonia, 2 ethylene, 3 polyethylene) have already come online in 2017, representing 0.26 Bcf/d of incremental demand in the reference efficiency case.

Sources: Company announcements, various news sources, DI analysis
2017 Review

LNG exports via Sabine Pass average 1.9 Bcf/d in 2017 with 3 fully operational trains, up from 0.6 Bcf/d in 2016, when only 1 train was in service. Hurricane Harvey did not have a direct impact on the terminal, but unstable waters limited the ability to dock the ships, ultimately impacting the gas intake, liquefaction, and exports. Following Harvey’s disruption, volumes returned strong and set a record high level at 2.86 Bcf/d.

5-Year Outlook

LNG exports will grow by 5.1 Bcf/d by 2021 over 2017 levels. In addition to Sabine Pass, 4 additional LNG export terminal are currently under construction and expected to come on line in the next 5 years. By the end of 2017, Cove Point will become the 2nd export terminal in service in the US.
2017 Review
Per EIA, natural gas exports, via pipeline, from the US to Mexico average 4.1 Bcf/d during the first half of 2017. This level is 0.6 Bcf/d higher from 2016, during the same timeframe.
DI expects 2017 exports to average 4.1 Bcf/d, in line with volumes seen so far this year.

5-Year Outlook
Exports to Mexico are expected to reach 4.9 Bcf/d average in 2021, an increase of 0.8 Bcf/d from 2017 levels. The 4.9 Bcf/d expectation compares to 5.4 Bcf/d projection from Mexico authorities.

Delays in infrastructure developments in Mexico (pipeline, E&P and power facilities), and our weaker demand forecast are the main reason of the discrepancy and of DI’s more conservative growth expectation.
PICEANCE BASIN
Given the great US production economics, it is no surprise that the rig count has continued to climb since the recent low active rig count was recorded May 4th, 2016 at 433.

Permian & Anadarko have recorded the largest increase in active rigs since then. Permian alone has made up ~50% of the active rigs added to the fleet since then.

Drilled uncompleted wells were a large part of the reason why production did not decline as quickly as some expected during the downturn. The DUC count has decreased from a high point of ~3,500 to 1,249 recently due to operators’ focus on allocating CAPEX to completions.

The DUC counts here reflect those horizontal wells that are outside of their normal spud-to-production lag of 6 months. DI believes these are DUCs because these wells are waiting on improved pricing (& hence, economics), infrastructure, or service crew or material availability.

The Permian DUC count will be key to watch over the coming months as this will be an indicator as to whether or not the completions crews and materials can keep up with the vastly increased rig count or if there are any infrastructure bottlenecks looming for takeaway of the produced volumes to demand centers.

The Appalachian DUC count should get drawn down as new takeaway capacity comes online in late 2017.
Garfield County is the most active county in Piceance as far as permitting in the last couple months.

Rio Blanco, Mesa, and Delta also show some permitting activity. However not as predominant as Garfield County.

Tep Rocky Mountain, Caerus Operating, Laramie Energy, and Ursa Operating are companies with the most permitting activity within Piceance Basin.

Among these producers, Caerus Operating and Tep Rocky Mountain currently have active Rigs. And Laramie Energy has active rigs in the Mesa County.
Lease Map and Production Profile

Tep Rocky Mountain, Ursa Operating, Blackhills Plateau Production, and Caerus Operating have the most prolific and productive wells in the area.

Vantage Energy holds a large leasing position in the Garfield County followed by Tep Rocky Mountain, and Ursa Operating.