Understanding Current Production Dynamics

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Understanding Current Production Dynamics
First Half of 2015

Oil Prices

Rig Count

Production

= 

?!?!
From Jan-15 PPT

Peak Month Minimum 800 BOPD

Peak Month BOPD / Well Cost

800

After Tax IRR

$45 Wellhead

7 MM
8 MM
9 MM

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Watching: Rigs Locations

- Wells with at least 800 BOPD peak month production*
- Current Drilling Rigs

*Confidential Wells Not Included
Watching: Location of Uncompleted Wells

- Wells with at least 800 BOPD peak month production*
- 478 Drilled but uncompleted wells* (8-18-2015)

Estimated 375-425 are within the 800+ BOPD footprint*

*Confidential Wells Not Included
Understanding Current Production Dynamics

ND Bakken Oil, BOPD

ND Bakken Wells
Understanding Current Production Dynamics

- Rigs
- M-M BKKN Well Count Additions

Timeline: 2005 to 2016
North Dakota Drilling Efficiency

Drilling Rigs & Spuds

Spuds Per Rig Per Month

- Spuds
- Drilling Rigs
- Spuds per Rig per Month

Understanding Current Production Dynamics

Diving Deep Into June 2015 Production
Understanding Current Production Dynamics
Non-Confidential Spud to Initial Production Timeline

Spud Month

- March 2015
- January 2015
- November 2014
- September 2014
- July 2014
- May 2014
- March 2014
- January 2014

IP Test Date

- Apr 1, 14
- Jul 1, 14
- Oct 1, 14
- Jan 1, 15
- Apr 1, 15
- Jul 1, 15

June 2015
95 Non-confidential locations reported initial production in June 2015.

These wells were drilled between April 2014 and April 2015.

Well status at the end of May 2015 shows that majority were flagged by the NDIC as drilled but uncompleted.
Wells with at least 800 BOPD peak month production*

95 Non-Confidential wells reported initial production in June 2015.

*Confidential Wells Not Included
Spud Dates of Confidential Wells Producing in June 2015
Understanding Current Production Dynamics
Non-Confidential Spud to Initial Production Timeline

![Graph showing average Spud to IP days from 2009 to 2014](image-url)
Why Cut Off Spud to IP Days Comparison in Aug 2014?

Too Many Wells Drilling, Drilled but Uncompleted, or Confidential to Make a Determination if Times are Changing

Spud Month

August 2015
- Confidential: 11
- Drilling: 45
- Drilled but Uncompleted: 37
- Total: 93

June 2015
- Confidential: 2
- Drilling: 38
- Drilled but Uncompleted: 64
- Total: 104

April 2015
- Confidential: 11
- Drilling: 36
- Drilled but Uncompleted: 60
- Total: 107

February 2015
- Confidential: 9
- Drilling: 33
- Drilled but Uncompleted: 28
- Total: 70

December 2014
- Confidential: 72
- Drilling: 73
- Drilled but Uncompleted: 21
- Total: 166

October 2014
- Confidential: 75
- Drilling: 75
- Drilled but Uncompleted: 28
- Total: 178

August 2014
- Confidential: 12
- Drilling: 34
- Drilled but Uncompleted: 17
- Total: 63

June 2014
- Confidential: 6
- Drilling: 32
- Drilled but Uncompleted: 9
- Total: 47

April 2014
- Confidential: 3
- Drilling: 4
- Drilled but Uncompleted: 1
- Total: 8

February 2014
- Confidential: 1
- Drilling: 1
- Drilled but Uncompleted: 1
- Total: 3

December 2013
- Confidential: 1
- Drilling: 1
- Drilled but Uncompleted: 1
- Total: 3

Well Status
- Confidential
- Drilling
- Drilled but Uncompleted
Understanding Current Production Dynamics

Conclusions:

-First half 2015 production was largely impacted by ND winter/spring conditions and drilling decisions made in 2014 (due to lag between well spud and IP).

-The second half of 2015 is when the production impact of the rig reduction will be felt/seen most.

-Producers will offset rig reduction with higher producing wells, but it is unclear if it will be enough to prevent a statewide oil production drop.

-Drilled but uncompleted wells are well positioned in the Bakken and act as a wild card that allows some flexibility to “cherry pick” the most attractive producing locations for completion.
Revised Forecast Assumptions

- Rigs
- M-M BKKN Well Count Additions
- Case 1 Wells Added Per Month
- Case 2 Wells Added Per Month

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Forecasting Williston Basin Oil Production, BOPD

Production forecast is for visual demonstration purposes only and should not be considered accurate for any near or long term planning.
EIA Short Term Production Forecast Through September 2015 (August 2015 Report)

Bakken Region
Oil production

thousand barrels/day


Oil -27 thousand barrels/day month over month
Estimated Williston Basin Oil Transportation

- **Pipeline Export**: 46%
- **Refined**: 6%
- **Truck to Canadian Pipelines**: 1%
- **Estimated Rail**: 47%

June 2015
Estimated ND Rail Export Volumes

Barrels Per Day


0  100,000  200,000  300,000  400,000  500,000  600,000  700,000  800,000  900,000
Rail Destinations Market Share (May 2015)

Destination Market Share
- Canada
- PADD I (East Coast)
- PADD II (Midwest)
- PADD III (Gulf Coast)
- PADD IV (Rockies)
- PADD V (West Coast)

Data for Rail Destination Market Share Provided by the US Energy Information Administration

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Williston Basin Oil Production & Export Capacity, BOPD

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Forecasting Future Market Share is Difficult

Predicting how future oil production will move with any degree of confidence is difficult/impossible due to:

• Future oil production uncertainty
• Shifting market conditions
• Project commitments are unknown (pipe & rail)
• Regulatory uncertainty (pipe, rail, exports, etc)
Solving the Flaring Challenge

**Simple Terms**

- **Blue** – Lack of pipelines
- **Orange** – Challenges on existing infrastructure

- **GREEN** – % of gas captured and sold
- **Blue** – % flared from zero sales wells
- **Orange** – % flared from wells with at least one mcf sold.

Statewide

- **82%**
- **14%**
- **4%**

June 2015 Data – Non-Confidential Wells
Capturing the 4% Faster Well Connections

- New Wells Selling Gas
- New Producing Wells

Number of Wells Per Month

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North Dakota Natural Gas Forecast, MMCFD

Production forecast is for visual demonstration purposes only and should not be considered accurate for any near or long term planning.
EIA Short Term Production Forecast Through September 2015 (August 2015 Report)

Bakken Region
Natural gas production

Gas -23 million cubic feet/day month over month

million cubic feet/day

7,000
6,000
5,000
4,000
3,000
2,000
1,000
0

Solving the Flaring Challenge

- Suspended Capacity
- Planned Plant Capacity
- Existing Plant Capacity
- NDPA Case 1 Forecast*
- NDPA Case 2 Forecast*
- Historical Sold, MMCFD
- Historical Flared, MMCFD
- Targets Case 1 (Sold)
- Targets Case 1 (Flared)

Legend:
- 90-95% Q4-20
- 85% Q1-16
- 77% Q1-15
- 74% Q4-14

Data Source:
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North Dakota NGL Production Forecast, BPD
Assumes 11 gpm and Case 1 Natural Gas Production

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