Industrial Commission Update
North Dakota Pipeline Authority
Justin J. Kringstad
January 11, 2016 - Bismarck, ND
Estimated Williston Basin Oil Transportation

October 2015

- Pipeline Export: 45%
- Refined: 1%
- Truck to Canadian Pipelines: 7%
- Estimated Rail: 47%
Estimated ND Rail Export Volumes

Barrels Per Day

Data for Rail Destination Market Share Provided by the US Energy Information Administration
Production forecast is for visual demonstration purposes only and should not be considered accurate for any near or long term planning.
Solving the Flaring Challenge

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

**October 2015 Data – Non-Confidential Wells**

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

Statewide

- 87%
- 10%
- 3%
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)

Jan-05 to Sep-21

- 91-93% Q4-20
- 85% Q4-16
- 88% Q4-18
- 77% Q1-15
- 80% Q2-16
- 74% Q4-14

JJ Kringstad - North Dakota Pipeline Authority
ND Gas Plant NGL Production, BPD
Through Sep 2015 - Peak Values Shown

All NGLs

Ethane

Propane

Butane

Natural Gasoline
Recent Video Presentations

• Over 3,100 video downloads since Aug-15
• Major topics include:
  – Bakken economics
  – Production insight, trends, and expectations
  – Crude oil gathering

All videos available for replay online
# Evolution of Oil Gathering in ND

![Graph showing the evolution of oil gathering in ND](image)

<table>
<thead>
<tr>
<th>County</th>
<th>Estimated Piped, BOPD</th>
<th>Estimated Trucked, BOPD</th>
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Data Source: JJ Kringstad - North Dakota Pipeline Authority
Evolution of Oil Gathering in ND Statewide Totals

- Estimated Piped, BOPD:
  - 2012: 263,352
  - 2013: 410,629
  - 2015: 725,743

- Estimated Trucked, BOPD:
  - 2012: 465,966
  - 2013: 524,649
  - 2015: 441,644
Estimated Loaded Oil Truckloads Per Day

April 2015 Data
220 bbls/Truck
North Dakota Oil Differential

Based on EIA Data

- North Dakota-WTI Differential
- North Dakota-Brent Differential

Dollars Per Barrel


JJ Kringstad - North Dakota Pipeline Authority
Peak Month Minimum
400 BOPD

Peak Month BOPD / Well Cost

After Tax IRR

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Breakeven Wellhead Price (AT IRR of 20%)
Peak Month Minimum 800 BOPD

1,280 Wells

800 BOPD

1,280 Wells

Wellhead $30

Peak Month Well Production, BOPD

Well Cost

$0 $5 $10 $15 $20 $25 $30 $35 $40 $45

6 MM

7 MM

8 MM

Breakeven Wellhead Price (AT IRR of 20%)

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Peak Month Minimum
1,000 BOPD

Peak Month BOPD / Well Cost

After Tax IRR

6 MM
7 MM
8 MM

$30 Wellhead

Breakeven Wellhead Price (AT IRR of 20%)

Well Cost

6 MM
7 MM
8 MM

$0 $5 $10 $15 $20 $25 $30 $35

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Peak Month Minimum 1,500 BOPD

Peak Month BOPD / Well Cost

After Tax IRR

Breakeven Wellhead Price (AT IRR of 20%)
Summary of $30 Wellhead Oil

Assumed Range of Minimum Acceptable Rate of Return
Breakeven Summary

Peak Month Well Production, BOPD / Well Cost

Breakeven Wellhead Price (AT IRR of 20%)

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JJ Kringstad - North Dakota Pipeline Authority
Understanding “The Core” Footprint

Peak Month Minimum: 800 BOPD
Understanding “The Core” Footprint

Peak Month Minimum: 1,200 BOPD

Spud 2008-2011

Spud 2012-2015

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