Energy Development and Transmission Committee

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February 3, 2016
Presentation Outline

- Understanding current and future oil production
  - Activity
  - Forecasts
  - Drilling economics
- Williston Basin oil transportation dynamics
  - Interstate oil movements
  - Intrastate oil movements
- North Dakota natural gas production
  - Flaring and gas capture
  - NGL Outlook
46 Rigs and 597 NC Wells:
February 1, 2016 (Non Confidential NC Wells Only)
North Dakota Drilling Activity

Drilling Rigs & Spuds

Spuds Per Rig Per Month

- Spuds
- Drilling Rigs
- Spuds per Rig per Month


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North Dakota Oil Production Forecast

Production forecast is for visual demonstration purposes only and should not be considered accurate for any near or long term planning.
North Dakota Forecast Activity Assumptions

- Historic Rigs
- Historic New Wells Per Month
- Case 1 Wells Added Per Month
- Case 2 Wells Added Per Month

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Forecast Cumulative Prod. & EUR Estimates
Peak Month Minimum 400 BOPD

Peak Month Well Production, BOPD

<table>
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<tr>
<th>Well Cost</th>
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<td>6 MM</td>
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Break-even Wellhead Price (AT IRR of 20%)

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</table>
Peak Month Minimum
800 BOPD

Peak Month BOPD / Well Cost

After Tax IRR

Well Cost

6 MM
7 MM
8 MM

Bakken Wellhead Price (AT IRR of 20%)

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Peak Month Minimum
1,000 BOPD

Peak Month BOPD / Well Cost
1000

After Tax IRR
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%

$30 Wellhead

Breakeven Wellhead Price (AT IRR of 20%)

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Peak Month Minimum 1,500 BOPD

Peak Month BOPD / Well Cost

After Tax IRR

6 MM 7 MM 8 MM

$30 Wellhead

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

Peak Month Well Production, BOPD / Well Cost

Breakeven Wellhead Price (AT IRR of 20%)
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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Estimated Williston Basin Oil Transportation

November 2015

- Pipeline Export: 52%
- Refined: 41%
- Truck to Canadian Pipelines: 6%
- Estimated Rail: 1%
Estimated Williston Basin Oil Transportation

- Estimated Rail
- Estimated Pipeline Export
- Refined
- Truck to Canadian Pipelines
- Brent - WTI Spread (EIA)
Estimated ND Rail Export Volumes

Barrels Per Day

Rail Destinations Market Share (Nov 2015)

Data for Rail Destination Market Share Provided by the US Energy Information Administration
Major Rail Lines and Refineries

EIA Oct 2015 Refiner Acquisition Cost

- PADD V: $46.88
- PADD IV: $40.37
- PADD III: $44.63
- PADD II: $43.37
- PADD I: $46.61
Crude Oil Prices – Feb. 1, 2016

Brent $34.60
WTI + $2.67

Pricing Data: Bloomberg
Williston Basin Oil Production & Export Capacity, BOPD

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Energy Transfer Partners: Dakota Access

- Successful Open Season During the First Half of 2014
- 450,000 BOPD Capacity to Patoka, IL (30”)
- Expandable Up To 570,000 BOPD if Shipper Demand Exists
- Target In-service Date: Late 2016

Map Source: Energy Transfer Partners
Patoka, IL Crude Hub
Energy Transfer Crude Oil Pipeline

Map Source: Energy Transfer Partners
North Dakota Pipeline Company LLC - formerly known as Enbridge Pipelines (North Dakota) LLC

- 225,000 BOPD ND Capacity to Clearbrook, MN (24”)
- 375,000 BOPD Clearbrook, MN to Superior, WI (30”)
- Target In-service Date: 2017
TransCanada: Upland Pipeline

- Successful Open Season During 2014
- Initial Capacity 220,000 BOPD (Expandable to 300,000 BOPD)
- Target In-service Date: 2020
- Energy East Project Capacity 1.1 MMBOPD

Map: NEB – NDPA Upland Addition
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Evolution of Oil Gathering in ND

Estimated Piped, BOPD

Estimated Trucked, BOPD
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
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North Dakota Gas Production Forecast

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Solving the Flaring Challenge

Statewide

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

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

November 2015 Data – Non-Confidential Wells
Solving the Flaring Challenge

Total ND Gas Flaring Percent (Color Indicates Reason)

- Wells Not Connected
- Wells Connected
- ND Gas Production

ND Gas Production, MMCFD

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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, Sep-05, May-06, Jan-07, Sep-07, May-08, Jan-09, Sep-09, May-10, Jan-11, Sep-11, May-12, Jan-13, Sep-13, May-14, Jan-15, Sep-15, May-16, Jan-17, Sep-17, May-18, Jan-19, Sep-19, May-20, Jan-21, Sep-21

85% Q4-16
88% Q4-18
77% Q1-15
80% Q2-16
74% Q4-14
91-93% Q4-20
Capturing the 4% Faster Well Connections

- New Wells Selling Gas
- New Producing Wells
ND Gas Plant NGL Production, BPD
Through Sep 2015 - Peak Values Shown

All NGLs

Ethane

Propane

Butane

Natural Gasoline

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NGL Pipeline Transportation

- Vantage (Ethane)
- Tioga Lateral
- Aux Sable
- Alliance (Dense Phase)
- ONEOK (Y-Grade)
Contact Information

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