ND Drilling Stats

- Spuds
- Drilling Rigs
- Spuds per Rig per Month

[Graph showing trends of Drilling Rigs, Spuds, and Spuds per Rig per Month from January 2007 to January 2013]
North Dakota Pipeline Miles

2,353 miles of new pipe in 2011
Roughly Distance from Seattle to Washington DC

2012 Data Available Q3 2013
Crude Oil

Understanding production potential

Understanding current transportation dynamics and potential transportation constraints

Understanding current and future market conditions
Understanding production potential

Understanding current transportation dynamics and potential transportation constraints

Understanding current and future market conditions
Production forecast is for visual demonstration purposes only and should not be considered accurate for any near or long term planning.
Crude Oil

Understanding production potential

Understanding current transportation dynamics and potential transportation constraints

Understanding current and future market conditions
Challenges*

1) Moving oil out of the Williston Basin
2) Moving oil within the Williston Basin

*Modified from Bridger and Belle Fourche Pipelines
North Dakota Crude Oil Pipelines

- 68,000 BOPD
- 145,000 BOPD
- 210,000 BOPD
- 160,000 BOPD

North Dakota Crude Oil Pipelines

North Dakota Pipeline Authority

JJ Kringstad - North Dakota Pipeline Authority
Oil Loading Rail Facilities
Estimated Williston Basin Oil Transportation

March 2013

- Pipeline Export: 20%
- Tesoro Refinery: 8%
- Truck to Canadian Pipelines: 1%
- Estimated Rail: 71%
US Williston Basin Oil Transport*

*Some data based on estimates or assumptions

Barrels Per Day

- Rail
- Pipelines (US & CAN)
- Tesoro Refinery

Jan-07, May-07, Sep-07, Jan-08, May-08, Sep-08, Jan-09, May-09, Sep-09, Jan-10, May-10, Sep-10, Jan-11, May-11, Sep-11, Jan-12, May-12, Sep-12, Jan-13
Williston Basin Oil Production & Export Capacity, BOPD

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

JJ Kringstad - North Dakota Pipeline Authority
Challenges*

1) Moving oil out of the Williston Basin
2) Moving oil within the Williston Basin

*Modified from Bridger and Belle Fourche Pipelines
ND Crude Oil Gathering

Red – Trucked
Blue – Pipeline

All ND Production

Sep 2012 Estimates – Some data incomplete or unavailable
Crude Oil

Understanding production potential

Understanding current transportation dynamics and potential transportation constraints

Understanding current and future market conditions
Crude Oil Prices – May 15, 2013

Cushing
$93.20

Brent $102.36
WTI + $9.16

Clearbrook*
$89.95
WTI - $3.25
*Bloomberg

Brent $102.36
WTI + $9.16

Brent $102.36
WTI + $9.16

Cushing
$93.20
Major Pipelines and Refining Centers

EIA Feb 2013 Refiner Acquisition Cost

$107.11
$86.94
$97.03
$106.64
$113.15
Major Rail Lines and Refineries

EIA Feb 2013 Refiner Acquisition Cost

$107.11

$86.94

$97.03

$106.64

$113.15
Natural Gas
Keys to Reducing Flaring

1. Economics Must Work
2. Understanding Production Potential
3. New Gas Gathering Pipelines
4. Enhancing Existing Gathering Pipelines
5. Adequate Gas Processing Capacity
6. Adequate Interstate Pipeline Capacity
7. Flaring Alternatives (Short & Long Term)
Rich Natural Gas

Raw Natural Gas (1500+ BTU) → Processing Plant

Consumer Quality Dry Natural Gas

Methane ($3.49 MMBTU)

Ethane 41.64%
Propane 28.33%
Butane 16.53%
Natural Gasoline 13.51%

NGL’S (8-12 gpm)
Y-Grade or Fractionated

*Using NGL breakdown from the July 2012 BENETEK Natural Gas Study
Forecasting Williston Basin Gas Production

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

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

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

Statewide

March 2013 Data – Non-Confidential Wells
Capturing the 17% Faster Well Connections
ND Gas Gathering Statistics

- Wells With Gas Sales or Lease Use
- Wells Without Gas Sales
Capturing the 11% Additional Compression

Older, lower pressure wells connected to plant

New, high pressure well causes older wells to flare
Capturing the 11%
Looping Existing Pipelines
NGL buildup in gathering pipelines reduces area for gas to flow

More of an issue in winter months due to lower ground temperature causing more liquids to drop out.
Natural Gas Processing & Transmission

5 New or Expanding Gas Plants 2013-2015
(See Website for Details)
ND Gas Plant Capacity

- Natural Gas Production
  (*Forecasted Case 1)
- Processing Plant Capacity

Million Cubic Feet Per Day

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Assumptions

- No Flaring
- 8 Gal/MCF
- All liquids extracted
NGL Pipeline Transportation
Contact Information

Justin J. Kringstad, Director
North Dakota Pipeline Authority

600 E. Boulevard Ave. Dept. 405
Bismarck, ND 58505-0840

Phone: (701)220-6227
Fax: (701)328-2820
E-mail: jjkringstad@ndpipelines.com

Websites:
www.pipeline.nd.gov
www.northdakotapipelines.com