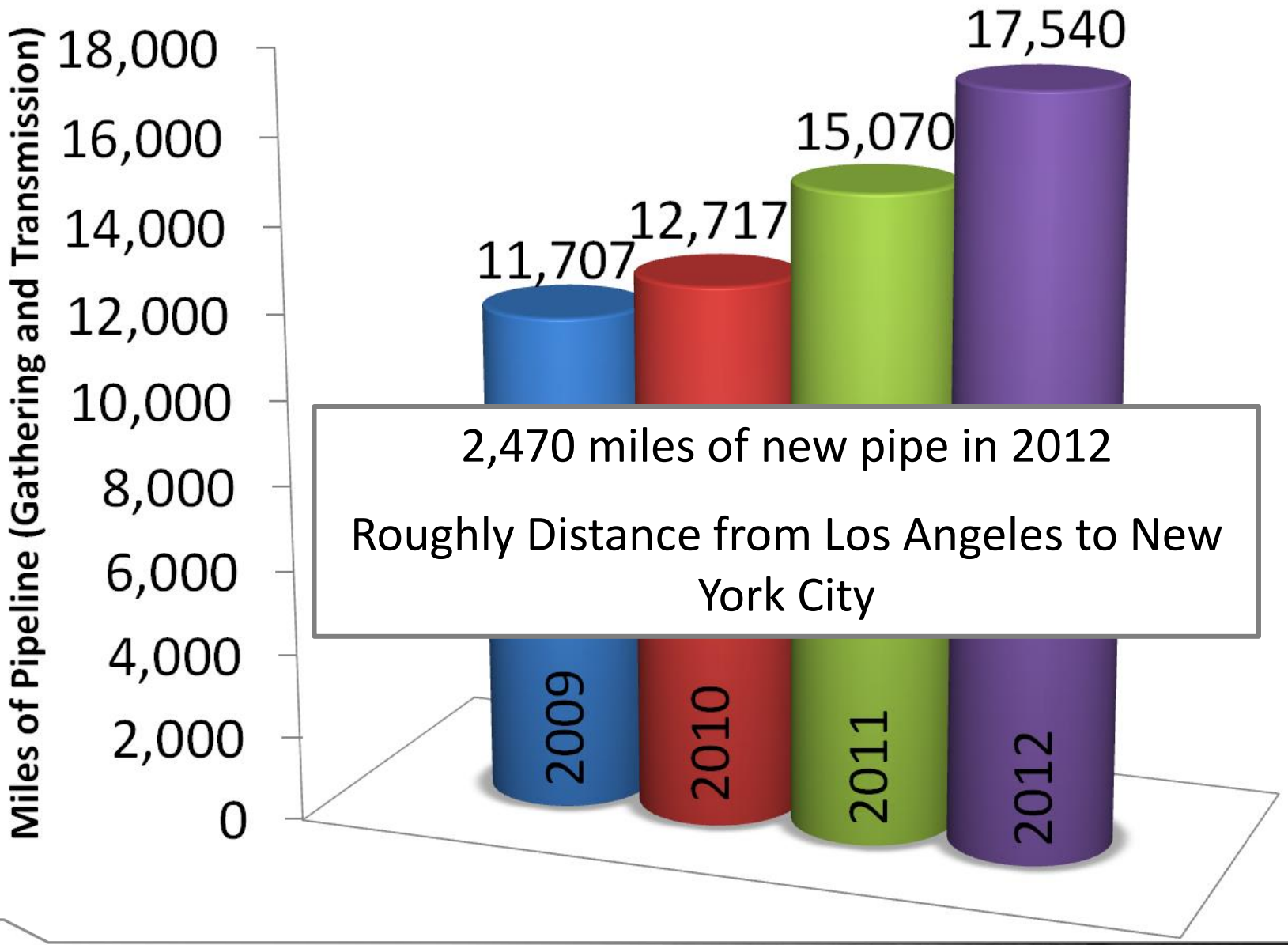
Energy Development and Transmission Committee

North Dakota Pipeline Authority

Justin J. Kringstad

October 14, 2013 - Bismarck, ND

North Dakota Pipeline Miles



2,470 miles of new pipe in 2012

Roughly Distance from Los Angeles to New York City

Crude Oil

Understanding production potential

Understanding current transportation dynamics and potential transportation constraints

Understanding current and future market conditions

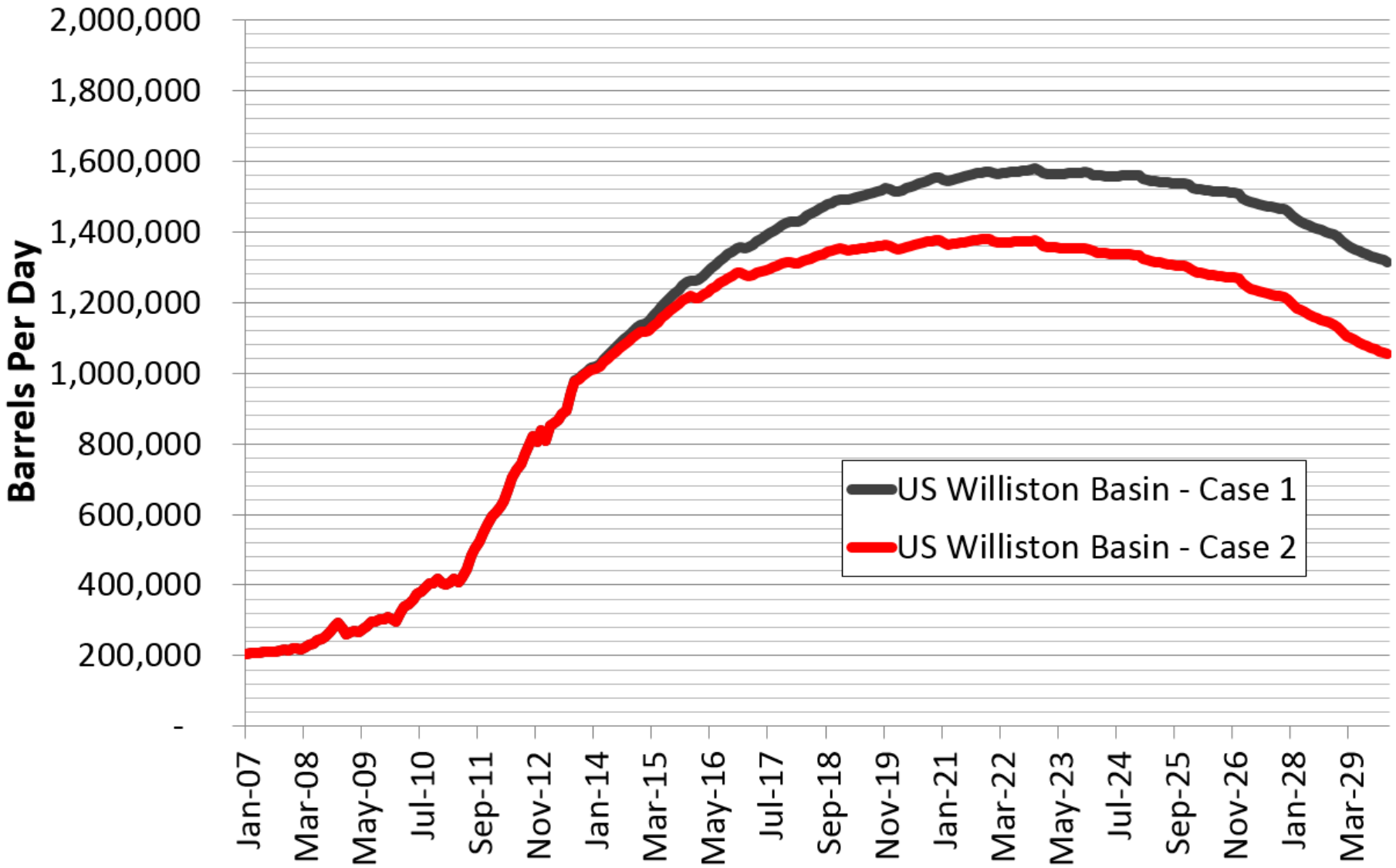
Crude Oil

Understanding production potential

Understanding current transportation dynamics and potential transportation constraints

Understanding current and future market conditions

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.

Crude Oil

Understanding production potential

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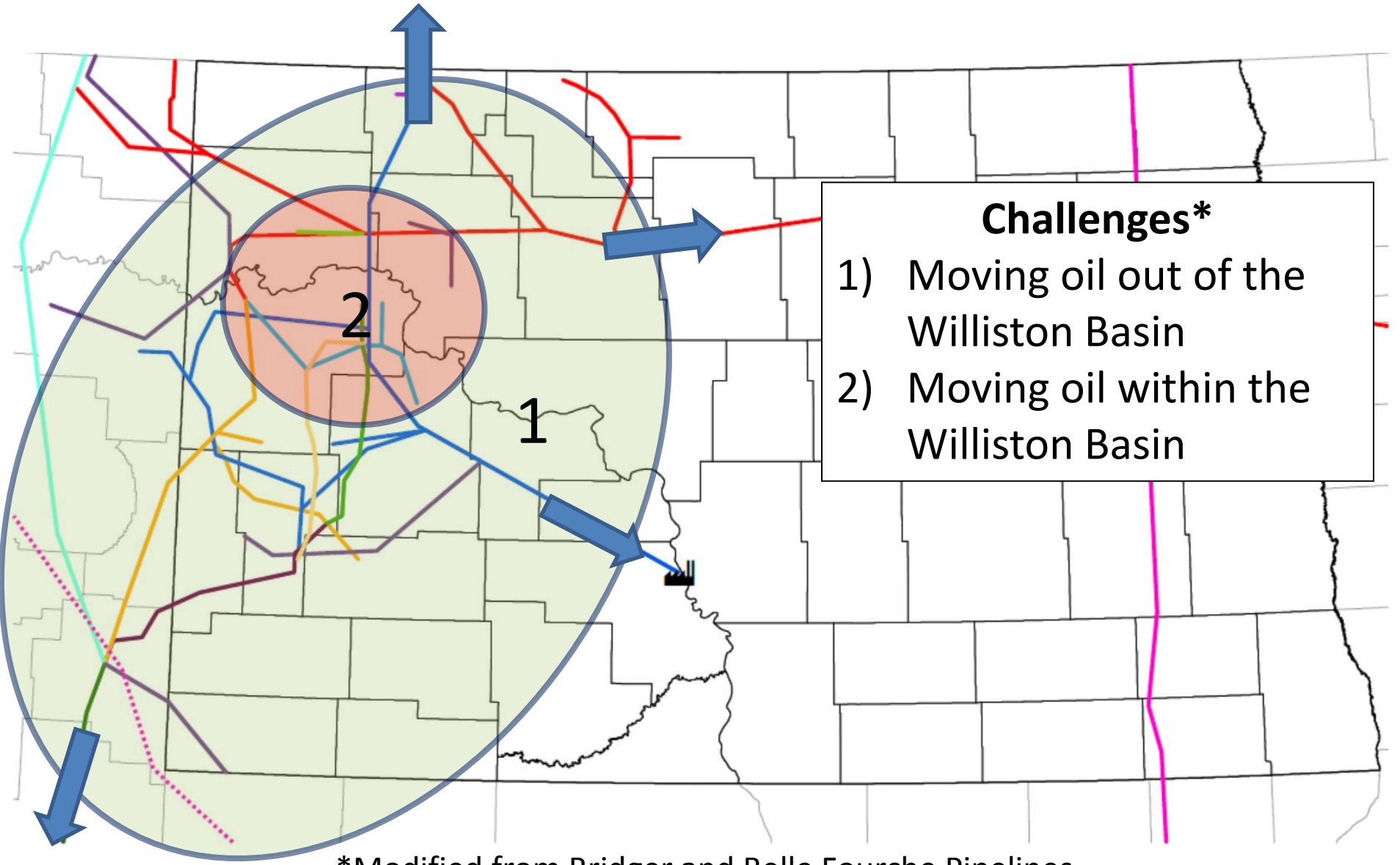
North Dakota Crude Oil Pipelines

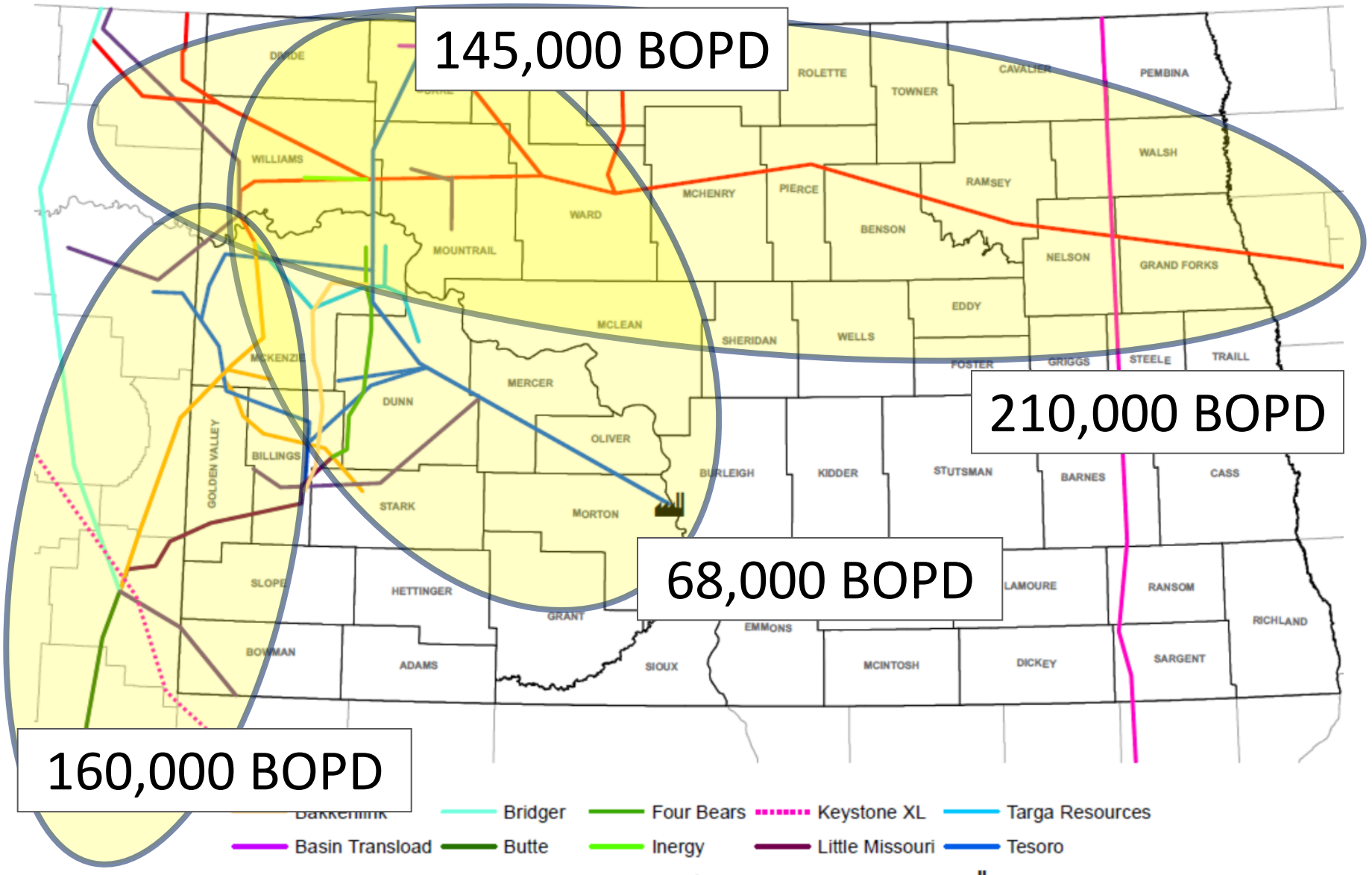


Challenges*

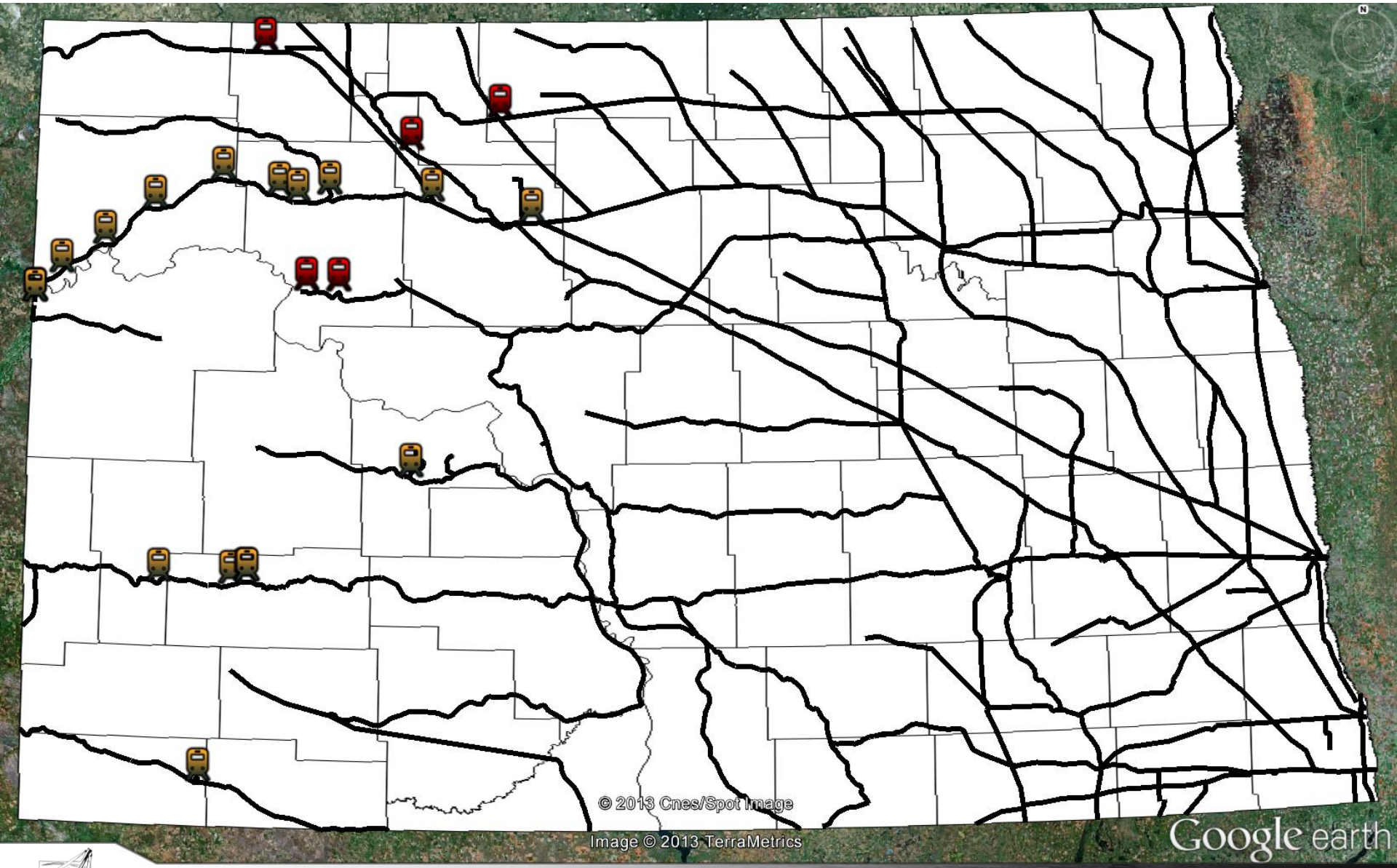
1) Moving oil out of the Williston Basin
2) Moving oil within the Williston Basin

*Modified from Bridger and Belle Fourche Pipelines

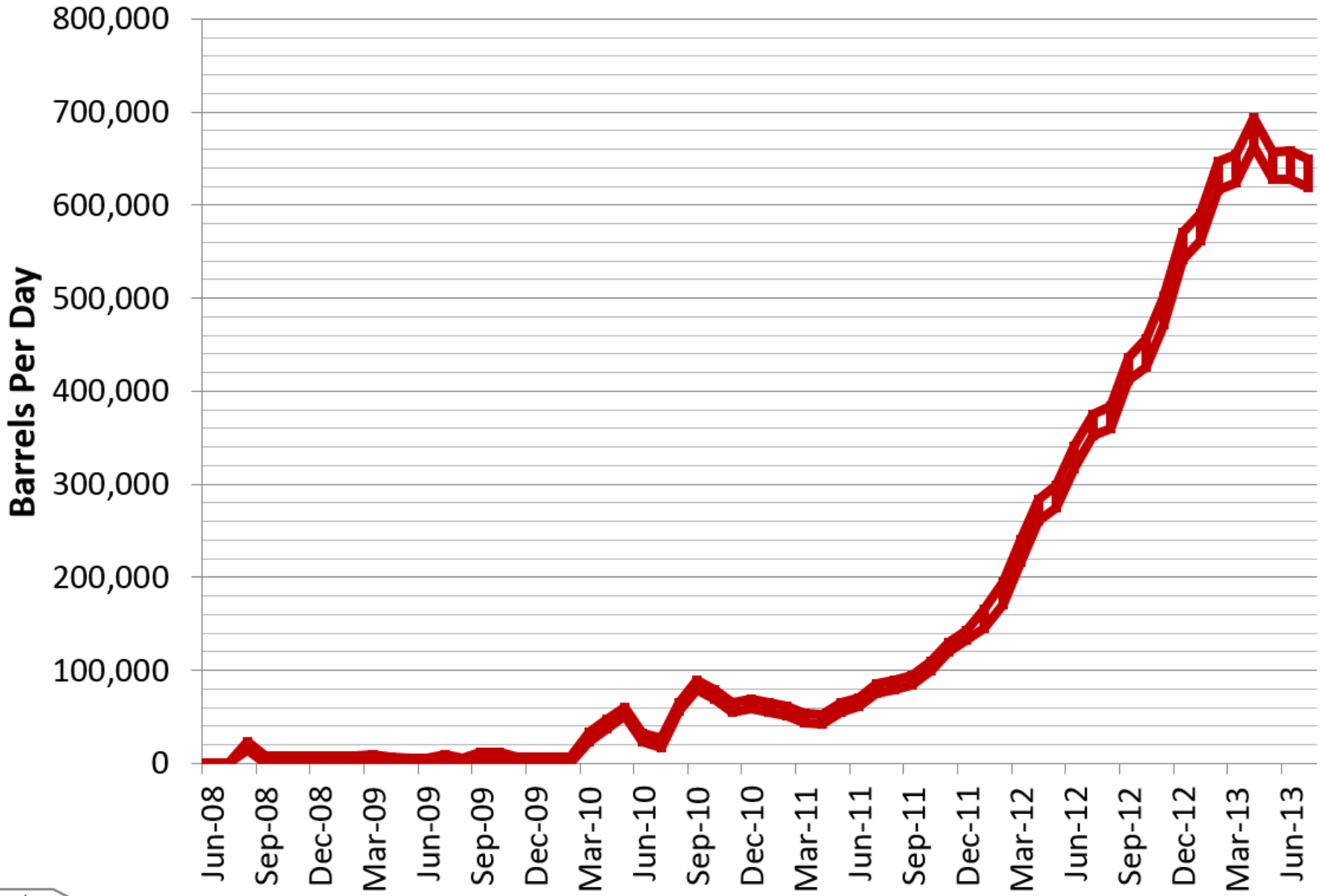
North Dakota Crude Oil Pipelines



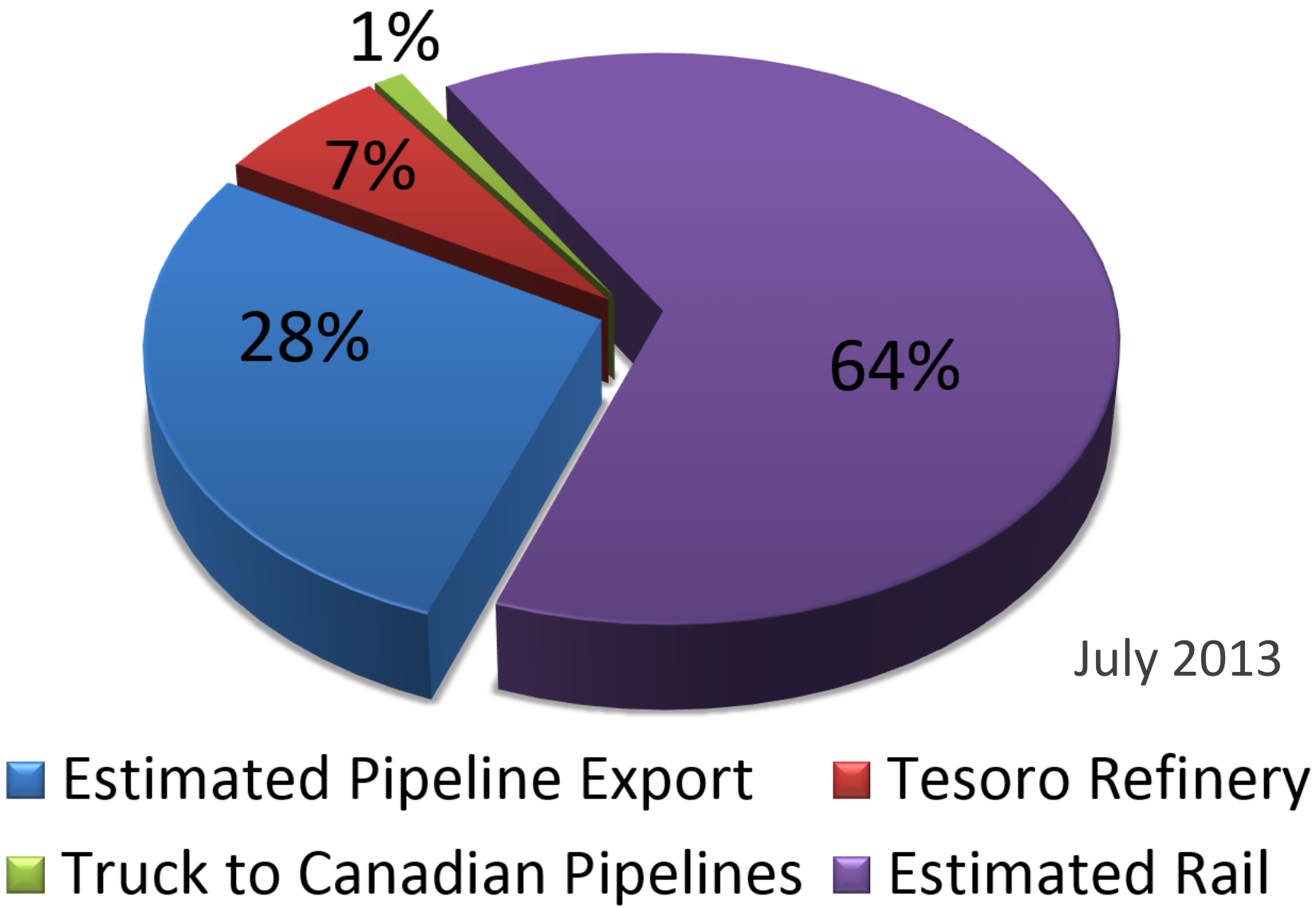
Oil Loading Rail Facilities



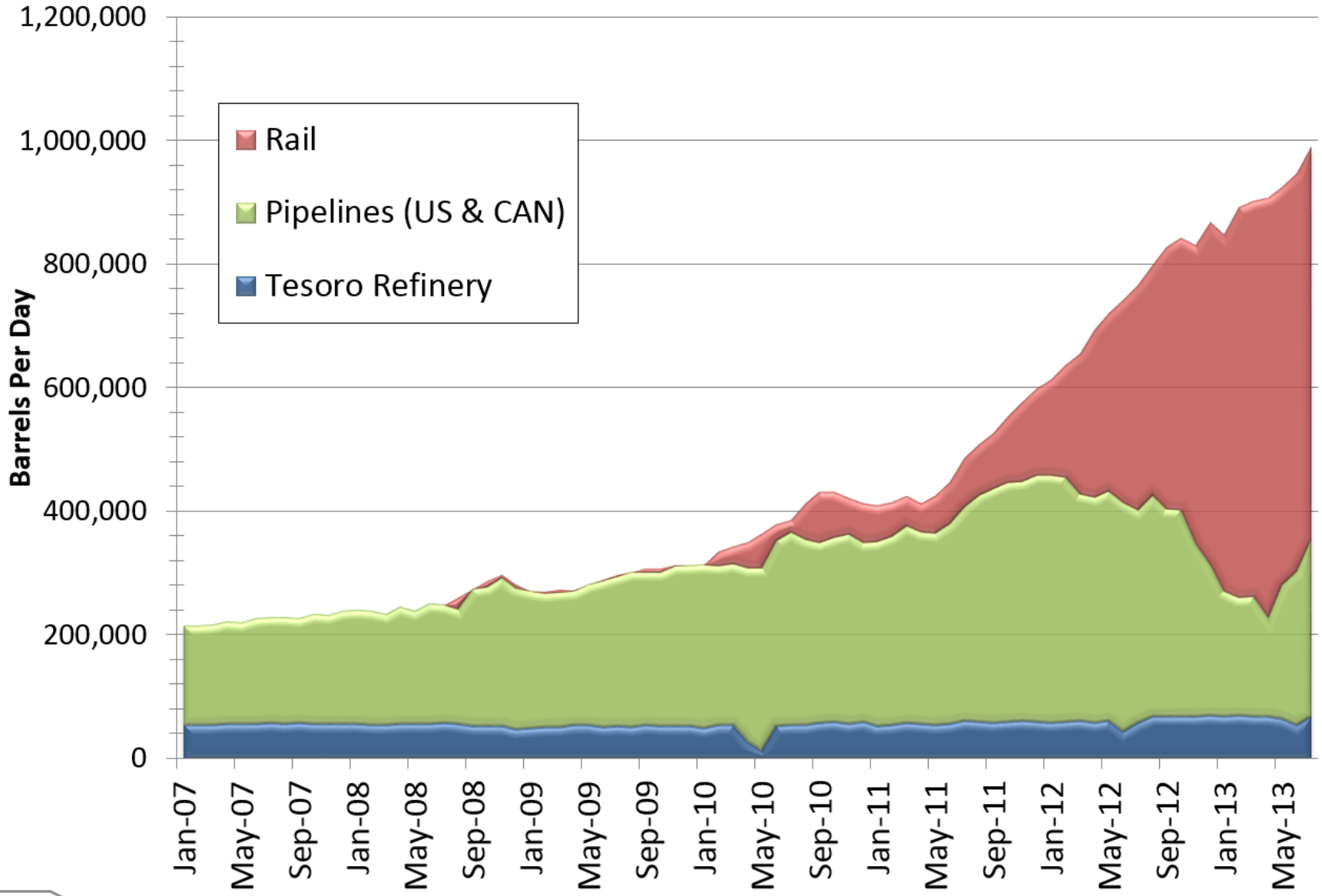
Estimated ND Rail Export Volumes



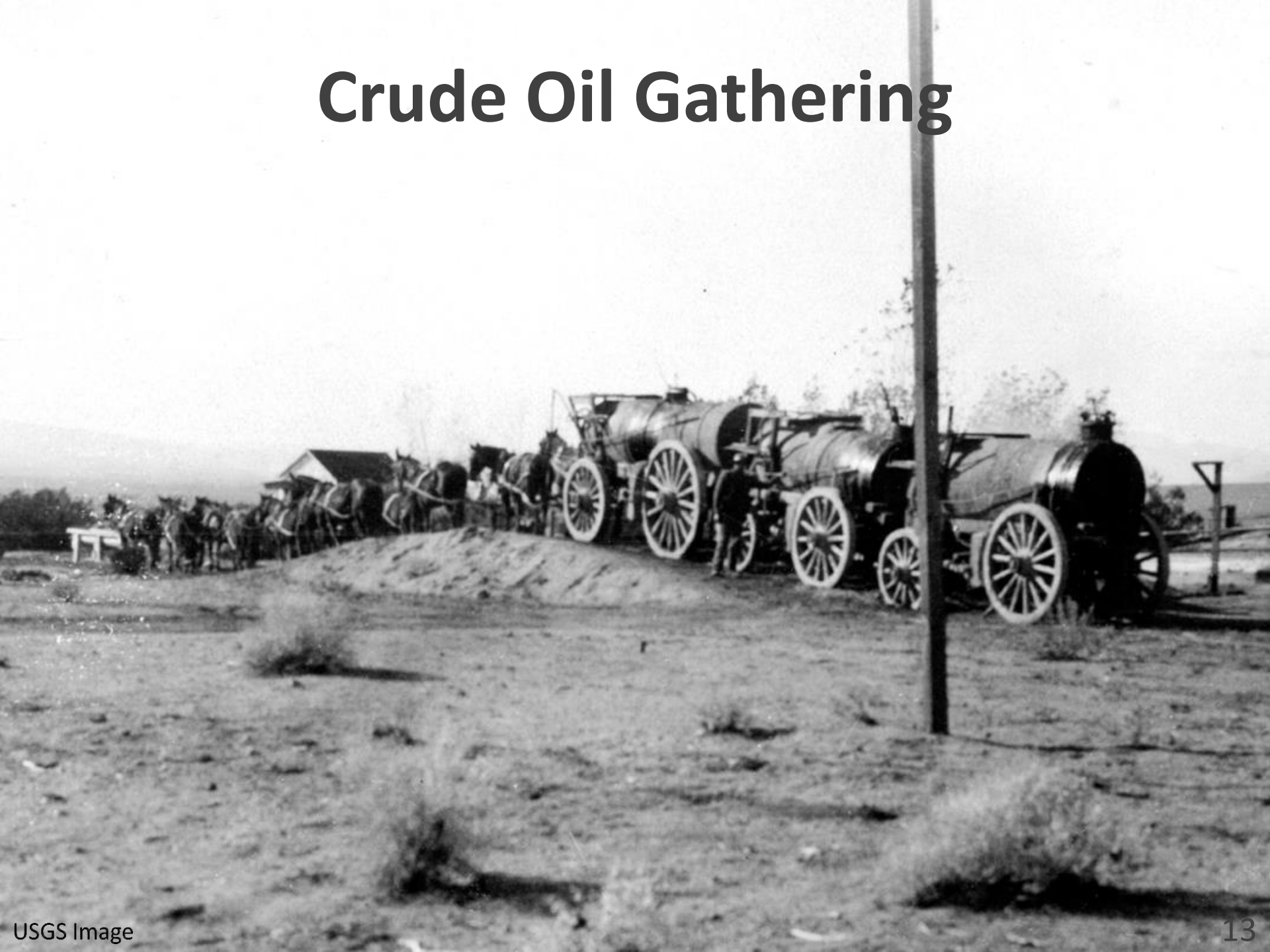
Estimated Williston Basin Oil Transportation



Estimated Williston Basin Oil Transportation

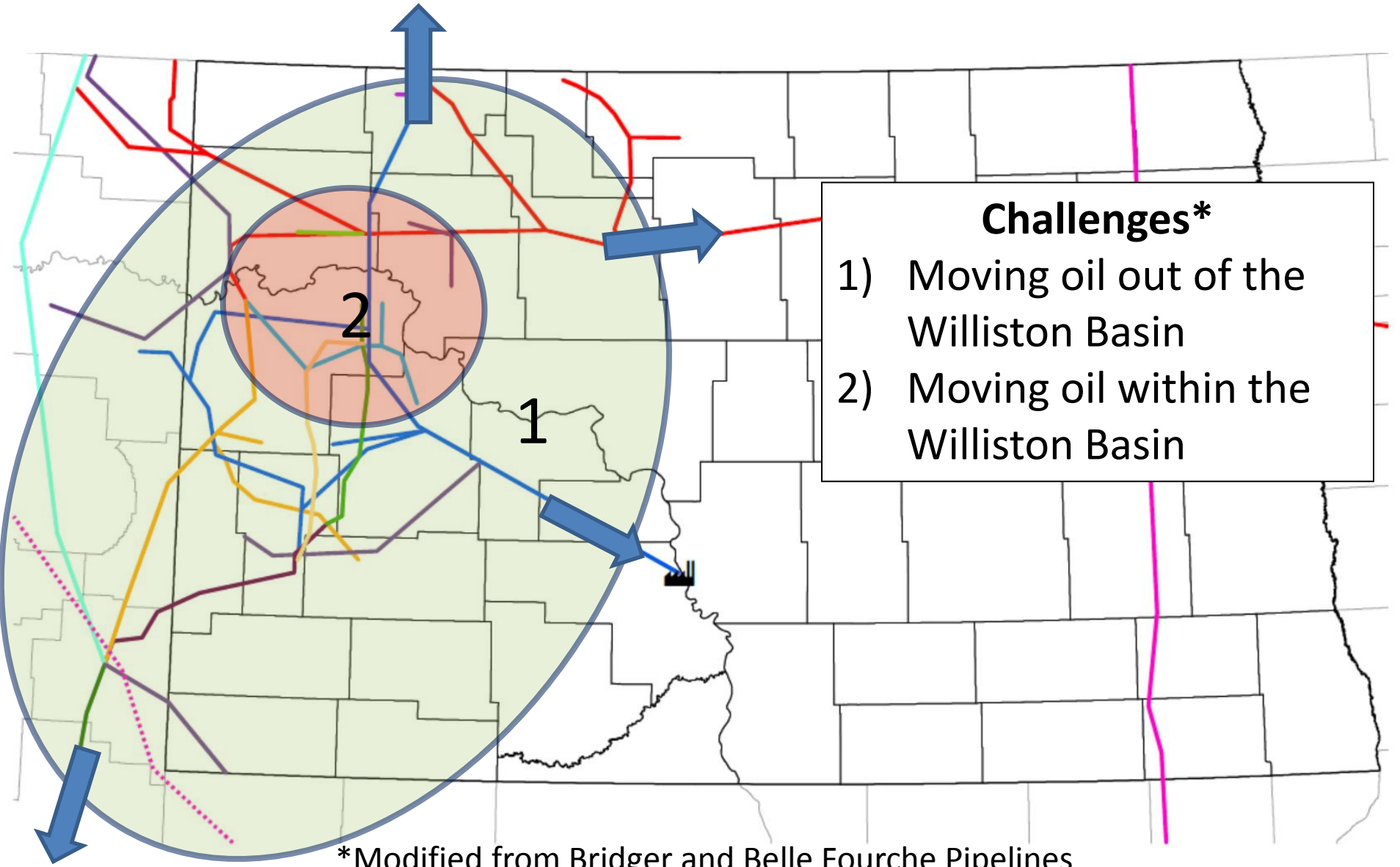


Crude Oil Gathering



USGS Image

North Dakota Crude Oil Pipelines



Challenges*

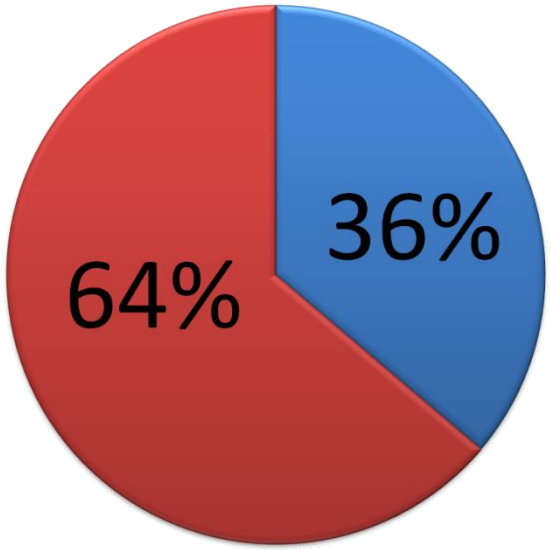
1) Moving oil out of the Williston Basin
2) Moving oil within the Williston Basin

*Modified from Bridger and Belle Fourche Pipelines

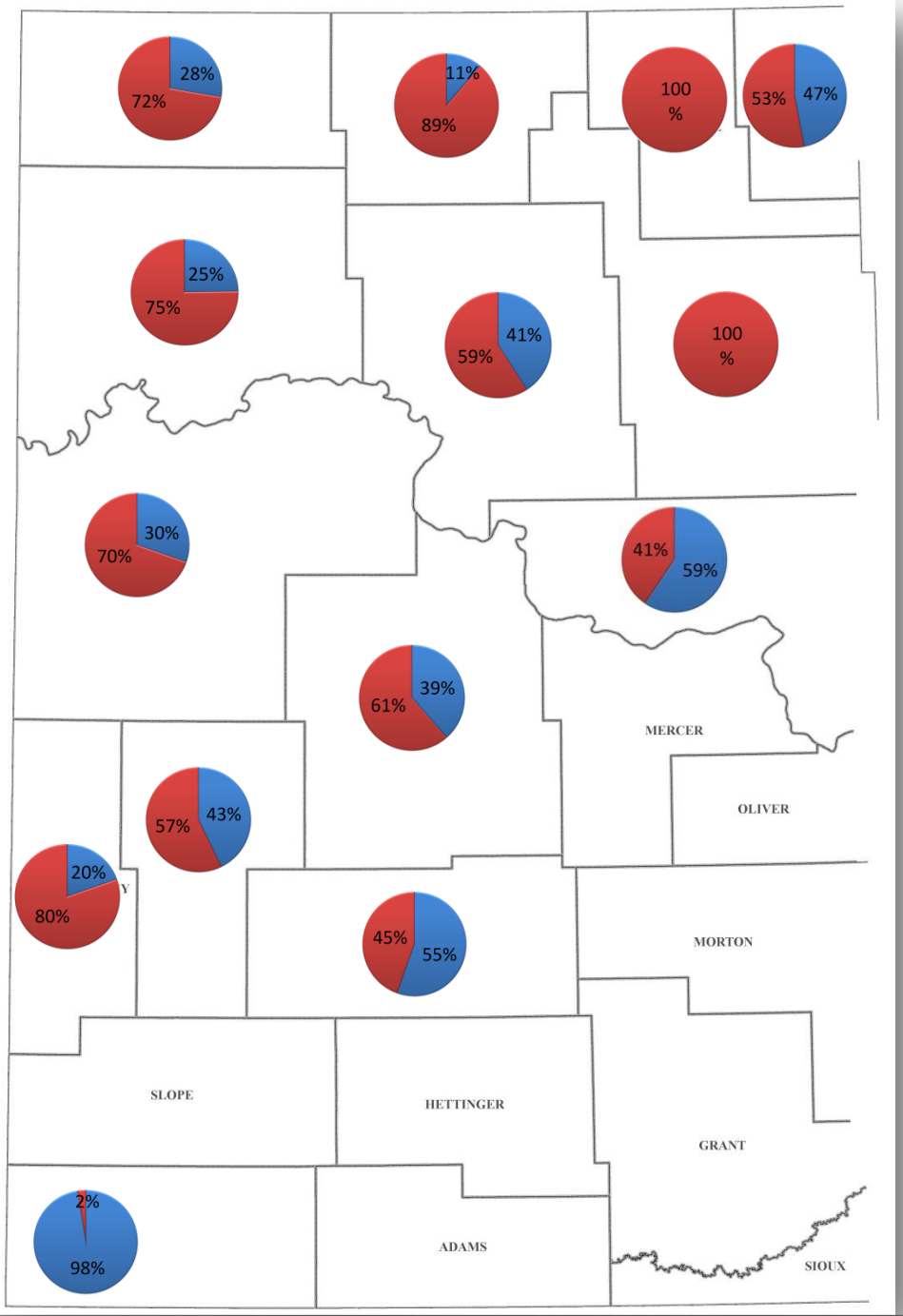
ND Crude Oil Gathering

Red – Trucked

Blue – Pipeline



All ND Production



Sep 2012 Estimates – Some data incomplete or unavailable

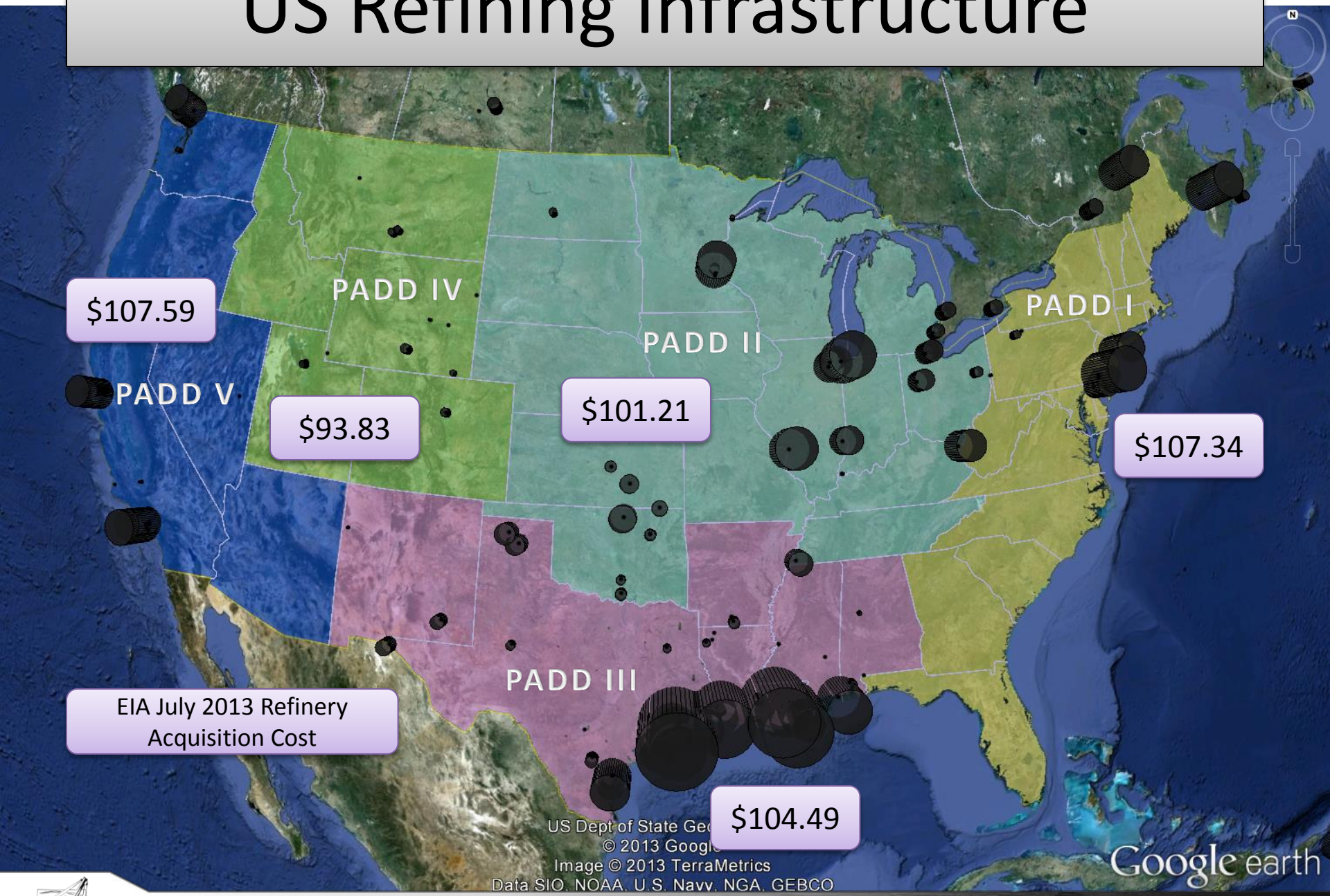
Crude Oil

Understanding production potential

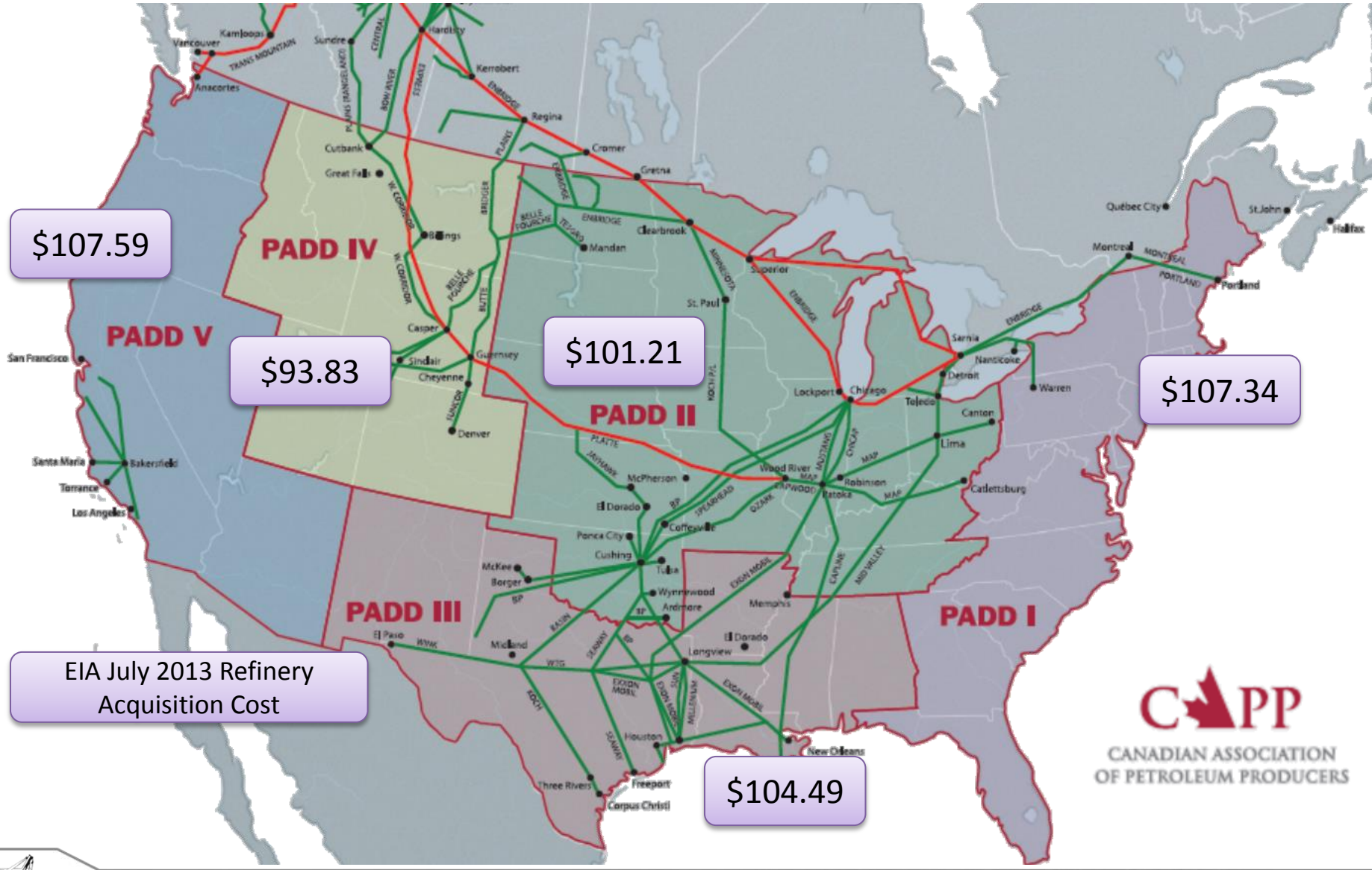
Understanding current transportation dynamics and potential transportation constraints

Understanding current and future market conditions

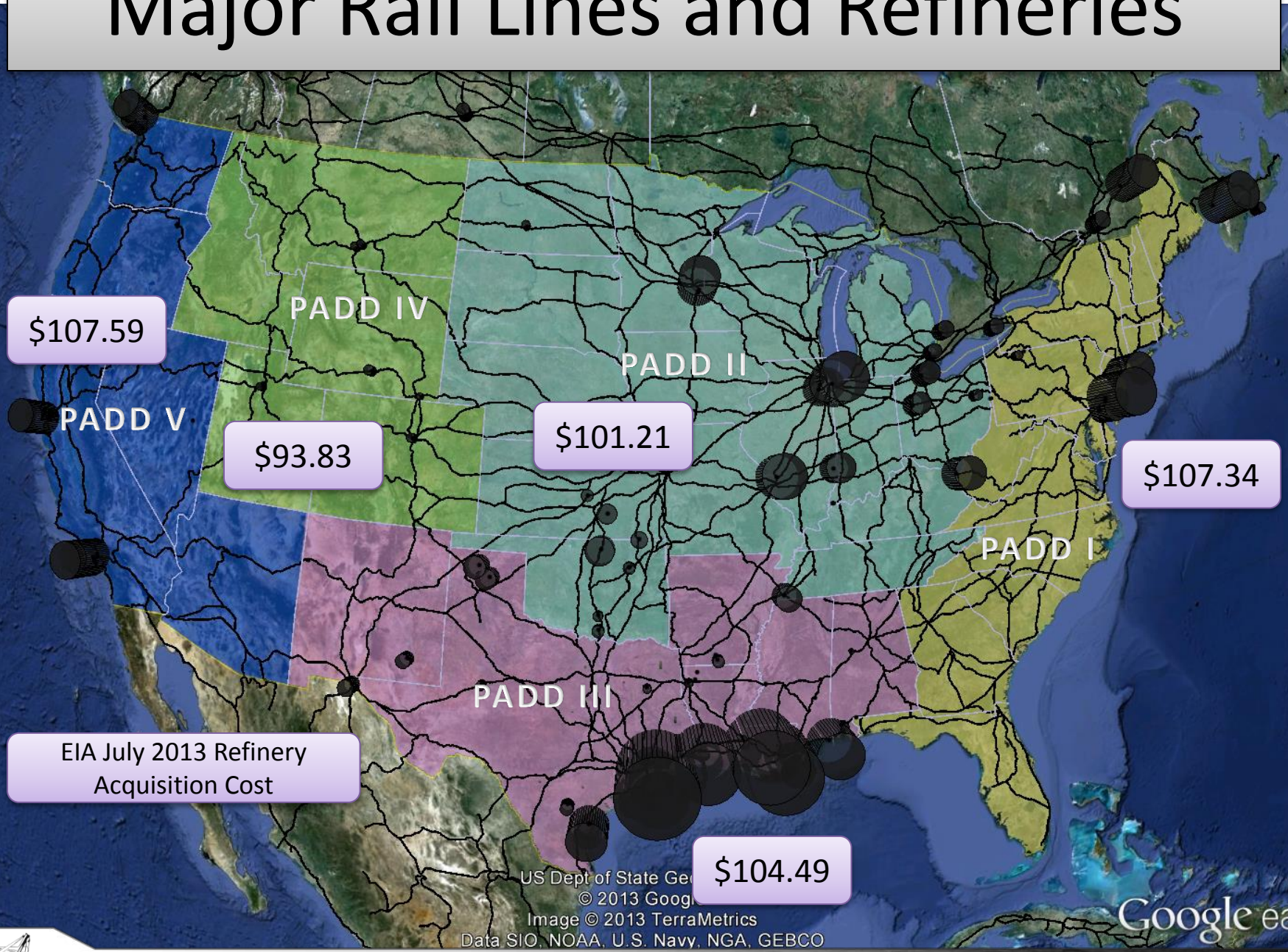
US Refining Infrastructure



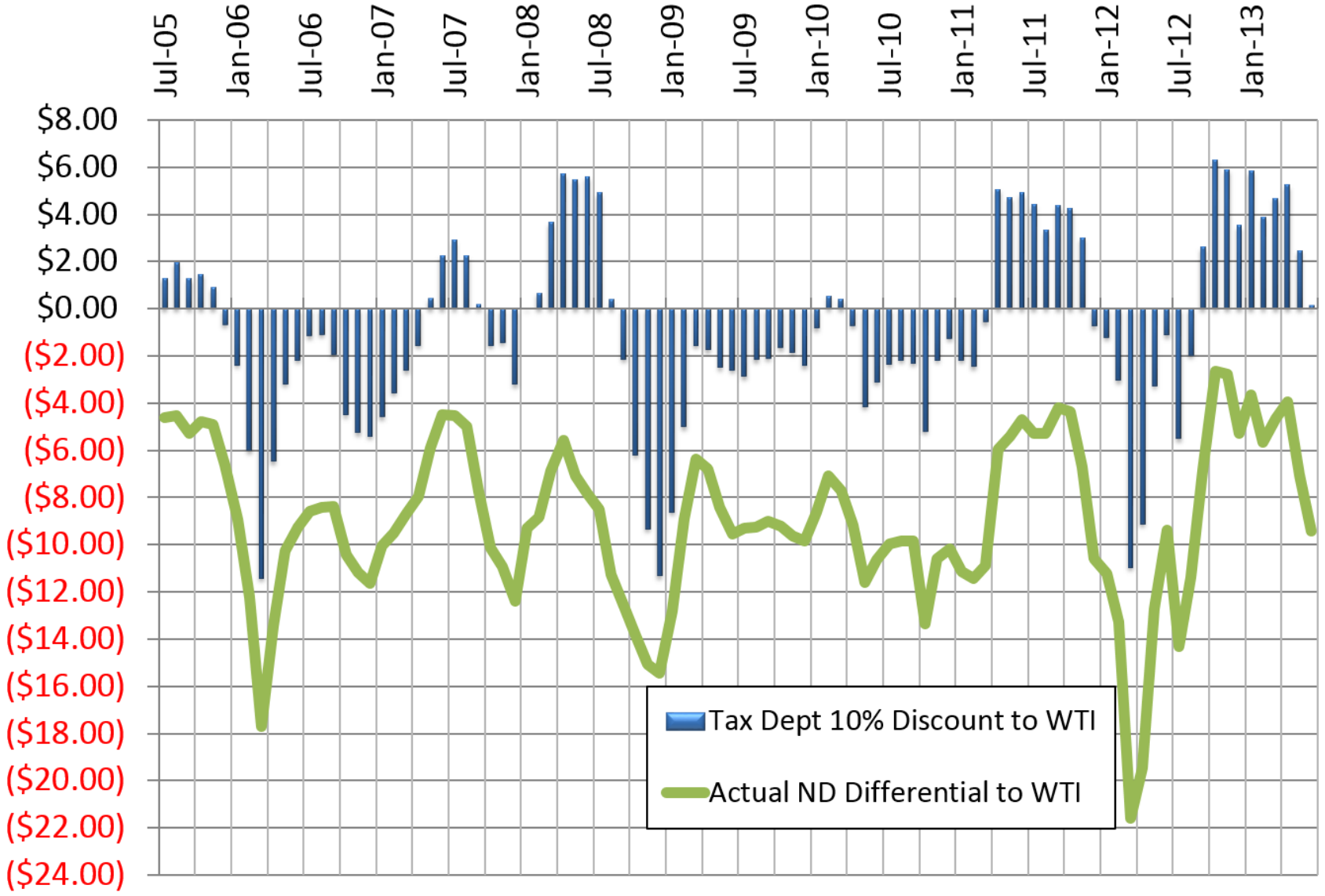
Major Pipelines and Refining Centers



Major Rail Lines and Refineries

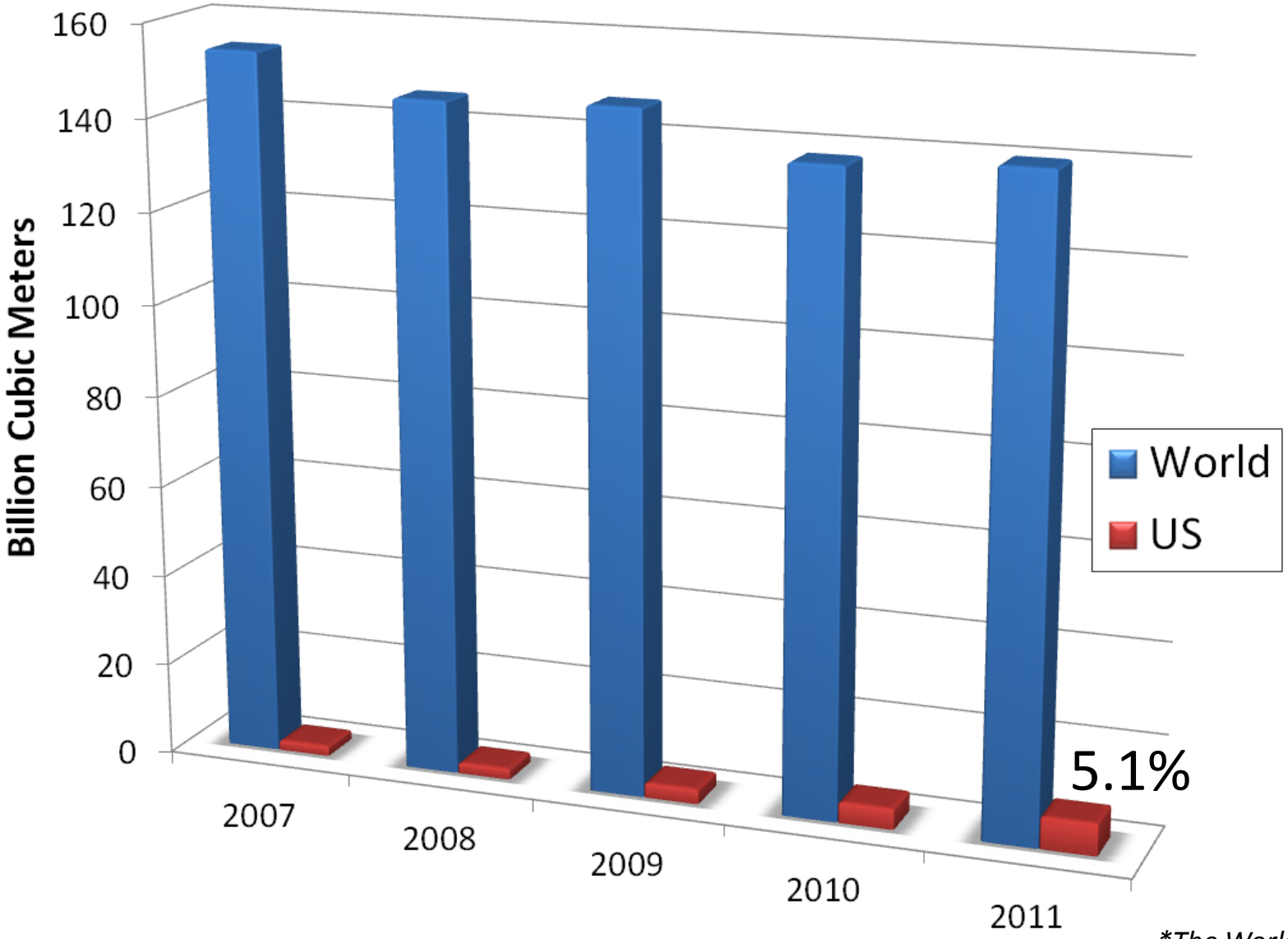


ND Wellhead Price Snapshot



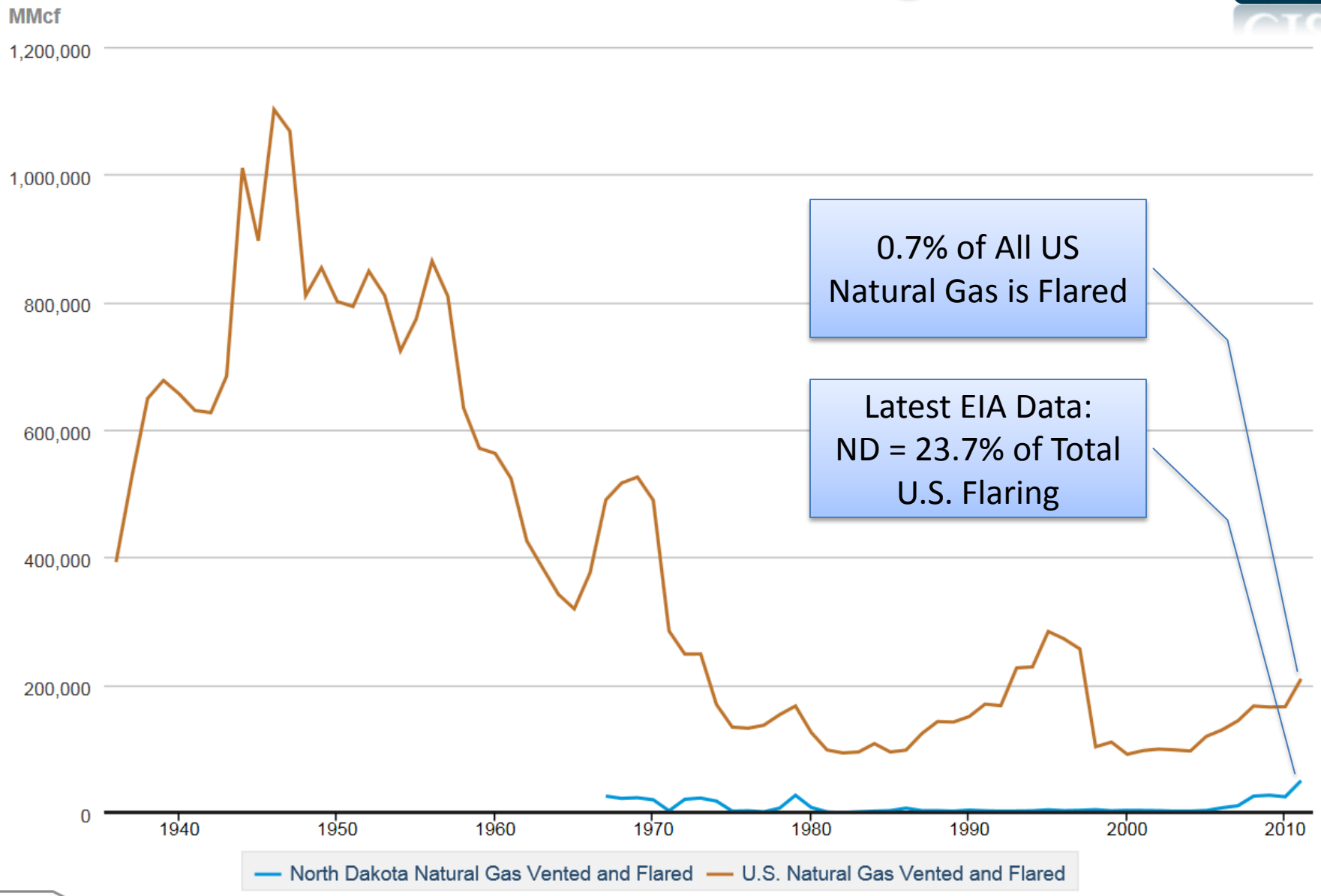
Natural Gas

World Gas Flaring Estimates*

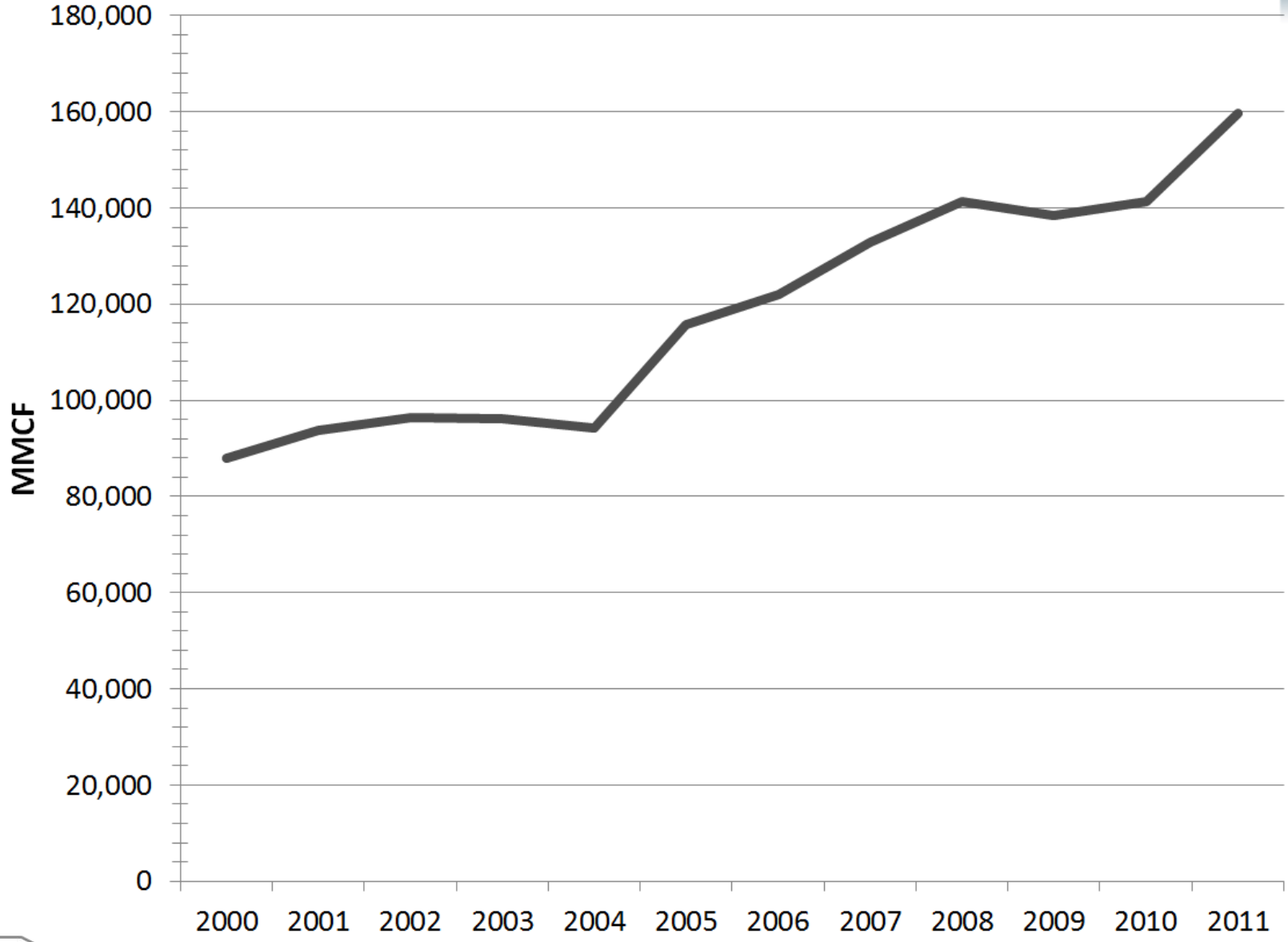


*The World Bank

U.S. Gas Flaring



U.S. Flaring Minus ND



Natural Gas Flaring Facts/Challenges

Primary Challenges

- *Size of resource*
- *Young age of development*
- *Harsh winter conditions*
- *Resource potential still being explored*

Regulations

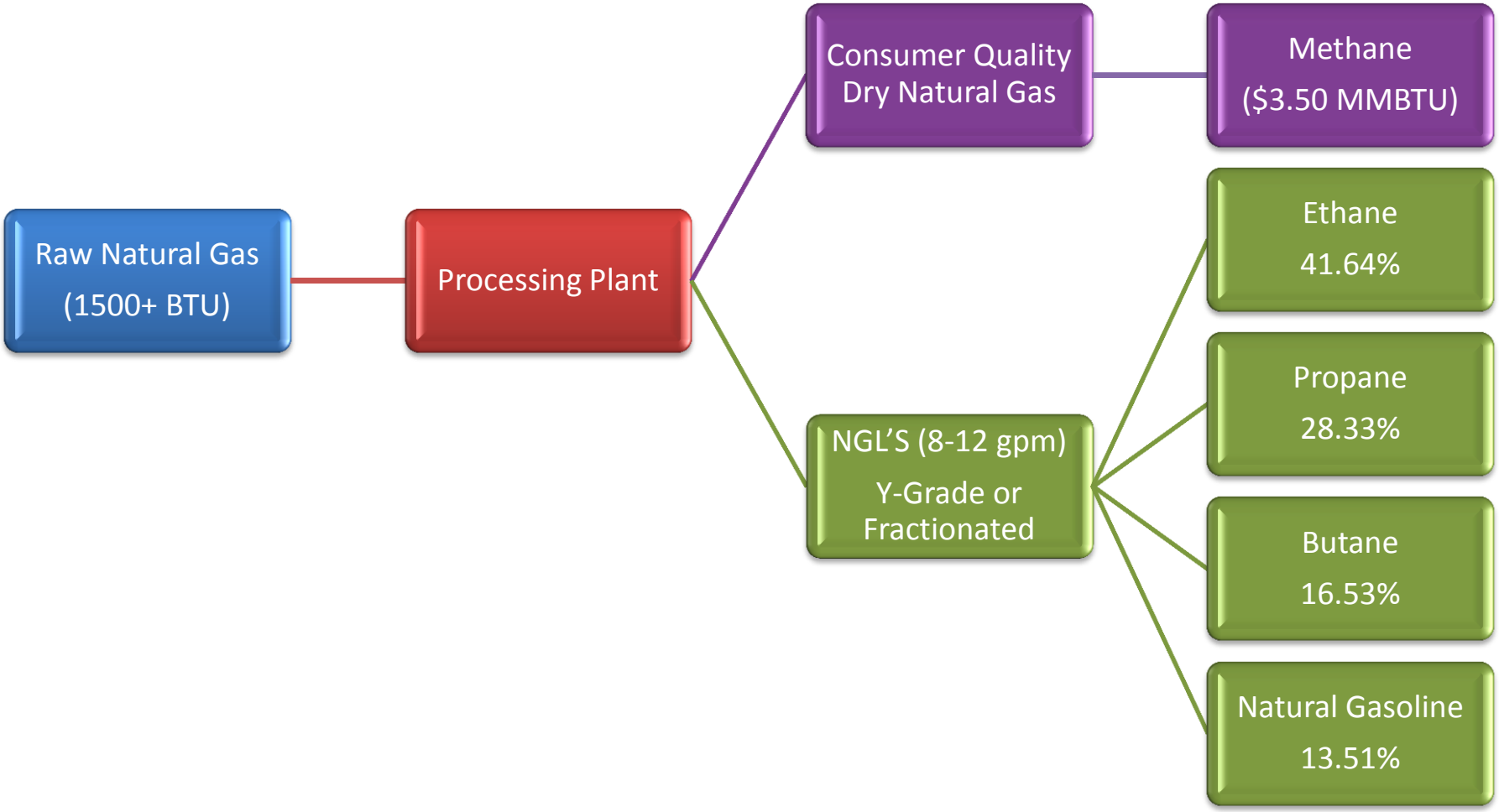
- *Flaring regulated by the ND Industrial Commission/Oil & Gas Division with existing penalties and incentives in place to reduce flaring*

Challenges to Reducing North Dakota Flaring

- *Upfront Planning/Coordination*
- *Obtaining Easements*
- *Understanding Bakken/Three Forks Gas Quality*
- *Understanding Production Potential*
- *Properly Sizing New Gas Gathering Pipelines*
- *Enhancing Existing Gathering Pipelines*
- *Sufficient Gas Processing Capacity (Timing and Location Critical)*
- *Adequate Interstate Pipeline Capacity*
- *Ramping Up Flaring Alternatives (Short & Long Term)*

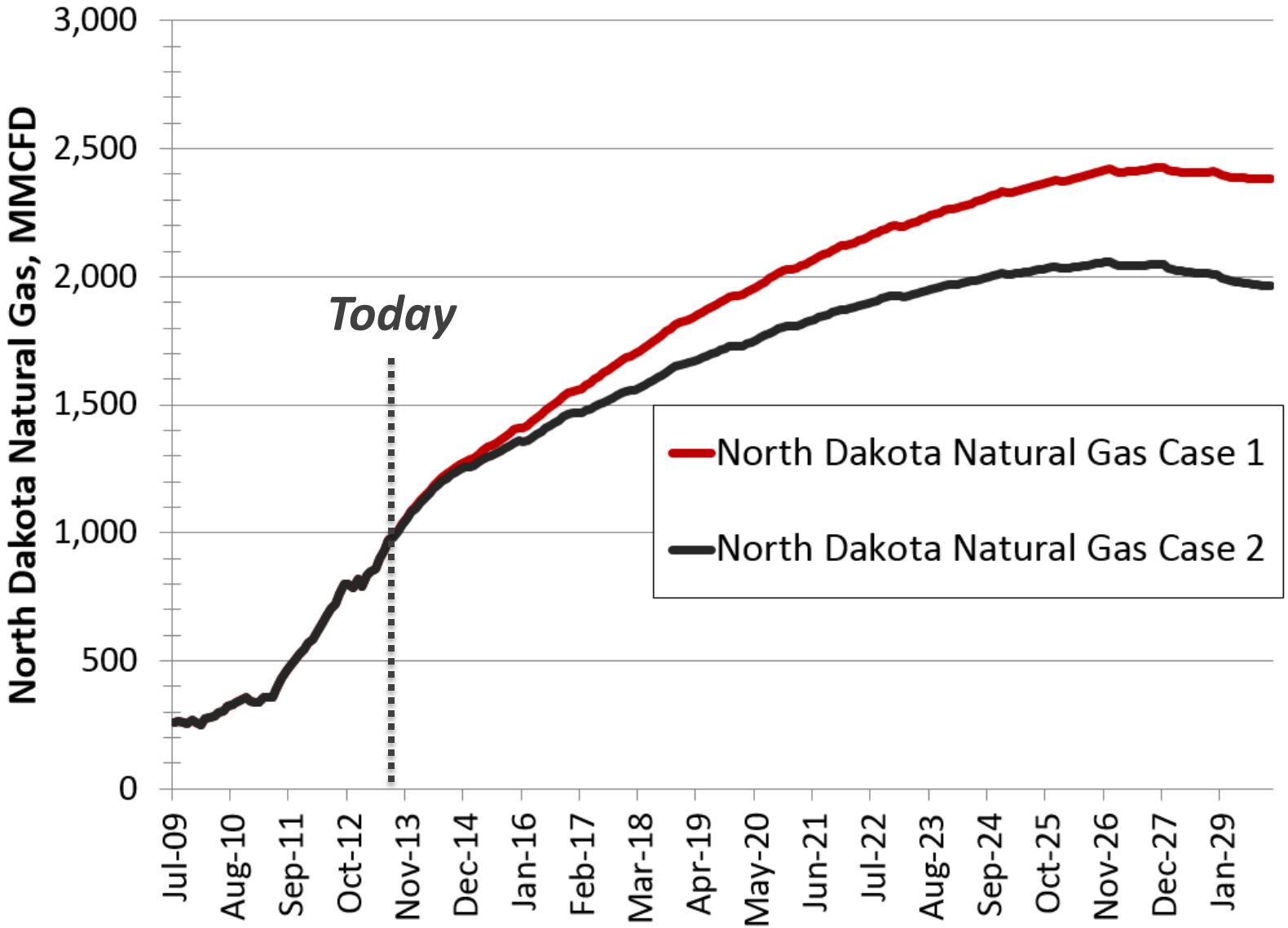
Strengthening Landowner Relations

Rich Natural Gas



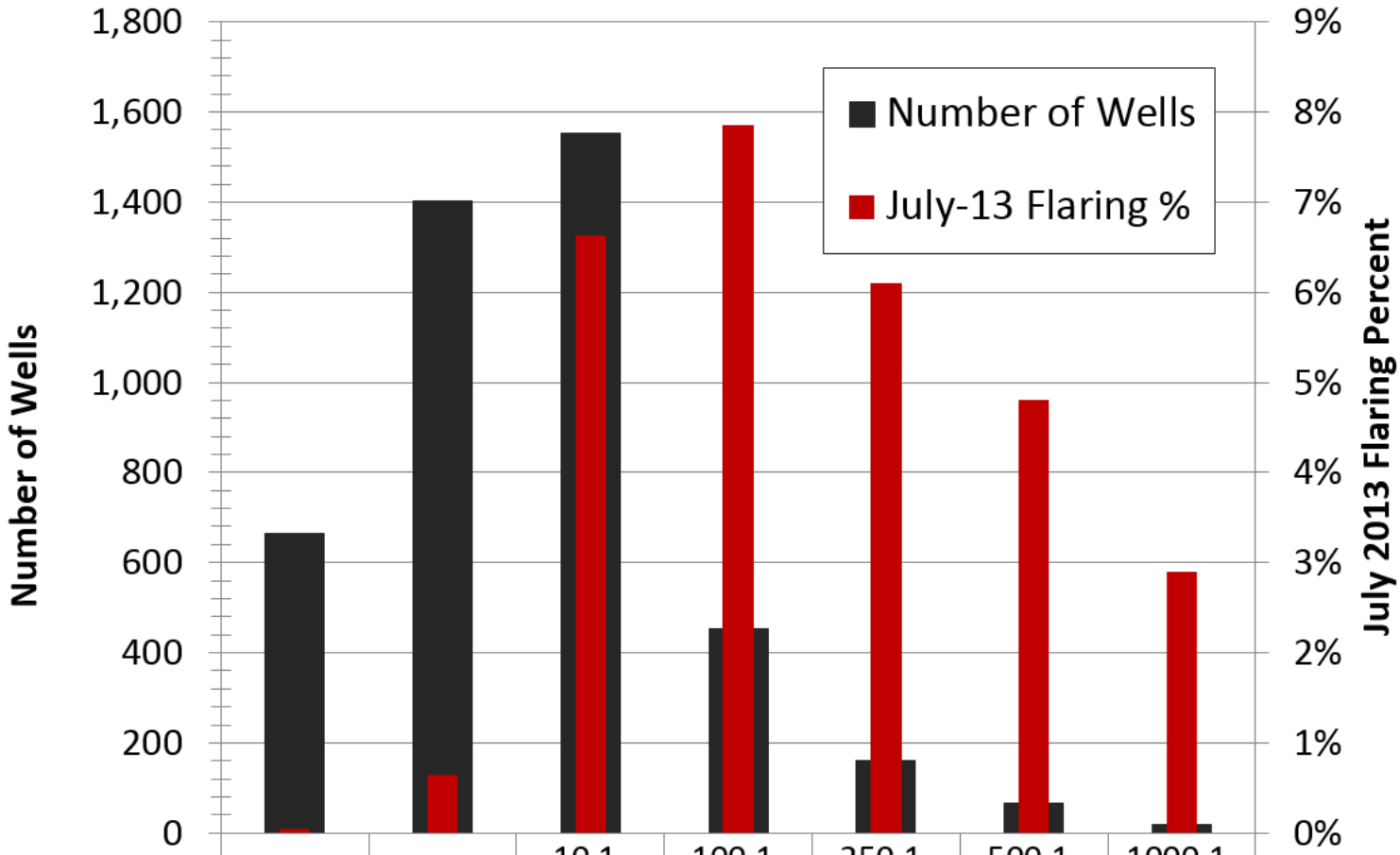
**Using NGL breakdown from the July 2012 BENTEK Natural Gas Study*

Forecasting North Dakota Gas Production



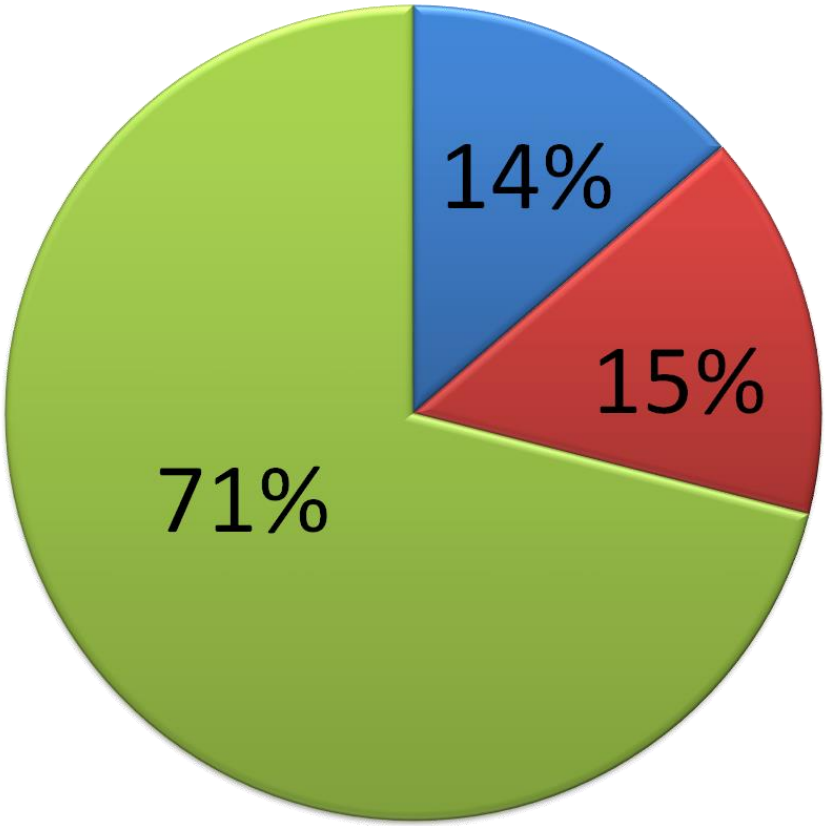
Production forecast is for visual demonstration purposes only and should not be considered accurate for any near or long term planning.

Understanding Which Wells Are Flaring



	0-1 MCFD	1.1-10 MCFD	10.1-100 MCFD	100.1-250 MCFD	250.1-500 MCFD	500.1-1000 MCFD	1000.1-2600 MCFD
Number of Wells	665	1403	1554	452	161	65	19
July-13 Flaring %	0.04%	0.64%	6.63%	7.86%	6.11%	4.81%	2.89%

Solving the Flaring Challenge



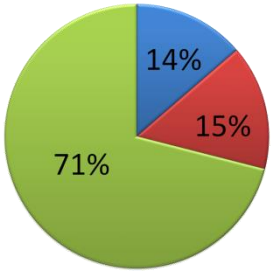
Statewide

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

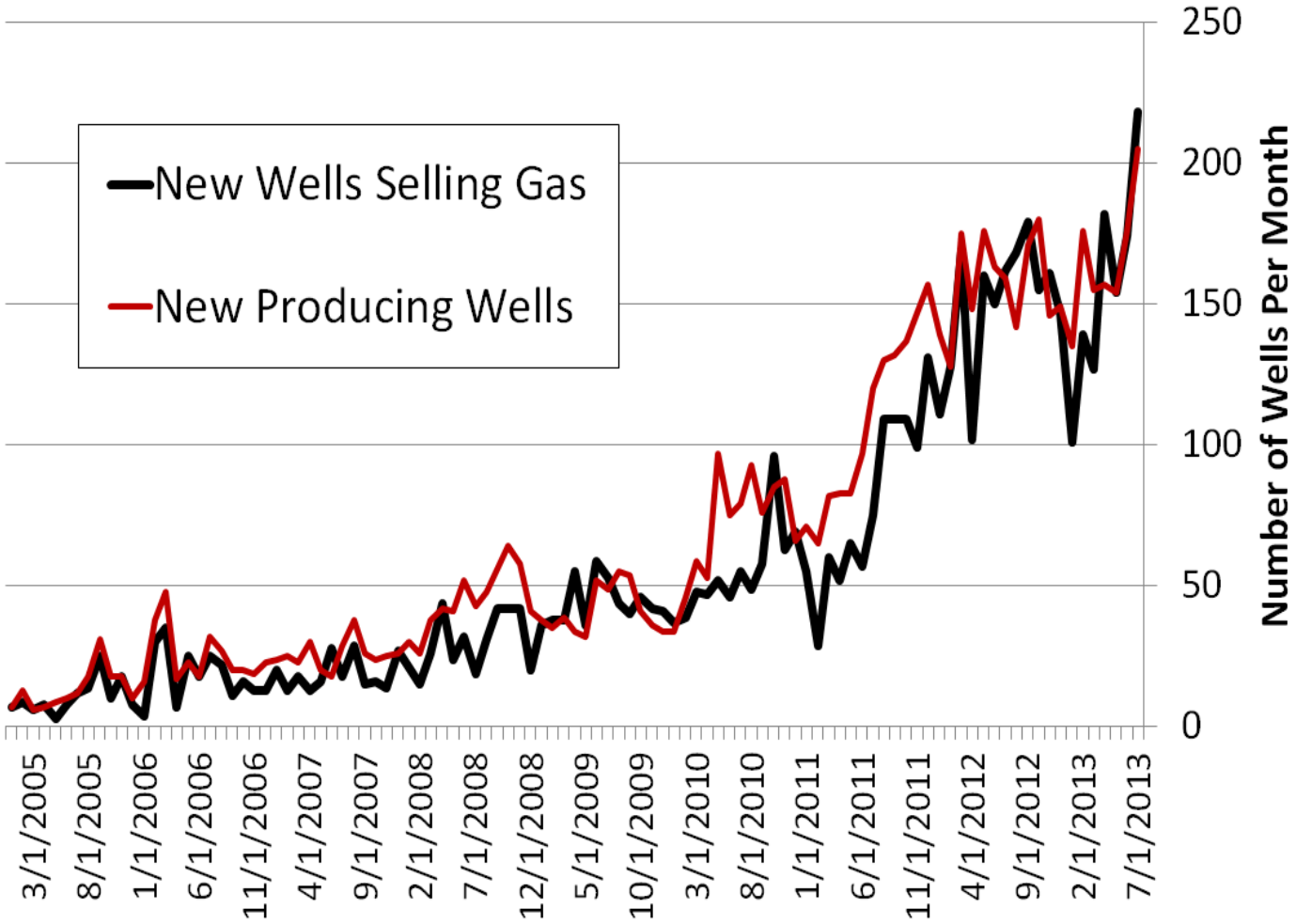
Simple Terms

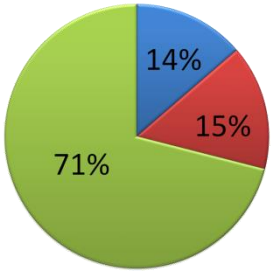
Red – Challenges on existing infrastructure
Blue – Lack of pipelines

July 2013 Data – Non-Confidential Wells

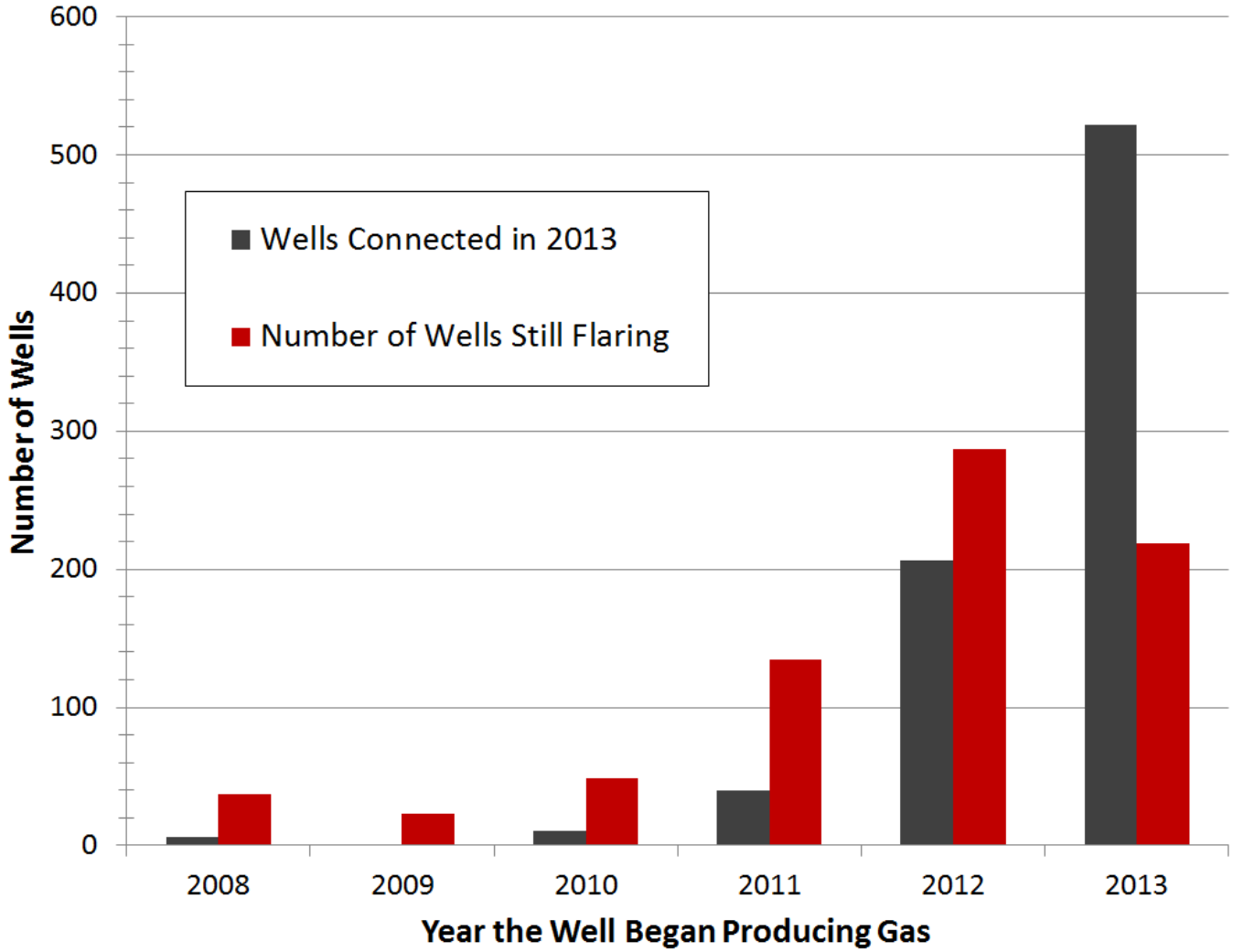


Capturing the 14%
Faster Well Connections

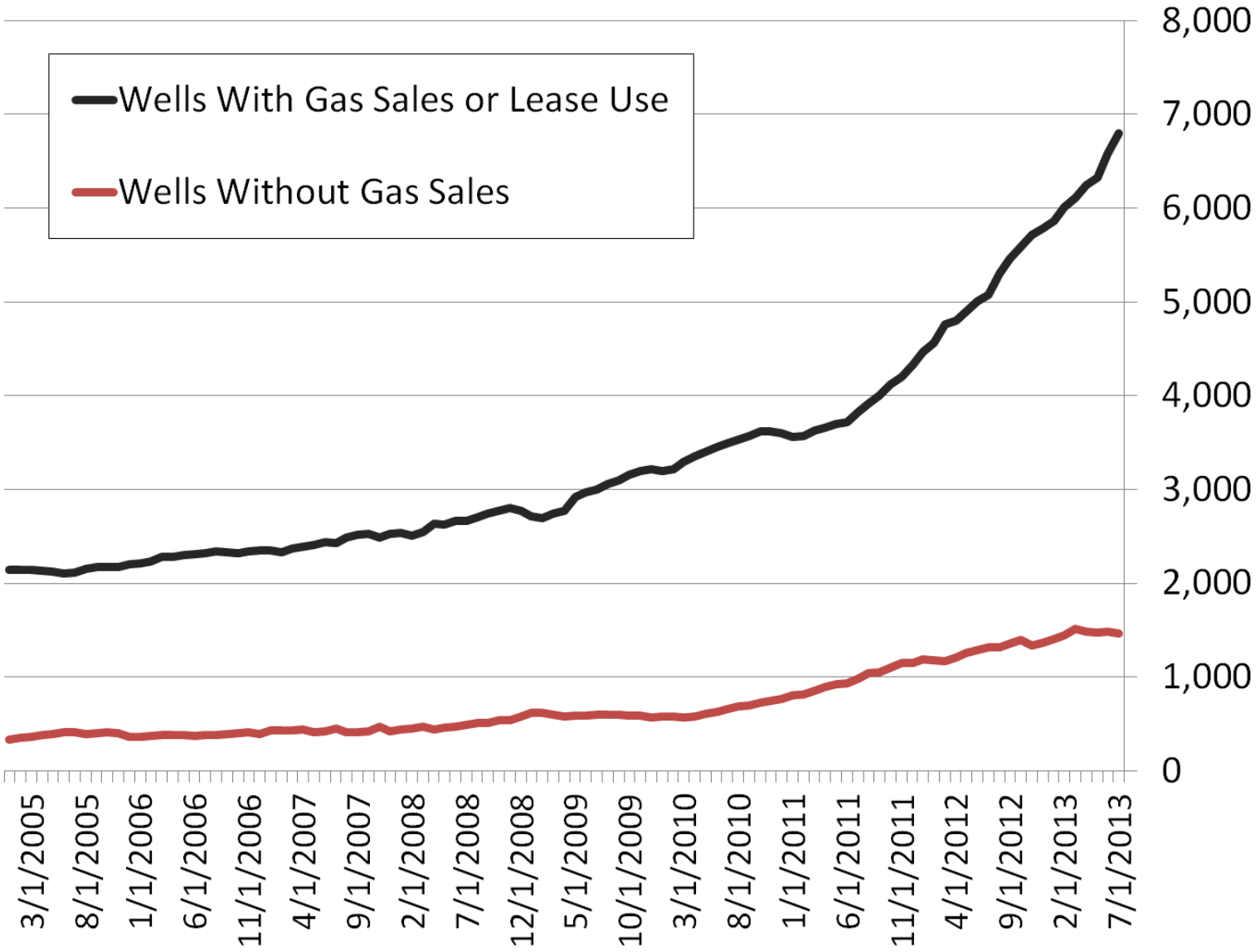


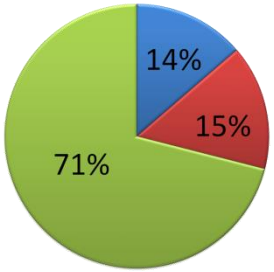


Capturing the 14%
Catching Early Production

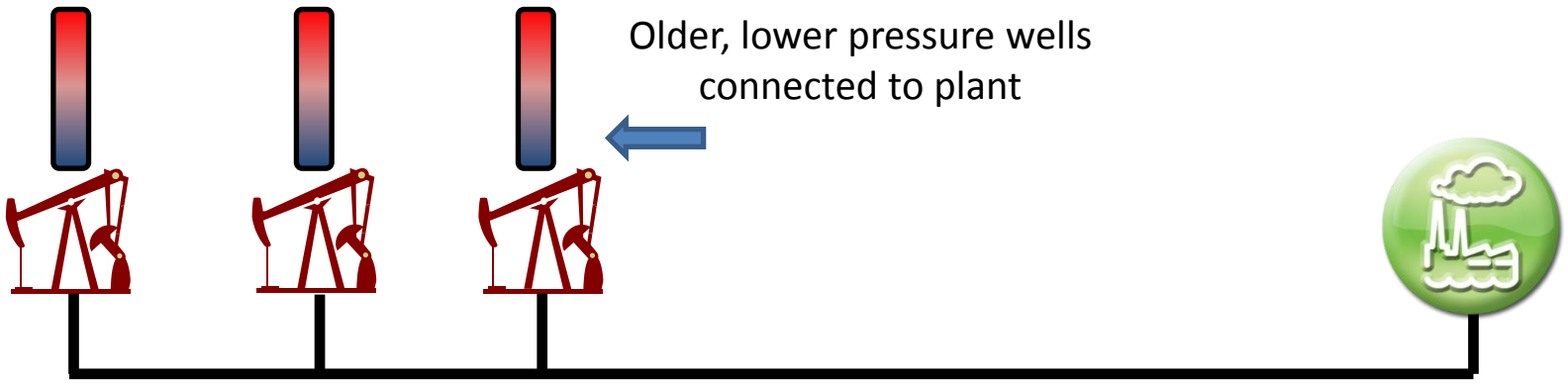


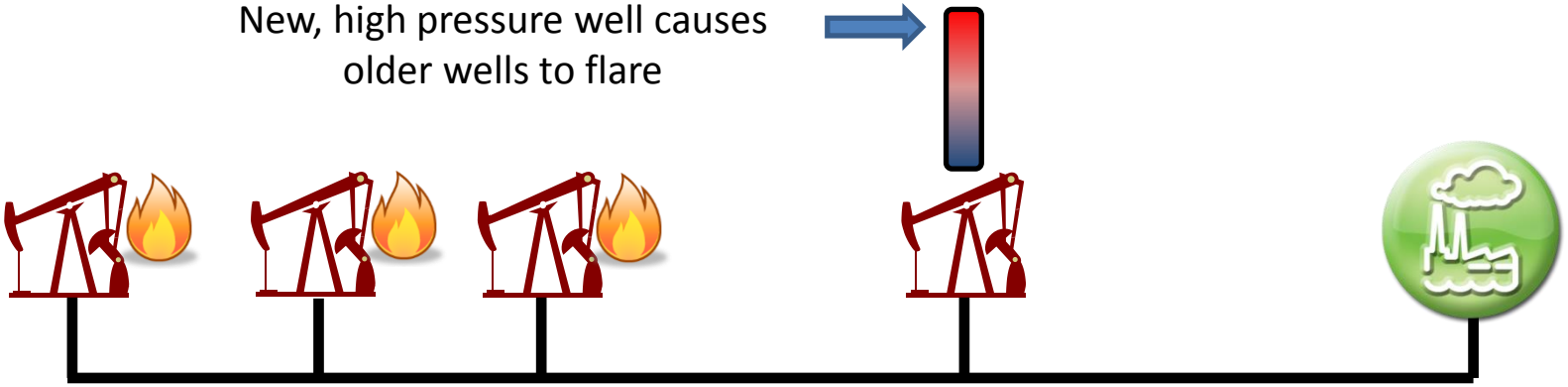
ND Gas Gathering Statistics

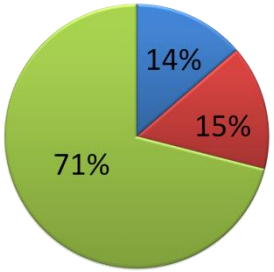




Capturing the 15%
Additional Compression

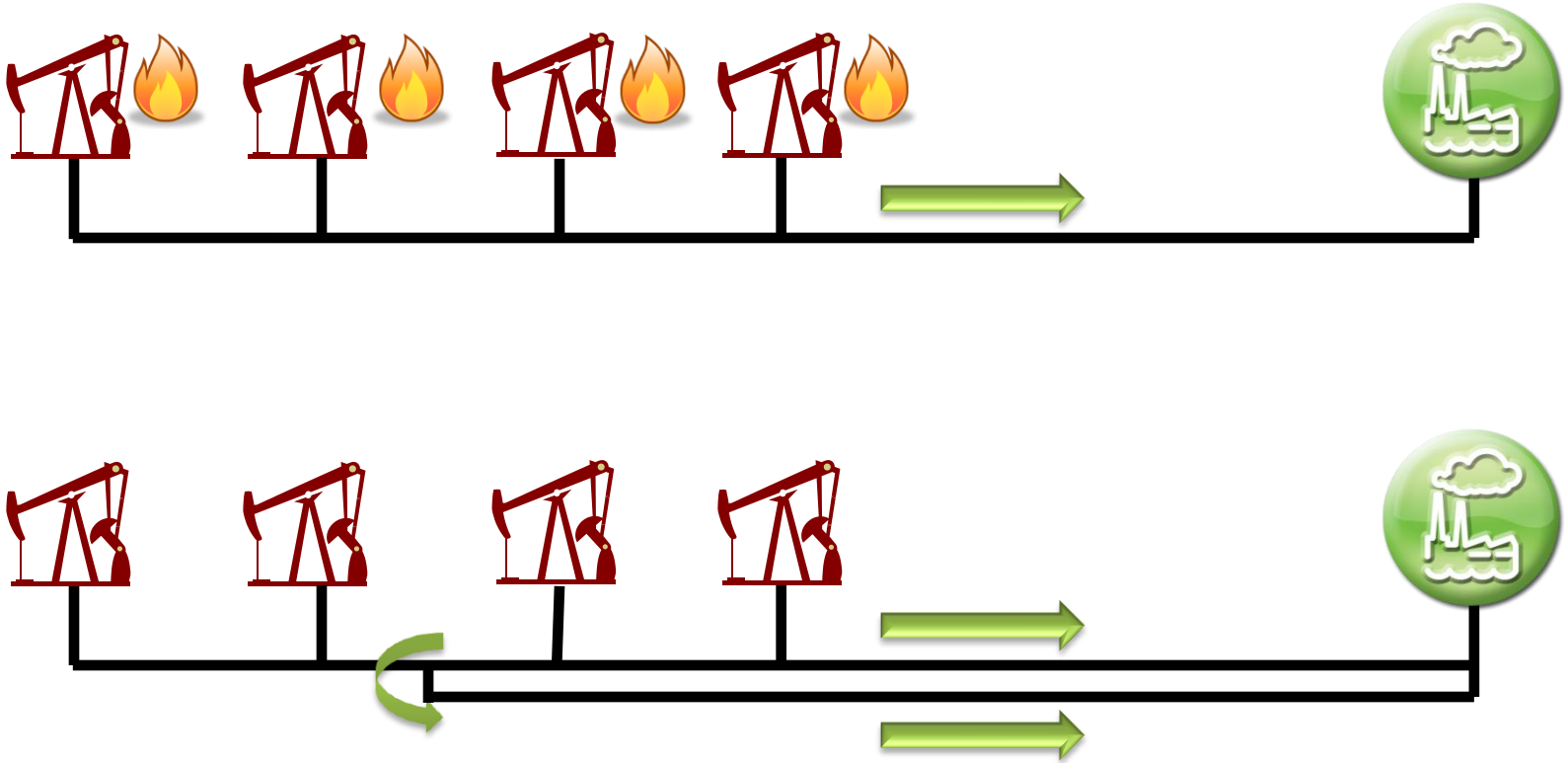


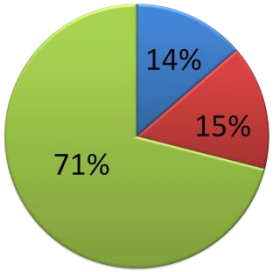




Capturing the 15%

Looping Existing Pipelines



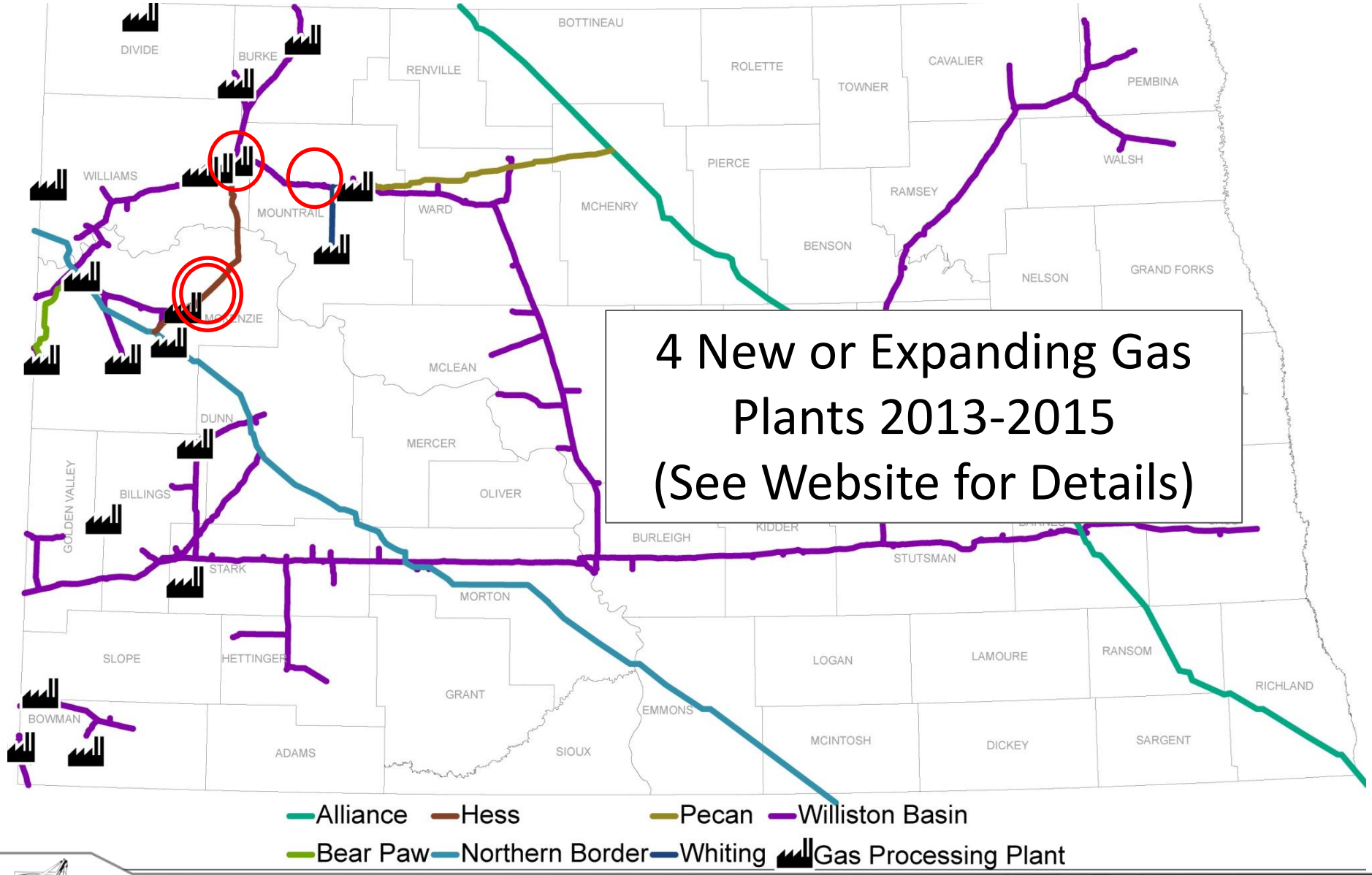


Capturing the 15%
Frequent Pigging

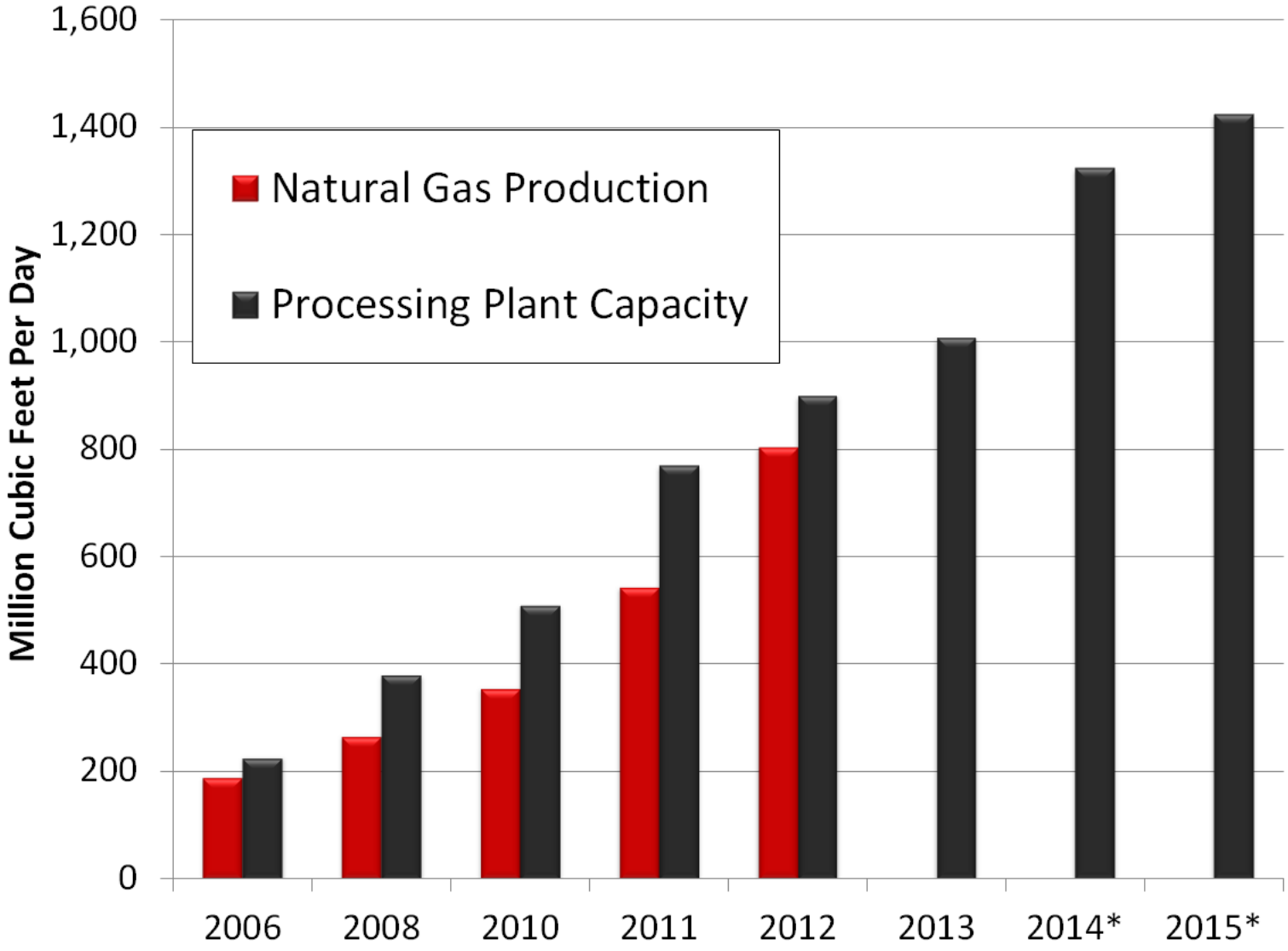
NGL buildup in gathering pipelines reduces area for gas to flow

More of an issue in winter months due to lower ground temperature causing more liquids to drop out

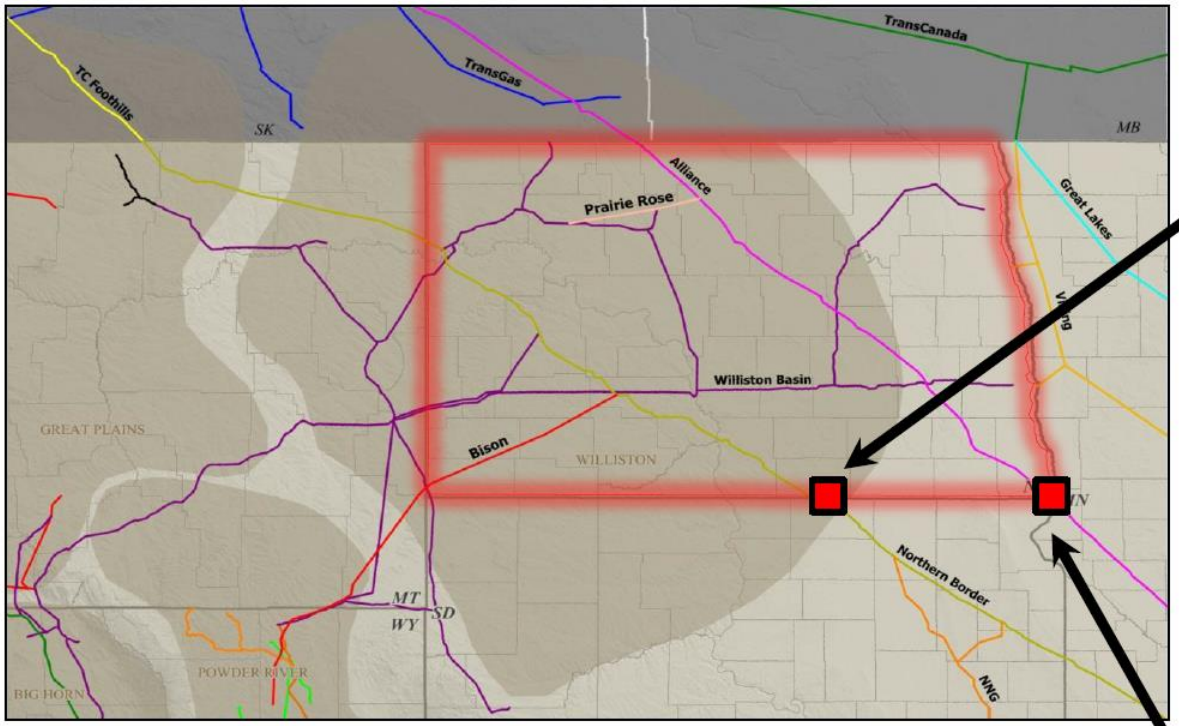
Natural Gas Processing & Transmission

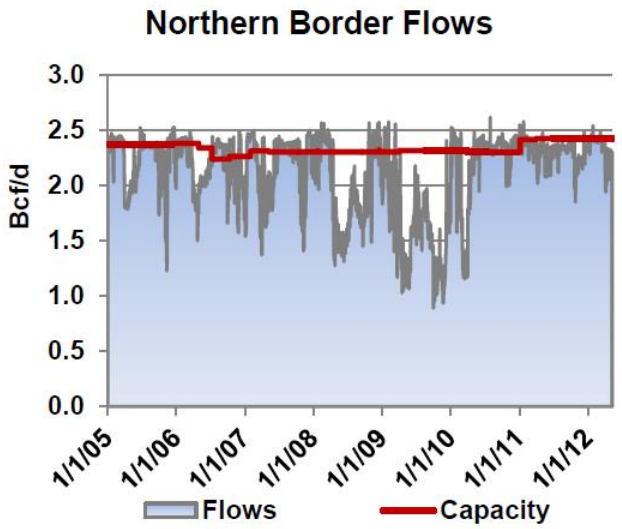


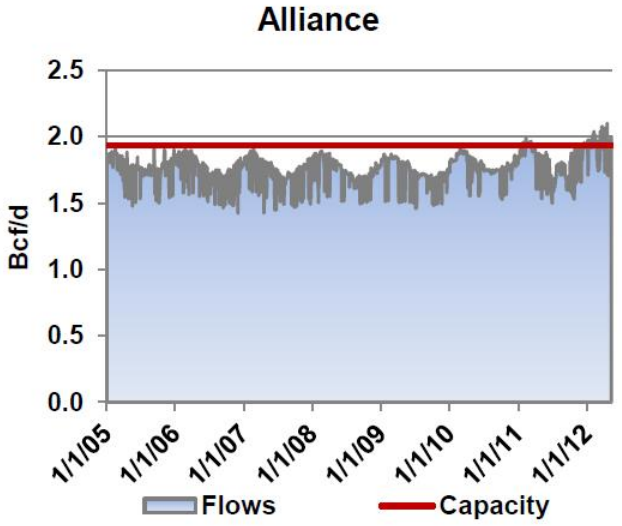
ND Gas Plant Capacity



Open Capacity Leaving N. Dakota Is Tight

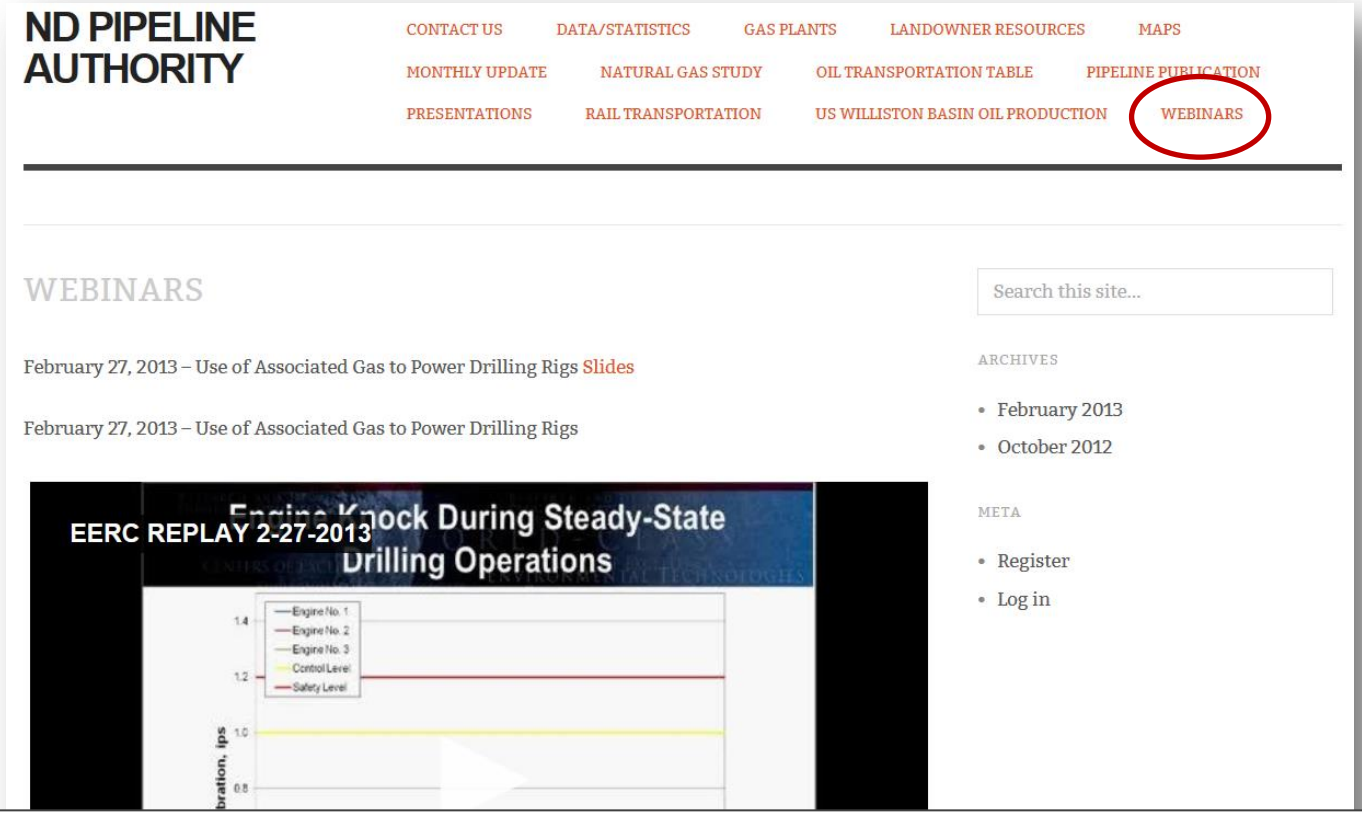






- **Northern Border and Alliance Serve As the Primary Routes to Transport Gas From the Region.**
- **Each Have Limited Open Mainline Capacity to Carry Additional Williston Supply.**

Flaring Alternatives

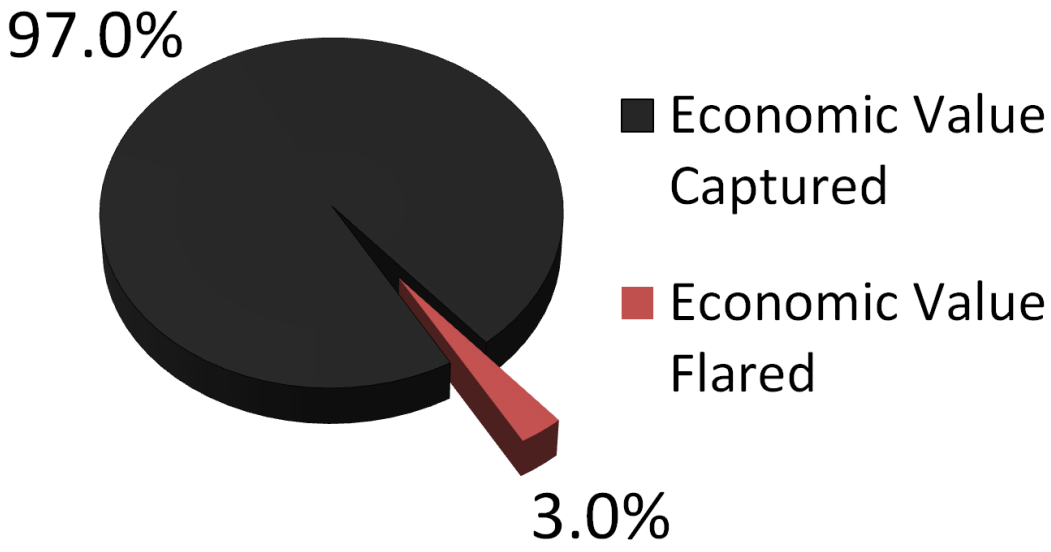


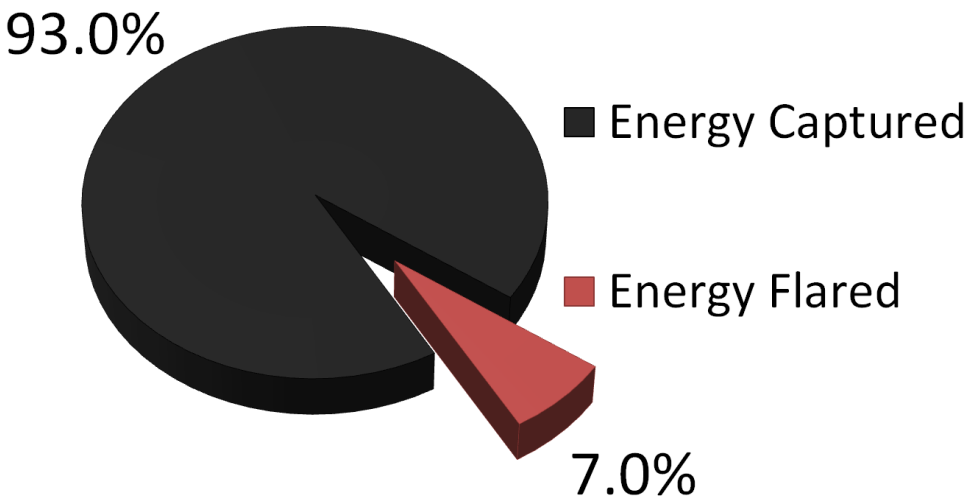
November 5, 2012 – EERC Associated Gas Use Study

December 18, 2012 – Natural Gas Flaring Alternatives (Company Presentations)

February 27, 2013 – EERC Use of Associated Gas to Power Drilling Rigs

ND Wellhead Recovery Estimates





Estimate Data/Assumptions: June 2013 Production

Oil Price of $86/bbl, Natural Gas/NGL Wellhead Price of $8.00/MCF

Contact Information

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