ND Pipeline Authority Web Seminar

Williston Basin and North American Infrastructure and Markets

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Director
North Dakota
Pipeline Authority

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Energy Policy
Research Foundation

Event audio will not begin until 10:00AM. Please be sure your computer audio is unmuted.

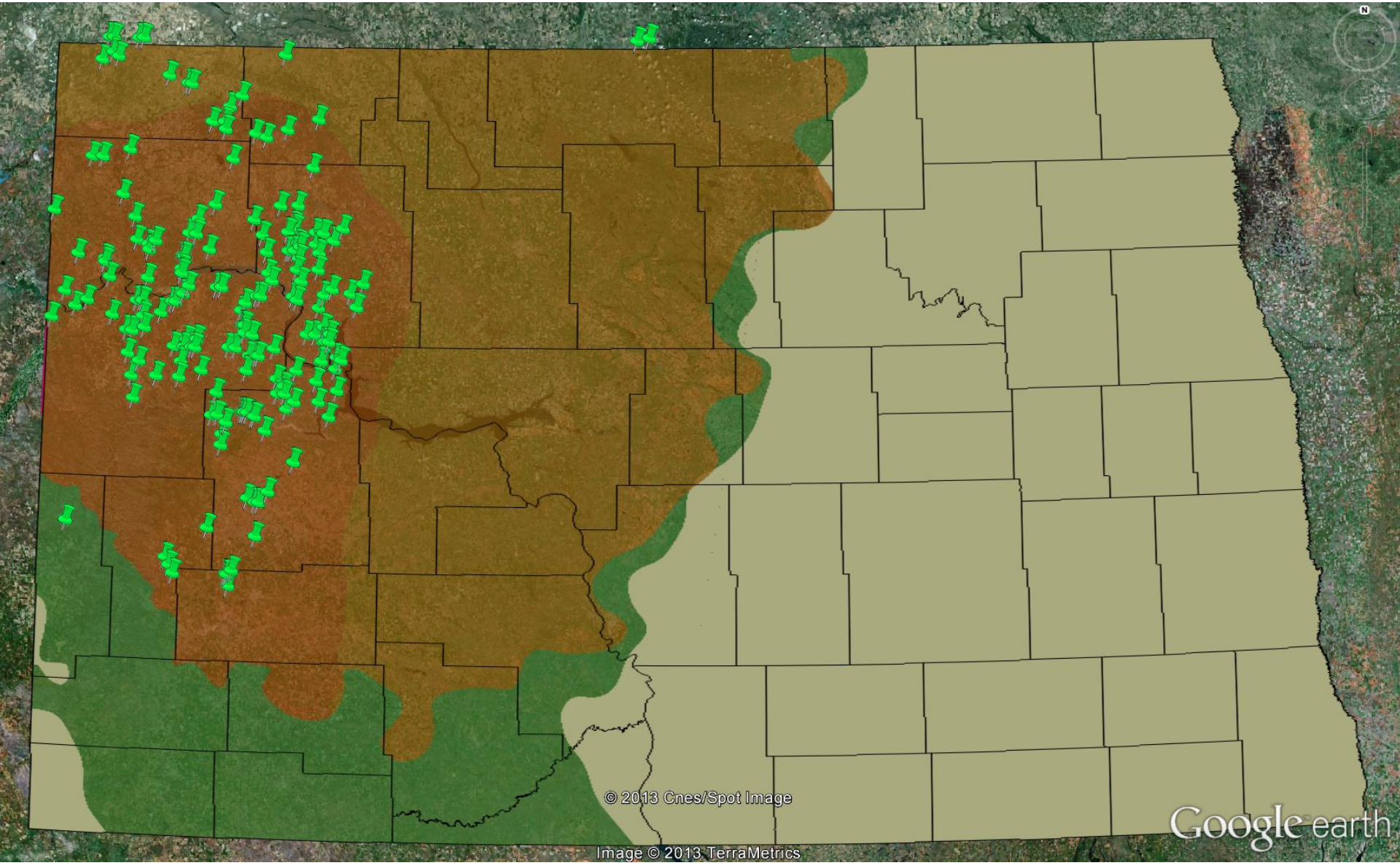
March 8, 2013

North Dakota Pipeline Authority

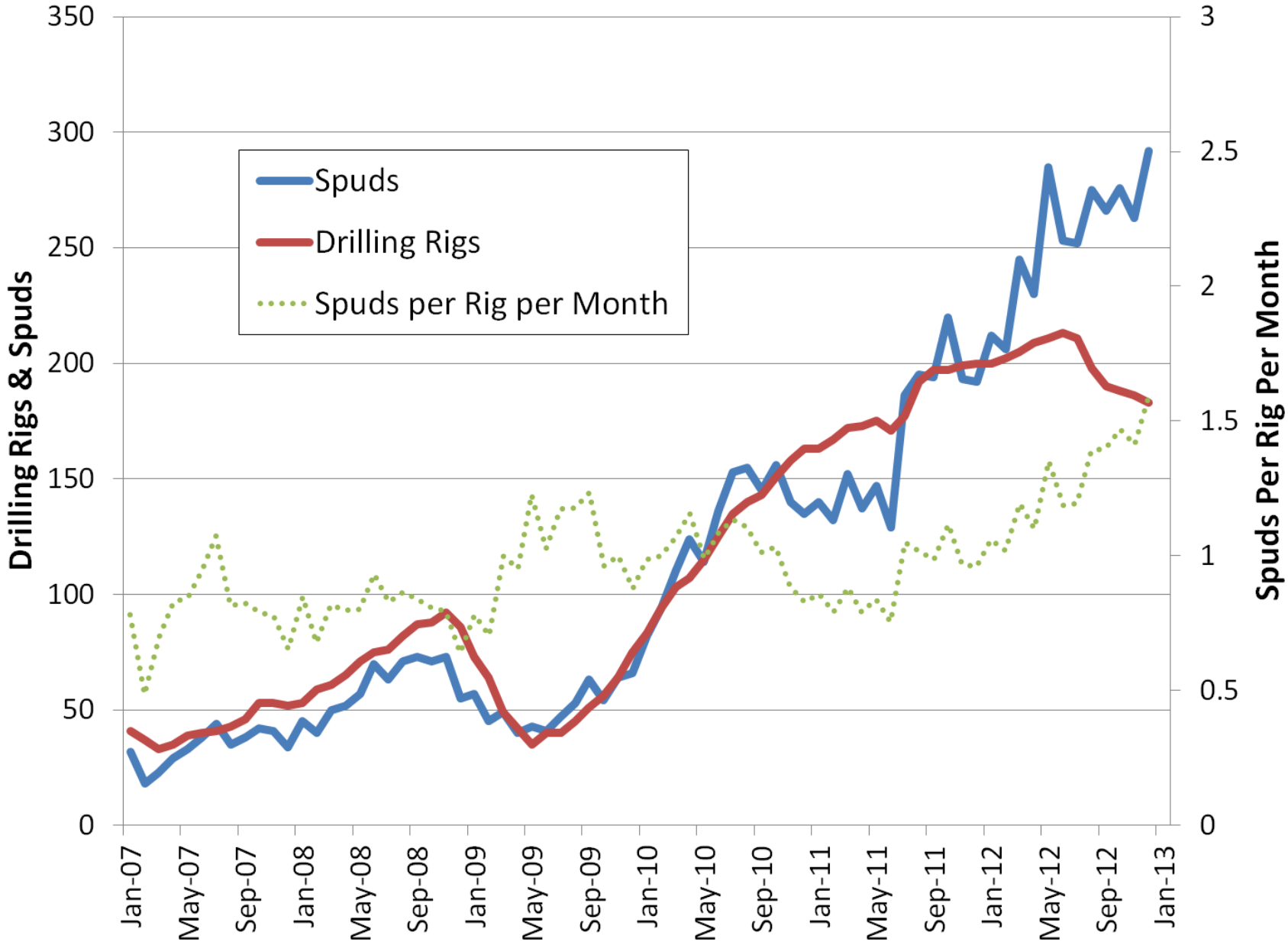
Justin J. Kringstad

March 8, 2013

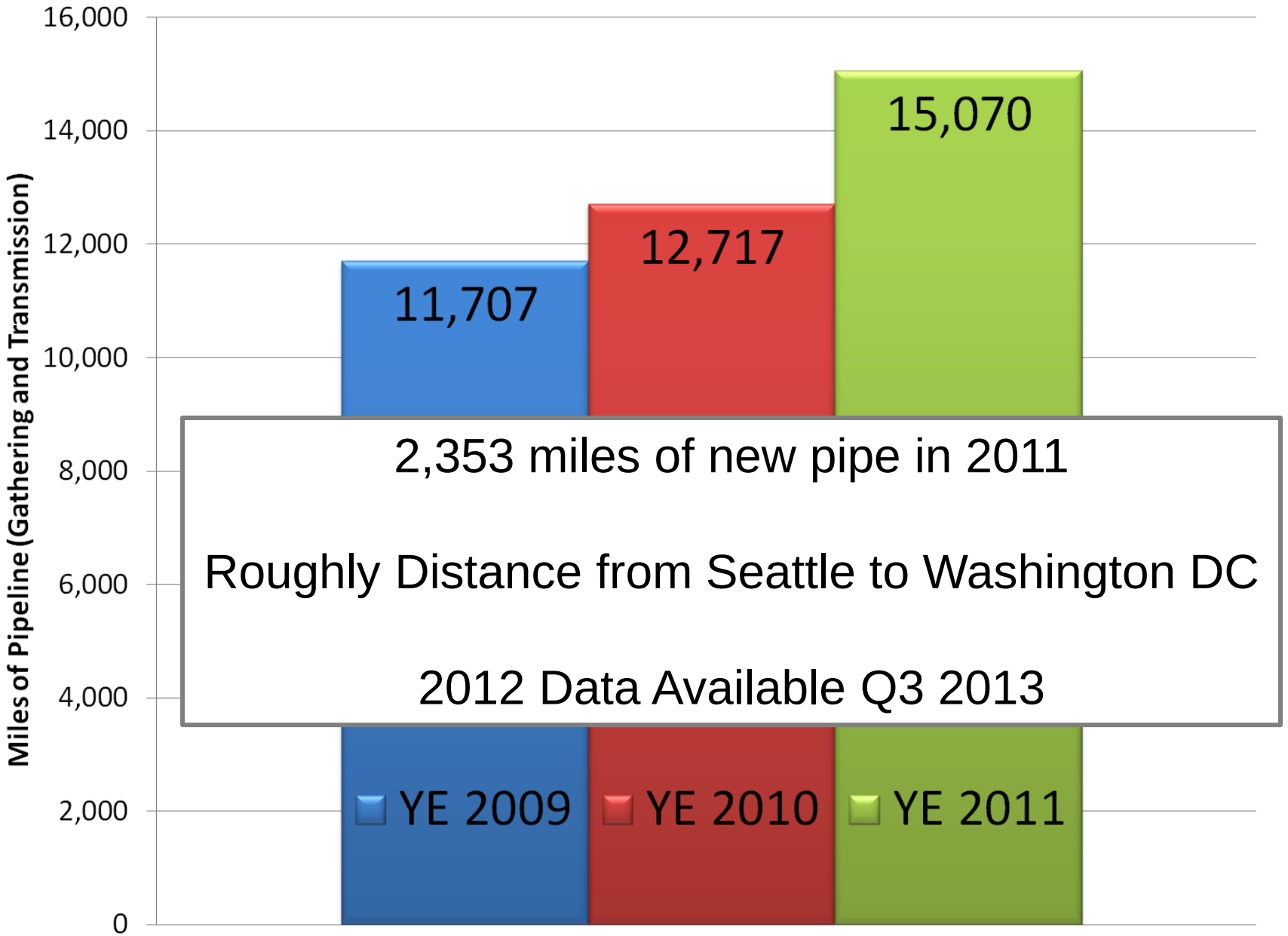
March 7, 2013 – 186 Drilling Rigs



ND Drilling Stats



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

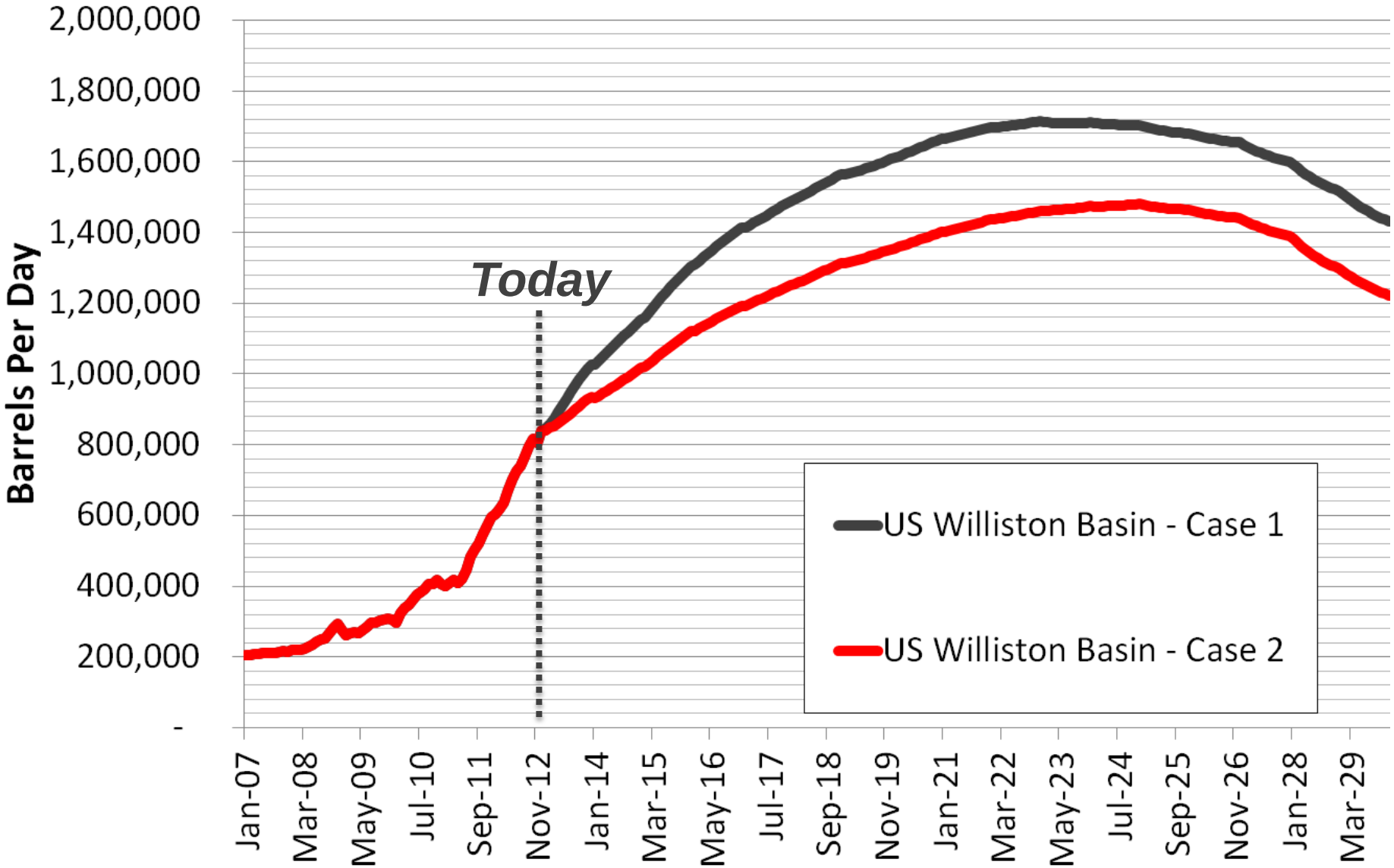
Crude Oil

Understanding production potential

Understanding current transportation dynamics and potential transportation constraints

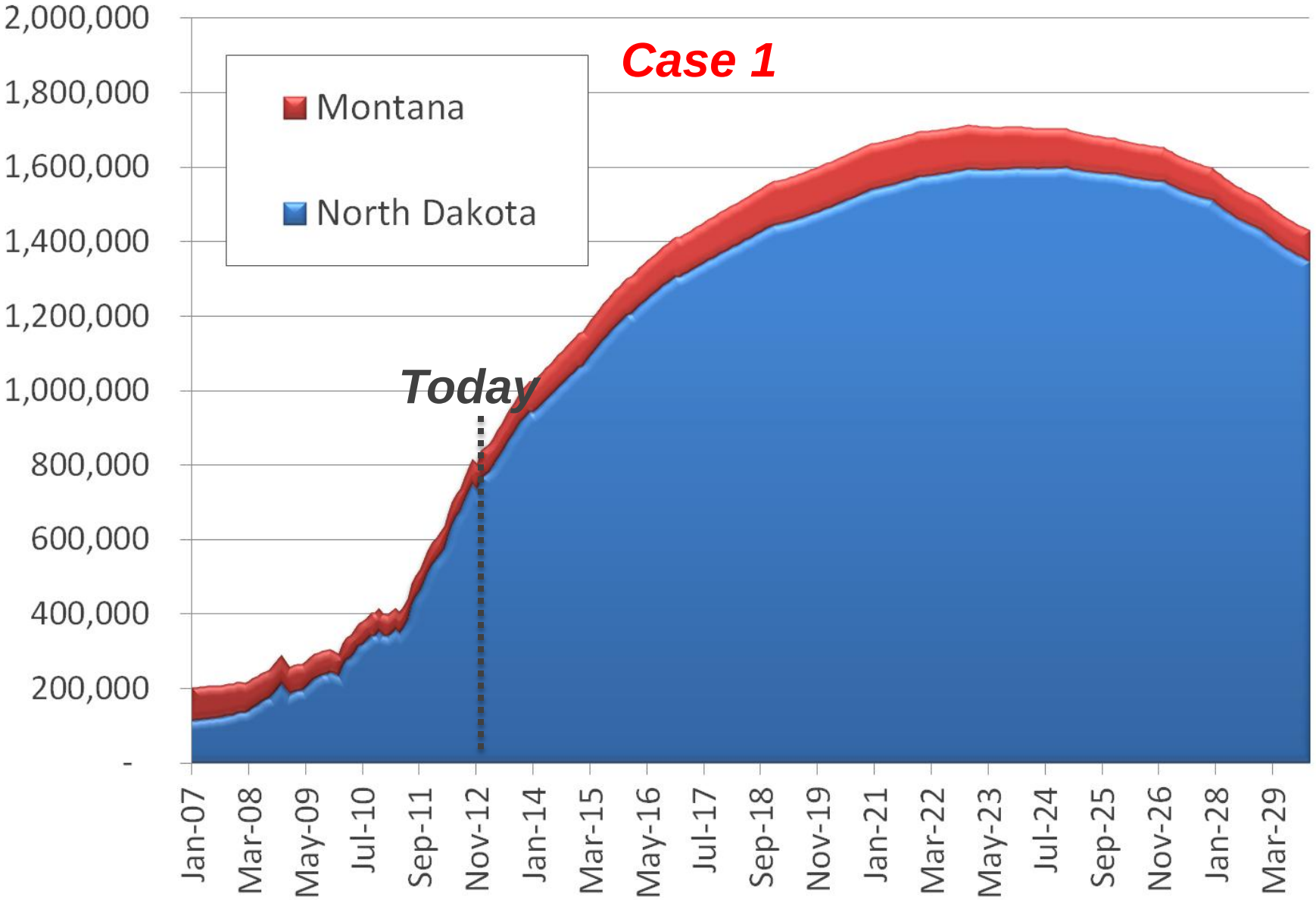
Understanding current and future market conditions

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.

Forecasting Williston Basin Oil Production, BOPD



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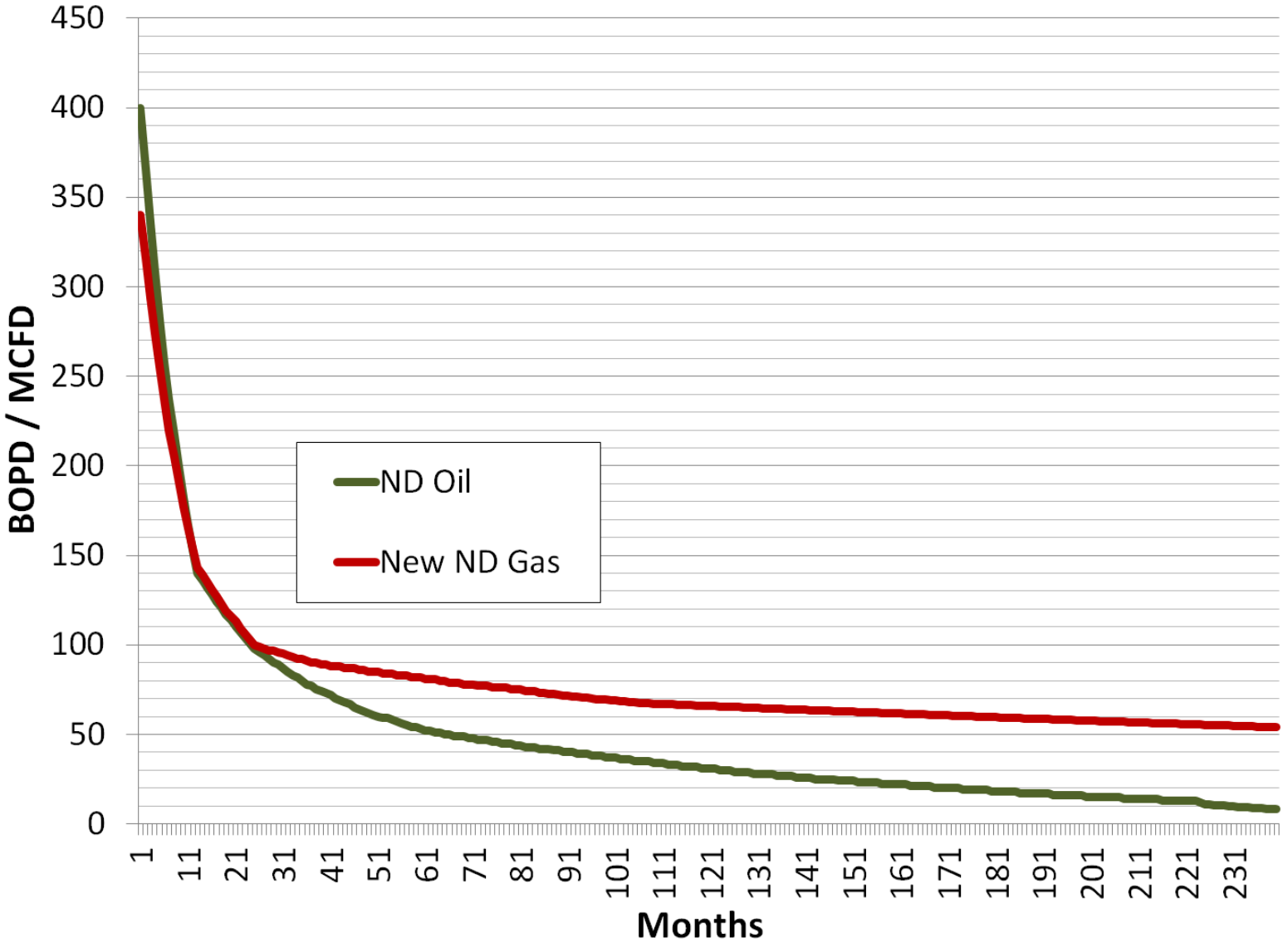
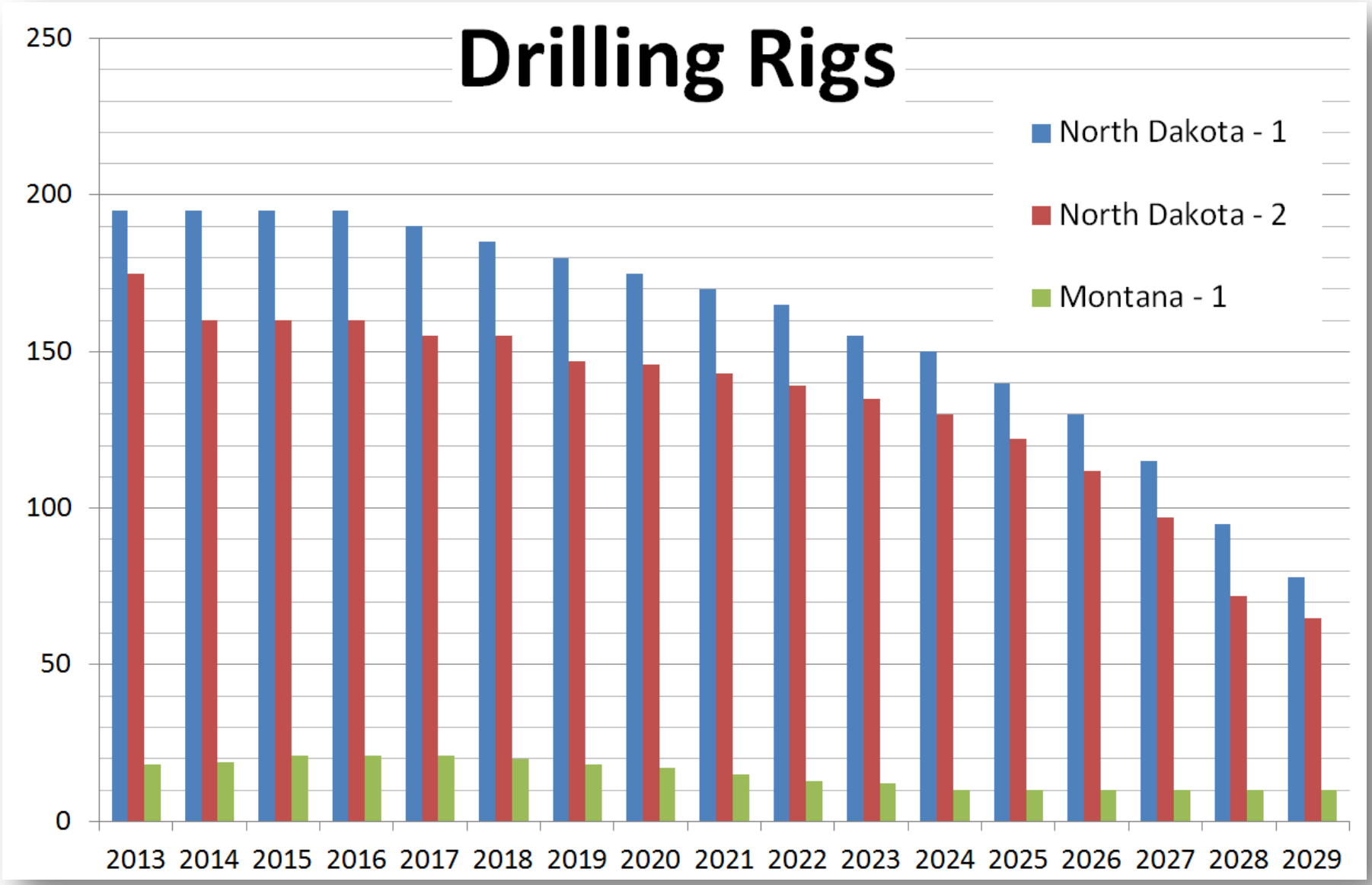
North Dakota Type Curves*

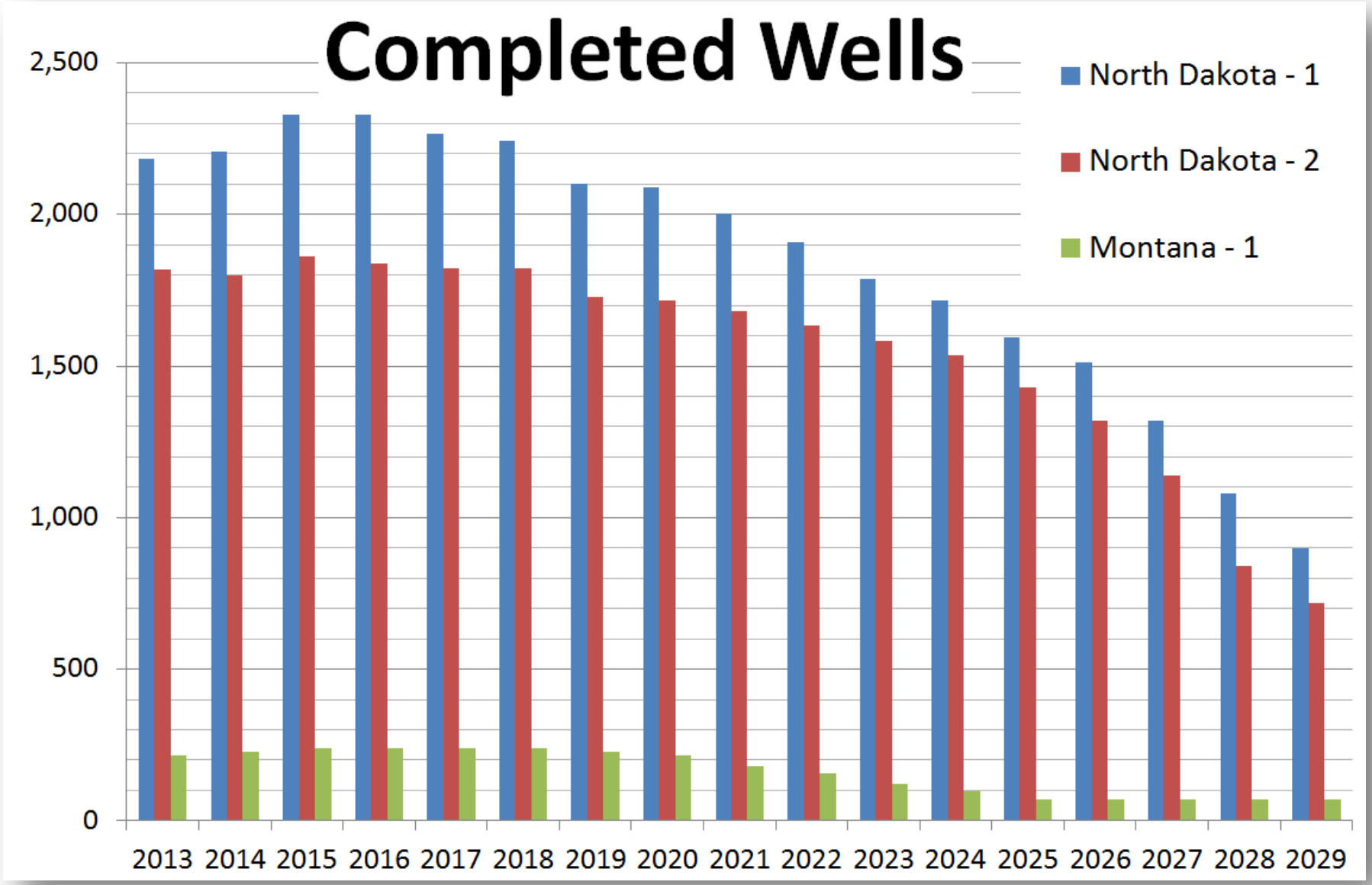


**Based on the July 2012 BENTEK Natural Gas Study*

Forecast Assumptions



Forecast Assumptions



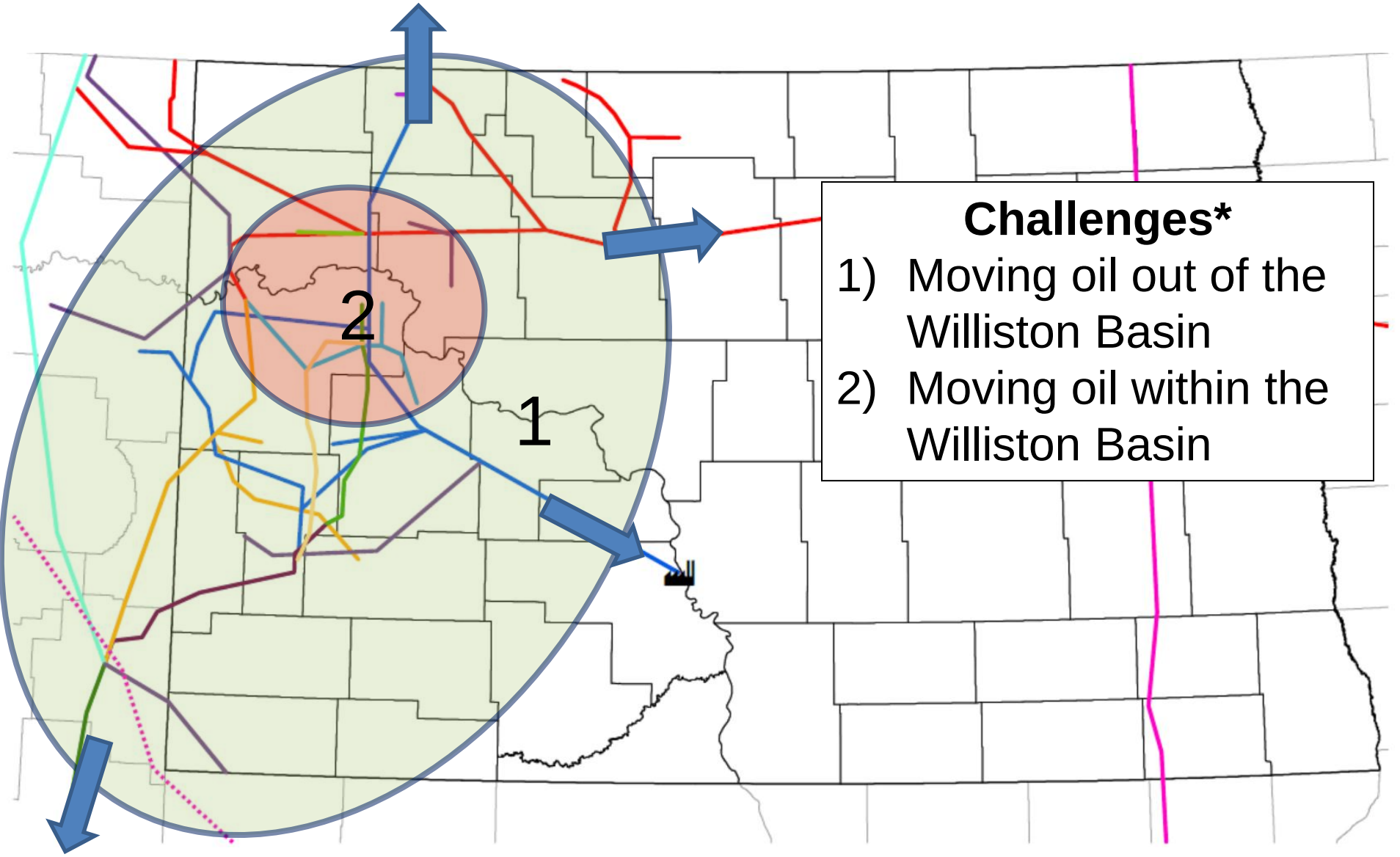
Crude Oil

Understanding production potential

Understanding current transportation dynamics and potential transportation constraints

Understanding current and future market conditions

North Dakota Crude Oil Pipelines

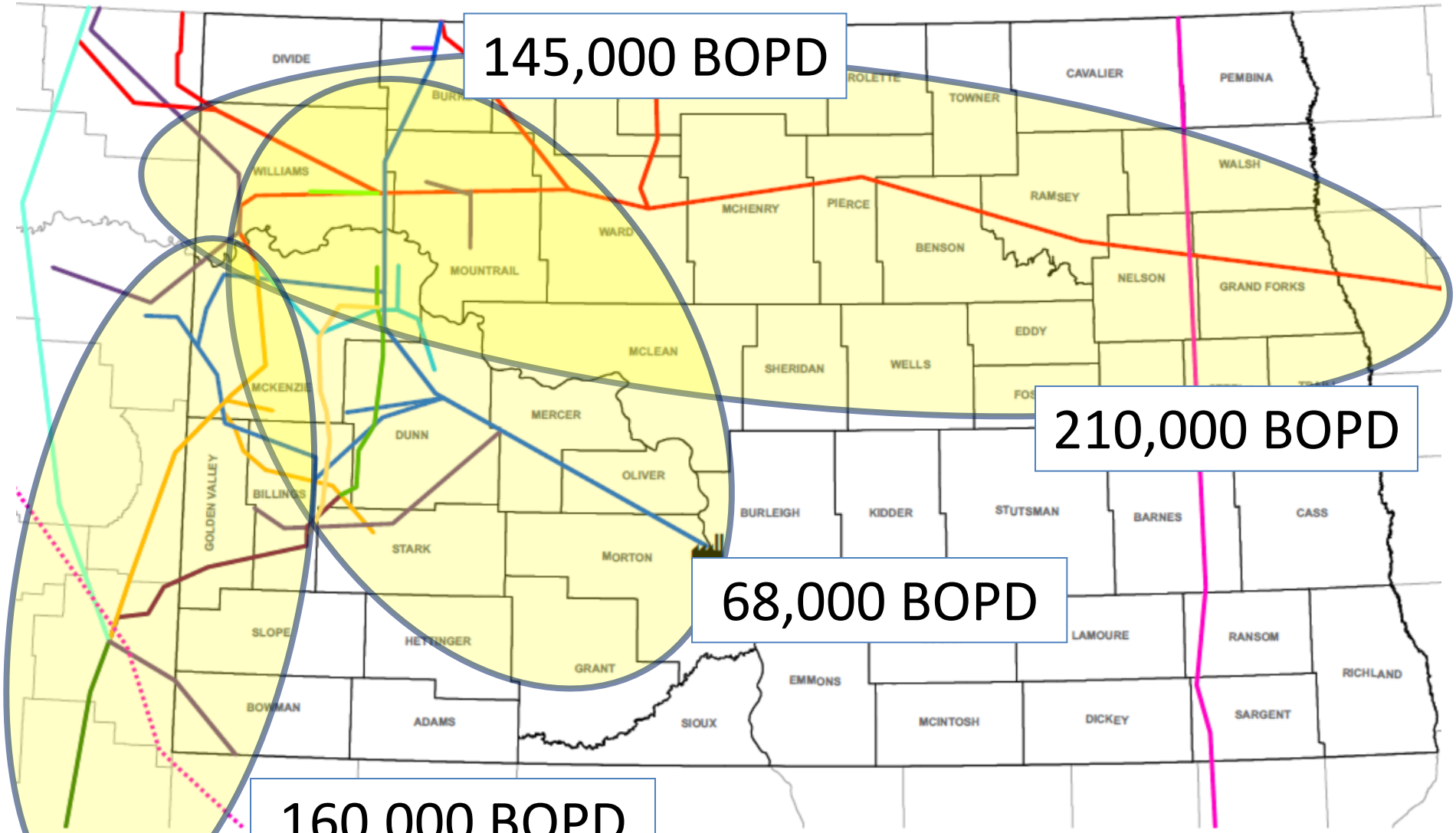


Challenges*

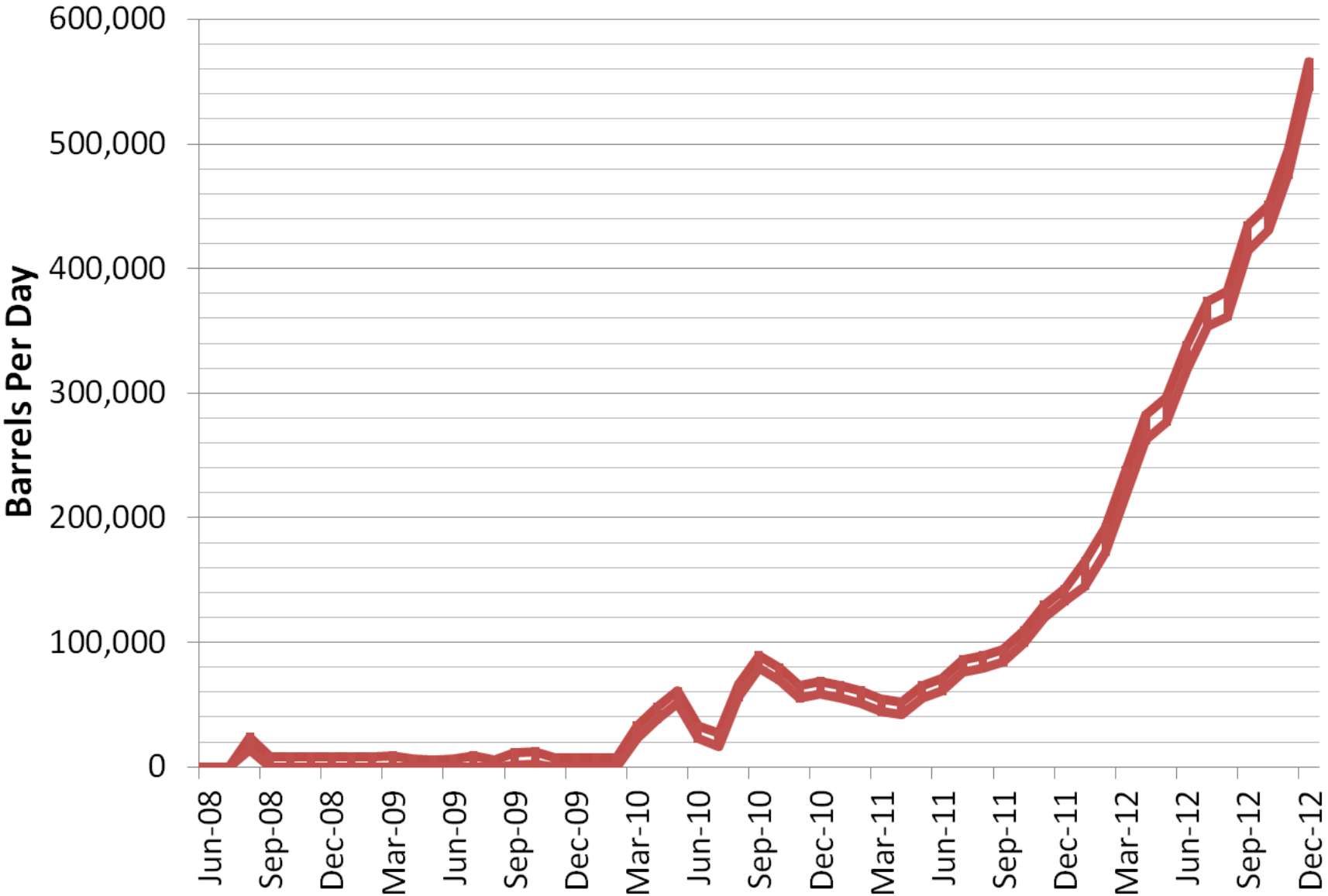
1) Moving oil out of the Williston Basin
2) Moving oil within the Williston Basin

*Modified from Bridger and Belle Fourche Pipelines

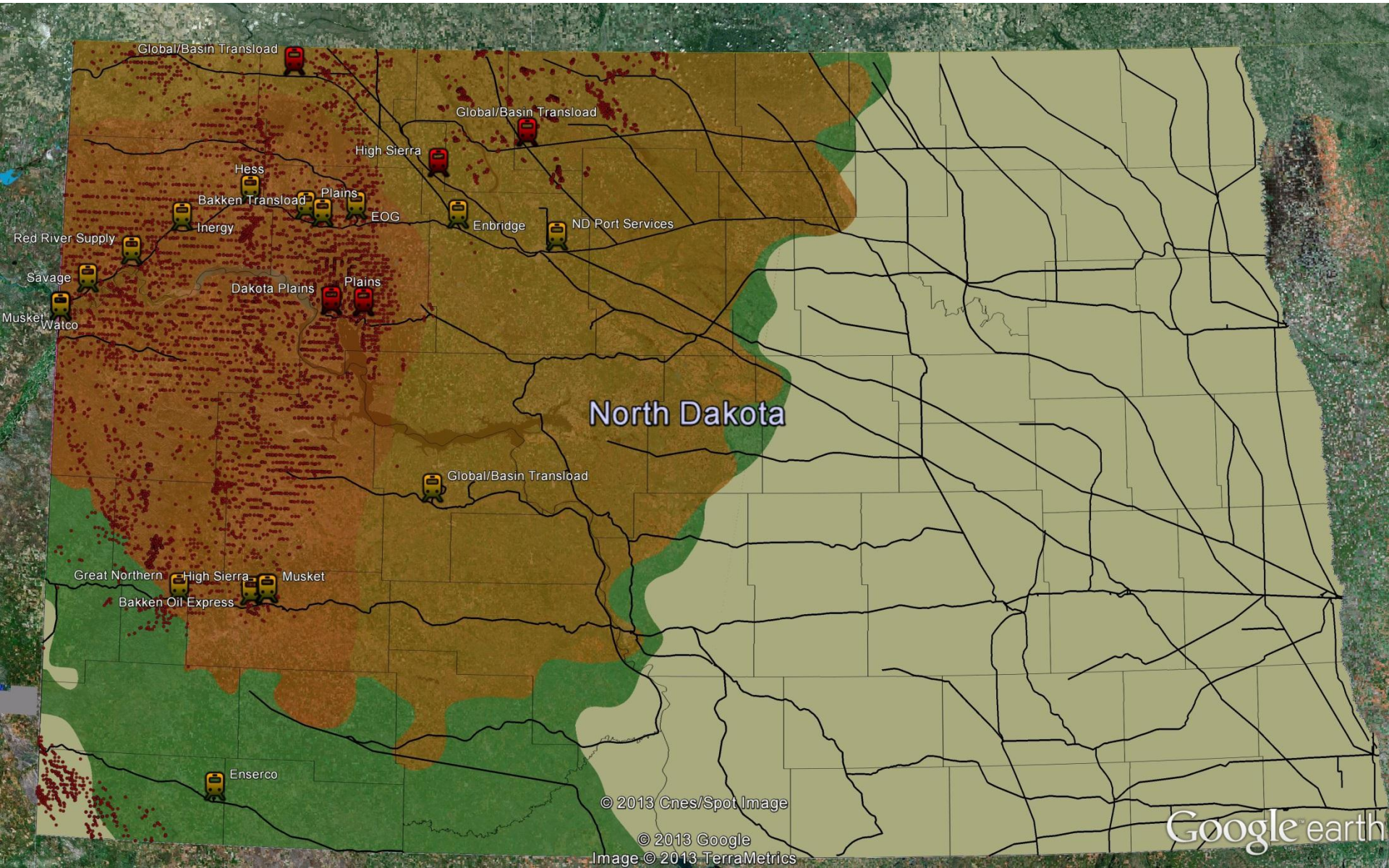
North Dakota Crude Oil Pipelines



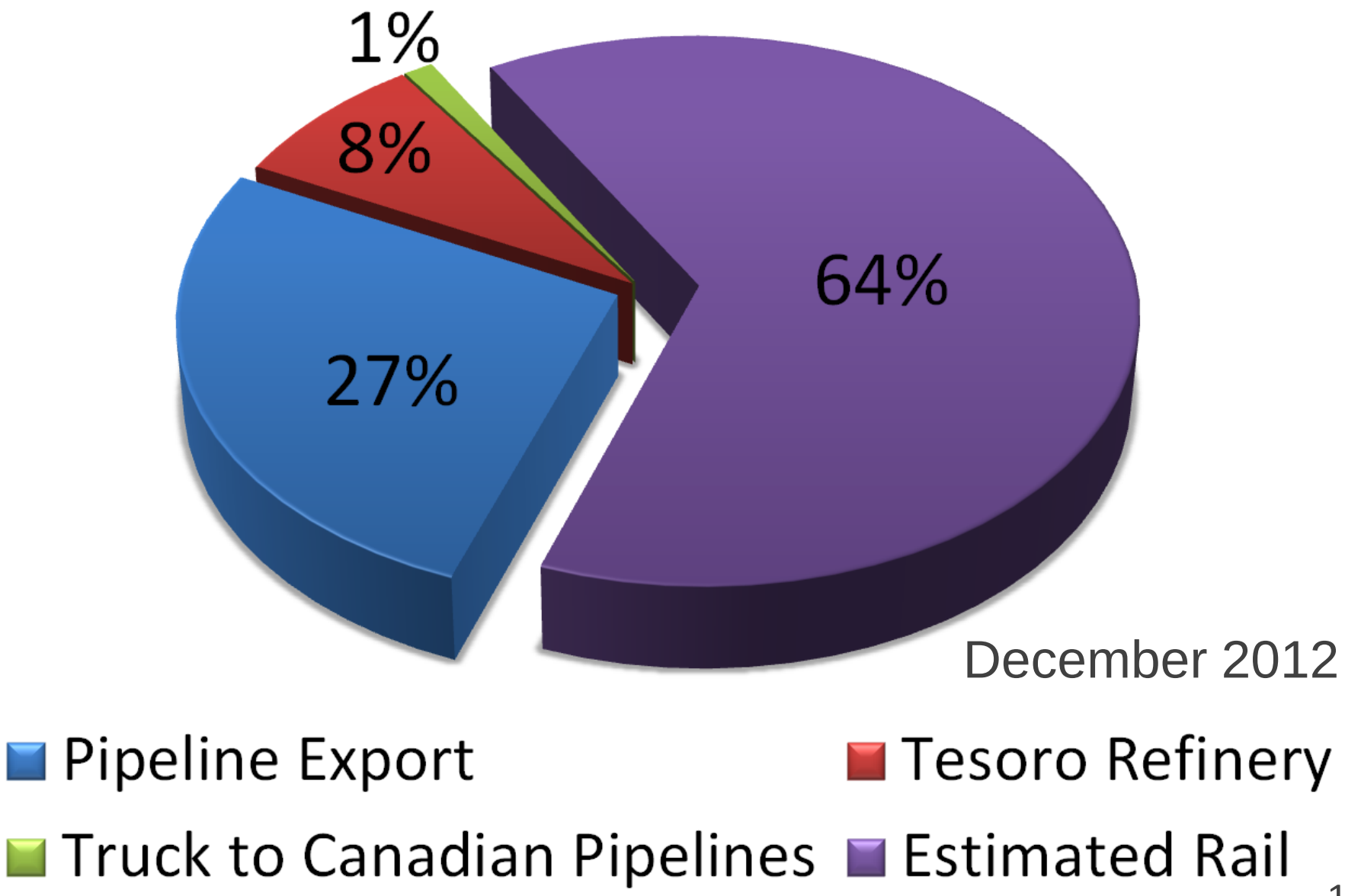
Estimated ND Rail Export Volumes



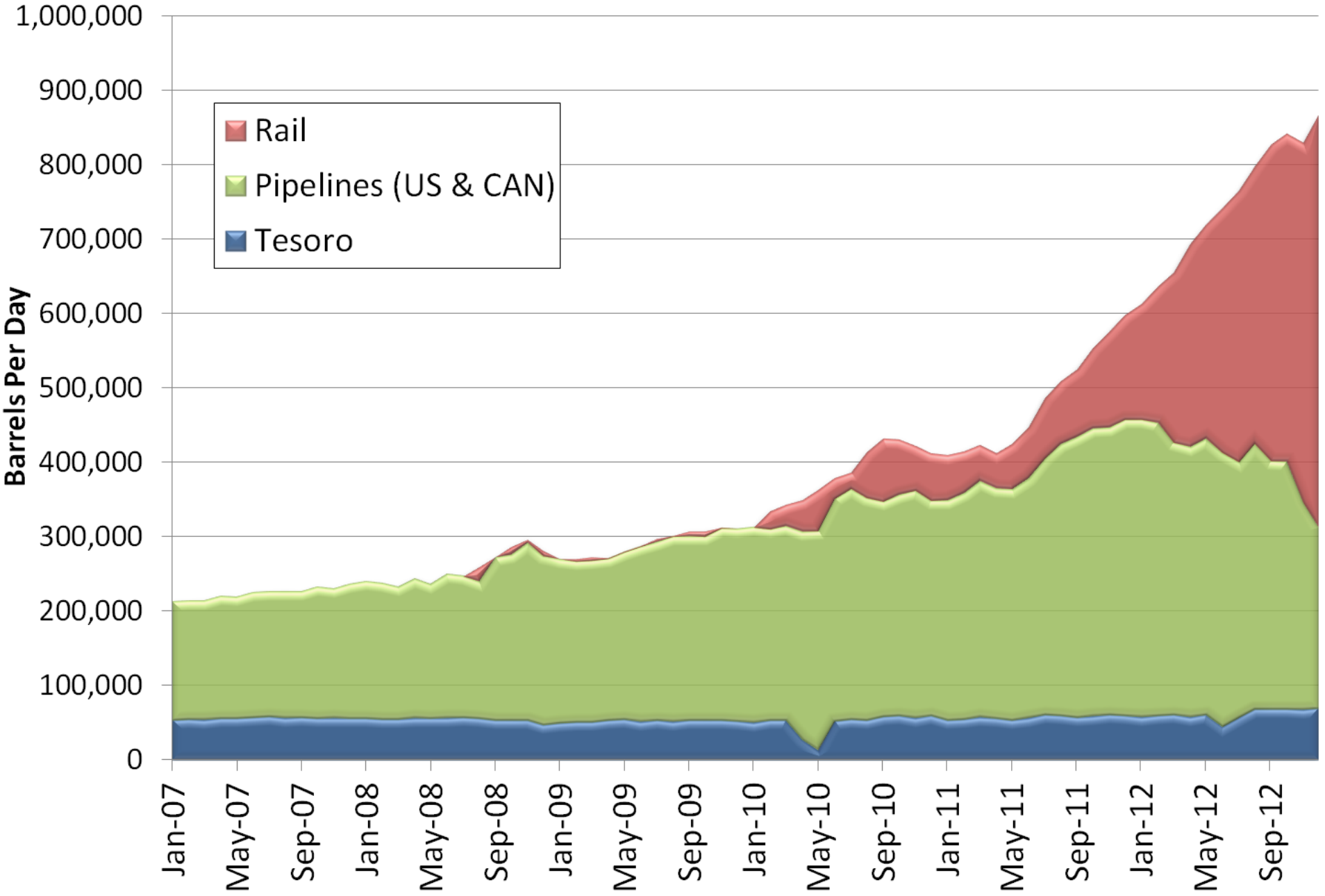
Oil Loading Rail Facilities



Williston Basin Oil Transportation

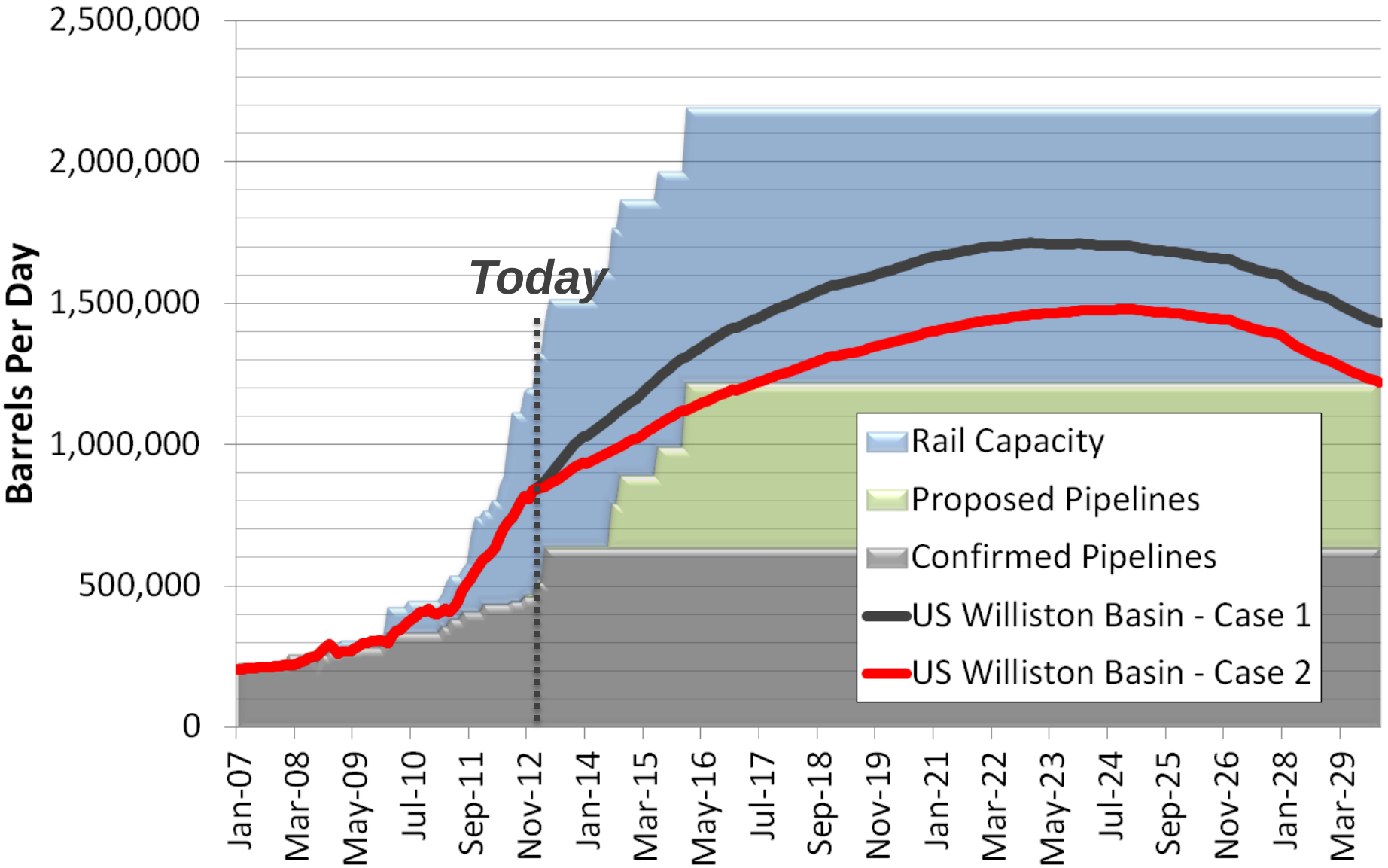


US Williston Basin Oil Transportation*



*Some data based on estimates or assumptions

Williston Basin Oil Production & Export Capacity, BOPD



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OIL TRANSPORTATION TABLE

This is a table used by the Pipeline Authority to create the charts seen in the presentations. If anyone notices an error, please contact the Pipeline Authority to get the table updated.

US Williston Basin Crude Oil Export Options - March 2013

Year End System Capacity, Barrels Per Day

	2007	2008	2009	2010	2011	2012	2013*	2014*	2015*	2016*
Butte Pipeline	92,000	104,000	118,000	118,000	145,000	160,000	160,000	160,000	160,000	160,000
Butte Loop* (Late 2014)	-	-	-	-	-	-	-	110,000	110,000	110,000
Tesoro Mandan Refinery (June/July 2012)	58,000	58,000	58,000	58,000	58,000	68,000	68,000	68,000	68,000	68,000
Enbridge Mainline North Dakota	80,000	110,000	110,000	161,500	185,000	210,000	210,000	210,000	210,000	210,000
Enbridge Bakken Expansion Program (Q1-11/Q1-13)	-	-	-	-	25,000	25,000	145,000	145,000	145,000	145,000
Plains Bakken North (Q2 2013, Up to 75,000 BOPD)	-	-	-	-	-	-	50,000	50,000	50,000	50,000
High Prairie Pipeline*	-	-	-	-	-	-	-	150,000	150,000	150,000
Enbridge Sandpiper* (Q1 2016)	-	-	-	-	-	-	-	-	-	225,000
TransCanada Keystone XL* (2015)	-	-	-	-	-	-	-	-	100,000	100,000
Pipeline Only Total	**230,000**	**272,000**	**286,000**	**337,500**	**413,000**	**463,000**	**633,000**	**893,000**	**993,000**	**1,218,000**
EOG Rail, Stanley, ND (Up to 90,000 BOPD)	-	-	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000
Dakota Plains, New Town, ND	-	-	-	20,000	40,000	40,000	40,000	40,000	40,000	40,000
Various Sites in Minot, Dore, Donnybrook, Gascoyne, and Stampede (est)	-	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
Inergy COLT Hub, Epping, ND (Q2 2012)	-	-	-	-	-	120,000	120,000	120,000	120,000	120,000
Hess Rail, Tioga, ND (Up to 120,000 BOPD)	-	-	-	-	-	60,000	60,000	60,000	60,000	60,000
Bakken Oil Express, Dickinson, ND	-	-	-	-	100,000	100,000	100,000	100,000	100,000	100,000
Savage Services, Trenton, ND (Q2 2012 Unit Trains)	-	-	-	-	-	90,000	90,000	90,000	90,000	90,000
Enbridge, Berthold, ND (Q4 2012)	-	-	-	-	-	10,000	80,000	80,000	80,000	80,000
Great Northern Midstream, Fryburg, ND (Q1 2013)	-	-	-	-	-	-	60,000	60,000	60,000	60,000
Musket, Dore, ND (Q2 2012)	-	-	-	-	-	60,000	60,000	60,000	60,000	60,000
Plains, Ross, ND	-	-	-	-	20,000	20,000	65,000	65,000	65,000	65,000
Plains - Van Hook, New Town, ND	-	-	-	-	-	35,000	65,000	65,000	65,000	65,000
Global/Basin Transload, Zap, ND (Estimate Not Confirmed)	-	-	-	-	20,000	40,000	40,000	40,000	40,000	40,000
Northstar Transloading - Dore/Fairview (Q1 2014)	-	-	-	-	-	-	-	100,000	100,000	100,000
Rail Only Total	-	30,000	95,000	115,000	275,000	670,000	875,000	975,000	975,000	975,000
All Transportation Total	**230,000**	**302,000**	**381,000**	**452,500**	**688,000**	**1,133,000**	**1,508,000**	**1,868,000**	**1,968,000**	**2,193,000**

*Project Still in the Review or Proposed Phase

Click on table to enlarge

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META

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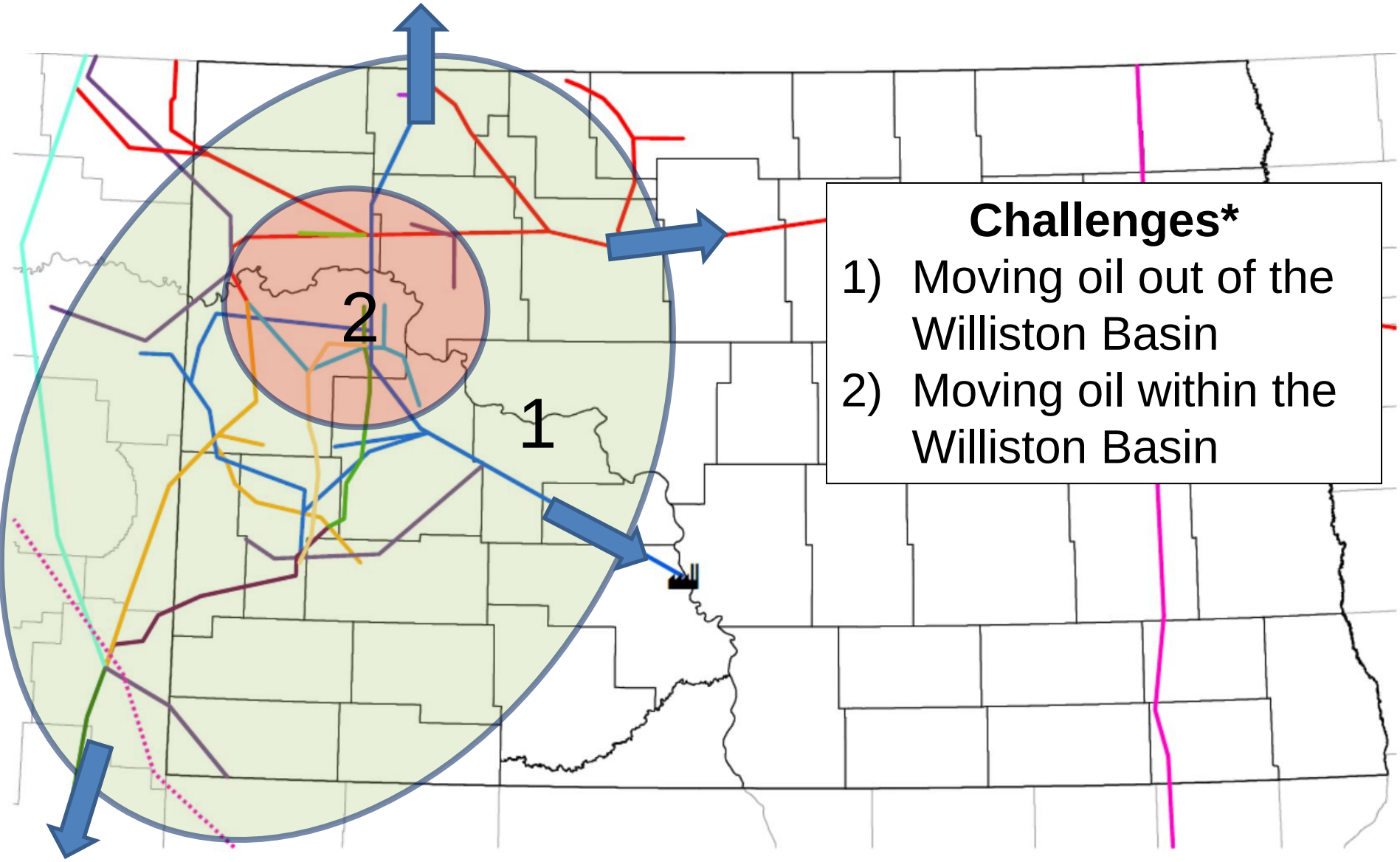
North Dakota Crude Oil Pipelines

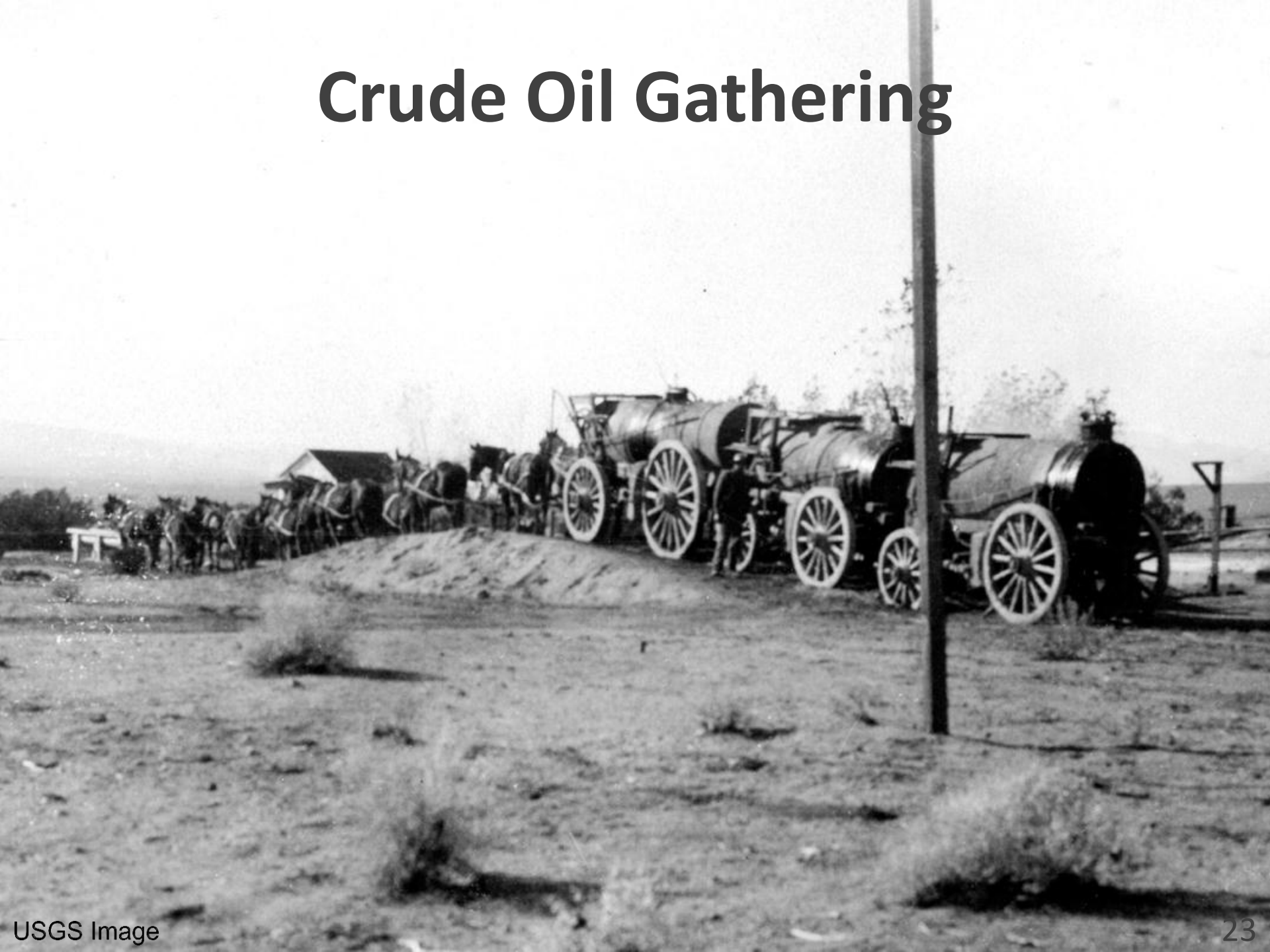


Challenges*

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

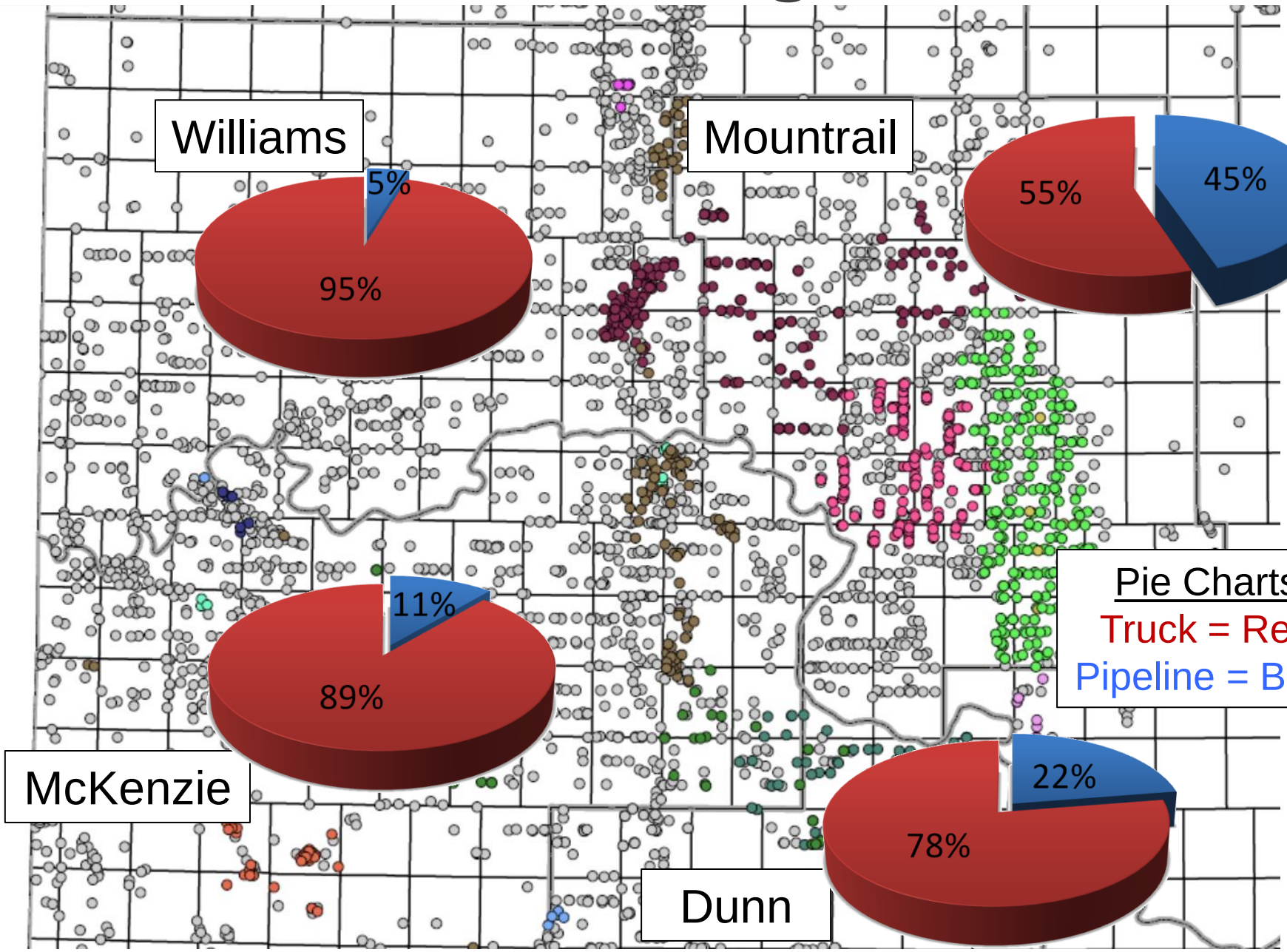
*Modified from Bridger and Belle Fourche Pipelines

Crude Oil Gathering



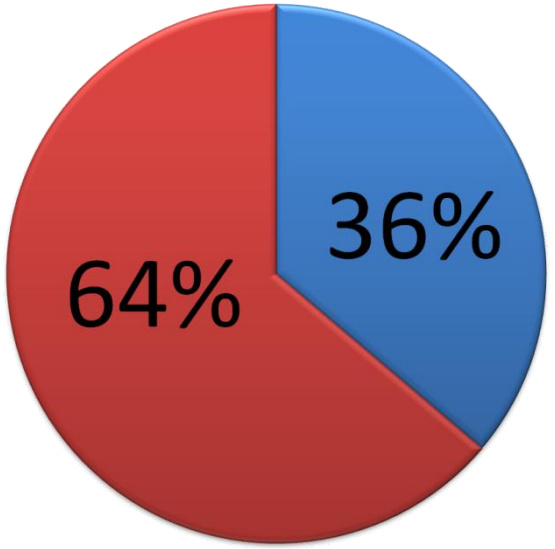
USGS Image

ND Crude Gathering – Feb 2012

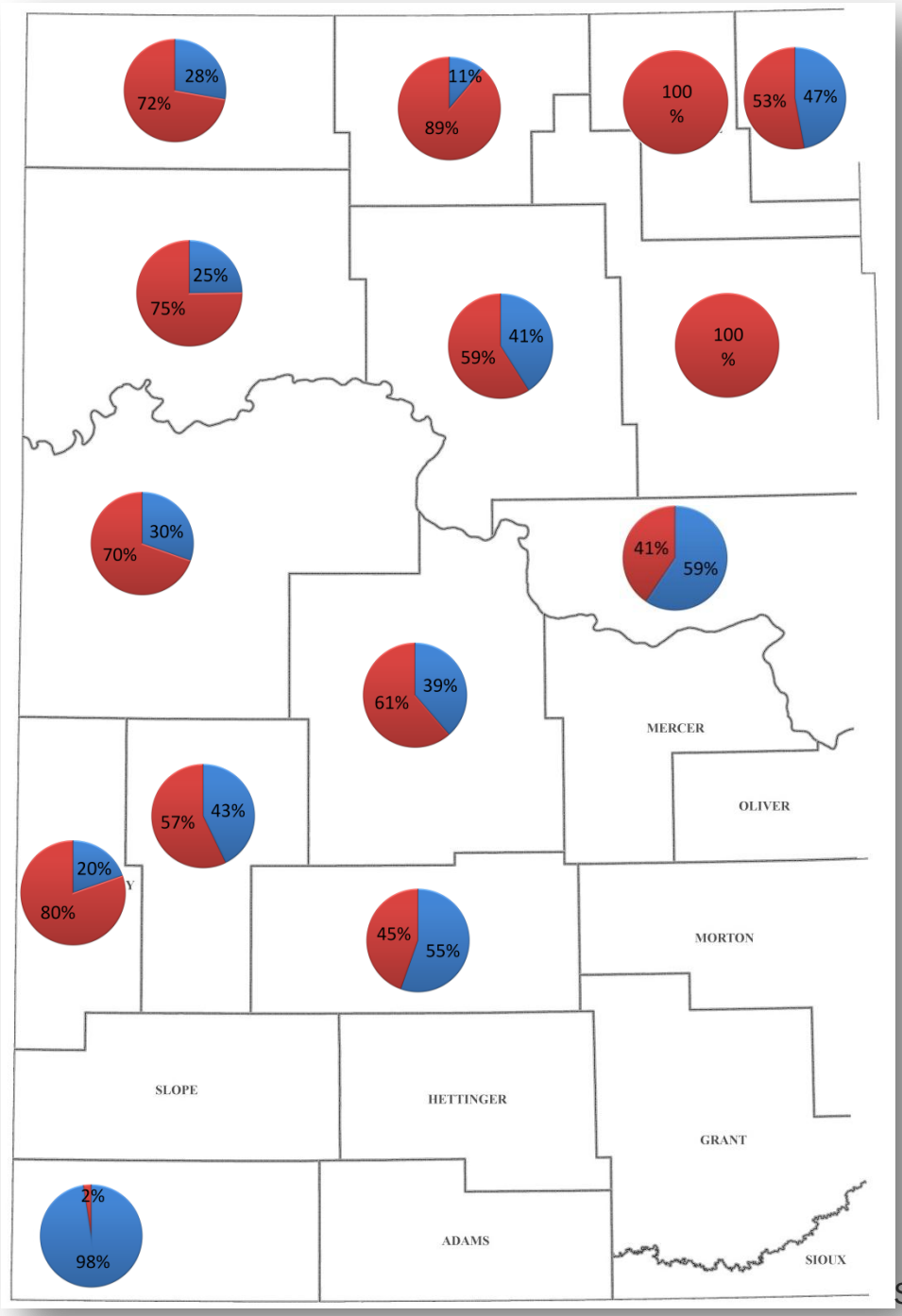


ND Crude Oil Gathering

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

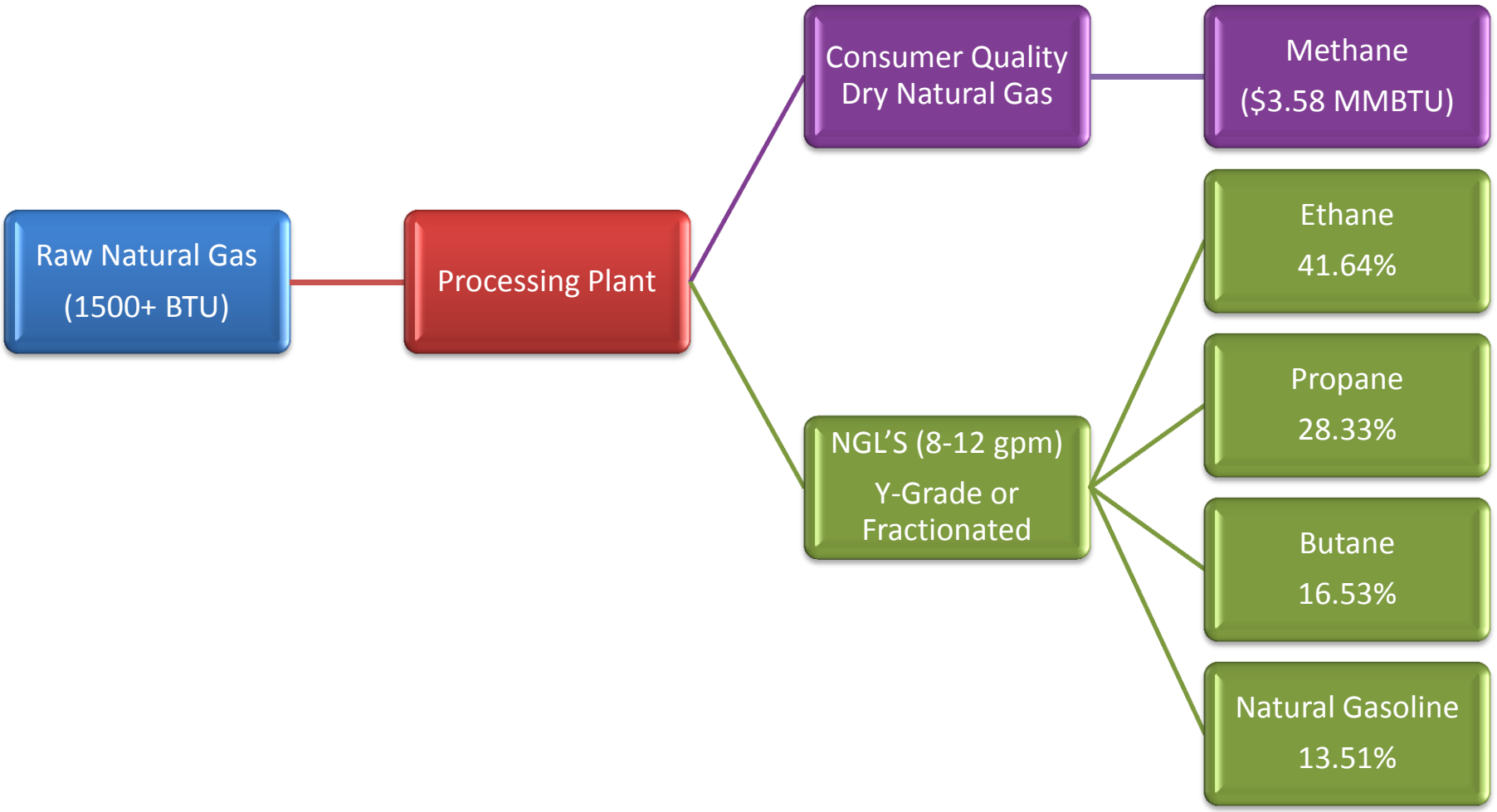
Understanding current and future market conditions…(EPRINC PPT)

Natural Gas

Keys to Reducing Flaring

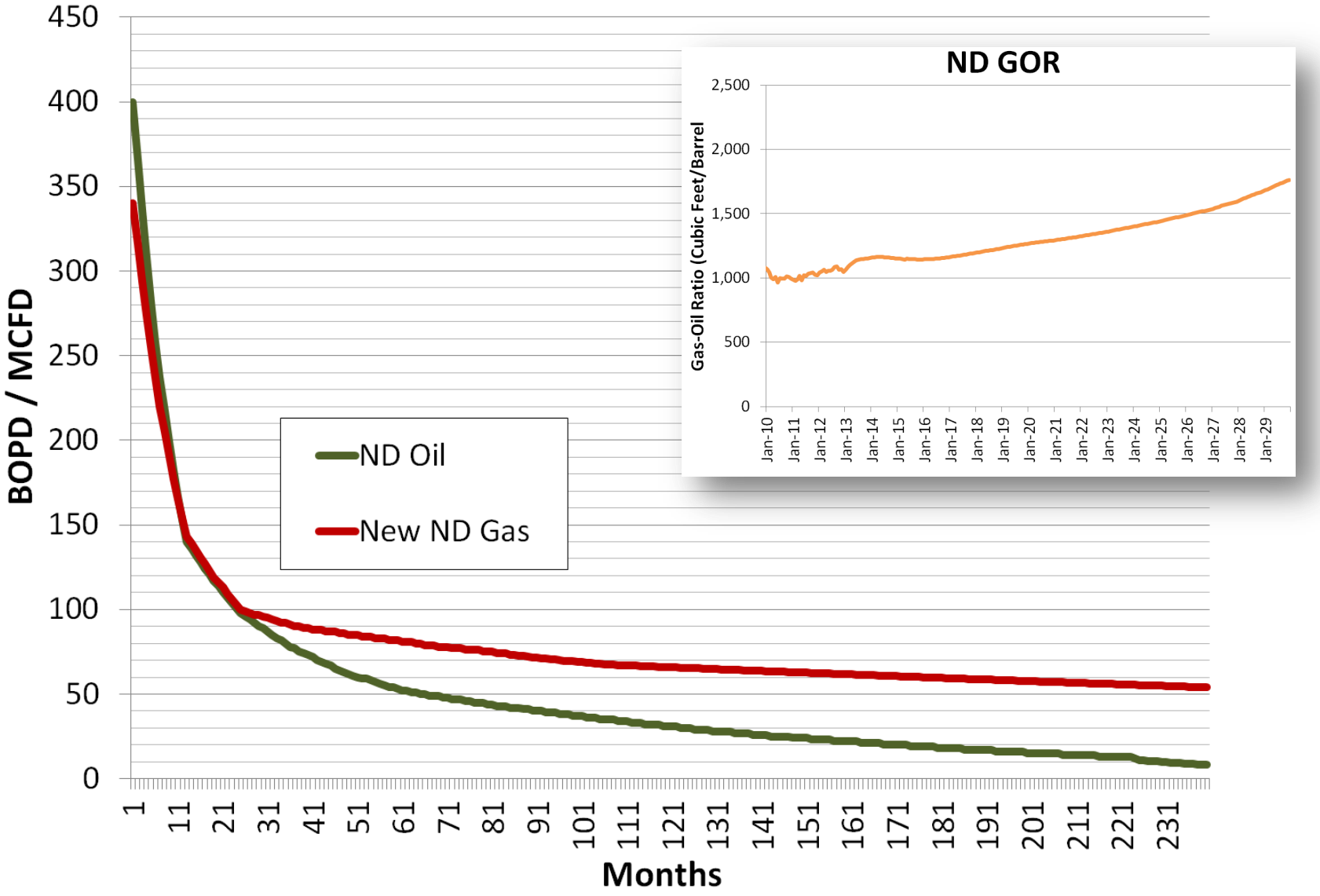
1. *Economics Must Work*
2. *Understanding Production Potential*
3. *New Gas Gathering Pipelines*
4. *Enhancing Existing Gathering Pipelines*
5. *Adequate Gas Processing Capacity*
6. *Adequate Interstate Pipeline Capacity*
7. *Flaring Alternatives (Short & Long Term)*

Rich Bakken Natural Gas



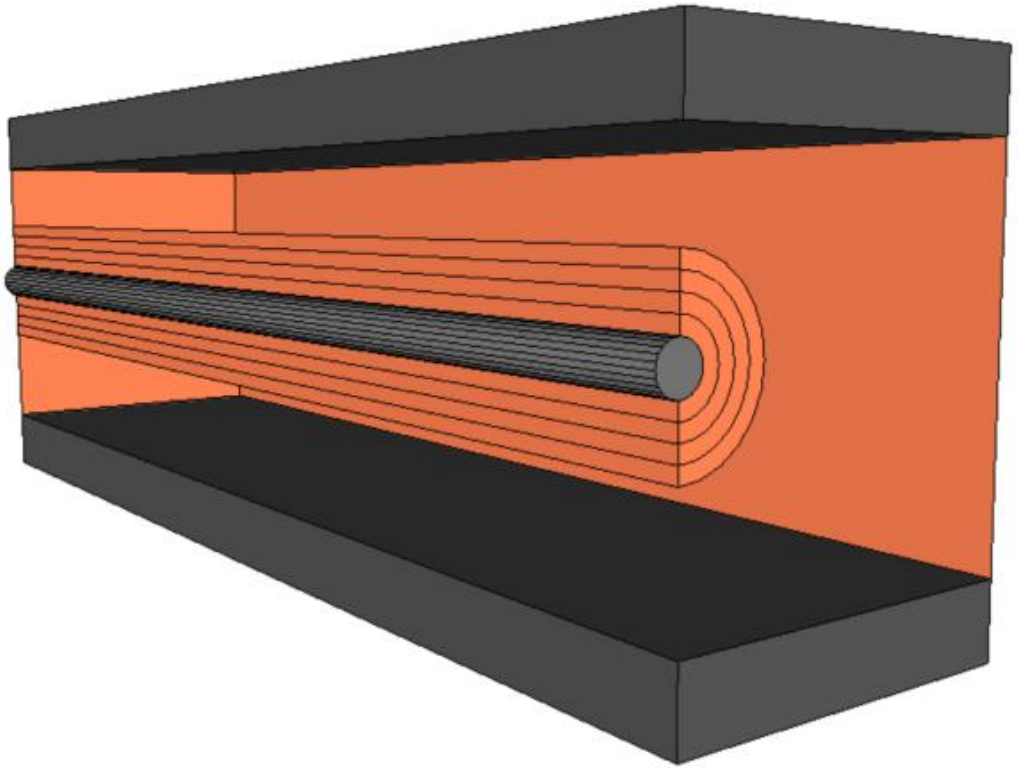
**Using NGL breakdown from the July 2012 BENTEK Natural Gas Study*

North Dakota Type Curves*

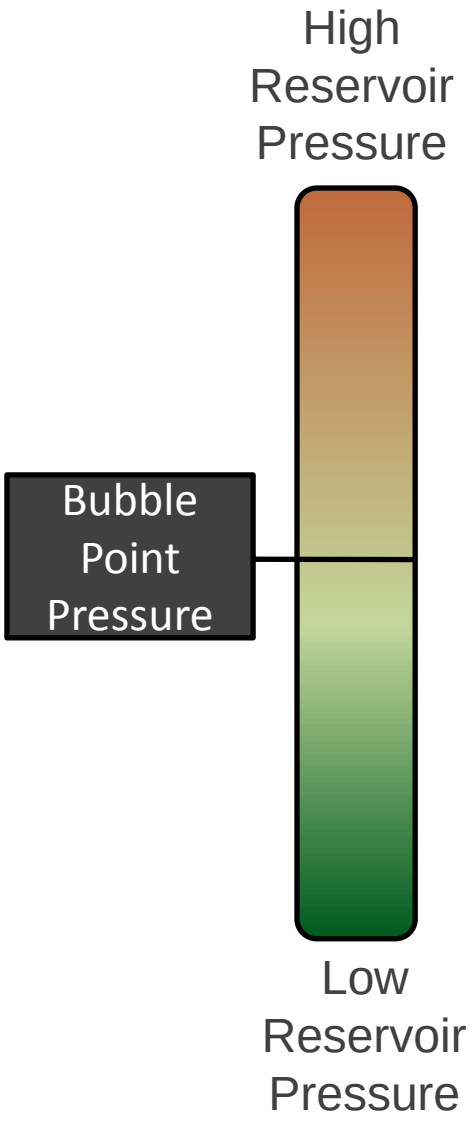


**Based on the July 2012 BENTEK Natural Gas Study*

Gas – Oil Ratio (GOR) Increasing Over Time



Horizontal Well Completed
in Target Reservoir



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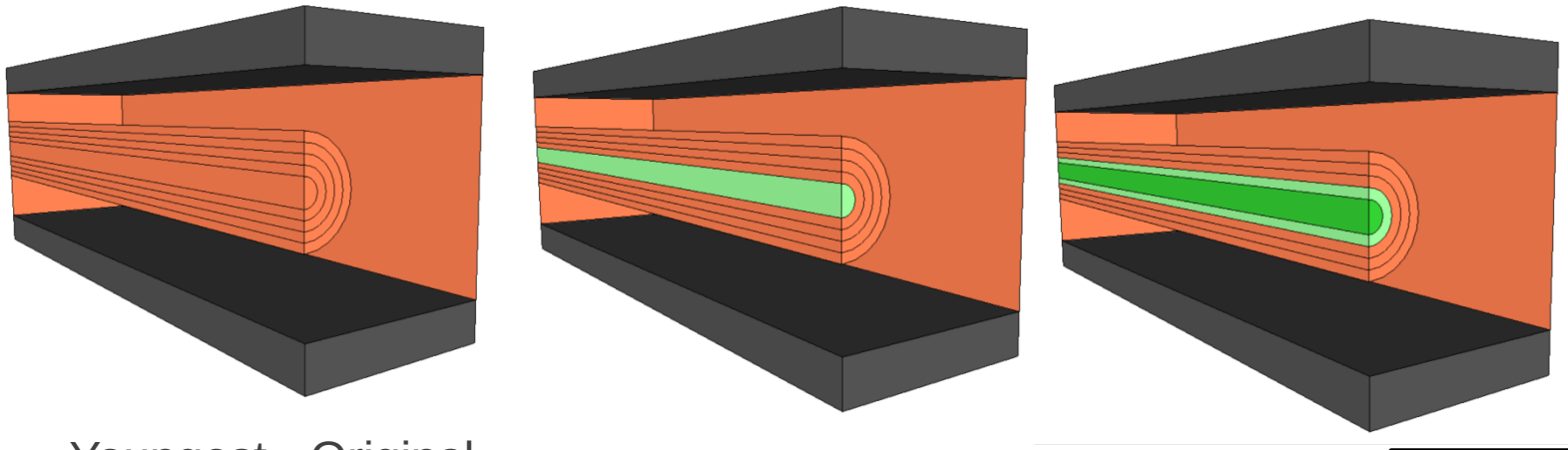
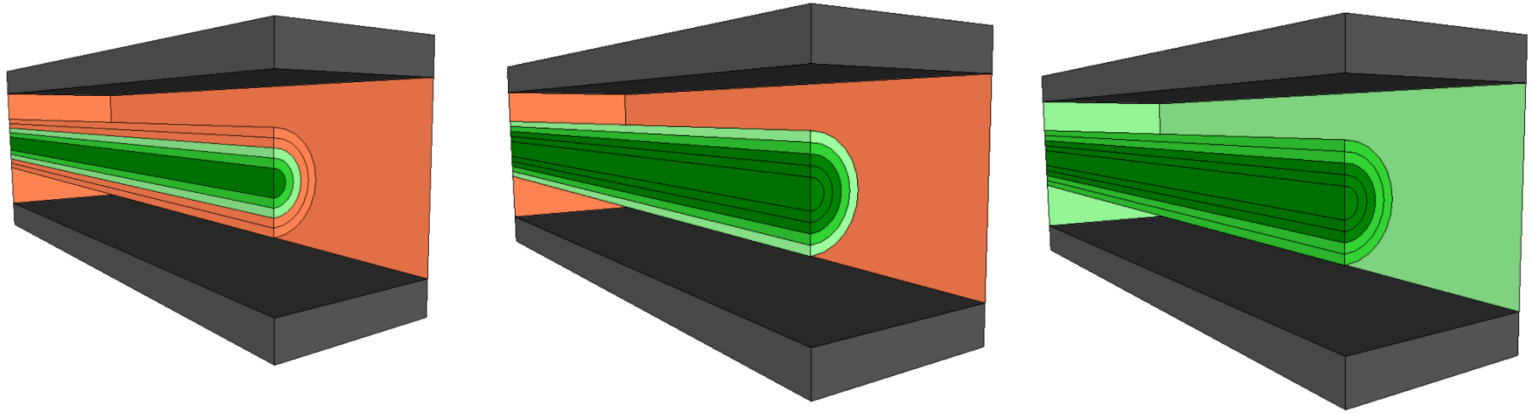


Youngest - Original Reservoir Pressure

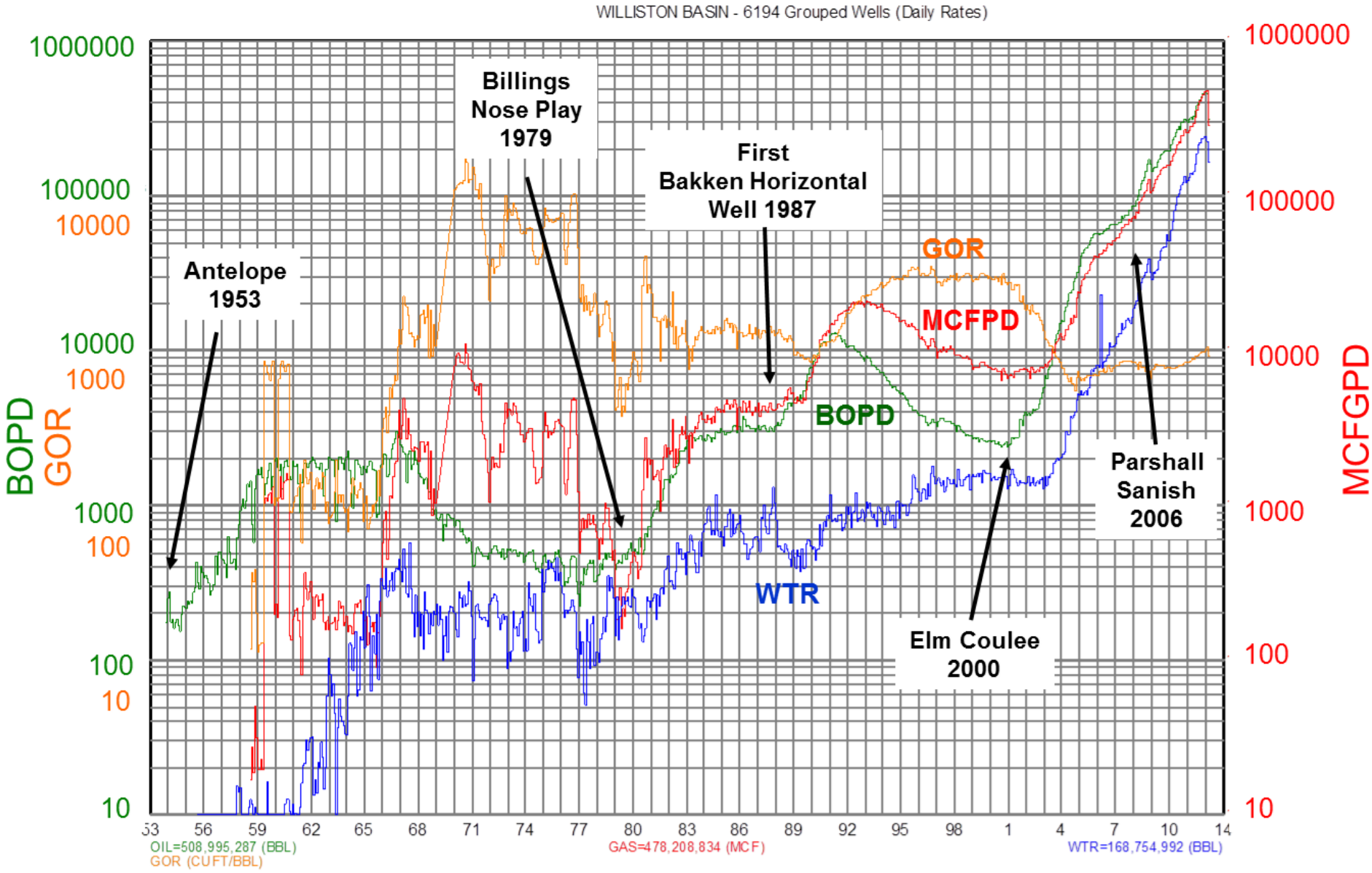


Oldest – Entire Reservoir Below Bubble Point

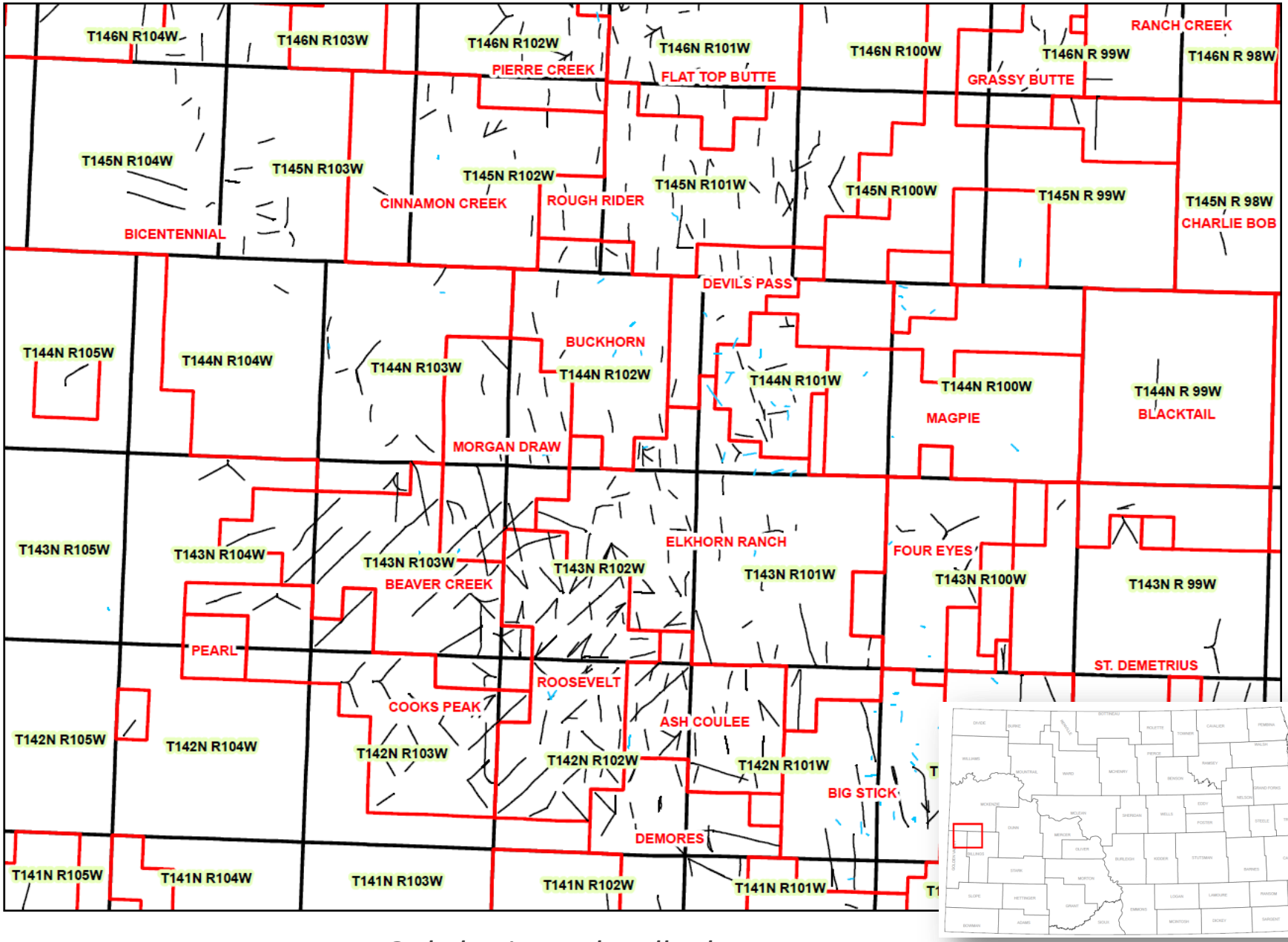
High Reservoir Pressure

Bubble Point Pressure

Low Reservoir Pressure

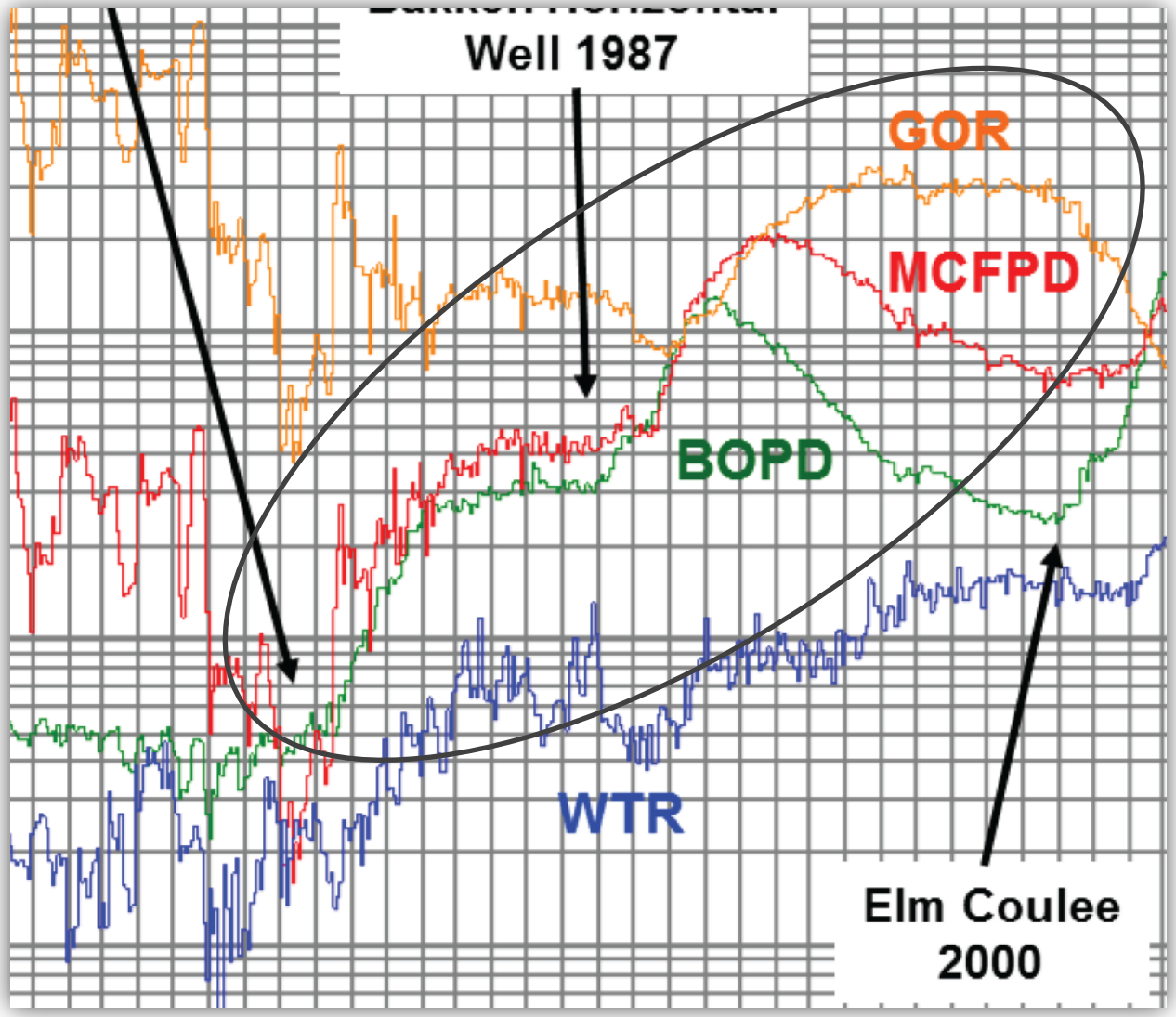


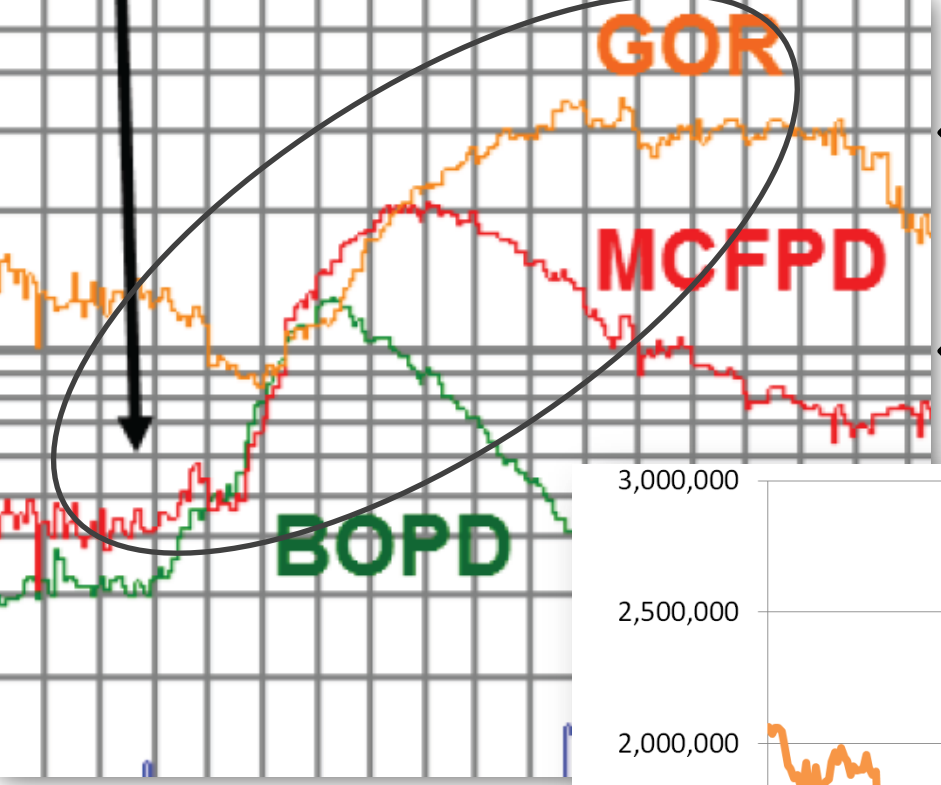
Production curve for the Bakken and Three Forks, US Williston Basin.
Source: BENTEK Energy July 2012 Report



Only horizontal wells shown on map

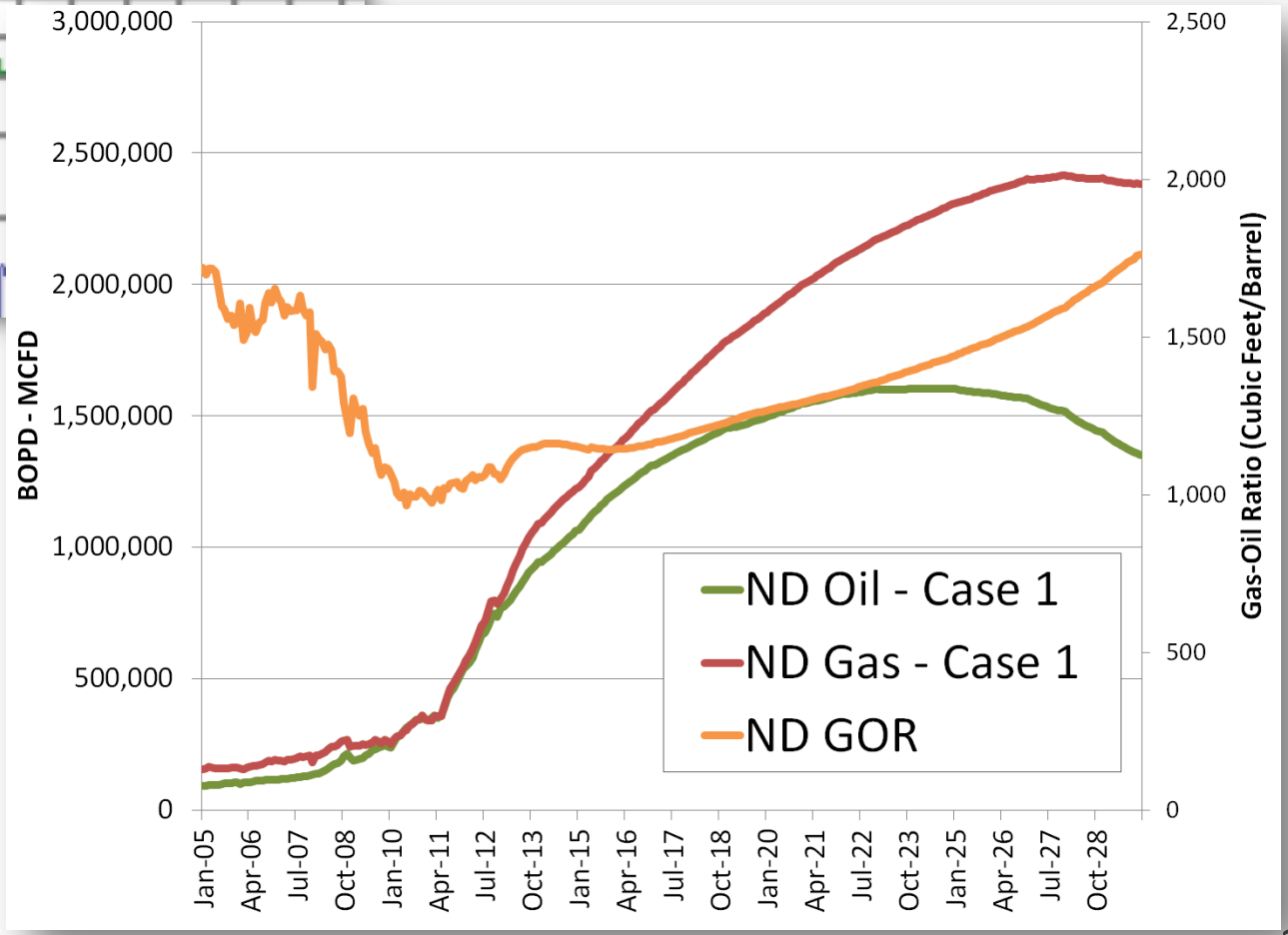
1980's-90's Bakken Development



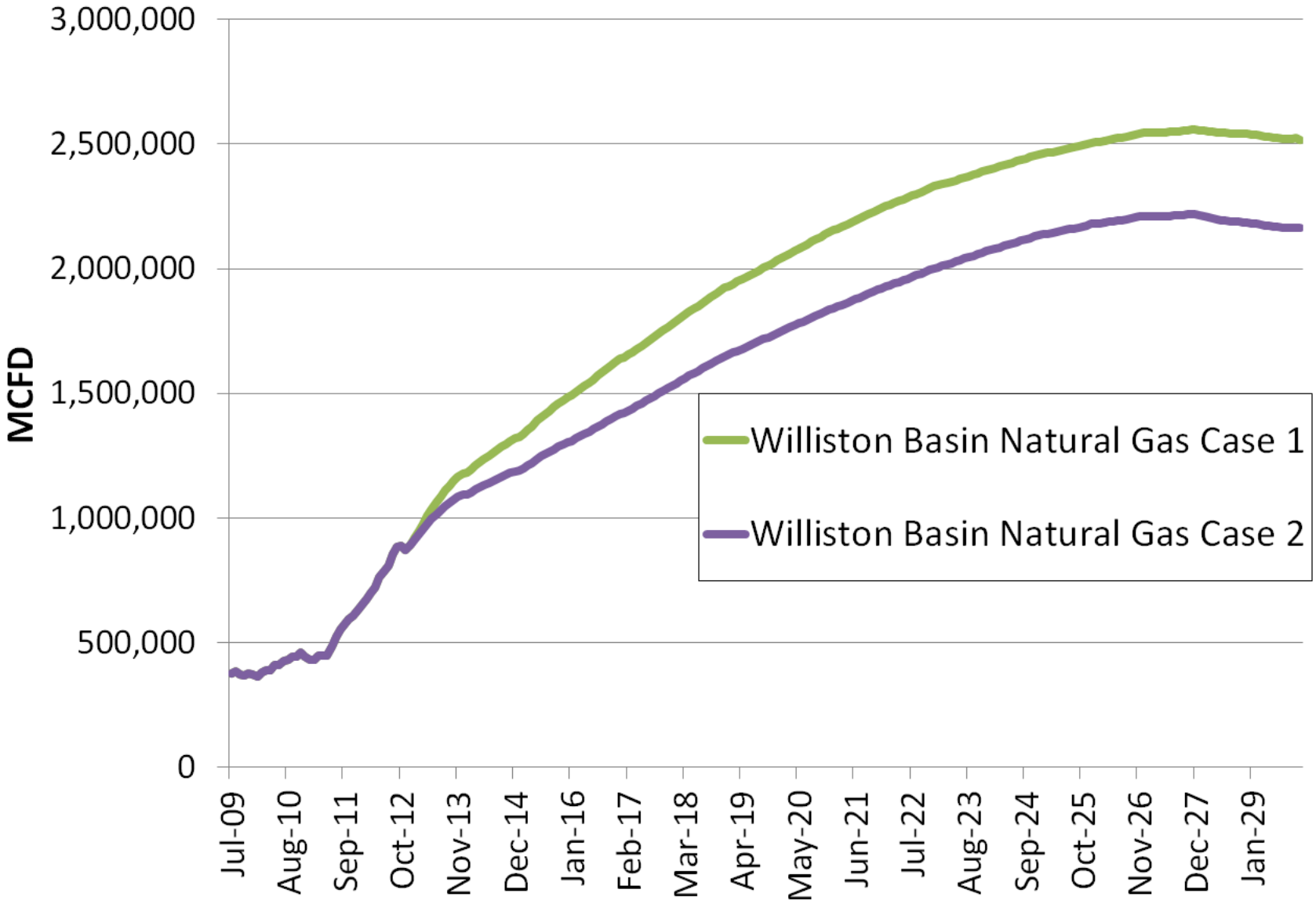


GOR 3,000 CUFT/BBL

GOR 1,000 CUFT/BBL



Williston Basin Gas Production



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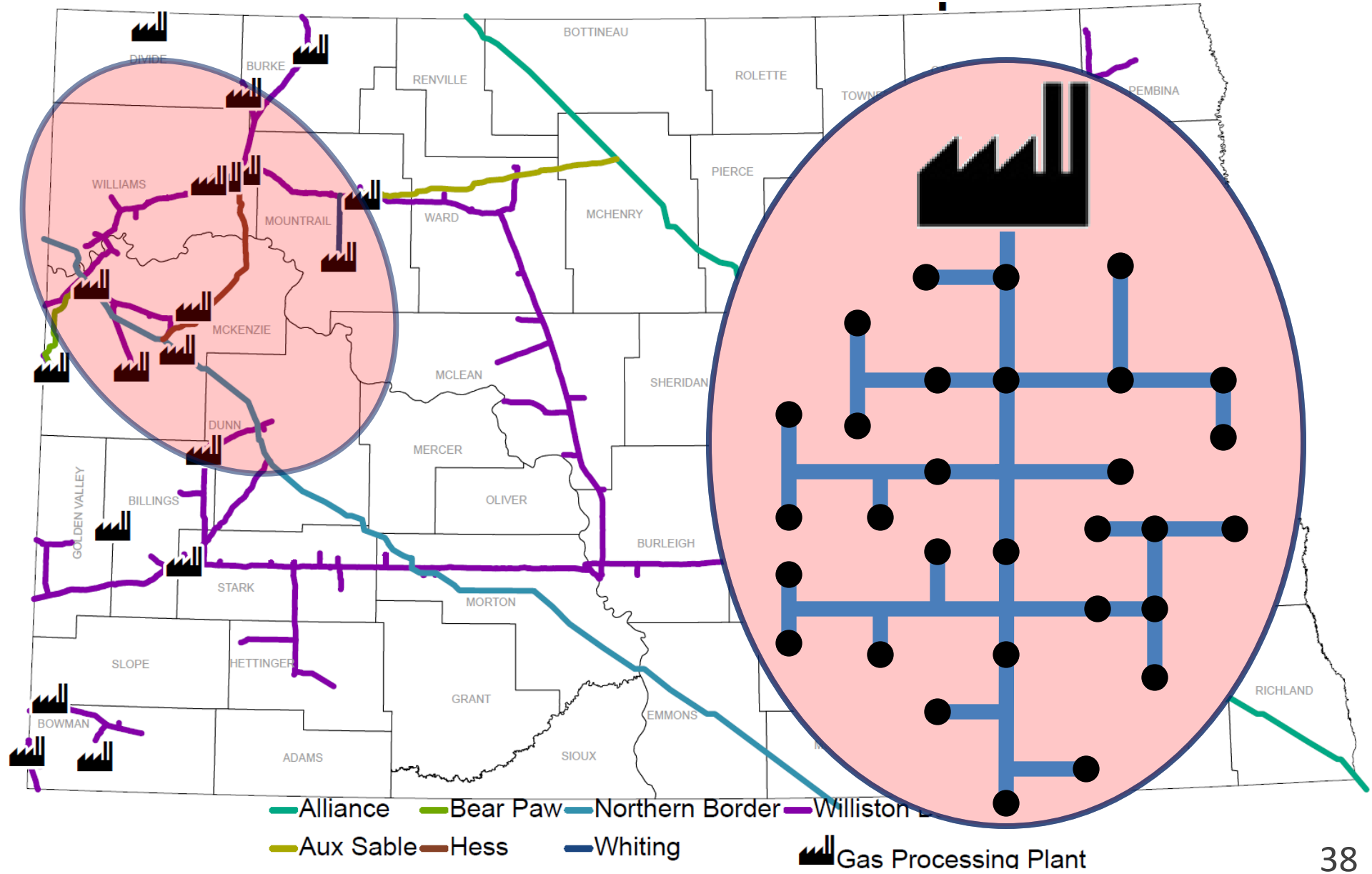
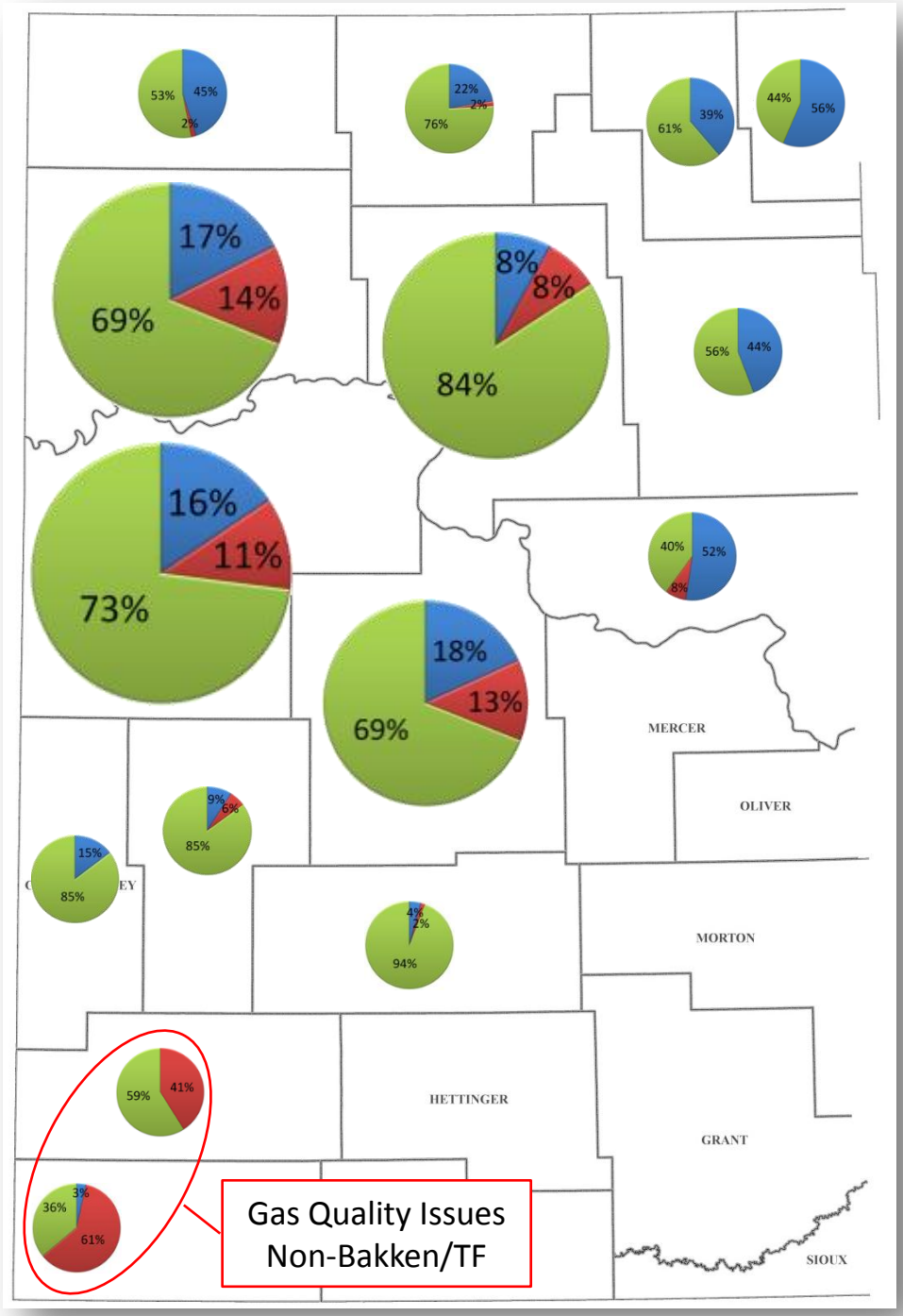
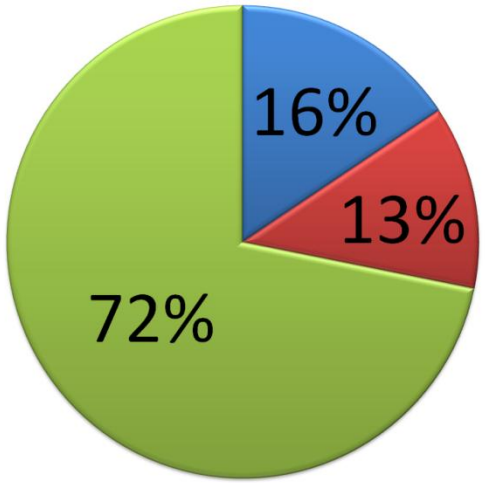
Natural Gas Gathering Challenge





Solving the Problem

GREEN – % of gas captured and sold
Red – % flared from wells with at least 1 mcf sold.
Blue – % flared from "0" sales wells

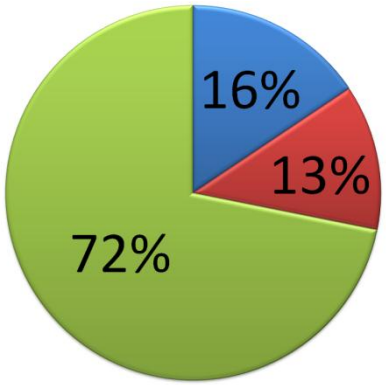


All ND Production

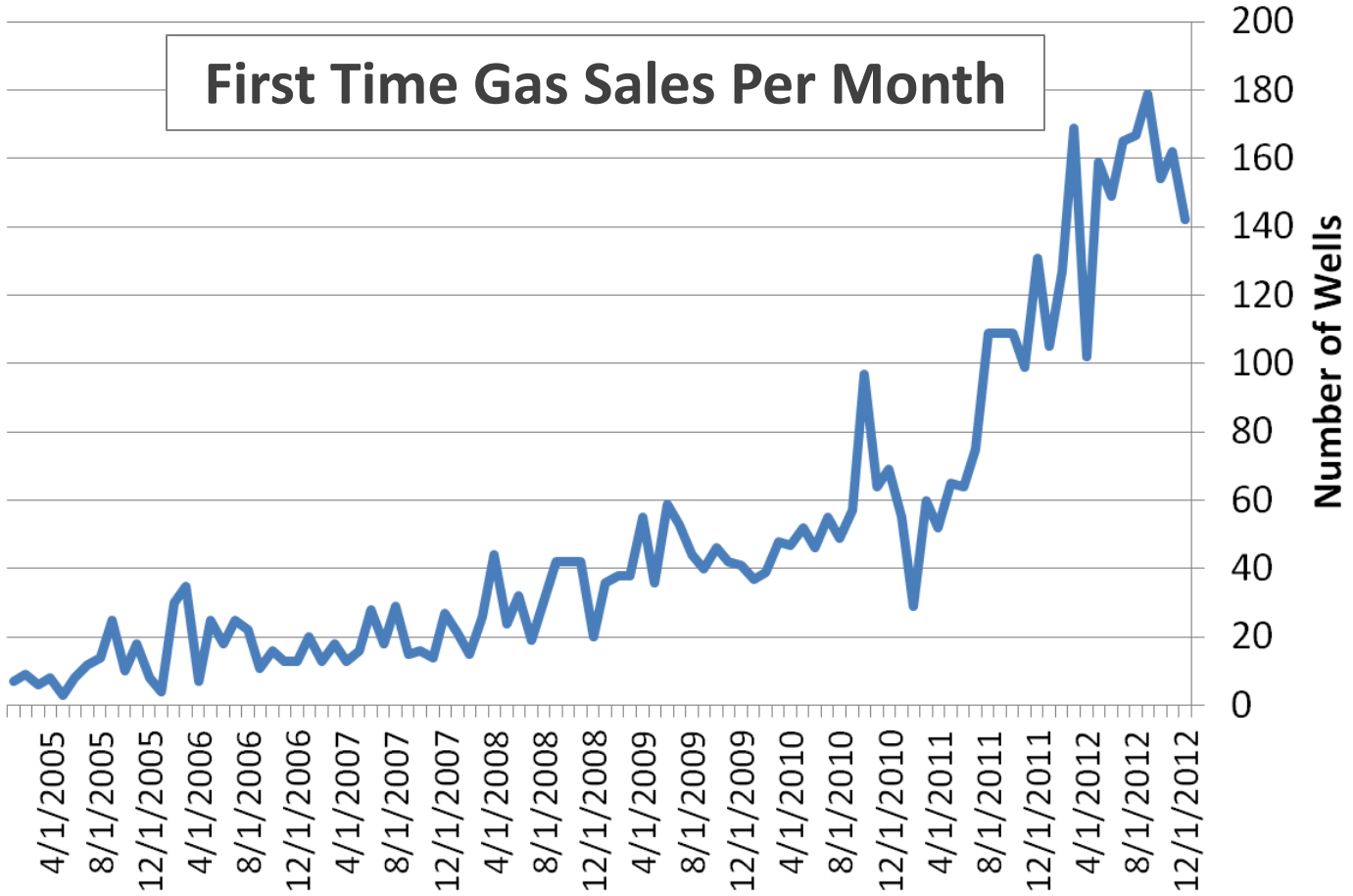
Simple Terms

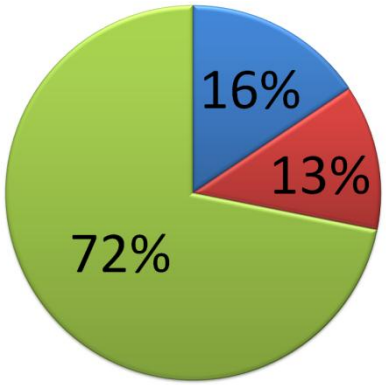
Red – Challenges on existing infrastructure
Blue – Lack of pipelines

Dec 2012 Data – Non-Confidential Wells



Capturing the 16%
Faster Well Connections





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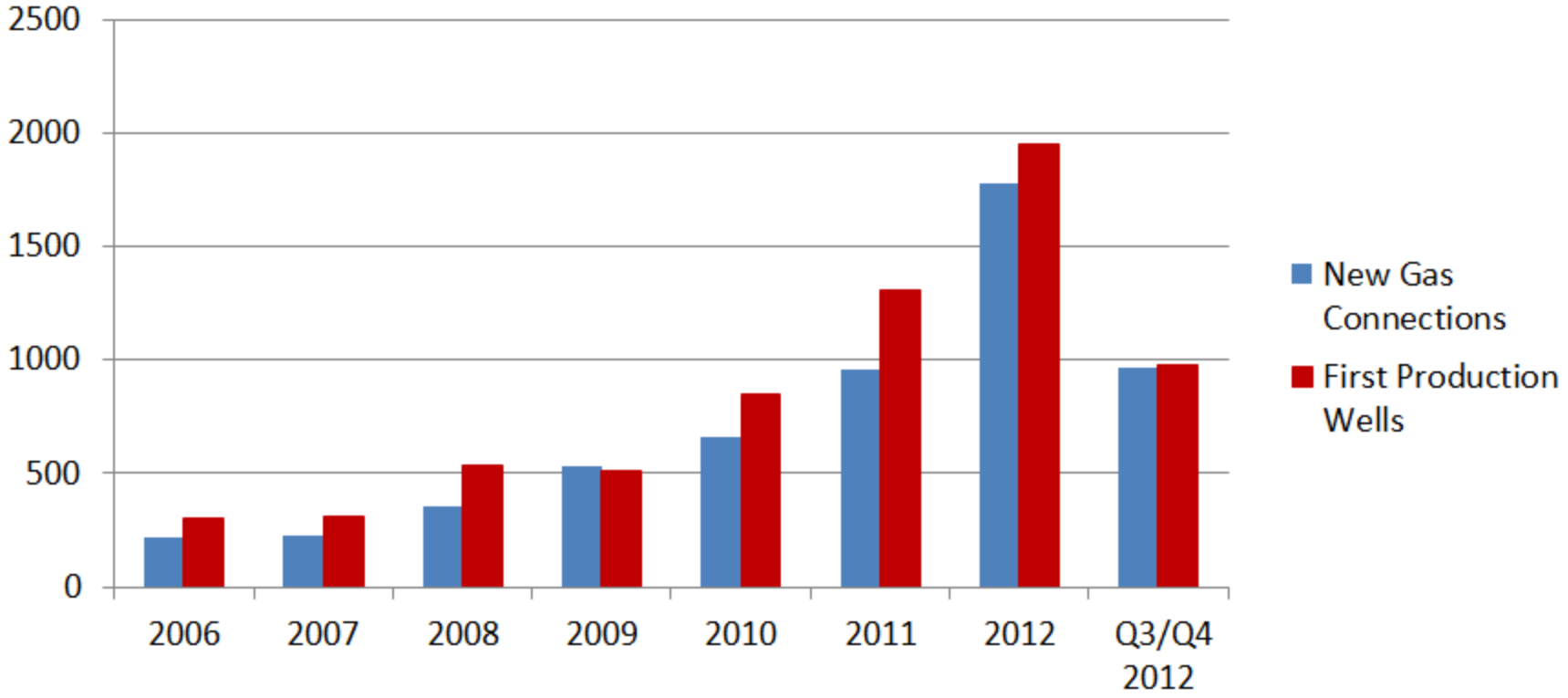
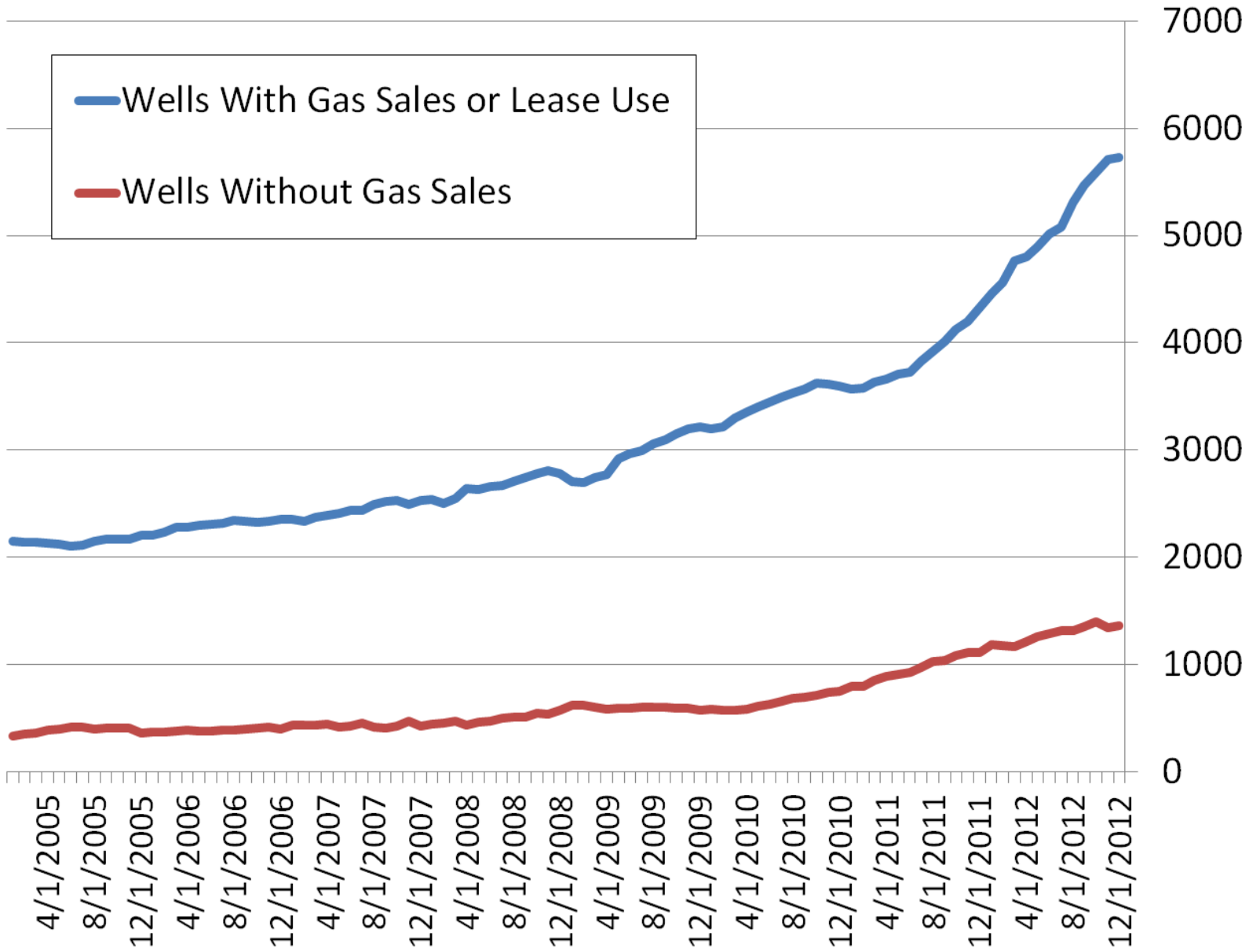
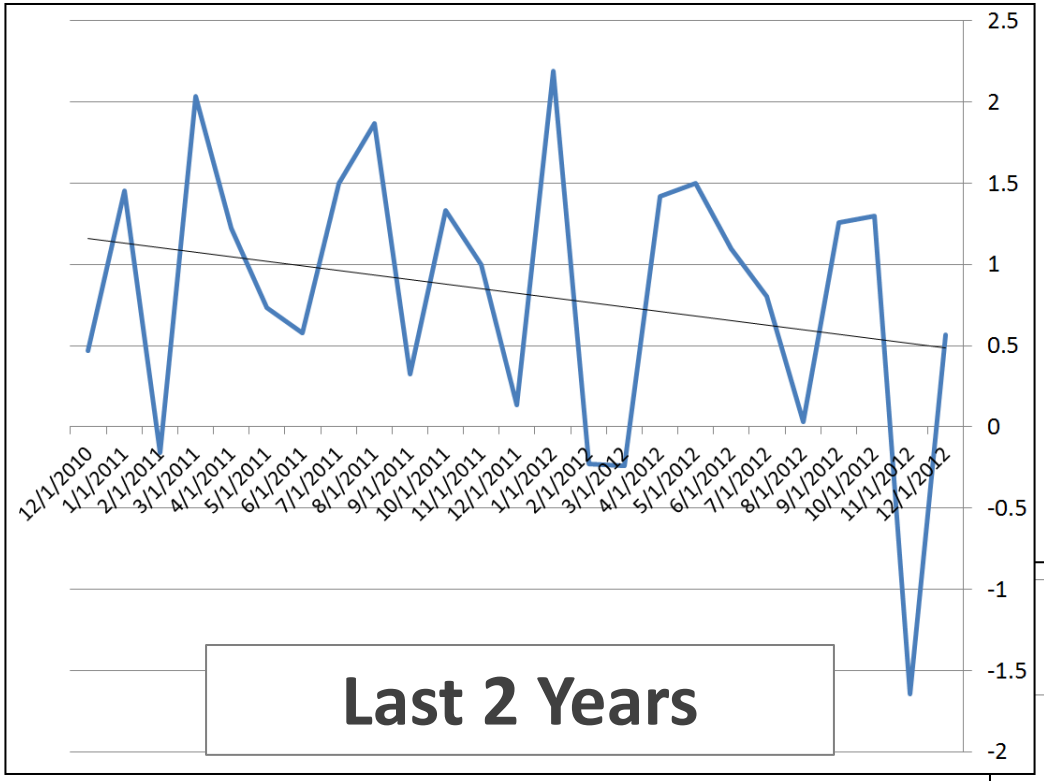
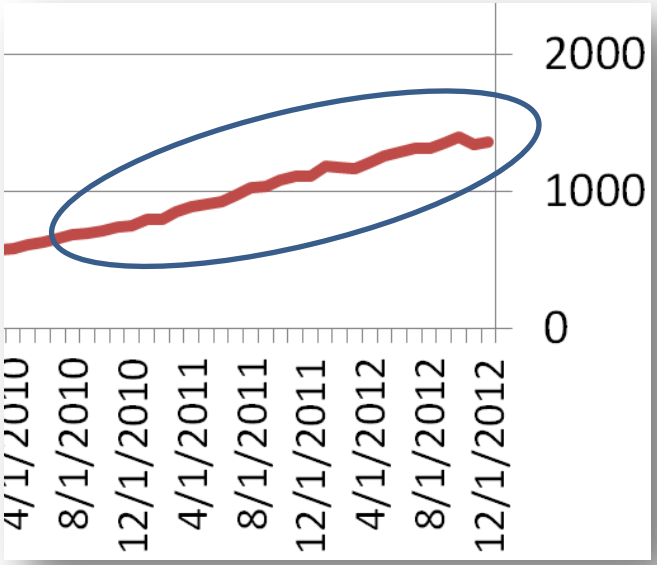


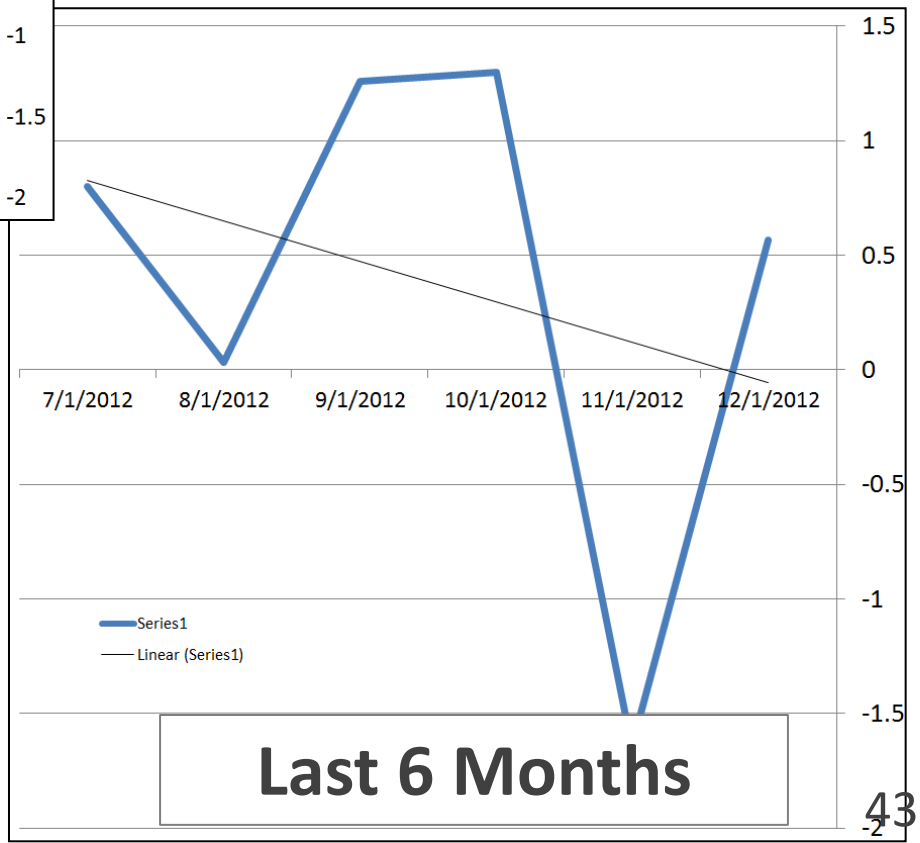
ND Gas Gathering Statistics



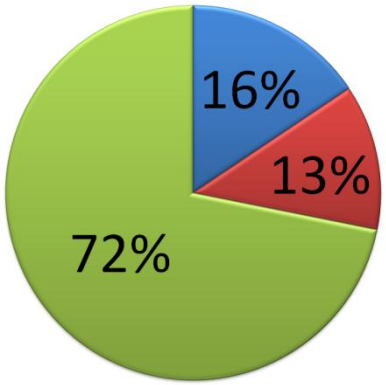
Slope of "Wells W/out Sales" Line

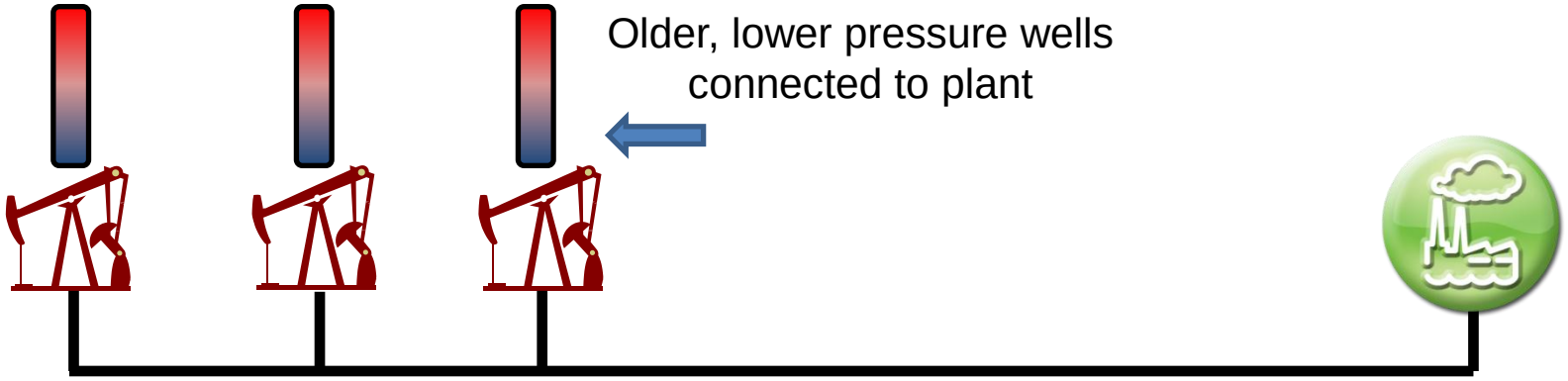


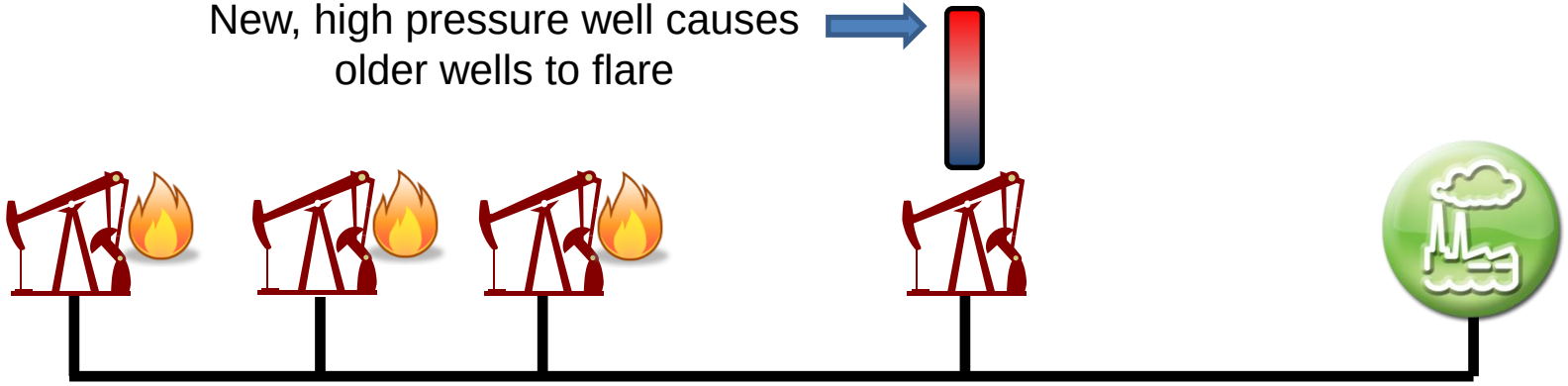


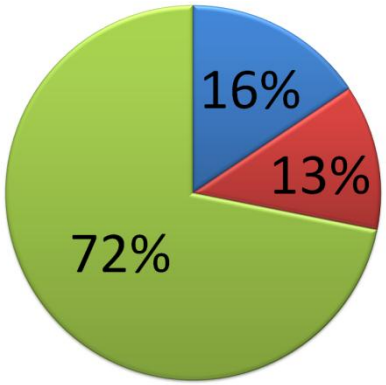


Capturing the 13%
Additional Compression



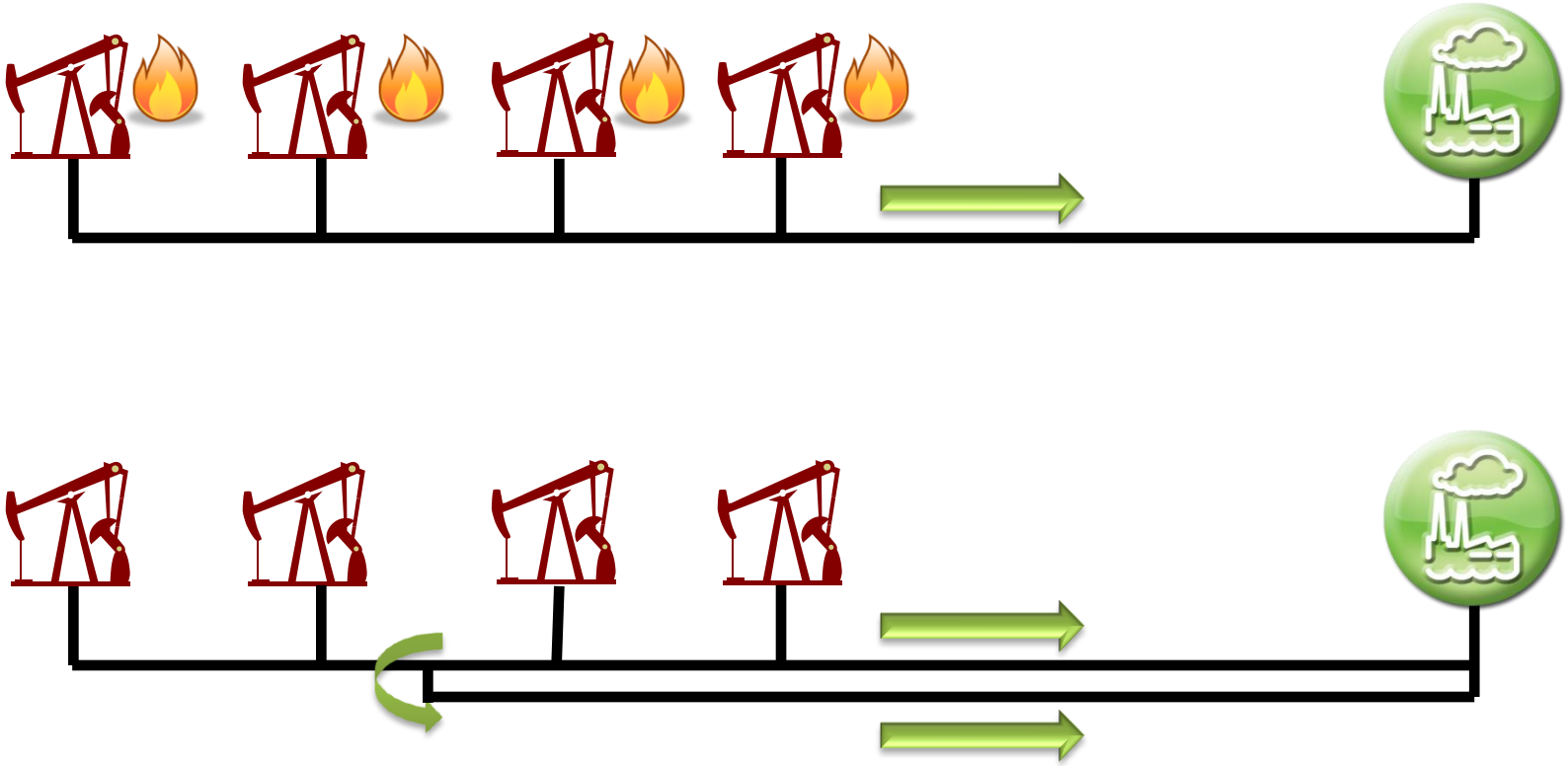


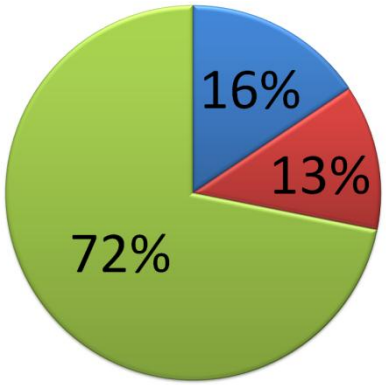




Capturing the 13%

Looping Existing Pipelines



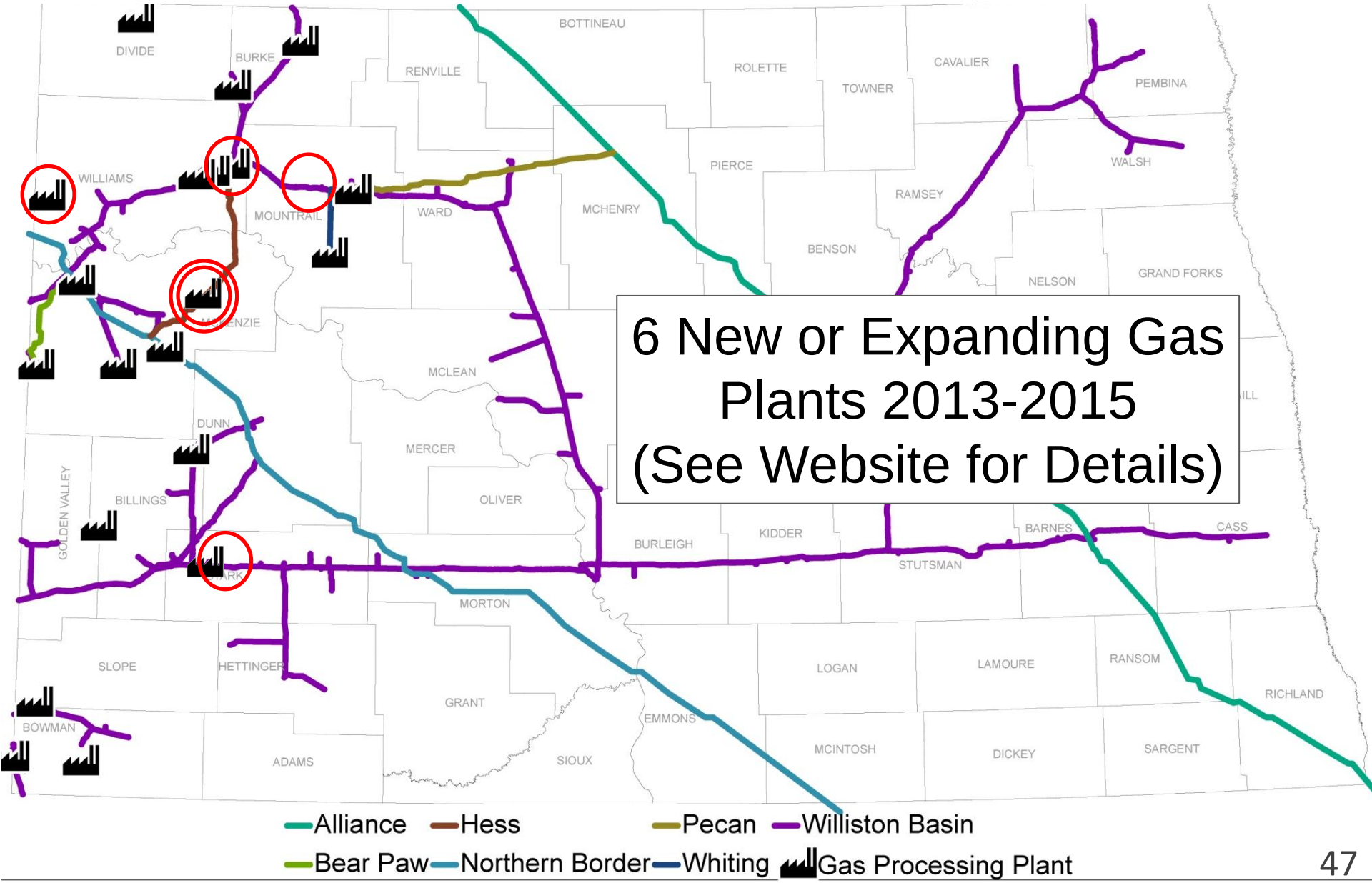


Capturing the 13%
Frequent Pigging

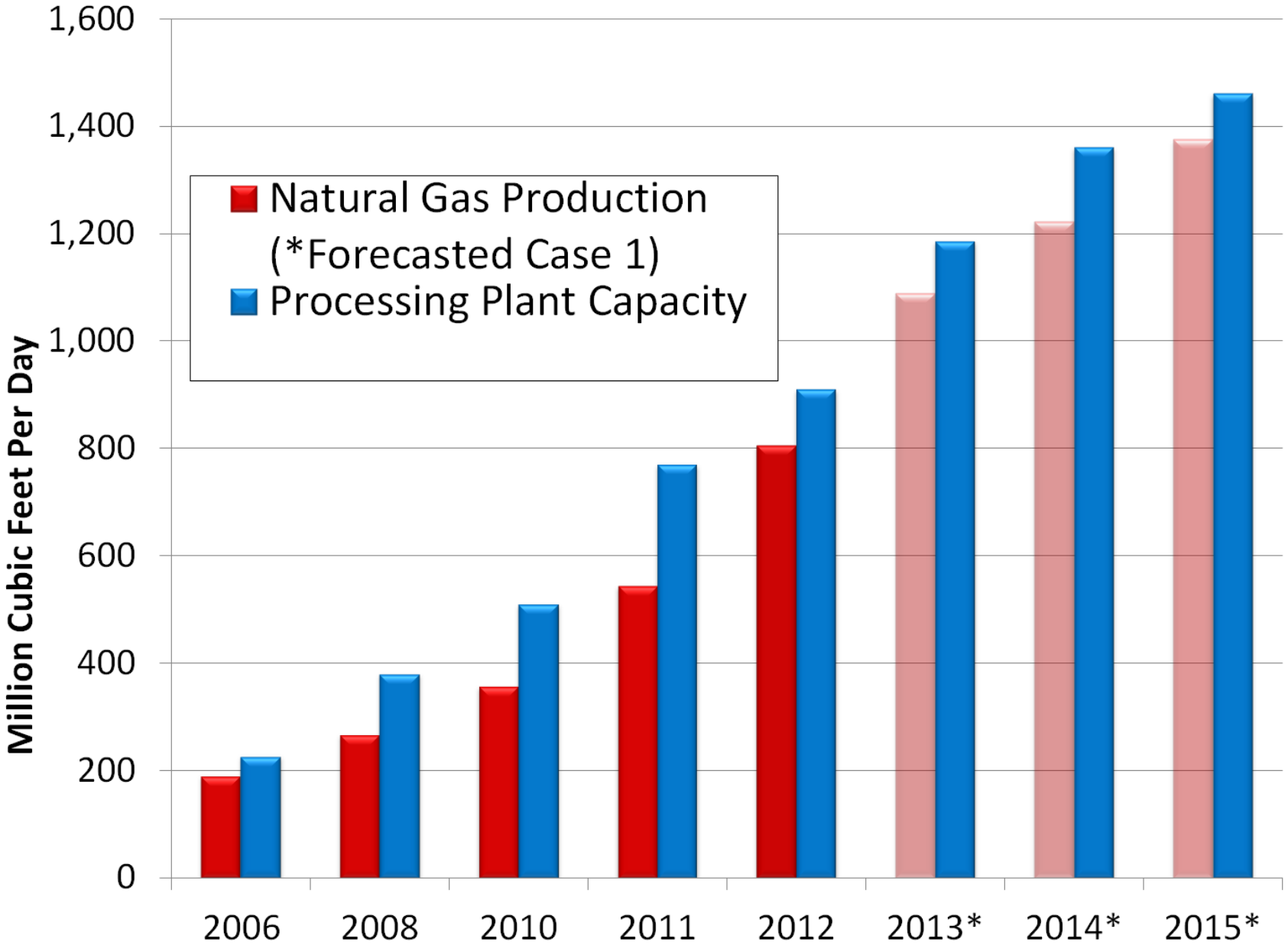
NGL buildup in gathering pipelines reduces area for gas to flow

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

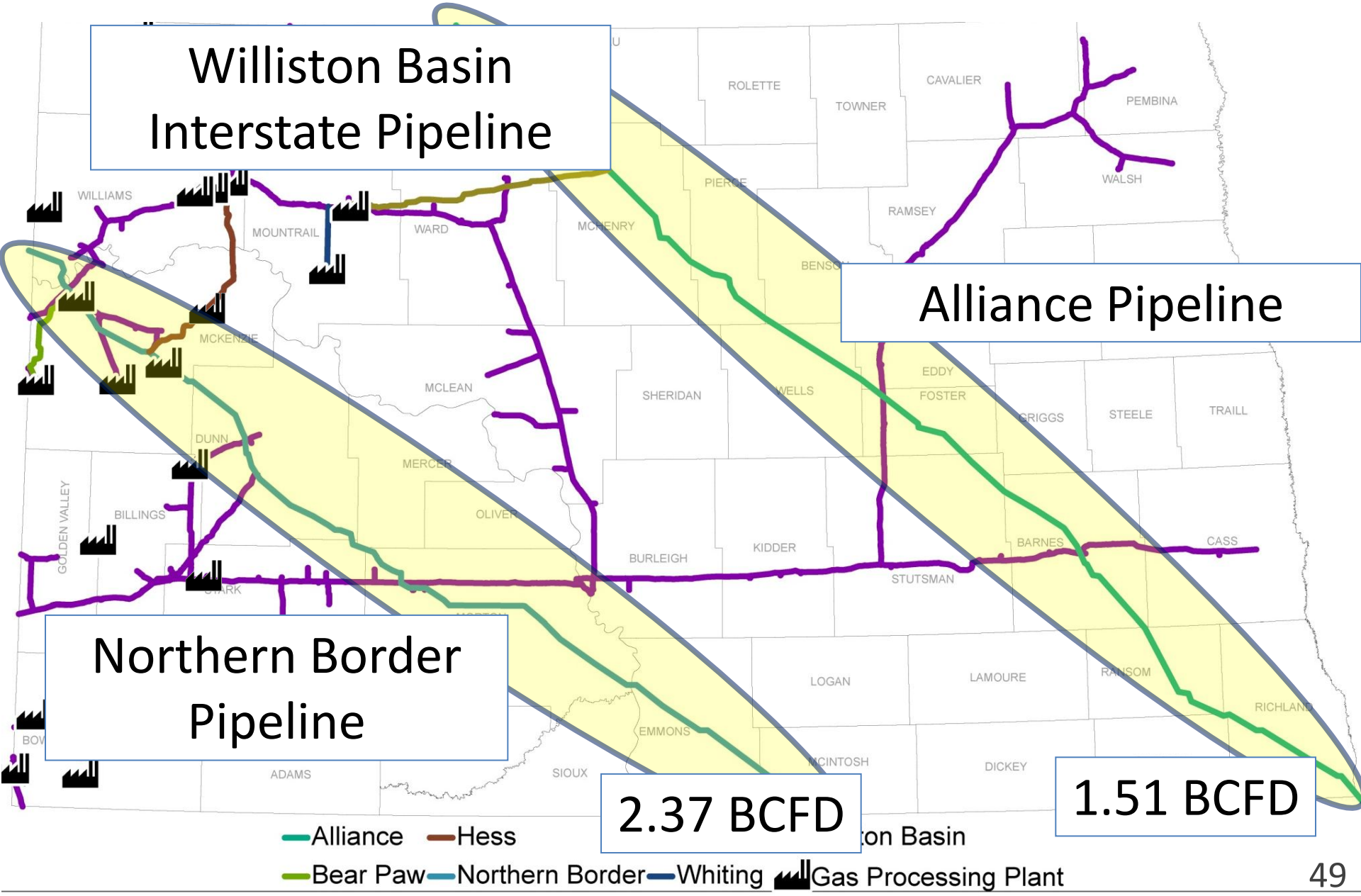
ND Natural Gas Processing



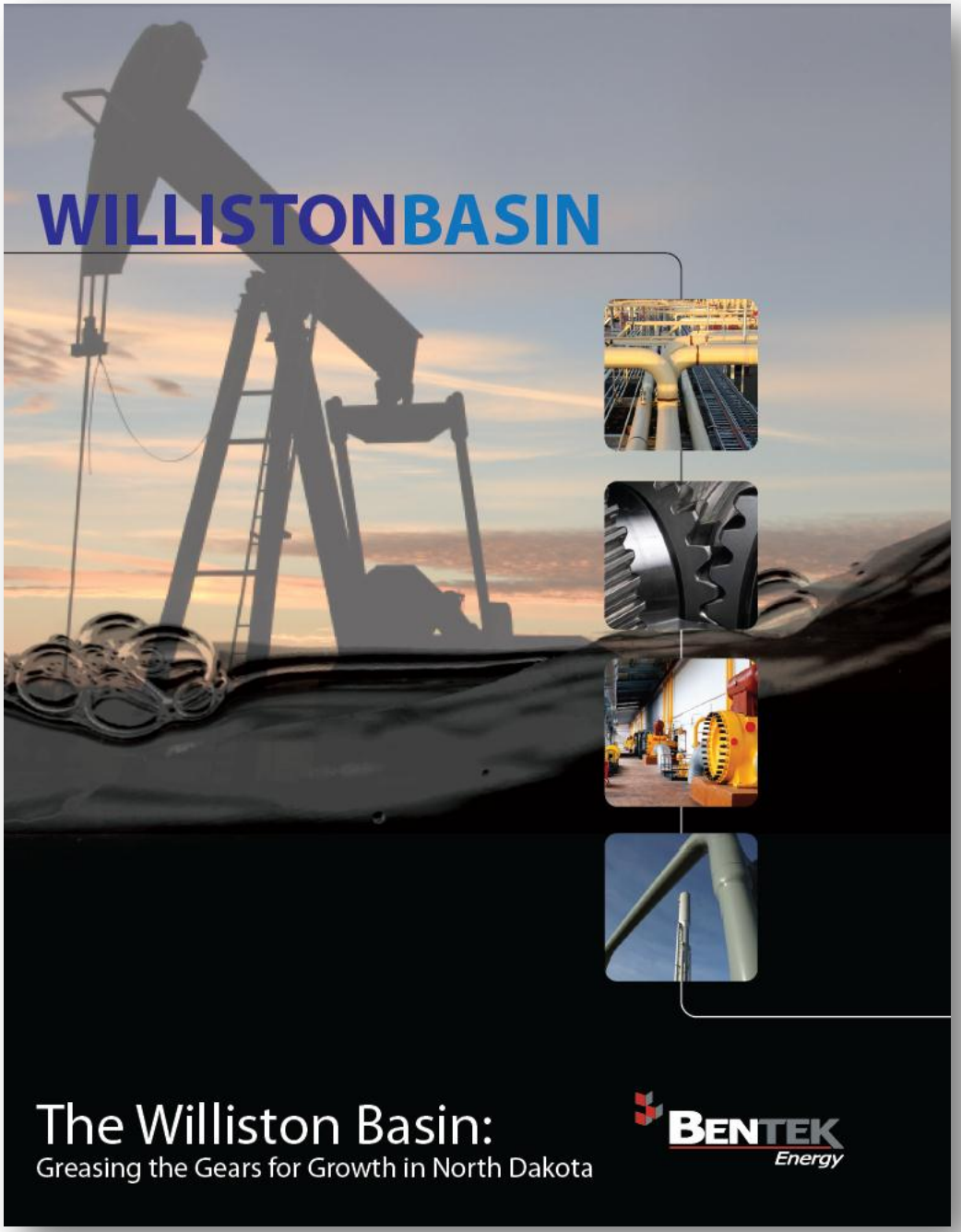
ND Gas Plant Capacity



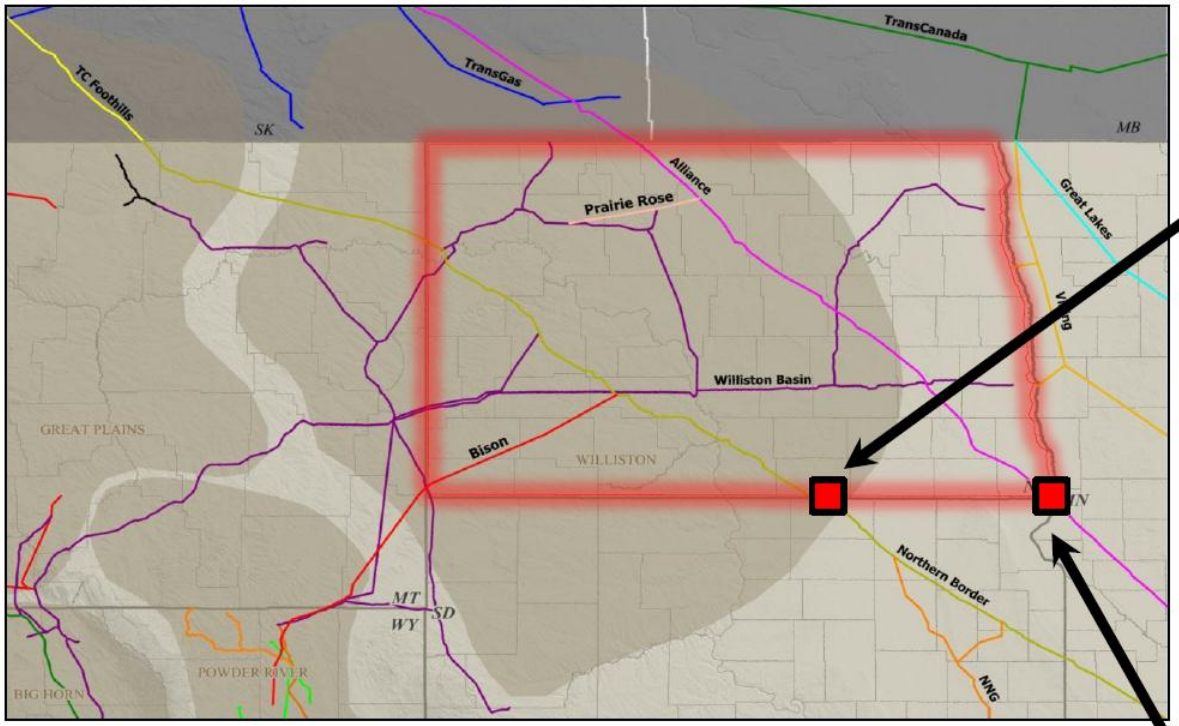
ND Natural Gas Pipelines

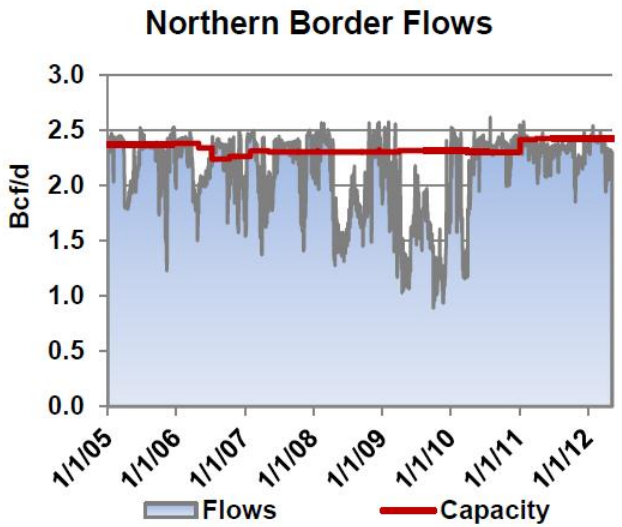


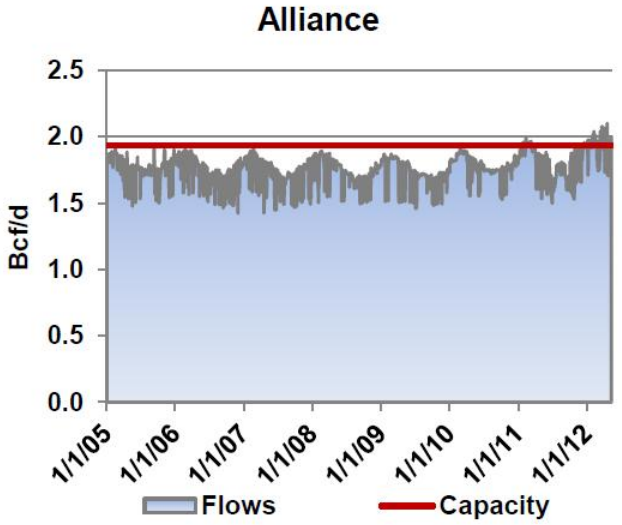
Natural Gas Study



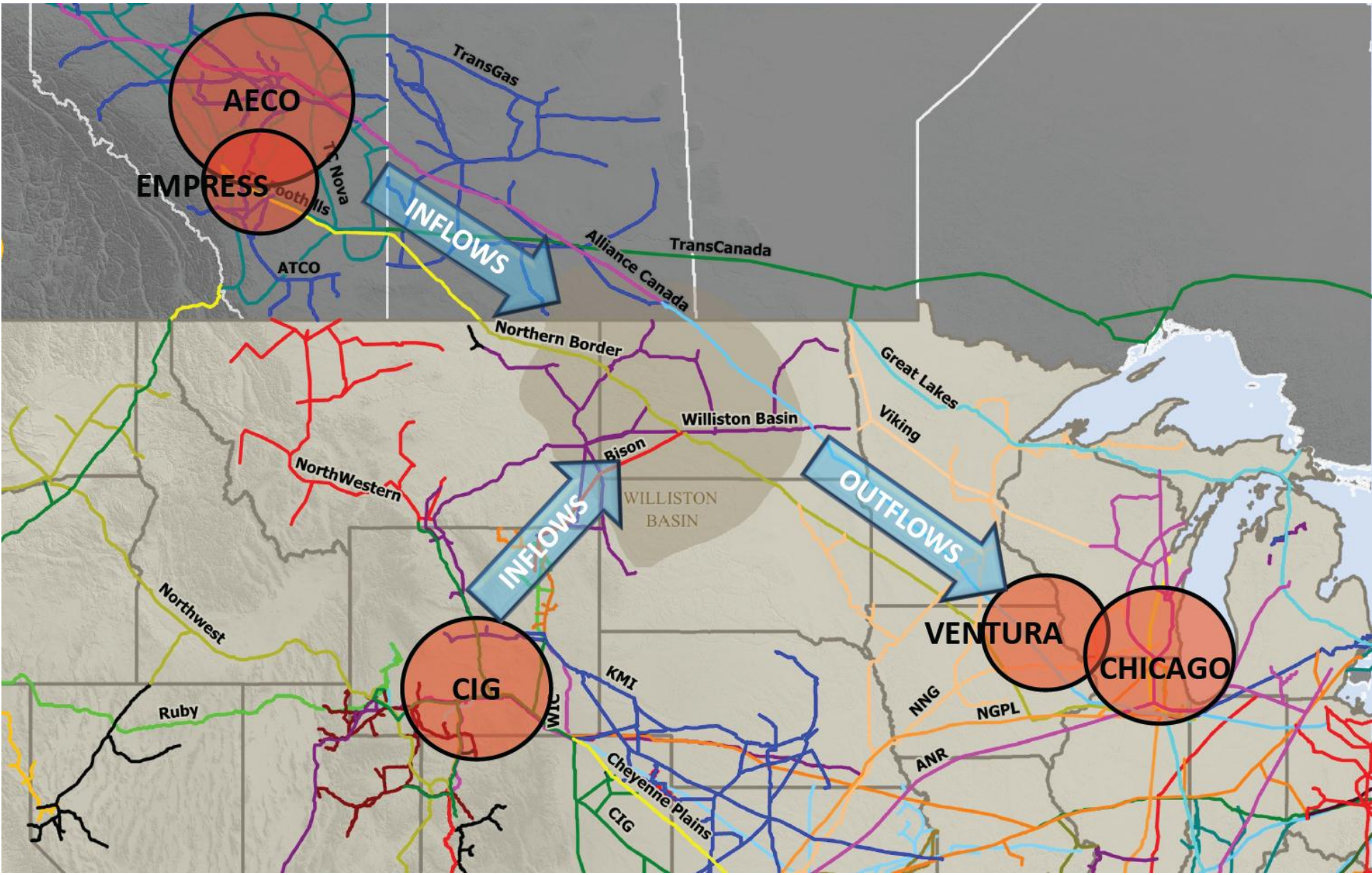
Open Capacity Leaving N. Dakota Is Tight





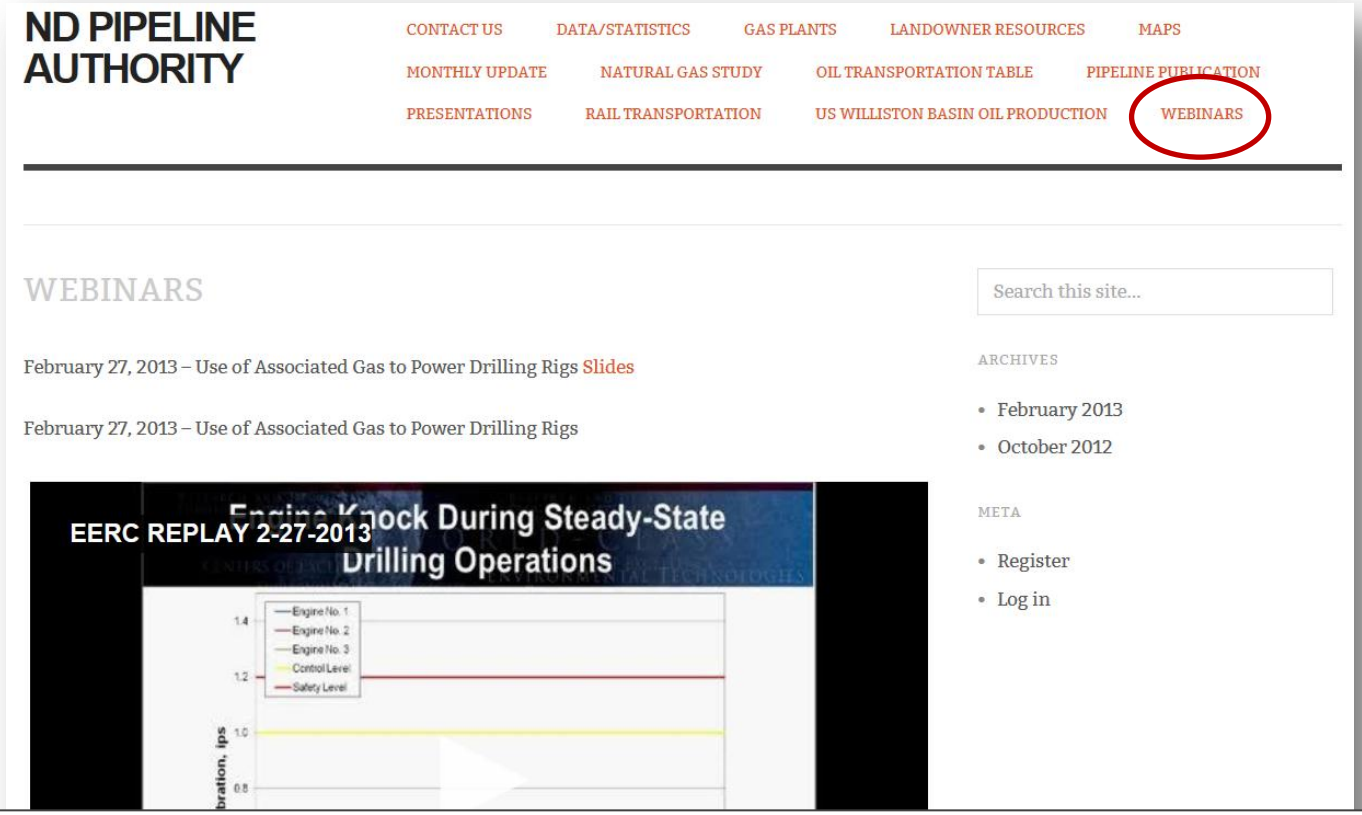


- **Northern Border and Alliance Serve As the Primary Routes to Transport Gas From the Region.**
- **Each Have Limited Open Mainline Capacity to Carry Additional Williston Supply.**



Source: BENTEK Energy July 2012 Report

Flaring Alternatives

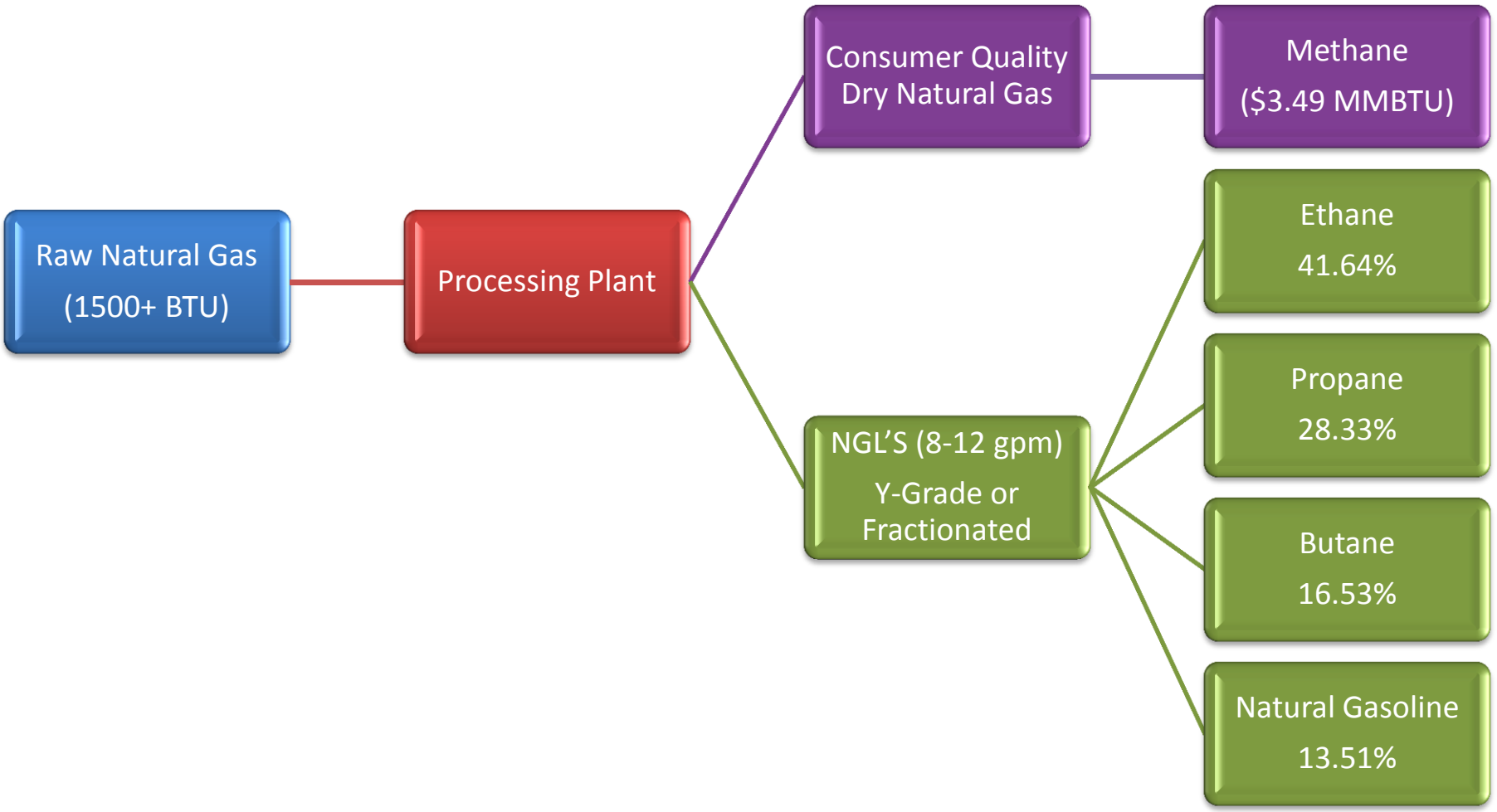


November 5, 2012 – EERC Associated Gas Use Study

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

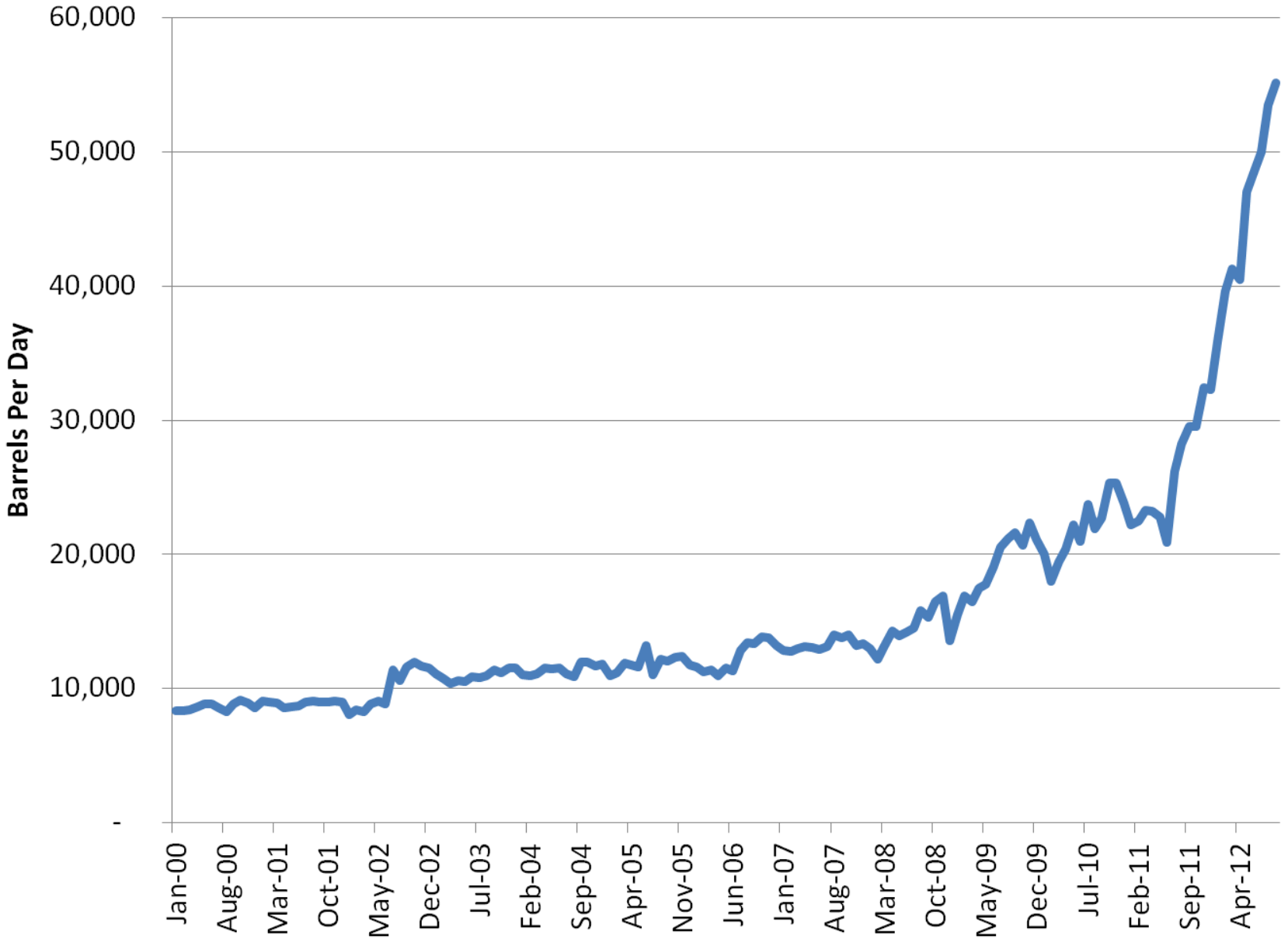
February 27, 2013 – EERC Use of Associated Gas to Power Drilling Rigs

Rich Bakken Natural Gas

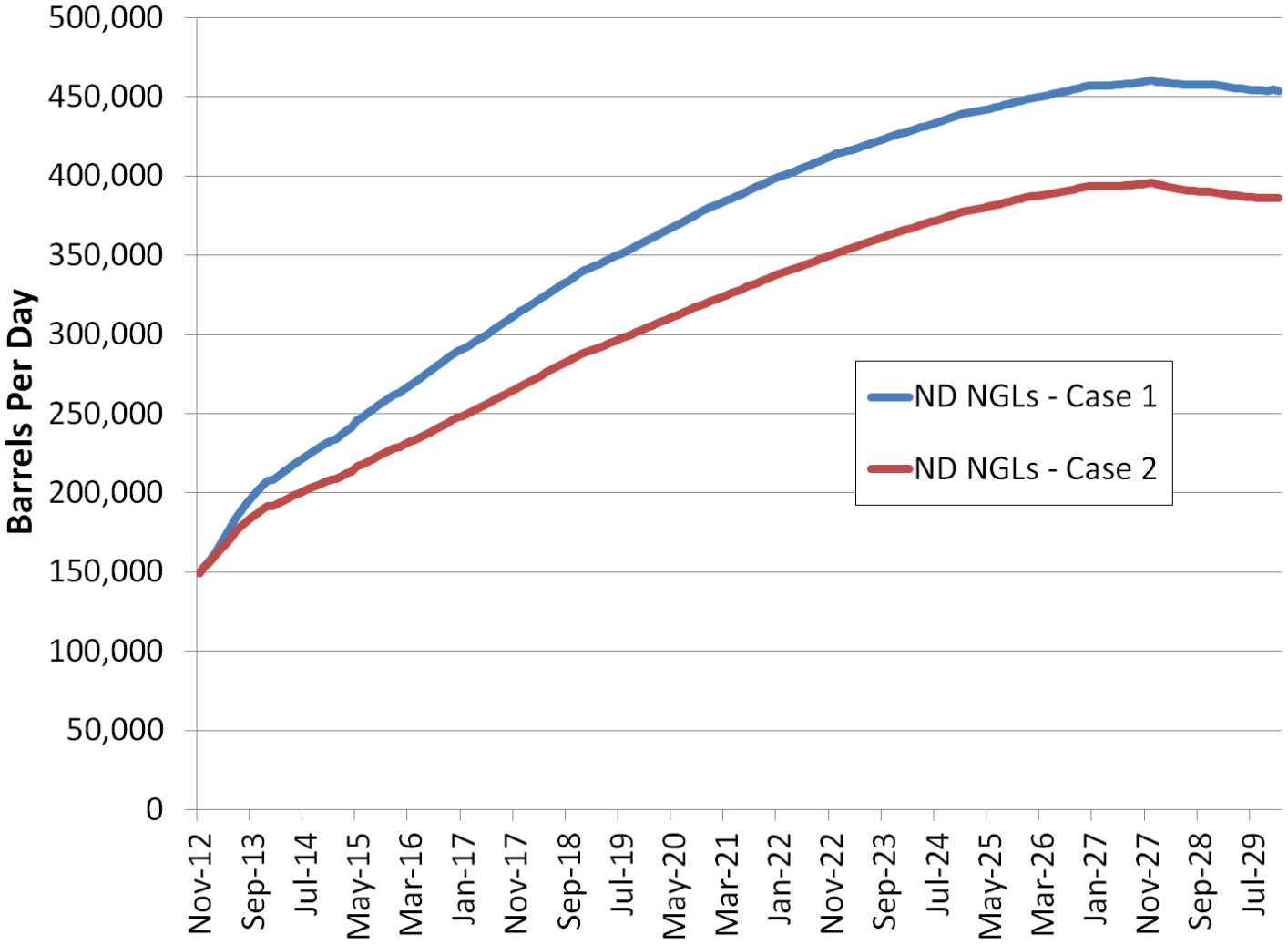


**Using NGL breakdown from the July 2012 BENTEK Natural Gas Study*

ND Gas Plant NGL Production



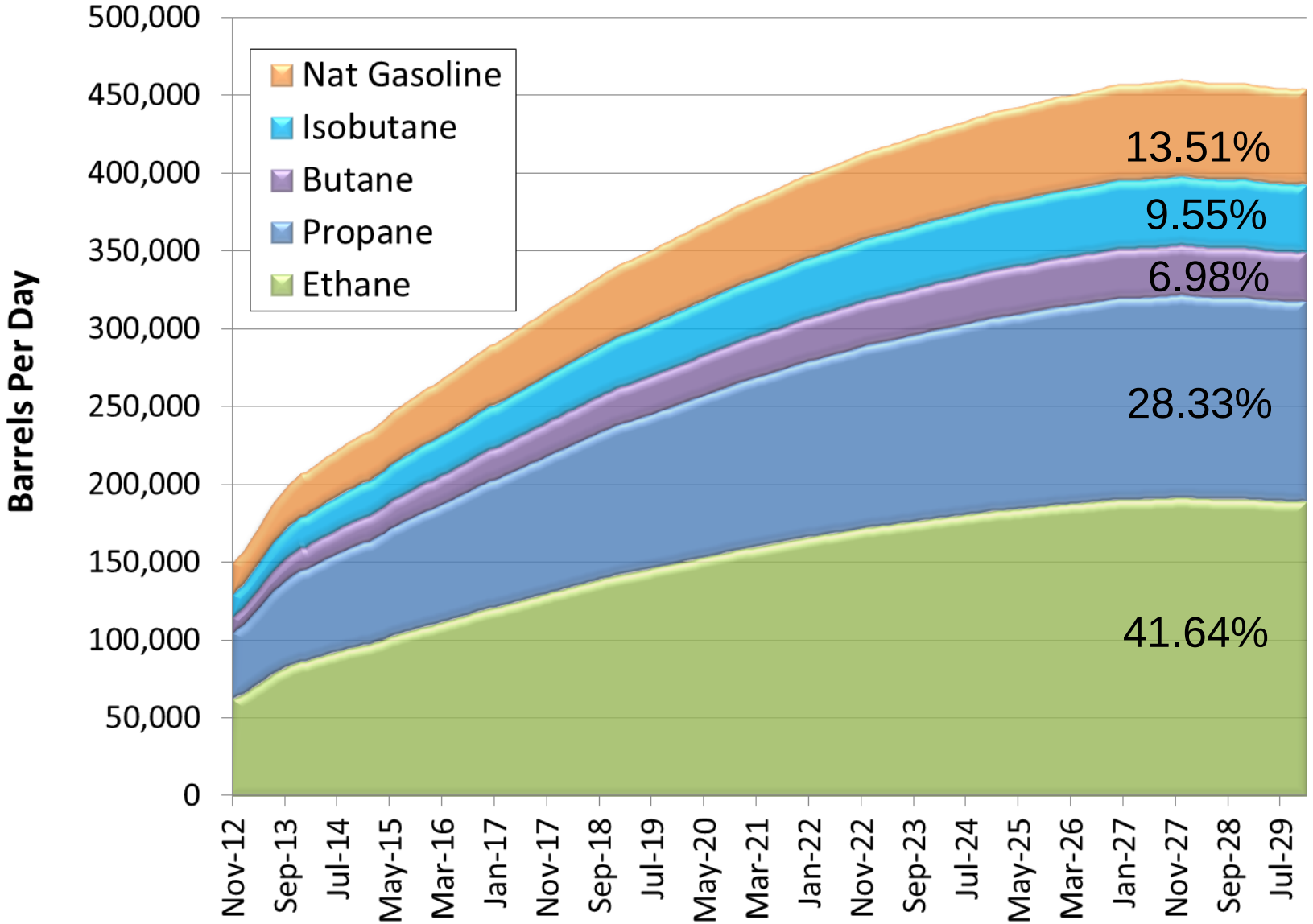
North Dakota NGL Potential



Assumptions

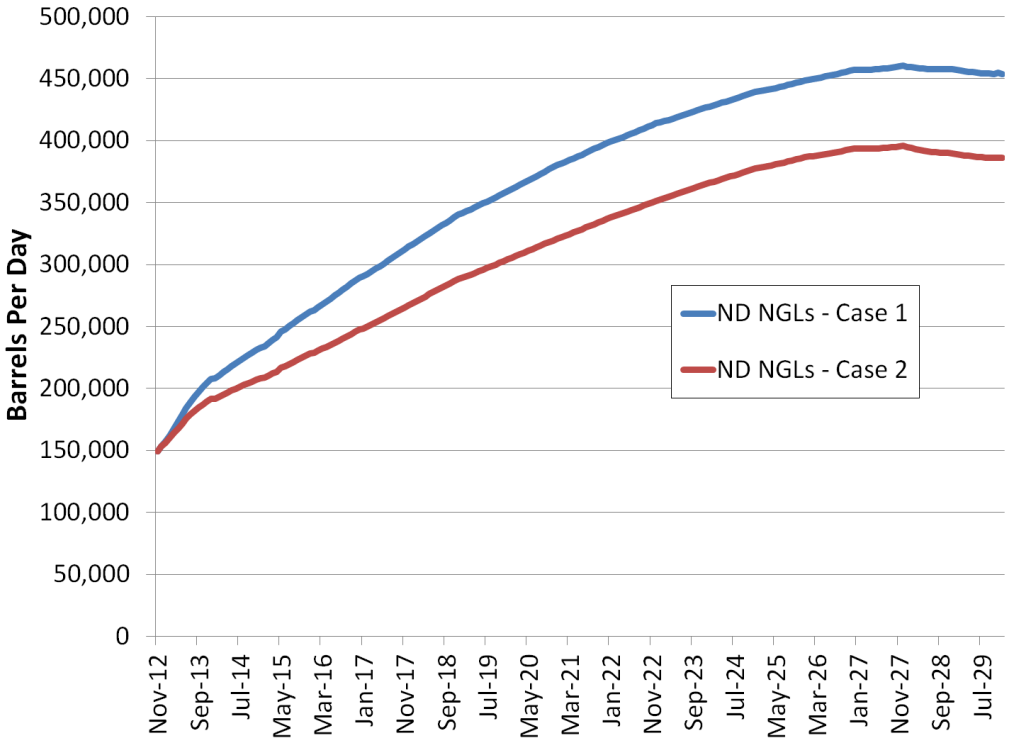
- No Flaring
- 8 Gal/MCF
- All liquids extracted

Case 1: ND NGL Potential*



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

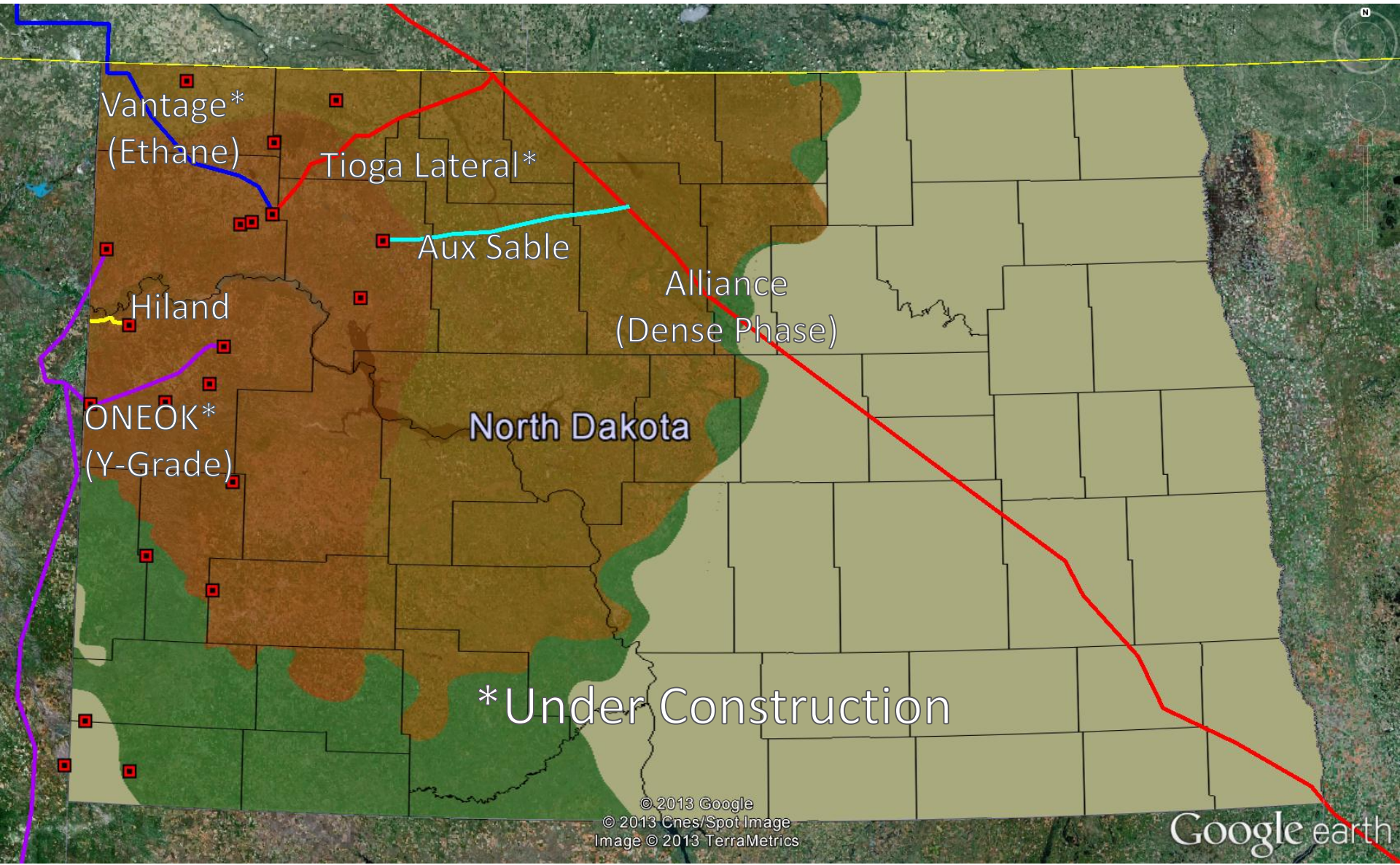
Moving Future NGL Volumes



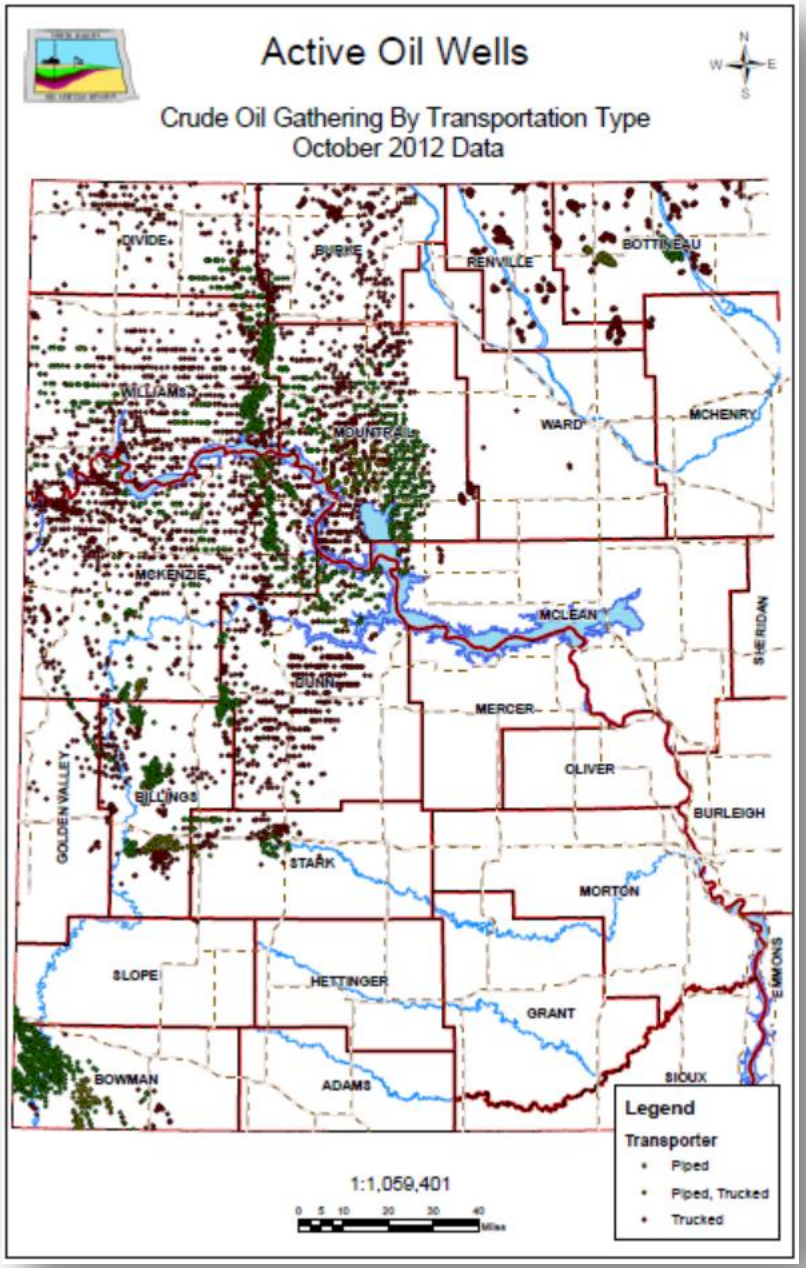
Transportation Options

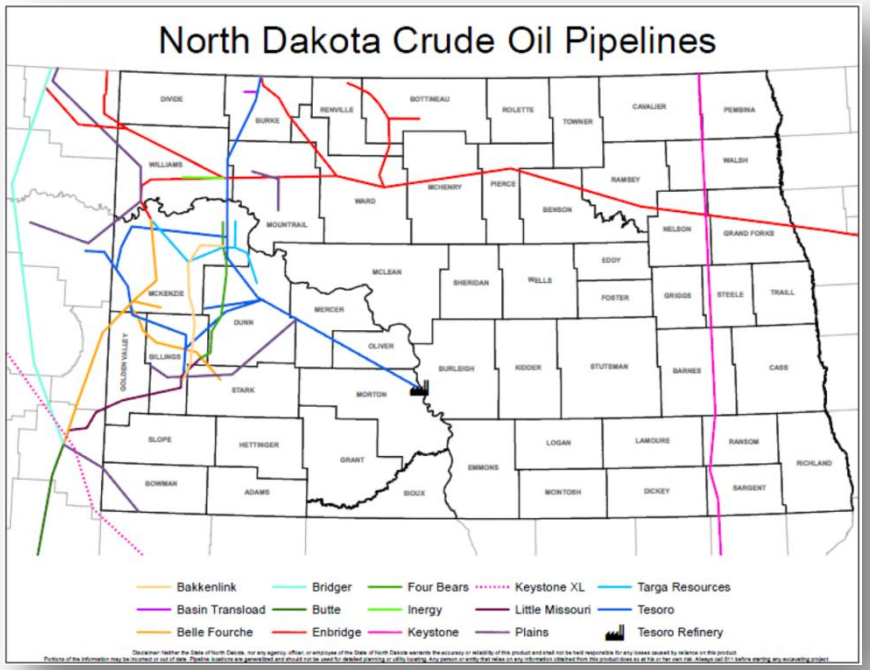
- Trucking Regionally
- Rail Transportation
- Vantage Pipeline (Ethane)
- ONEOK Bakken Pipeline (Y-Grade)
- Alliance Pipeline (Rich Gas)
- New Pipeline Infrastructure??

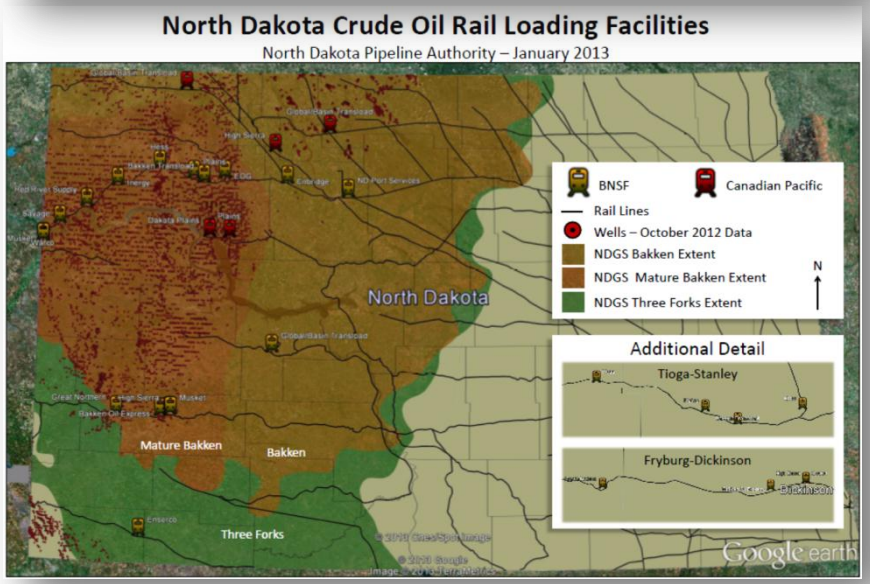
NGL Pipeline Transportation



New Maps Online







Contact Information

North Dakota Pipeline Authority

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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

811 Know what's below. Call before you dig.

How the Game Has Changed

Infrastructure and the North American Petroleum Renaissance

Trisha Curtis, Senior Research Analyst
Energy Policy Research Foundation, Inc. (EPRINC)
NDPA Webinar
March 8th, 2013

Who is EPRINC?

EPRINC stands for ***Energy Policy Research Foundation, Inc.*** We are a non-profit research group that does economic and policy analysis on the petroleum industry.

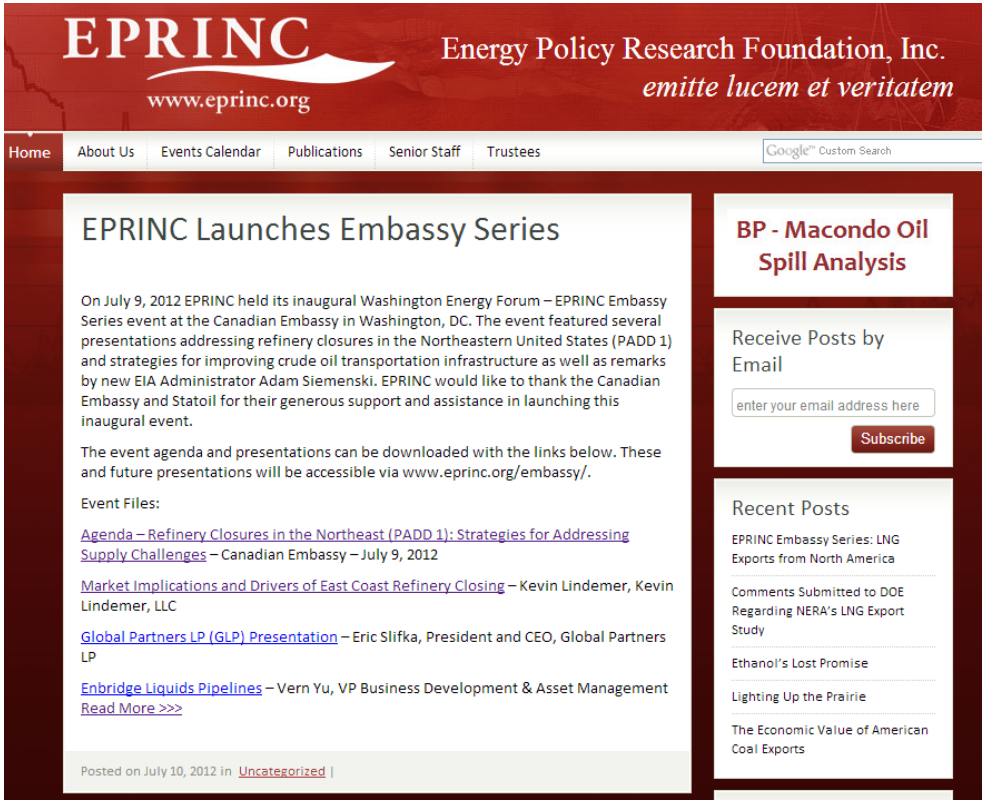
Founded in 1944 in New York. Established as a group to explain markets and fundamentals

Previously the Petroleum Industry Research Foundation, Inc (PIRINC) until we moved to Washington in 2007

Grew largely into a downstream organization, but have since moved extensively into upstream and midstream

Extensive work on ethanol, refining, U.S. shale plays, Keystone XL, natural gas flaring

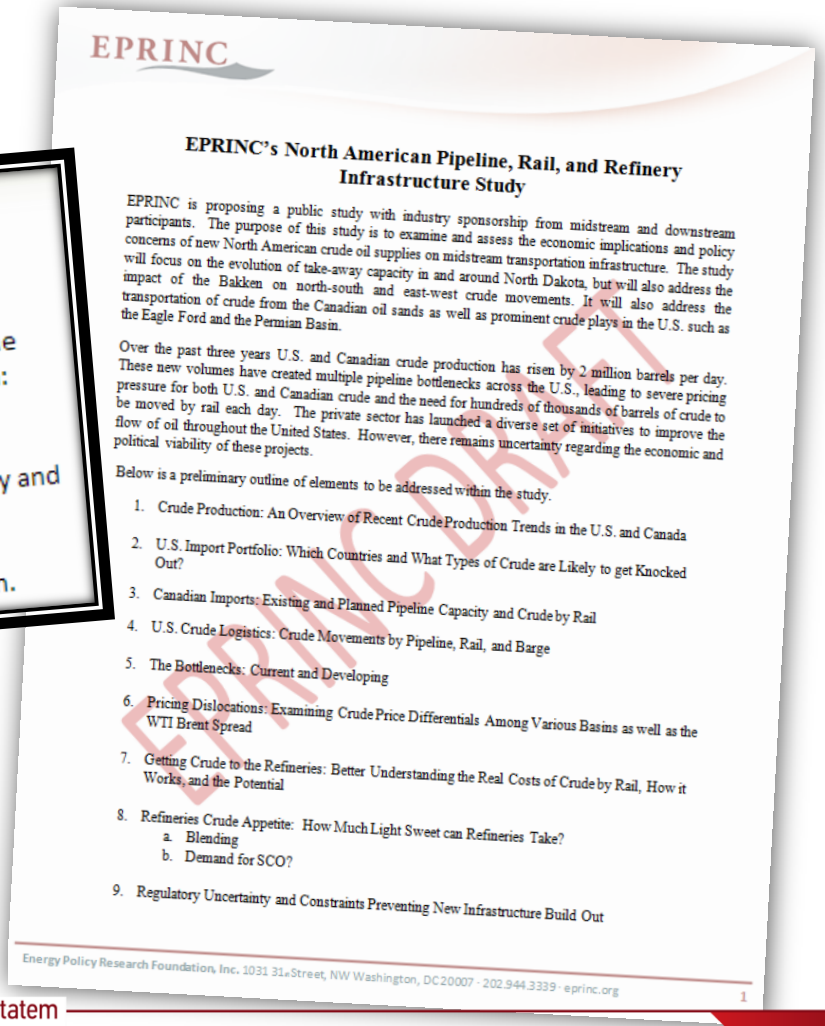
www.eprinc.org -- check out our research, its free



Recent and Forthcoming

EPRINC Embassy Series: LNG Exports from North America

The second event in the EPRINC Embassy Series was held on January 29, 2013 at the Russian Embassy in Washington, D.C. The event, LNG Exports From North America: Understanding the Policy Debate, featured presentations by Jim Jensen, Piotr Galitzine and David Montgomery, as well as commentary by Charles Ebinger and Michelle Michot Foss. EPRINC is grateful to the Russian embassy for its hospitality and support of this event and in particular would like to thank H. E. Sergey I. Kislyak, Ambassador of the Russian Federation to the U.S. and the Honorable Yury P. Sentyurin, State-secretary – Deputy Minister of Energy of the Russian Federation.



EPRINC

EPRINC's North American Pipeline, Rail, and Refinery Infrastructure Study

EPRINC is proposing a public study with industry sponsorship from midstream and downstream participants. The purpose of this study is to examine and assess the economic implications and policy concerns of new North American crude oil supplies on midstream transportation infrastructure. The study will focus on the evolution of take-away capacity in and around North Dakota, but will also address the impact of the Bakken on north-south and east-west crude movements. It will also address the transportation of crude from the Canadian oil sands as well as prominent crude plays in the U.S. such as the Eagle Ford and the Permian Basin.

Over the past three years U.S. and Canadian crude production has risen by 2 million barrels per day. These new volumes have created multiple pipeline bottlenecks across the U.S., leading to severe pricing pressure for both U.S. and Canadian crude and the need for hundreds of thousands of barrels of crude to be moved by rail each day. The private sector has launched a diverse set of initiatives to improve the flow of oil throughout the United States. However, there remains uncertainty regarding the economic and political viability of these projects.

Below is a preliminary outline of elements to be addressed within the study.

1. Crude Production: An Overview of Recent Crude Production Trends in the U.S. and Canada
2. U.S. Import Portfolio: Which Countries and What Types of Crude are Likely to get Knocked Out?
3. Canadian Imports: Existing and Planned Pipeline Capacity and Crude by Rail
4. U.S. Crude Logistics: Crude Movements by Pipeline, Rail, and Barge
5. The Bottlenecks: Current and Developing
6. Pricing Dislocations: Examining Crude Price Differentials Among Various Basins as well as the WTI Brent Spread
7. Getting Crude to the Refineries: Better Understanding the Real Costs of Crude by Rail, How it Works, and the Potential
8. Refineries Crude Appetite: How Much Light Sweet can Refineries Take?
   a. Blending
   b. Demand for SCO?
9. Regulatory Uncertainty and Constraints Preventing New Infrastructure Build Out

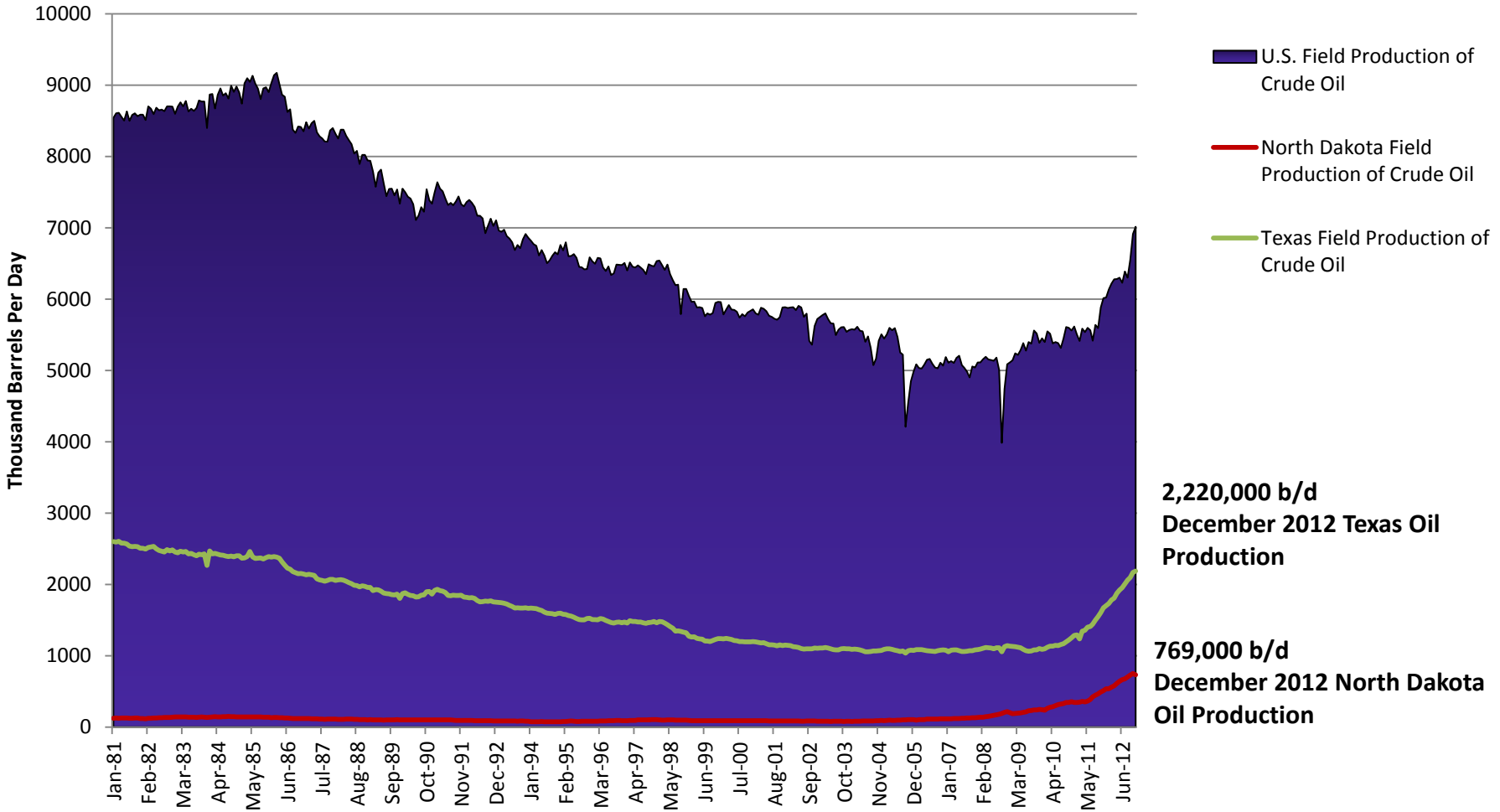
EPRINC DRAFT

Energy Policy Research Foundation, Inc. 1031 31st Street, NW Washington, DC 20007 · 202.944.3339 · eprinc.org 1

Main Discussion Points

1) Trends in production throughout the Northern Tier in the next 5-10 years
2) Pricing and Logistical Constraints
3) Likely markets for U.S. light and Canadian heavy crude oil
4) Keystone XL and its relationship to other Canadian and U.S. Midcontinent projects
5) Prospect for movement of new crude supplies to U.S. East and West coasts
6) Regulatory and market constraints on the movement of North American crude

U.S. Oil Production - 7 mbd

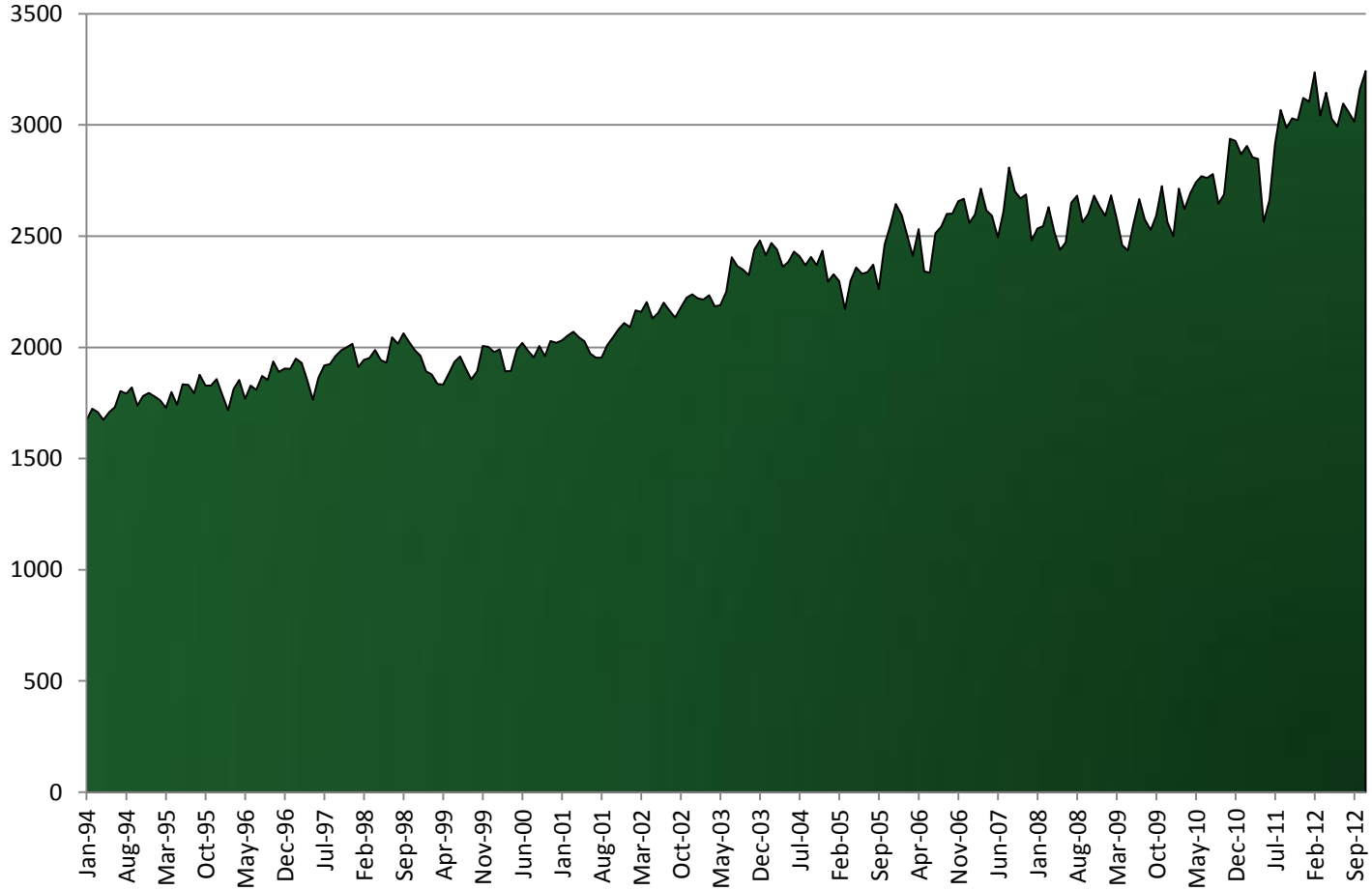


2,220,000 b/d December 2012 Texas Oil Production

769,000 b/d December 2012 North Dakota Oil Production

Source: EIA (mbd million barrels per day)

Canadian Oil Production - 3.2 mbd

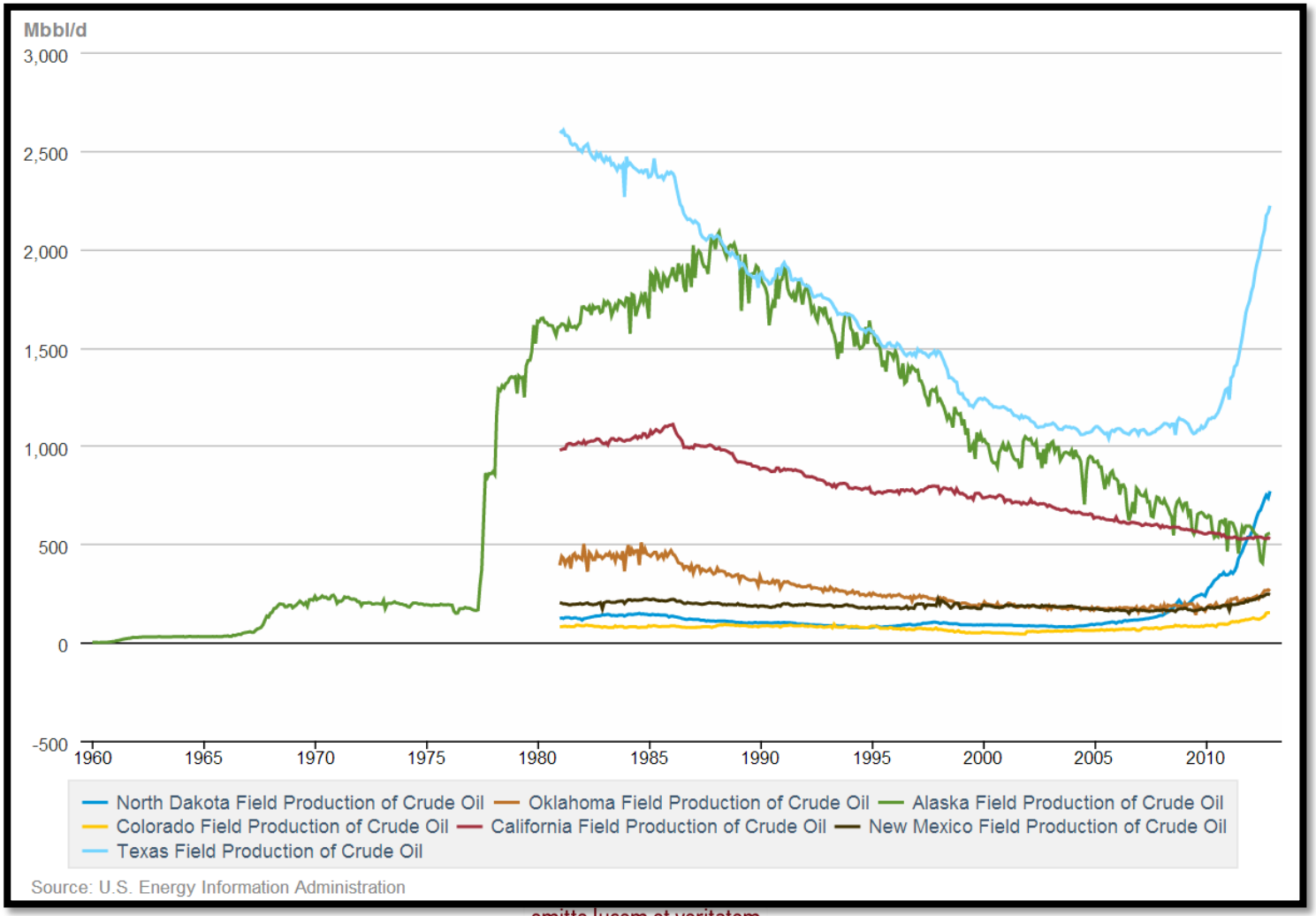


3,243,000 b/d
November 2012 Canadian Oil Production

Canada Oil Production Including Lease Condensate (Thousand Barrels Per Day)

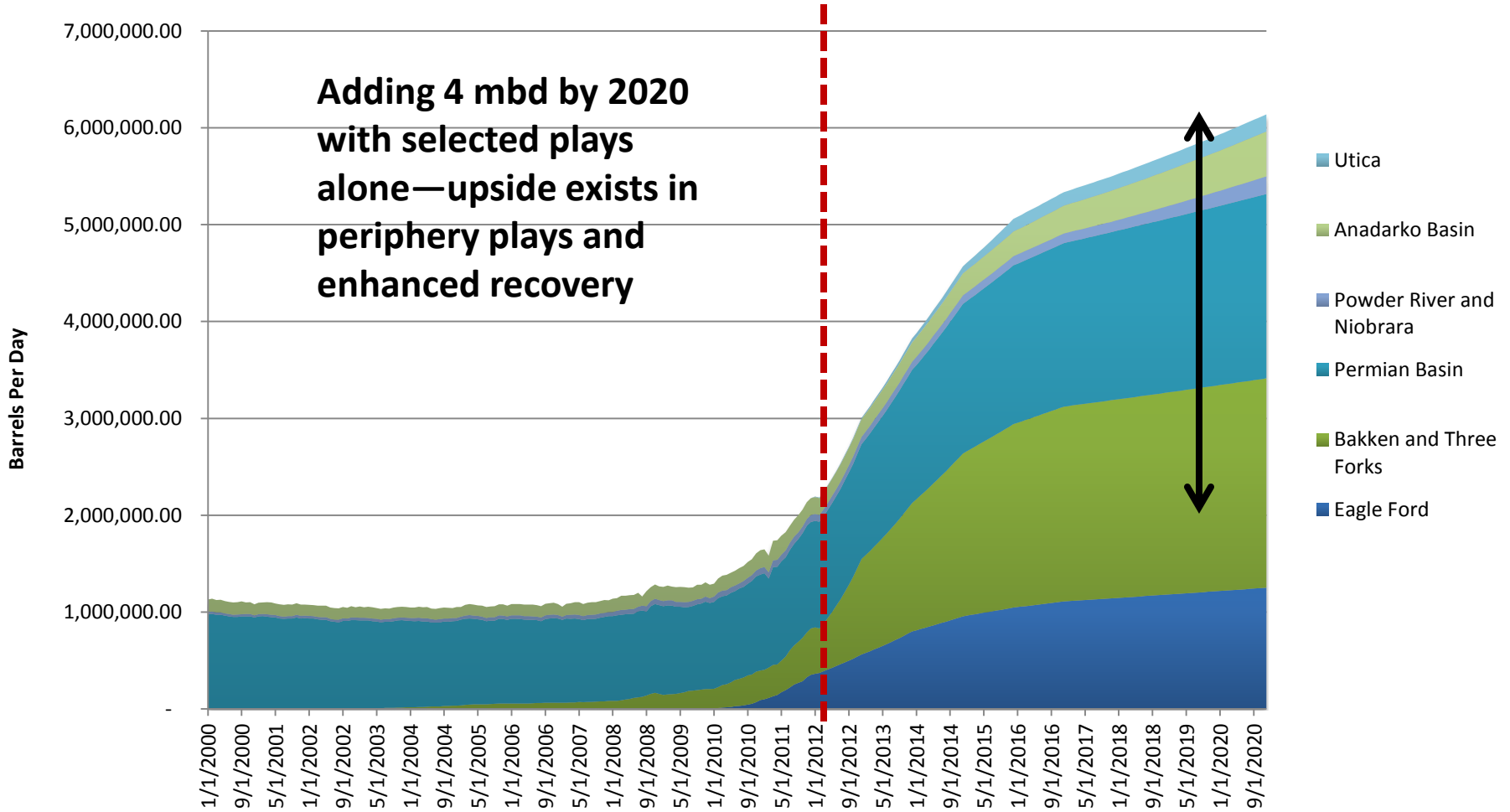
Source: EIA International Energy Statistics

U.S. Growth Stories



Renaissance in the Making

EPRINC's Forecast for Major U.S. Shale Plays



Source: HPDI data with EPRINC forecast estimates

The Forecast Numbers

Bentek

- Between 2011-2016 3.1 mbd increase (or 36%) in both Canadian and US oil production
- 900,000 b/d increase in exports from Canada to US
- US oil imports (exclude Canada) drop 2.8 mbd or 41% to 3.9 mbd average by 2016

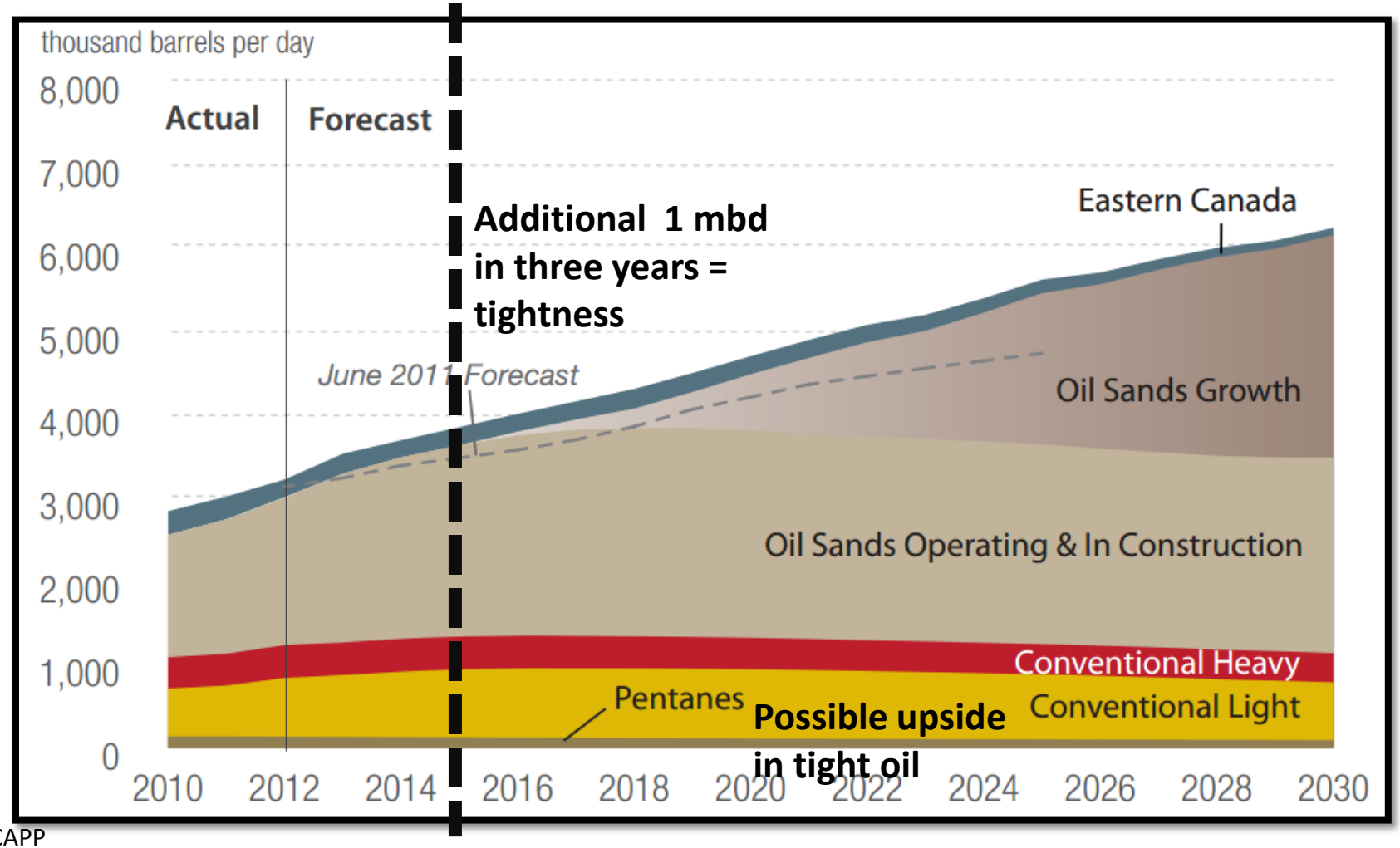
Raymond James

- *"U.S. oil production (excluding NGLs) will grow from 5.6 MMBpd in 2010 to a whopping 9.1 MMBpd in 2015. Including natural gas liquids, total U.S. petroleum liquid production grows 60% from 7.7 MMBpd in 2010 to 12.2 MMBpd in 2015."*

Citi (from 2011 to 2020)

- US liquids grow from 9 mbd to 15.5 mbd
- Canada liquids grow from 3 mbd to 7 mbd

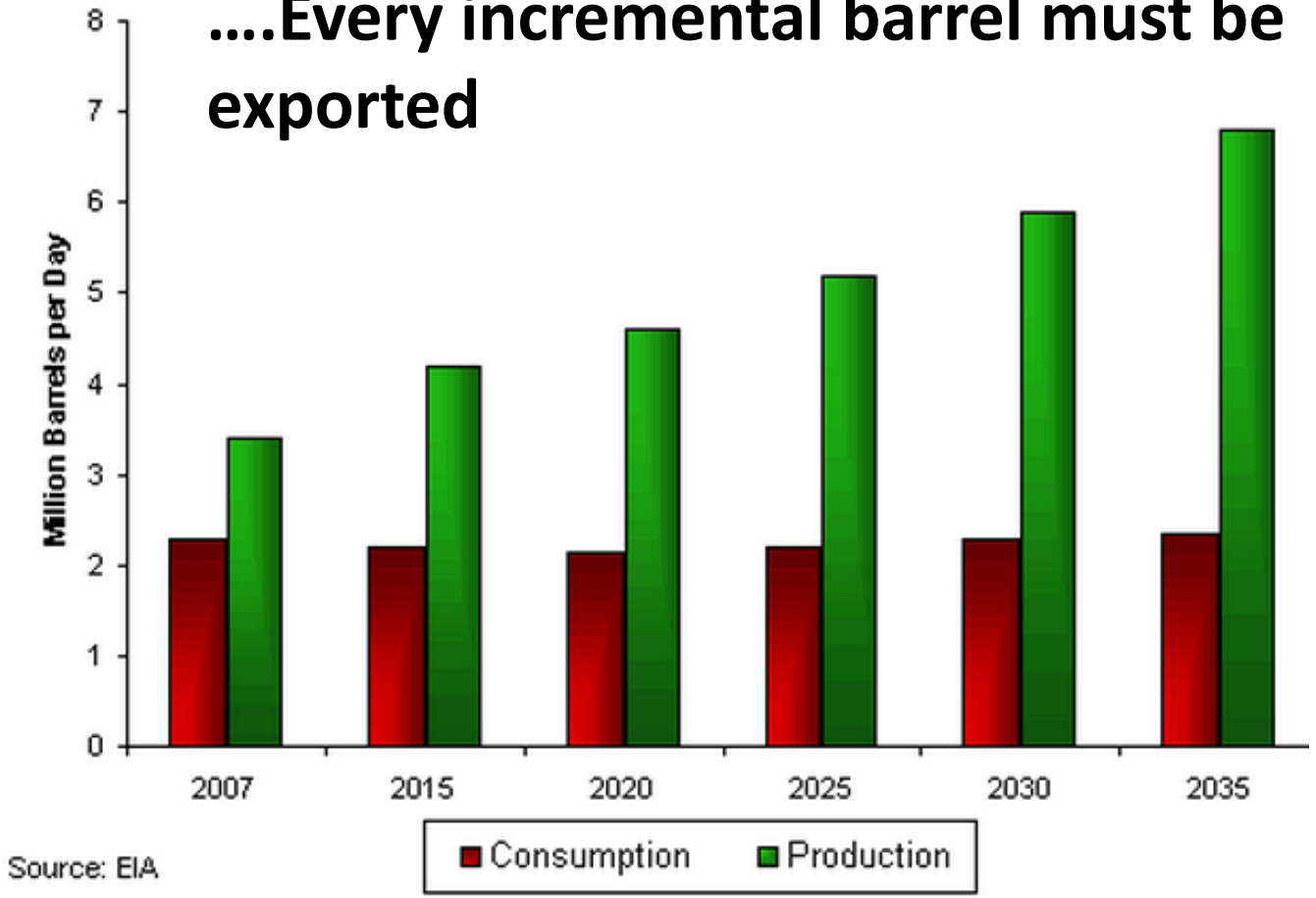
Canadian Production



Source: CAPP

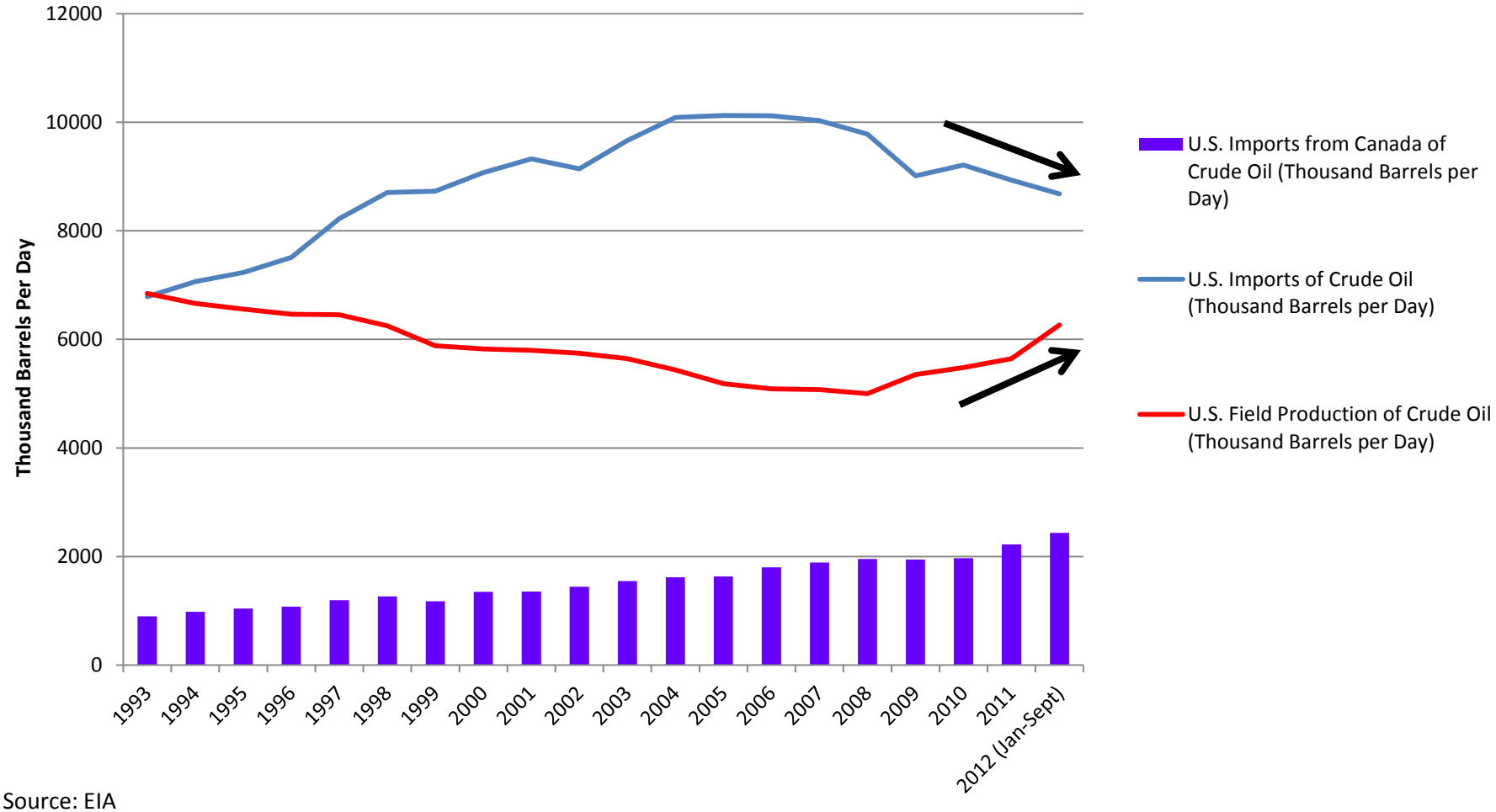
Canadian Consumption to Remain Flat…

….Every incremental barrel must be exported



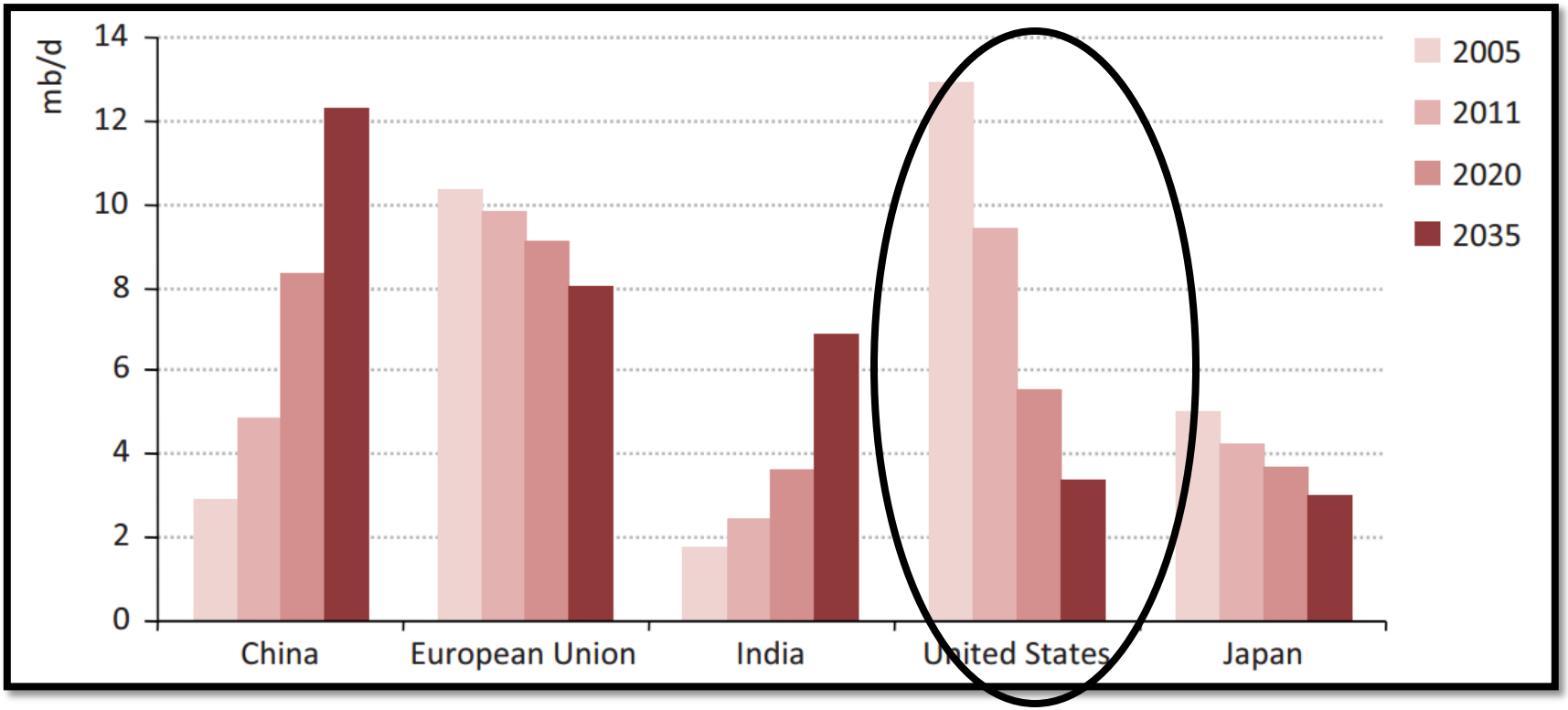
Source: EIA

U.S. Total Imports, U.S. Canadian Imports, U.S. Production



Source: EIA

Net Oil Imports in Selected Countries- IEA

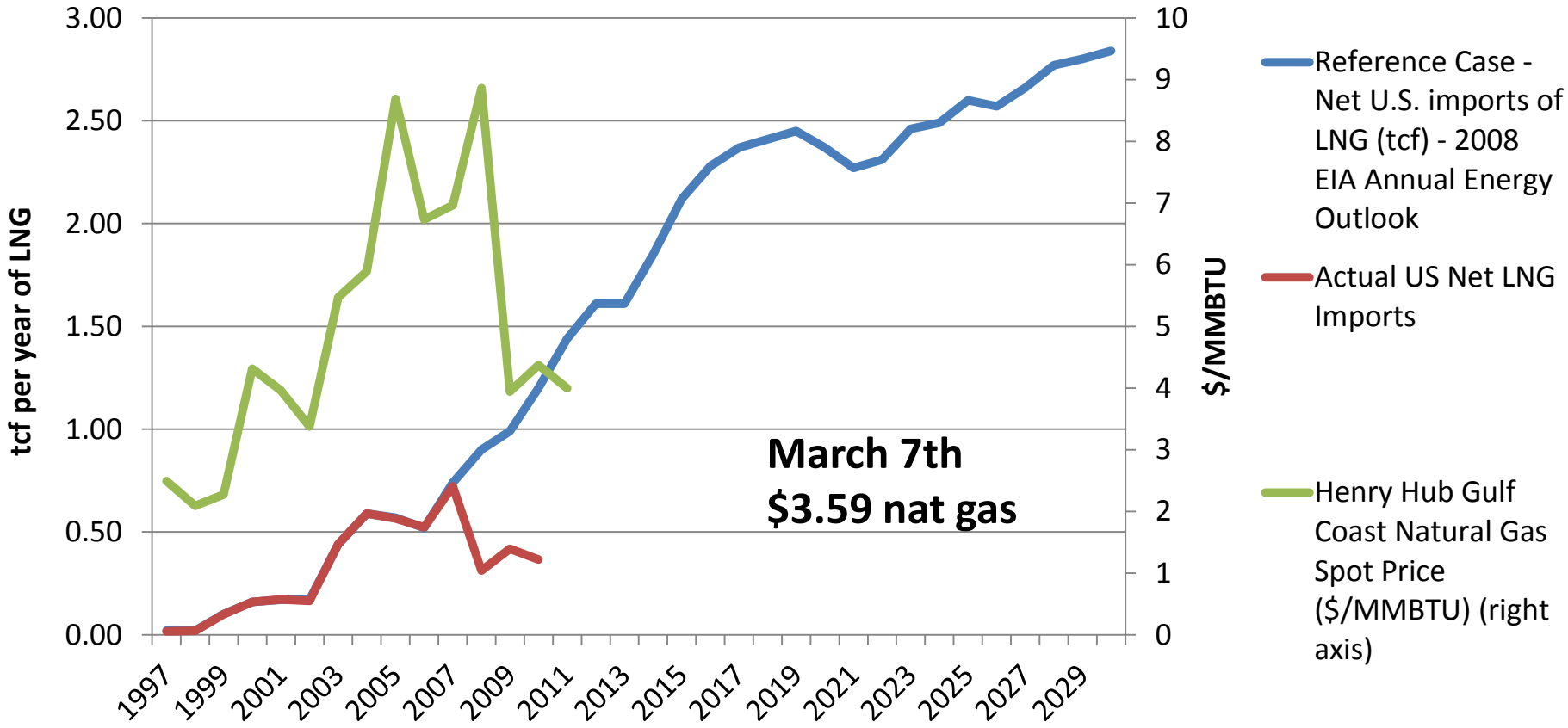


Fuel efficiency, plateauing demand, and rising production offer the potential to drastically reduce oil imports over the coming years.

"Net Oil Imports in Selected Countries and Regions in the New Policies Scenario"

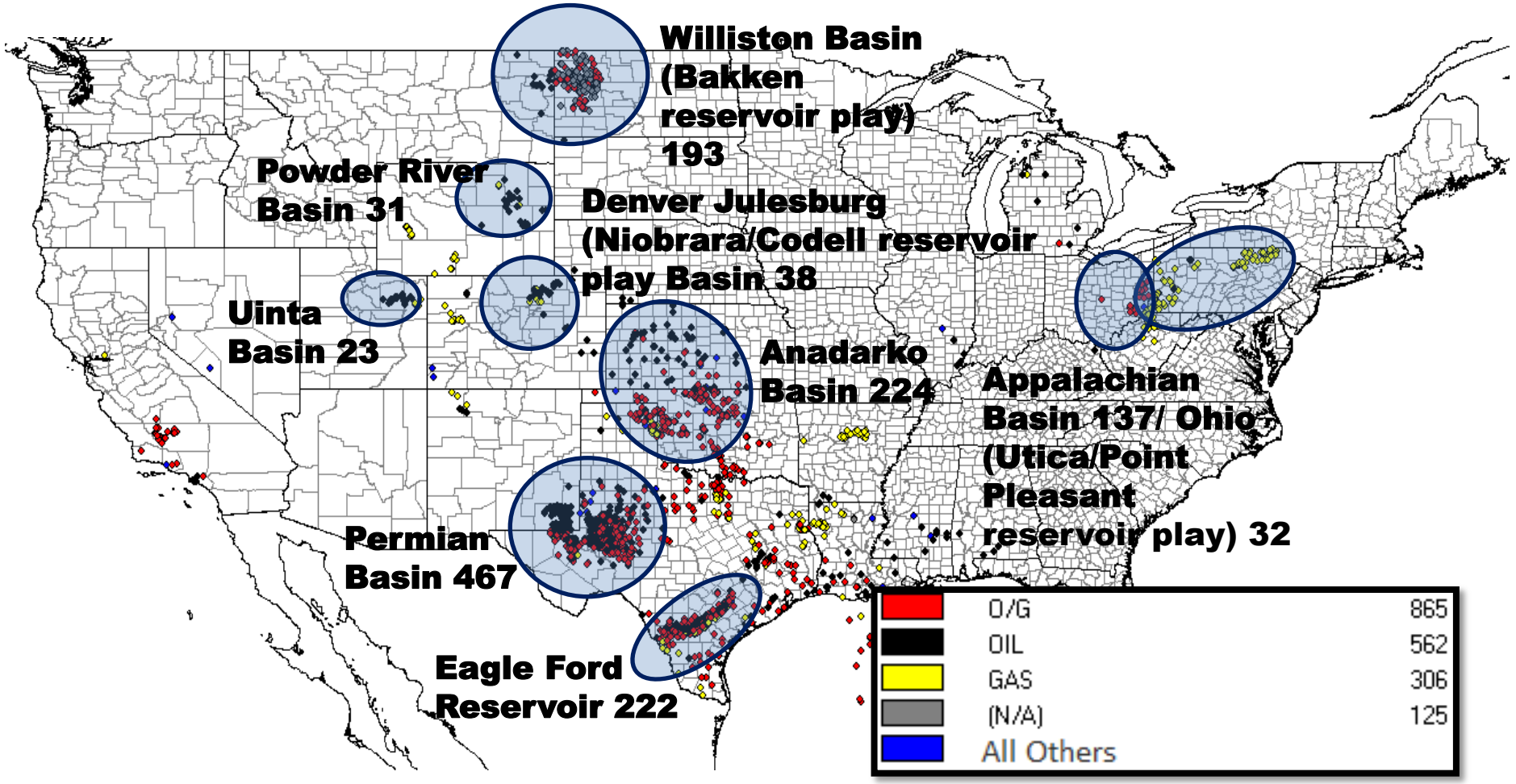
Source: World Energy Outlook, © OECD/IEA, 2012

Remember to be humble...Projected Imports of LNG vs. Actual



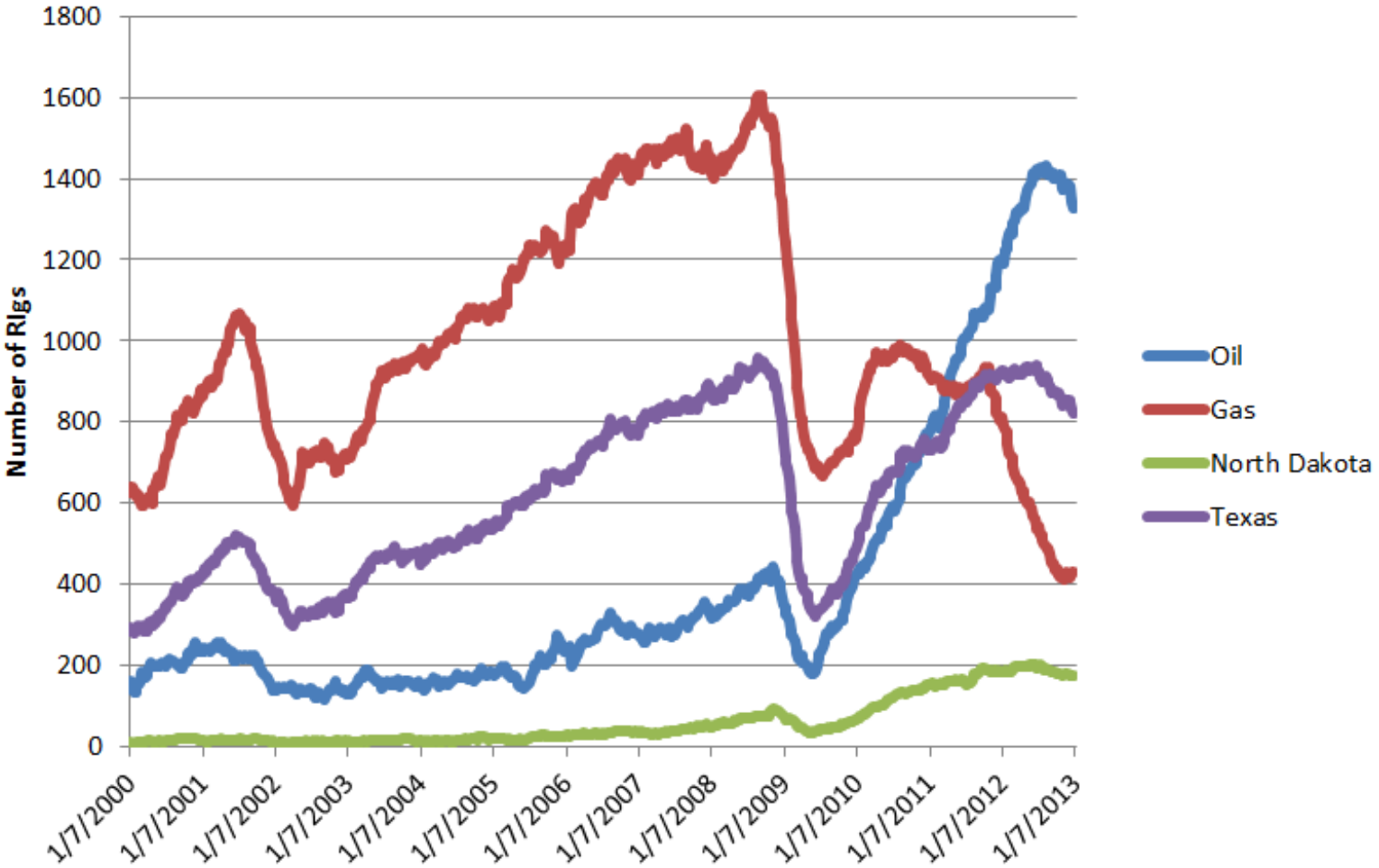
Source : EIA data and forecasts

U.S. Rig Count and Play Breakdown with Rig Totals



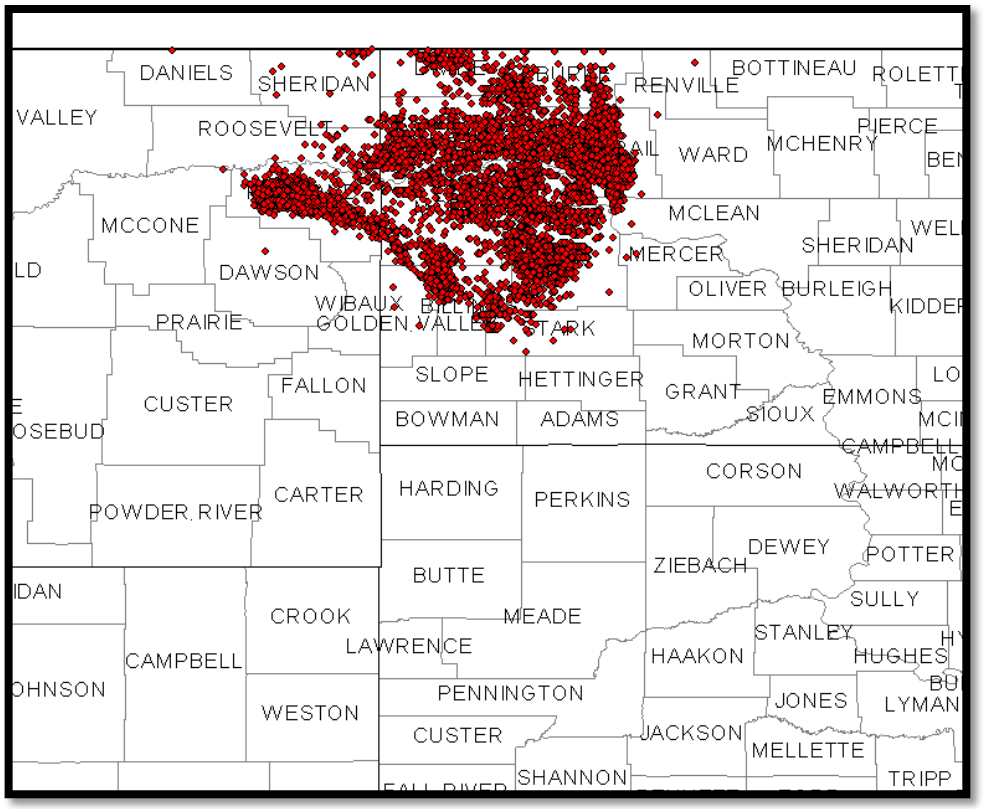
Source: HPDI Feb 12 2012

U.S. and North Dakota and Texas Rig Count

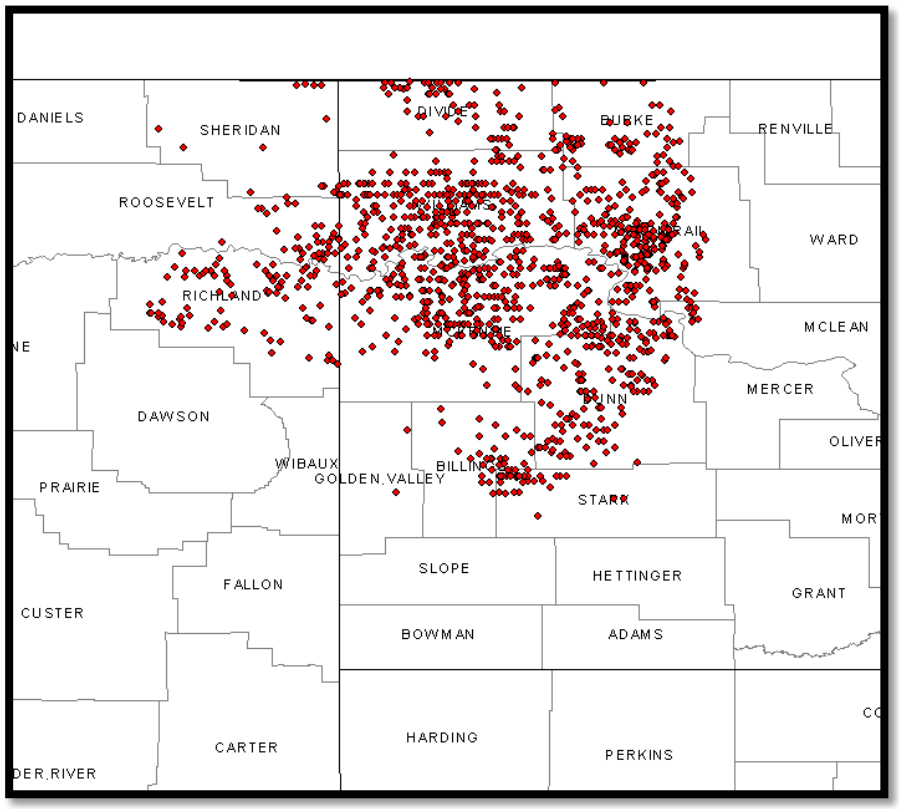


Source: Baker Hughes Jan 2013. All but 51 rigs nationwide are onshore.

Bakken and Three Forks Wells in the Williston Basin (Montana and North Dakota)



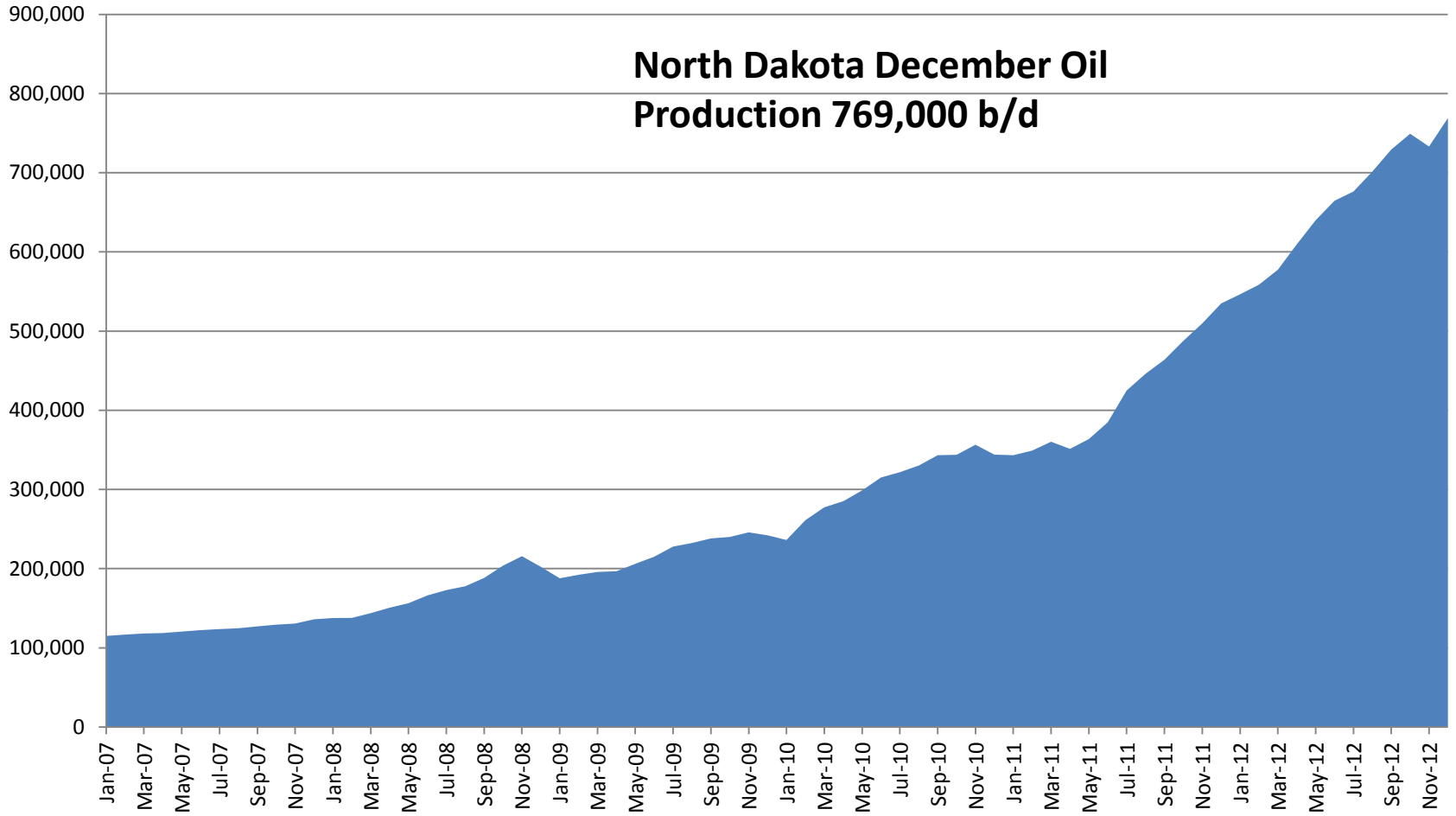
All Wells



2012 Wells

Source: HPDI

North Dakota Oil Production

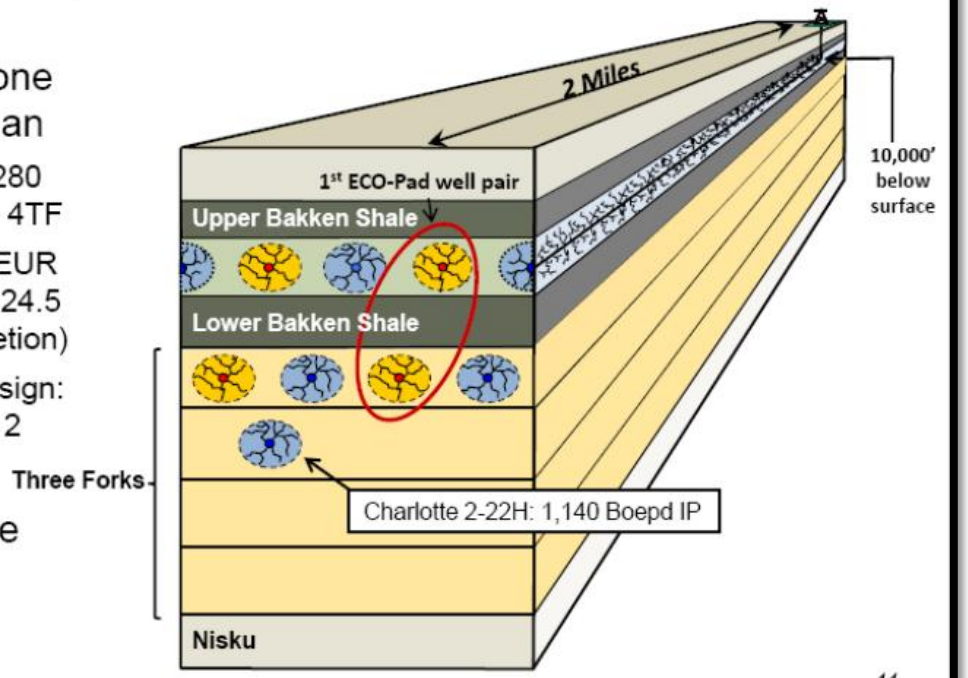


Source: NDPA

A lot of potential…

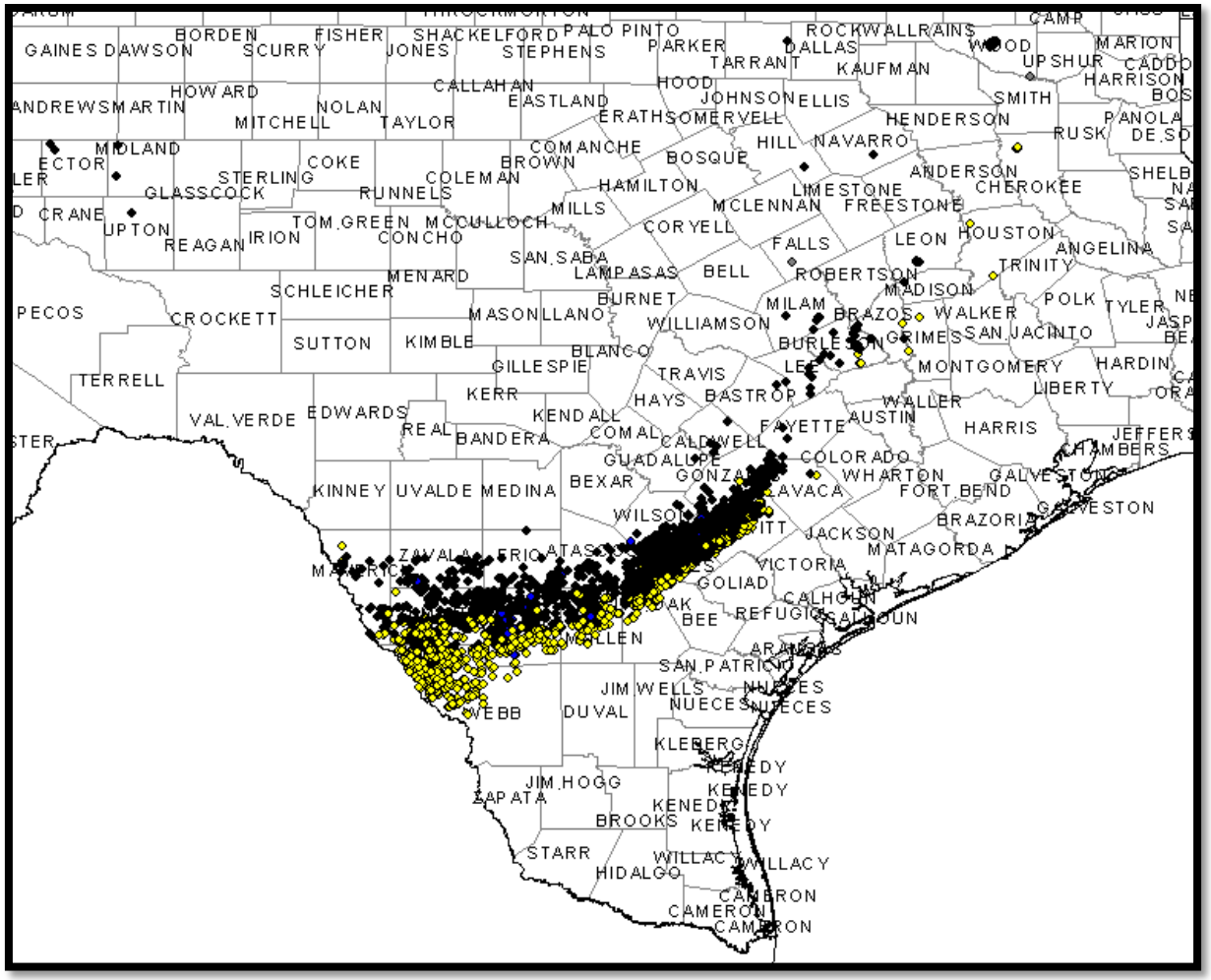
Bakken Development Plan

- Original dual-zone development plan
  - 8 wells per 1,280 acres – 4 MB, 4TF
  - 603,000 Boe EUR per well (avg. 24.5 stages/completion)
  - ECO-Pad® design: 2 wells south, 2 wells north
- Additional Three Forks potential



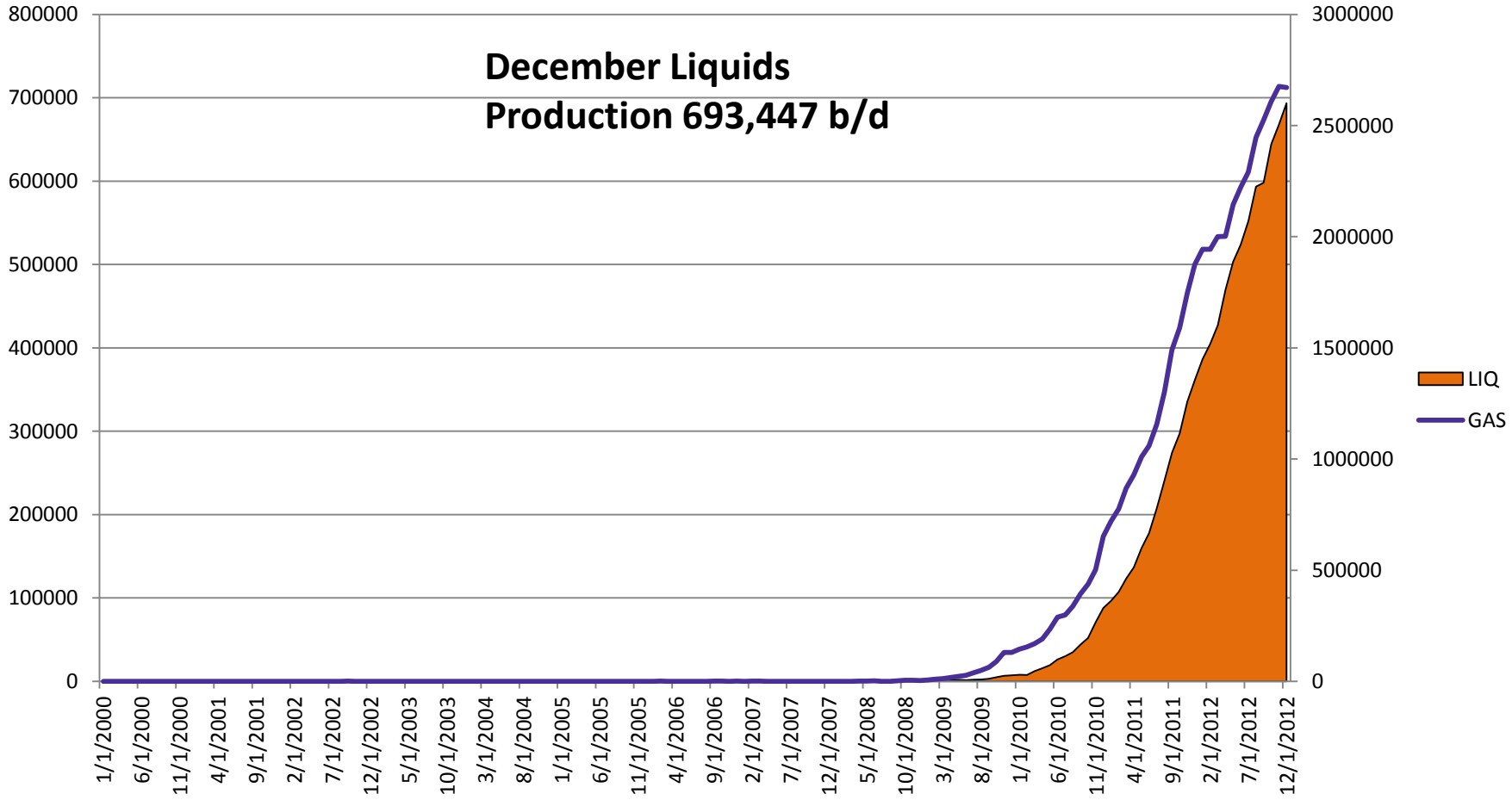
11

South Texas' Eagle Ford Reservoir Wells (Black-Oil, Yellow-Gas)



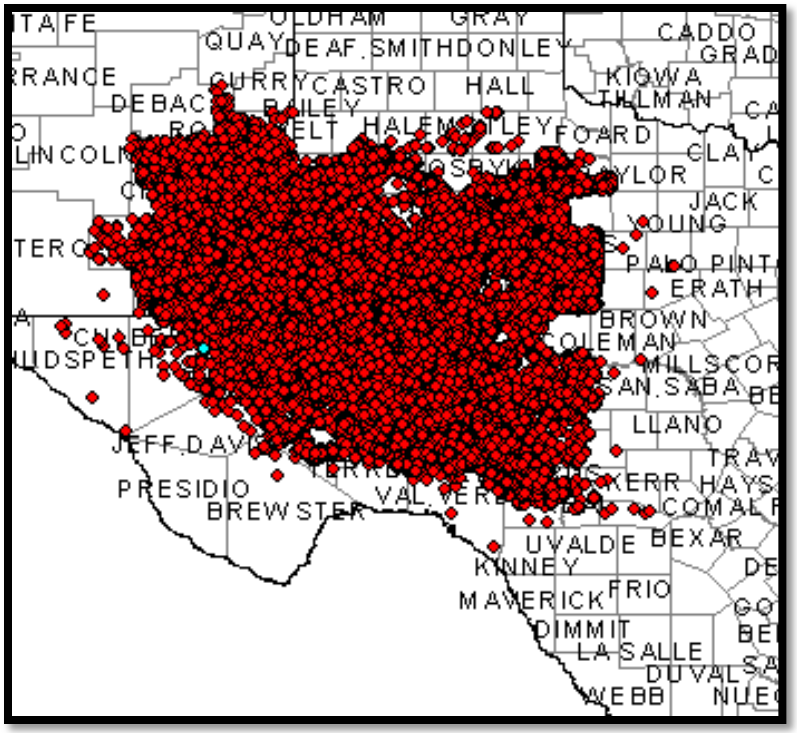
Source: HPDI Dec 10 2012

South Texas' Eagle Ford Reservoir Liquid and Gas Production

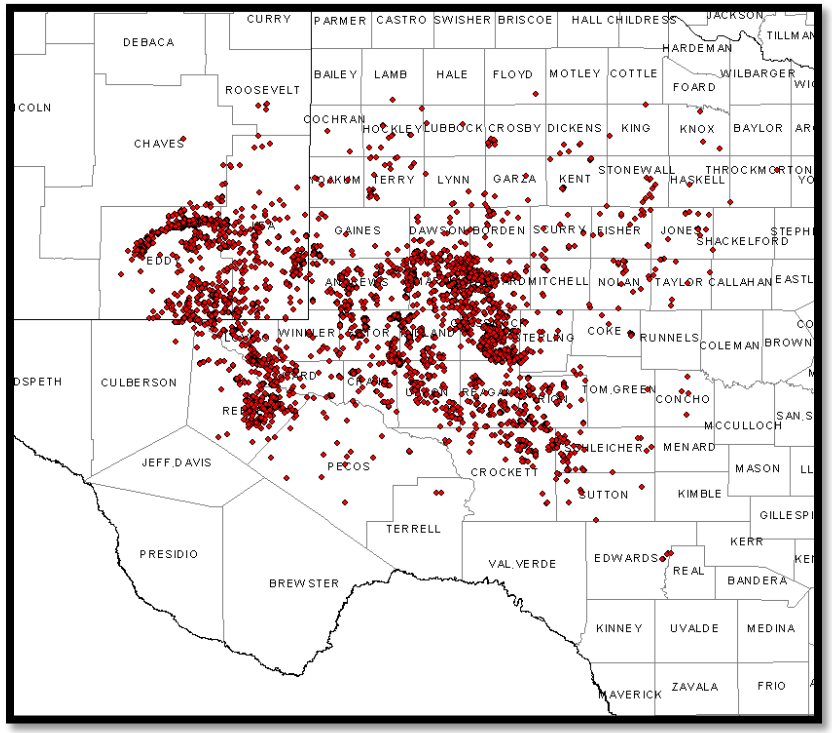


Source: HPDI Dec Feb 8th 2012, liquid volumes includes condensate, estimated condensate volumes are up to 40% of liquids production

Permian Basin Wells



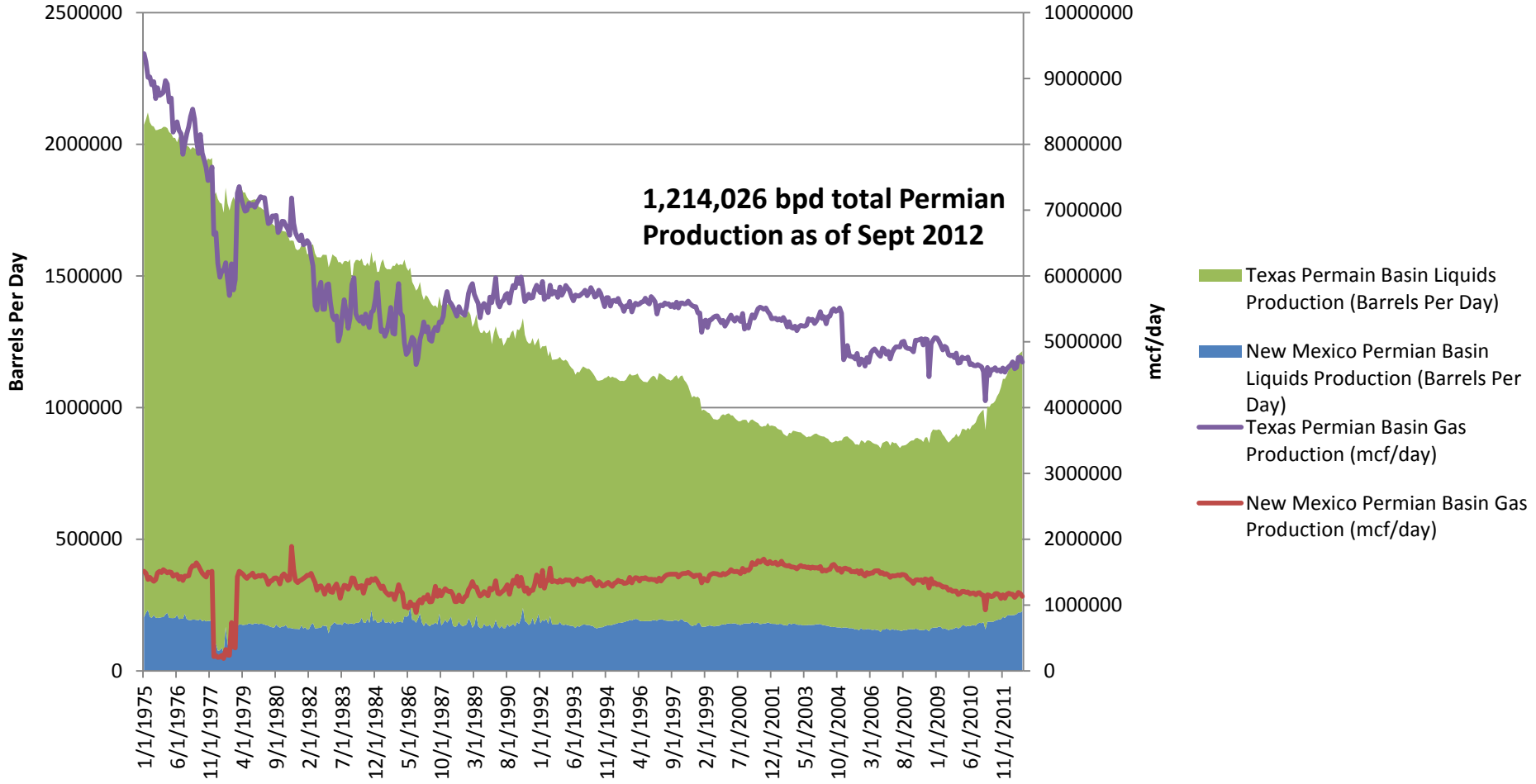
All Wells



2012 Wells

Source: HPDI

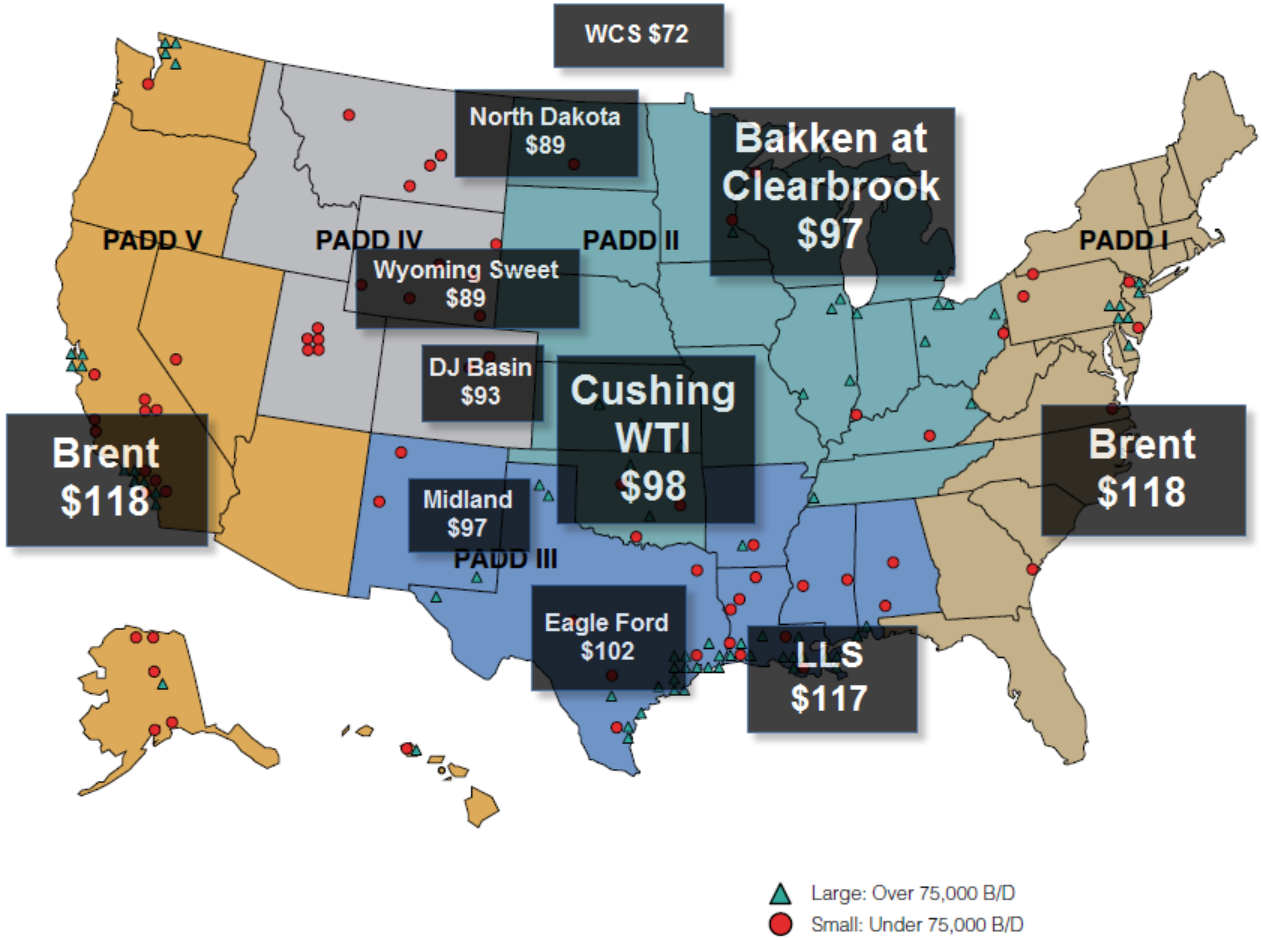
Permian Basin Liquids and Gas Production



Source: HPDI Jan 2013

And with all this production what's happening to prices?

Brent, WTI, and Bakken Markets

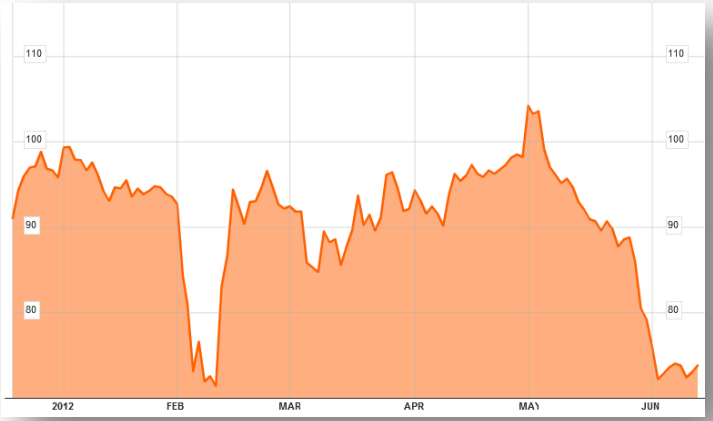


Brent $111
WTI $91
LLS $112
WCS $66
Bakken Clearbrook $91
North Dakota $85.50
Wyoming Sweet $85
DJ Basin $87
Midland $91
Eagle Ford $99.25

Source: AFPM Map,; Bloomberg Brent, Midland, LLS, and WTI Prices; Flint Hills and estimates, Canadian assumptions and estimates (Bloomberg)

Bakken Prices at Clearbrook

Bloomberg Bakken (Clearbrook MN) Crude Oil Spot Price



Bloomberg Bakken (Clearbrook MN) Crude Oil Differential

+ Add to Watchlist

USCSUHC1:IND -0.25 ▼ 0.50 200.00%

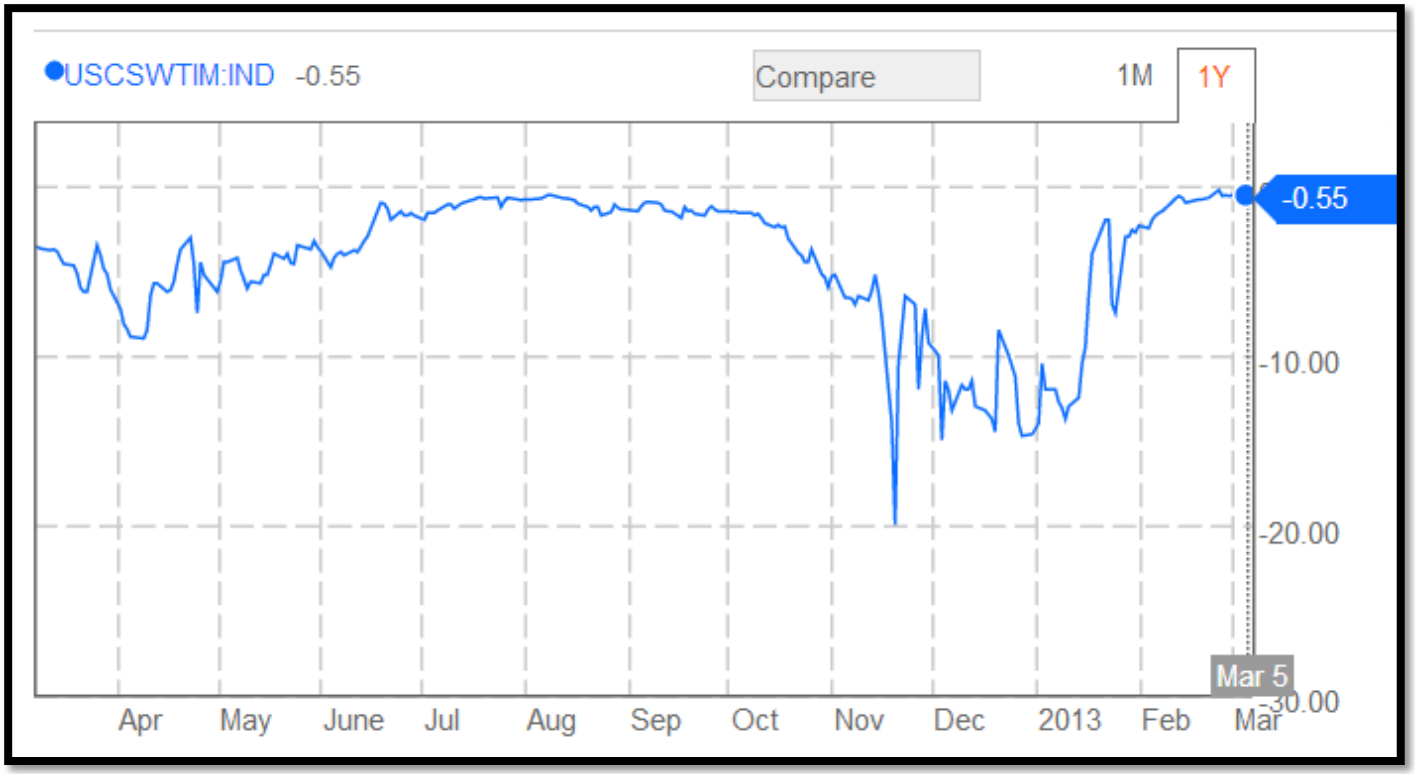
Source: Bloomberg, June 14, 2012 and March 7 2013

Midland (Permian) Differential

Bloomberg Midland Crude Oil Differential

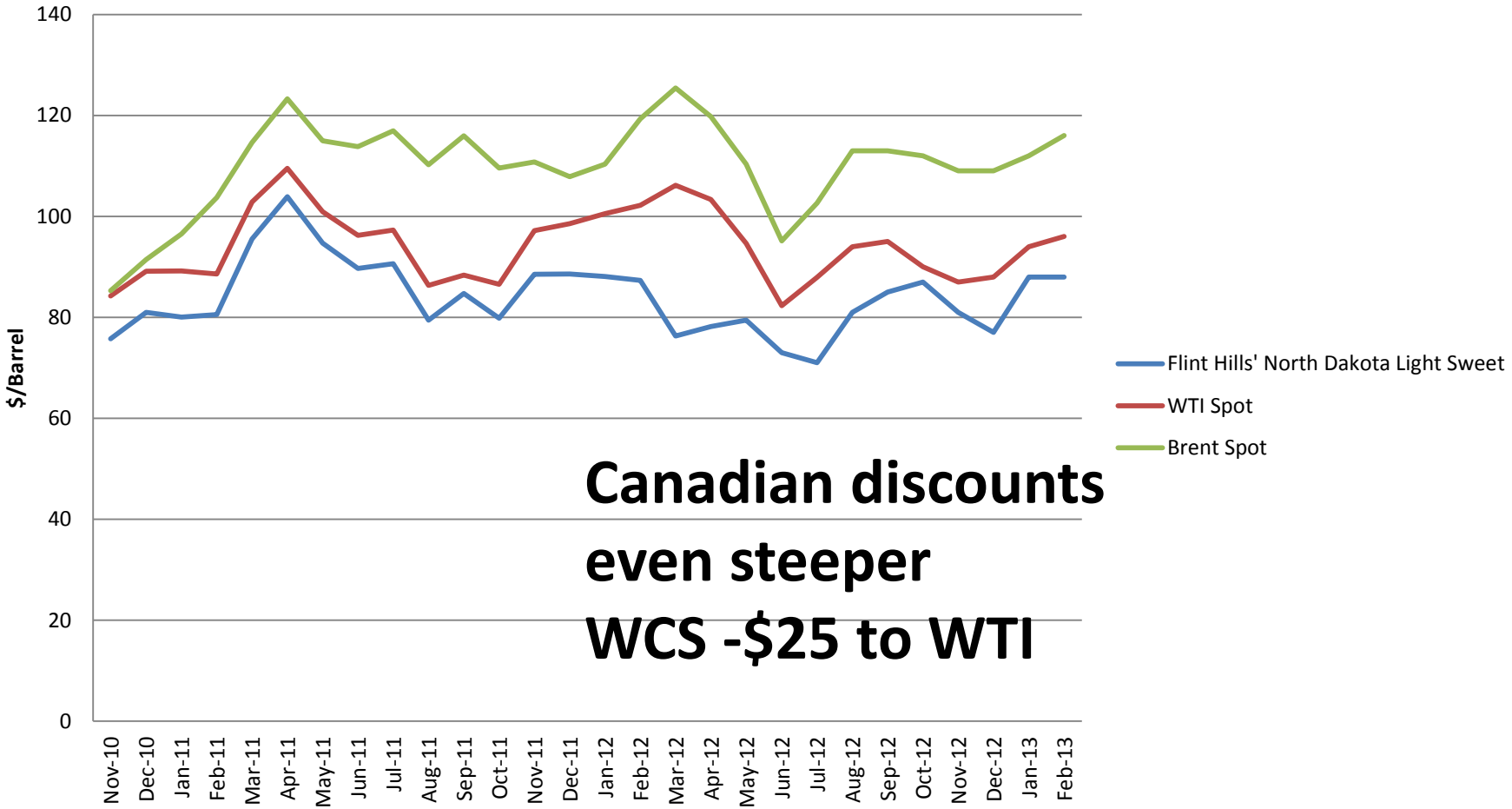
USCSWTIM:IND -0.50 ↓ 0.05 11.11%

As of 16:22:43 ET on 03/07/2013.



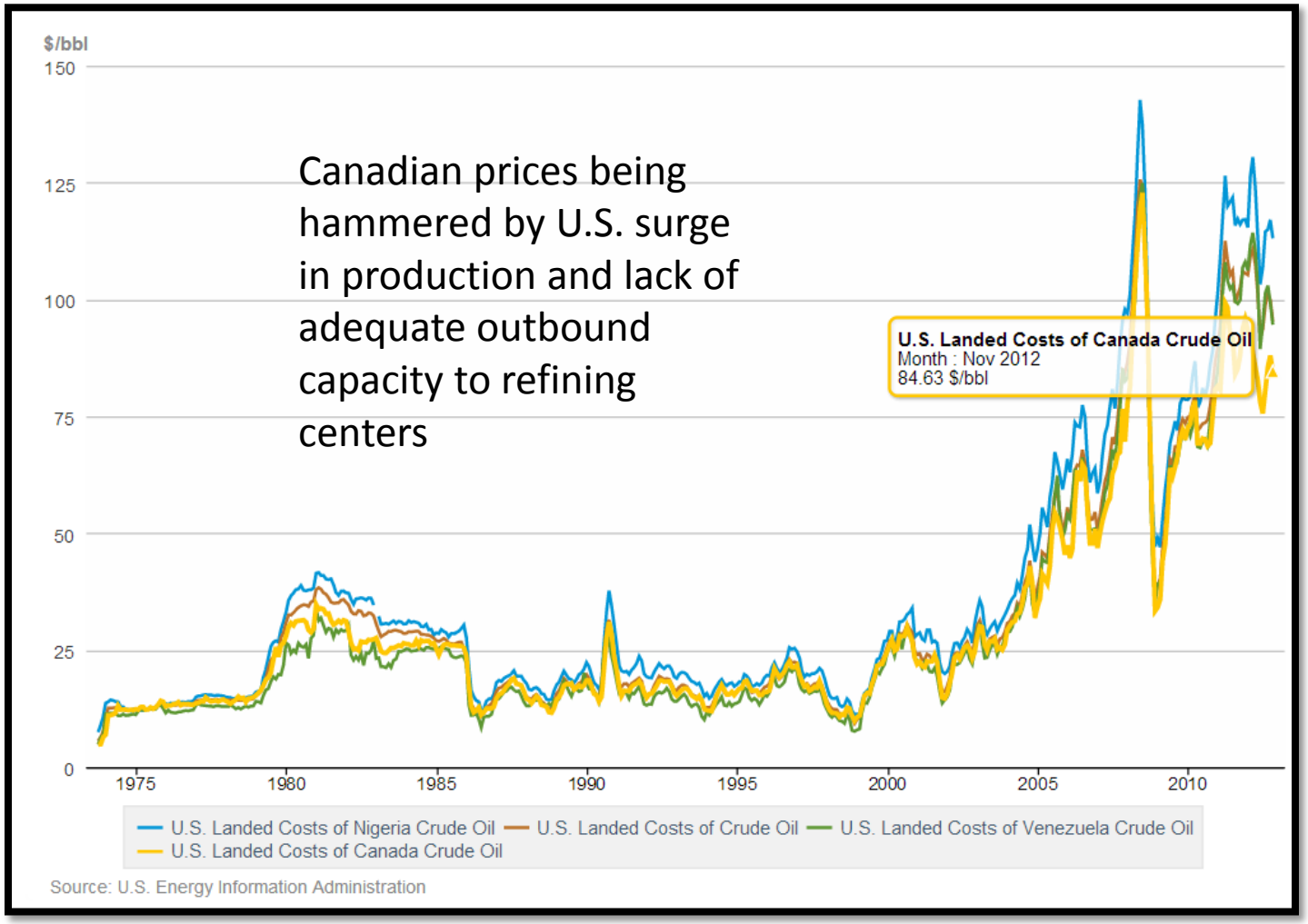
Source: Bloomberg March 7th 2013

Price Discounts



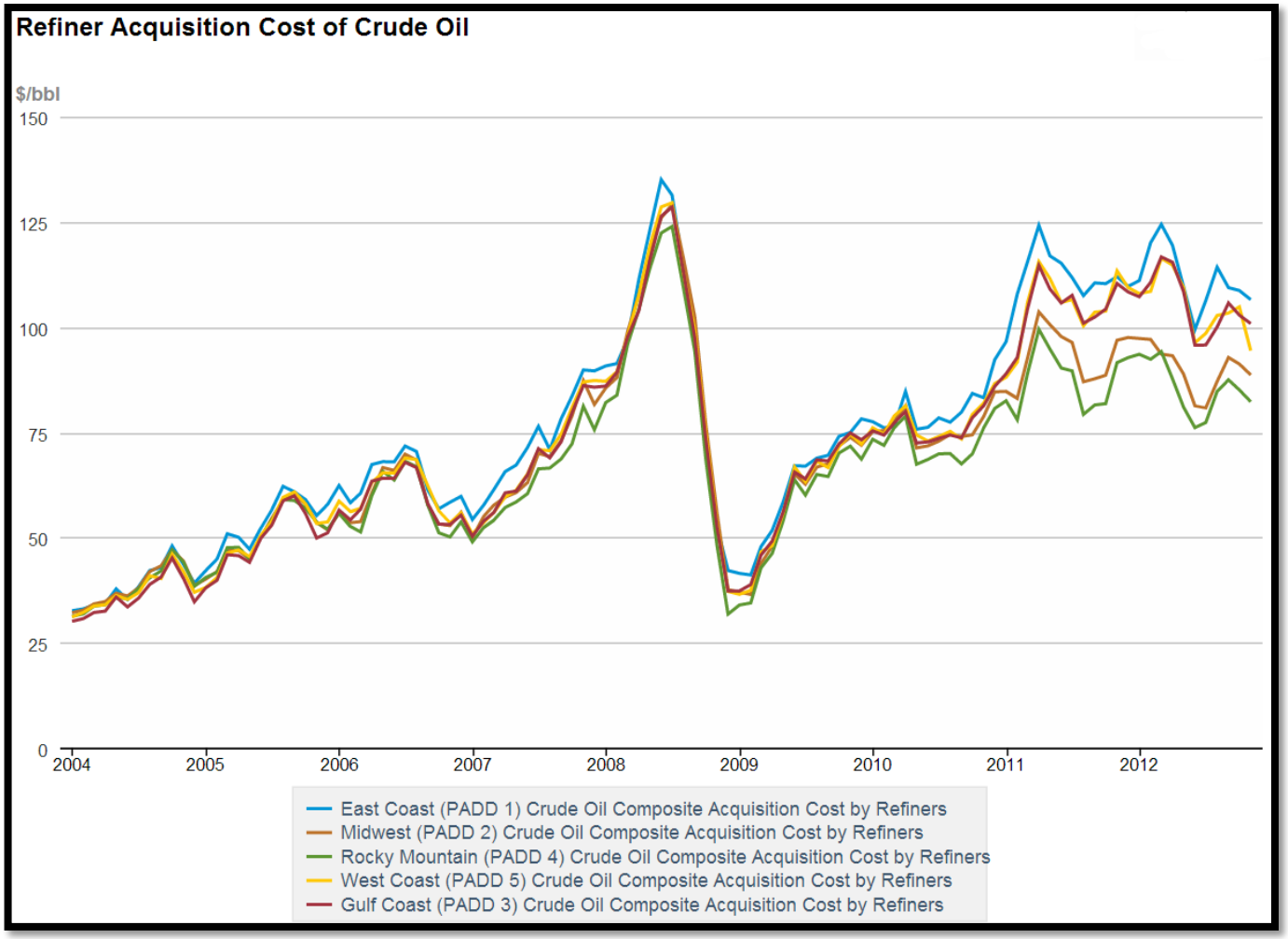
Source: Flint Hills, EIA, and estimates

Price of Canadian Crude Imports



Landed Cost: The dollar per barrel price of crude oil at the port of discharge. Includes charges associated with the purchase, transportation, and insuring of a cargo from the purchase point to the port of discharge. Does not include charges incurred at the discharge port (e.g., import tariffs or fees, wharfage charges, and demurrage).

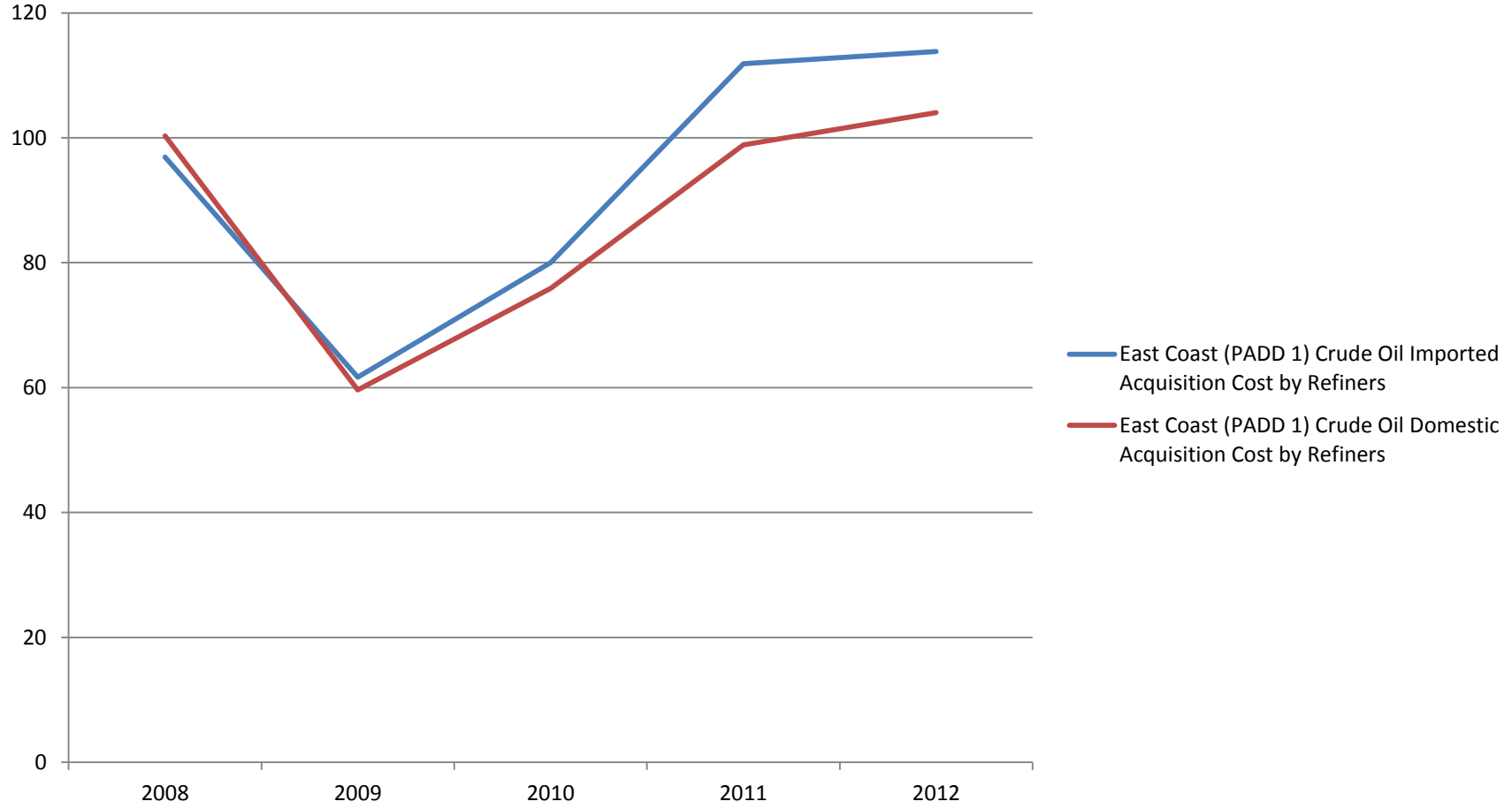
Refinery Acquisition Cost of Crude Oil



PADD 1 has the highest RAC in the U.S. – and the least heavy crude processing capability

Source: EIA

PADD 1 East Coast RAC of Crude: Domestic vs. Imported



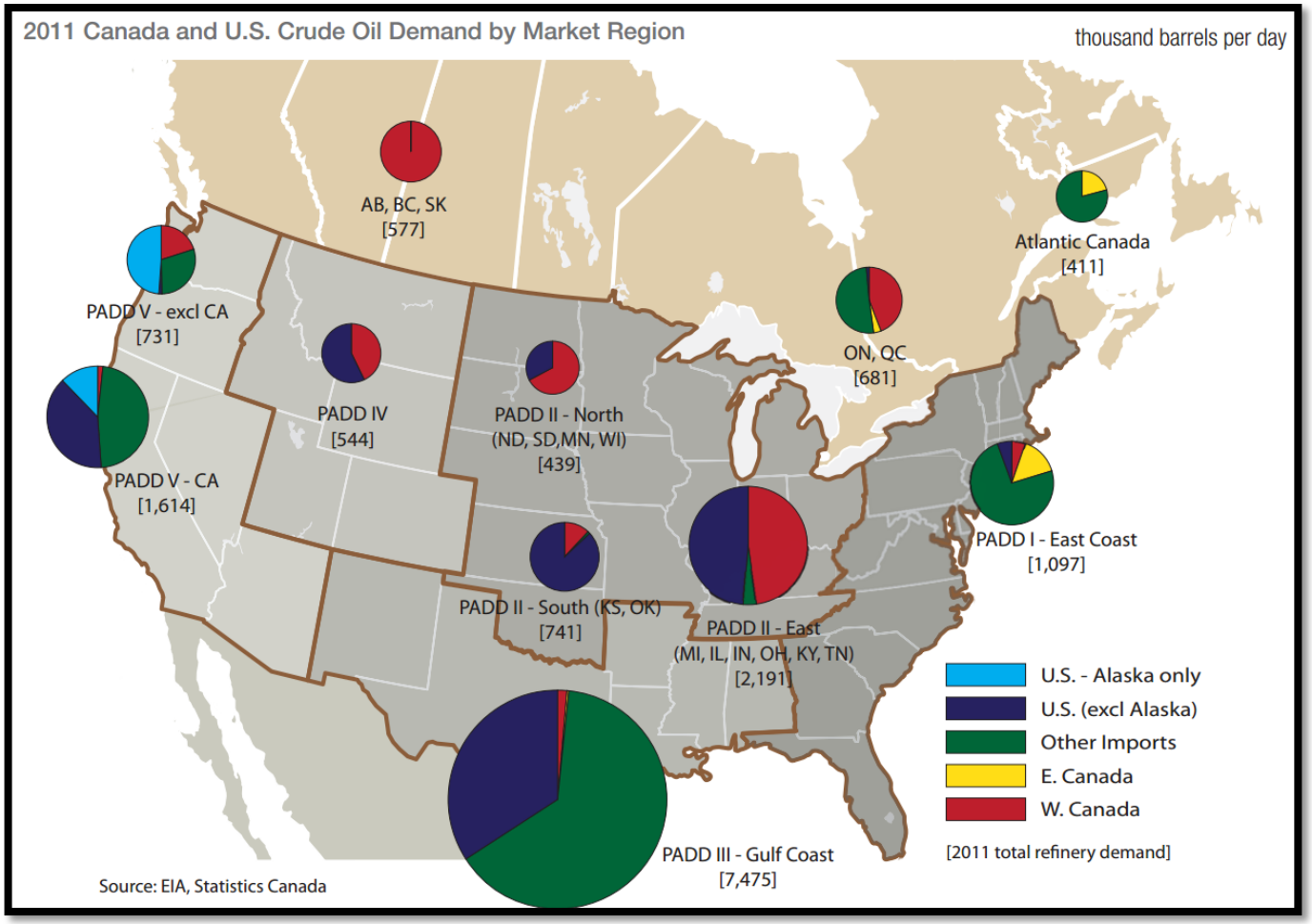
Source: EIA Data

Understanding the Infrastructure

Markets for Bakken and Canadian Crude

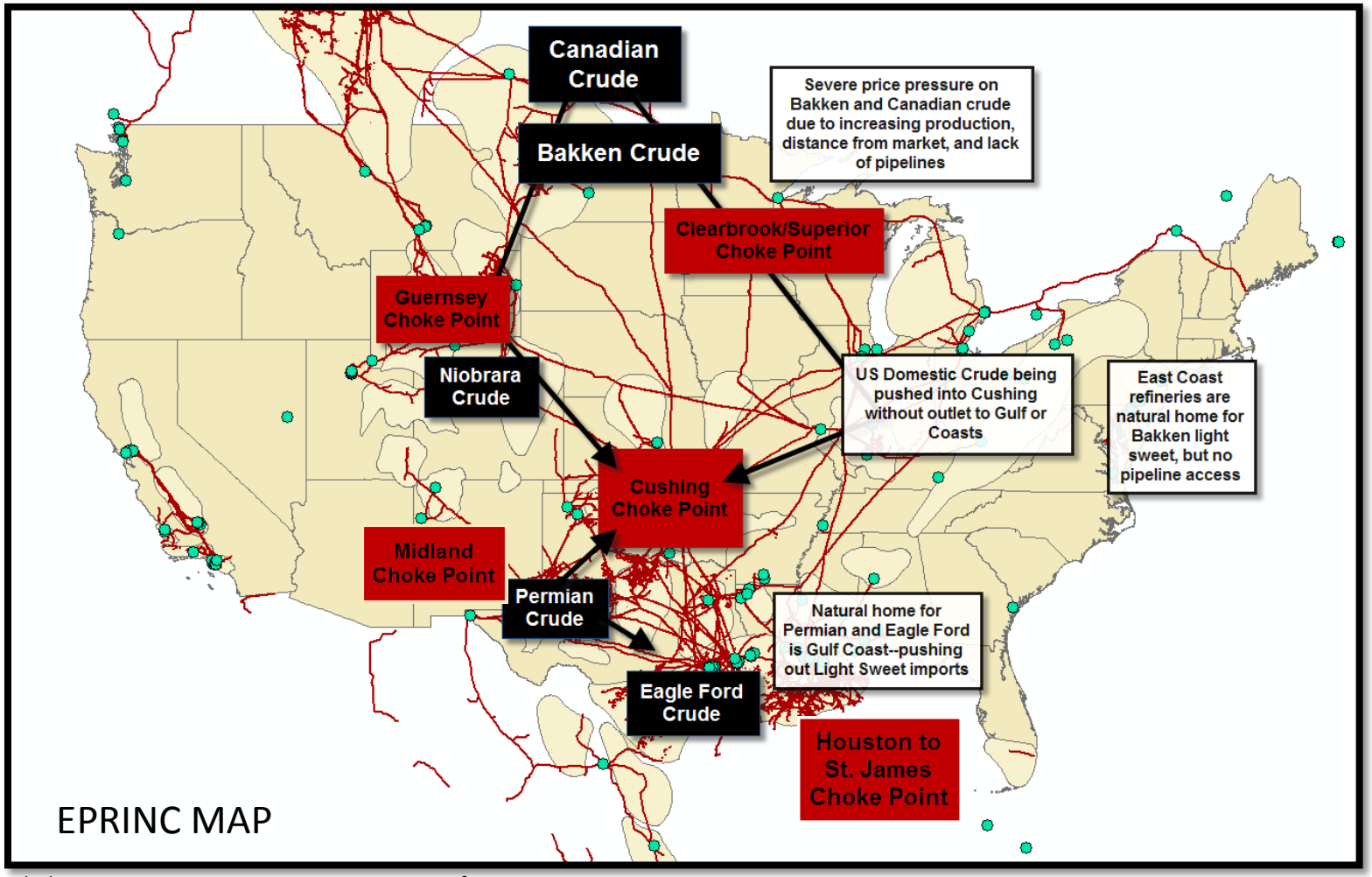
- The current markets for Canadian crude are the Rockies (PADD 4) and the Midwest (PADD 2) where heavy and SCO refining capacity exists
- The potential exists in Asia and the Gulf Coast…substantially knocking out heavy Mexican and Venezuelan imports in the US Gulf Coast
  - But due to regulatory and environmental hurdles, PADD III access has been postponed and thereby tightness has been created – and too much light sweet in the market exacerbating this tightness
- The U.S. imports a significant amount of SCO as well as heavy crude oil from Canada…SCO could play an important role in blending and meeting desired production of distillate
- Canadian crude fights for capacity with Bakken crude along the Enbridge line (Bakken crude ends up in Clearbrook and all of the PADDs)---as Bakken crude has moved to rail, Canadian price discounts have eased slightly

Canadian Imports and Potential Markets



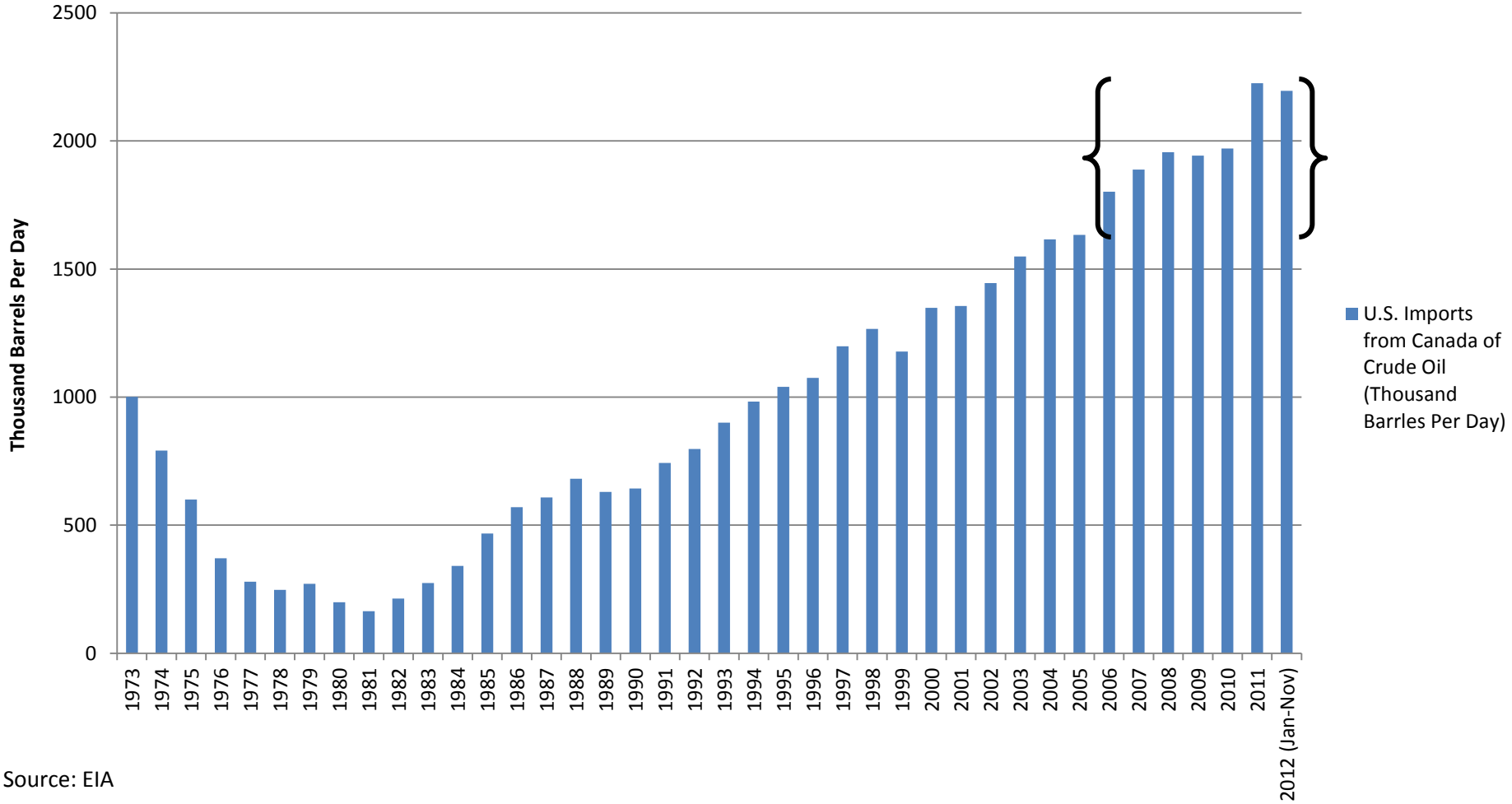
Source: CAPP Crude Oil Forecast June 2012

Choke Points



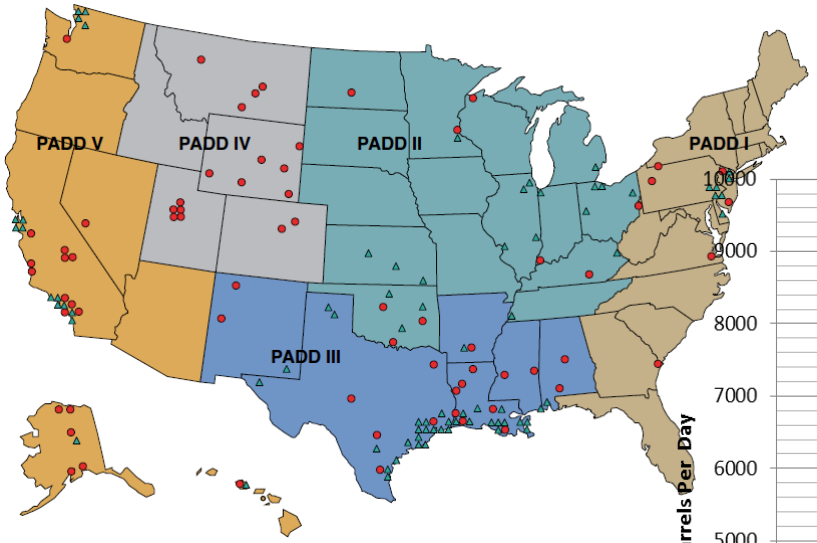
Source: EPRINC Choke Point Map using Hart ArcGIS Mapping software

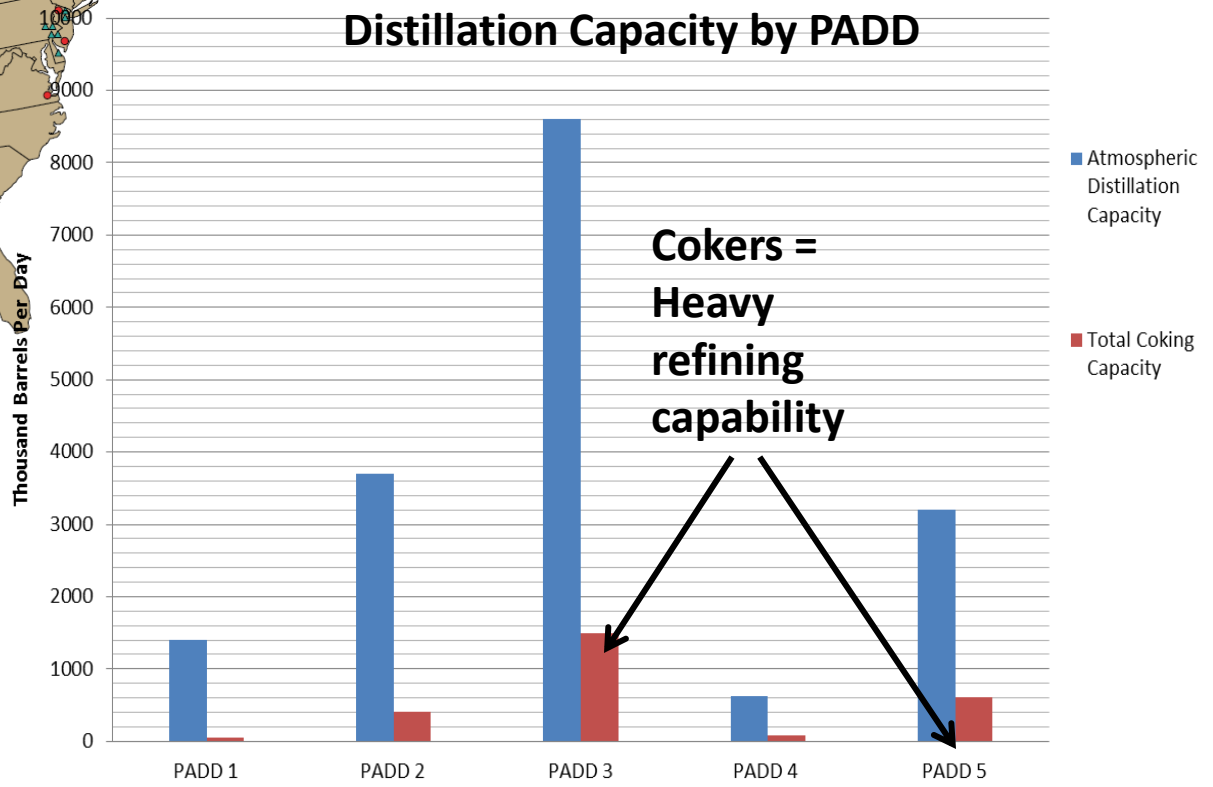
U.S. Imports of Canadian Crude



Source: EIA

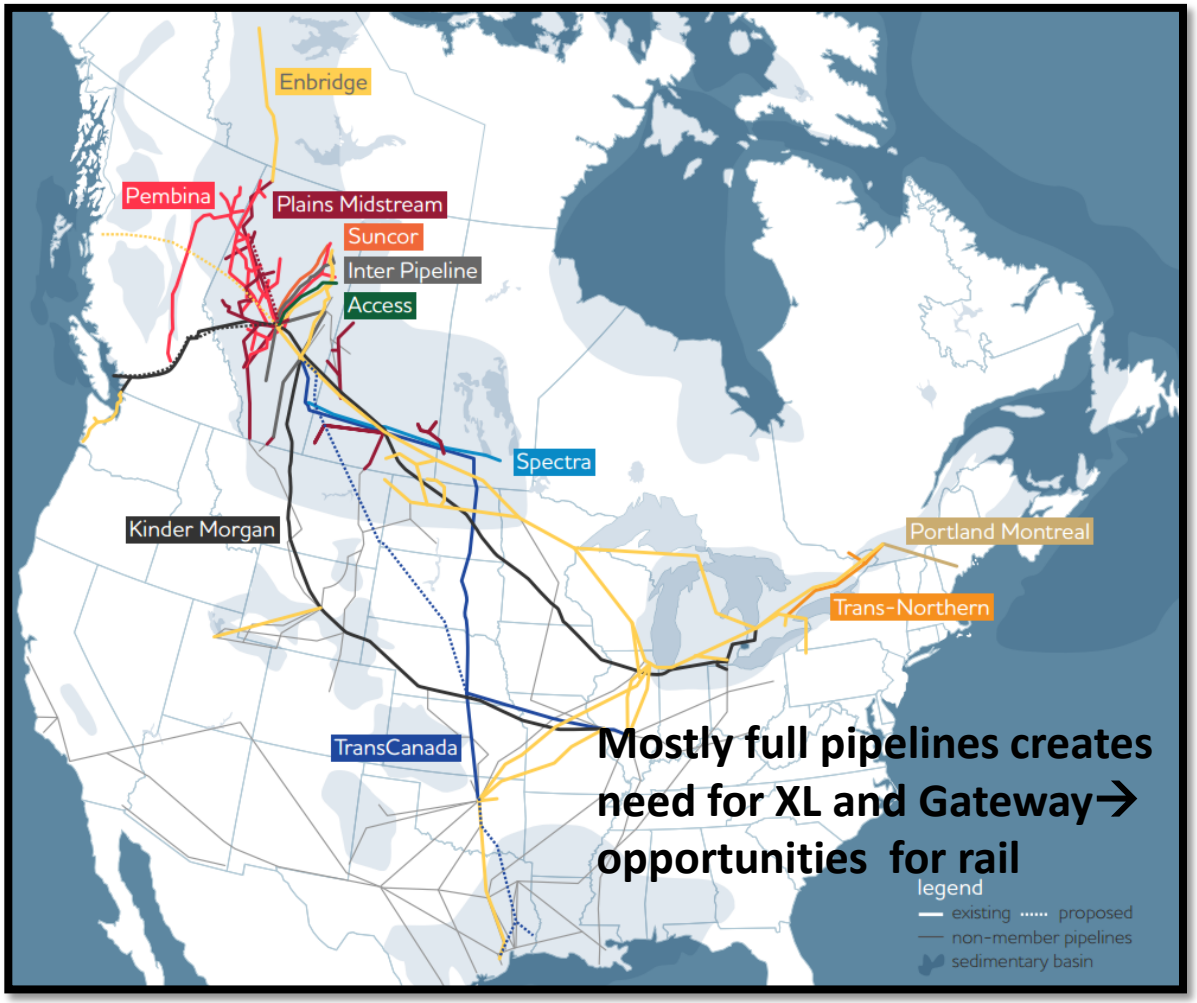
Where light sweet Bakken and heavy (blended bitumen) needs to go…





Source: AFPM map, EIA data for graph

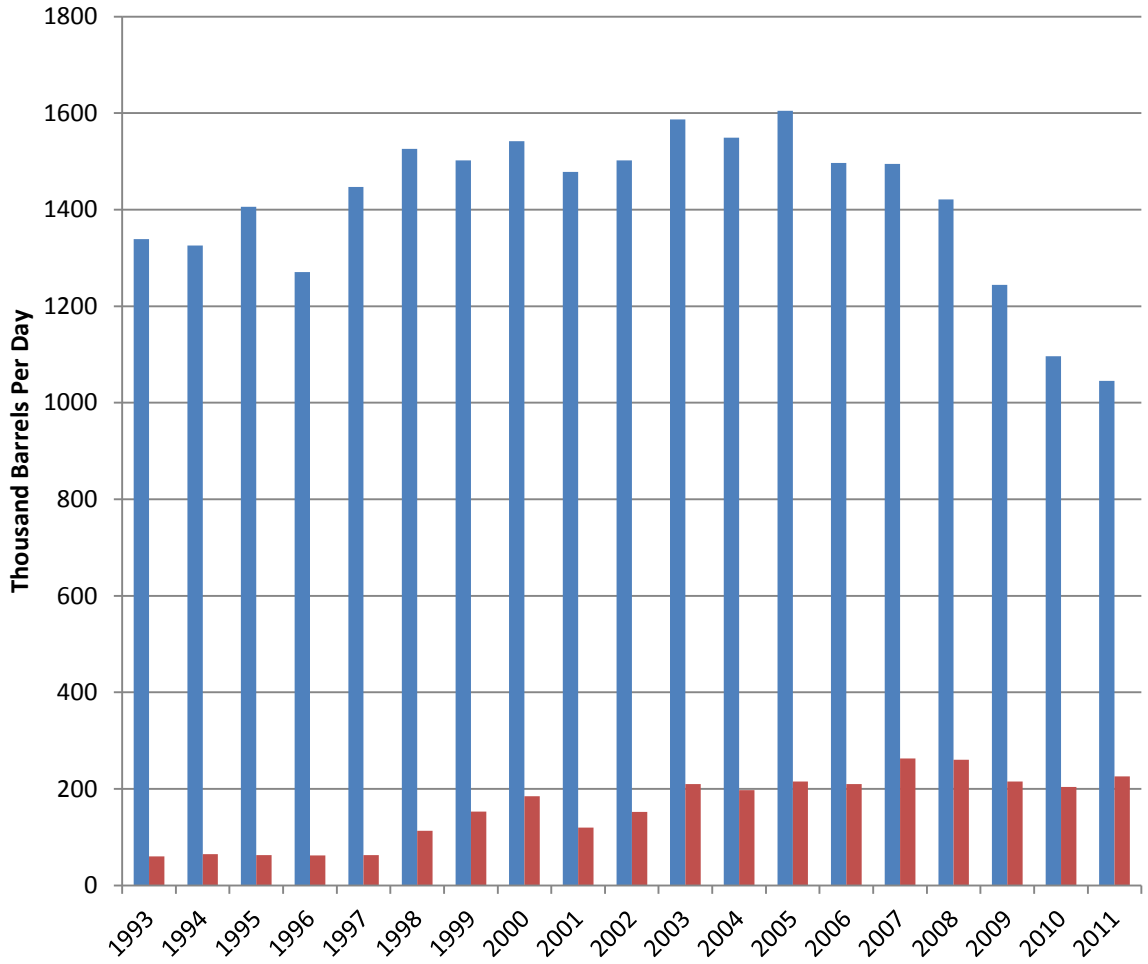
Canadian Pipeline Export Options



- **Kinder Morgan's** Transmountain line off BC coast- currently 300,000 b/d capacity-recent announcements to expand up to 800,000 b/d (early 2017)
- (Now Sprectra) Platte line to Wood River 280,000 b/d-full
- **Enbridge mainline system currently transporting over 1.5 mbd with potential capacity around 2.5 mbd—Northern Gateway off BC coast planned 525,000 b/d**
- **TransCanada's Keystone 581,000 b/d-full—XL would add 700,000 b/d**

Source: Canadian Energy Pipeline Association

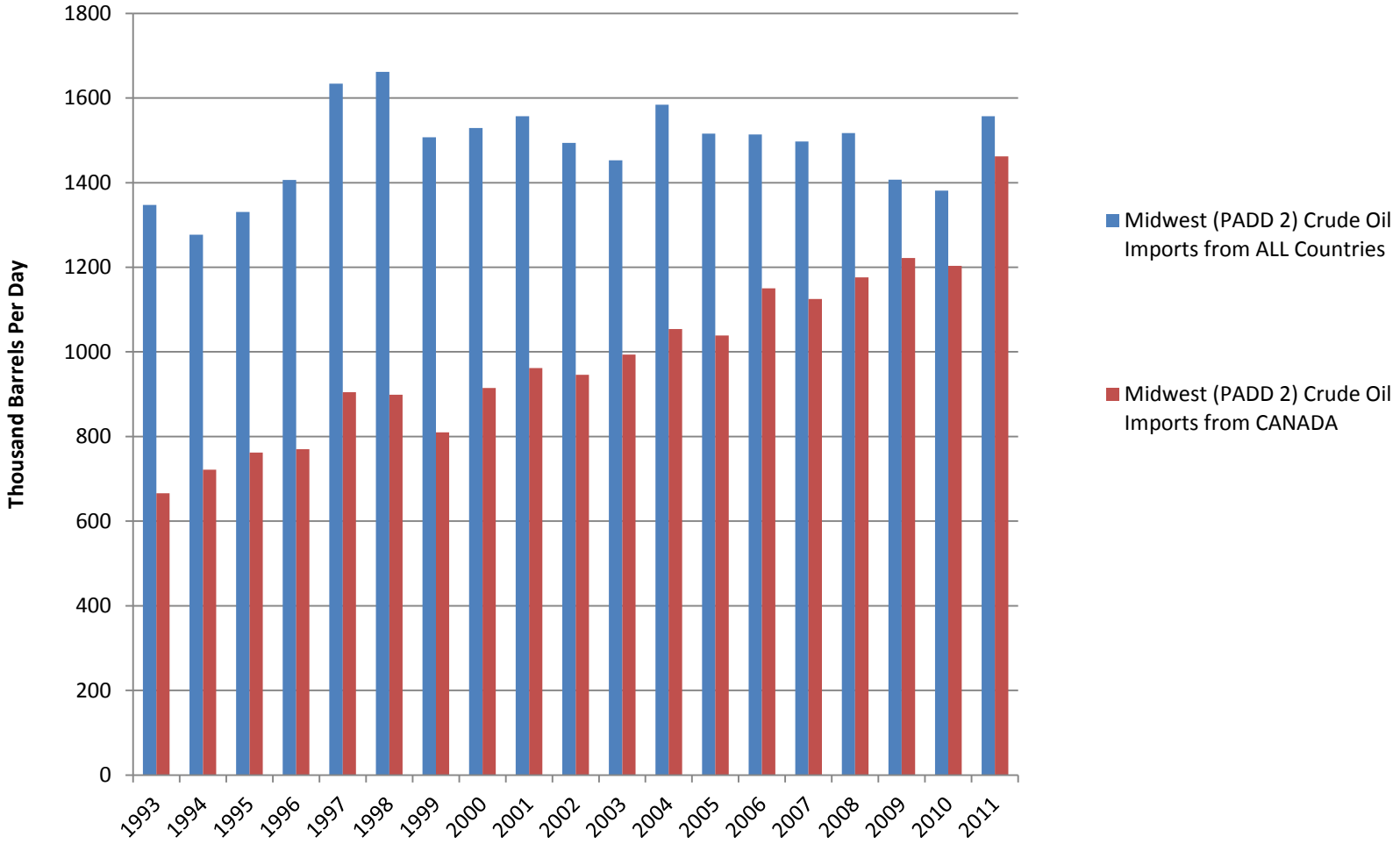
East Coast taking little Canadian Crude



- Mainly SCO, but some blended bitumen

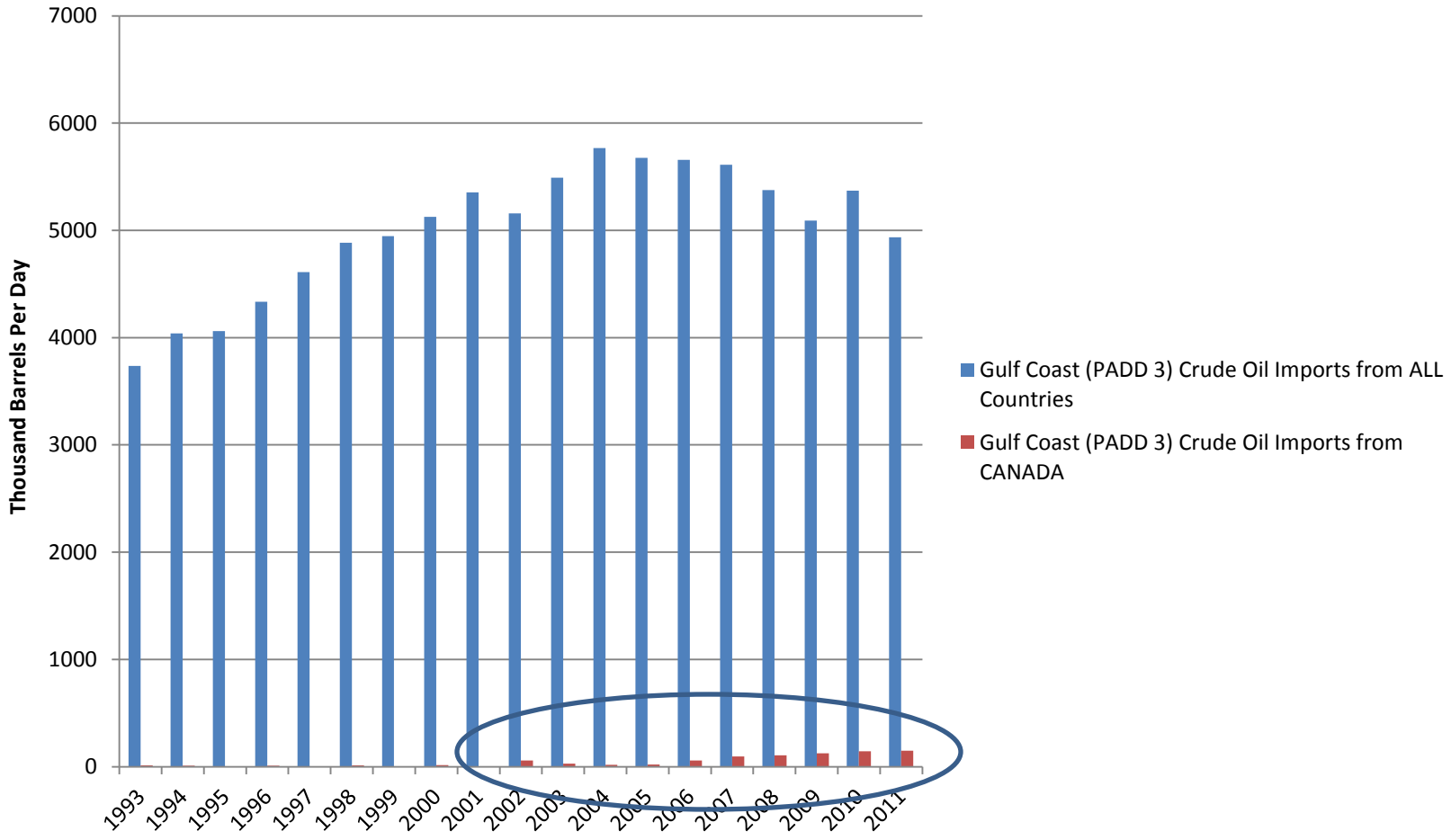
Source: EIA

PADD II imports are almost all Canadian



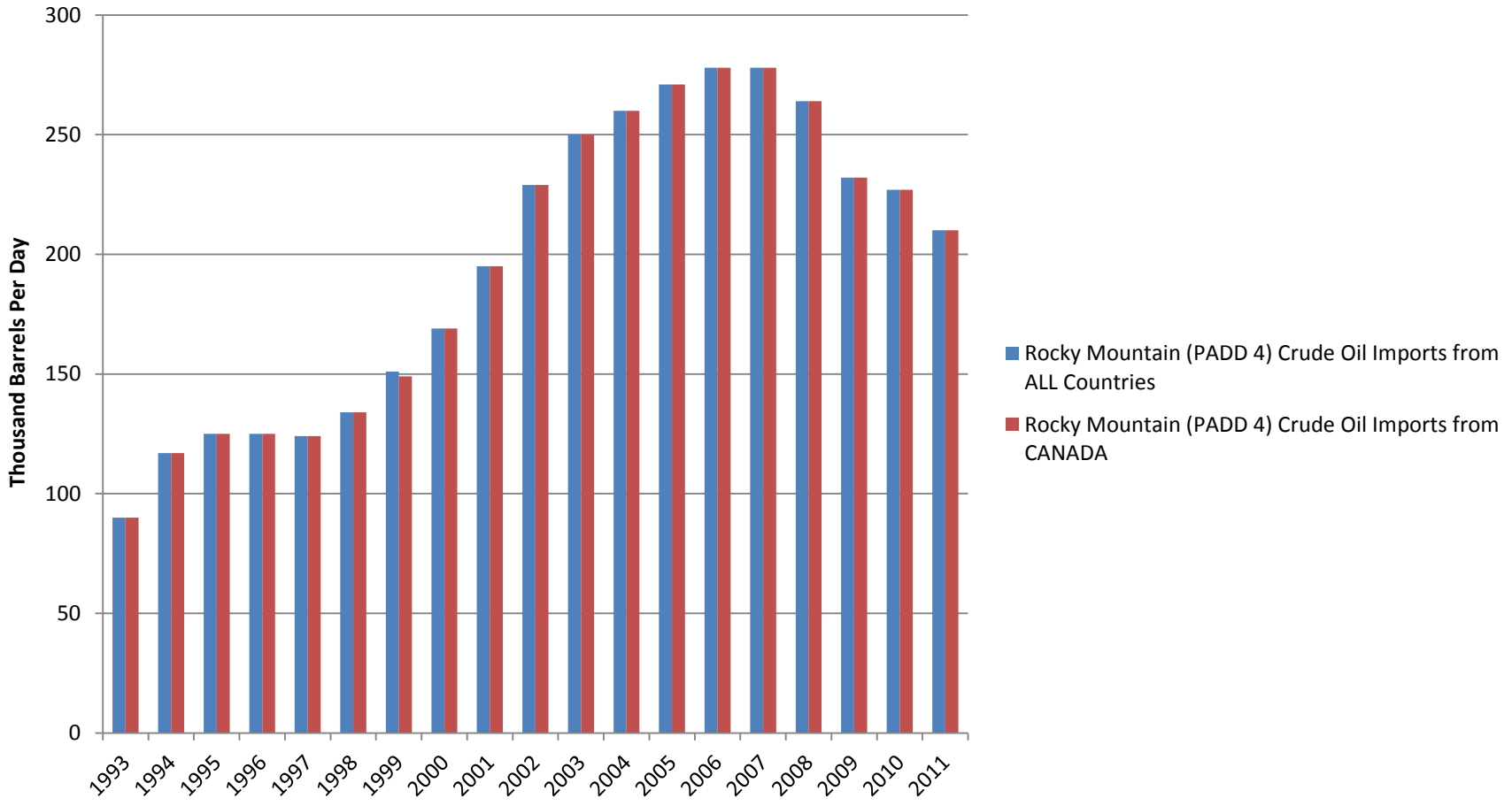
Source: EIA

PADD III...has the cokers and is getting none of the crude



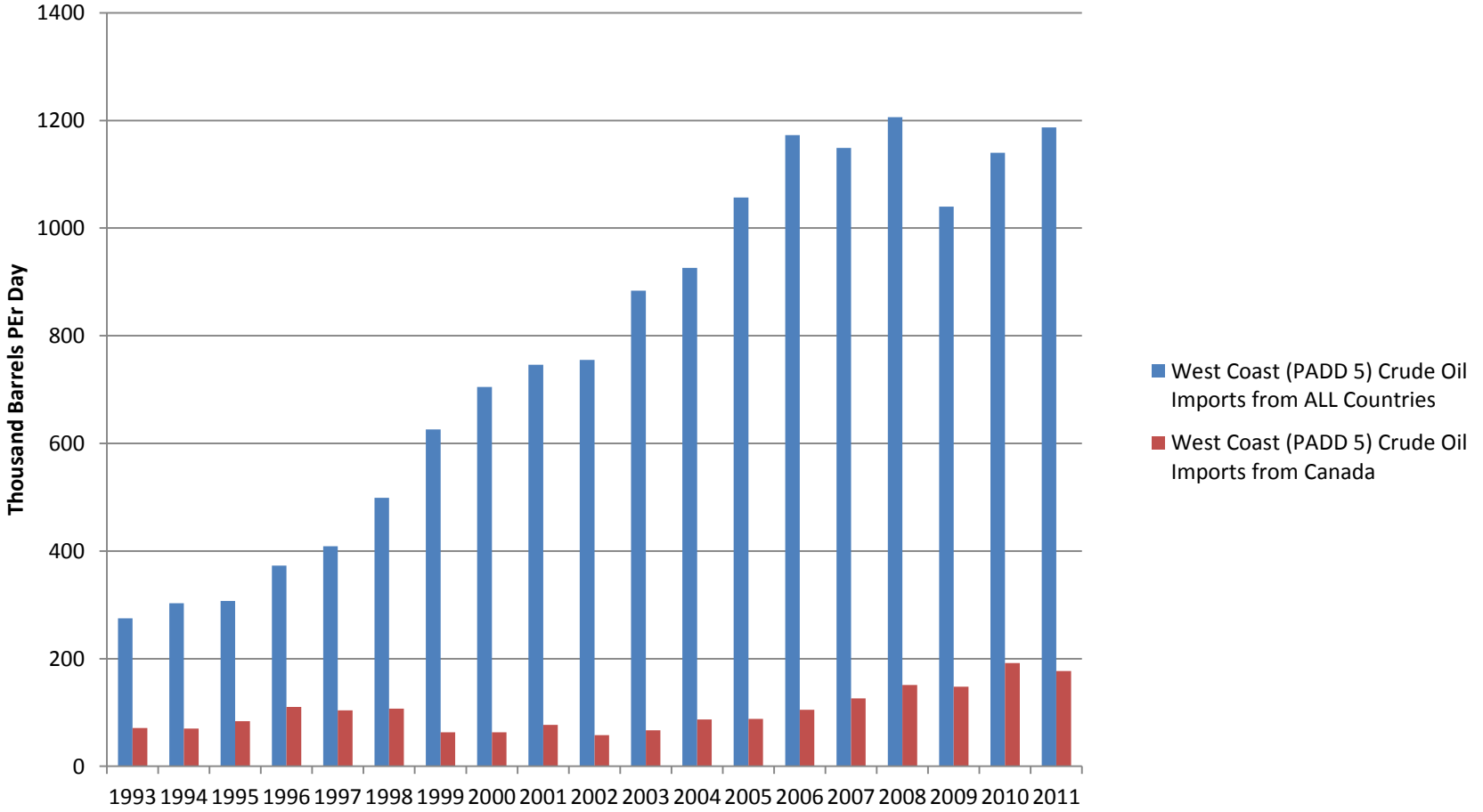
Source: EIA

ALL Imports into the Rockies are from CANADA



Source: EIA

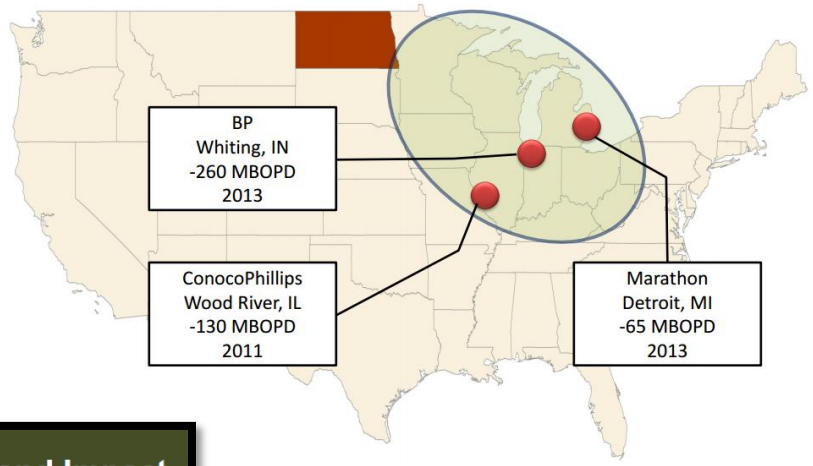
PADD V also has the cokers...taking some Canadian



Source: EIA

PADD II will be importing more HEAVY crude…

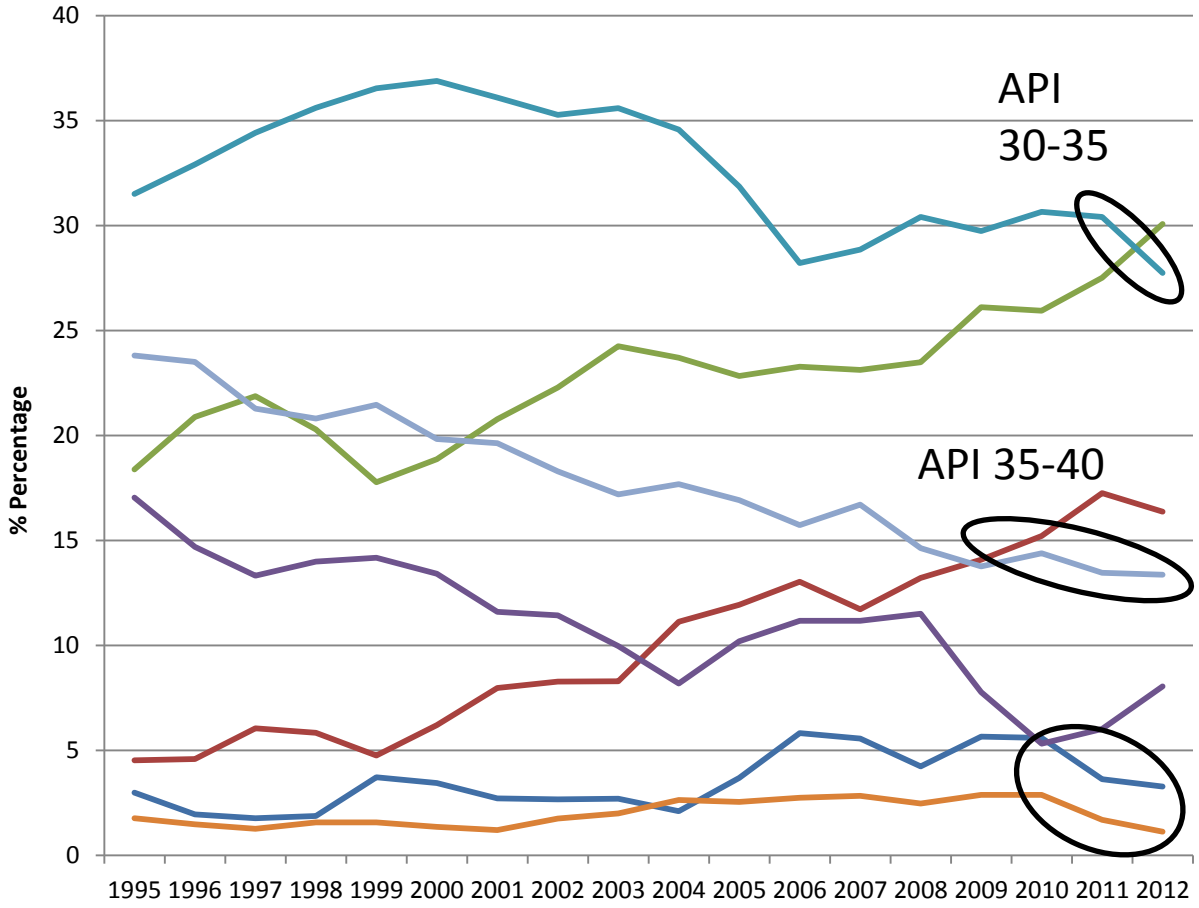
….absorbing more Canadian crude and pushing out light sweet Bakken crude



Refinery	Year	Crude Demand Impact MBPD	
		Light	Heavy
COP/Cenovus Wood River	2012	-95	+130
Marathon/Detroit	2013	-65	+80
BP/Whiting	2013	-220	+260
BP/Husky Toledo	2015	-45	+60
Total		-425	+530

Source: John Auers Turner Mason Argus Americas Crude Summit Jan 2012;; map using Enbridge data from NDPA

U.S. Imports by API Gravity



Light Sweet imports are declining...

Source: EIA

Knocking Out Waterborne Imports

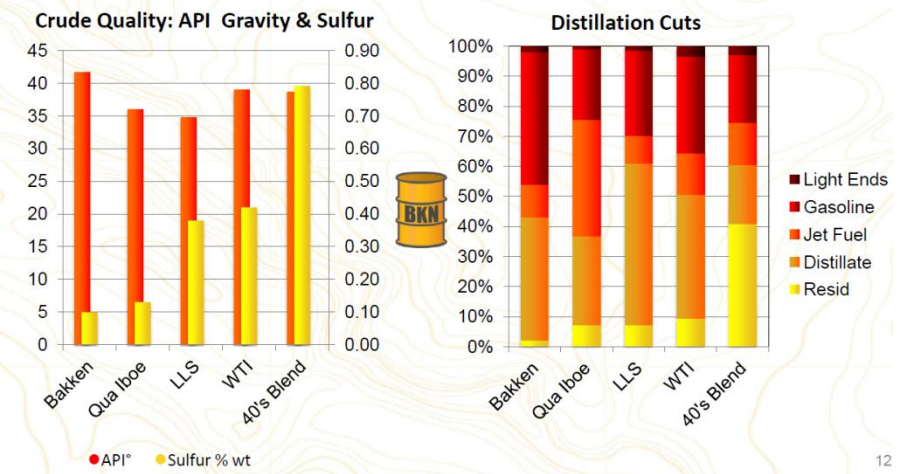
- Growth in domestic crude oil production will largely be light sweet crude oil from tight/shale oil formations such as the Bakken and Eagle Ford.
- If the current rates of growth are maintained, light sweet crude imports into the U.S. will be displaced in the next couple of years.
- By year end light sweet imports into the Gulf should stop. Bakken should be looking for another coastal home too!
- More imports into the U.S. will be pushed out over the coming years as refiners blend this light sweet crude to meet their specifications (helping to displace medium API gravity imports). The majority of what the U.S. is importing is heavy, medium, and medium and light sour crudes. The demand for heavy crudes in the U.S. should be met by the Canadian oil sands.

Blending Prospects

	West Texas Sour	50% Cold Lake/ 50% North Dakota Light	Value, $/Bbl[1]
API Gravity	29.0	31.6	
Sulfur, wt %	1.9	2.0	
Yields, vol %			
- naphtha (IBP-450°F)	35.8	39.2	$103
- distillate (450°F- 650°F)	20.7	16.4	$121
- gas oil (650°F- 1000°F)	25.8	23.7	$110
-residuum (1000°F+)	17.7	20.6	$92

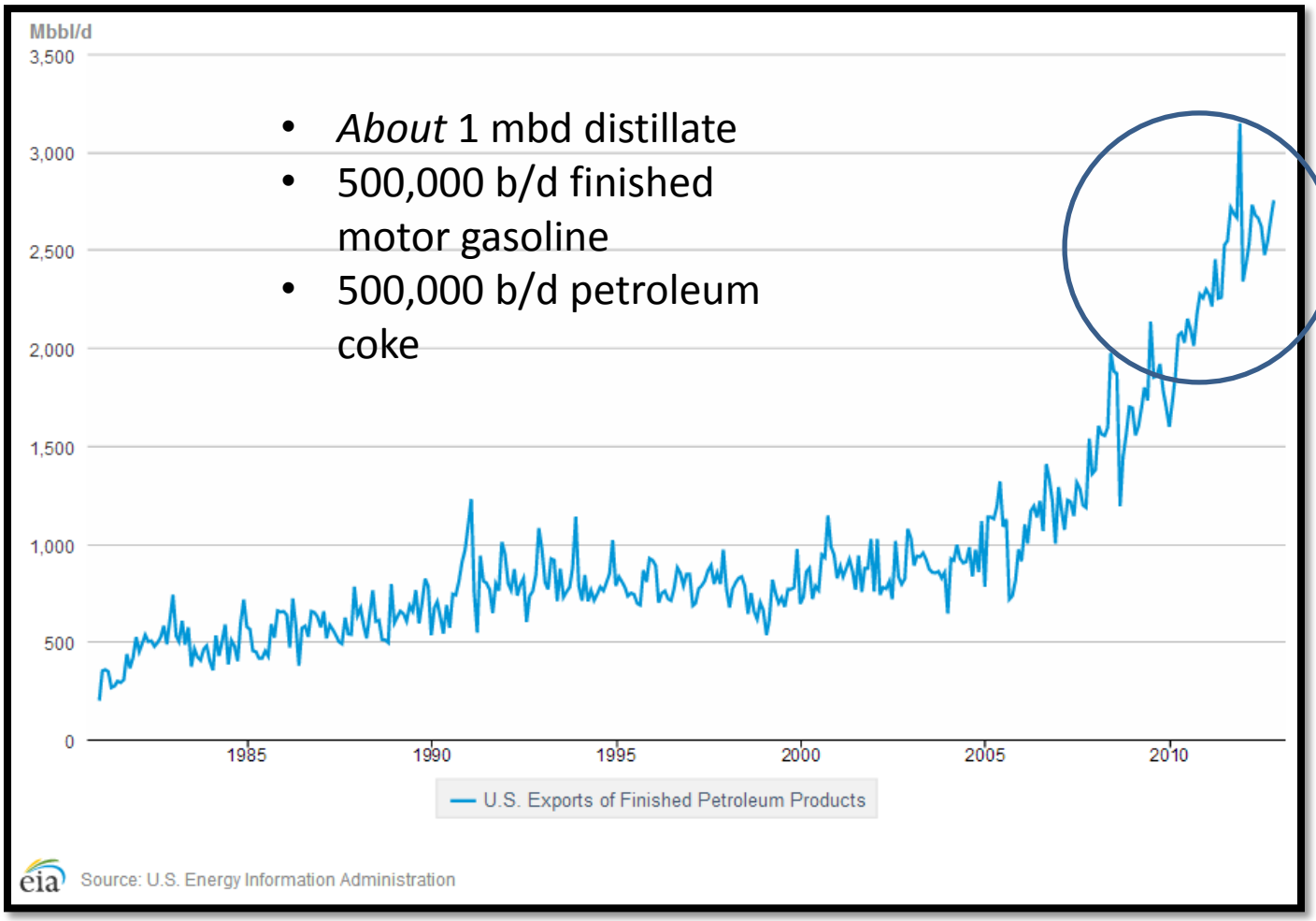
1 Based on mid-December prices

Bakken Premium Light Sweet Crude vs. Other Benchmarks
Improved Refinery Yield



Source: Dennis Sutton Marathon, Argus Americas Crude Summit Jan 2012; Continental Resources 2013 Investor Presentation

U.S. Exports of Finished Petroleum Products



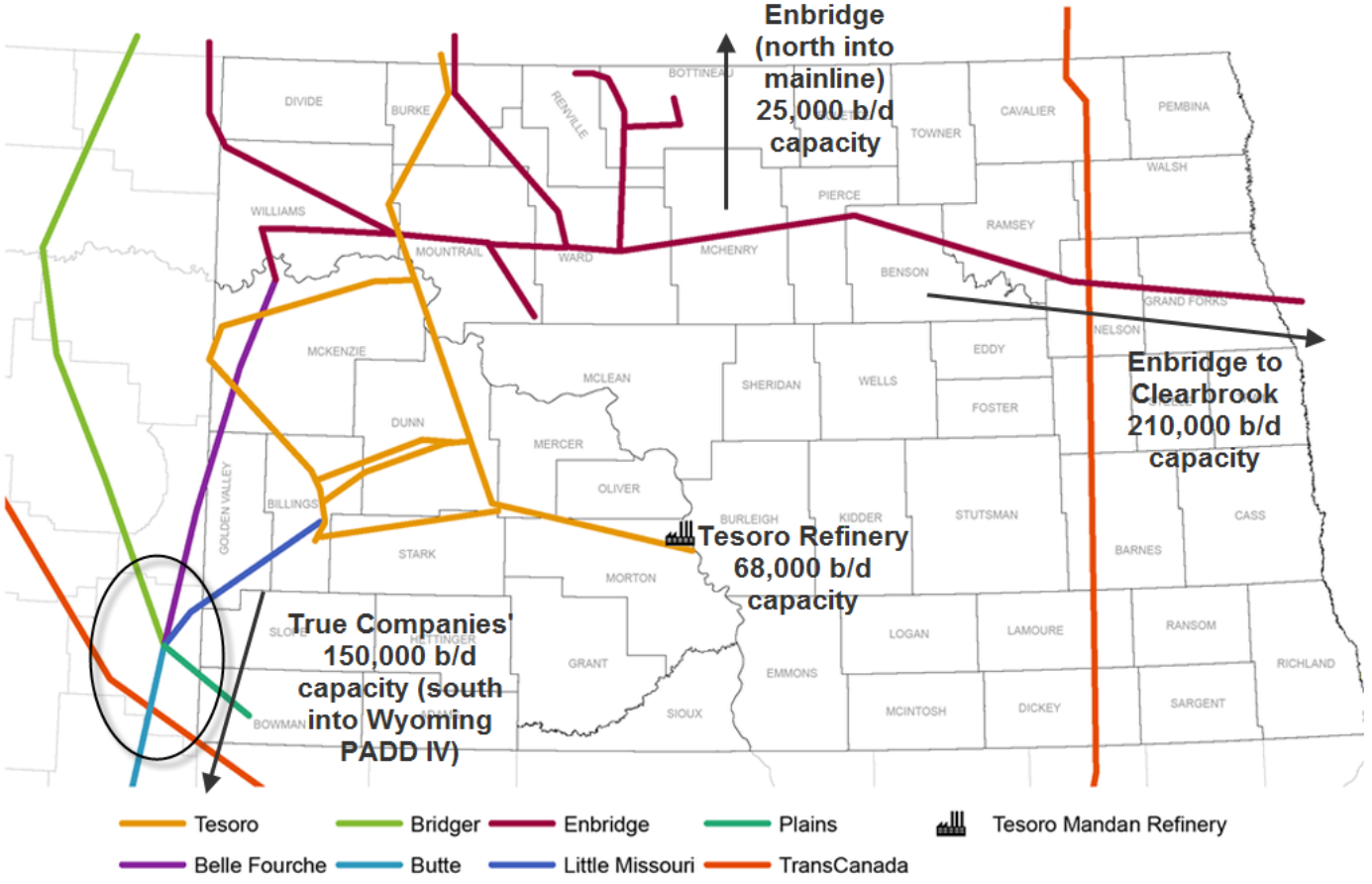
- *About* 1 mbd distillate
- 500,000 b/d finished motor gasoline
- 500,000 b/d petroleum coke

Rail

From Wellhead to Railbed

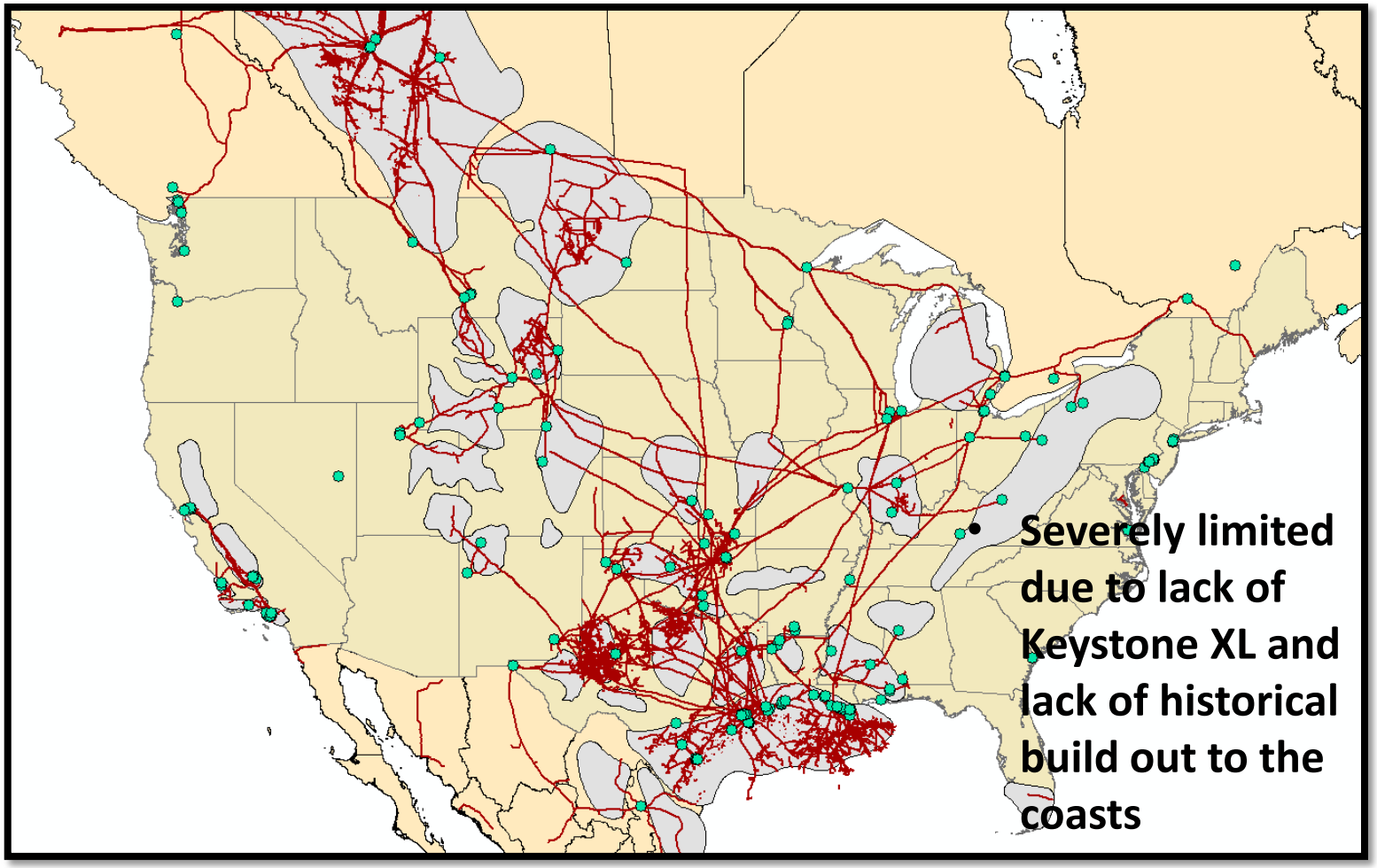
- Over 500,000 b/d of crude are moving by rail out of the Williston Basin
- Close to 200,000 b/d of spare pipeline capacity in ND (estimated)
- Bakken crude making it to all US coasts (and all PADDs)
- East Coast refinery beginning to take heavy oil sands crude via rail
- About 1.9 mbd (million barrels a day) of crude oil and petroleum products are moving by rail in the US and Canada
- Statoil leasing 1,000 railcars; Exxon leasing 2,000 railcars
- 80,000 plus b/d of Canadian crude are moving by rail
  - Many smaller oil sands companies are putting entire production on rail

Spare Capacity in North Dakota



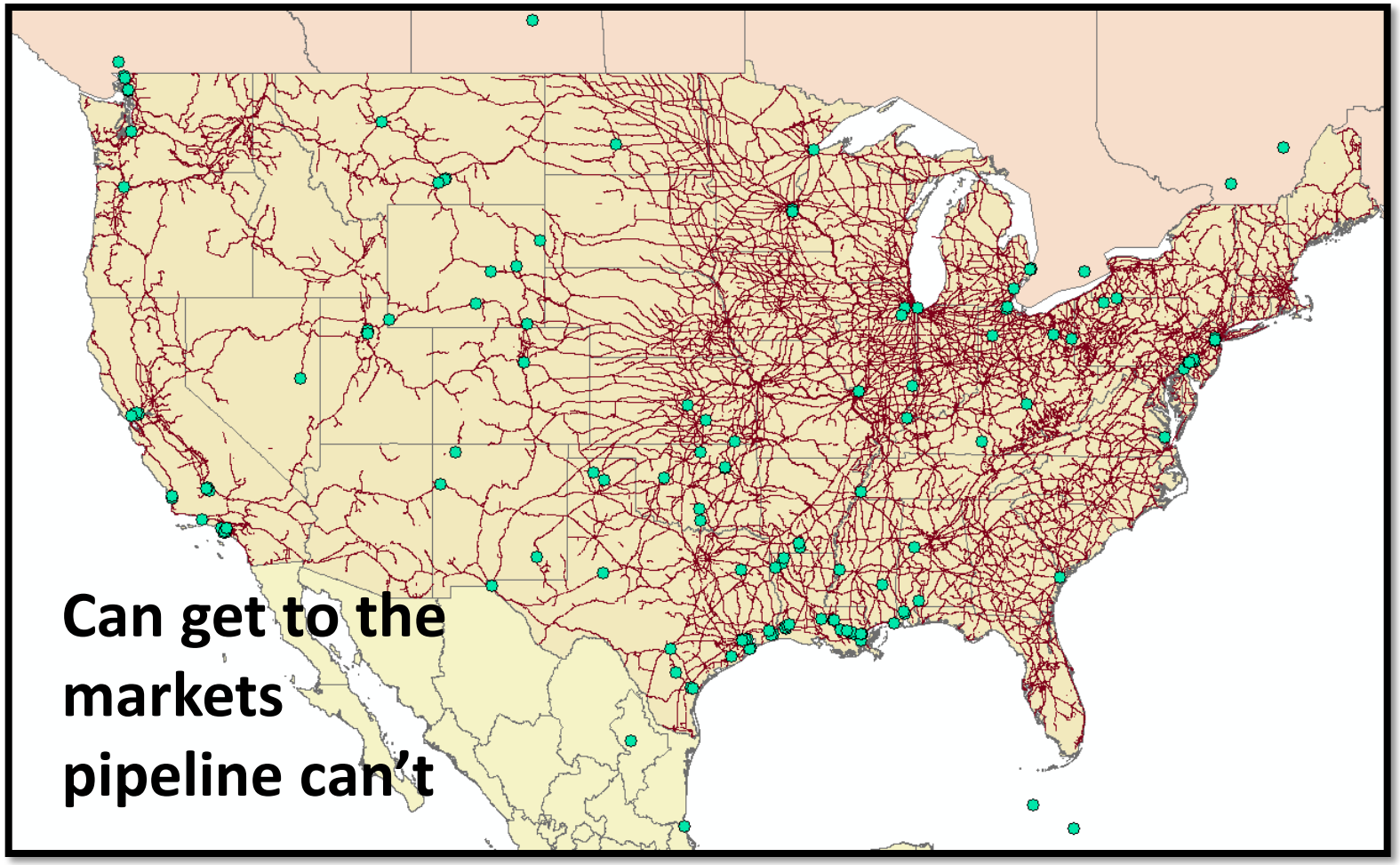
Source: NDPA

Crude Pipeline Infrastructure



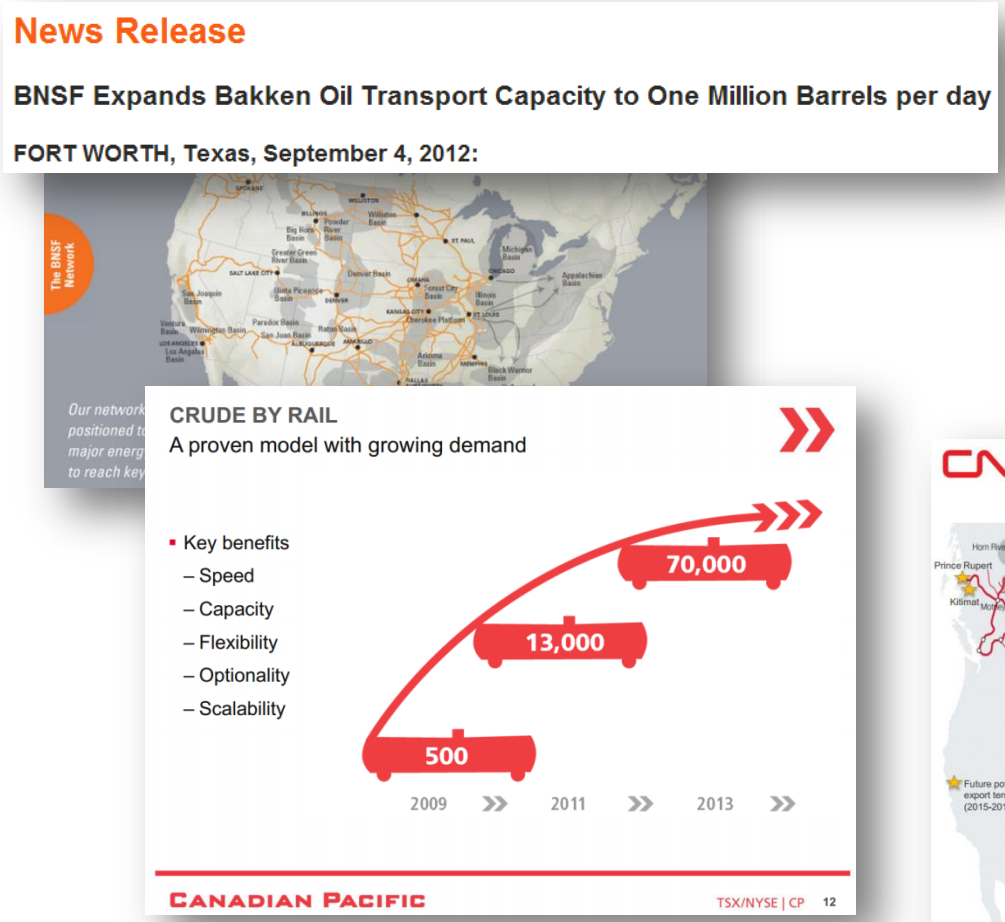
Source: EPRINC Choke Point Map using Hart ArcGIS Mapping software

Rail Infrastructure

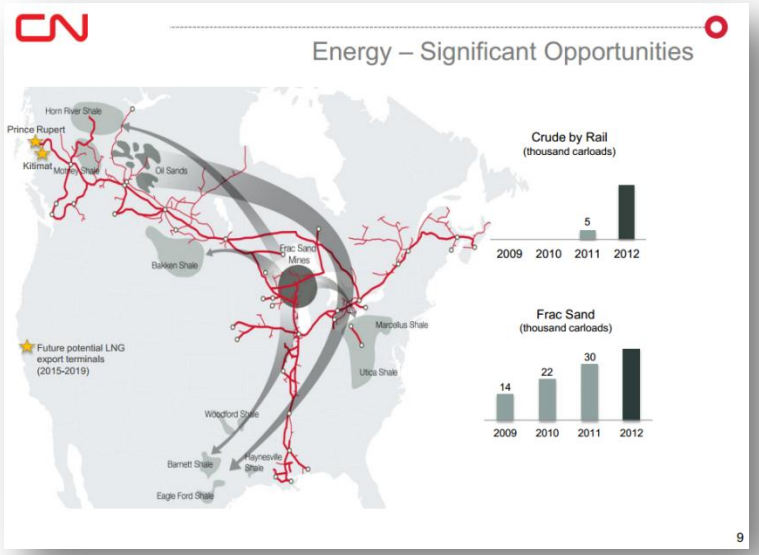


Source: EPRINC Choke Point Map using Hart ArcGIS Mapping software

Rail is a Contender

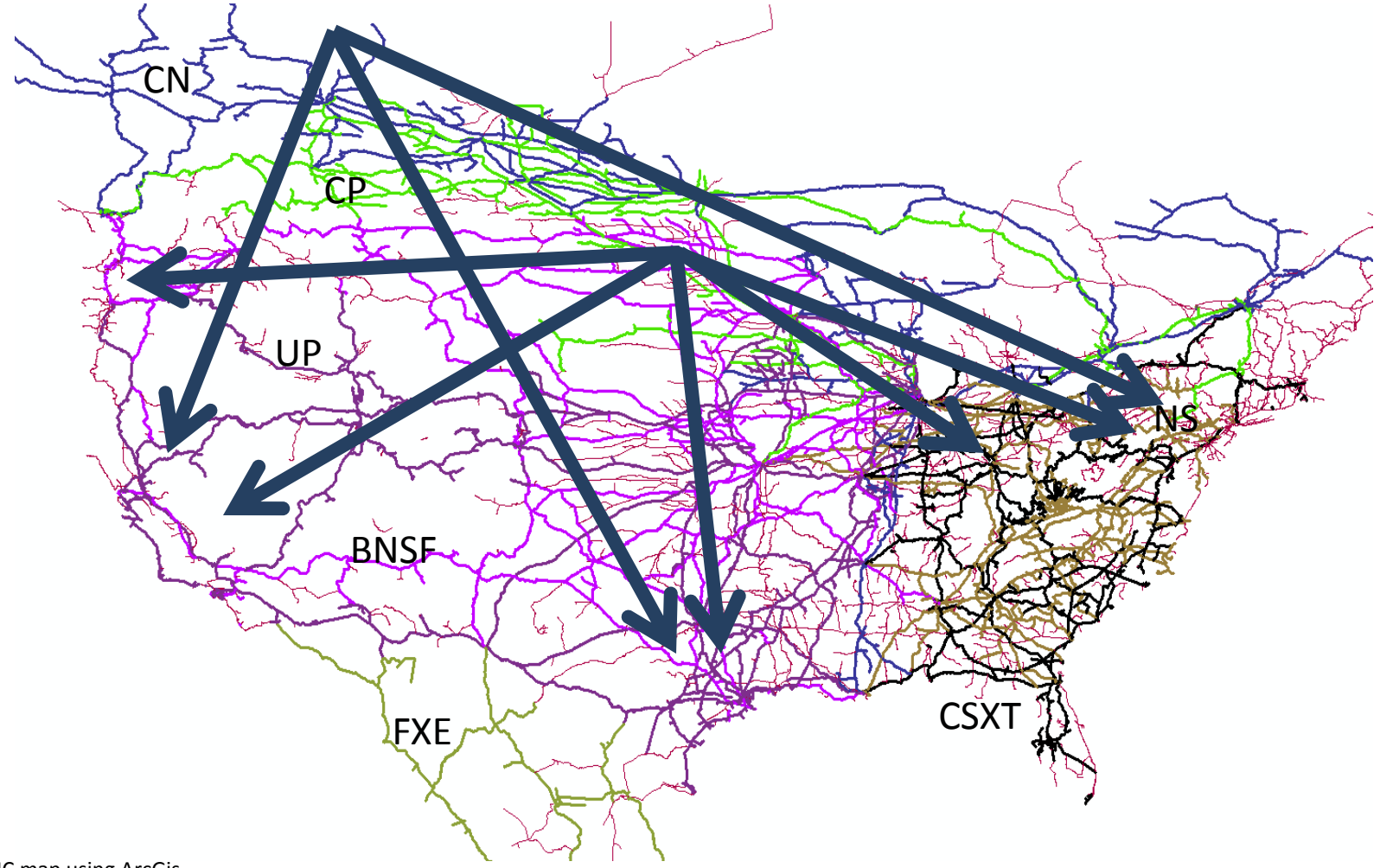


Major rail companies in the U.S. and Canada are moving hundreds of thousands of barrels of crude each day. The Bakken is clearly the leader in this space, but more Canadian crude is beginning to move by rail as crude chases better prices at premium markets.



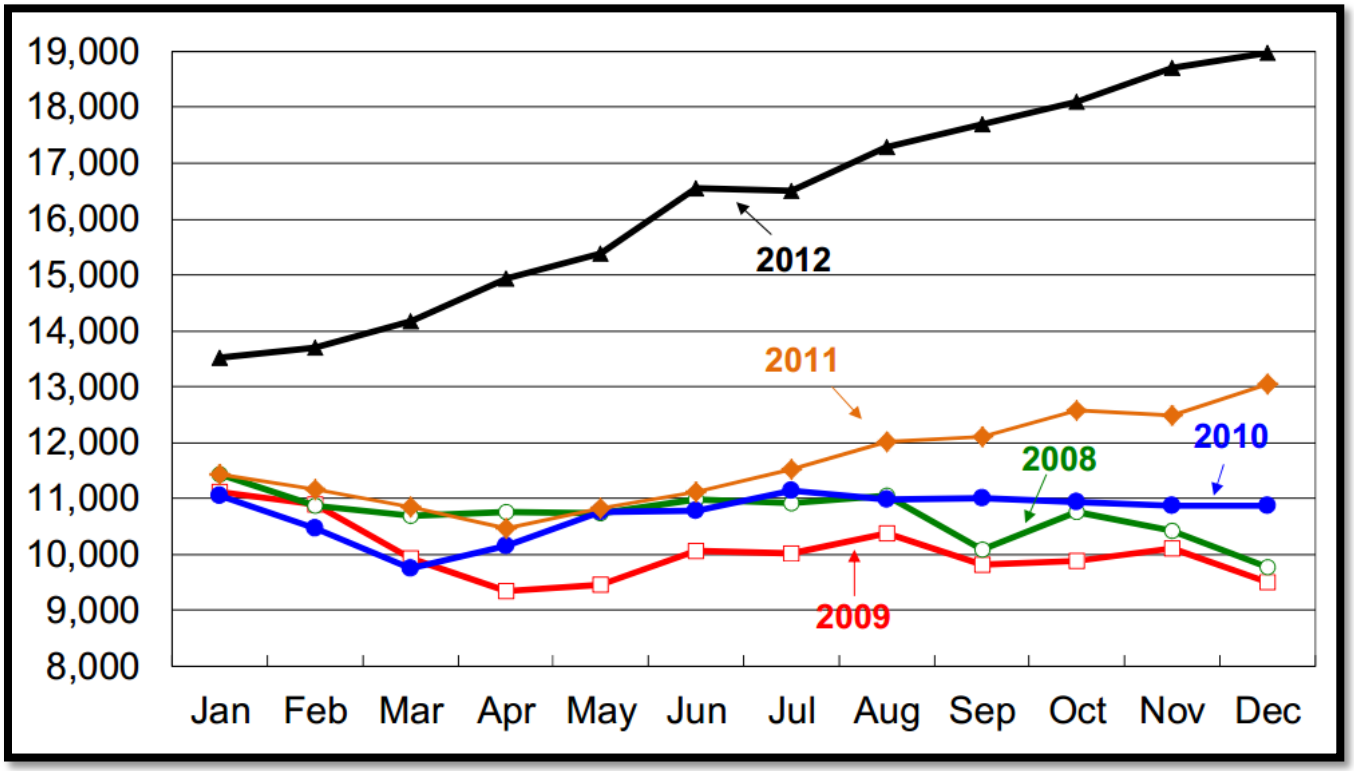
Source: Images directly from BNSF, CP, and CN websites

Optionality of Rail to Move Bakken and Canadian Crude



Source: EPRINC map using ArcGis

Average Weekly U.S. and Canadian Railcar Loads of Crude Oil and Petroleum Products

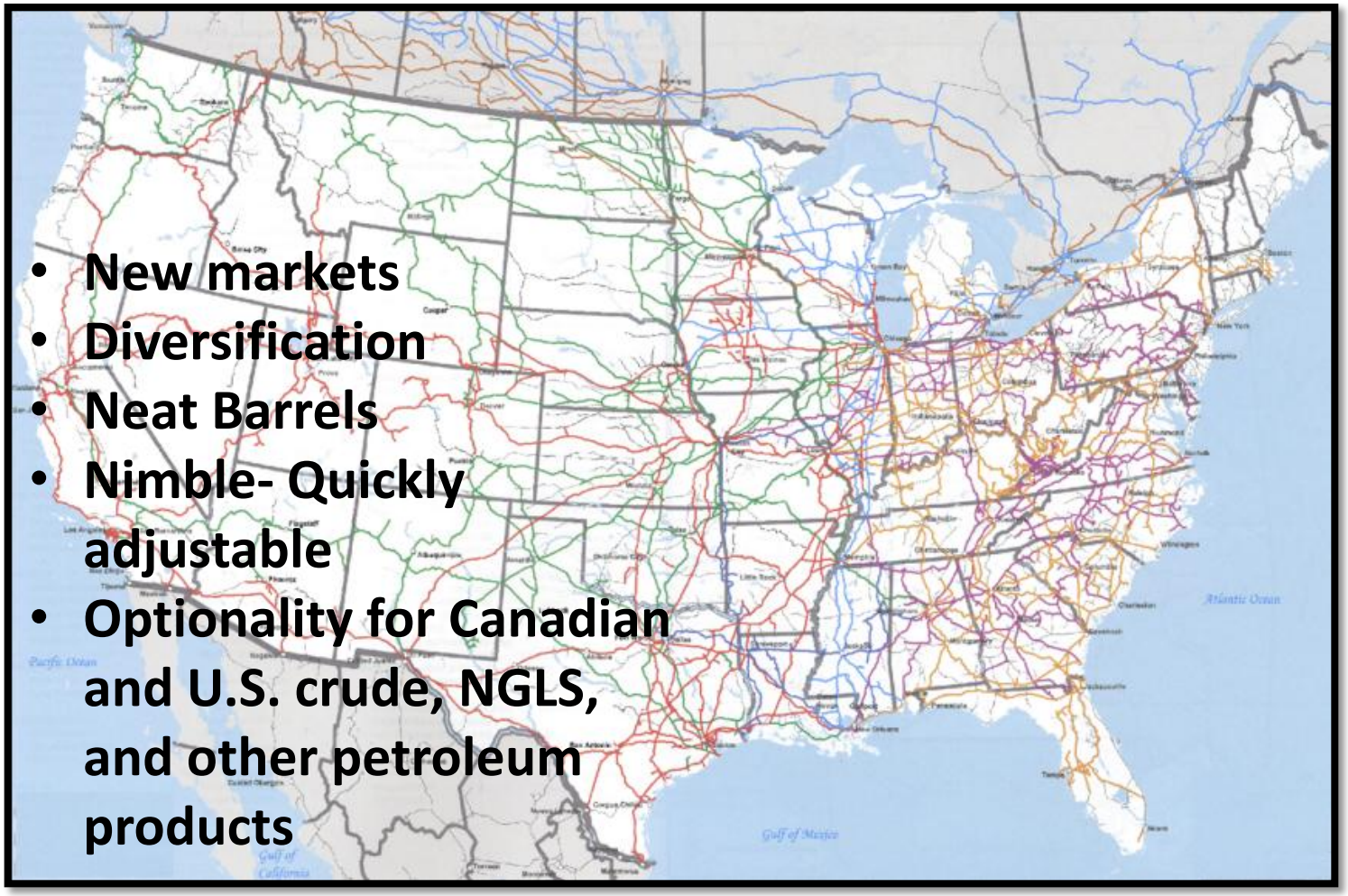


Over 1.9 mbd of crude oil and product are moving by rail in both U.S. and Canada.

AAR estimates 740,000 barrels of oil are moving each day via rail in the U.S. and Canada.

Source: Association of American Railroads. Weekly Railroad Traffic
crude petroleum and all products of petroleum refining (liquefied gases, asphalt, fuel oil, lubricating oil, jet fuel, etc.)
Note: Data are weekly average originations for each month, are not seasonally adjusted; crude petroleum and all products of petroleum refining (liquefied gases, asphalt, fuel oil, lubricating oil, jet fuel, etc.); *one carload holds 30,000 gallons (or 714.3 barrels).*

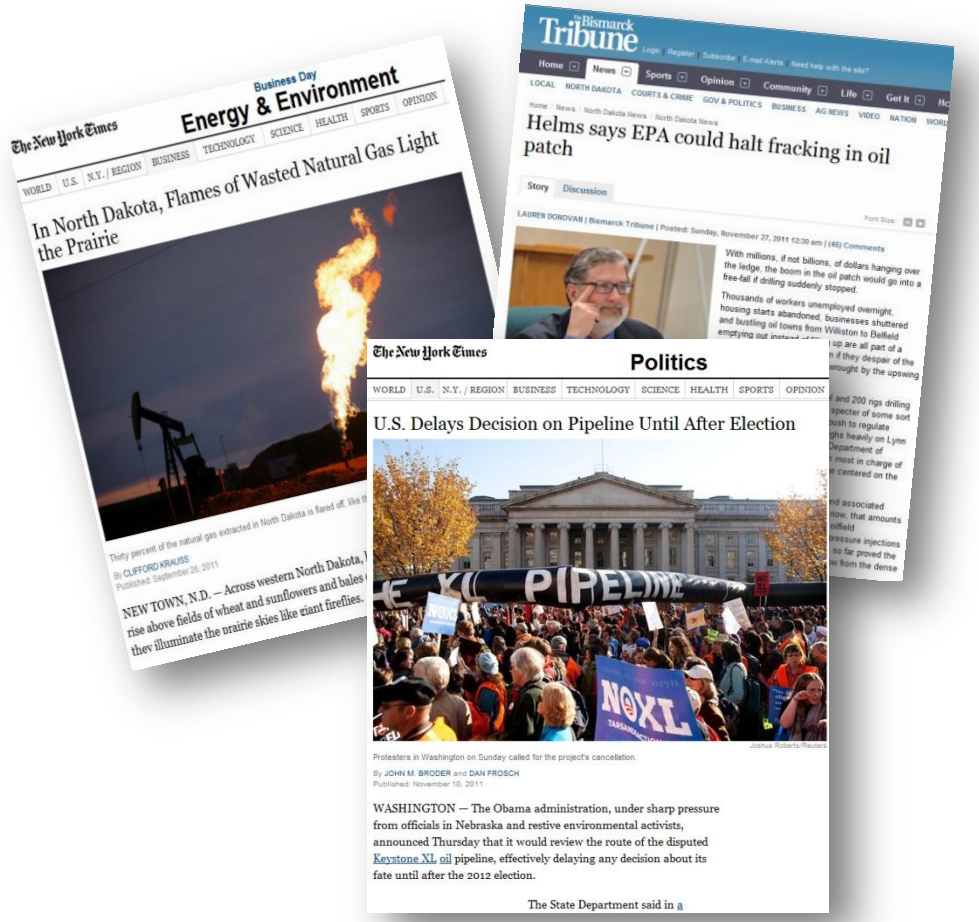
North American Rail Map



Source: Watco Companies LLC, Presentation Bakken Product Markets and Take-Away Denver Jan 31-Feb 1 2012

Major Regulatory Issues and Hurdles

- Oil prices
- Environmental Concerns
- Water Usage
- Regs on Federal Land-Fracking
- Infrastructure Delays- PERMITTING
- Lack of prudent policy making, not fully grasping the positive benefits and understanding of the bigger picture



Conclusions

- This is a petroleum renaissance. The U.S. is the largest producer of gas in the world and quickly becoming one of the lowest cost energy producers in the world
- US and Canadian oil and liquids production is surging
- Pipelines are being built, but right now their exists tightness—need for Gateway, XL, and Costal options for US and Canadian crude
- Rail is a serious option for US producers distanced from refining centers
- Rail could be an alternative shipping method for oil sands producers as they look to diversify their options and secure stable prices—markets exist where pipeline doesn't (especially with XL delay and Gateway uncertainty)
- Blended bitumen needs to get to the Gulf and potentially PADD V
- Bakken light sweet needs to get to East Coast PADD I (as well as PADD V)….only so much light sweet can be sent to Cushing and down into Gulf
- Rail in the long-term…it is going to be there, but the question is "how much"?...pipelines?