Energy Development and Transmission Committee

Justin J Kringstad
Geological Engineer
Director
North Dakota Pipeline Authority

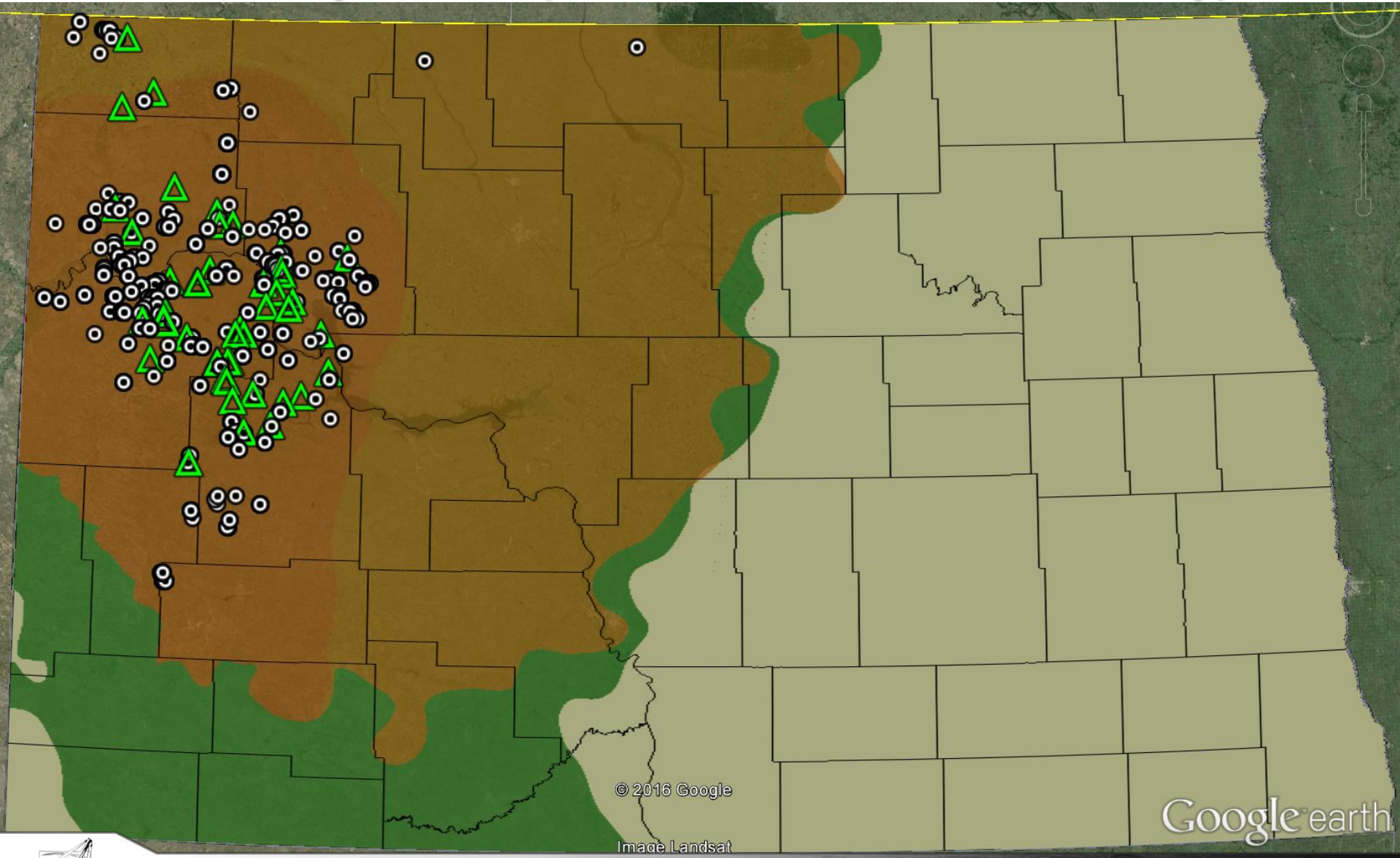
February 3, 2016

Presentation Outline

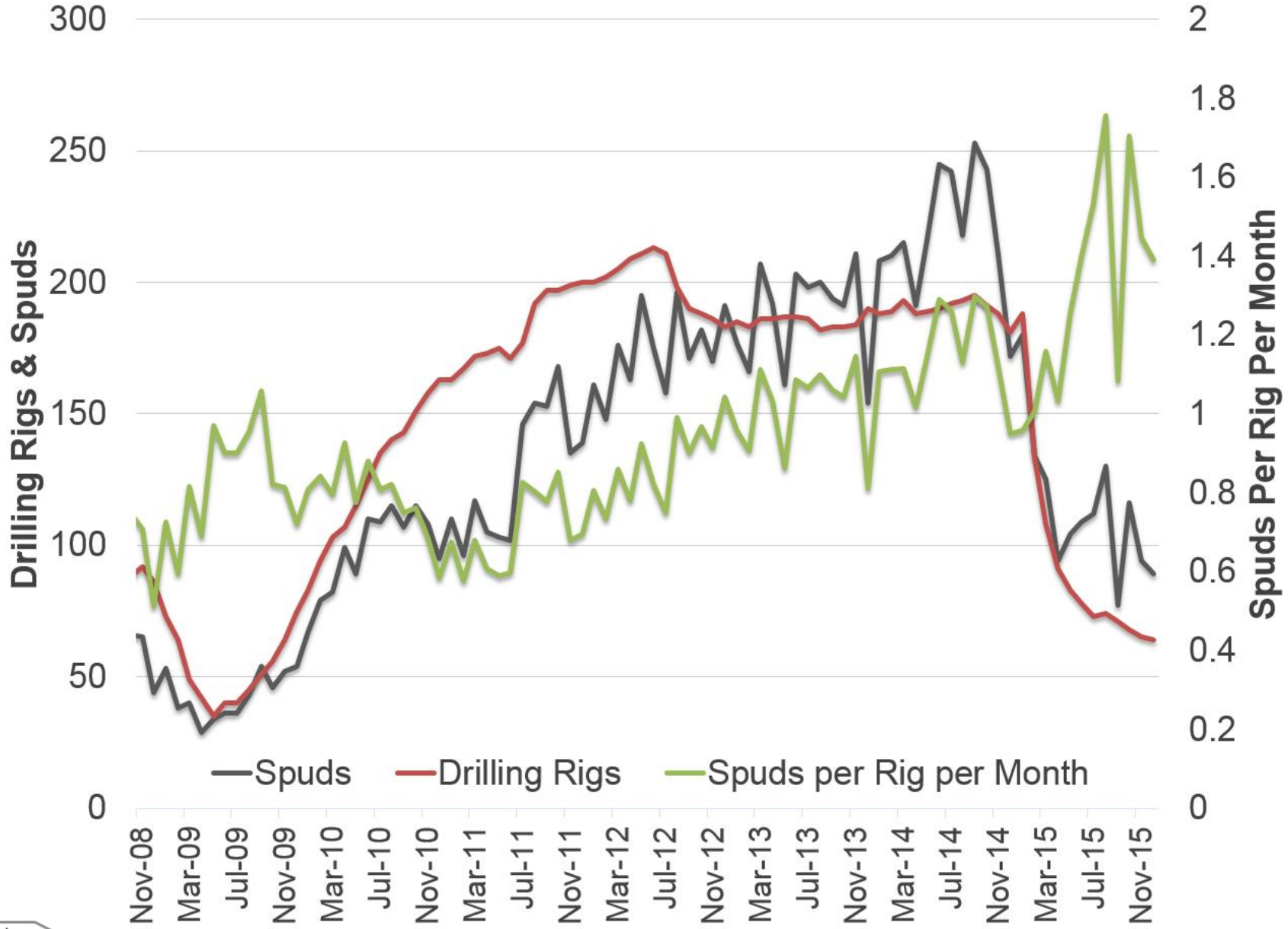
- Understanding current and future oil production
  - Activity
  - Forecasts
  - Drilling economics
- Williston Basin oil transportation dynamics
  - Interstate oil movements
  - Intrastate oil movements
- North Dakota natural gas production
  - Flaring and gas capture
  - NGL Outlook

46 Rigs and 597 NC Wells:

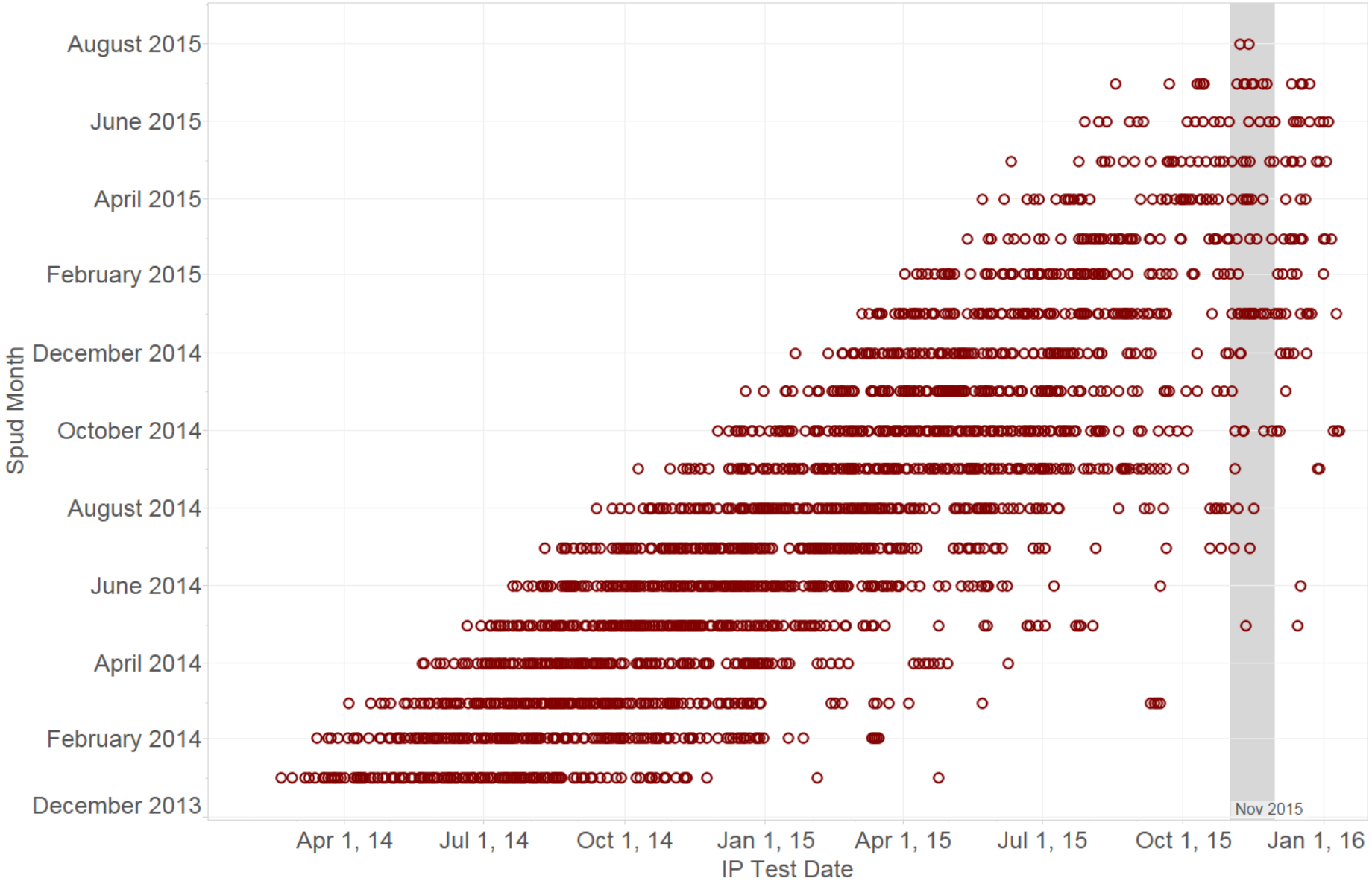
February 1, 2016 (Non Confidential NC Wells Only)



North Dakota Drilling Activity

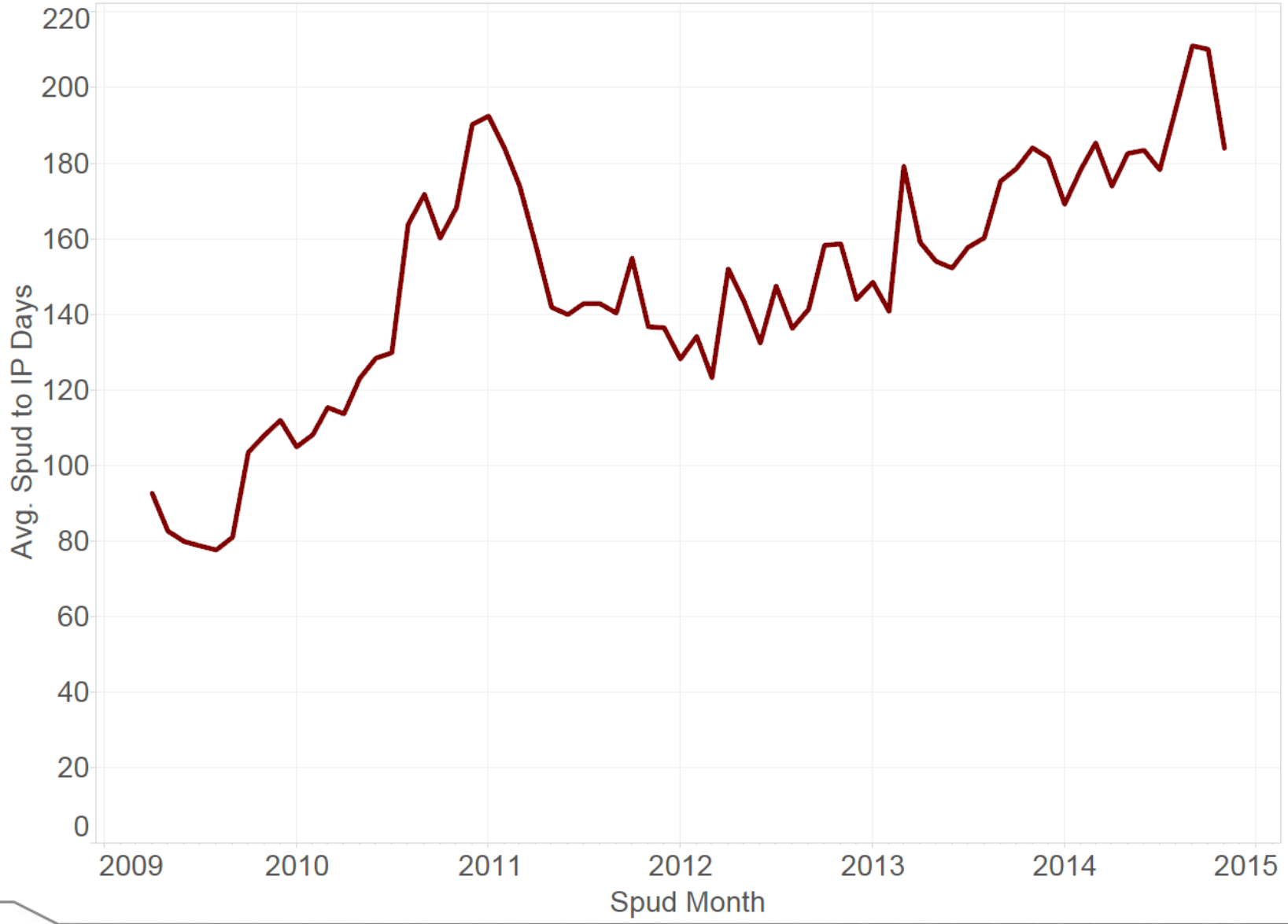


North Dakota Drilling & Completions

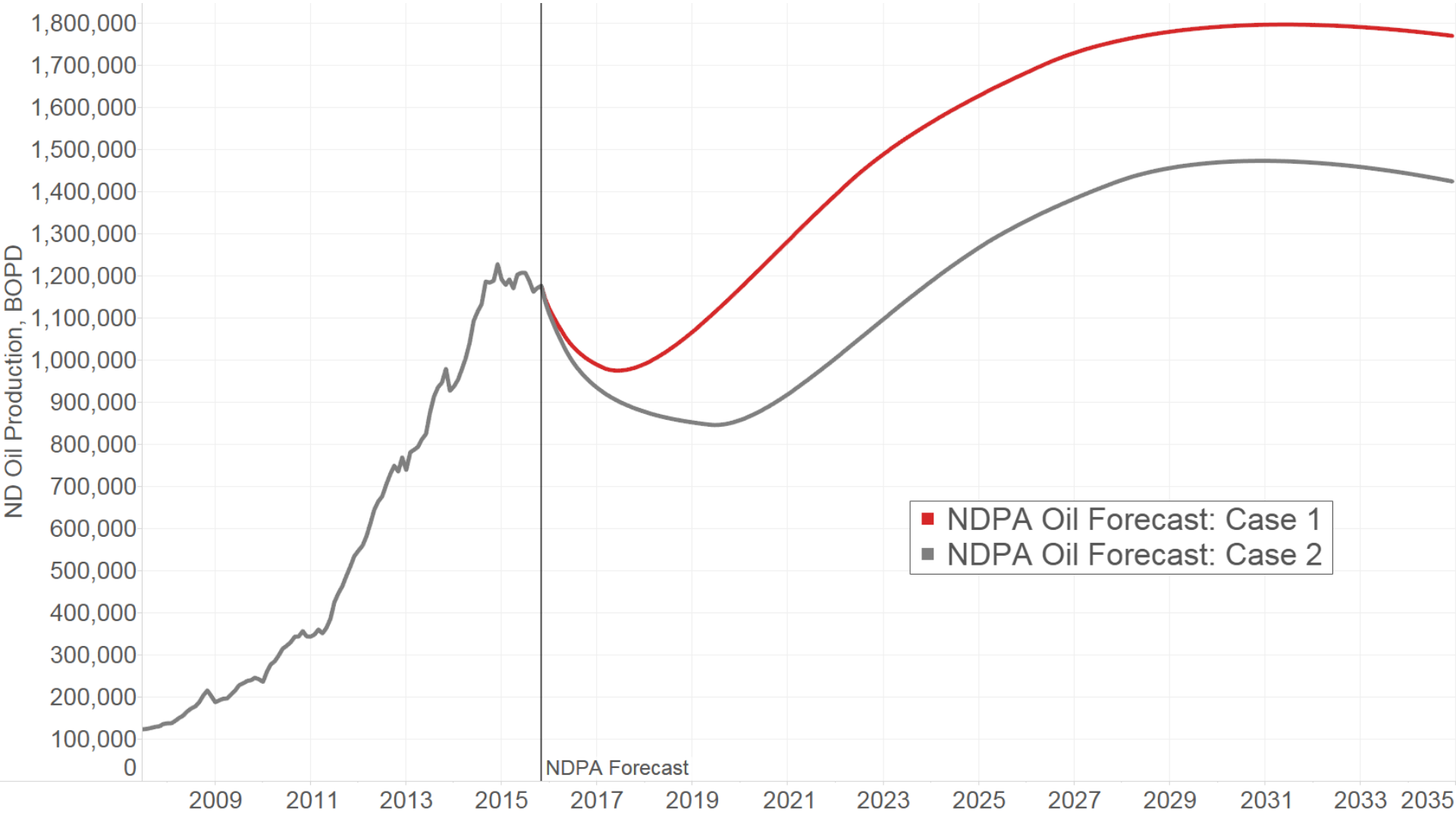


Understanding Current Production Dynamics

Non-Confidential Spud to Initial Production Timeline

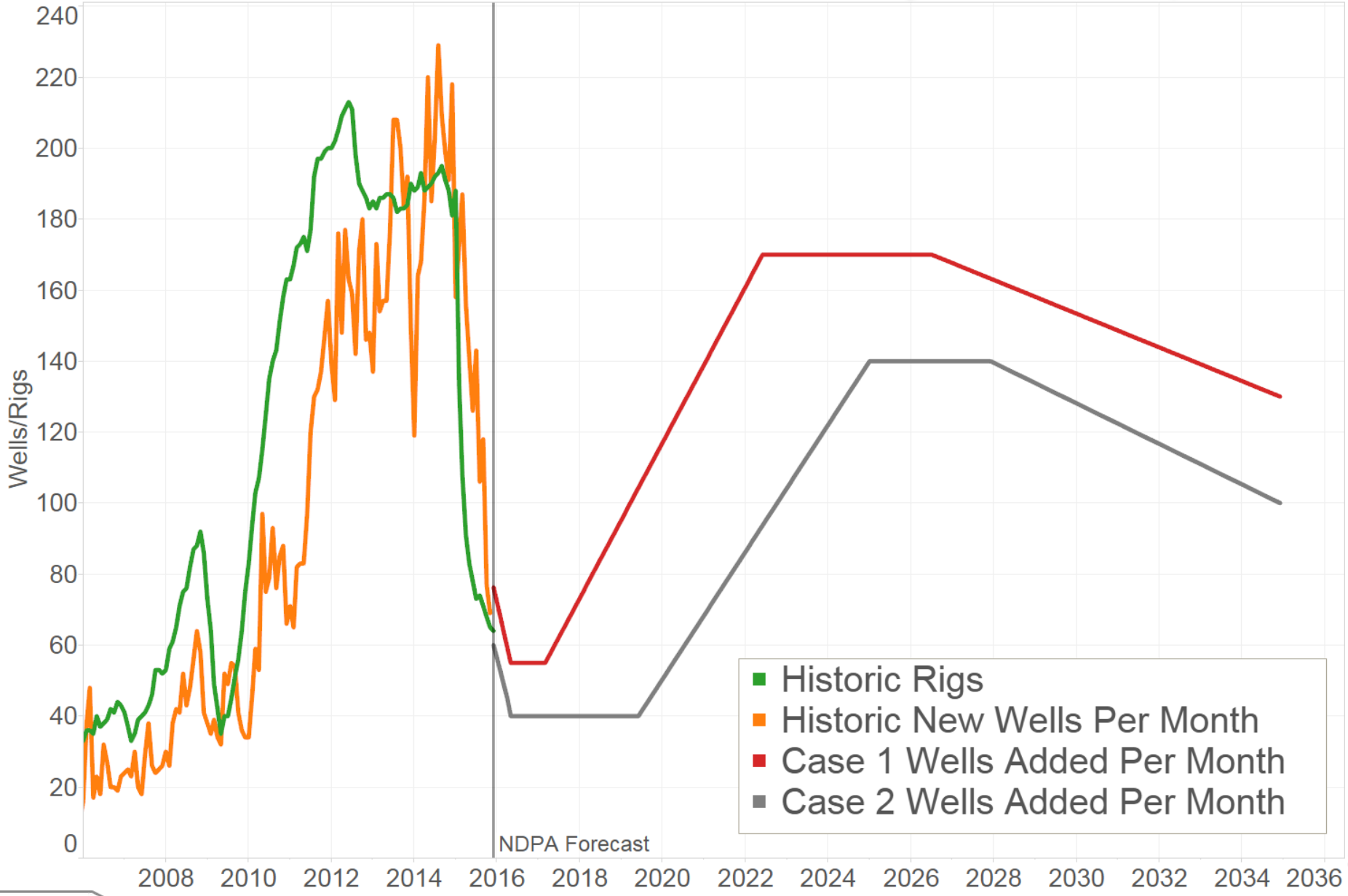


North Dakota Oil Production Forecast

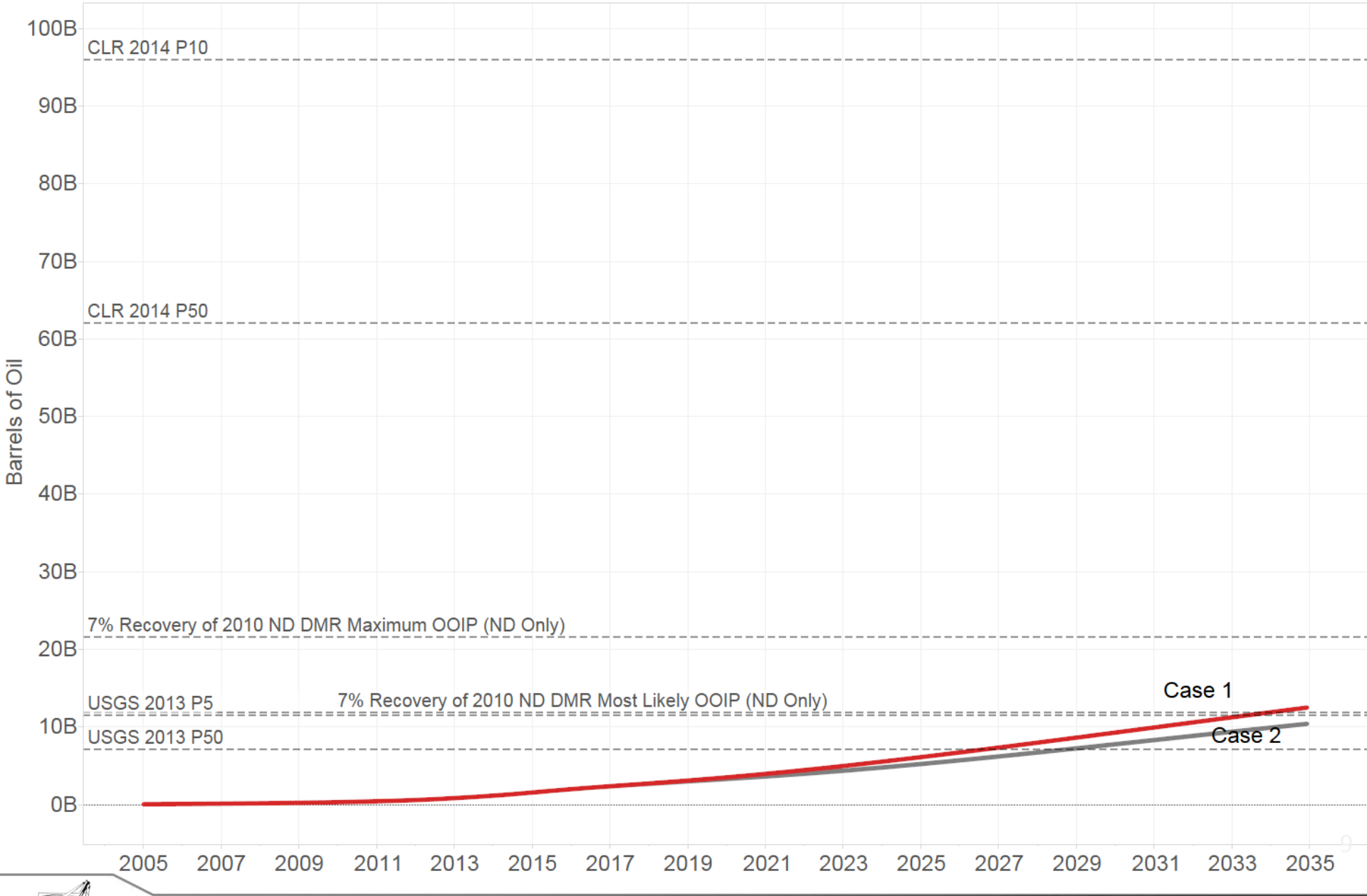


Production forecast is for visual demonstration purposes only and should not be considered accurate for any near or long term planning.

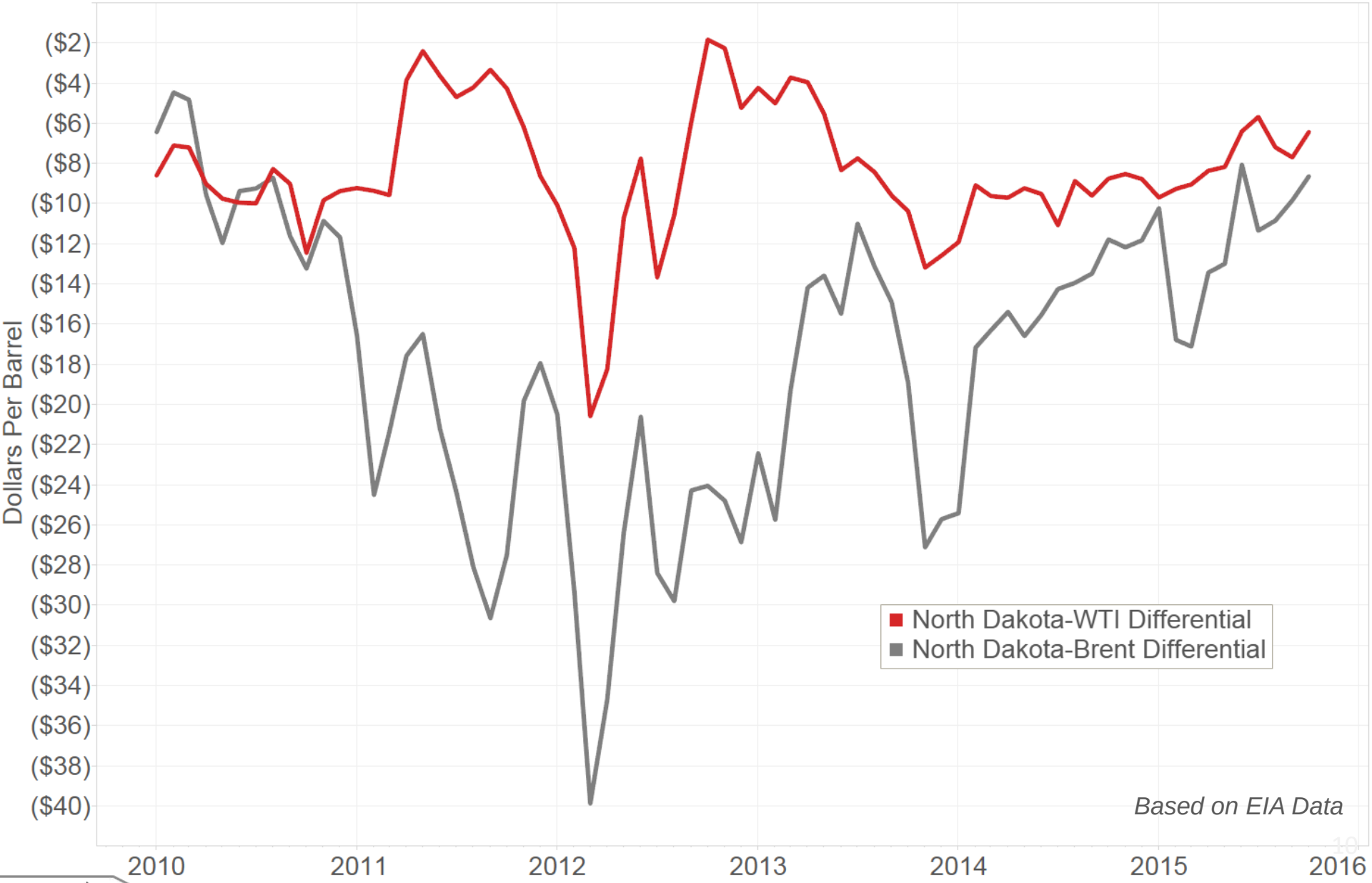
North Dakota Forecast Activity Assumptions



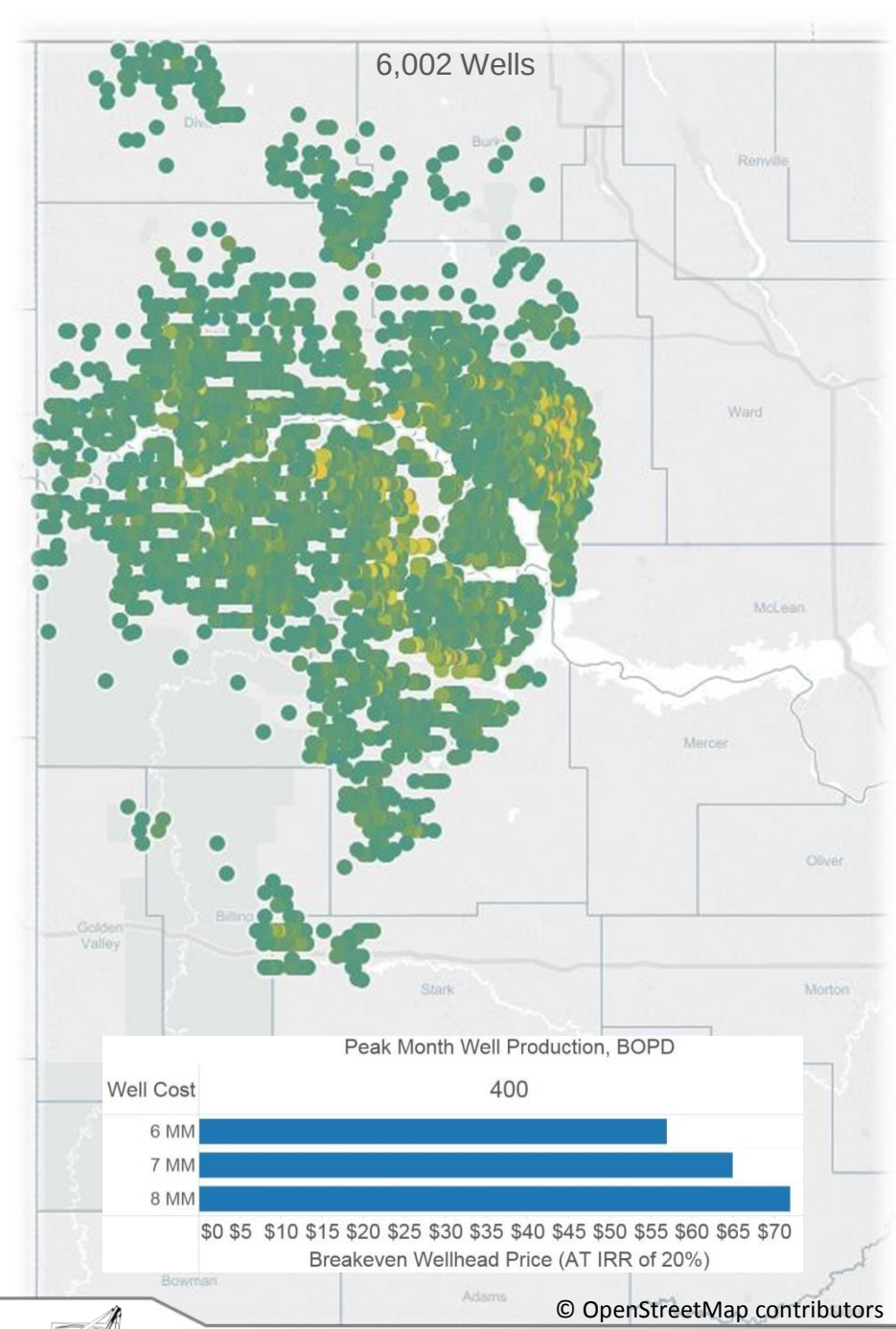
Forecast Cumulative Prod. & EUR Estimates

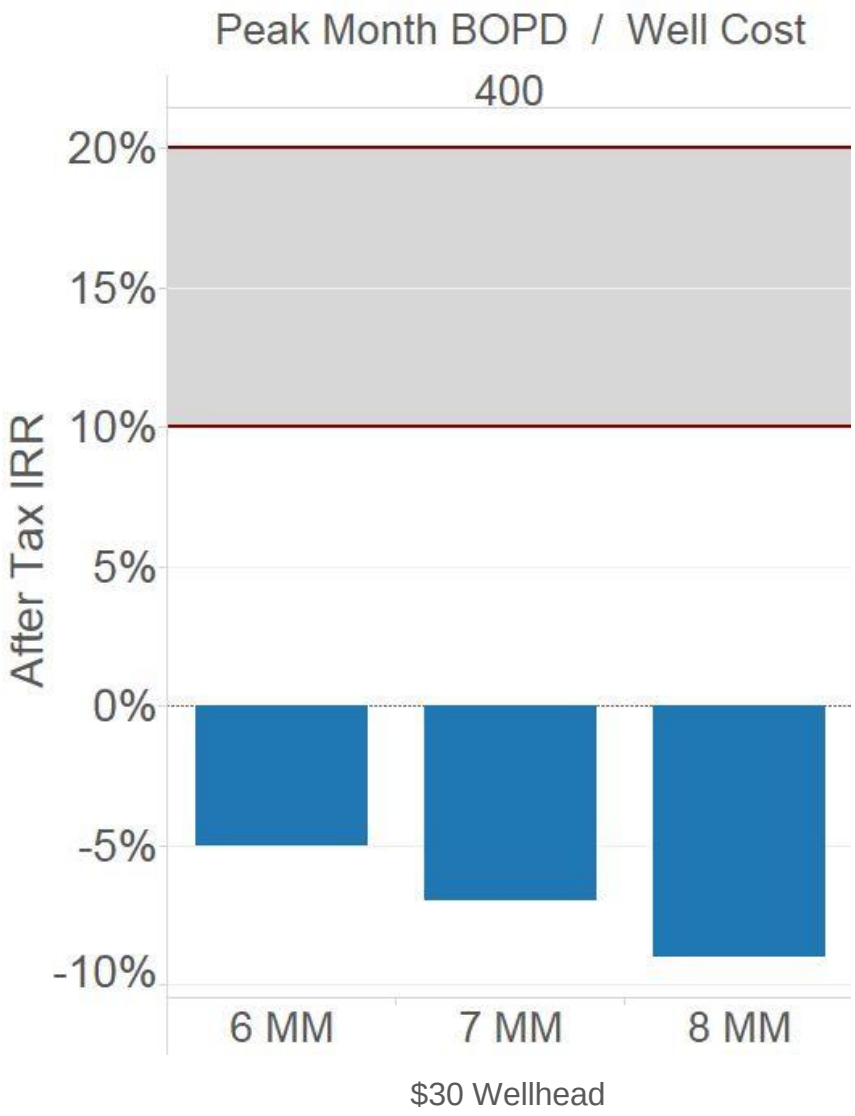


North Dakota Oil Differential

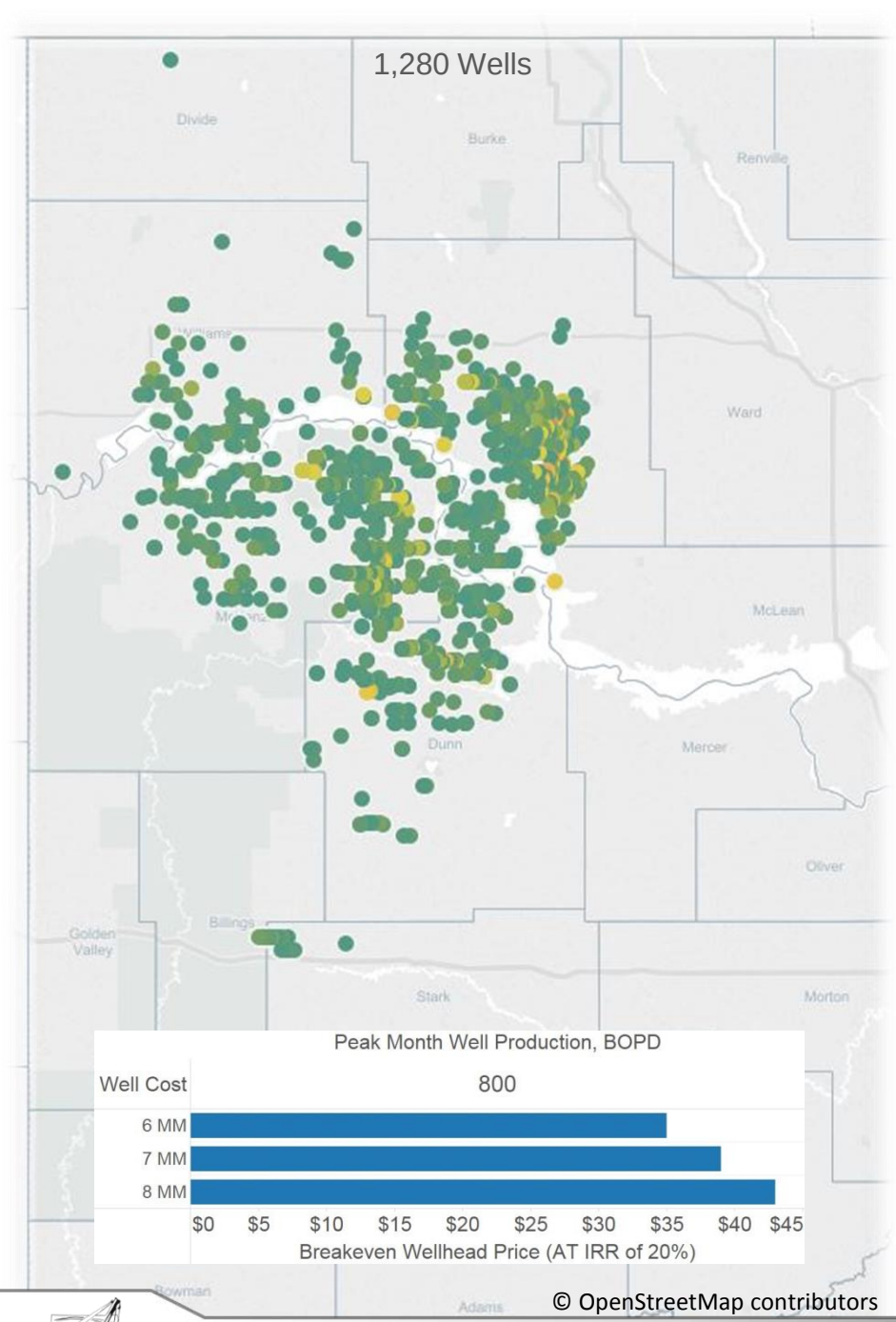


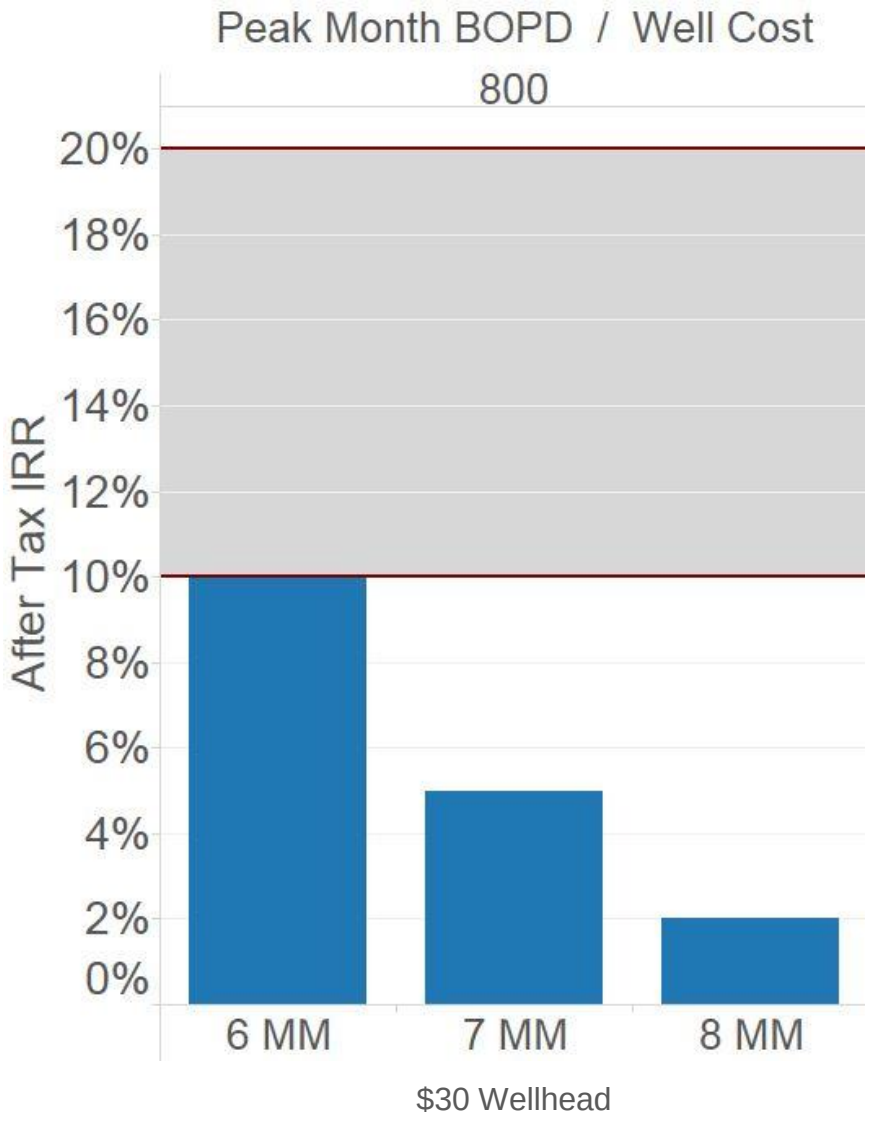
Peak Month Minimum 400 BOPD



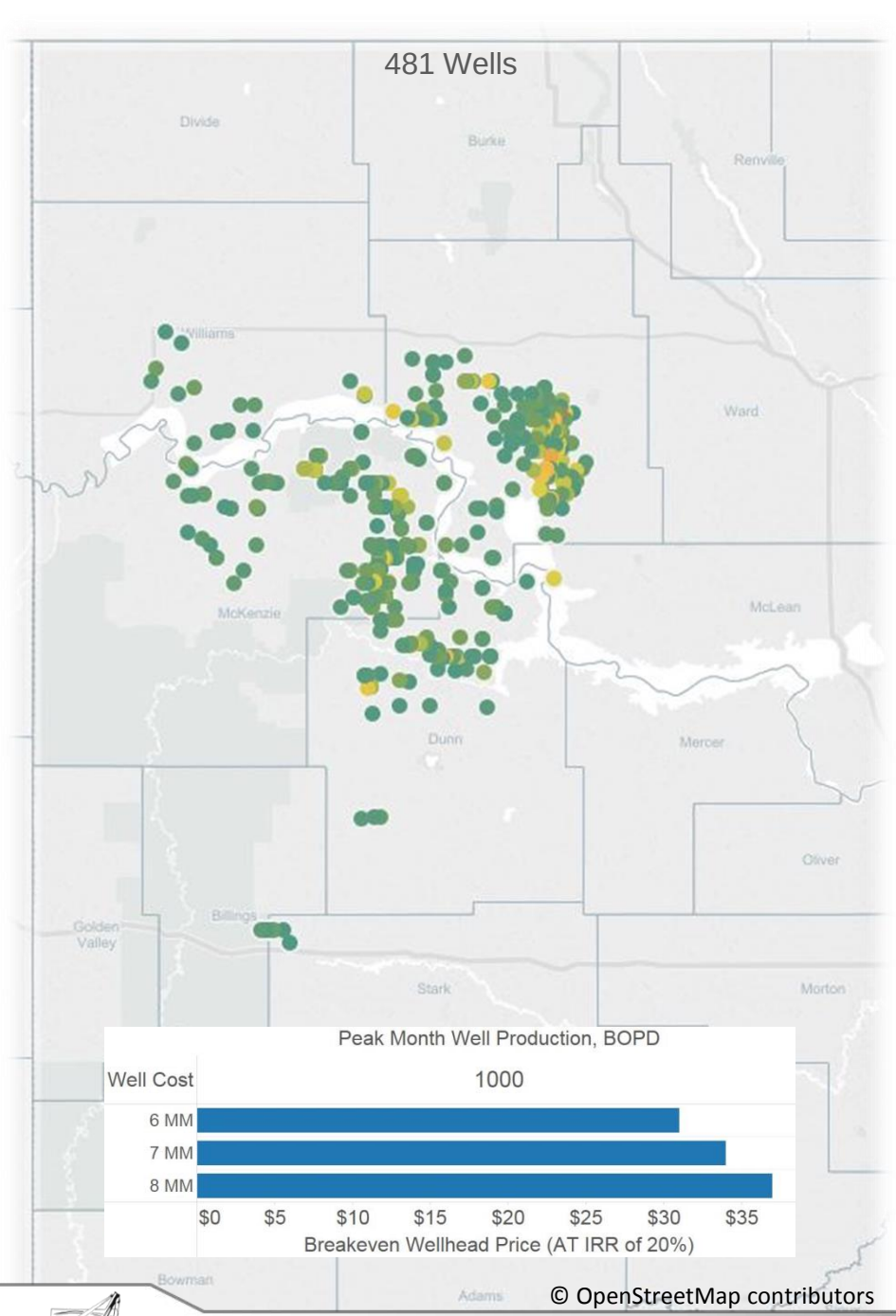


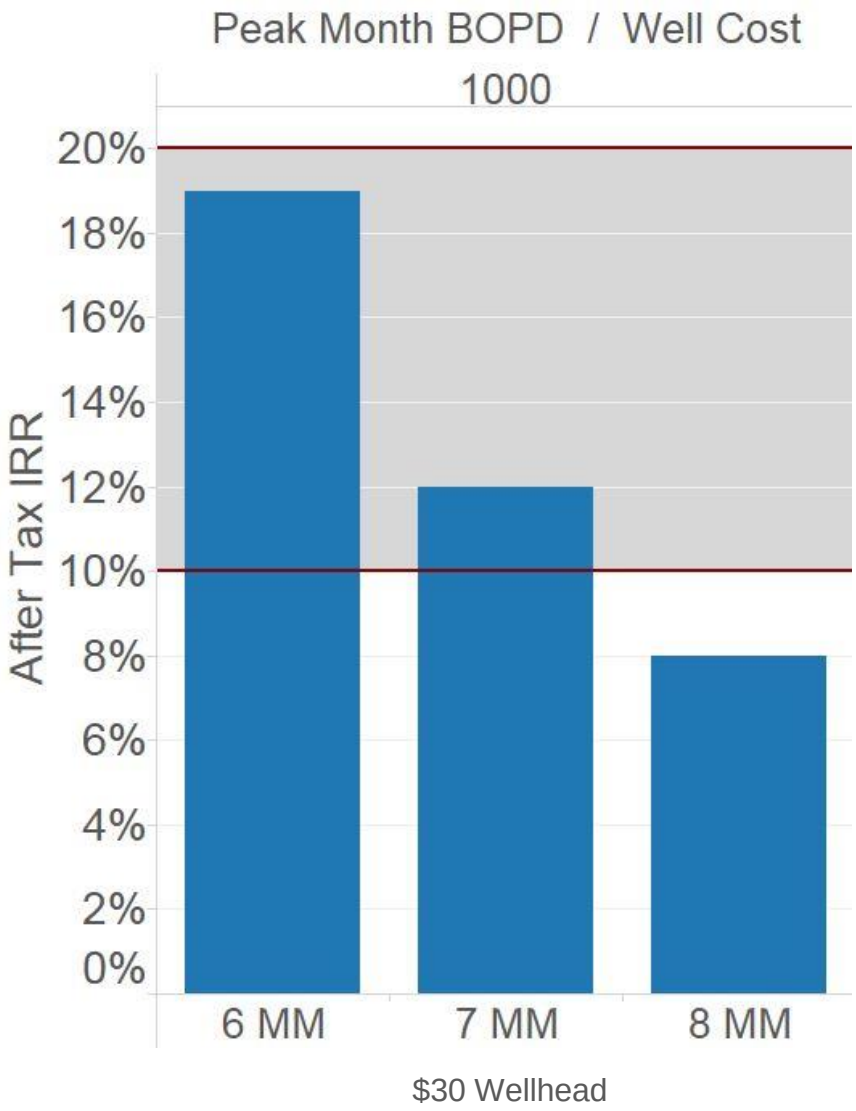
Peak Month Minimum 800 BOPD



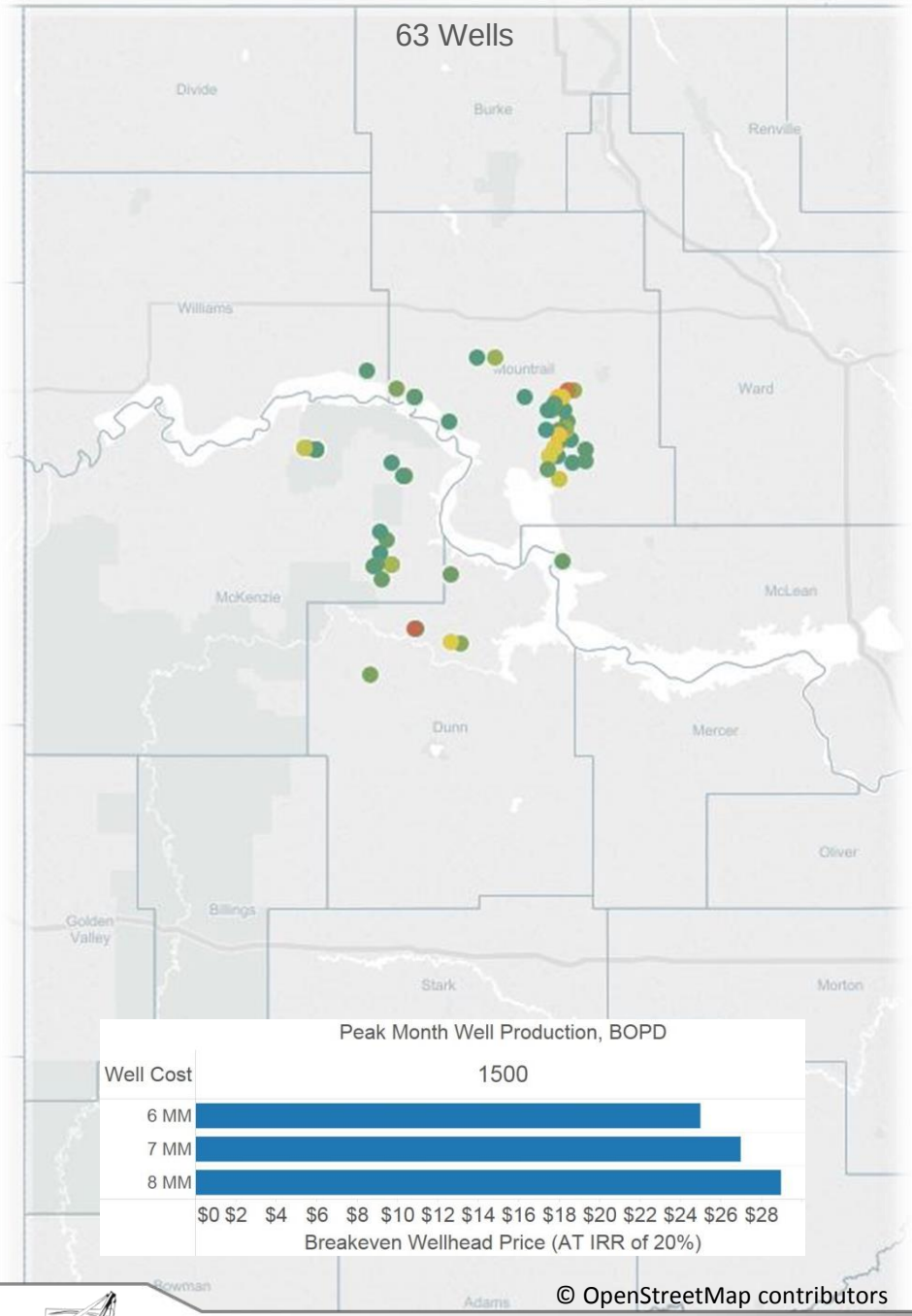


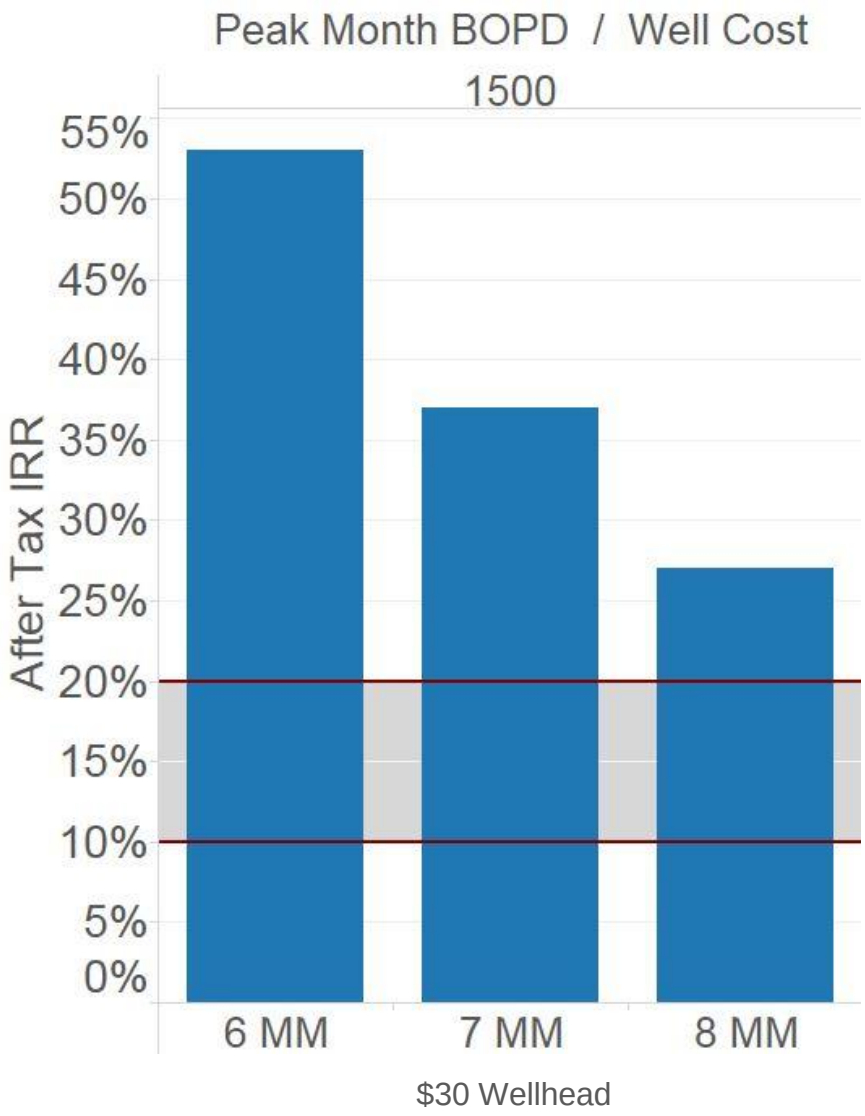
Peak Month Minimum 1,000 BOPD



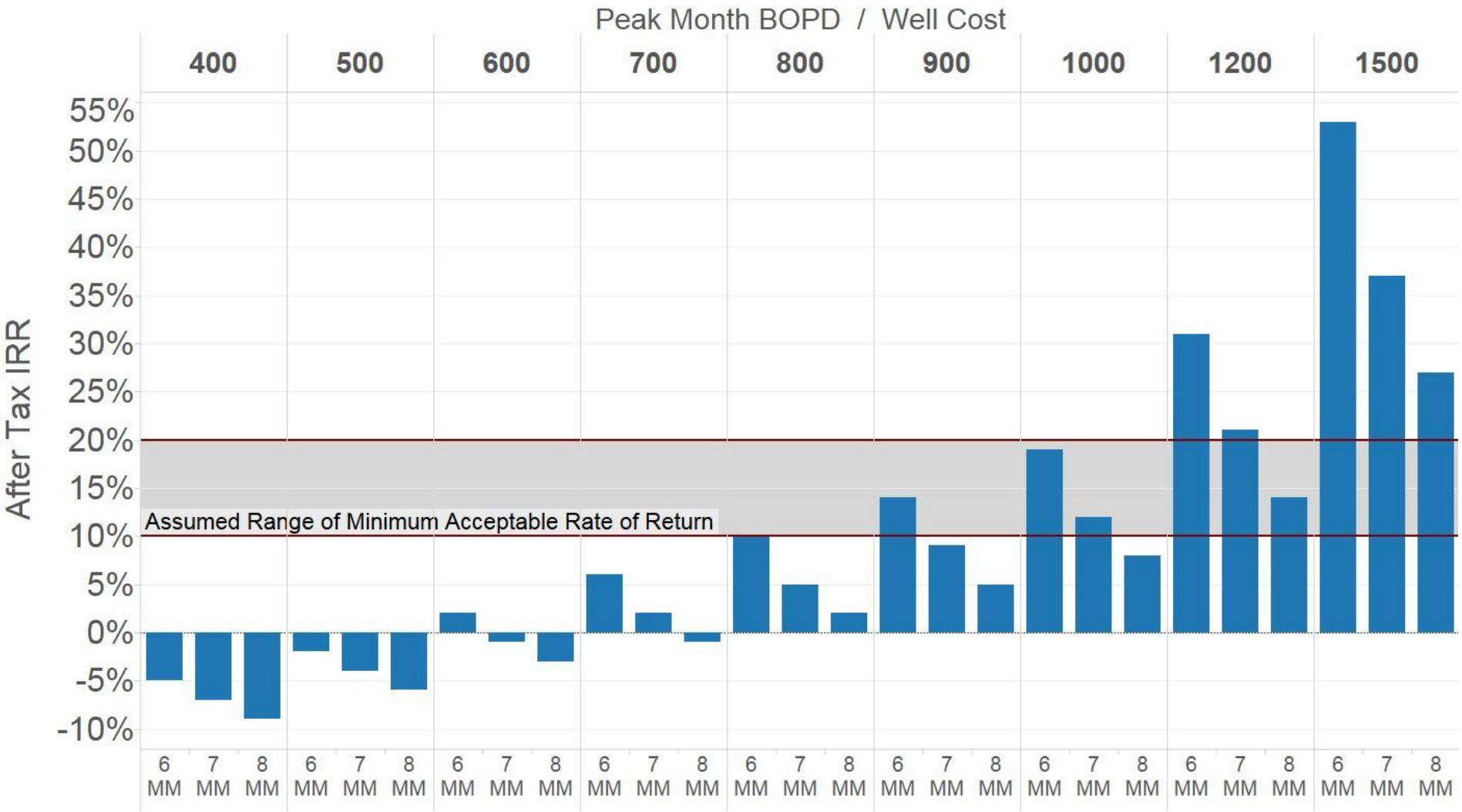


Peak Month Minimum 1,500 BOPD

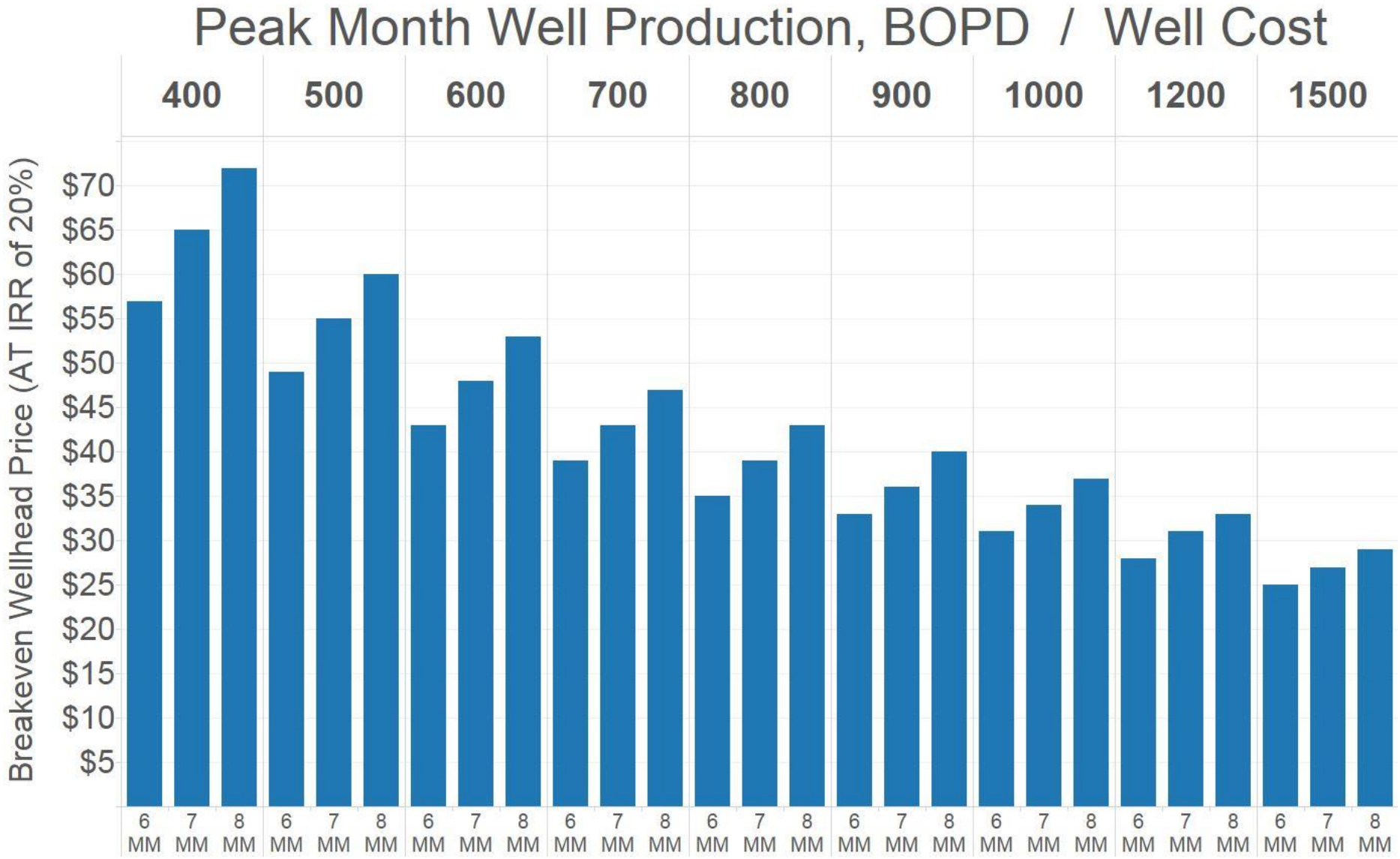




Summary of $30 Wellhead Oil



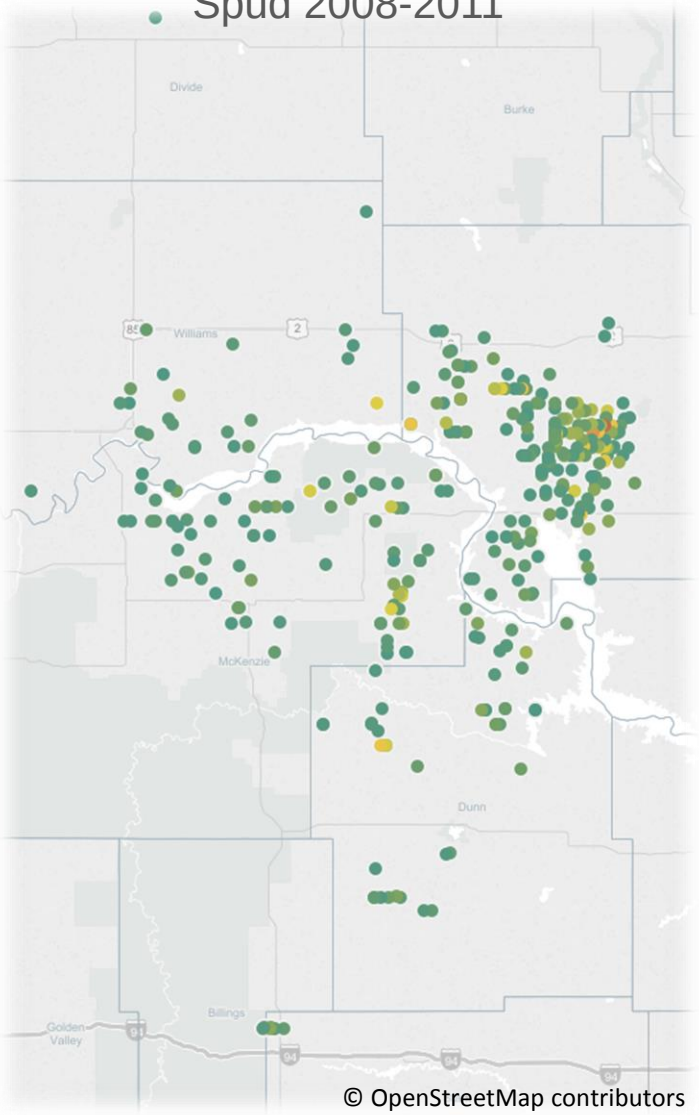
Breakeven Summary



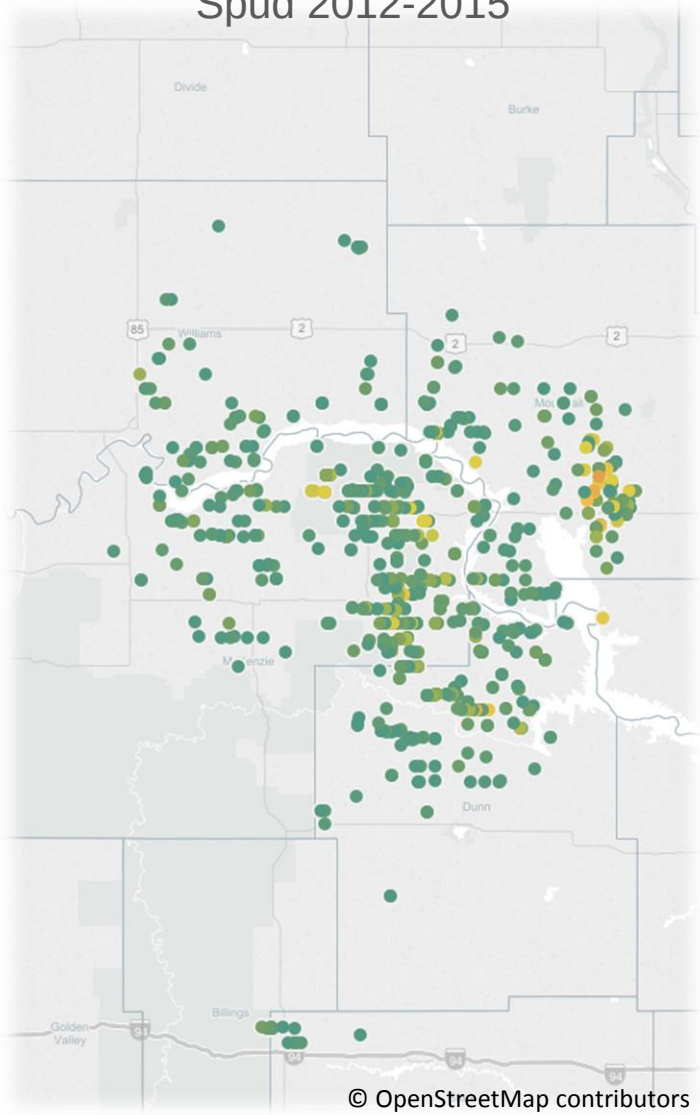
Understanding “The Core” Footprint

Peak Month Minimum: 800 BOPD

Spud 2008-2011



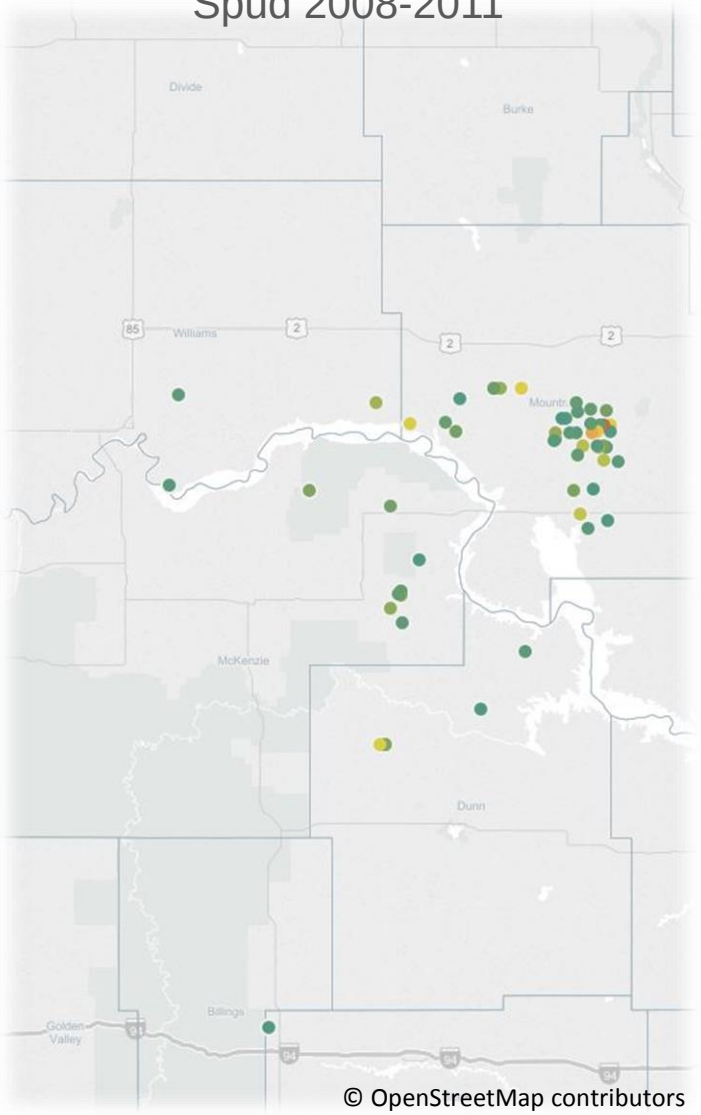
Spud 2012-2015



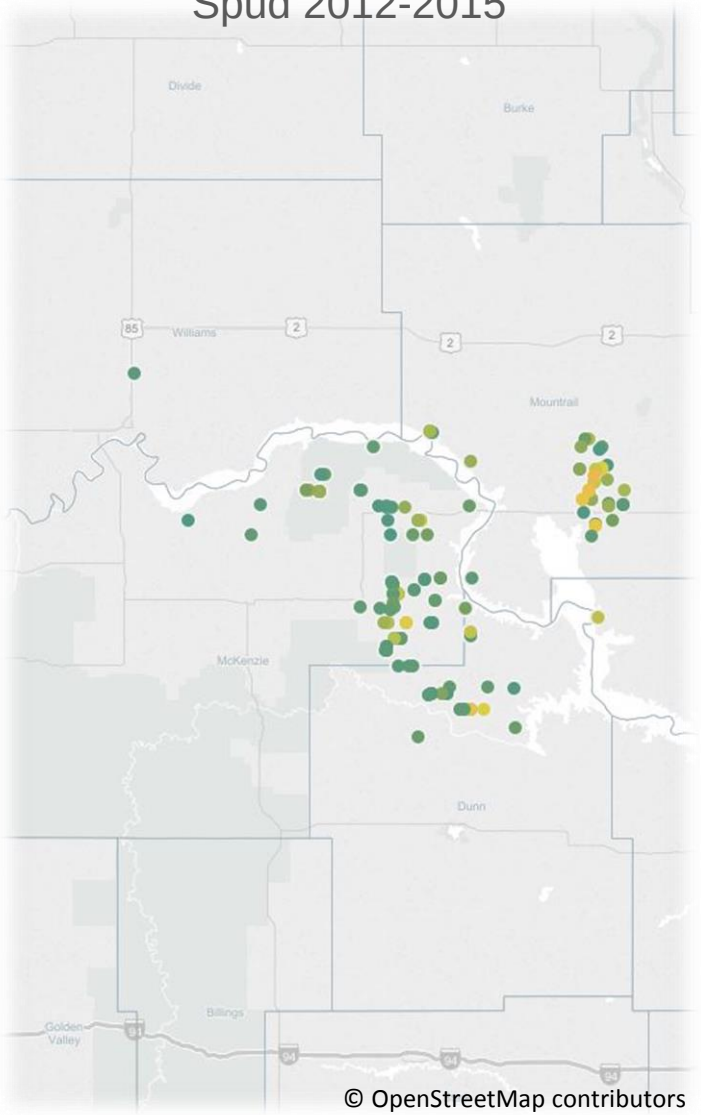
Understanding “The Core” Footprint

Peak Month Minimum: 1,200 BOPD

Spud 2008-2011



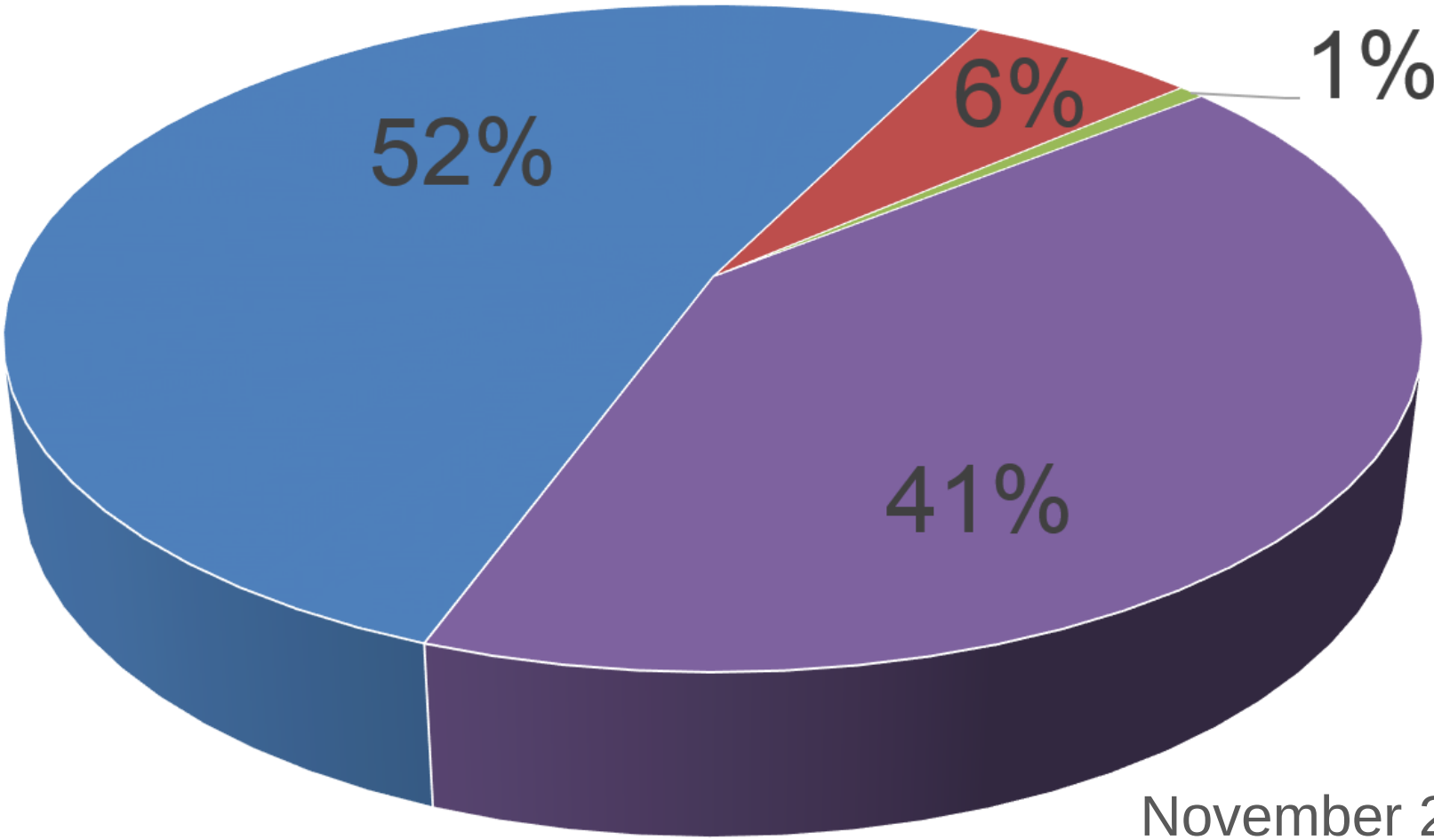
Spud 2012-2015



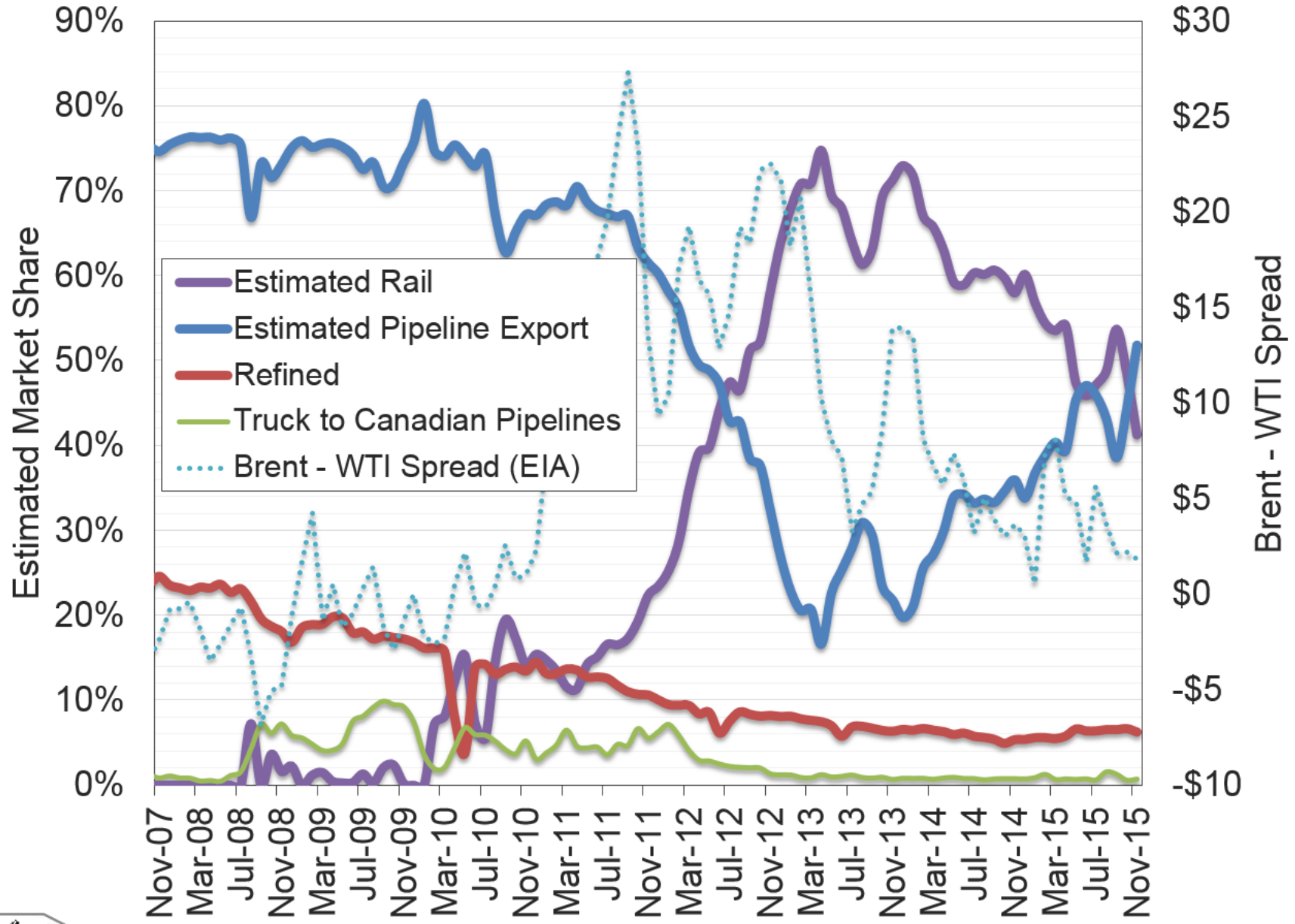
Presentation Outline

- 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

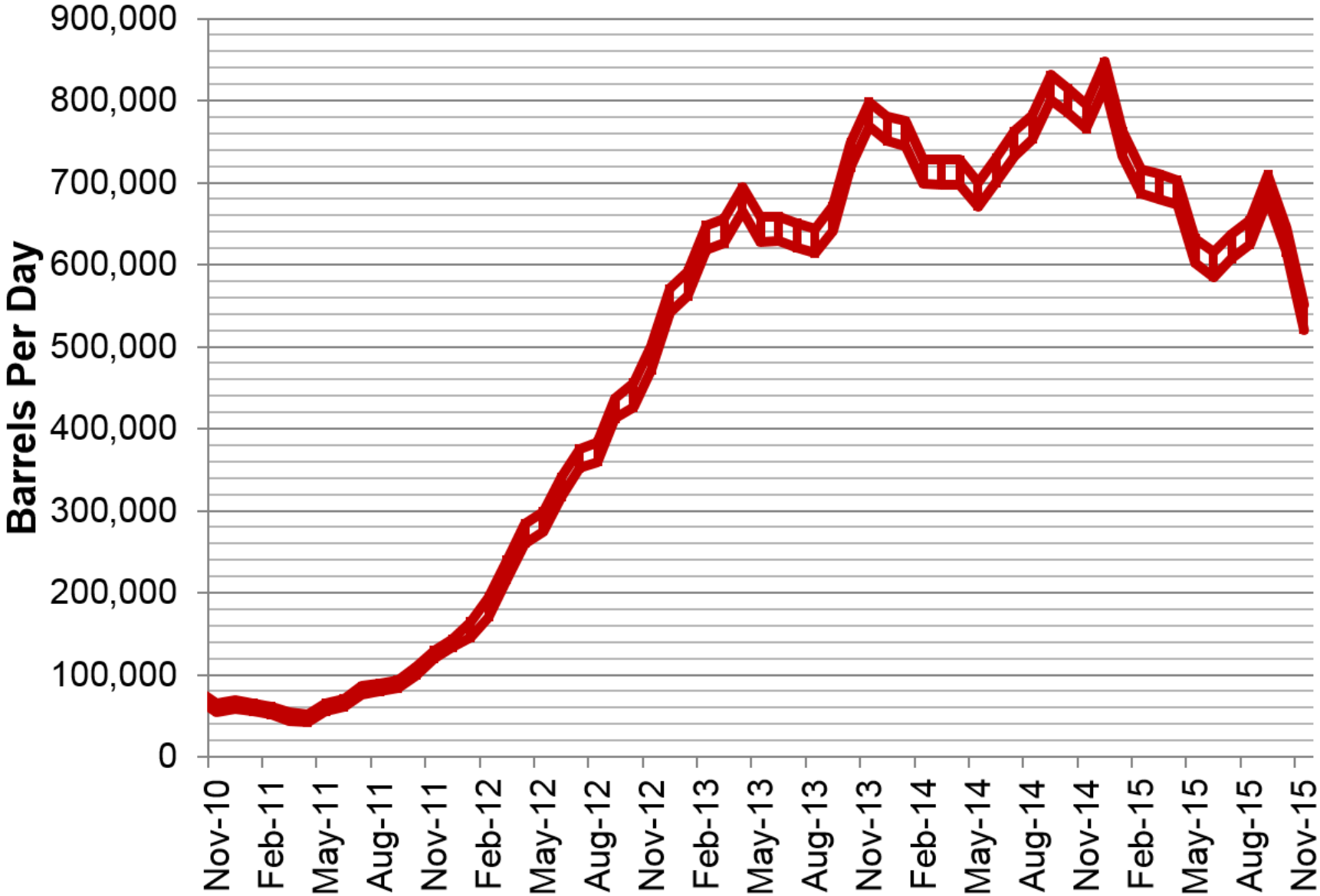
Estimated Williston Basin Oil Transportation



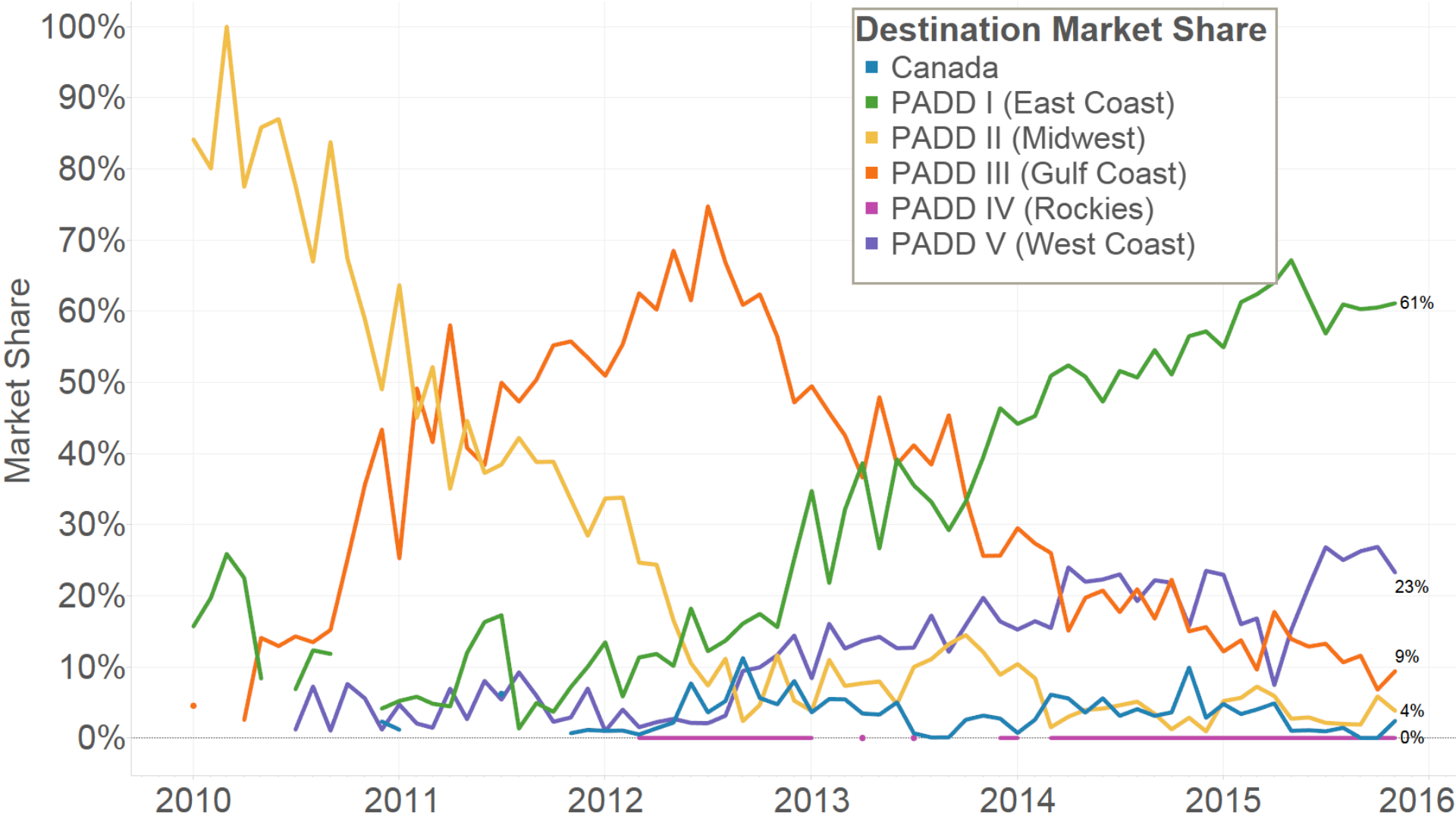
Estimated Williston Basin Oil Transportation



Estimated ND Rail Export Volumes

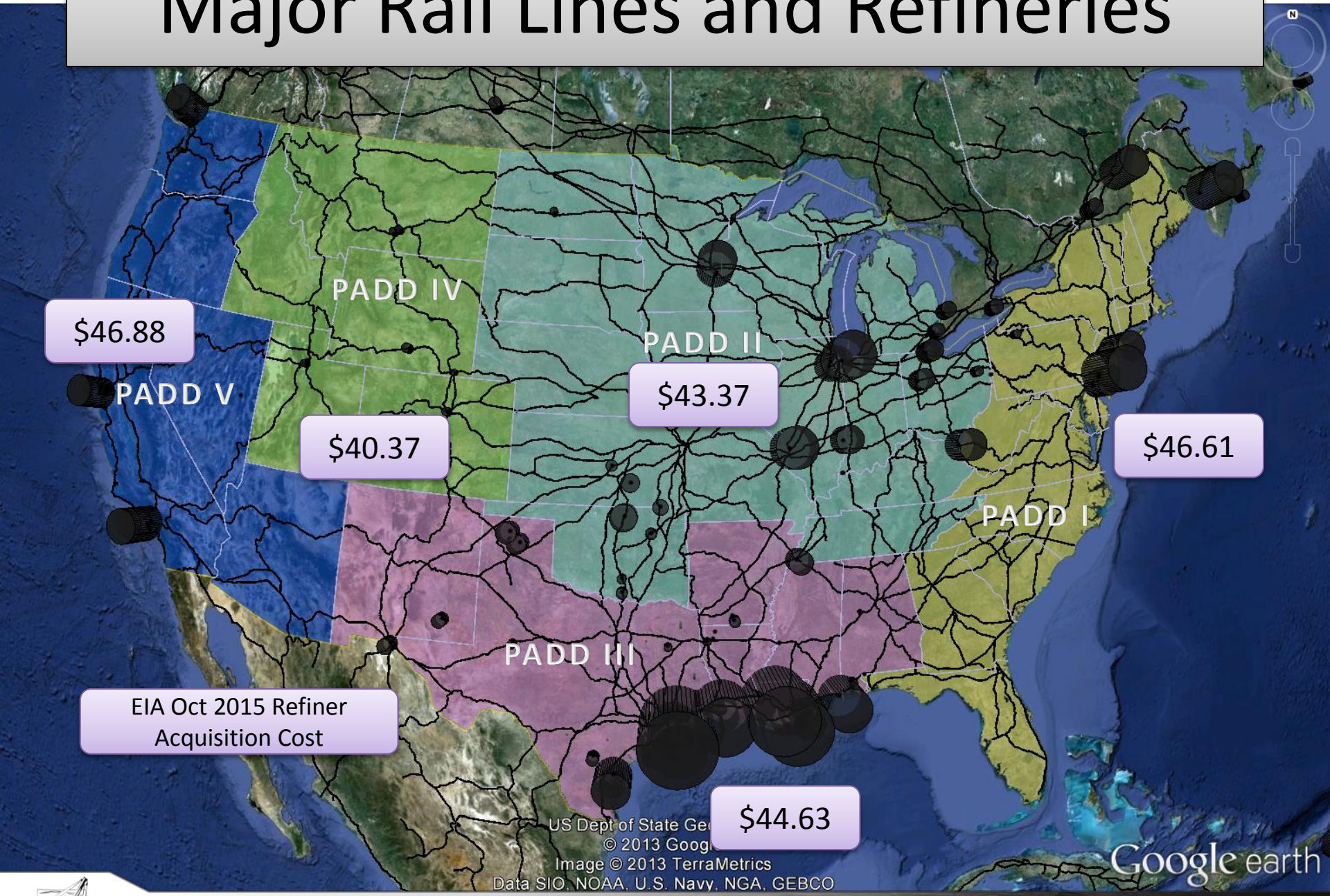


Rail Destinations Market Share (Nov 2015)

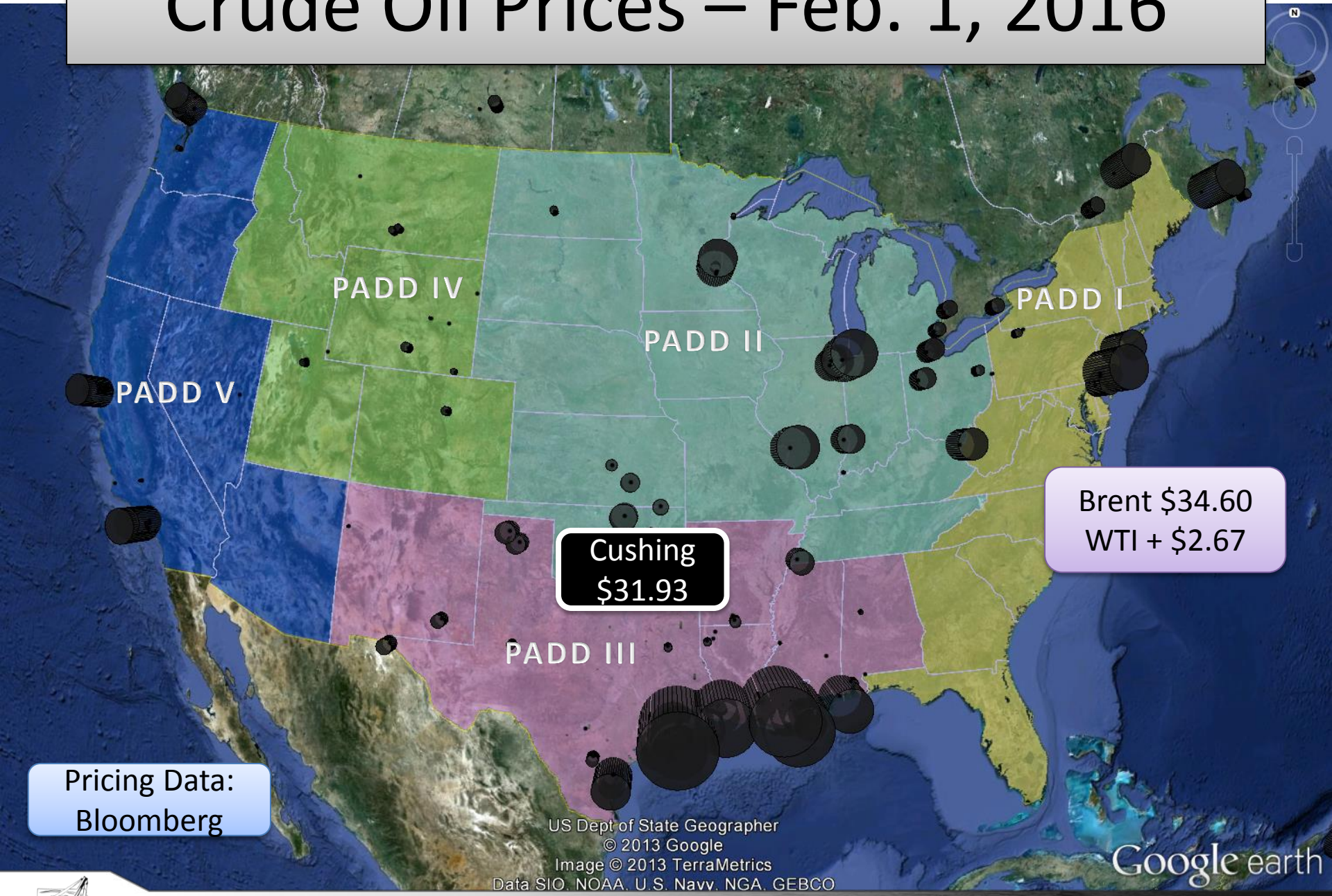


Data for Rail Destination Market Share Provided by the US Energy Information Administration

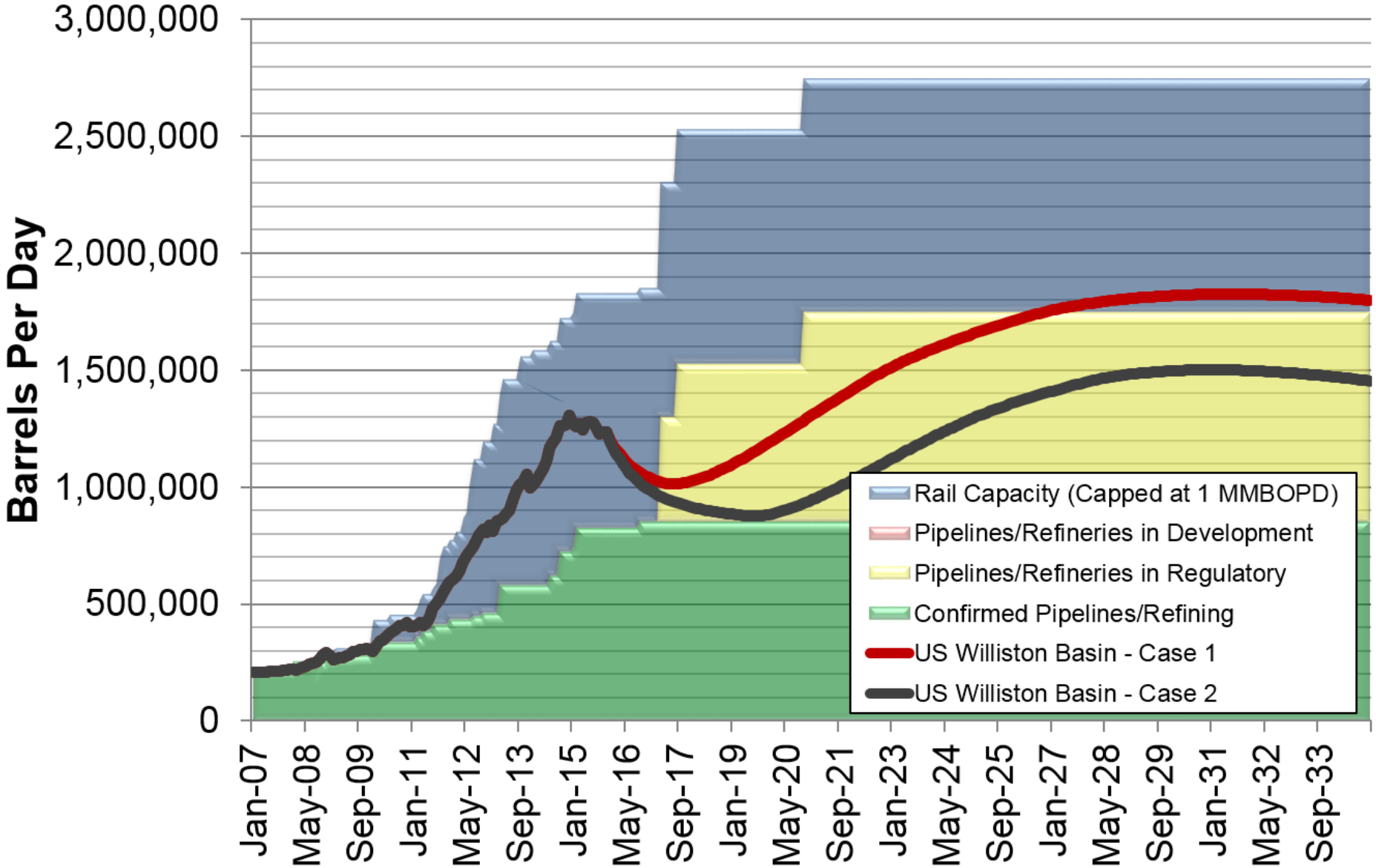
Major Rail Lines and Refineries



Crude Oil Prices – Feb. 1, 2016

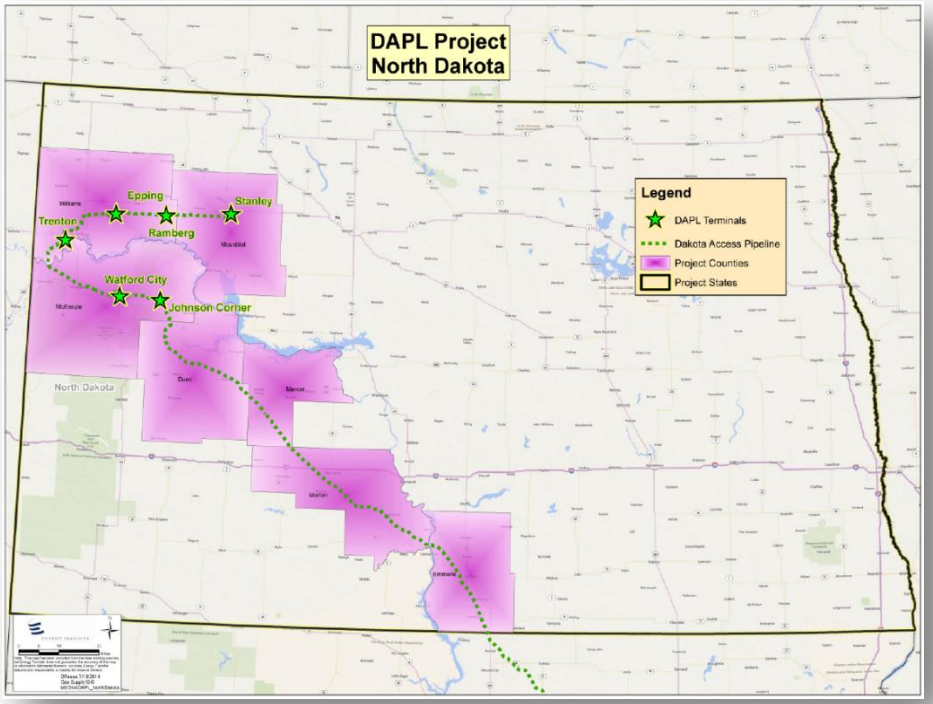


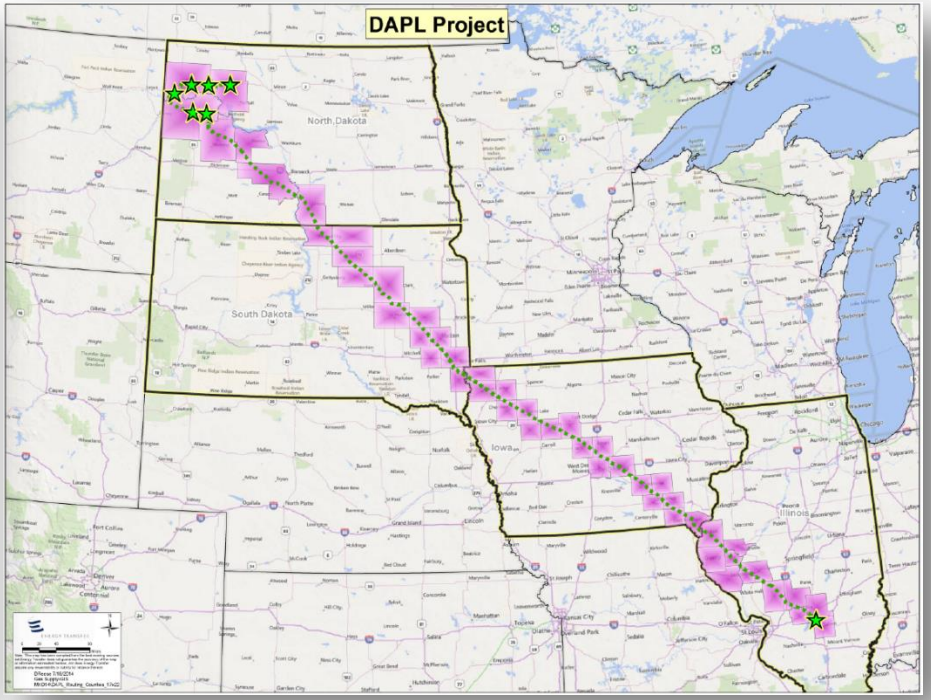
Williston Basin Oil Production & Export Capacity, BOPD



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

Energy Transfer Partners: Dakota Access

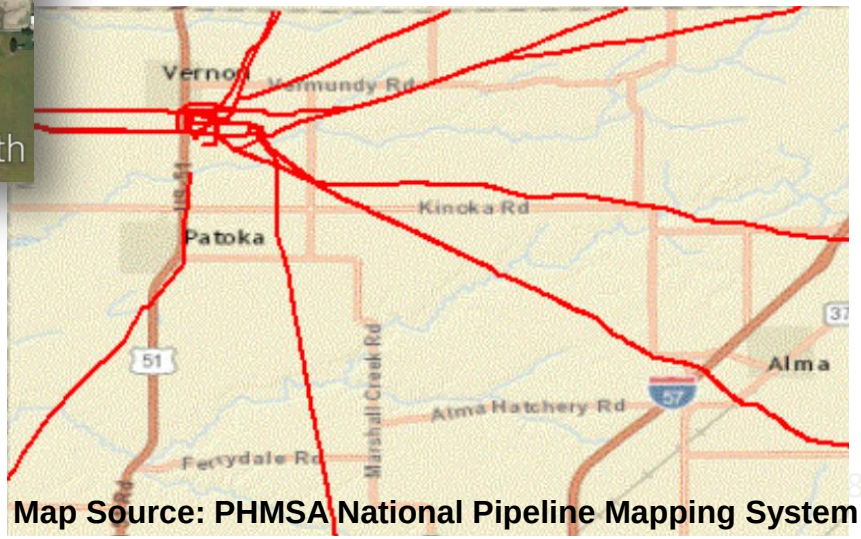




- Successful Open Season During the First Half of 2014
- 450,000 BOPD Capacity to Patoka, IL (30”)
- Expandable Up To 570,000 BOPD if Shipper Demand Exists
- Target In-service Date: Late 2016

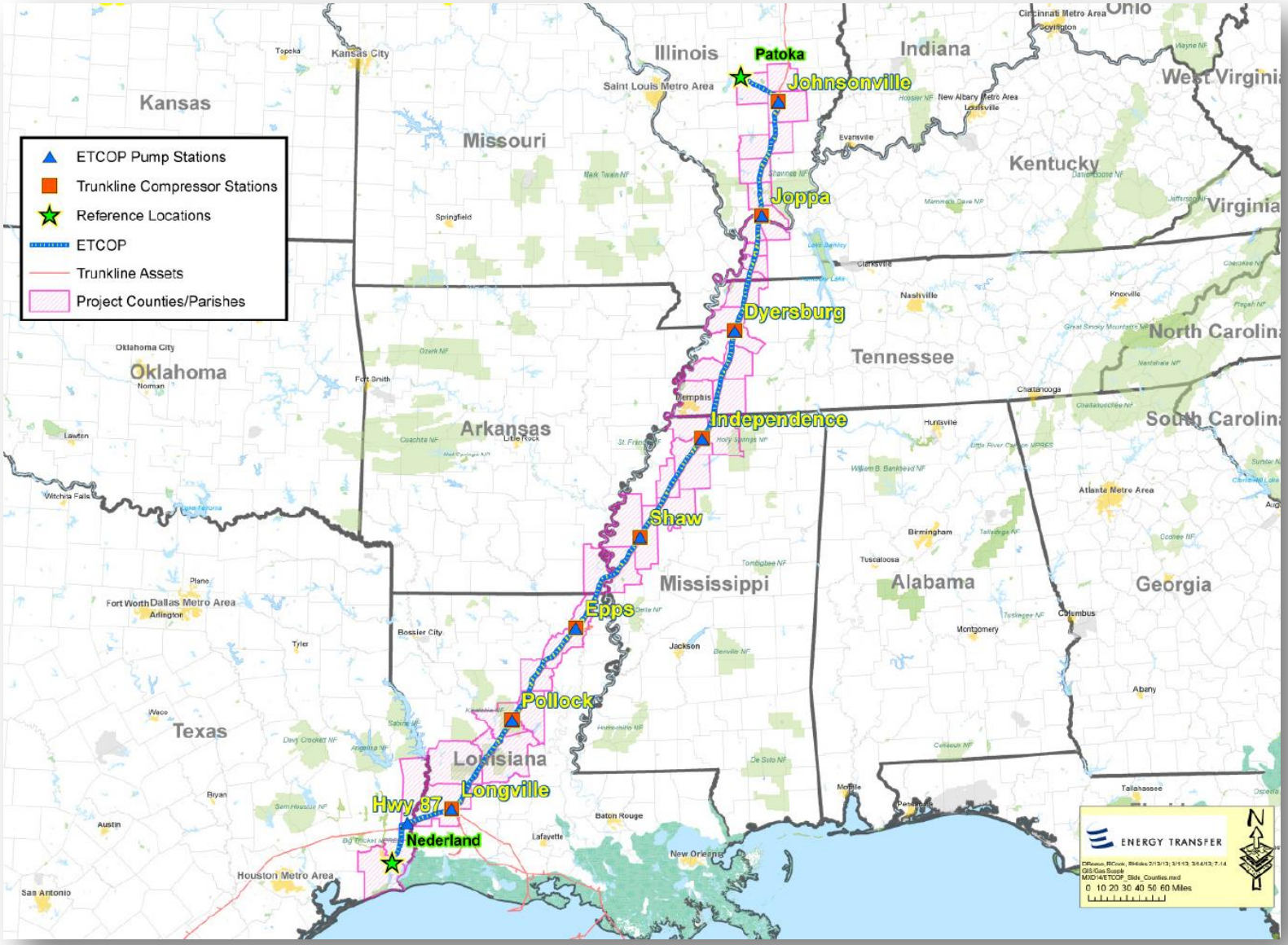
Map Source: Energy Transfer Partners

Patoka, IL Crude Hub



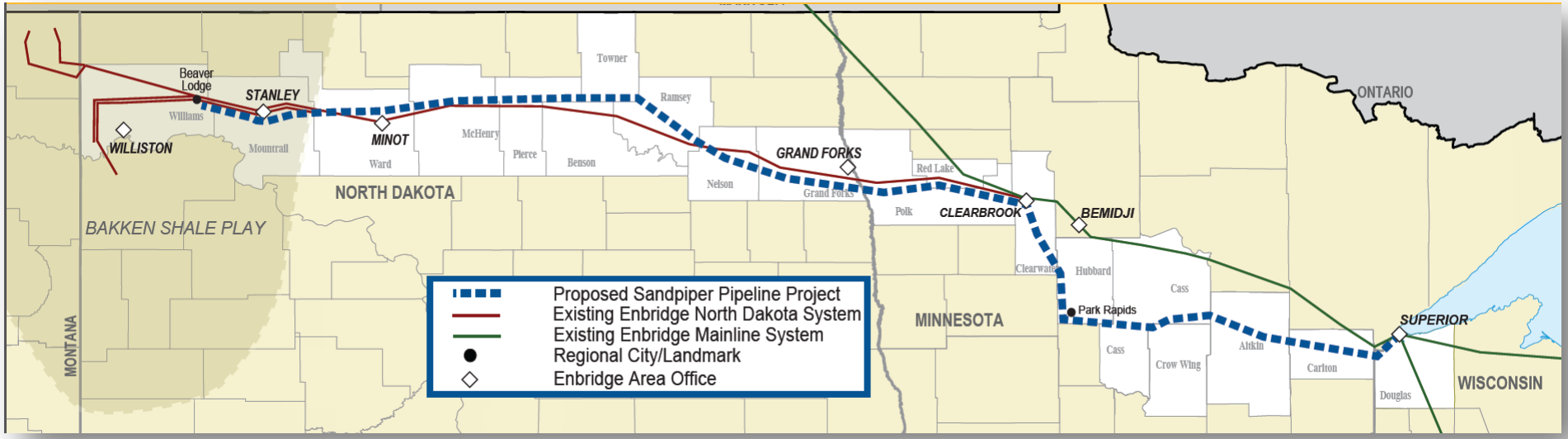
Map Source: PHMSA National Pipeline Mapping System

Energy Transfer Crude Oil Pipeline



Map Source: Energy Transfer Partners

Sandpiper Pipeline



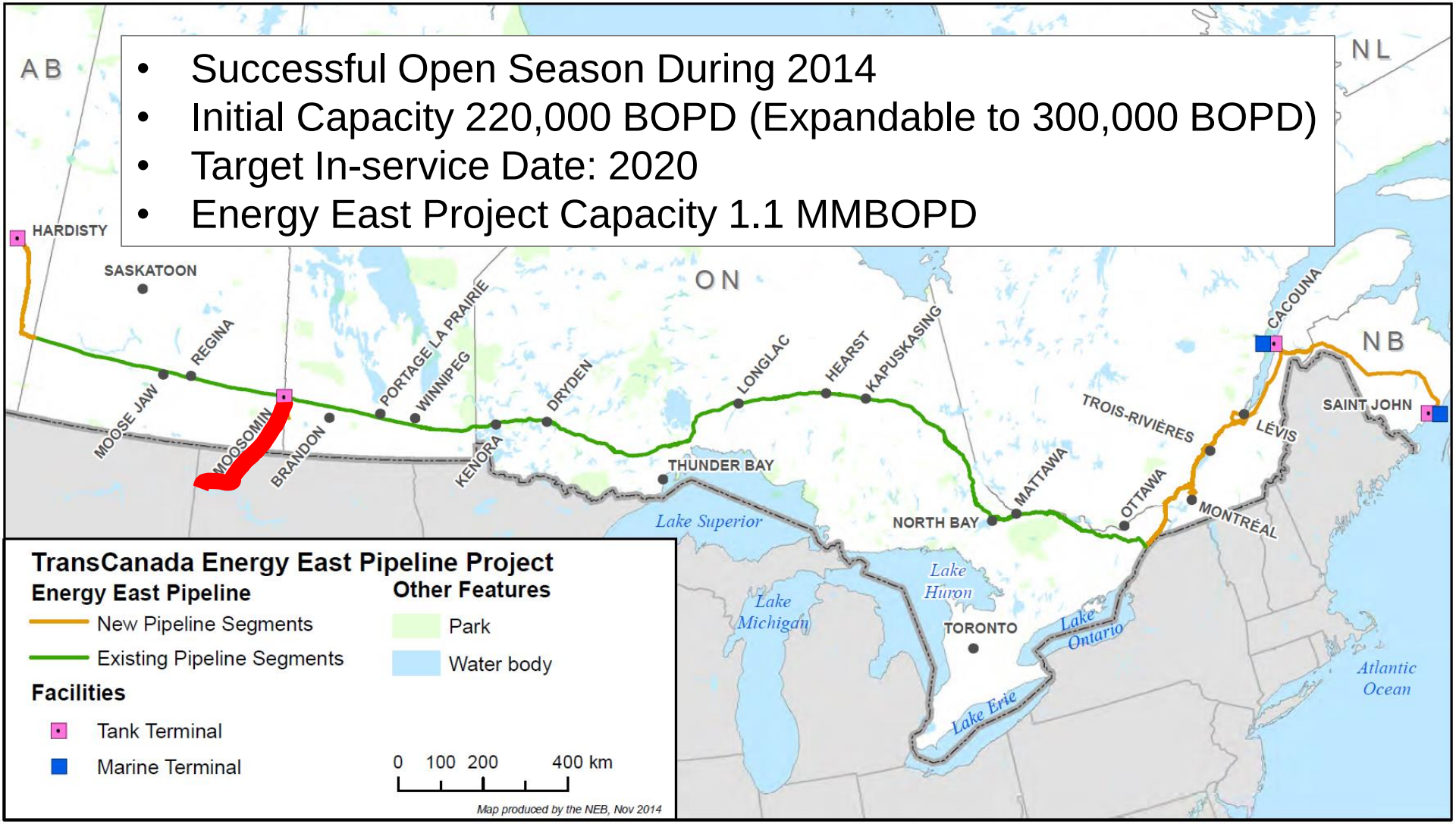
North Dakota Pipeline Company LLC - formerly known as Enbridge Pipelines (North Dakota) LLC

- Open Season Dates: November 26, 2013 – January 24, 2014
- 225,000 BOPD ND Capacity to Clearbrook, MN (24”)
- 375,000 BOPD Clearbrook, MN to Superior, WI (30”)
- Target In-service Date: 2017

Map: Enbridge

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

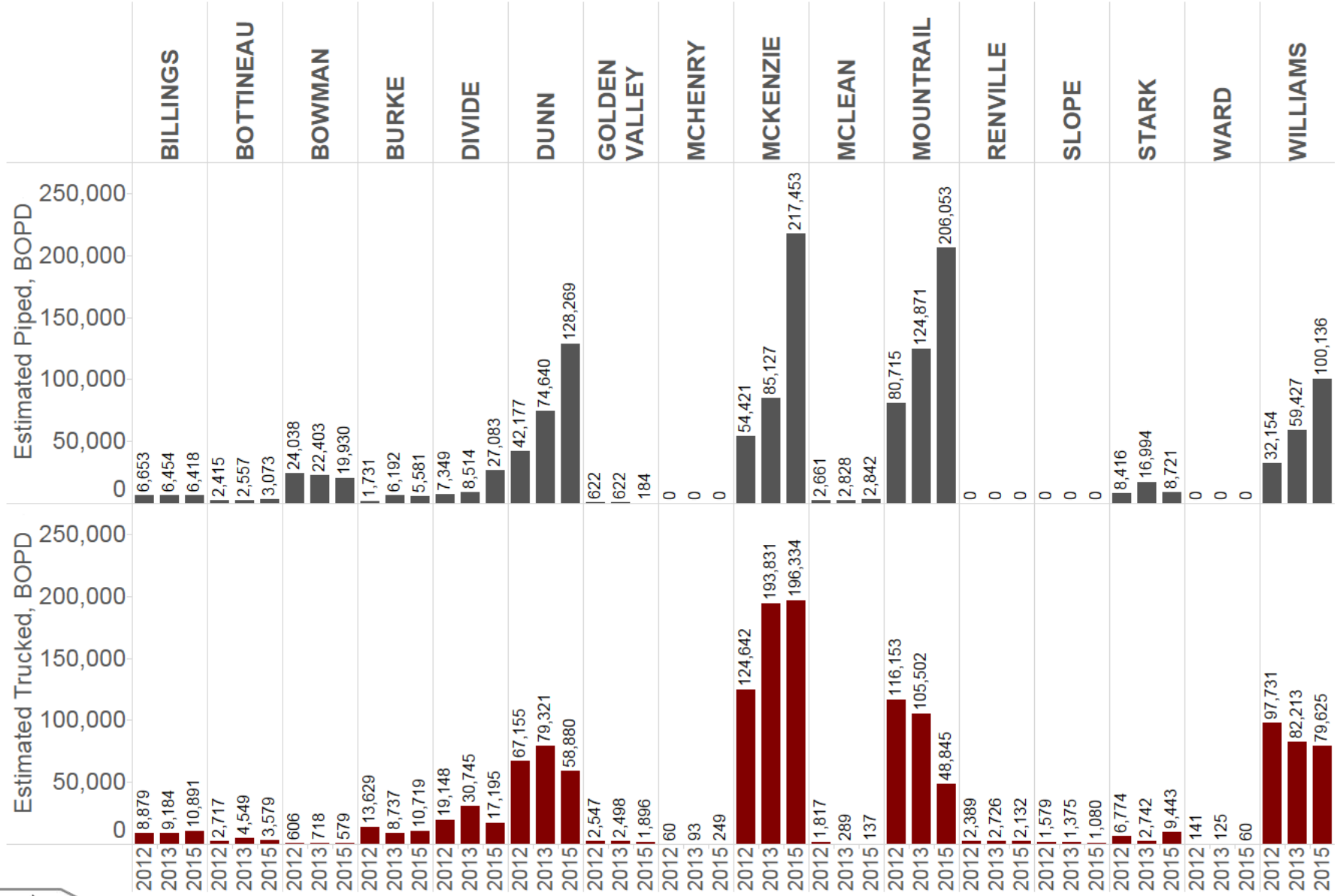


Map: NEB – NDPA Upland Addition

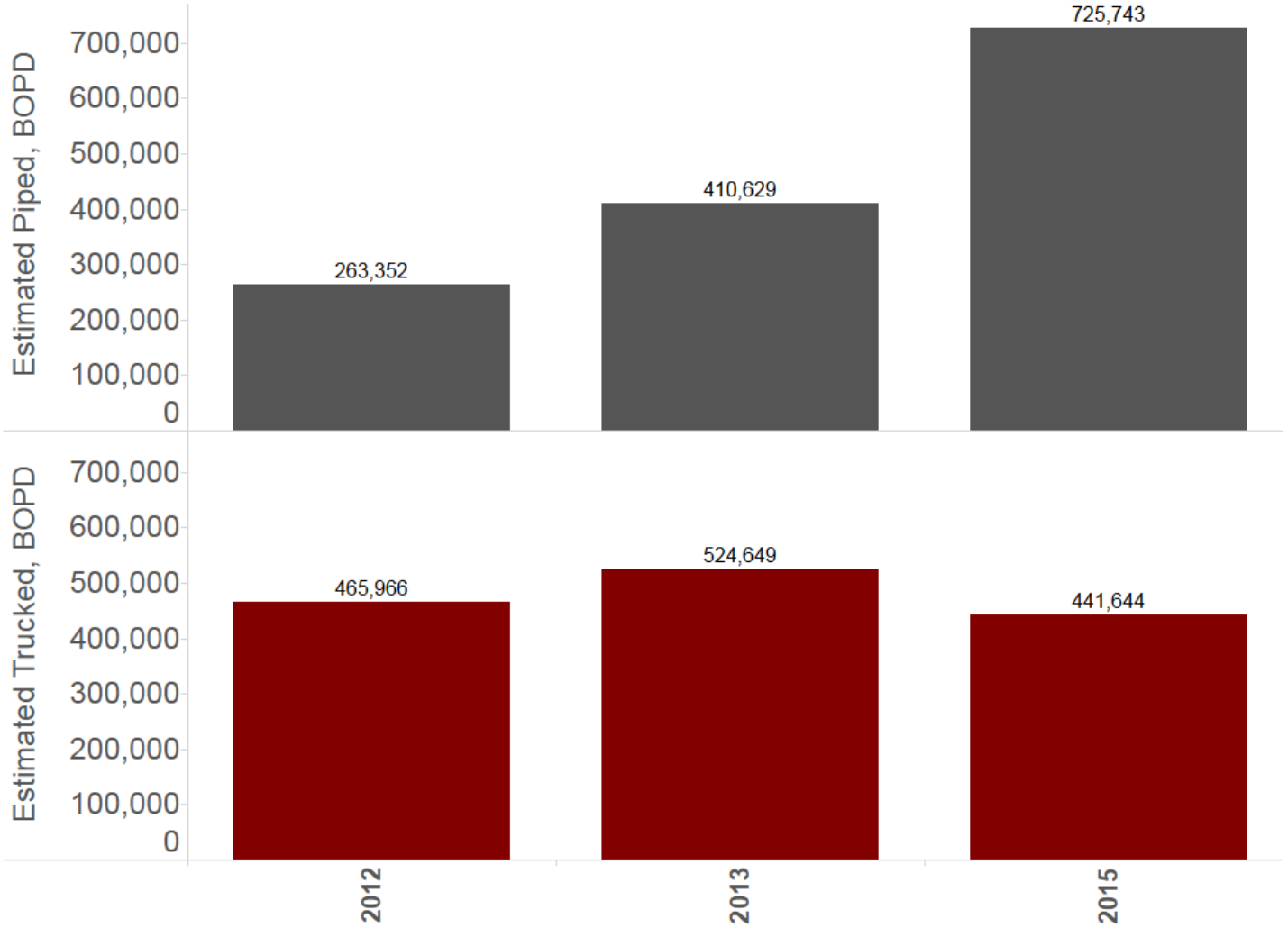
Presentation Outline

- 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

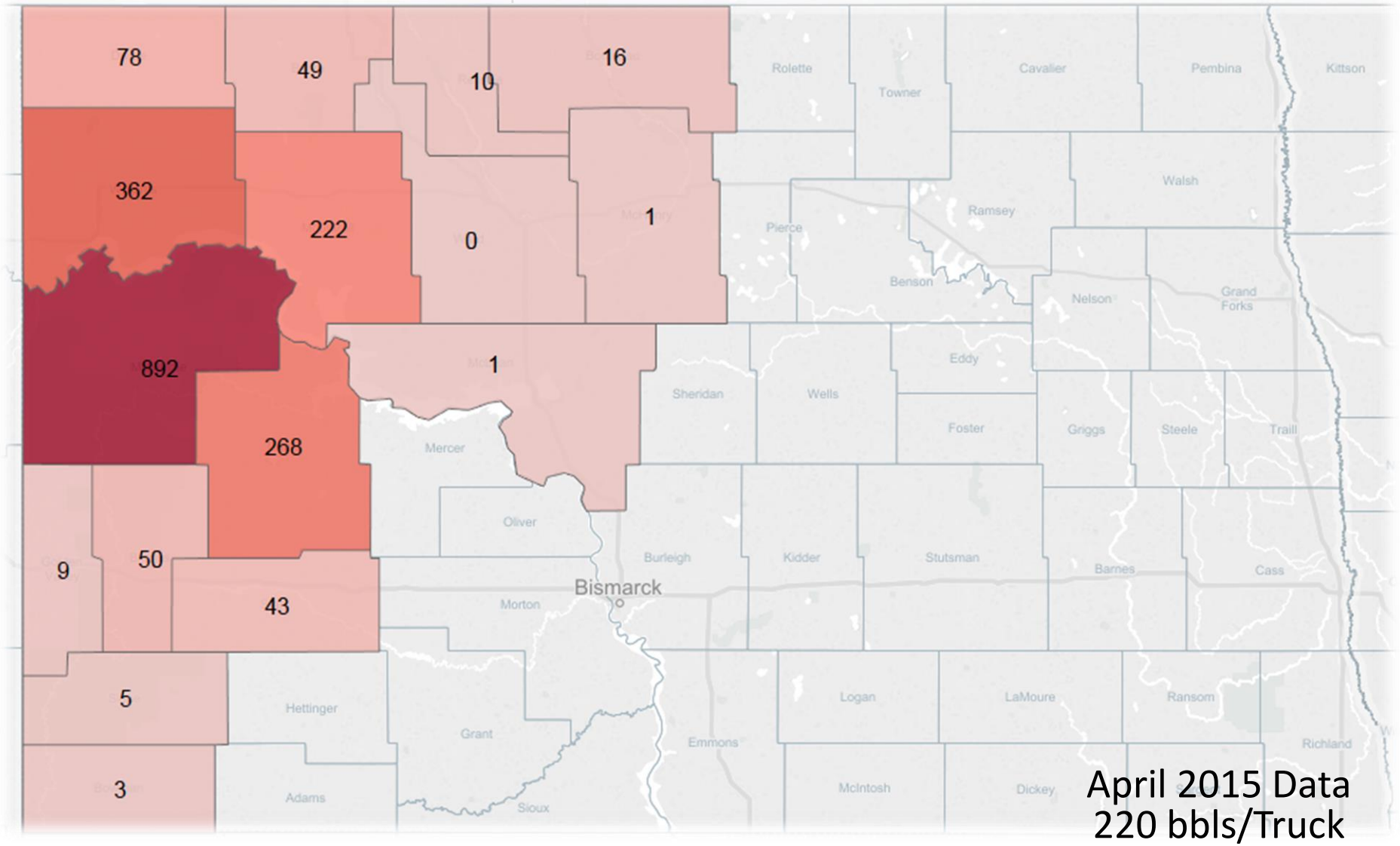
Evolution of Oil Gathering in ND



Evolution of Oil Gathering in ND Statewide Totals



Estimated Loaded Oil Truckloads Per Day

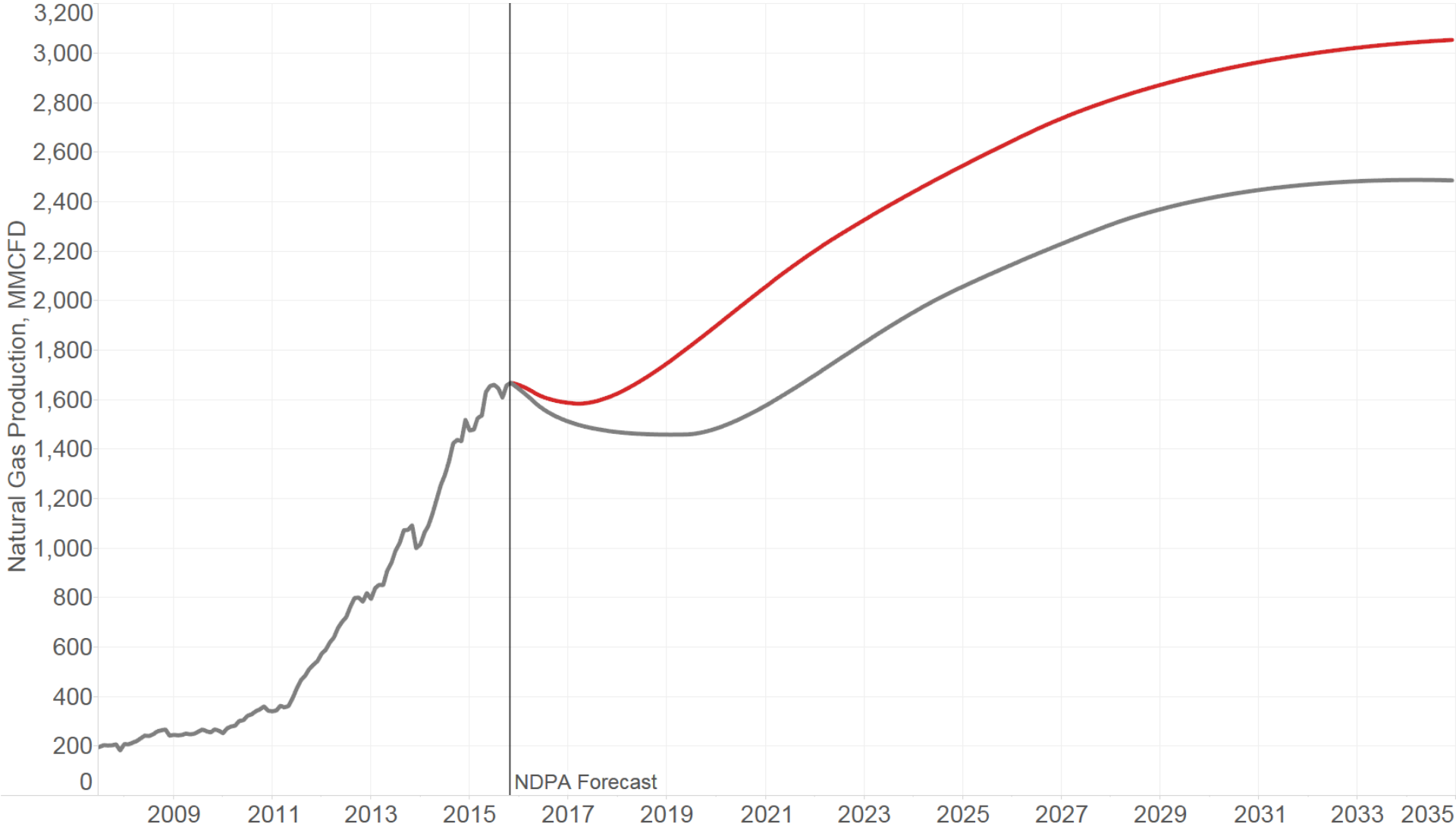


April 2015 Data
220 bbls/Truck

Presentation Outline

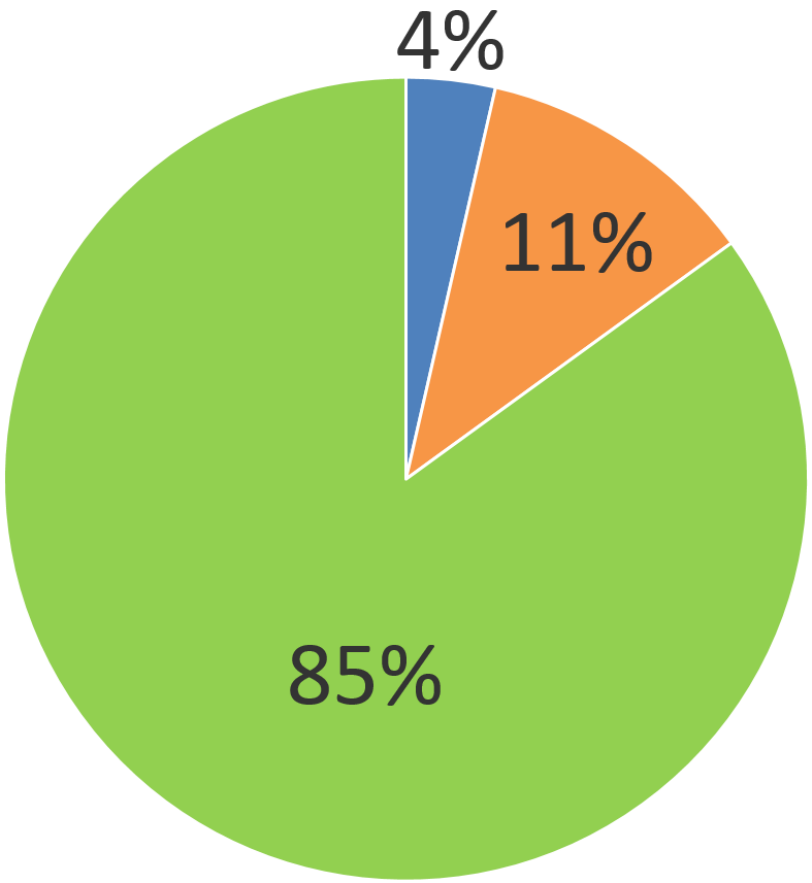
- Understanding current and future oil production
  - Activity
  - Forecasts
  - Drilling economics
- Williston Basin oil transportation dynamics
  - Interstate oil movements
  - Intrastate oil movements
- North Dakota natural gas production
  - Flaring and gas capture
  - NGL Outlook

North Dakota Gas Production Forecast



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



Statewide

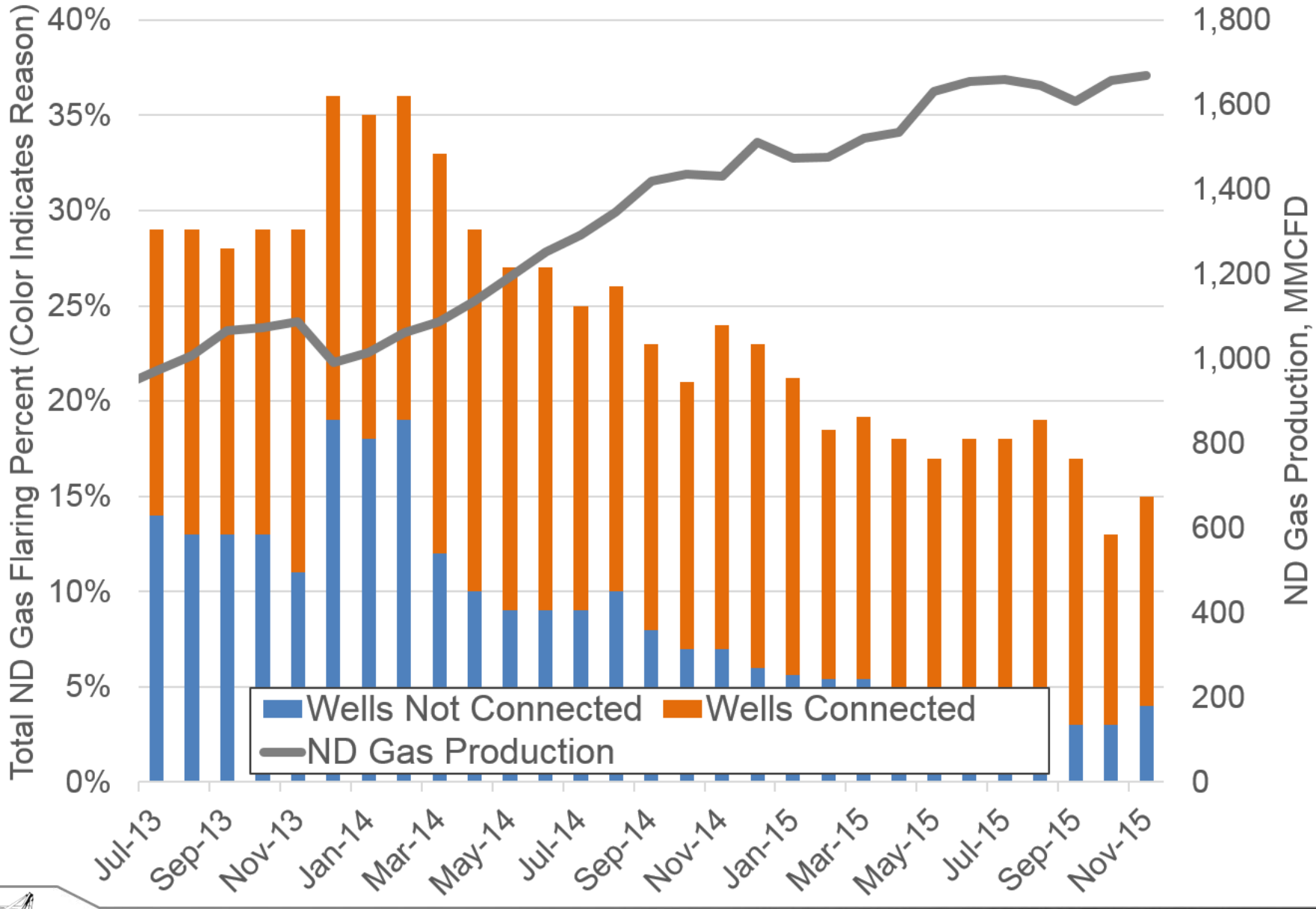
GREEN – % of gas captured and sold
Blue – % flared from zero sales wells
Orange – % flared from wells with at least one mcf sold.

Simple Terms

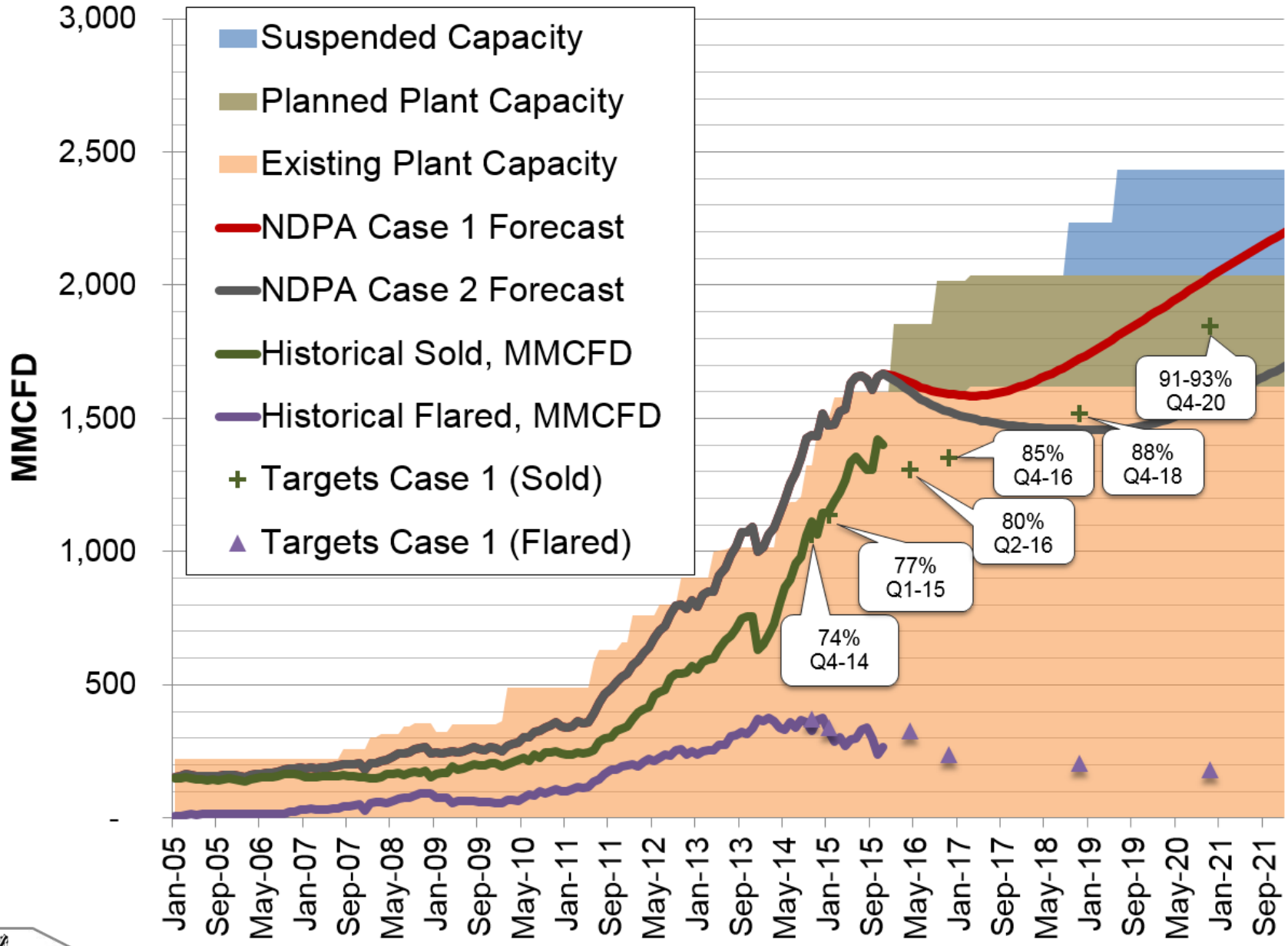
Blue – Lack of pipelines
Orange – Challenges on existing infrastructure

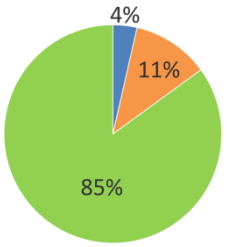
November 2015 Data – Non-Confidential Wells

Solving the Flaring Challenge



Solving the Flaring Challenge





Capturing the 4%

Faster Well Connections

New Wells Selling Gas

New Producing Wells

Number of Wells Per Month

250

200

150

100

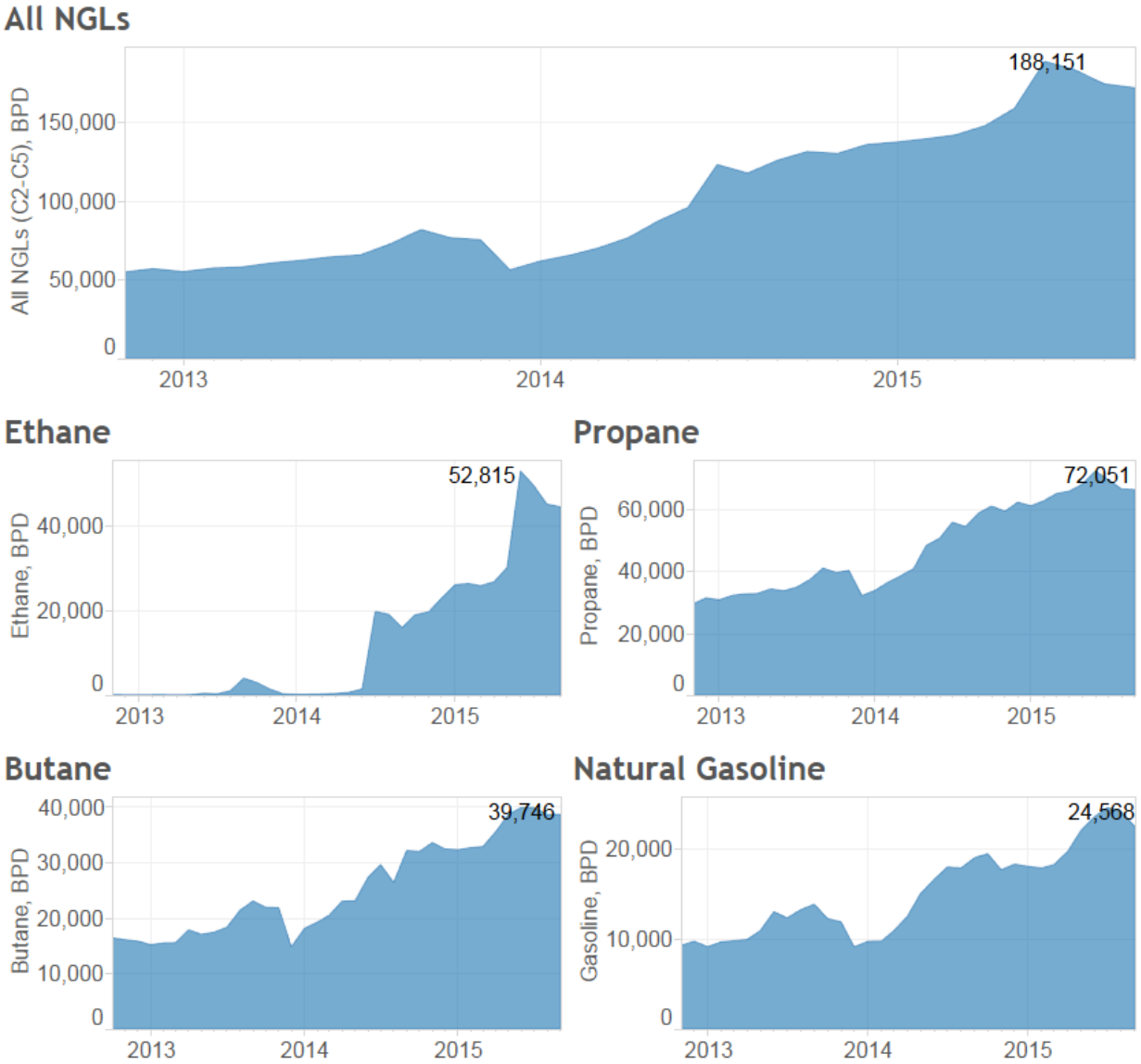
50

0

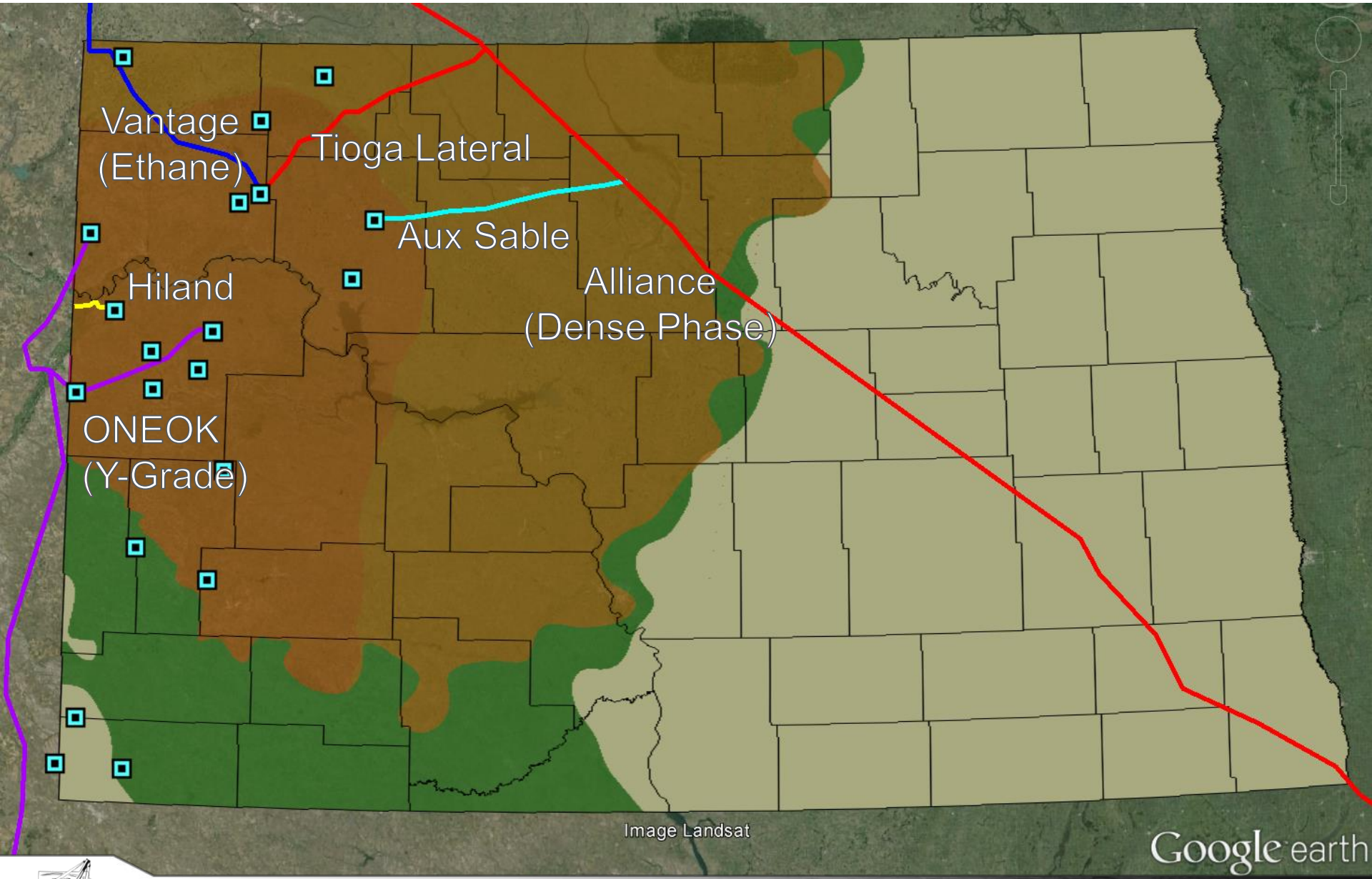
1/1/2005
6/1/2005
11/1/2005
4/1/2006
9/1/2006
2/1/2007
7/1/2007
12/1/2007
5/1/2008
10/1/2008
3/1/2009
8/1/2009
1/1/2010
6/1/2010
11/1/2010
4/1/2011
9/1/2011
2/1/2012
7/1/2012
12/1/2012
5/1/2013
10/1/2013
3/1/2014
8/1/2014
1/1/2015
6/1/2015
11/1/2015

ND Gas Plant NGL Production, BPD

Through Sep 2015 - Peak Values Shown



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

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