NDIC Update

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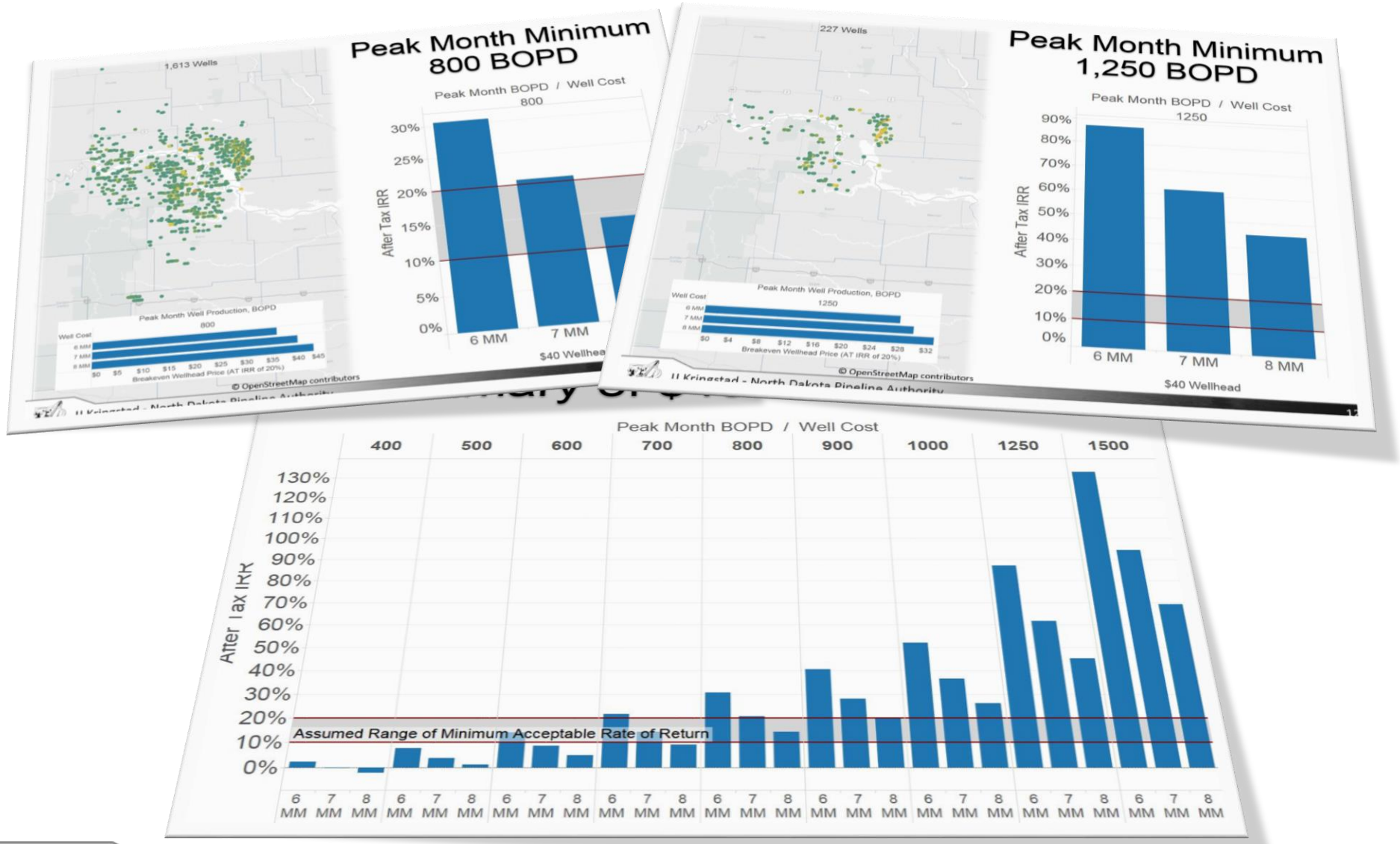
North Dakota Pipeline Authority

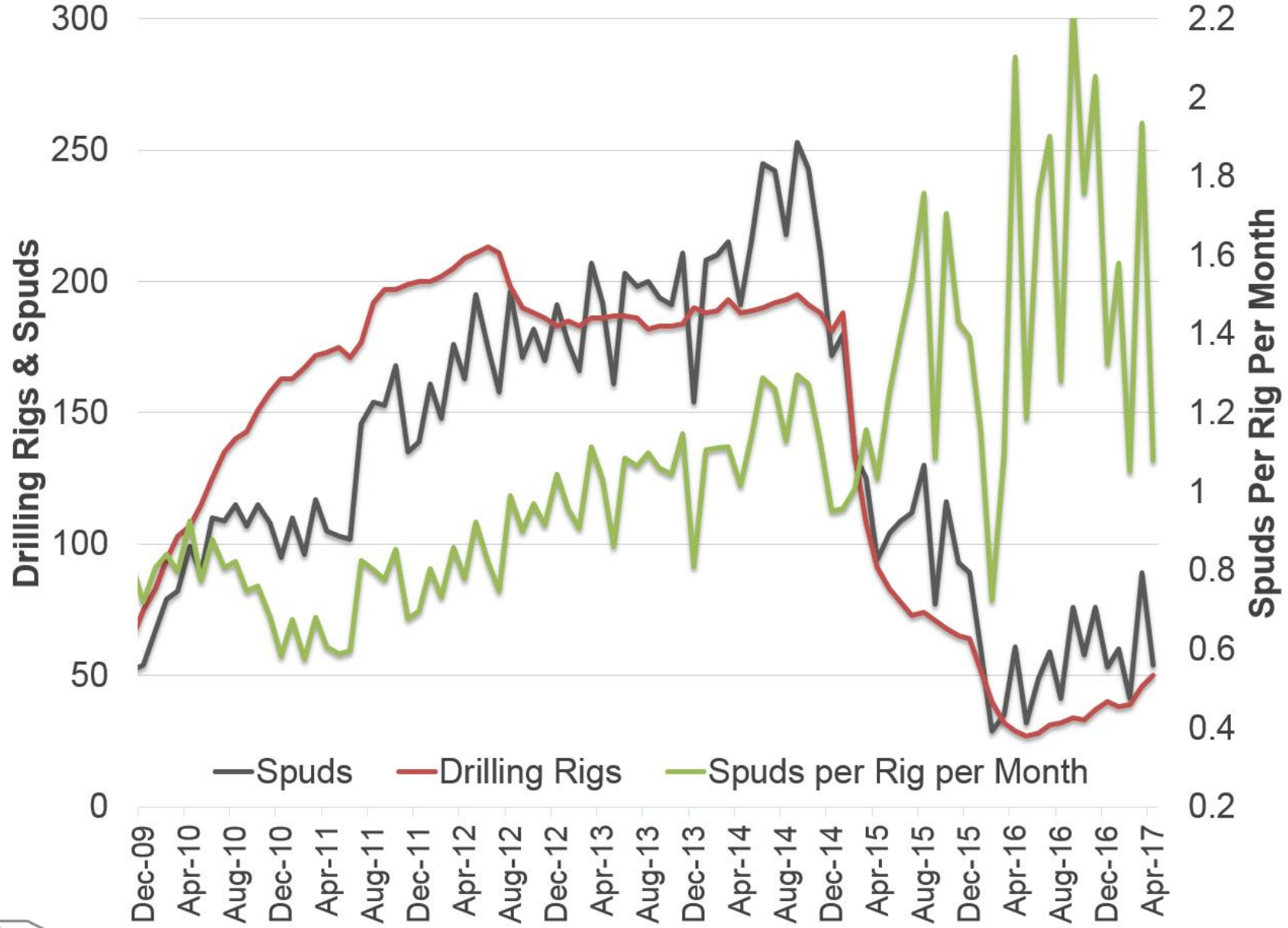
June 5, 2017

March 2017 – Bakken Economics Updated

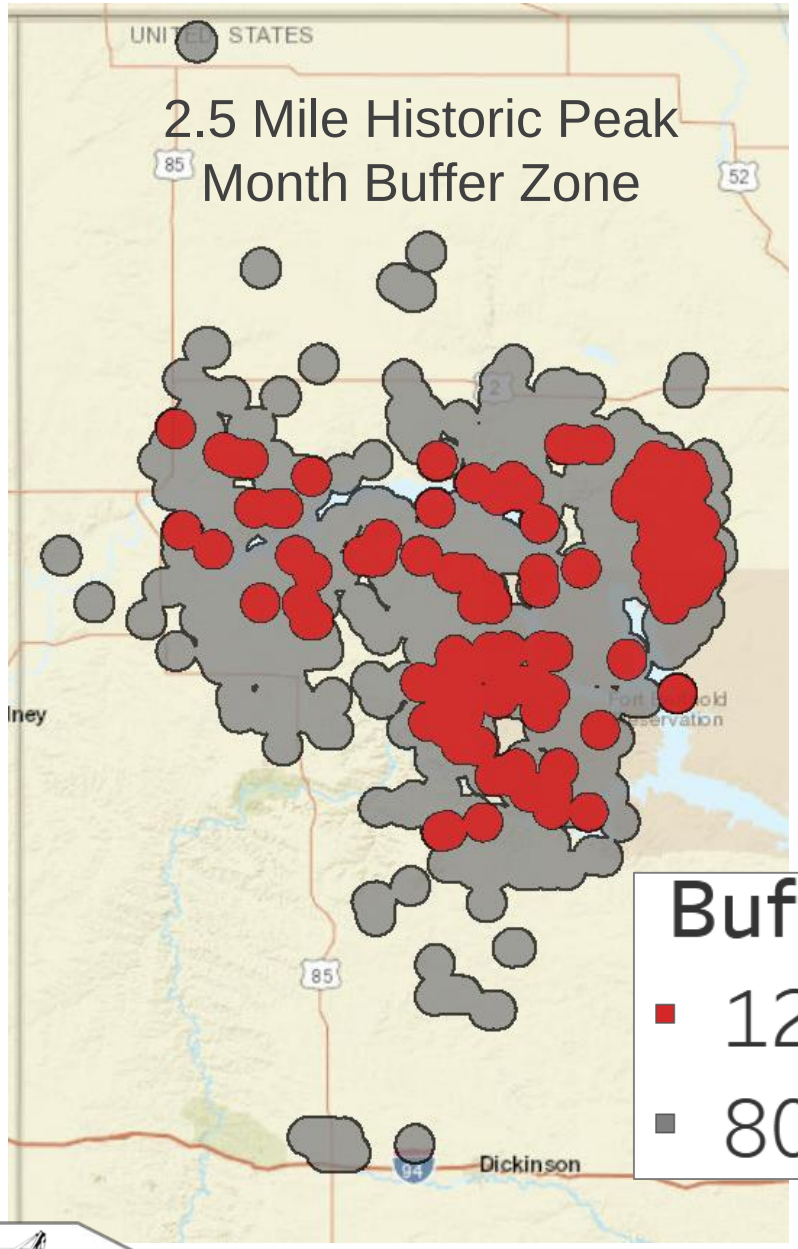
Slides Available Online



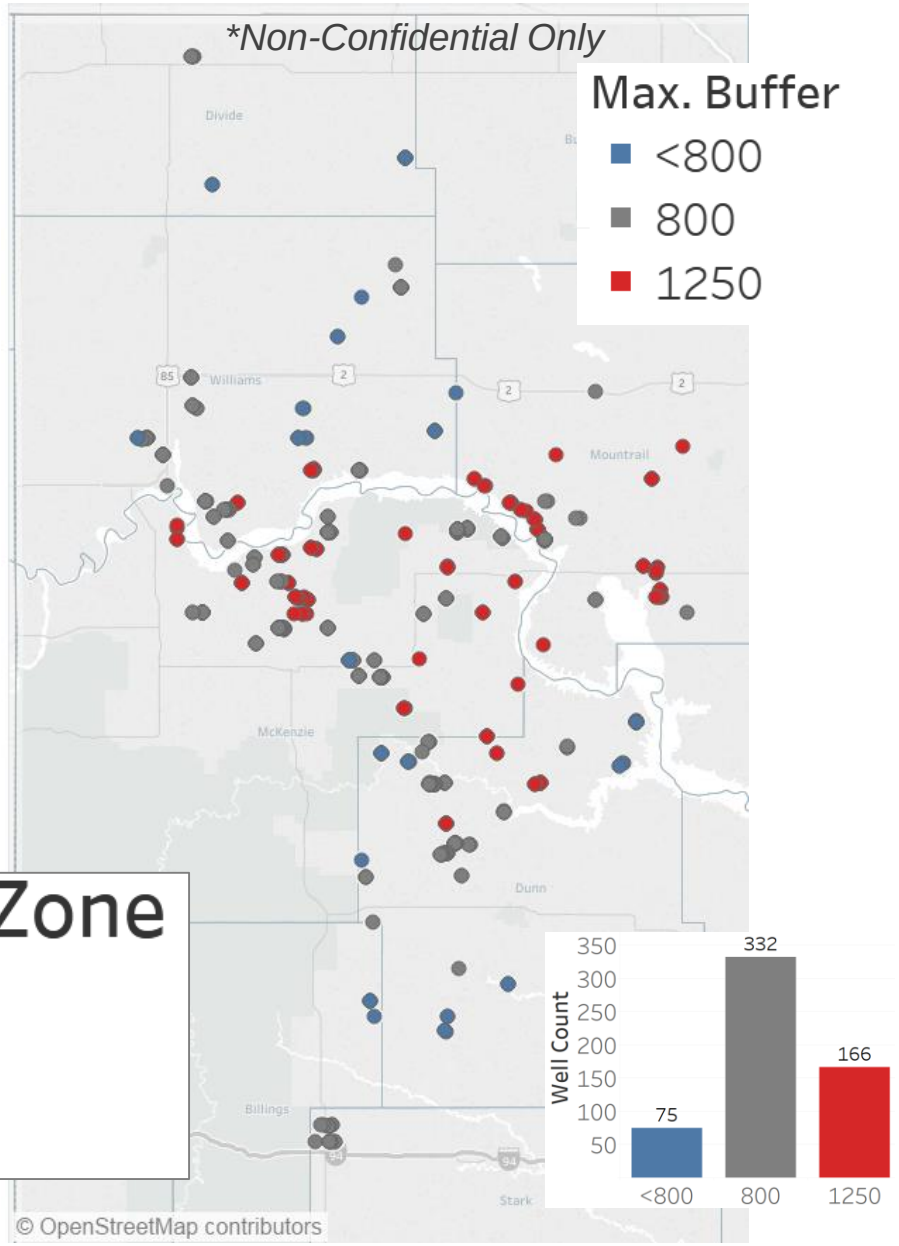
North Dakota Drilling Activity



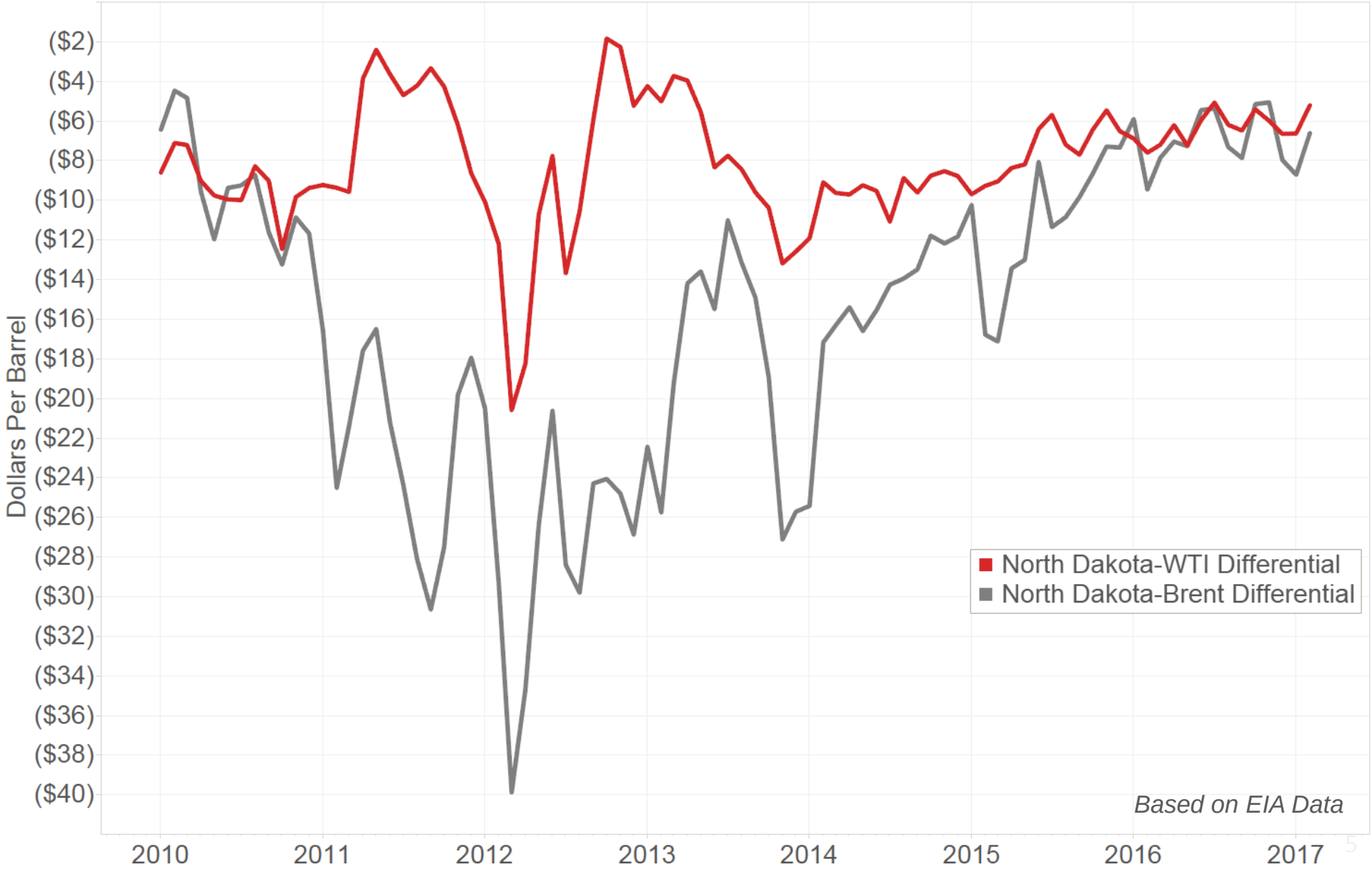
DUC's* - Proximity to High Performing Wells



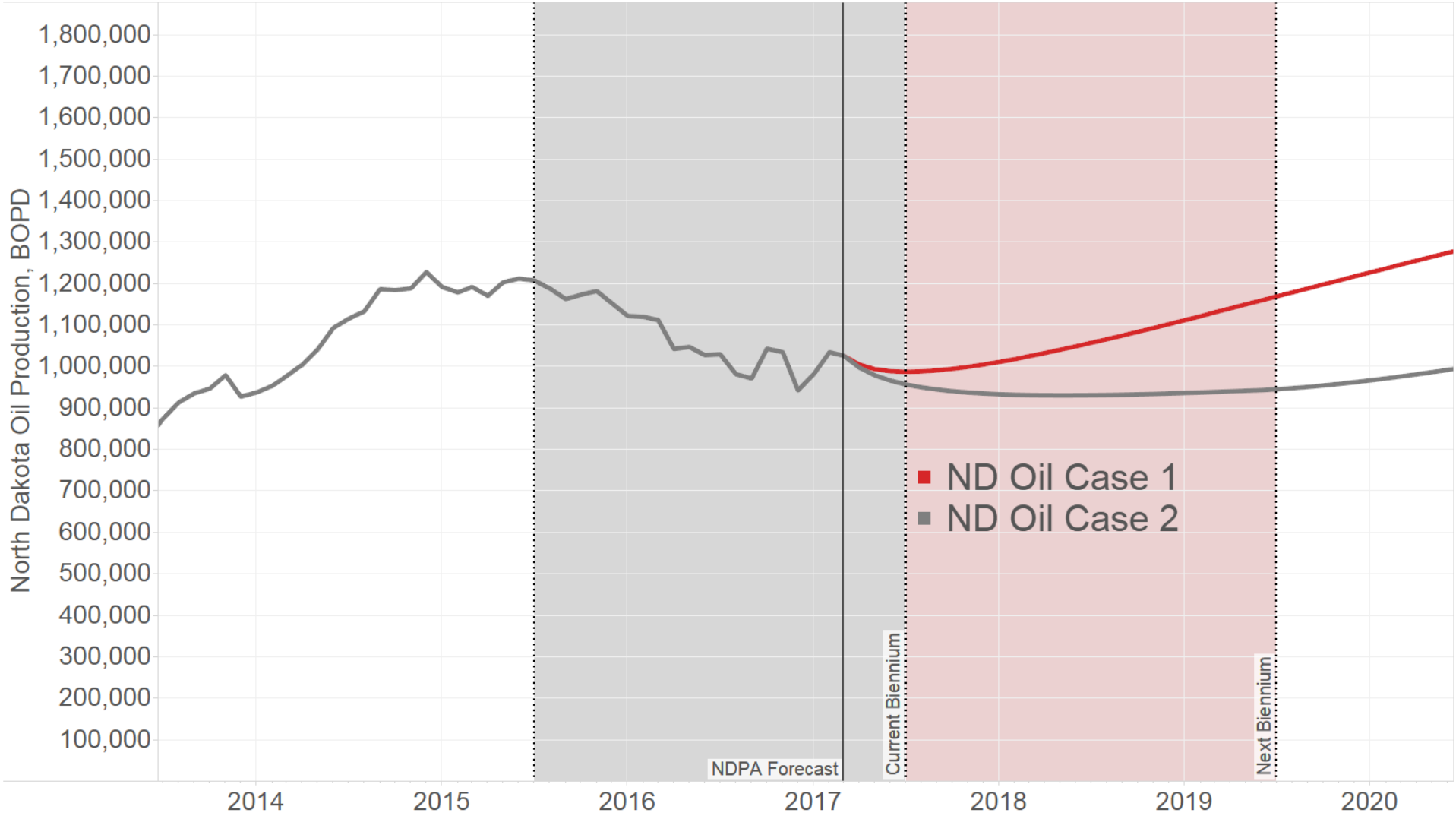
*Non-Confidential Only



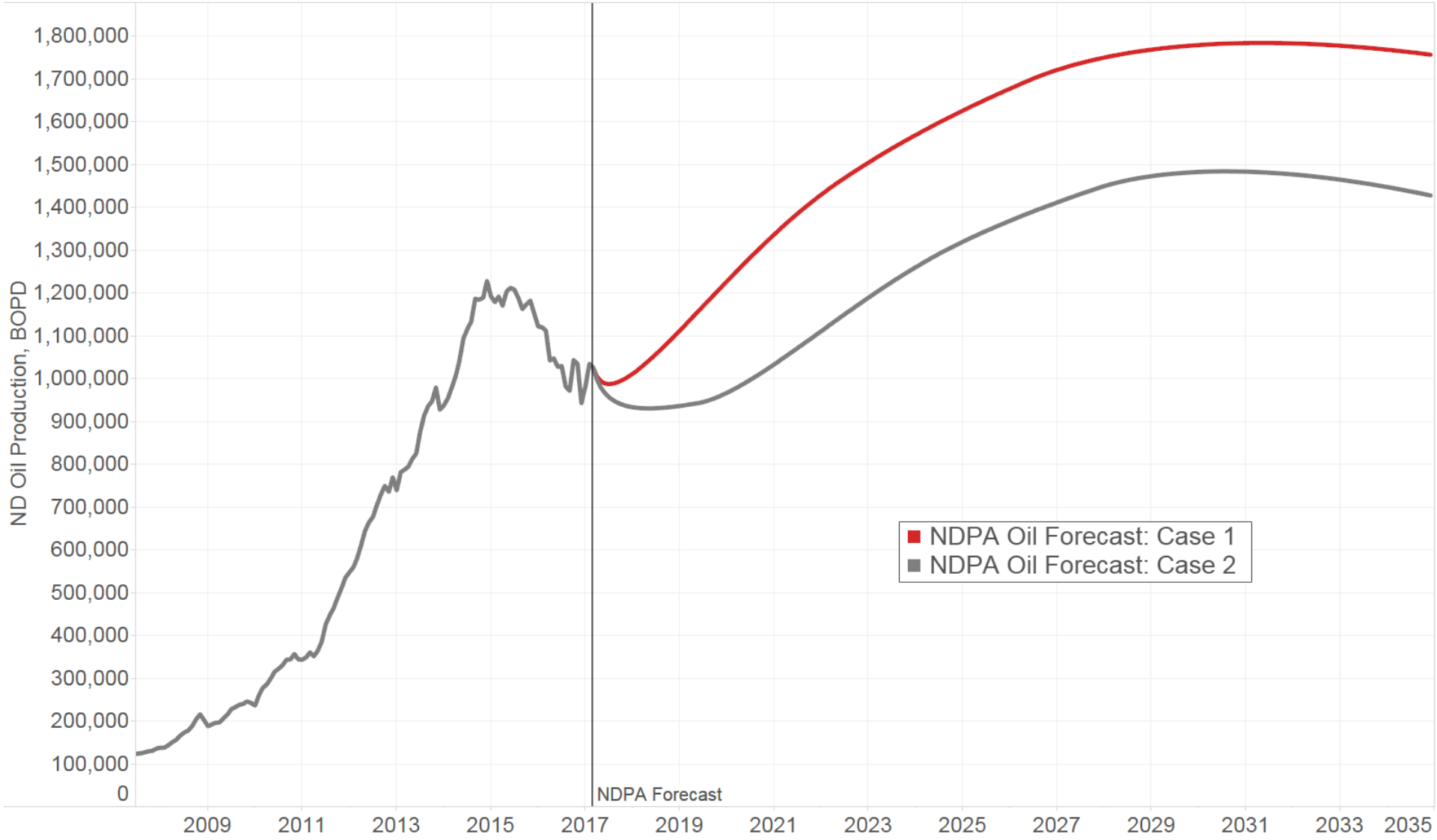
North Dakota Oil Differential



NDPA ND Oil Production Forecast

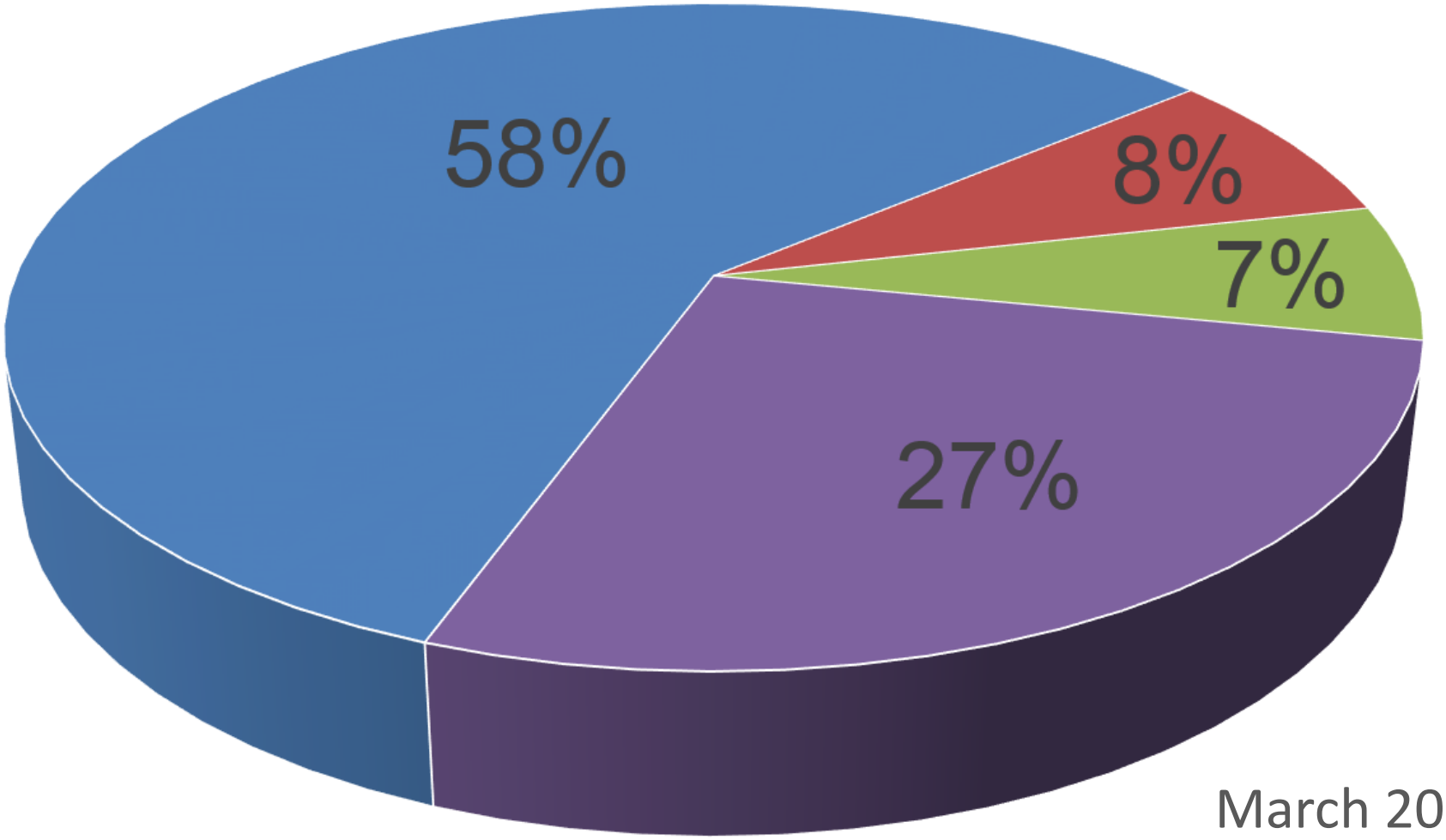


North Dakota Oil Production Forecast

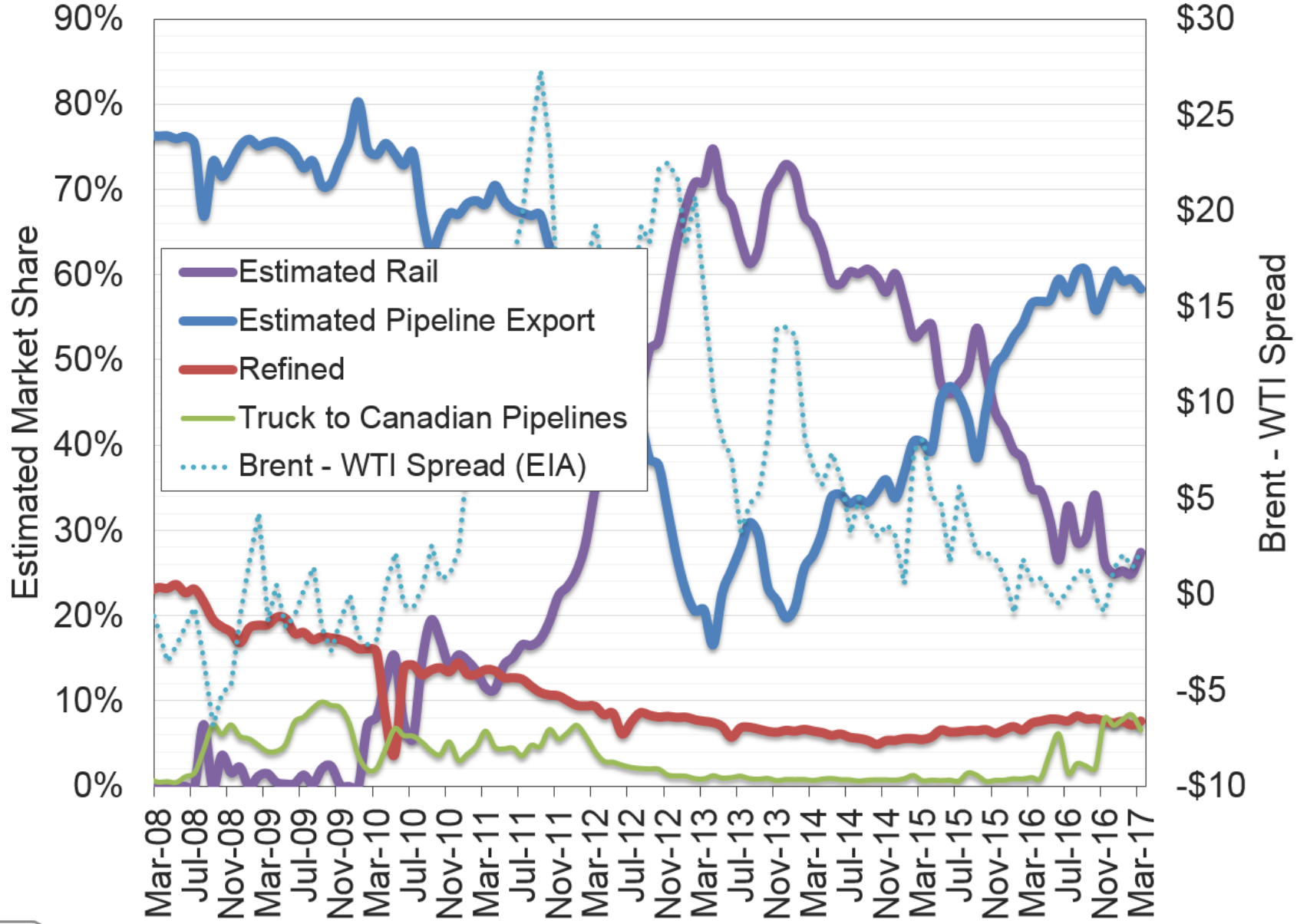


Production forecast is for visual demonstration purposes only and should not be considered accurate for any near or long term planning.

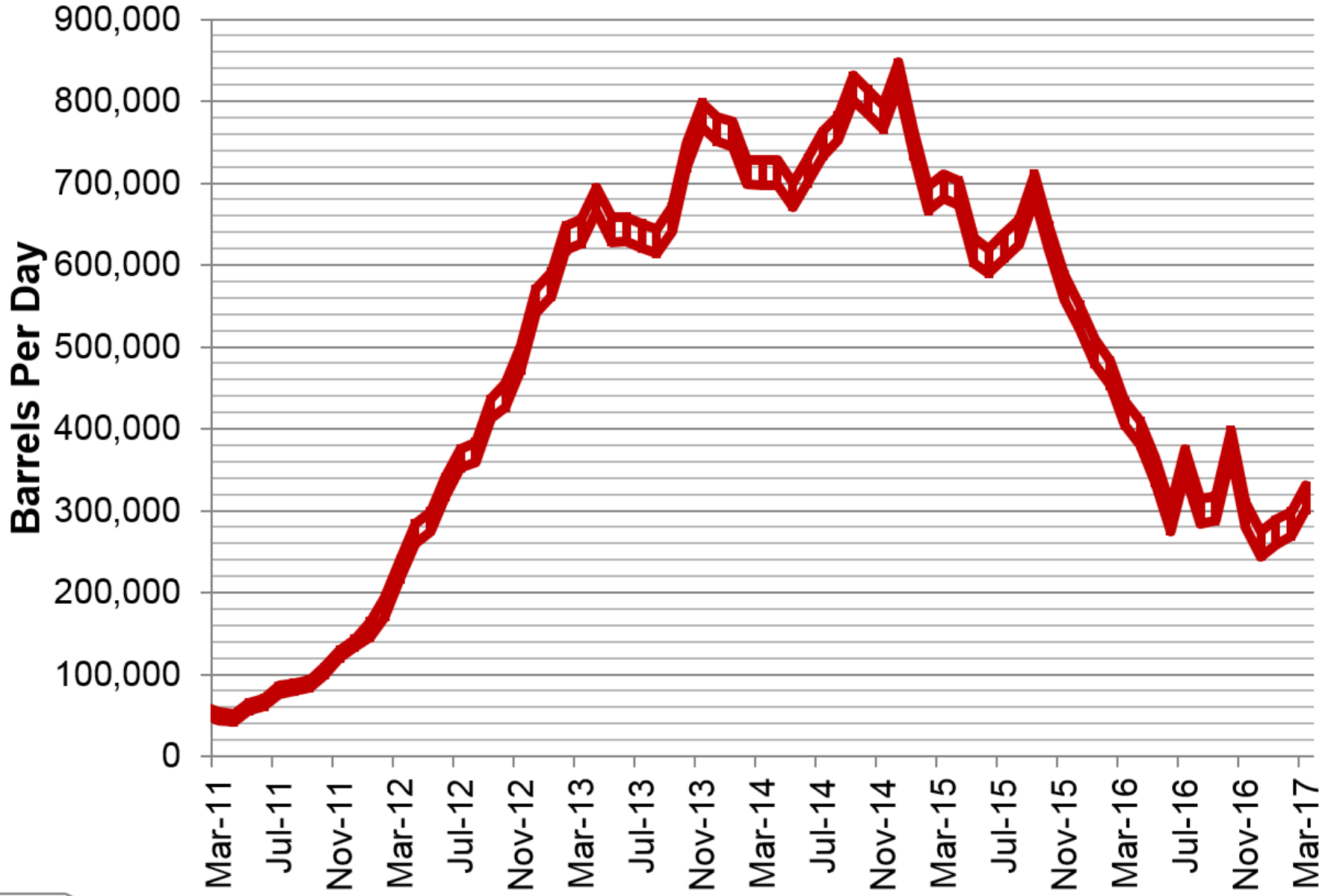
Estimated Williston Basin Oil Transportation



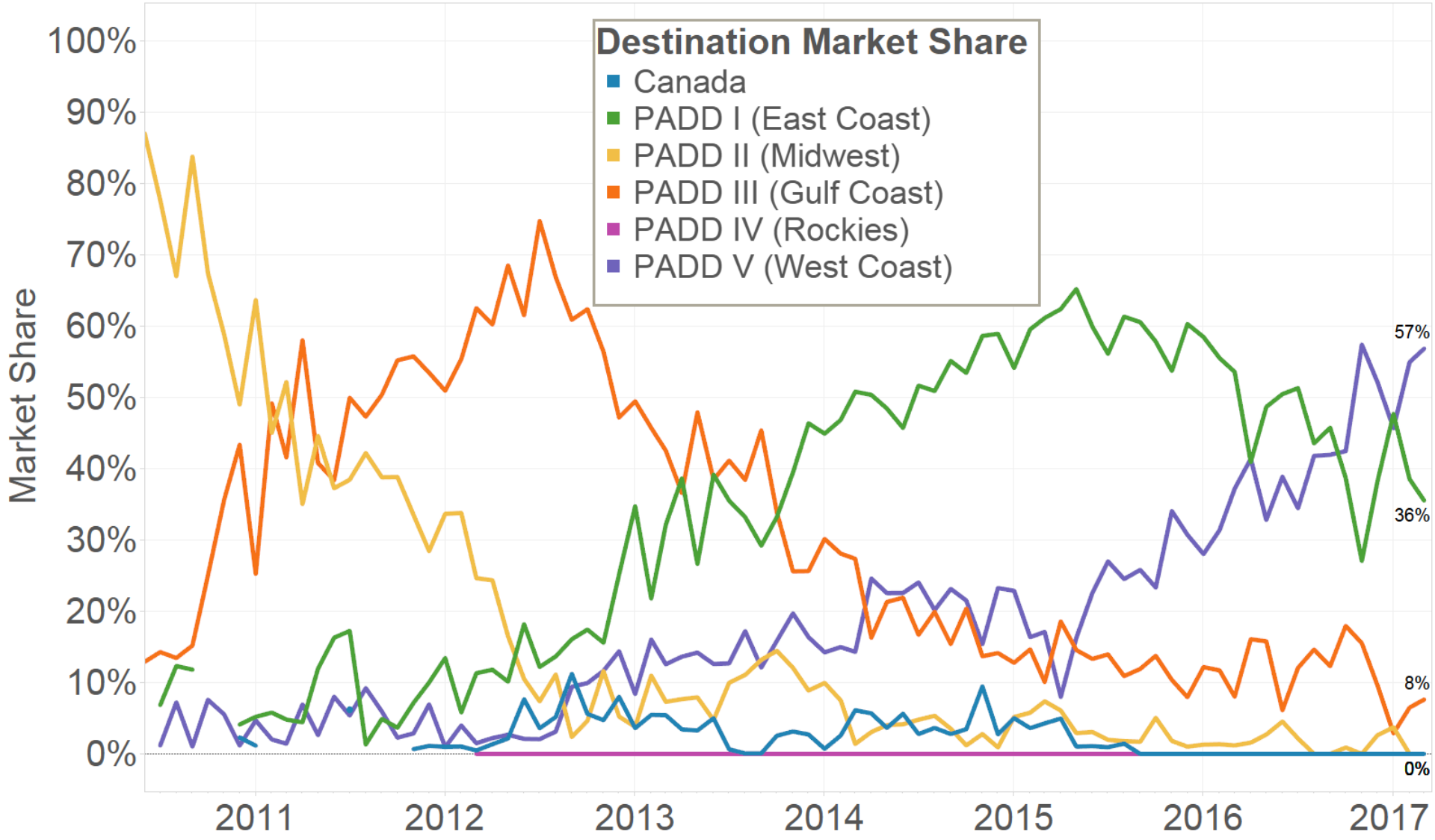
Estimated Williston Basin Oil Transportation



Estimated ND Rail Export Volumes

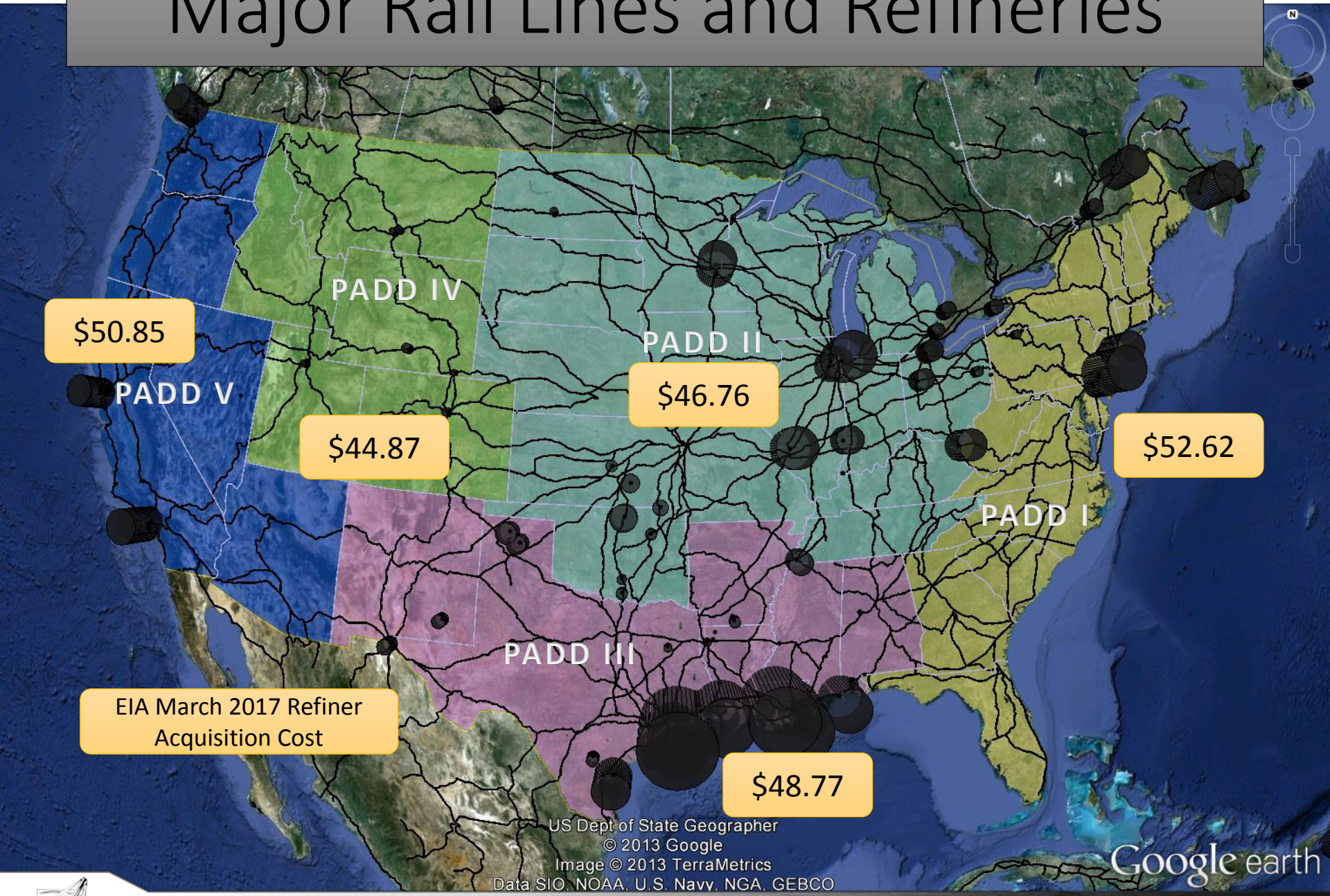


Rail Destinations Market Share (Mar. 2017)

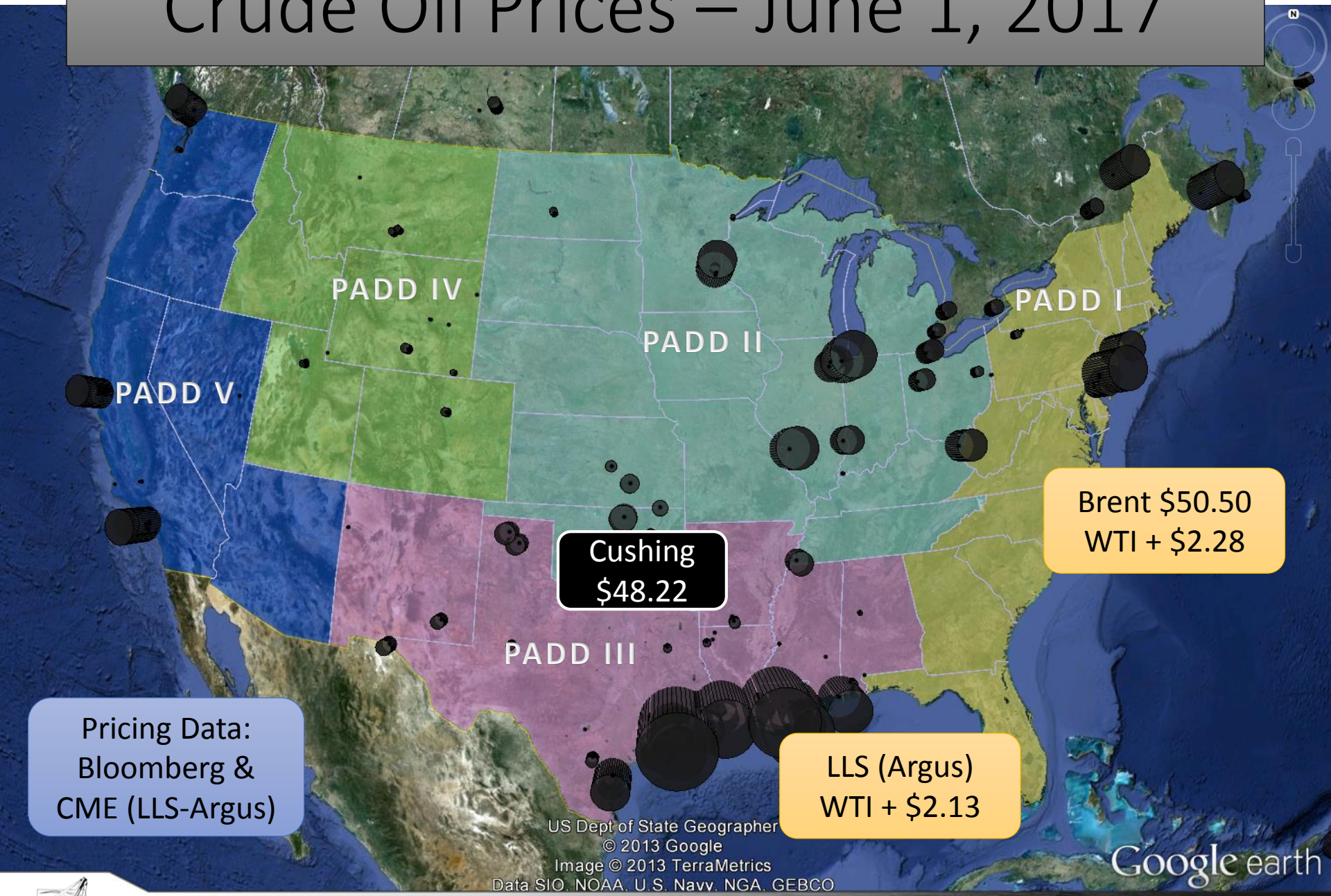


Data for Rail Destination Market Share Provided by the US Energy Information Administration

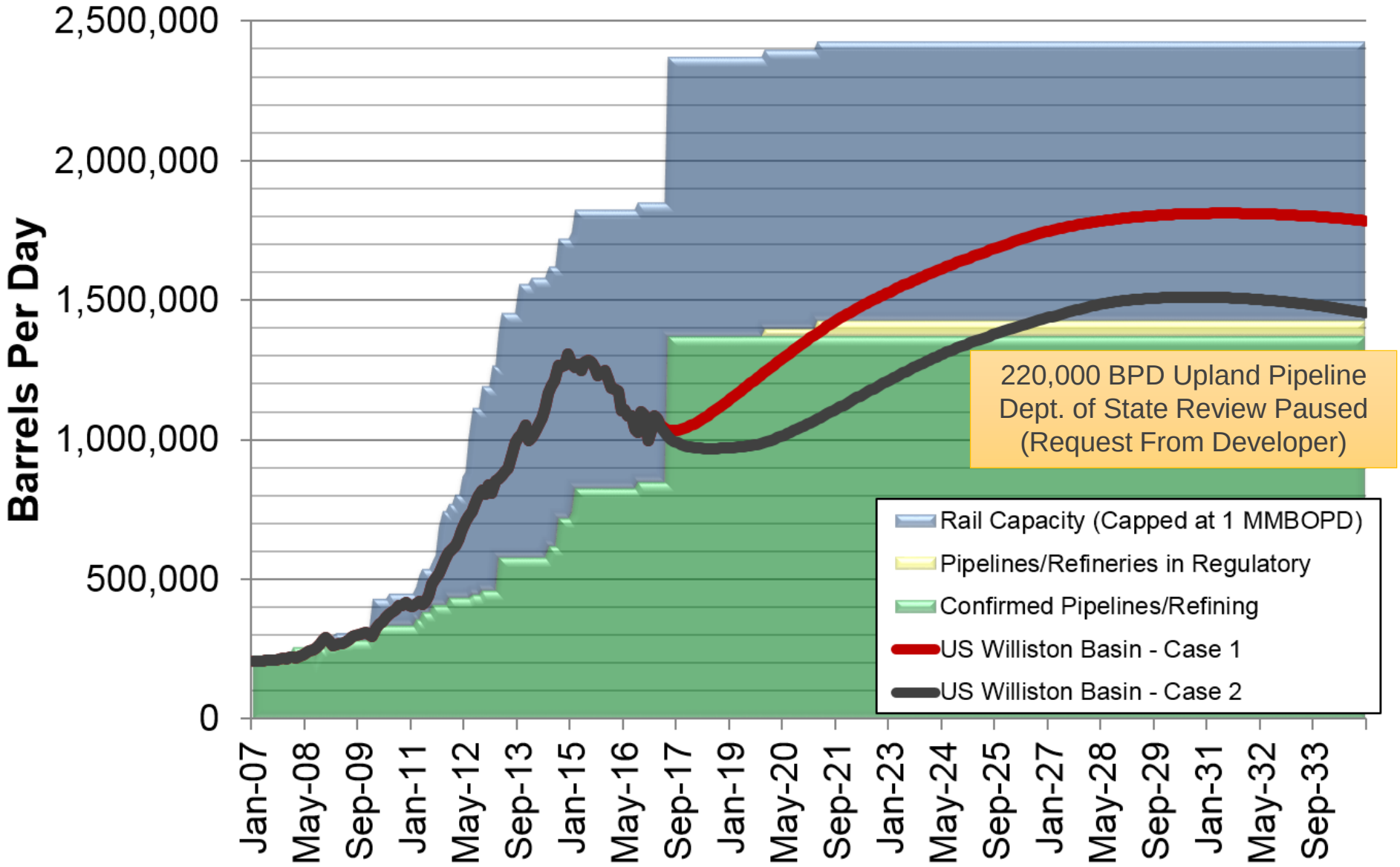
Major Rail Lines and Refineries



Crude Oil Prices – June 1, 2017



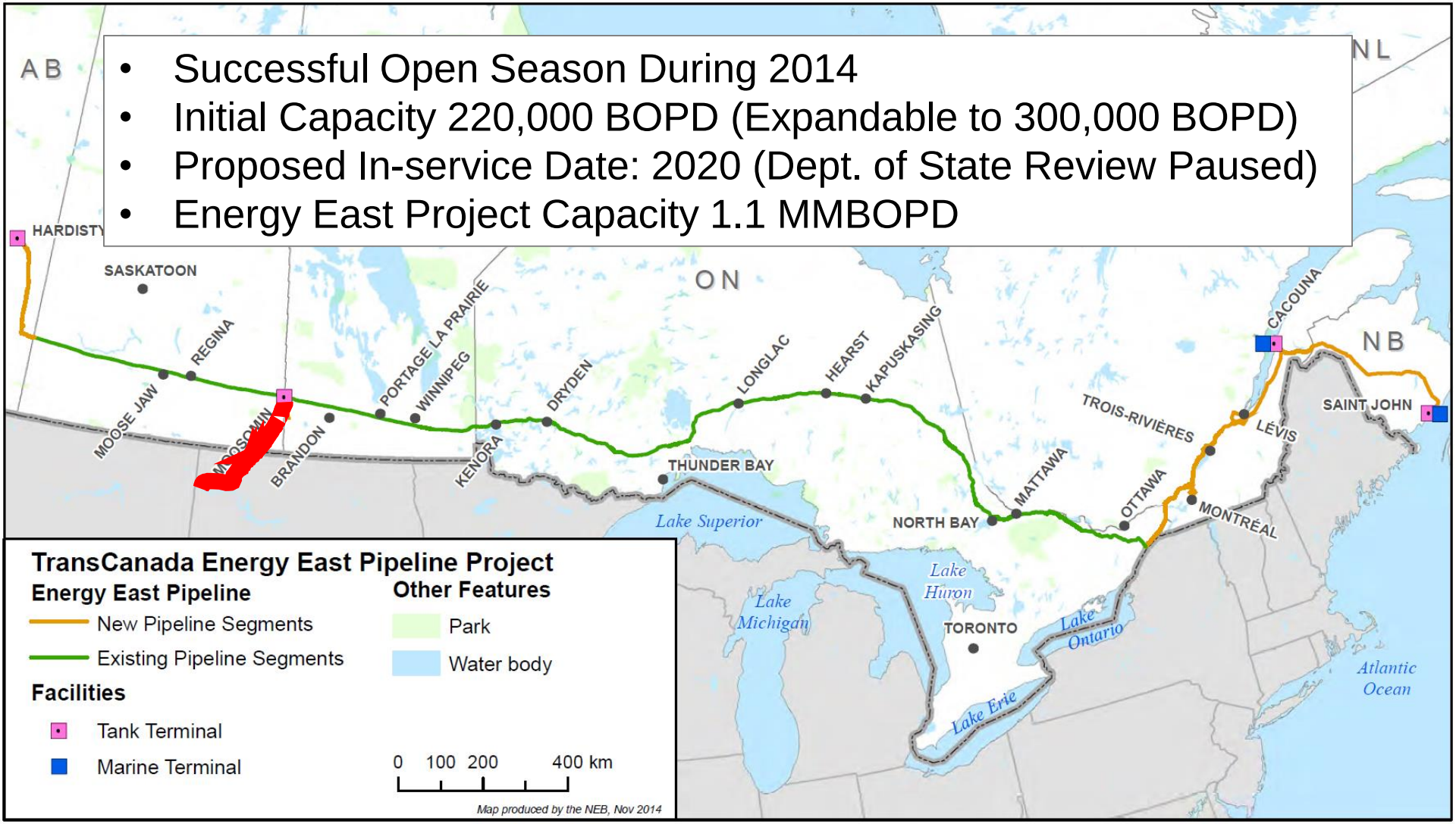
Williston Basin Oil Production & Export Capacity, BOPD



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

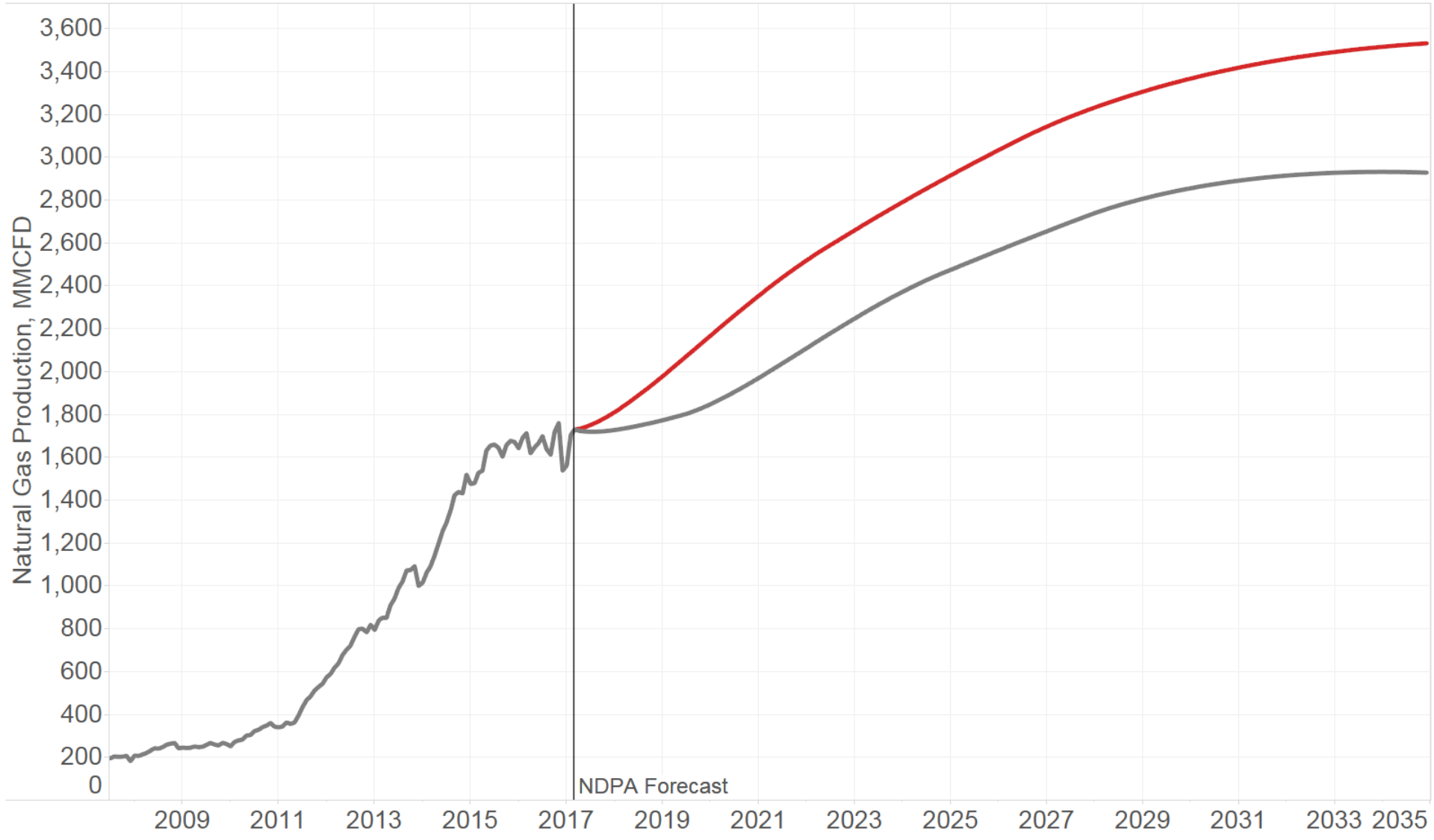
TransCanada: Upland Pipeline

- Successful Open Season During 2014
- Initial Capacity 220,000 BOPD (Expandable to 300,000 BOPD)
- Proposed In-service Date: 2020 (Dept. of State Review Paused)
- Energy East Project Capacity 1.1 MMBOPD

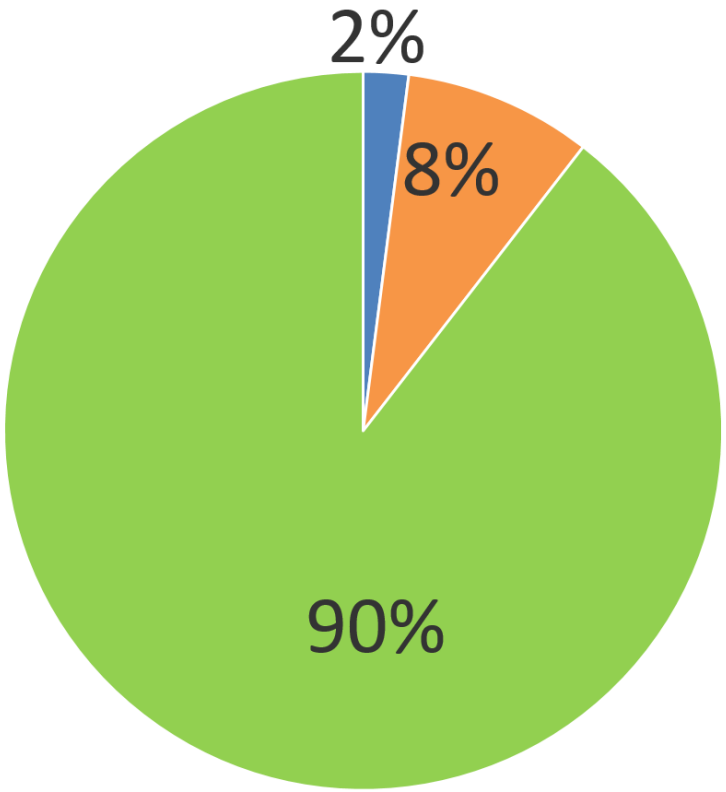


Map: NEB – NDPA Upland Addition

NDPA ND Gas Production Forecast



Solving the Flaring Challenge



Statewide

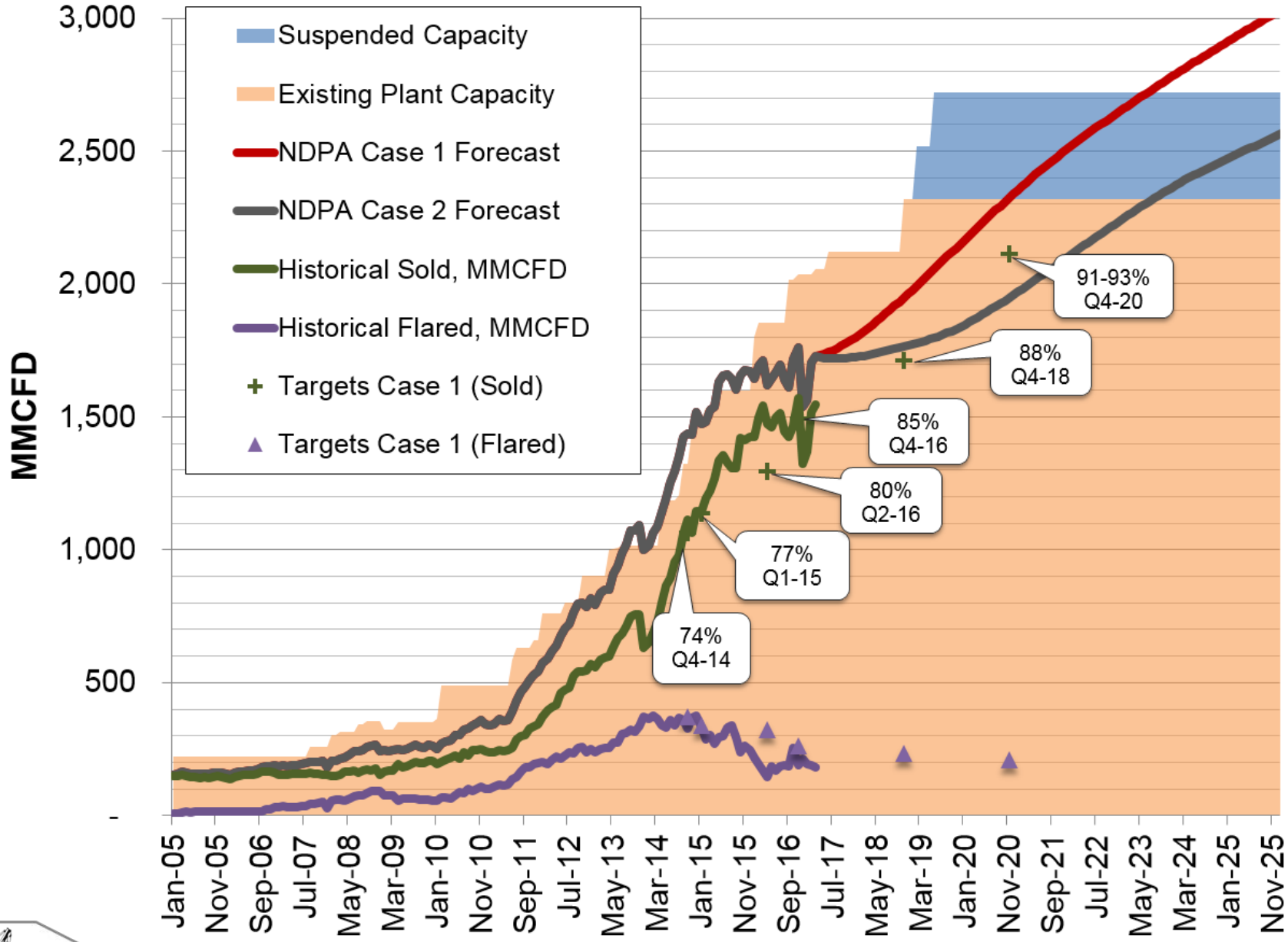
GREEN – % of gas captured and sold
Blue – % flared from zero sales wells
Orange – % flared from wells with at least one mcf sold.

Simple Terms

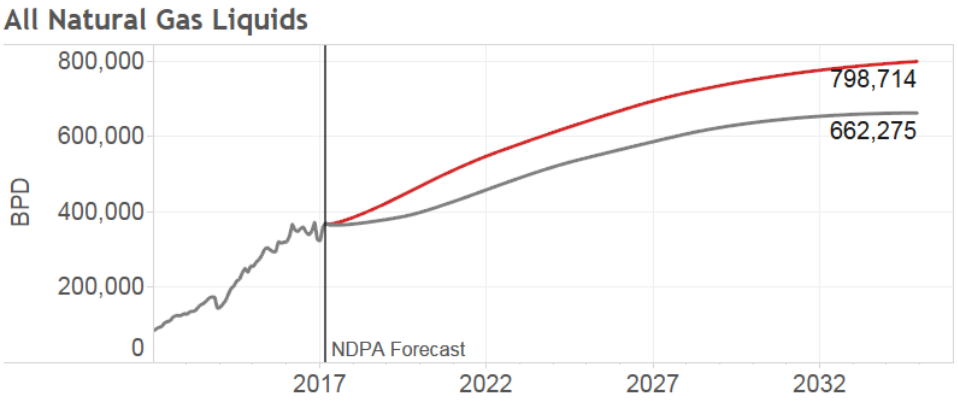
Blue – Lack of pipelines
Orange – Challenges on existing infrastructure

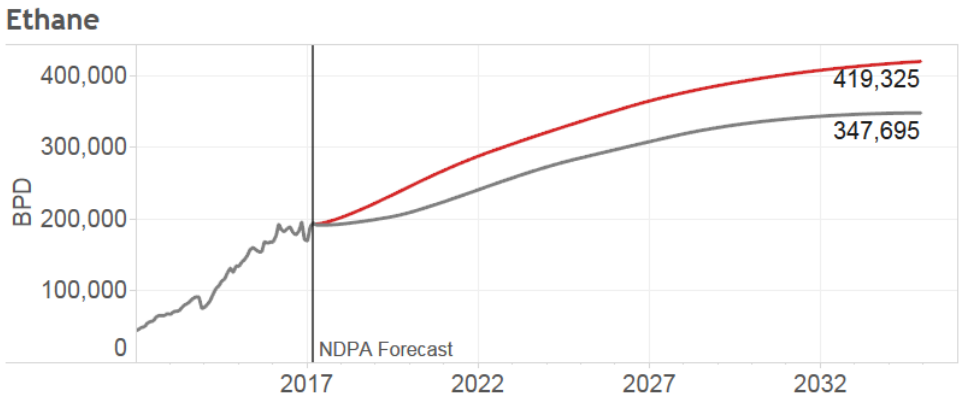
Mar 2017 Data – Non-Confidential Wells

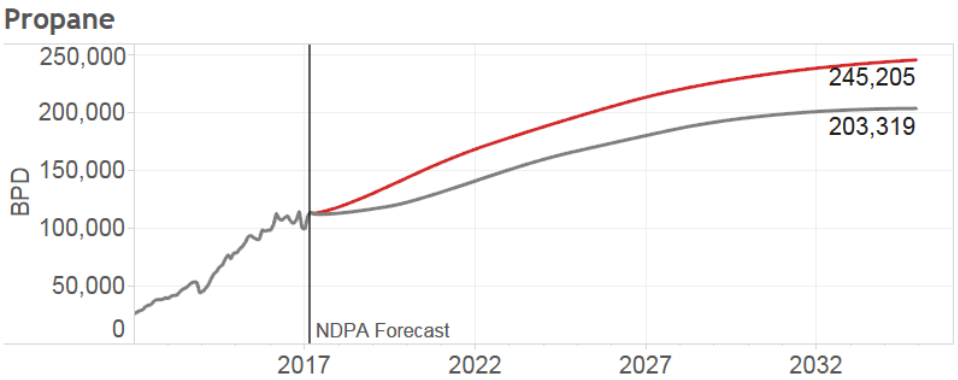
Solving the Flaring Challenge

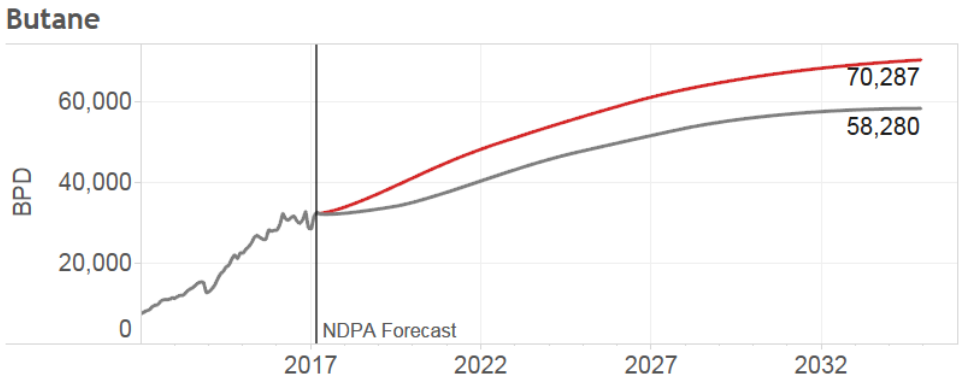


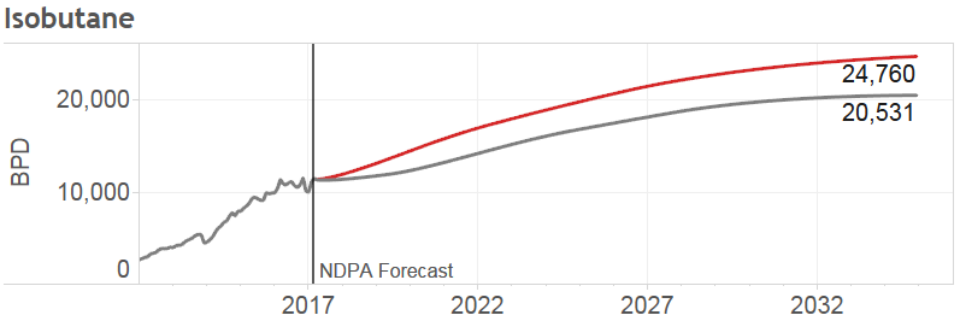
North Dakota Captured* NGL's

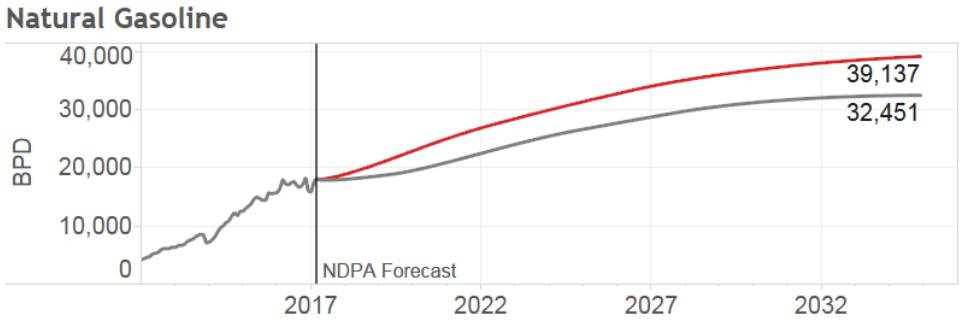






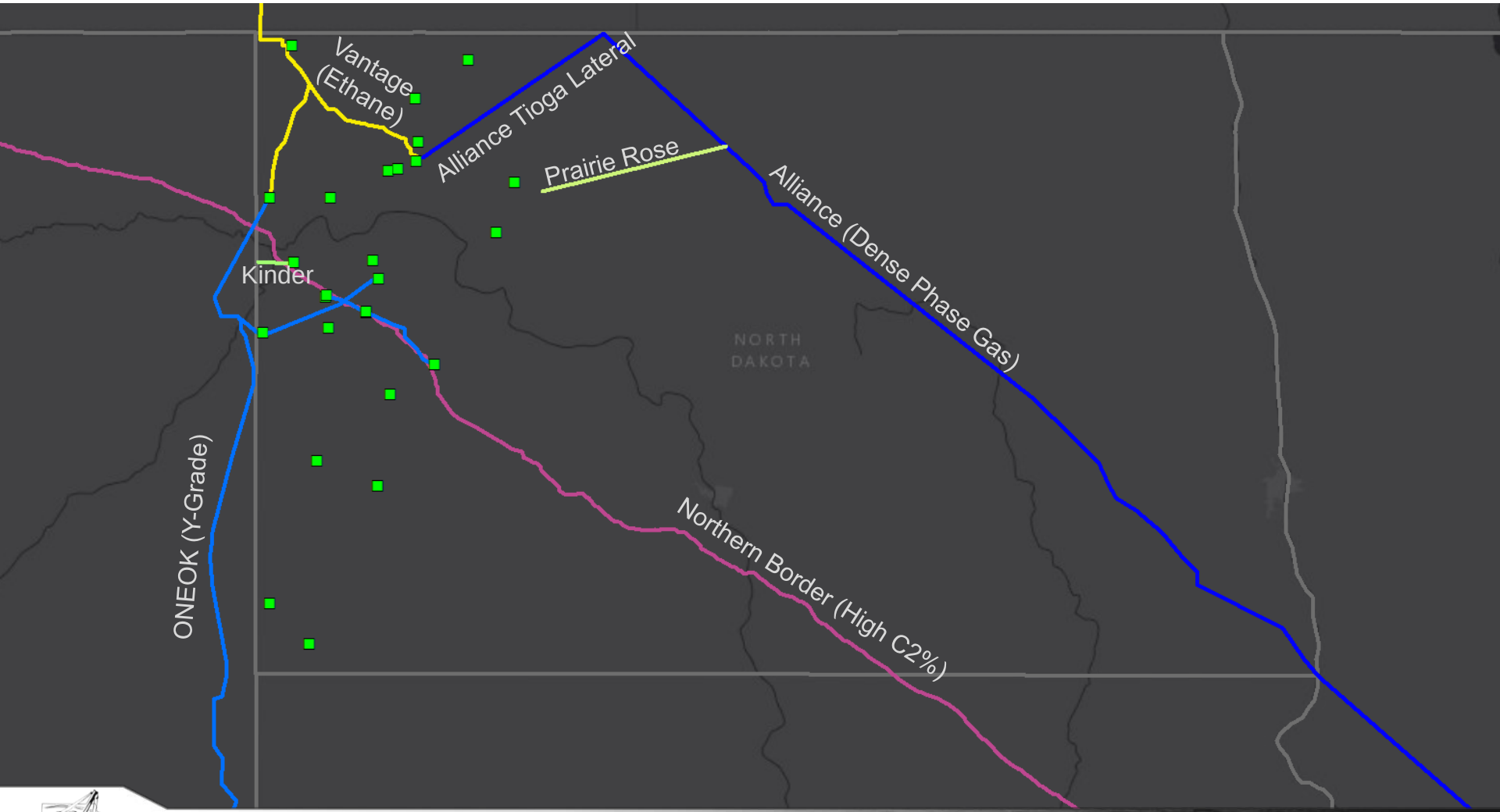




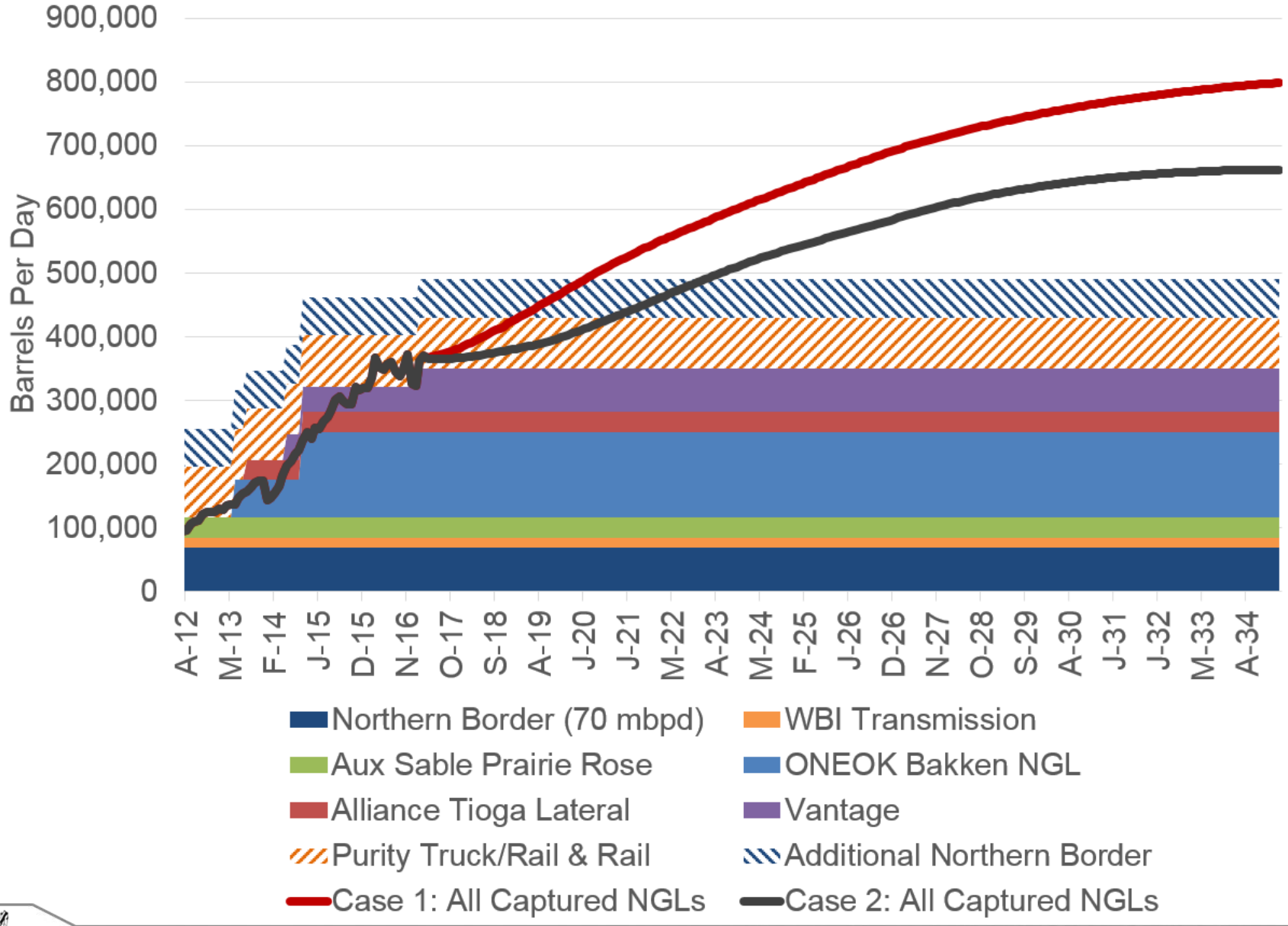


**Non-flared NGL's & Assumes 10 GPM*

Major NGL Pipeline and Processing Infrastructure

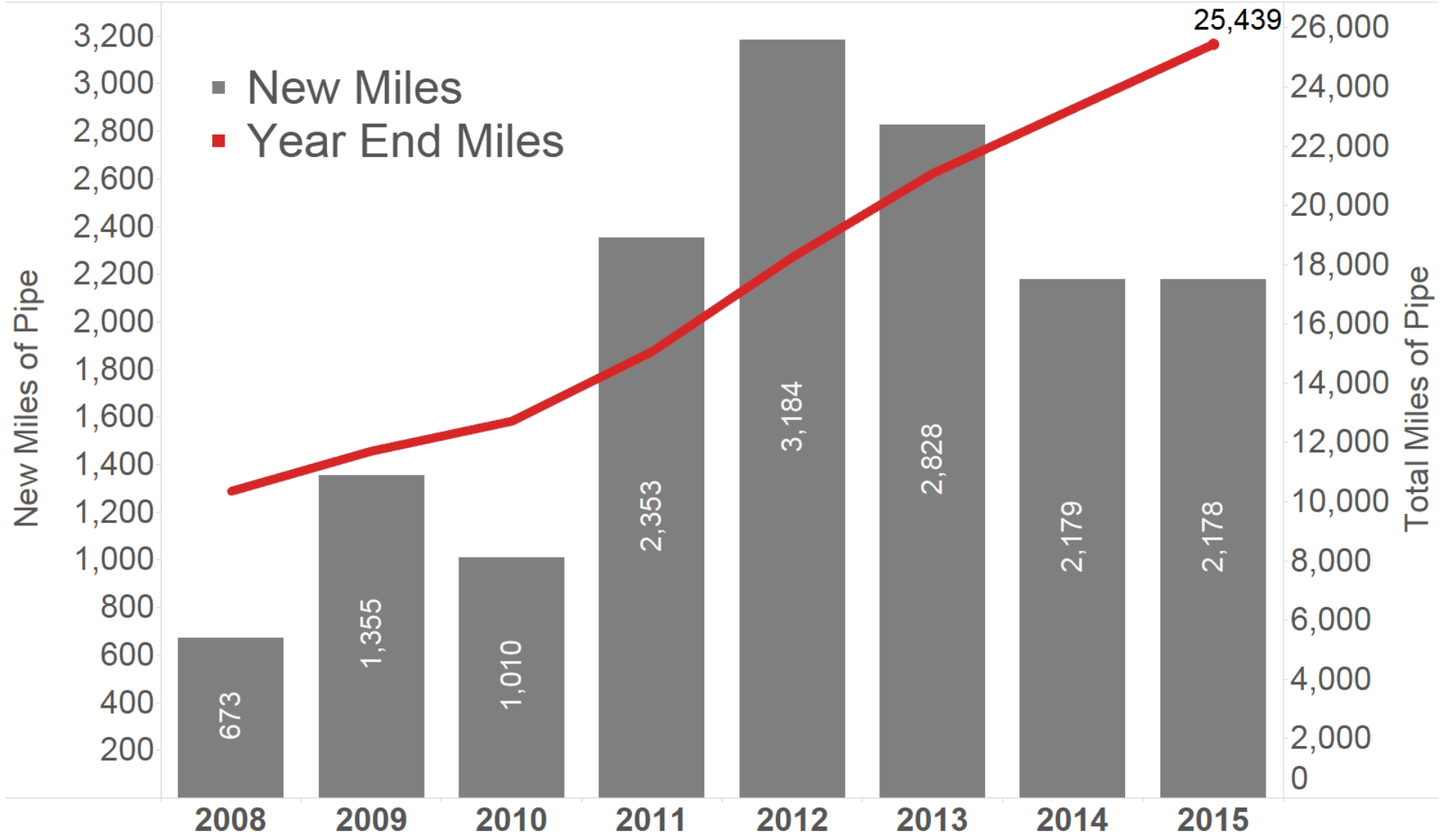


NGL Capacity Is Complicated…



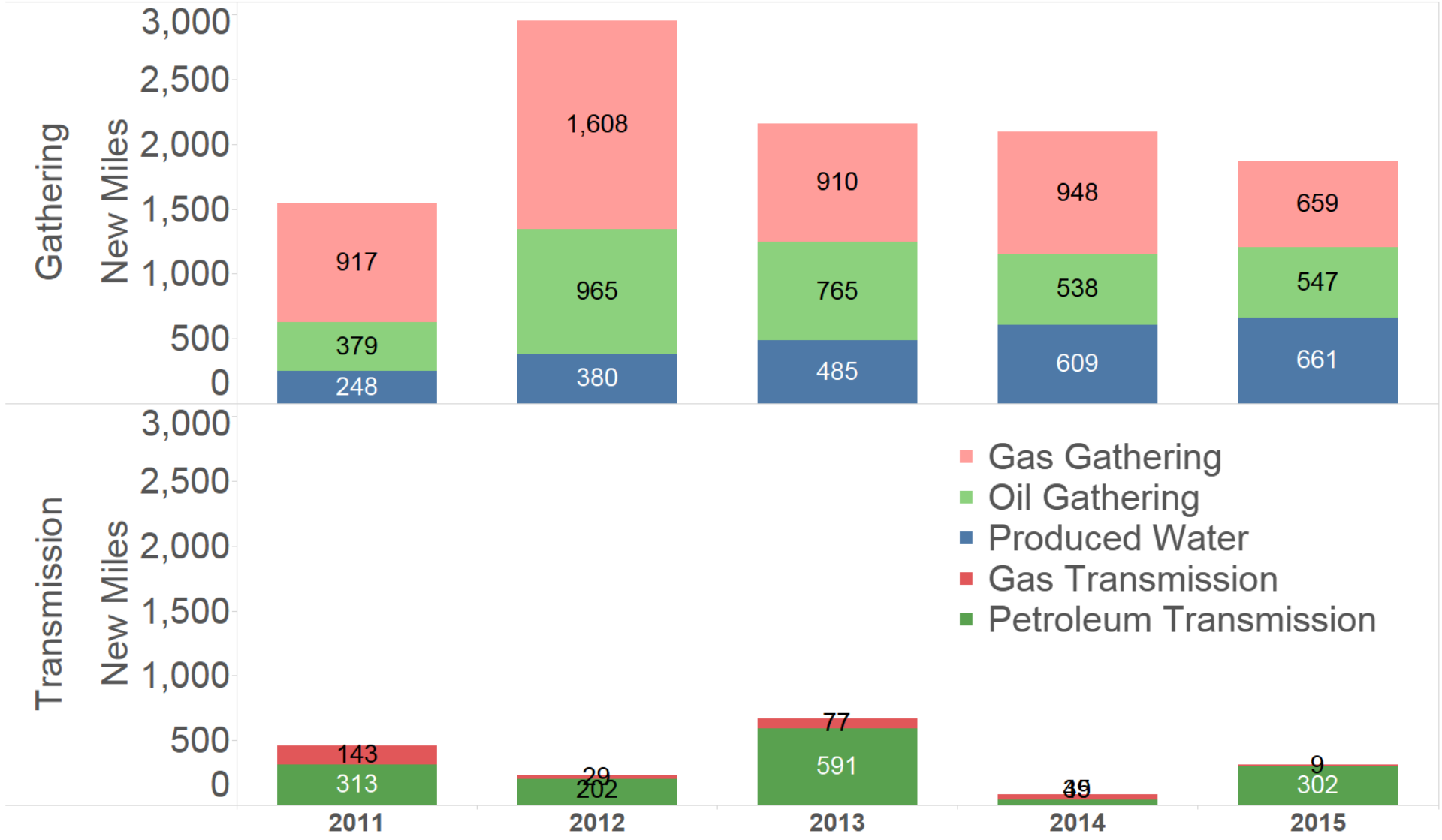
Construction Update

North Dakota Pipeline Construction



Sources: NDIC & PHMSA

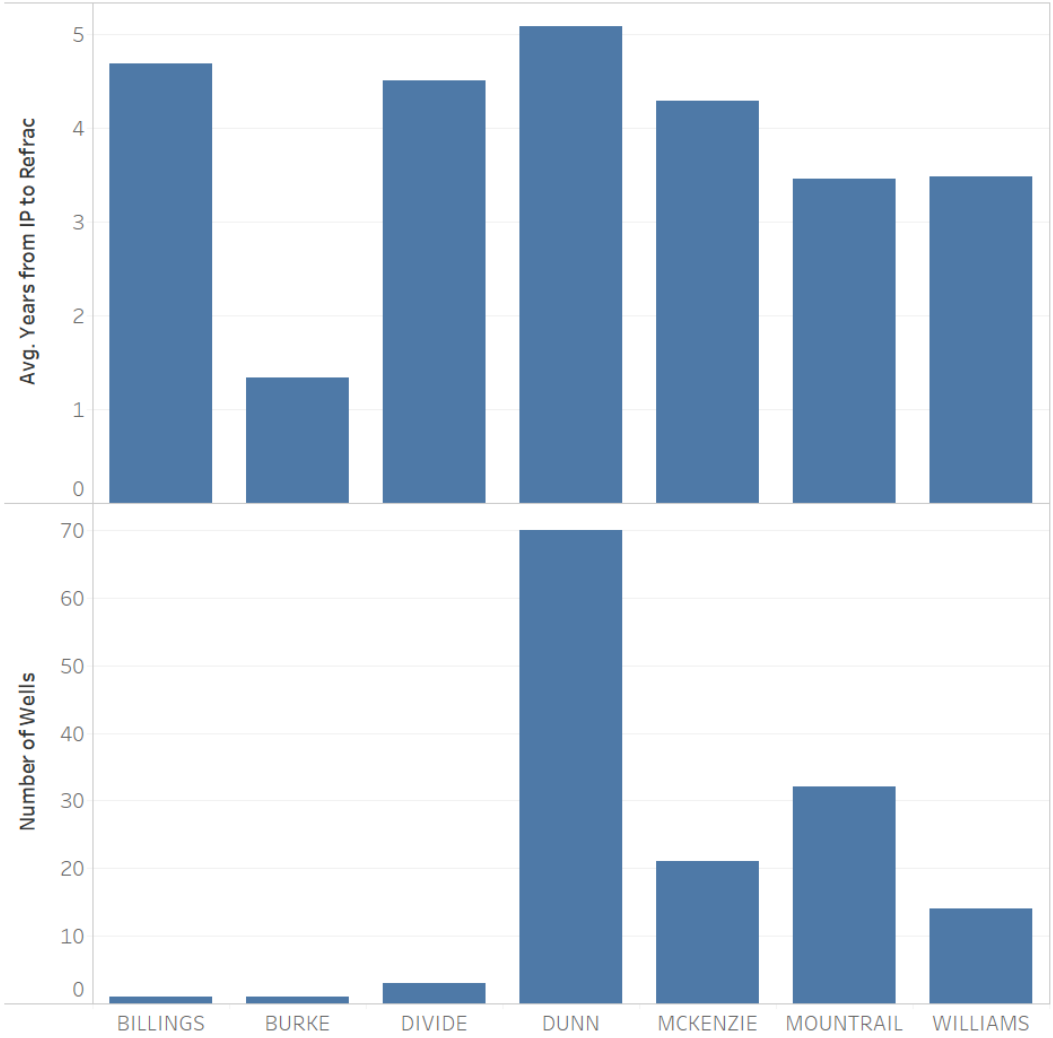
North Dakota Pipeline Construction

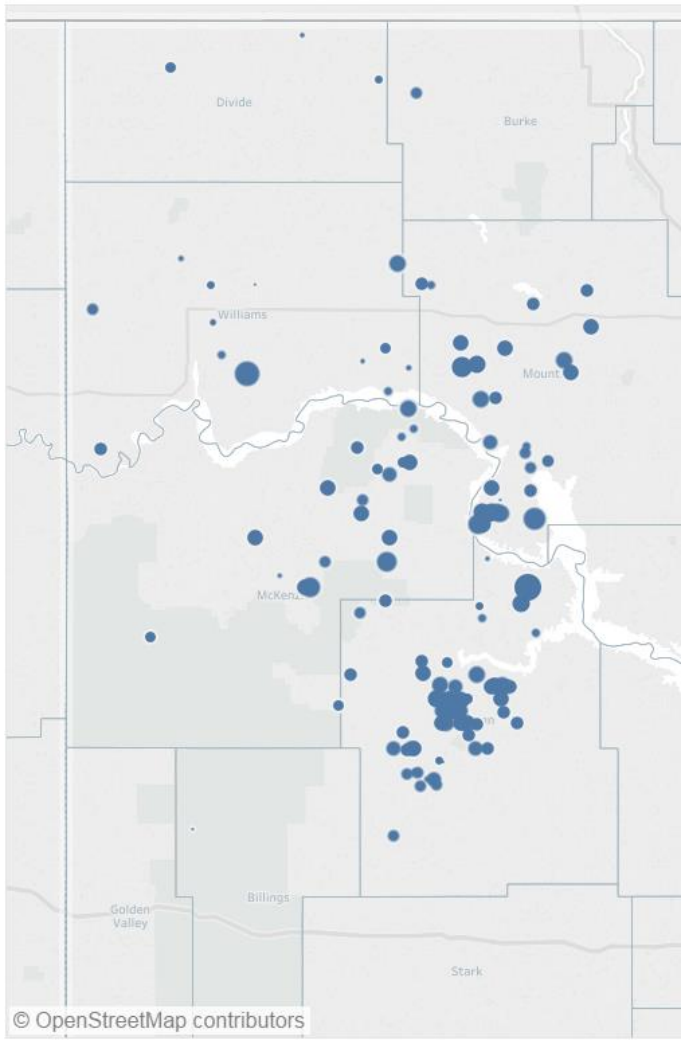


Sources: NDIC & PHMSA

Bakken Refracs

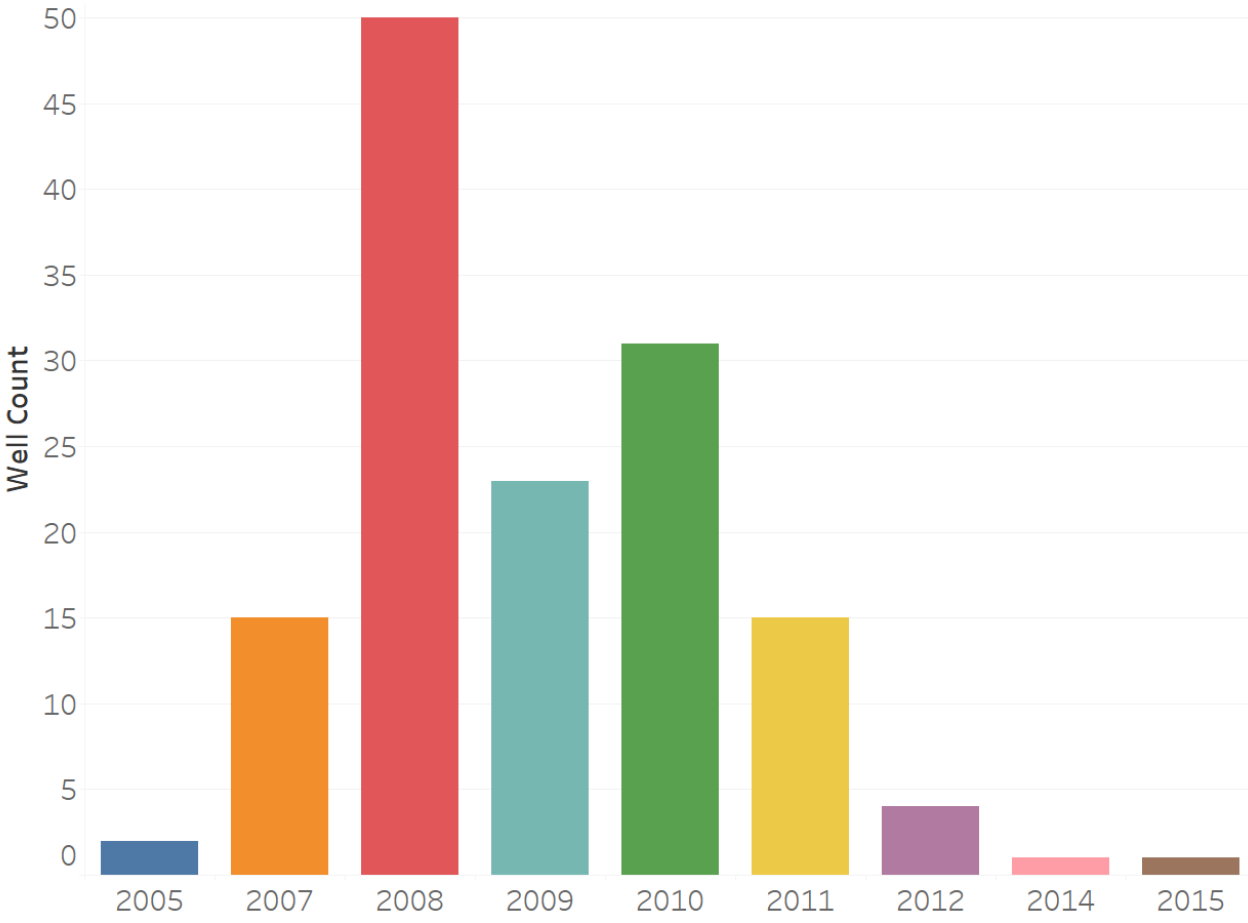
Refracs In the Bakken*

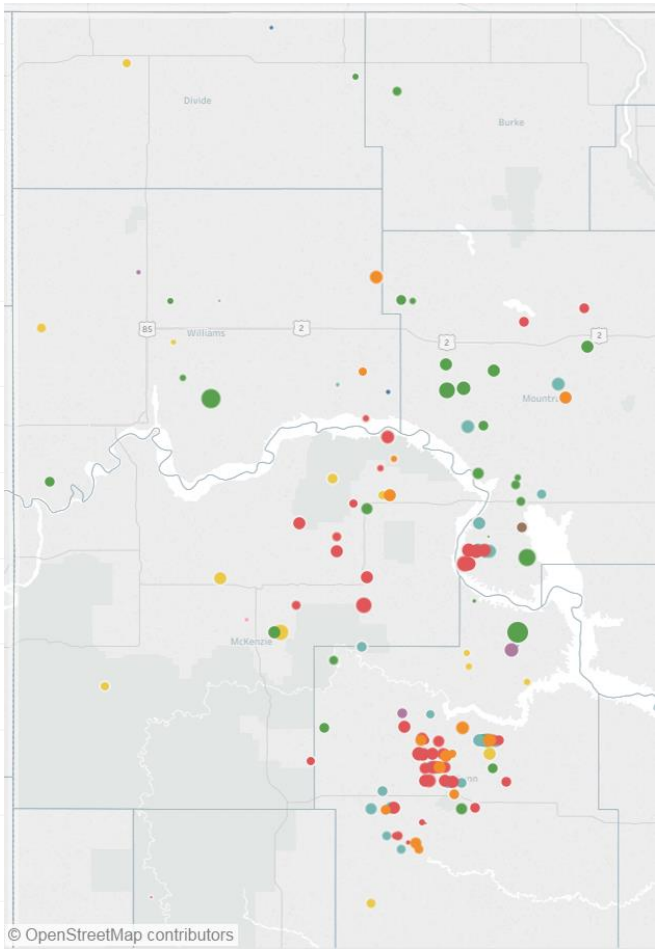




**While careful work was performed to discover as many non-confidential, modern refracs as possible, this data set is likely not all inclusive.*

Spud Year of Bakken Refrac Wells*





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Performance Pre/Post Refrac

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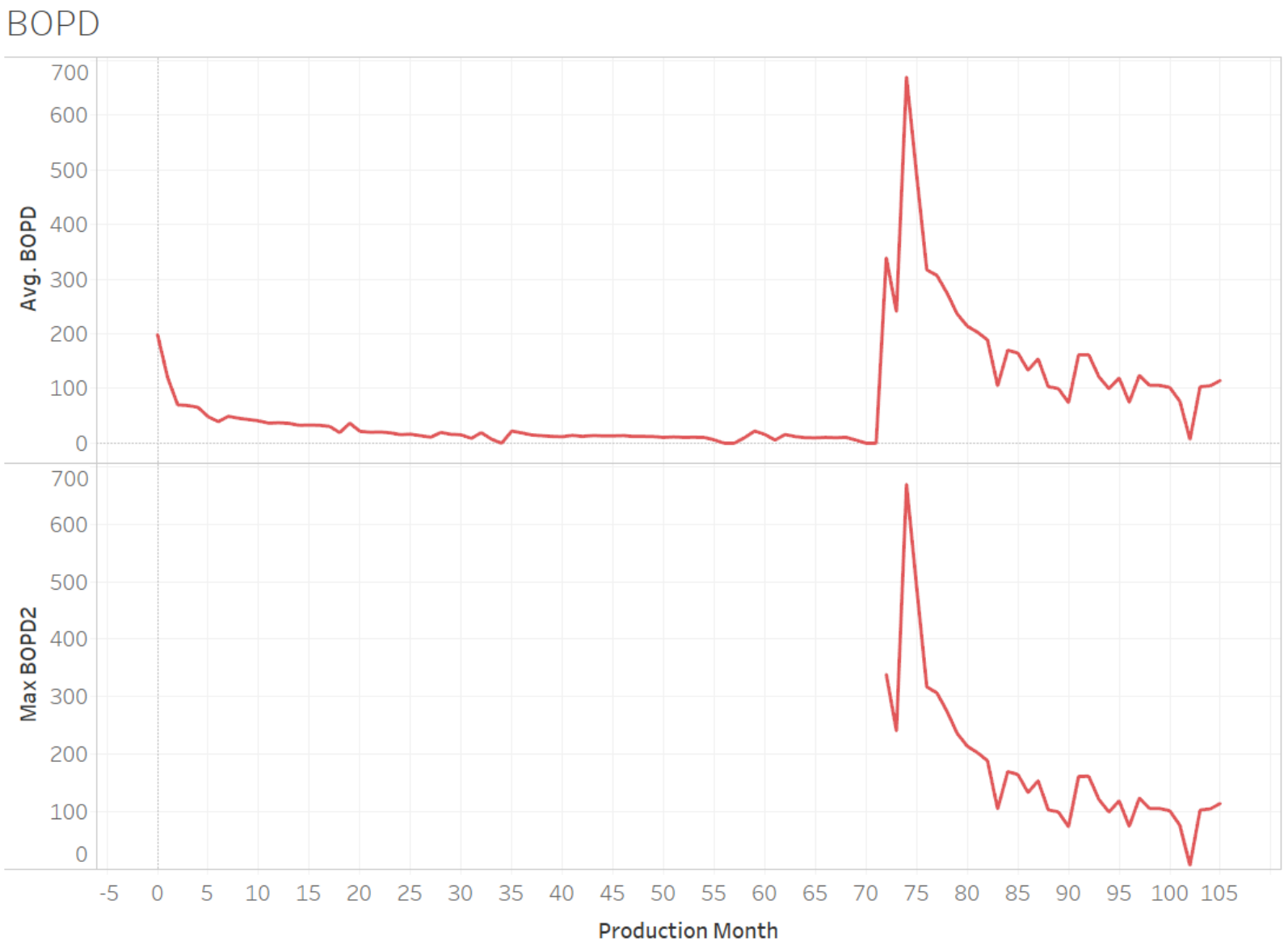
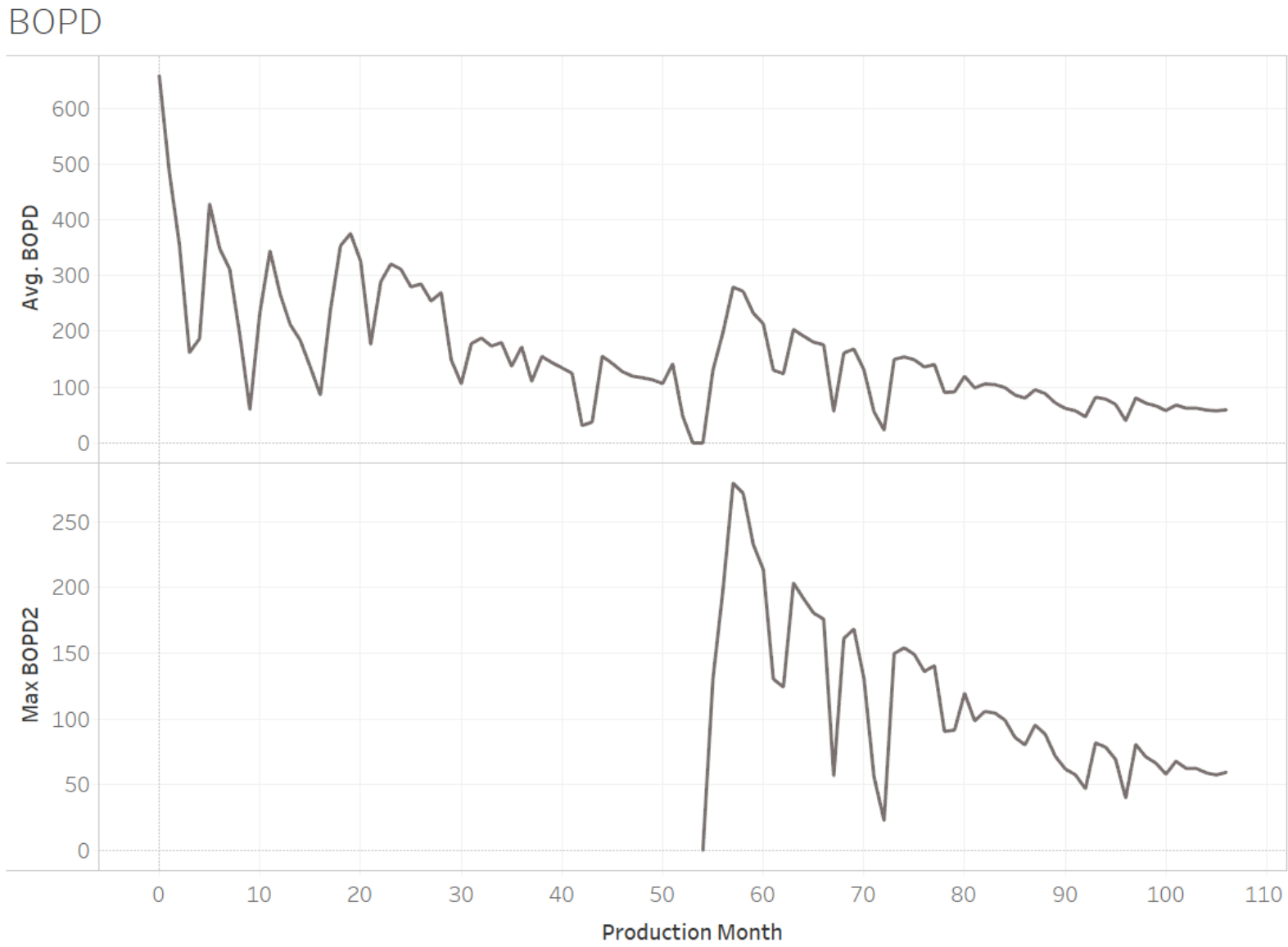
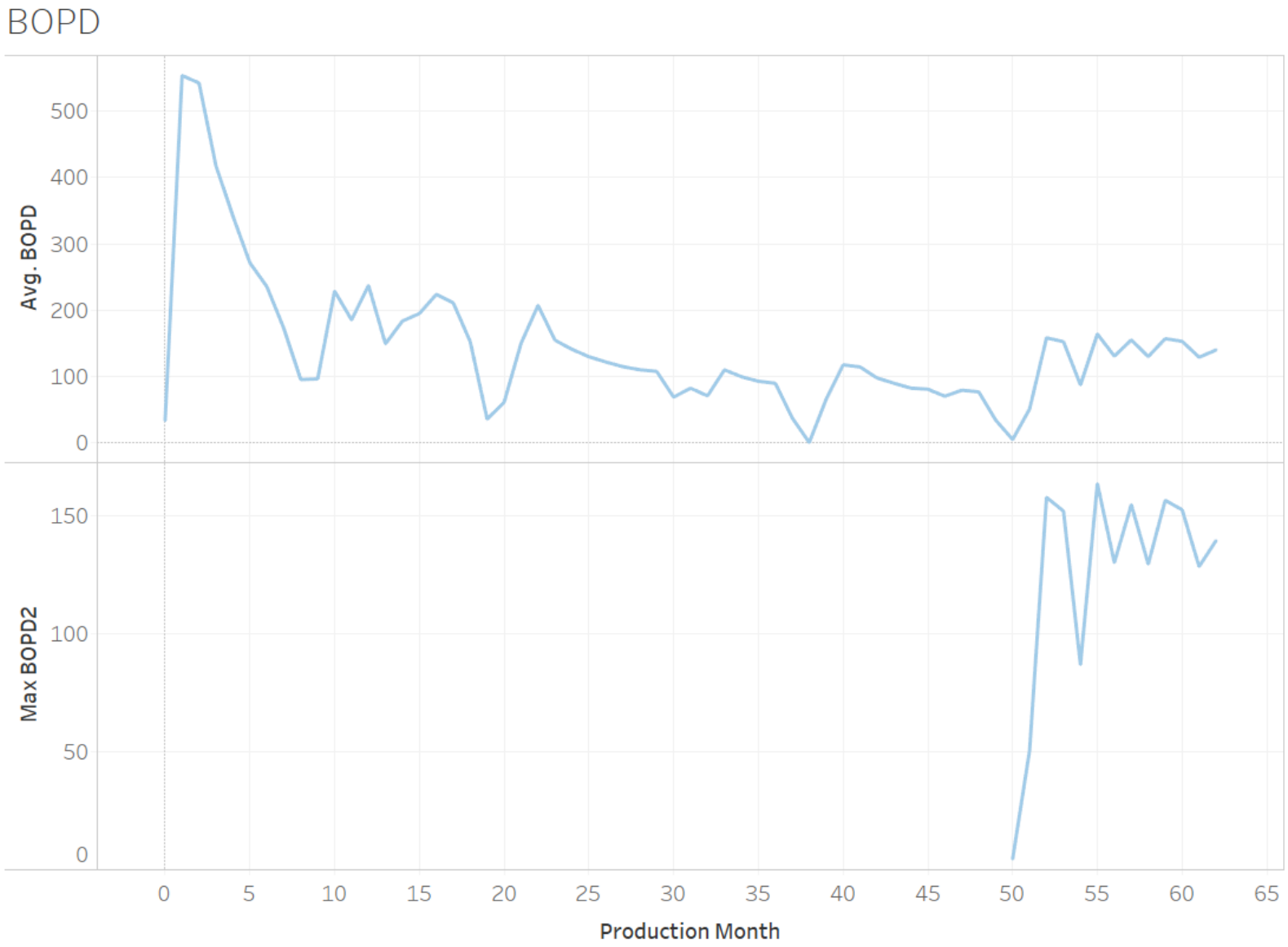


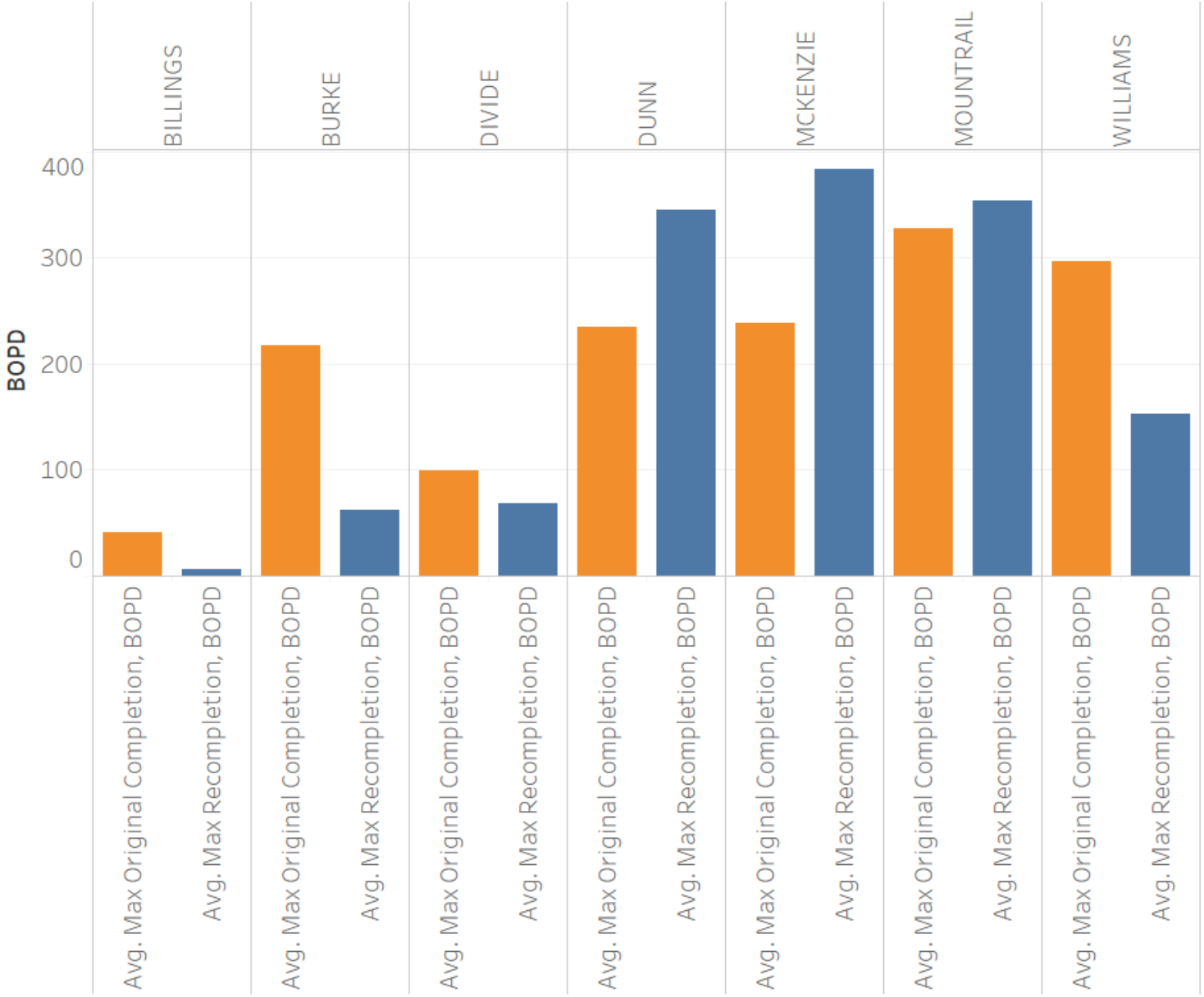
Performance Pre/Post Refrac



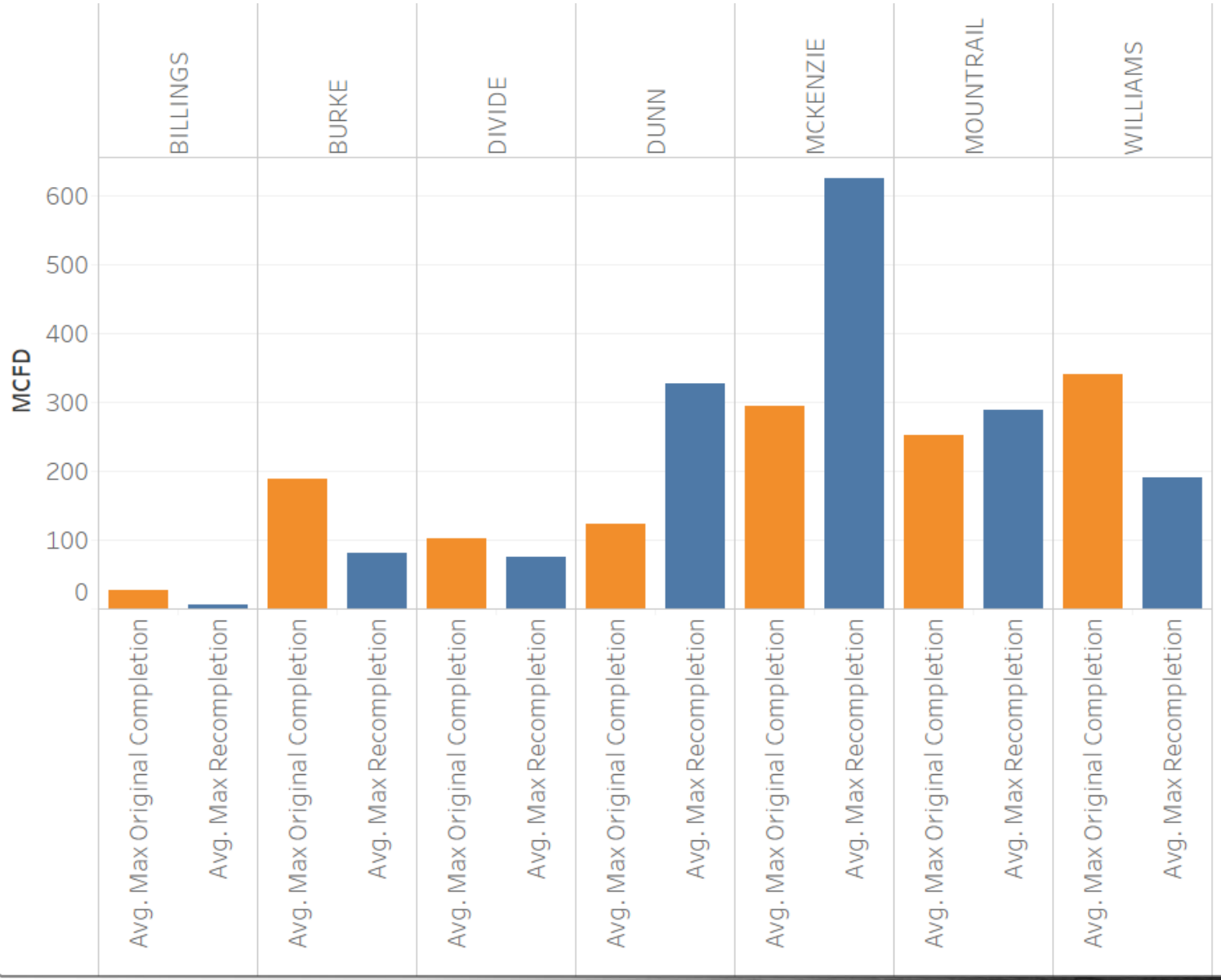
Performance Pre/Post Refrac



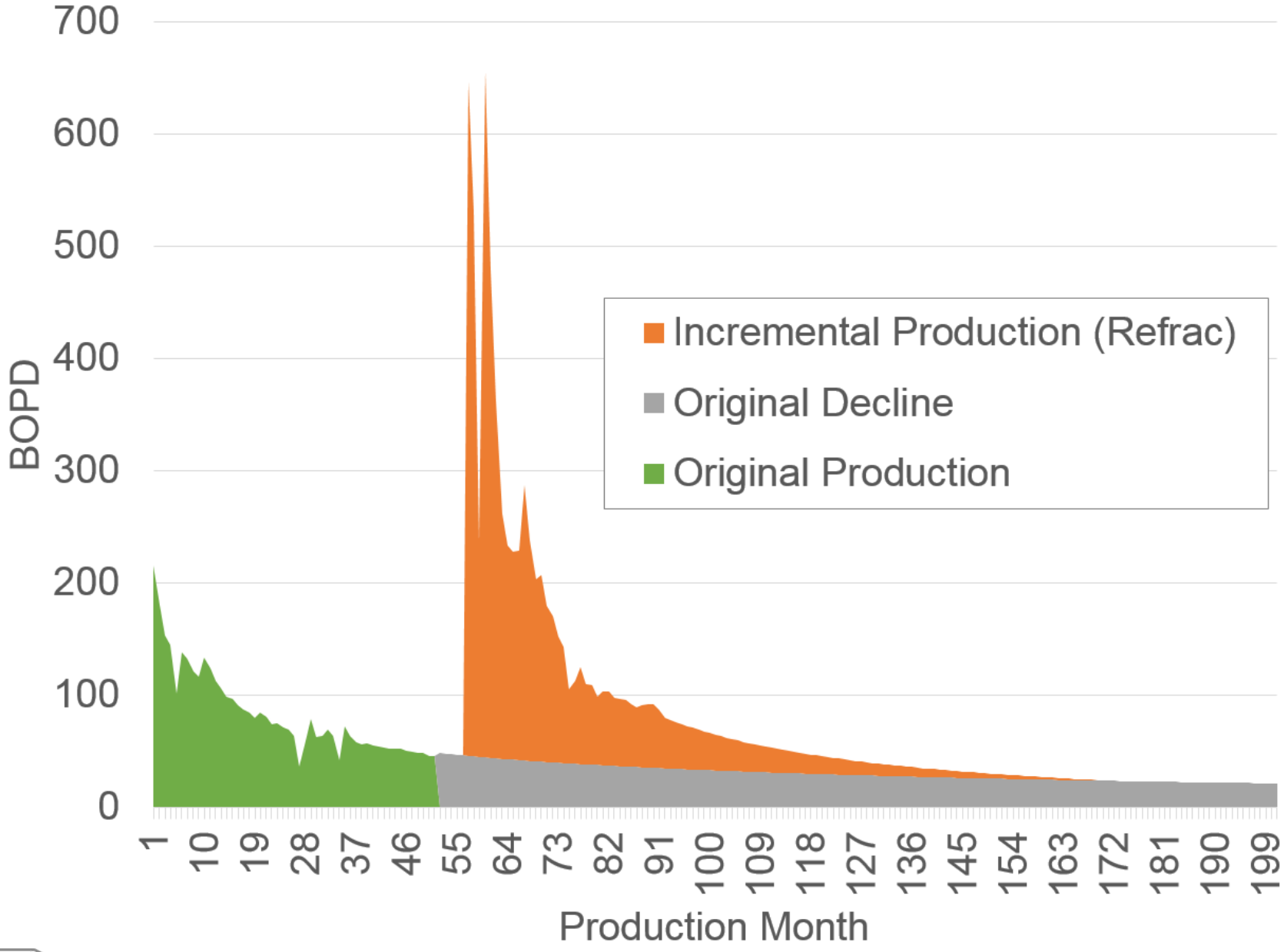
Performance Pre/Post Refrac



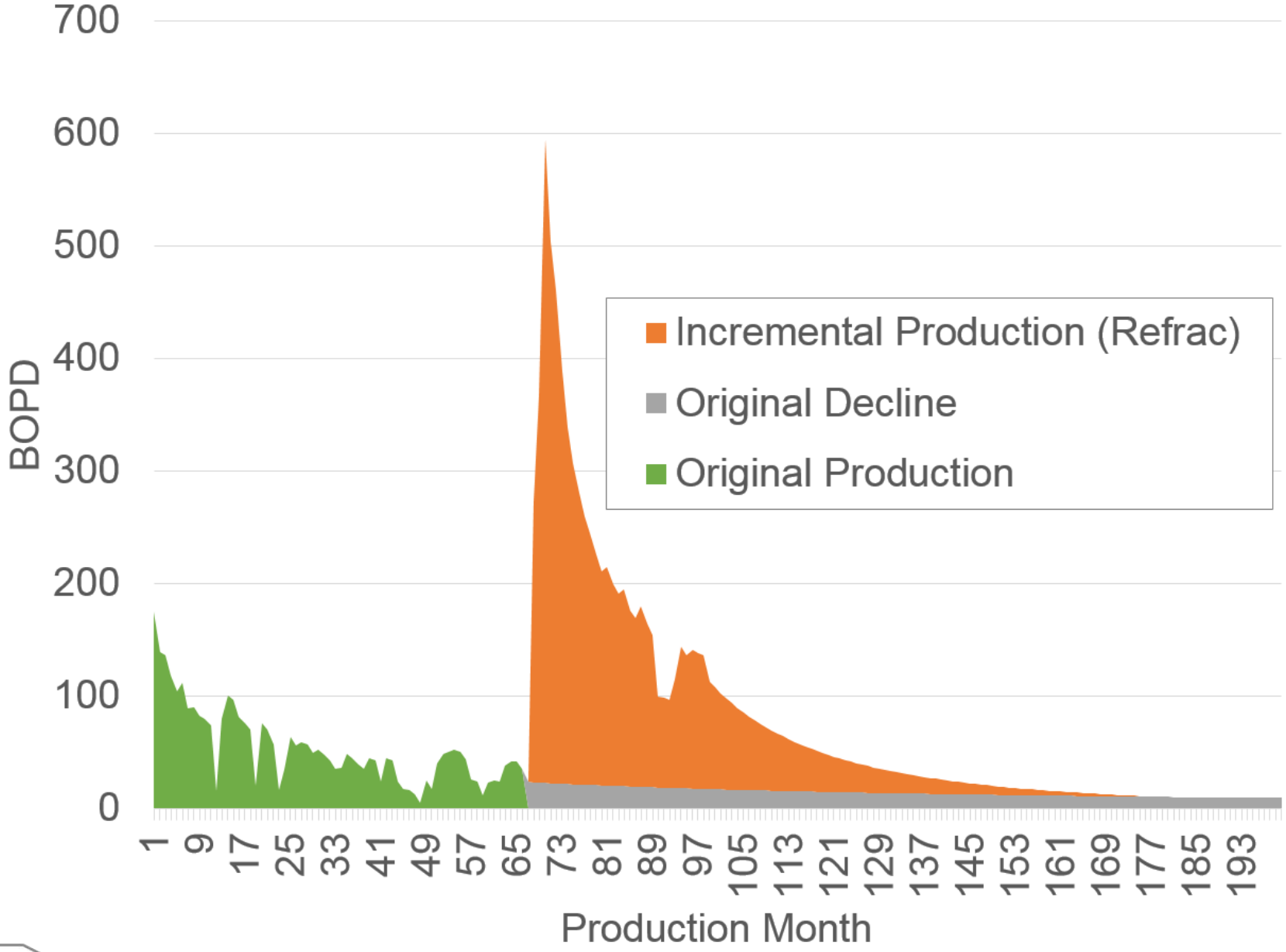
Performance Pre/Post Refrac



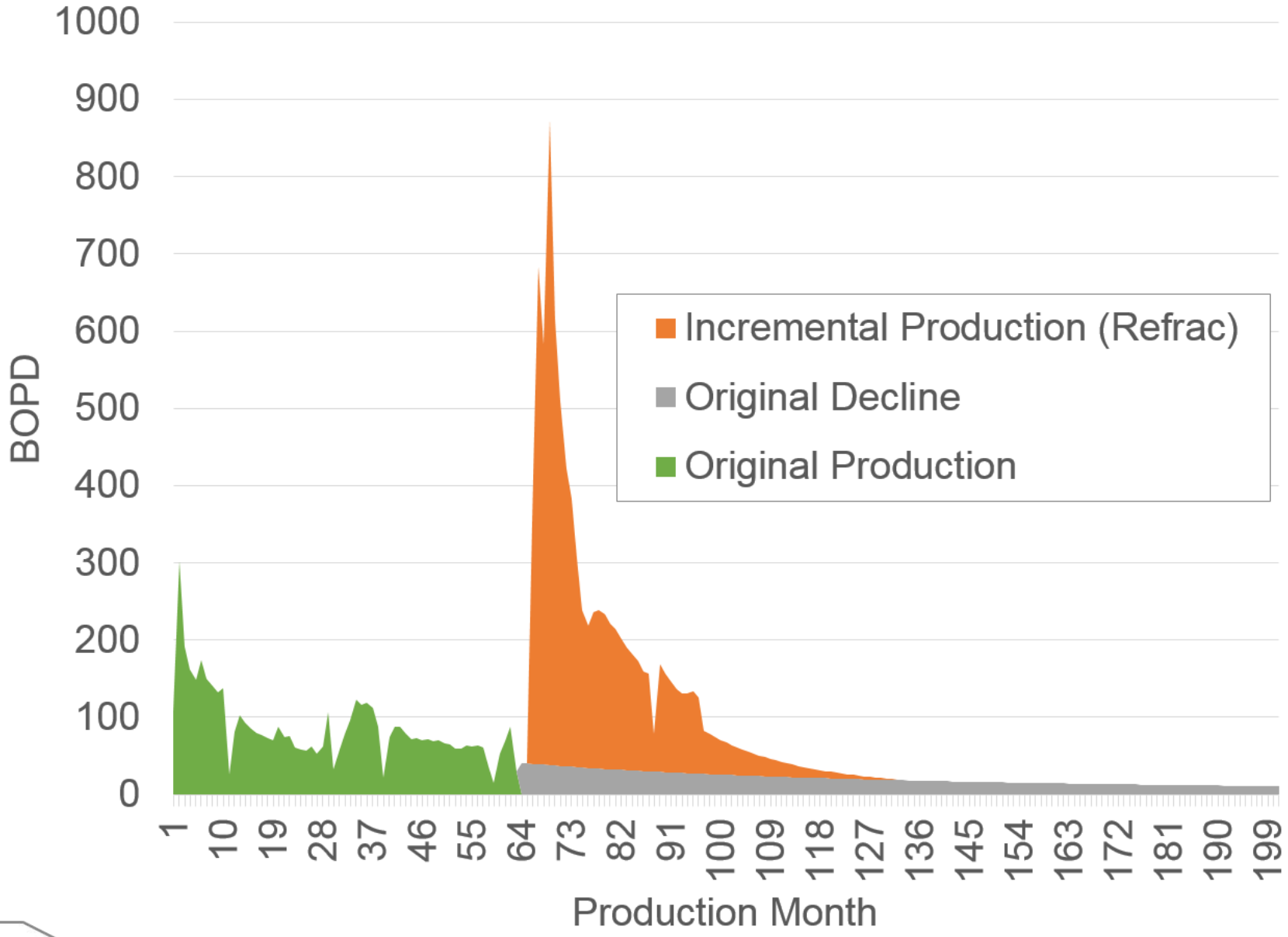
209,000 Barrels of Incremental Production



257,000 Barrels of Incremental Production

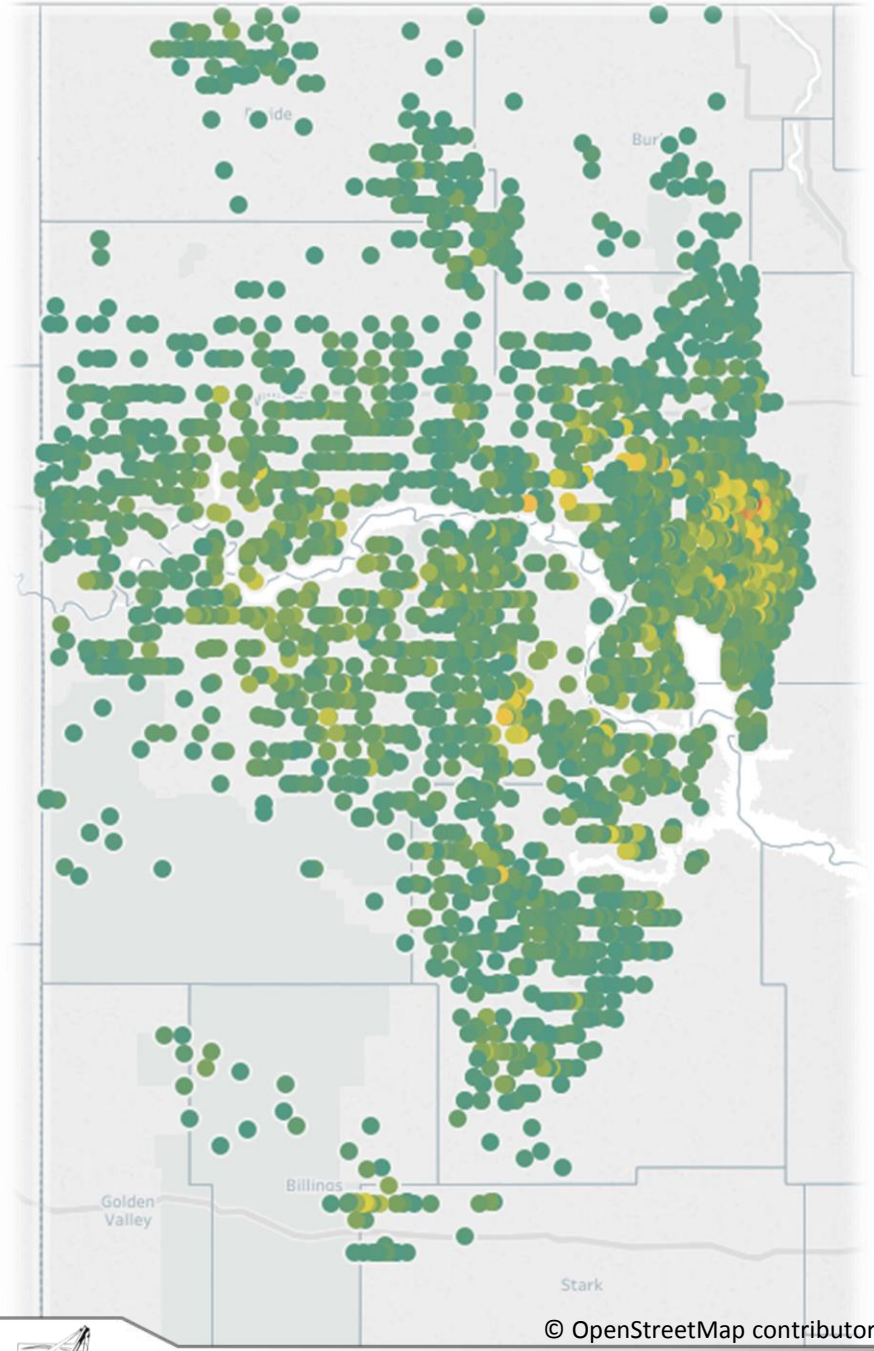


253,000 Barrels of Incremental Production



Refrac Candidates

- Refrac selection is based on a number of criteria, many of which are not available in the public domain
- Refracs have been performed with success on a wide range of well ages and performance
- Refracs are designed to address one or more reservoir level issues impacting well performance (e.g. scaling, embedment, proppant rearrangement, fines generation, etc)
- The following work is not intended to imply a well will be refraced, but rather that the wells fit a certain criteria that may make them a near term candidate for refrac.

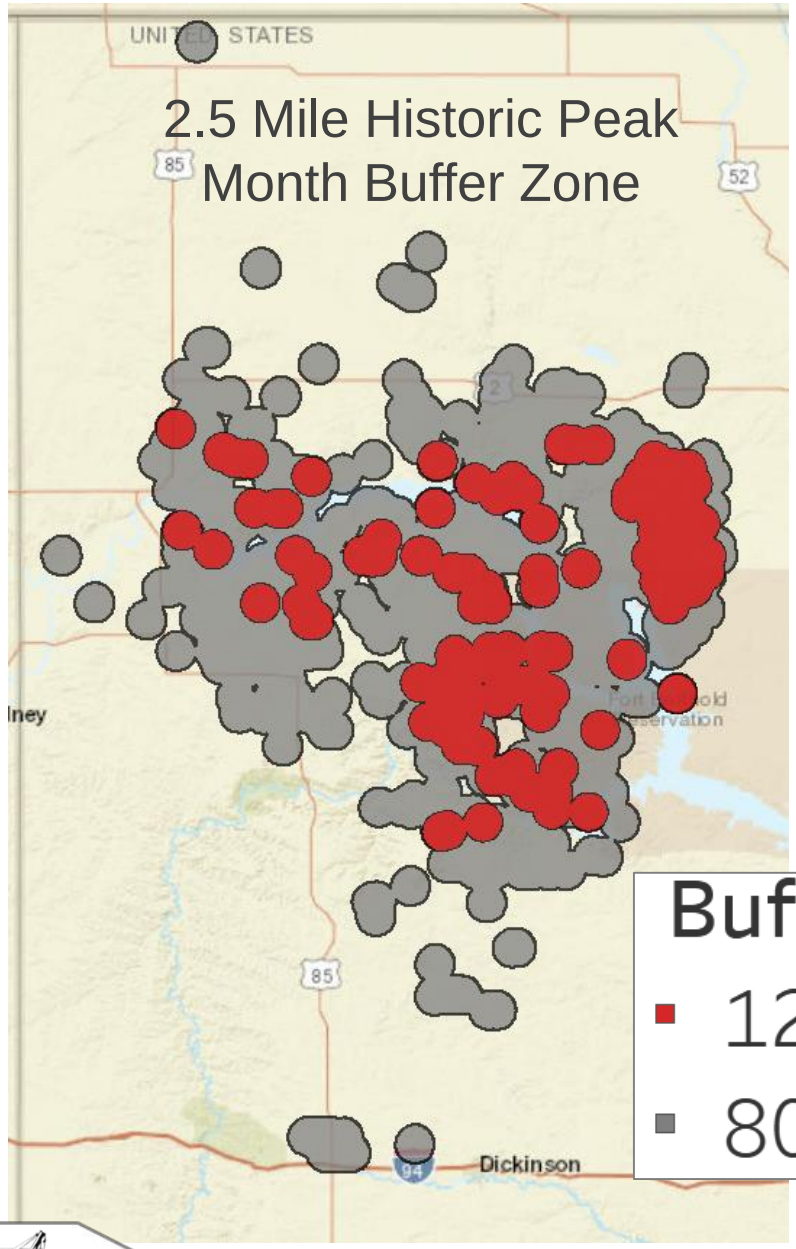


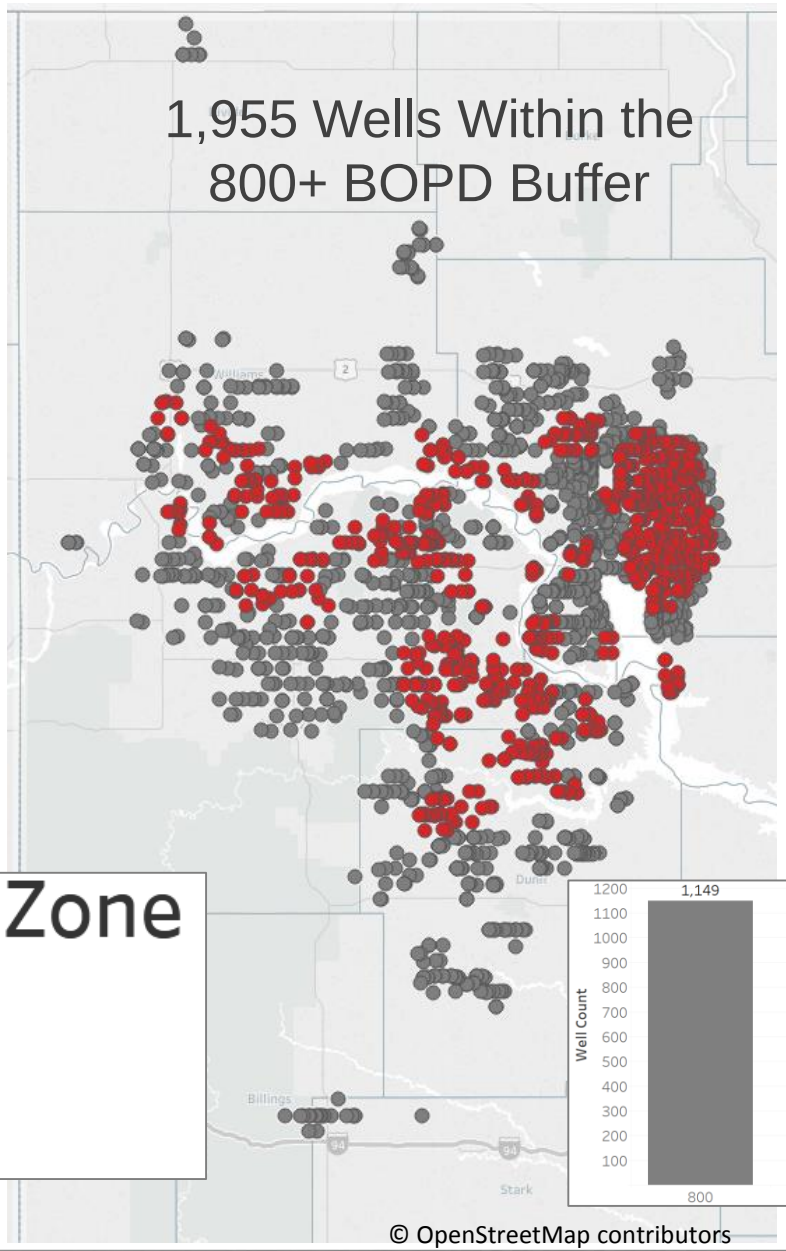
Peak Month Minimum 200 BOPD

3,074 BKN Wells
Spud 2007-2011

Potential Near term Refrac Candidates?

Proximity to High Performing Wells

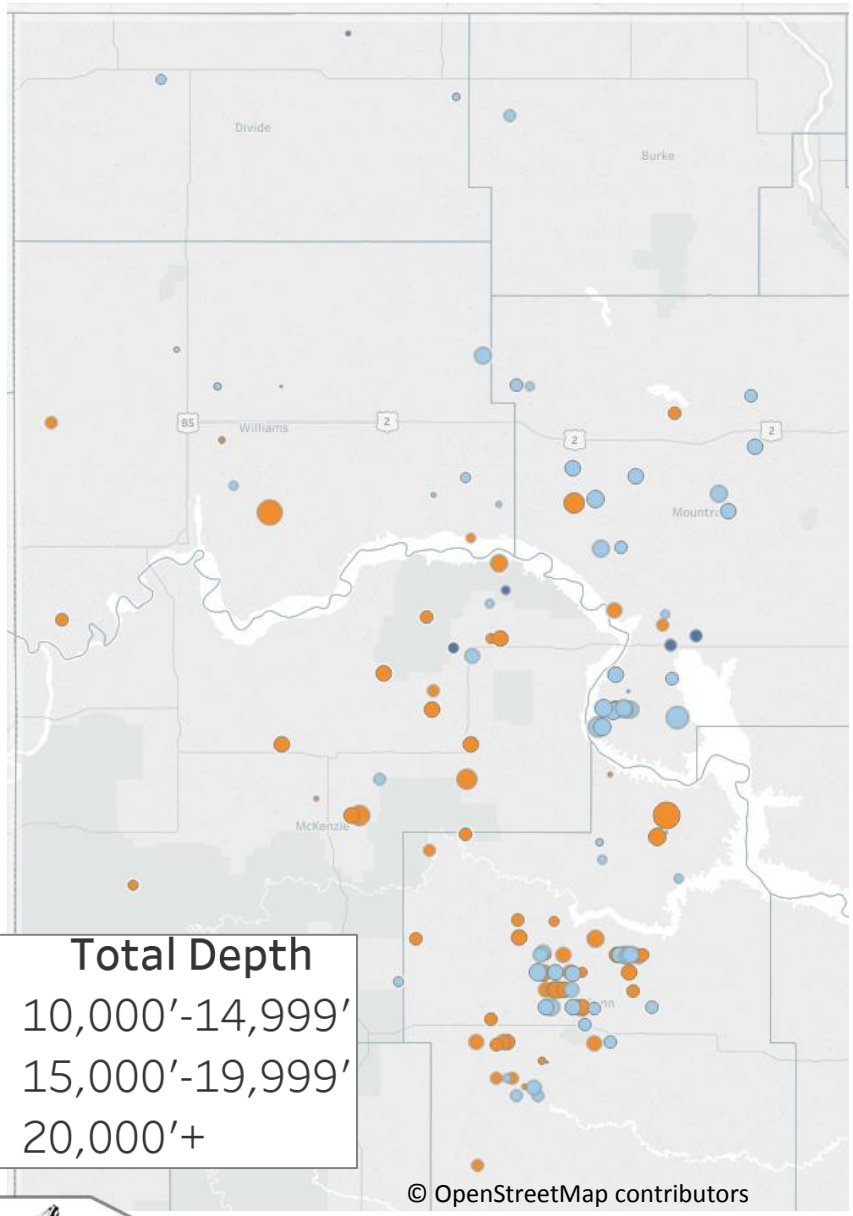


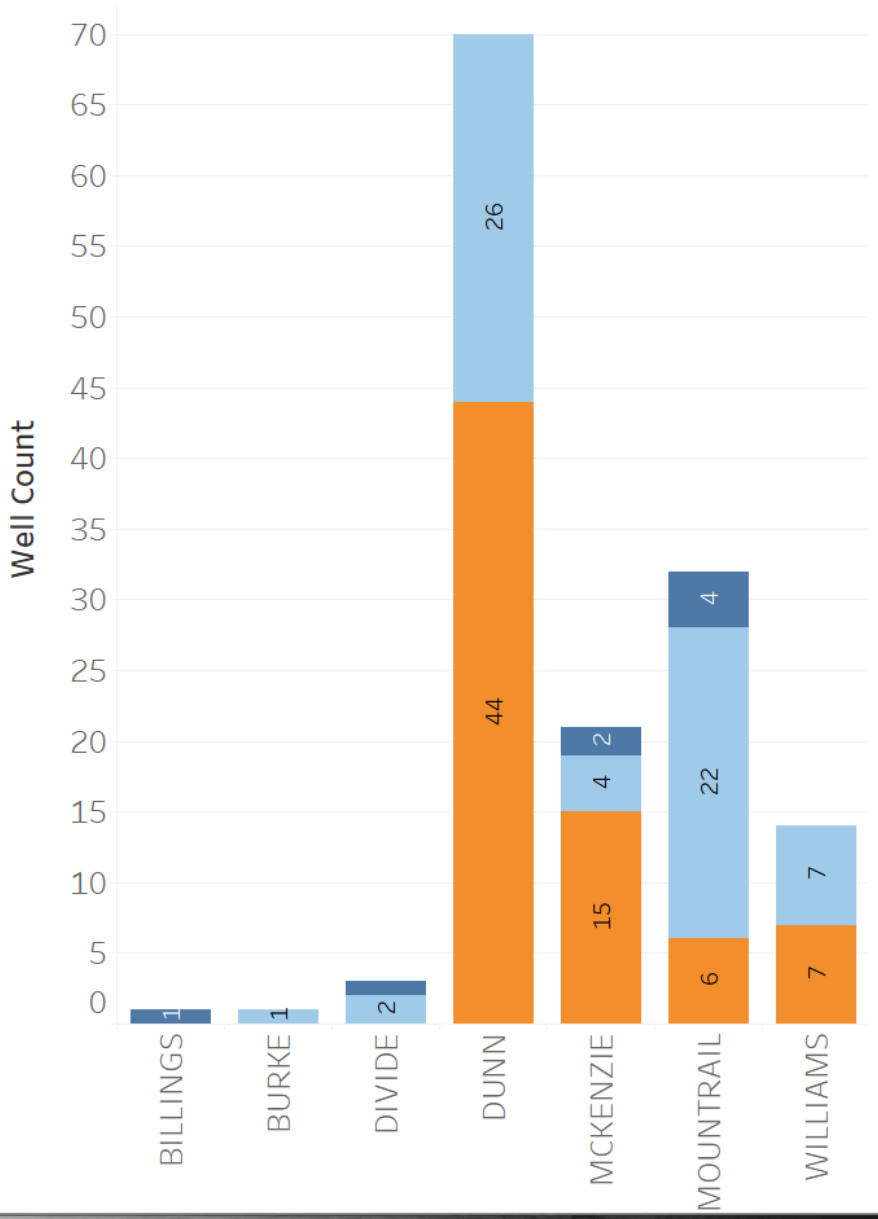


Buffer Zone

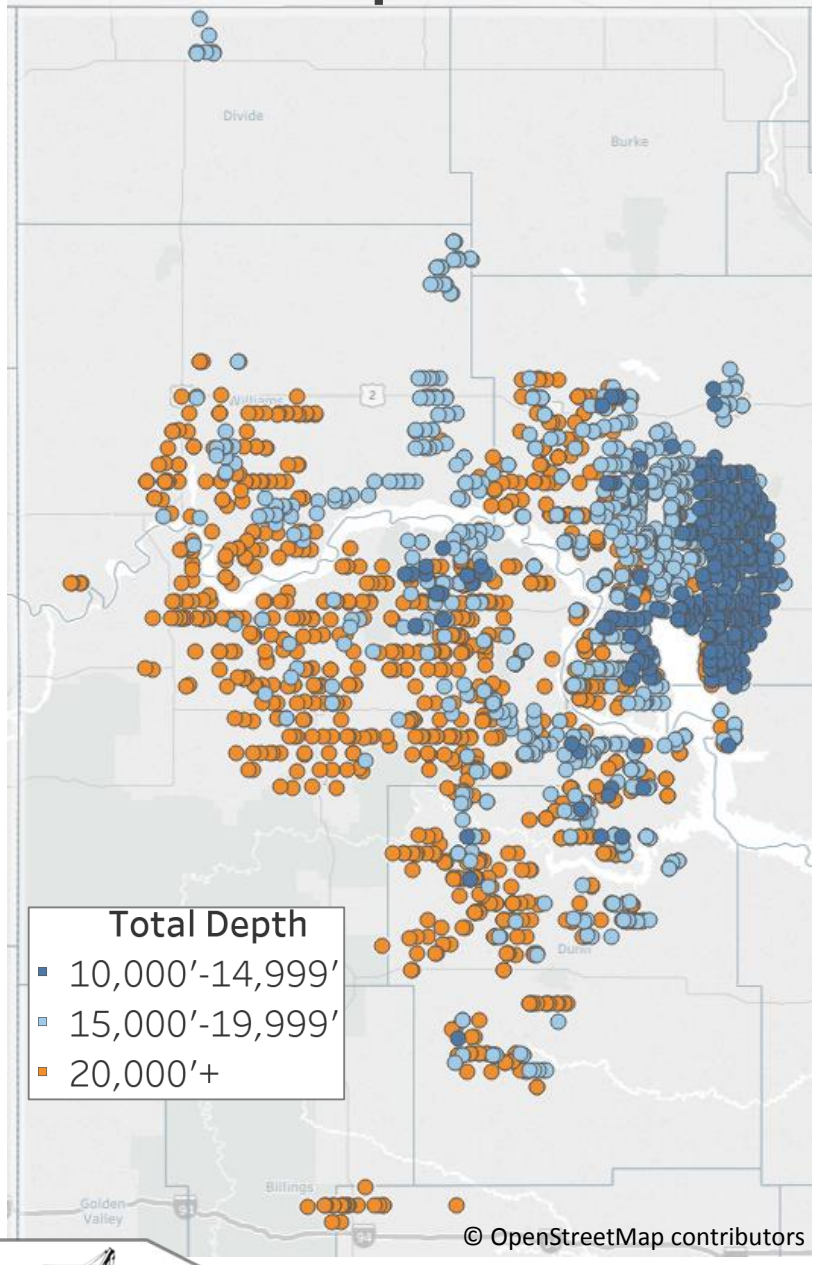
- 1250
- 800

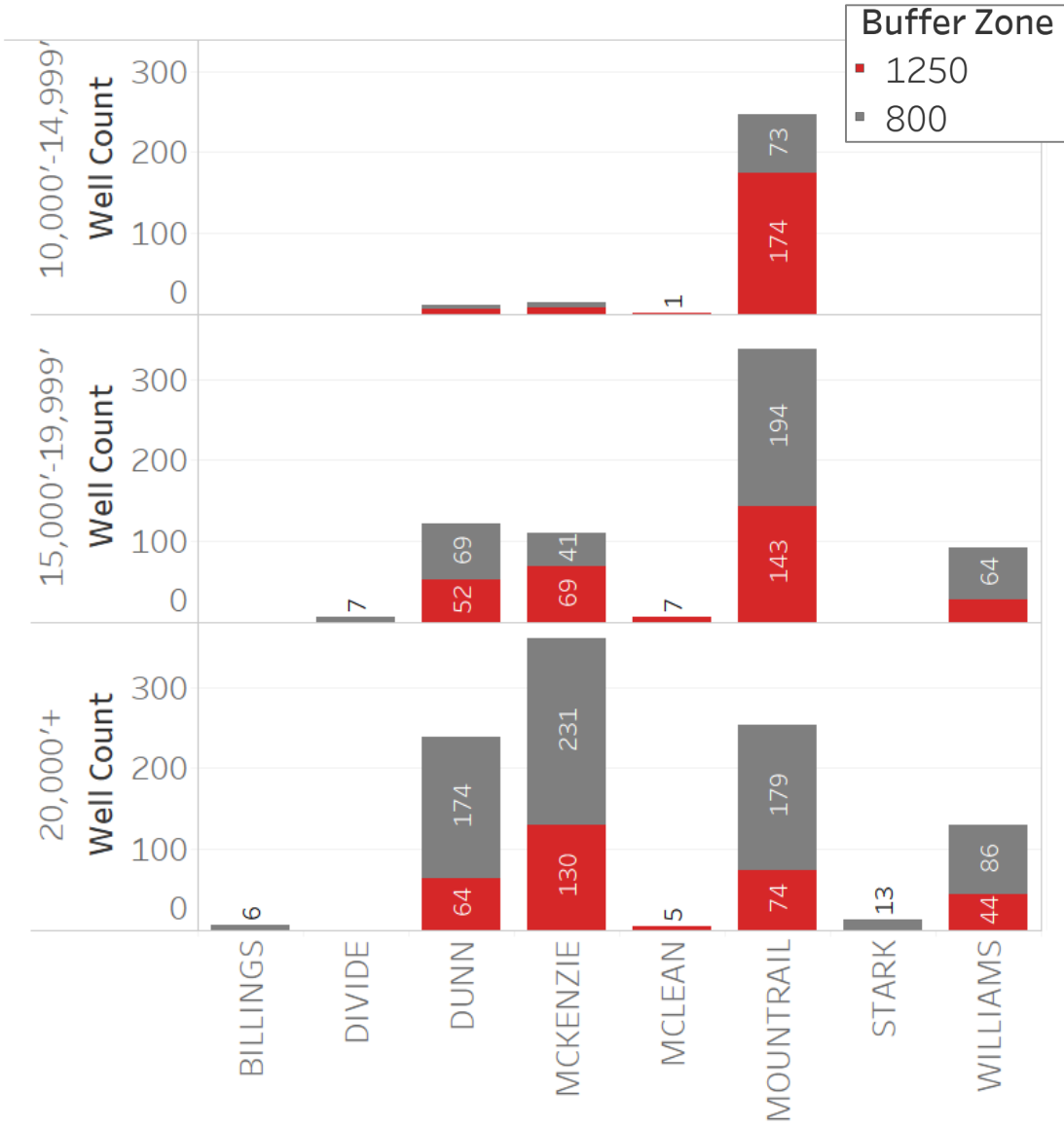
Total Depth of Previously Refraced Wells





Total Depth & Buffer Zone of the 1,955 Wells





Next Steps

- How does ND's production profile shift if/when horsepower is added or reallocated to refracs?
- How do the economics of a refrac compare to a new drill and completion?
- How does ND's midstream industry react to meet shifting production volumes? (Locally & Regionally)