Bakken/Three Forks Drilling Economics

Justin J Kringstad
Geological Engineer
Director
North Dakota Pipeline Authority

May 22, 2018

Objective

Define where the Bakken/Three Forks system may be economic in the current oil price environment.

Method

Analyze past well performance across the region and estimate well economics for various production levels.

Disclaimer

The goal of this work is not to imply individual company actions or intentions. All view expressed are strictly that of Justin J. Kringstad.

Neither the State of North Dakota, nor any agency, officer, or employee of the State of North Dakota warrants the accuracy or reliability of this product and shall not be held responsible for any losses related to its use.

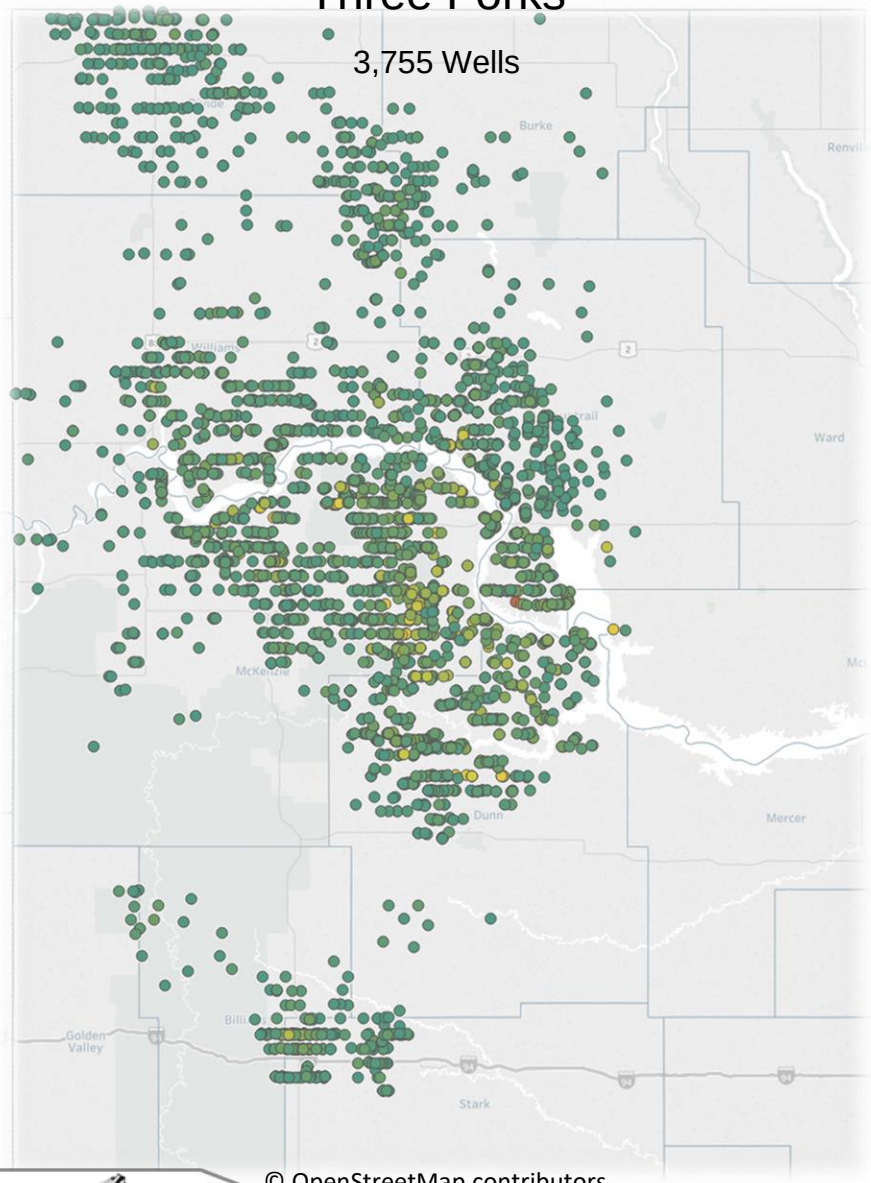
Key Economic Assumptions

- $6-$8 Million Well Costs
- $63/BBL & $6.00/MCF Wellhead Pricing
- 1/6 Royalty
- Zero Flaring
- Assumed 10-20% IRR to drill (calculated after production taxes and royalties)
- No Tax Incentives Included
- Production rate is 30-day average
- All Bakken/Three Forks wells drilled in 2008+

Peak Month Minimum - 200 BOPD

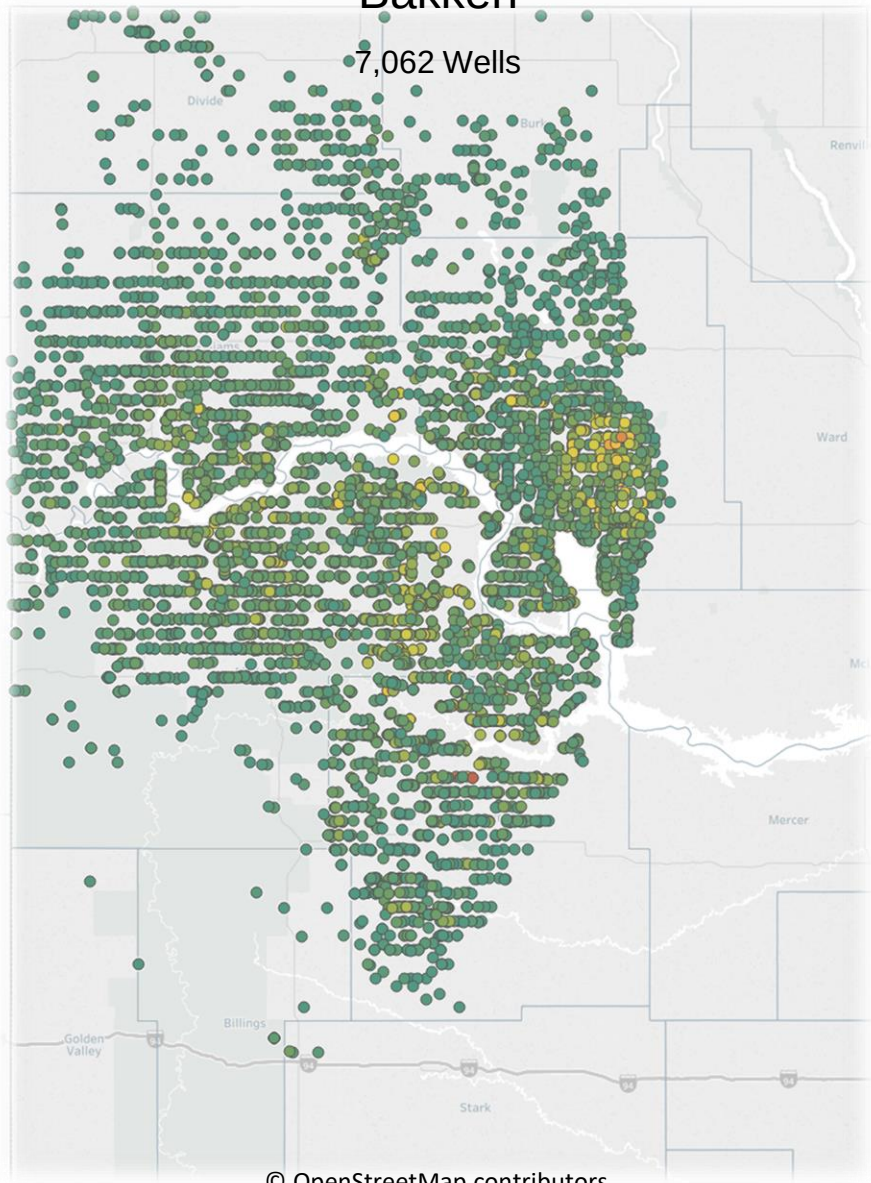
Three Forks

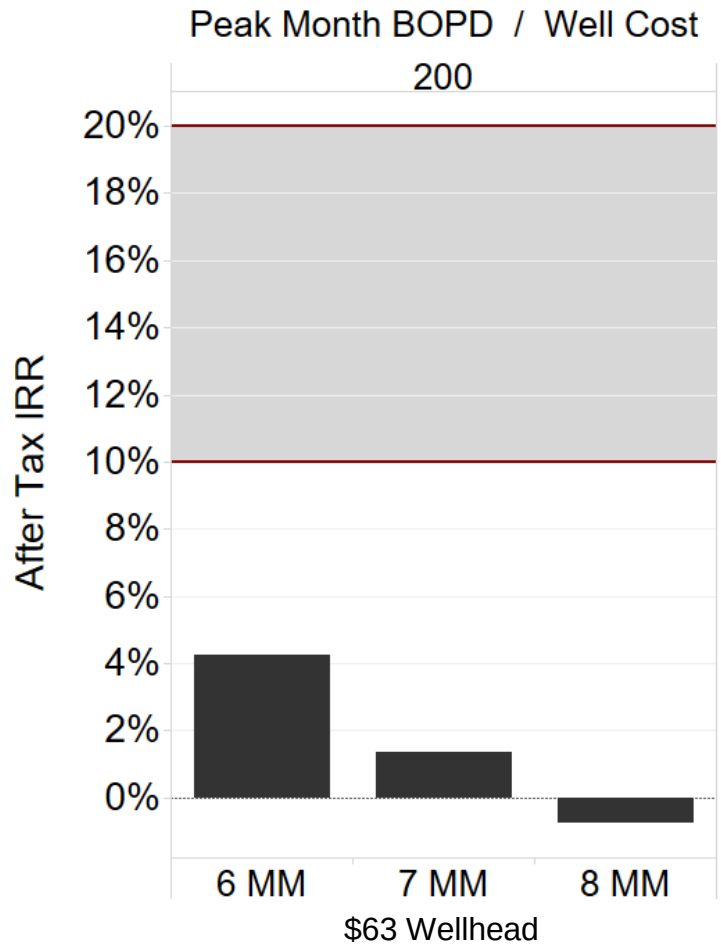
3,755 Wells

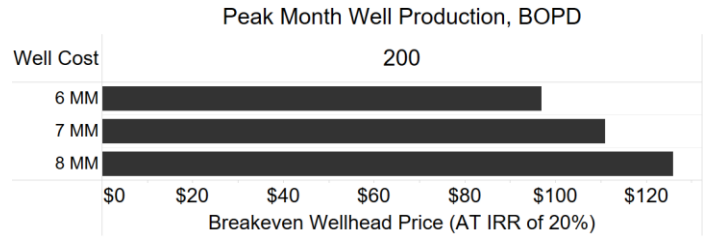


Bakken

7,062 Wells



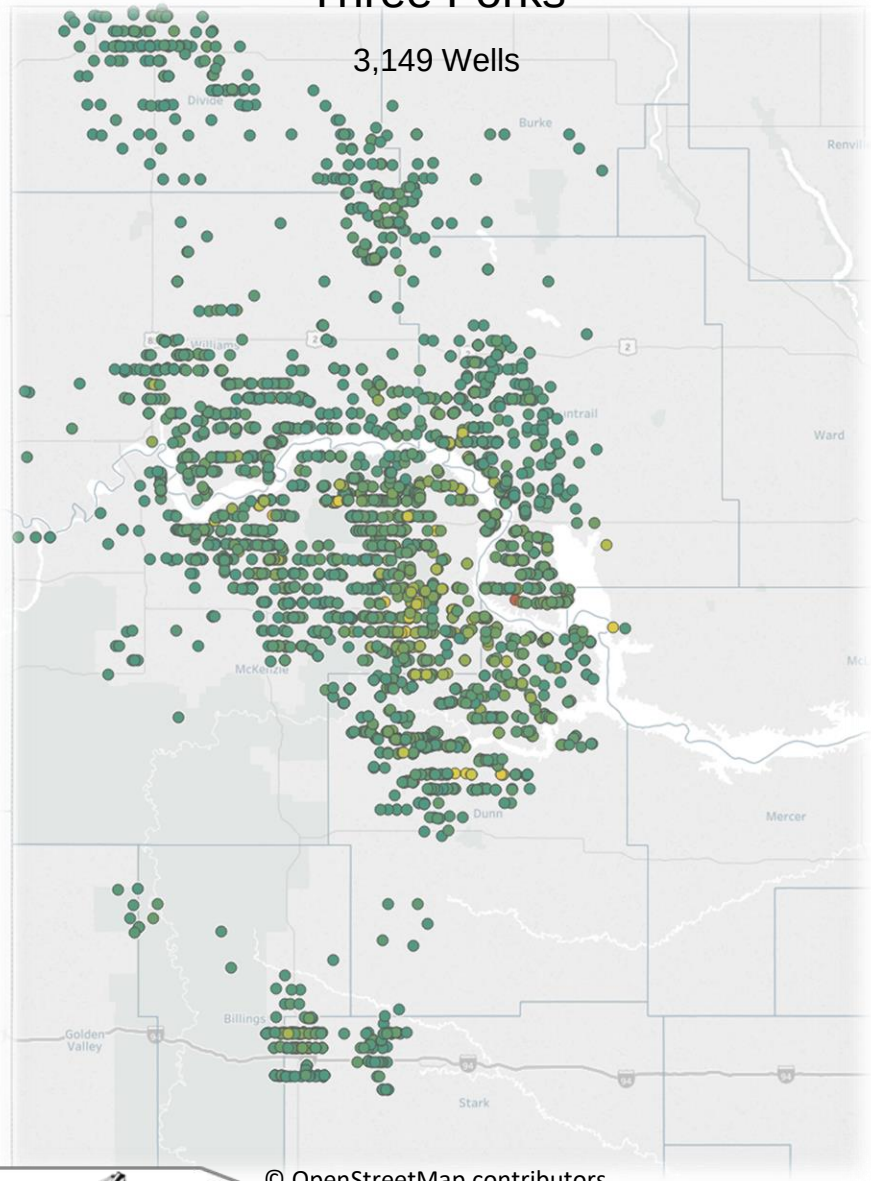




Peak Month Minimum - 300 BOPD

Three Forks

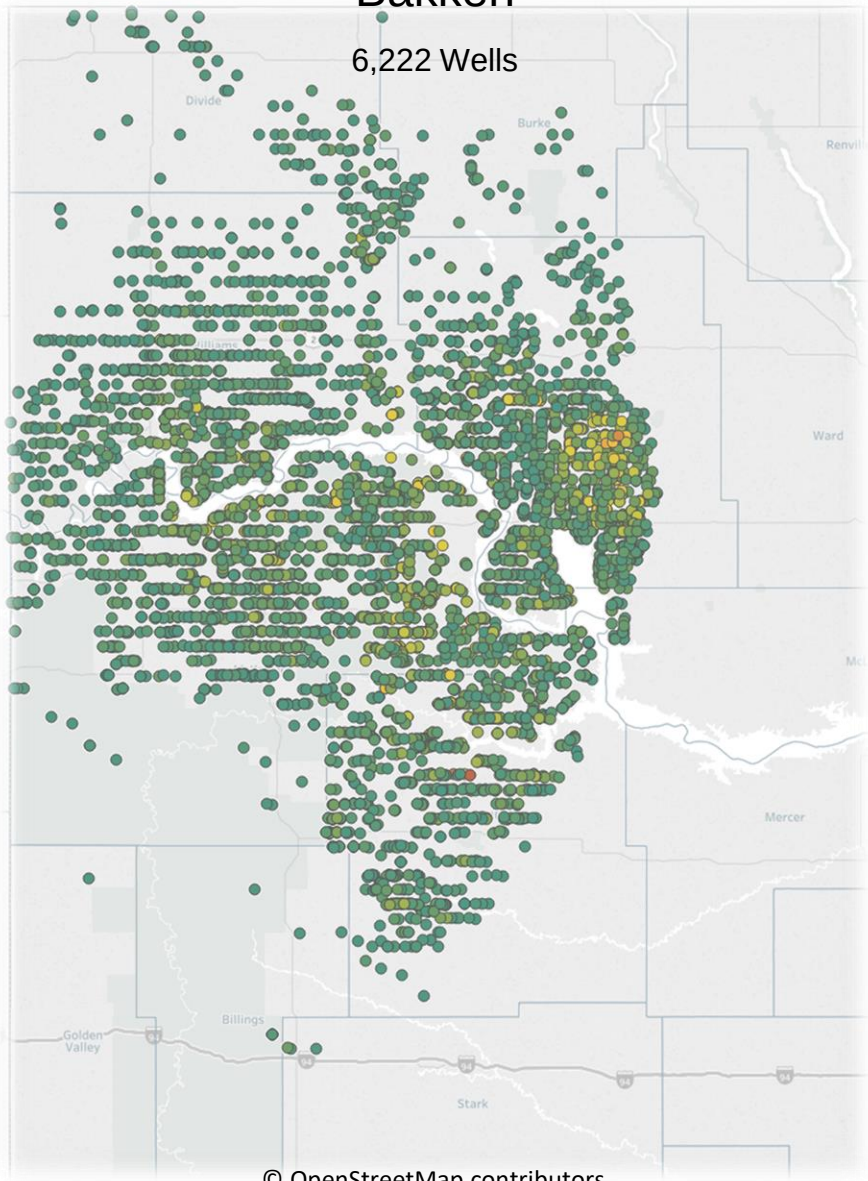
3,149 Wells



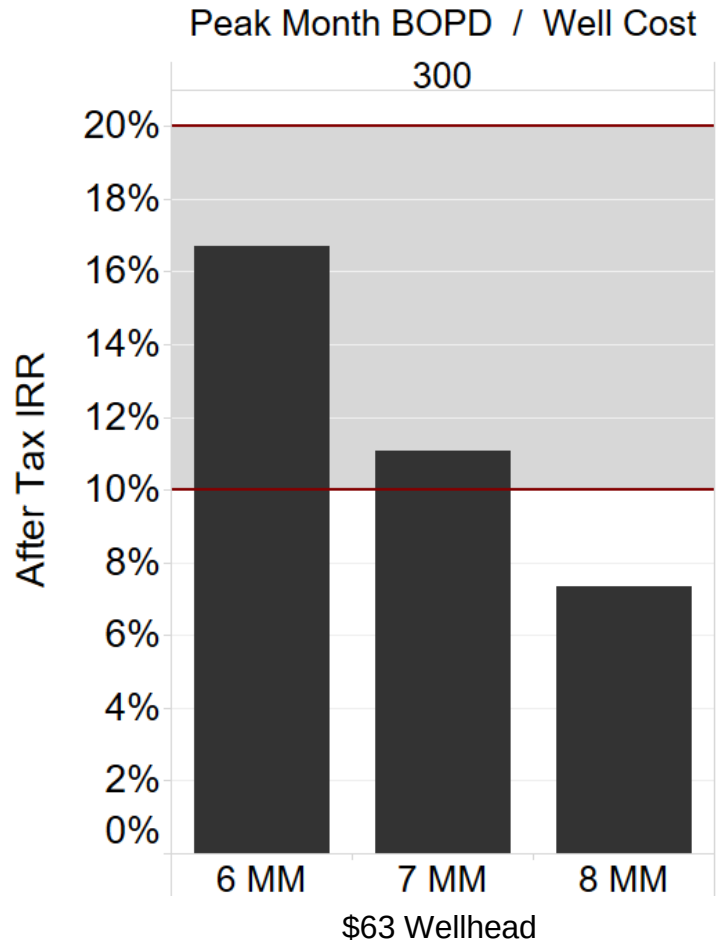
© OpenStreetMap contributors

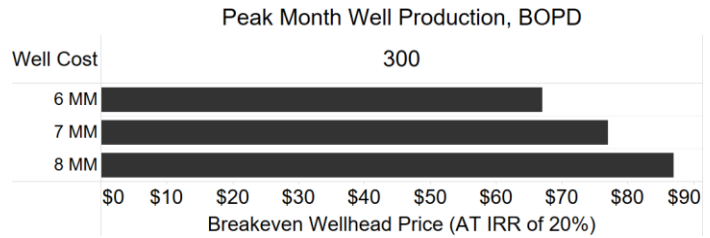
Bakken

6,222 Wells



© OpenStreetMap contributors

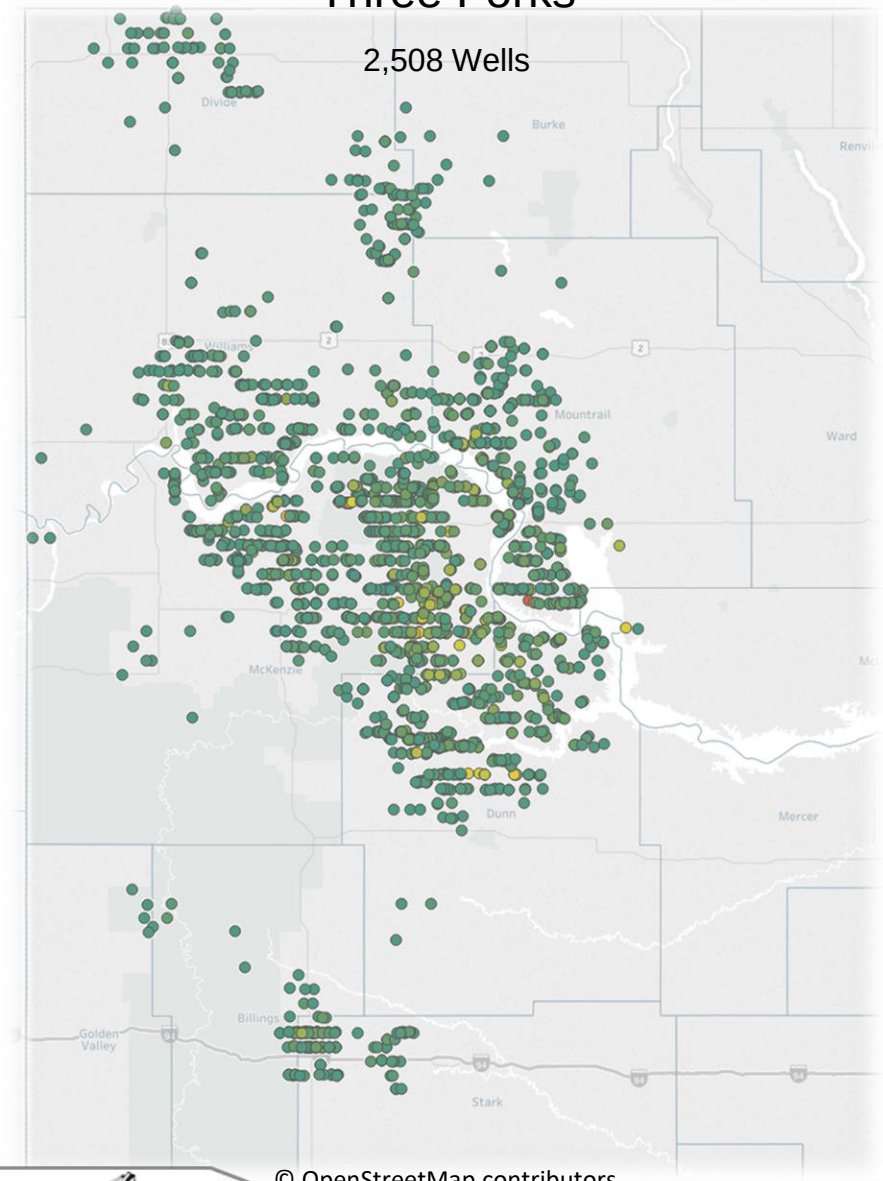




Peak Month Minimum - 400 BOPD

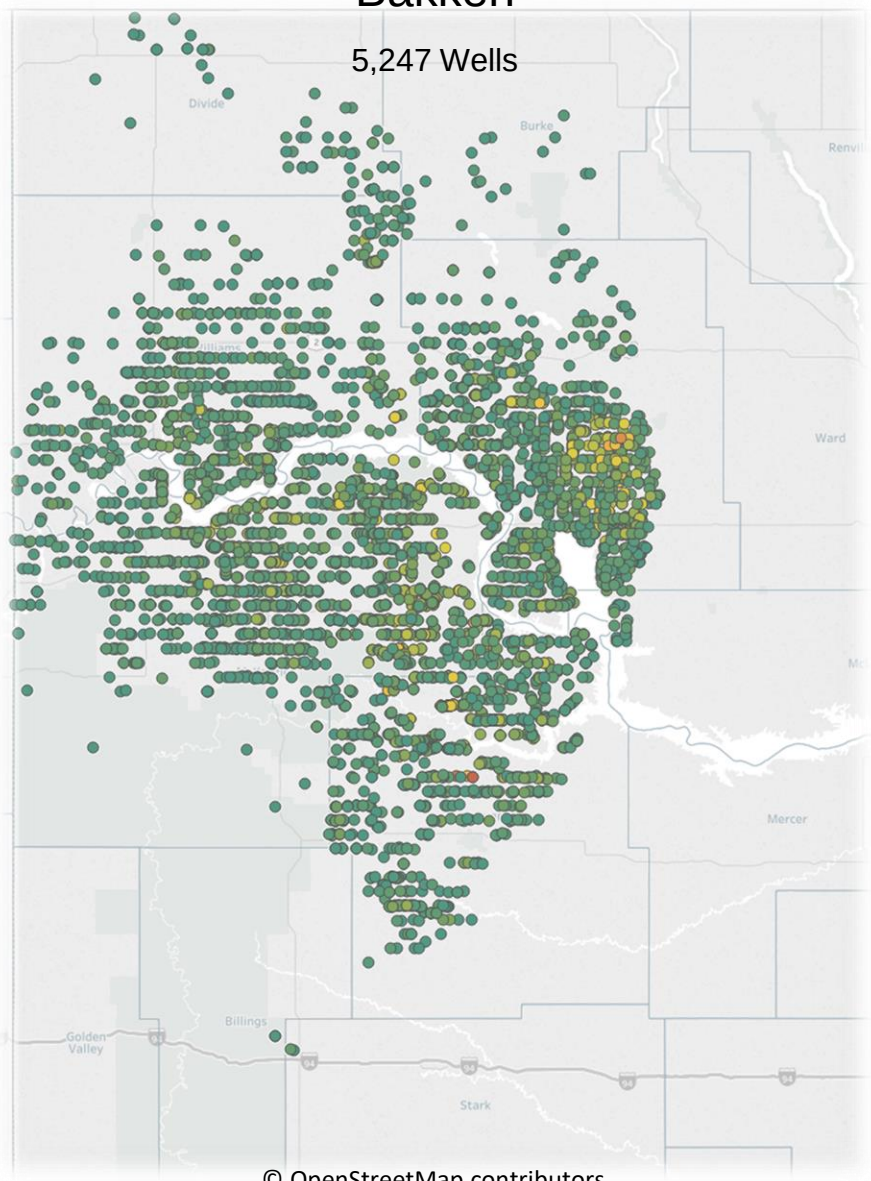
Three Forks

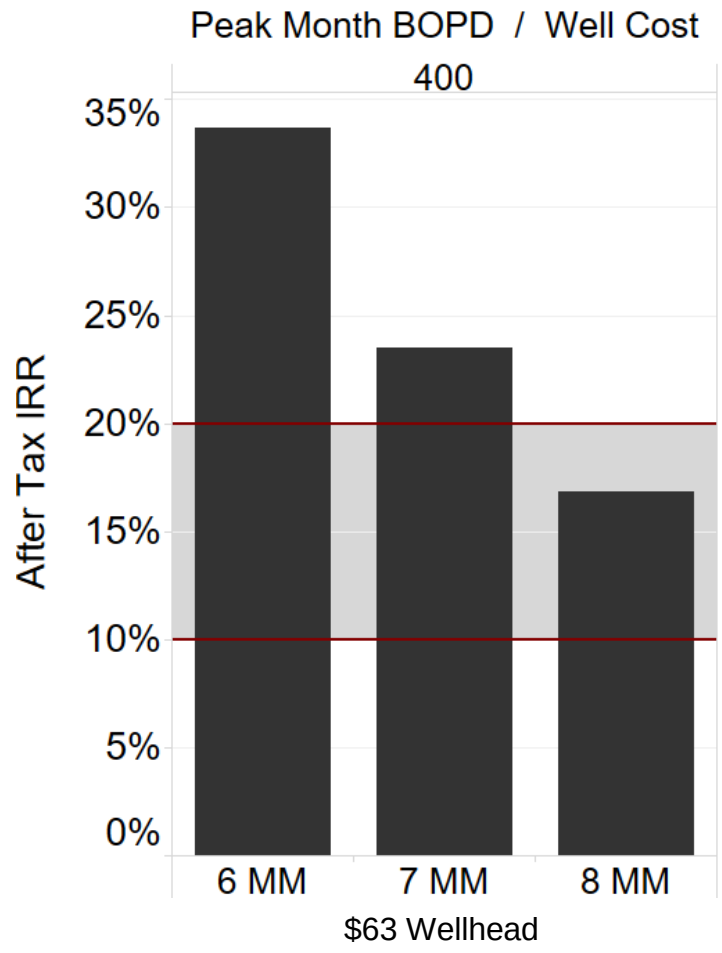
2,508 Wells

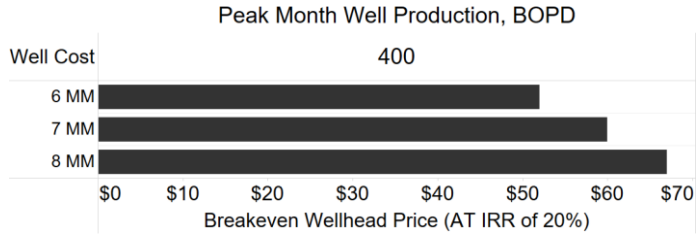


Bakken

5,247 Wells



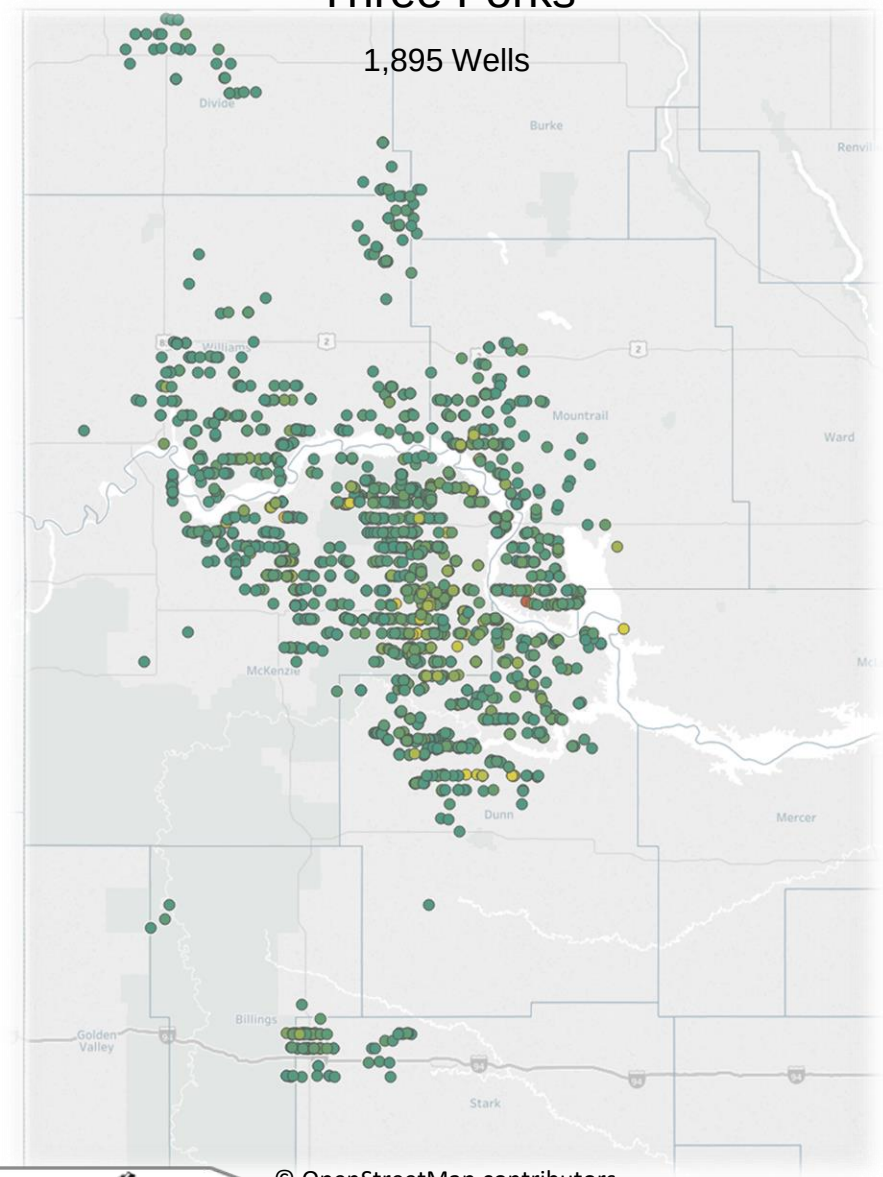




Peak Month Minimum - 500 BOPD

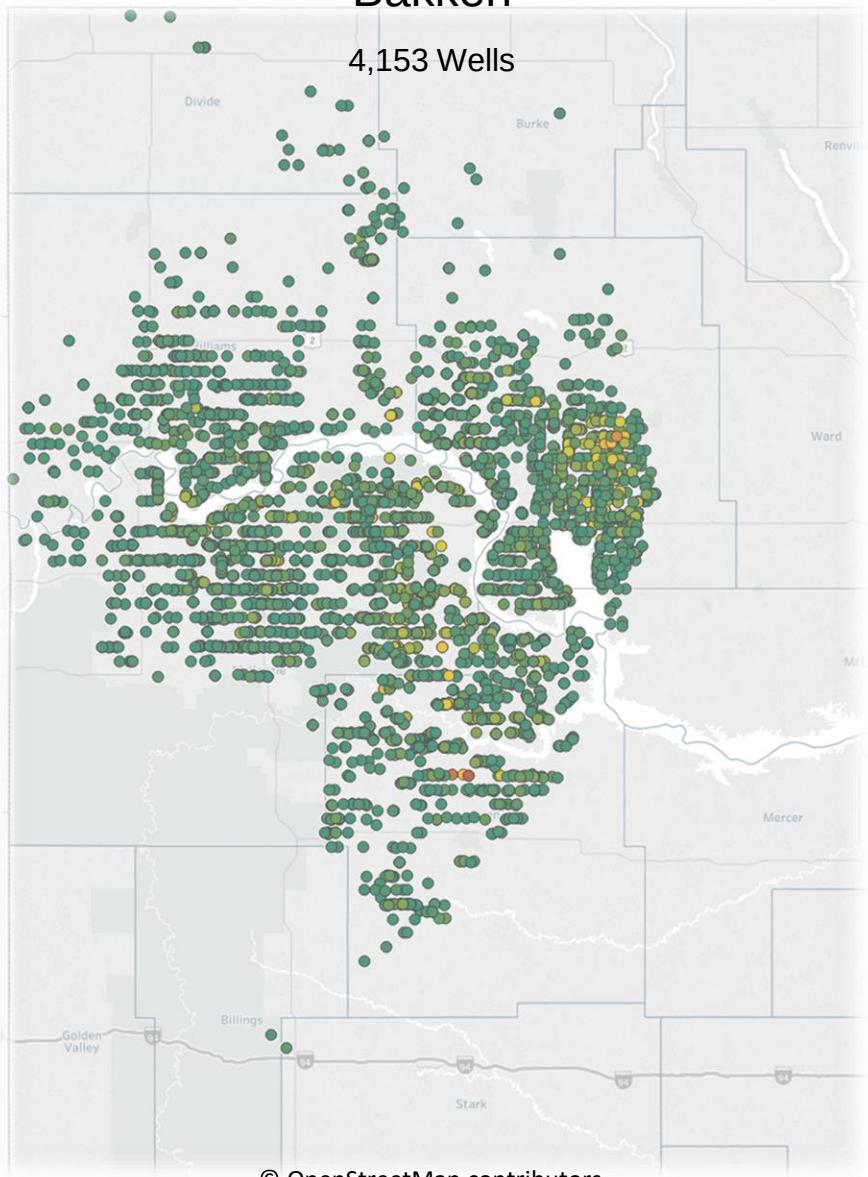
Three Forks

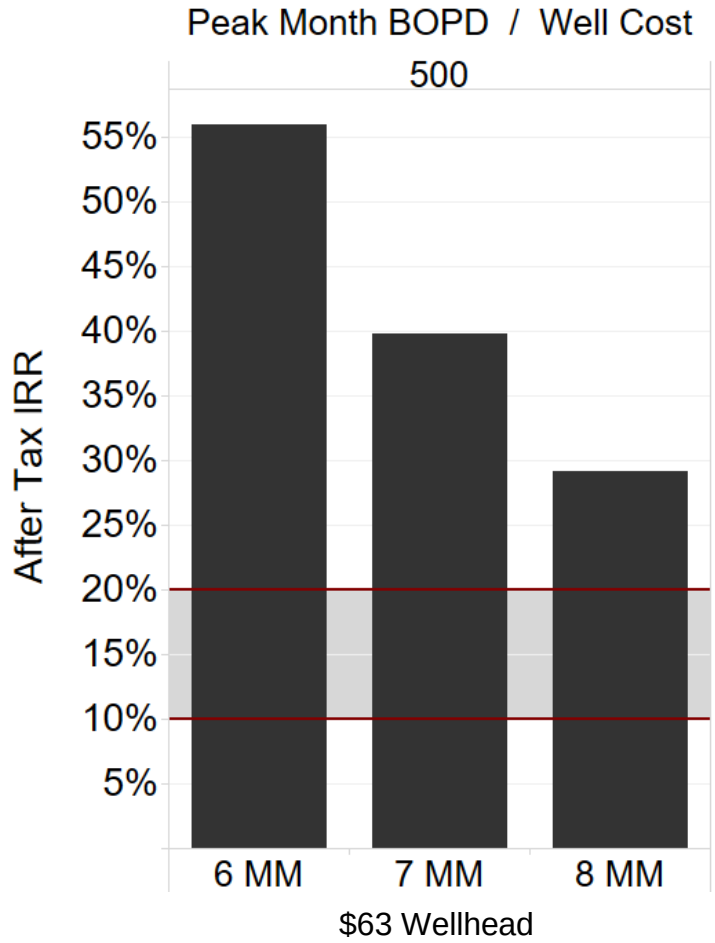
1,895 Wells

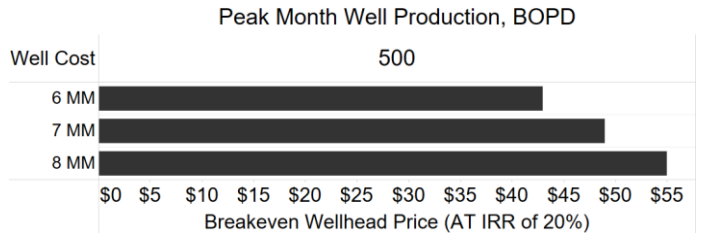


Bakken

4,153 Wells



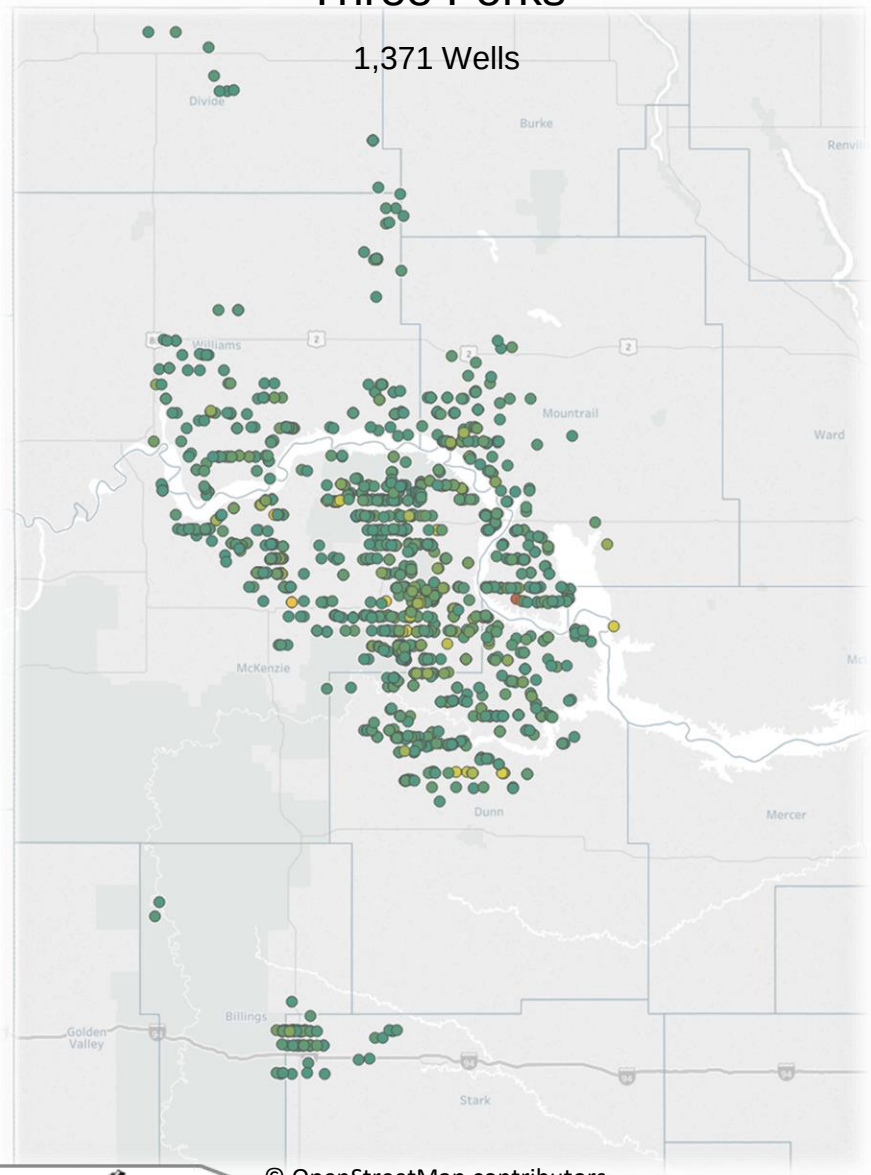




Peak Month Minimum - 600 BOPD

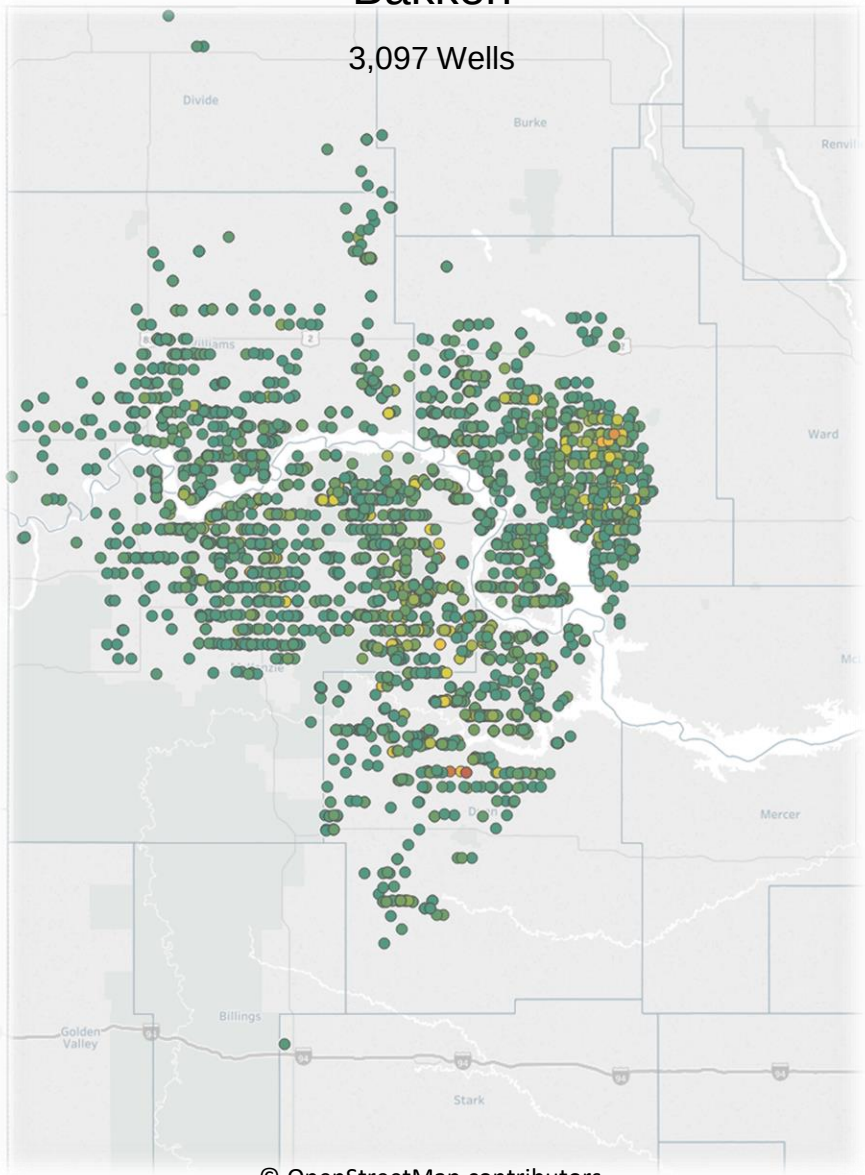
Three Forks

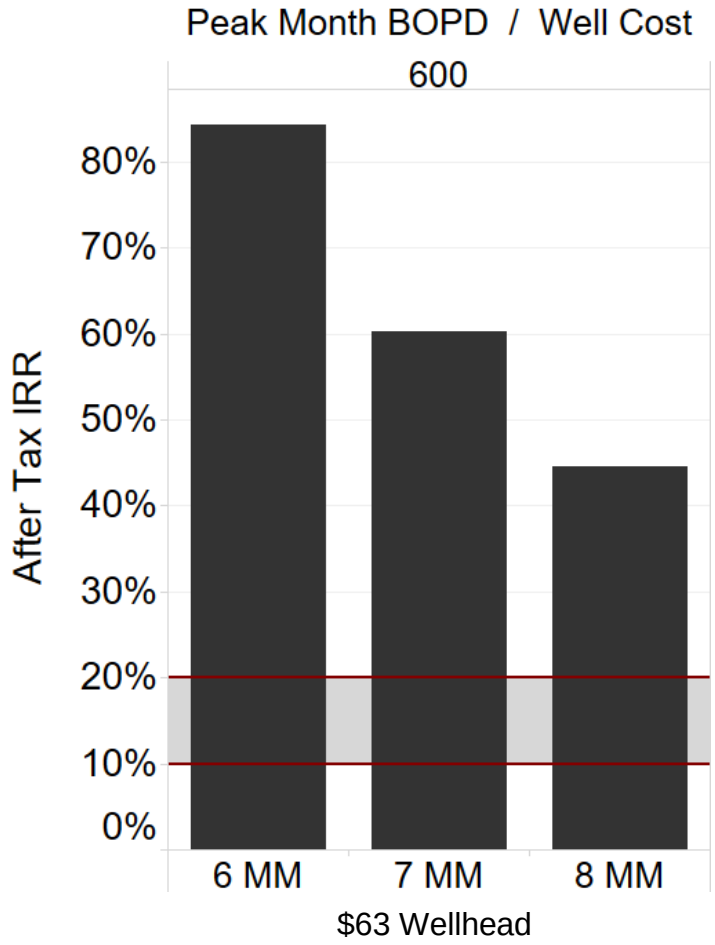
1,371 Wells

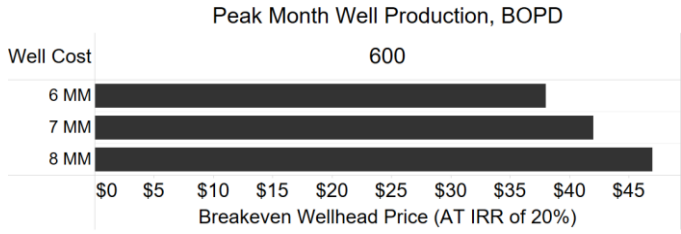


Bakken

3,097 Wells



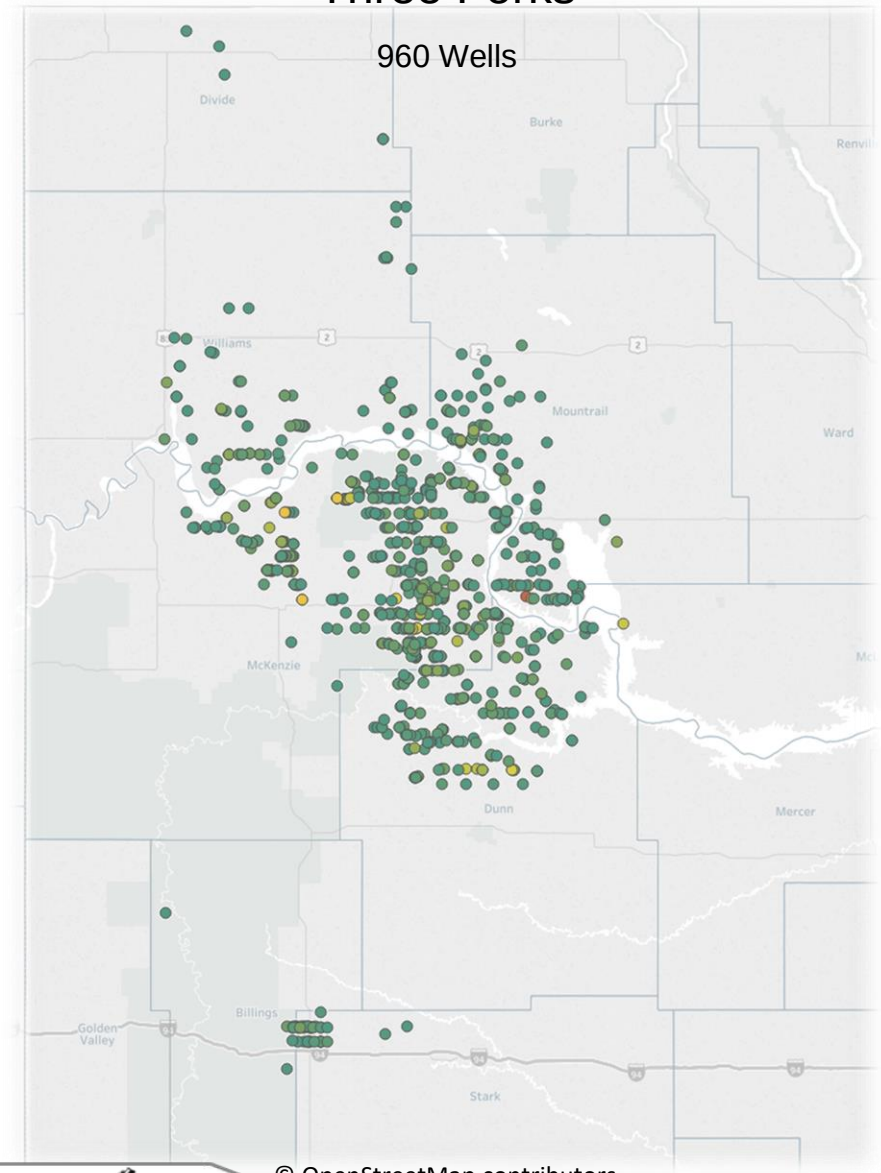




Peak Month Minimum - 700 BOPD

Three Forks

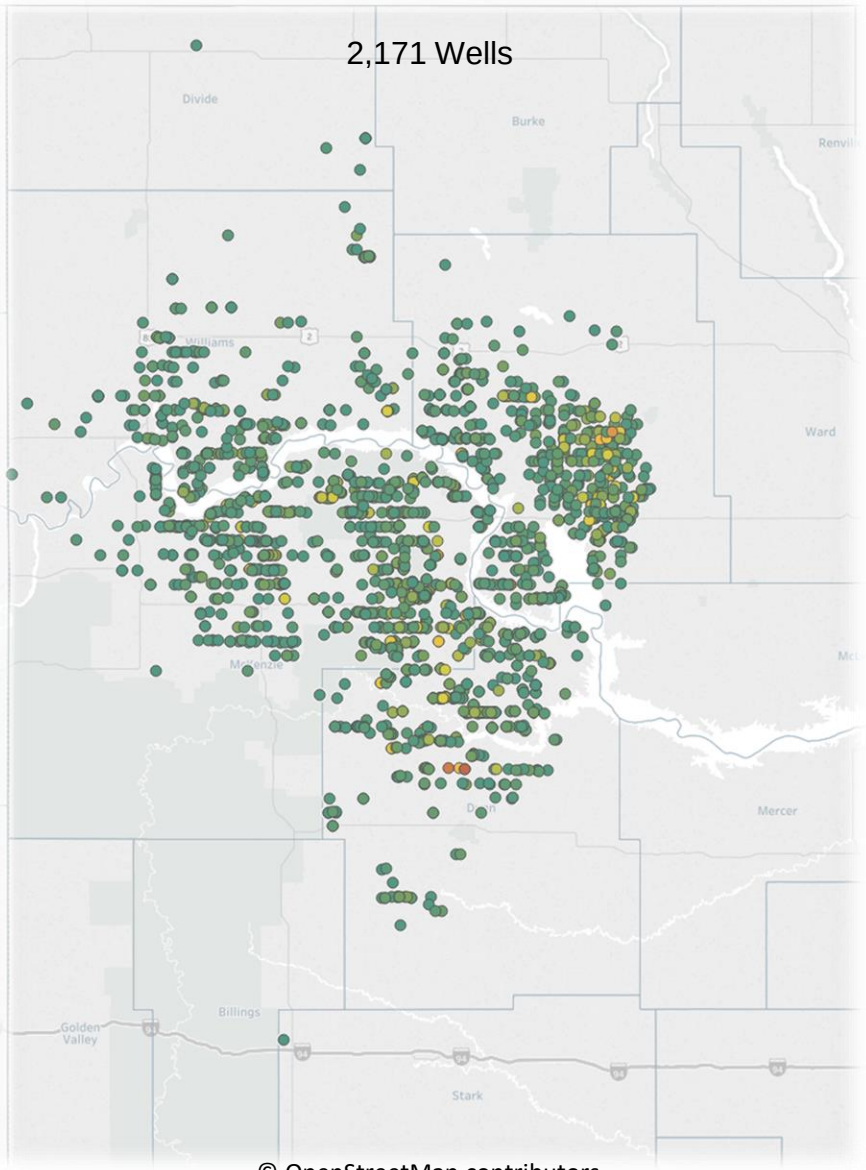
960 Wells



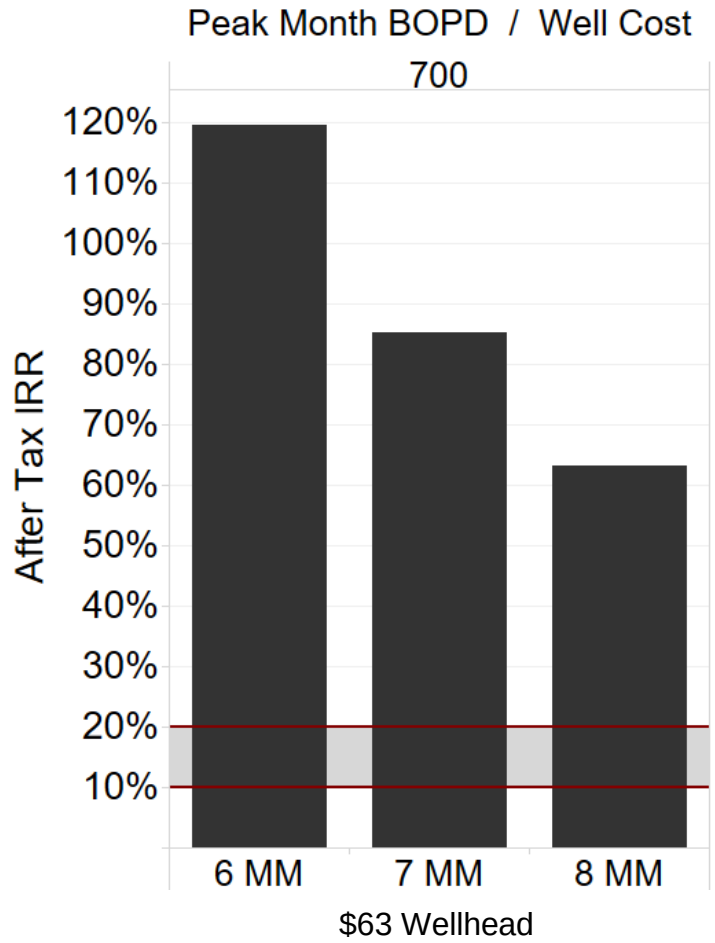
© OpenStreetMap contributors

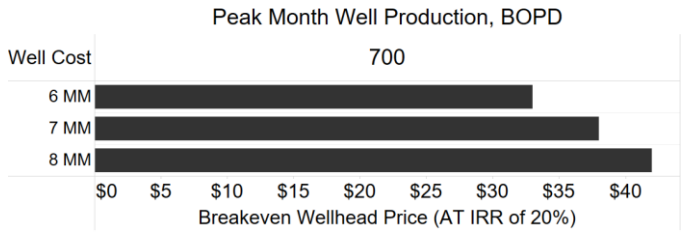
Bakken

2,171 Wells



© OpenStreetMap contributors

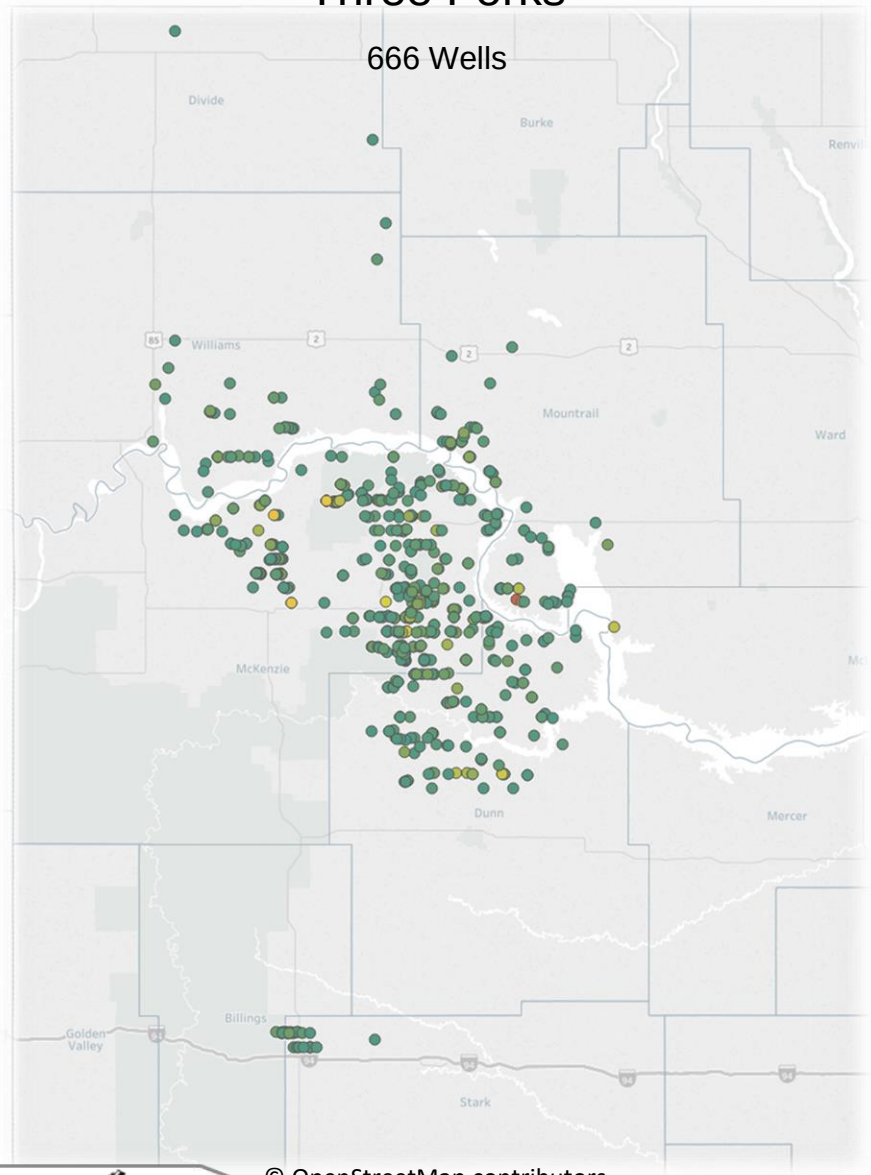




Peak Month Minimum - 800 BOPD

Three Forks

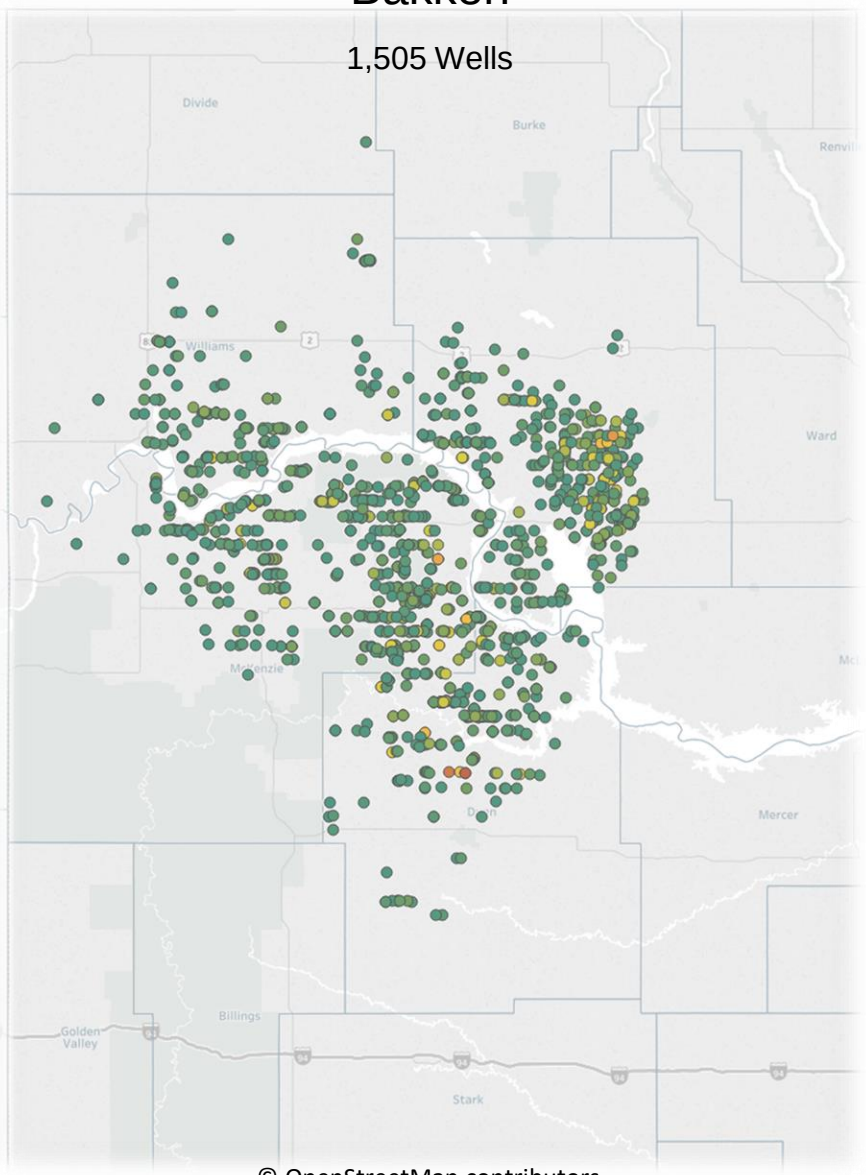
666 Wells



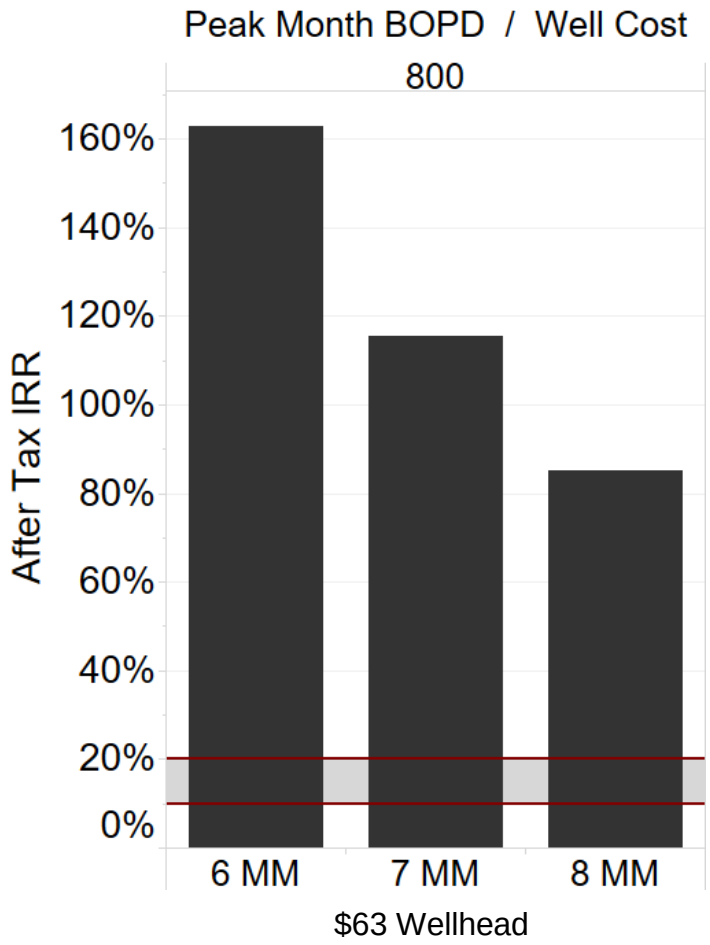
© OpenStreetMap contributors

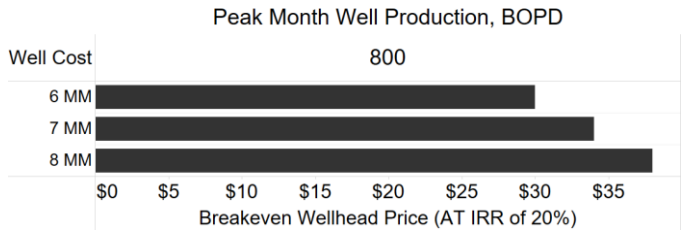
Bakken

1,505 Wells



© OpenStreetMap contributors

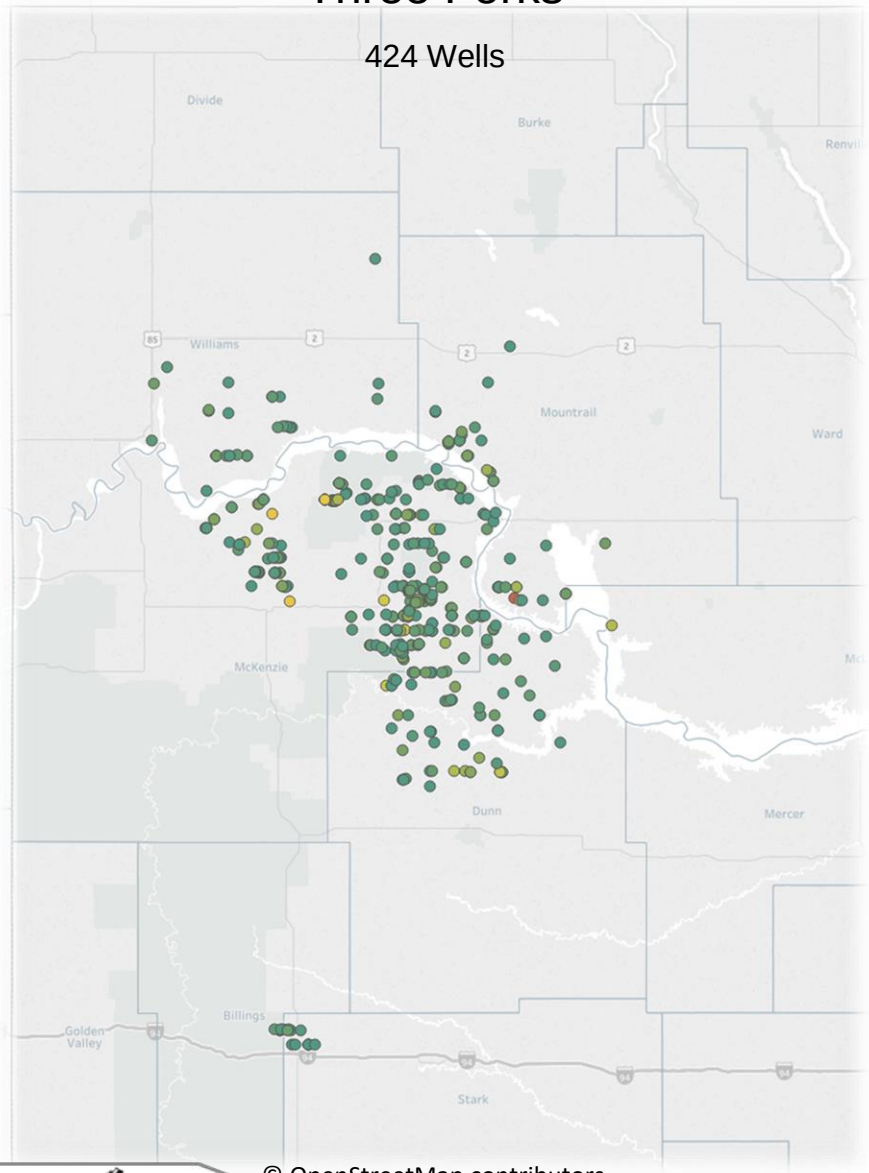




Peak Month Minimum - 900 BOPD

Three Forks

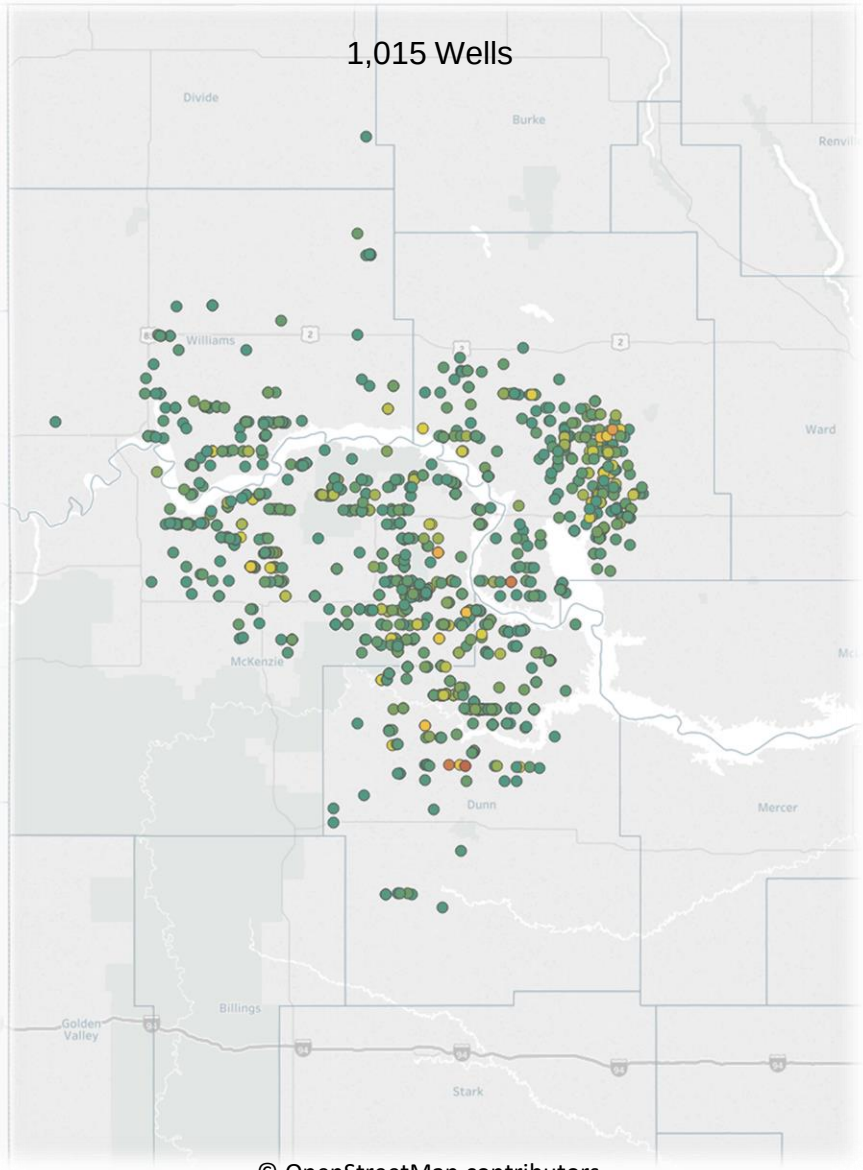
424 Wells



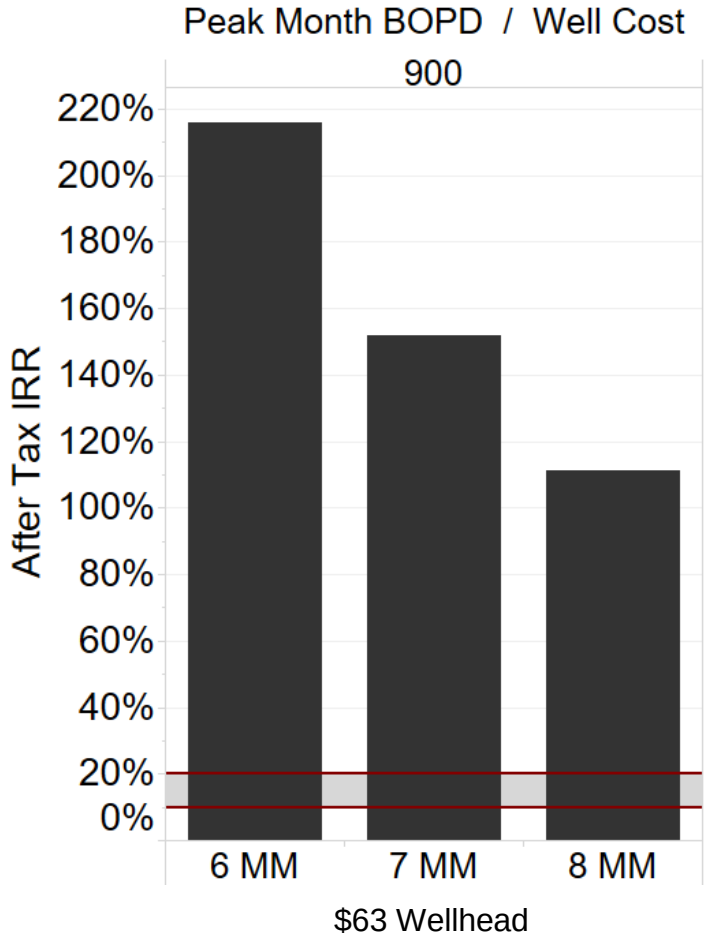
© OpenStreetMap contributors

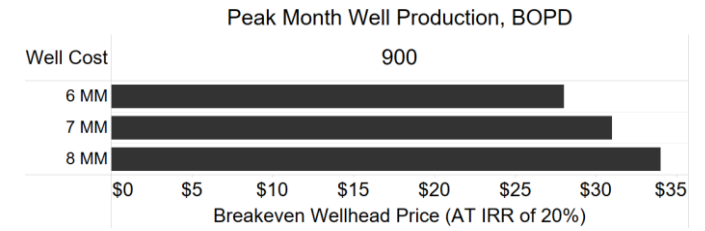
Bakken

1,015 Wells



© OpenStreetMap contributors

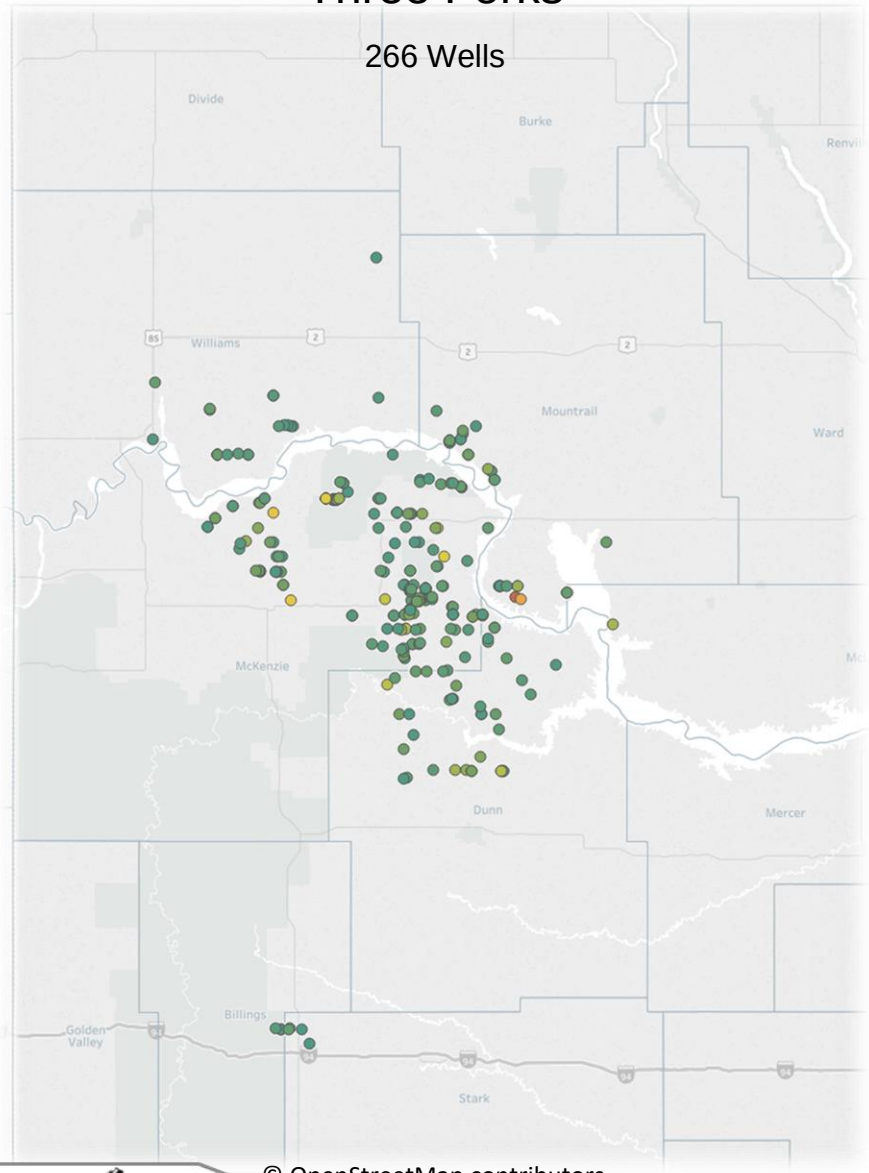




Peak Month Minimum – 1,000 BOPD

Three Forks

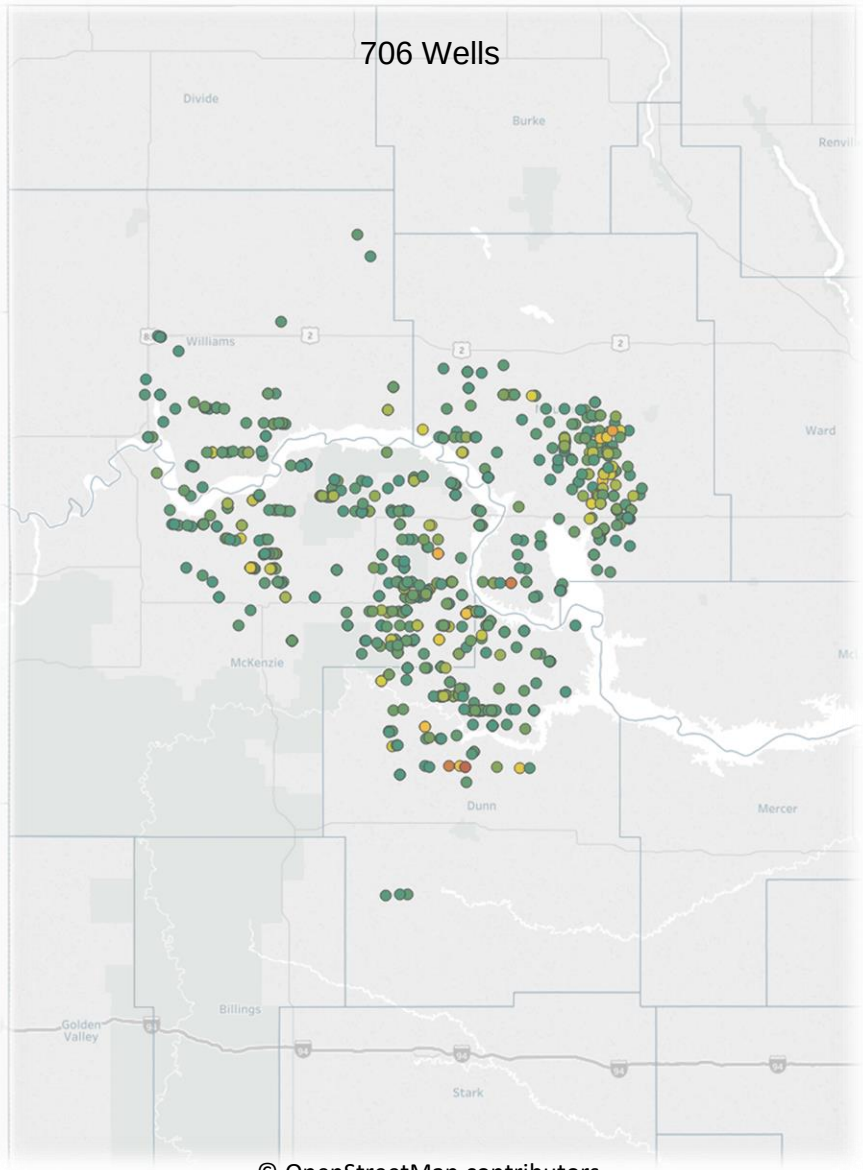
266 Wells



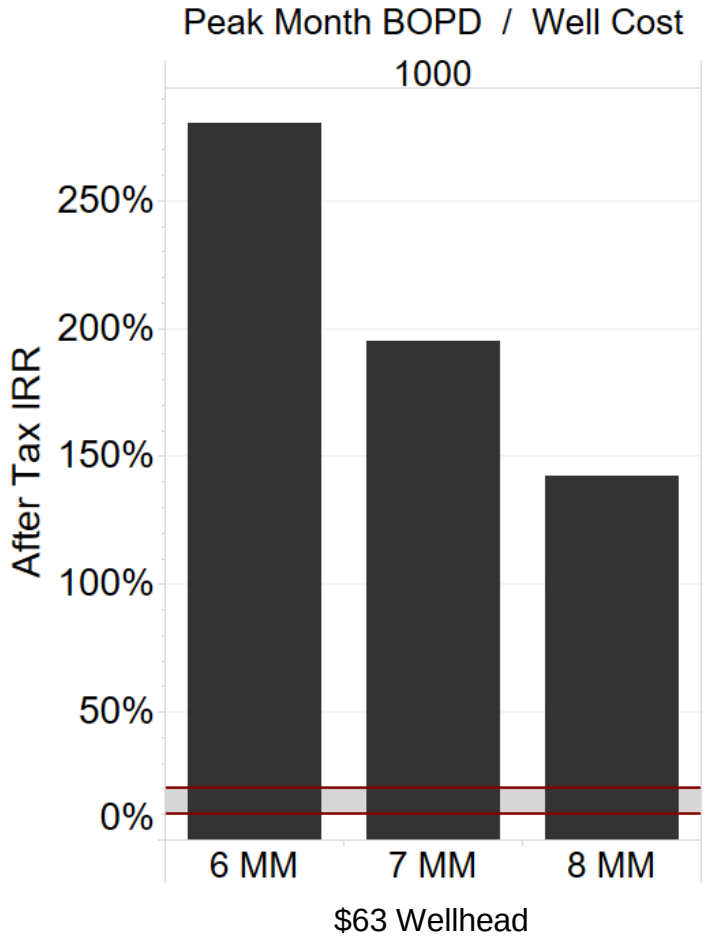
© OpenStreetMap contributors

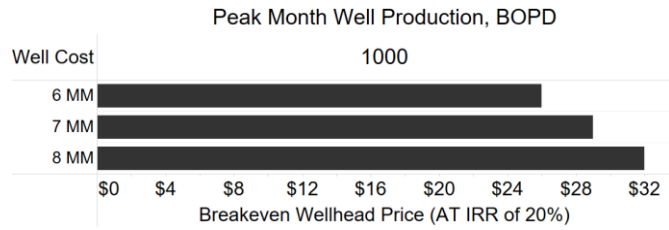
Bakken

706 Wells



© OpenStreetMap contributors

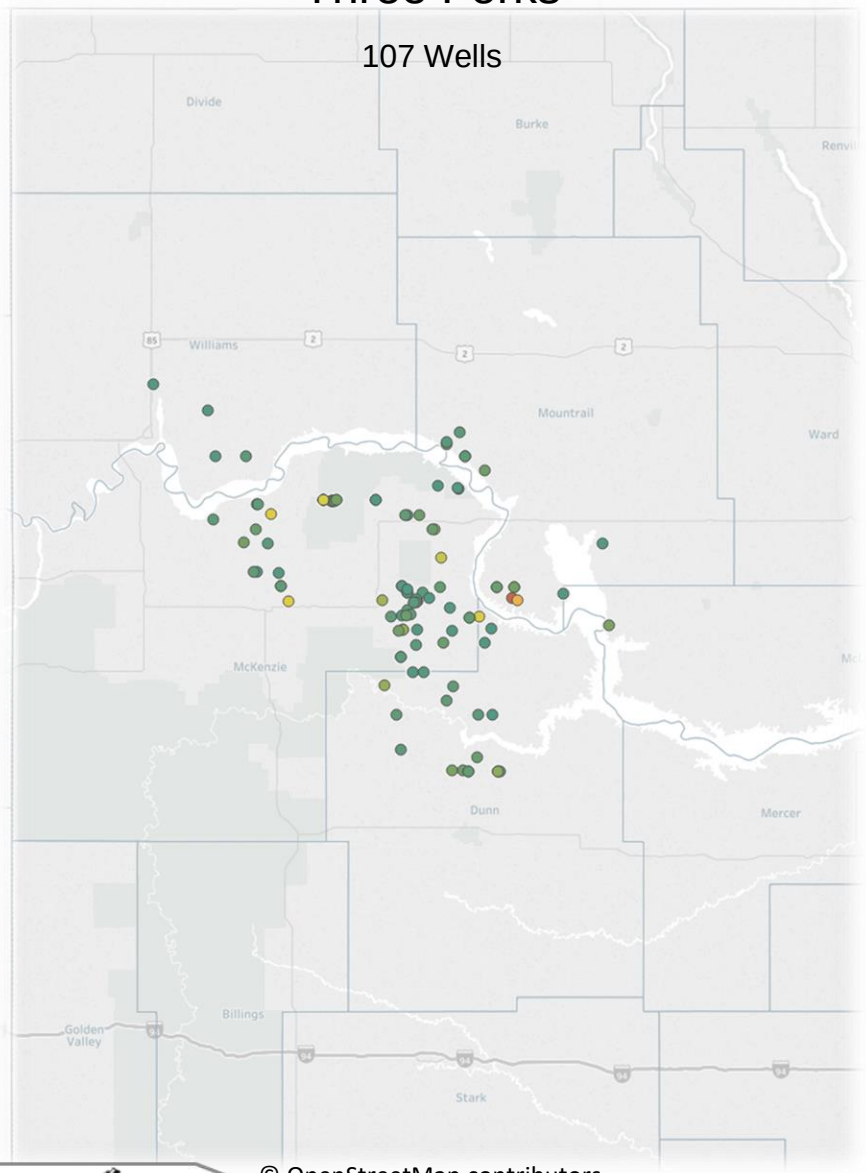




Peak Month Minimum – 1,250 BOPD

Three Forks

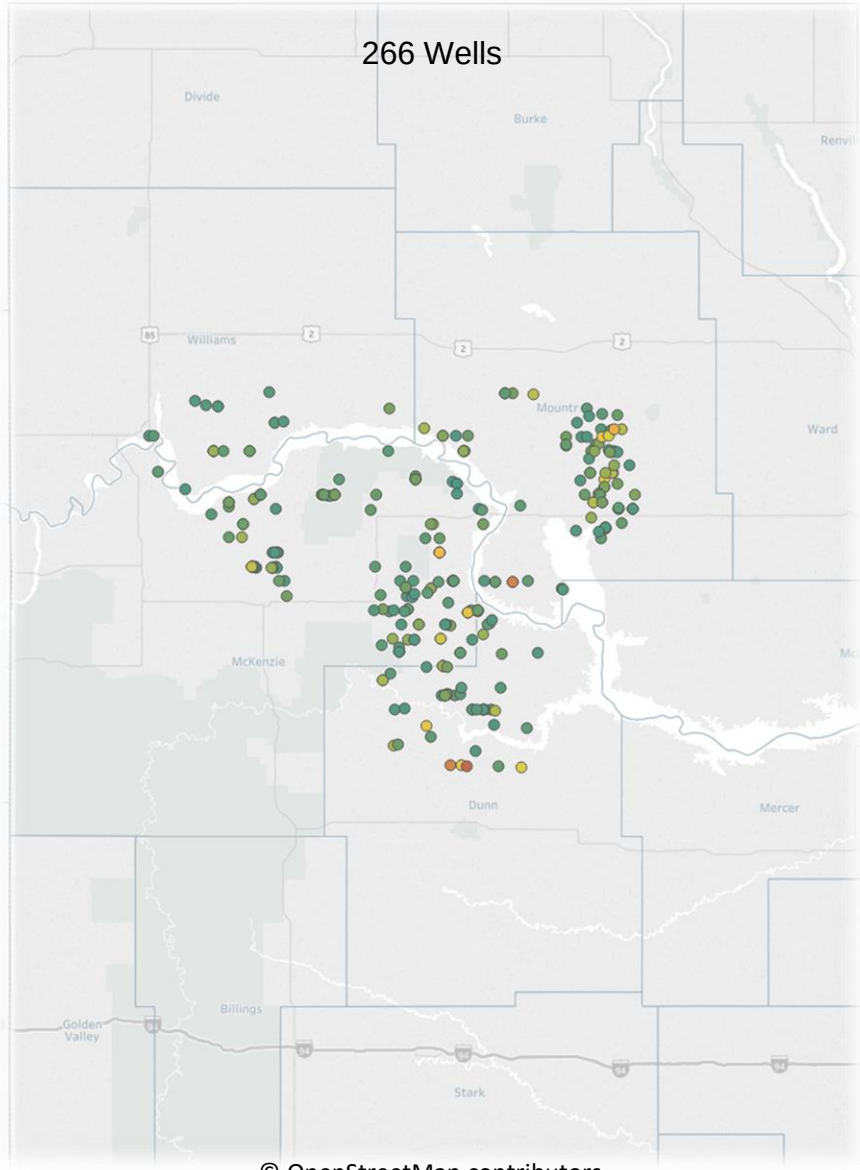
107 Wells



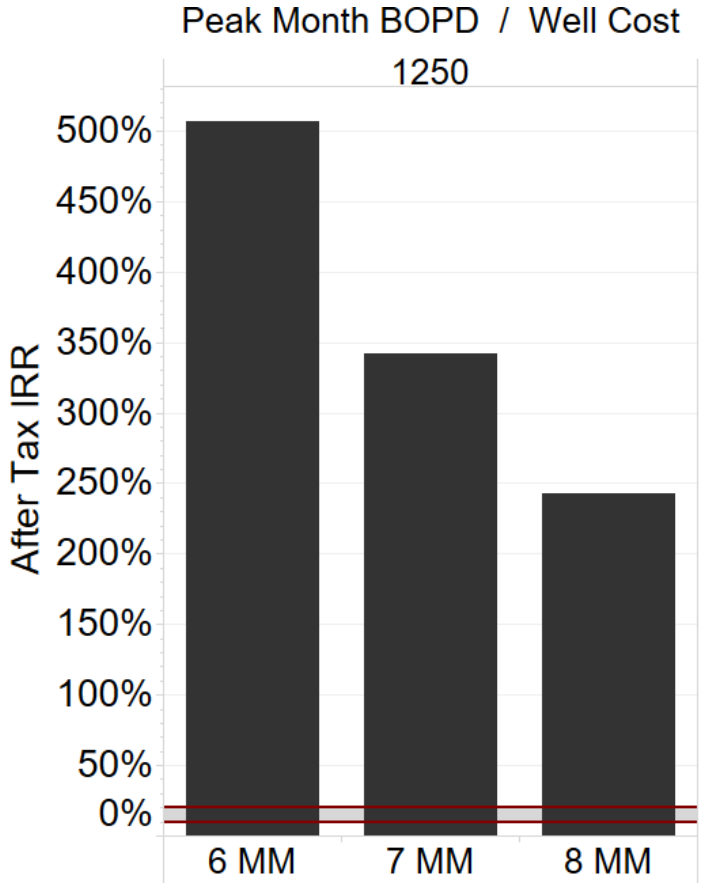
© OpenStreetMap contributors

Bakken

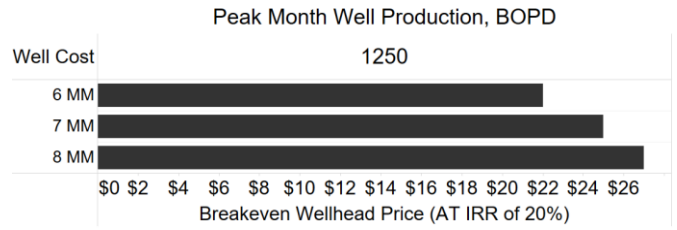
266 Wells



© OpenStreetMap contributors



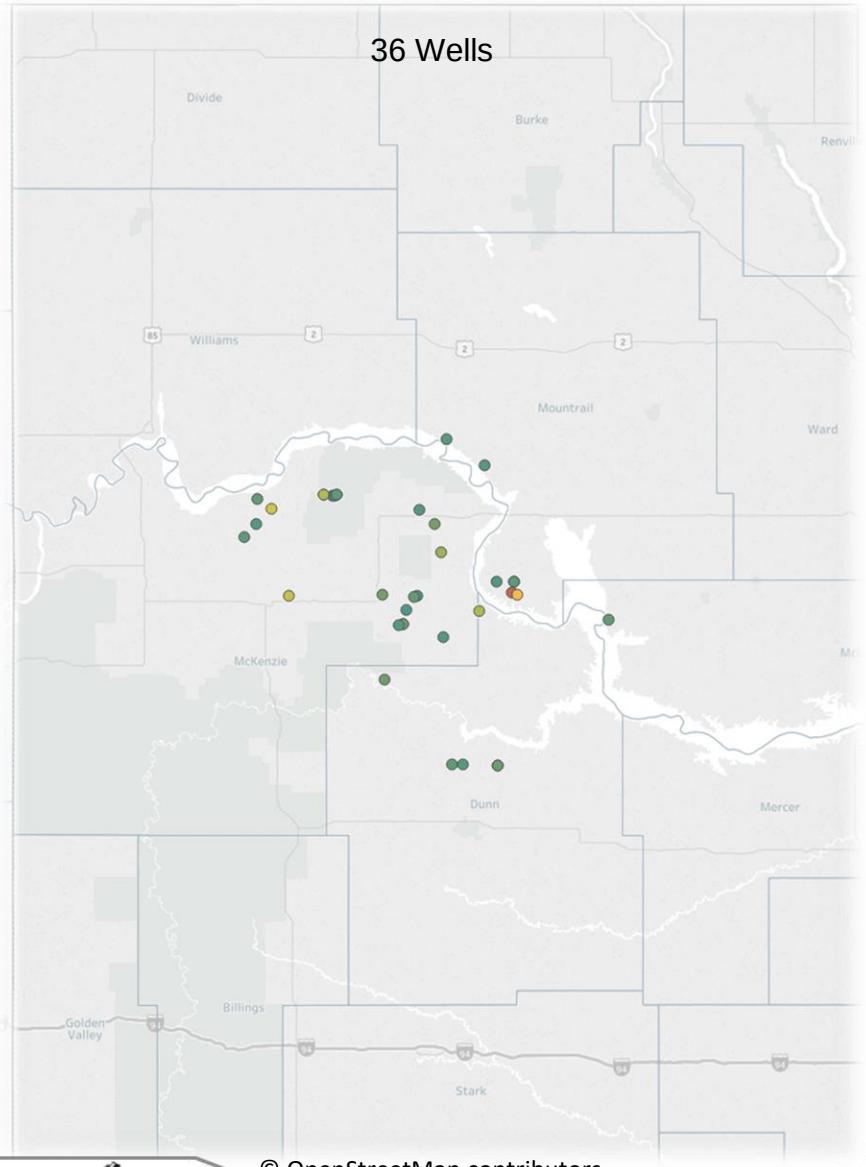
$63 Wellhead



Peak Month Minimum – 1,500 BOPD

Three Forks

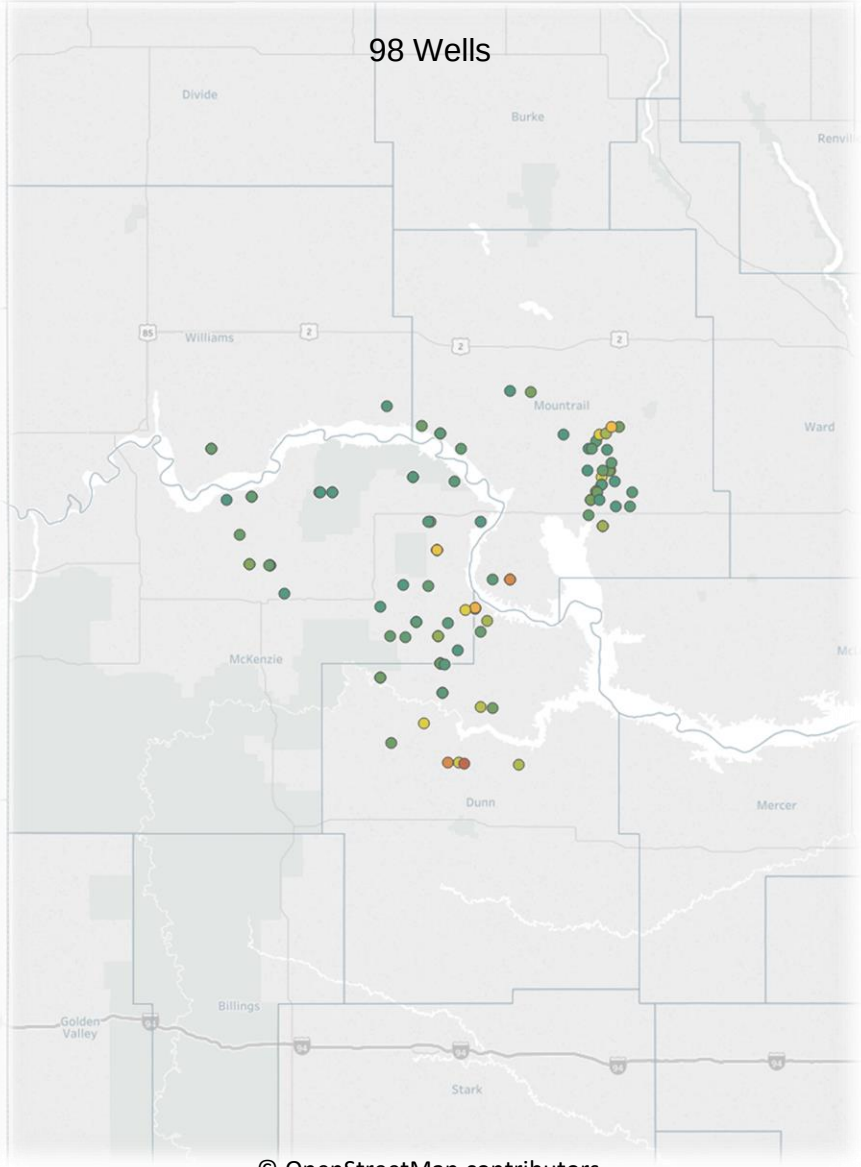
36 Wells



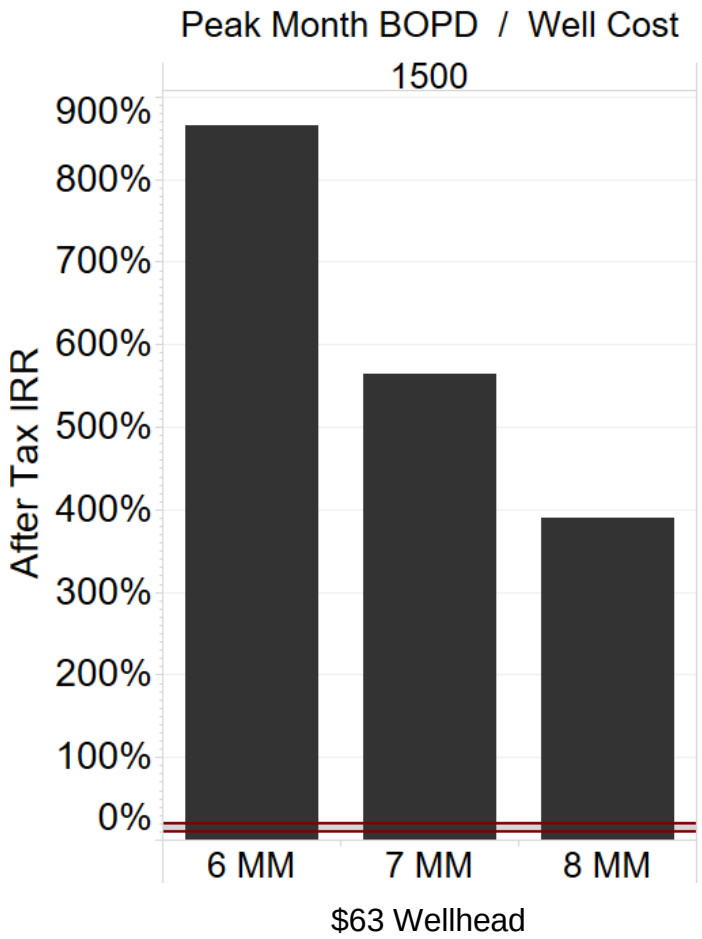
© OpenStreetMap contributors

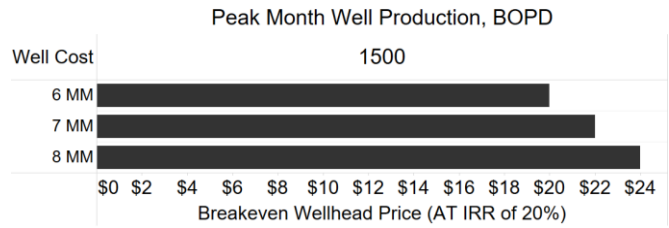
Bakken

98 Wells

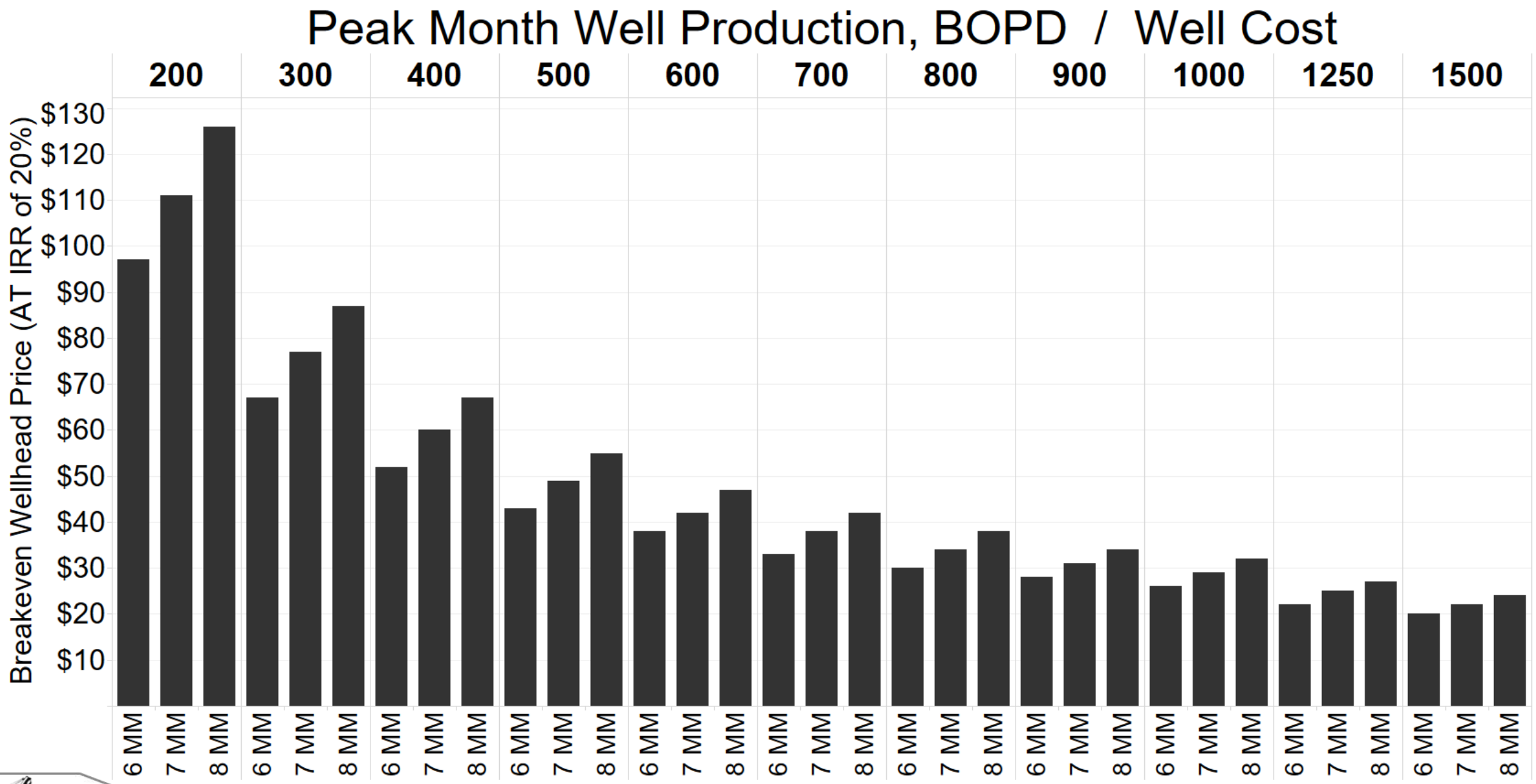


© OpenStreetMap contributors

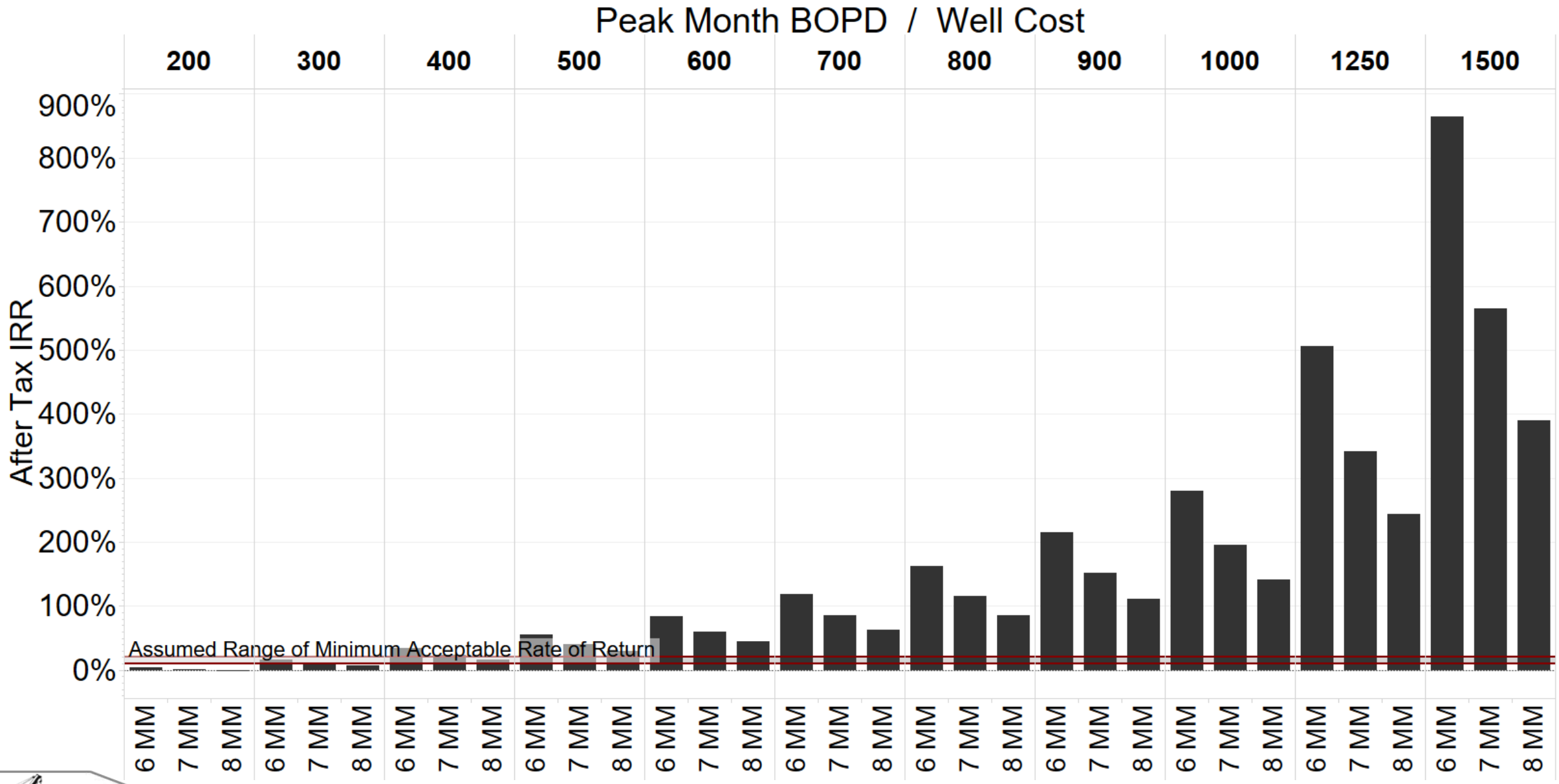




Breakeven Summary



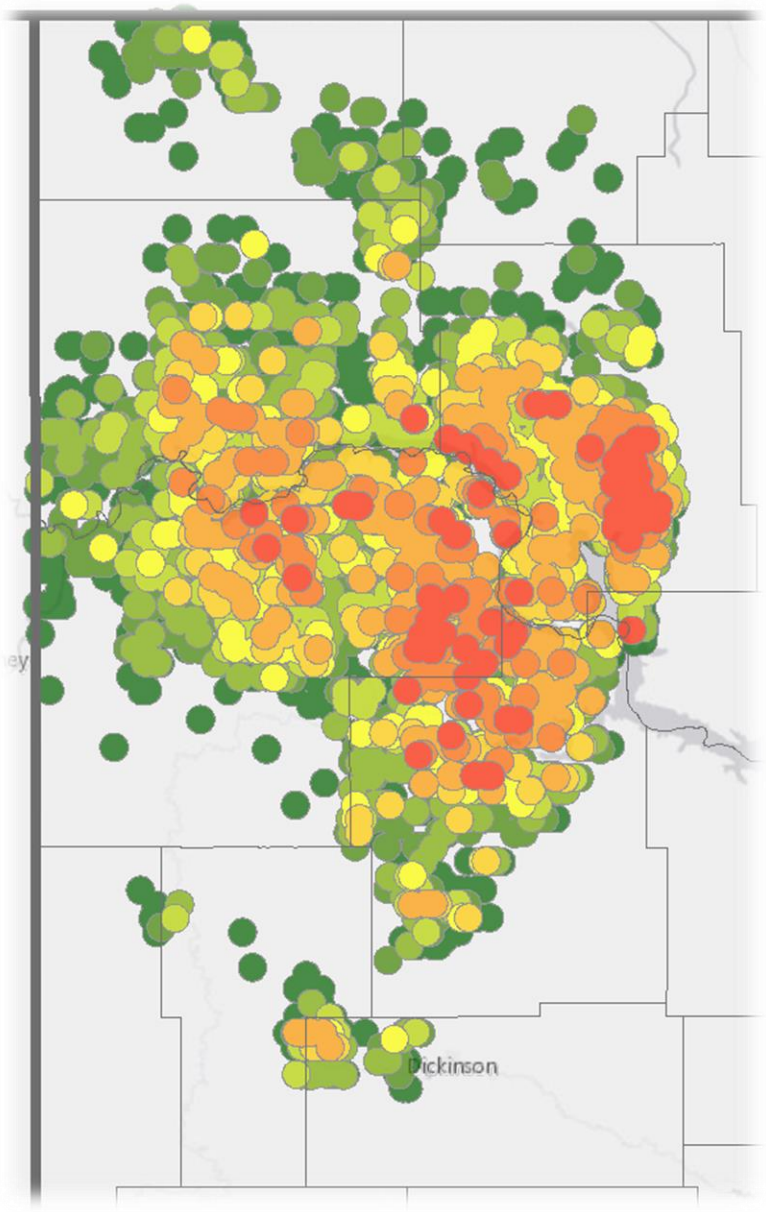
Summary of $63 Wellhead Oil



Bakken Breakeven Analysis Important Considerations

- Breakeven areas were determined by neighboring well performance and are expected to expand as new completion technology is applied in areas outside “the core.”
- Just because an area is considered “economic” **does not mean that it is the <u>most economic</u>** option for the industry participant(s). Competition for capital continues to exist inside and outside the region.

Bakken Breakeven Price Range (20% IRR)



Bakken Breakeven Prices
$6 - $8 Million
Completed Wells Cost

- $58-$73
- $49-$61
- $43-$52
- $39-$48
- $36-$43
- $34-$40
- $32-$38
- $28-$33
- $26-$30

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

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

Websites:

www.pipeline.nd.gov

www.northdakotapipelines.com