

North Dakota CO₂-EOR Financial Analysis

By: Brian Kroshus
Tax Commissioner
January 28, 2025

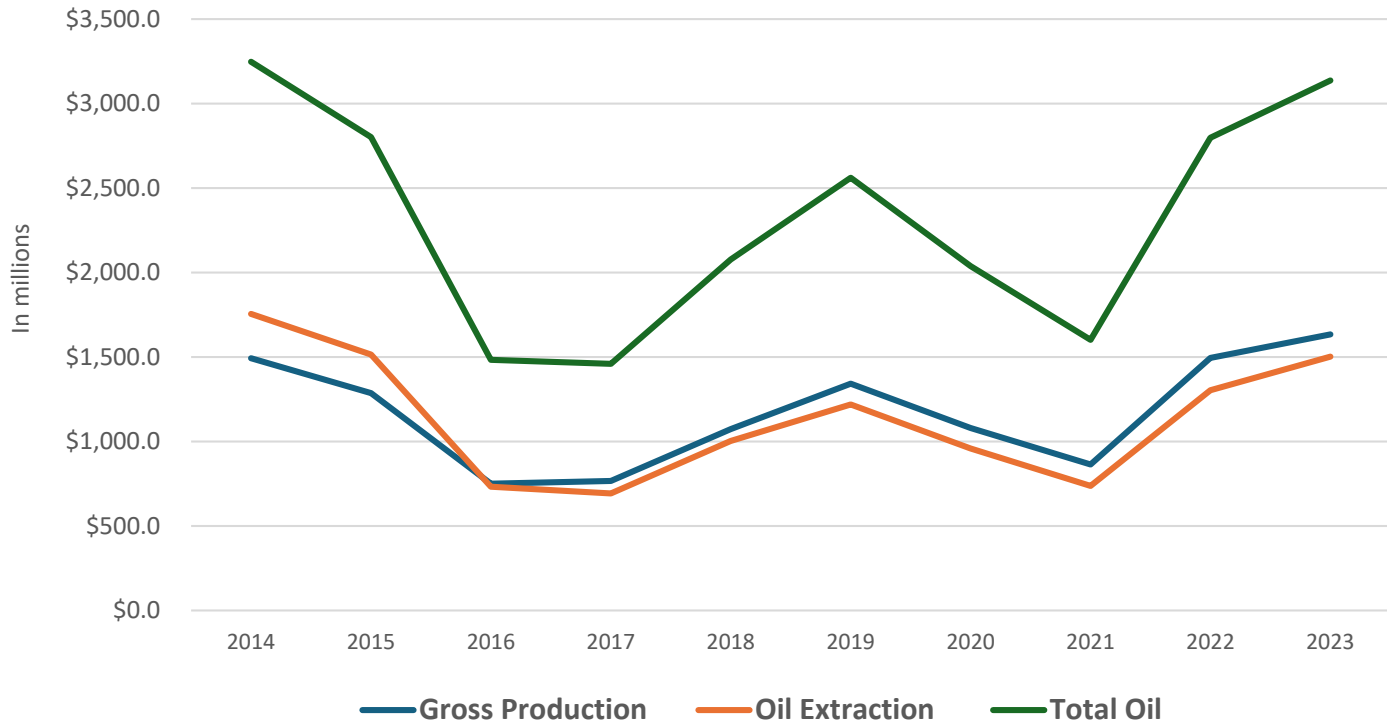
CO₂-EOR in North Dakota

- CO₂-EOR represents a significant opportunity for North Dakota
- The CO₂-EOR landscape is becoming increasingly competitive – being “next to market” is critical
- North Dakota is strategically positioned to implement CO₂-EOR
 - Size and scope of interrelated industry resources
 - Reasonable, fair and consistent regulatory framework
 - Favorable tax policy to incentivize investment
- CO₂-EOR further monetizes existing assets, minimizing surface disturbance
- The U.S. Geological Survey estimates that up to 3.3 billion barrels of undiscovered, technically recoverable oil are in the Bakken Formation
 - This equates to **\$33 billion dollars** in additional oil production and extraction tax revenues, alone

Oil and gas production helps drive the North Dakota economy

- Oil production and extraction tax collections have generated more than **\$23 billion in revenue** to the state over the past decade
- Beyond oil production and extraction tax, billions more in both direct and indirect revenue collections from:
 - Sales and use tax
 - Corporate income tax
 - Individual income tax
- Oil-driven, legacy fund contributions and associated earnings, support important state priorities including providing property tax relief to citizens
- Oil and gas activity plays an integral role in directly supporting communities and main street businesses in western North Dakota
- North Dakota oil production plays a vital role in funding state priorities

ND Oil Revenue Collections – Past Decade

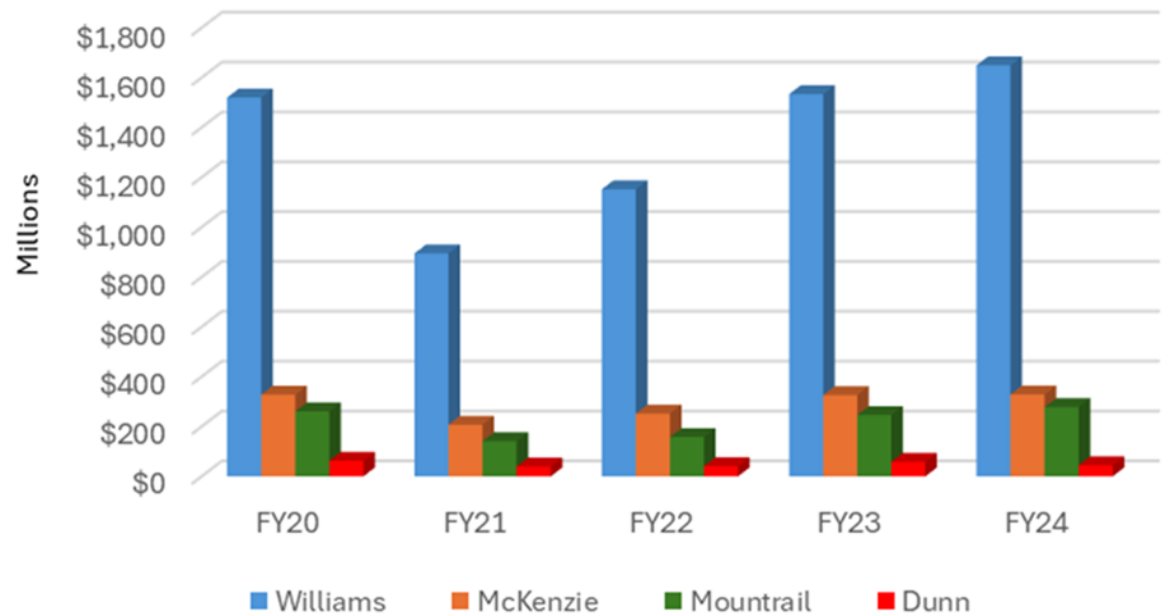


Rev. per 100K bbls.



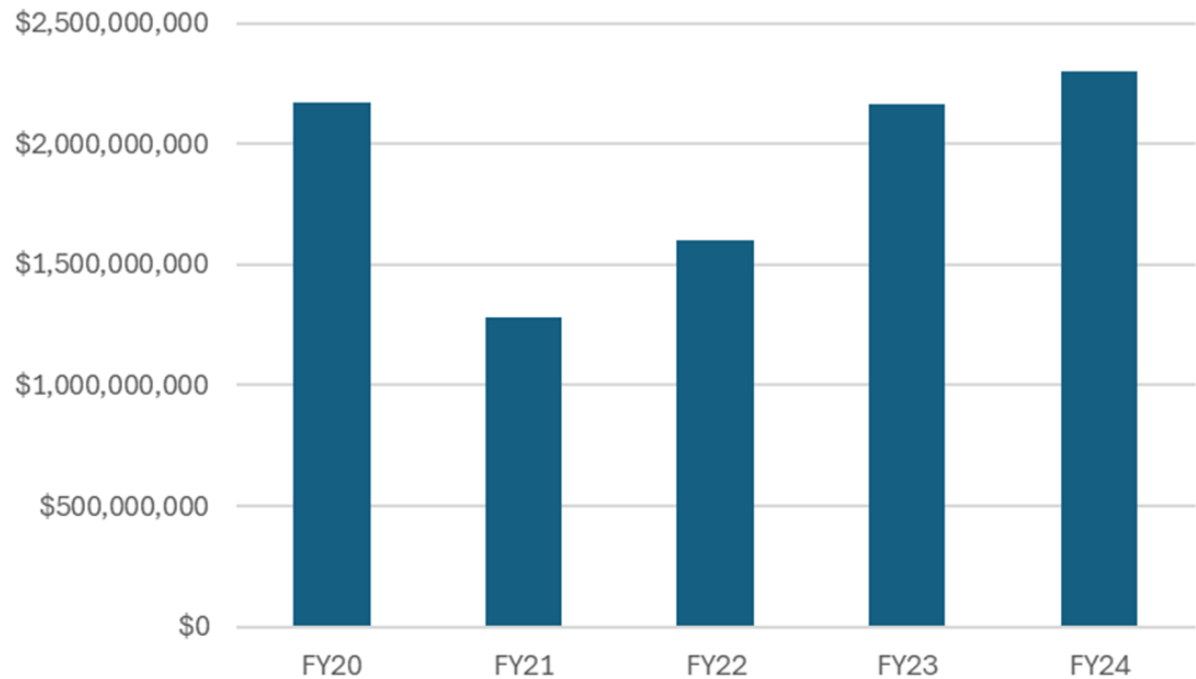
ND Oil Producing Counties “Big Four”

Taxable Sales and Purchases - ND Top Four Oil Counties

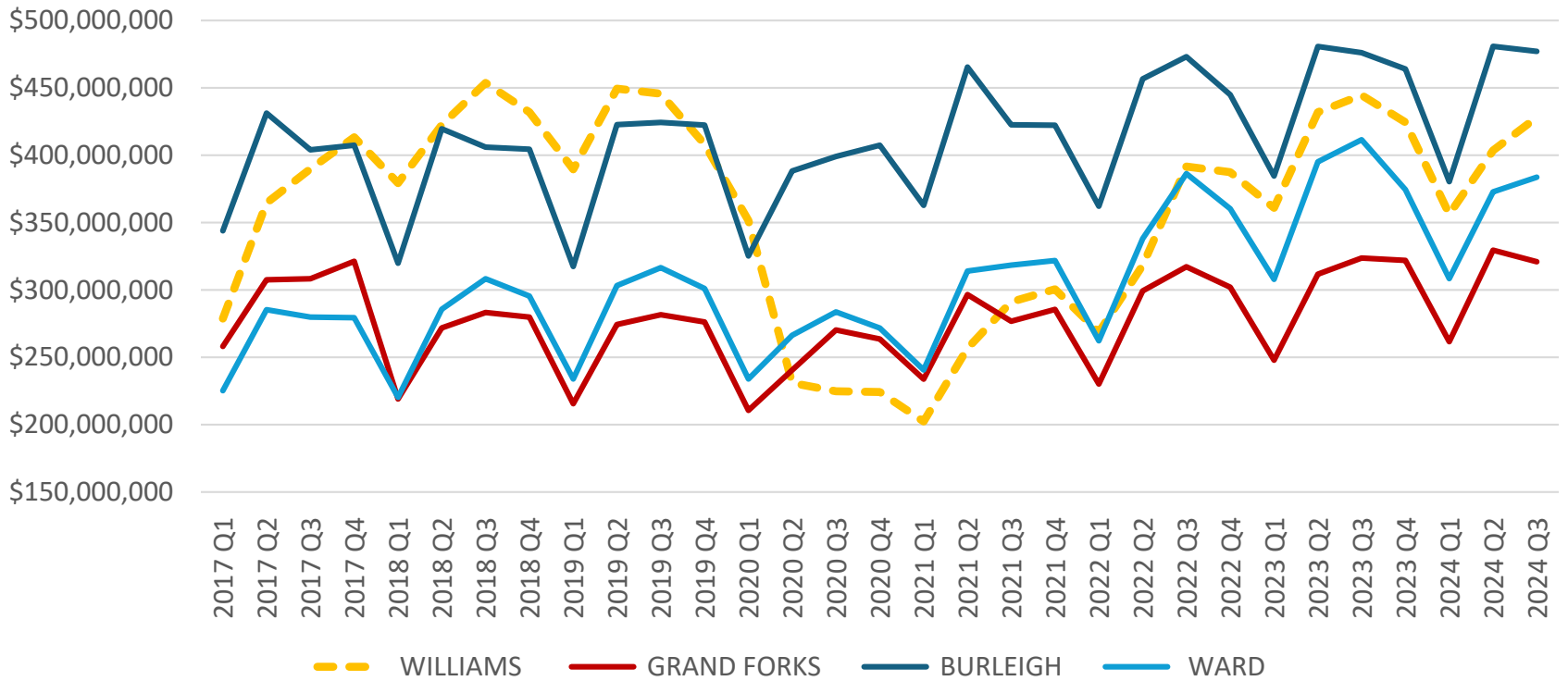


ND Oil Producing Counties “Big Four”

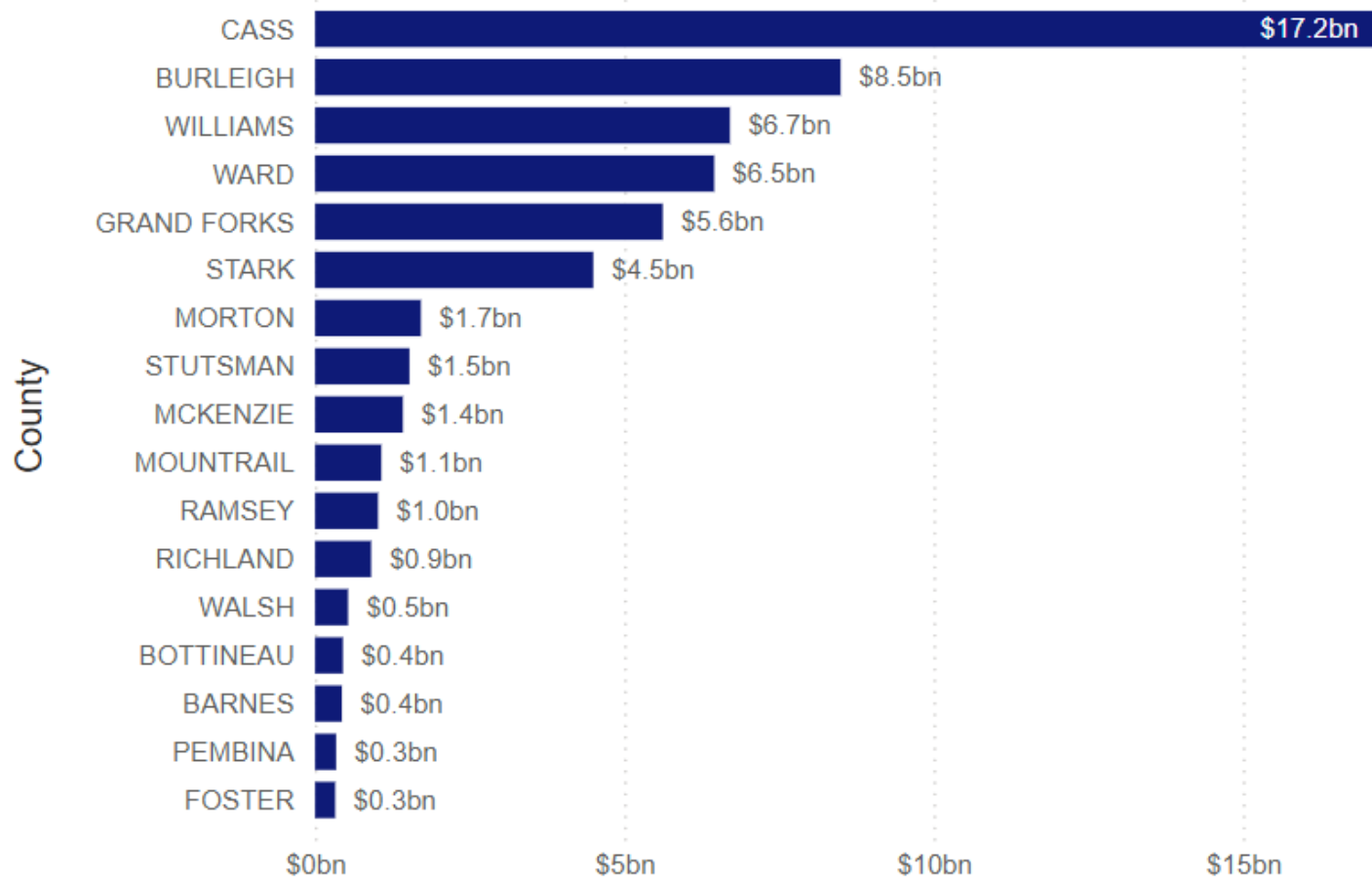
Total Taxable Sales and Purchases - ND Top Four Oil Counties



Taxable Sales and Purchases by ND County



Taxable Sales and Purchases by ND County¹



¹Taxable Sales and Purchases – past five years, 2020-2024 (Q4, 2019 through Q3, 2024)

Single Well CO₂-EOR– 5-yr. extraction tax exempt¹

		Total Annual Production bbls.	Legacy Production bbls.	Incremental Production bbls.	Ave. price Bakken Crude	Incremental Production Tax Revenue	Incremental Extraction Tax Revenue	Total Incremental Revenue
2028	yr 1	71,781	9,211	62,570	\$80.00	\$250,280	\$0	\$250,280
2029	yr 2	45,192	7,375	37,817	\$80.00	\$151,268	\$0	\$151,268
2030	yr 3	33,222	5,905	27,317	\$80.00	\$109,268	\$0	\$109,268
2031	yr 4	20,043	4,728	15,315	\$80.00	\$61,260	\$0	\$61,260
2032	yr 5	12,911	3,785	9,126	\$80.00	\$36,504	\$0	\$36,504
2033	yr 6	8,719	3,030	5,689	\$80.00	\$22,756	\$22,756	\$45,512
2034	yr 7	6,016	2,426	3,590	\$80.00	\$14,360	\$14,360	\$28,720
2035	yr 8	4,148	1,943	2,205	\$80.00	\$8,820	\$8,820	\$17,640
2036	yr 9	3,010	1,555	1,455	\$80.00	\$5,820	\$5,820	\$11,640
2037	yr 10	1,732	1,392	340	\$80.00	\$1,360	\$1,360	\$2,720
	Total	206,774	41,350	165,424		\$661,696	\$53,116	\$714,812

¹Based on 10 yr. average price of \$80.00

Single Well Revenue Model	Incremental Production Tax Revenue	Incremental Extraction Tax Revenue	Total - Single Well
EOR 10-year model - EIA Pricing	\$502,149	\$0	\$502,149
EOR 10-year model - \$80.00 WTI	\$661,696	\$0	\$661,696
EOR 5-year model - EIA Pricing	\$502,149	\$46,248	\$548,396
EOR 5-year model - \$80.00 WTI	\$661,696	\$53,116	\$714,812

CO₂-EOR Incremental Revenue Models North Dakota

**As indicated, if every certified, low-producing or stripper well currently identified in North Dakota is targeted for CO₂-EOR, the economic benefit is significantly higher in comparison to the low estimate, even with low-producing wells in the state being exempted from extraction tax for the life of the well under current statute. Conversely, the opportunity cost or potential revenue loss absent CO₂-EOR as demonstrated, equates to billions of dollars in unrealized collections.*

Single Well Revenue Model	Total - 5,744 Wells	Total - 12,515 Wells* (*Stripper Well Count - 7-24)
EOR 10-year model - EIA Pricing	\$2,884,341,547	\$6,284,389,704
EOR 10-year model - \$80.00 WTI	\$3,800,781,824	\$8,281,125,440
EOR 5-year model - EIA Pricing	\$3,149,988,103	\$6,863,179,163
EOR 5-year model - \$80.00 WTI	\$4,105,880,128	\$8,945,872,180

CO₂-EOR Incremental Revenue Models North Dakota

**As indicated, if every certified, low-producing or stripper well currently identified in North Dakota is targeted for CO₂-EOR, the economic benefit is significantly higher in comparison to the low estimate, even with low-producing wells in the state being exempted from extraction tax for the life of the well under current statute. Conversely, the opportunity cost or potential revenue loss absent CO₂-EOR as demonstrated, equates to billions of dollars in unrealized collections.*

CO₂-EOR Production Cost Model (single well)

Expense/Savings Centers	Cost per bbl.	Tax savings/bbl.	Tax savings/tonne CO ₂	Net Cost/bbl.
CO ₂ Transportation ^{1,2}	\$5.00	\$0	\$0	\$5.00
CO ₂ price/bbl. (\$30/t = 3 bbls.) ²	\$10.00	\$0.50	\$1.50	\$9.50
Royalty payment est. (19% of \$80/bbl. Oil)	\$15.20	\$0	\$0	\$15.20
Well and surface (taxable) ³	\$17.50	\$0.88	\$2.63	\$16.63
Well and surface (non-taxable) ⁴	\$7.50	\$0	\$0	\$7.50
Extraction tax savings - \$80/bbl.*5%	\$0	\$4.00	\$12.00	(\$4.00)
Totals	\$55.20	\$5.38	\$16.13	\$49.83

¹Primary distribution delivery cost est. = \$15/tonne

²Per bbl. based on \$30/tonne CO₂ and 3:1 bbl. oil/tonne CO₂

³Includes well, distribution infrastructure & production costs

⁴Labor cost

CO₂-EOR Challenges and Opportunities

- 45Q incentive gap currently exists between EOR application and sequestration
 - EOR - \$60 per metric tonne
 - Sequestration - \$85 per metric tonne
- Closing the incentive gap is critical
- Competitive landscape – other oil producing states are aggressively pursuing mechanisms to incentivize CO₂-EOR within their borders
- Creating new efficiencies through advancements in technology represents a significant return on investment for North Dakota
- Shale plays like the Bakken experience rapid depletion rates
 - CO₂-EOR production revitalizes existing assets (wells) with minimal surface disturbance, within the same footprint
 - Creates greater, long-term assurances for oil producers which in turn, creates greater long-term financial certainty for North Dakota

Final Thoughts

- CO₂-EOR signifies the next chapter in North Dakota energy production
- Opportunity to accentuate existing and create new energy partnerships - increased value proposition
- CO₂-EOR and the race for capital will continue to intensify in what can best be described as a highly competitive landscape
- The ability to attract capital will be influenced by a multitude of factors, including advancements in technology - “cracking the code”
- Technology – tremendous progress to date, but more resources are needed to support continued advancement
- North Dakota is recognized as a global leader in shale oil production and can be in CO₂-EOR, as well

In closing, CO₂-EOR, represents a significant and exciting economic opportunity current and future generations can benefit from.