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Mandating Decline

Comment on U.S. Bureau of Land Management's
Proposed Rule on Fluid Mineral Leases

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Introduction

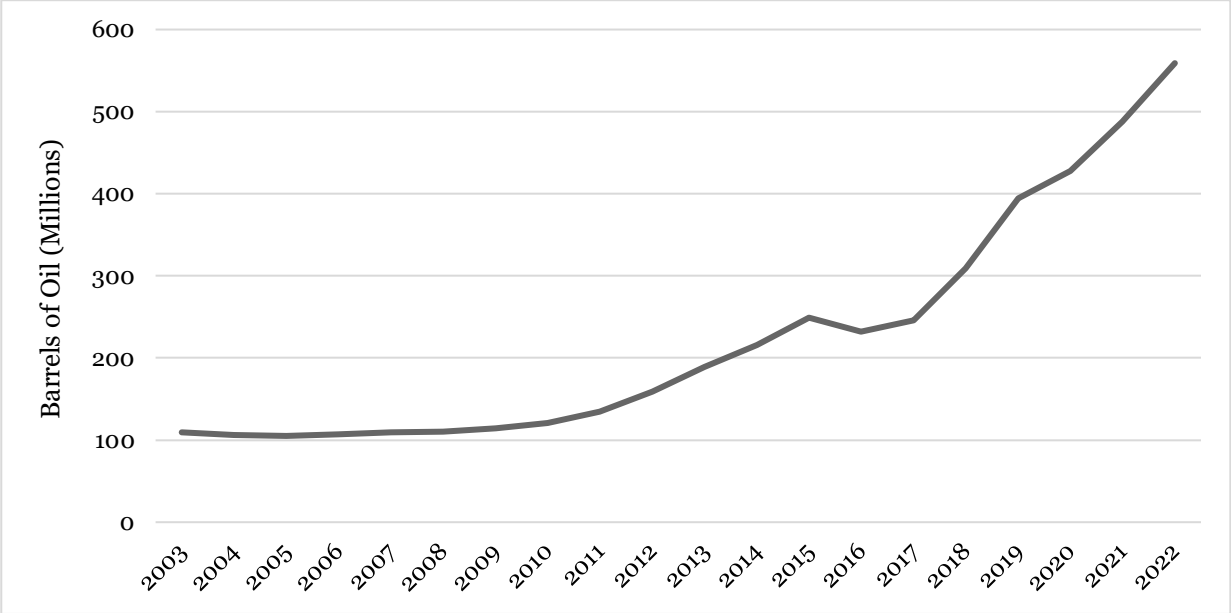
A Bureau of Land Management (BLM) decision to increase fluid mineral royalty rates will deter drillers from spudding, refracturing, and refurbishing wells on federal lands. Such deterrence will raise energy prices and risk U.S. energy security. To mitigate the impact of the Inflation Reduction Act's (IRA) mandatory royalty rate increase on fuel and electricity prices, the BLM should refuse to comply with the IRA's mandate or adopt a permanent royalty relief rule for onshore production.

The IRA directed the BLM to change the federal leasing process for onshore oil and gas acreage, which will deter drilling on federal lands by raising startup costs and lengthening payback periods for drillers. The IRA's most egregious change raises the minimum federal royalty on oil and gas production from 12.5 to 16.67 percent. The IRA also required the agency to raise royalty rates by four percent when operators renew their leases, hiking the minimum onshore rate to 20 percent after the first 10 years of drilling. Higher royalty rates will deter drillers from taking the financial risk to develop new and refurbish old oil acreage. Without new acreage drilled, natural well depletion will exhaust oil and gas reserves before they can be replaced, exacerbating a looming energy security crisis.

Raising oil and gas royalty rates will directly reduce well operators' revenue margins, risking well closures and deliberate attempts to devalue oil fields. More concerning, higher royalty rates affect long term project economics, reducing the expected revenue of long-term oil projects and making them less financially feasible. Similarly, higher rates will deter small operators from investing in expensive enhanced oil recovery (EOR) methods that can extend the productive life of a well. The BLM can mitigate these potentially devastating harms by extending royalty relief to all American energy producers working onshore wells on federal lands.

Reversing Positive Trends

Figure 1: Annual Federal Onshore Oil Production[1]



In 2010, onshore oil production on federal lands accounted for just six percent of total U.S. oil production.[2] But the advent of the shale revolution doubled federal onshore oil production between 2015 and 2021. In 2022, federal onshore oil production hit an annual record high of more than 550 million barrels (mmbl) of oil (Figure 1),[3] which account for 11 percent of America's total crude oil production.[4] American energy producers could only achieve this production increase because of the Trump administration's generous leasing policy. Between 2017 and 2020, BLM auctioned 4,975 leases, most of which were in highly productive shale basins, granting drilling rights to develop more than 6.4 million acres.

The record onshore drilling failed to double total royalty revenue for two reasons. First, the increase in onshore production offset declining production from older offshore oil wells. The offshore wells were not replaced due to the high initial production costs, long payback periods, regulatory burdens, permitting delays, and higher royalty rates than onshore oil and gas production. Second, the shale revolution and other geopolitical events significantly reduced oil prices and kept them low for nearly a decade. Because royalty income is tied to crude oil prices, the government's revenue depends on crude's volatile spot price. When the price of West Texas Intermediate, the benchmark grade of crude oil, fell between 2014 and 2019, increased production could not offset the decline in royalty revenue. (Figure 2.)

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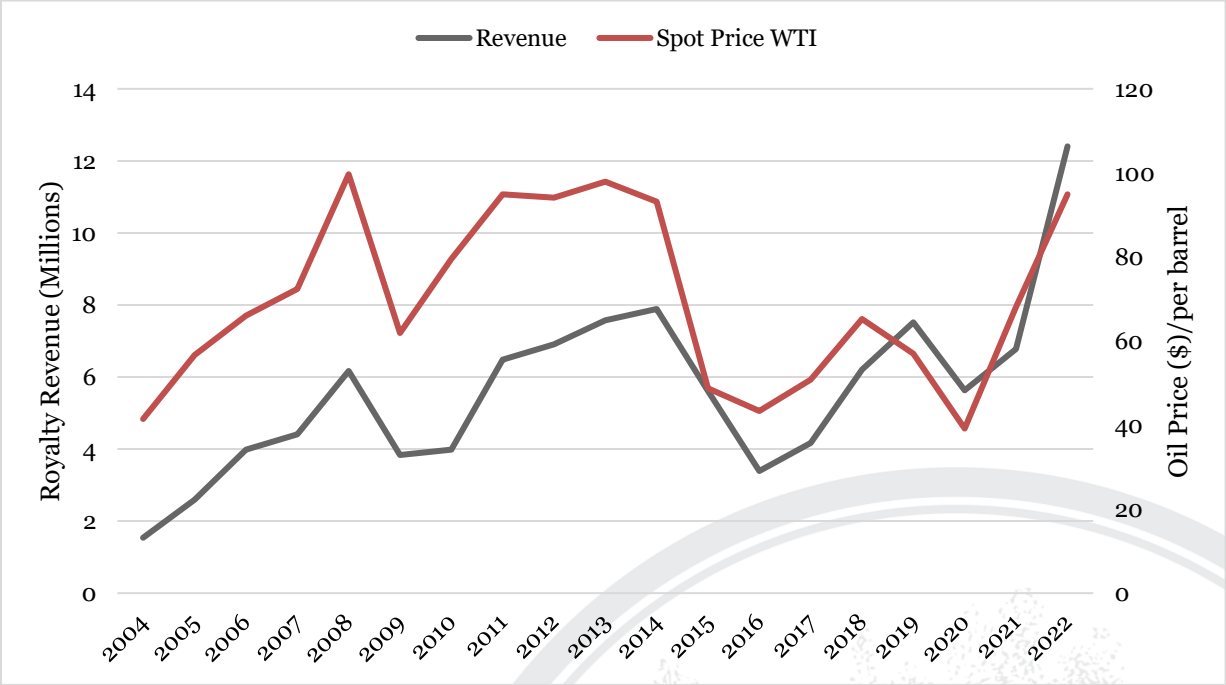
[1] U.S. Bureau of Land Management, **Oil and Gas Statistics: Fiscal Year 2022 Statistics** (Last visited September 11, 2023).
[2] Congressional Research Service, **Revenues and Disbursements from Oil and Natural Gas Production on Federal Lands**, September 22, 2020.
[3] U.S. Department of the Interior, **Natural Resource Revenue Data** (Last visited September 8, 2023).
[4] U.S. Bureau of Land Management, **About the BLM Oil and Gas Program** (Last visited September 8, 2023).

Although production, price, and royalty rates impact government revenues, most analysis myopically focuses on raising the royalty rate. A 2020 Government Accountability Office report, *Oil, Gas, and Coal Royalties*, asserted that the American people were not receiving a "fair return on public resources,"[5] a sense of entitlement undergirding Congress's decision to raise royalty rates in the IRA. This crabbed view implies that American energy producers cheated the public, when actually, oil producers worked to double production even as crude oil prices languished in a decade-low trough.

Figure 2: Federal Oil Royalty Revenue compared to Oil Price[6]



Opening new onshore acreage for drillers is crucial for stabilizing oil production and royalty revenues in the long run. Oil wells are subject to natural decline. Shale wells have notoriously rapid decline rates. A typical shale well's production will decline by 50 percent after its first year.[7] If new acreage is not constantly awarded to energy producers, production will inevitably fall and take royalty revenue and America's energy security down with it.

Since January 2021, the Biden administration has failed to offer sufficient leases to sustain current oil production levels and pursued policies hostile to energy production. The Department of Interior, for example, raised the royalty rate on a batch of new drilling leases from 12.5 percent

[5] Government Accountability Office, ***Oil, Gas, and Coal Royalties: Raising Federal Rates Could Decrease Production on Federal Lands but Increase Federal Revenues***, June 2017.
[6] U.S. Department of the Interior, **Natural Resource Revenue Data** (Last visited September 8, 2023); U.S. Energy Information Administration, **Cushing, OK WTI Spot Price FOB** (Last visited September 11, 2023).
[7] Trent Jacobs, **Life After 5: How Tight-Oil Wells Grow Old**, *Journal of Petroleum Technology*, January 31, 2020.

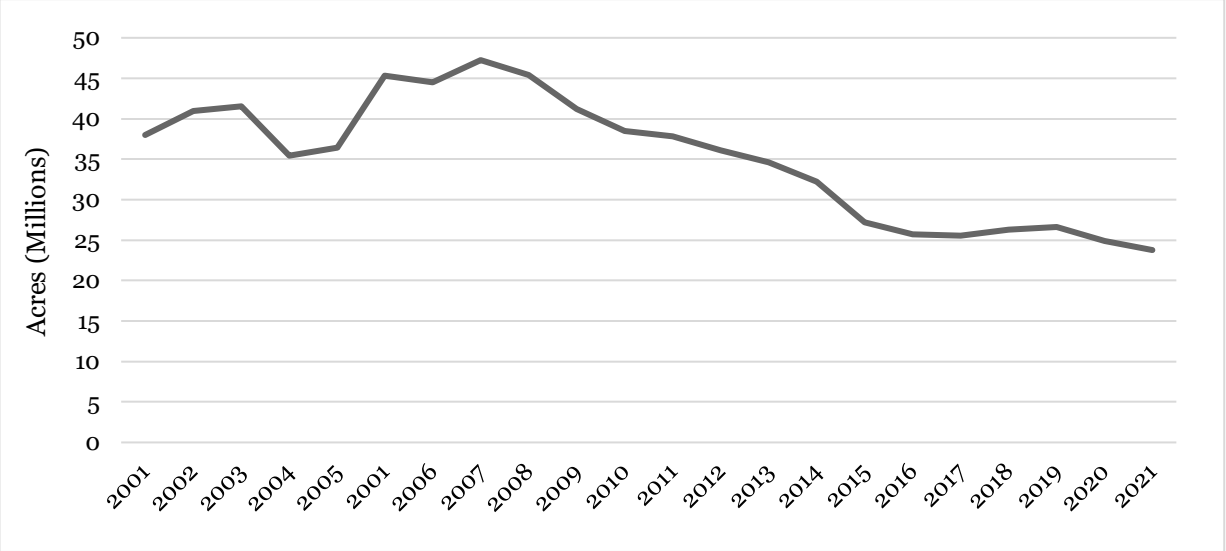
to 18.75 percent.[8] Unsurprisingly, these unreasonably high terms caused a 70 percent decline in new leases issued between 2021 and 2022.[9] Then, in June 2022, the Biden administration barred the Navajo Nation from developing prospective oil and gas leases in New Mexico for the next 20 years.[10] In September 2023, the Biden administration revoked three arctic drilling leases auctioned in 2021. And the administration will restrict drilling in all 13 million acres held in the National Petroleum Reserve-Alaska.[11] As a result of these anti-drilling policies, total acres under lease have plummeted to a twenty year low of 23.7 million, raising the risk of a sudden aggressive oil production decline.

The decline in active acreage under lease combined with increased hydraulic fracturing portends an imminent decline in oil production on federal lands. Over 90 percent of new wells on federal lands are hydraulically fractured[12] shale wells that decline much faster than conventional wells. Whereas conventional oil wells can reliably produce for seven to 10 years, shale wells will be marginal producers, if not plugged and abandoned, within just two to three years of being drilled. Without new replacement leases in highly productive shale plays in Wyoming, New Mexico, and North Dakota, federal oil production will decline dramatically as driller's exhaust their current backlog of leases.

Raising the royalty rate will deter drillers from bidding on lands and ultimately decrease federal onshore oil production, reduce royalty revenue, threaten U.S. energy security, and ultimately saddle American consumers with higher fuel, food, and energy prices.

[8] **Biden Increases Oil Royalty Rate and Scales Back Lease Sales on Federal Lands**, Associated Press, April 16, 2022.
[9] U.S. Bureau of Land Management, **Oil and Gas Statistics: Fiscal Year 2022 Statistics** (Last visited September 11, 2023).
[10] Morgan Lee, **Biden Orders 20-year ban on oil, gas drilling around tribal site in New Mexico**, Associated Press, June 2, 2023.
[11] Alex DeMarban and Riley Rogerson, **Biden Administration cancels state-owned oil leases in Arctic National Wildlife Refuge**, *Anchorage Daily News*, September 6, 2023; Becky Bohrer and Matthew Daly, **Biden Cancels last oil and gas leases in Alaska's Arctic Refuge, overturns sales held by Trump**, Associated Press, September 7, 2023.
[12] **Interior Department Releases Final Rule to Support Safe, Responsible Hydraulic Fracturing Activities on Public and Tribal Lands**, U.S. Department of Interior press release, September 29, 2023.

Figure 3: Active Acres under Federal Oil & Gas Leases[13]



Without offering new acreage for drilling, EOR methods can extend the productive lives of conventional and unconventional wells. But higher royalty rates will dissuade operators from implementing these costly projects. The Energy Information Administration has estimated that CO2 flooding, a popular tertiary EOR method, can raise the per-barrel cost of extracting oil by as much as $20 – $30.[14] These high costs and the IRA's royalty hikes thin producer margins and deter more EOR.

High Royalties Encourage Cheating

Royalties are taken off the top of gross production value. To avoid paying federal and private royalties, companies have used various methods to understate the gross value of oil and natural gas minerals and overstate transportation and production costs. In 2009, for example, Chevron Corporation and their affiliates agreed to pay the United States over $45 million for underpaying royalties owed on natural gas produced on federal lands.[15] Recently, on September 6, 2023, San Juan Basin Royalty Trust, which holds a 75 percent net overriding royalty interest on natural gas and oil produced in Northern New Mexico, reached a settlement with their operator, Hilcorp, for alleged underpayment of royalties between 2017 and 2020.[16] Raising the federal royalty rate will encourage more of this behavior and require greater federal investment in compliance enforcement at taxpayer expense.

[13] U.S. Bureau of Land Management, **Oil and Gas Statistics: Fiscal Year 2022 Statistics** (Last visited September 11, 2023).
[14] U.S. Energy Information Administration, **Oil Prices drive projected enhanced oil recovery using carbon dioxide**, July 30, 2014.
[15] **Chevron to Pay U.S. more Than $45 Million to Resolve Allegations of False Claims for Royalties Underpayment**, U.S. Department of Justice press release, December 23, 2009.
[16] **San Juan Basin Royalty Trust Announces Settlement Agreement**, Business Wire, September 6, 2023.

Higher Royalty Rates Reduce Profitability

Currently, the federal government taxes the gross value of every barrel of oil and one thousand cubic feet (Mcf) of natural gas at 12.5 percent of the sale value. Royalties are taken directly from producers' profit margins, and raising royalty rates will only decrease those margins. Although a 4 percent increase in royalties may have a small per barrel impact, the aggregated impact can deter long-term investments in oil projects.

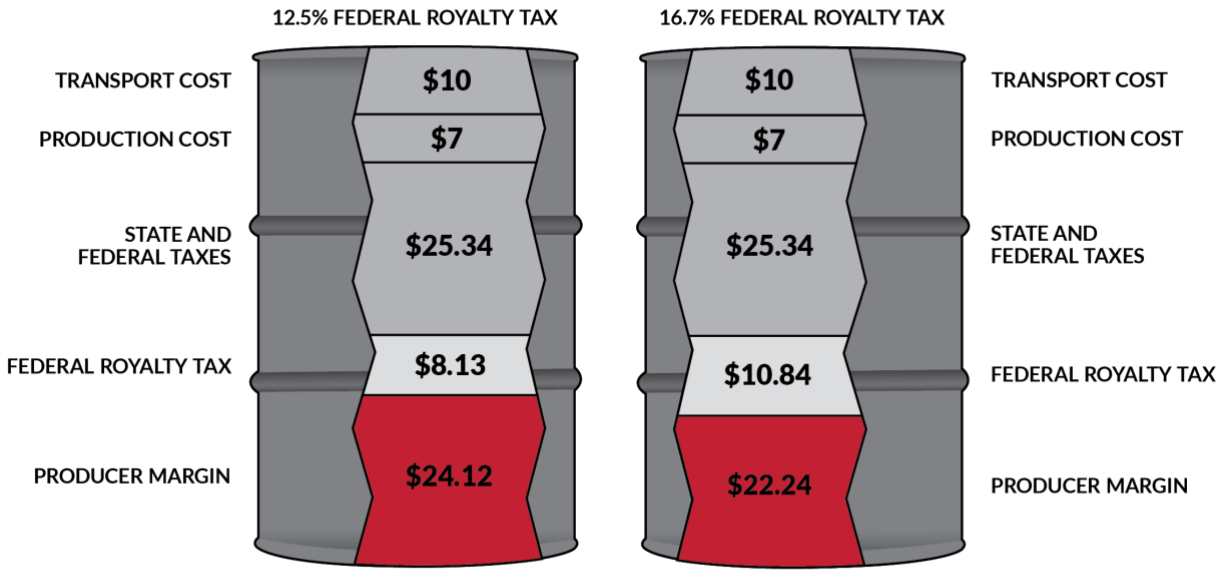
Impacts on the Producer

The Economic Research Center at The Buckeye Institute used data from the Alaskan Department of Revenue and the Willow Master Development Plan to estimate the impact of increasing the federal royalty by 4 percent on producers' netback, time to positive cashflow, and net present value of future revenue.[17]

Per barrel returns are estimated using the netback accounting method commonly used by exploration and production companies. Netback is the revenue received from a barrel of oil less the transport costs, operating costs, taxes, and mineral royalties paid. Figure 4 divides the revenue from a barrel of Alaskan North Slope crude sold at $75 into the following sections: transport costs, production costs, state and federal taxes, and federal royalty. Deducting transport costs of $10 leaves a gross taxable value of $65. Accounting for an $8 per barrel tax credit, Alaska collects $14.80 in taxes. At a federal royalty rate of 12.5 percent, the federal government collects $8.13. After state and federal income taxes, rents, and other taxes paid, producers keep approximately $24 per barrel. This $24 margin does not account for the capital expenditures and debt required to bring the oil production online, which will be paid out of future margins.

[17] State of Alaska Department of Revenue, **Willow Project Fiscal Analysis – Spring 2023 Update**, April 10, 2023; Willow; U.S. Department of Interior, **Willow Master Development Plan**, Vol 15, Appendix E, January 2023.

FIGURE 4: PRODUCER NETBACK WITH OIL AT $75 PER BARREL



Source: State of Alaska Department of Revenue and ERC calculations.
Calculations assume the price of oil is $75 per barrel.

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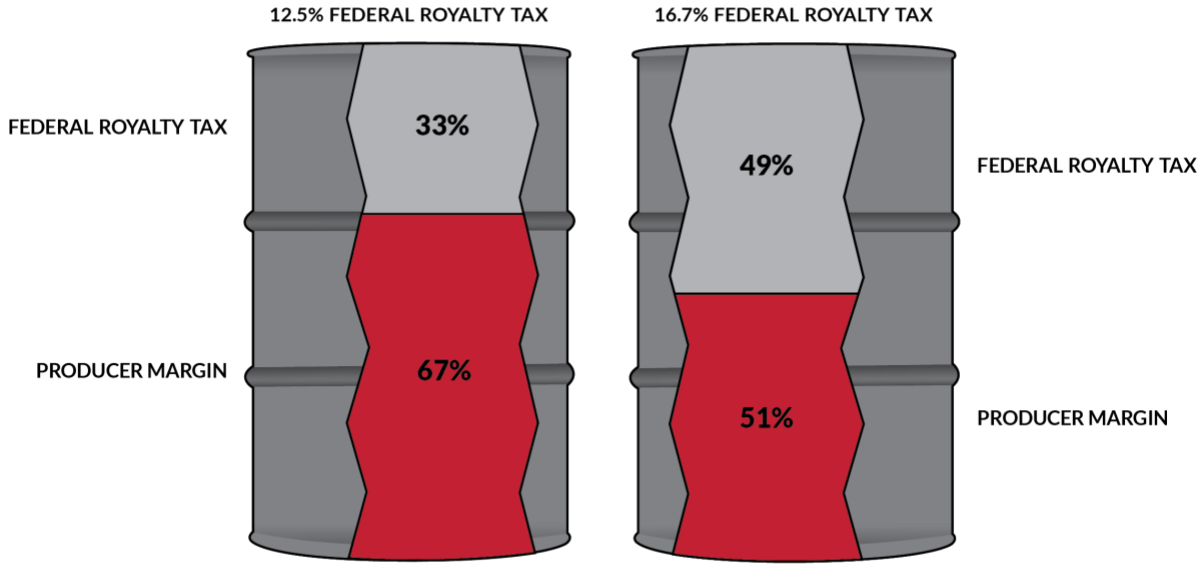
Raising the federal royalty rate by four percentage points to 16.67 percent decreases producer margins by eight percent, taking an extra $2.72 per barrel. The higher royalties paid per barrel mean that the federal government raises its take from 33 percent of a producer's margin to 49 percent. Oil and gas producers on federal lands can expect to pay a lot more of their margins to the federal government as taxes. The small amount skimmed off each barrel adds up over the long run and significantly impacts the expected revenue from a project. For oil projects with long payback periods like the Willow Project, a small increase in the royalty rate will cost the project billions of dollars in future revenues and lengthen the payback period considerably.

FIGURE 5: FEDERAL ROYALTY TAX AS PERCENTAGE OF PRODUCER MARGIN



Source: State of Alaska Department of Revenue and ERC calculations.
Calculations assume the price of oil is $75 per barrel.

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Higher royalty rates are paid from expected operating margins (Figure 5), which will delay the expected positive cashflow for large scale projects. Raising the federal royalty rate from 12.5 to 16.67 percent will delay positive cash flow on the Willow Project, for example, by two years. Longer payback periods will deter oil producers from investing in large oil and gas development projects.

Discount rates are an integral part of corporate benefit cost analysis because they scale future revenue received in today's value, which helps companies determine whether an investment will be profitable in the long term.[18] Rapid fluctuations in oil prices and production risks mean that future revenues can vary substantially. Oil producers must use a 10 percent discount rate to help prevent overstating the value of future revenues in net present value calculations. Given a 10 percent discount rate, increasing the royalty rate from 12.5 percent to 16.67 percent the net present value of the estimated income from the Willow Project declines by $550 million over the project's 30-year life. This lowers the net present value of revenue and makes investment in the project less attractive for producers. Higher royalty rates are enough to push a marginal project's net present value negative, making the project financially unfeasible.

[18] David C. Tryon, Alex M. Certo, Zachary D. Cady, and Trevor W. Lewis, **Comment on Proposed OMB Circular A-4**, The Buckeye Institute, June 6, 2023.

The BLM Should Extend Royalty Relief to Limit the IRA's Negative Impact

Responding to the BLM's request for comments on royalty relief in Section 3103.41,[19] the BLM should extend royalty relief to all oil producers at any stage of production. Raising the royalty rate four percent unfairly subjects fossil energy producers to the highest royalty rates of any energy resource produced on federal lands.[20] Oil and natural gas make up 59 percent of all energy consumption in the United States.[21] Higher royalty rates will deter drillers from drilling, decrease the supply of onshore oil and gas, and inevitably raise fuel and electricity costs for all Americans. To harness less expensive energy resources from public lands, the BLM must reject the royalty increase or extend royalty relief to all producers at any point of production.

As proposed, a high royalty rate of 16.67 percent, followed by a minimum increase of four percent upon renewal of the lease will deter operators from renewing their leases and investing in EOR methods that can extend production. Instead, field operators seeking to conduct waterflooding and other EOR methods should immediately qualify for royalty rate relief. CO2 flooding, for example, is an expensive EOR method that permanently sequesters CO2 in geologic formations (a net environmental benefit),[22] and producers implementing it should immediately qualify for royalty relief.

BLM should not set a floor for royalty rate reductions. A universal royalty rate, even a low one, cannot account for the varying productivity of geologies. Royalty relief should be determined by the field productivity and the crude grade produced. American refineries require certain grades of crude oil to produce certain fuels and chemicals. Currently, most of American oil production is focused on light sweet and super light sweet crude grades. America imports heavy sour crude oil which is needed for refining diesel fuel.[23] Conventional heavy oil deposits on federal lands producing this scarce resource should be heavily incentivized to continue operating their wells even if that means eliminating the royalty rate entirely. Additionally, the BLM's removal of Section 3103.4-2 Stripper Well Royalty Reduction and Section 3103.4-3 Heavy Oil Royalty Relief[24] obsolescence ignores the fact that over the next decade, the number of stripper wells on federal lands will rise along with needed oil exploration and production.

Drillers should not be penalized with an additional four percent royalty hike upon lease renewal. After a decade of operating a field, drillers have irreplicable knowledge of the geologic formation and know how that field will best respond to secondary and tertiary oil recovery methods.[25] Higher

[19] U.S. Bureau of Land Management, **Proposed update to Fluid Mineral Lease and Leasing Process**, July 24, 2023.
[20] U.S. Department of Interior, **Natural Resources Revenue Data: Revenues** (Last visited September 11, 2023).
[21] U.S. Energy Information Administration, **U.S. Primary Energy Consumption by Energy Source, 2022** (Last visited September 11, 2023).
[22] Christophe McGlade, **Can CO2-EOR really provide carbon-negative oil?**, International Energy Agency, April 11, 2023.
[23] Dr. Anas Alhajji, **The World Is Still Asleep On the Crude Quality Crisis: A Follow Up Note**, August 2019.
[24] U.S. Bureau of Land Management, **Proposed update to Fluid Mineral Lease and Leasing Process**, July 24, 2023.
[25] U.S. Department of Energy: Office of Fossil Energy and Carbon Management, **Enhanced Oil Recovery** (Last visited September 8, 2023).

royalty rates will deter smaller drillers from investing in extending a field's life. Royalty relief should be offered to all small, independent drillers willing to invest in EOR, especially CO2-flooding that remains crucial for further developing carbon capture and sequestration technology.[26]

Conclusion

Higher royalty rates decrease revenue received from long term projects and guide companies away from investing in projects with long undiscounted and discounted payback periods. Higher royalties will encourage smaller firms to reconsider investing in expensive EOR operations or extending the productive life of oil and gas wells. The BLM acknowledges these impacts but reserves royalty relief for the end of a project's productive life. Unfortunately, such relief is too little, too late, because that relief revenue is unappreciable on balance sheets and left out of initial cost-benefit analyses. By extending royalty relief to more producers, the BLM can mitigate the damage of higher royalty rates. The BLM should refuse to implement the IRA's oil and gas royalty rate hike or extend royalty relief to all producers.

[26] Dana M. Abdulbaqi, Carol A. Dahl, and Mohammed R. AlShaikh, "**Enhanced oil recovery as a stepping stone to carbon capture and sequestration**," *Mineral Economics*, 31, 239-251, May 2018.

About The Buckeye Institute

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