

# Project Proposal: [Redacted]

## Lost contributions from Uranium to Wyoming's Permanent Mineral Trust

Wyoming maintains state investments which include a sovereign wealth fund called the Permanent Mineral Trust Fund—this account grows its principal from severance taxes on mineral revenues. The current value of this fund is around \$9.2 billion (Treasurer; 2021). Traditionally, while Wyoming has been known as a fossil-fuel state, it maintains the largest Uranium reserves in the country. As with fossil fuels, revenue from uranium produced within the state is also subject to severance taxes.

On July 1, 2020, Wyoming bill SF0085 took effect. This bill creates temporary severance taxation rates for Wyoming Uranium until Jan 1, 2026. For market prices of Uranium under \$30 per pound, the severance tax is 0%. Above a spot price of \$30 per pound, the severance tax rates are graduated in 1% increments (SF0085 - Uranium taxation rates; 2020).

Table 1: Uranium severance tax rates

| Price/pound        | Tax rate |
|--------------------|----------|
| Less than \$30.00  | 0%       |
| \$30.00 to \$36.67 | 1%       |
| \$36.68 to \$43.34 | 2%       |
| \$43.35 to \$50.00 | 3%       |
| \$50.01 to \$60.00 | 4%       |
| \$60.01 or more    | 5%       |

The goal of this forecast is to consider the losses for the state of Wyoming, given the new policy. The estimated loss for the fiscal years 2020-2022 to the state's general fund and budgetary reserve account are \$500,000 and \$1,000,000, respectively (Richards; 2019). The

new taxation policy in bill SF0085 continues until Jan 1, 2026, whereafter all Uranium severance taxes will be 4% *SF0085 - Uranium taxation rates (2020)*.

To predict budgetary shortfalls requires prediction of the price of uranium through the period where the new legislative mandate applies, that is, through the end of FY2025. I use a dataset that describes the quarterly global price of Uranium from 1990 to 2020, taken from FRED ([FRED; 2021](#)). A quick summary of the data is given below.

Table 2: Uranium price summary

| Metric | Value  |
|--------|--------|
| Min    | 7.221  |
| 25%    | 10.06  |
| Median | 21.37  |
| Mean   | 27.02  |
| 75%    | 37.54  |
| Max    | 121.92 |

I will use both time-series and econometric analysis to predict future values of the uranium world price. In addition to year over year trend, we expect price to be affected by demand for nuclear fuel in energy creation. Included in the analysis is global electricity generated by nuclear fuel in terawatt hours (TWh) taken from the EIA ([EIA; 2021b](#)).

Table 3: Electricity Generation from Nuclear Fuel (TWh)

| Metric | Value  |
|--------|--------|
| Min    | 684.4  |
| 25%    | 1892.5 |
| Median | 2354.5 |
| Mean   | 2122.8 |
| 75%    | 2524.3 |
| Max    | 2659.8 |

Contributions to the Permanent Mineral Trust, however, depend not only on price, but on quantity of state production sold. We will assume state production is small enough to

make Wyoming a price-taker. It is difficult to forecast precisely how Wyoming's supply of uranium will adjust to changes in price. However, state production has a useful constraint: there are two operating uranium mines in Wyoming with a combined annual capacity of 7.5 million pounds and another two uranium mines on standby with a shared annual capacity of 1.675 million pounds (EIA; 2021a).

This new forecasting model will augment Wyoming's current forecast and allow the government to anticipate lost revenue for the state's wealth funds through 2025.

## References

EIA (2021a). Domestic uranium production report - quarterly.

**URL:** <https://www.eia.gov/uranium/production/quarterly/qupdtable4.php>

EIA (2021b). Nuclear & uranium.

**URL:** [eia.gov/nuclear/data.php#nuclear](https://www.eia.gov/nuclear/data.php#nuclear)

FRED (2021). Global uranium price.

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Richards, H. (2019). With uranium mining under pressure, wyoming lawmakers suggest tax cuts.

**URL:** [https://trib.com/business/energy/with-uranium-mining-under-pressure-wyoming-lawmakers-suggest-tax-cuts/article\\_2bed5152-7d8e-5b2d-b2a1-5bcb8002cf05.html](https://trib.com/business/energy/with-uranium-mining-under-pressure-wyoming-lawmakers-suggest-tax-cuts/article_2bed5152-7d8e-5b2d-b2a1-5bcb8002cf05.html)

SF0085 - Uranium taxation rates (2020).

**URL:** <https://www.wyoleg.gov/Legislation/2020/SF0085>

Treasurer, W. S. (2021). Wyoming state investment portfolio.

**URL:** <https://statetreasurer.wyo.gov/wp-content/uploads/2021/08/Package-06302021r.pdf>