NUCLEAR SERIES PART 4

WYOMING'S NUCLEAR SUPPLY CHAIN OPPORTUNITIES AND CHALLENGES: HEAT APPLICATIONS

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WHY THE STUDY WAS NEEDED

This report is one of a series evaluating the feasibility of developing an integrated nuclear sector in Wyoming. From the mine mouth to spent fuel processing, each step in the nuclear supply chain has unique economic considerations. To compare the opportunities for Wyoming across the nuclear supply chain, a qualitative scoring system of advantages and obstacles is applied (Gebben & Peck, 2023). The summary of these scoring criteria for nuclear heat applications of nuclear energy is provided in Table 1.

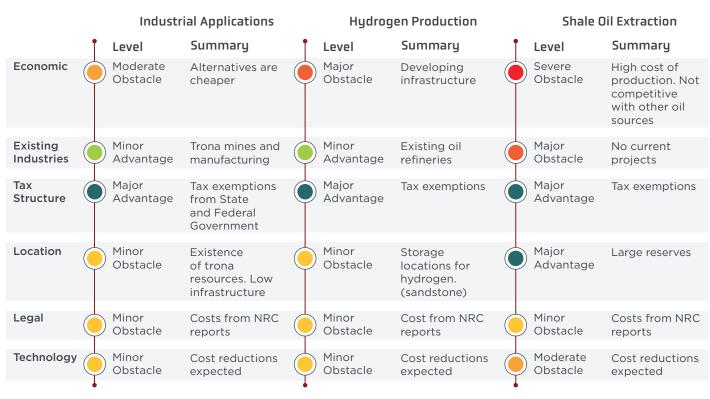
ABOUT THE STUDY

This report quantifies the economic outcomes of potential non-electricity uses of nuclear power in Wyoming. The unique opportunities and challenges of expanding the industry are identified. Additionally, an event study is performed that estimates economic outcomes under a range of technological adoption scenarios.

WHAT THE RESEARCHERS CONCLUDED

The analysis concludes that there is potential to apply nuclear technology to non-electricity generation uses in Wyoming. Directly applying nuclear produced heat to industrial processes creates economic cost savings compared to using nuclear energy exclusively for electricity generation. The unique attributes of nuclear power, including reliable heat output and high operational uptime, create technological benefits for nuclear reactors.

Table 1:Significant Economic Factors Related to Wyoming Nuclear Heat Uses



| Table 2: | | Tax Revenue (Million USD) | | Employment |
|--|----------------------|---------------------------|-----------------------------------|----------------------------------|
| Wyoming: Yearly Benefits of Direct Heat Applications of Nuclear ⁴ | | Gross (Yearly) | Total Revenue⁵ (Over 50 Years) | Full Time Equivalent (Yearly) |
| | Industrial Heating | \$37.0 | \$634 | 2,545 |
| | Hydrogen Production | \$61.3 | \$1,052 | 4,225 |
| | Oil Shale Extraction | \$886 | \$15,200 | 61,019 |
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