#### **NUCLEAR SERIES PART 4**

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

Alex Gebben

#### 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

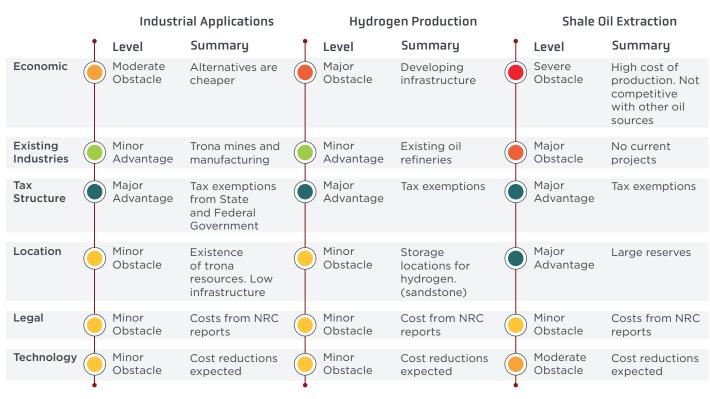


Table 2:		Tax Revenue (Million USD)		Employment
Wyoming: Yearly Benefits of Direct Heat Applications of Nuclear <sup>4</sup>		Gross (Yearly)	Total Revenue⁵ (Over 50 Years)	Full Time Equivalent (Yearly)
	Industrial Heating	\$37.0	\$634	2,545
	Hydrogen Production	\$61.3	\$1,052	4,225
	Oil Shale Extraction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

Author

Alex Gebben

*Energy Economist,* University of Wyoming Center for Business and Economic Analysis



School of Energy Resources Center for Energy Regulation & Policy Analysis Read The Paper bit.ly/CERPAPublications

