



NUCLEAR SERIES PART 5

# WYOMING'S NUCLEAR SUPPLY CHAIN OPPORTUNITIES AND CHALLENGES: SPENT FUEL

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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 uranium recovery to spent fuel processing, each step in the nuclear supply chain has unique economic challenges. 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 spent fuel management is provided in *Table 1*.

## ABOUT THE STUDY

This report quantifies the economic opportunities and outcomes of forming a spent nuclear fuel management industry in Wyoming. The unique opportunities and challenges of expanding the industry are identified. Additionally, empirical analysis is conducted to estimate the various benefits and costs associated with developing a consolidated interim storage facility in the State.

## WHAT THE RESEARCHERS CONCLUDED

Based on this analysis, a Wyoming spent nuclear fuel management industry would be able to expand in the coming years if legal requirements were changed at both the State and federal level. Without this change no further development can be expected.

**Table 1:**  
Economic Factors Related to Wyoming Spent Nuclear Fuel Industry Development

	Intermediate Storage		Recycling	
	Level	Summary	Level	Summary
Economic	Moderate Advantage	Current demand for U.S. storage	Major Obstacle	Costs are too high to be profitable
Existing Industries	Minor Obstacle	Two other facilities already have a NRC license, but are delayed.	Minor Advantage	Current development of fast reactors in Wyoming.
Tax Structure	Moderate Advantage	Wyoming has the lowest effective tax rate for similar industries.	Major Obstacle	Tax exemptions for reactors using U.S. sourced uranium promotes the use of fresh fuel, but not recycled fuel.
Location	Minor Advantage	Locations with low seismic disturbance and water contamination risk exist in the State.	Minor Advantage	Some advantages for fast reactor operation.
State Legal	Severe Obstacle	Wyoming approval has not been granted.	Major Obstacle	Limitations on importing spent fuel for recycling
Federal Legal	Severe Obstacle	Court ruling excludes NRC licensing of private storage. On appeal at the Supreme Court.	Major Obstacle	No NRC guidelines for reprocessing.
Technology	Neutral	No obstacles to deployment.	Minor Obstacle	The technology to recycle spent nuclear fuel exists but is still maturing.

**Table 2:**  
Job Additions from a Wyoming Spent Nuclear Fuel Storage Facility

Scenario	Low	Middle	High
Jobs During Construction (Yearly)	1,900	4,300	8,200
Jobs During Operation (Yearly)	900	2,500	4,000

**Table 3:**  
Monetary Benefits and Costs of a Wyoming Spent Nuclear Fuel Storage Facility

Scenario	Low	Middle	High
Social Costs (Mill. USD)	-70.6	-15.4	-11.2
Tax Revenue (Mill. USD)	52.6	67.8	108.5
DOE Payment (Mill. USD)	28	243	515
Net Value (Mill. USD)	10	295.4	612.3

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