

Wyoming's Nuclear Supply Chain Opportunities and Challenges

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Center for Energy Regulation and Policy Analysis (CERPA) series

1. Identify challenges to acquire nuclear sectors in Wyoming
2. Analysis of benefits and costs to development
3. Make reports comparable across the supply chain

Obstacles: What will it take?

Table 1: Scoring System for Wyoming Nuclear Development

Score	Summary
🟢 Major Advantage	Wyoming has a unique advantage
🟢 Moderate Advantage	Wyoming has non-unique advantage
🟢 Minor Advantage	Status quo development
🟡 Minor Obstacle	Financial support and status quo development
🟠 Moderate Obstacle	Financial support or industry change
🔴 Major Obstacle	Significant financial and industry change
🔴 Severe Obstacle	Impossible

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Direct Benefits and Costs

1. Producer surplus
 - Revenue-Costs
 - Cost can be an input to other producers
2. Consumer surplus
 - Private value
 - Lower electricity costs
 - Better stability
3. Taxes
 - Government spending value

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Indirect Benefits and Costs

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Manufacturing

Key Wyoming Advantages

- Major Advantage Tax exemption for manufacturing
- Moderate Advantage Existing industries that could pivot

Key Wyoming Obstacles

- Minor Obstacle Comparative advantage
- Minor Obstacle Tied to nuclear energy economics

What is necessary to acquire the industry?

- Wyoming tax incentives will be enough if nuclear growth continues
- Attracting large industries from overseas would require additional incentives

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Direct Effects

Total direct value add of \$2.27 million per year, \$1.87 million of Wyoming GDP contribution¹.

Benefits

- 20 employment
- \$1.7 million in employee compensation
- \$500 thousand in profit
- \$18.4 thousand for county taxes.
- \$420 thousand in U.S. taxes.

Costs

- ≈\$13 thousand benefits moved from State taxes to profit.
- 14 tons of non-toxic waste products.
- 1 acre of land used.

¹Assume an existing Wyoming manufacturing firm adds 20 new employees to produce nuclear components.

Indirect Effects

Benefits

- 12 employment
- \$672 thousand in employee compensation
- \$220 thousand in profit
- \$37.5 thousand for county taxes
- \$70 thousand for State taxes
- \$170 million in U.S. taxes

Costs

- 20 tons of non-toxic waste products.

Total indirect value add of \$1.24 million per year, \$1.07 million of Wyoming GDP contribution.

Overall Considerations

- \$2.9 million in Wyoming GDP increase
- 32 added employees
- 24 tons of non-toxic waste
- No (or minor) radioactivity considerations

Who Benefits?

- Industry employees
- Local business
- Nuclear power plant operators
- Local and State government amenities

Who might be harmed?

- No clear individuals with substantial costs.
- Local taxes could compensate if some increase traffic or other costs.

Nuclear reactor

Key Wyoming Advantages

- Major Advantage Tax exemption for advanced reactors
- Moderate Advantage Coal power plant co-location

Key Obstacles

- Major Obstacle Prices suppressed by natural gas
- Moderate Obstacle Experience needed to reduce costs

What is necessary to acquire the industry?

- Financial support required to make nuclear a cheaper alternative to natural gas
- \$2 billion of support for TerraPower overcomes this, Wyoming a feasible location.

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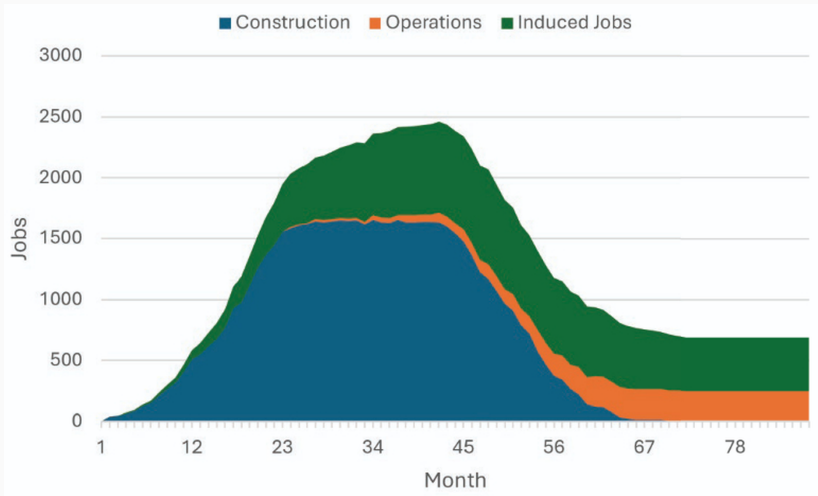
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Job Impacts



Direct Construction Effects

Total direct value added of \$629 million, \$408 million of Wyoming GDP contribution, \$49 million at the county level².

Benefits Wyoming	Benefits Local	Costs
<ul style="list-style-type: none">• 748 employment• \$365 million in employee compensation• \$9.6 million in sales tax.• \$33 million in property tax.	<ul style="list-style-type: none">• 37 employment• \$18.25 million in employee compensation• \$3 million county sales taxes• \$28 million in county property tax.	<ul style="list-style-type: none">• Increased traffic accidents worth \$11.8 million to avoid.• 490 thousand tons of non-toxic waste products.• 43 tons of RCRA toxic waste.

²Discount at 5% and average employment over all years of construction.

Indirect Construction Effects

Total indirect value add of \$126 million, \$94 million of Wyoming GDP contribution.

Benefits

- 239 employment
- \$52 million in employee compensation
- \$41 million in profit
- \$17.1 million in Wyoming tax.
 - \$5.6 million in county taxes
 - \$11.5 million State
- \$15.5 million in U.S. taxes

Costs

- 2,425 tons of non-toxic waste products
- 85 tons of RCRA toxic waste.

Operating Effects

Total value added of \$150 million per year. However money can leave the State.

Benefits Wyoming

- Between 371 and 516 employment
- Between \$50 and \$75 million in compensation
- \$14 million in State taxes.
 - \$4 million in county taxes

Costs

- Opportunity Cost: Gas conversion
- 970 tons of non-toxic waste
- Accident risk
- Personal preference to avoid nuclear

Overall Considerations

- Significant Wyoming GDP increase
- Impacts are not uniform over time or space

Who Benefits?

- Skilled Industry employees
- Local business
- Most consumers
- Local and State government amenities

Who might be harmed?

- Coal or gas specific skills
- Spent fuel management
- Infrastructure and housing load
- National tax payers

Conclusion and Questions