

Climbing the Critical Minerals Mountain

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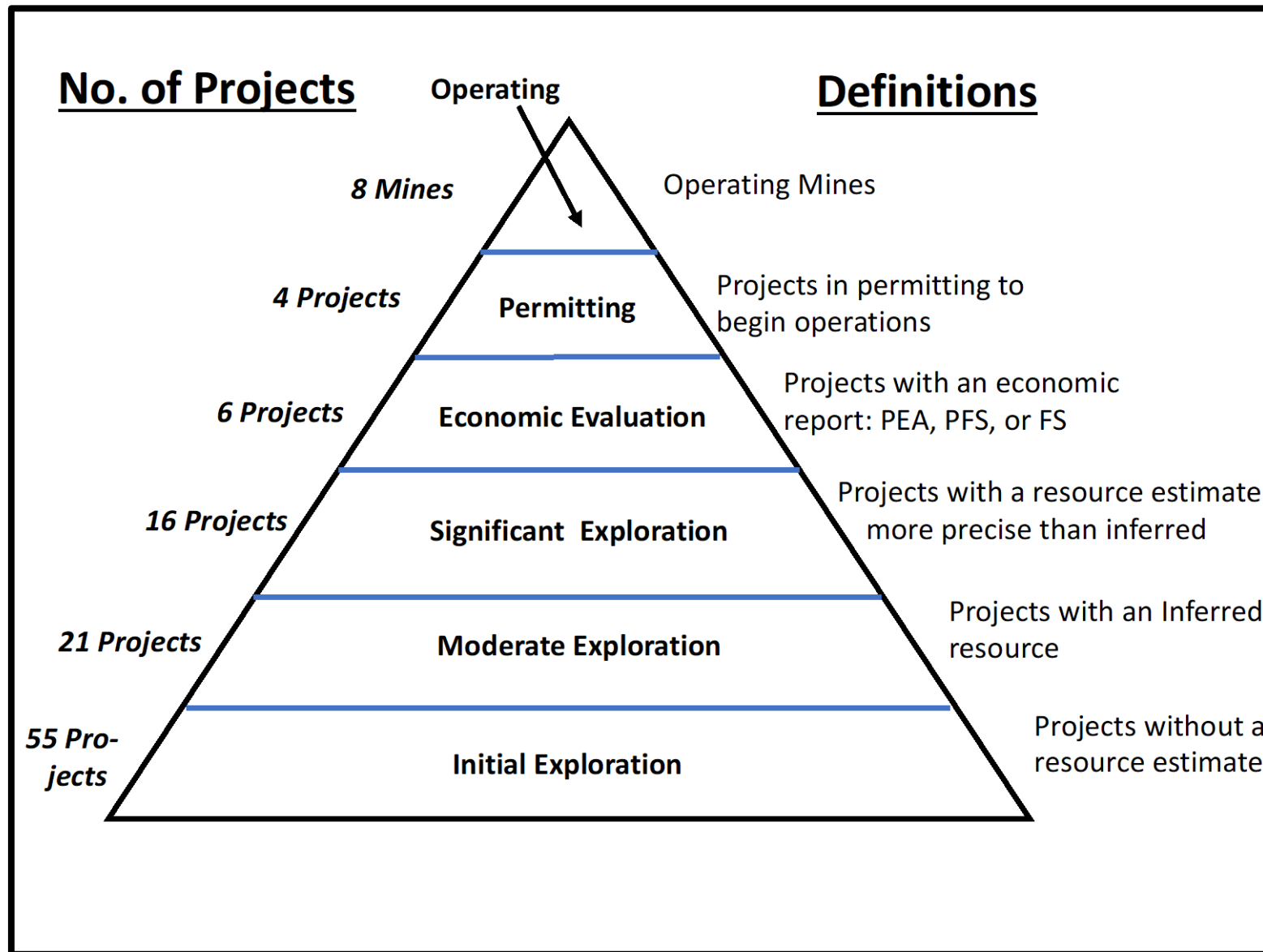


Organization

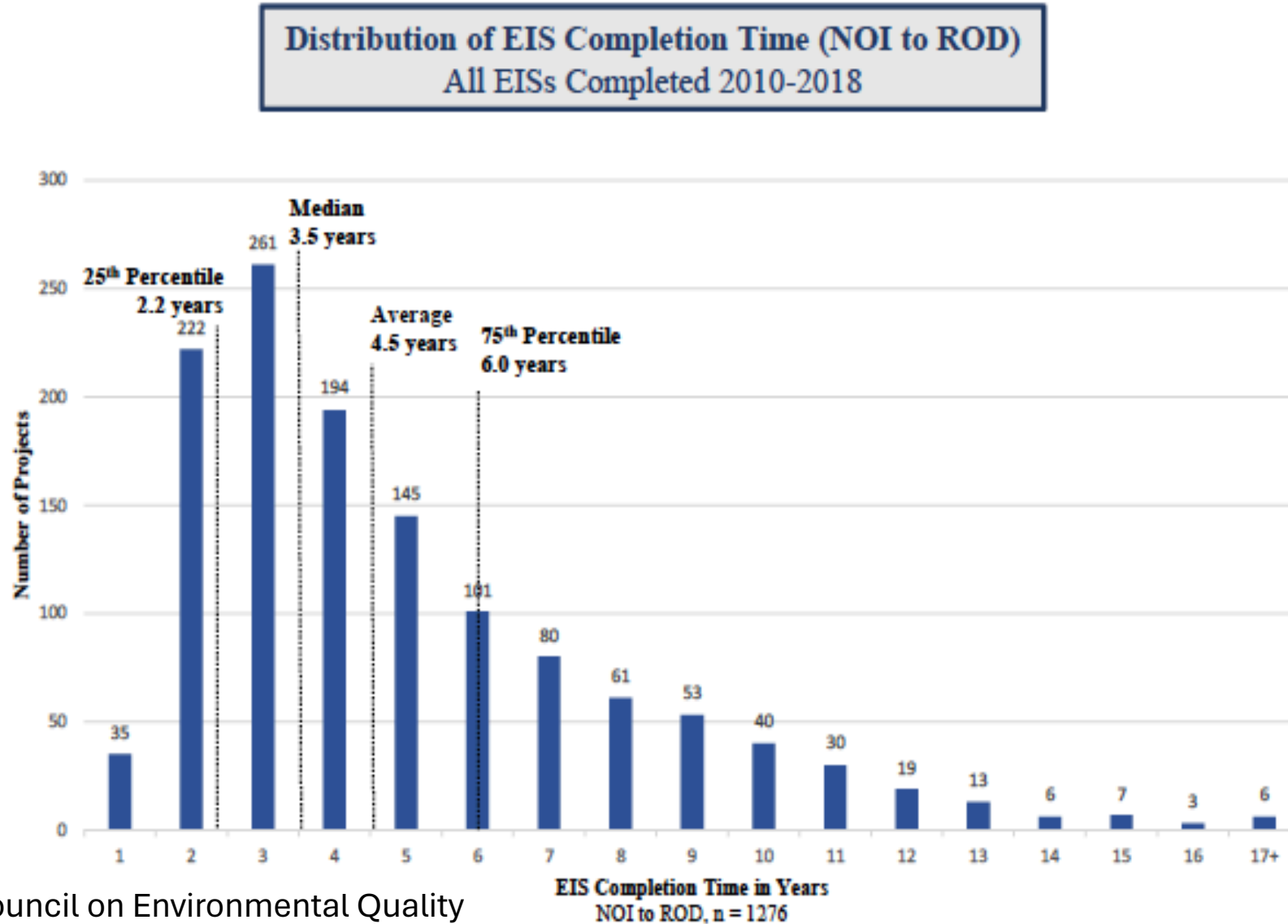
- Time
- Distance & Infrastructure
- Markets
- Processing



Time: *The Minerals Development Pyramid*



Time: *The Permitting Hurdle*

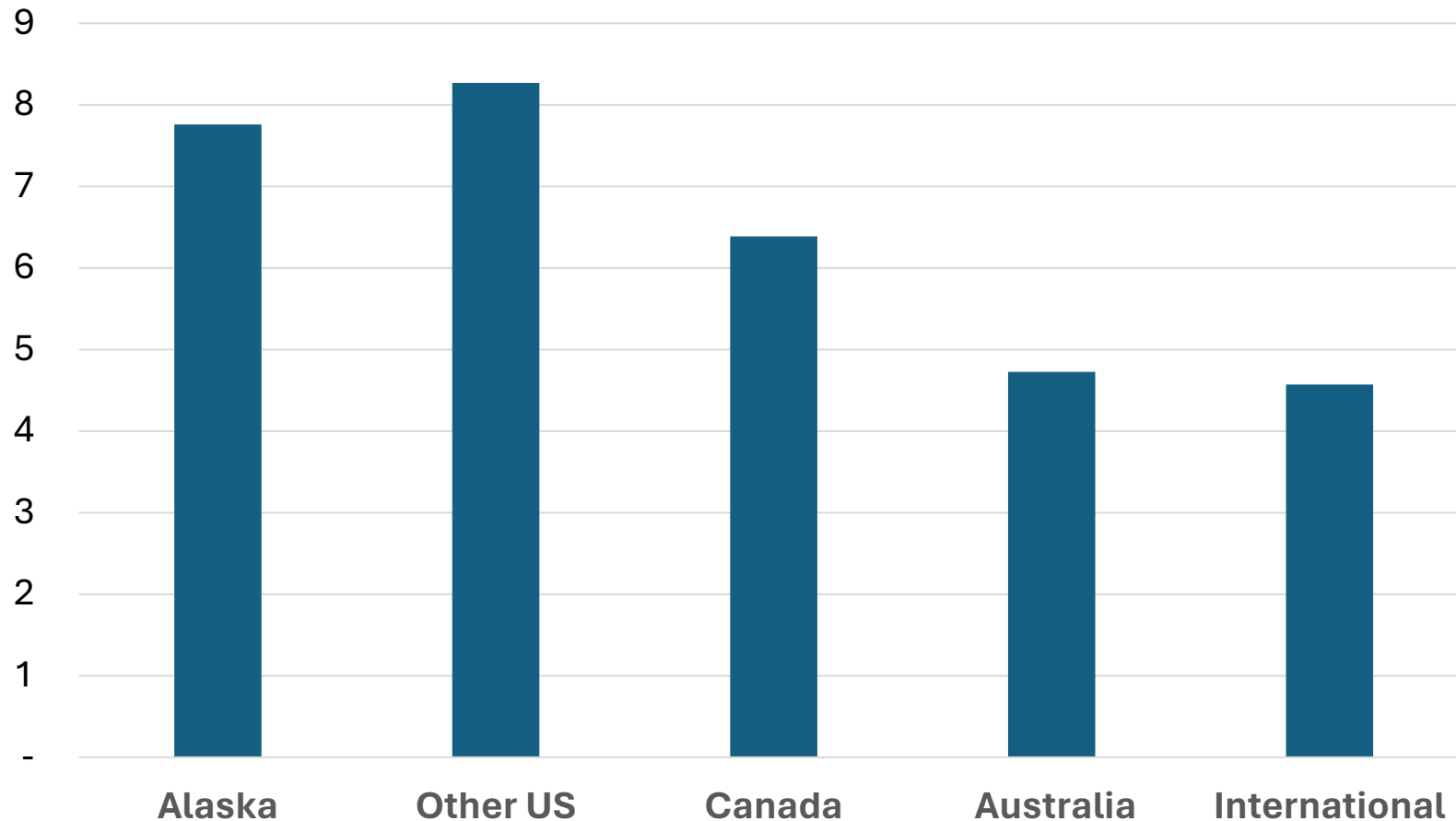


Source: White House Council on Environmental Quality

Time: *Preliminary ISER Data – Permitting Length*

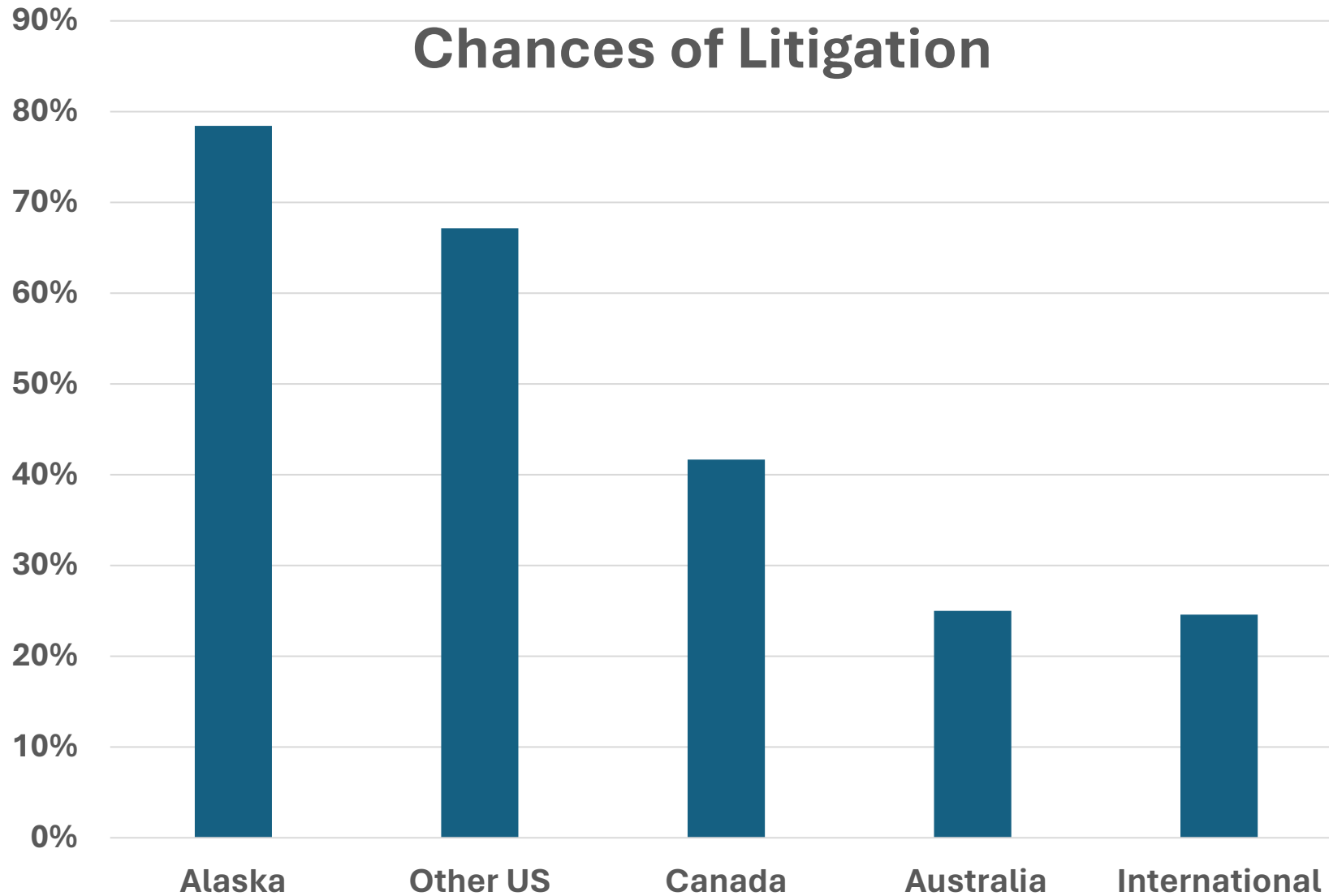
Years to Production, Permitting Only

Litigation excluded; "Large", open-pit, hard-rock mine
(e.g., >\$750 million capex)



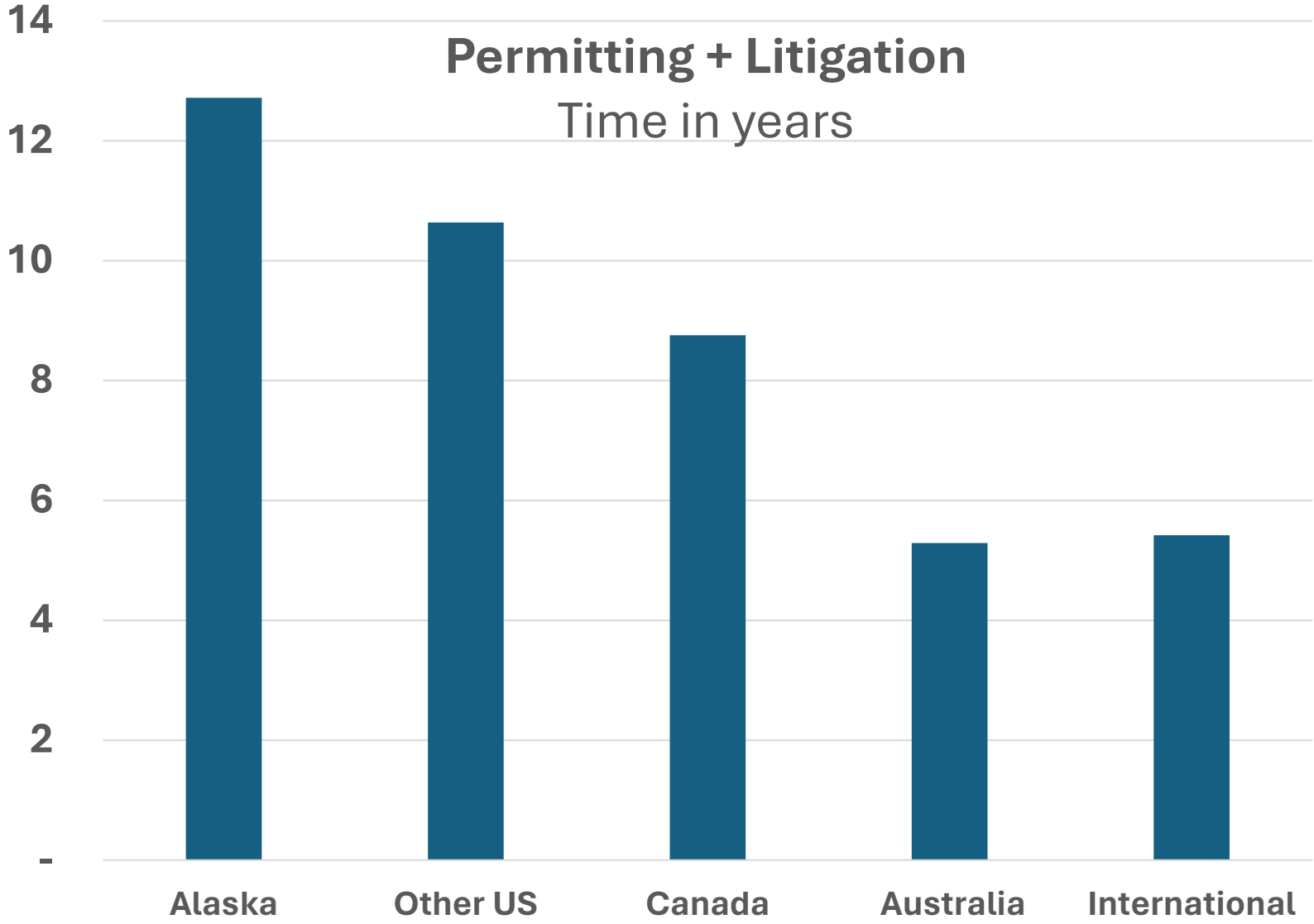
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Time: *Preliminary ISER Data – Odds of Litigation*



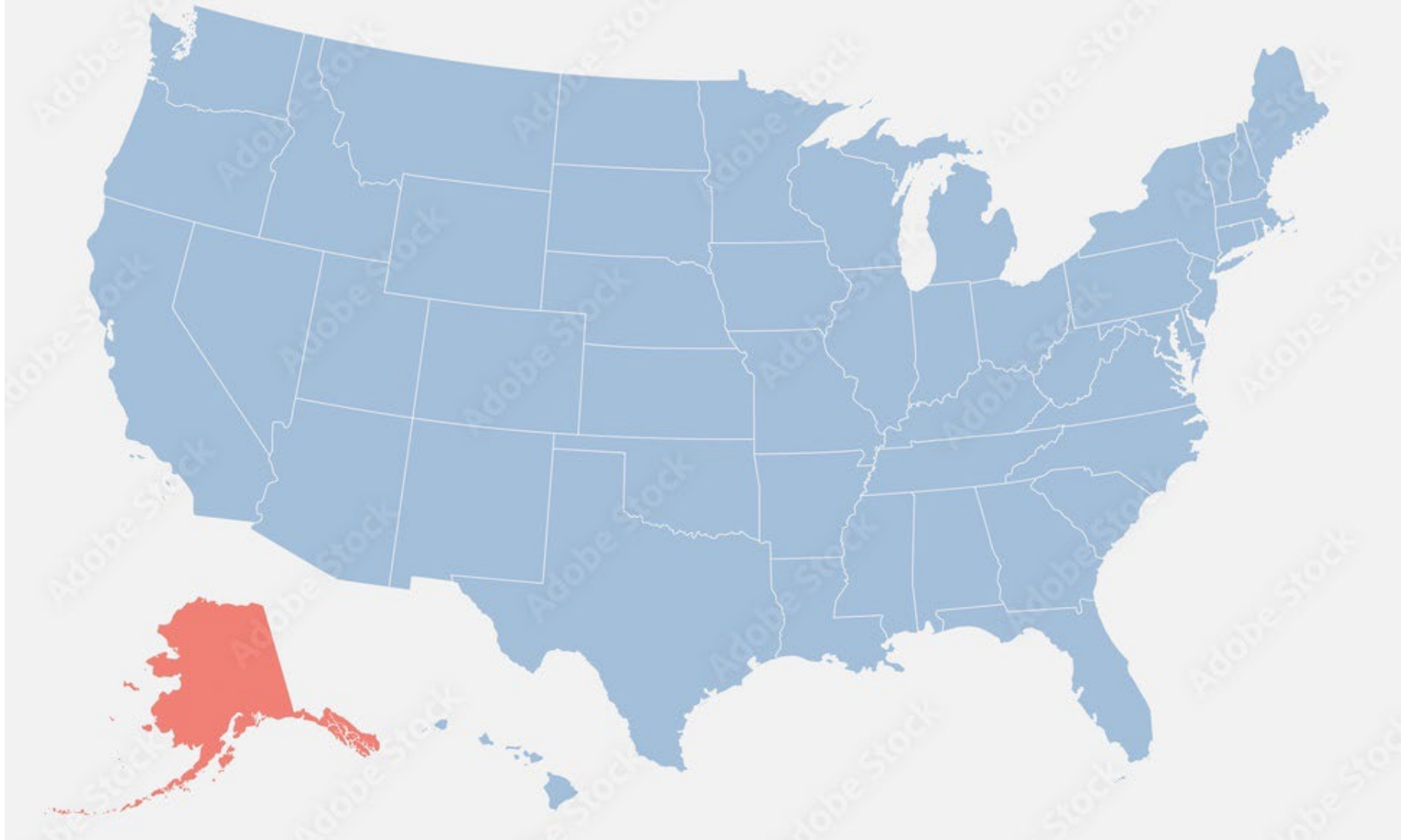
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Time: *Preliminary ISER Data – Permitting + Litigation*



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Distance and Infrastructure



Distance and Infrastructure

- ~2/3 of exploration within 30 miles of a road or the ocean
- Need a large deposit to justify a road.
- Some specialty minerals (some rare earths), lack large enough total demand to be off infrastructure. These may only be produced as a co-product.



Markets (or lack of them)

- US relies on private capital to fund mineral exploration and development
- Some minerals (many rare earths) lack a robust private market
 - No spot price
 - Spot price, but thin trading or price controlled by other countries
- US manufacturing generally does not invest in mining
- These minerals unlikely to be developed except as co-product, or with government intervention to create a market

Processing

- Value increases as one moves up the processing chain
- Alaska generally does primary processing only – decreases weight and volume for transportation
- Other than fish processing, in modern Alaska history, our state has never manufactured anything significant to sell outside our state.

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