CCS in Alaska – Regulatory and Commercial Factors for Transoceanic CO2 Transport
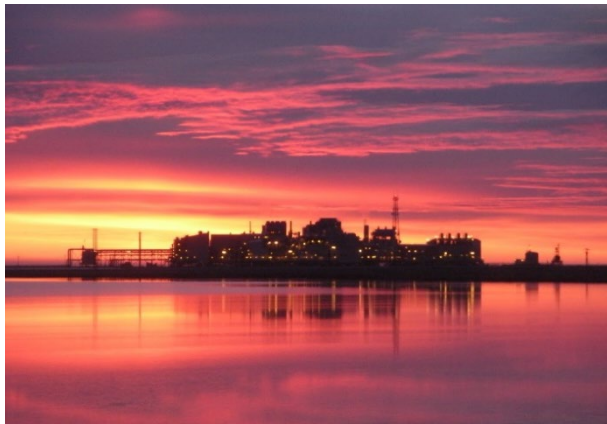
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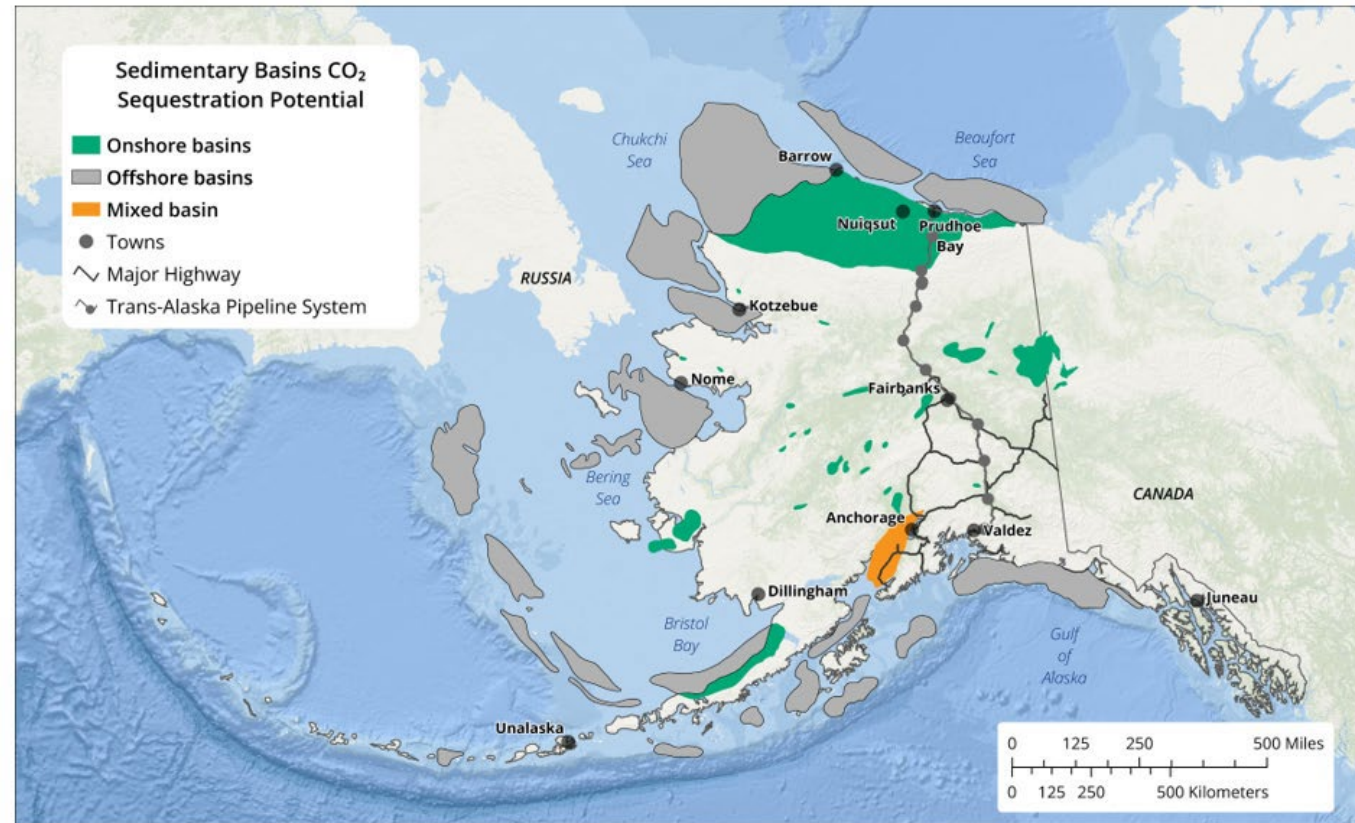
Potential Alaska Carbon Storage Basins

Figure 1. Map of Alaska with significant sedimentary basins with potential for CO2 storage overlaid.
(Courtesy of Alaska Department of Natural Resources)

Carbon Regulatory Matrix

	Carbon Transoceanic Shipping	Carbon Storage (Offshore)	Carbon Storage (Onshore)	Carbon Storage Leasing	Long-Term Storage Monitoring
International Regulation	*London Protocol (Bilateral Agreement)*	*London Protocol (Bilateral Agreement)*	*-*	*-*	*-*
U.S. National Regulation	*-*	*Safe Drinking Water Act + Marine Protection, Research, & Sanctuaries Act*	*Safe Drinking Water Act*	*Multiple (Federal Lands)*	*Safe Drinking Water Act*
Alaska State Regulation	*-*	*"An Act Related to Carbon Storage" - House Bill 50 (Section 39)*	*House Bill 50 (Section 39)*	*House Bill 50 (Section 18) for State Lands + Private Landowners*	*House Bill 50 (Sections 18 & 39)*

International Regulatory Framework

- London Protocol: 2009 Amendment allows for cross-border shipments of CO_2 for marine transportation and subsurface disposal.

- Basel Convention: Regulates cross-border movement of hazardous waste, unlikely to extend to CO_2.

- U.S. is a signatory but not a ratifier—bilateral agreements required for CO_2 shipments.

U.S. Regulatory Framework

- **Safe Drinking Water Act (SDWA) regulates underground CO$_2$ injection, administered by EPA through Class VI well permits.**

  - Permitting includes geologic review, modeling, seismic risk, public comment.

  - Alaska is pursuing primary enforcement authority for Class VI wells from U.S. Environmental Protection Agency.

- **Marine Protection, Research, and Sanctuaries Act (MPRSA) regulates sub-seabed CO$_2$ storage.**

  - 2021 amendment clarified that MPRSA does not cover CO$_2$ storage, but exception may only extend to Federal leases.

Alaska Regulatory Framework

- **Alaska passed comprehensive CCUS regulatory structure in 2024 via "An Act Related to Carbon Storage" (House Bill 50 / HB50).**

  - Shared oversight for CCUS between AOGCC (well control) and DNR (leasing).

  - Includes post-closure trust fund to cover long-term liability.

- **Pore space ownership in Alaska is well-settled (pore space follows mineral interests).**

- **Most land is State, Federal, or Native-corporation owned; large contiguous lease tracts.**

Commercial Screening Factors

Factor	Explanation
Geology	Adequate reservoir; "stacked" zones
Steaming Distance	Shorter travel distances reduce costs
Ports & Infrastructure	Deepwater access critical; existing or expanded facilities
Onshore Transmission	Distance between port and storage location impacts costs
Oil & Gas Activity	Established service sector reduces labor cost
Gas/CO_2 Injection	Use of CO_2 for Enhanced Recovery improves economics
Environmental	Evaluation of specific sites for environmental mitigation costs

<u>Additional Commercial Factors</u>

- Integration of CCUS with existing Oil & Gas operations: Reduce labor and logistics costs, EOR opportunities, depleted reservoirs, synergies with developing proposals.

- Port infrastructure developments: Potential to leverage possible port facility developments, especially for near-Asia shipments.

- Shipping Economics: CO_2 Carriers likely to be single-product cruises. Future hydrogen carriers may be dual-use, allowing improved economics for back-haul.

THANK YOU!

For more Information:

Fulford, N., Zhang, T., Paine, H., and Fitzpatrick, R. 2025. "*CCS In the State of Alaska – Regulatory Framework and Commercial Selection Criteria for Transoceanic CO2 Imports."* Proceedings of the Society for Petroleum Engineers' Asia-Pacific CCUS Conference, August 2025, Kuala Lumpur, MY.

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