



Trans Mountain Expansion

Evaluating terminal storage, vessel delays and marine operating constraints for a major expansion.

The proposed expansion required a credible capacity basis for pipeline deliveries, terminal storage and marine exports. Tank and berth capacities alone could not establish achievable throughput: vessels also shared Burrard Inlet with existing traffic and faced tidal, current, visibility and passing restrictions. The simulation connected these operations to evaluate capacity and delays under alternative operating conditions.



Integrated terminal and marine operations analysis

Project objective

Assess how terminal storage configurations and marine operating restrictions affect achievable capacity, vessel delay and operating flexibility, providing evidence for design and port-authority discussions.

KEY MARINE AND TERMINAL DECISIONS

Marine access

Compare navigation restrictions

Tide, current, visibility and passing

Storage strategy

Test tank and inventory choices

Crude-grade mix and pipeline supply

Berth operations

Test vessel delays and capacity

Calls, berths, loading and anchorage

Decisions supported

Tested nighttime vessel movements, tidal and current restrictions, alternative vessel distributions and storage configurations. Quantified the resulting effects on vessel delay and system capacity, providing a common analytical basis for terminal planning and discussions with the Vancouver Fraser Port Authority.

Integrated marine operating scope

PIPELINE → STORAGE → BERTH → BURRARD INLET

Pipeline & inventory Delivery profiles, multiple crude grades, tanks and operating strategy.	Vessel & berth operations Aframax arrivals, anchorage, loading and berth occupancy.
Channel conditions Tides, currents, passing rules, visibility and daylight windows.	Traffic & variability Third-party vessels, historical conditions and scenario variation.

Why the shared waterway mattered

Constraints extend beyond terminal infrastructure

Burrard Inlet was a potential constraint on terminal capacity because vessels had to navigate the same restricted waterway as other users. The model considered pipeline supply, grade inventories, berth availability, weather and marine movements together. This allowed proposed marine conditions and storage strategies to be assessed by their effects on delays and overall system performance, rather than through separate capacity calculations.

Transferable insight

Terminal capacity depends on more than tankage and loading rates. Vessel scheduling, shared-waterway restrictions and operating variability must be evaluated together to establish achievable throughput and make sound storage and marine infrastructure decisions.

KEY-PERSONNEL EXPERIENCE Yes Jefferson Lo, P.Eng., modelling and analyst	MISIM CORPORATE ENGAGEMENT No prior-employer project	CLIENT Trans Mountain
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