



Project  
Leaders

# Future-Ready Ferries and Northern Connectivity

**Strategic Asset Lifecycle Planning:**

**Reimagining Shipping, Rail, and Northern  
Connectivity through Churchill, Manitoba**

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# The Port of Churchill: A Northern Gateway

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## Why It Matters

Gateway to Nunavut and the Arctic shipping corridor

Canada's only deep-water Arctic port on Hudson Bay

Shortest route from Prairies to Tidewater

Platform for energy exports, Arctic resupply, critical minerals, tourism and community access.

# The Port of Churchill: A Northern Gateway

## Re-Imagining The Port

First major investment in decades — revitalizing critical northern infrastructure

New dedicated facility for critical mineral exports

Modernizing operations to handle multi-commodity throughput

Enhancing Arctic trade and northern resupply capacity, connecting communities

Future-ready design: sustainability, adaptability, and Indigenous partnership at its core



Scope of Work

# Port Infrastructure Investments

Wharf rebuilding and dredging preparation

Grain elevator maintenance and modernization

Facility investments for critical mineral exports

Long-term site planning and asset management strategy

An aerial photograph showing a large red barge moving through a narrow canal. The canal is flanked by dense green trees and vegetation. In the background, a small bridge crosses a tributary of the canal. The barge is moving away from the viewer, leaving a white wake in the water. The overall scene is a mix of natural greenery and industrial infrastructure.

# Integrating Rail, Marine & Barge Systems

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Reconnecting Churchill's rail link with Arctic and southern trade routes

Exploring barge and potential ferry service to Nunavut and northern remote communities

Coordinating cargo, passenger, and vehicle movement across modes

Designing infrastructure for seasonal shifts - summer, shoulder, and winter operations

Long-term goal: a seamless northern logistics network supporting people, goods, and communities



# Ferry Operations and Lessons from Churchill

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Build adaptability into asset design from the start

Leverage data and AI for predictive maintenance and route optimization

Design for environmental variability — ice, wind, tides, and temperature swings

Expand service windows through seasonal flexibility and shared infrastructure

Invest in multi-purpose ports that support cargo, passenger, and community needs



Community & Indigenous Partnerships

# Community & Indigenous Partnerships

Collaboration with northern and Indigenous communities is central to every stage of planning

Infrastructure designed to create long-term social and economic benefits

Local knowledge informs safe, sustainable, and culturally appropriate design

Partnerships strengthen workforce development and community resilience



# Reimagining Northern Connectivity

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Exploring new marine corridors to connect remote and Indigenous communities

Integrating cargo, passenger, and tourism routes across northern waters

Leveraging icebreaking, seasonal, and shoulder-season operations

Supporting local economies and accessibility through improved mobility

# Ferry & Barge Opportunities

Proposed routes: Churchill ↔ Rankin Inlet,  
Iqaluit, Kuujjuaq

Seasonal operation windows

Ice-capable vessels: ro-pax and modular  
barges

# Service Scenarios

Conservative: Monthly sailings, \$150–\$400 fares, 50–80 pax

Moderate: Bi-weekly/weekly, \$250–\$600 fares, 100–120 pax

Ambitious (15 yrs): Weekly, \$200–\$500 fares, 150 pax + freight barge

# Service Scenarios

Route	Distance (NM)	Notes
<b>Churchill → Rankin Inlet</b>	248 NM	Short route; suitable for weekly service with ice-class ro-pax vessel
<b>Churchill → Kuujuaq</b>	540 NM	Multi-day journey; modular freight + passenger cabins recommended
<b>Churchill → Iqaluit</b>	783 NM	Long route; seasonal only; ice-class vessels and overnight accommodations needed
<b>Churchill → Nanisivik</b>	810 NM	Future route; requires high-end Arctic vessels and icebreaker coordination
<b>Bergen → Kirkenes, Norway</b>	1,220 NM	Year-round coastal express; freight + passengers; multiple overnight stops
<b>Nuuk → Ilulissat, Greenland</b>	160–200 NM	Seasonal service; day or overnight trips connecting small communities
<b>Hirtshals → Isafjordur, Iceland</b>	430 NM	Multi-day journey; connects small communities
<b>Tromsø → Svalbard, Norway</b>	480 NM	Seasonal Arctic cruise/freight hybrid; ice-class vessels required



# Sustainability & Climate Resilience

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Infrastructure designed for extreme and variable northern conditions

Adaptive strategies for ice, permafrost, and sea-level change

Materials and systems chosen for durability and low maintenance

Integration of renewable energy and green technologies

Sustainability measured over decades, not project phases



# Economic & Tourism Diversification

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Revitalized port creates new trade and logistics opportunities

Supports tourism through enhanced access and infrastructure

Emerging market for Arctic expedition and cultural tourism

Local procurement and training strengthen regional economies

Gateway for energy, minerals, and sustainable development



# Technology & Innovation

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Using AI and data analytics for predictive maintenance and planning

Digital twins to simulate performance and extend asset life

Remote sensing and monitoring for northern operations

Smart energy systems and automation improving efficiency

Technology as a bridge between safety, sustainability, and cost control

A photograph of an iceberg floating in the ocean. The top part of the iceberg is visible above the water surface, appearing as a jagged, white mass of ice. The bottom part of the iceberg is submerged, appearing as a large, smooth, and translucent blue-green mass. The water is a deep blue color, and the sky is a clear, bright blue. The horizon line is visible in the distance.

## Key Challenges & Opportunities

# Challenges

Aging northern infrastructure and limited construction windows

Harsh environmental and ice conditions

Complex logistics and high operating costs

Balancing economic growth with environmental protection

# Opportunities

Growing demand for Arctic and northern trade routes

Investment in climate-resilient infrastructure

Emerging technologies enabling year-round operations

Strong community partnerships driving shared success

A white and blue ferry boat is crossing a river, carrying a dark car and a white truck. The boat has a cabin with a red and white flag. The riverbank is dark and gravelly, with a dense forest of tall, thin trees in the background. A blue building is visible on the shore. Several small boats are in the water. The scene is captured from a high angle, looking across the river towards the shore.

## Takeaways for Ferry Operators

# Takeaways for Ferry Operators

**Design for adaptability:** Build assets that evolve with climate, technology, and community needs

**Plan with data:** Use lifecycle tools, AI, and digital twins to anticipate change — not react to it.

**Think beyond the terminal:** Integrate marine, rail, and road systems for seamless connectivity.

**Partner early and often:** Collaborate with Indigenous and local communities for long-term resilience.

**Invest in sustainability:** Future-proof operations through energy efficiency and low-impact design.

An aerial photograph showing a dark, narrow channel of open water cutting through a vast, flat expanse of white sea ice. The ice consists of numerous small, irregular floes. The wake of a ship is visible in the foreground, with white foam and churning water trailing behind. The horizon is flat and extends to the top of the frame under a pale, overcast sky.

Next Steps & Future Vision

# Next Steps & Future Vision

Investing in resilient, future-ready marine and ferry infrastructure

Strengthening northern and coastal connectivity across Canada

Advancing collaboration between public, private, and Indigenous partners

Accelerating innovation — digital twins, AI, and sustainable vessel design

Shaping a unified national vision for marine mobility and economic growth



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Questions?



Thank you

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