Supplying Wood Pellets to Remote Communities

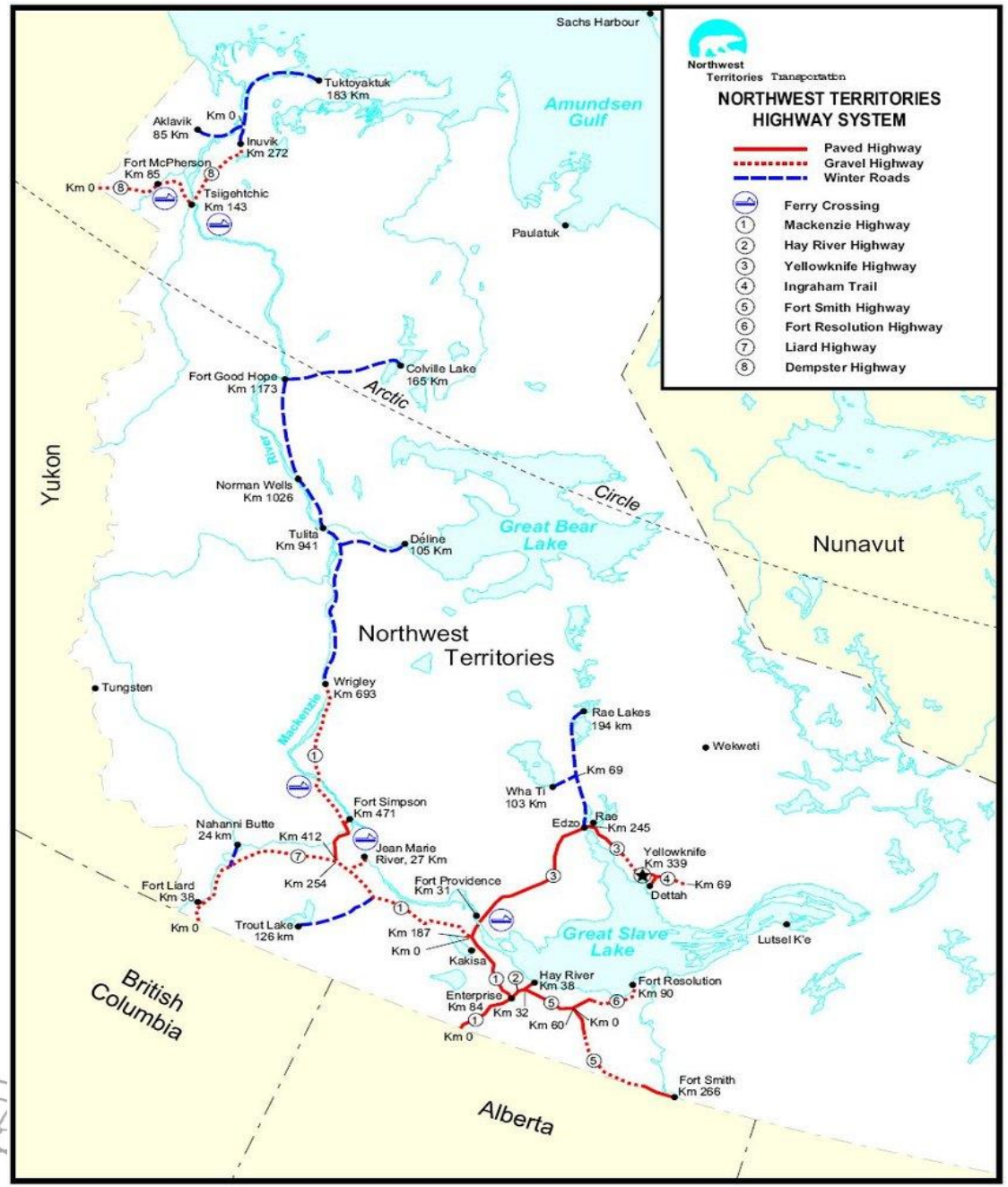
Sheena Adams, Project Manager, Community Energy, GNWT

Arctic Bioenergy Summit – January 27, 2026

Government of
Northwest Territories

Context

- In 2023, the GNWT partnered with Nihtat Energy Limited to conduct a study looking at the cost competitiveness of barge-delivered wood pellets as a heating option in 12 remote communities along the Mackenzie River.
- These communities include Tuktoyaktuk, Inuvik, Aklavik, Fort McPherson, Tsiigehtchic, Fort Good Hope, Norman Wells, Tulita, Wrigley, Fort Simpson, Jean Marie River, and Fort Providence.
- At the time of the study, Marine Transportation Services (MTS) and Cooper's Barging were the two main barge operators on the Mackenzie River, providing services to six of the 12 communities included in the study.
- The study is available on our website: https://www.inf.gov.nt.ca/en/services/energy


Northwest Territories Transportation
NORTHWEST TERRITORIES HIGHWAY SYSTEM
Paved Highway
Gravel Highway
Winter Roads
Ferry Crossing
1 Mackenzie Highway
2 Hay River Highway
3 Yellowknife Highway
4 Ingraham Trail
5 Fort Smith Highway
6 Fort Resolution Highway
7 Liard Highway
8 Dempster Highway
Sachs Harbour
Tuktoyaktuk 183 Km
Amundsen Gulf
Aklavik 85 Km
Km 0
Inuvik Km 272
Fort McPherson Km 85
Km 0
Tsiigehtchic Km 143
Paulatuk
Fort Good Hope Km 1173
Colville Lake 165 Km
Arctic
Yukon
River
Norman Wells Km 1026
Circle
Great Bear Lake
Tulita Km 941
Déline 105 Km
Nunavut
Northwest Territories
Tungsten
Wrigley Km 693
Mackenzie
Rae Lakes 194 km
Wekweti
Km 69
Wha Ti 103 Km
Fort Simpson Km 471
Edzo
Rae Km 245
Nahanni Butte 24 km
Km 412
Jean Marie River, 27 Km
Yellowknife Km 339
Km 69
Dettah
Fort Liard Km 38
Km 254
Fort Providence Km 31
Km 0
Trout Lake 126 km
Km 187
Km 0
Kakisa
Great Slave Lake
Lutsel K'e
British Columbia
Hay River Km 38
Fort Resolution Km 90
Enterprise Km 84
Km 32
Km 60
Km 0
Km 0
Fort Smith Km 266
Alberta

What Was Studied?

- Overall heating needs, the logistics of delivering wood pellet and the total landed cost of pellets for each community
  - Community and GNWT Buildings Heat Load Profiles
  - Biomass Barging Options
  - Current Wood Pellet Biomass Use in GNWT Buildings
  - Existing Landed Costs: Wood Pellets & Other Fuels ($/GJ)
  - Mackenzie River Region Biomass Heating Supply Chain Challenges, Gaps and Deficiencies
  - Potential Solutions in the Beaufort Delta Region and Next Steps

Key Findings

1. Private investments: Contributed to the success of supply chains in the Sahtu and the Dehcho, with limited or no public funding – with the GNWT being one main customer.

2. Storage: Additional seasonal storage in remote communities could help mitigate existing biomass supply challenges.

3. Hub Distribution is important: A 1,380-ton storage facility in Norman Wells was highlighted as a crucial hub for distributing pellets to surrounding communities.

4. Cost Savings: Wood pellets typically cost less than heating oil, with some estimates suggesting they provide heat at a cost equivalent to 60–67 cents per litre of oil.

5. Local Supply Potential: There is strong interest in developing local, community-based wood chip or pellet production, as many NWT communities have abundant surrounding biomass.

Key Findings (Cont'd)

6. Climate Change: Challenges to biomass expansion in remote communities include impacts from climate change on barging operations, the cost of barging, the lack of storage in certain communities, and limited pellet supply options.

7. Barge Potential: Transporting pellets via the Mackenzie River is a viable alternative to highway transportation, though it requires robust storage solutions, particularly in the Beaufort-Delta region.

8. Savings: Results showed that in most communities, wood pellets are a cheaper alternative to heating oil.

9. Recommendation: Increasing Seasonal Storage in the Beaufort Delta. The Beaufort-Delta region faces unique challenges with fluctuating water levels and less-reliable winter road access, making efficient, large-scale storage critical. The study recommended increasing storage capacity to prevent supply disruptions caused by low water levels or winter road closures.

Highlighted Challenges

- **Low water levels on the Mackenzie River** (linked to climate change) have disrupted barge service in 2023 and 2024 and will likely continue to affect the availability of barging as effects from climate change intensify.
- **Extreme weather and warmer temperatures** (also fueled by climate change) are affecting road access and ice roads, delaying pellet deliveries.
- **MTS's costs** are higher than Cooper's, partly due to larger boats and a cost-recovery pricing model.
- **NWT currently relies on one main pellet supplier**, which poses a long-term supply risk.

Conclusion

- The 2023 study by the Government of the Northwest Territories (GNWT) and Nihtat Energy Limited found that shipping wood pellets by barge is a cost-effective, low-carbon heating option for many remote communities along the Mackenzie River, offering a less expensive alternative to heating oil.
- The study supports one of the Strategic Objectives of the NWT 2030 Energy Strategy by looking at ways to advance towards the goal of reaching 40% share of renewable energy used for space heating in the building sector by 2030.
- The study also supports the availability of cheaper heating options such as biomass across the NWT as affordable energy is one key element of the vision of the NWT 2030 Energy Strategy.

Mársı | Kinanāskomitin | Thank you | Merci | Hąį’ | Quana | Qujannamiik | Quyanainni | Máhsı | Ması | Mahsì

Sheena_Adams@gov.nt.ca