Northwest Territories

Backgrounder

NWT Power System Plan

The vision for the NT Power System Plan (NTPSP) provides a short and long term outlook for developing the necessary resources and systems to provide reliable, clean, and socially acceptable electric power for the communities and industries of the Northwest Territories.

The concept of developing the NTPSP arose when NT Energy was developing its strategic plan in 2011. It was determined that a long term plan was needed to map out energy priorities and to understand what options were available to develop energy infrastructure and stabilize energy costs in the NWT.

Work on the NTPSP was supplemented by the NWT Energy Charette which was held in November 2012 by the Department of Industry, Tourism and Investment. The Charette brought together energy stakeholders and experts from government, industry, aboriginal governments, non-government organizations and consulting sectors to discuss opportunities and challenges for the NWT's energy sector.

Regional Twenty Year Outlook Summary

In the NTPSP each region was reviewed to determine which potential energy options hold the most potential for future energy development. The following factors were considered:

- Grid Expansion
- Non-diesel firm power options
- Renewable Resources for diesel off-set

North and South Slave Regions

Snare Grid Expansion - Connect the community of Whati to the Snare grid.

Non-diesel firm power options – Primary options is Liquefied Natural Gas (LNG) for road connected communities.

Renewable resources for diesel off-set – Solar, wind and small hydro generation are all potential options

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Dehcho Region

Taltson grid expansion - Connect the communities of Kakisa, Fort Providence and Fort Simpson to the Taltson grid.

Non-diesel firm power options - Primary option is LNG for road connected communities.

Renewable resources for diesel off-set - Solar has potential for use in this region

Sahtu Region

Regional transmission grid – transmission connections within the region are uneconomic due to long distances and low community loads. It may become more economic if transmission can be tied to industrial loads associated with petroleum development and production.

Non-diesel firm power options - Hydro on the Great Bear River.

Renewable resources for diesel off-set – Wind and Solar are potential options.

Beaufort Delta

Regional transmission grid - transmission connections within the region are uneconomic due to long distances and low community loads.

Non-diesel firm power options - LNG for road connected communities.

Renewable resources for diesel off-set - Wind and Solar are potential options.

Grid Expansion

NT Energy is currently exploring the technical viability of the various elements of expanding the grid. The key pieces of the vision include:

- Connect two existing hydro systems at Snare and Taltson together which will improve reliability, shift two diesel communities to hydropower and consolidate our surplus hydro resources.
- Extend the grid northeast towards established mines in the Slave Geological Province in order to attract the customer base needed to support the investment and benefit electricity rates.
- The model proposes that the public sector own the transmission network while individual mine customers will pay for transmission spurs to feed into the Grid.
- Interconnect the grid to the south in Saskatchewan or Alberta to stabilize our system and tie us into the North American grid.

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- An expanded grid will create an efficient energy market and allow time for the GNWT to build and transition to renewable energy sources like hydro and wind.

Summary of Power System Plan Recommendations

Category	0 → 5 Year Recommendations	6 → 20 Year Recommendations
Creating an NWT Grid	• Pre-feasibility work for Snare Grid and Taltson Grid interconnection • Secure commitment for funding	• Design and construction of a Snare Grid and Taltson Grid Interconnection • Expansion of NWT grid to support economic development
Pursue an Intertie with Saskatchewan and Alberta	• Initiate negotiations with SaskPower to confirm opportunity for a Power Purchase Agreement • Negotiate with Alberta	• Construct interconnection between NWT Grid and SaskPower Grid • *ALTERNATIVE*: Construct interconnection with Alberta
Undertaking Regional Initiatives: Regional Grid Expansion	• Pursue an extension from Snare Grid to Whatì • Pursue an extension from Taltson Grid to Fort Providence and Kakisa	• Extend Taltson Grid to Fort Simpson via Jean Marie River

Undertaking Regional Initiatives: Firm Power Options for Replacing Diesel	• LNG Implementation Study and pilot project for Inuvik
	• LNG Feasibility Studies:
	  • Fort Simpson (Dehcho)
	  • Fort McPherson (Beaufort Delta)
	  • Yellowknife (North Slave)
		• Additional LNG Feasibility Studies:
		  • Fort Liard (Dehcho)
		  • Jean Marie River (Dehcho)
		  • Wrigley (Dehcho)
		  • Tsiigehtchic (Beaufort Delta)
		  • Tuktoyaktuk (Beaufort Delta)

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Undertaking Regional Initiatives: Intermittent Power Options for Offsetting Diesel	• Continue to collect data, design work, and costing work for Storm Hills Wind Project • Achieve the installation of photovoltaic generation in five communities Feasibility work for solar installations in: • Colville Lake (Sahtu) • Jean Marie River (Dehcho); • Lutsel K'e (South Slave);or • Nahanni Butte (Dehcho)	• Additional wind feasibility studies: • Paulatuk (Beaufort Delta) • Sachs Harbour (Beaufort Delta) • Tuktoyaktuk (Beaufort Delta) • Ulukhaktok (Beaufort Delta) • Continue to add solar installations as per GNWT Solar Energy Strategy (to achieve 20% of average load). Potential communities include: • Gamètì (North Slave) • Whatì (North Slave) • Wekweètì (North Slave) • Fort Providence (Dehcho) • Kakisa (Dehcho) • Trout Lake (Dehcho) • Nahanni Butte (Dehcho) • Fort Good Hope (Sahtu) • Norman Wells (Sahtu) • Tulita (Sahtu) • Deline (Sahtu) • Aklavik (Beaufort Delta) • Paulatuk (Beaufort Delta) • Sachs Harbour (Beaufort Delta) • Tuktoyaktuk (Beaufort Delta) • Ulukhaktok (Beaufort Delta)

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