Conservation Council of New Brunswick
Conseil de conservation du Nouveau-Brunswick

# Modernizing New Brunswick's Transmission Infrastructure

## Purpose

This document outlines the urgent need to modernize and expand New Brunswick's transmission infrastructure to support the province's clean energy transition, accommodate rising electricity demand, and improve reliability. Strategic investment in grid upgrades will facilitate the integration of renewable energy, reduce inefficiencies, and position New Brunswick as a leader in the transition to a low-carbon economy.

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## Issue Summary

While progress has been made, the provincial grid remains 30% reliant on fossil fuels, contributing to harmful greenhouse gas emissions. Additionally, NB Power faces financial challenges, with a debt-to-equity ratio of approximately 94%, highlighting the need for strategic investments to modernize infrastructure and transition to renewable energy sources.

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## Background and Challenges

**Current infrastructure limitations**

- **Transmission line limitations:** Older transmission lines may not have the capacity to carry large volumes of power from remote renewable energy sources to population centers. (US DoE, 2022)
- **Variable generation:** Renewable energy sources fluctuate based on weather conditions, meaning the grid needs to adjust power flow rapidly to accommodate these fluctuations. (IRENA, 2018)
- **Lack of flexibility:** Traditional grids were designed for predictable power generation while integrating renewables, often requiring more dynamic grid management and flexibility options like distributed energy resources and energy storage. (IEA, 2022)

**Population growth and increasing demand for electricity**

- As of July 1, 2023, New Brunswick's population was 834,691, a 3.1% increase from the previous year. This was the highest population growth rate in the province's history. (GNB - The New Brunswick Economy: 2023 in Review, 2024)
- New Brunswick's electricity demand is rising, driven by population growth, economic development, industrial expansion, and the growing shift toward electrification. This surge is particularly evident in sectors such as transportation and heating, which are increasingly transitioning to electric solutions. (GNB - Powering our Economy and the World with Clean Energy, 2024)

**Global pressures**

- Global emissions are rising, increasing pressure to curb climate change, with the electricity sector playing a crucial role in driving emissions reductions. (Energy+Environmental Economics, 2022)
- Recent U.S. trade tariffs on energy exports demonstrate the volatility of global energy markets. Strengthening east-west transmission planning is crucial for Canadian energy security, reducing reliance on U.S. markets and ensuring that provinces can better share and distribute renewable energy resources across the country.

**Lessons from Other Regions**

- **Texas**: The Competitive Renewable Energy Zones (CREZ) program demonstrates the economic and reliability benefits of proactive grid investments. (Powering Texas)
- **New England**: Regional collaboration models emphasize the importance of interprovincial partnerships to optimize transmission planning and resource sharing.

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## Recommendations

- **Promote Regional Energy Planning:**
    - Develop a collaborative energy model with the Northeast Grid Planning Forum to establish a unified power system planning tool for Eastern Canada. This tool will be crucial for analyzing the complexities of the interconnected energy grid. Specifically, the model can assess cost-saving benefits for ratepayers, evaluate grid resiliency and reliability improvements, and quantify economic and trade advantages.
    - Support the creation of a regional independent system operator (ISO) to coordinate energy resources, improve grid reliability, and optimize renewable energy deployment across provinces (Transmission and System Operator Options for Nova Scotia).
    - Initiate dialogue with neighbouring provinces in Canada to develop a framework for an interconnected and resilient transmission network similar to the Atlantic Loop. (NEG ECP 2024 resolution).

- **Secure Federal Support:** Work with the federal government to secure funding for interprovincial collaboration on energy system modelling, planning, and regional transmission development. Emphasize how these initiatives align with national climate and energy objectives.
- **Generate revenue in New Brunswick:** Explore opportunities to expand renewable energy generation alongside transmission infrastructure to export clean electricity, generating additional revenue to reduce NB Power's net debt of $5.557 billion as of September 30, 2024, and strengthen its financial position. (NB Power Q2 Report, 2024)
- **Engage with communities to build trust:** In areas of energy planning, including renewable energy development and transmission infrastructure, adopting best practices for community engagement is essential for successful implementation. Our *Best Practices Guide for Community Engagement in Energy Projects* (Conservation Council, 2023) offers valuable guidance for communities, stakeholders, and project developers to ensure meaningful, inclusive, and timely engagement.

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## Significance and Impact

- As the planet gets warmer, it is critical to reduce emissions. Modernized transmission infrastructure is pivotal to integrating renewable energy into the grid and reducing fossil fuel dependency (IRENA World Energy Transitions Outlook, 2023).
- New Brunswick's electricity demand is expected to increase due to population growth, electrification of transportation, and expanding industries. A modernized grid is essential to meet this rising demand while ensuring reliability and affordability. The current business-as-usual approach does not align with emissions reduction targets or the province's long-term energy security.

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## Analysis

**Impact on Stakeholders and Rightsholders**

1. **Indigenous Communities:** Indigenous communities hold rights and interests in land use and energy development. They are key partners in renewable energy projects and must be engaged in decision-making to ensure equitable benefits and respect for treaty rights.
2. **Energy Consumers:** Residential, commercial, and industrial consumers will experience changes in electricity rates, reliability, and access to cleaner energy sources.
3. **NB Power:** As the province's primary electricity provider, NB Power must modernize its grid, invest in renewable energy integration, and manage financial risks associated with infrastructure upgrades and policy shifts.

4. **Government of New Brunswick:** The provincial government plays a central role in shaping energy policy, regulating utilities, and directing funding for infrastructure projects that support a cleaner energy transition.
5. **Federal Government:** Federal policies like the Clean Electricity Regulations support renewable energy expansion and grid modernization in New Brunswick. However, to ensure successful implementation in New Brunswick, the federal government must also provide financial support for the province's grid modernization efforts.
6. **Neighboring Provinces:** Nova Scotia, Québec, Prince Edward Island, and Newfoundland and Labrador are potential partners in regional transmission expansion and interprovincial power trading.

**Risks and Opportunities**

**Risks:**

- **High Capital Costs:** Significant investment is needed for infrastructure upgrades.
- **Regulatory and Policy Barriers:** Coordination challenges across provincial and federal regulations.
- **Grid Reliability Risks:** Potential short-term disruptions during upgrades.
- **Financial Risks for NB Power:** Increased debt burden and cost recovery challenges.
- **Indigenous and Community Concerns:** Need for meaningful consultation and land-use considerations.

**Opportunities:**

- **Expanded Renewable Energy Integration:** Enables greater use of wind, solar, and hydro.
- **Enhanced Energy Security:** Strengthens grid reliability and resilience.
- **Economic Growth:** Job creation and investment in clean energy sectors.
- **Lower Long-Term Electricity Costs:** Improved efficiency and access to cheaper clean energy.
- **Regional Energy Collaboration:** Facilitates interprovincial power trading and emissions reductions.

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**Current Status**

NB Power's analysis shows no economic viability for the Atlantic Loop until 2040 (NB Power IRP, 2023), while NB Power continues to export fossil fuels to generate revenue (NB Power 21/22 Annual report, 2022) rather than pushing efforts to trade clean electricity.

The New Brunswick–Nova Scotia Intertie is advancing, with Nova Scotia Power completing its Environmental Assessment in December 2023 and planning for line construction by 2027. The project includes a new 345-kilovolt transmission line spanning 96 kilometres from Onslow, NS, to the NB border. This project seeks to improve grid reliability, facilitate renewable energy

integration, and enhance interprovincial power transmission. However, large-scale transmission projects require years to develop and construct. Early collaboration and planning with neighbouring provinces are essential to ensure New Brunswickers can benefit from initiatives like the Atlantic Loop if they become operational.

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## Key Contacts

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