



# Canada's Electricity Future Requires a Reliable Backbone

## Key Takeaways (CER 2026)

- **Electricity demand grows significantly:** +26% to +84% by 2050, driven by electrification and new loads such as data centres, which could add up to 12 GW of demand by 2050.
- **System scale expands dramatically:** Installed capacity increases from ~160 GW to 270–400 GW
- **Wind and solar drive most new capacity:** 50–150 GW of wind added, increasing system variability
- **Electricity enables emissions reductions:** Power sector emissions fall by more than 90% by 2050
- **Grid complexity increases:** Transmission capacity grows by ~70%, with electricity flows more than doubling

## 1. System Implications

- **A larger grid is also more complex:** Growth in variable generation increases the need for firm, flexible, and dispatchable electricity
- **Reliability requirements increase with system scale:** System stability, peak demand management, and integration of renewables depend on available, on-demand power
- **Electricity plays a central role in decarbonization:** Electrification expands across multiple sectors

## 2. Hydropower in an Expanding Grid

- Hydropower provides approximately **55 per cent of Canada's total electricity** and about **86 per cent of its renewable electricity**, forming the foundation of a stable power system.
- It enables the integration of growing wind and solar capacity by providing the flexibility and balancing needed to manage variability.
- Its long asset lifespans and lack of fuel input support affordability, reliability, and resilience over time.
- Expanding interprovincial transmission increases the value of dispatchable hydropower resources across regions.

### 3. Planning Considerations

- **System value considerations increase in importance:** Reliability, flexibility, and longevity are not fully captured in project-level cost comparisons
- **Dispatchable resources remain required:** CER scenarios show continued reliance on dispatchable generation, including hydropower, to maintain system reliability.
- **Coordinated infrastructure development is required:** generation, transmission, and storage must expand together
- **Existing assets require ongoing investment:** Hydropower systems require modernization and reinvestment to maintain performance

#### What This Means

- Canada's electricity system is expanding in scale and complexity.
- Reliability becomes more critical as scale and variability increase, requiring firm, flexible, and dispatchable resources to maintain stability
- Hydropower plays a central role in maintaining reliability, flexibility, and system performance as this transition unfolds.

#### Sources:

Canada Energy Regulator (CER), [Canada's Energy Future 2026](#)  
WaterPower Canada; Natural Resources Canada (NRCAN)

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