

POWERING PROGRESS TOGETHER:

UNLOCKING TRANSMISSION OPPORTUNITIES ACROSS
PROVINCIAL AND INTERNATIONAL BORDERS IN THE
CANADIAN-AMERICAN NORTHEAST

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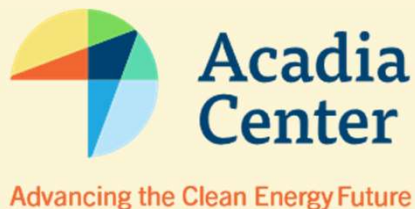
2025 Atlantic Canadian Conference
on System Energy Modeling
June 18, 2025



A JOINT INITIATIVE OF ACADIA CENTER & NERGICA

NERGICA

Co-Convenors of the Northeast Grid Planning Forum (NGPF):



A U.S. Northeast nonprofit, Acadia Center's mission is to advance bold, effective clean energy solutions for a livable climate and a stronger, more equitable economy.



A Canadian centre of applied research based in Québec that stimulates innovation in the renewable energy industry through research, technical assistance, technology transfer, and technical support for businesses and communities.

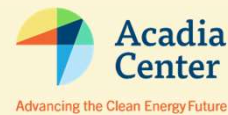
Northeast Grid Planning Forum footprint

- Covers Northeast Power Coordinating Council's (NPCC) footprint, plus Newfoundland and Labrador
- Jurisdictions share aggressive carbon reduction goals and will experience a ~doubling of energy demand by 2050^{1,2,3}
- Optimizes benefits of onshore and offshore wind and other renewable resources
- Eastern Canada & US share a deep history of joint infrastructure planning and development

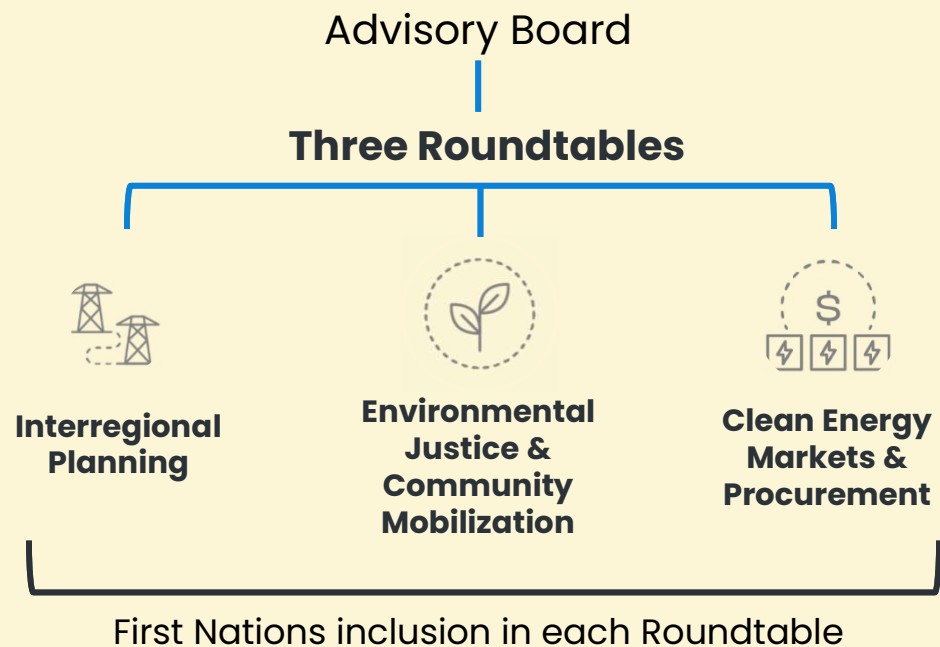


1. ISO New England 2050 Transmission Study, February 2024
2. New York State Climate Action Council Scoping Plan, December 2022
3. Canada's Energy Future 2023: Energy Supply and Demand Projections to 2050, June 2023

Organizational structure



An inclusive structure facilitates collaboration and effective decision-making, for a next-generation power network that will safeguard the economic competitiveness and energy resilience of the entire region.



Benefits of US – Canada interregional planning are well documented

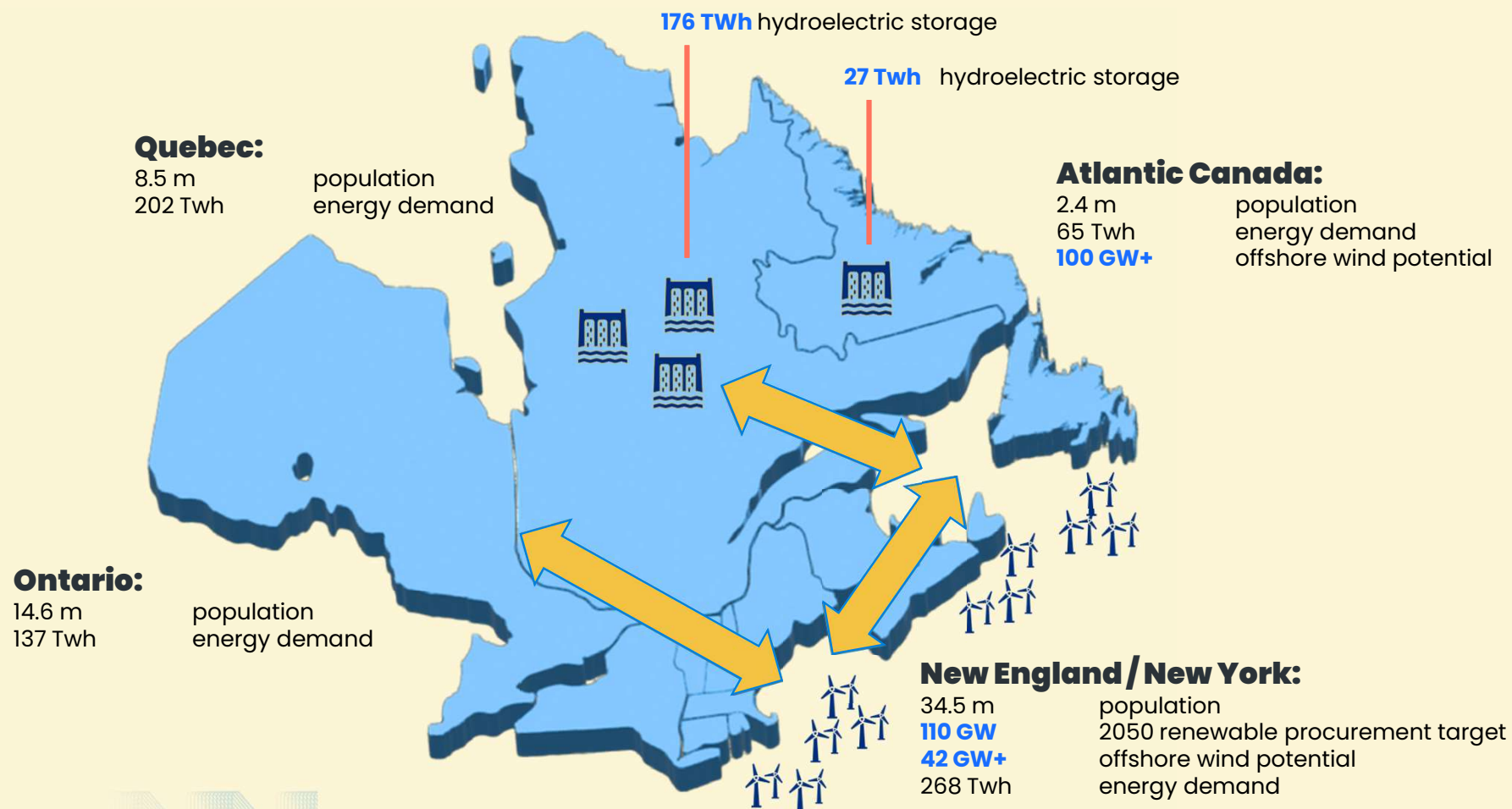
- In different transmission and renewable addition scenarios between Québec and New York and New England... the **net benefits of increased coordination and transmission are in the range of \$4B per year.**
(Williams et al, Evolved Energy 2018)
- “Adding 4 GW of transmission between New England and Quebec is **estimated to lower the costs of a zero-emission power system [in that region] by 17–28%.**”
(MIT CEEPR, 2020)
- “It is optimal to shift the ... existing hydro and transmission assets... toward a two-way trading of electricity to balance intermittent US wind and solar generation. Doing so **reduces power system cost by 5–6%.**”
(MIT CEEPR, 2020)
- “During a simulated polar vortex in February 2035, greater transmission **prevented ~ 2 million customers losing power across Boston, New York City, Baltimore and Washington DC saving \$1B.**”
(GE International Study, 2022)

Benefits of US / Canada interregional planning

Delivers a more secure, affordable, and clean energy future

- Optimizes benefits of transmission investment and avoids overbuilding generation
- Enhances reliability across the footprint by expanding options for supply balancing and resource adequacy
- Opens new markets for energy trade and maximizes the impact of new onshore and offshore renewable generation
- Accelerates progress toward jurisdictional clean energy goals
- Incentivizes energy efficiency
- Attracts cost-competitive capital by de-risking interregional projects

Connecting clean energy resources for bi-directional trade



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Energy efficiency alternatives to building new generation

Quebec:

17,111 kWh
1g / kWh
5.1¢

household consumption
carbon intensity
cents / kWh

Atlantic Canada:

13,303 kWh
171g / kWh
11.9¢

household consumption
carbon intensity
cents / kWh

Energy efficiency is a low-cost energy resource with numerous benefits. Reducing local demand for electricity through energy efficiency measures is a resource that can help achieve clean energy goals across the region.

Ontario:

8,300 kWh
26g / kWh
7.8¢

household consumption
carbon intensity
cents/kWh

New England:

7,308 kWh
220g / kWh
24.1¢

household consumption
carbon intensity
cents / kWh

New York:

6,916 kWh
186g / kWh
23.7¢

household consumption
carbon intensity
cents / kWh

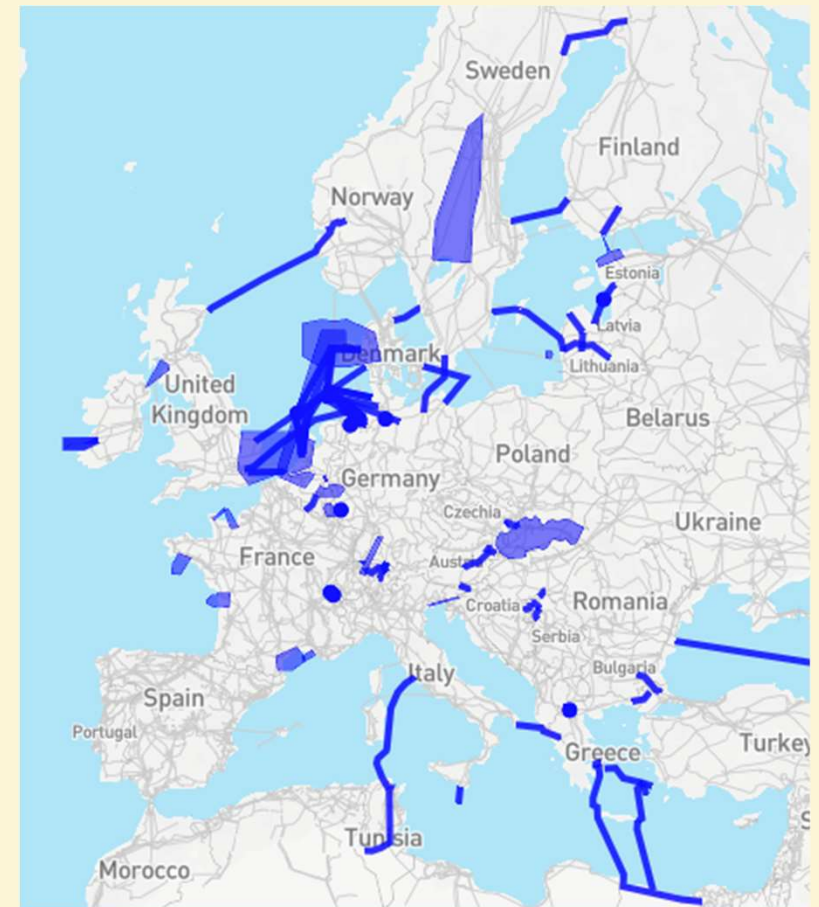
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NGPF's current initiatives

- Community engagement and capacity building review
- Eastern Canada – Northeast U.S. Transmission Development Roadmap with Power Advisory
- Modelling initiative

Examples of successful interregional approaches (inspiration for the roadmap)

- E.U. Projects of Common Interest (PCIs) framework
- US RTOs MISO and SPP "Joint Targeted Interconnection Queue" process
- New England's Long-Term Transmission Planning Process (LTTP)



European Network of Transmission System Operators for Electricity (ENTSO-E): 10-year Development Plan
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Modeling Value Proposition

- Provide a unified energy system modeling framework for the entire US-Canadian northeast, spanning provinces and states
- Quantify the benefits of enhanced interregional coordination and planning to inform policy decisions
- Guide interregional procurement by identifying least-risk and high impact development opportunities
- Identify and compare opportunities across balancing authorities to optimize existing resources and guide new development

Modeling scope

- Geospatial analysis with adjustable assumptions to project system characteristics across planning scenarios
- Includes all anticipated generation and demand-side resources, including energy efficiency

Partners:

- **ZERO Lab at Princeton University (U.S.)**
- **Energy Modeling Hub (Canada)**
- **Open Energy Transition (Europe)**

Data considerations

- Existing models only provide a basic representation of integrated Canada – U.S. Northeast; all data must be reviewed and updated
- Planned upgrades include incorporating data from CODERS for Canada and the PUDL dataset for the U.S.
- Data gaps will be identified and addressed

Model outputs

- **Validated open-source capacity expansion modeling tool** for the Canadian and U.S. Northeast
- Comparative analysis of Key Performance Indicators (KPIs) and outcomes for **isolated versus integrated interregional planning**
- **Stakeholder engagement** process to collect and incorporate feedback throughout project design and implementation

Increasing alignment across the NGPF footprint builds momentum for economic growth, energy resilience, and clean, affordable energy

- Re-engagement of the Conference of New England Governor's and Eastern Canadian Premiers
- Establishment of Northeast International Committee on Energy (NICE) and Transmission Working Group
- Renewed Canadian federal and provincial interest in interregional energy trade
- Establishment of US Northeast States Collaborative on Interregional Transmission and release of a Strategic Action Plan
- Cost allocation models established by FERC Order 1920 and New England's Long-Term Transmission Plan

Next steps

- **Eastern Canada – Northeast U.S. Transmission Development Roadmap – June 2025**
 - *Model regulatory planning frameworks*
 - *Cost allocation strategies*
 - *Framework for defining shared stakeholder modeling goals.*
- Expand outreach and deepen engagement with key stakeholders
 - *Provincial and state officials*
 - *Balancing authorities*
 - *Utilities*
 - *Consumer, indigenous and community groups*
 - *Commercial interests*
- Secure Funding to Implement Model



THANK YOU!

FOR FURTHER INQUIRIES:

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