



WORK BETTER | AIM HIGH | BUILD THE FUTURE

ADVANCED ENERGY CONFERENCE

GARY SUTHERLAND

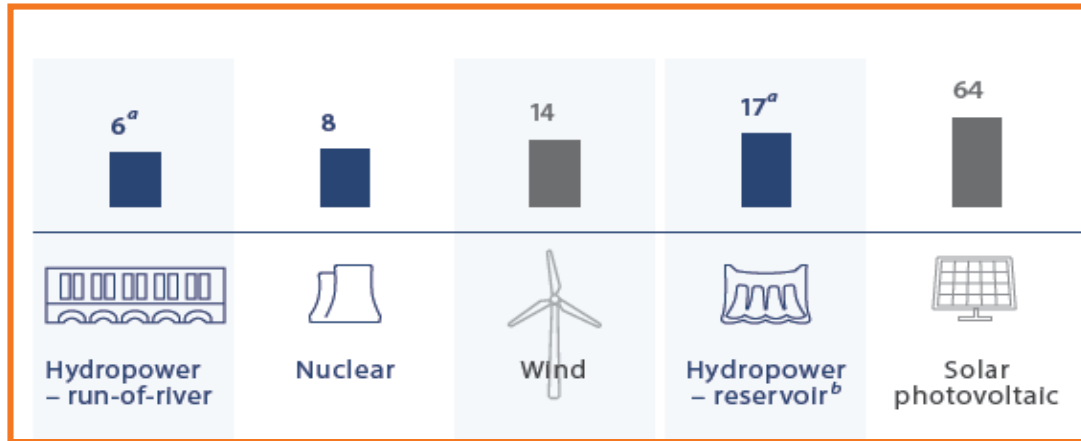
DIRECTOR, EXTERNAL RELATIONS, HYDRO-QUÉBEC INTERNATIONAL

New York | March 28, 2018

Decarbonizing the Northeast

(g CO₂ eq. /kWh)

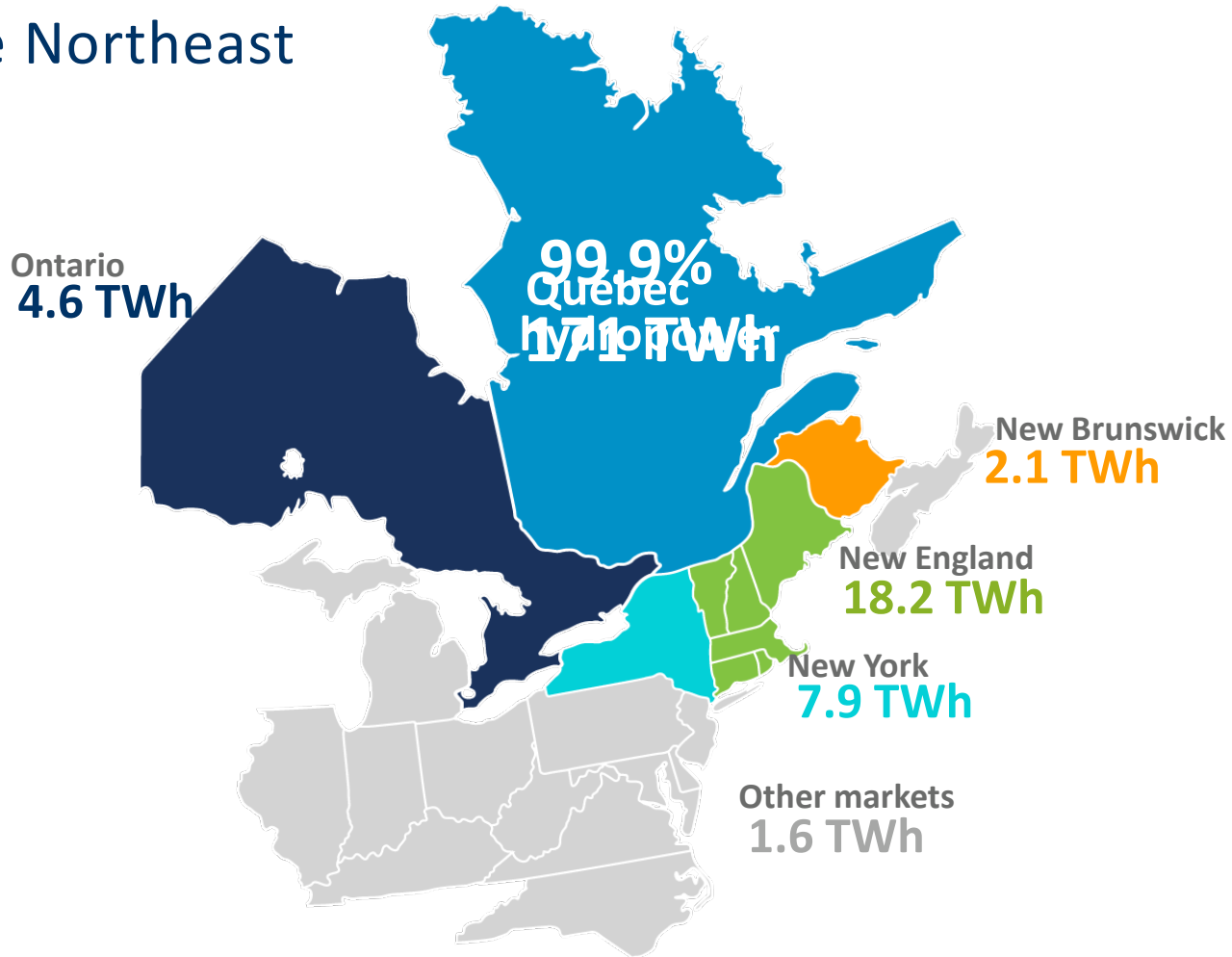
■ CONTINUOUS-OUTPUT OPTION
■ INTERMITTENT-OUTPUT OPTION



a) Hydro-Québec's results.

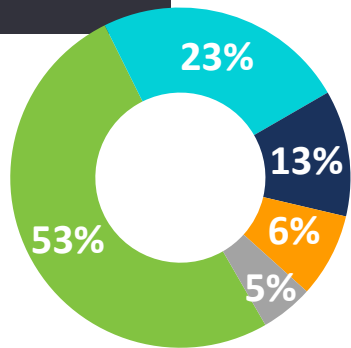
b) Reservoir hydropower differs from run-of-river hydropower with respect to GHG emissions. After it is impounded, a reservoir releases GHG emissions, with the emission rate diminishing gradually over the following ten years. This is why GHG emission rates are higher for reservoir hydropower than for run-of-river hydropower.

Decarbonizing the Northeast



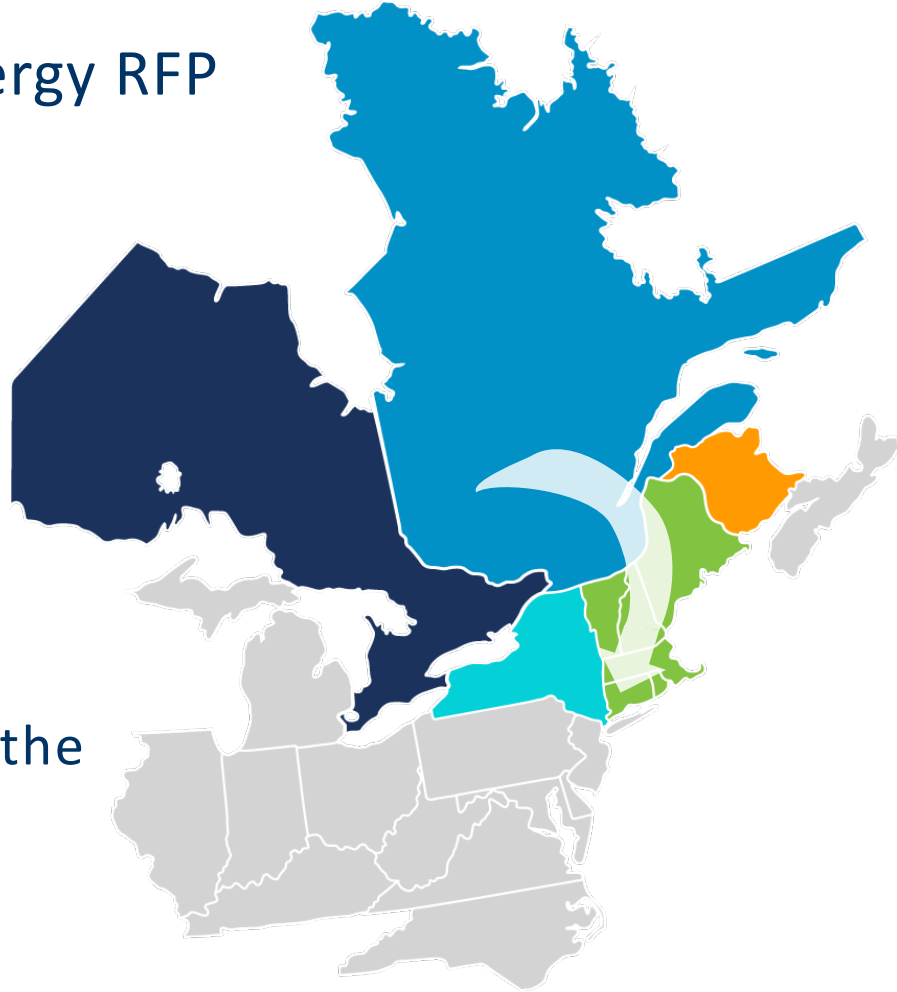
Total net exports:

34.4 TWh



Massachusetts Clean Energy RFP

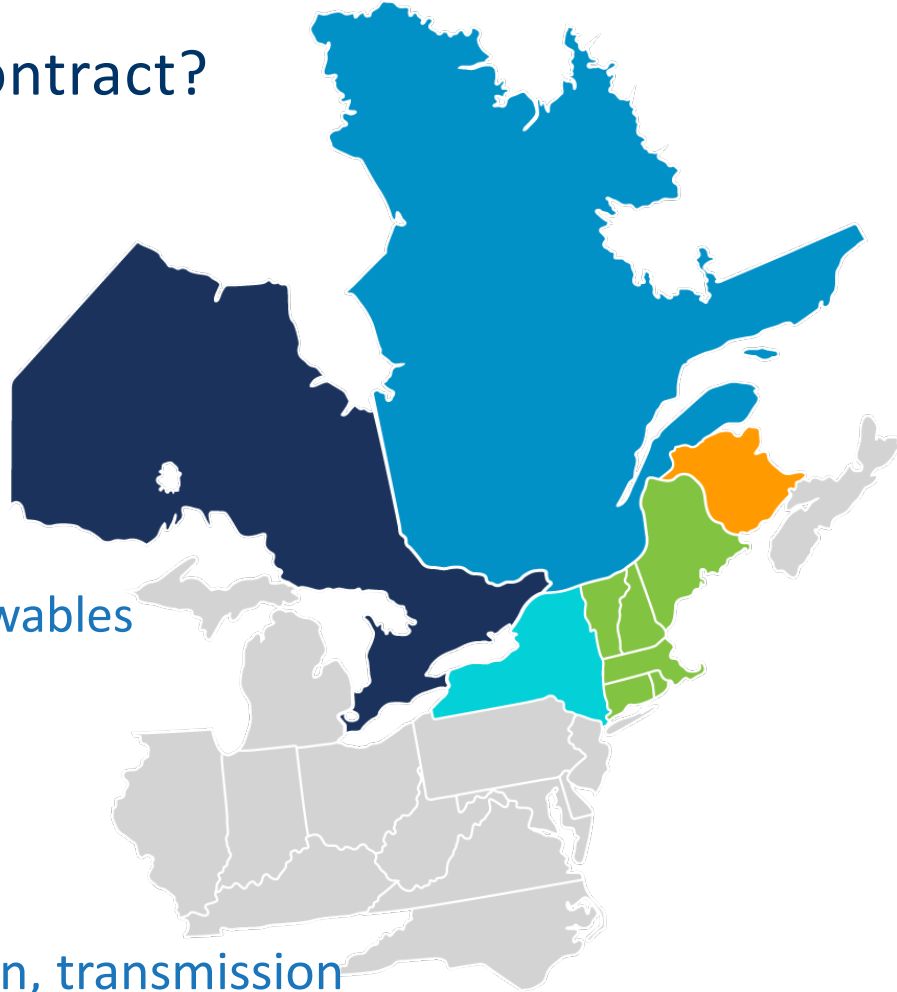
- 9.45 TWh of Québec hydropower selected by Massachusetts
- New transmission line between Québec and New England grids
- 20-year contract for deliveries every hour of the year



And after that 20-year contract?

We'll need:

- Clean
 - Firm
 - Cost-effective
 - Flexible
- Balancing variable renewables
 - Seasonal storage
 - Ramping capabilities



- Transmission, transmission, transmission

KEY TAKEAWAYS

- **The need for flexibility has increased and this trend will in all likelihood continue.**
- **The Northeast has flexibility in many of its energy supply options** but some of it will need to be **unlocked**. This could be accomplished through:
 - Improvements to **existing market mechanisms**: more flexible scheduling at interties, better price signals
 - New **flexibility-specific products** (ramping, attribute-specific capacity, wind balancing, storage)
 - Development of **other incentives** (inside or outside organized markets): mandates/RFPs, incentives for resources under contract



**A
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HYDRO-QUÉBEC: THE BATTERY OF THE NORTHEAST