



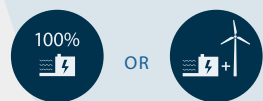
WATER AND WIND
QUÉBEC'S CLEAN, RENEWABLE
ENERGY RESOURCES

QUÉBEC HAS THE CLEAN ENERGY MASSACHUSETTS NEEDS

Hydro-Québec is proposing a new source of clean energy to Massachusetts, in the form of firm deliveries every hour of the year for 20 years and beyond, over a new interconnection to be built between the Québec and New England power systems.

Through innovative partnerships with experienced New England transmission developers and proven Québec wind power producers, Hydro-Québec is proposing six options—either 100% hydropower or a hydro-wind blend—involving one of three possible transmission projects.

6 OPTIONS FOR MASSACHUSETTS



NEW ENGLAND CLEAN POWER LINK



NORTHERN PASS



NEW ENGLAND CLEAN ENERGY CONNECT

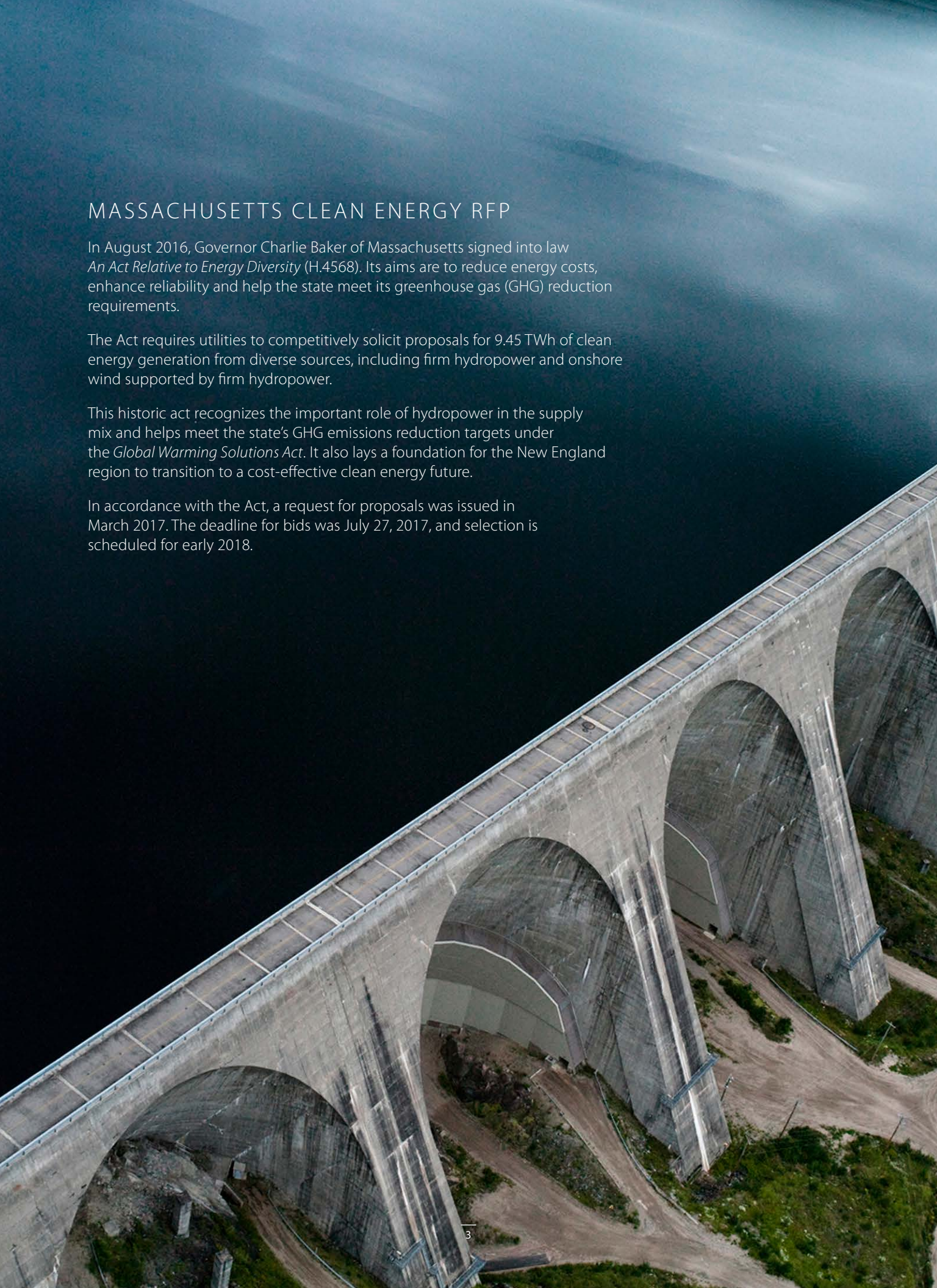
MASSACHUSETTS CLEAN ENERGY RFP

In August 2016, Governor Charlie Baker of Massachusetts signed into law *An Act Relative to Energy Diversity* (H.4568). Its aims are to reduce energy costs, enhance reliability and help the state meet its greenhouse gas (GHG) reduction requirements.

The Act requires utilities to competitively solicit proposals for 9.45 TWh of clean energy generation from diverse sources, including firm hydropower and onshore wind supported by firm hydropower.

This historic act recognizes the important role of hydropower in the supply mix and helps meet the state's GHG emissions reduction targets under the *Global Warming Solutions Act*. It also lays a foundation for the New England region to transition to a cost-effective clean energy future.

In accordance with the Act, a request for proposals was issued in March 2017. The deadline for bids was July 27, 2017, and selection is scheduled for early 2018.





MORE CLEAN ENERGY; NEW, LASTING INFRASTRUCTURE

Hydro-Québec has been providing power to New England for decades. The company has enough hydropower to supply Massachusetts with more clean energy today. But to provide the incremental energy the state requires, new transmission facilities must be built.

New transmission infrastructure will improve reliability and cost-effectiveness in New England for decades to come. Interconnected electricity markets are more efficient, using power generated from a range of resources over a much wider geographic area. That lowers the cost of producing and managing electricity for everyone.



RELIABLE BASELOAD ENERGY WITH ENVIRONMENTAL ATTRIBUTES

Hydro-Québec has a fleet of 62 hydroelectric generating stations, 61 of which are connected to the main grid. Power comes from the entire system, not from just one particular generating station, and is carried over a robust high-voltage transmission system. For this reason, supply is not affected by maintenance or equipment failure at any single facility.

Not only is hydropower a constant, permanently available energy source, it's also flexible. Thanks to its storage capacity, a reservoir generating station can respond instantly to changes in demand, including during peak periods.

Delivered energy will be tracked to individual generating stations to allow for the creation and transfer of environmental attributes to distribution companies in Massachusetts as required by the RFP.

BACKING UP INTERMITTENT RENEWABLES WITH BASELOAD RENEWABLES

Hydropower—a flexible and controllable source of electricity—is the only renewable option that can firm up intermittent renewables such as solar and wind power and support their development.

Three of the bids submitted by Hydro-Québec under the Massachusetts RFP propose a blend of Québec wind power and hydro. Wind energy is supplied by Gaz Métro and Boralex. In all cases, Hydro-Québec guarantees a 100% clean, renewable power supply for Massachusetts.



— Québec has abundant wind resources. To date, a total of 3,500 MW has been brought online to serve Québec, and the province's wind industry is continuing to identify new potential projects.

QUÉBEC ENERGY FOR A LOW-CARBON FUTURE

Energy from Québec, in the form of water and wind, can be part of the solution to the major challenges facing North America in reducing greenhouse gas emissions and ensuring a secure electricity supply.

VAST HYDROPOWER RESOURCES

99% of our electricity is generated using water

> 500,000 lakes

> 4,500 rivers – of which 75 have been developed for power generation

Hydropower and wind are among the lowest-emission generating options per kilowatthour.

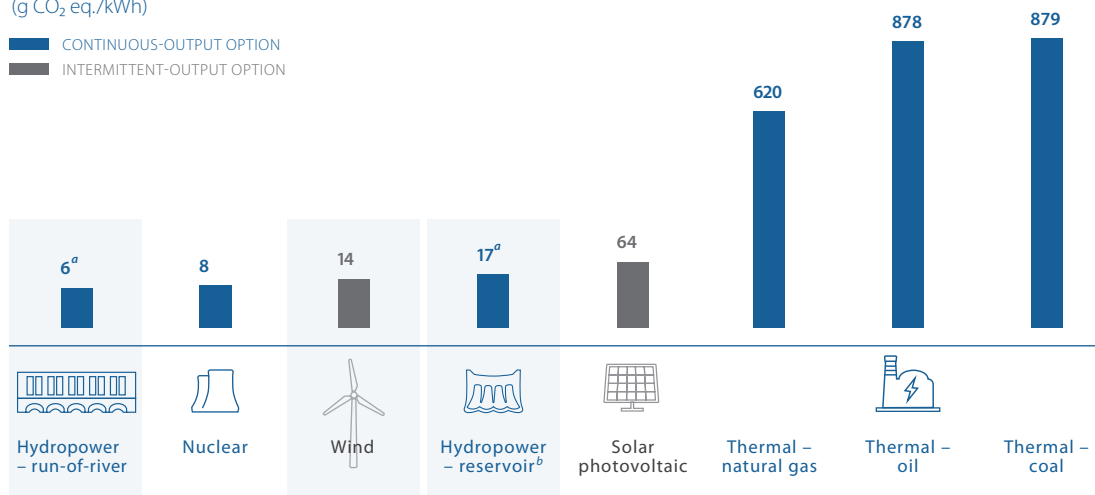
QUÉBEC ELECTRICITY, CLEAN ENERGY PAR EXCELLENCE

GHG emissions – power generation options based on life-cycle analysis

[www.hydroquebec.com/developpement-durable/centre-documentation/pdf/15094A.pdf]

(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, 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.

HYDRO-QUÉBEC: THE BATTERY OF NORTHEAST NORTH AMERICA

In addition to being a major source of clean energy, Hydro-Québec's vast reservoir system enables it to firm up intermittent renewables, absorb excess generation from surrounding markets and flow that power back onto those grids when it is most needed.



WORKING WITH HYDRO-QUÉBEC OFFERS EXCEPTIONAL ADVANTAGES TO MASSACHUSETTS:

- **Clean energy** that will help the state meet its carbon reduction goals in the most cost-effective way
- **Energy now** – Hydro-Québec's hydropower resources are already in service
- **Enhanced reliability** – all of Hydro-Québec's vast generation and transmission system supports deliveries
- **Foreseeable long-range operating costs** – Hydro-Québec can offer long-term contracts with competitive pricing far into the future
- **Strong finances** – one of the highest debt ratings of any regulated public utility
- **Extensive experience** in operations and maintenance
- **Proven track record** in developing large energy projects

As a region, we've been working together in the energy sector for decades. But Québec can do more to ensure a low-carbon future for the entire Northeast.

HYDRO-QUÉBEC AND ITS PARTNERS HAVE THE ENERGY MASSACHUSETTS NEEDS

Firm supply
at all times, all year round

Clean energy
to diversify the state's energy portfolio

Cost-effective solutions
to help reduce ratepayer costs

A
NATURAL
ALLY



hydroquebec.com/international