New England and Quebec –
A Growing Energy Partnership
December 7, 2011

Delivering Clean Power…
... to over 1 million homes
Why Canadian HydroPower is an attractive resource option

Other Characteristics

- Quebec and Northeast Markets have complementary load characteristics
  - Northeast Markets peak in summer
  - Quebec market peaks in winter (electric heating)

- Reservoir-based hydro also effectively provides storage services and is dispatchable, unlike other low/no-emission resources which are intermittent (e.g., wind or solar)

- Systems require a AC-DC-AC transformation to link systems and ensure frequency stability

### Lifetime GHG emissions (g CO₂e/kWh)

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>GHG Emissions (g CO₂e/kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydroelectric run-of-river</td>
<td>4</td>
</tr>
<tr>
<td>Nuclear</td>
<td>6</td>
</tr>
<tr>
<td>Wind</td>
<td>9</td>
</tr>
<tr>
<td>Hydroelectric with reservoir</td>
<td>10</td>
</tr>
<tr>
<td>Photovoltaic solar</td>
<td>38</td>
</tr>
<tr>
<td>Thermal: natural gas</td>
<td>422</td>
</tr>
<tr>
<td>Thermal: coal</td>
<td>957</td>
</tr>
</tbody>
</table>

Source: World Energy Conference 2010
Existing HQ Interconnections with the NorthEast

Three Major Interconnections

High Gate (Quebec - Vermont)
- 225 MW
- Major supplier of Vermont’s energy needs through a long term energy contract

Phase I/II (Quebec – Massachusetts)
- 2000 MW potential (1200 MW firm)
- Spot and short term contracts with New England markets
- New York (Upstate Interconnection)
- 1500 MW
- Spot and short term contracts with New York markets
Two Developing Projects
The Northern Pass and Champlain-Hudson Power Express

**CHPE**
- 1000 MW interconnection
  - HVDC to NYC
  - Under water / ground cable
- Merchant business model, contracts under development
- Project in service date 2016

**The Northern Pass**
- 1200 MW interconnection
  - HVDC to Franklin, NH
  - AC Radial to Deerfield
- 7-10 GWh of energy transfer capability
- Unique business model approved by FERC, Transmission Agreement approved by FERC
- Final route selection and siting in 2012/2013
Northern Pass -- An Innovative Win-Win Business Model

• The transmission line will be participant funded
  • NU and NSTAR provide the capital
  • HQ will fund all revenue requirements in exchange for firm transmission rights, per FERC Orders (5/22/09 and 12/31/09)
  • New England customers will bear NO cost for transmission
• HydroQuebec will assume market risk for power sales
  • HQ Parent guarantying revenue requirements (fixed price PPA not required for credit security)
  • Long Term Fixed Price Power Purchase Agreements NOT REQUIRED
  • This alleviates the major objections to the business model raised by generators and marketers
• This is a win – win model for Quebec and New England
  • HQ preserves all the market upside associated with energy price volatility
  • New England gets clean, renewable power without a significant market premium
**Northern Pass Benefits are Significant**

Additional 1,200 MW of generation bids into New England wholesale markets.

$180-$315m savings/yr*

1,200 MW of New England energy that *doesn’t* come from fossil fuels.

<table>
<thead>
<tr>
<th>Incremental generation supplied to N.E.</th>
<th>7000 Gwh</th>
<th>10,000 GWH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural gas conserved</td>
<td>36 BCF</td>
<td>52 BCF</td>
</tr>
<tr>
<td>CO₂ emissions avoided**</td>
<td>3.4 MM tons</td>
<td>4.8 MM tons</td>
</tr>
<tr>
<td>(percent of N.E. RGGI emissions)</td>
<td>(6.1%)</td>
<td>(8.7%)</td>
</tr>
<tr>
<td>Equivalent car emissions</td>
<td>600,000</td>
<td>800,000</td>
</tr>
<tr>
<td>Homes supplied with clean electricity</td>
<td>840,000</td>
<td>1,200,000</td>
</tr>
<tr>
<td>Homes heatable with displaced natural gas</td>
<td>450,000</td>
<td>650,000</td>
</tr>
</tbody>
</table>

* Based on CRA’s detailed dispatch modeling using GE MAPs

** Using ISO-NE’s marginal emissions rate for 2008 (most recent available) of 964 lbs CO₂ equivalent per MWh