Canada/New England: Opportunities for Regional Growth

New England Economic Partnership (NEEP)
Barry Bluestone
June 9, 2016
New England/Canada Trade
## New England - Canada Trade

<table>
<thead>
<tr>
<th></th>
<th>Merchandise Exports</th>
<th>Merchandise Imports</th>
<th>Services Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut</td>
<td>$1,600</td>
<td>$3,400</td>
<td>$773</td>
</tr>
<tr>
<td>Maine</td>
<td>$1,300</td>
<td>$1,900</td>
<td>$157</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>$3,100</td>
<td>$7,600</td>
<td>$2,200</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>$545</td>
<td>$4,900</td>
<td>$244</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>$522</td>
<td>$429</td>
<td>$173</td>
</tr>
<tr>
<td>Vermont</td>
<td>$1,200</td>
<td>$2,900</td>
<td>$1,500</td>
</tr>
<tr>
<td><strong>New England</strong></td>
<td><strong>$8,267</strong></td>
<td><strong>$21,129</strong></td>
<td><strong>$5,047</strong></td>
</tr>
</tbody>
</table>

Source: Compiled by Embassy of Canada (Washington, D.C.)
<table>
<thead>
<tr>
<th>State</th>
<th>Jobs Dependent on Canadian Trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut</td>
<td>96,400</td>
</tr>
<tr>
<td>Maine</td>
<td>38,500</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>211,000</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>39,000</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>27,600</td>
</tr>
<tr>
<td>Vermont</td>
<td>18,900</td>
</tr>
<tr>
<td>New England</td>
<td>431,400</td>
</tr>
</tbody>
</table>

Source: Compiled by Embassy of Canada (Washington, D.C.)
## Employment (2014)

<table>
<thead>
<tr>
<th>State</th>
<th>Total Employment</th>
<th>Jobs Dependent on Canadian Trade</th>
<th>Percent of Total Jobs Dependent on Canadian Trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut</td>
<td>1,766,934</td>
<td>96,400</td>
<td>5.5%</td>
</tr>
<tr>
<td>Maine</td>
<td>646,438</td>
<td>38,500</td>
<td>6.0%</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>3,354,036</td>
<td>211,000</td>
<td>6.3%</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>693,329</td>
<td>39,000</td>
<td>5.6%</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>511,362</td>
<td>27,600</td>
<td>5.4%</td>
</tr>
<tr>
<td>Vermont</td>
<td>325,336</td>
<td>18,900</td>
<td>5.8%</td>
</tr>
<tr>
<td><strong>New England</strong></td>
<td><strong>7,297,435</strong></td>
<td><strong>431,400</strong></td>
<td><strong>5.9%</strong></td>
</tr>
</tbody>
</table>

Source: Compiled by Embassy of Canada (Washington, D.C.); U.S. Census Bureau, American Community Survey (ACS)
New England Merchandise Exports to Canada by Industry Sector
(in $Millions)
2015

Source: Compiled by Embassy of Canada (Washington, D.C.)
New England Service Exports to Canada by Sector
(In $Millions)
2015

Source: Compiled by Embassy of Canada (Washington, D.C.)
New England Merchandise Imports from Canada by Industry Sector
(In $Millions)
2015

Source: Compiled by Embassy of Canada (Washington, D.C.)
New England/Canada Merchandize Trade Balance by Industry Sector
(in $Millions)
2015

New England Export Dominance

Canadian Export Dominance

Source: Compiled by Embassy of Canada (Washington, D.C.)
New England Exports to Canada

- Aircraft & Aircraft Parts
- Fuel Oil
- Plastics & Plastic Products
- Fish & Crustaceans
- Wood Products
- Paper and Paperboard
- Optical, Medical & Precision Instruments
- Computers
- Telephones & AV Recording Equipment
- Motor Vehicle Parts
- Rubber & Rubber Articles
- Clothing
- Footwear
- Toys and Games
- Compressors and Pumps

Source: Compiled by Embassy of Canada (Washington, D.C.)
Major Canadian Merchandise Exports to New England

- Fish & Crustaceans
- Natural Gas
- Precious Metals
- Fuel Oil
- Paper & Paperboard
- Plastics & Plastic Articles
- Wood & Semi-Finished Wood Products
- Electricity
- Iron & Steel Tubes, Pipes, and Sheets
- Inorganic Chemicals
- Furniture & Bedding
- Stone & Cement Products
- Aluminum & Aluminum Articles
- Animal Meats

Source: Compiled by Embassy of Canada (Washington, D.C.)
New England Projections
## New England Projected Population Growth

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut</td>
<td>3,590,886</td>
<td>3,829,527</td>
<td>238,641</td>
<td>6.6%</td>
<td>29.5%</td>
</tr>
<tr>
<td>Maine</td>
<td>1,329,328</td>
<td>1,394,244</td>
<td>64,916</td>
<td>4.9%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>6,794,422</td>
<td>7,149,819</td>
<td>355,397</td>
<td>5.2%</td>
<td>44.0%</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>1,330,608</td>
<td>1,395,587</td>
<td>64,979</td>
<td>4.9%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>1,056,298</td>
<td>1,126,389</td>
<td>70,091</td>
<td>6.6%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Vermont</td>
<td>626,042</td>
<td>640,579</td>
<td>14,537</td>
<td>2.3%</td>
<td>1.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14,727,584</strong></td>
<td><strong>15,536,145</strong></td>
<td><strong>808,561</strong></td>
<td><strong>5.5%</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau
New England Projected Output (GDP) Growth
(Inflation-Adjusted)

2015: $862.7 Billion
2025: $972.1 Billion
2015-2025 Growth: 12.7%

What do these projections mean for just one part of New England’s Infrastructure – Electricity?
# Projected Electricity Consumption – “Business-as-Usual”
(in millions of kilowatt hours)

<table>
<thead>
<tr>
<th>State</th>
<th>Residential</th>
<th>Commercial</th>
<th>Industrial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut</td>
<td>13,093</td>
<td>13,029</td>
<td>3,392</td>
</tr>
<tr>
<td>Maine</td>
<td>4,658</td>
<td>4,098</td>
<td>3,085</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>20,501</td>
<td>17,562</td>
<td>16,066</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>4,531</td>
<td>4,503</td>
<td>1,959</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>3,167</td>
<td>3,666</td>
<td>926</td>
</tr>
<tr>
<td>Vermont</td>
<td>2,113</td>
<td>2,027</td>
<td>1,422</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>48,063</strong></td>
<td><strong>44,885</strong></td>
<td><strong>26,850</strong></td>
</tr>
<tr>
<td><strong>2015</strong></td>
<td><strong>48,545</strong></td>
<td><strong>50,135</strong></td>
<td><strong>29,991</strong></td>
</tr>
<tr>
<td><strong>2025</strong></td>
<td><strong>51,215</strong></td>
<td><strong>56,502</strong></td>
<td><strong>33,799</strong></td>
</tr>
<tr>
<td>2015-2025 Increase</td>
<td>+2,670</td>
<td>+6,367</td>
<td>+3,809</td>
</tr>
</tbody>
</table>

New England

|                | +12,846 mKh | +10% |

Source: U.S. Department of Energy; Dukakis Center Projections
New England’s Electricity Demand - 2025

• The “Business-as-Usual” Projection assumes “no change in behavior” – households consume as much electricity per capita in 2025 as today; businesses use as much electricity per dollar of output as today.

• Even if we somehow reduce our electricity demand per capita and per dollar of output by half, this projection suggests electricity demand by 2025 will be 5% higher than today – an increase of more than 6.4 million kilowatt hours.

• Seems easy!

• But here’s the rub: According to ISO New England, the retirement of the remaining nuclear, coal, and oil-fired generation will reduce the region’s generating capacity by 13% by 2020 at a minimum … with the potential of a 30 percent reduction if generating plants over 40 years old are retired.
ISO New England Electricity Sources - 2015

Percent of Total Generation

- Natural Gas 48.5%
- Nuclear 29.6%
- Hydro 7.5%
- Coal 3.6%
- Oil 1.8%
- Wind 2.0%
- Solar 0.4%
- Other Renewables 5.6% (Wood, Refuse, Landfill gas, methane, steam)

Source: ISO New England
So where do we get the electricity we will need?

- The current answer is to **buy more natural gas** … and pipe it in from Pennsylvania and float it in from Yemen.

- At peak times such as the winter of 2012/2013 **pipelines into New England were already running at full capacity.**

- Higher demand for natural gas in the region, combined with pipeline constraints and the increased global price for liquefied natural gas, drives up the price of fuel. **By 2013, the region spent 54% more per kilowatt hour for electricity than the national average** – a major burden for New England households and especially for energy-dependent New England Industry.

- **Wind and Solar generated electricity can help** … but until scientists develop much more cost-efficient ways to store huge amounts of electricity … **wind and solar cannot provide reliable 24/7 power.**
The New England-Canadian Alternative
Hydro Quebec

- Hydro-Quebec operates 63 hydroelectric power stations with a combined output capacity of nearly 37,000 megawatts – 96.8% powered by water; 2.9% by other renewables; 0.2% by nuclear; and 0.1% by thermal.

- TransEnergie, Hydro-Quebec’s transmissions division, operates the largest electricity transmission network in North America.

- In 2010, Vermont’s two largest utilities entered into a 26-year deal to purchase up to 225 MW of hydro power from Hydro-Quebec from 2012 to 2038.

- TransEnergie plans to build a new 1200-MW direct link between the Windsor, Quebec and Deerfield, New Hampshire.

- According to Northeast Utilities, New England could meet one-third of its Regional Greenhouse Gas Initiative commitments with hydropower coming through this new power line alone.

- BUT HOW DO WE GET THIS ELECTRICITY SOUTH OF DEERFIELD?
The Key Political Issue
The problem is not whether we have enough generating capacity, but whether we can find a way to build transmission lines that bring clean hydro power from Canada to Massachusetts, Connecticut, and Rhode Island.

There is natural objection to more massive power lines across New Hampshire, Maine, and Vermont.

Is there a way to compensate our northern tier so that there is a “win-win” on energy?

Is it possible to built a cost effective underwater cable from New Brunswick to Massachusetts to avoid land-lines?

Clearly, to meet our energy needs, to reduce the cost of electricity, and to meet our gas-house emission commitments, we need to find answers to these questions.

We economists need to turn to brilliant engineers and wise politicians to help answer these questions!
Here’s the New England-Canada Deal I’d Like to See

• Find a way for Hydro-Quebec to export more clean electric power to New England
• Find a way to encourage Canadians to help with the trade imbalance by coming to New England for vacation in even greater numbers than they do now … visiting
  • The Green Mountains of Vermont
  • The White Mountains of New Hampshire
  • The Atlantic Coast of Maine
  • Cape Cod and the Berkshires in Massachusetts
  • Newport in Rhode Island
  • The beauty of Long Island Sound in Connecticut
Thank You