

New England Canada Business Council  
25<sup>th</sup> Annual Energy Conference  
November 8-9, 2017

**Session 1**  
**Twenty-Five (25) Years After:**  
**Where Have We Been?**  
**Where Are We Going?**

Geoff Mitchell, President Brant Energy, Inc.

To start I want to briefly describe the origins of the New England Canada Business Council and this NECBC Annual Energy Conference.

The New England Canada Business Council was formed in 1982.

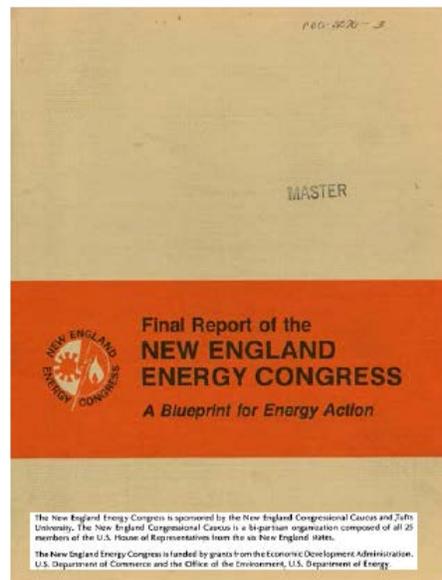
- It was the idea of the Canadian Consulate's Trade Commissioner Robert Merner
- It was formed in conjunction with and managed by the Boston Chamber of Commerce and the Consul General's office.
- To set the record straight I was the second president.
- In 1985, Canadian Consul General Barney Danson suggested and organized with the Chamber, the first Maple Leaf Ball. The Ball was Co-Chaired by Barney Danson and hockey great Bobby Orr.
- In the early 1980's several energy projects were in the development stage to bring Canadian natural gas from Alberta and electricity from Hydro Quebec to southern New England. Prior to these projects, oil fired and nuclear generation from New Brunswick was imported through Maine and both natural gas and electricity into Vermont.

The original New England Canada Business Council Energy Conference was held in November 1987

- It was conceived by Frederic Nemergut - who you will hear more about tomorrow. In 1987 Fred was working at J. Makowski Associates and was deeply involved in getting Canadian gas to New England for a group of 15 northeast US gas distribution utilities.
- The initial conference was held at the Park Plaza Hotel in conjunction with the 3<sup>rd</sup> Maple Leaf Ball.

- The purpose of having a New England Canada Business Council energy conference was to help give a “business reason” for the MLB attendees so they could obtain business related expense receipts.
- The cost of the first energy conference was \$10.00. It was held on Saturday morning on the day of the Ball.
- The first guest speaker was James Malachowski, a Commissioner at the RI Public Utility Commission.
- Initial attendance was 12 to 15 people – mostly from Canada.
- The revenue went to the MLB fund to help with the annual student exchange between Boston inner city high school students and an alternating Canadian city high school.

### **What set the stage for the energy sector in the 1980’s?**



After the OPEC oil embargo of the early 1970’s, New England had the highest energy costs in the US and was basically dependent on unreliable and high cost imported oil products for over 80% of its primary energy supplies. For the energy sector community in New England, the 1979 release of the New England Energy Congress Blueprint for Energy Action offered a roadmap to change the high cost energy supply situation.

This 450 page comprehensive study was undertaken by the New England Congressional Caucus and Tufts University to help New England identify options to wean itself off imported oil products and provide a forecast of what New England’s energy supply, demand and cost picture could look like in 2000 and beyond.

The New England Energy Congress Blueprint For Action’s objectives were to:

- Reduce New England’s oil consumption from 80% of total energy supply in 1976 to less than 50% (about the national average) in year 2000.
- Encourage energy conservation.
- Encourage development of alternative energy sources.
- Encourage expansion of natural gas use.
- Balance New England economic, environmental and social needs with energy needs.
- Provide flexibility to meet the regions energy needs if alternative energy source development or demand for energy is different than expected.

My view is that the Blueprint is responsible for shaping much of our present day energy supply and delivery infrastructure.

The changes in primary energy supplies from imported oil and coal to natural gas has been dramatic. In 1976 oil, coal and natural gas made up 89 % of the regions primary energy. By 2015, oil was at 44 % with natural gas at 28% and coal reduced to 2%.

**Percent Change in Primary Energy Mix 1976-2015**

	% Total	% Total	% Total
<u>Energy Source</u>	<u>1976</u>	<u>2000</u>	<u>2015</u>
Oil	80.0	51.0	44.0
Natural Gas	8.6	19.0	28.0
Coal	0.8	6.0	2.0
Nuclear	8.8	11.0	13.0
Hydro/Biofuels/Renewables	1.8	13.0	13.0
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Sources NE ISO, Blueprint for Energy Action and NE Gas Association/DOE

The major factors for these supply source changes were:

- Fuel switching from imported No 6 oil in the power generation and industrial sectors to domestic and Canadian natural gas, and, to a lesser extent bio fuels.
- Related “west to east” increases in pipeline capacity in Canada, NY state and across New England.
- From the mid 1980’s to the present time these pipeline expansions have allowed the power sector to replace aging oil and coal plants with high efficiency combined cycle

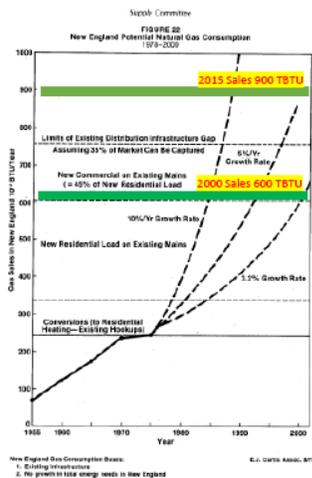
combustion turbine plants using natural gas as the primary fuel. Natural gas now provides 36% of our generating capacity and 50% of our annual electric energy supply.

- In 1976, renewables (mostly wood biofuels) and small scale hydro were 1.8% and nuclear power 8.8% of primary energy supply. In the electric sector today nuclear power provides 30 %; hydro 6%; wind 2%; solar 1% and bio fuels and refuse about 8%.

From an environmental perspective, the replacement of the heavy oil and coal with cleaner burning gaseous fuels was and continues to be a big win for reductions in atmospheric combustion products.

The biggest contribution to the natural gas growth was improved access to gas supply by expanding pipeline capacity to and within New England and Eastern Canada

## A Summary of the Natural Gas Expansion-1976 to 2015



### New Infrastructure Contributing to 28% Growth in Natural Gas Use in New England

- Increased use of underground natural gas storage in 1980's
- Boundary Gas with Alberta gas imports in late 1980's
- Construction of the Iroquois Gas Transmission System in the early 1990's
- Portland Pipeline crude to gas conversion in the late 80's/early 90's
- Nova Scotia Sable Island gas imports via the Maritime and Northeast Pipeline in the late 1990's
- Portland Natural Gas Transmission System in mid 1990's.
- New LNG imports from Trinidad gas at the Distrigas LNG Terminal in Everett, MA and the Repsol Canaport the mid to late 2000's.
- Relatively small incremental expansion projects on Algonquin and Tennessee post 2010

In the 1980's New England was served by two interstate pipelines, Quebec and northern Vermont by one Canadian Interprovincial pipeline. Atlantic Canada did not have natural gas. These 3 major pipelines were supplied primarily from the US gulf coast and Western Canada.

Today the two regions are served by 4 major inter-state and 2 interprovincial interconnected pipelines with supplies coming from Western Canada, the fast growing Marcellus/Utica production area in the northeast US, offshore Nova Scotia gas production, augmented by imported LNG via two LNG import terminals in Boston and New Brunswick.

In spite of these pipeline infrastructure expansions since the early 1980's, **New England and Eastern Canada still need additional "west to east pipeline capacity" if the region is to take full advantage of low cost US domestic gas available in the Marcellus/Utica gas production areas in Pennsylvania, Ohio and W. Virginia. Additional pipeline capacity will also help reduce winter heating season price volatility that negatively affects the power generation sector.**

## A few comments on the Alternative Energy Sources

The New England Energy Congress Blueprint for Action called for aggressive growth in alternatives to meet 25% of the New England's primary energy consumption by 2000. Today most of these alternative sources are concentrated in the electricity sector.

In 1979, the Alternative Energy target was not set with the idea of limiting climate change and global warming temperature rises. The alternatives were to make a large contribution for replacing high cost and unreliable imported oil products to help make New England competitive with the other regions of the US and Canada that had better access to domestic energy.

### Blueprint called for "aggressive" action to meet 1985 Targets

Wood Energy	200 MW (Gen)
Wood heating (residential/industrial)	114 Tbtu/yr
Solid Waste	24 Tbyu/yr
Small Hydro	375 MW (Gen)
Solar Thermal & PV	24 Tbtu/yr
Wind	3 Tbtu/yr
Tidal	12.5 MW (Gen)

**Recommend "intensive stimulus" of subsidies, tax credits and research grants by the New England States in the range of \$400 million to meet the 1985 goals.**

**Emphasis was on:**

- wood, solid waste                      \$265 million
- Solar/Wind                                \$110 million
- Other                                         \$25 million

Today state and federal subsidies still make up a large part of the government's role in helping Alternatives penetrate into the US energy markets. In 2013 the US federal subsidies was \$16 billion with 72 % going to renewables.

New England still has a way to go for Alternatives to reach the 25% target for primary energy supply. In fact, some states have recently set targets far in excess of this 25% of alternative energy figure but more to address climate change goals.

However, after 40 years, and since most of the alternative energy sources are used to generate electricity, New England still has the highest electric rates in the country with a residential

customer paying 31% above the continental US average and an industrial customer paying 41% above the average in that market sector.

**The challenge for all of the New England states is to continue to work together to bring down it's still high energy costs in relation to the rest of the nation, especially our highest in the nation cost of electricity.**

Cost of Electricity in NE vs Lower 48

	Residential	Comerc'l	Industrial	Transport	Average
Current Electric Prices (cts/KWh)	Jun-17	Jun-17	Jun-17	Jun-17	Jun-17
New England	19.37	15.31	12.37	8.18	16.45
Lower 48 Average w/o NE	13.3	11.0	7.3	8.2	10.9
Difference	6.03	4.30	5.08	(0.02)	5.56
Percent Difference	31%	28%	41%	0%	34%

This situation is not good for New England’s longer term economic competitiveness with other regions of the US, Canada and, in our shrinking world, other countries as well.

New England is not the only country, region or individual state/province that has high electricity costs but is imposing increasingly higher targets for reducing the use of fossil fuels and increasing the use of carbon free renewable alternatives.

Germany has an average electricity cost of 35 cents/kwh and high renewable targets. Likewise, Denmark is at 33 cents, the Netherlands is at 28 cents and in Australia, some states are in the 26 cent range. In New England we are currently at 17 cents as opposed to a national average for the other lower 48 states of 11 cents.

I am sure the topic of increasing renewable energy targets and energy costs to consumers will be discussed during the remainder of this conference and those discussions will hopefully provide some insights into the future for our six New England states and the 5 Eastern Canadian Provinces.

On this note, I would like to leave you with some comments by Tony Abbott, former Prime Minister of Australia in his October address to the Global Warming Foundation in London:

- 1. Inevitably, our Paris agreement was a compromise**
- 2. Renewable energy should properly be referred to as intermittent and unreliable power**
- 3. Throughout last summer, there were further blackouts and brownouts across eastern Australia**
- 4. A market that is driven by subsidies rather than by economics always fails**
- 5. We have got ourselves into this mess because successive federal governments have tried to reduce emissions rather than to ensure reliable and affordable power**

