An Agenda for the Emerging Energy – Economic – Environmental Reality

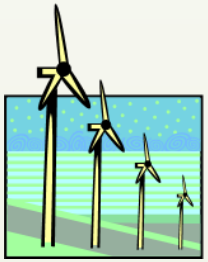
Jim Robb
Senior Vice President, Planning and Development

Northeast Utilities System

New England Energy faces many issues

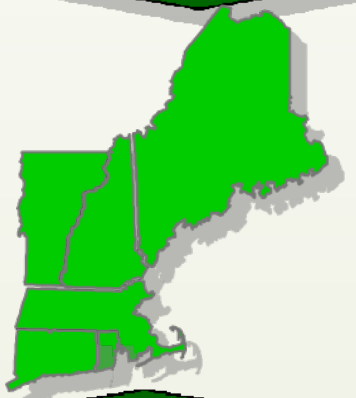
Reliability Concerns

- NERC compliance
- Natural Gas Dependency
- System Operability



Advancing Technology

- Improving renewable costs
- Innovative Grid Communications (AMI/ BPL)
- End use energy management



Continuing Rate Pressure

- Volatile commodity costs
- "Peaky" demand growth
- Infrastructure modernization requirements

Increasing Environmental Pressure

- Climate change policy
- Renewable Portfolio Standards
- Energy efficiency aspirations

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New England Energy faces many issues

Reliability

- **NERC compliance**

National Priorities

- Energy Independence
- Economic Recovery
- Climate Change

- Energy Efficiency
- Renewables
- Electrification

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- **Climate change policy**
- **Renewable Portfolio Standards**
- **Energy efficiency aspirations**

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NU's Energy Sector Agenda

Reduce "traditional" end use energy consumption

Decarbonize our electricity fuel supply

Reduce carbon intensity of "non-traditional" end uses through electrification and/or gasification

Northeast Utilities Proposed 2008 Budget/Impact

		Annual kW Reduction	Lifetime MWh Savings	Program Budget ($1000s)[1, 2]	
Residential	Products Retrofit / Weatherization New Construction L. I. Retrofit	15,440	861,234	32,375	• 36% of budget • 31% of kwh savings • 6% KW savings
Commercial & Industrial	Small Retrofit Large Retrofit New Construction Products / Other	31,723	1,926,424	47,000	• 52% of budget • 69% of kwh savings • 13% KW savings
Load Mgmt & Demand Response[3]		197,300	0	$10,330	
	TOTAL	244,463	2,787,658	$89,705	

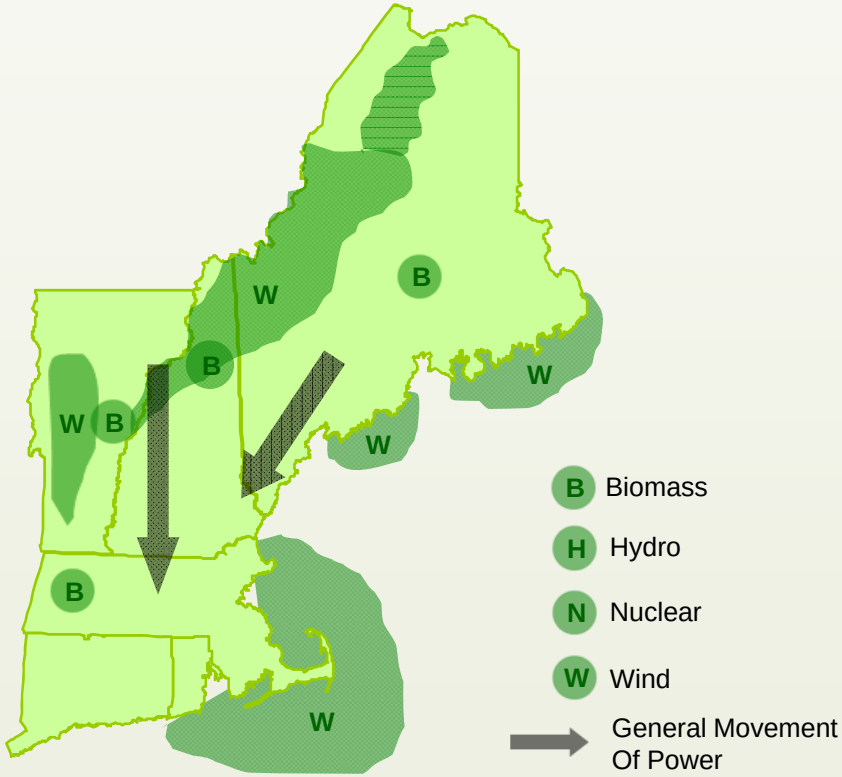
ECONOMICS
- 25 MW of DR at ~ $330/kw
- Lifetime EE savings at ~ $28/mwh
- National recognition

WHAT ARE THE BARRIERS?
- Limited program funding
- Opt in programs
- Agency Issues
- Decision making algorithm

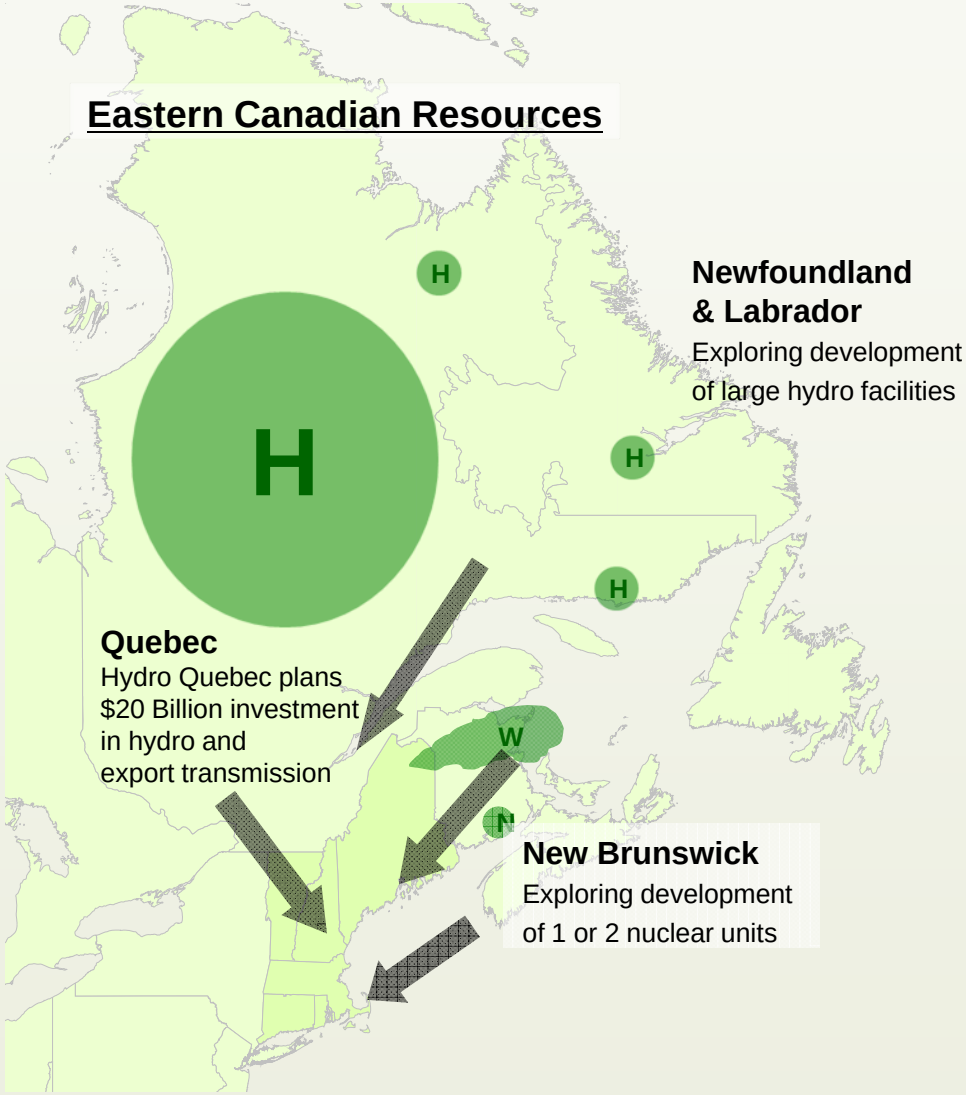
HOW BIG IS THE MARKET?
- Remaining EE potential estimated to be substantial, 38b kWh achievable by 2030 in Northeast (EPRI)
- NU programs are routinely over-subscribed

Renewable resource potential in our markets

New England's Most Attractive Renewable Energy Locations



Eastern Canadian Resources



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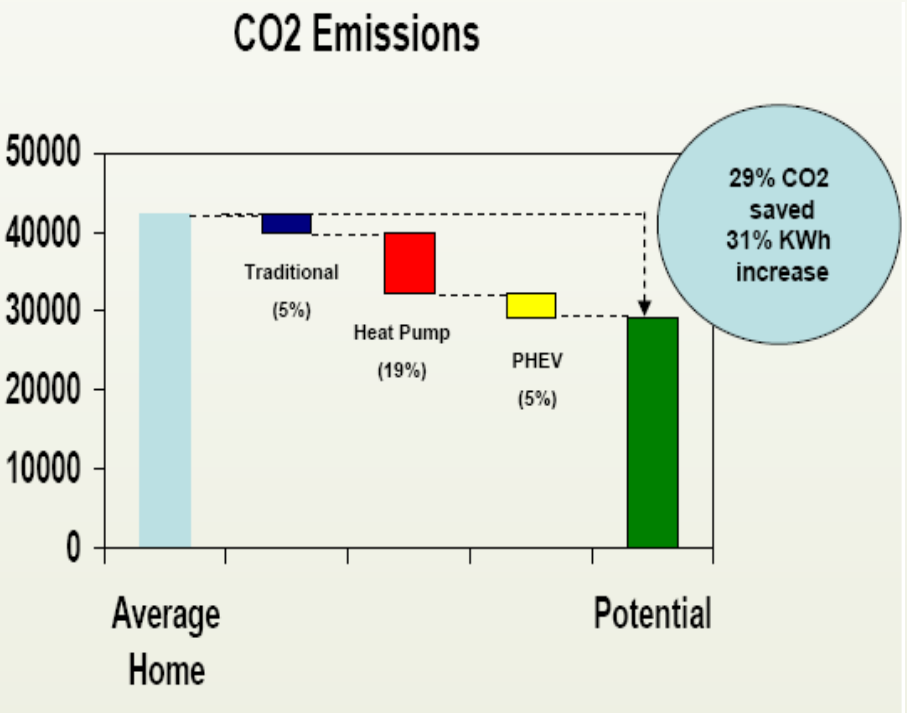
Benefits of Electrification

- **Traditional Energy Efficiency**
  - 5% reduction in energy usage
  - 5% reduction in carbon footprint
- **Electric heat pump vs. natural gas**
  - 41% reduction in energy consumed
  - 32% reduction in carbon footprint
- **Plug In Hybrid Vehicles vs. Internal Combustion Engine**
  - Consume 1800 kwh ($360/year @ 20 cents/kwh)
  - Save 300 gallons gasoline ($900/year at $3.00/gallon)
  - Save 32 MMBTU/year
  - 38% reduction in CO_2 (current generation mix)
  - 47% reduction in CO_2 (projected 2030 generation mix)



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NU's Priorities

Reduce "traditional" end use energy consumption

- Increase spend and effectiveness of energy conservation programs
- Increase deployment of demand response capability
- Invest in and develop an intelligent delivery infrastructure

Decarbonize our electricity fuel supply

- Develop renewable and other clean generation resources
- Develop a renewable grid interconnection model that works
- Enable delivery of other low-carbon generation resources

Reduce carbon intensity of "non-traditional" end uses through electrification and/or gasification

- Increase penetration of natural gas for home heating
- Lay ground work for electric transportation
- Commercialize advanced electric technologies as they evolve

THANK YOU!

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