

Conference of New England Governors
and
Eastern Canadian Premiers
(NEG/ECP)

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Presentation Outline

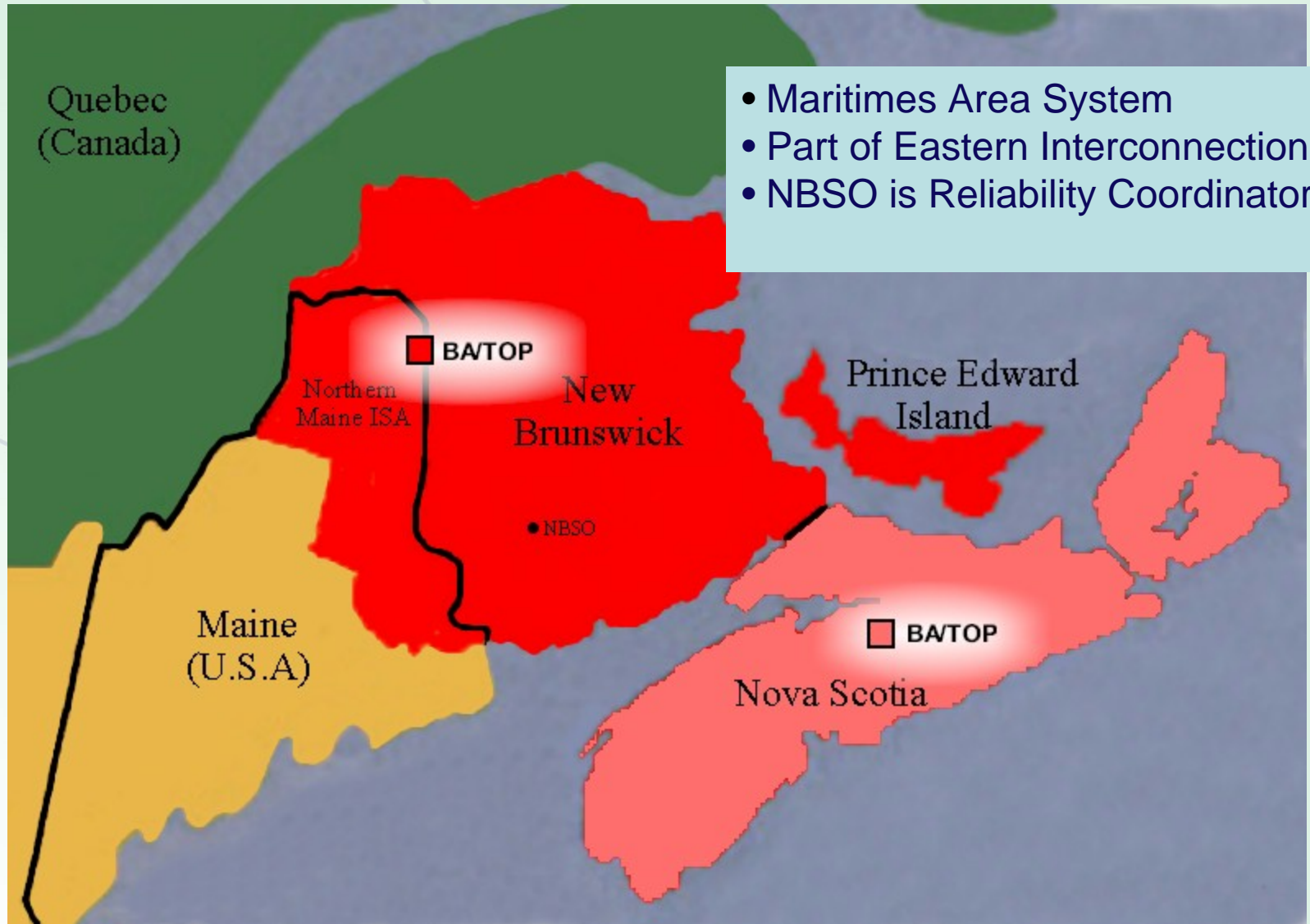
- ***NEG/ECP Systems Footprint***
- ***Canadian Systems Characteristics & Needs***
- ***Future Opportunities & Challenges***
- ***Summarize Actions for Consideration***



NEG/ECP Power System Footprint

- **ISO-NE Area and Maritimes Area**
 - *Synchronous inerties with each other*
 - *Form part of the Eastern Interconnection (one system from Saskatchewan to Florida to Nova Scotia)*
- **Quebec Area and parts of Labrador**
 - *Form a separate interconnection*
 - *DC inerties from Quebec to Ontario, NY, NE and NB*
- **Newfoundland Island**
 - *Isolated system*
- **Remote communities and islands**
 - *Small isolated diesel systems*
 - *Quebec, Labrador, Newfoundland*

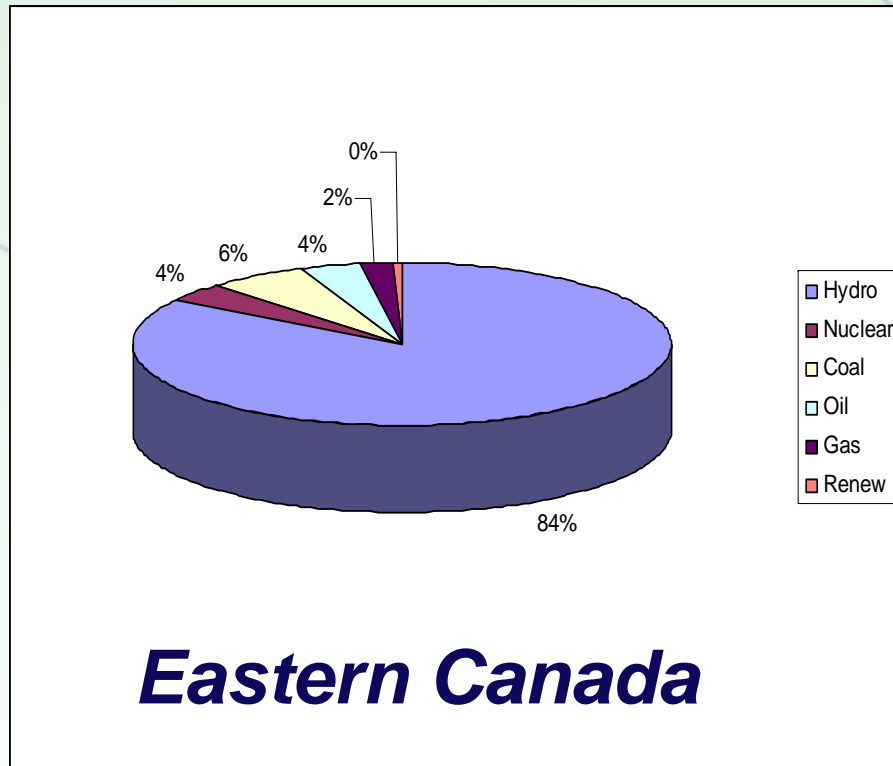




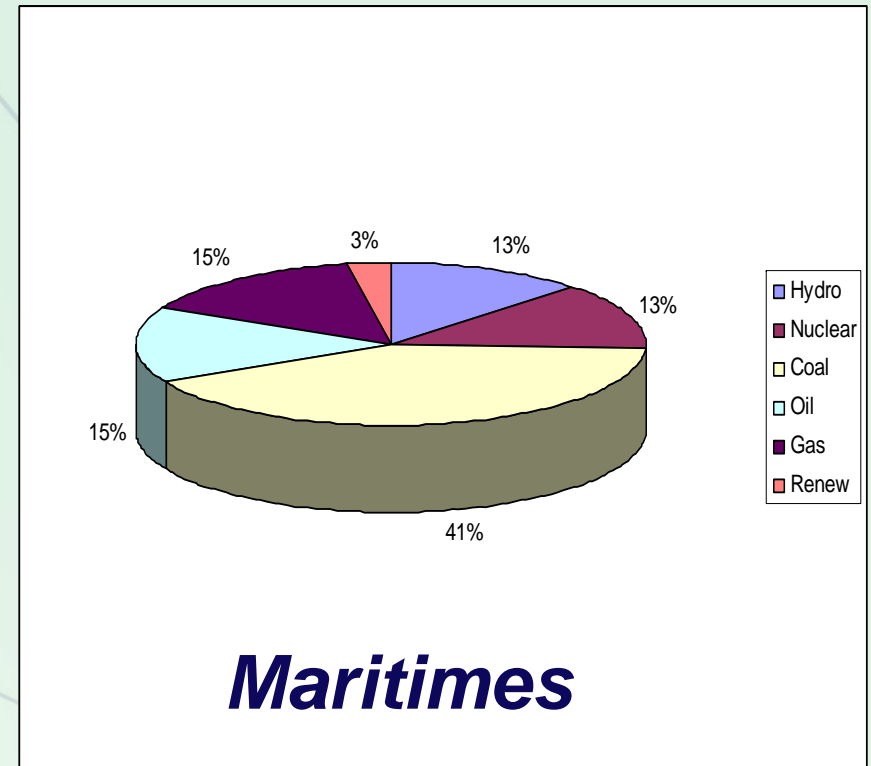
- Maritimes Area System
- Part of Eastern Interconnection
- NBSO is Reliability Coordinator



Current Eastern Canada Supply Mix (by Energy)



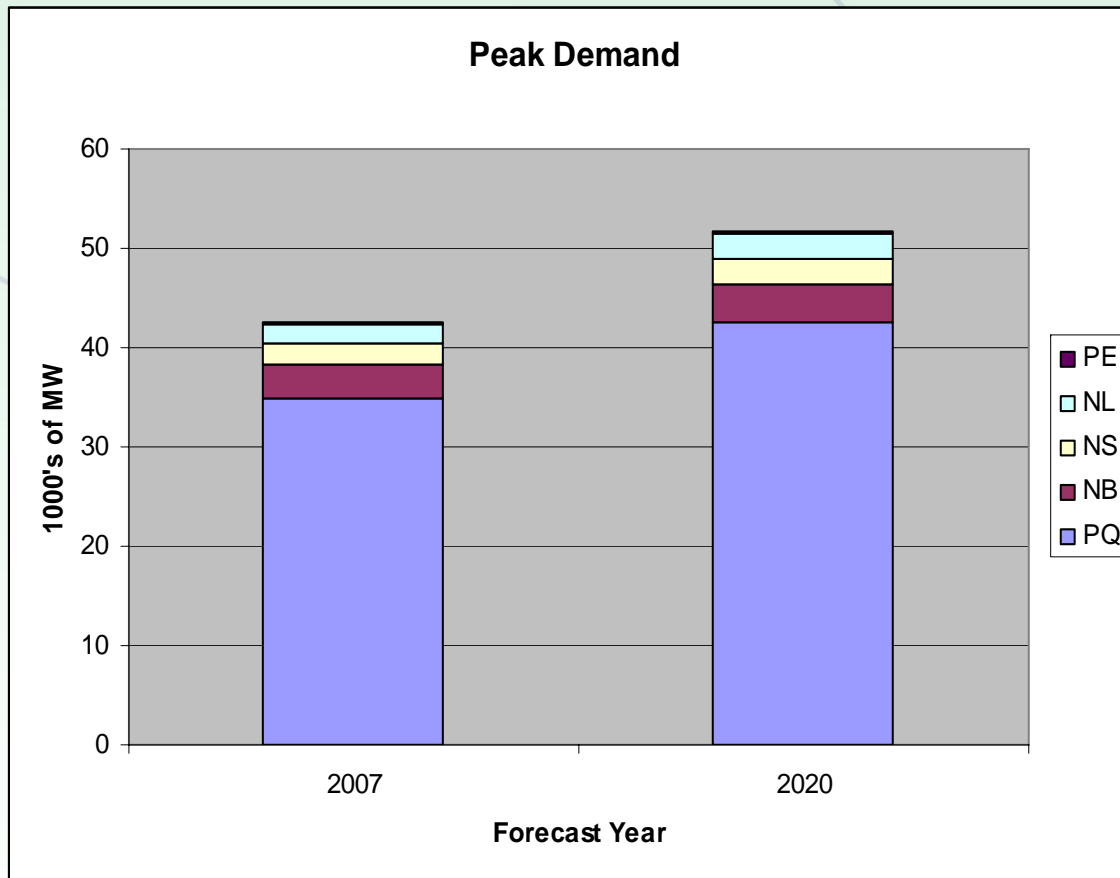
- Primarily Renewable Hydro



- Primarily Fossil



Eastern Canada Demand Projections



Load Characteristics

- 1.7% Peak growth (8-9000 MW)
- 1.5% Energy growth (40-50 TWh)
- Winter peaking
- 60% Load Factor



Common Canadian Challenges

- ***Continued demand growth***
- ***GHG Reduction Targets***
 - 18% of emission intensity by 2010 (Canada)
 - Equal to 1990 levels by 2010 (NEG/ECP)
 - 6% from 1990 levels by 2012 (Kyoto)
 - 26% of emission intensity by 2015 (Canada)
 - 10% from 1990 levels by 2020 (NEG/ECP)
- ***Unstable fuel prices***
 - Natural gas and fuel oil have tripled in last 10 years
- ***Market access to ISO-NE***
 - Transmission access and rules



Common Canadian Goals and Actions

- ***Define and set renewable targets***
- ***Set up independent energy efficiency agencies***
 - Agence de l'efficacité énergétique du Québec
 - Efficiency New Brunswick
 - Conserve Nova Scotia
- ***Pursue aggressive energy efficiency plans***
- ***Initiate new generation plans***
 - Wind, hydro, nuclear, coal, tidal
- ***Use electricity to grow provincial economies***
 - Continue to supply electricity exports to NE



Wind/Renewable Estimate by 2020

- ***Targets/Potential***

Quebec	4000 MW
New Brunswick	500 MW
Nova Scotia	500 MW
Prince Edward Island	300 MW
Newfoundland & Labrador	1500 MW
<u>Northern Maine</u>	<u>800 MW</u>
Totals	7600 MW (26 TWh)

- ***All except Newfoundland & Labrador prior to 2015***
- ***Variability and predictability are issues***
 - Regional cooperation can help



Conventional Generation Potential

- **Hydro Targets**

Quebec	6500 MW
Newfoundland & Labrador	2800 MW
<u>Other Hydro</u>	<u>2000 MW</u>
Subtotal	11300 MW (78 TWh)

- **Nuclear**

New Brunswick	1000 MW (7 TWh)
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- **High efficiency gas cogeneration and CO2 sequestered coal**

Nova Scotia	500 MW
<u>New Brunswick</u>	<u>1000 MW</u>
Subtotal	1500 MW (11 TWh)

- **Total potential** **13800 MW (96 TWh)**



Import Opportunities for NE

- ***Canadian resources must meet load growth and GHG reductions in Canada***
- ***Other markets in Ontario and NY will compete with NE for a portion of the surplus***
- ***Assume that***
 - Up to 2/3 of generation potential is used to meet load growth and GHG reductions
 - Half the remainder goes to NY and Ontario
- ***About 3500 MW (18 TWH) may be available for NE***
 - Firm capacity may be limited (1000 MW from Quebec)
- ***Seasonal diversity adds both import and export trade value***



Development Challenges

- ***Transmission is an issue***
 - Robust Canadian systems will need reinforcement to accommodate the amount of generation considered
 - Some is local and some is long distance
- ***Interconnection capacity to NE is an issue***
 - Current transfer capability from Canada is derated
 - 3600 MW operates at 2400 MW due to US limitations
 - What actions are needed in NE? In US?
- ***Contracting is an issue***
 - Projects considered are high up front capital with low O&M
 - Financing requires long term contracts
 - NE forward capacity market is a start
 - States need to allow and encourage long term contracts



Summary Points

- ***Growing diverse mix of systems in Canada***
 - Primarily low GHG sources with various transmission connections
 - Growth of about 20% by 2020
- ***Common Canadian policy approach***
 - GHG reductions, renewables, energy efficiency, exports
- ***Major clean generation project opportunities***
 - Wind, hydro, nuclear, clean gas and coal
 - Sufficient resources for Canada and NE
- ***Developmental challenges must be met***
 - Wind integration, Transmission, Interconnections, Contracting
- ***NEG/ECP can provide leadership through regional cooperation***



Thank You Merci



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