

National Energy
Board



Office national
de l'énergie

Emerging Technologies in Electricity Generation

An Energy Market Assessment

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Presentation to

Ocean Renewable Energy Symposium

Victoria, British Columbia

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Canada



NEB's Electricity Interests

- **Authorization of international power lines and designated interprovincial power lines (NEB Act)**
- **Electricity Exports**
- **Market monitoring and advice**



NEB Reports

- Energy Market Assessments
 - ◆ Long-term supply / demand report
 - All-energy
 - ◆ Commodity reports
 - Electricity, oil, gas
 - ◆ Canadian focus
 - International context
 - ◆ Balanced analysis – no advocacy role
- Audience
 - ◆ Inform public/stakeholders
 - Stimulate discussion
 - ◆ NEB - inform Members and staff



Why and What ?

This report ...

- Motivated by concerns about
 - ◆ electric supply adequacy in most provinces
 - ◆ supply diversification
 - ◆ local air quality and global climate change
- Emerging Technologies in Canada
 - ◆ wind, biomass, small-hydro
 - ◆ geothermal, fuel cells, solar PV, ocean energy
 - ◆ clean coal
 - ◆ demand management (DSM, demand response)

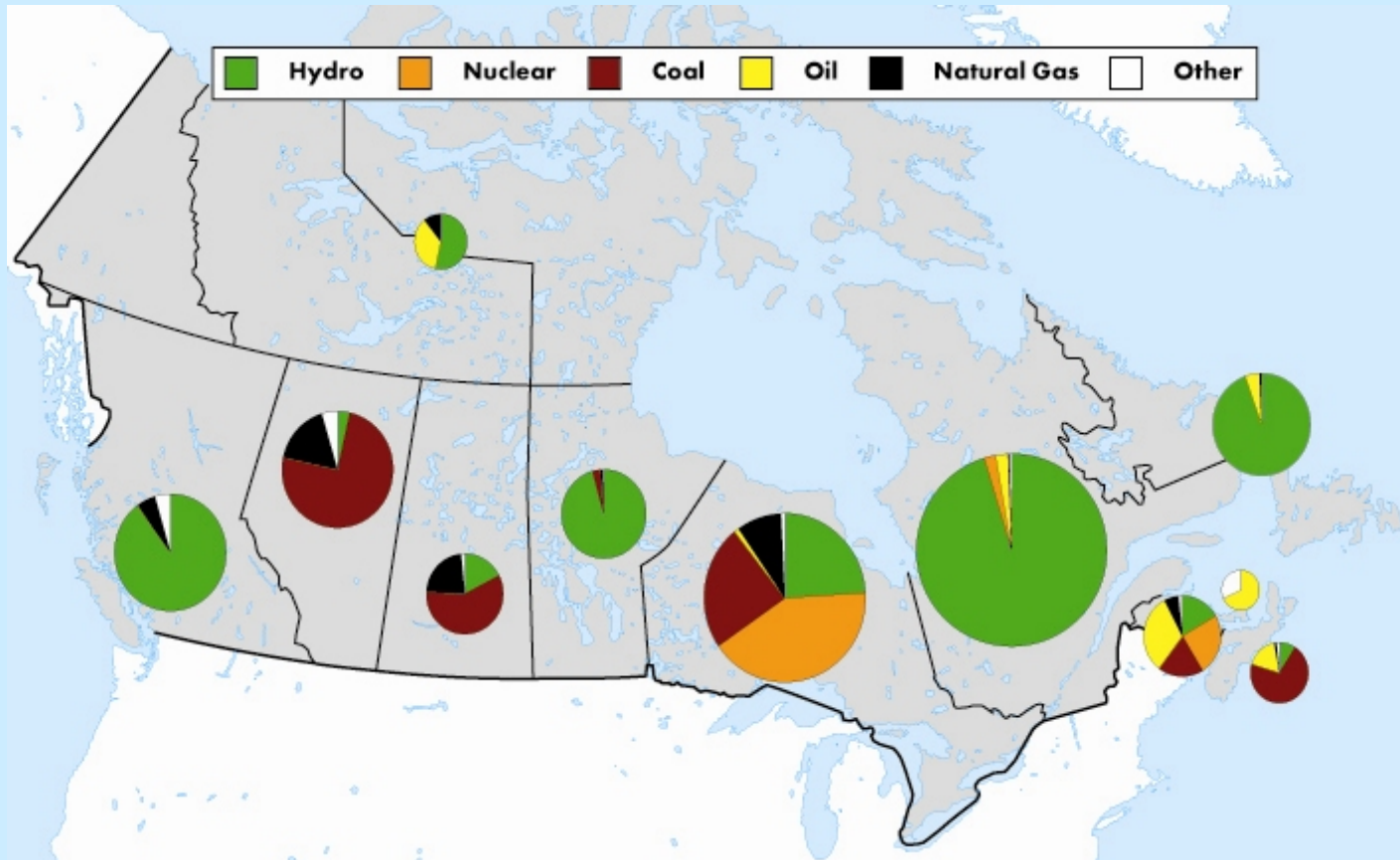


Why and What ?

- Assess near-term and longer-term prospects
 - ◆ trends and issues
 - ◆ report does not include detailed projections
 - ... these will be prepared for the NEB's next *Energy Futures* report, October 2007



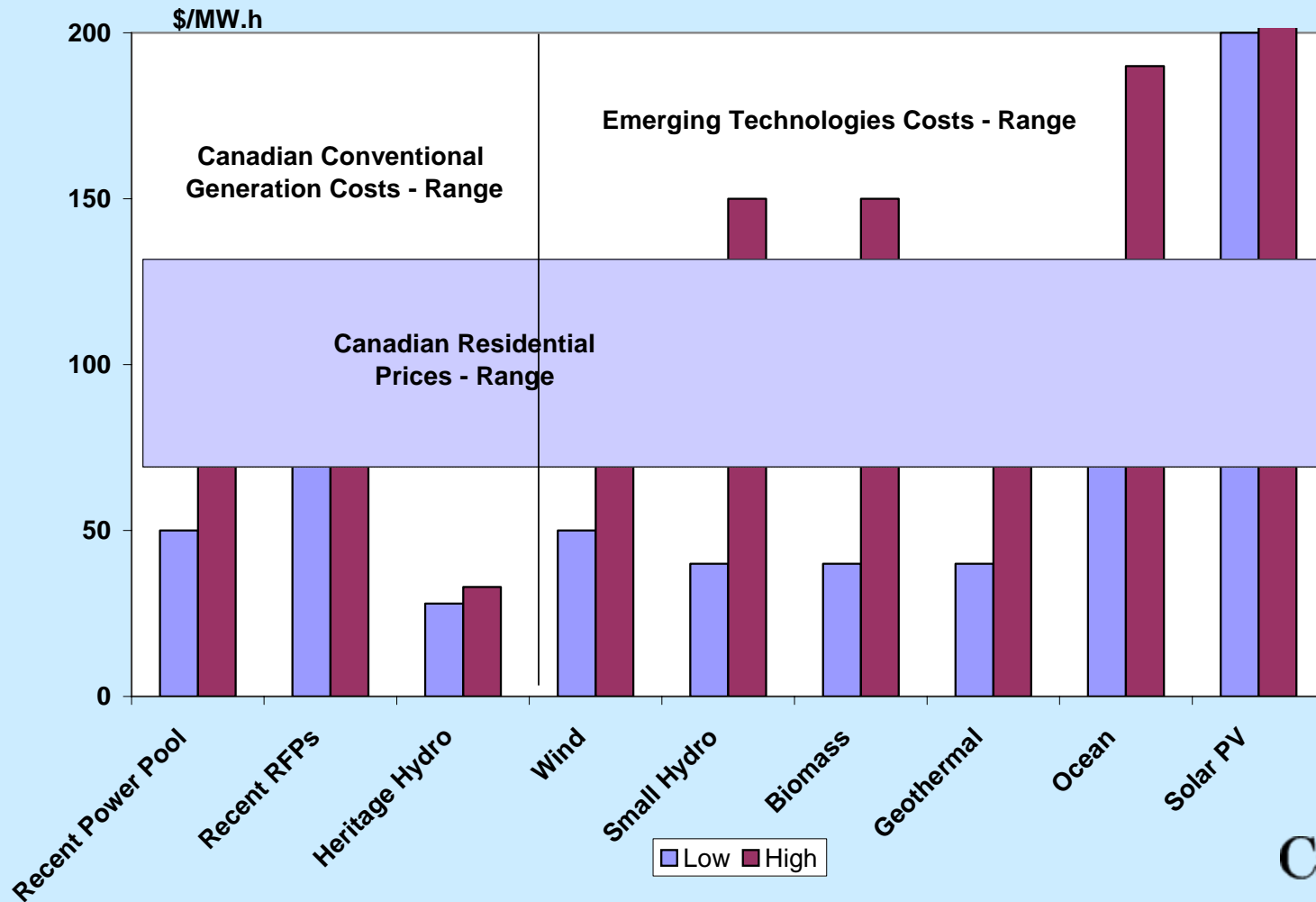
Canadian Electricity Generation by Fuel, 2003



About 3% of Canadian generation is from emerging technologies



Supply Costs - Emerging Technologies versus Conventional Generation





Observations

- Currently, there is low market penetration of emerging technologies in power generation
- Energy market developments have created conditions for rapid growth
 - ◆ rising fossil fuel prices
 - ◆ falling costs for emerging technologies
- There are a variety of choices at different stages of development



Observations – Barriers

- Electricity pricing policies
 - ◆ “heritage” pricing
 - ◆ failure to account for “externalities”
- Grid access
 - ◆ Intermittency
 - ◆ Transparent rules for connection
- Regulatory requirements
- NIMBY



Observations – Current Incentives

- Policy targets for cleaner and greener generation (RPS)
- Request for proposals (RFPs)
- Standard offer contracts
- Production incentives (e.g. WPPI, RPPI)
- Accelerated CCA
- Research & Development



“Options for Action” by Governments

1. Transparent rules for grid access
2. Clear regulatory requirements - appropriate to project size and scope
3. Continue to support research into emerging technologies
4. Encourage regional (interprovincial) solutions
5. Incentives to improve financial certainty
6. Market pricing for electricity
7. Guarantee minimum prices for power from emerging technologies



Ocean Energy in Canada - Impressions

- Additional commercial production in Canada seems some way into the future
- Regional importance (DG, grid access)
- Synergy with other power sources, notably hydro
- Synergy with other regions
- Industrial/regional development opportunities



Emerging Technologies in Electricity Generation

available at:

http://www.neb-one.gc.ca/energy/EnergyReports/index_e.htm#Electricity

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