Next Steps for Meeting the Power Demand in Canada

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Balanced Solution in Canada

- **Power development models**
  - **Past weaknesses**
  - **Successful models exist**
- **Solutions must be balanced**
  - **Among generation technologies**
  - **Among society's needs**
- **Nuclear is part of balanced solution**
  - **Baseload foundation**

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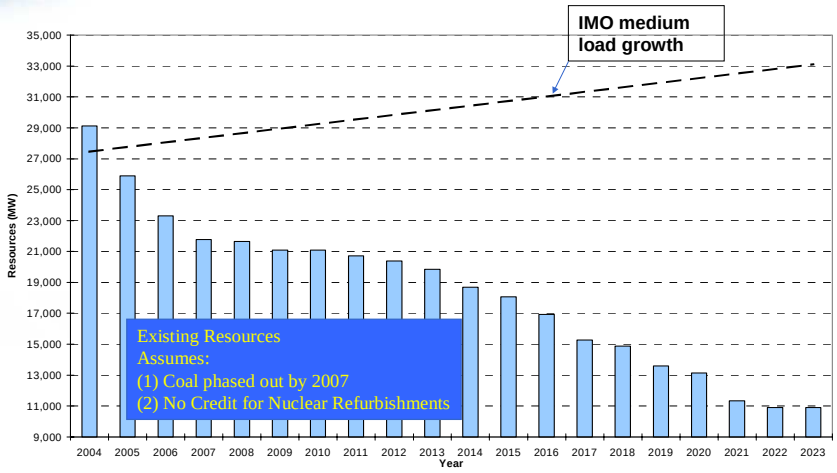
Ontario Electricity Situation



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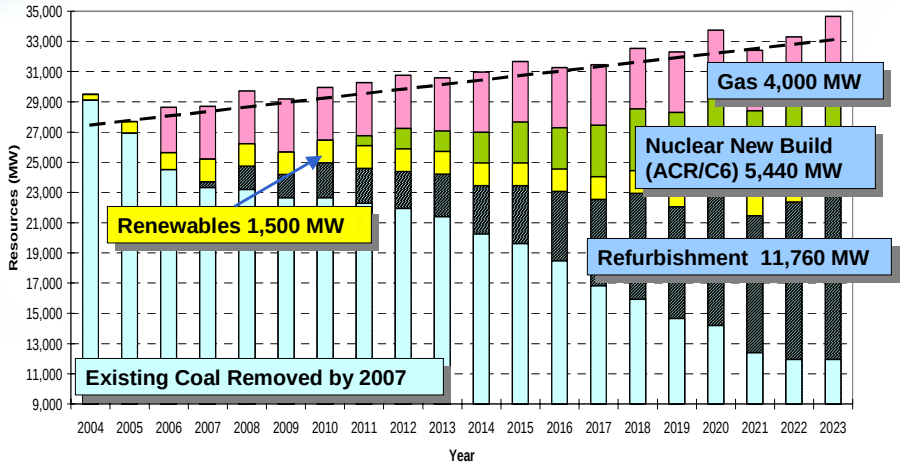
A Viable Future Generation Scenario



Note: All Coal out by 2007; all units refurbished; 50% nuclear share maintained

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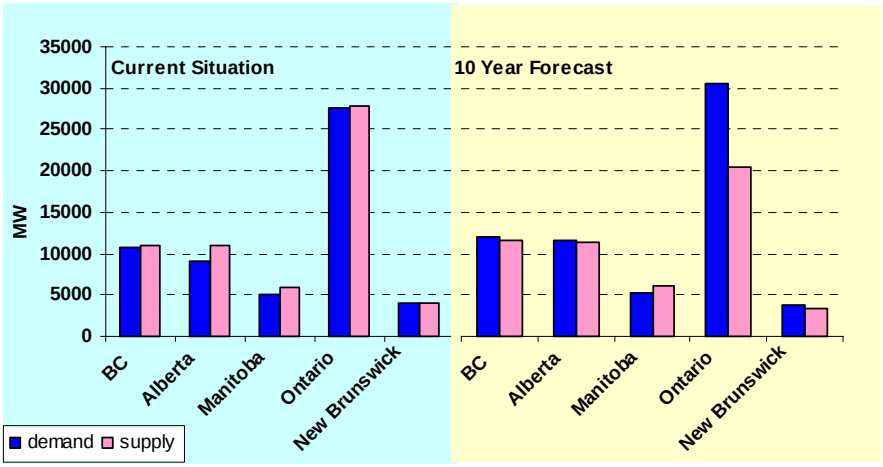
Electricity Supply & Demand in Canada



Source: provincial electricity system operators

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Energy Beyond Electricity

- **Demand concerns with other energy types**
- **Oil & gas production**
- **"Highest & best" use of limited resources**
- **Get the best value for available resources**
  - **For society**
  - **For investors**

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Independent Study Findings

GENERATION OPTION	LUEC (¢/kWh constant) from Studies: Ranges	Base Case	with CO_2 charge
Existing Nuclear – Pickering Restart	4.0 - 6.1	4.0 - 4.5	
Publicly Financed New Build			
ACR-700 Nuclear (n^{th})	*4.7*	*4.7*	*4.7*
Coal	4.6 - 6.1	4.8	6.1
ACR-700 Nuclear (1^{st})	5.1 - 6.0	5.3	5.3
CANDU 6 Nuclear	6.0 - 7.1	6.3	6.3
Gas (CCGT)	6.4 - 7.8	7.2	7.8
Privately Financed New Build			
ACR-700 Nuclear (n^{th})	*6.3*	*6.3*	*6.3*
Coal	5.7 - 7.3	5.9	7.3
ACR-700 Nuclear (1^{st})	7.0 - 8.4	7.3	7.3
Gas (CCGT)	6.6 - 8.1	7.5	8.1
CANDU 6 Nuclear	8.4 - 9.4	8.9	8.9

Sources: CERI study LUEC Comparisons for Ontario Baseload (Aug-2004); OPG Review Committee "Manley" report (Mar2004)

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Meeting North American Demand

- Nuclear refurbishment
  - Canada over 12,000 MW possible
- Nuclear new build
  - Canada & United States
- Electricity plus other applications
  - Oil extraction
  - Foundation for clean hydrogen economy

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Nuclear Need ←→ Risk Control

- Nuclear power → value as investment
  - Successful project delivery models
  - Safe operating history
  - Long-term rate stability at high margins
  - Demonstrated market for in-service plants
- Manage to deliver …
  - On-time, on-budget construction
  - Consistent operating performance
  - Controlled waste management

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CANDU Continued Delivery Success

In-Service Date	Plant	Cost Variance	Schedule Variance
1996	Cernavoda Unit 1, Romania	0%	On Schedule
1997	Wolsong Unit 2, Korea	<0.1%	On Schedule
1998-99	Wolsong Units 3 & 4, Korea	<0.01%	On Schedule
2003	Qinshan Phase III, Units 1 & 2, China	0%	>1 month Early

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Excellent CANDU 6 Performance

Name of Unit	In-Service Date	Lifetime Capacity Factor
Pt. Lepreau (New Brunswick)	Feb. 1, 1983	83%
Gentilly 2 (Quebec)	Oct. 1, 1983	80%
Wolsong 1 (Korea)	April 22, 1983	86%
Wolsong 2 (Korea)	July 1, 1997	92%
Wolsong 3 (Korea)	July 1, 1998	93%
Wolsong 4 (Korea)	Oct. 1, 1999	96%
Embalse (Argentina)	Jan. 20, 1984	85%
Cernavoda 1 (Romania)	Dec. 2, 1996	86%
Qinshan 1 (China)	Dec. 31, 2002	90%

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Proven Waste Solutions

- Dry fuel storage technology - MACSTOR®
  - In use in Canada, Korea, Romania
- Waste disposal concept in place
- NWMO will recommend solution by end of 2005

The total waste generated from CANDU would fill one soccer field to a depth of one metre – waste is securely, responsibly managed.

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Project Risk Allocation Comparison

Risk Element	Past OPG / Ontario Hydro Model	Qinshan Model	New Build Ontario Model
Project Delivery : Contract Model	Owner as General Contractor	Turnkey	Turnkey
Design - Cost & Schedule			
Equipment Supply - Cost & Schedule			
Project Management - Cost & Schedule			
Construction - Cost & Schedule		shared Owner/AECL	shared Owner/AECL
Commissioning - Cost & Schedule			
Plant Performance (Power Output)			
Licensability			
Regulatory Delay not due to Contractor			
Risk in Excess of Contractor's Liability			
Technology Risk on Plant Design		AECL cover to contract cap	AECL cover to contract cap
Financing - Loan Repayment Risk	100%	$1.5 billion[1]	100% or less
Operation - Plant Operations Cost & Risk[2]			*Or could place contract*
Market - Electricity Revenue Risk			shared Owner/Ont.Gov.
Decommissioning, Waste Storage Risk			

Legend

- AECL / Subcontractors .....
- Export Dev't Corp .....
- Government of Canada .....
- Owner .....
- Ontario Government .....

[1] of Total Project $3.0 B (remainder $0.9 B China, $0.6 foreign loans)

[2] AECL Team would consider performance contract

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Strong Partners → Opportunities

- **Leverage experience and expertise**
- **Our Project Partners include:**

HITACHI Inspire the Next · BECHTEL · BABCOCK & WILCOX · SNC·LAVALIN · NNC · AnsaldoEnergia · AECON

AECL and its partners can help create nuclear investment opportunities

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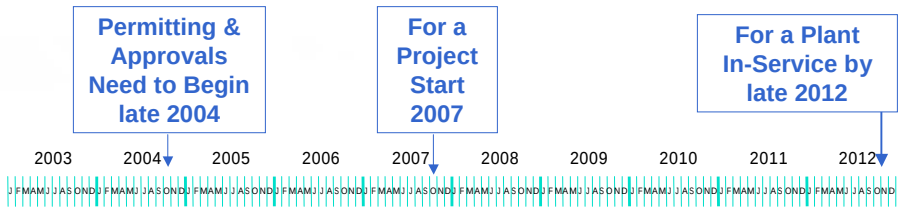
Conclusions

- **Demand for power → Investment**
  - **Opportunity → Is real & is here**
  - **Environment → Is challenging, but manageable**
  - **Need → Is urgent**



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