ENERGY CHALLENGES AND NUCLEAR OPPORTUNITY

Presentation to CNS Chalk River Branch

John Luxat
CNS President 2005/06
February 20, 2006

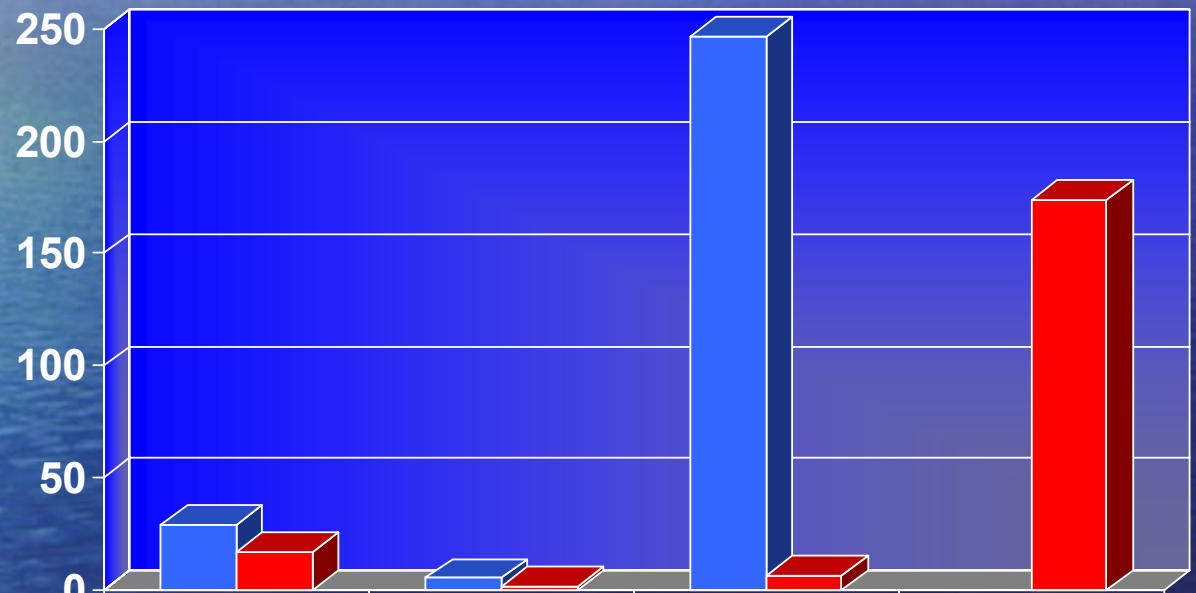
ENERGY CHALLENGES: THE ISSUES

- Security of supply
  - Dwindling North American reserves; political instability internationally
- Environmental impacts
  - Climate change; land use (NIMBY)
- Reliability of supply
  - Energy when required: 2003 electricity blackout
- Affordability (economics)
  - Rising costs: oil, natural gas

NUCLEAR ISSUES

- Public perception
  - Used fuel storage
    - ✓NIMBY
  - Safety
    - ✓Legacy of TMI-2 & Chernobyl
  - Reliability
    - ✓Unit lay-ups & return to service delays
  - Costs
    - ✓Return to service costs (Pick A vs Bruce A)
  - Media coverage of options
    - ✓Renewables vs. nuclear

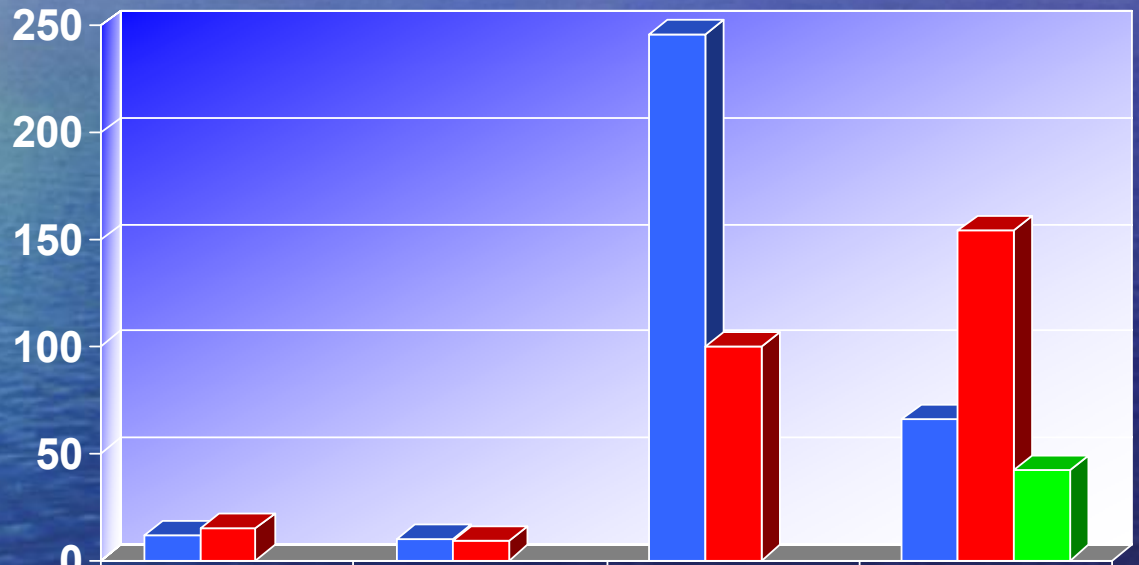
PROVEN RESERVES: CONVENTIONAL FOSSIL ENERGY



	OIL(Bbl)	NAT GAS (Trill. cu m)	COAL (Billion tonnes)	TAR SANDS (Bbl)
USA	29.4	5.29	247	
CANADA	16.8	1.6	6.6	174

BP Statistical Review of World Energy, June 2005

RESERVE/PRODUCTION RATIO: FOSSIL ENERGY SOURCES

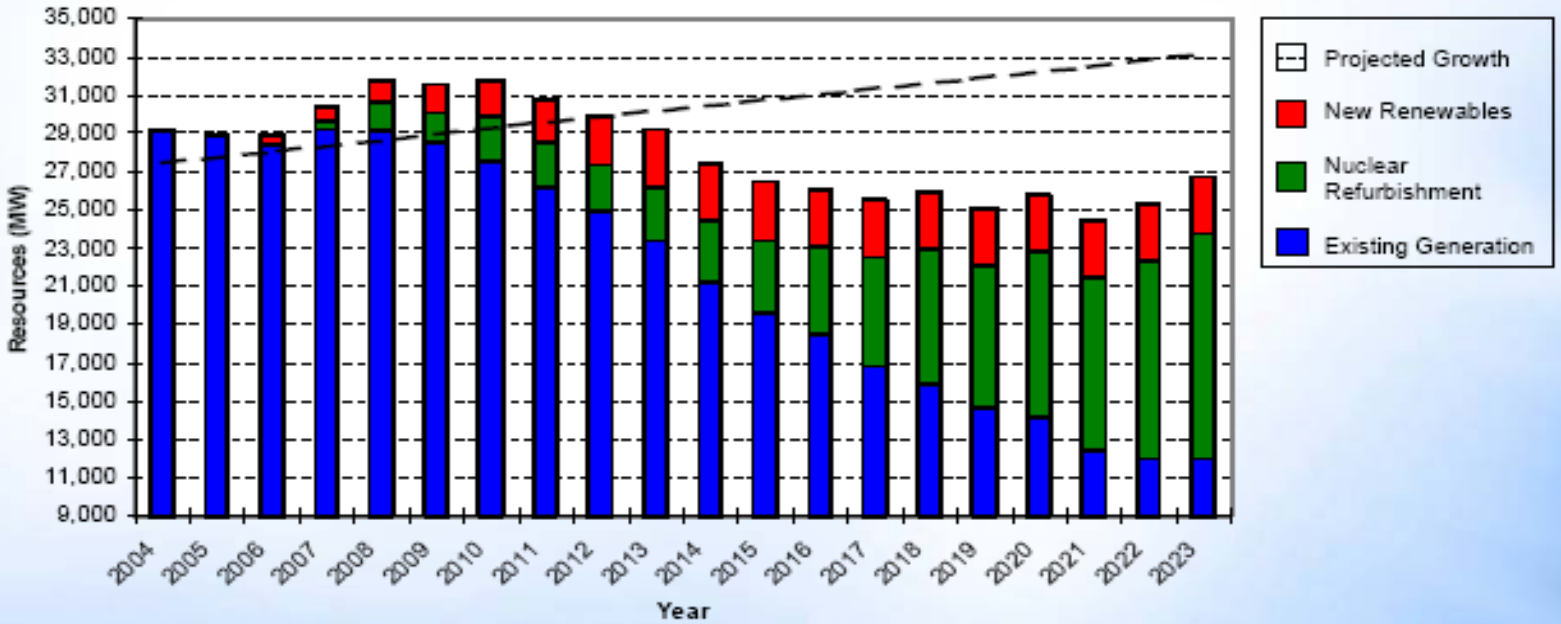


	OIL (Years)	NAT GAS (Years)	COAL (Years)	TAR SANDS (Years)
USA	11.1	9.8	245	66
CANADA	14.9	8.8	100	154
N America				42

BP Statistical Review of World Energy, June 2005

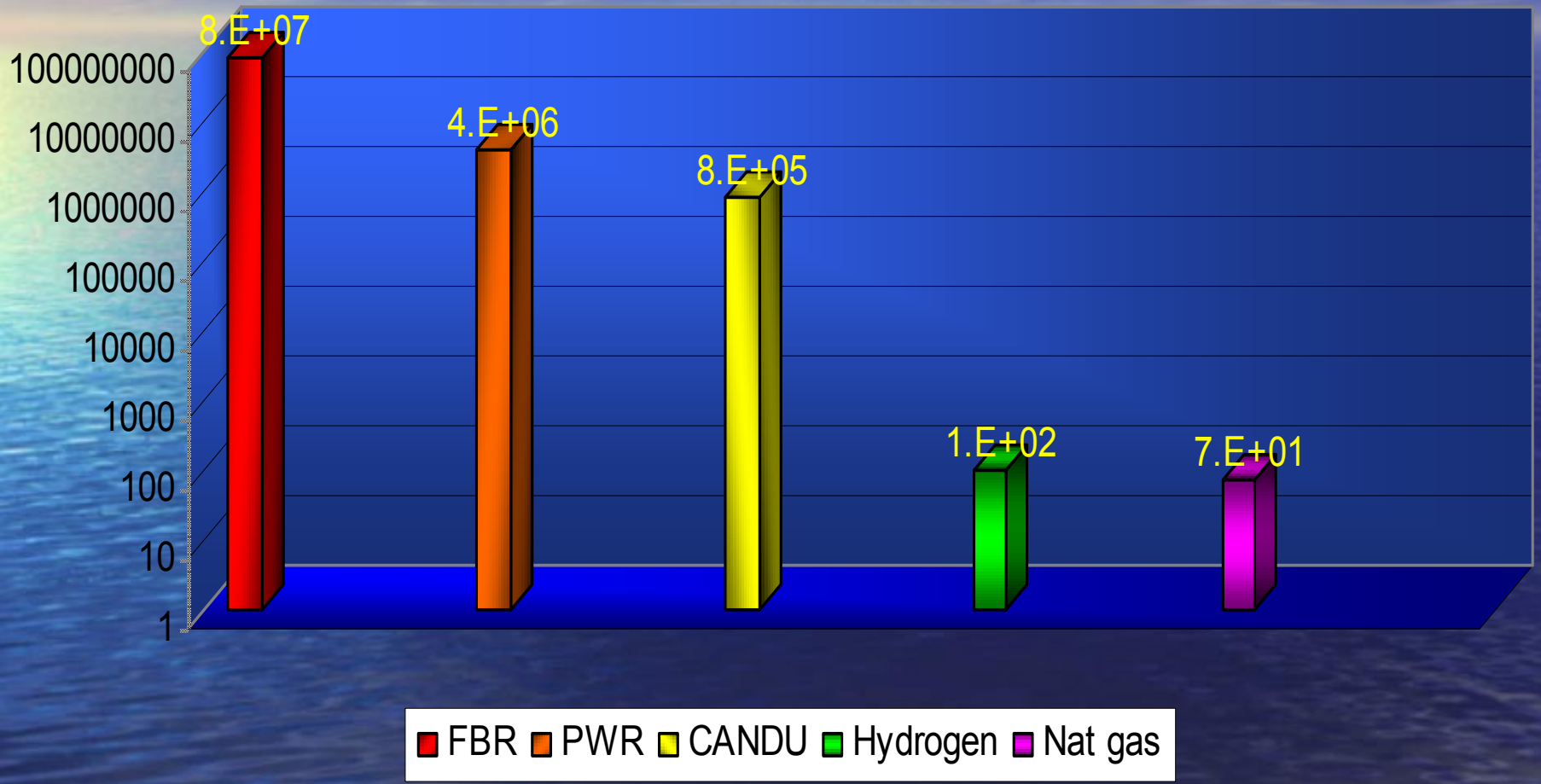
ONTARIO ELECTRICITY SUPPLY PROJECTIONS

Renewable Potential added to Nuclear Refurbishment



SPECIFIC ENERGY [MJ/kg]

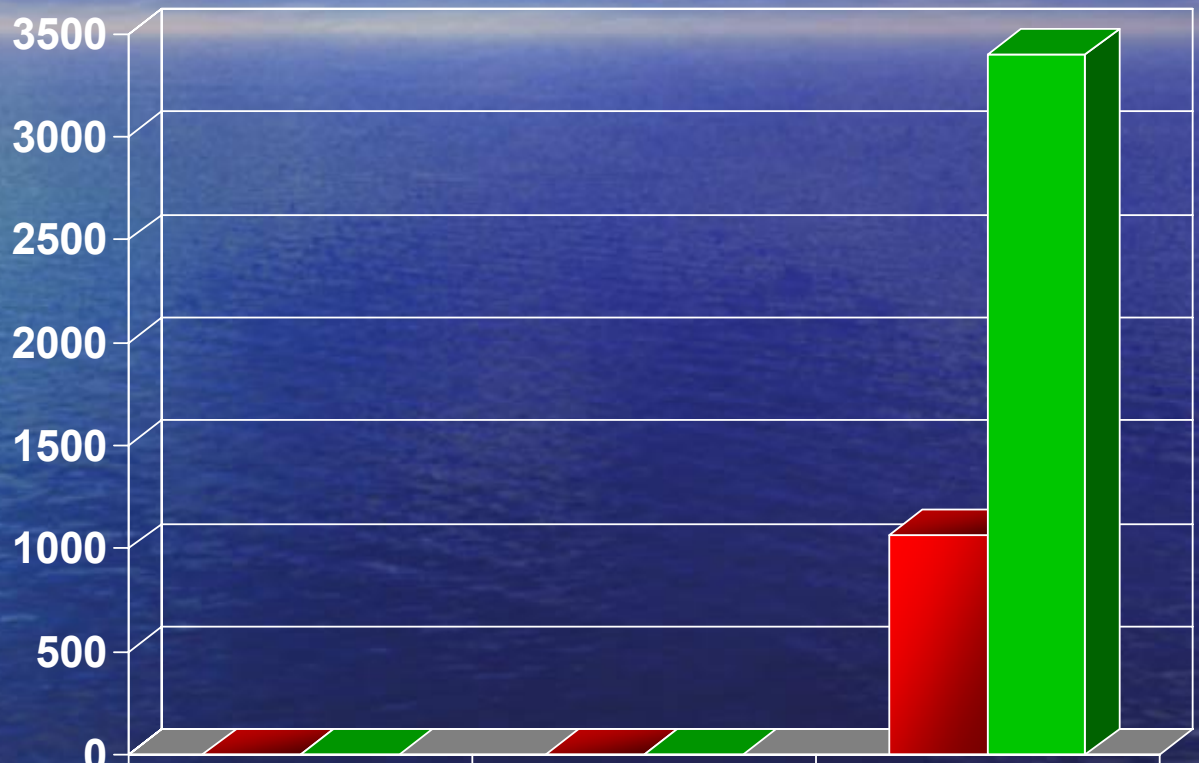
(CANDU with Nat U; PWR & FBR with Enriched U/MOX)



Source: Ausbel, CNA Seminar, Ottawa, 2005

ENVIRONMENTAL FOOTPRINT

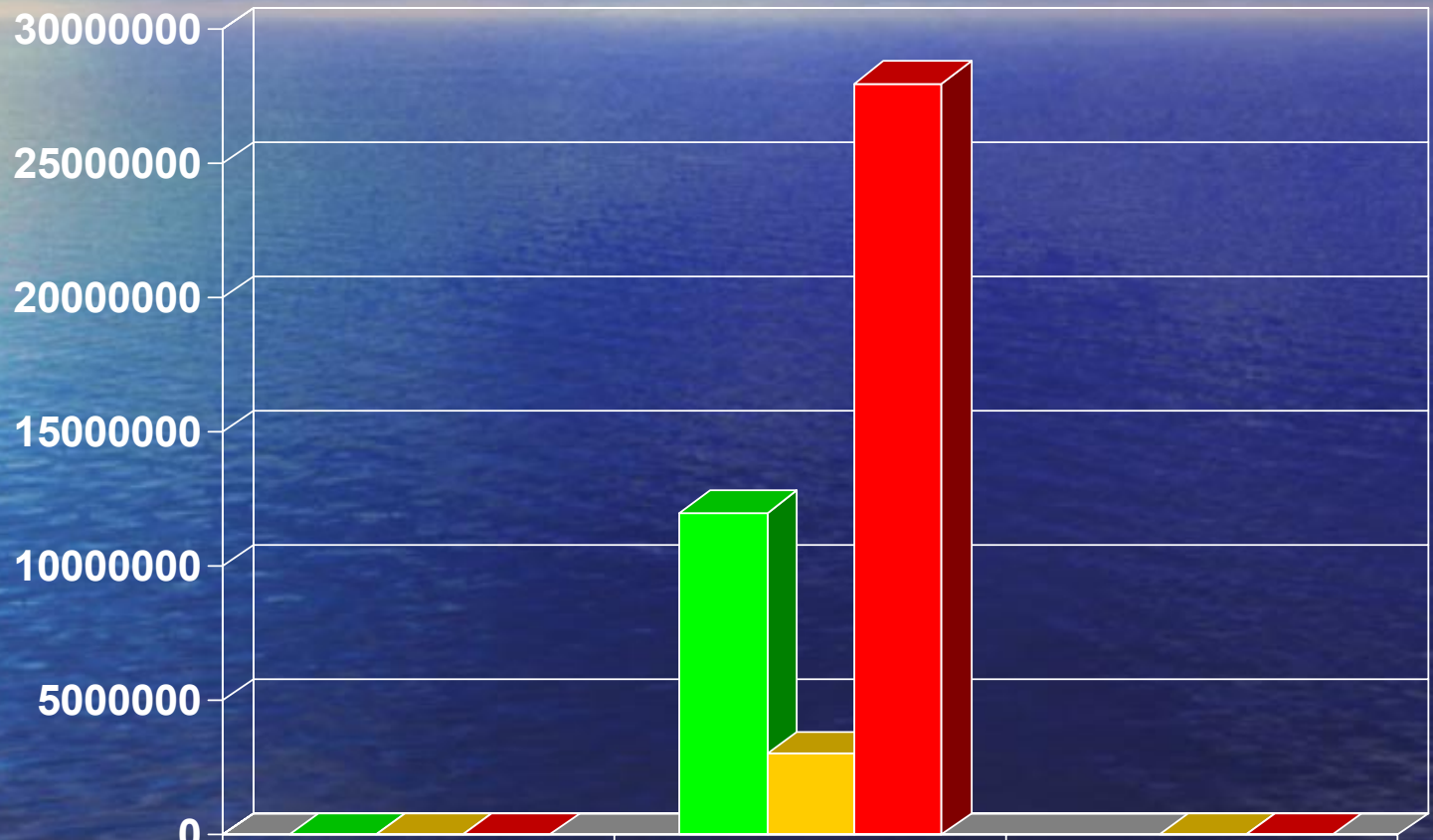
(Land area to generate energy equivalent of Darlington station at 85% Capacity Factor)



	NUCLEAR	COAL	WIND
LAND USE [sq km]	1	3	1064
REALISTIC	1	3	3400

ENVIRONMENTAL IMPACT

(Fuel use/ waste and emissions to generate energy equivalent of Darlington station at 85% Capacity Factor)



	NUCLEAR	COAL	WIND
FUEL [tonnes]	200	12,000,000	
WASTE [tonnes]	200	3,000,000	0
CO2 [tonnes]	0	28,000,000	0

THE NUCLEAR OPPORTUNITY

- North American energy security crisis is not impending - it is here
- Need to replace baseload supply and meet growth in demand.
- Nuclear and renewables reduce CO_2 emissions and reduce impact on climate change threat.
- Nuclear the only option in the environmentally acceptable mix that is:
  - ✓ economic and
  - ✓ can meet baseload need.
- Reprocessing of spent fuel in the longer term to segregate fuel and waste streams
  - ✓ breeder and & actinide burning
  - ✓ fission products only - reduce volume and decay time (~500 years)