

Ontario Energy Network

Our Mission:

"to provide networking opportunities in support of the business interest of the energy industry in Ontario"



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LUNCHEON SPEAKER

February 16, 2005



Murray J. Elston
President and CEO,
Canadian Nuclear Association



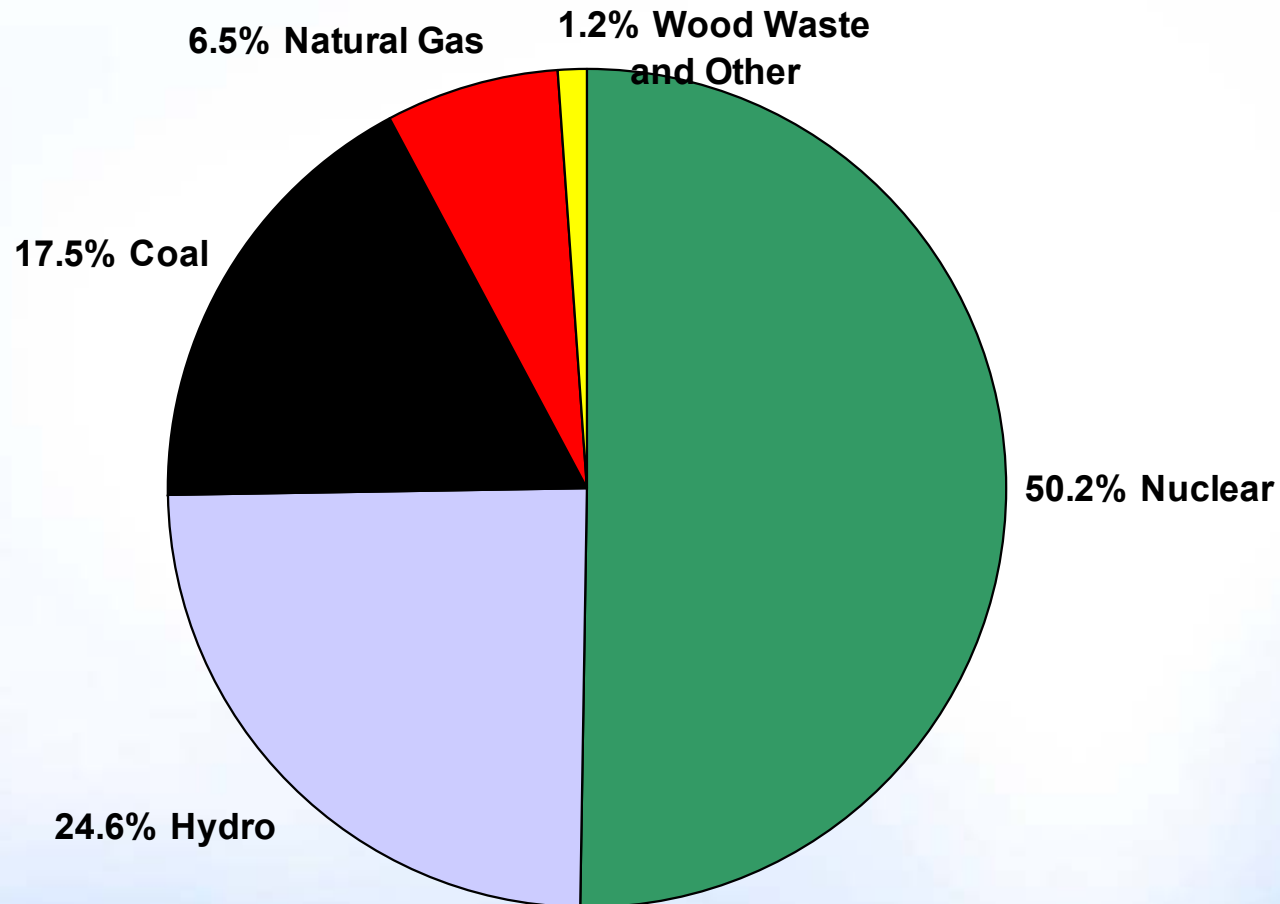
Canadian Nuclear Association
Association nucléaire canadienne

Nuclear Energy: An Essential Part of Canada's Economic Future

Murray Elston,
President and CEO,
Canadian Nuclear Association
Ontario Energy Network, Toronto
February 16, 2005



Electricity Sources in Ontario (2004)

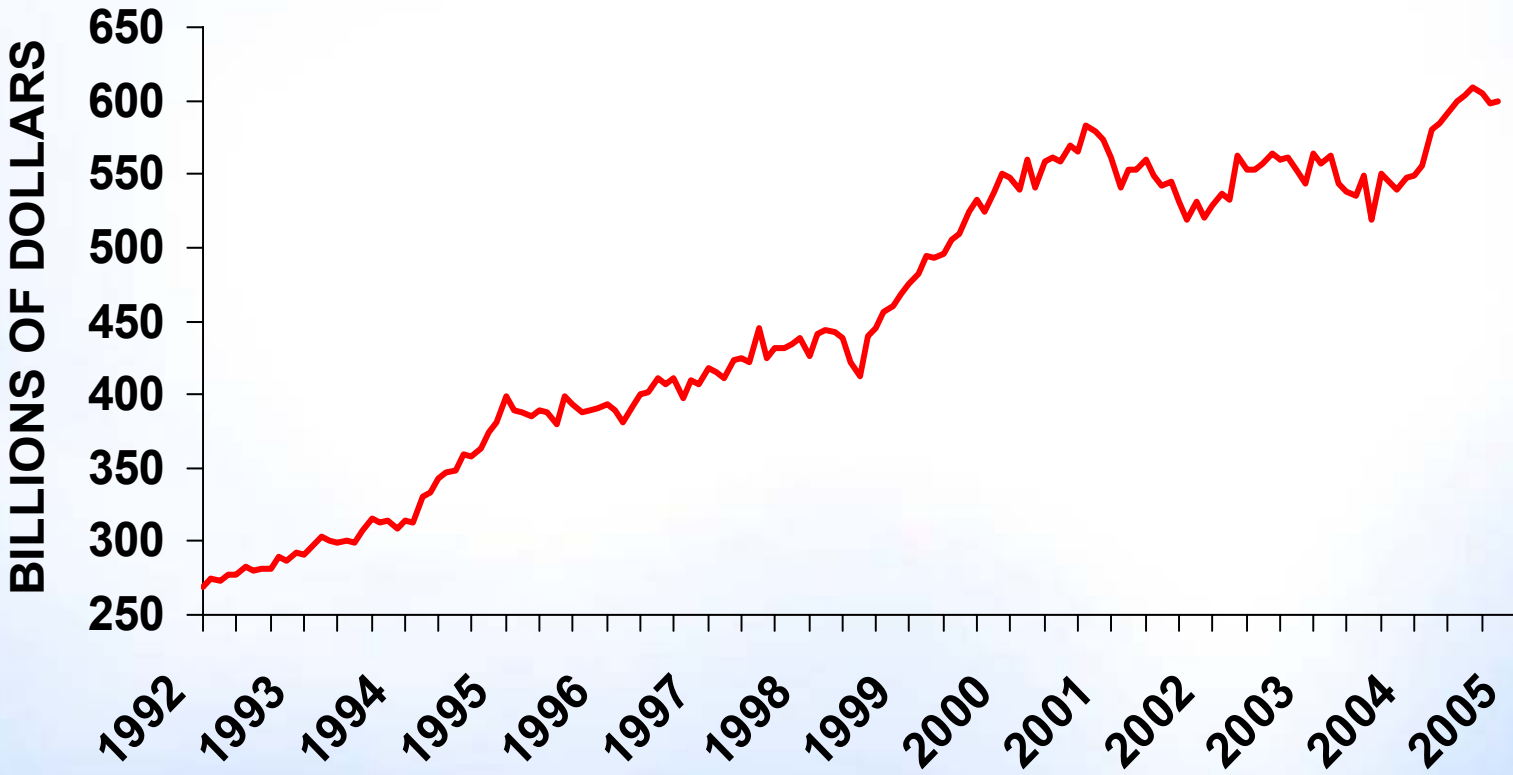


Nuclear - 77 Twh	Hydro - 37.6 Twh
Coal - 26.8 Twh	Natural Gas - 10 Twh
Wood Waste and Other - 1.9 Twh	

Source: Independent Electricity System Operators (IESO) 2004



Manufacturing output in Canada over the last 15 years



Source: Canadian Manufacturers & Exporters



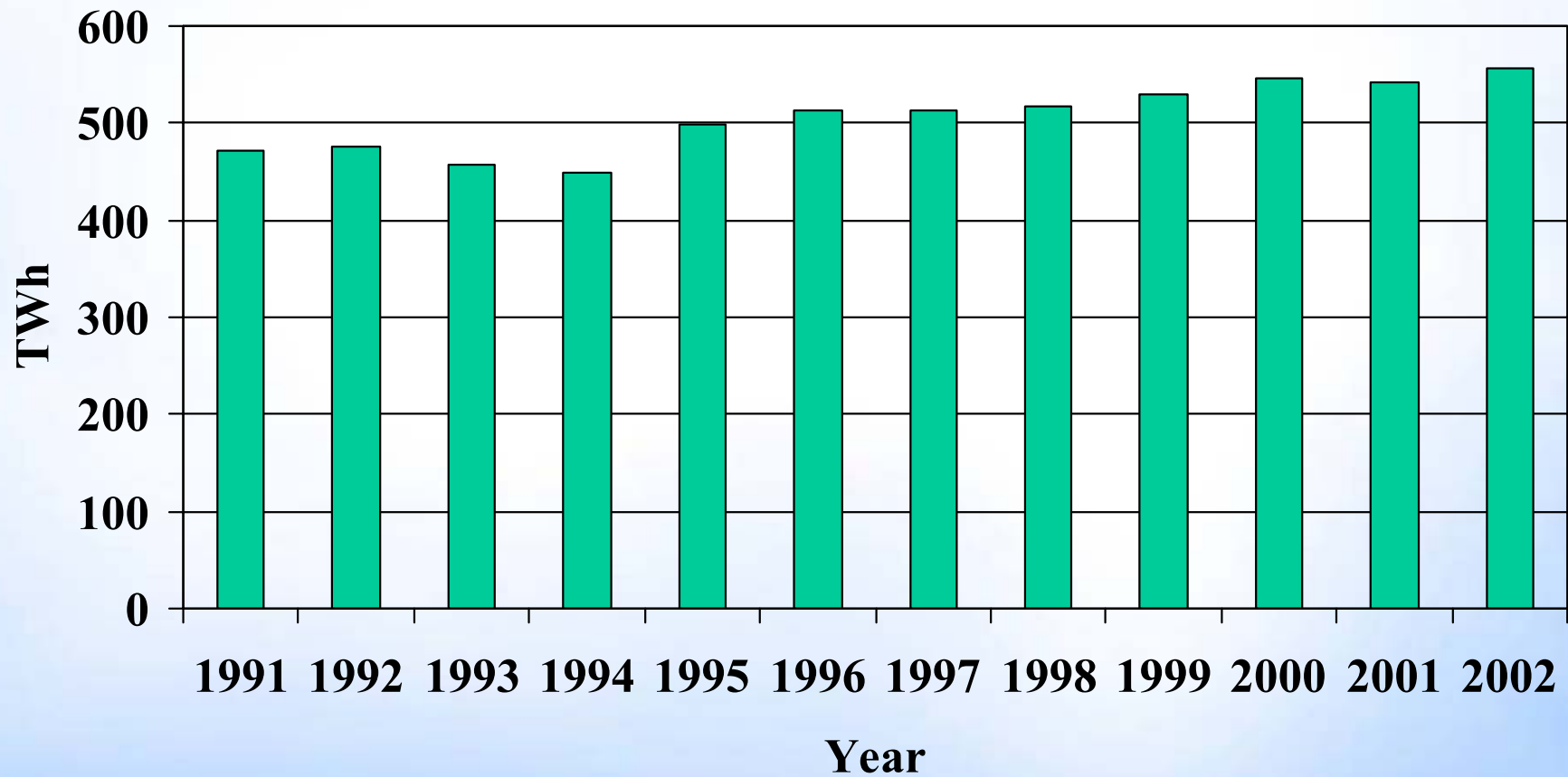
Canadian Manufacturers & Exporters Top Ten Challenges

- Increasing competition from China – and new opportunities!
- Impact of dollar appreciation
- Problems & delays at the border
- Skills shortages
- Rising business costs – materials, energy, insurance
- Global sourcing/investment
- Image of manufacturing.
- Costly, slow, non-competitive tax & regulatory structure
- Infrastructure
- Reliable supply of cost-competitive energy



Electricity Consumption in Canada

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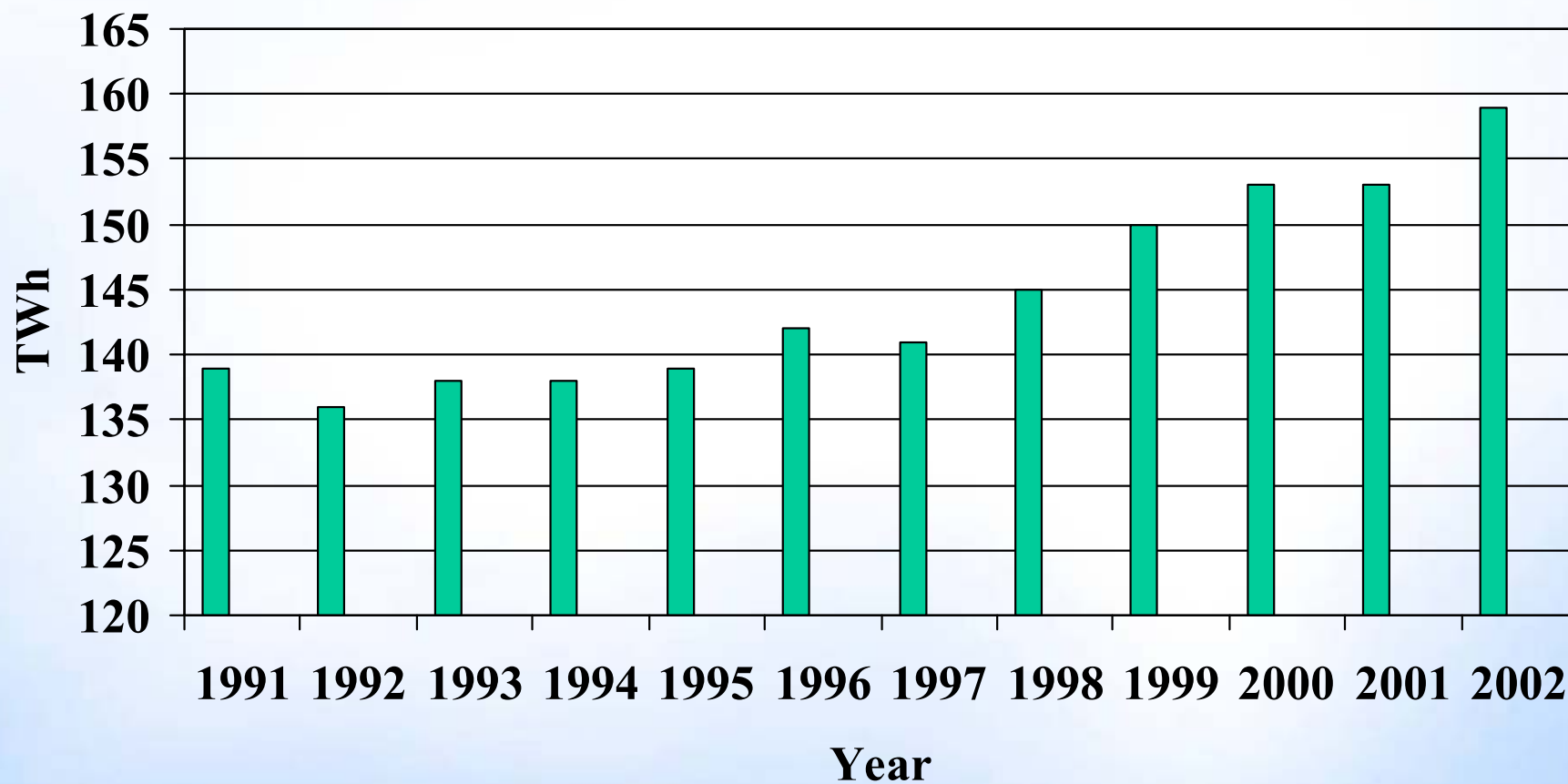


SOURCE: Statistics Canada



Electricity Consumption in Ontario

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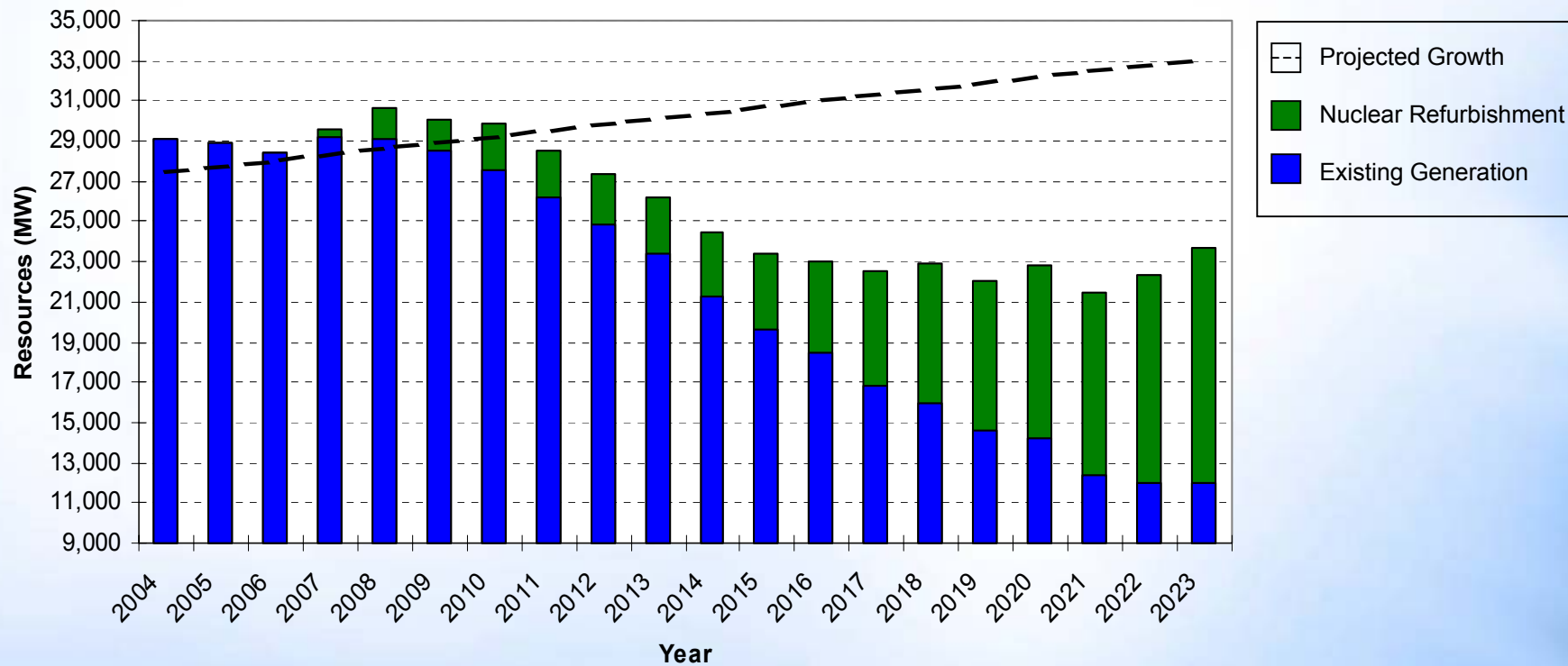


SOURCE: IMO



Refurbishment is Essential

Nuclear Refurbishment provides some of needed capacity





New Nuclear Construction in Ontario

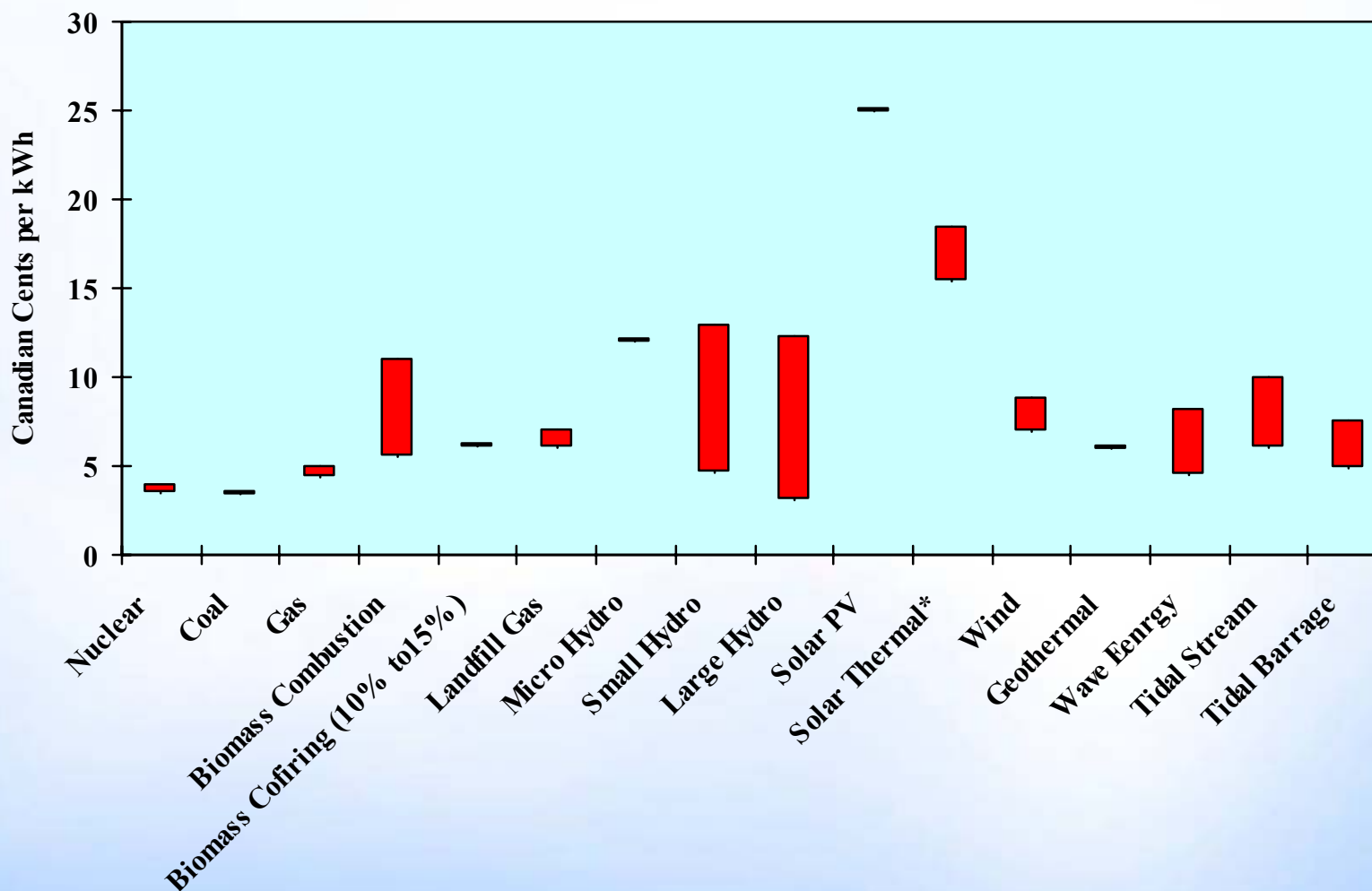
- Even with refurbishments, the current infrastructure cannot meet supply requirements
 - Coal phase-out to place additional strains on supply
- Imports can only meet fluctuations in demand
- Future demand can be met with mix of sources, including nuclear power

New nuclear plants are essential



Broad Agreement on Electricity Costs

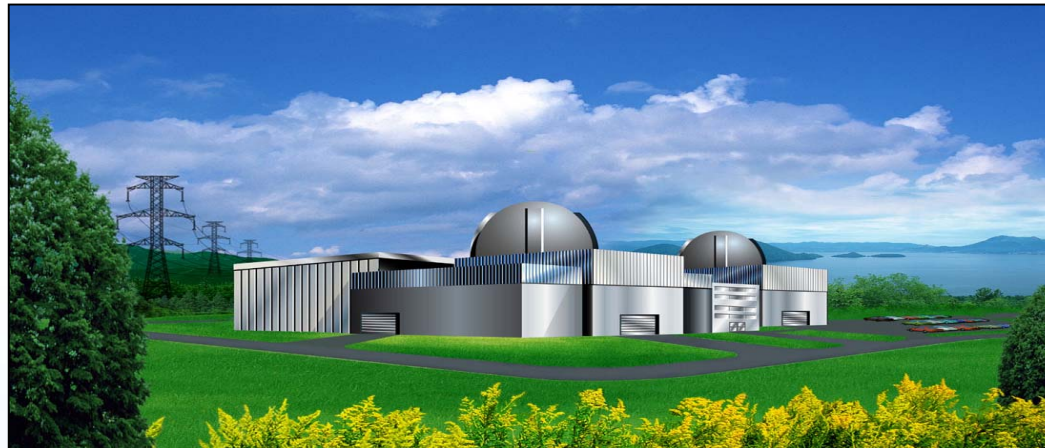
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SOURCE: Pollution Probe, "Promoting Green Power in Canada", 2002.



New Build Option: Advanced CANDU Reactor (ACR)



- Developed by AECL in Canada with Hitachi
- Capital cost reduced, build quickly, competitive with gas
- Market Studies: A winning product; robust market demand
- Major opportunity for Ontario's nuclear industry - domestic & export
- Builds on the CANDU 6 success
- Union Jobs



Environmental Performance

Nuclear power means low carbon emissions:

Coal:	975 g/kWh
LNG Thermal:	608 g/kWh
LNG Combined Cycle:	519 g /kWh
Solar PV:	53 g /kWh
Wind:	29 g /kWh
Nuclear:	22 g /kWh
Hydro-electric:	19 g /kWh

Japanese Central Research Institute, 2002



Impact of Nuclear Power

- Only nuclear and hydro are large-scale, zero-carbon power options.
- ~17% of the world's electricity comes from nuclear plants; nuclear base load in OECD is 23.2%.
- This avoids ~2.5 billion tonnes of CO₂ annually.
- Canadian reactors have avoided ~1.6 billion tonnes of emissions since 1972; each CANDU avoids ~ 5 megatonnes /yr of Greenhouse Gases.
- With CANDU plants, annual Canadian CO₂ emissions are reduced by 12%.



Bruce Power





Canadian Nuclear Industry

- Canada: 60 years in nuclear; Nobel Prize - 1994
- Nuclear is a \$5B/year industry; 21,000 direct jobs, 10,000 indirect jobs, 150 firms, \$1.2 billion in exports.
- In 2004, there are 22 CANDU reactors – 17 in service generating ~16% of Canada's electricity, cleanly and safely in Ontario (45%), New Brunswick (30%) and Québec (3%).



Bruce, ON



Gentilly, QC



Pickering, ON



Darlington, ON



Pt. Lepreau, NB



Canadian Nuclear Industry (*cont'd*)



- Industry safety record second to none
- Nuclear energy = zero air pollution
- Waste well managed, small in volume
- World's largest uranium exporter
- Invented Cobalt-60 cancer therapy
- Largest exporter of radioisotopes



Nuclear Industry Drives the Innovation Economy

Utility, Design, Engineering, Manufacturing, Construction and Operations

Sectors:

- Advanced computer-aided design and manufacturing skills and tools, highest precision, ISO quality standards



Applied R&D, Academic & Professional Innovation:

- Science & Technology; Engineering
- Computer Science; Architecture
- R&D in Advanced Reactors, Innovative Fuel, Waste Technologies



CANDU Exports

- Construction of CANDU reactors in Canada and export of this model to China, Argentina, Romania and South Korea has supported many well-paid jobs in Canadian manufacturing & engineering firms
 - The project at Qinshan has resulted in 27,000 PYs of quality work for Canadians





Nuclear Renaissance

- Nuclear growth driven by growing demand for clean-air power, secure energy supply, diversified generation, environmental protection
- Supportive Government policy & incentives for next-generation reactor construction – esp. in US
- 439 reactors operating, 25 under construction, 37 planned
- Reactor performance greatly improved (OECD = 90%)



Next Generation Nuclear Reactors Generation IV

- Long term research and development project by 11 countries to develop new nuclear technology
 - Canada (Atomic Energy of Canada Limited), U.S., U.K., France, Japan, Switzerland, Brazil, Argentina, South Korea, South Africa, European Union
- Four technologies approved for research
 - CANDU technology included in the Super Critical Water-cooled Reactor
 - These reactor types to be available starting in 2050



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Thank you!

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