

CAE Canada

R.L. Evans

Professor Emeritus

Clean Energy Research Centre

The University of British Columbia
Vancouver, BC, CANADA



Outline

- The “Other” CAE - Canada
- Energy Demand and Supply in Canada

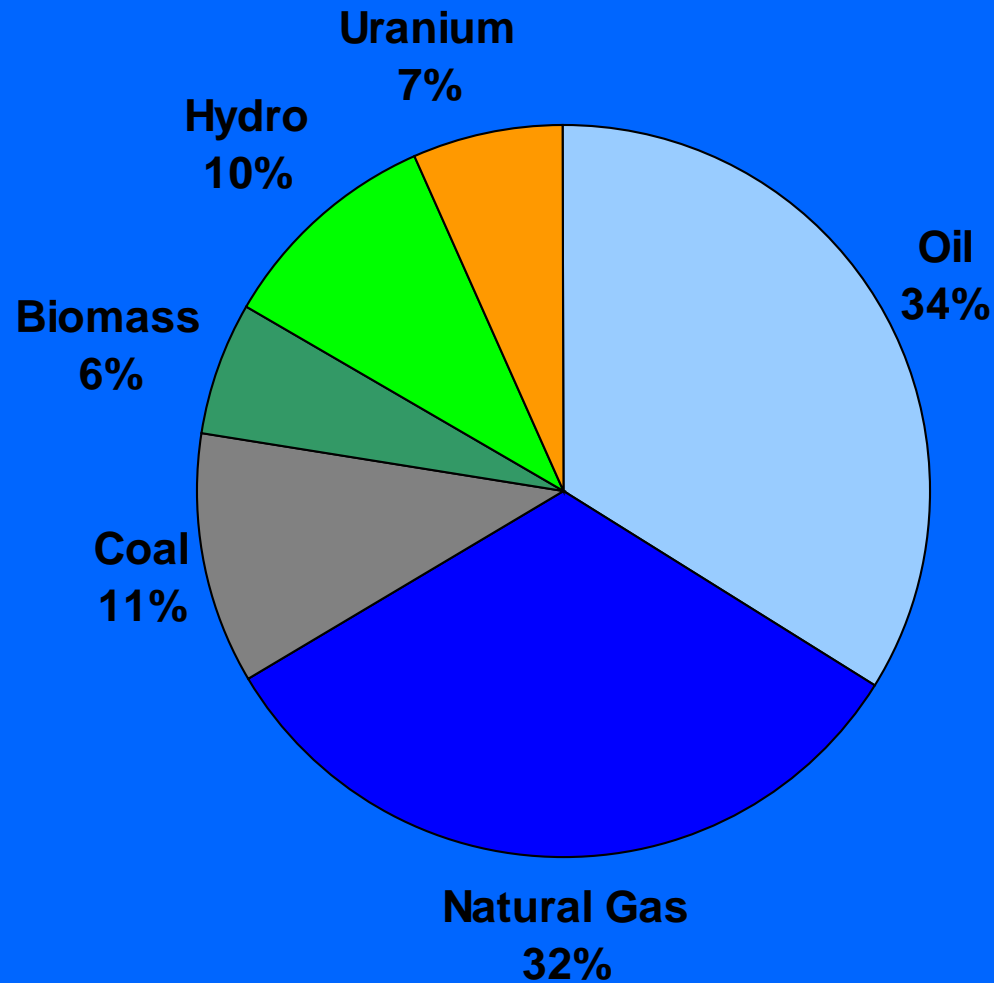


CAE - Canada

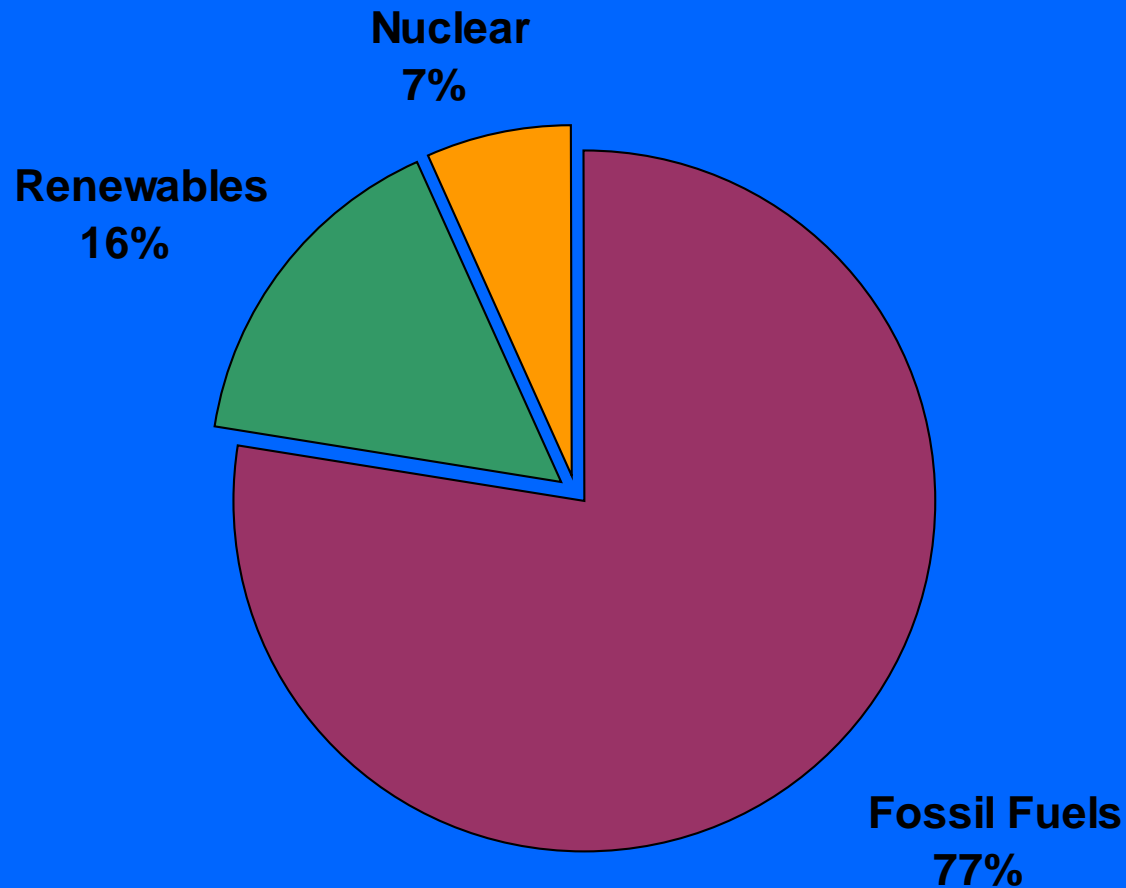
- **Founded in 1988**
- **~ 750 Fellows in CAE**
- **No government funding**
- **Many members in the Energy field**
- **Participation in a number of government funded Studies**



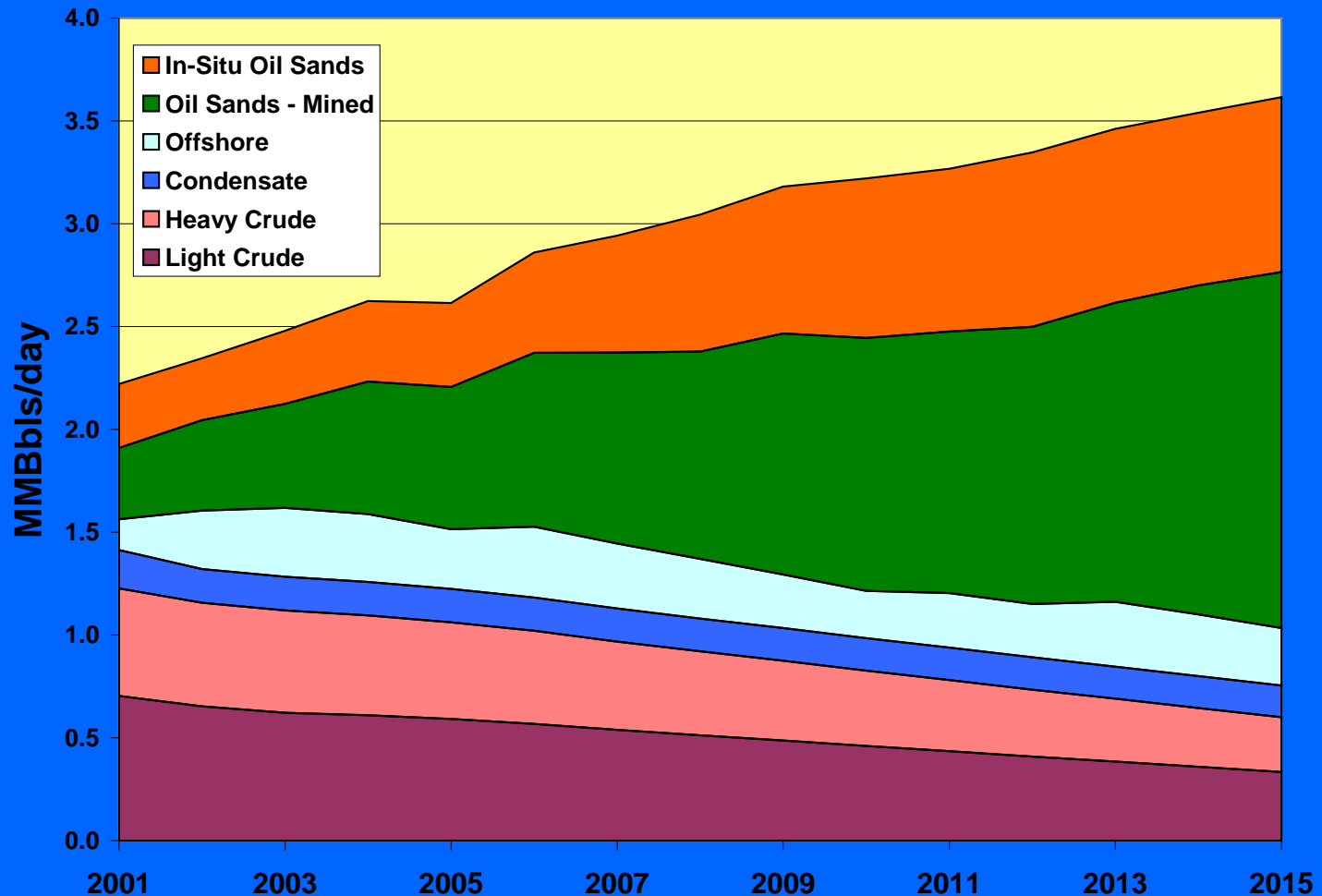
Canadian Energy Supply



Canadian Energy Supply



Canadian Oil Production



Source: CAPP



Canadian Oil Sands Production



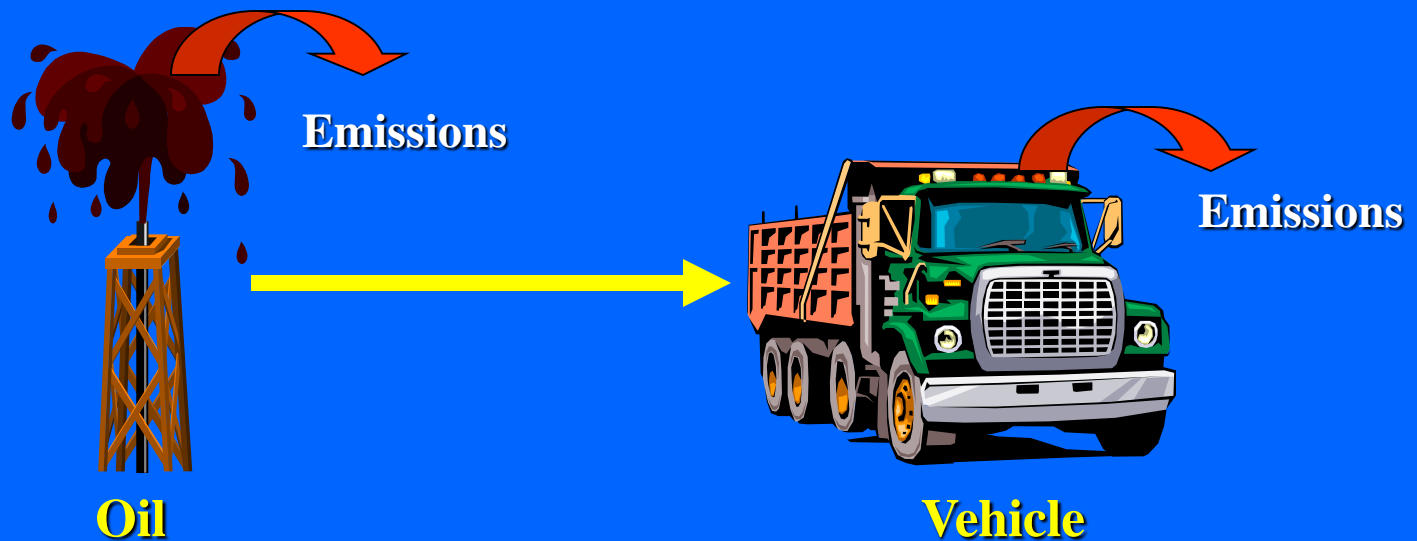
Source: Suncor



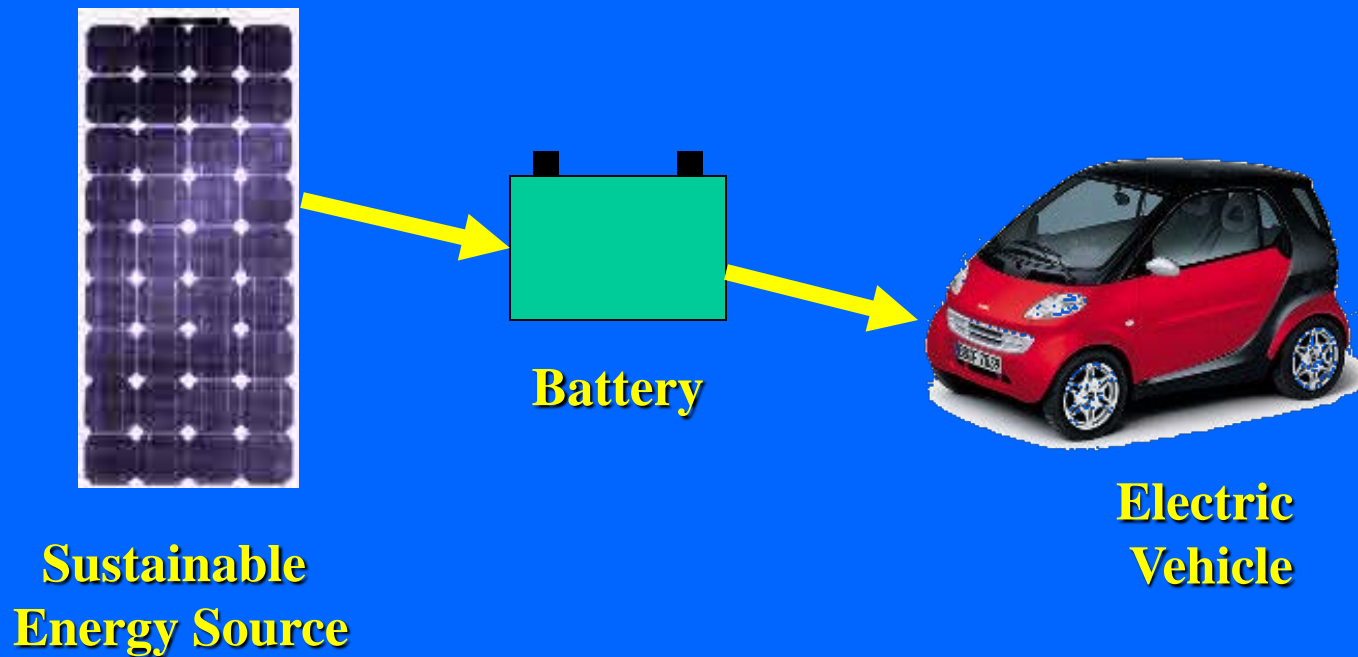
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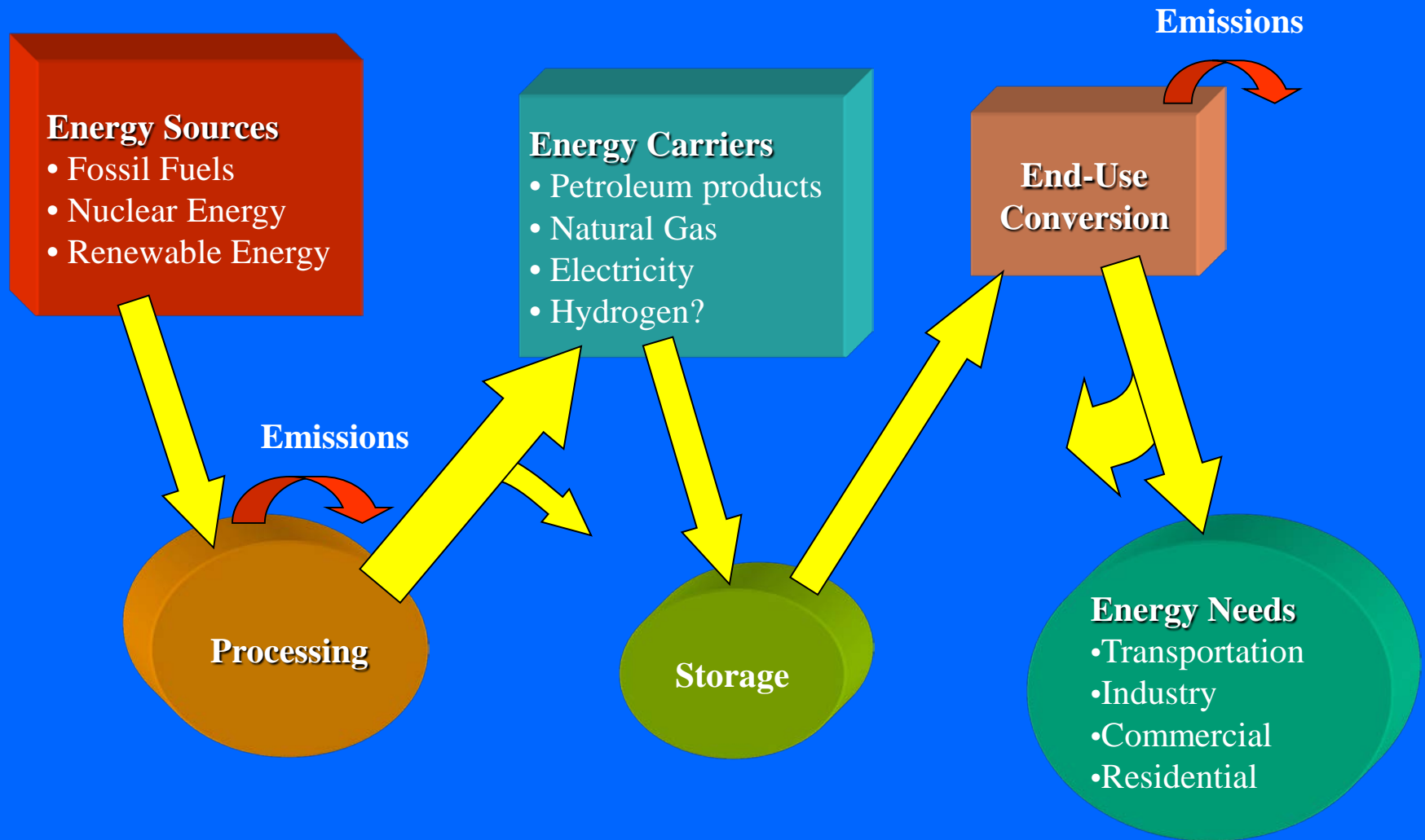
We need to go from here



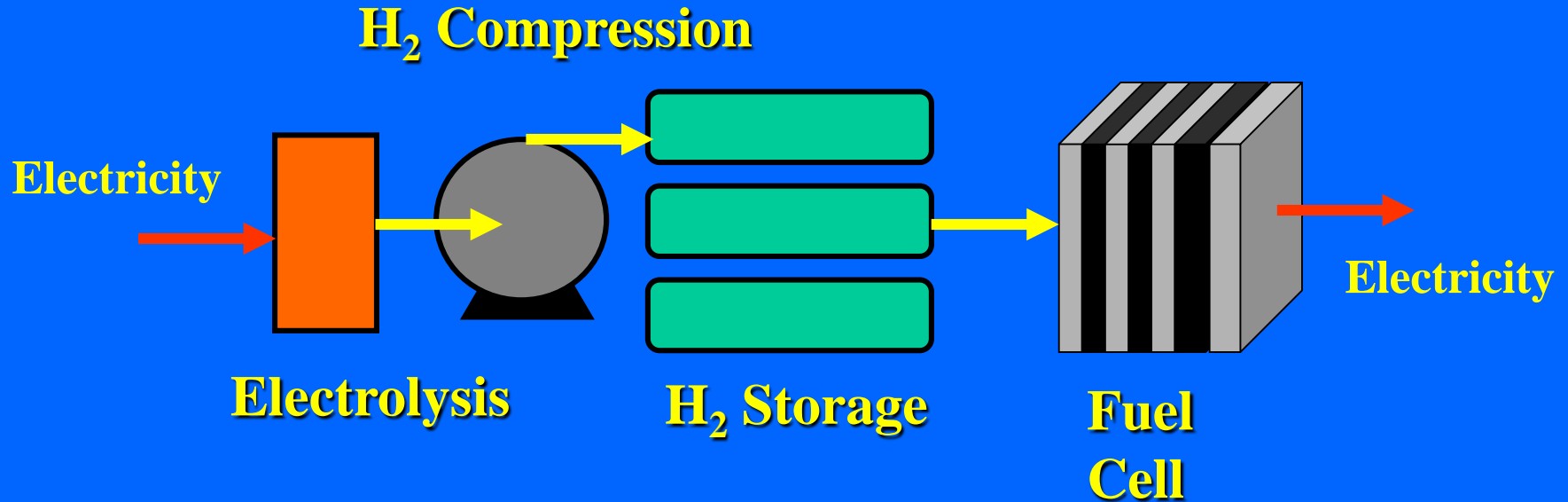
to here !



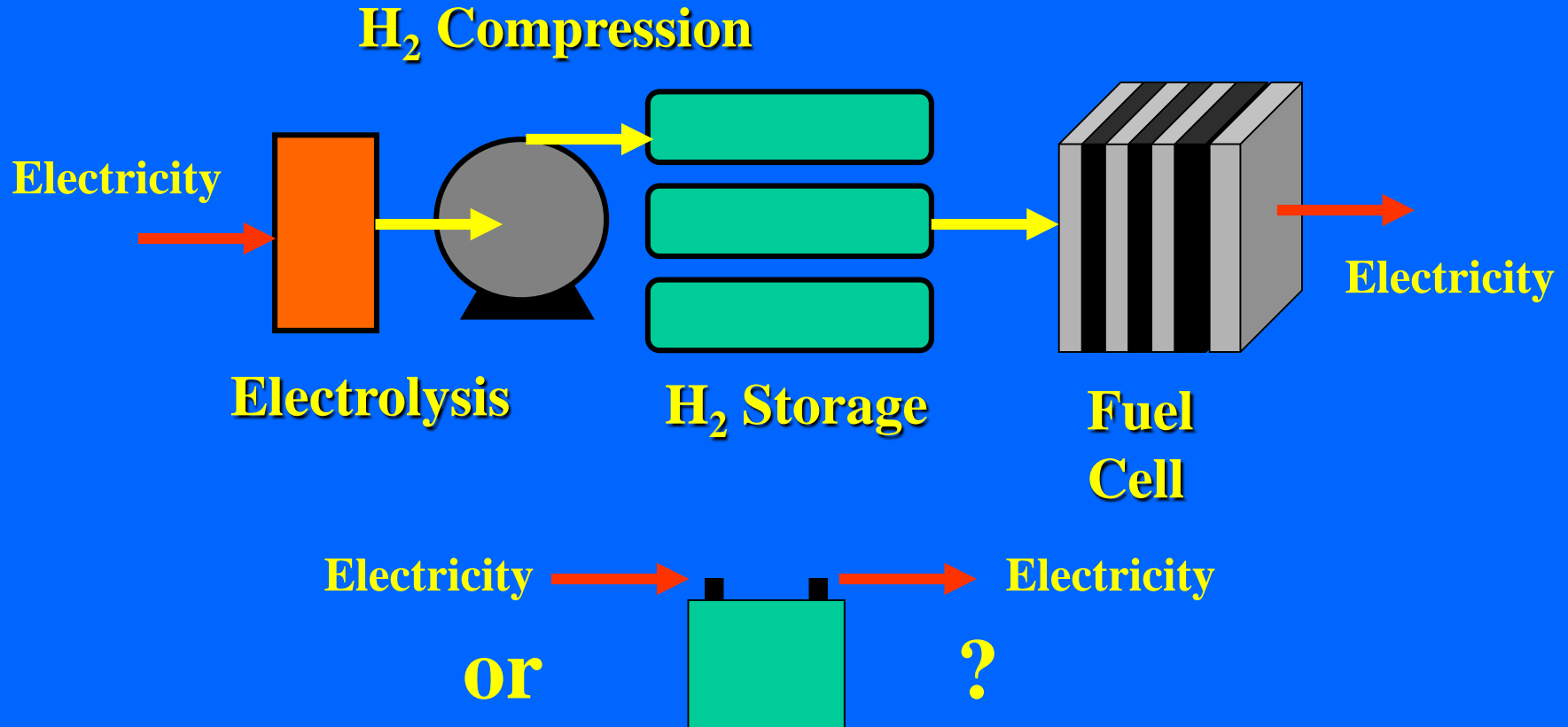
The Energy Conversion Chain



The H₂ “Battery”? ...



The H₂ “Battery”? ...



“Battery” Comparison

"In-Out" Efficiency Comparison			
Fuel Cell		Battery	
Electrolysis	75%	Battery	90%
Compression	90%	—	—
Fuel Cell	50%	—	—
Overall Efficiency	34%	Overall Efficiency	90%



H₂ can't compete with Electricity

**Hydrogen is just an “Energy Carrier”
like Electricity – However:**

- **Hydrogen will require nearly 3 times the primary energy as will electricity**
- **Electricity is the “Energy Carrier” of choice to replace fossil fuels**
- **Electricity will need to be “low-carbon”**



Word's Biggest “Batteries”

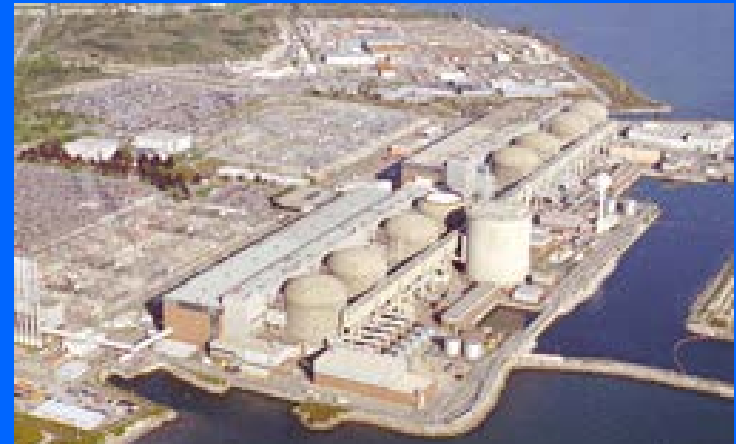
Reservoir	Storage (km3)	Installed Capacity (MW)
Lake Volta - Ghana	148	1,020
Manicouagan - Quebec	140	5,600
Williston Lake - BC	70	2,730
3 Gorges - China	39	22,500
Itaipu - Brazil	29	14,000



3 Gorges 22,500 MW Hydroelectric Station



With Sustainable Electricity ...



Canada will showcase the new “Electricity Economy”



For further information see --





FUELING OUR FUTURE

An Introduction to Sustainable Energy

ROBERT L. EVANS

EVANS FUELING OUR FUTURE

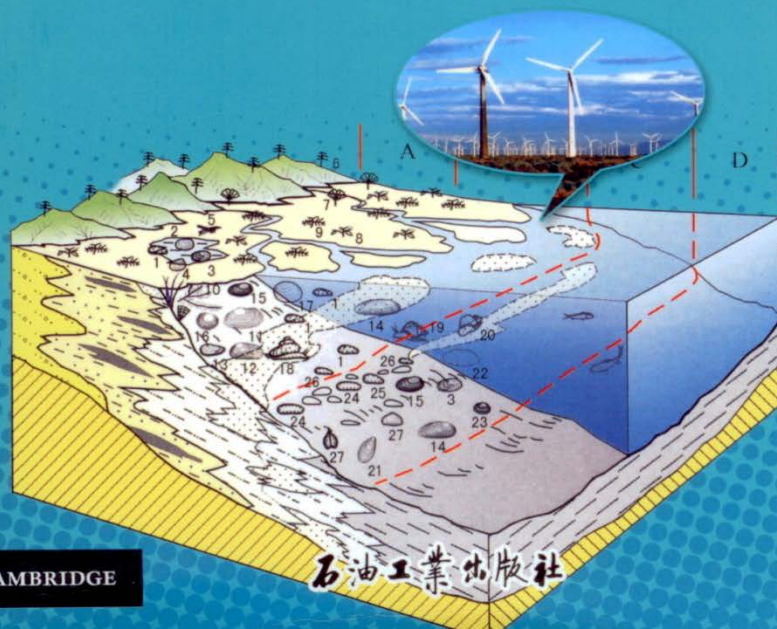
CAMBRIDGE

国外油气勘探开发新进展丛书
GUOWAIYOUQIKANTANKAIFAXINJINZHANCONGSHU



Fueling Our Future 未来能源

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