



The Bowman Centre For Sustainable Energy

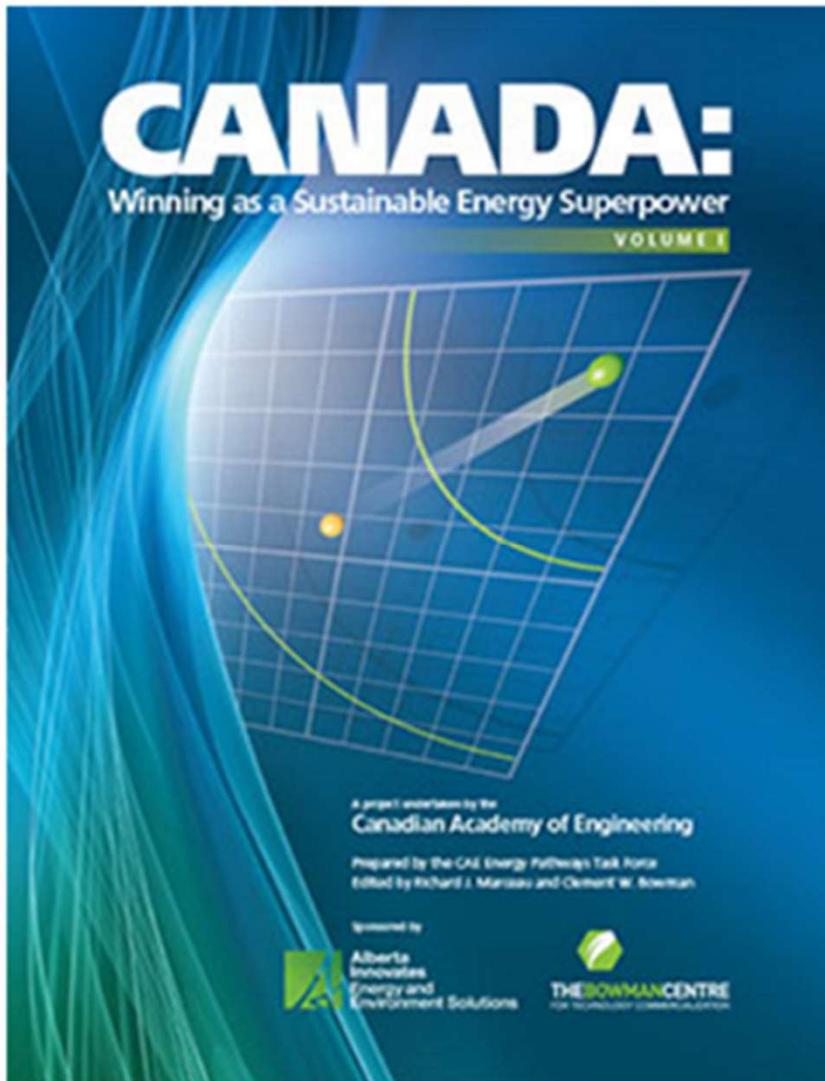
Canadian Academy of Engineering

Northern Infrastructure Corridor Seminar

Participation by Marshall Kern
President, Bowman Centre for Sustainable Energy
October 5, 2020

A National Electrical Grid

- We've been working this file for a decade
- We aren't the first. Proposals for a national electrical grid have floated around since the debates on the trans-Canada pipeline in the 1950s
- *What have we contributed?*



“Canada’s electricity networks were historically designed and built on a province by province basis, with limited emphasis on provincial interconnections.”

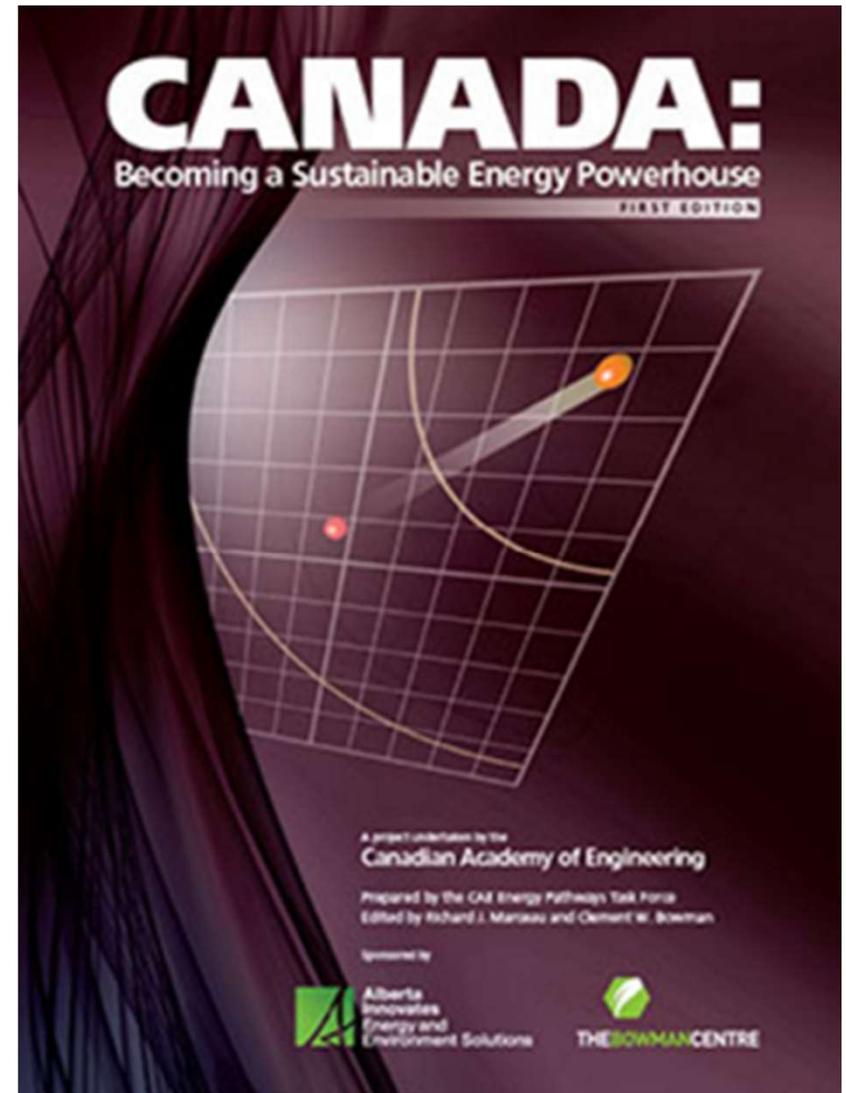
We provided a scenario of 11 steps to connect the provincial grids in a logical sequence over 17 years at a cost of about \$25 billion.

2012

ISBN: 978-0-9730830-8-8

“Twinning Canada’s electricity trade strategy with climate change goals – through high value electricity production and transmission – has the potential to deliver economic prosperity with a much lower national carbon footprint.”

We presented case studies for hydropower generation development that could set Canada – and North America – on a low-carbon trajectory.



2014

ISBN: 978-1-928194-00-2

CANADA:

Making the Case for Nation-Building Projects



A project undertaken by:

The Bowman Centre
For Sustainable Energy

“Canada’s energy system should be envisioned as an integrated system.”

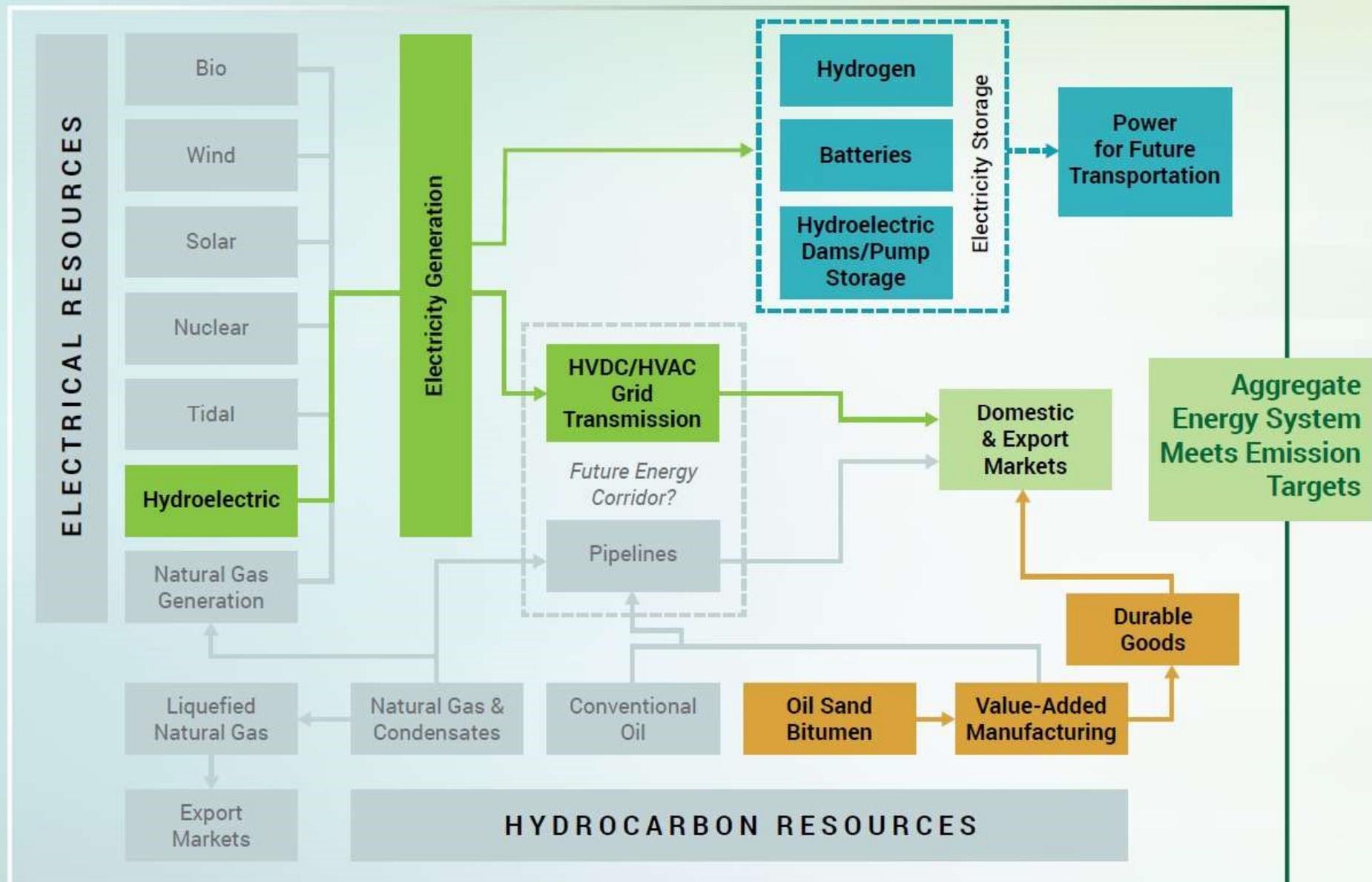
We proposed 3 ‘value-chains’:

- 1) A hydro-electric chain with HVDC/HVAC transmission for domestic and export markets
- 2) Electricity storage with hydrogen, batteries, pumped storage and hydropower to provide energy for transportation, and
- 3) Non-fuel uses of Oil Sands bitumen

2019

ISBN: 978-0-9739339-6-3

Energy Linkages: Three Important "System Chains"

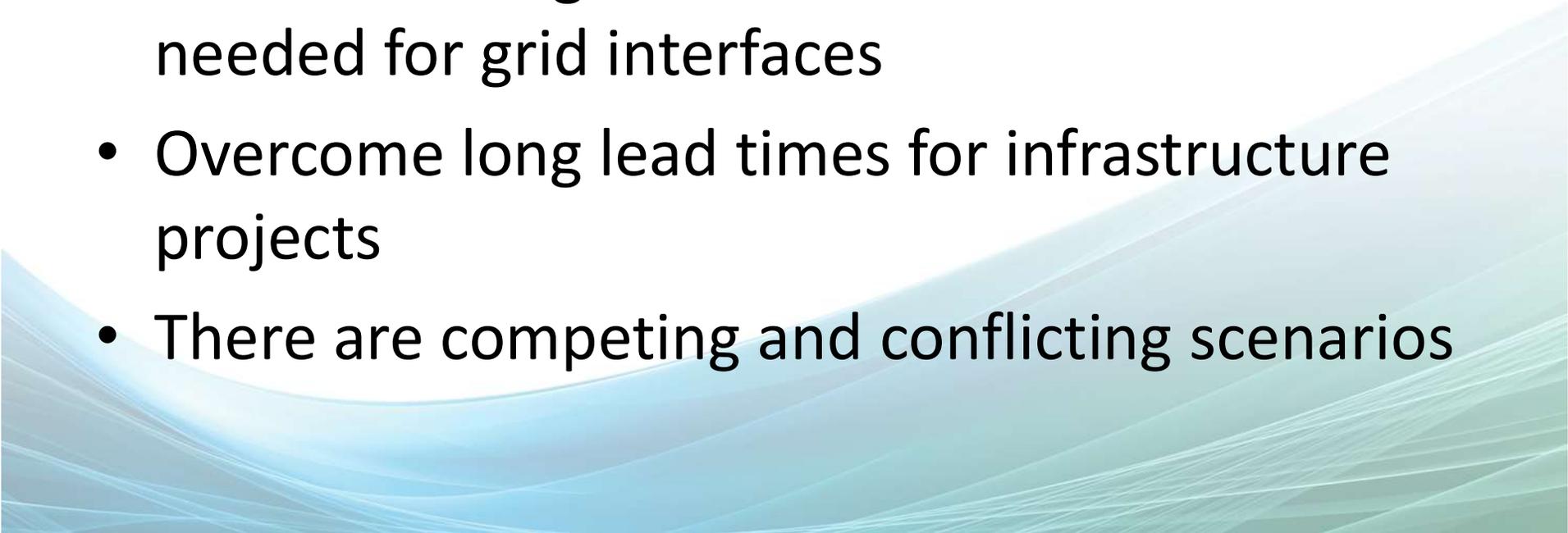


Benefits:

- Productivity improvements as each link of a national electrical grid is built
- Avoid stranded assets
- Continue with nation-building



Where are we now?

- Canada needs a visionary leader
 - Adjoining provinces need to cooperate to connect their respective grids
 - Technical and governance solutions are needed for grid interfaces
 - Overcome long lead times for infrastructure projects
 - There are competing and conflicting scenarios
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Dr. Clem Bowman



- Founder of The Bowman Centre for Sustainable Energy
- Fellow of the Canadian Academy of Engineering
- Former President of AOSTRA

Dr. Richard Marceau (1953 – 2016)



- Associate of The Bowman Centre for Sustainable Energy
- Past-President of the Canadian Academy of Engineering
- VP of Research; Memorial University Newfoundland
- Past Provost and VP Academic at UOIT



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