

The Transition from Hydrocarbons and a Role for Renewable Energy - Market and Regulatory Barriers -

Michal C. Moore

Senior Fellow

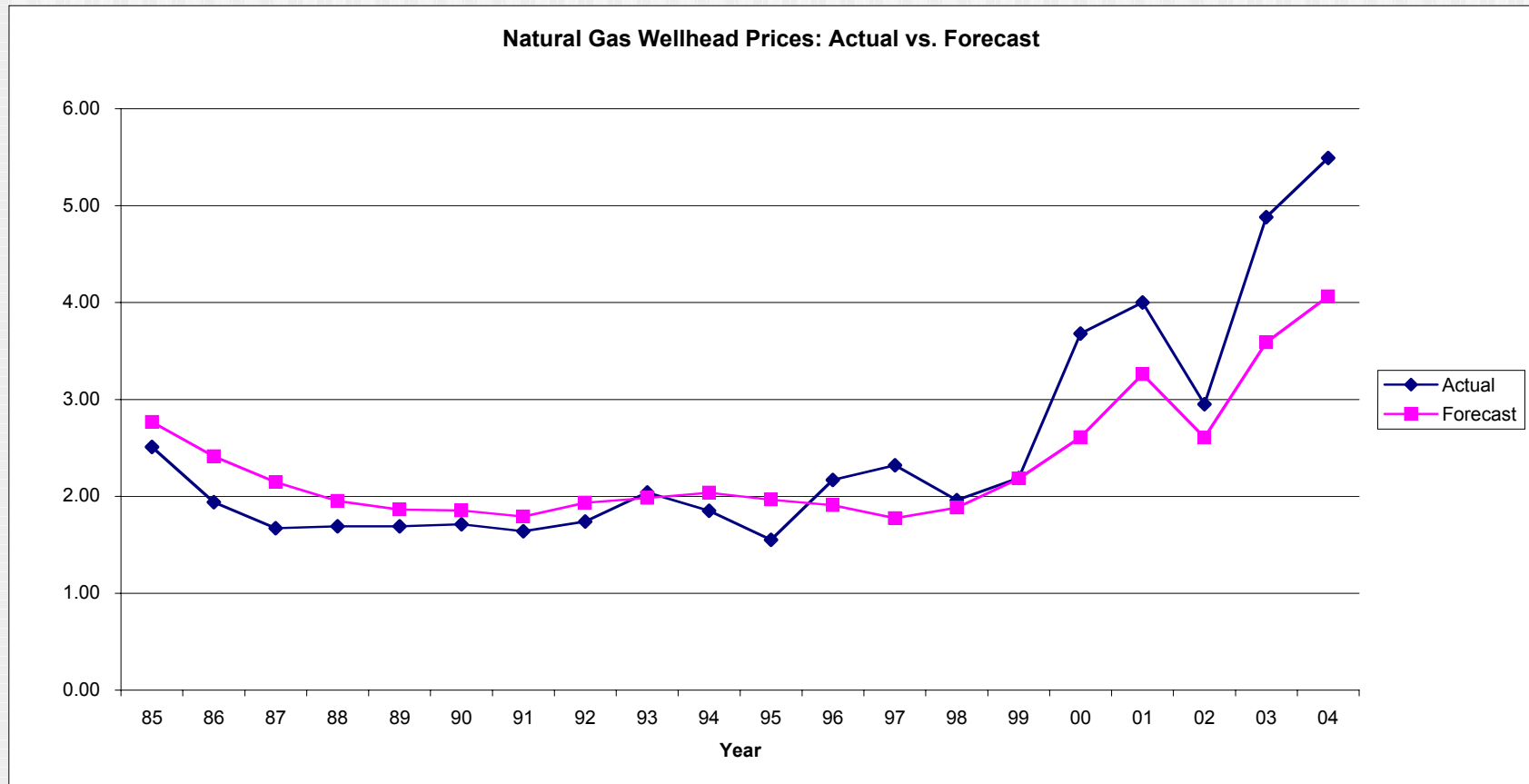
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University of Calgary

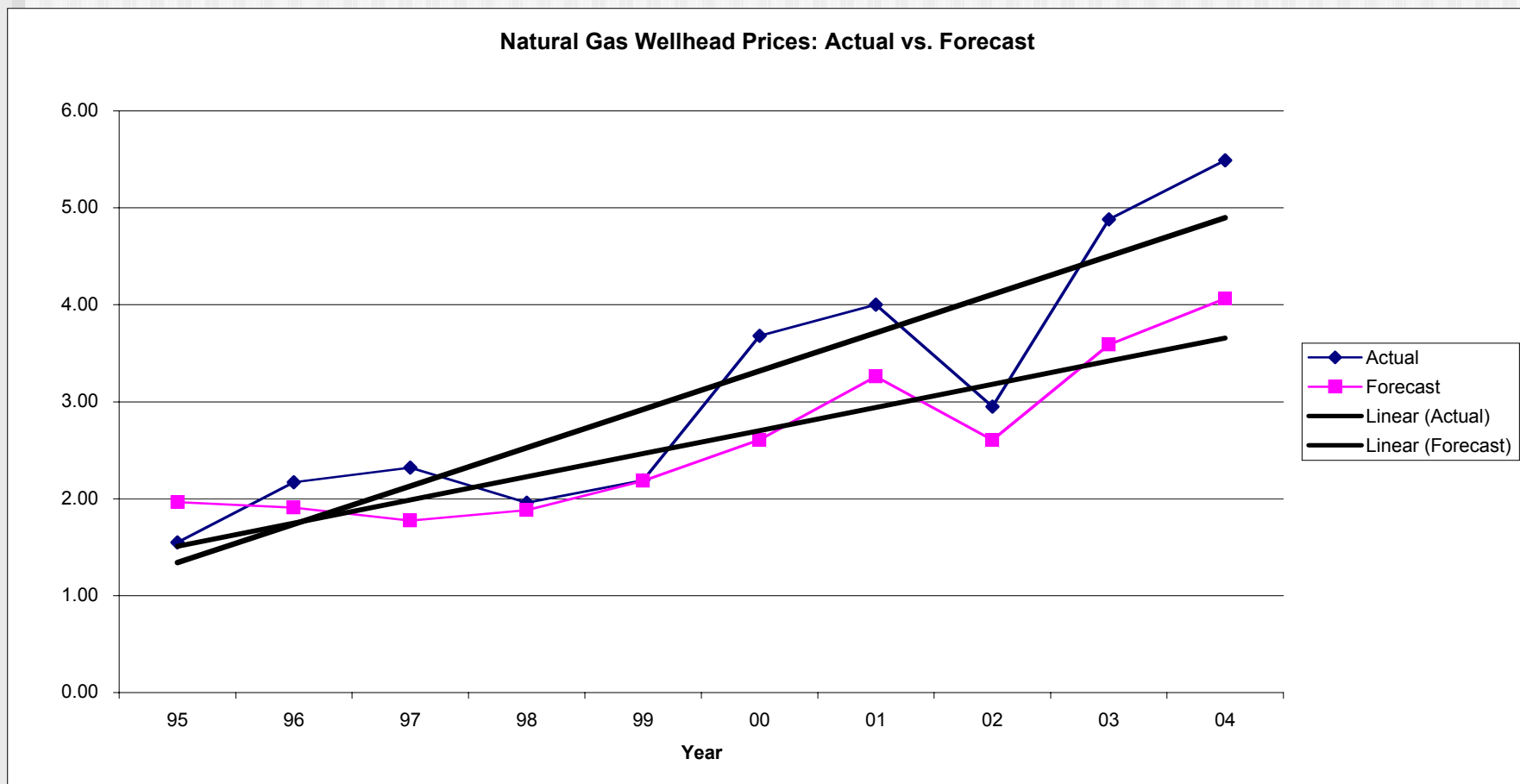
Transition Drivers

- Price Increases for Oil
- Price Increases for NG
- Competition for Water
- Concern for Externalities
- Geopolitical Realities

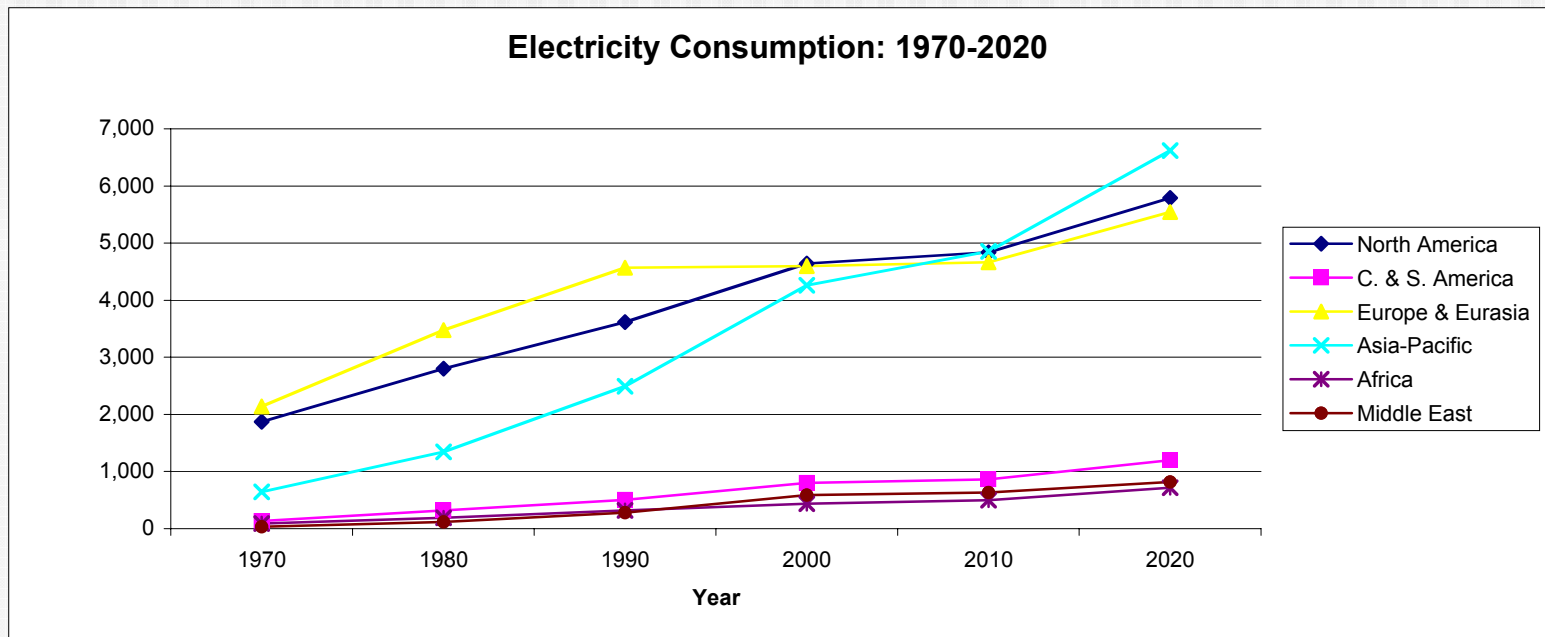
The Problem with Forecasting...



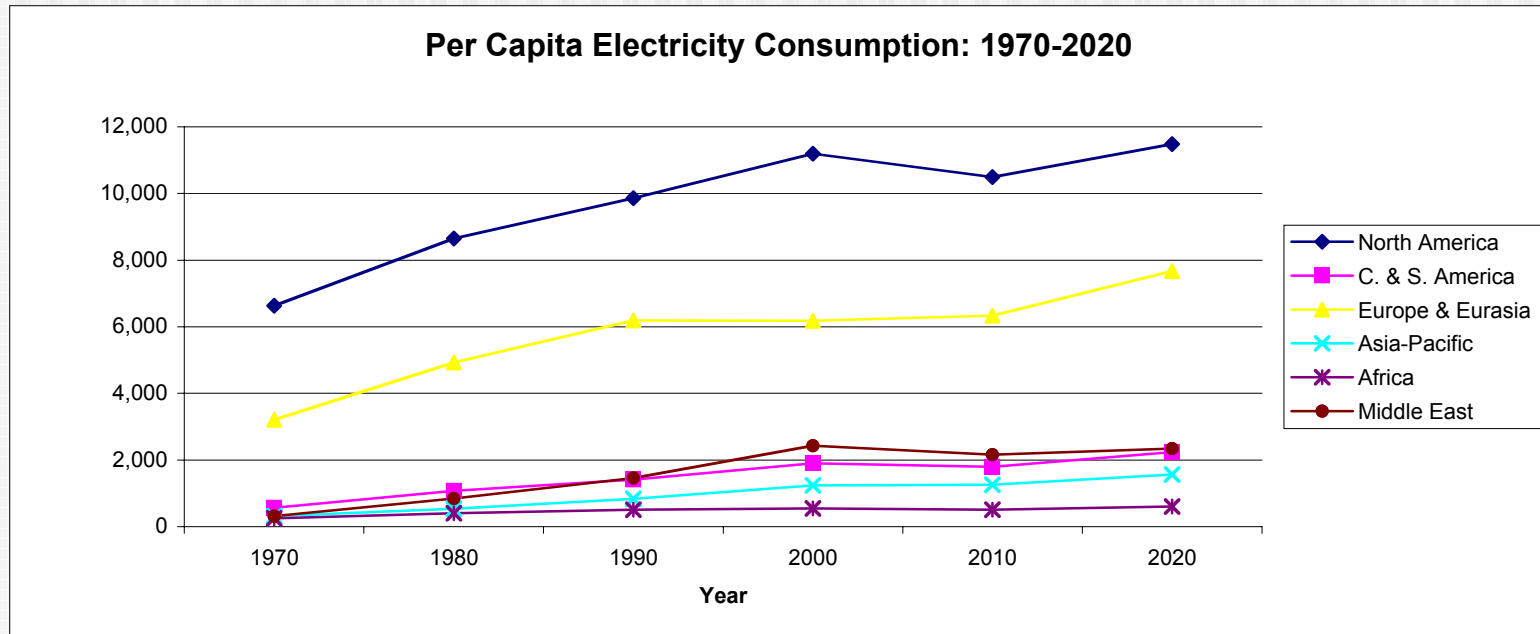
The Trend is Clear



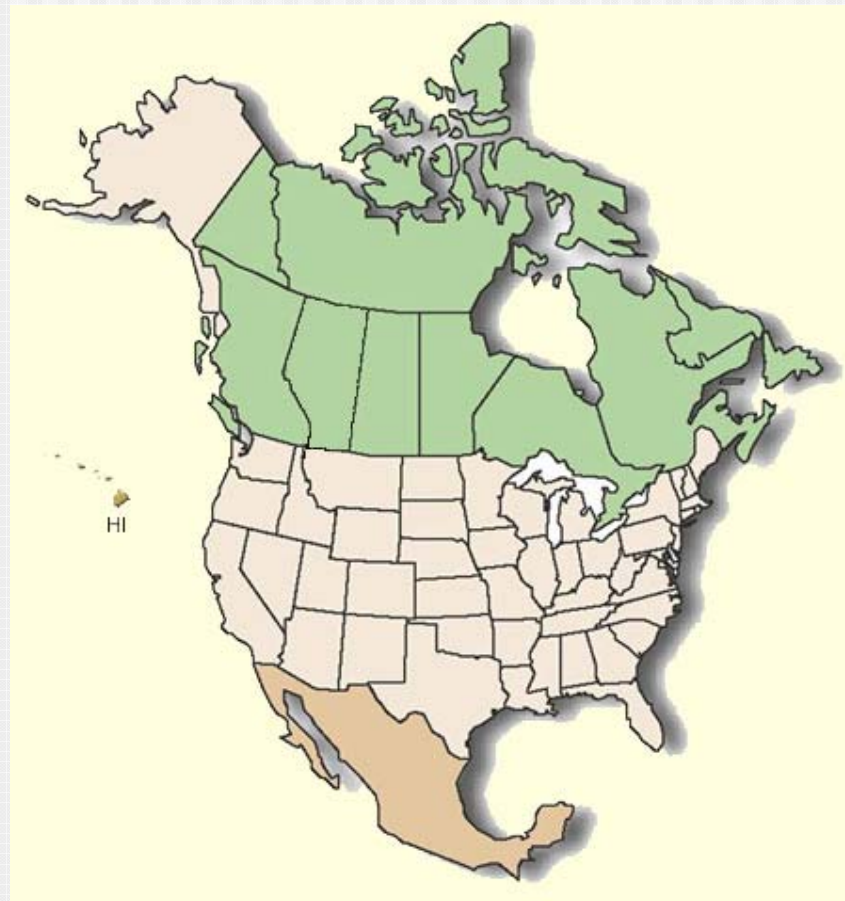
Demand in Waiting



An Opportunity to Change Behavior



Canada in Context



Canada - the Confederation

QuickTime™ and a
TIFF (LZW) decompressor
are needed to see this picture.

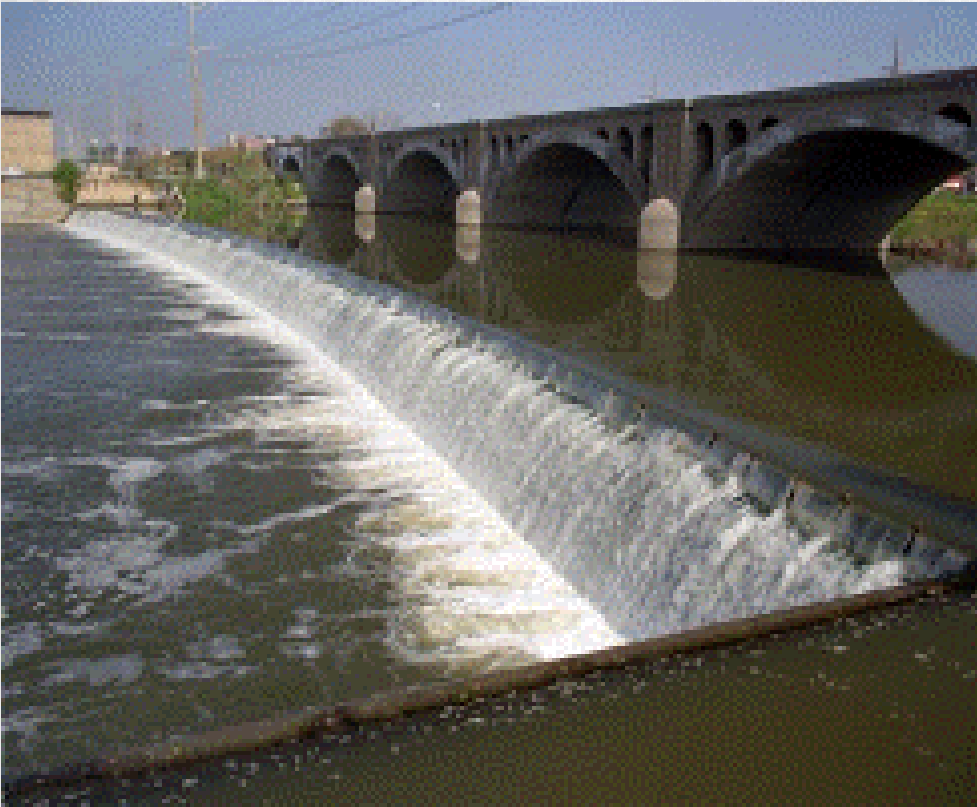
Population distribution cluster

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In An Energy Rich Country, Who Cares About Renewables

- The Canadian Public
- The Federal and Some Provincial Legislatures
- Industry
- NGO's

Water, the Dominant Renewable



Dispatchable
Dependable
Other Competitive Uses

Could be backbone of
Future Green Markets

Current Renewable Projects

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Wind Speed
meters per second

0.0 - 1.4

1.4 - 2.8

2.8 - 4.2

4.2 - 5.6

5.6 - 7.0

Cambridge
Bay

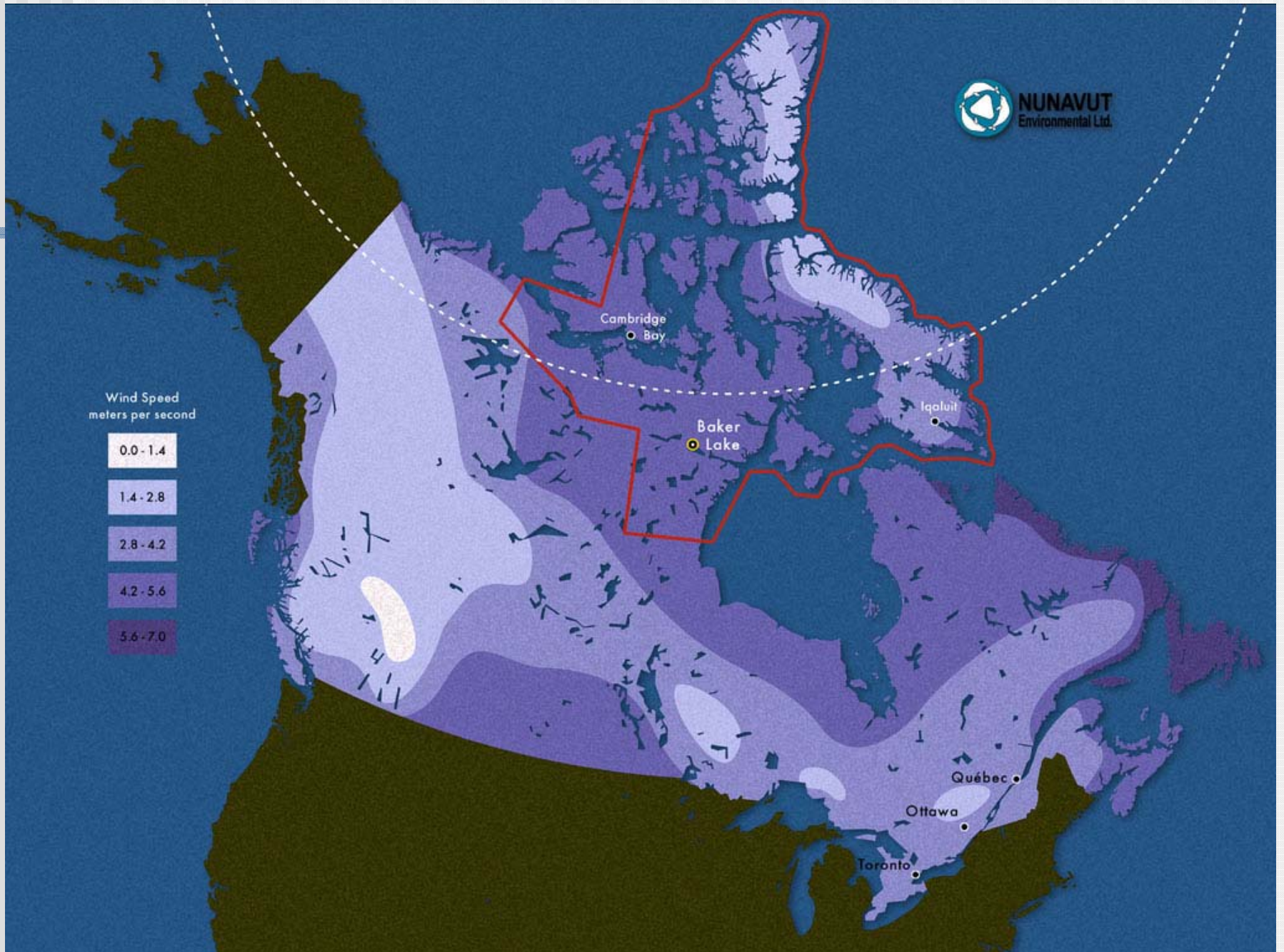
Baker
Lake

Iqaluit

Québec

Ottawa

Toronto



Dominant New Renewable Technology

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Emerging Technologies

- Solar, microhydro & remote DG
- Biomass
- Deep geothermal

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Market Incentives

- Premiums
- Demand side management
- Subsidies

What is Working?

- Tradable credits and Kyoto
- Future hydro and far north development
- Provincial Incentives
 - Alberta
 - wind, hydro, biomass
 - Ontario
 - wind and hydro
- Concept of “Co-generation”

What Are the Next Enablers

- The Oil Sands
- Slave River
- Large Transmission System
- Shared facilities
 - Steam hosts for drying biomass
 - Wind to blend with coal
 - Gasification and hydrogen / fuel cell development

Obstacles and Opportunities

- Regulatory reform
 - Interprovincial transfers
 - Cross industry tariffs
 - Transmission siting and financing
- Green market development
- Co-siting and use of renewables and fossil energy
- Resource for US as well with cooperative regulatory agreements

What Renewable Energy Needs

- Incentives (and interest from policy makers and the public)
- Access (transmission, interconnect standards)
- Permission from regulators
- Demonstration over time

The Path to Integration

- Admit they won't take over
- Adopt role as supplement
- Convince ISO's to dispatch
- Begin substitution
- Emphasize conservation of other fuels and adopt sustainability goal