Economics and Politics of Carbon Pricing

Discussion Material for CCRE Energy Leaders' Roundtable

April, 2017

STRATEGIC POLICY ECONOMICS

Economics and Politics of Carbon Pricing

Overview and Discussion Points

Ontario's Climate Strategy built on several components:

- *Climate Change Mitigation and Low-Carbon Economy Act*
  - Legislated the 37% emission reduction target by 2030
  - Framework for Cap & Trade
- *Cap & Trade (C&T) Program initiated in 2017*
  - Link with California and Quebec in 2018
  - "Cap" driven by emissions reduction targets
    - Caps imposed on specific organizations for compliance
    - Allowances to emit up to the "Cap" are auctioned
  - "Trade" enables businesses to buy allowances from others who reduce emissions beyond the allowances they received
    - Large emitters in Ontario are issued "free allowances"
      - To protect against "Carbon leakage"
- *Climate Change Action Plan (CCAP)*
  - The process by which Ontario will disburse the "proceeds" from the Cap & Trade Allowance Auctions

Climate strategy focus is to switch away from fossil fuels

- Implies significant electrification → Input to Long Term Energy Plan?

Federal Government is pursuing a $50/tonne carbon price

- Will impose a tax on jurisdictions not achieving goals
- Not clear if Ontario's Cap & Trade program "achieves the goal"

Topics Explored

- Politics of COP21 Objectives
- Politics of "Claiming Victory" vs "Value to Taxpayers"
- Politics of International Affairs
- Fact not Politic: Known solutions are expensive
- Politics of Avoiding Accountability
- Politics of Avoiding Implementation
- Politics of "Green Image" vs the Politics of "Cost"

The Politics of COP21 Objectives

→ Ontario's Legislated Pace of Emissions: What price does leadership come with?

Paris made headlines, Ontario and Canada had leadership roles

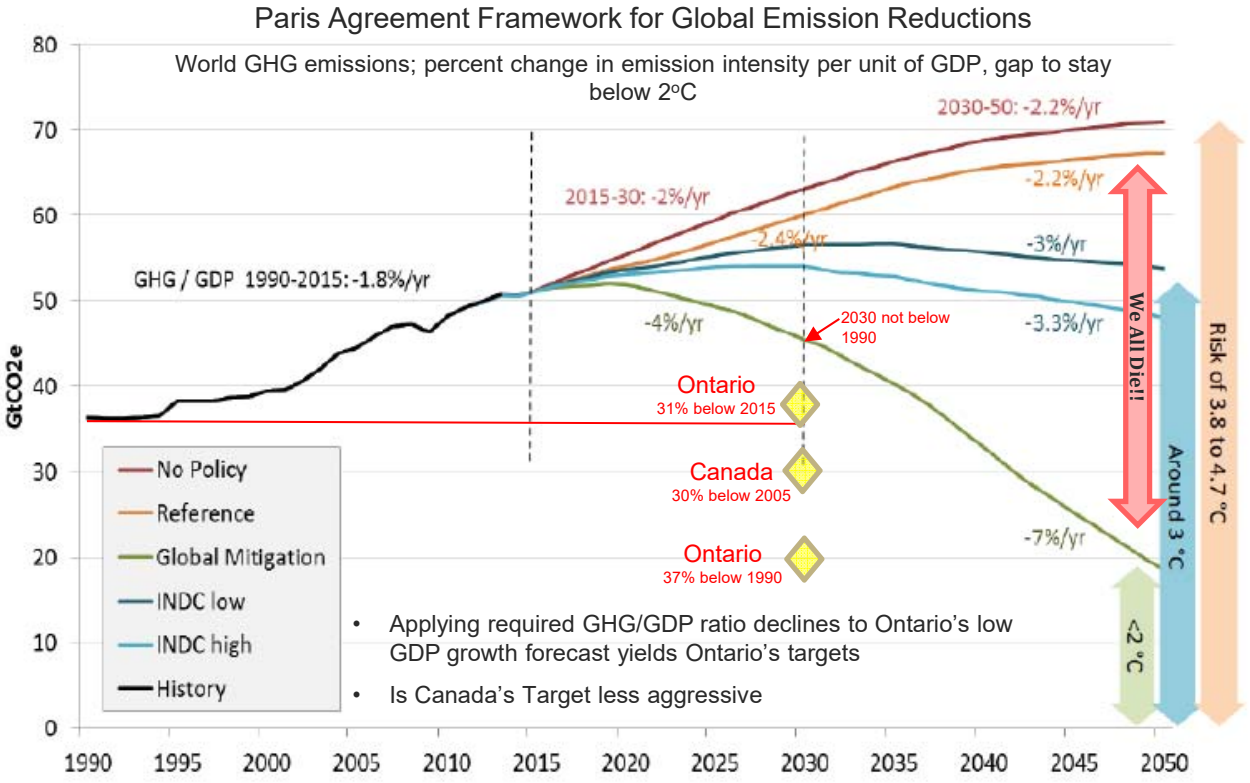
- INDC efforts to date will not avoid global disaster
- Ontario is but a "drop in the bucket"
- Ontario objectives appear more aggressive than others

GHG/GDP Growth Perspective

- Ontario's target is comparable

Feels like an international compromise

Impact of Intended Nationally Determined Contributions (INDCs)



Source: EU Climate Strategy Presentation, EIA Conference 2016, Strapolec analysis

The Politics of "Claiming Victory" vs "Value to 'Tax'payers"

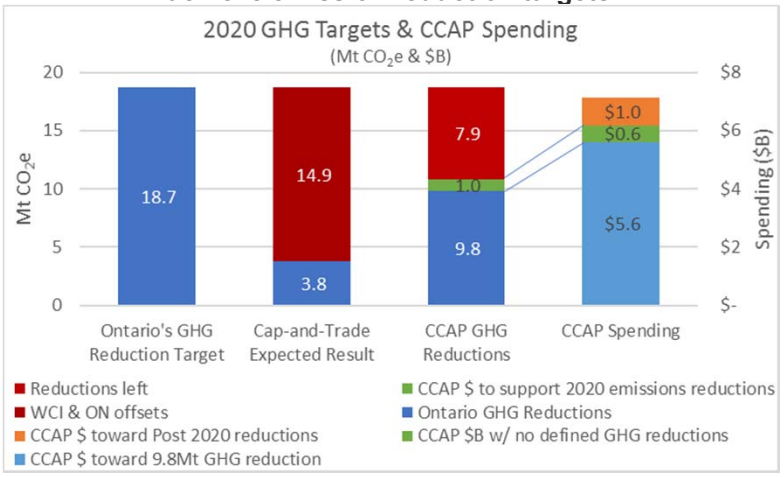
→ Cap & Trade vs a Carbon Tax: At what price is victory?

Auditor General: C&T only "claims" target achievement

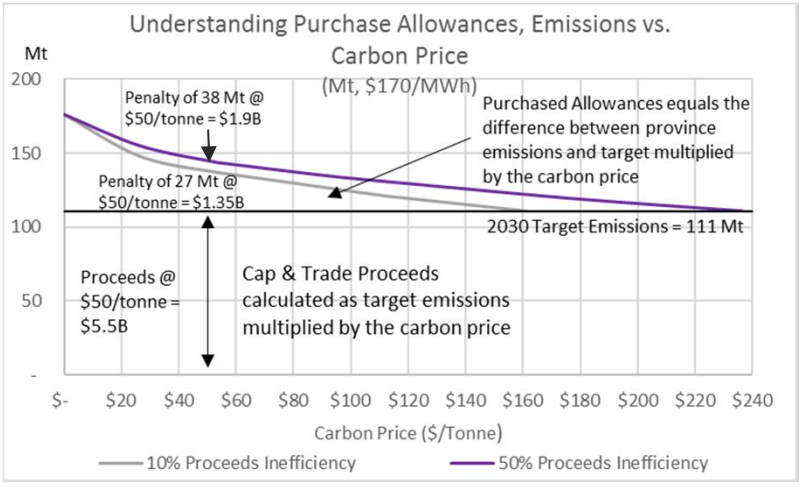
- C&T Economic assessment: → No intent to achieve targets
- CCAP: → Targeted use of proceeds fall short
- Cap & Trade: → Untracked cost to taxpayers/ ratepayers
- Reducing Emissions: → Harder in Ontario than California

Carbon Tax: → No outflows of purchased allowances

Neither Cap & Trade or CCAP are currently designed to achieve emission reduction targets



Under Cap and Trade, shortfall will be purchased from California



The Politics of International Affairs

→The Border Adjustment: Can the mouse influence the elephant? *

Cap & Trade should be most relevant to registered large emitters; 80-90 of them in Ontario

- But these have *Free Allowances* to avoid "carbon leakage"

The rest of Ontario's emissions? Heating and Transportation for all

- 0.5% of GDP to 4% of GDP for most sectors
- A significant cost disadvantage for manufacturing

Full economy treatment required with a carbon price system**

Border Adjustment: A duty applied or discounted on goods traded with regions with different carbon policies

Implement with HST-like mechanism?

The Politics: *The Cost of Leadership Again?*

- Response to "Trump Effect"??
- Challenge: Trade policy is Federal jurisdiction

Ontario Economy Trade Exposure vs GDP by Sector

Carbon Price = $30/tonne

The centre of each sector's bubble reflects that sector's trade exposure (horizontal axis) and its carbon costs (vertical axis; log scale). The size of each bubble reflects the sector's share of provincial GDP (blue) and share of provincial GHG emissions (red).

Source: Modelling analysis from Canada's Ecofiscal Commission and Navius Research.

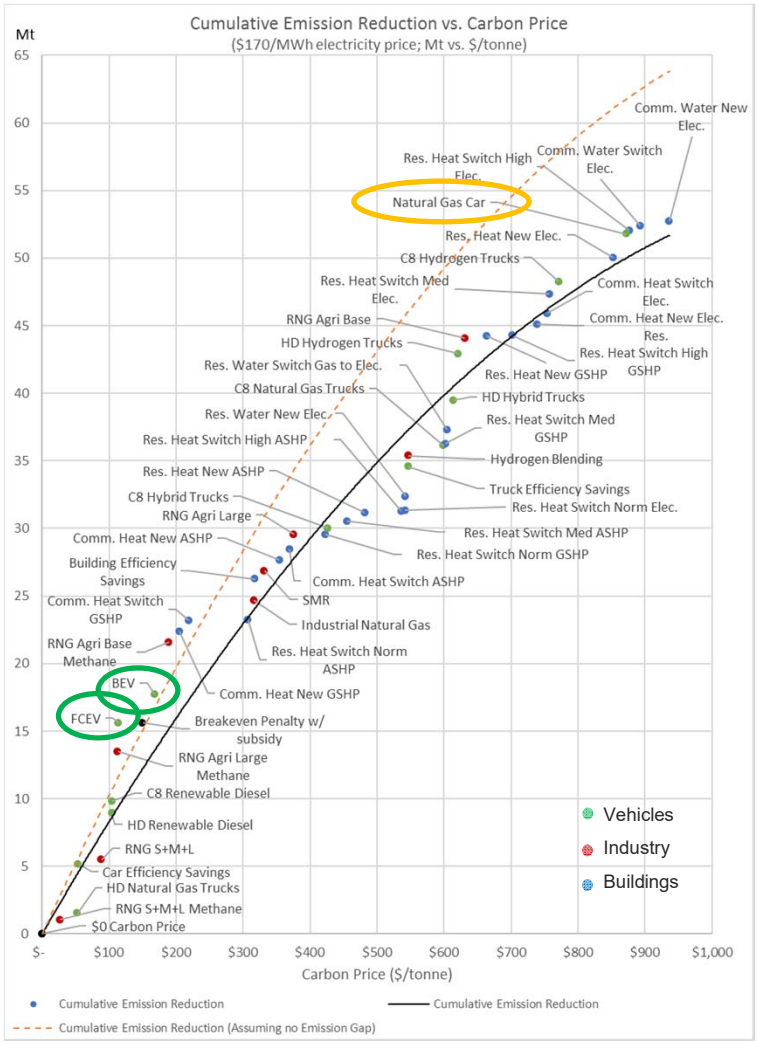
* Maria Panezi, a postdoctoral fellow at the Centre for International Governance Innovation, 2016

** Matthew C Klein, If you're going to border-adjust a carbon tax, why stop there? Feb 2017

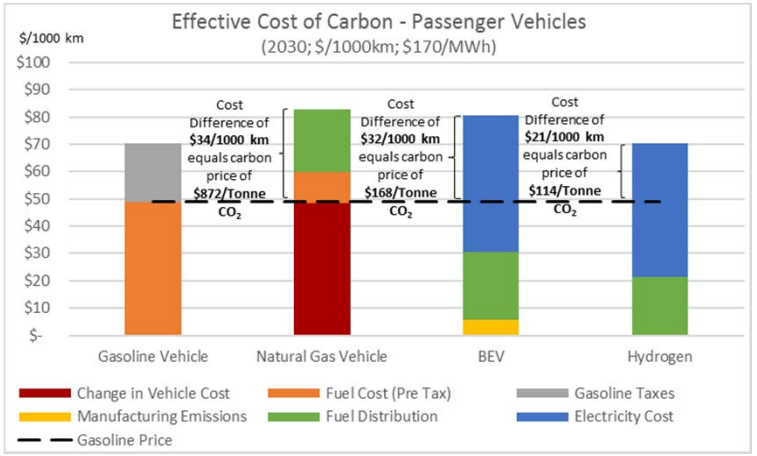
The Fact not Politic: Known solutions are expensive

→ Cost of achieving emission reductions can be estimated

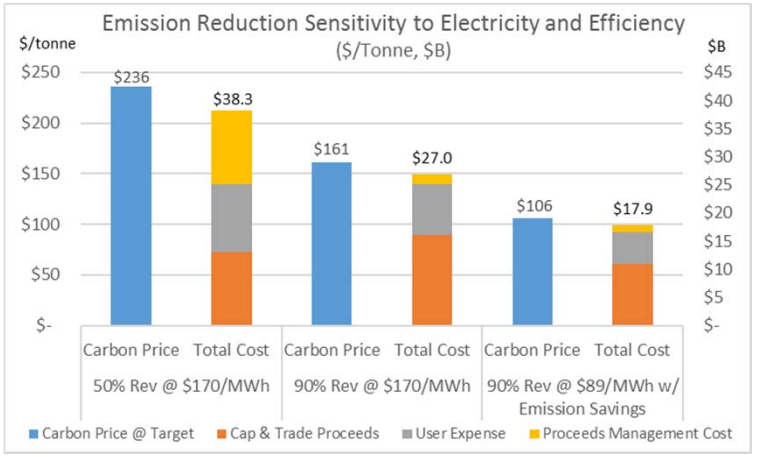
45 technologies assessed for expected costs in 2030



The cost of a solution and the Carbon Price impact differ



Lower cost of electricity means lower cost of carbon reduction



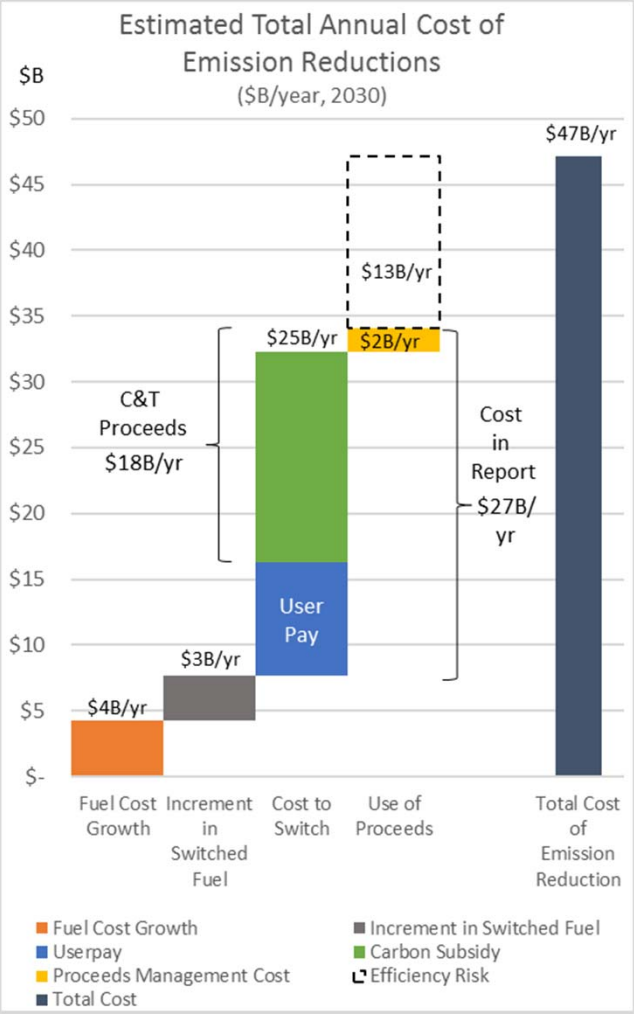
Source: Strapolec Analysis

The Politics of Avoiding Accountability

→ People pay for more than just the carbon price

Emission reduction is an extreme intervention into the economy

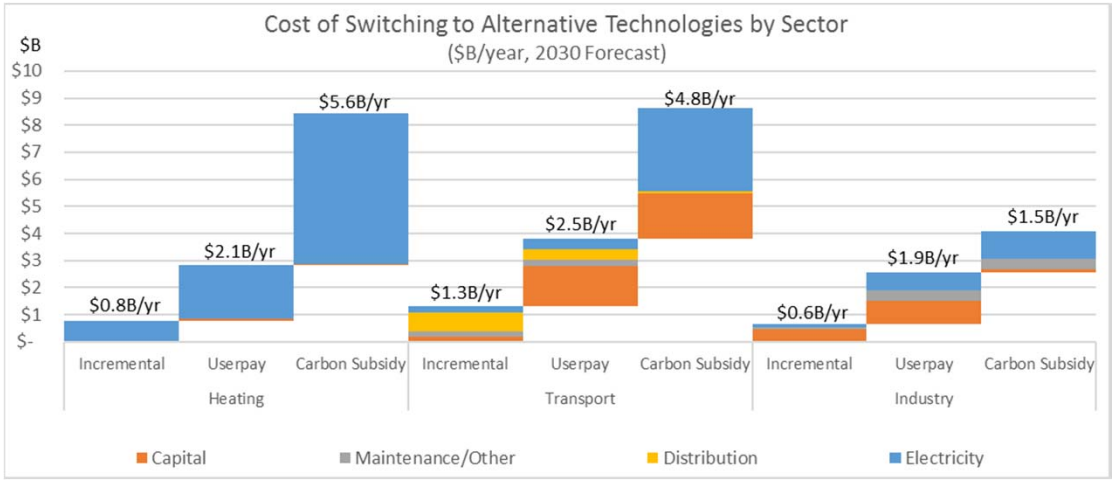
- By 2030 the cost of energy use could be $47B/year higher than Ontarians' current cost of $65B/year (fuels plus electricity)



Carbon price may be visible, but cost of implementation will not

Electricity is a significant component of switching cost

- Consumers will be mostly affected by the cost of electricity to heat homes



Source: Strapolec Analysis, $2016 for electricity at $170/MWh,
Costs for the 25% of emissions not explicitly assessed not included in above

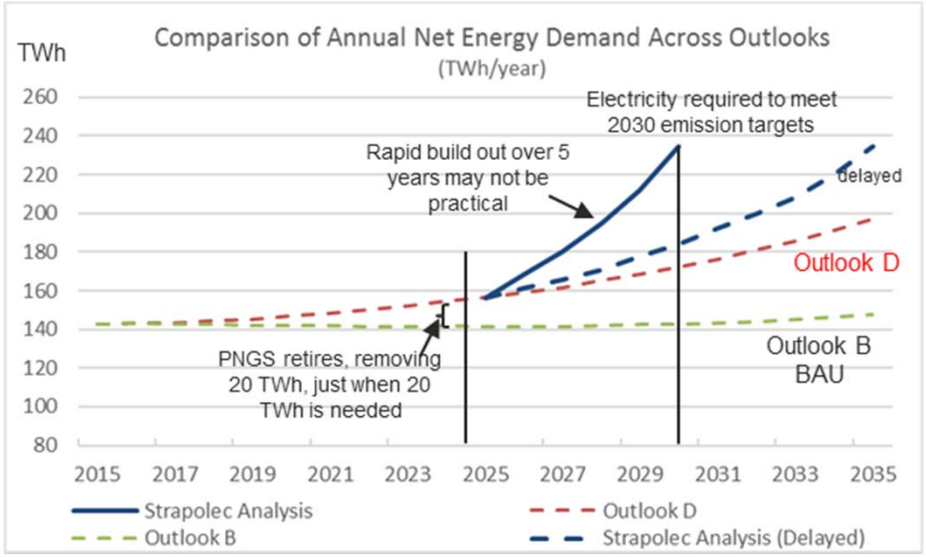
The Politics of Avoiding Implementation

→ Electrification Implications: Are they even trying? But costs are committed..

New electricity generation ***Cannot be Built*** in time to achieve emissions

- Particularly after loss of Pickering's 20 TWh
- Emission targets **Cannot be Met**

90 TWh of new generation required, much more than today



Cap & Trade commits Ontario to purchasing allowances

- Again, a cost that a Carbon Tax would avoid

Ontario's Environmental Commissioner concurs
MoE commissioned plans do not reflect goals

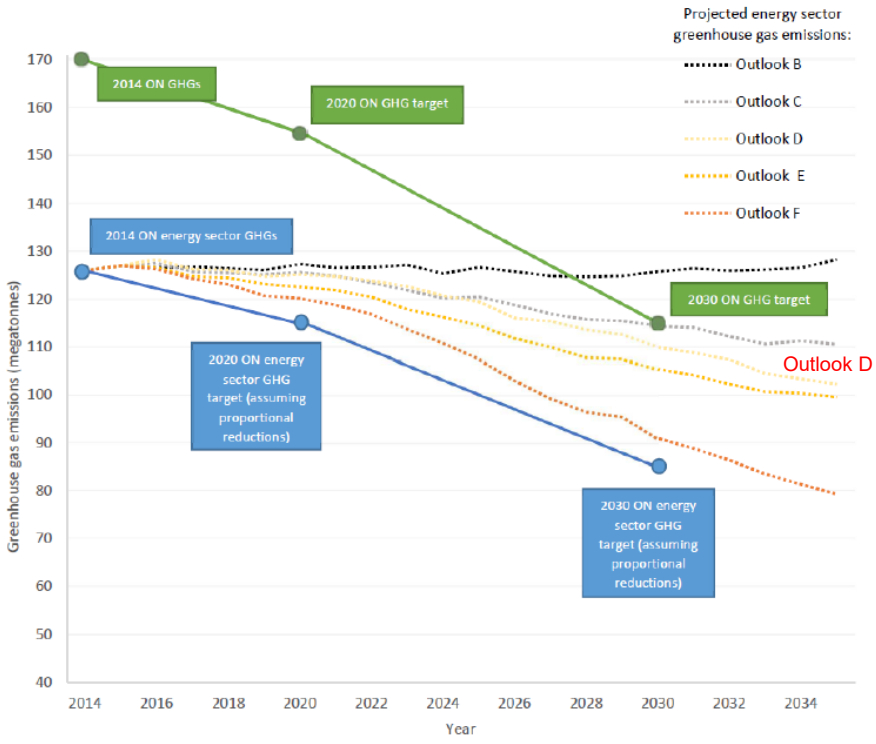


Figure 3: Comparison of LTEP Energy Sector Greenhouse Gas Emissions Projections with Ontario Climate Targets

Source: Strapolec Analysis, IESO OPO, Environmental Commissioner of Ontario, 2016

The Politics of "Green Image" vs the Politics of Cost

→ Supply Mix Choices: Popularity or Cost?

Ontario needs a smart solution that reduces electricity cost by half

And make Ontario an economic powerhouse in the global combat against climate change

A Political Solution Does not Benefit Ontarians

Propagating alternative facts will cost a lot of money

Combined new Hydro need exceeds James Bay that flooded 13,000 square kilometers

Hydro Imports from Quebec
- Send $B/year out of the province

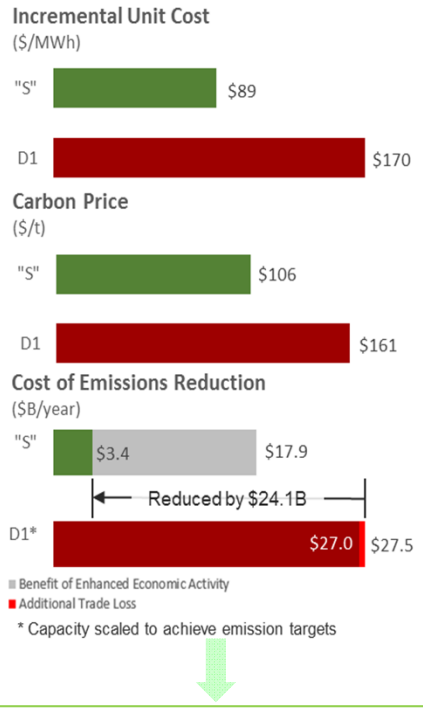
New Hydro in Northern Ontario
- Flowing into Hudson's Bay

$170/ MWh

Doubling imported Wind technology in Ontario
- Only use half, & cover '000s of acres of land

LDC Expansion
- No estimate provided for "expected cost increases"
- There will be impact

Benefits of Smart over OPO D1*



Enhanced Economic Activity From:
- Improved Trade Balance
- Low cost domestic energy
- Export energy
- New industries
- Global low carbon solution exports

A Smart Solution addresses Ontario's unique needs with Homegrown solutions

Enabled by four paradigm shifts

LDC controlled resources optimize capacity usage

Wires & Pipes Integration (Winter Peak Reserve)
- Hybrid electrical and natural gas solutions

Energy Where and When you need it

Distributed Energy Resources (Asset Efficiency)
- Integrated solar/battery/ EV charging

$89/ MWh

Hydrogen Economy (Seasonal Storage and Demand Response)
- Power to Gas
- Fuel Cell Vehicles
- Demand Response

No increase in LDC Capacity required

Low Cost Nuclear (Backbone of Ontario's Low Carbon Energy Future)

Low Land Use

*OPO D1 = IESO Ontario Planning Outlook, Outlook "D" demand forecast, Option 1 supply mix