



Ontario's Climate Change Strategy – The Move towards Cap & Trade

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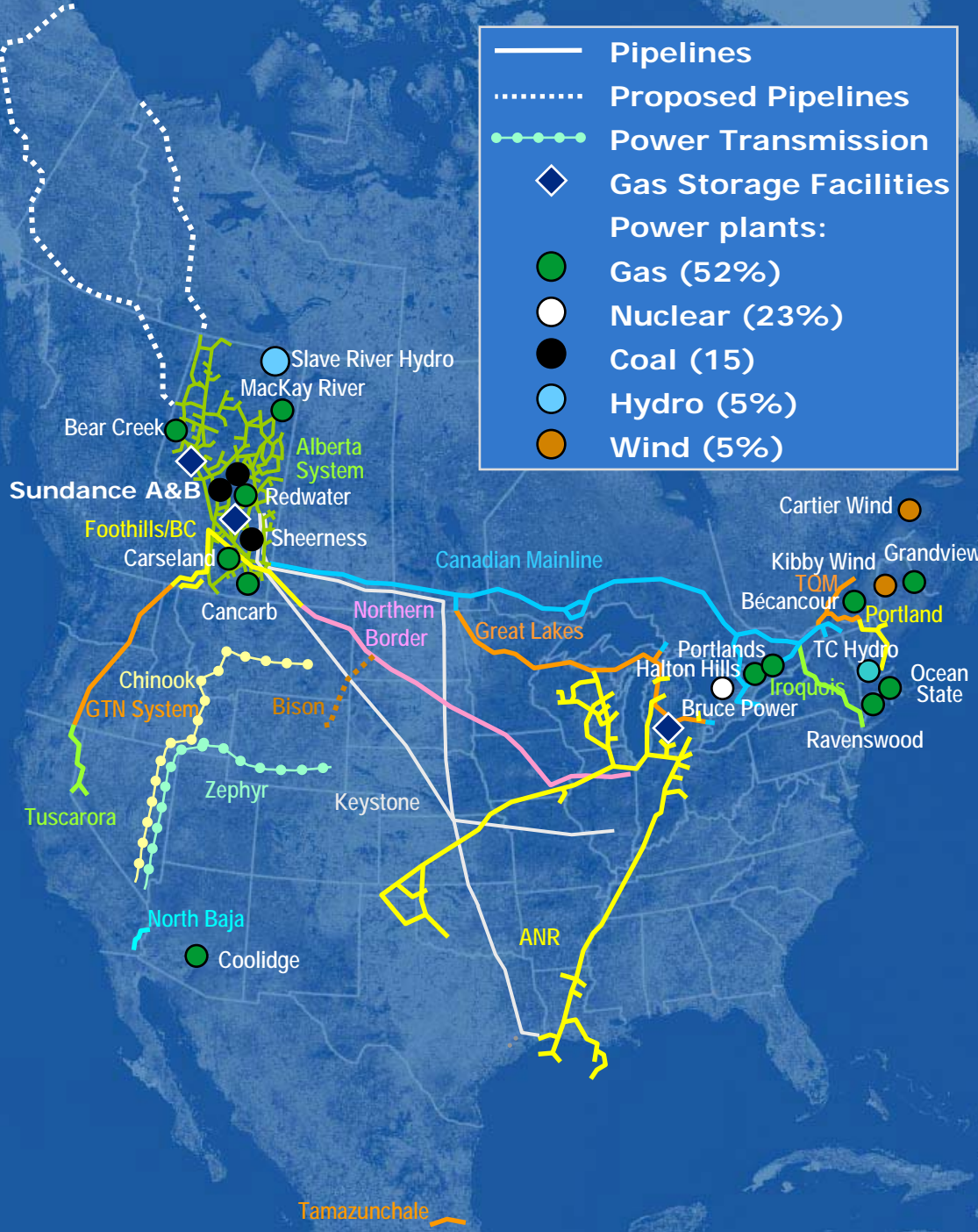


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TransCanada Energy and Pipeline Assets



Gas Pipelines

- 59,000 km wholly-owned
- 4,000 km under construction
- 7,800 km partially-owned
- 235 Bcf of regulated natural gas storage capacity
- Average volume of 15 Bcf/d

Oil Pipelines

- Keystone 1.1 MMb/d

Energy

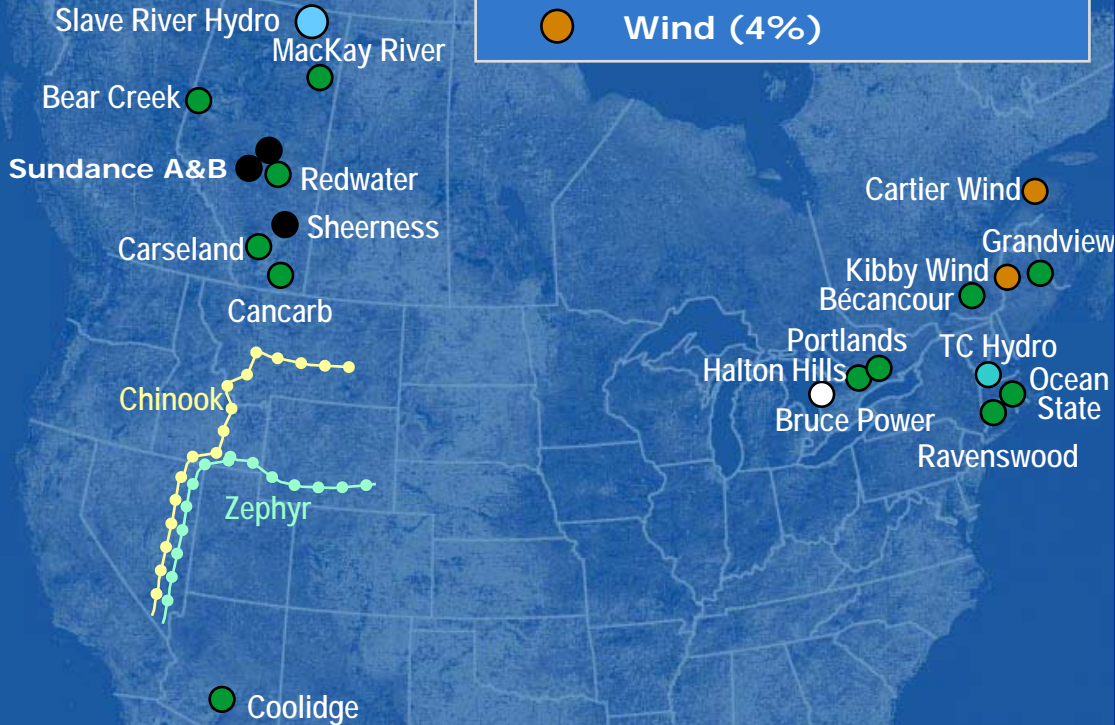
- 20 power plants, 11,800 MW
- 120 Bcf of non-regulated natural gas storage capacity

Power Projects

Power Transmission

Power plants:

- Gas (55%)
- Nuclear (21%)
- Coal (14%)
- Hydro (5%)
- Wind (4%)



- 20 plants, 11,800 MW
- Diversified portfolio
- Large clean energy portfolio
- Bruce Power Units 1&2 restart, life extension on Units 3&4
- Cartier Wind phase 3 in service, Kibby Wind under construction
- Chinook and Zephyr Transmission
- Slave River Hydro
- Bécancour Cogeneration
- Portlands Energy Centre
- Halton Hills under construction (90% complete)
- Coolidge under construction

Summary of TransCanada Energy's Power Business



- **Largest power construction business in Canada**

- Including our capital commitment to Bruce Power, TransCanada is investing about \$5.0 billion in power infrastructure

- **Business spans many jurisdictions**

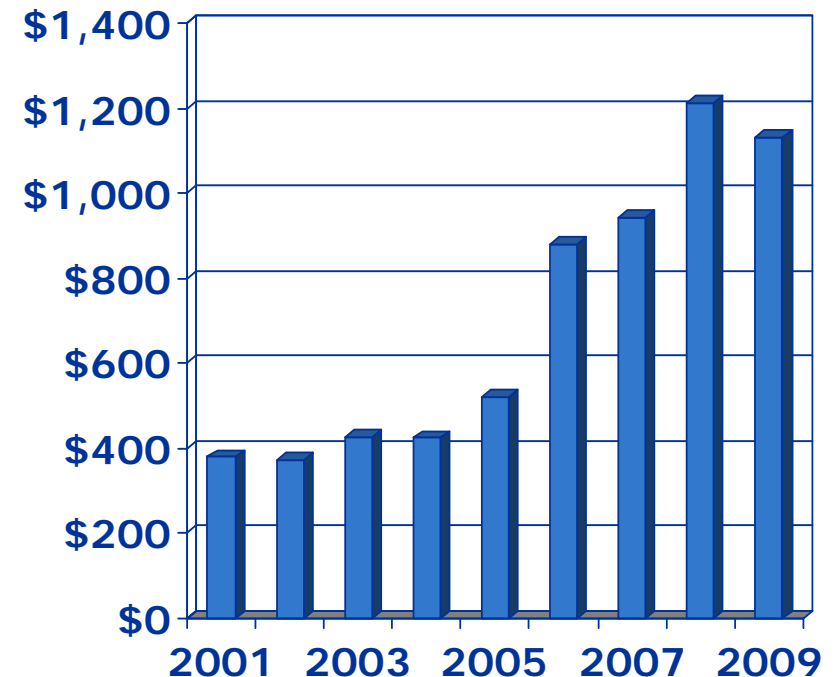
- Ontario, Quebec, US North East, Alberta and Arizona

- **Have become experienced in all major electricity fuel types**

- Nuclear, natural gas, wind, coal, and hydro

- **Significant financial track record**

TransCanada Energy EBITDA (\$millions)

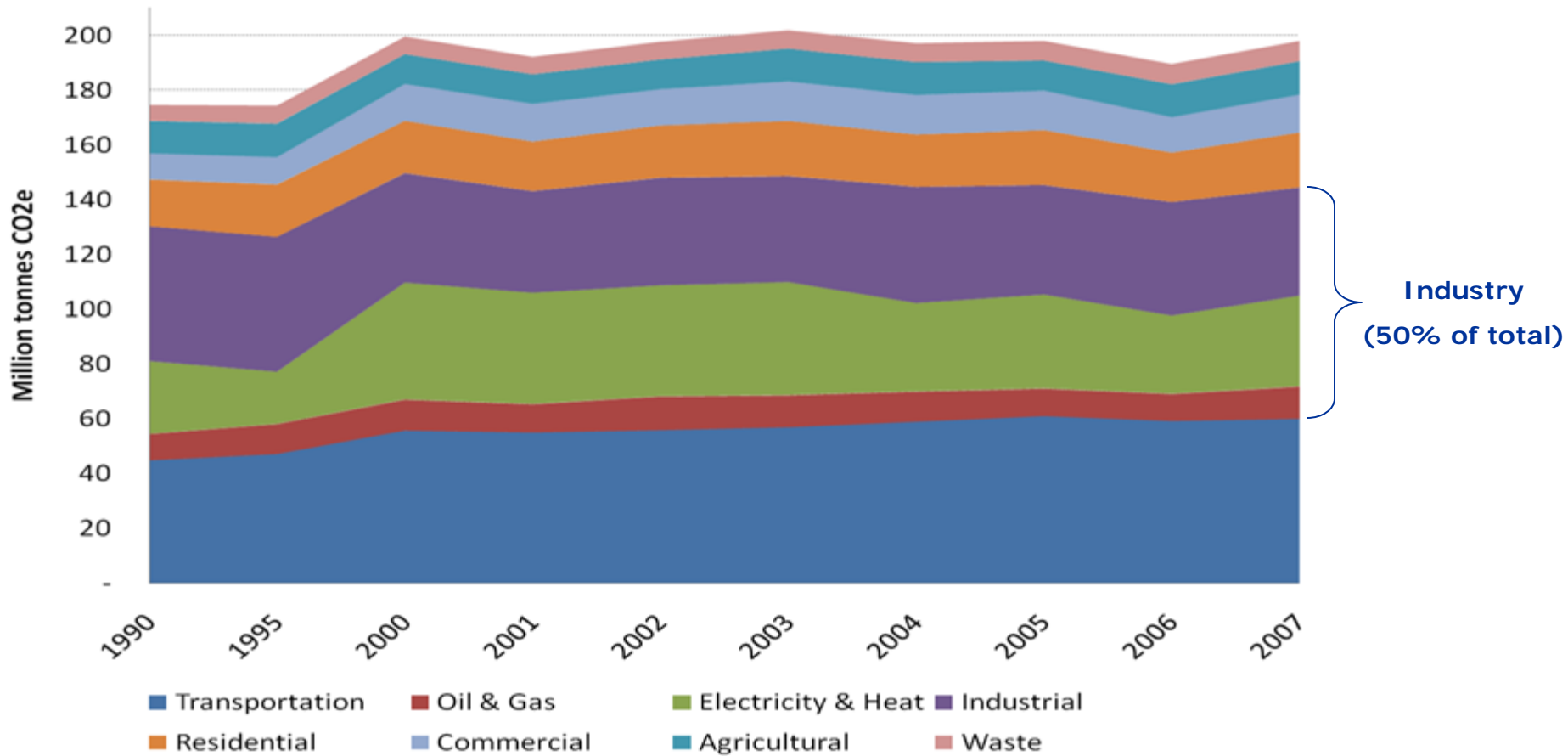


Ontario - My Observations



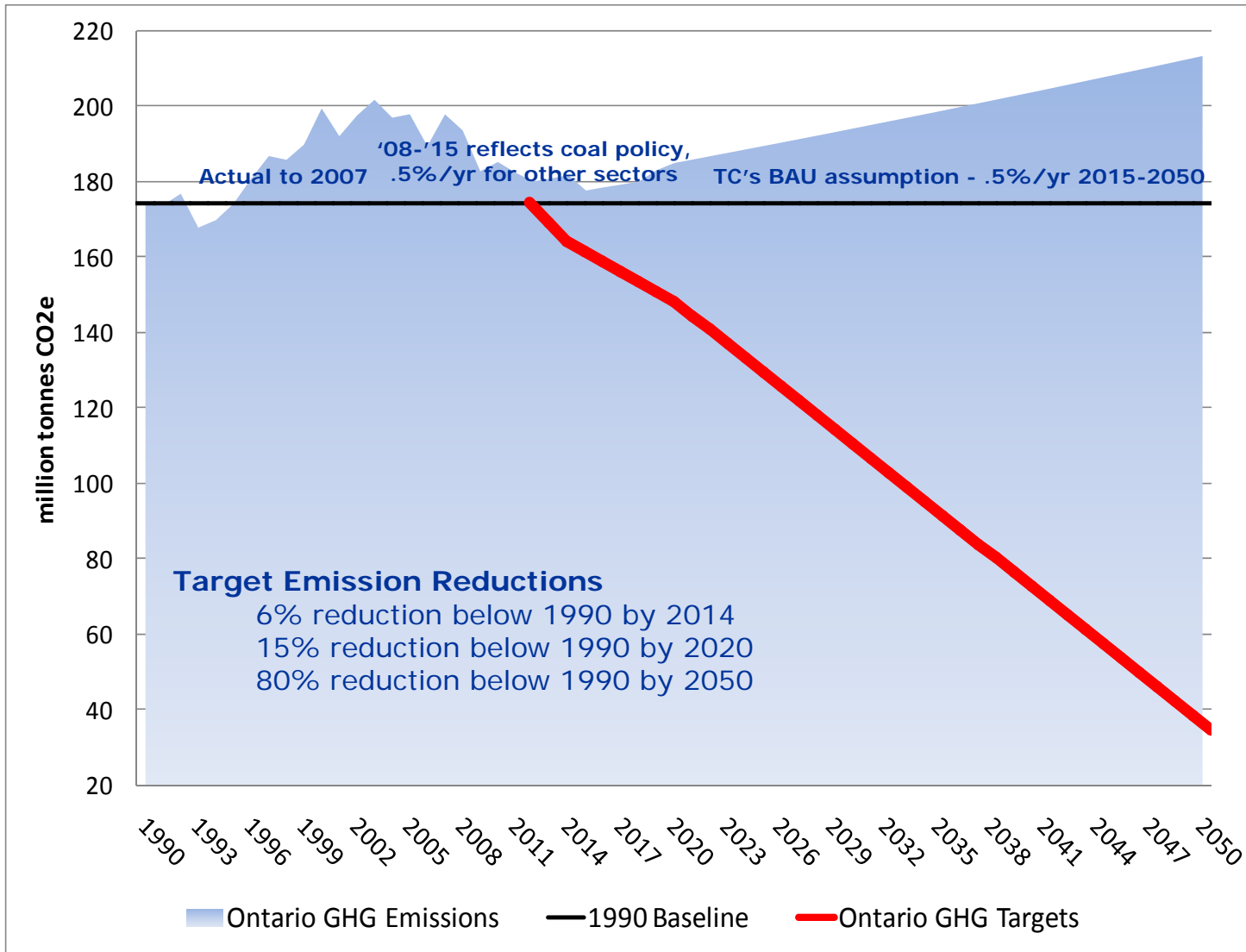
- **Ontario is a world leader in reducing GHG emissions**
 - Province will achieve world-class reductions by 2015!
 - Re-powering of coal fleet is the core enabler
- **Green Energy Plan & FIT Tariff**
 - Very ambitious green energy plan
 - It very well might create a surplus of power from renewables
 - It will create significant infrastructure needs to support level of participation
- **Cap and Trade for GHG's**
 - Effective for dealing with large industrial emitters
 - Might not be the right solution for Ontario's transportation and household sectors

Ontario GHG Emissions by Sector



Source: Environment Canada 1990-2007

Ontario's GHG Emissions and Targets

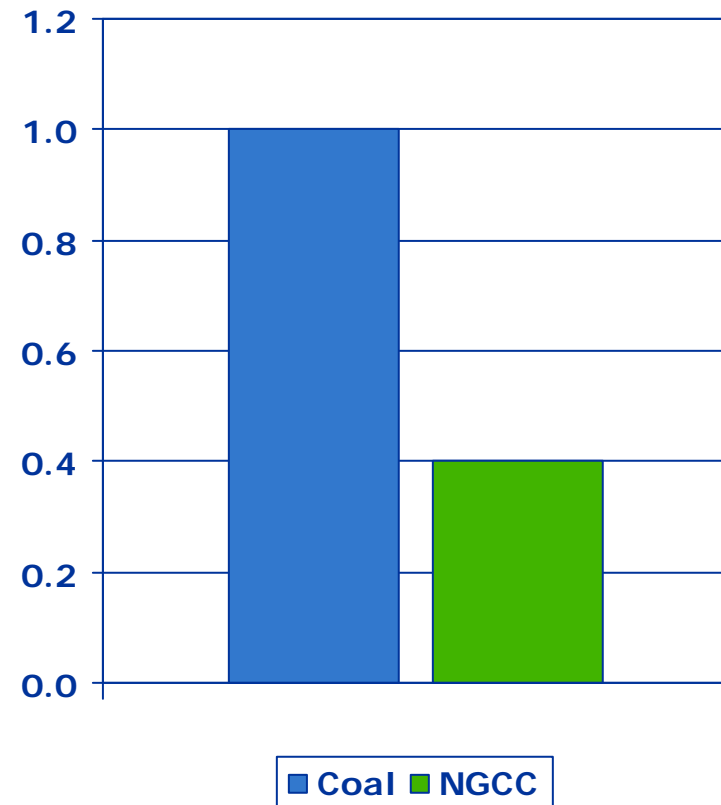




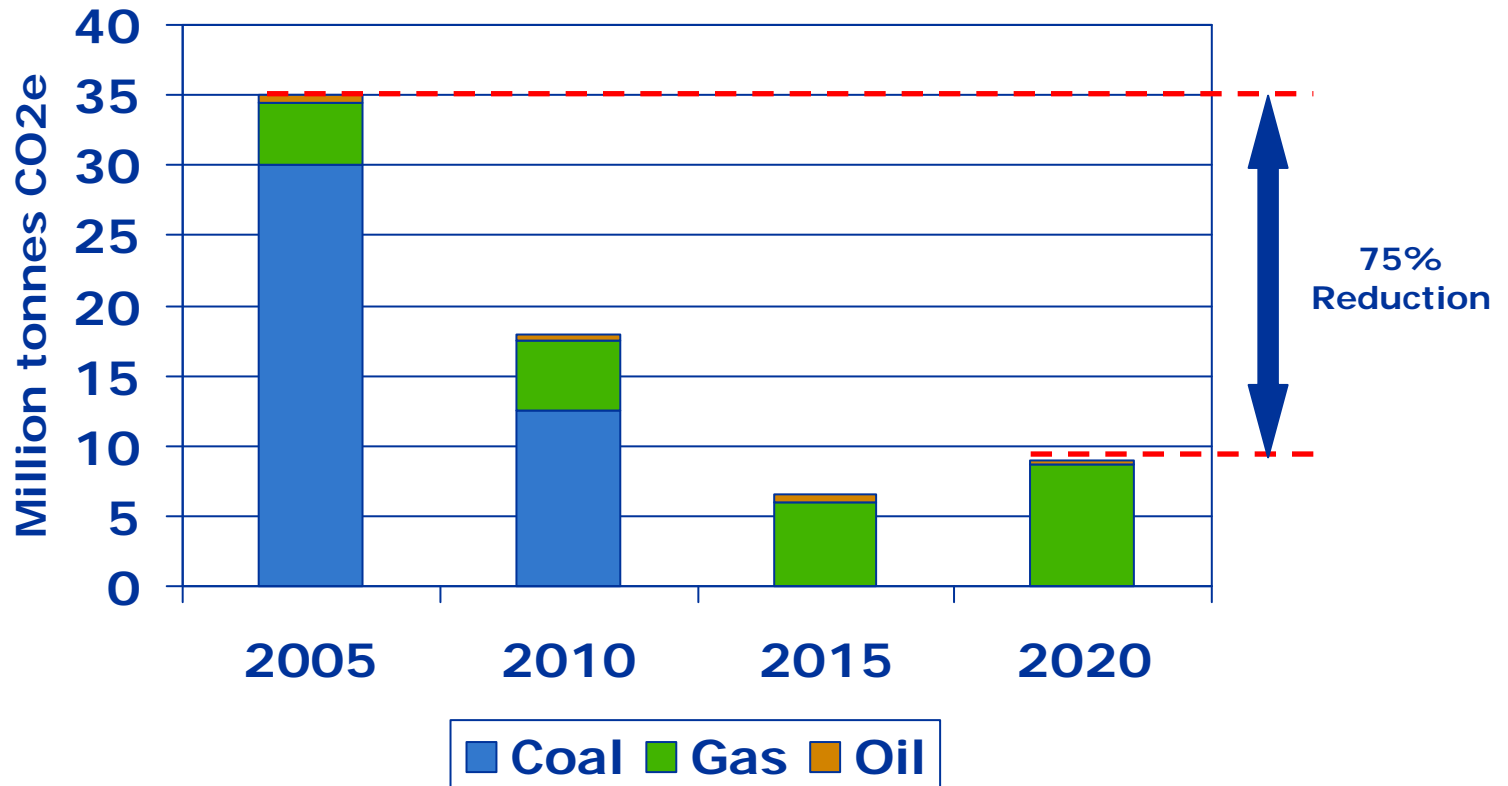
- **How are reductions going to happen?**

- Conservation – will result in less fossil fuel burned
- New renewable energy – will displace some fossil fuel
- Repowering coal fleet with natural gas – will reduce fossil fuel emissions by 60%

GHG Emissions Intensity
(tonnes CO₂e/MWh)



Ontario Electricity Sector GHG Emissions



Source: TransCanada

Costs to Repower Coal Fired Electricity

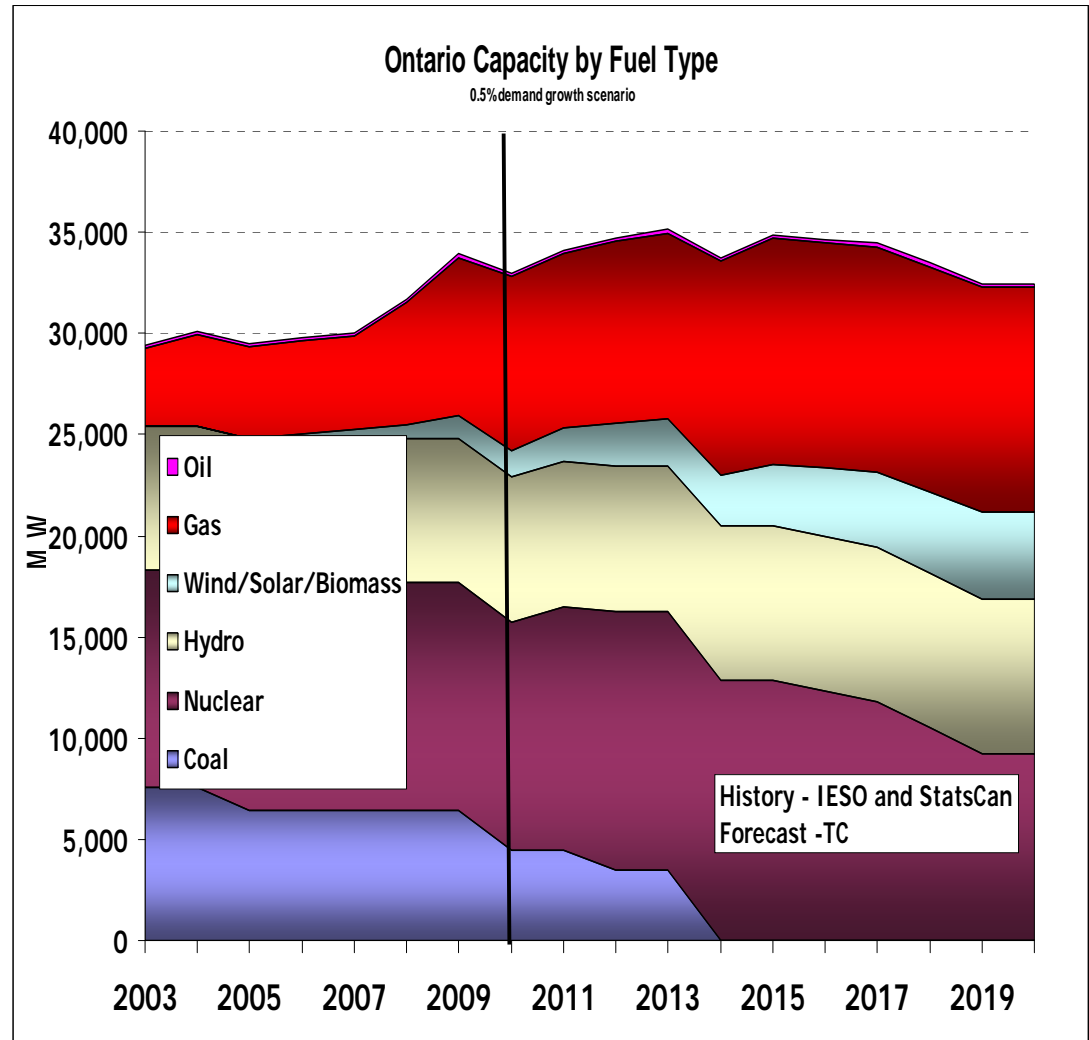


- Ontario has spent significant capital to achieve significant reductions in GHG emissions

2005 to 2020 est. costs

Gas	5.8 Billion
Renewables	4.2 Billion
Total	10.0 Billion

- This equals an average (real) cost of about **\$25/tCO₂e** over a 30 year investment life



Electricity Summary



- Ontario has already taken significant steps in reducing GHG emissions
- After coal is retired, there will be limited opportunity to squeeze the electricity sector for more reductions
- **Further GHG reductions must be targeted from other sectors such as transportation and consumer behavior**

Options for GHG Mitigation in Other Sectors



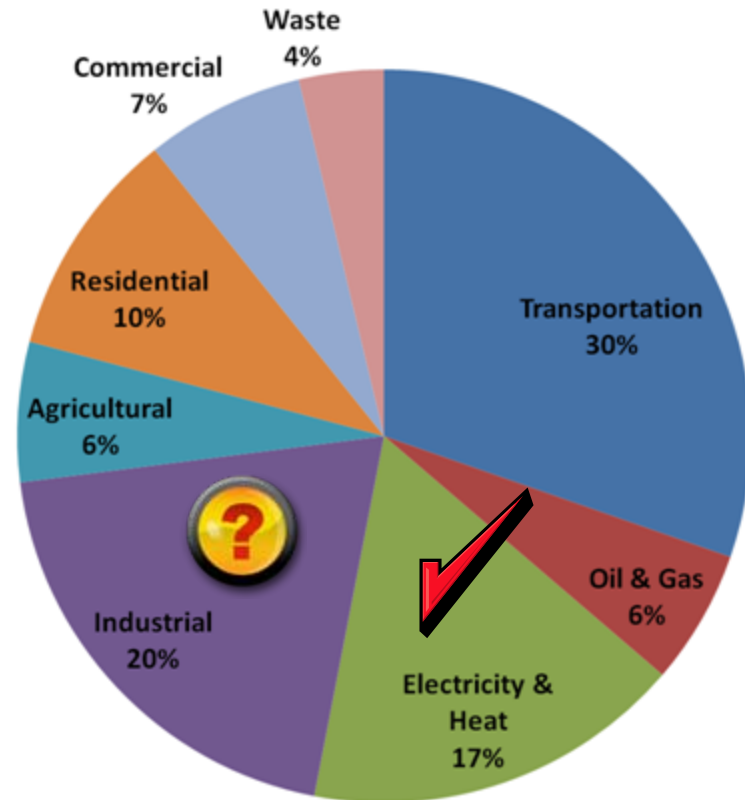
- **Target Sectors**

- Transportation
- Residential
- Commercial
- Industrial?

- **How to implement emissions reductions**

- Direct regulation
- Carbon tax
- Cap & Trade programs

Ontario GHG Emissions by Sector, 2007



Source: Environment Canada

Direct Regulation



- **Allows government to regulate new emission standards**
- **Benefits**
 - Already have permitting structure in place for other pollutants (no need to re-create the administrative process)
 - You can directly regulate specific sectors for specific goals
- **Concerns**
 - Generally, results in a slower transformation as it relies heavily on new capital stock and the capital replacement cycle
 - If structured poorly, can create large winners and losers
 - You can get unusual outcomes (support for widely uneconomic solutions due to political agendas i.e. CCS)



- **Relies on the basic fundamental that “whatever you tax you get less of”**
- **Benefits**
 - Clear, easy to understand profit incentive for emitters to reduce
 - Clear, easy to understand signal for consumers to consume less of
- **Concerns**
 - Major concern - no guarantee of environmental outcome
 - Tax rates subject to “political will” not market fundamentals
 - Dollars collected are not necessarily earmarked for emission reductions
- **Very unpopular politically**



- **What is cap and trade?**

- Regulations establish a cap (or target emissions level) determines the maximum amount of GHG that can be emitted and allowances are granted to the emitter

- **Three Scenarios**

- If a company's allowances match their emissions they are fine
- If a company's allowances exceed their emissions they can sell or bank the allowances
- If a company's allowances fall short of their emissions they must purchase allowances from others or invest in offsets

- **What are offsets?**

- Offsets are projects that create GHG benefits and those benefits can be sold to assist an emitter in meeting its compliance obligations



- **Certainty**
 - Offers certainty by establishing clear, long term reduction targets
- **Proven Results**
 - Only program believed to result in real emission reductions
- **Market-based Solution**
 - Carbon price will be established through supply/demand considerations
- **Drives Rationale Behavior**
 - Properly designed, will bring a market solution to emission decisions (some say more efficient)

Cap and Trade - Concerns



- **Cap and trade programs targeted at large emitters**
 - Will cap-and-trade yield necessary reductions in residential and transportation sector?
- **Devil is in the design details**
 - Unclear how effectively upstream suppliers will flow cost of compliance through to end users
- **Very difficult to do in isolation of larger economy**
 - Alignment with neighboring jurisdictions is crucial
- **Poorly designed will result in large economic distortions**
 - California electricity deregulation



- **Design Issues**

- Allowances, how to allocate free permits, baseline year, target reductions

- **Administratively complex and open to gaming**

- Creates many “winners and losers”
- Creates great uncertainty for business owners

- **Establishing offset or credit systems**

- Some would say that allowing someone else to reduce on your behalf does not solve the problem



- **Existing capital stock**

- Must be aware of the capital replacement cycle in all programs
- This is more “art than science” as you do not want to punish businesses that invested in good faith under current guidelines and now expect them to bear additional costs whereas you do not want to unreasonably enrich existing owners of capital stock through infinite grandfathering

- **Safety nets**

- Whatever we do we must understand that we cannot expect the carbon offset market to function perfectly right off the start.
- Cannot put our industry in a position that it needs to shut down because there are no reasonably priced offsets in the market

- **Trade exposed sectors**

- We must be careful to our competitive position if we make reduction targets materially harsher than our export customers

Summary



- **Ontario is a world leader in reducing GHG emissions**
 - Province will achieve world-class reductions by 2015!
 - Re-powering of coal fleet is the core enabler
- **Green Energy Plan & FIT Tariff**
 - Sector would benefit from knowing the full policy strategy so we can put our activities in context to overall GHG policy in other sectors
 - It appears that there is an over reliance on the electric sector to fulfill government GHG agenda
- **Cap and Trade for GHG's**
 - Effective for dealing with large industrial emitters
 - May have to combine the C & T program with other options (i.e. direct regulation) to target the consumer sectors

Thank you



Questions?