

# Carbon Capture and Storage Development in Alberta

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# Overview

- CCS Funding Program
- Demonstration Projects
- Policy Framework

**Anchorage**  
2,277 km  
(1,415 miles)

**Vancouver**  
817 km (507 miles)

**Ottawa**  
2,847 km (1,769 miles)

**New York City**  
3,270 km (2,032 miles)

**Mexico City**  
3,973 km (2,469 miles)

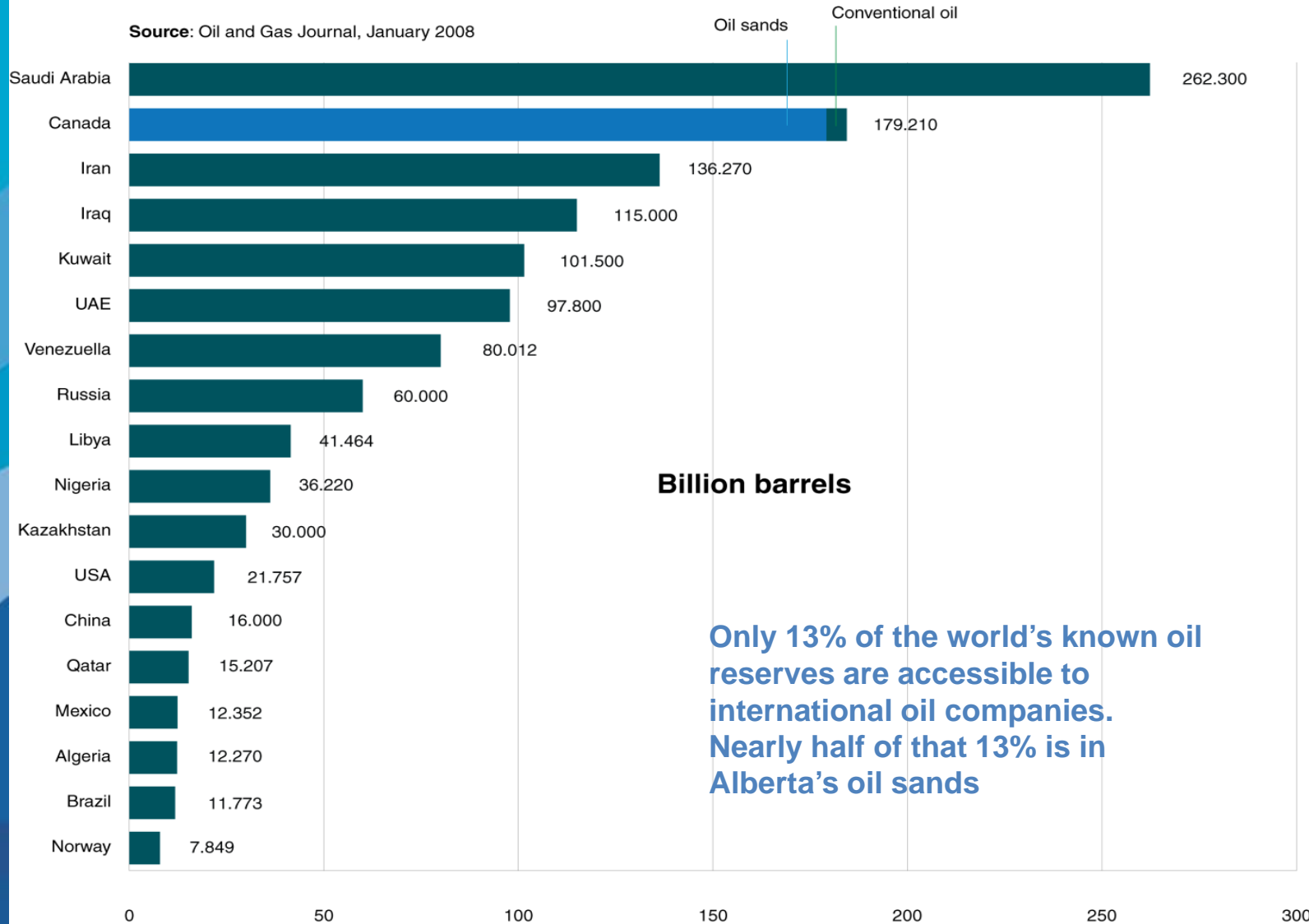
**Alberta**

Canada

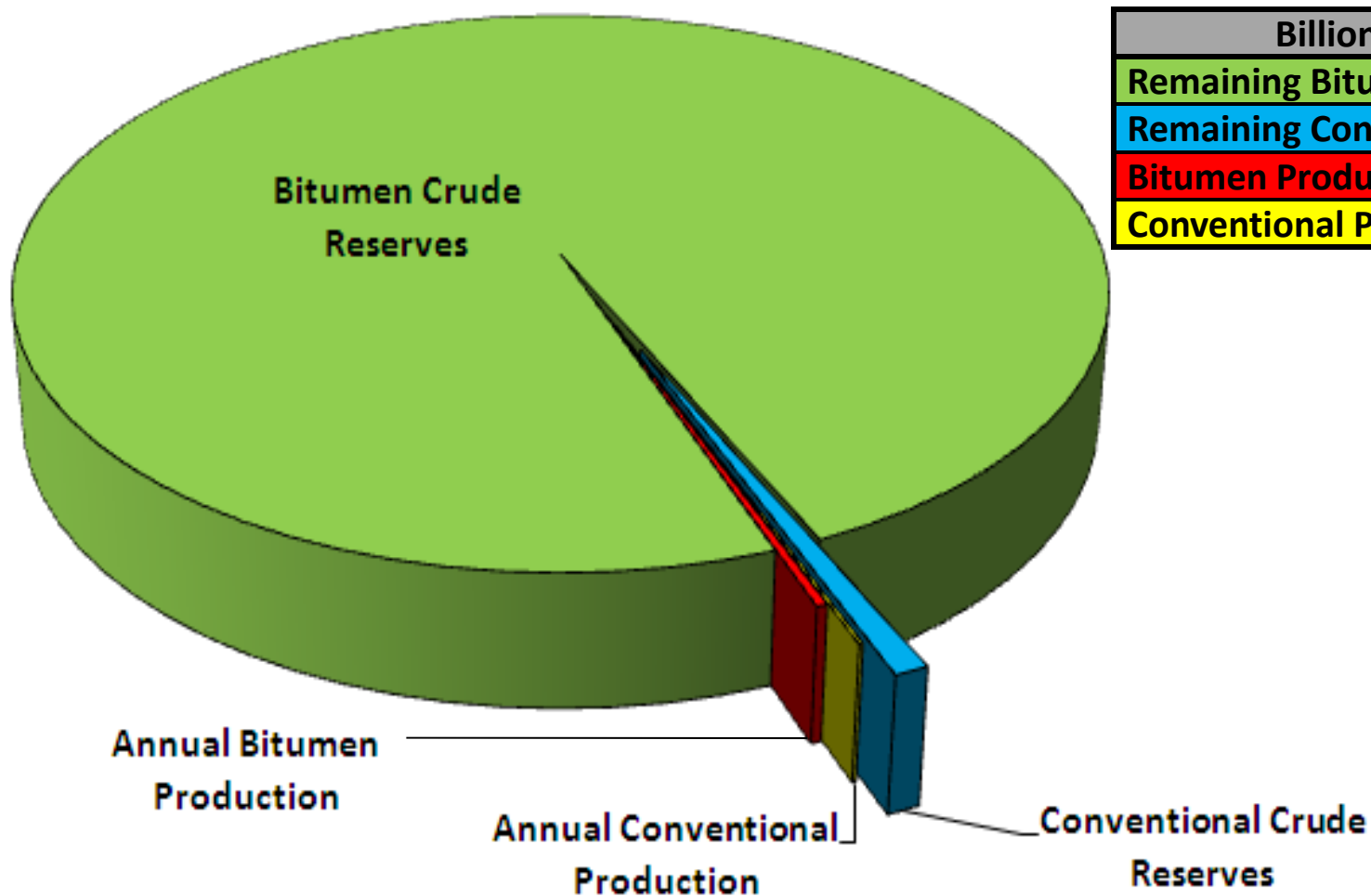
United States

# Alberta's Crude Oil Resource

Source: Oil and Gas Journal, January 2008



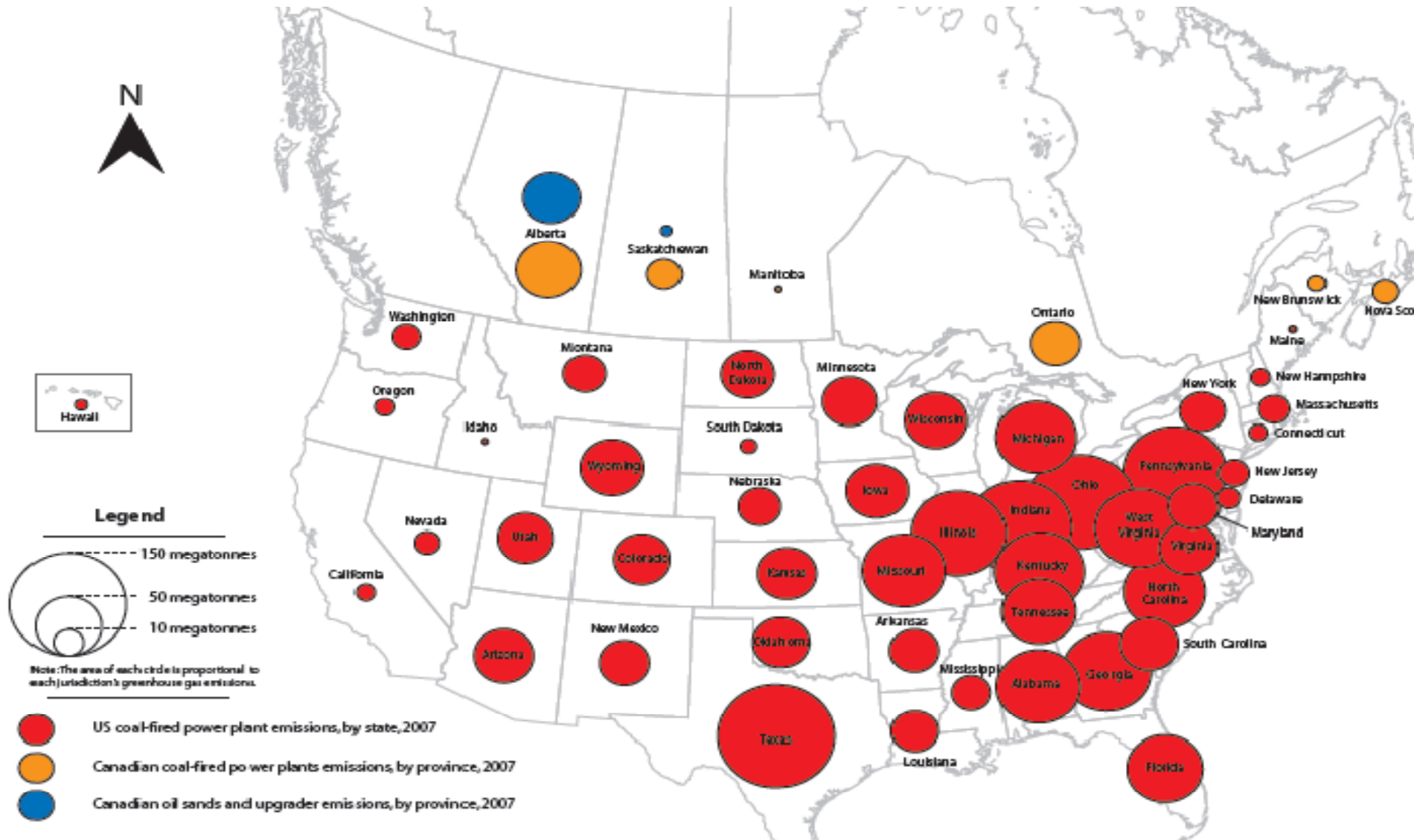
# Alberta's Crude Reserves



# Federal and Provincial Jurisdiction

- Provincial government owns most of the natural resources and have full jurisdiction over resource development.
- Federal government has jurisdiction and shared regulatory responsibility in the area of emissions, including greenhouse gas emissions.

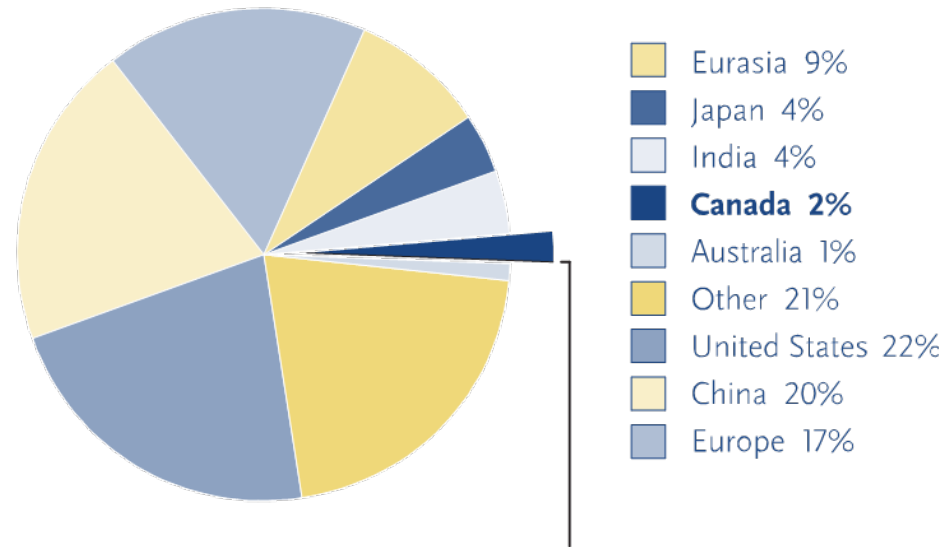
# Alberta's GHG Emissions in Context



# Oil Sands and GHGs

The oil sands in a carbon constrained world...

- Oil sands = 5% of Canada's emissions
- Canada = 2% of global emissions
- Oil sands = .1% of global emissions



Alberta's oil sands account for less than 1/10 of 1% of GHG emissions

# Responsible Energy Producers

Albertans take pride in protecting our:

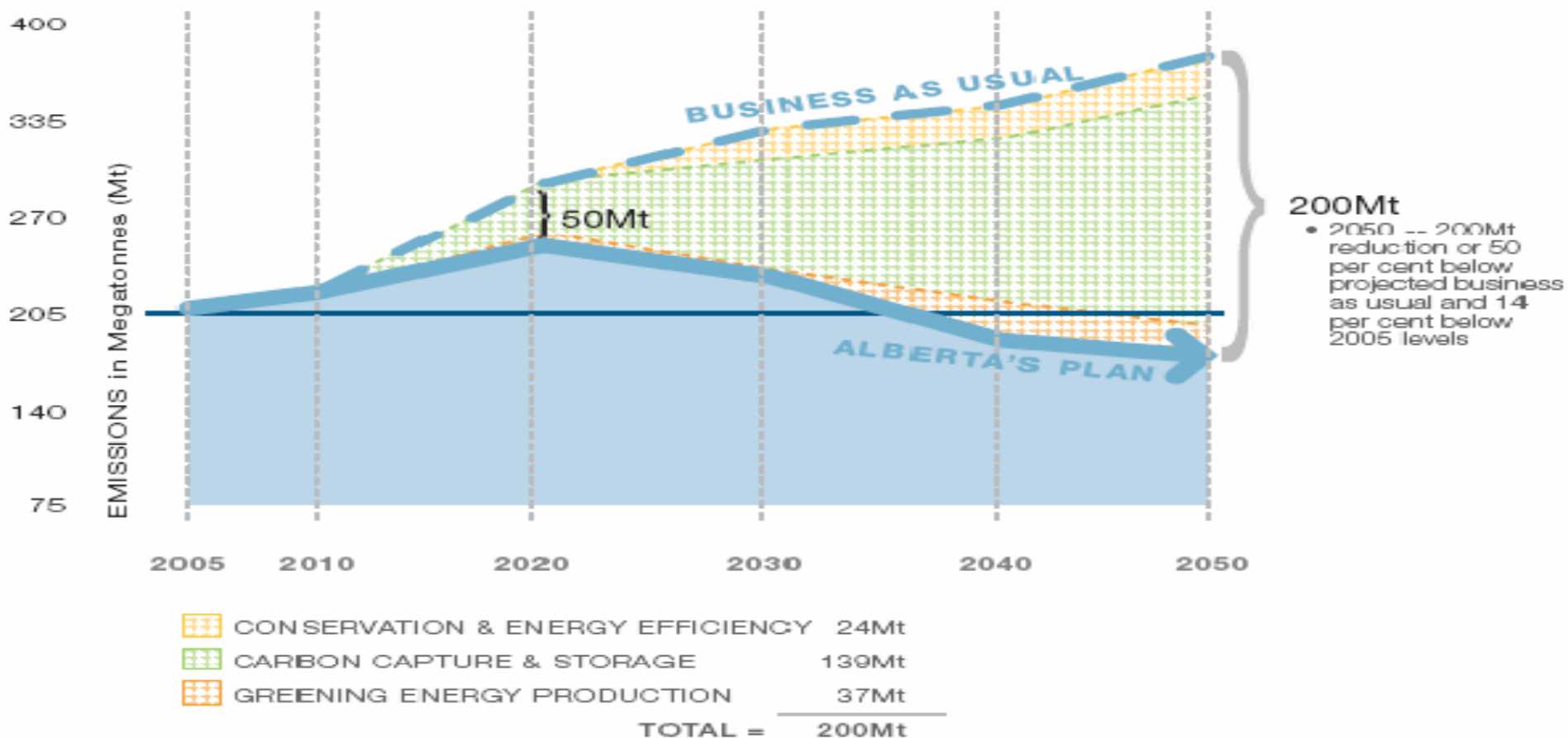
- clean air
- clean water
- tremendous landscapes
- healthy environment

Have some of the most progressive environmental policies in the world.



# Alberta's 2008 Climate Change Strategy

## ALBERTA'S REDUCTION COMMITMENTS



# Alberta's Climate Strategy

ALBERTA'S 2006 CLIMATE CHANGE STRATEGY  
RESPONSIBILITY / LEADERSHIP / ACTION

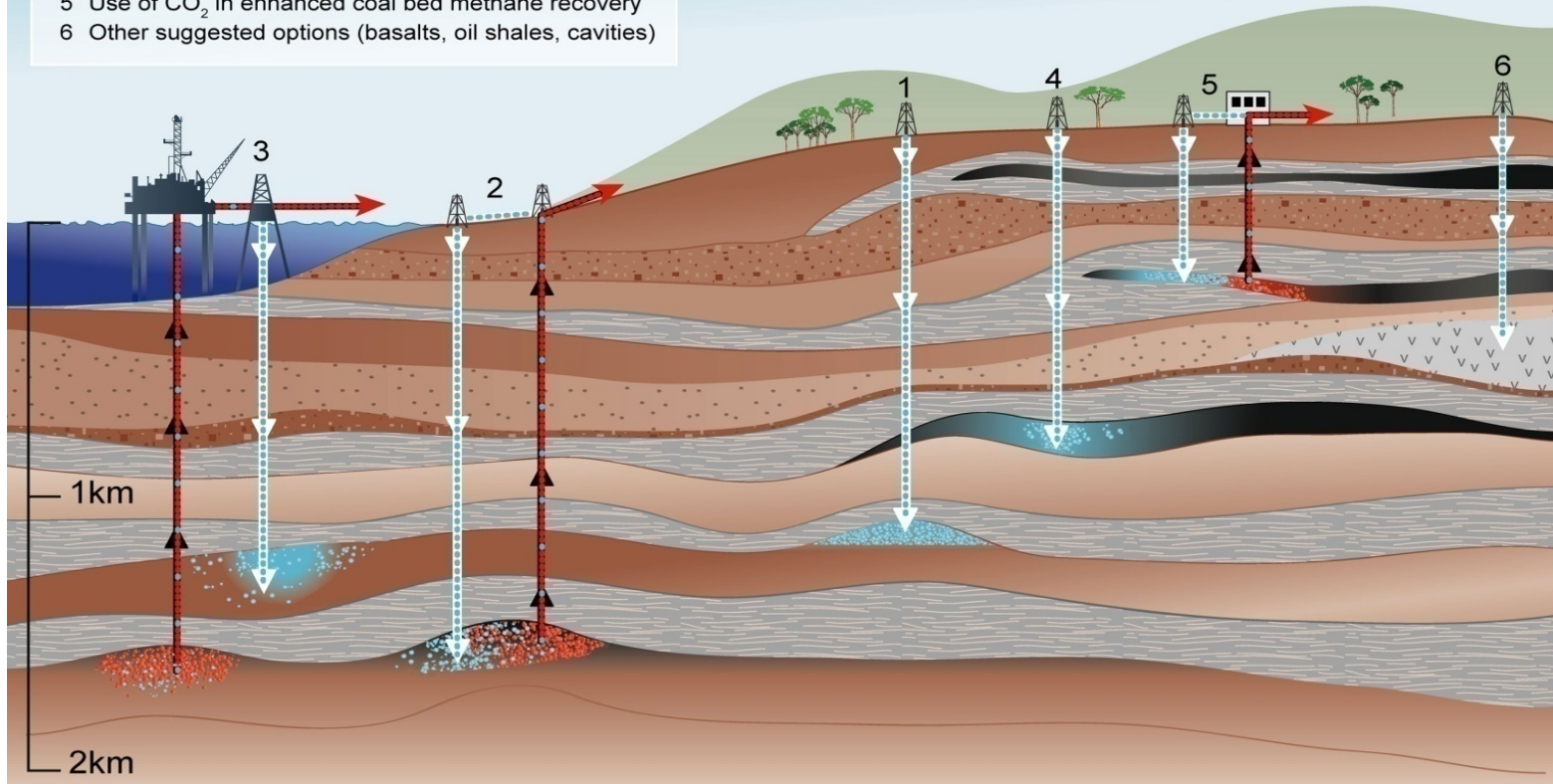
- In 2007, Alberta became the first jurisdiction in **North America** to regulate large industrial emissions.
- Facilities required to immediately reduce per unit GHG output by 12%
- Three compliance options:
  - 1) Physically reduce emissions
  - 2) Purchase accredited Alberta offset
  - 3) \$15 dollar payment per tonne into Technology fund.

# Carbon Capture and Storage

## Geological Storage Options for CO<sub>2</sub>

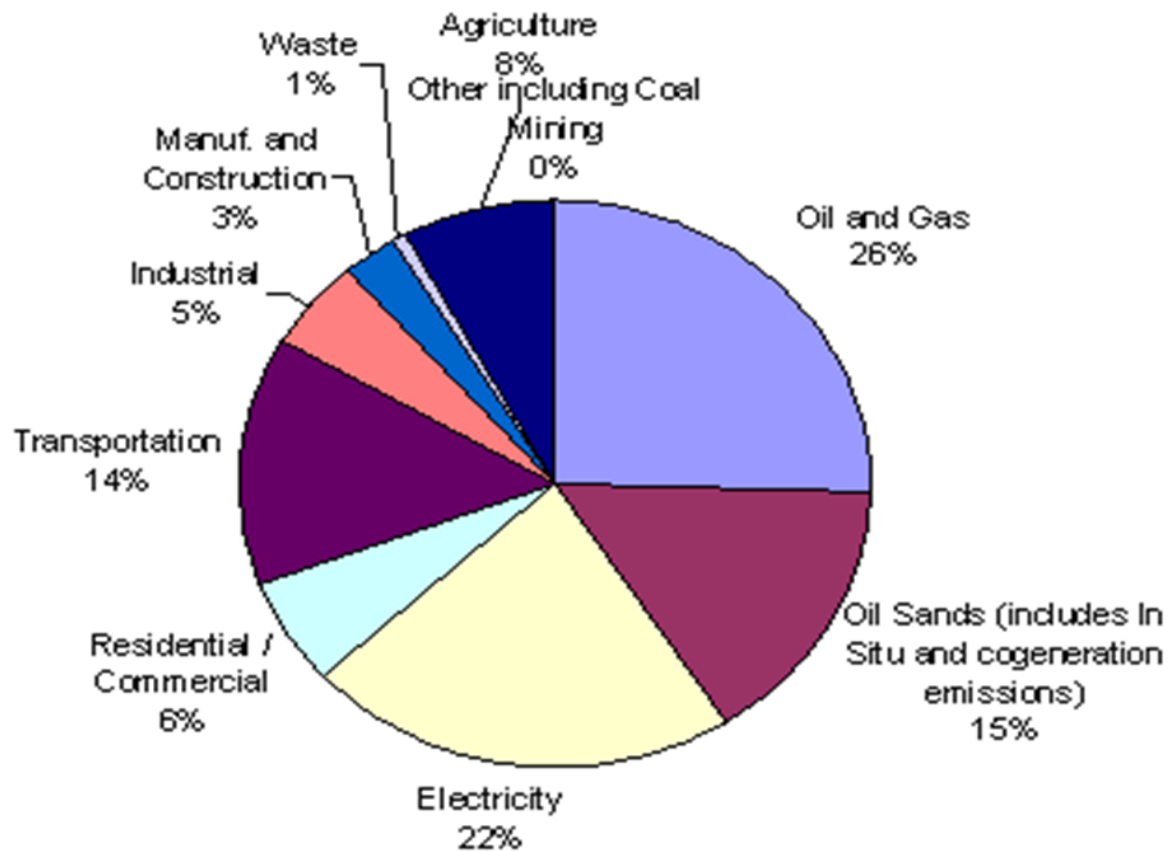
- 1 Depleted oil and gas reservoirs
- 2 Use of CO<sub>2</sub> in enhanced oil recovery
- 3 Deep unused saline water-saturated reservoir rocks
- 4 Deep unmineable coal seams
- 5 Use of CO<sub>2</sub> in enhanced coal bed methane recovery
- 6 Other suggested options (basalts, oil shales, cavities)

Produced oil or gas  
Injected CO<sub>2</sub>  
Stored CO<sub>2</sub>

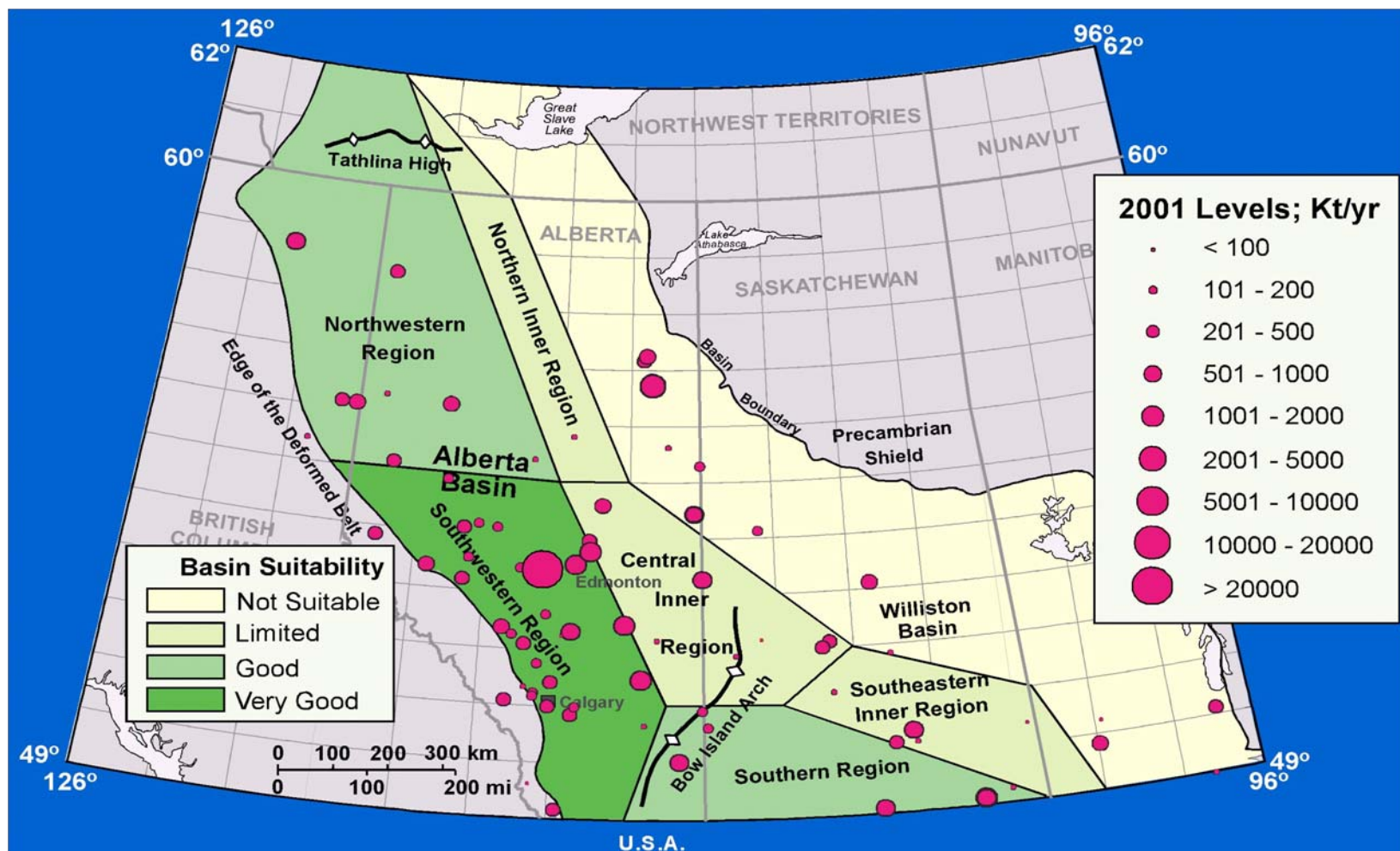


# Alberta's GHG Emissions

2007 Alberta Greenhouse Gas Emissions - 246 Megatonnes total



# CO<sub>2</sub> Storage Potential in the WCSB



# The importance of CCS to Alberta

- Alberta's economy driven by \$80 billion export market in energy products
- Markets are demanding fewer CO<sub>2</sub> emissions from energy products
- Provides opportunities to reduce CO<sub>2</sub> emission from value added activities in Alberta, such as upgrading/refining bitumen or utilizing our vast coal resources for cleaner electricity generation.
- Alberta is positioned for CCS success - geology, industrial make-up, experience, expertise

# CCS Funding Program

- \$2 billion announced July 2008
  - Expression of interest
  - Full project proposals
  - Evaluation criteria / team
- Announced 4 projects Fall 2009

# Objectives of Alberta's CCS Program

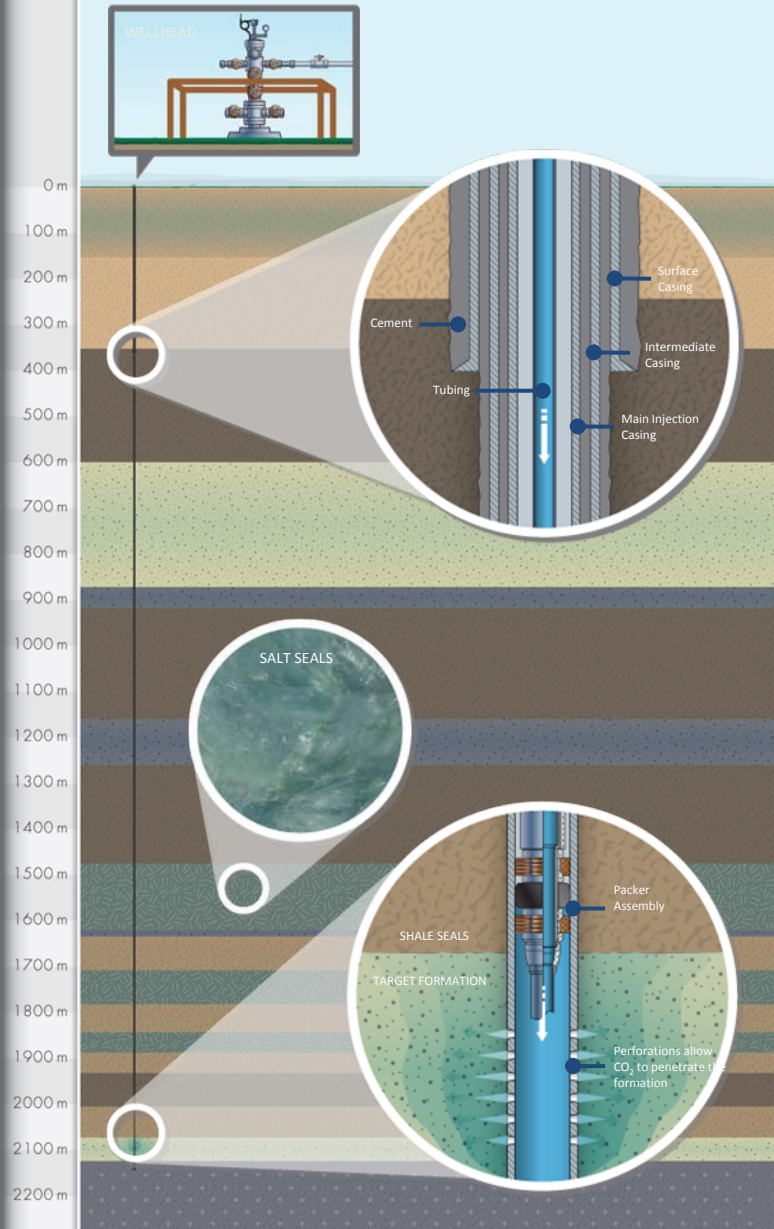
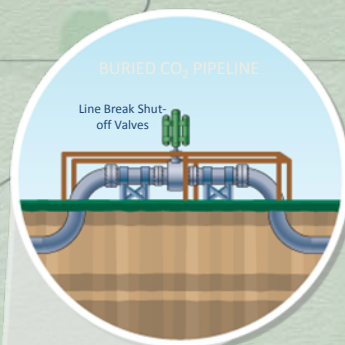
- Demonstration of the integration of CCS technologies at a large scale
- Build public confidence in the technologies
- Contribute to the global effort to close the cost gap by learning by doing
- Reduce Alberta's carbon emissions
- Develop a world class regulatory framework for CCS

# Alberta's Four Projects

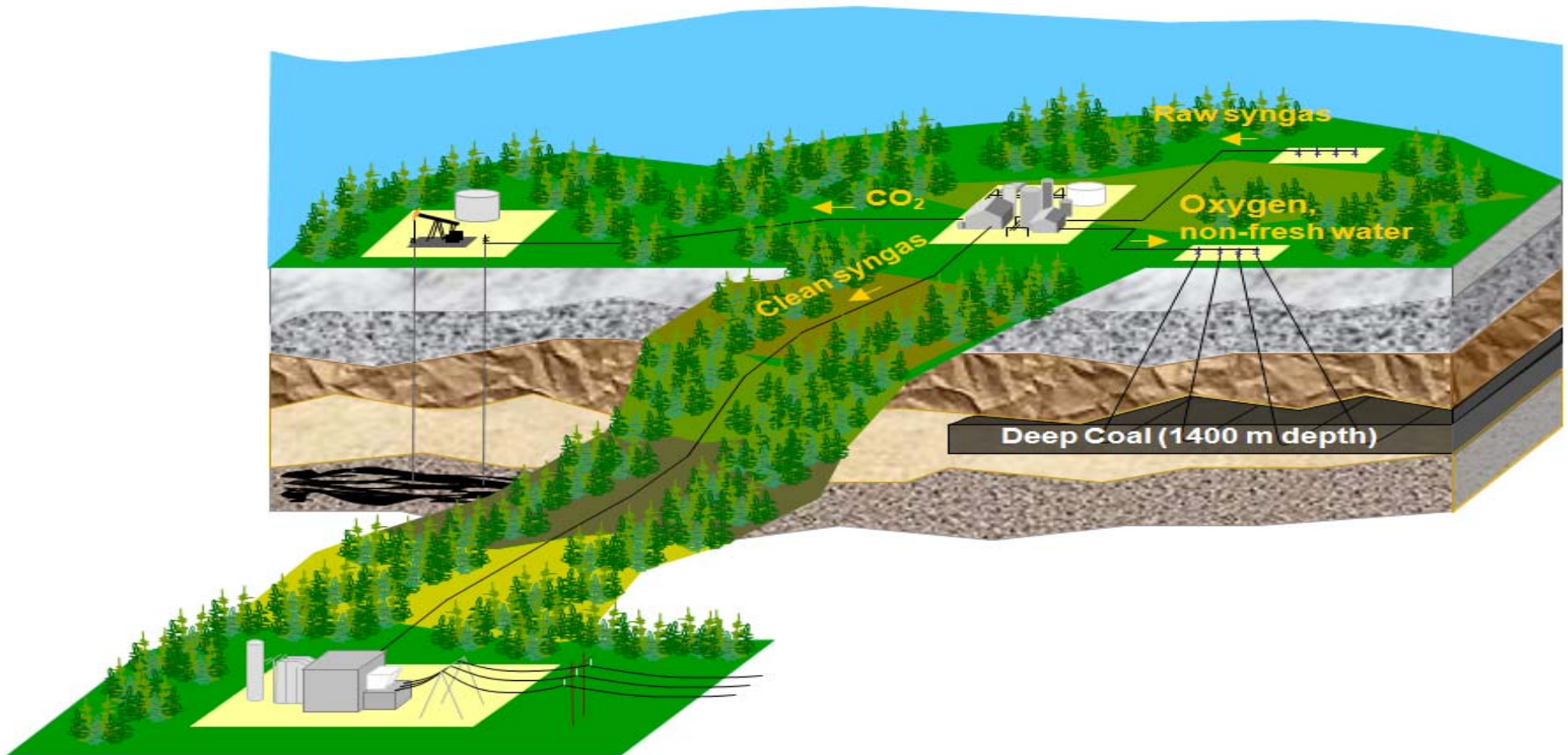


# QUEST CCS PROJECT

Carbon Capture & Storage



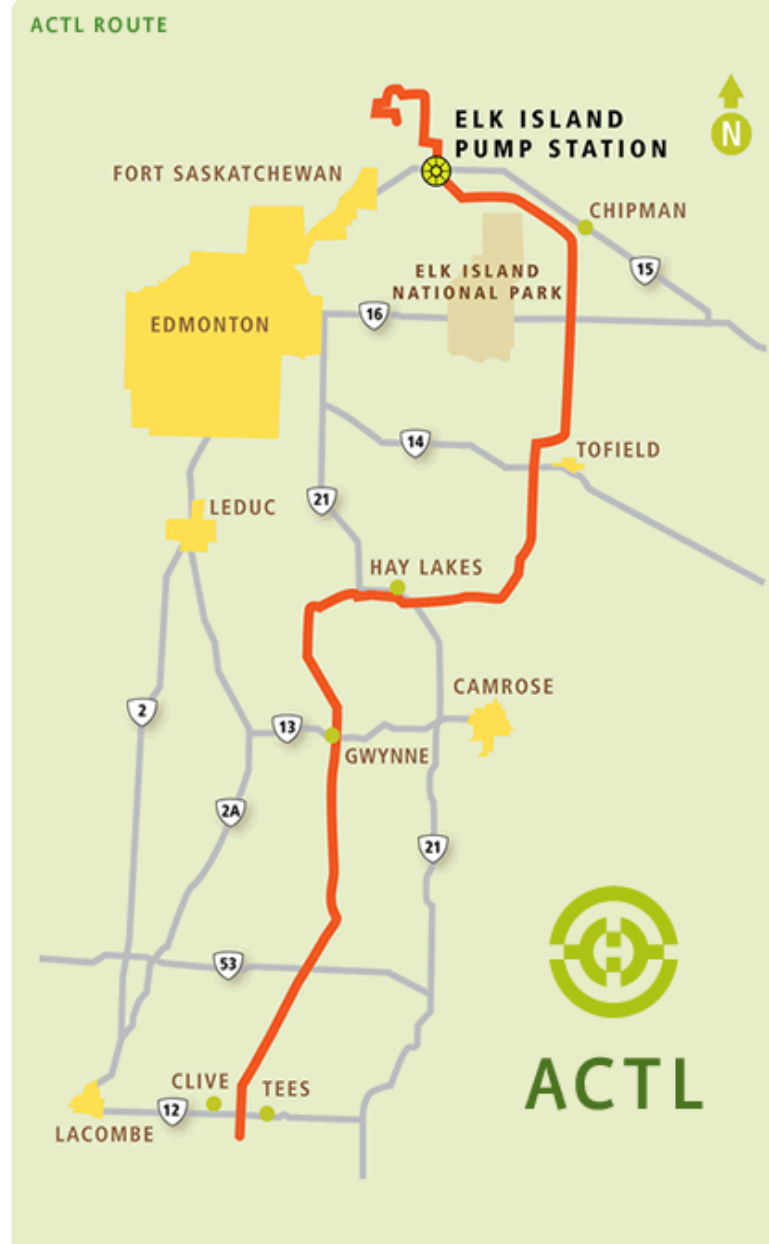
# Swan Hills Synfuels



# TransAlta Project Pioneer



# Enhance - Alberta Carbon Trunk Line



# Policy Challenges

- Pore Space Access
- Long-term Liability
- Outreach and Education
- Regulatory Alignment

# Engaging with the U.S.

- Plains CO<sub>2</sub> Reduction Forum
- Clean Energy Dialogue
- FutureGen
- Carbon Sequestration Leadership Forum

# Conclusion

- Alberta is committed to environmentally responsible energy development.
- Alberta's investment in CCS will help maintain our economic and competitive advantage while protecting our environment.
- Alberta is committed to working with the U.S. on CCS technology.



Questions?