



Freedom To Create. Spirit To Achieve.

# Carbon Capture and Storage Development in Alberta

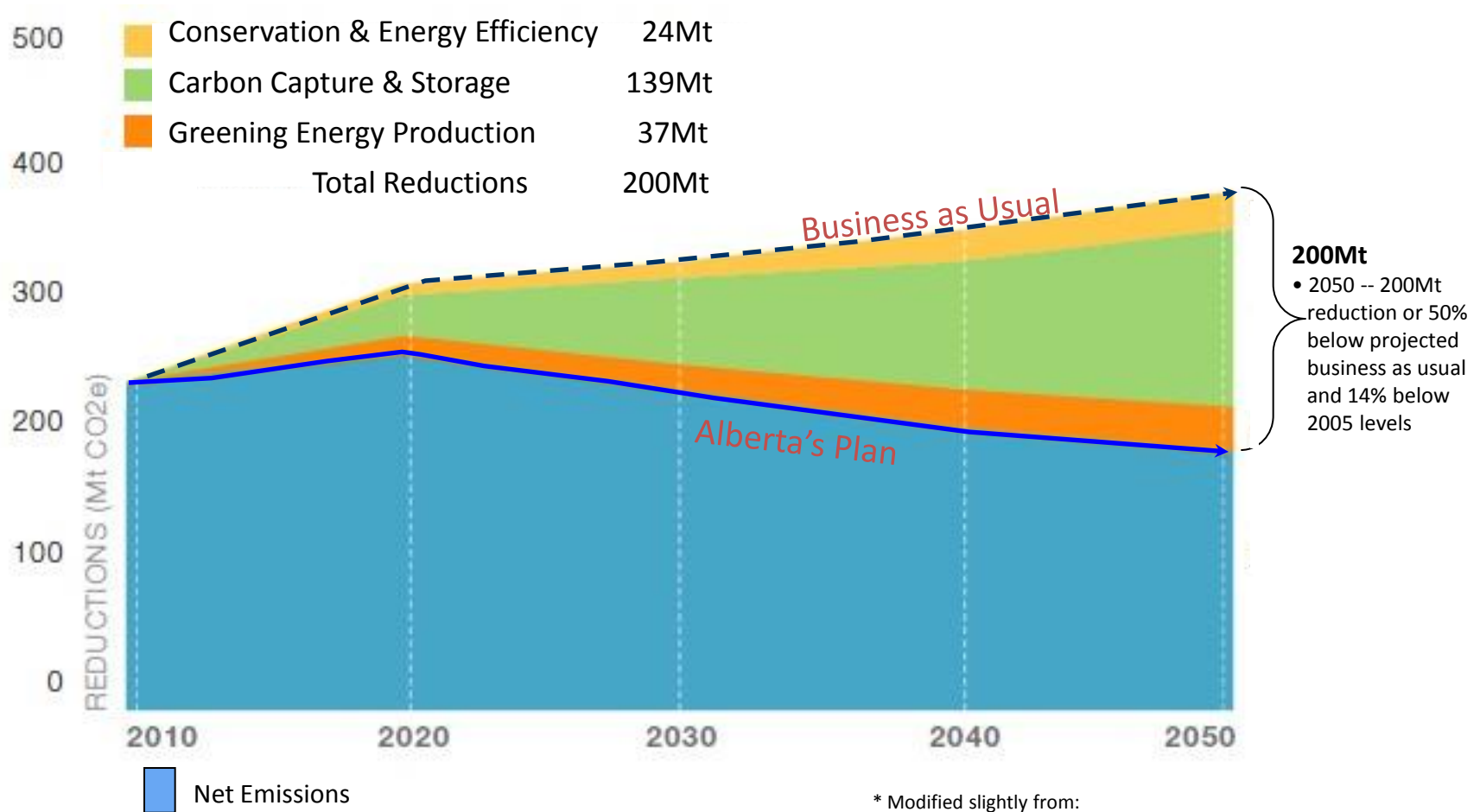
**April 6, 2010**

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**Executive Director, CCS Development  
Government of Alberta**

**Government  
of Alberta** ■

# Alberta's Reduction Commitments\*



Source: Alberta 2008 Climate Change Strategy

\* Modified slightly from:  
 Alberta's Climate Change Strategy 2008

# Alberta's GHG Compliance Options



ALBERTA'S 2008 CLIMATE CHANGE STRATEGY  
RESPONSIBILITY / LEADERSHIP / ACTION

The image shows the cover of a report titled 'ALBERTA'S 2008 CLIMATE CHANGE STRATEGY RESPONSIBILITY / LEADERSHIP / ACTION'. The cover features a photograph of green leaves and a blue and yellow curved graphic at the bottom. The Alberta logo is visible in the bottom right corner of the cover.

- 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.

# ecoEnergy Carbon Capture and Storage Task Force

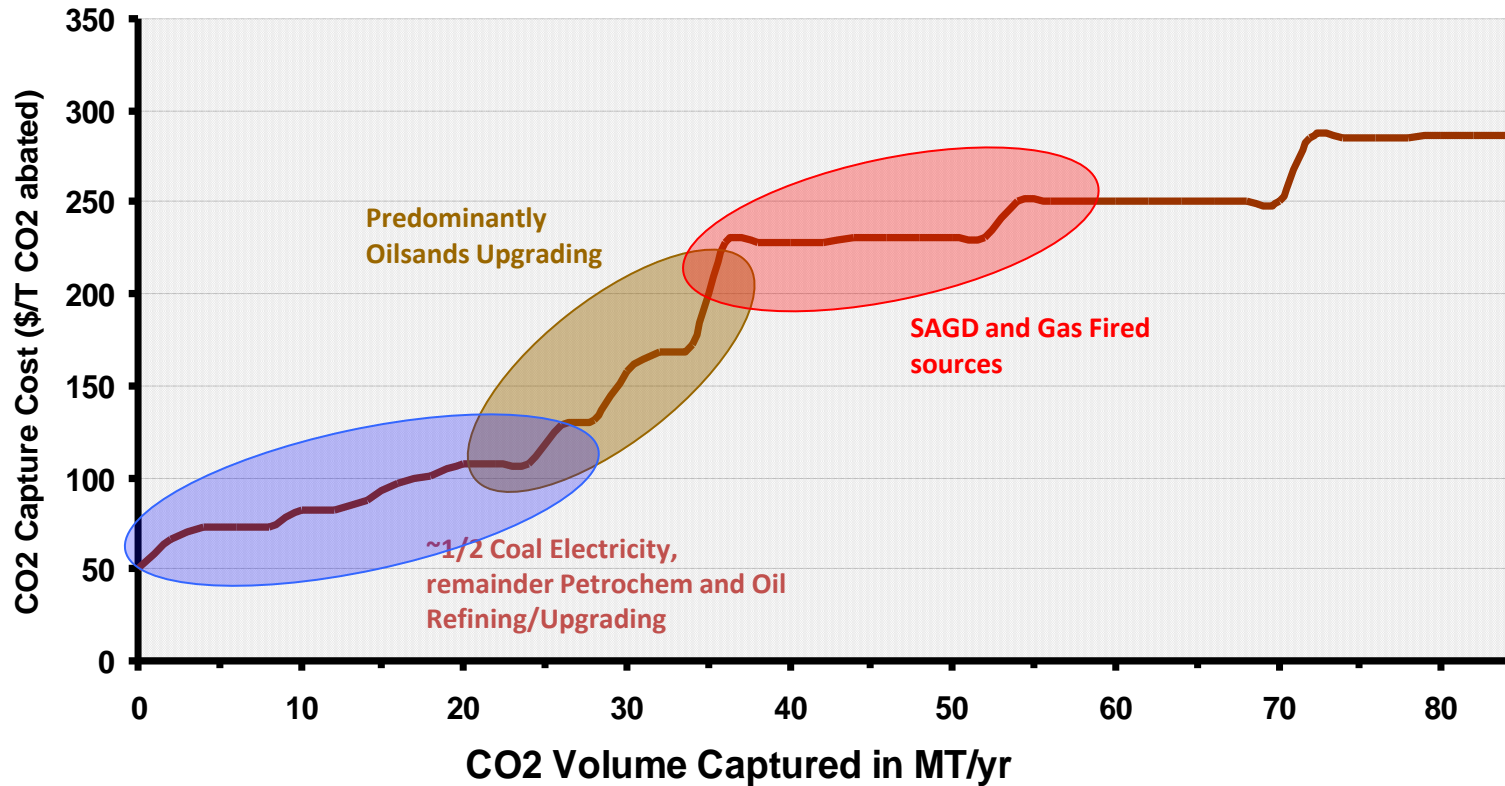
- Formed in 2007 to recommend the best ways for Canada to implement the technology on a large scale.
- Final report on January 2008
- Recommendations include:
  - Incorporating carbon capture and storage into Canada's clean air regulations
  - Allocating new funding to projects through a competitive process
  - Targeting research efforts to lower the cost of this technology

# Alberta Carbon Capture and Storage Council

- Formed in March 2008 to develop a roadmap for implementing CCS in Alberta.
- Final report on July 2009
- Issues included in the report
  - CCS strategic context
  - Business case for CCS
  - Regulatory and governance considerations for CCS
  - Longer-term R&D and Technology needs

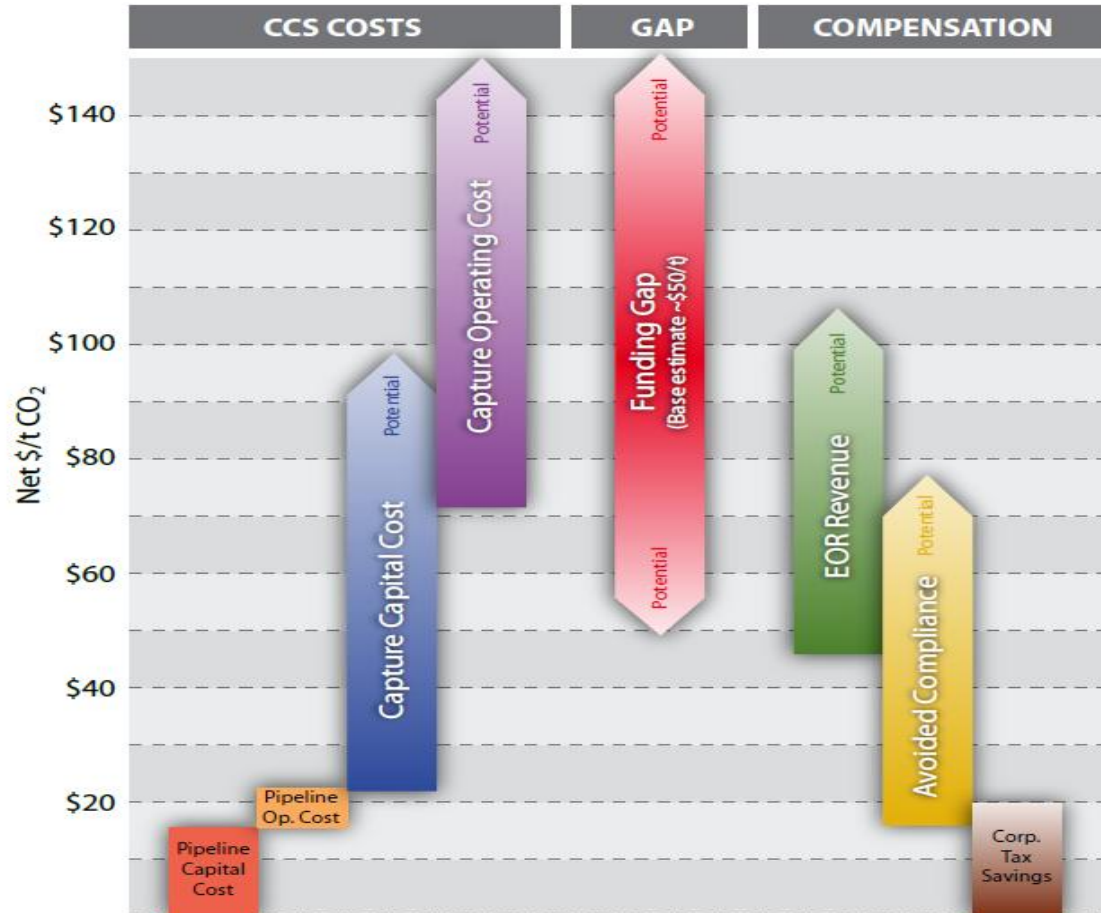
# CO<sub>2</sub> Capture Cost Curve

Capturable CO<sub>2</sub> Emissions in Alberta  
(from existing and new large emitters)



# Hypothetical Economic Profile

(Facility with ~\$100/t capture costs)



# Alberta's CCS Funding Program

- \$2 billion announced July 2008
- CCS Funding Act
  - Passed in June 2009
  - Purpose of the Act is to encourage and expedite the design, construction and operation of CCS projects in Alberta.
- Will be paid out over the life of the funding agreement

# CCS Funding Program Competition

- We moved quickly to set up a competitive selection process
- 50+ Expressions of interest (September 2008)
- 20 projects were invited to submit full project proposals
- 11 Full project proposals received (March 2009)
- 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

# CCS Funding Principles

- Coverage of up to 75 percent of approved incremental CCS costs
- Capped by the lower of:
  - Total funding (\$) allocated for the project, or
  - 75 percent of approved costs.
- Costs increases will be ineligible for grant payments
- Payment structure in place to minimize risk to Government

# CCS Funding Payments

- Maximum of 40 percent of individual grants based on project milestones during development and construction
- Maximum of 20 percent based on commencement of sustained operations
- Remaining percentage disbursed as CO<sub>2</sub> is capture and stored, over a maximum of 10 years.
- Grant reduction issues:
  - Project generates cost savings
  - Project generates excess revenues

# Funding Allocation Process

- Evaluation by an internal cross-ministry government committee
- Develop an evaluation criteria and assigned weightings
  - Technical
  - Commercial
  - Portfolio
- Ranking of submissions
- Final decisions made by government

# Knowledge Sharing

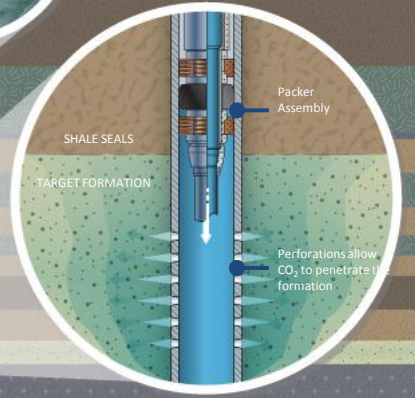
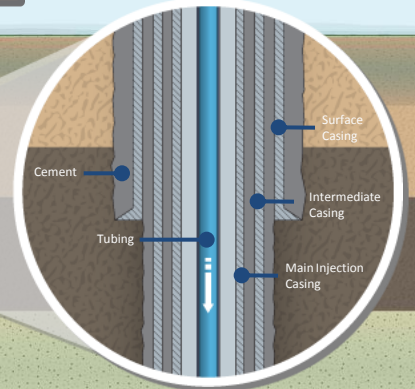
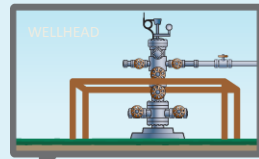
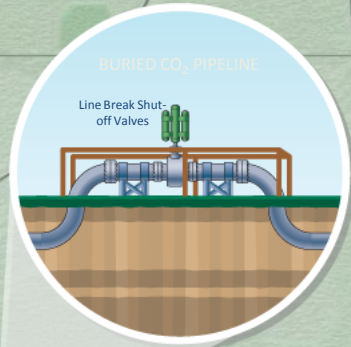
- Key to bringing costs down
- Knowledge sharing principles
  - Knowledge sharing is a condition of approval under the program
  - Intellectual property will be respected
- International cooperation

# Alberta's Four Projects

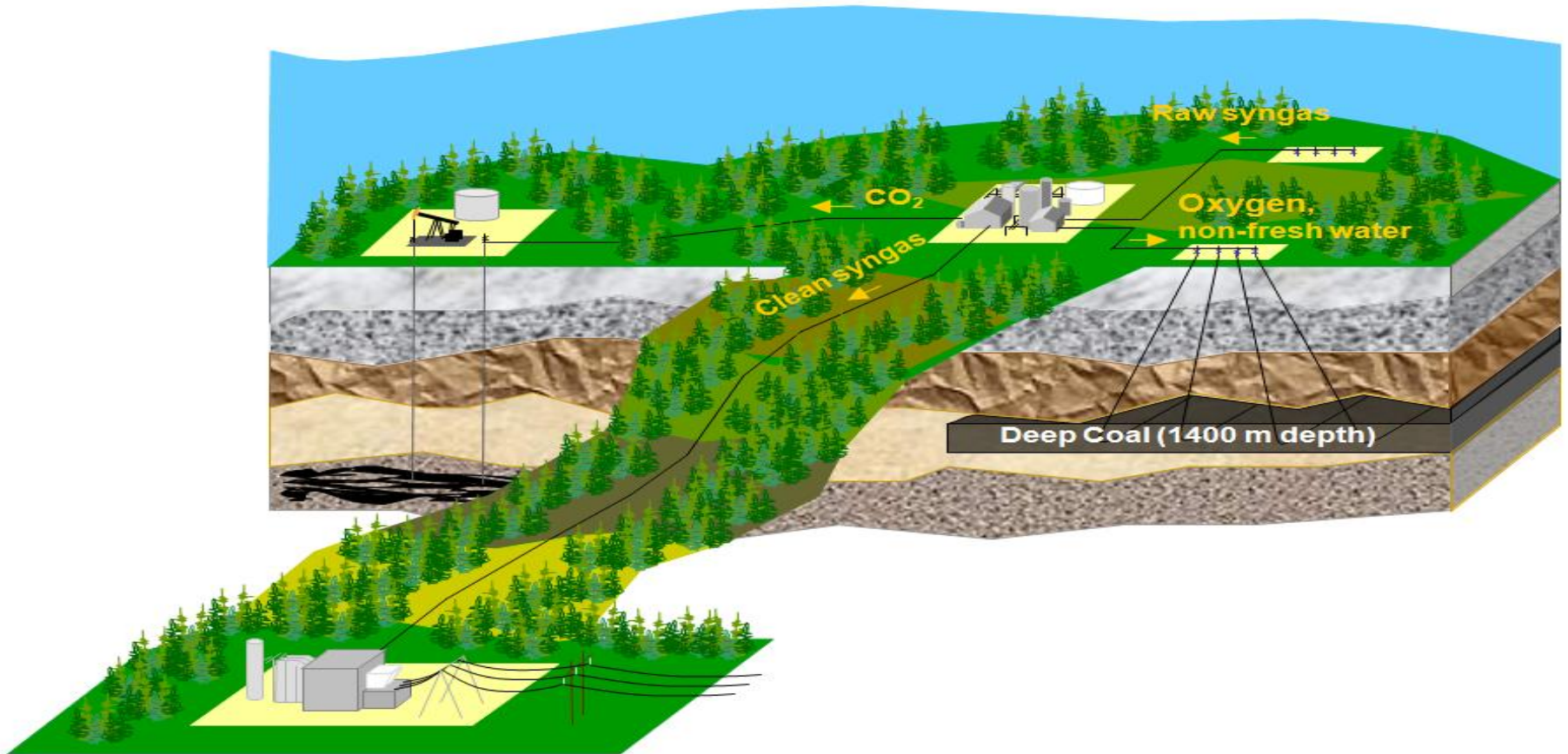


# QUEST CCS PROJECT

Carbon Capture & Storage



# Swan Hills Synfuels



# TransAlta Project Pioneer



# Enhance - Alberta Carbon Trunk Line



# Climate Change and Emissions Management Fund

- Purpose is to strategically invest in transformative technologies
- Provides a measure of price certainty
  - Allows companies to focus on reducing emissions in response to a clear, escalating price on emissions
- Total amount of the fund currently at \$123.4 million
- Puts compliance money where it is needed
  - Greening energy production (50% of funds)
  - Conserving and using energy efficiently (20% of funds)
  - Carbon capture and storage (30% of funds)

# Future Considerations

- Cost reduction
- Enhanced oil recovery potential
- Emission restrictions – carbon price

Questions?