



# Petro-Canada's Use of Life Cycle Value Assessment as a P2 tool

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April 29<sup>th</sup>, 2004



# Five Core Businesses



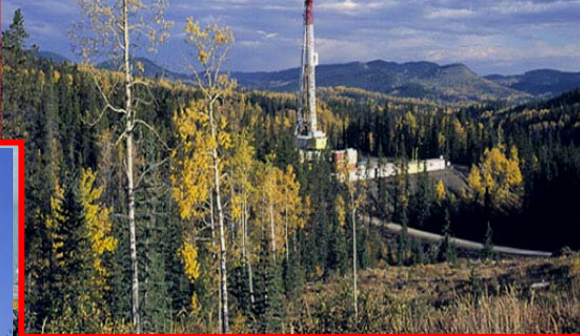
## East Coast Oil



## Oil Sands



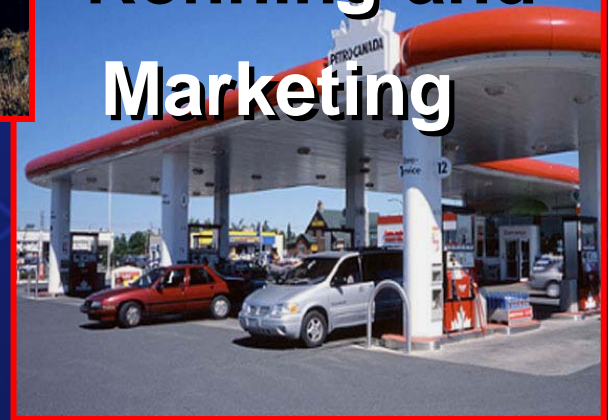
## North American Gas



## International



## Refining and Marketing



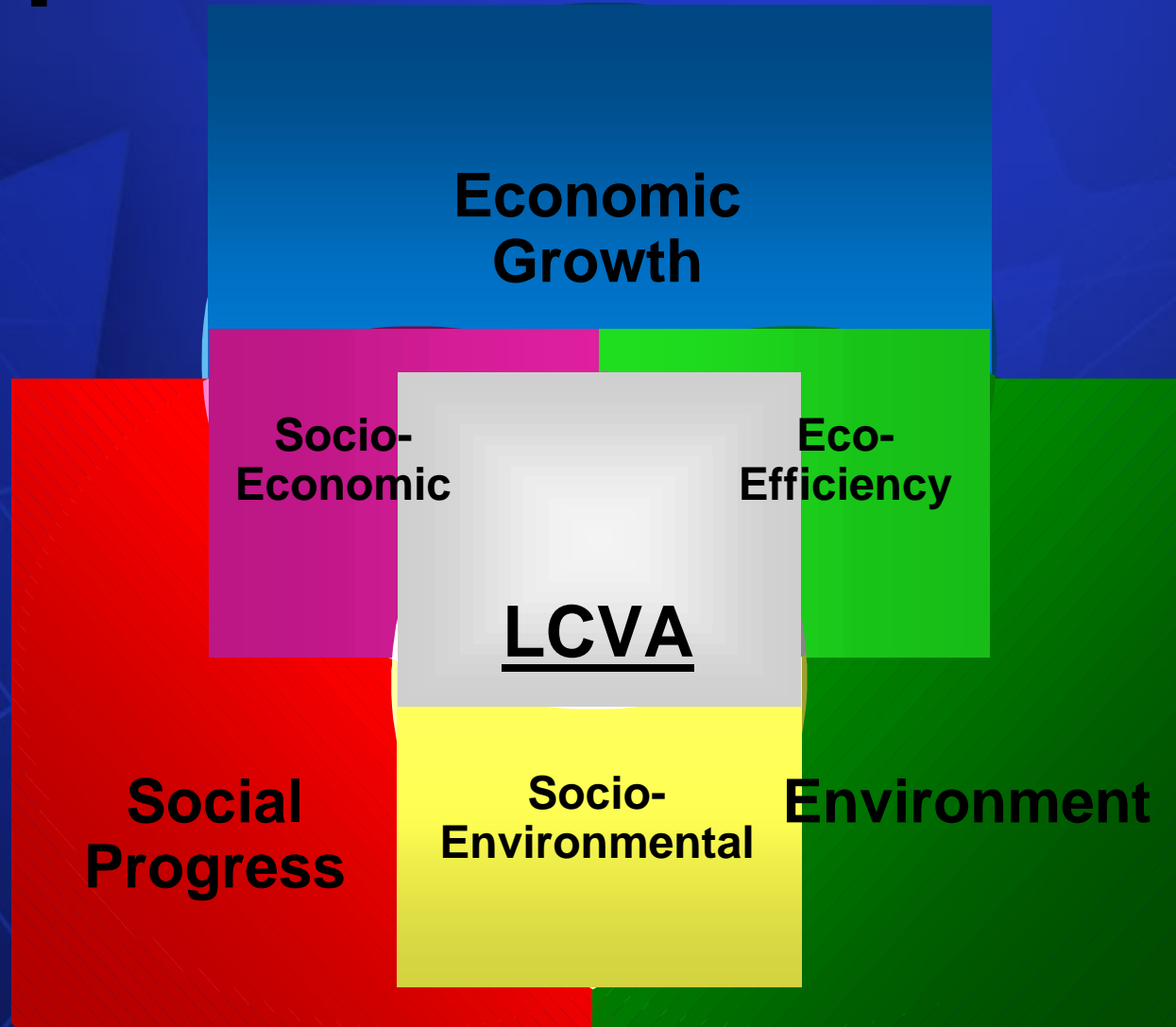
# Petro-Canada



- One of Canada's largest integrated oil and gas companies
- 4,500 employees
- Corporate headquarters in Calgary, Alberta
- A strong reputation for ethical conduct, environmental responsibility and corporate citizenship

- Life Cycle Value Assessment
- One of our key business analyses/decision making tools
- Integrate and balance environmental, social and economic information
- Consider full life cycle of a project from “Cradle to Grave”

# Triple Bottom Line



# **Some Benefits of LCVA**



- **Structured methodology (follows Pembina's 6 step process) but can fit any project size**
- **Inventory of environmental impacts**
- **Identify project's strengths/weaknesses**
- **Win-Win = save long term project cost and minimize adverse environmental and social impacts (risk based)**

# **LCVA Use at Petro-Canada**

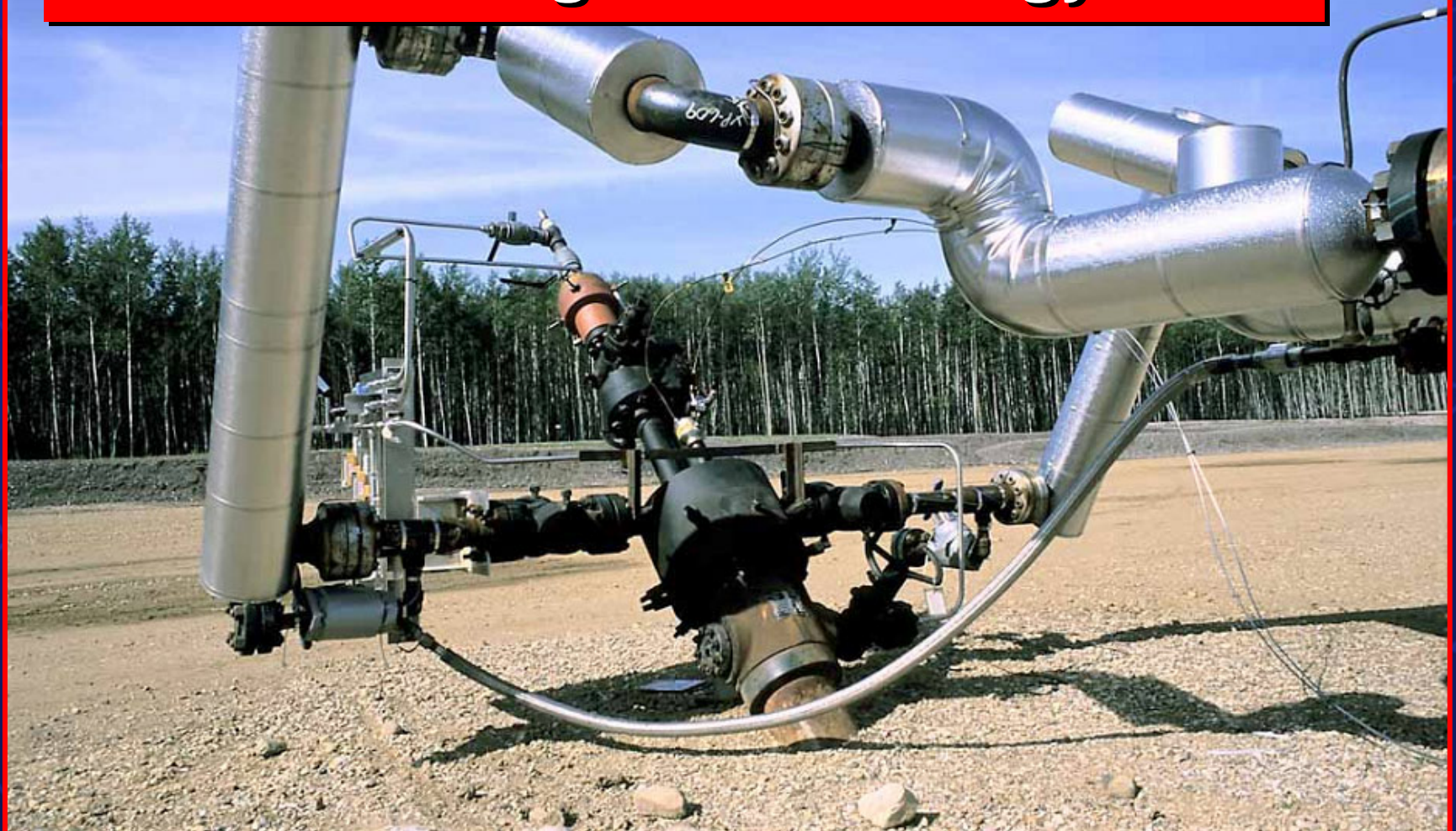


- **Used since 1998 on large significant projects**
  - **Oil Sands (MacKay River)**
  - **Refineries (Montreal, Oakville, Edmonton)**
  - **East Coast Oil (Terra Nova)**

# Oil Sands - MacKay River



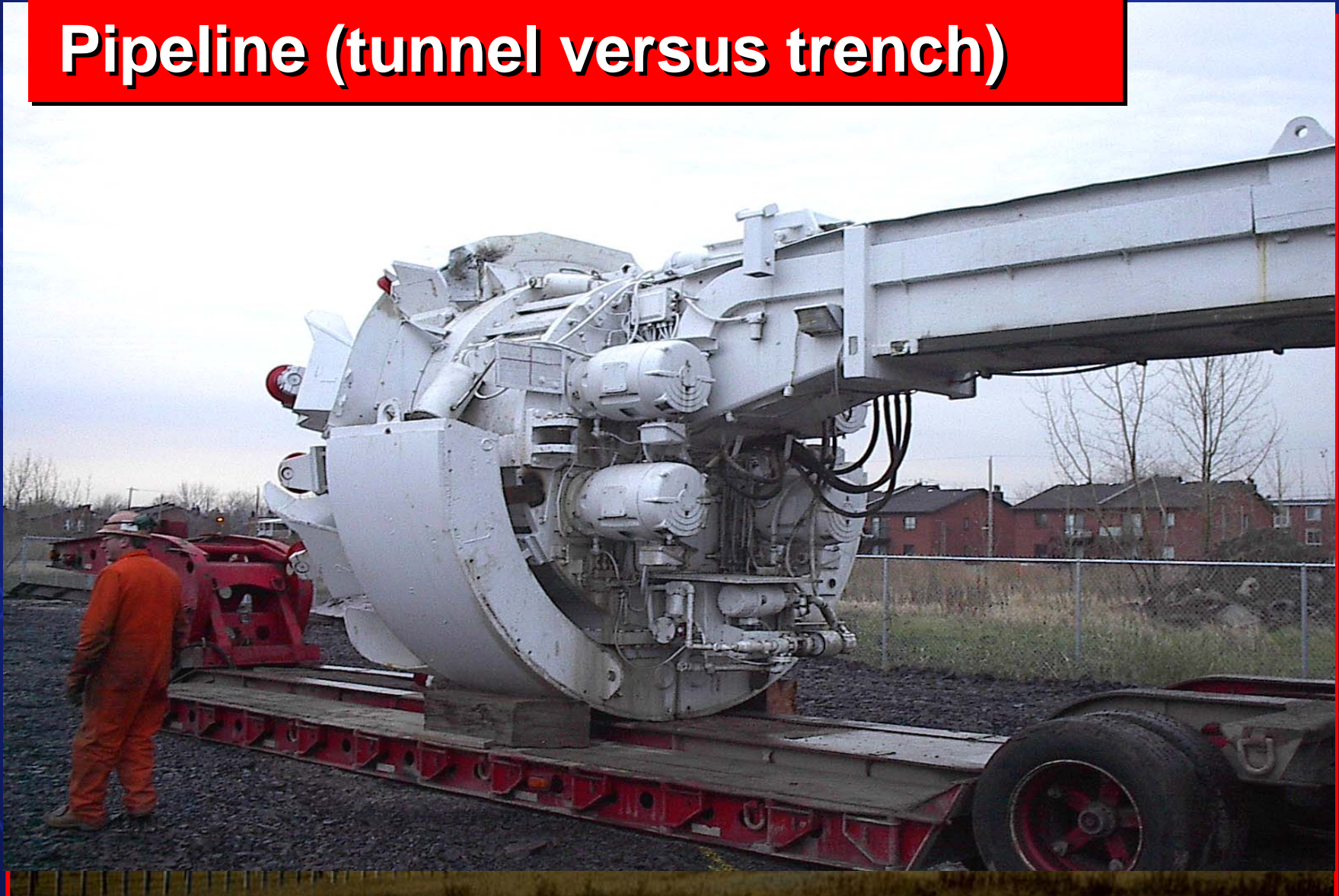
**Co-generation plant,  
water management strategy**



# Montreal Refinery



## Pipeline (tunnel versus trench)



# East Coast Oil - Terra Nova



## Drill cuttings disposal



# Recent Work



- Increase employee awareness and use
  - Employee Intranet site (with link to Pembina Clearinghouse site)
  - For significant projects, part of new Project Management Process and Environmental Management System
  - Checklists for smaller projects

# Small Project Checklists

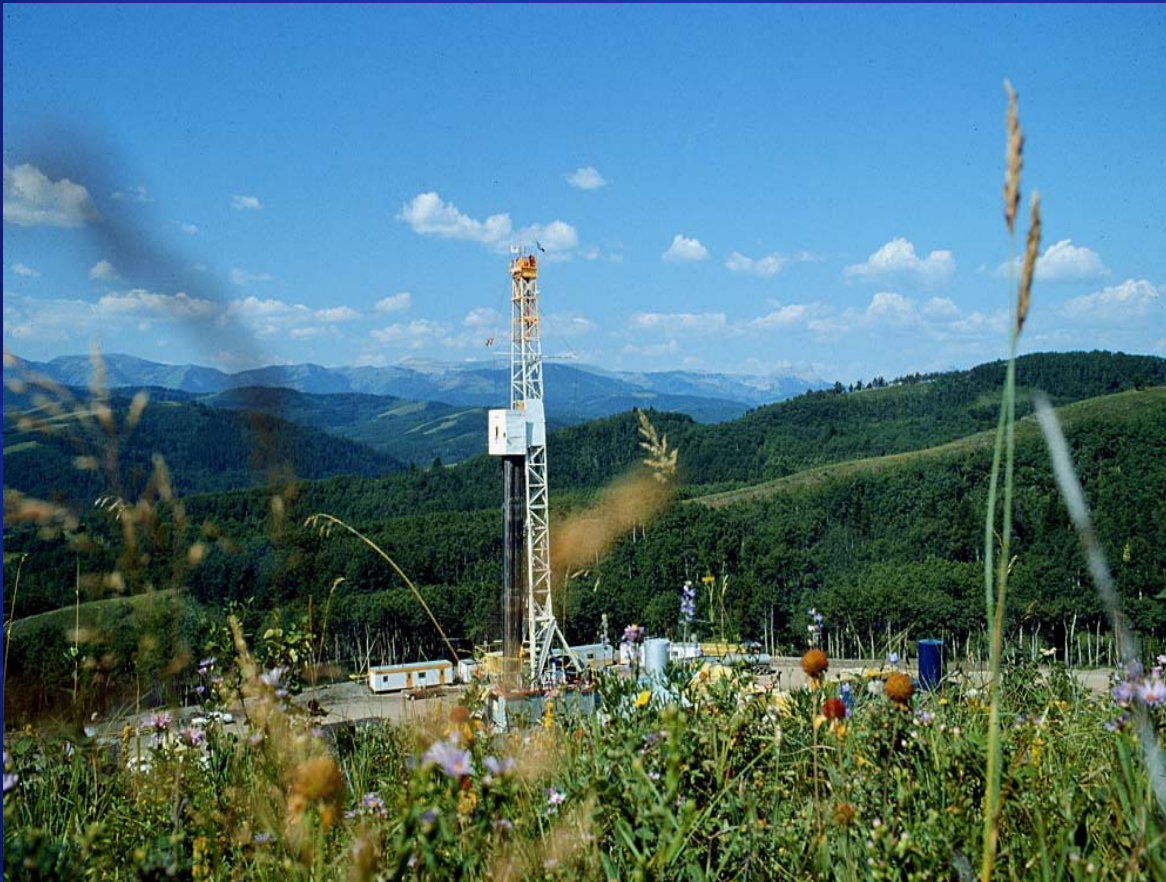


- Checklist for small to medium projects which consider
  - Economic life cycle costing
  - Environmental impacts (air, water & land)
  - Employee and social/community issues
- For checked items, describe mitigating measures to minimize negative impact

# Checklist Example



- Well Data Sheet Checklist



# Checklist Example



- Flare Liquid Containment Design



# Closing Comments



- **Very successful use of process for seven years concentrating on significant projects**
- **Simplifying process for smaller projects to consider environmental costs/impacts at an early stage so steps can be taken to minimize these impacts**