

2nd Workshop

International Oxy-Combustion Research Network

Hilton Garden Inn
Windsor, CT, USA

25th and 26th January 2007

Hosted by:
Alstom Power Inc.

PRESENTATION - 22

The Saskatchewan Advantage: SaskPower Clean Coal Project Update

by:

Bob Stobbs
SaskPower, Canada



The Saskatchewan Advantage

SaskPower Clean Coal Project Update
2007 Jan 26

**IEA International Oxy-Combustion Network
Windsor, CT**

Bob Stobbs, P.Eng.
SaskPower

Presentation Overview

- Opportunity
- Economics
- Sustainability
- Technology
- Plan Forward

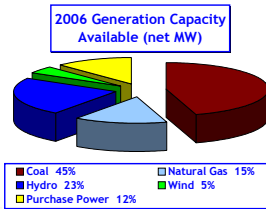
Power Generating Facilities in Saskatchewan December 2006

CAPACITY	NET MW
SaskPower Facilities:	
Coal	1,653
Hydro	853
Natural Gas	538
Wind (Cypress)	11
SaskPower Total	3,055
Independent Power Producers (IPP):	
Meridian (Natural Gas)	211
Cory (Natural Gas)	228
SunBridge (Wind)	11
IPP Subtotal	450
SaskPower - Total Capacity Available December 31, 2005	3,505
Centennial Wind Facility - completed Spring 2006	150
Total Capacity Available 2006	3,655

Number of Customers 444,000

Transmission Interconnection Capacity 600 MW

With:
 Manitoba Hydro 300 MW
 Basin Electric (North Dakota) 150 MW
 Alberta (D.C.converter) 150 MW

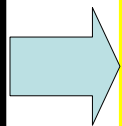


Record System Peak Load:
2,960 MW (net) Nov 29, 2006

clean coal Project | SaskPower

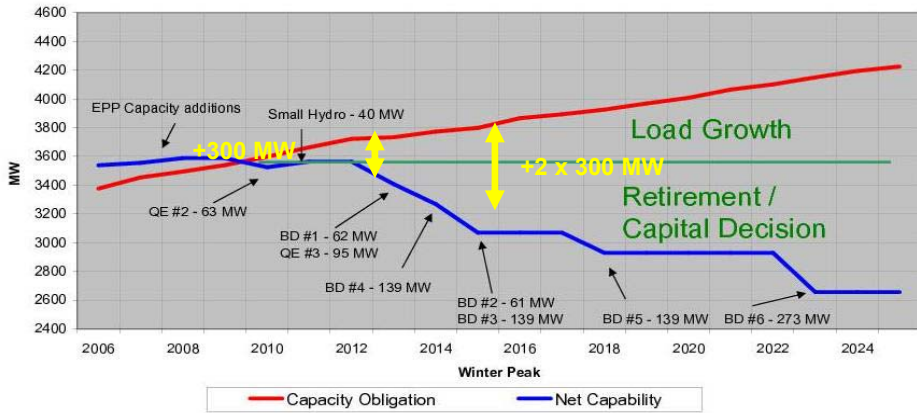
The Saskatchewan Advantage

- Capacity Need
- Legislated Requirement to Serve
- Fuel Availability
- Environmental Stewardship
- Kyoto Protocol
- Proven Sequestration Effectiveness
- Value for CO₂
- Fed/Prov Cooperation (MOU)
- Work of the PTRC, SRC, ITC
- Technical/Financial Capacity



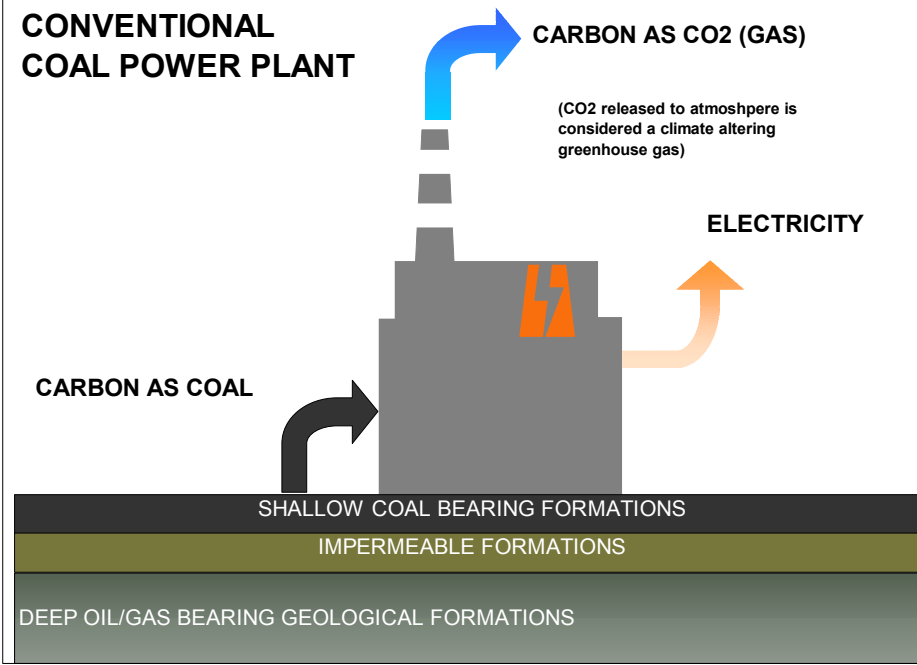
300 MW
(near) Zero Emissions
Pulverized Coal Plant in 2011?

SaskPower Capacity Position Base

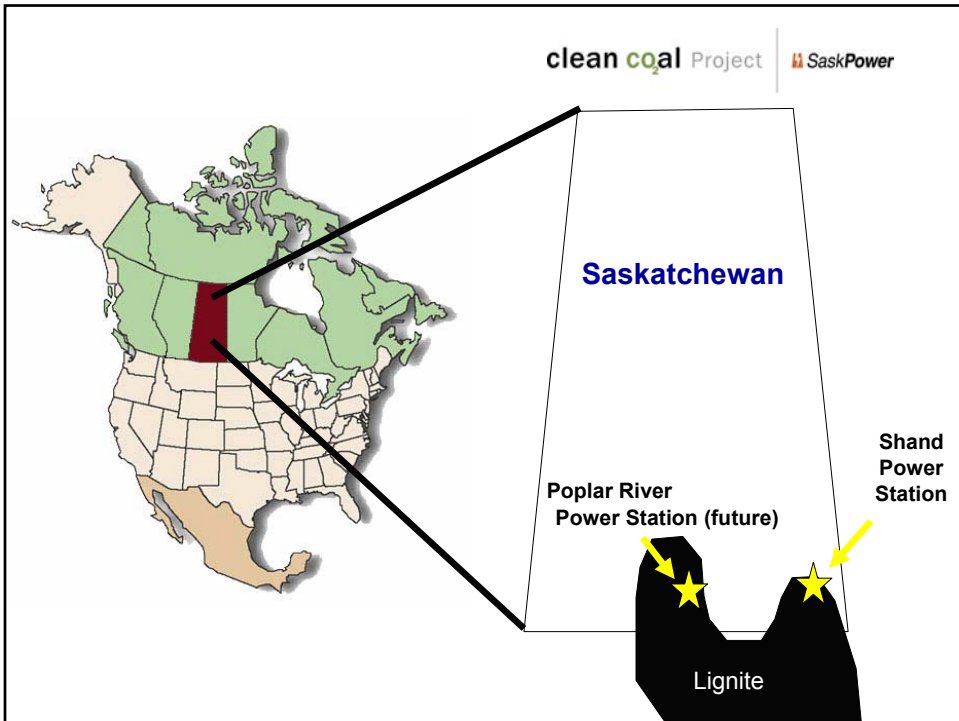
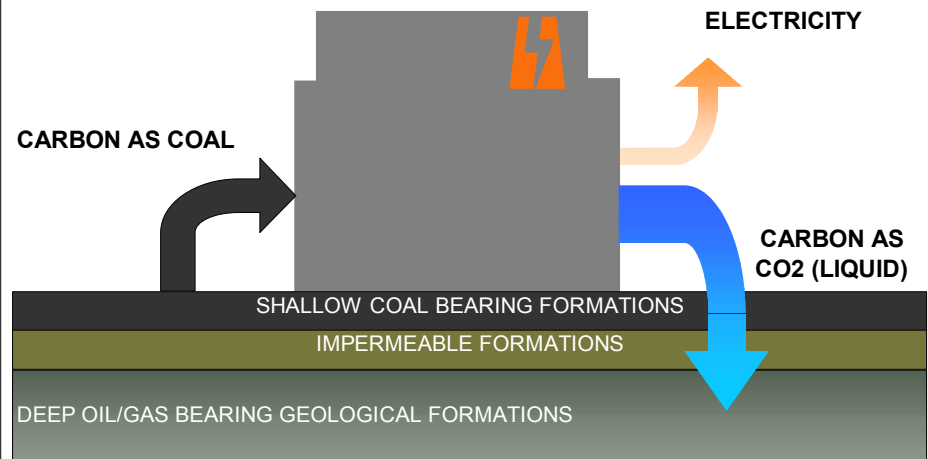


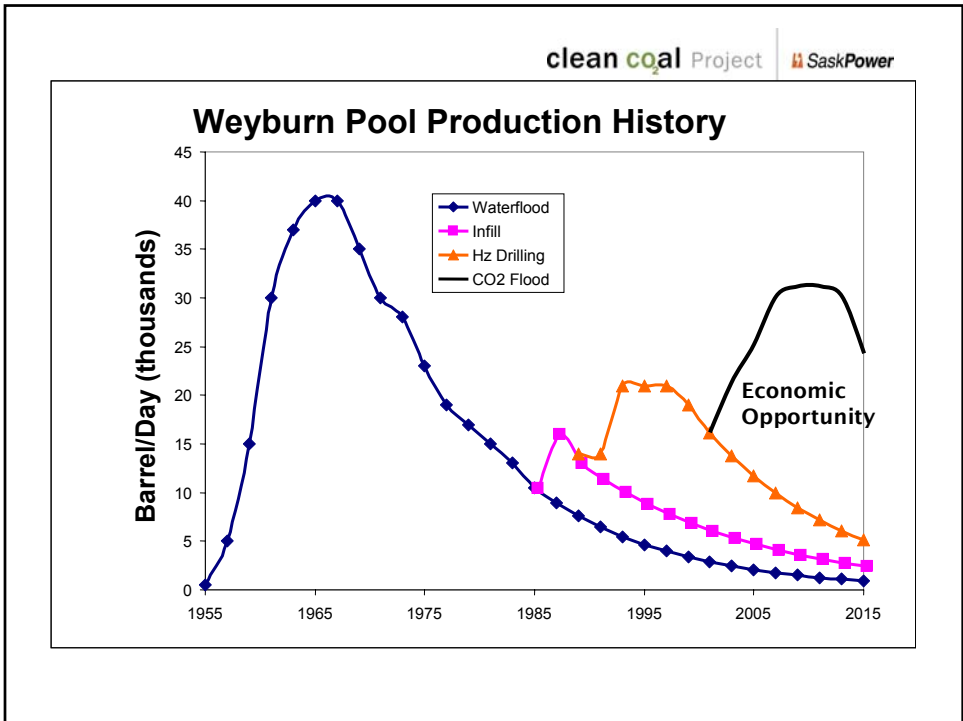
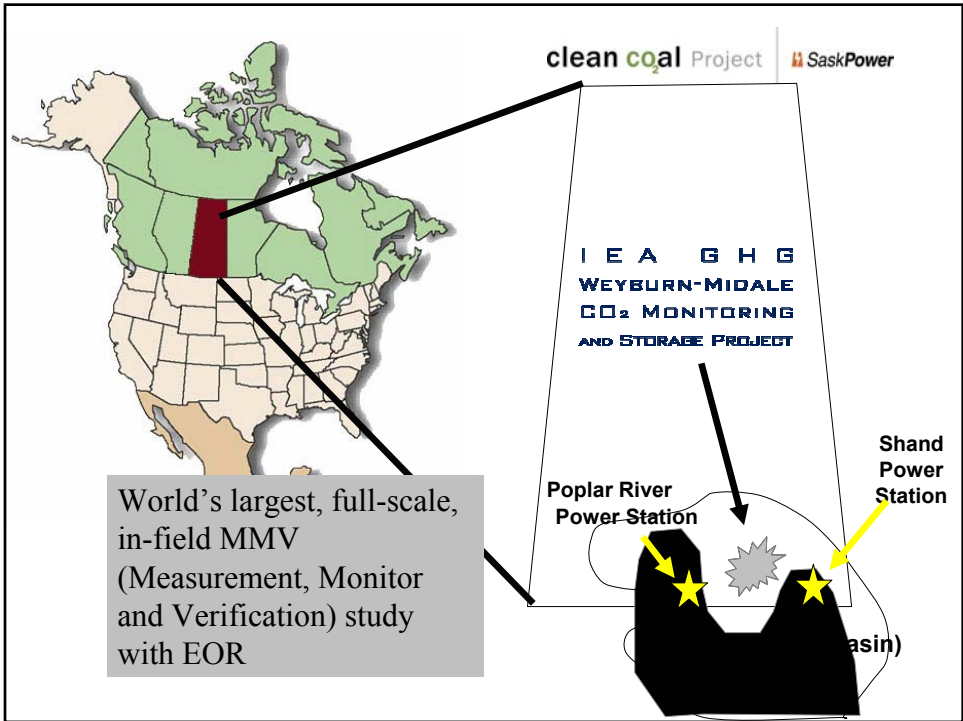
Peaking plants are assumed to be replaced in-kind.

CONVENTIONAL COAL POWER PLANT



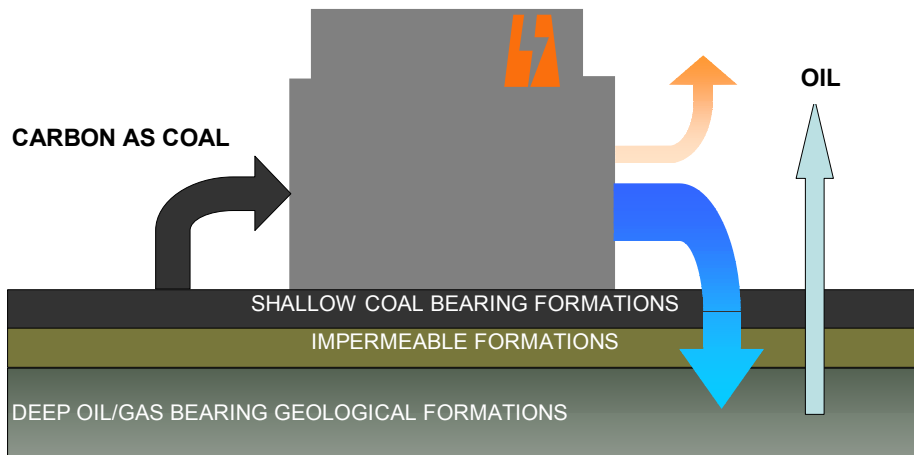
SaskPower's CLEAN COAL POWER PLANT





SaskPower's CLEAN COAL POWER PLANT

With Cogeneration of CO₂



clean coal Project | SaskPower

Economics

Two Product Streams:

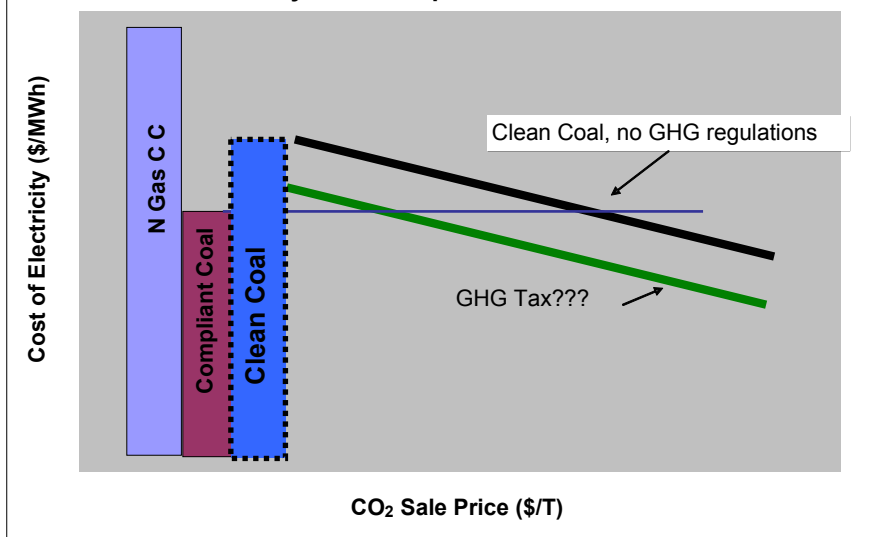
Electricity:

- Evaluated by internal procedures

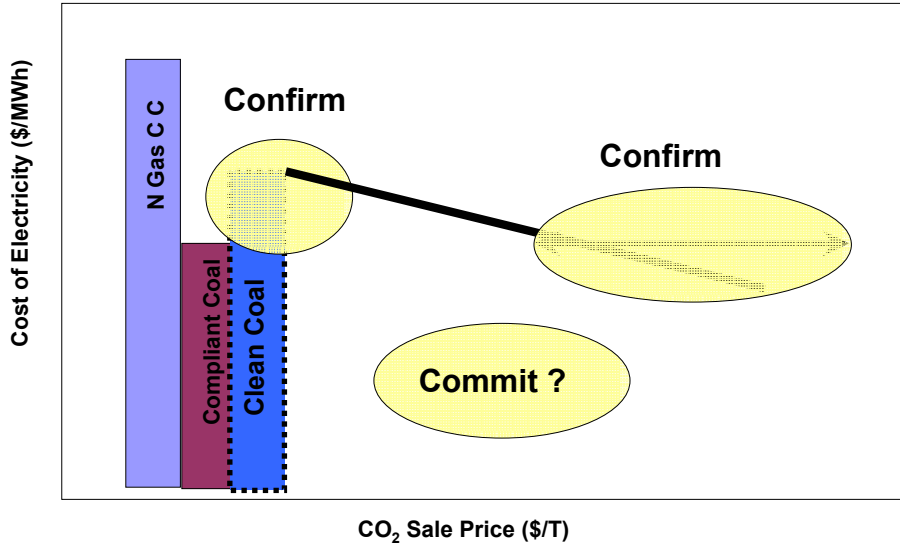
CO₂ for Enhanced Oil Recovery:

- Evaluated by contracts in place as of June 2007

Preliminary Cost Comparison 300 MW Base Load



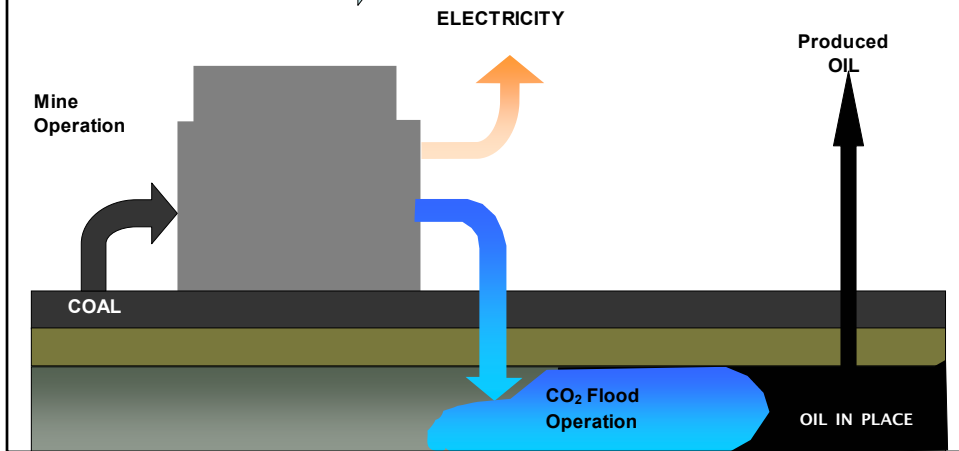
Precommitment Engineering Priority



Sustainability and Environmental Performance

Overall COAL to OIL Process

1 Tonne Coal Produces 0.8 MWh + 2 to 10 barrels Oil



ENERGY BALANCE

1 Tonne Coal Produces 0.8 MWh + 2 to 10 barrels Oil

Energy Out:

0.8 MWh = + 3 GJ (electrical)

2 to 10 bbl = + 12 to 60 GJ (fossil)

Energy In:

1 Tonne = - 13 GJ (fossil)

Net Energy Produced: + 2 to 50 GJ (elect & fossil)

Net Emissions Impact

Near Zero emissions electricity plus:

1 Barrel Weyburn
Crude: Equivalent
to 1.0 GHG unit

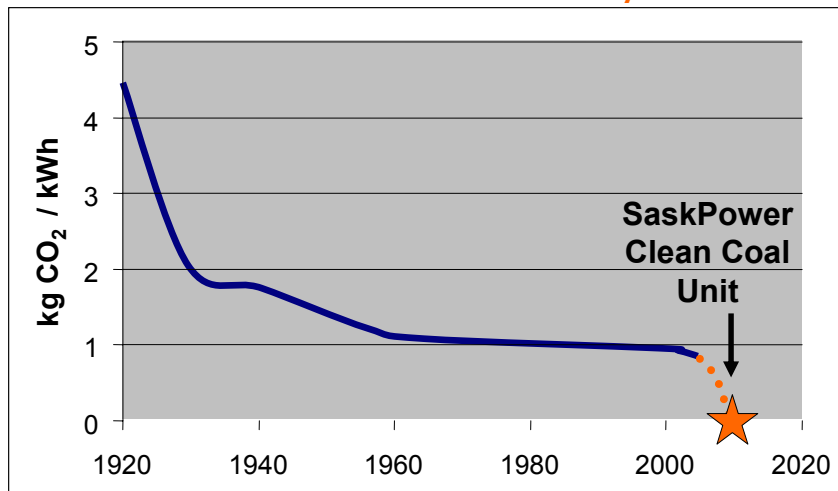


1.3 to 1.4 GHG equivalents
Saudi oil

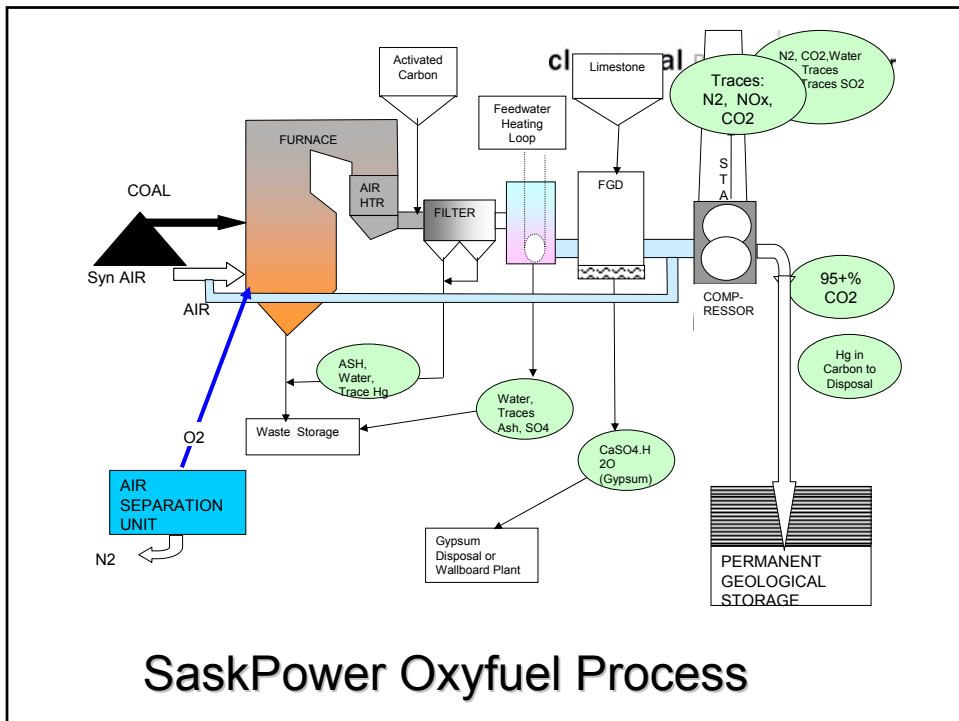
or

1.9 GHG equivalents
Alberta Oil Sands

100 Years of Progress in Reducing Emissions Intensity



Technology



SaskPower Oxyfuel Process



clean coal Project | SaskPower

Contract Strategy

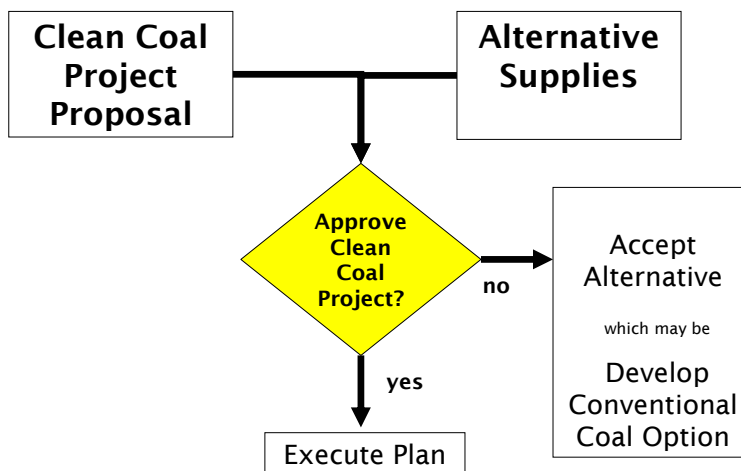
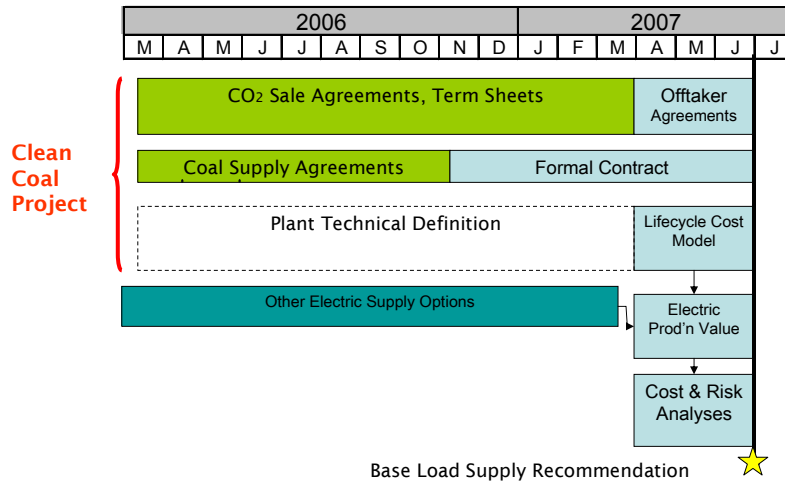
- Synthetic Air Boiler – Babcock & Wilcox
- Air Separation Unit – Air Liquide
- Compression & Purification Unit – Air Liquide
- Steam Turbine Generator- Marubeni/Hitachi
- Owner's Engineer – Neill & Gunter
- Balance of Plant - TBA

Project Proposal

- The SaskPower Clean Coal Project Proposal (end June 2007) will include:
 - ▷ Business Case Analyses addressing cost, risk and revenue expectations
 - ▷ Provisional Equipment and Construction Contracts for immediate acceptance
 - ▷ Provisional CO₂ sales agreements for immediate acceptance
 - ▷ Project Execution Plan

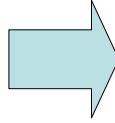
Path Forward

SaskPower's Supply Decision



The Saskatchewan Opportunity

300 MW
(near) Zero
Emissions
Pulverized
Coal Plant in
2011?



- Environmentally and Economically Sustainable Electricity Supply
- Enhanced Oil Production
- On-going and Enhanced Coal Royalties
- Leading Edge Clean Coal Technologies to a Huge World Market
- International Clean Coal Engineering & Technology Center
- Expansion of In-Province Manufacturing Commitment
- Economic Spin-offs from Project Construction

