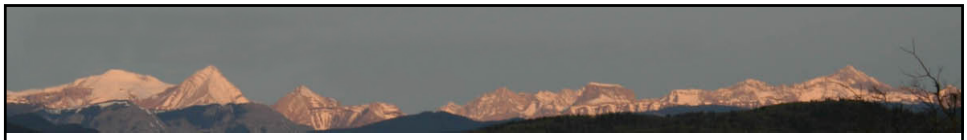

Oil Sands Industry Outlook

Presentation to the
National Energy Board
2007 Energy Futures Project Working Group

Bob Dunbar, President
Strategy West Inc.
Calgary, Alberta
May 5, 2006

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Presentation Outline

- Oil Sands Wish List – Unadjusted Outlook
- Adjusted Outlook
  - Approximates “Same Old” Scenario
- Challenges Facing Oil Sands Developers
- Technology Outlook to 2020
  - Approximates “Same Old” Scenario
- “Fortified Islands and TREES”

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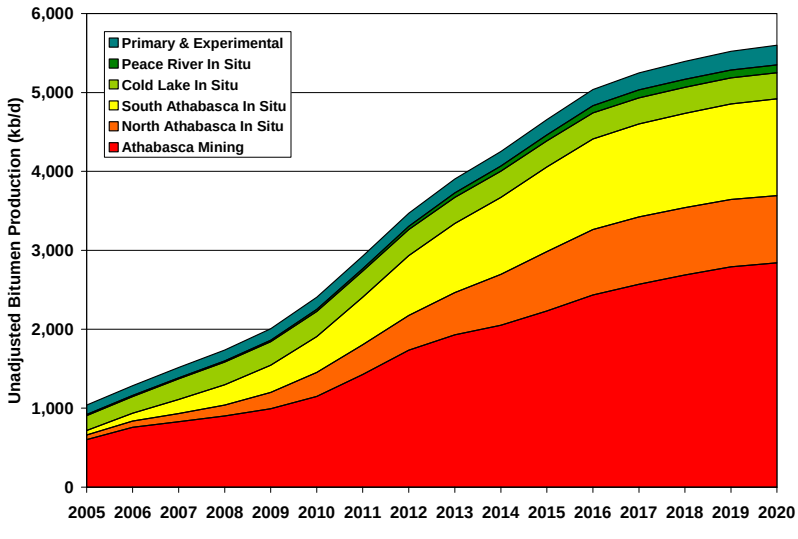
Unadjusted Bitumen Production



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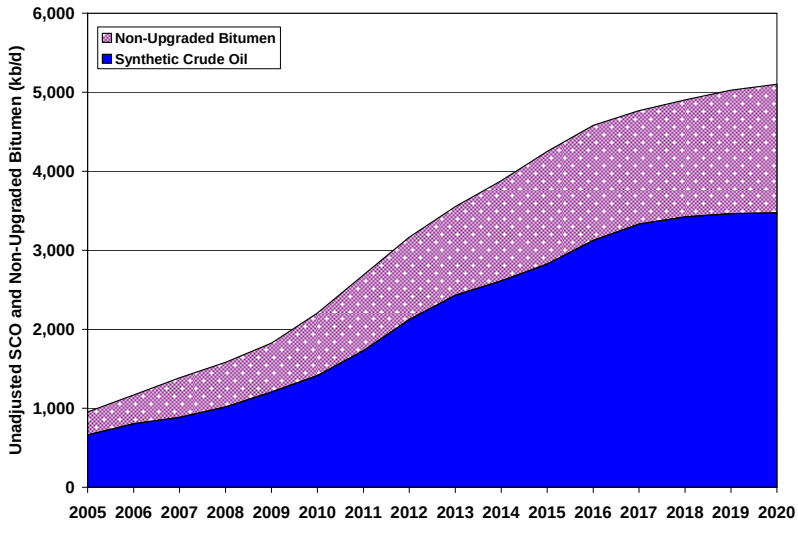
Unadjusted SCO and Non-Upgraded Bitumen Supply



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Unadjusted Case CAPEX

- Average Annual Capital Expenditures (2005-2020)
  - Thermal In Situ $3.0 Billion
  - Mining & Extraction $3.0 Billion
  - Upgrading $7.5 Billion
  - Total $13.5 Billion
- CAPEX for Capacity Additions (C$2006)
  - Thermal In Situ $20,000 per b/d
  - Mining & Extraction $20,000 per b/d
  - Upgrading $40,000 per b/d
- Strategic Capital only – figures do not include sustaining capital

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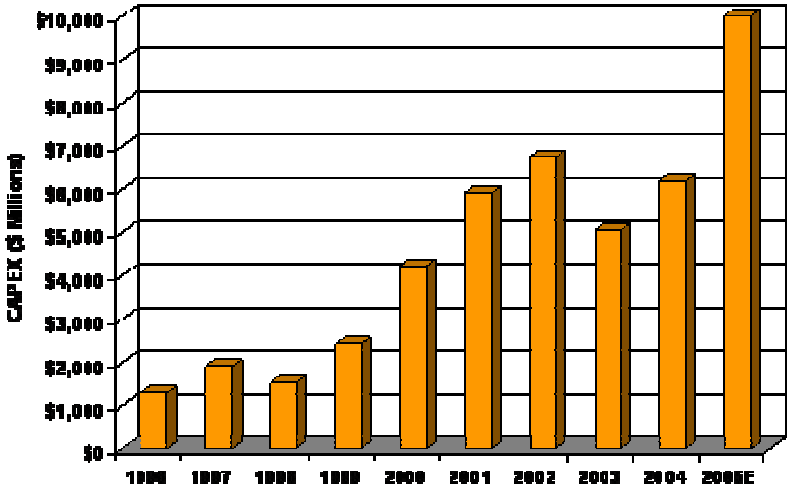
Historical Oil Sands CAPEX



Source: CAPP

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Project-by-Project Adjustments

- Project Timing
  - Lease evaluation
  - Disclosure
  - Application preparation and EIA
  - Application review and approval
  - Detailed engineering
  - Internal approval
  - Construction
  - Phasing
- Project Probabilities
  - Project status
  - Owners
    - Operating experience
    - Financial capacity
    - Technical capability
    - Other factors
  - Technology
  - Existing operations
  - Integration
  - Timing

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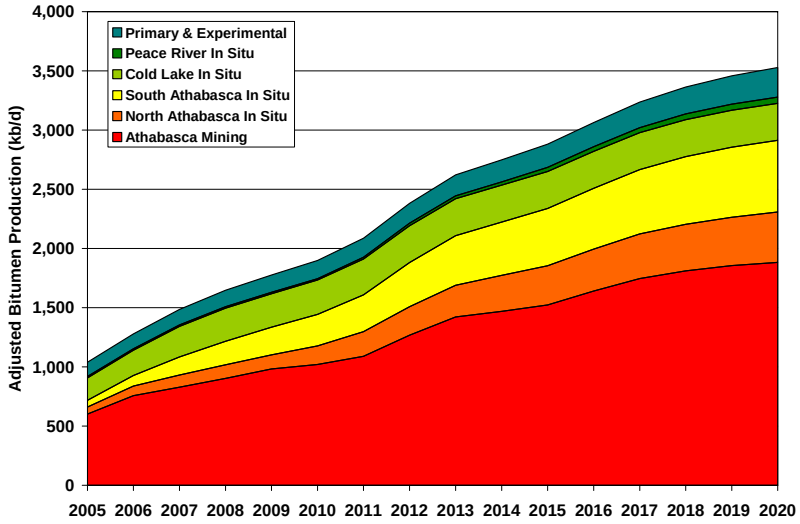
Adjusted Bitumen Production



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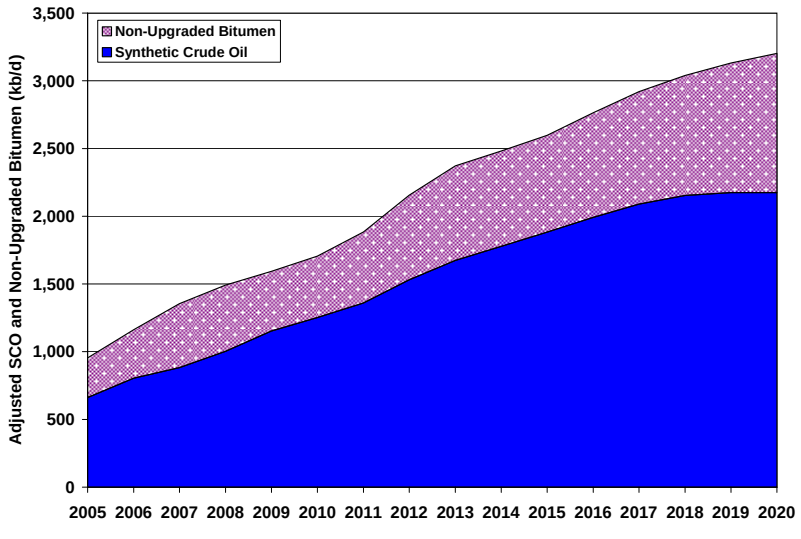
Adjusted SCO and Non-Upgraded Bitumen Supply



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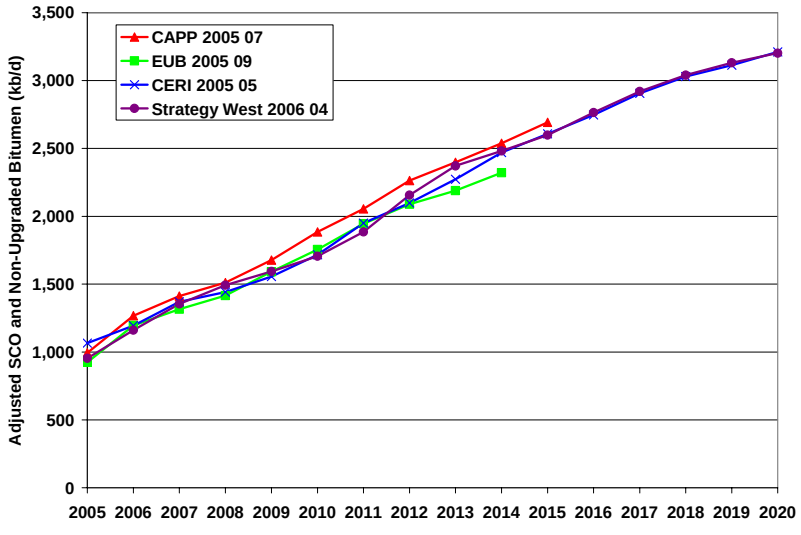
Comparative SCO and Non-Upgraded Bitumen Supply



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Adjusted Case CAPEX

- Average Annual Capital Expenditures (2005-2020)
  - Thermal In Situ $1.5 Billion
  - Mining & Extraction $1.7 Billion
  - Upgrading $4.0 Billion
  - Total $7.2 Billion
- Strategic Capital only – figures do not include sustaining capital

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Challenges Facing the Oil Sands Industry

- Environmental
  - Air emissions – GHGs and Criteria Air Contaminants
  - Water use
  - Waste water disposal
  - Land disturbance and reclamation
  - Cumulative effects
- Energy Use, Sources & Costs
- Labour Availability & Productivity
- Capital Costs
- Markets
- Infrastructure Constraints
- Diluent Supply
- Socio-Economic Impacts
- Gas Over Bitumen

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Oil Sands Energy and Hydrogen Requirements

Energy

- In situ steam
- Mining/extraction process heat
- Upgrading process heat
- Electricity

Hydrogen

- Hydroconversion processes (upgrading)

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Typical Natural Gas and Electricity Requirements

	Natural Gas (GJ/b)	Electricity (kWh/b)
Thermal In Situ	0.90 – 1.30	9
Mining and Extraction	0.25	13
Upgrading (Fuel)	0.10	12
Upgrading (Hydrogen)	0.30 – 0.70	2

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Current Sources of Thermal Energy, Hydrogen and Electricity

- Thermal Energy
  - Natural gas
  - Produced gases (in situ projects)
  - Process gases (upgraders)
  - Coke (upgraders)
  - Liquid hydrocarbon fuels
  - Crude bitumen
- Hydrogen
  - Steam Methane Reforming (natural gas)
- Electricity
  - On-site generation
  - Purchased electricity

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Potential Future Sources of Thermal Energy, Hydrogen and Electricity

Technology	Thermal Energy	Electricity	Hydrogen
Gasification	✓	✓	✓
Bitumen Combustion	✓	✓	
Nuclear	✓	✓	✓

Oil sands industry energy intensity will likely be reduced through further efficiency improvements and application of new technologies

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Oil Sands Gasification Projects

Project	Status
OPTI/Nexen Long Lake 1-4	Construction (Phase 1)
Suncor Voyageur 2	Application
North West Upgrading 1 - 3	Application
Northern Lights 1 & 2	Disclosure
CNRL Horizon 4 & 5	Under Consideration
CNRL Primrose 1 & 2	Under Consideration
NAOSC Kai Kos Dehseh 2	Under Consideration
Petro-Canada Sturgeon 2 & 3	Under Consideration

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Technology Outlook to 2020 – "Same Old"

- In Situ
  - Geological challenges
  - Possible increasing use of hybrid steam/solvent recovery processes
  - Possible commercial application of new recovery technologies
    - VAPEX
    - THAI
- Mining & Extraction
  - Energy efficiency improvements
  - Improved and possible introduction of new tailings technologies
    - Non-segregating tailings (Muskeg River)
    - BITMIN (Fort Hills)

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Technology Outlook to 2020 – "Same Old"

- Upgrading
  - Energy efficiency improvements
  - Myriad process configurations
  - SCO quality differences
  - Other products
  - Possible introduction of CO_2 capture
- External Energy & Hydrogen
  - Natural gas (SMR) dominance
  - Increased use of gasification at new projects
    - Asphaltenes
    - Coke
  - Possible introduction of bitumen burning at new thermal in situ projects (MSAR)
  - Possible introduction of nuclear (CANDU, other technologies?)

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"Fortified Islands and TREES"

	Fortified Islands*	TREES
Bitumen Production	Greater	Less
Upgrading Intensity	No Significant Change	No Significant Change
Energy Intensity	Greater	Less
Emissions Intensity	Greater	Less

*** Assuming "Island North America" with respect to energy trade**

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Thank You
Strategy West maintains an up-to-date list of existing and proposed oil sands projects at www.strategywest.com
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