

## Recovery Technologies – Shallow Reserves

### Truck & Shovel Mining

- Athabasca only
- < 75m to top of oil sands formation
- 6% of OBIP
- 20% of initial established reserves
- 68% of cumulative production

Source: EUB Alberta's Reserves 2004 and Supply/Demand Outlook 2005-2014

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## Muskeg River Extraction Plant



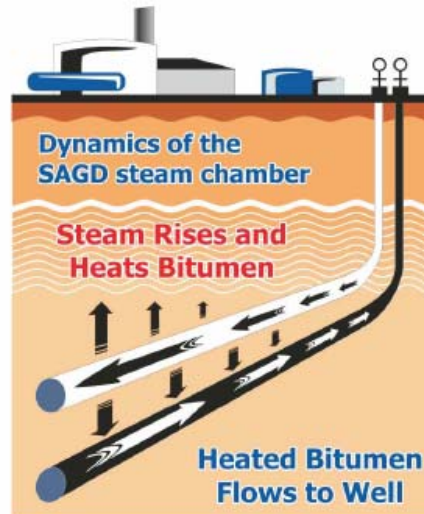
Source: Albian Sands Energy

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## Recovery Technologies – Deep Reserves

### In Situ Recovery

- > 75m depth to top of oil sands formation
- Athabasca, Cold Lake and Peace River
- 94% of OBIP
- 80% of initial established reserves
- 32% of cumulative production



Source: Husky Energy; Sunrise Project Application; August 2004

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## Syncrude Plant Site

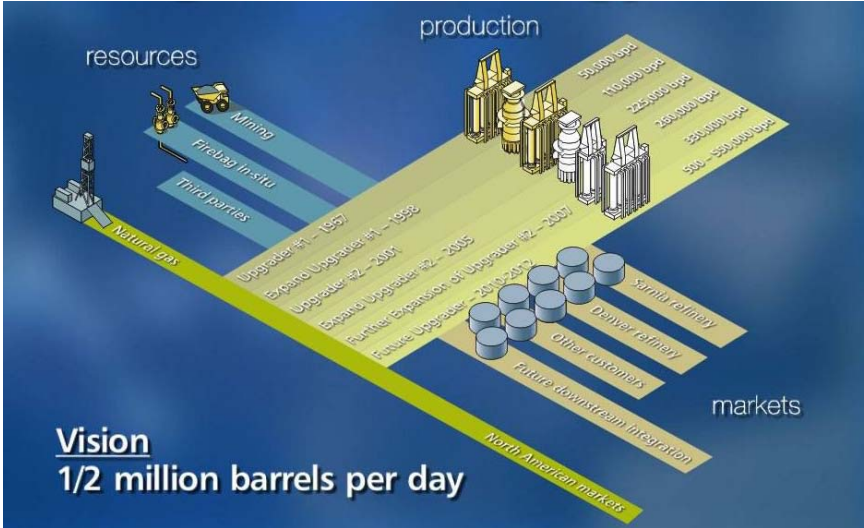


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Source: Syncrude Canada Limited.

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## Suncor's Integrated Strategy: Mining, In Situ, Upgrading and Refining



**resources**

- Mining
- Firebag In-situ
- Third parties
- Natural gas

**production**

- Upgrader #1 - 1997
- Edmonton Upgrader #1 - 1998
- Upgrader #2 - 2007
- Edmonton Upgrader #2 - 2005
- Expansion & Expansion of Upgrader #2 - 2007
- Future Upgrader - 2010-2012

**markets**

- Simola refinery
- Denver refinery
- Other customers
- Future downstream integration
- North American markets

**production capacity (bbl/d):**

- 50,000 bbl/d
- 110,000 bbl/d
- 225,000 bbl/d
- 250,000 bbl/d
- 300,000 bbl/d
- 500 - 550,000 bbl/d

**Vision**  
1/2 million barrels per day

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Source: Suncor Energy Inc.

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## Oil Sands Supply Cost

- **Supply Cost is the constant dollar price needed to recover all capital expenditures, operating costs, royalties and taxes and earn a specified return on capital**
- **Supply costs are calculated:**
  - In constant 2004 dollars
  - Using a discount rate of 10%/a (real) - 12%/a (nominal) based on an inflation rate of 2%/a
  - For hypothetical standalone projects
    - Before financing (unlevered)
    - No flow-through of taxable losses
    - No expansion uplifts

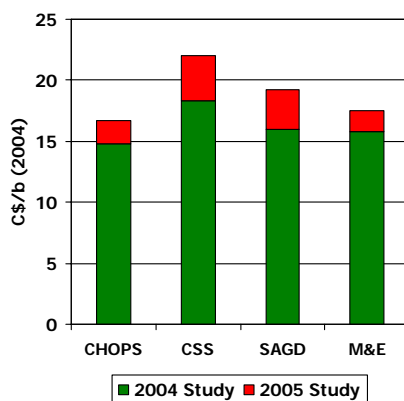
Source: Canadian Energy Research Institute; May 3, 2005

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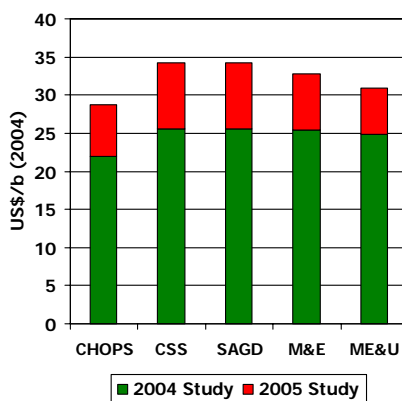
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## Oil Sands Supply Costs

Bitumen Supply Cost at Plant Gate



Equivalent WTI Price at Cushing OK



Source: Canadian Energy Research Institute; May 3, 2005

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## Athabasca Mining Projects

<u>(kb/d bitumen)</u>	<u>2005</u>	<u>2020</u>
Suncor Steepbank/Millennium	155	324
Syncrude North/Aurora	286	627
AOSP Muskeg/Jackpine	155	570
CNRL Horizon	-	270
Petro-Canada Fort Hills	-	190
Imperial/Exxon Kearl Lake	-	300
Synenco Northern Lights	-	100
Deer Creek Joslyn Mine	-	188
<u>Others</u>	-	<u>100</u>
<b>Totals</b>	<b>596</b>	<b>2,669</b>

Source: Regulatory applications and company announcements

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## Athabasca In Situ Projects

<u>(kb/d bitumen)</u>	<u>2005</u>	<u>2020</u>
Suncor Firebag	25	376
Petro-Canada Mackay River	30	65
EnCana Christina Lake	18	70
EnCana Foster Creek	36	63
JACOS Hangingstone	10	60
Nexen Long Lake	3	291
Deer Creek Joslyn	2	42
ConocoPhillips Surmont	-	100
Husky Sunrise	-	200
<u>Others</u>	<u>22</u>	<u>400</u>
<b>Totals</b>	<b>144</b>	<b>1,666</b>

Source: Regulatory applications and company announcements

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## Other In Situ Projects

<u>(kb/d bitumen)</u>	<u>2005</u>	<u>2020</u>
<b>Cold Lake</b>		
Imperial Cold Lake	140	170
CNRL Primrose Wolf Lake	53	113
<u>Others</u>	<u>7</u>	<u>117</u>
<b>Totals</b>	<b>200</b>	<b>400</b>
<b>Peace River</b>		
Shell Cadotte/Carmon	12	100
<u>Others</u>	<u>-</u>	<u>8</u>
<b>Totals</b>	<b>12</b>	<b>108</b>

Source: Regulatory applications and company announcements

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## Alberta Upgraders

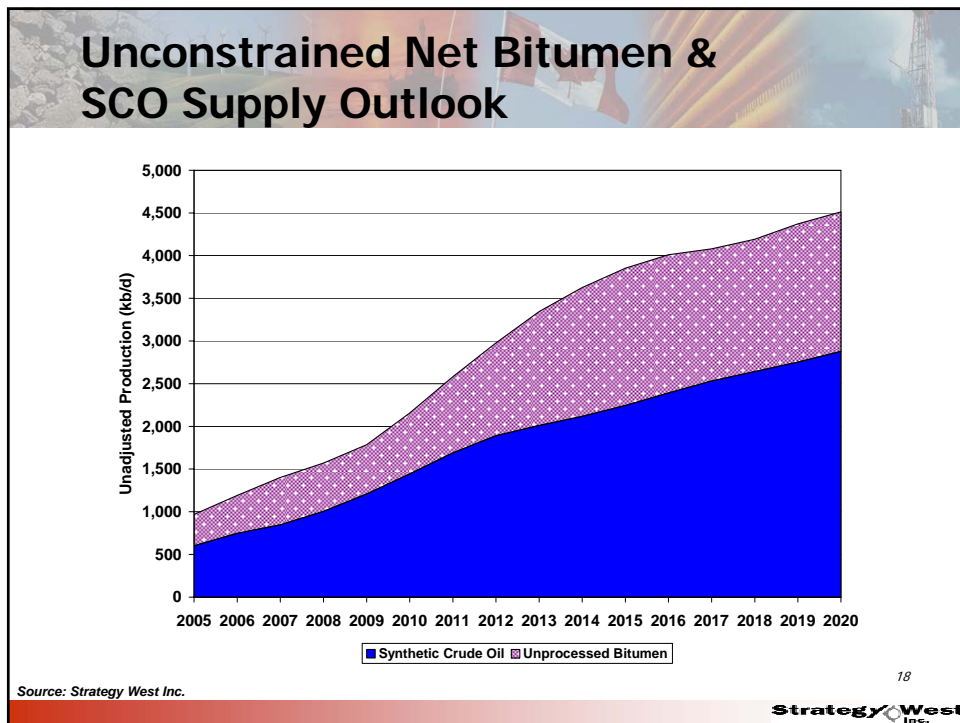
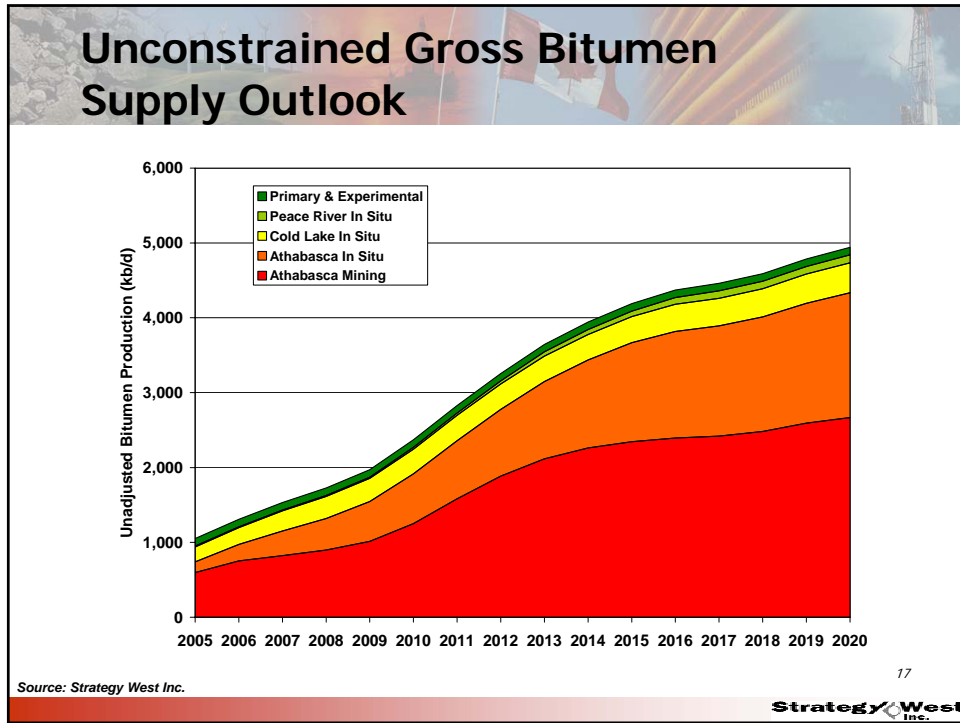
<u>(kb/d SCO)</u>	<u>2005</u>	<u>2020</u>
Suncor Tar Island	136	357
Syncrude Mildred Lake	246	539
AOSP Scotford	158	295
Husky Lloydminster	62	69
OPTI Long Lake	-	234
CNRL Horizon	-	233
BA Energy Heartland	-	160
Synenco Northern Lights	-	100
Suncor Voyageur	-	190
North West Sturgeon	-	225
<u>Unidentified</u>	<u>-</u>	<u>475</u>
<b>Totals</b>	<b>602</b>	<b>2,877</b>

Source: Regulatory applications and company announcements

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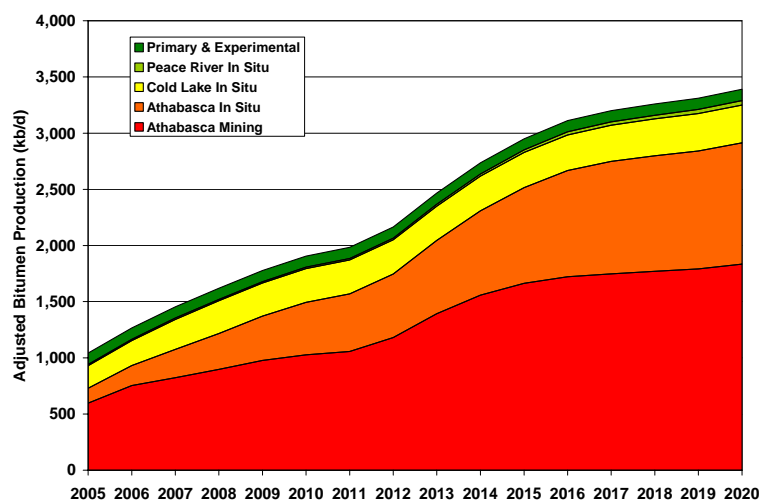
## Industry Challenges

- **Environment**
  - Air – Greenhouse Gas Emissions
  - Water – Use and Disposal
  - Land – Reclamation
  - Cumulative Effects
- **Labour Availability and Productivity**
- **Energy Requirements, Sources and Costs**
- **Project Costs**
- **Markets and Market Access**
- **Infrastructure**

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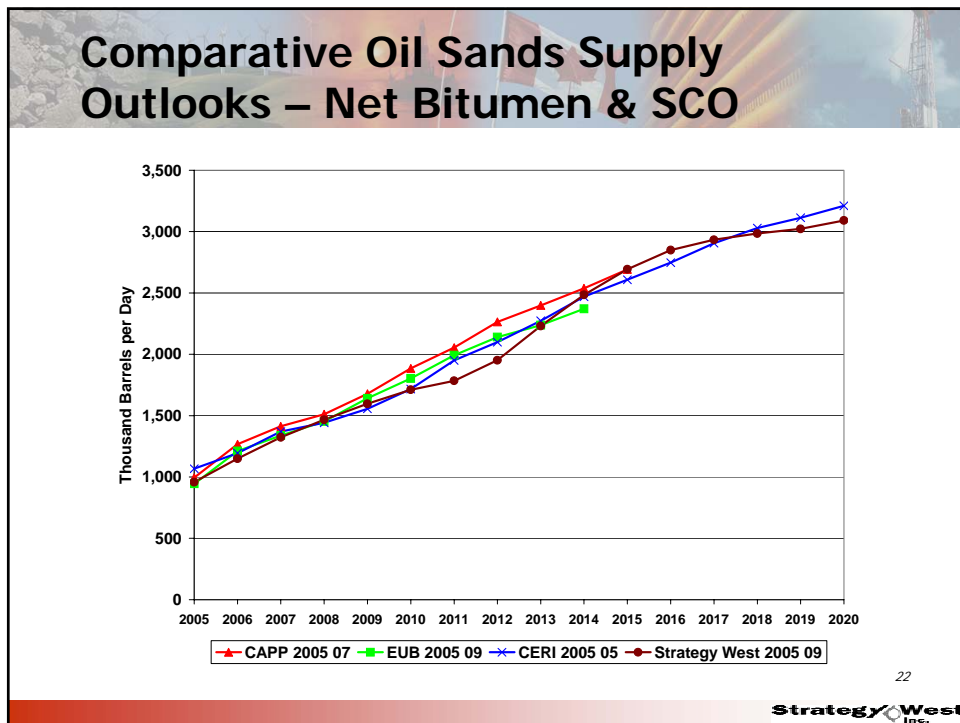
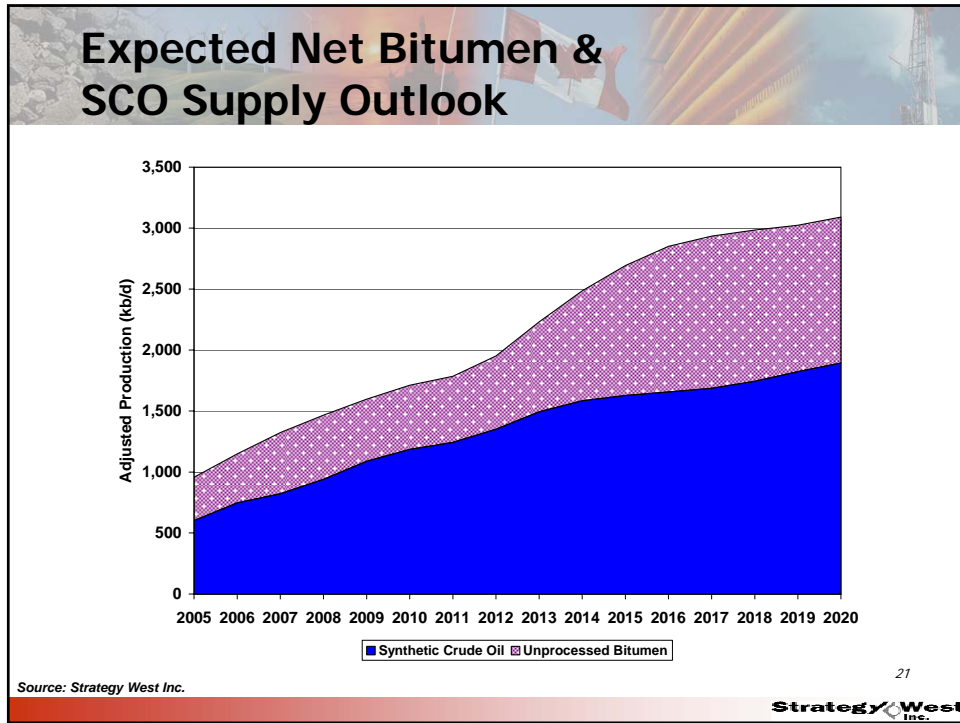
## Expected Gross Bitumen Supply Outlook



Source: Strategy West Inc.

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## Conclusions

- Canada's oil sands are one of the world's largest hydrocarbon accumulations
- The industry is well developed and growing rapidly
- Oil sands projects are economically attractive at about US\$30-35/b WTI
- The industry is aggressively addressing the challenges it faces
- Net production is expected to exceed 3 million b/d by 2020 and to continue growing

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