CAPP CANADIAN ASSOCIATION OF PETROLEUM PRODUCERS

Canadian Oil Sands Outlook

EIA 2007 Annual Energy Outlook
March 2007

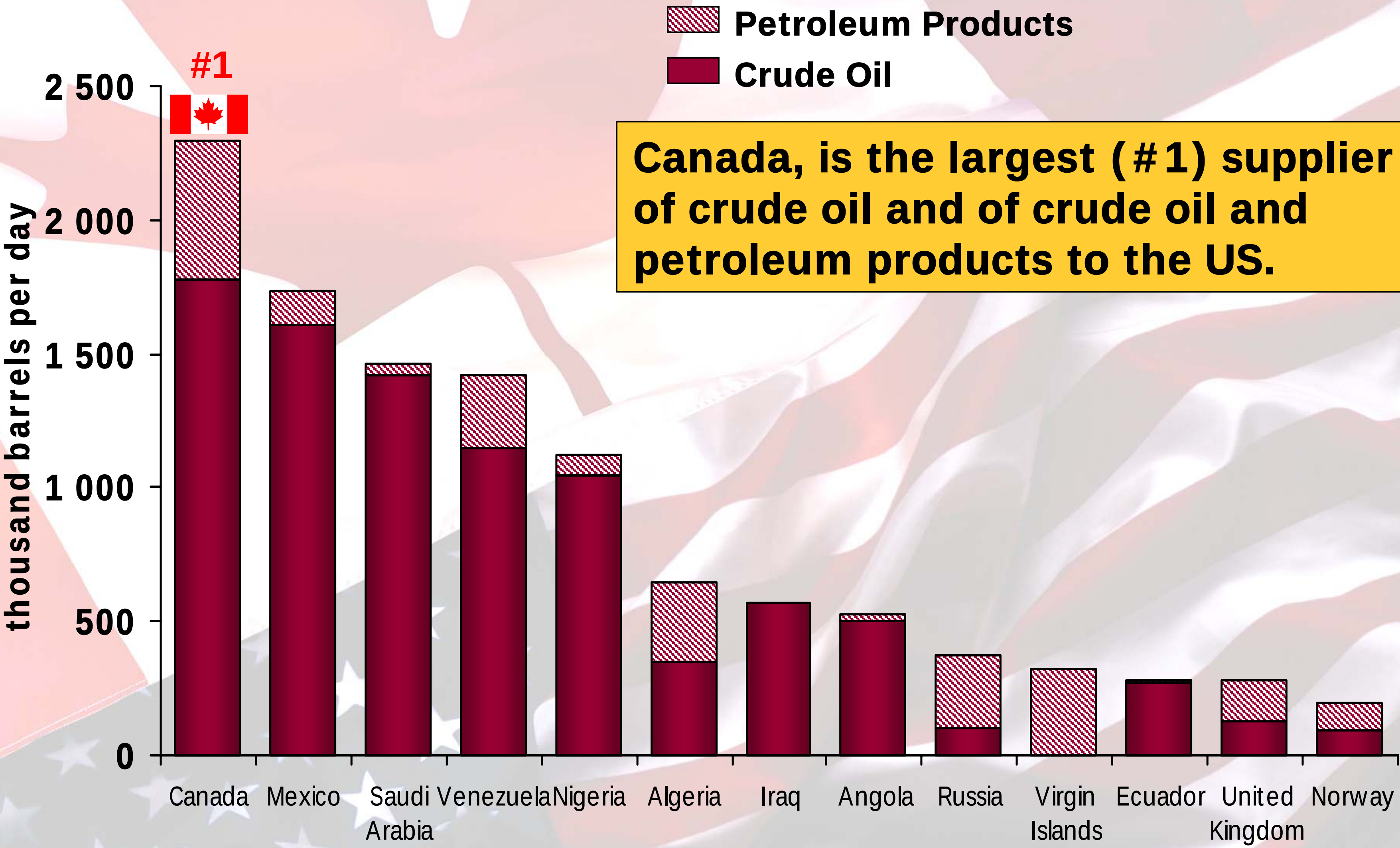
- **150 producer member companies**
- **Explore for, develop and produce natural gas, natural gas liquids, crude oil, synthetic crude oil, bitumen and sulphur throughout Canada**
- **Members produce more than 95 per cent of Canada's natural gas and crude oil**
- **130 associate members provide a wide range of services that support the upstream crude oil and natural gas industry**

Canada's Oil and Gas Industry in the North American Energy Economy

- **Canada is the world's 3rd largest natural gas producer**
- **Canada is the world's 8th largest crude oil producer**
  - and moving up the list quickly with oil sands production increasing
- **Canada is the largest supplier of energy to the United States**

2006	Canadian Natural Gas	Canadian Petroleum
Ranking of importers to U.S.	#1	#1
Share of U.S. consumption	16%	11%
Share of U.S. imports	86%	16%

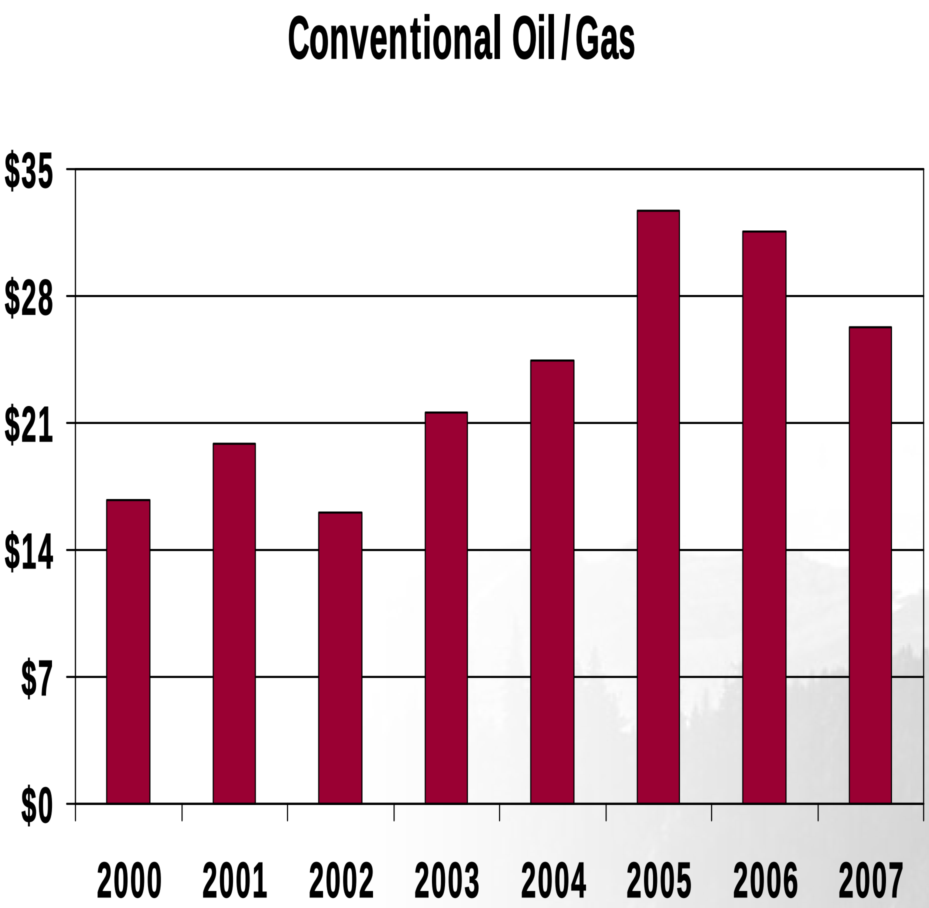
U.S. Imports of Crude Oil and Petroleum Products by Country of Origin

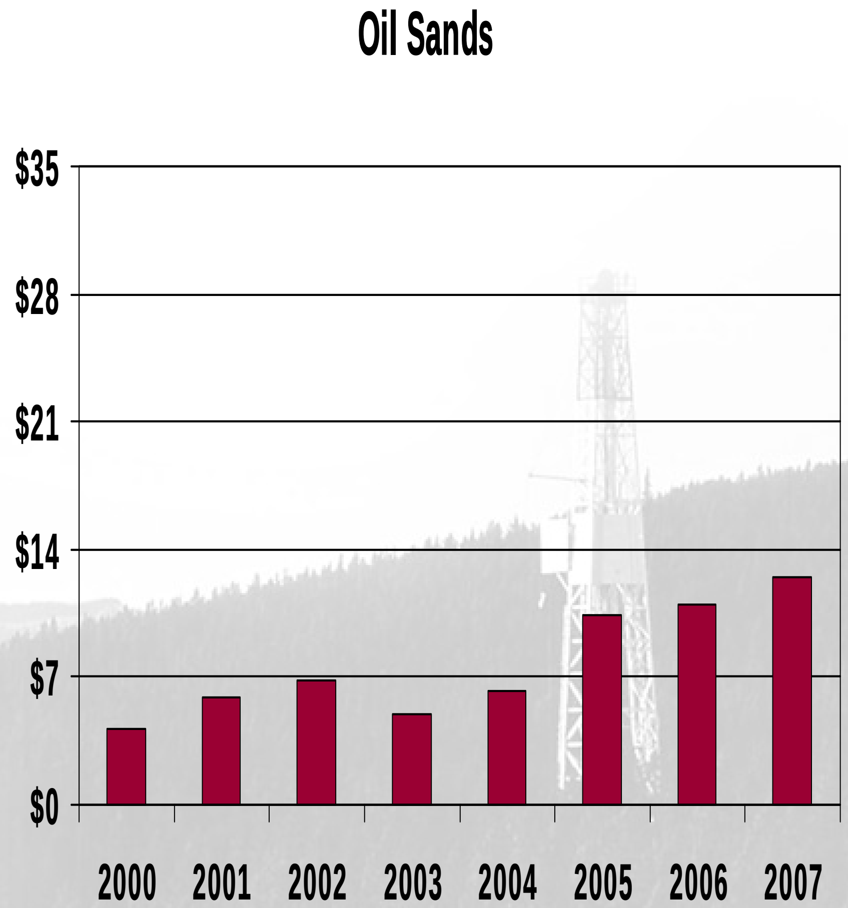


Canada, is the largest (#1) supplier of crude oil and of crude oil and petroleum products to the US.

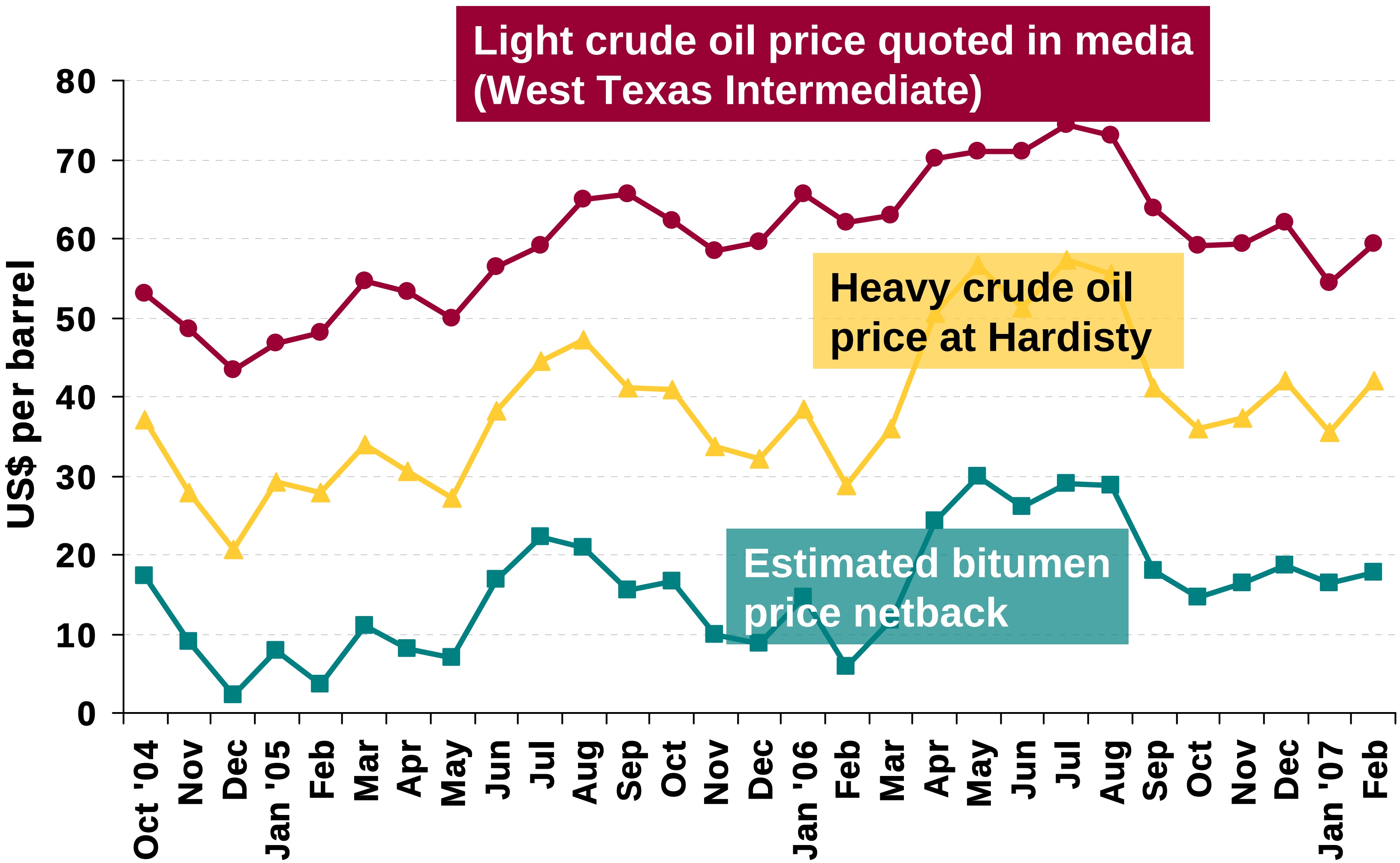
Source: EIA, Jan-Nov 2006

Oil & Gas Investment in Western Canada (Cdn $ billion)

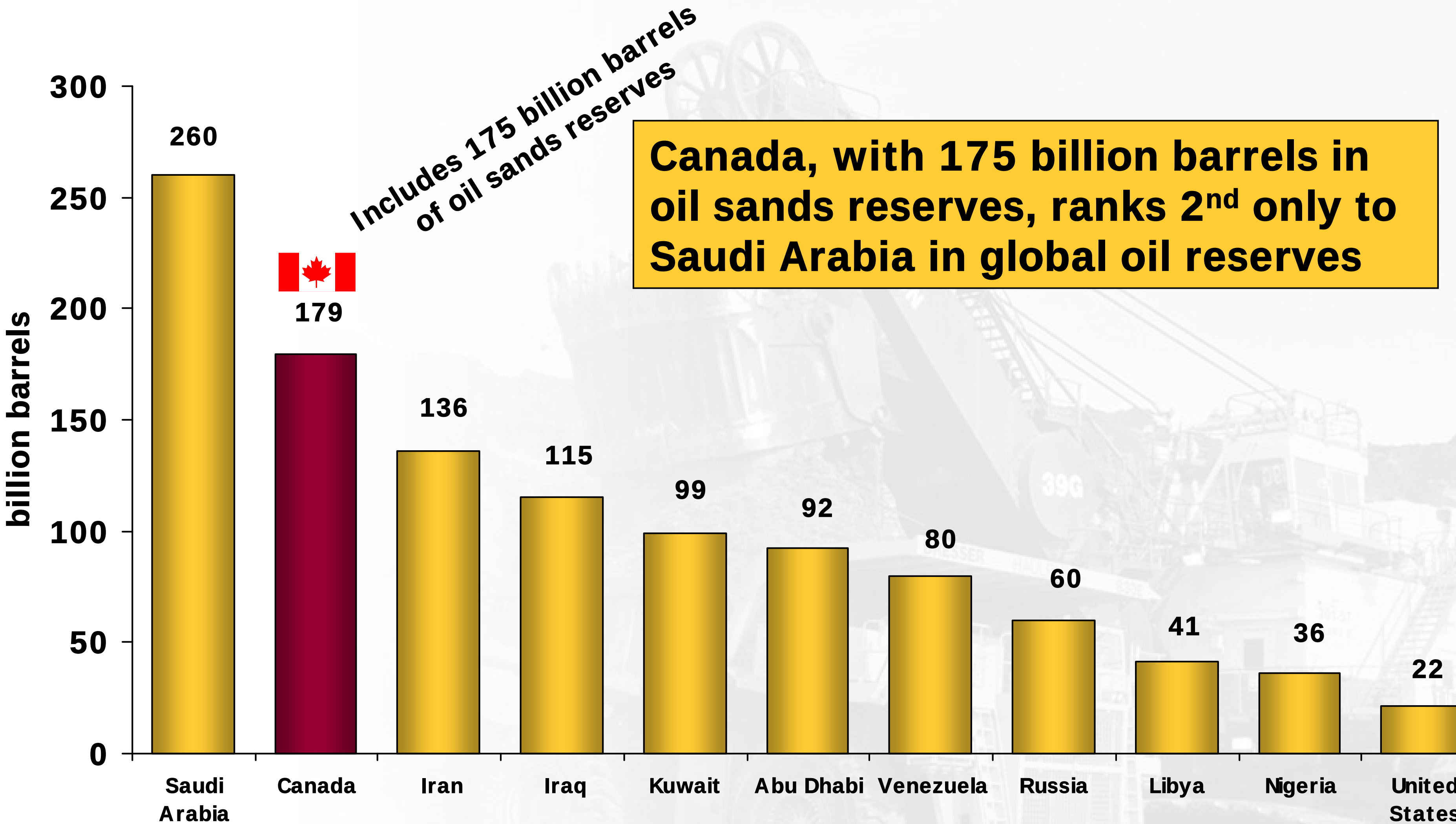




Comparative light, heavy and bitumen crude oil price



Global Crude Oil Reserves by Country



Source: Oil & Gas Journal Dec. 2006

Oil Sands Production Technologies

20 % less than 50 m deep

Mining & Upgrading

Recoverable reserves = 35 billion barrels

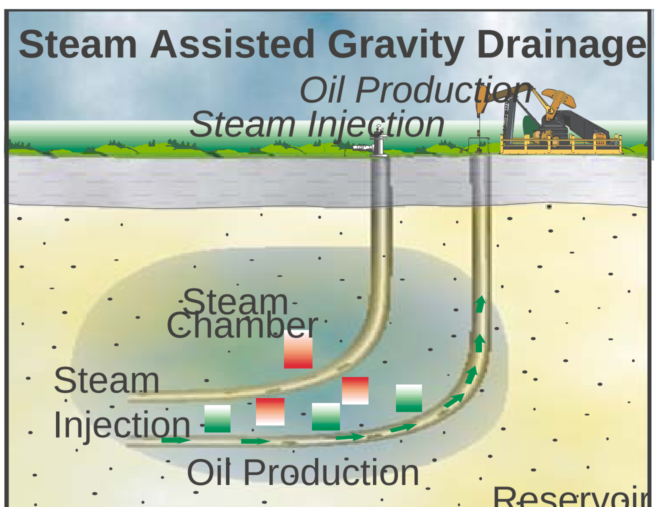
Source: Syncrude

Source: Shell Canada

80 % more than 50 m deep

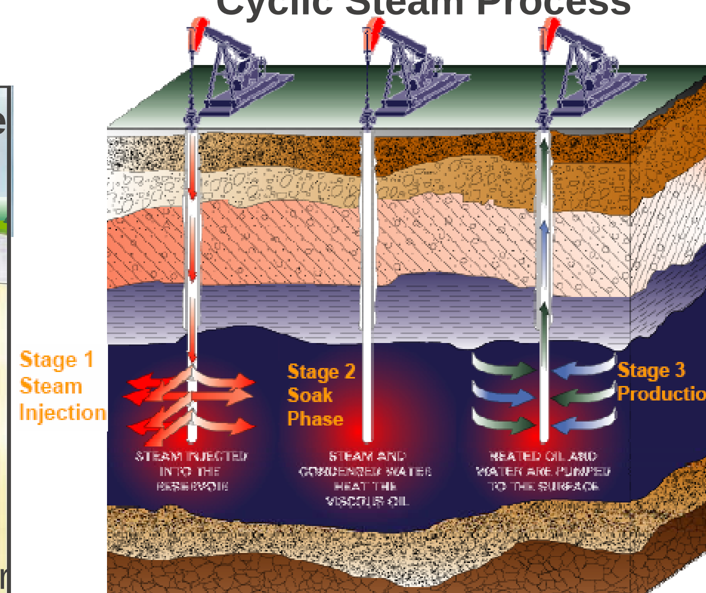
In-situ

Recoverable reserves = 140 billion barrels



Source: Petro-Canada

Cyclic Steam Process



Source: Imperial Oil

Oil sands Mining and Upgrading Process

2 tonnes of oil sands

2 tonnes of oil sands through separator

1.2 barrels bitumen

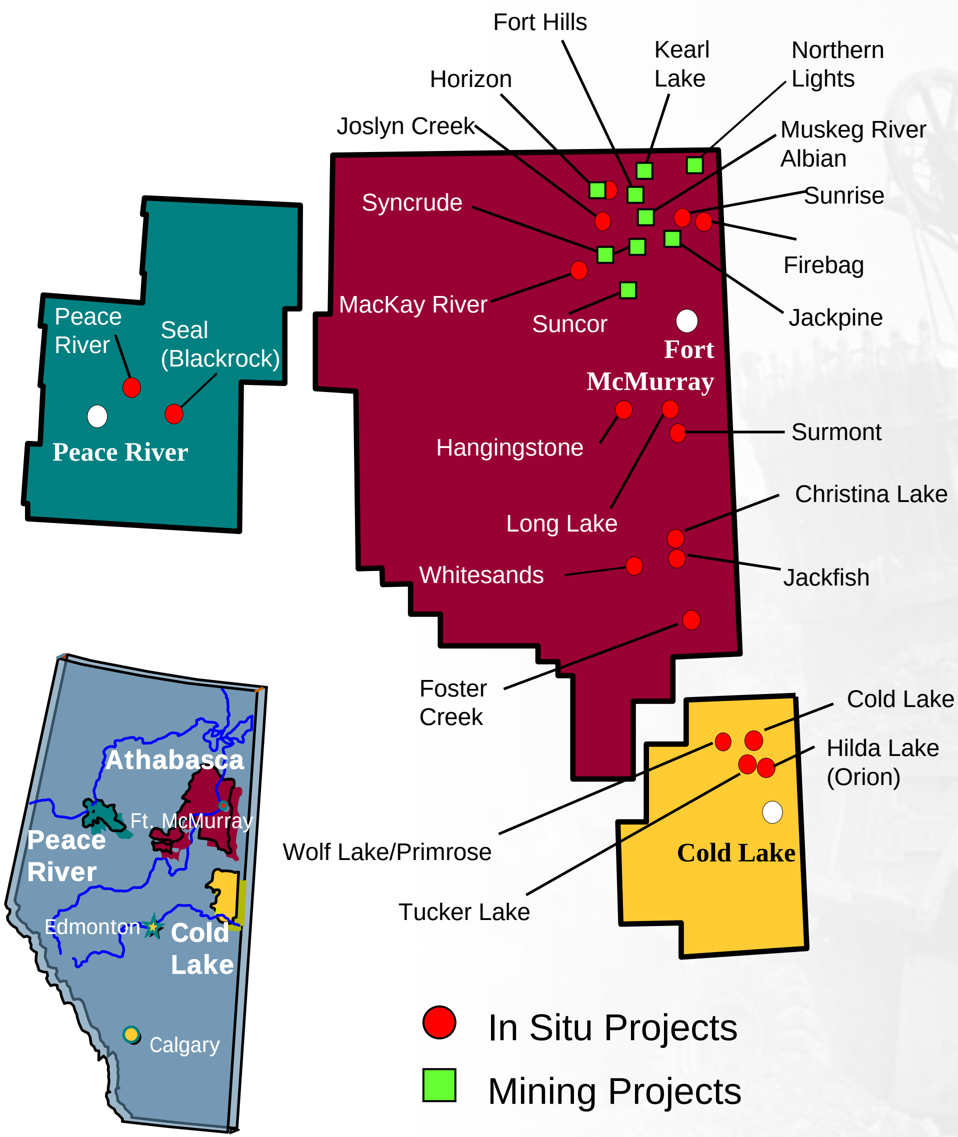
1 barrel synthetic (upgraded) crude oil

4 tonnes material

0.5 - 0.7 mcf/barrel

Photos courtesy of Syncrude Canada

Oil Sands Projects in Three Deposits

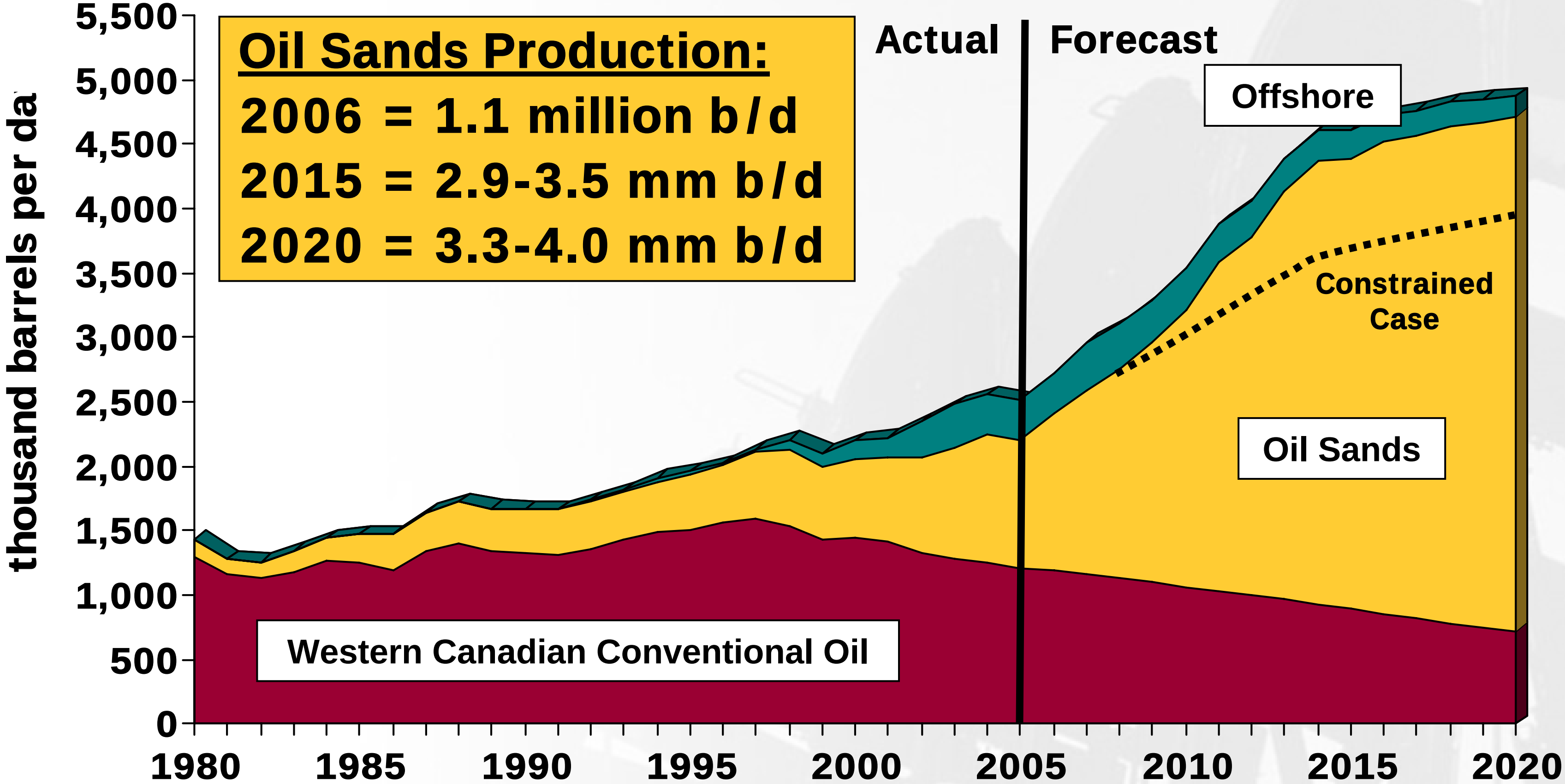


Athabasca – Mining		Barrels per day	
Operator	**Project**	**Initial**	**Potential**
Albian/Shell	Muskeg/Jackpine	150,000	550,000
Suncor	Base Plant	280,000	550,000
Syncrude	Base Plant	300,000	600,000
CNRL	Horizon (2008)	110,000	232,000
Imperial	Kearl (2010)	100,000	300,000
Petro-Canada	Fort Hills (2011)	50,000	190,000
Synenco	Northern Lights (2010)	50,000	100,000
Total E&P	Joslyn Creek Mine (2013)	50,000	200,000
Athabasca – In Situ Thermal			
JACOS	Hangingstone (pilot)	10,000	30,000
Suncor	Firebag	35,000	
ConocoPhillips	Surmont (2006)	16,000	110,000
Devon	Jackfish (2008)	35,000	70,000
Encana	Christina/Foster (2006)	30,000	400,000
Husky	Sunrise (2012)	60,000	240,000
OPTI/Nexen	Long Lake (2007)	70,000	140,000
Petro-Canada	MacKay River (2009)	24,000	60,000
Total E&P	Joslyn Creek (2006)	10,000	40,000
Cold Lake – In Situ Thermal			
Blackrock	Orion-Hilda Lake pilot	500	20,000
CNRL	Wolf Lake/Primrose	50,000	120,000
Imperial	Cold Lake	130,000	180,000
Husky	Tucker (2006)	18,000	35,000
Peace River – In Situ Thermal			
Shell	Peace River	12,000	100,000

Bitumen Upgraders in Alberta Capacity by 2015

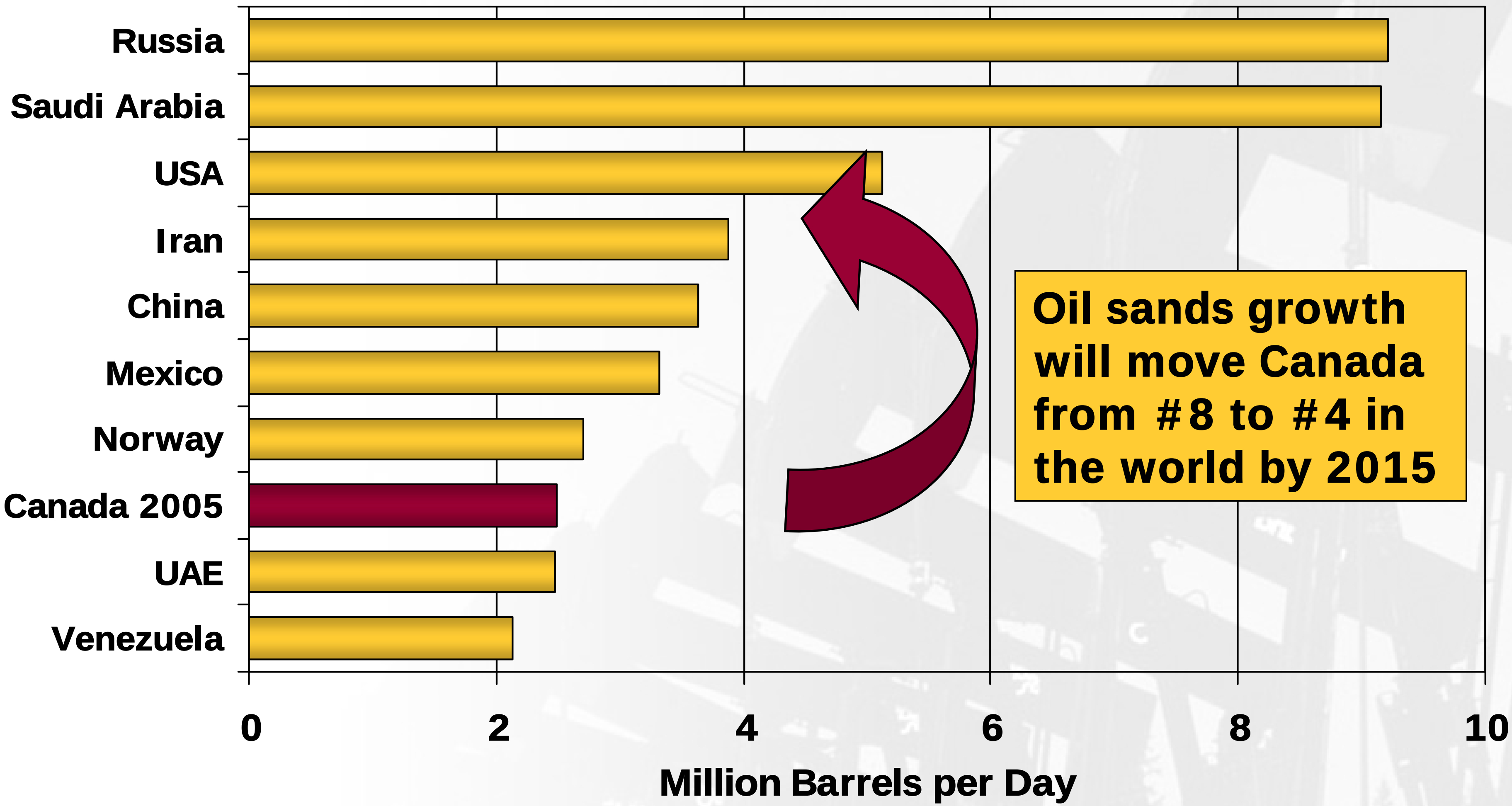
Existing:	**Volume (bpd)**	
Albian-Scotford	158,000	
Husky-Lloydminster	59,000	
Suncor	260,000	
Syncrude	350,000	
Expansions:		**Comment**
Albian-Scotford	397,000	Expansion w/plans for a total of 555,000 bpd
Husky-Lloydminster	65,600	Expansion (2011)
Suncor	287,000	97,000 b/d expansion of Upgrader 2 & in-situ to total planned 357,000 b/d in 2008. Upgrader 3, additional 190,000 b/d to 550,000 b/d in 2012.
Syncrude	160,000	Phased expansion (2012-2015) – 510,000 bpd
New projects:		
BA Energy-Heartland	260,000	Phase 1 - 77,500 bpd (2008). 3-phase expansion to 260,000 bpd
CNRL-Horizon	232,000	Phase 1-3 (2011). Phase 1 in 2008 – 110,000 bpd.
Nexen/Opti-Long Lake	173,000	On-stream late 2007.
North American (Kai Kos Dehseh)	250,000	Phase 1 – 76,000 bpd (2012). Phase 2 to 250,000 bpd by 2015
Northwest Upgrading	150,000	3 phased expansion. On stream in 2010, phase 2 – 2012-2014
Petro-Canada	85,000	Refinery conversion to upgrader/refinery in late 2008
Petro-Canada/UTS-Fort Hills	240,000	Phase 1 – 140,000 bpd (2011). Phase 2 - 240,000 bpd by 2014
PRO (Bluesky)	50,000	Phase 1 on-stream 2011.
SynEnCo-Northern Lights	100,000	Phase 1 – 50,000 bpd in 2010, phase 2 – 50,000 bpd in 2012
Total E&P	85,000	On-stream in 2014
TOTAL	**3,361,600**	

Canadian Oil Production
Conventional, Oil Sands and Offshore



Source: CAPP

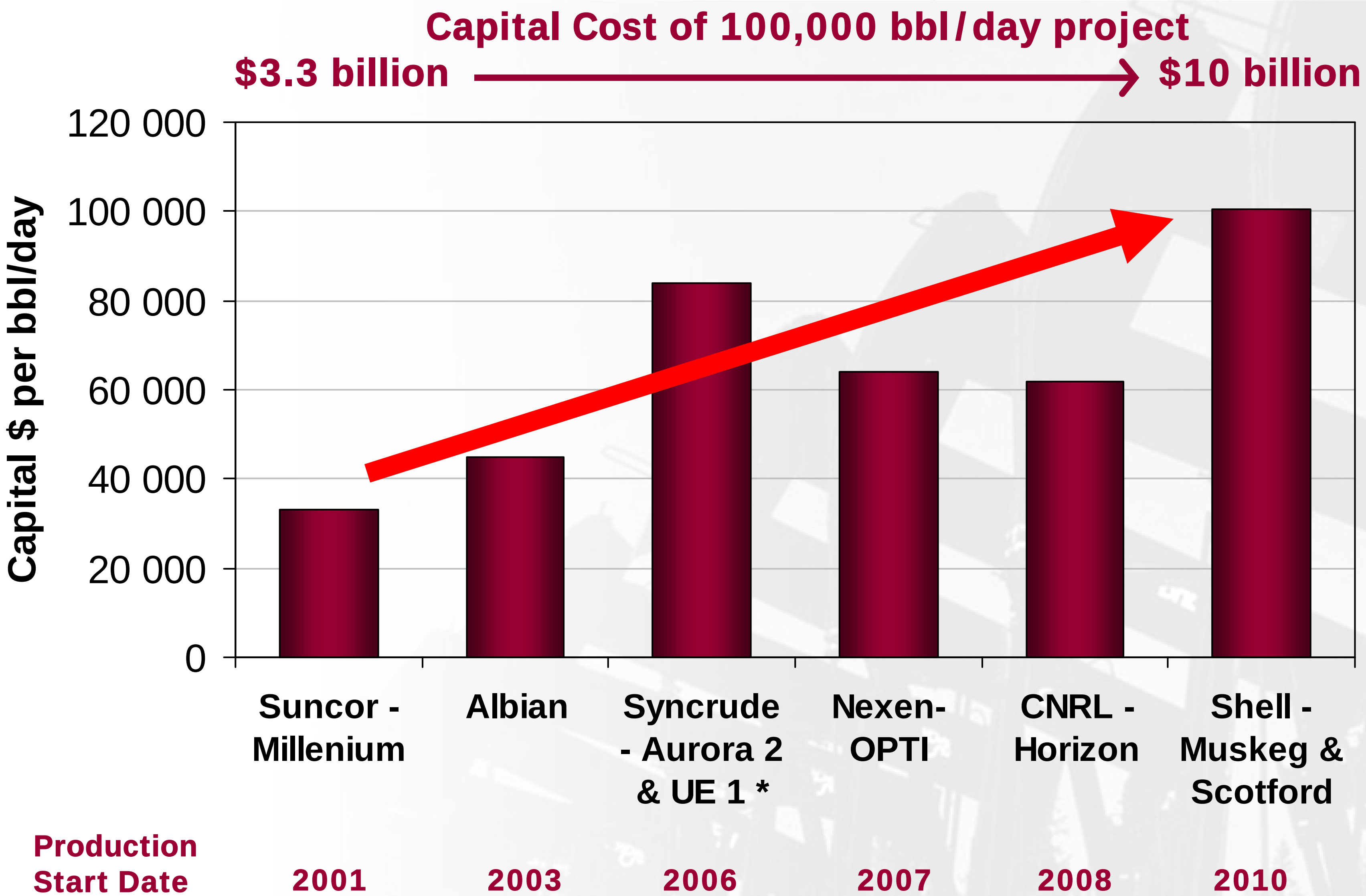
Top 10 World Crude Oil Producers in 2005



Source: EIA & CAPP

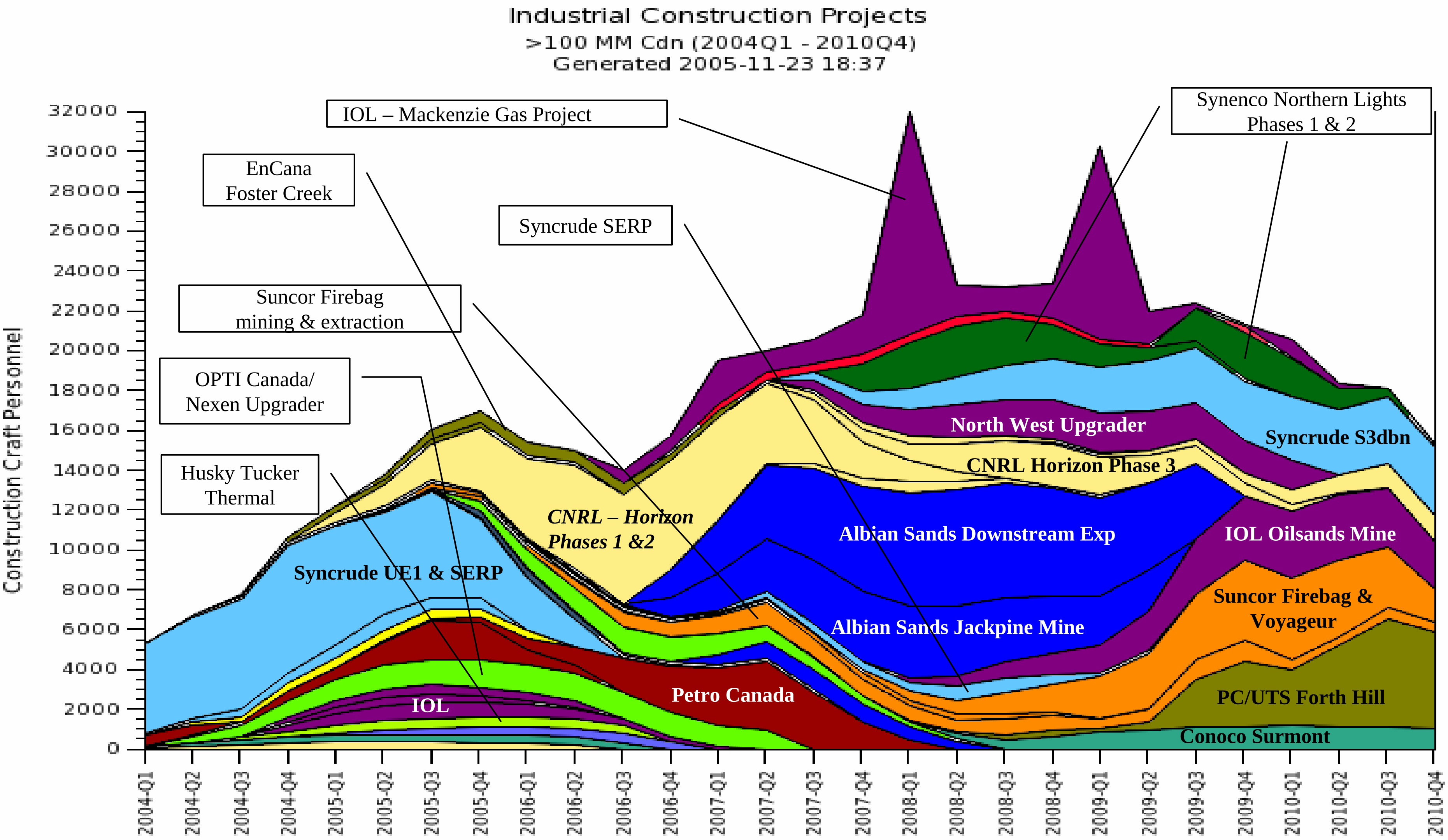
Oil Sands Capital Costs Increases

Global Cost Increases Not Just Local



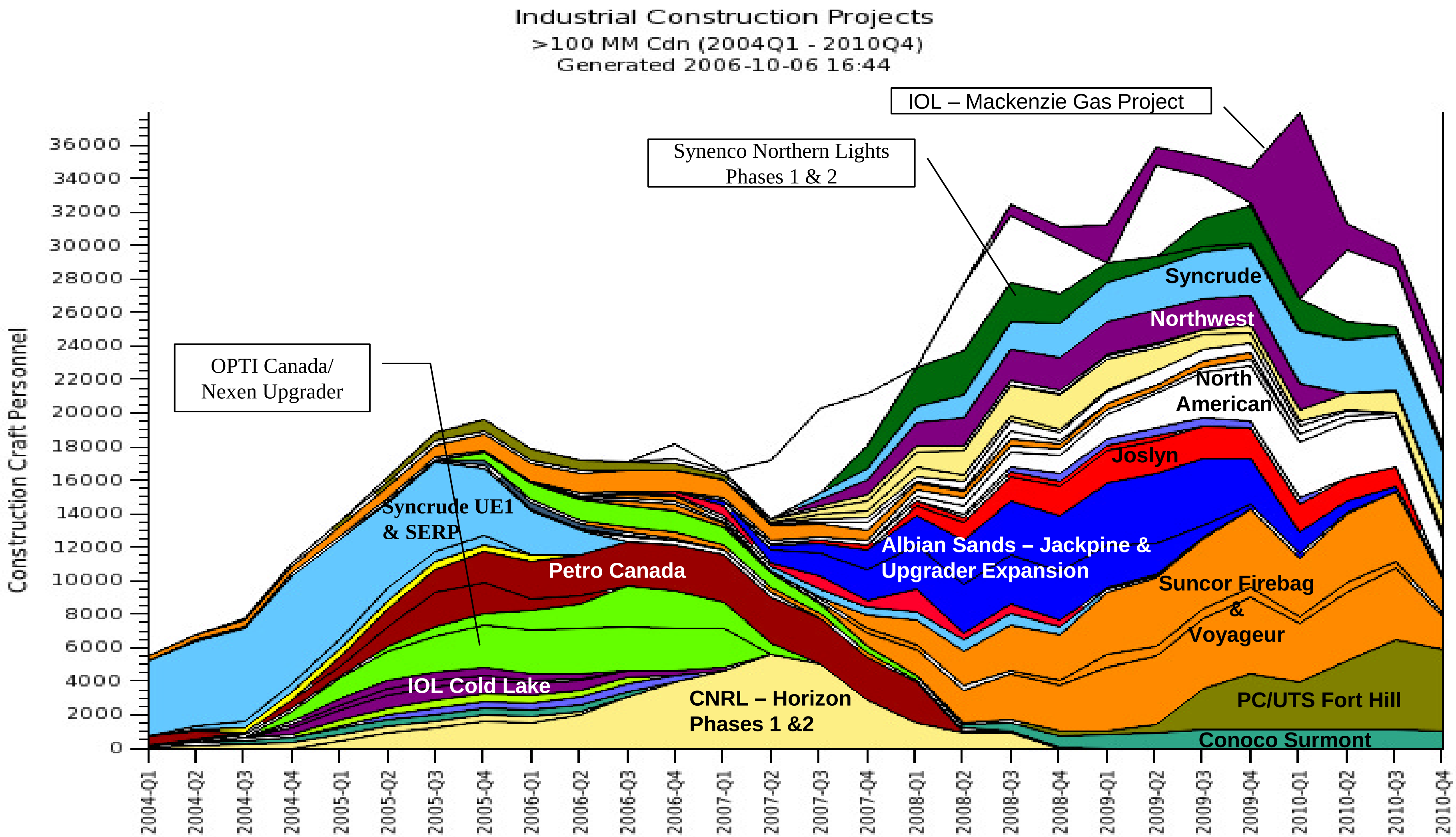
*Syncrude includes base plant quality improvements and power

Construction Workforce Outlook – Nov 2005



Source: Construction Owners Association of Alberta (COAA) Nov 2005

Construction Workforce Outlook – Oct 2006



Source: Construction Owners Association of Alberta (COAA) Oct 2006

Need for Infrastructure

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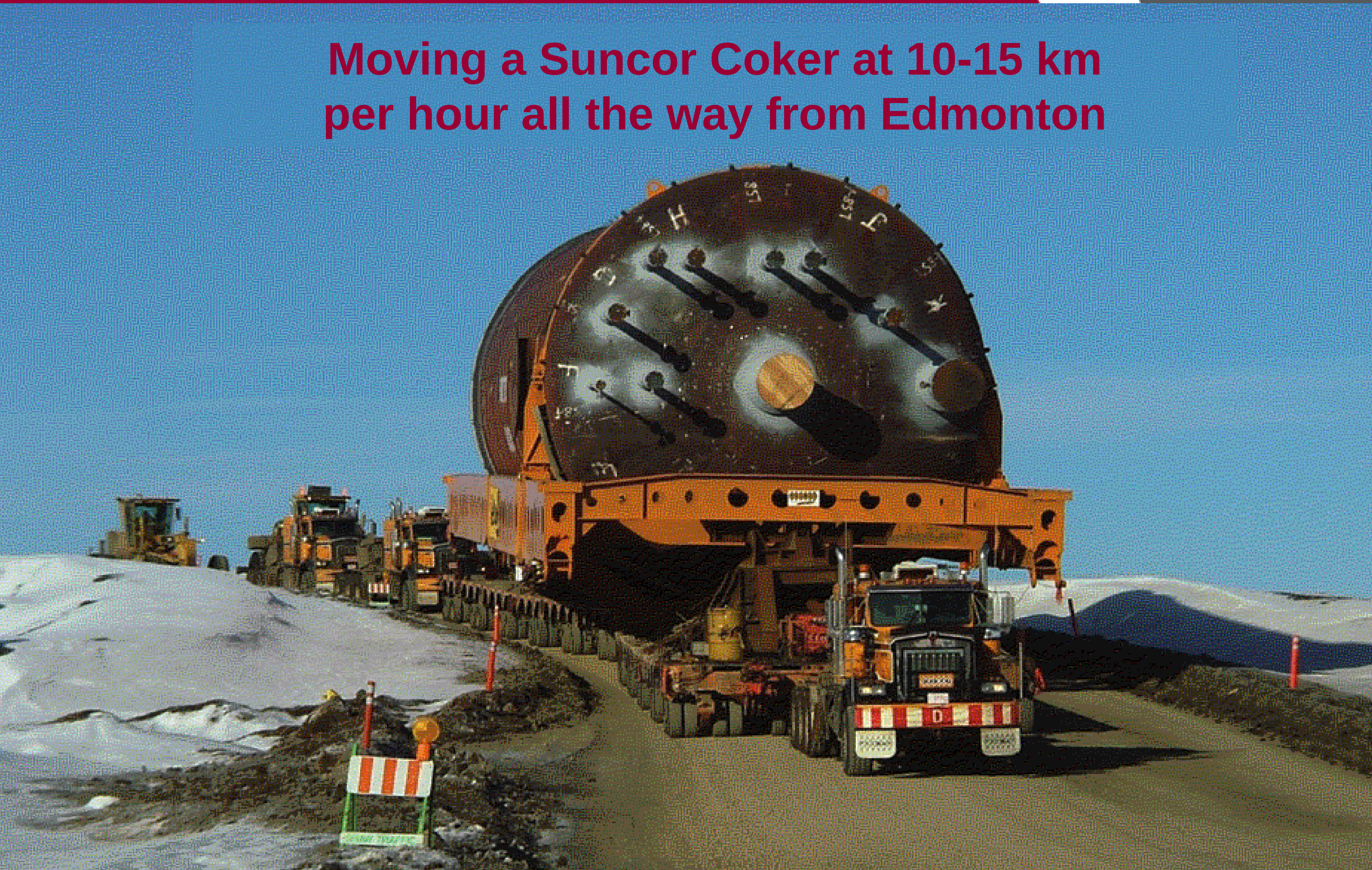
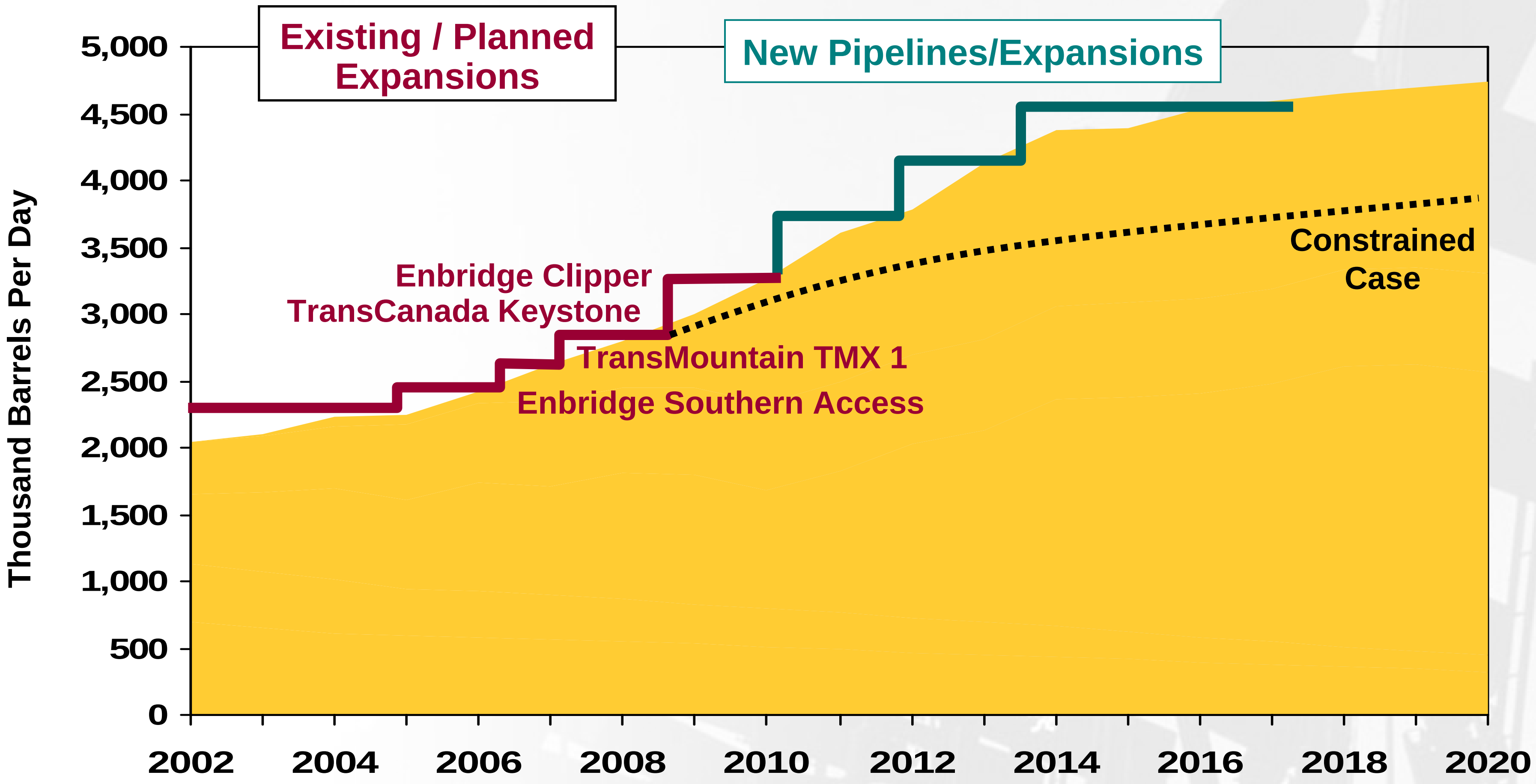
Moving a Suncor Coker at 10-15 km per hour all the way from Edmonton



Crude Oil Supply and Pipeline Expansions



Canadian & U.S. Crude Oil Pipelines

existing
proposed
possible

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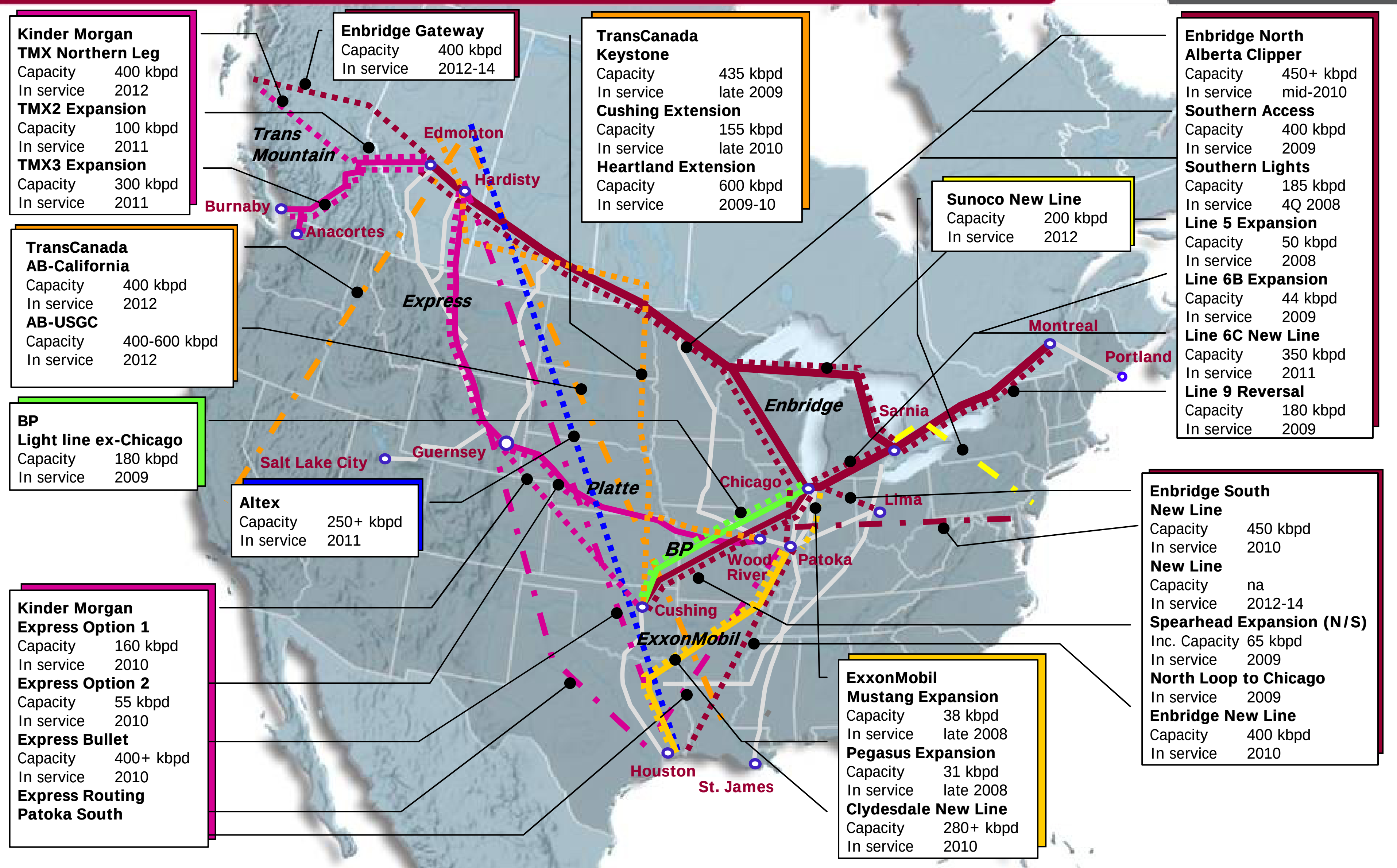
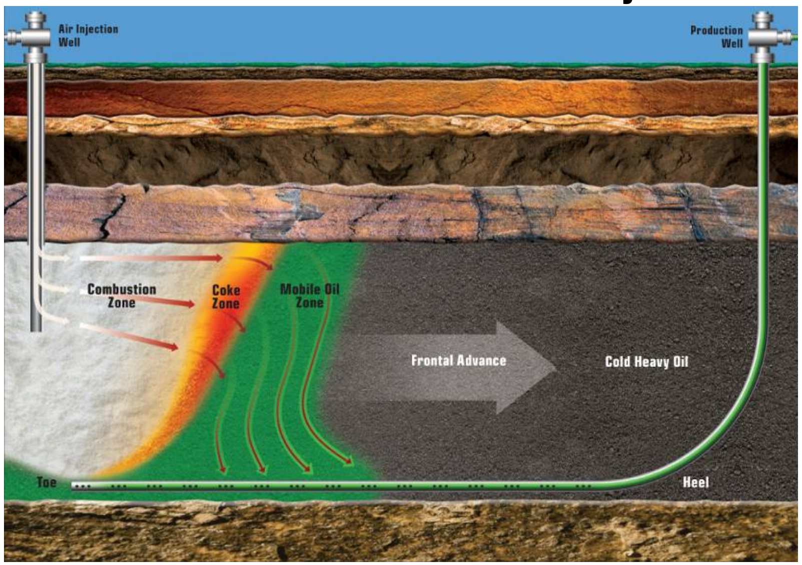
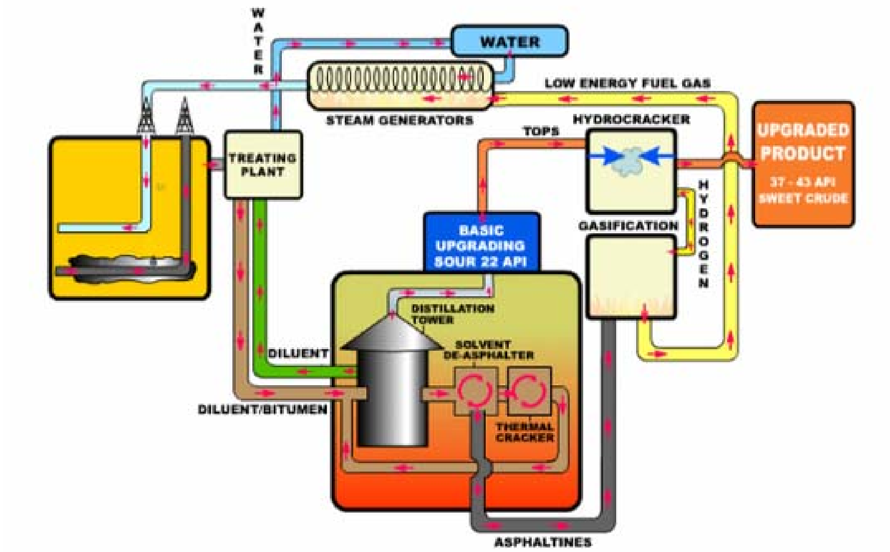


Oil Sands Production Technologies
Alternatives to Natural Gas

THAI™ (Toe-to-Heel Air Injection)
Petrobank Whitesands Project

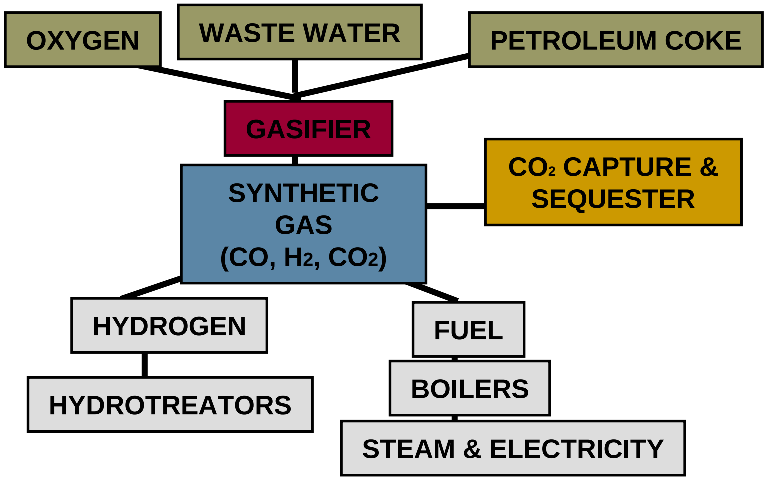


OrCrude Process - Nexen/OPTI Longlake



Multiphase Superfine Atomized Residue - DeerCreek

Suncor 3rd Upgrader - Coke Gasification



Environmental Stewardship

- **Air**
  - Monitoring programs
  - Reducing emissions
  - CO2 capture and EOR

- **Water**
  - Reduce, recycle and reuse
  - Insitu using “saline” aquifers
  - More efficient, 90+% recycle

- **Land**
  - Reclamation and remediation
  - Directional drilling from single site to reduce impact

100th Caterpillar 797 Truck sold to the oil sands
March 14, 2007

Photo: Shell Canada