

# Alberta's Hydrocarbon Upgrading Sector

## Adding Value to our Oil Sands Resource

Debbie Pietrusik  
Director, Energy Industry Development  
Alberta Finance & Enterprise  
March 2008



*“The Alberta Government will develop policy to ensure that the raw bitumen from our oil sands is processed right here in Alberta”*

**Premier Stelmach**



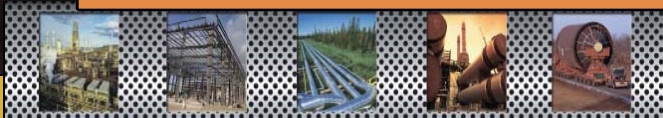
- Alberta's hydrocarbon resources will be the foundation for a series of world class chemical clusters.
- A chemical cluster further diversifies the economy while adding value to resources.
- Bitumen is a very complex feedstock, and processing provides many co-product, by-product and new feedstock opportunities.
- Upgrading activity planned for Alberta's Industrial Heartland makes Greater Edmonton the ideal location.
- Existing chemical operations will integrate well with a new cluster.
- Creating the environment for Alberta have one of the most competitive chemical clusters in North America.



<b>Existing Projects</b>	<b>Volume (bpd)</b>	
Suncor	260,000	
Syncrude	350,000	
Husky-Lloydminster	59,000	
AOSP	158,000	
<b>Project Expansions</b>		
Suncor	287,000	
Syncrude	160,000	
Husky-Lloydminster	65,600	
AOSP	397,000	
<b>New Projects</b>		
Nexen/OPTI-Long Lake	173,000	
CNRL-Horizon	232,000	
Synenco-Northern Lights	100,000	tentative
BA Energy-Heartland	260,000	
PetroCanada/UTS-Fort Hills	240,000	
PetroCanada	85,000	
Northwest Upgrading	150,000	
Total SA	85,000	
North American	250,000	
Peace River Oil	50,000	

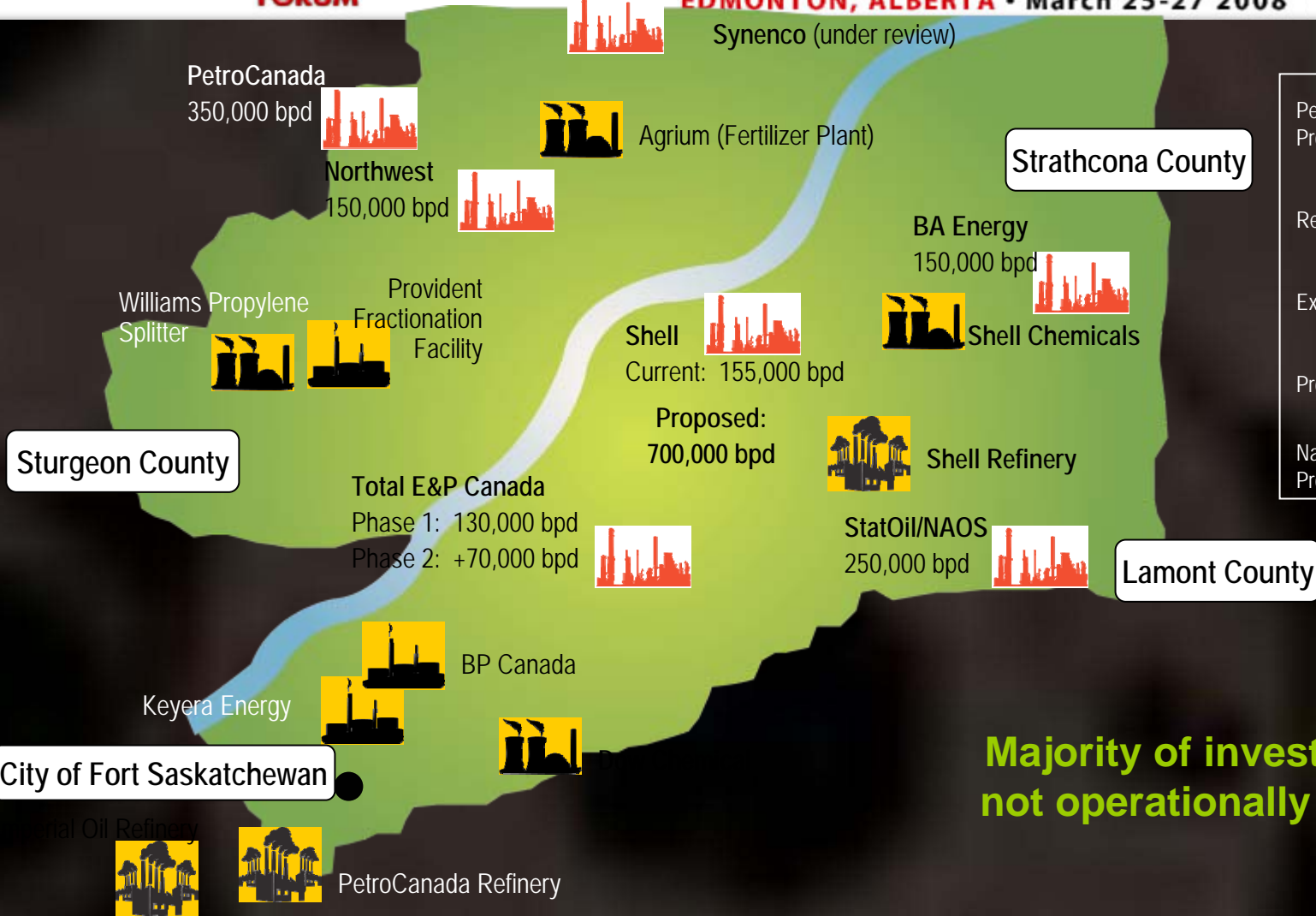
**TOTAL ANNOUNCED  
UPGRADING CAPACITY:  
3,361,600 bpd**

Source: CAPP, March 2007



# NATIONAL BUYER/SELLER FORUM

EDMONTON, ALBERTA • March 25-27 2008



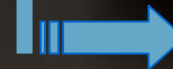
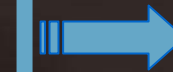
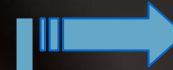
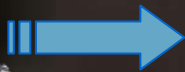
Petrochemical and Processing Plant	
Refinery	
Existing Upgrader	
Proposed Upgrader	
Natural Gas Processing	

**Majority of investments are not operationally integrated**



# INTEGRATION OPPORTUNITY

From bitumen production to value added processing



## Fuel Products

Diesel  
Kerosene  
Gasoline  
Fuel Oil

## Petrochemicals

Ethylene  
Propylene  
Butadiene  
SynGas  
Hydrogen  
Naphtha

## Fertilizers

Ammonia  
Ammonium Sulphate  
Elemental Sulphur  
Urea



# WHAT ARE THE BENEFITS?

Industry	Government
<ul style="list-style-type: none"><li>▪ Enhance Supply Chains</li><li>▪ Access New Markets</li><li>▪ Creation of Integration Synergies</li><li>▪ Increase Competitiveness</li><li>▪ Improve Common Infrastructure and Skill Sets</li><li>▪ Environmental Management</li></ul>	<ul style="list-style-type: none"><li>▪ Stewardship of the province's resources</li><li>▪ Increase Economic Wealth in the Province</li><li>▪ Stable, High Paying Jobs</li><li>▪ Increase Global Competitiveness</li><li>▪ Creation of New Diversified Industries for Sustained Growth</li><li>▪ Environmental Management</li></ul>



## Benchmarking Analysis

- Antwerp, Belgium
- Chemelot, Netherlands
- ChemSite, Germany
- Rotterdam, Netherlands
- Jurong Island, Singapore
- Wilton, U.K.

- Leadership and vision is key
- Infrastructure is vital
- Site management structure is critical
- Collaboration, integration is crucial
- Focus on advantages and strengths
- Supportive government/regulatory structure
- Stimulation, incentive, kick-start
- Access to downstream markets
- Environmental management



# Economic Impact of Oil Sands +

## Oil Sands - Bitumen and Synthetic Crude Oil (SCO)

**\$100 Billion Investment from 2000 to 2020 @ US \$32/B**

	Alberta	Rest of Canada	Total Canada	Outside Canada	Grand Total
<b>GDP</b> Billion (2004\$)	634	155	789	96	885
	Federal	Alberta	Other Prov./ Territorial	Municipalities*	Total
<b>Gov't Revenue</b> Billion (2004\$)	51	44	12	17	123

## Oil Sands, Upgrading, Refining & Petrochemicals\*

**\$157 Billion Investment from 2000 to 2020 @ US \$32/B**

	Alberta	Rest of Canada	Total Canada	Outside Canada	Grand Total
<b>GDP</b> Billion (2004\$)	881 (+39%)	241 (+56%)	1,122 (+42%)	244 (+154%)	1,366 (+54%)
	Federal	Alberta	Other Prov./ Territorial	Municipalities*	Total
<b>Gov't Revenue</b> Billion (2004\$)	92	50	19	24	185

Data excludes conventional oil. Both cases assume 1.9 million bpd of SCO production.

\*Includes Alberta municipalities.

Source: CERl Reports: Oil Sands Report – October 2005; Alberta's Oil Resources – August 2006

- Oil sands are ranked as the second largest crude oil supply globally
- Strong and developing infrastructure accesses the growing North American and offshore markets
- International companies are already active in Alberta's oil sands and bring their expertise to the province
- Rising energy costs and increased environmental awareness emphasizes the need for integrated processes to remain competitive
- Governments are committed to value-added in Alberta and working with industry to turn our vision into a prosperous reality
- Along with a hydrocarbon upgrading economy, the opportunity exists to enhance our supply chains and create a supporting manufacturing hub for industrial development



## PARTICIPATE IN ALBERTA'S GROWTH

Business

Supply Chain

Innovation

Skilled Labour

Infrastructure

Environment

Alberta

[www.alberta-canada.com](http://www.alberta-canada.com)

Debbie Pietrusik  
Director, Energy Industry Development  
Alberta Finance & Enterprise  
Phone: (780) 415-8807  
Email: [Debbie.Pietrusik@gov.ab.ca](mailto:Debbie.Pietrusik@gov.ab.ca)

