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Energy From Athabasca

# Transportation Innovation in Alberta Oil Sands

May 13, 2009

Tim Hayward

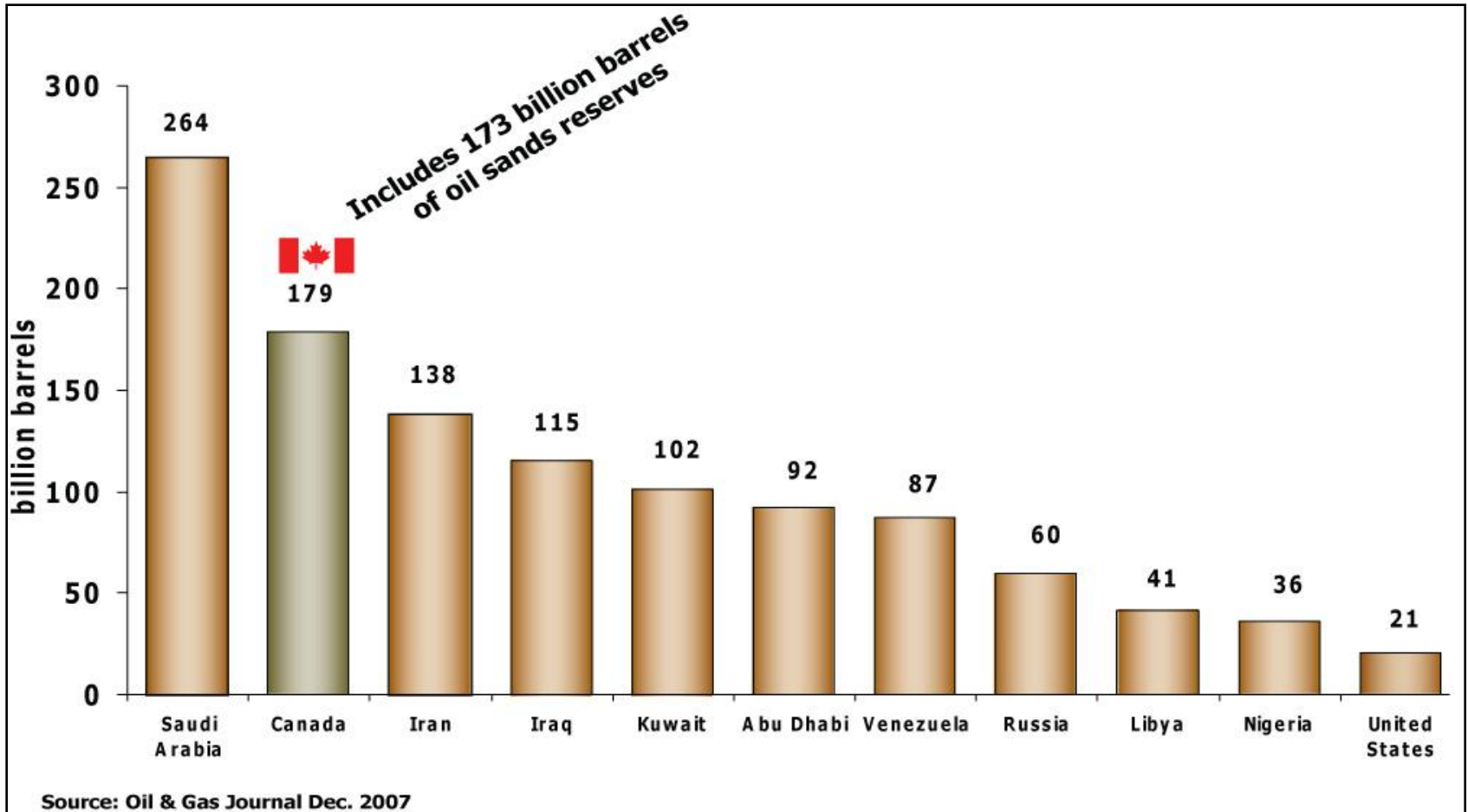
# Canada's oil sands deposits



# There's more than just oil in Canada's oil sands



# Canada's Oil Reserves #2 in the World





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Energy From Athabasca

# An Important Regional Forum



## Who we are and what we do

# Fort McMurray





# What we are facing



## Challenges forecast to increase\*



# What We're Doing



# Alberta

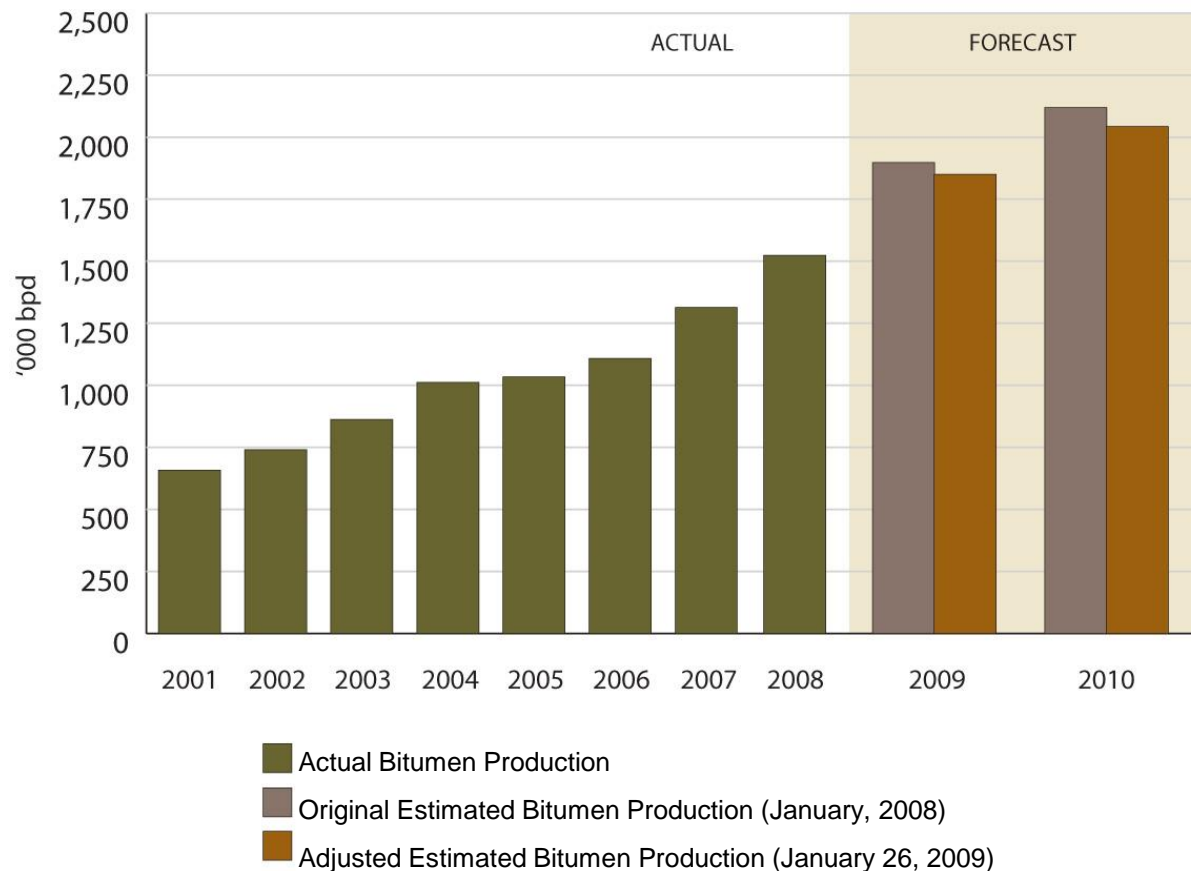
Ministry of Transportation

# Pioneering Spirit



# On-going challenges

# Despite setbacks, oil sands production expected to increase<sup>1</sup>

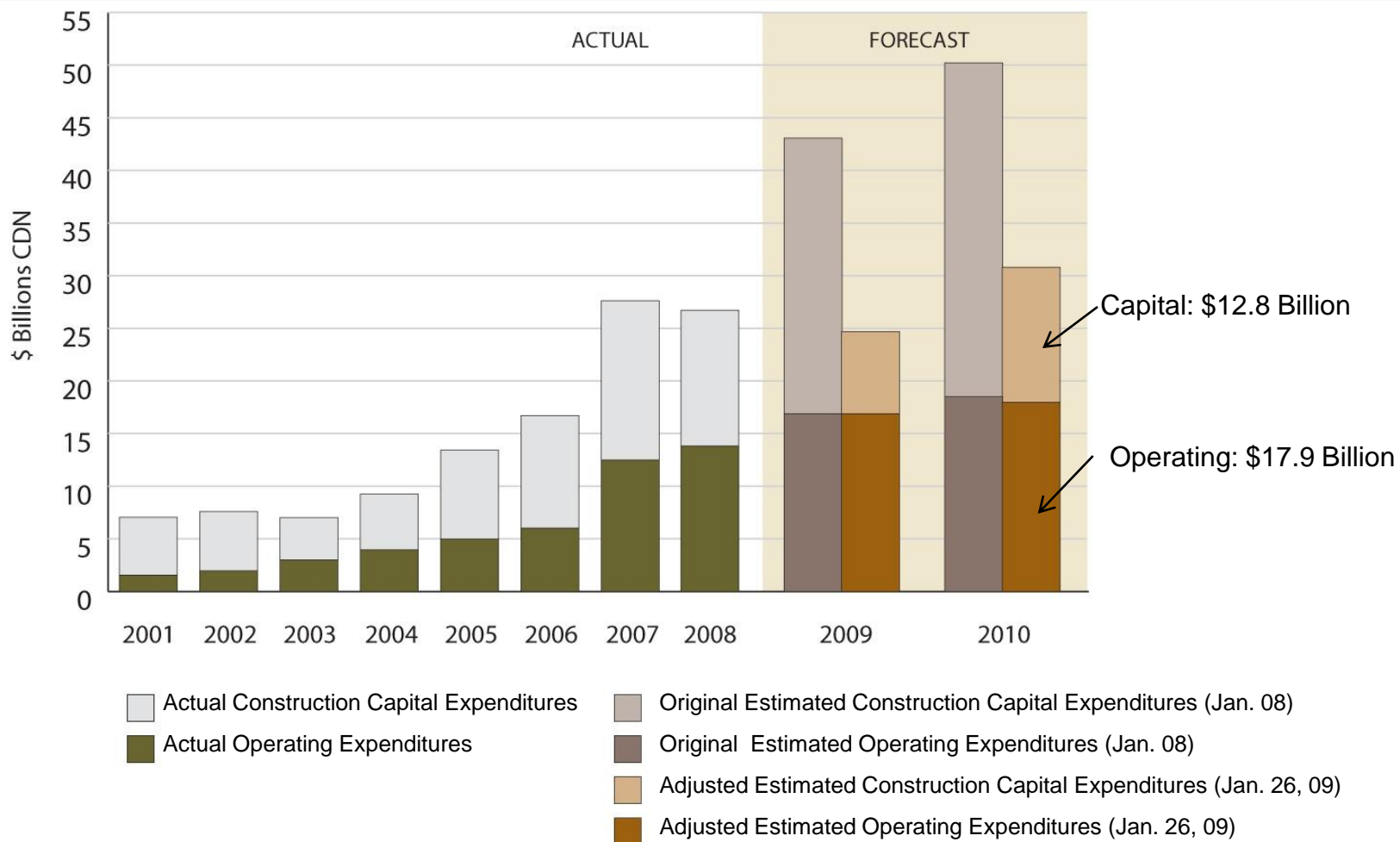


<sup>1</sup>Bitumen forecast for all Alberta oil sands projects – original estimate (January, 2008) and adjusted estimate per public announcements (January 26, 2009)

Source: CAPP and Nichols Applied Management



# Combined oil sands expenditures: historical and estimated<sup>1</sup>



<sup>1</sup>2008 construction capital expenditure estimate for all Alberta oil sands projects, including related pipeline, upgrader and co-generation projects – original estimates (January, 2008) and adjusted (January 26, 2009) per public announcements.





# Athabasca Deposit Region – Operating Oil Sands Projects (April 2009)



***The Athabasca region is an important supply hub with a current productive capacity of 1.2 million bpd...***

Projects – Operating	Bitumen Capacity Barrels/day
Canadian Natural Resources mining/upgrading	135,000
ConocoPhillips Surmont insitu Ph 1	25,000
Devon Jackfish Insitu Ph 1	30,000
Encana Christina Lake Ph 1A-1B	18,000
Jacos Pilot insitu	7,000
MEG Energy Pilot	3,000
Nexen Long Lake Insitu.Upgrader Phase 1	70,000
Petro Canada MacKay River insitu	30,000
Petrobank in situ pilot	2,000
Shell Muskeg River Mine	155,000
Suncor Base Plant mining/insitu/upgrading	350,000
Syncrude mining/upgrading	350,000
Total	1,175,000

## Total bitumen production, operating projects :

- **Bitumen Production Capacity – 1,200,000 bpd** (Note previous slides were for all oil sands – this is just Athabasca)
- **Upgrading Capacity– 835,000 bpd**

Data source: Strategy West Feb. 2009 and Nichols Applied Management

# Athabasca Deposit Region – Next Wave of Oil Sands Projects (April 2009)



***Despite the slowdown, an additional 500,000 bpd in capacity is under construction...***

Projects – Under Construction	Status	Est. Start Up Production	Bitumen Capacity Barrels/day	Est. Capex \$ million
Devon Jackfish Insitu Ph. 2	Construction	2011	35,000	1,225
EnCana Christina Lk. Insitu Ph. 1C	Construction	2010	40,000	1,400
Imperial Kearn Phases 1-3	Construction	2012-2018	300,000	18,000
MEG Energy Christina Lk. Insitu Ph. 2A	Construction	2009	22,000	770
Shell Exp 1 (Jackpine Mine Ph. 1A/MRM facilities)	Construction	2010	100,000	6,000
Statoil Hydro Leismer Demo Insitu	Construction	2009	10,000	350
<b>Total</b>			<b>507,000</b>	<b>27,745</b>

## Total bitumen production, projects under construction:

- Bitumen Production Capacity – 500,000 bpd
- Capital Costs (based on industry averages): \$27.7 billion

Data source: Strategy West Feb. 2009 and Nichols Applied Management



# Athabasca Deposit Region – Oil Sands Projects in the Pipeline (April 2009)



***An additional 925,000 bpd of capacity is in the pipeline and could get underway quickly...***

Projects – In the Pipeline	Status	Est. Start Up Production	Bitumen Capacity Barrels/day	Est. Capex \$ million
Connacher Algar insitu	Regulatory Approval	TBD/target 2011	10,000	350
ConocoPhillips Surmont insitu Ph2	Regulatory Approval	TBD/target 2013	75,000	2,625
CNRL Horizon Phase 2/3 mine/upgrader	Regulatory Approval	TBD	130,000	14,300
EnCana Christina Lk. Insitu Ph. 1D	Regulatory Approval	~2012	40,000	1,400
Husky Sunrise in situ phase 1-4	Regulatory Approval	2013-2018	200,000	7,000
Nexen Long Lake Phase 2 insitu/upgrader	Regulatory Approval	TBD	70,000	5,950
Petro Canada Fort Hills mine	Regulatory Approval	TBD/target 2014	190,000	11,400
Petro Canada MacKay River Expansion in situ	Regulatory Approval	TBD/target 2012	40,000	1,400
Shell Expansion 2	Regulatory Approval	TBD/target 2014	100,000	6,000
Suncor Firebag insitu Ph. 3	Construction (suspended)	TBD /target 2013	70,000	2450
Suncor Voyageur Upgrader	Construction (suspended)	TBD /target 2011	N/A	11500
Total			925,000	64,375

**Total bitumen production, projects with regulatory approval and under active commercial consideration:**

- Bitumen Production Capacity – 925,000 bpd
- Capital Costs (based on industry averages): \$64.4 billion

Data source: Strategy West Feb. 2009 and Nichols Applied Management

# Athabasca Deposit Region – A considerable number of Oil Sands Projects remain under consideration (April 2009)



Projects – Planning Stages	Status	Est. Start Up Production	Capacity Barrels/day	Est. Capex \$ million
Connacher Great Divide Expansion insitu	Disclosed	TBD	25,000	875
CNRL Kirby insitu	Under Regulatory Review	TBD	45,000	1,575
JACOS Hanginestone Commercial insitu	Disclosed	TBD	25,000	875
EnCana Christina Lk. Insitu Ph. 1E-F	Disclosed	TBD	60,000	2,100
Encana Borealis insitu ph 1	Under Regulatory Review	TBD	35,000	1,225
Enerplus Kirby insitu	Under Regulatory Review	TBD	10,000	350
KNOC Black Gold	Under Regulatory Review	TBD	10,000	350
MEG Energy Christina Lk. Insitu Ph. 2B, 3	Under Regulatory Review	TBD	185,000	6,475
Nexen Long Lake South insitu	Under Regulatory Review	TBD	140,000	4,900
Petro Canada MacKay River Expansion in situ	Regulatory Approval	TBD	40,000	1,400
Petro Canada Meadow Creekin situ	Regulatory Approval	TBD	80,000	2,800
Petro Canada Lewis in situ	Disclosed	TBD	80,000	2,800
Petrobank May River Ph 1 insitu	Under Regulatory Review	TBD	10,000	350
Petrobank May River insitu Expansion	Disclosed	TBD	90,000	3,150
Shell Expansion 3 -5 mine	Under Regulatory Review	TBD	300,000	18,000
StatoilHydro Leismer insitu	Under Regulatory Review	2012-2014	30,000	1,050
StatoilHydro insitu expansion	Under Regulatory Review	TBD	200,000	7,000
Suncor Firebag insitu Ph. 4-6	Under Regulatory Review	TBD	200,000	7,000
Suncor Voyageur South mine	Under Regulatory Review	TBD	120,000	7,200
Syncrude Aurora South mine	Approval	TBD	200,000	12,000
TOTAL E&P Joslyn Mine Ph 1	Under Regulatory Review	~ 2015	100,000	6,000
UTS Frontier Mine	Disclosed	TBD	160,000	9,600
UTS Equinox Mine	Disclosed	TBD	50,000	3,000
Total			2,195,000	100,075

## Total bitumen production, projects being planned :

- Bitumen Production Capacity – 2,200,000 bpd
- Capital Costs (based on industry averages): \$100.0 billion

Data source: Strategy West Feb. 2009 and Nichols Applied Management

# The oil sands economy: built to last

The quality and magnitude of Canada's oil sands ensures its continued contribution to secure energy supplies

[www.oilsandsdevelopers.ca](http://www.oilsandsdevelopers.ca)

# ***Transportation Innovation in Canada's Oil Sands***

By Tim Hayward



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# Disclaimer

This presentation contains forward-looking information. Actual results could differ materially due to market conditions, changes in law or government policy, changes in operating conditions and costs, changes in project schedules, operating performance, demand for oil and gas, commercial negotiations or other technical and economic factors.

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