

Alberta Oil Sands Projects Review - March 2006

Company	Project	Location	Cost [C\$ million]	Production [Mb/d]		Capex <sup>1</sup> [\$ / b/d]	Status <sup>2</sup>	Operation Date	Notes
				Bitumen/ Heavy	Upgraded				
Shell Canada / Chevron / Western Oil Sands	Current operations	Ft. McMurray		155	155		Operating		60% Shell Canada, 20% Chevron, 20% Western Oil Sands.
	Muskeg River Mine and Scotford Expansion	Ft. McMurray and Edmonton area	4,500	135	135	33,333	Filed	2009	\$2 billion upgrader, \$2.5 billion mine
	Jackpine Phase 1	Ft. McMurray	2,000	200		10,000	Approved	2010	Upgrading options being considered.
BA Energy	Alberta Heartland Upgrader Phase 1	Edmonton area	800		50	16,000	Construction	2007	Private company
	Alberta Heartland Upgrader Phases 2 & 3	Edmonton area	2,000		150	13,333	Approved	undisclosed	Private company
BlackRock Ventures	Orion Heavy Oil SAGD (Phases 1 and 2)	Cold Lake area	340	20		17,000	Construction	2007	
Canadian Natural Resources	Current operations	Cold Lake area		45			Operating		
	Primrose North CSS	Cold Lake area	250	30		8,333	Construction	2007	
	Primrose East CSS Project	Cold Lake area	600	30		20,000	Proposed	2009	
	Horizon Phase 1	Ft. McMurray	6,834	135	110	62,127	Construction	2008	
	Horizon Phase 2	Ft. McMurray	2,440	45	45	54,222	Approved	2010	
Connacher Oil and Gas	Horizon Phase 3	Ft. McMurray	1,478	90	77	19,195	Approved	2011	
	Great Divide SAGD Pilot Plant	Ft. McMurray	150	10		15,000	Filed	2006	
ConocoPhillips / Total	Surmont SAGD Bitumen	Ft. McMurray	1,400	110		12,727	Construction	2006	50/50 Partnership.
Devon	Jackfish SAGD Phase 1	Ft. McMurray	450	35		12,857	Construction	2008	
	Jackfish SAGD Phase 2	Ft. McMurray	500	35		14,286	Proposed	2010	
EnCana	Current operations	Cold Lake and Ft. McMurray		37			Operating		
	Foster Creek Thermal Recovery Phase 2	Cold Lake area	440	30		14,667	Construction	2006	
	Foster Creek Thermal Recovery Phase 3	Cold Lake area	844	70		12,057	Filed	2008	
	Christina Lake Sunrise SAGD Phase 1	Ft. McMurray	575	60		9,583	Construction	2009	
Husky	Sunrise SAGD Phases 2 to 4	Ft. McMurray	1,900	150		12,667	Approved	2009+	
	Tucker Lake SAGD	Cold Lake area	500	33		15,385	Construction	2006	
Imperial Oil	Current operations	Cold Lake area		126			Operating		Production is 2004 average gross.
	Extension of Phases 9 & 10 (Mahihkan North)	Cold Lake area	350	0			Construction	2006	Replacement production
	Heavy Oil Plant Expansion Phases 14 to 16 (Nabiye). In situ CSS	Cold Lake area	650	30		21,667	Construction	2006	
Imperial Oil / ExxonMobil	Kearl Lake Oilsands Mine Phase 1	Ft. McMurray	6,500	100		21,667	Filed	2010	70% Imperial, 30% ExxonMobil Canada. Upgrading options being considered. ExxonMobil owns 69.6% of Imperial.
	Kearl Lake Oilsands Mine Phases 2+	Ft. McMurray		200				2012	
Japan Canada Oil Sands Limited (JACOS)	Current operations	Ft. McMurray		9			Operating		Pilot plant
	Hangingstone SAGD Commercial Production Project	Ft. McMurray	450	30		15,000	Proposed	2013	75% JACOS, 25% Nexen
North West Upgrading Inc.	Bitumen Upgrader Phase 1	Edmonton area	1,600		50	32,000	Filed	2010	Privately held
	Bitumen Upgrader Phases 2 and 3	Edmonton area	3,200		100	32,000	Filed	2015	
OPTI Canada / Nexen Inc.	Long Lake SAGD Phase 1	Ft. McMurray	3,482	70	60	58,033	Construction	2007	Nexen is bitumen operator, OPTI is upgrader operator. Operation date is upgrader startup.
	Long Lake SAGD Phase 2	Ft. McMurray	2,790	70	60	46,500	Filed	2010	Upgrader approved
Petro-Canada / UTS Energy / Teck Cominco	Fort Hills Oilsands Project	Ft. McMurray and Edmonton area	5,000	100	100	50,000	Mine approved for 190 Mb/d; upgrader proposed	2011	Petro-Canada (extraction and upgrader operator) 55%, UTS 30%, Teck Cominco (mine operator) 15%.
Petro-Canada	Current operations	Ft. McMurray		33			Operating		
	Edmonton Refinery Conversion to Upgrade Bitumen	Edmonton area	1,600		85	18,824	Construction	2008	Project replaces 85 Mbb/d of conventional capacity with 85 Mbb/d of bitumen feed.
	Mackay River SAGD Expansion	Ft. McMurray	810	40		20,250	Filed	2009	
Petro-Canada / Nexen	Meadow Creek SAGD Bitumen Production	Ft. McMurray	800	40		20,000	Filed	2012	Nexen 25%
Suncor	Current operations	Ft. McMurray		290	260		Operating		
	Steepbank Mine Expansion	Ft. McMurray	350	48		7,292	Filed	2010	
	Voyageur Phase 1	Ft. McMurray	6,500	147	127	34,211	Filed	2010	Bitumen production estimated based on 15% volume loss in upgrader.
	Voyageur Phase 2 Upgrader Expansion	Ft. McMurray	2,100	73	63	23,333	Construction	2012	Bitumen production estimated based on 15% volume loss in upgrader.
	Firebag Phase 2	Ft. McMurray	540	90		15,429	Construction	2008	
Syn crude	Current operations	Ft. McMurray		288	250		Operating		Eight partners
	Aurora Train 2 and Upgrader Expansion 1	Ft. McMurray	8,400	115	100	84,000	Construction	2006	Bitumen production estimated based on 15% volume loss in upgrader.
	Debottleneck Upgrader Expansion Phase 2 / Aurora Mine Train 3	Ft. McMurray	not avail.	46	40		Approved	2012	
Synenco / SinoCanada	Upgrader Expansion Phase 2 / Aurora Mine Train 3	Ft. McMurray	not avail.	115	100		Approved	2016	
	Northern Lights Phase 1	Ft. McMurray, Edmonton area	5,300	58	50	53,000	Proposed	2010	Synenco (60% owner and operator) went public in November, 2005. Bitumen production estimated based on 15% volume loss in upgrader
Total	Northern Lights Phase 2			58	50			2012	
	Joslyn Creek SAGD Phase 2	Ft. McMurray	178	10		17,800	Construction	2006	Total completed Deer Creek Energy purchase December, 2005, for ~C\$1.7 billion.
Total New Projects	Joslyn Creek SAGD Phase 3A	Ft. McMurray	1,500	15		13,043	Filed		
	North Mine	Ft. McMurray		100			Filed	2010	
			80,901	2,766	1,542				

<sup>1</sup> Capex per flowing barrel of highest quality product.  
<sup>2</sup> Filed = regulatory application filed. Approved = regulatory approval obtained (company sanction may still be required).  
 Sources: Company filings, Alberta Economic Development, Canadian Environmental Assessment Agency, RSEG Analysis  
 Note: Includes announced projects with operation dates before 2012 (and with capex estimates) and approved projects regardless of their operation date.

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