

# Existing and Proposed Canadian Commercial Oil Sands Projects

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## Summary

### Existing and Proposed Upgraders

	Capacities (b/d)	
	Bitumen	Products
Operating	1,209,000	1,037,500
Construction	90,000	91,000
Suspended	210,400	173,300
Approved	883,800	761,300
Application	705,000	670,400
Withdrawn	363,200	318,200
Disclosure	-	-
Announced	1,264,000	1,071,200
Total	4,725,400	4,122,900

### Existing and Proposed Bitumen Producers

	Capacities (b/d bitumen)					Total
	Mining	In Situ				
		N Athabasca	S Athabasca	Cold Lake	Peace River	
Operating	1,018,000	140,000	235,800	300,000	13,500	1,707,300
Construction	100,000	-	167,000	-	-	267,000
Suspended	-	62,500	10,000	-	-	72,500
Approved	840,000	240,000	203,600	50,000	-	1,333,600
Application	634,500	258,200	662,455	33,000	1,475	1,589,630
Withdrawn	-	15,000	-	-	87,500	102,500
Disclosure	210,000	95,000	125,000	-	-	430,000
Announced	593,000	445,000	631,000	-	30,000	1,699,000
Total	3,395,500	1,255,700	2,034,855	383,000	132,475	7,201,530

### Definitions

Operating	Projects that are in operation.
Construction	Projects that are under construction (beyond site preparation).
Suspended	Projects that began construction (beyond site preparation) that is no longer underway.
Approved	Projects that have received provincial regulatory approval but are not under construction.
Application	Projects that have filed applications with provincial regulatory agencies.
Withdrawn	Projects that had filed applications which were subsequently withdrawn.
Disclosure	Projects that have issued formal public disclosures but have not filed applications.
Announced	Projects that have been announced but have not issued formal public disclosures.

Startup	Year of commencement of operations for "Operating" projects and announced years for commencement of operations for projects under "Construction". Since startup dates for other projects are uncertain in the current economic environment, their "Startup" dates have been marked as TBD (to be determined).
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#### Notes:

Capacities of the Husky Lloydminster and Federated Coop Regina upgraders are not included.  
 Capacities of upgrading (conversion) units at Canadian refineries are not included.  
 Capacities of primary, secondary and experimental in situ recovery projects are not included.

### Errors and Omissions

Strategy West accepts no liability for errors or inaccuracies in the information provided in this report. No implied warranty of merchantability or fitness for a particular purpose shall apply.

## Upgraders

Design Bitumen and Product Capacities Company/Project Name	Status	Startup	Capacities (b/d)	
			Bitumen	Products
<b>AOSP (Shell) Scotford Upgrader 1</b>				
AOSP Scotford 1	Operating	2003	155,000	158,000
AOSP Scotford 1 Expansion	Construction	2010	90,000	91,000
			245,000	249,000
<b>BA Energy (Value Creation) Heartland</b>				
Phase 1	Suspended	TBD	54,400	46,300
Phase 2	Approved	TBD	54,400	46,300
Phase 3	Approved	TBD	54,400	46,300
			163,200	138,900
<b>Bluesky Refining</b>				
Phase 1	Announced	TBD	50,000	42,500
Phase 2	Announced	TBD	50,000	42,500
Phase 3	Announced	TBD	50,000	42,500
Phase 4	Announced	TBD	50,000	42,500
			200,000	170,000
<b>CNRL Horizon</b>				
Phase 1	Operating	2008	135,000	114,000
Phases 2 & 3	Approved	TBD	135,000	118,000
Phase 4	Announced	TBD	145,000	125,000
Phase 5	Announced	TBD	162,000	140,000
			577,000	497,000
<b>CNRL Primrose</b>				
Phase 1	Announced	TBD	145,000	125,000
Phase 2	Announced	TBD	58,000	50,000
			203,000	175,000
<b>Fort Hills (Petro-Canada) Sturgeon</b>				
Phase 1	Approved	TBD	165,000	145,000
Phase 2/3	Approved	TBD	175,000	145,000
			340,000	290,000
<b>Long Lake (Nexen)</b>				
Phase 1	Operating	2008	72,000	58,500
Phase 2	Approved	TBD	72,000	58,500
Phase 3	Announced	TBD	72,000	58,500
Phase 4	Announced	TBD	72,000	58,500
Phase 5	Announced	TBD	72,000	58,500
Phase 6	Announced	TBD	72,000	58,500
			432,000	351,000
<b>Northern Lights (Synenco) Sturgeon</b>				
Phase 1	Withdrawn	TBD	56,600	50,600
Phase 2	Withdrawn	TBD	56,600	50,600
			113,200	101,200
<b>North West Upgrading Sturgeon</b>				
Phase 1	Approved	TBD	50,000	46,400
Phase 2	Approved	TBD	50,000	46,400
Phase 3	Approved	TBD	50,000	46,400
			150,000	139,200

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## Upgraders (continued)

Design Bitumen and Product Capacities Company/Project Name	Status	Startup	Capacities (b/d)	
			Bitumen	Products
<b>Shell Scotford Upgrader 2</b>				
Phase 1	Application	TBD	100,000	97,750
Phase 2	Application	TBD	100,000	97,750
Phase 3	Application	TBD	100,000	97,750
Phase 4	Application	TBD	100,000	97,750
			400,000	391,000
<b>StatoilHydro Strathcona</b>				
Phase 1	Withdrawn	TBD	75,000	65,000
Phase 2	Withdrawn	TBD	175,000	152,000
			250,000	217,000
<b>Suncor Base and Millennium</b>				
Base U1 and U2	Operating	1967	281,000	225,000
Millennium Vacuum Unit	Operating	2005	43,000	35,000
Millennium Coker Unit	Operating	2008	116,000	97,000
			440,000	357,000
<b>Suncor Voyageur</b>				
Voyageur Phase 1	Suspended	TBD	156,000	127,000
Voyageur Phase 2	Approved	TBD	78,000	63,000
			234,000	190,000
<b>Syncrude Mildred Lake</b>				
Stages 1 & 2	Operating	1978	290,700	250,000
Stage 3 Expansion	Operating	2006	116,300	100,000
Stage 3 Debottleneck	Announced	TBD	46,500	40,000
Stage 4 Expansion	Announced	TBD	139,500	120,000
			593,000	510,000
<b>Total Strathcona</b>				
Phase 1	Application	TBD	150,000	138,000
Phase 2	Application	TBD	95,000	87,000
Debottlenecking	Application	TBD	50,000	46,000
			295,000	271,000
<b>Value Creation Terre de Grace</b>				
Pilot	Application	TBD	10,000	8,400
Phase 1	Announced	TBD	40,000	33,600
Phase 2	Announced	TBD	40,000	33,600
			90,000	75,600
<b>Total Upgrading Capacities (Existing &amp; Proposed Projects)</b>			4,725,400	4,122,900

**Notes:**

Each phase of proposed North West Upgrader has approval to process 77,000 b/d of feedstocks consisting of 50,000 b/d of bitumen and 27,000 b/d of other crudes. In addition to 46,400 b/d of ULS Doesel, products include 31,600 b/d of condensate, naphtha and butanes. It is assumed that Phases 4-5 of CNRL's Horizon Upgrader and Phases 1-2 of CNRL's Primrose Upgrader would have the same liquid yields as Horizon Phases 1-3. The Husky Lloydminster and NewGrade Regina Upgraders are not included since they process primarily conventional heavy crude oil. This list does not include Canadian refineries with upgrading capacity.

## Athabasca Mining Projects

Design Bitumen Capacities Company/Project Name	Status	Startup	Capacity (b/d)
AOSP (Shell) Jackpine			
Phase 1A	Construction	2010	100,000
Phase 1B	Approved	TBD	100,000
Phase 2	Application	TBD	100,000
			300,000
AOSP (Shell) Muskeg River			
Existing Facilities	Operating	2002	155,000
Expansion and Debottlenecking	Approved	TBD	115,000
			270,000
AOSP (Shell) Pierre River			
Phase 1	Application	TBD	100,000
Phase 2	Application	TBD	100,000
			200,000
CNRL Horizon			
Phase 1	Operating	2008	135,000
Phases 2&3	Approved	TBD	135,000
Phase 4	Announced	TBD	145,000
Phase 5	Announced	TBD	162,000
			577,000
Fort Hills (Petro-Canada)			
Phase 1	Approved	TBD	165,000
Debottleneck	Approved	TBD	25,000
			190,000
Imperial/ExxonMobil Kearl Lake			
Phase 1	Approved	TBD	100,000
Phase 2	Approved	TBD	100,000
Phase 3	Approved	TBD	100,000
			300,000
Northern Lights (Synenco)			
Phase 1	Application	TBD	57,250
Phase 2	Application	TBD	57,250
			114,500
Suncor Millennium & North Steepbank			
Millennium Mine	Operating	1967	294,000
Steepbank Debottleneck Phase 3	Operating	2007	4,000
Millennium Debottlenecking	Operating	2008	23,000
North Steepbank Extension	Construction	2010	-
			321,000
Suncor Voyageur South			
Phase 1	Application	TBD	120,000
			120,000

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## Athabasca Mining Projects (continued)

Design Bitumen Capacities Company/Project Name	Status	Startup	Capacity (b/d)
Syn crude Mildred Lake & Aurora			
Stages 1 & 2	Operating	1978	290,700
Stage 3 Expansion	Operating	2006	116,300
Stage 3 Debottleneck	Announced	TBD	46,500
Stage 4 Expansion	Announced	TBD	139,500
			593,000
Total (Deer Creek) Joslyn			
North Mine	Application	TBD	100,000
South Mine	Announced	TBD	100,000
			200,000
UTS/Teck Cominco			
Equinox	Disclosure	TBD	50,000
Frontier 1	Disclosure	TBD	100,000
Frontier 2	Disclosure	TBD	60,000
			210,000
Total Athabasca Mining Bitumen Capacity (Existing & Proposed Projects)			3,395,500

## North Athabasca Commercial In Situ Projects

### Athabasca In Situ Projects North of Fort McMurray

Design Bitumen Capacities Company/Project Name	Status	Startup	Capacity (b/d)
Athabasca Oil Sands MacKay Pilot	Application	TBD	<u>2,200</u> 2,200
Chevron Canada Ells River SAGD Project	Announced	TBD	<u>100,000</u> 100,000
CNRL Birch Mountain Phase 1	Announced	TBD	<u>60,000</u> 60,000
EnCana Borealis Phase 1	Application	TBD	35,000
Phase 2	Announced	TBD	32,500
Phase 3	Announced	TBD	<u>32,500</u> 100,000
Husky Sunrise Phase 1	Approved	TBD	50,000
Phase 2	Approved	TBD	50,000
Phase 3	Approved	TBD	50,000
Phase 4	Approved	TBD	<u>50,000</u> 200,000
Petro-Canada Lewis Phase 1	Disclosure	TBD	40,000
Phase 2	Disclosure	TBD	<u>40,000</u> 80,000
Petro-Canada MacKay River Phase 1	Operating	2002	33,000
Phase 2	Approved	TBD	<u>40,000</u> 73,000
Southern Pacific McKay Phase 1	Announced	TBD	<u>10,000</u> 10,000
Suncor Firebag Phase 1	Operating	2004	35,000
Phase 2	Operating	2006	35,000
Cogeneration and Expansion	Operating	2007	25,000
Phase 3	Suspended	TBD	62,500
Phase 4	Application	TBD	62,500
Phase 5	Application	TBD	62,500
Phase 6	Application	TBD	62,500
Stages 3-6 Debottlenecking	Application	TBD	<u>23,500</u> 368,500

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## North Athabasca Commercial In Situ Projects (continued)

### Athabasca In Situ Projects North of Fort McMurray

Design Bitumen Capacities Company/Project Name	Status	Startup	Capacity (b/d)
Sunshine Oilsands Harper CSS Pilot	Application	TBD	-
Sunshine Oilsands Thickwood Phase 1	Announced	TBD	10,000
Phase 2	Announced	TBD	30,000
Phase 3	Announced	TBD	25,000
			<u>65,000</u>
Sunshine Oilsands West Ells Phase 1	Announced	TBD	10,000
Phase 2	Announced	TBD	30,000
Phase 3	Announced	TBD	25,000
			<u>65,000</u>
Total (Deer Creek) Joslyn Phase 1	Operating	2004	2,000
Phase 2	Operating	2006	10,000
Phase 3a	Withdrawn	TBD	15,000
Phase 3b	Disclosure	TBD	15,000
			<u>42,000</u>
Value Creation Terre de Grace Pilot	Application	TBD	10,000
Phase 1	Announced	TBD	40,000
Phase 2	Announced	TBD	40,000
			<u>90,000</u>
Total North Athabasca In Situ Bitumen Capacity (Existing & Proposed Projects)			<u><u>1,255,700</u></u>

*Note:*

List does not include Athabasca primary production, secondary recovery and experimental projects



## South Athabasca Commercial In Situ Projects

### Athabasca In Situ Projects South of Fort McMurray

Design Bitumen Capacities Company/Project Name	Status	Startup	Capacity (b/d)
CNRL Gregoire Lake Phase 1	Announced	TBD	<u>60,000</u> 60,000
CNRL Grouse Phase 1	Announced	TBD	<u>60,000</u> 60,000
CNRL Kirby Phase 1	Application	TBD	<u>45,000</u> 45,000
CNRL Leismer Phase 1	Announced	TBD	<u>30,000</u> 30,000
Connacher Great Divide Great Divide Pod 1	Operating	2007	10,000
Great Divide Pod 2 (Algar)	Suspended	TBD	<u>10,000</u> 20,000
Devon Jackfish Jackfish 1	Operating	2008	35,000
Jackfish 2	Construction	2011	<u>35,000</u> 70,000
EnCana Christina Lake Phase 1A	Operating	2002	10,000
Phase 1B	Operating	2008	8,800
Phase 1C	Construction	2010	40,000
Phase 1D	Approved	TBD	40,000
Unnamed Expansion 1	Announced	TBD	30,000
Unnamed Expansion 2	Announced	TBD	30,000
Unnamed Expansion 3	Announced	TBD	30,000
Unnamed Expansion 4	Announced	TBD	30,000
Unnamed Expansion 5	Announced	TBD	<u>30,000</u> 248,800
EnCana Foster Creek Phase 1A	Operating	2001	24,000
Phase 1B - Debottlenecking	Operating	2003	6,000
Phase 1C - Stage 1	Operating	2005	10,000
Phase 1C - Stage 2	Operating	2007	20,000
Phase 1D	Construction	2009	30,000
Phase 1E	Construction	2009	30,000
Phase 1F	Application	TBD	<u>30,000</u> 150,000
Enerplus Kirby Phase 1	Application	TBD	10,000
Phase 2	Announced	TBD	<u>25,000</u> 35,000

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## South Athabasca Commercial In Situ Projects (continued)

## Athabasca In Situ Projects South of Fort McMurray

Design Bitumen Capacities Company/Project Name	Status	Startup	Capacity (b/d)
Husky McMullen Pilot	Application	TBD	755 <u>755</u>
JACOS Hangingstone Demonstration Project	Operating	2002	10,000
Expansion	Disclosure	TBD	<u>35,000</u> 45,000
KNOC BlackGold Phase 1	Application	TBD	10,000
Phase 2	Announced	TBD	<u>20,000</u> 30,000
Laricina Germain Pilot	Approved	TBD	600
phase 1	Announced	TBD	<u>10,000</u> 10,600
Laracina Saleski Pilot	Application	TBD	1,200
Phase 1	Announced	TBD	<u>10,000</u> 11,200
Long Lake (Nexen) Phase 1	Operating	2007	72,000
Phase 2	Announced	TBD	72,000
Phase 3	Announced	TBD	72,000
Phase 4	Announced	TBD	<u>72,000</u> 288,000
Long Lake South (Nexen) Phase 1	Application	TBD	70,000
Phase 2	Application	TBD	<u>70,000</u> 140,000
MEG Christina Lake Phase 1 Pilot	Operating	2007	3,000
Phase 2A	Construction	2009	22,000
Phase 2B	Application	TBD	35,000
Phase 3A	Application	TBD	75,000
Phase 3B	Application	TBD	<u>75,000</u> 210,000
Patch Ells River Phase 1	Announced	TBD	<u>10,000</u> 10,000
Petrobank May River Phase 1	Application	TBD	10,000
May River Subsequent Phases	Disclosure	TBD	<u>90,000</u> 100,000
Petro-Canada Chard Phase 1	Announced	TBD	<u>40,000</u> 40,000

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## South Athabasca Commercial In Situ Projects (continued)

### Athabasca In Situ Projects South of Fort McMurray

Design Bitumen Capacities Company/Project Name	Status	Announced Startup	Capacity (b/d)
Petro-Canada Meadow Creek			
Phase 1	Approved	TBD	40,000
Phase 2	Approved	TBD	40,000
			<u>80,000</u>
Serrano Blackrod			
Pilot	Application	TBD	500
			<u>500</u>
Surmont (ConocoPhillips)			
Phase 1	Operating	2006	27,000
Phase 2	Approved	TBD	83,000
			<u>110,000</u>
StatoilHydro Kai Kos Dehseh			
Leismer Demonstration	Construction	2009	10,000
Leismer Commercial	Application	TBD	10,000
Leismer Expansion	Application	TBD	20,000
Corner	Application	TBD	40,000
Thornbury	Application	TBD	40,000
Corner Expansion	Application	TBD	40,000
Hangingstone	Application	TBD	20,000
Thornbury Expansion	Application	TBD	20,000
Northwest Leismer	Application	TBD	20,000
South Liesmer	Application	TBD	20,000
			<u>240,000</u>
Total South Athabasca In Situ Bitumen Capacity (Existing & Proposed Projects)			<u><u>2,034,855</u></u>

*Note:*

List does not include Athabasca primary production, secondary recovery and experimental projects

## Cold Lake Commercial In Situ Projects

Design Bitumen Capacities Company/Project Name	Status	Startup	Capacity (b/d)
<b>CNRL Primrose/Wolf Lake</b>			
Wolf lake	Operating	1985	13,000
Primrose South	Operating	1985	45,000
Primrose North	Operating	2006	30,000
Primrose East	Operating	2008	32,000
Wolf Lake SAGD	Application	TBD	5,500
Production Capacity Increase	Application	TBD	25,000
			150,500
<b>Husky Caribou Lake</b>			
Demonstration Project	Approved	TBD	10,000
			10,000
<b>Husky Tucker</b>			
Phase 1	Operating	2006	30,000
			30,000
<b>Imperial Oil Cold Lake</b>			
Phases 1-10: Leming, Maskwa, Mahikan	Operating	1985	110,000
Phases 11-13: Mahkeses	Operating	2003	30,000
Phases 14-16: Nabiye, Mahikan North	Approved	TBD	30,000
			170,000
<b>Pengrowth Lindberg</b>			
Pilot	Application	TBD	2,500
			2,500
<b>Shell (BlackRock) Orion (Hilda Lake)</b>			
Phase 1	Operating	2007	10,000
Phase 2	Approved	TBD	10,000
			20,000
<b>Total Cold Lake In Situ Bitumen Capacity (Existing &amp; Proposed Projects)</b>			<b>383,000</b>

*Note:*

List does not include Cold Lake primary recovery, secondary recovery and experimental projects

## Peace River Commercial In Situ Projects

Design Bitumen Capacities Company/Project Name	Status	Startup	Capacity (b/d)
Andora Sawn Lake Demonstration Project	Application	TBD	1,400 <u>1,400</u>
North Peace Energy Red Earth Pilot	Operating	2009	1,000
Phase 1	Announced	2013	10,000
Phase 2	Announced	TBD	10,000
Phase 3	Announced	TBD	10,000 <u>31,000</u>
Penn West Seal CSS Pilot	Application	TBD	75 <u>75</u>
Shell Peace River Cadotte Lake	Operating	1986	12,500
Carmon Creek Phase 1	Withdrawn	TBD	37,500
Carmon Creek Phase 2	Withdrawn	TBD	50,000 <u>100,000</u>
Total Peace River In Situ Bitumen Capacity (Existing & Proposed Projects)			<u><u>132,475</u></u>

*Note:*

List does not include Peace River primary recovery, secondary recovery and experimental projects