



# **Canadian Crude Oil Production and Supply Forecast 2006 - 2020**

## 1.0 Introduction

The Canadian Association of Petroleum Producers (CAPP) 2006-2020 forecast has been developed to provide industry with a long-range outlook for Canadian crude oil production. The primary use of this forecast is to enable members to plan for pipeline capacity requirements for transporting Canadian crude oil to markets. This forecast includes a production outlook for both western and eastern Canada, however the analysis focuses on western Canadian production and supply because offshore eastern oil production does not rely on pipeline access to reach markets.

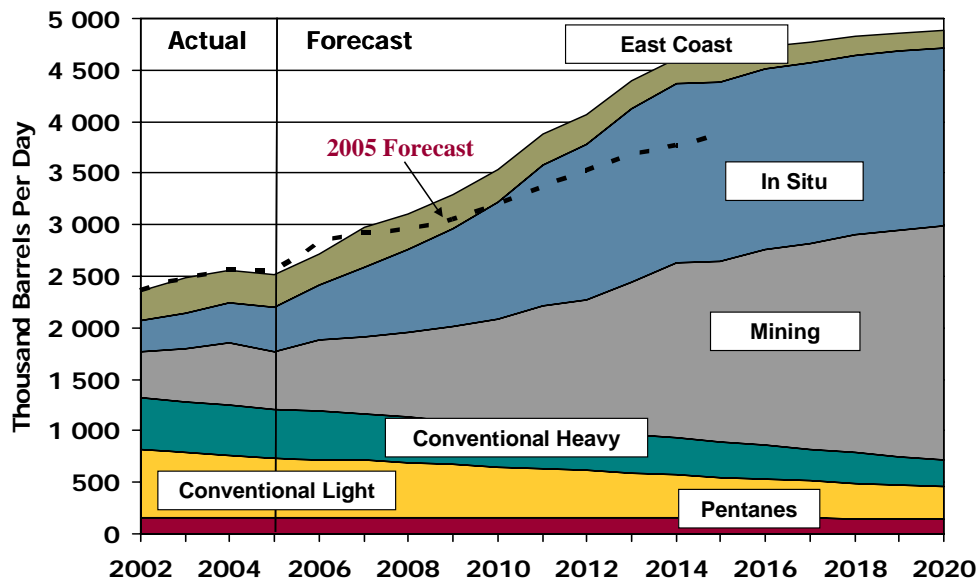
The main source of growth in the western Canadian production forecast, over the next fifteen years, comes for Alberta's oil sands. The outlook for oil sands production included in this forecast is based on a survey of CAPP members; more information on the methodology used to develop this forecast is provided in the methodology section presented at the end of this document.

## 2.0 Canadian Crude Oil Production

Canadian crude oil production is forecast to grow from 2.5 million barrels per day (b/d) in 2005 to 4.6 million b/d by 2015, with further potential growth to 4.9 million b/d by 2020. Chart 1 presents the forecast by types of Canadian crude oil production. Atlantic Canada's East Coast conventional light production comes from offshore projects while western Canadian production comes from both conventional sources and oil sands. Bitumen production from the oil sands can be extracted using one of two recovery processes, in-situ for areas deeper than about 80 meters and with mining operations where deposits are closer to the surface.

The 2006 forecast represents an increase compared to last year's forecast by about 750,000 b/d in 2015. The increase reflects more aggressive scheduling for some projects and new investments in the oil sands.

**Chart 1: Canadian Crude Oil Production Forecast**



The forecast for the East Coast reflects a reduction due to the removal of the Hebron project, which was previously included in the projection developed in 2005.

**Table 1: Canadian Crude Oil Production**

*Thousand Barrels Per Day*

	<u>1990</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>
<b>Western Canada</b>							
Conventional Light	940	936	734	577	495	400	309
Conventional Heavy	263	415	510	476	413	340	263
Pentanes	116	161	194	160	156	152	149
Oil Sands Mining	209	279	321	552	1 019	1 750	2 273
Oil Sands In-Situ	135	149	289	438	1 132	1 745	1 724
<b>Total</b>	<b>1 663</b>	<b>1 940</b>	<b>2 048</b>	<b>2 204</b>	<b>3 215</b>	<b>4 387</b>	<b>4 718</b>
<b>Offshore East Coast</b>	<b>0</b>	<b>21</b>	<b>145</b>	<b>305</b>	<b>320</b>	<b>230</b>	<b>160</b>
<b>Canada</b>	<b>1 663</b>	<b>1 961</b>	<b>2 193</b>	<b>2 509</b>	<b>3 535</b>	<b>4 617</b>	<b>4 878</b>

### 3.0 Western Canadian Crude Oil Production

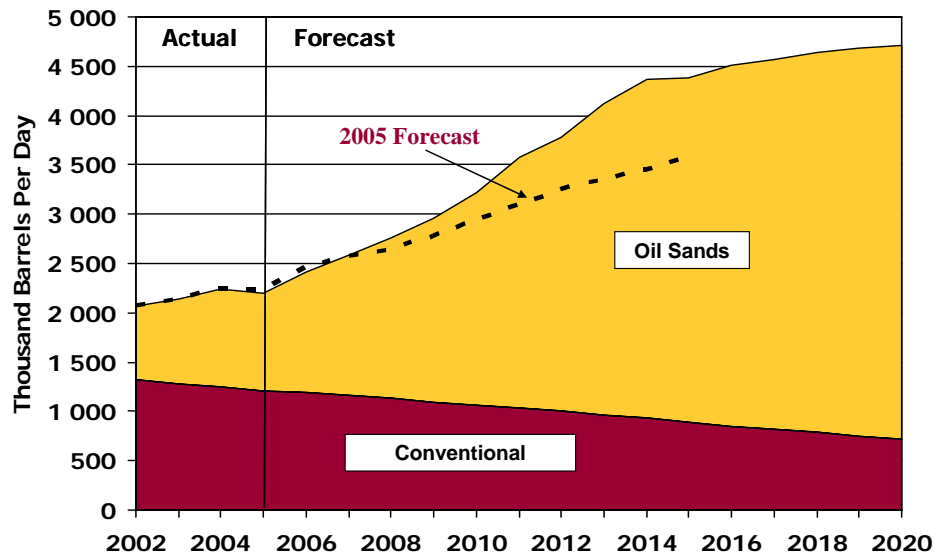
Western Canadian crude oil production is projected to grow from 2.2 million b/d in 2005 to 4.7 million b/d, by 2020.

Some of the highlights are:

- Conventional production in western Canada has been declining slowly since the late 1990s. By 2020, conventional oil production is reduced to about 550,000 b/d, about one-half of its current level.
- Recent trends indicate that the year-over-year decline rate for conventional production has slowed somewhat due to high oil prices but the overall trend is continued declines.
- Both in-situ and mining projects contribute to the growth in oil sands production, with a four-fold increase in production for each category.
- Western Canadian crude production growth, which more than doubles over the next 15 years will require construction of new pipelines to ensure new oil supplies can be transported to markets in Canada, the U.S. and potentially offshore.
- The share of western oil production generated by oil sands grows from 45 percent in 2005 to about 80 percent, by 2020.
- Compared to CAPP's 2005 forecast, the outlook for oil production from western Canada has increased by about 800,000 b/d in 2015.

Chart 2 depicts the split between oil sands and conventional production and also shows the increase in western Canadian production over last year's projection. The significant growth in oil sands production means four in five barrels produced is sourced from the oil sands by 2020.

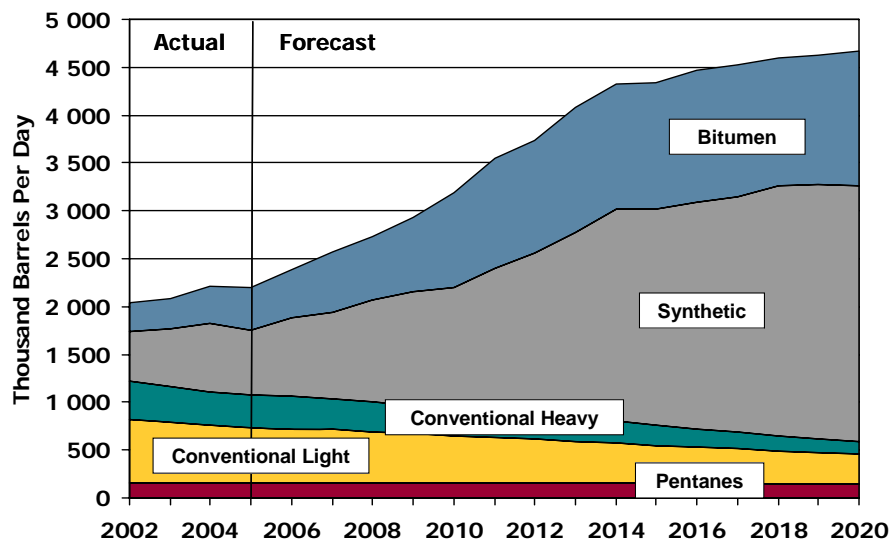
**Chart 2: Comparison of Oil Sands versus Conventional Oil Production**



Oil sands bitumen production can be marketed as a heavy crude blend or it can be further upgraded and marketed as synthetic oil. Chart 3 shows the split between bitumen and synthetic production for the oil sands along with the conventional light and heavy production forecast.

A number of projects such as Suncor and Syncrude have upgrading as part of an integrated operation. In addition to the integrated oil sands projects a number of stand-alone or merchant upgrader projects have been announced and planned and are included in the forecast. The potential supplies from these projects have been included in the synthetic shown in Chart 3.

**Chart 3: Western Canadian Crude Oil Supply Forecast**



#### 4.0 Western Canadian Crude Oil Supply to Market

To enable conventional heavy oil and bitumen oil to be transported using pipelines, it must be diluted with a lighter commodity such as condensate/pentanes or synthetic crude. This blending

process lowers the viscosity and density of the crude allowing for efficient transportation through pipelines.

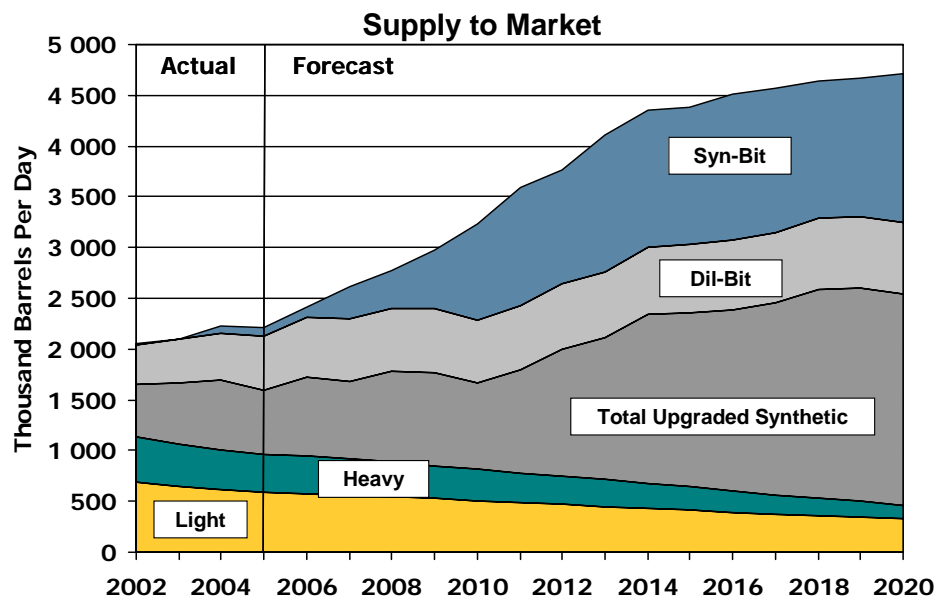
The main source of diluent has been condensates/pentanes produced in western Canada. These products are slowly declining and will not provide sufficient supplies of diluent to match forecast growth of bitumen. Producers have been evaluating options to import condensate using either existing infrastructure such as railroads or through a condensate import pipeline. As an alternative, producers are also considering using synthetic for blending.

When bitumen is blended with traditional condensate/pentanes the blended crude is typically referred to as a dil-bit blend. Bitumen blended using synthetic crude has been referred to as syn-bit.

#### 4.1 Supply Scenario with Synthetic Crude Used as Diluent

Chart 4 shows the amount of syn-bit developed as a result of the limited supply of condensate. The forecast shows the volume of dil-bit as generally constant. Over the forecast period, the development of a syn-bit blend uses substantial volumes of synthetic for blending purposes.

**Chart 4: Western Canadian Crude Oil Supply  
With Synthetic Crude used for Blending**

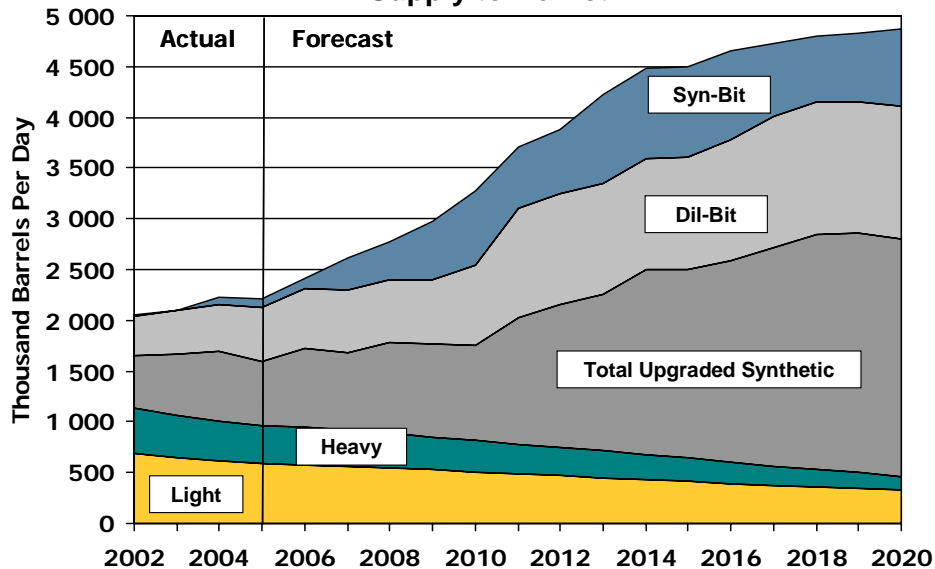


#### 4.2 Supply Scenario with Imported Condensate Used as Diluent

Currently, western Canadian producers have limited capability to import large volumes of condensate from other areas due to a lack of pipeline access. This scenario assumes producers support the development of a pipeline to import condensate. The forecast assumes initial imports of 150,000 b/d growing to 200,000 b/d by 2020.

The access to condensate has a significant impact on the crude mix produced. Chart 5 shows the growth in dil-bit and the offsetting reduction in syn-bit and growth in synthetic crude.

**Chart 5: Western Canadian Crude Oil Supply  
Including a 150,000 b/d Condensate Import Pipeline  
Supply to Market**



## 5.0 Forecast Potential and Risks

As noted, the primary purpose for the forecast is to ensure producers have information to plan for increases in pipeline capacity to market their growing supplies of crude oil. As such, the forecast is prepared to not be too conservative because the cost of a small amount of surplus pipeline capacity is preferable to the lost revenue from shut-in production due to insufficient pipeline capacity.

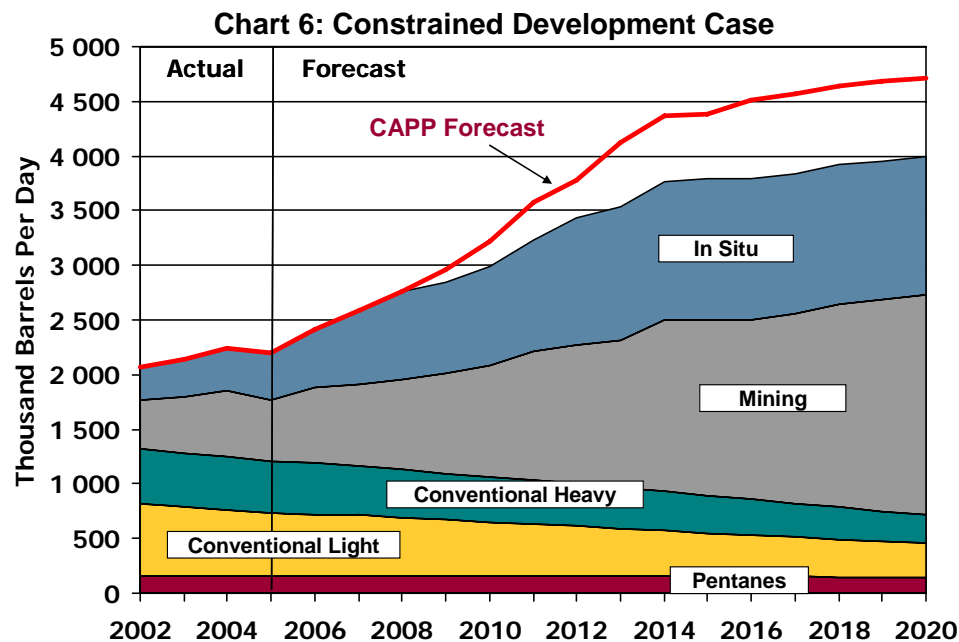
Due to competing strong economic growth in many sectors, the potential oil sands development underpinning the forecast may be subject to a number of delays and risk factors that could slow the pace of development and the corresponding increase in production being forecast in the “base” case. The development capacity to convert the plans for new oil sands projects into construction and facilities may be constrained by a limited supply of manpower, infrastructure and other resources. The following points illustrate areas that may slow the pace of oil sands development.

- Unemployment levels in Canada and Alberta are near record low levels. The demand for manpower exceeds the available supply of skilled workers in many sectors of the economy, including oil sands. Although solutions such as training and immigration are planned, it takes time to gear up government processes and support systems that deal with increasing the supply of qualified manpower. This may pose a challenge not only for oil sands development but also the key support sectors, such as education, housing and infrastructure that are integral to achieving the forecast pace of development;
- Refiner’s abilities to run and process oil sands crudes are currently at full capacity in the market areas served by Canadian producers. Refineries will need to undertake plant conversions and expansions to utilize and absorb the growth in crude supplies from the oil sands and producers will need to extend beyond their traditional market areas. Producers will be reluctant to grow supplies without markets to absorb the crude. As such, the ability to grow production may be

constrained if the pace of refinery development or market expansion does not keep pace with potential oil sands development.

- Strong economic growth and activity levels in Alberta, other regions in North America and global markets means competing demands for key resources essential to oil sands development, such as steel and fabricating facilities. Finite capacity to produce and manufacture key input materials and equipment could possibly result in a degree of queuing for essential components, which could translate into delays for some projects.
- A number of the in-situ recovery processes, such as steam assisted gravity drainage (SAGD) recovery techniques, are still at an early stage. As many projects transition from pilot to commercial level projects, there is a risk that start-up delays and/or unanticipated technical challenges may slow the pace of production in the early years of the forecast.

The following chart reflects the potential impact associated with development being constrained or delayed. By 2020 the forecast is reduced by about 800,000 b/d of production.



## 6.0 Methodology

CAPP annually prepares a crude oil production and supply forecast. The oil sands components are developed from a survey of CAPP members which encompasses all projects. CAPP received a 100 percent response to the survey, as members have a vested interest to help ensure the production forecast accurately portrays expected production.

Survey responses reflect both planned and envisioned projects because it covers a fifteen year period. CAPP has risk adjusted some of the envisioned projects by adjusting the potential completion schedules for projects which are deemed more uncertain. As such, the CAPP forecast is reduced compared with the ultimate potential reflected in the survey raw survey data.

For conventional crude oil production, CAPP extrapolates production based on historical trends adjusted to reflect recent events and developments in the industry. Both the conventional and oil sands production are benchmarked based on the most recent actual production data published by government agencies.

This forecast reflects a relatively optimistic outlook for western Canadian crude oil production and assumes that the development of markets and pipeline infrastructure will coincide to support the forecast growth in western Canadian production. A key use of the forecast is to allow members to plan for needed pipeline capacity increases.

The survey results do not prescribe any forecasts of future oil prices and rely on individual companies incorporating their own internal price expectations to develop their production forecasts.

## **7.0 Production and Supply Tables**

The following tables provide the detailed forecast data from which the charts were created. Three sets of tables are included to show production, two supply scenarios and a high level assessment of the need for incremental pipeline capacity.

### CAPP CANADIAN CRUDE OIL PRODUCTION FORECAST 2006 - 2020

	Thousand barrels per day					Forecast														
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>CONVENTIONAL</b>																				
<b>Light &amp; Medium</b>																				
Alberta	481	438	414	389	374	366	359	348	334	321	308	296	284	273	259	246	234	222	211	200
B.C.	43	42	37	35	30	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
Saskatchewan	143	139	138	137	141	138	135	131	126	121	116	111	107	102	97	92	88	83	79	75
Manitoba	11	11	11	11	14	13	13	13	12	12	11	11	10	10	10	9	9	8	8	7
N.W.T.	25	24	22	21	19	18	18	18	17	16	15	15	14	14	13	12	12	11	11	10
<b>Total Conv. Light and Medium</b>	<b>704</b>	<b>653</b>	<b>622</b>	<b>593</b>	<b>577</b>	<b>566</b>	<b>554</b>	<b>538</b>	<b>516</b>	<b>495</b>	<b>476</b>	<b>457</b>	<b>438</b>	<b>421</b>	<b>400</b>	<b>380</b>	<b>361</b>	<b>343</b>	<b>326</b>	<b>309</b>
<b>Heavy</b>																				
Alberta Conv. Heavy	240	222	216	211	197	194	188	182	177	171	166	161	155	149	141	134	127	121	115	109
Saskatchewan Conv. Heavy*	283	282	282	286	278	273	265	257	249	241	234	227	218	209	199	189	180	171	162	154
<b>Total Conventional Heavy</b>	<b>523</b>	<b>504</b>	<b>498</b>	<b>497</b>	<b>476</b>	<b>466</b>	<b>452</b>	<b>439</b>	<b>426</b>	<b>413</b>	<b>400</b>	<b>388</b>	<b>373</b>	<b>358</b>	<b>340</b>	<b>323</b>	<b>307</b>	<b>292</b>	<b>277</b>	<b>263</b>
<b>TOTAL CONVENTIONAL</b>	<b>1 226</b>	<b>1 157</b>	<b>1 120</b>	<b>1 089</b>	<b>1 053</b>	<b>1 032</b>	<b>1 007</b>	<b>976</b>	<b>942</b>	<b>908</b>	<b>876</b>	<b>845</b>	<b>811</b>	<b>779</b>	<b>740</b>	<b>703</b>	<b>668</b>	<b>634</b>	<b>603</b>	<b>572</b>
<b>PENTANES/CONDENSATE</b>	186	163	164	162	160	159	159	158	157	156	155	155	154	153	152	152	151	150	149	149
<b>OIL SANDS</b>																				
Oil Sands Mining	349	441	514	608	552	696	751	826	908	1 019	1 182	1 264	1 481	1 701	1 750	1 909	1 996	2 121	2 195	2 273
Oil Sands In-Situ	310	303	349	386	438	520	676	794	957	1 132	1 370	1 513	1 683	1 736	1 745	1 753	1 752	1 740	1 730	1 724
<b>TOTAL OIL SANDS</b>	<b>659</b>	<b>744</b>	<b>863</b>	<b>994</b>	<b>991</b>	<b>1 216</b>	<b>1 427</b>	<b>1 620</b>	<b>1 865</b>	<b>2 151</b>	<b>2 552</b>	<b>2 777</b>	<b>3 164</b>	<b>3 437</b>	<b>3 495</b>	<b>3 661</b>	<b>3 748</b>	<b>3 861</b>	<b>3 925</b>	<b>3 997</b>
<b>WESTERN CANADA OIL PRODUCTION</b>	<b>2 071</b>	<b>2 065</b>	<b>2 147</b>	<b>2 245</b>	<b>2 204</b>	<b>2 407</b>	<b>2 592</b>	<b>2 754</b>	<b>2 964</b>	<b>3 215</b>	<b>3 583</b>	<b>3 777</b>	<b>4 129</b>	<b>4 369</b>	<b>4 387</b>	<b>4 516</b>	<b>4 567</b>	<b>4 645</b>	<b>4 677</b>	<b>4 718</b>
<b>TOTAL CANADIAN OIL PRODUCTION</b>	<b>2 220</b>	<b>2 350</b>	<b>2 484</b>	<b>2 560</b>	<b>2 509</b>	<b>2 722</b>	<b>2 967</b>	<b>3 109</b>	<b>3 294</b>	<b>3 535</b>	<b>3 883</b>	<b>4 062</b>	<b>4 394</b>	<b>4 614</b>	<b>4 617</b>	<b>4 731</b>	<b>4 767</b>	<b>4 830</b>	<b>4 852</b>	<b>4 878</b>

**Notes:**

\* Re-allocates Saskatchewan Area III "Medium" into medium and heavy. Reserves data shows about 17% of Area III is > 900 kg/m<sup>3</sup>

May, 2006

CAPP WESTERN CANADIAN CRUDE OIL SUPPLY FORECAST 2006 - 2020

Table 2

*BLENDING SUPPLY to Trunk Pipelines and Markets*

**Supply Scenario with Synthetic Crude Used as Diluent**

	<i>Thousand barrels per day</i>					Forecast															
	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	
<b>CONVENTIONAL</b>																					
Total Light and Medium	704	653	622	593	567	555	544	528	507	487	467	448	430	413	393	373	354	337	320	304	
Net Conventional Heavy to Market	463	443	418	395	379	368	353	337	323	308	294	280	263	246	226	207	189	172	155	140	
<b>TOTAL CONVENTIONAL</b>	<b>1 166</b>	<b>1 097</b>	<b>1 041</b>	<b>988</b>	<b>946</b>	<b>924</b>	<b>897</b>	<b>865</b>	<b>829</b>	<b>795</b>	<b>761</b>	<b>729</b>	<b>694</b>	<b>659</b>	<b>619</b>	<b>580</b>	<b>543</b>	<b>508</b>	<b>475</b>	<b>443</b>	
NGL Mix	37	37	30	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	
<b>OIL SANDS</b>																					
Upgraded Light (Synthetic)	377	465	492	560	495	615	605	705	737	664	814	1 012	1 171	1 305	1 398	1 469	1 545	1 675	1 704	1 694	
Heavy Equivelant																					
Dil Bit Blend and Synthetic Heavy	435	446	531	587	669	753	769	805	805	807	837	884	872	1 021	998	999	1 030	1 080	1 100	1 093	
Syn-Bit	6	5	7	69	87	104	316	371	581	949	1 155	1 117	1 352	1 351	1 341	1 447	1 426	1 352	1 372	1 463	
<b>Total Heavy Equivelant</b>	<b>441</b>	<b>451</b>	<b>538</b>	<b>656</b>	<b>756</b>	<b>857</b>	<b>1 085</b>	<b>1 176</b>	<b>1 387</b>	<b>1 756</b>	<b>1 992</b>	<b>2 001</b>	<b>2 224</b>	<b>2 372</b>	<b>2 338</b>	<b>2 446</b>	<b>2 456</b>	<b>2 432</b>	<b>2 472</b>	<b>2 556</b>	
<i>Synthetic Used as Diluent</i>			3	31	39	47	142	167	262	427	520	503	609	608	603	651	642	609	617	658	
<b>TOTAL OIL SANDS AND UPGRADERS</b>	<b>818</b>	<b>917</b>	<b>1 030</b>	<b>1 216</b>	<b>1 251</b>	<b>1 472</b>	<b>1 690</b>	<b>1 882</b>	<b>2 123</b>	<b>2 420</b>	<b>2 806</b>	<b>3 013</b>	<b>3 395</b>	<b>3 678</b>	<b>3 736</b>	<b>3 915</b>	<b>4 001</b>	<b>4 107</b>	<b>4 176</b>	<b>4 250</b>	
Total Light Supply	1 118	1 156	1 144	1 175	1 084	1 192	1 171	1 255	1 266	1 172	1 303	1 482	1 623	1 741	1 812	1 864	1 921	2 033	2 046	2 020	
Total Heavy Supply	904	895	956	1 051	1 135	1 225	1 438	1 514	1 709	2 064	2 286	2 282	2 487	2 619	2 565	2 653	2 645	2 604	2 627	2 696	
<b>WESTERN CANADA OIL SUPPLY</b>	<b>2 021</b>	<b>2 051</b>	<b>2 100</b>	<b>2 226</b>	<b>2 219</b>	<b>2 418</b>	<b>2 609</b>	<b>2 769</b>	<b>2 975</b>	<b>3 236</b>	<b>3 589</b>	<b>3 764</b>	<b>4 111</b>	<b>4 359</b>	<b>4 377</b>	<b>4 517</b>	<b>4 566</b>	<b>4 637</b>	<b>4 673</b>	<b>4 715</b>	

May, 2006

CAPP WESTERN CANADIAN CRUDE OIL SUPPLY FORECAST 2006 - 2020

Table 3

*BLENDING SUPPLY to Trunk Pipelines and Markets*

**Supply Scenario with Condensate Used as Diluent**

	<i>Thousand barrels per day</i>					Forecast															
	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	
<b>CONVENTIONAL</b>																					
Total Light and Medium	704	653	622	593	567	555	544	528	507	487	467	448	430	413	393	373	354	337	320	304	
Net Conventional Heavy to Market	463	443	418	395	379	368	353	337	323	308	294	280	263	246	226	207	189	172	155	140	
<b>TOTAL CONVENTIONAL</b>	<b>1 166</b>	<b>1 097</b>	<b>1 041</b>	<b>988</b>	<b>946</b>	<b>924</b>	<b>897</b>	<b>865</b>	<b>829</b>	<b>795</b>	<b>761</b>	<b>729</b>	<b>694</b>	<b>659</b>	<b>619</b>	<b>580</b>	<b>543</b>	<b>508</b>	<b>475</b>	<b>443</b>	
NGL Mix	37	37	30	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	
<b>OIL SANDS</b>																					
Upgraded Light (Synthetic)	377	465	492	560	495	615	605	705	737	748	1 026	1 196	1 351	1 482	1 569	1 688	1 816	1 943	1 970	1 958	
Heavy Equivelant																					
Dil Bit Blend and Synthetic Heavy	435	446	531	587	669	753	769	805	805	983	1 299	1 304	1 284	1 424	1 391	1 492	1 630	1 676	1 691	1 680	
Syn-Bit	6	5	7	69	87	104	316	371	581	729	599	635	881	890	891	873	719	651	676	772	
<b>Total Heavy Equivelant</b>	<b>441</b>	<b>451</b>	<b>538</b>	<b>656</b>	<b>756</b>	<b>857</b>	<b>1 085</b>	<b>1 176</b>	<b>1 387</b>	<b>1 712</b>	<b>1 898</b>	<b>1 939</b>	<b>2 164</b>	<b>2 314</b>	<b>2 283</b>	<b>2 365</b>	<b>2 349</b>	<b>2 326</b>	<b>2 367</b>	<b>2 452</b>	
Synthetic Used as Diluent			3	31	39	47	142	167	262	328	270	286	396	401	401	393	324	293	304	347	
<b>TOTAL OIL SANDS AND UPGRADERS</b>	<b>818</b>	<b>917</b>	<b>1 030</b>	<b>1 216</b>	<b>1 251</b>	<b>1 472</b>	<b>1 690</b>	<b>1 882</b>	<b>2 123</b>	<b>2 460</b>	<b>2 925</b>	<b>3 135</b>	<b>3 516</b>	<b>3 796</b>	<b>3 852</b>	<b>4 054</b>	<b>4 164</b>	<b>4 269</b>	<b>4 337</b>	<b>4 410</b>	
Total Light Supply	1 118	1 156	1 144	1 175	1 084	1 192	1 171	1 255	1 266	1 256	1 515	1 666	1 804	1 917	1 984	2 083	2 192	2 302	2 312	2 284	
Total Heavy Supply	904	895	956	1 051	1 135	1 225	1 438	1 514	1 709	2 020	2 192	2 220	2 427	2 561	2 509	2 572	2 538	2 498	2 522	2 592	
<b>WESTERN CANADA OIL SUPPLY</b>	<b>2 021</b>	<b>2 051</b>	<b>2 100</b>	<b>2 226</b>	<b>2 219</b>	<b>2 418</b>	<b>2 609</b>	<b>2 769</b>	<b>2 975</b>	<b>3 277</b>	<b>3 708</b>	<b>3 886</b>	<b>4 231</b>	<b>4 478</b>	<b>4 493</b>	<b>4 656</b>	<b>4 730</b>	<b>4 800</b>	<b>4 834</b>	<b>4 876</b>	

May, 2006

**CAPP WESTERN CANADIAN CRUDE OIL SUPPLY FORECAST 2006 - 2020**

Table 4

**Summary of Western Canadian Supply and Pipeline Capacity ex Western Canada**

**Supply Scenario with Synthetic Crude Used as Diluent**

	Thousand Barrels Per Day															
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Light Crude Supply</b>	1 080	1 190	1 170	1 260	1 270	1 170	1 300	1 480	1 620	1 740	1 810	1 860	1 920	2 030	2 050	2 020
<b>Non Enbridge Demand</b>	690	710	720	720	760	770	770	770	770	770	770	770	770	770	770	770
<b>Supply to Enbridge</b>	390	490	450	530	510	410	540	720	860	980	1 050	1 100	1 160	1 270	1 280	1 250
<b>Enbridge Light Capacity (Line 2 &amp; Line 13)</b>	580	580	580	580	580	580	580	580	580	580	580	580	580	580	580	580
<b>Capacity Surplus / (Shortfall)</b>	190	90	130	50	80	170	40	(140)	(280)	(390)	(470)	(520)	(580)	(690)	(700)	(670)
<b>Heavy Crude Supply</b>	1 140	1 230	1 440	1 510	1 710	2 060	2 290	2 280	2 490	2 620	2 560	2 650	2 640	2 600	2 630	2 700
<b>Non Enbridge Demand</b>	320	330	370	370	380	380	380	380	380	380	380	380	380	380	380	380
<b>Supply to Enbridge</b>	810	890	1 070	1 140	1 330	1 690	1 910	1 900	2 110	2 240	2 190	2 280	2 270	2 230	2 250	2 320
<b>Enbridge Heavy Capacity (L3 &amp; L4)</b>	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120
<b>Capacity Surplus / (Shortfall)</b>	300	220	50	(30)	(220)	(570)	(790)	(790)	(1 000)	(1 130)	(1 070)	(1 160)	(1 150)	(1 110)	(1 130)	(1 200)
<b>Total Supply to Enbridge</b>	1 200	1 380	1 520	1 670	1 840	2 100	2 450	2 620	2 970	3 220	3 240	3 380	3 430	3 500	3 530	3 570
<b>Total Enbridge Capacity</b>	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700
<b>Net Surplus / (Shortfall)</b>	500	320	180	30	(140)	(400)	(750)	(920)	(1 270)	(1 520)	(1 540)	(1 680)	(1 730)	(1 800)	(1 830)	(1 870)
<b>Planned Western Canadian Capacity Expansion Projects:</b>																
<b>Enbridge Southern Access</b>			120	268	315	315	315	315	315	315	315	315	315	315	315	315
<b>Trans Canada Keystone</b>					170	340	340	340	340	340	340	340	340	340	340	340
<b>Total Capacity Added</b>			120	268	485	655	655	655	655	655	655	655	655	655	655	655
<b>Net Surplus / (Shortfall)</b>	500	320	300	298	345	255	(95)	(265)	(615)	(865)	(885)	(1 025)	(1 075)	(1 145)	(1 175)	(1 215)

Notes:

Enbridge capacities reflect Terrace III annual capacity

May, 2006

**CAPP WESTERN CANADIAN CRUDE OIL SUPPLY FORECAST 2006 - 2020**

Table 5

**Summary of Western Canadian Supply and Pipeline Capacity ex Western Canada**

**Supply Scenario with Condensate Used as Diluent**

	Thousand Barrels Per Day															
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Light Crude Supply</b>	1 080	1 190	1 170	1 260	1 270	1 260	1 520	1 670	1 800	1 920	1 980	2 080	2 190	2 300	2 310	2 280
<b>Non Enbridge Demand</b>	690	710	720	720	760	770	770	770	770	770	770	770	770	770	770	770
<b>Supply to Enbridge</b>	390	490	450	530	510	490	750	900	1 040	1 150	1 220	1 320	1 430	1 540	1 550	1 520
<b>Enbridge Light Capacity (Line 2 &amp; Line 13)</b>	580	580	580	580	580	580	580	580	580	580	580	580	580	580	580	580
<b>Capacity Surplus / (Shortfall)</b>	190	90	130	50	80	90	(170)	(320)	(460)	(570)	(640)	(740)	(850)	(960)	(970)	(940)
<b>Heavy Crude Supply</b>	1 140	1 230	1 440	1 510	1 710	2 020	2 190	2 220	2 430	2 560	2 510	2 570	2 540	2 500	2 520	2 590
<b>Non Enbridge Demand</b>	320	330	370	370	380	380	380	380	380	380	380	380	380	380	380	380
<b>Supply to Enbridge</b>	810	890	1 070	1 140	1 330	1 640	1 820	1 840	2 050	2 180	2 130	2 200	2 160	2 120	2 150	2 210
<b>Enbridge Heavy Capacity (L3 &amp; L4)</b>	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120	1 120
<b>Capacity Surplus / (Shortfall)</b>	300	220	50	(30)	(220)	(530)	(700)	(730)	(940)	(1 070)	(1 020)	(1 080)	(1 050)	(1 010)	(1 030)	(1 100)
<b>Total Supply to Enbridge</b>	1 200	1 380	1 520	1 670	1 840	2 130	2 570	2 740	3 090	3 330	3 350	3 520	3 590	3 660	3 700	3 730
<b>Total Enbridge Capacity</b>	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700	1 700
<b>Net Surplus / (Shortfall)</b>	500	320	180	30	(140)	(430)	(870)	(1 040)	(1 390)	(1 630)	(1 650)	(1 820)	(1 890)	(1 960)	(2 000)	(2 030)
<b>Planned Western Canadian Capacity Expansion Projects:</b>																
<b>Enbridge Southern Access</b>			120	268	315	315	315	315	315	315	315	315	315	315	315	315
<b>Trans Canada Keystone</b>					170	340	340	340	340	340	340	340	340	340	340	340
<b>Total Capacity Added</b>			120	268	485	655	655	655	655	655	655	655	655	655	655	655
<b>Net Surplus / (Shortfall)</b>	500	320	300	298	345	225	(215)	(385)	(735)	(975)	(995)	(1 165)	(1 235)	(1 305)	(1 345)	(1 375)

Notes:

Enbridge capacities reflect Terrace III annual capacity

May, 2006

**CAPP CANADIAN CRUDE OIL PRODUCTION FORECAST 2006 - 2020**

	Thousand m3 per day					Forecast															
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
<b>CONVENTIONAL</b>																					
<b>Light &amp; Medium</b>																					
Alberta	76	70	66	62	59	58	57	55	53	51	49	47	45	43	41	39	37	35	34	32	
B.C.	7	7	6	6	5	5	5	4	4	4	4	4	4	3	3	3	3	3	3	3	3
Saskatchewan	23	22	22	22	22	22	21	21	20	19	18	18	17	16	15	15	14	13	13	12	
Manitoba	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1
N.W.T.	4	4	4	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2
<b>Total Conv. Light and Medium</b>	<b>112</b>	<b>104</b>	<b>99</b>	<b>94</b>	<b>92</b>	<b>90</b>	<b>88</b>	<b>85</b>	<b>82</b>	<b>79</b>	<b>76</b>	<b>73</b>	<b>70</b>	<b>67</b>	<b>64</b>	<b>60</b>	<b>57</b>	<b>54</b>	<b>52</b>	<b>49</b>	
<b>Heavy</b>																					
Alberta Conv. Heavy	38	35	34	34	31	31	30	29	28	27	26	26	25	24	22	21	20	19	18	17	
Saskatchewan Conv. Heavy*	45	45	45	45	44	43	42	41	40	38	37	36	35	33	32	30	29	27	26	24	
<b>Total Conventional Heavy</b>	<b>83</b>	<b>80</b>	<b>79</b>	<b>79</b>	<b>76</b>	<b>74</b>	<b>72</b>	<b>70</b>	<b>68</b>	<b>66</b>	<b>64</b>	<b>62</b>	<b>59</b>	<b>57</b>	<b>54</b>	<b>51</b>	<b>49</b>	<b>46</b>	<b>44</b>	<b>42</b>	
<b>TOTAL CONVENTIONAL</b>	<b>195</b>	<b>184</b>	<b>178</b>	<b>173</b>	<b>167</b>	<b>164</b>	<b>160</b>	<b>155</b>	<b>150</b>	<b>144</b>	<b>139</b>	<b>134</b>	<b>129</b>	<b>124</b>	<b>118</b>	<b>112</b>	<b>106</b>	<b>101</b>	<b>96</b>	<b>91</b>	
<b>PENTANES/CONDENSATE</b>	30	26	26	26	25	25	25	25	25	25	25	25	24	24	24	24	24	24	24	24	24
<b>OIL SANDS</b>																					
Oil Sands Mining	55	70	82	97	88	111	119	131	144	162	188	201	235	270	278	303	317	337	349	361	
Oil Sands In-Situ	49	48	55	61	70	83	107	126	152	180	218	240	267	276	277	279	278	277	275	274	
<b>TOTAL OIL SANDS</b>	<b>105</b>	<b>118</b>	<b>137</b>	<b>158</b>	<b>157</b>	<b>193</b>	<b>227</b>	<b>257</b>	<b>296</b>	<b>342</b>	<b>406</b>	<b>441</b>	<b>503</b>	<b>546</b>	<b>555</b>	<b>582</b>	<b>596</b>	<b>614</b>	<b>624</b>	<b>635</b>	
<b>WESTERN CANADA OIL PRODUCTION</b>	<b>329</b>	<b>328</b>	<b>341</b>	<b>357</b>	<b>350</b>	<b>382</b>	<b>412</b>	<b>438</b>	<b>471</b>	<b>511</b>	<b>569</b>	<b>600</b>	<b>656</b>	<b>694</b>	<b>697</b>	<b>718</b>	<b>726</b>	<b>738</b>	<b>743</b>	<b>750</b>	
<b>TOTAL CANADIAN OIL PRODUCTION</b>	<b>353</b>	<b>373</b>	<b>395</b>	<b>407</b>	<b>399</b>	<b>433</b>	<b>472</b>	<b>494</b>	<b>523</b>	<b>562</b>	<b>617</b>	<b>645</b>	<b>698</b>	<b>733</b>	<b>734</b>	<b>752</b>	<b>757</b>	<b>768</b>	<b>771</b>	<b>775</b>	

**Notes:**

\* Re-allocates Saskatchewan Area III "Medium" into medium and heavy. Reserves data shows about 17% of Area III is > 900 kg/m3

May, 2006

**CAPP WESTERN CANADIAN CRUDE OIL SUPPLY FORECAST 2006 - 2020**

Table 7

***BLENDED SUPPLY to Trunk Pipelines and Markets***

**Supply Scenario with Synthetic Crude Used as Diluent**

<b><u>CONVENTIONAL</u></b>	<i>Thousand m3 per day</i>					Forecast														
	<b><u>2001</u></b>	<b><u>2002</u></b>	<b><u>2003</u></b>	<b><u>2004</u></b>	<b><u>2005</u></b>	<b><u>2006</u></b>	<b><u>2007</u></b>	<b><u>2008</u></b>	<b><u>2009</u></b>	<b><u>2010</u></b>	<b><u>2011</u></b>	<b><u>2012</u></b>	<b><u>2013</u></b>	<b><u>2014</u></b>	<b><u>2015</u></b>	<b><u>2016</u></b>	<b><u>2017</u></b>	<b><u>2018</u></b>	<b><u>2019</u></b>	<b><u>2020</u></b>
Total Light and Medium	112	104	99	94	90	88	86	84	81	77	74	71	68	66	62	59	56	53	51	48
Net Conventional Heavy to Market	74	70	66	63	60	59	56	54	51	49	47	45	42	39	36	33	30	27	25	22
<b>TOTAL CONVENTIONAL</b>	<b>185</b>	<b>174</b>	<b>165</b>	<b>157</b>	<b>150</b>	<b>147</b>	<b>143</b>	<b>138</b>	<b>132</b>	<b>126</b>	<b>121</b>	<b>116</b>	<b>110</b>	<b>105</b>	<b>98</b>	<b>92</b>	<b>86</b>	<b>81</b>	<b>75</b>	<b>70</b>
NGL Mix	6	6	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
<b><u>OIL SANDS</u></b>																				
Upgraded Light (Synthetic)	60	74	78	89	79	98	96	112	117	105	129	161	186	207	222	233	246	266	271	269
Heavy Equivelant																				
Dil Bit Blend and Synthetic Heavy	69	71	84	93	106	120	122	128	128	128	133	140	139	162	159	159	164	172	175	174
Syn-Bit	1	1	1	11	14	17	50	59	92	151	184	178	215	215	213	230	227	215	218	232
<b>Total Heavy Equivelant</b>	<b>70</b>	<b>72</b>	<b>85</b>	<b>104</b>	<b>120</b>	<b>136</b>	<b>172</b>	<b>187</b>	<b>220</b>	<b>279</b>	<b>317</b>	<b>318</b>	<b>353</b>	<b>377</b>	<b>372</b>	<b>389</b>	<b>390</b>	<b>386</b>	<b>393</b>	<b>406</b>
<i>Synthetic Used as Diluent</i>	0	0	1	5	6	7	23	27	42	68	83	80	97	97	96	103	102	97	98	105
<b>TOTAL OIL SANDS AND UPGRADERS</b>	<b>130</b>	<b>146</b>	<b>164</b>	<b>193</b>	<b>199</b>	<b>234</b>	<b>269</b>	<b>299</b>	<b>337</b>	<b>384</b>	<b>446</b>	<b>479</b>	<b>540</b>	<b>584</b>	<b>594</b>	<b>622</b>	<b>636</b>	<b>653</b>	<b>664</b>	<b>675</b>
Total Light Supply	178	184	182	187	172	189	186	199	201	186	207	235	258	277	288	296	305	323	325	321
Total Heavy Supply	144	142	152	167	180	195	228	241	272	328	363	363	395	416	408	422	420	414	417	428
<b>WESTERN CANADA OIL SUPPLY</b>	<b>321</b>	<b>326</b>	<b>334</b>	<b>354</b>	<b>353</b>	<b>384</b>	<b>415</b>	<b>440</b>	<b>473</b>	<b>514</b>	<b>570</b>	<b>598</b>	<b>653</b>	<b>693</b>	<b>696</b>	<b>718</b>	<b>726</b>	<b>737</b>	<b>743</b>	<b>749</b>

May, 2006

**CAPP WESTERN CANADIAN CRUDE OIL SUPPLY FORECAST 2006 - 2020**

Table 8

***BLENDED SUPPLY to Trunk Pipelines and Markets***

**Supply Scenario with Condensate Used as Diluent**

	<i>Thousand m3 per day</i>					Forecast														
	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
<b><u>CONVENTIONAL</u></b>																				
Total Light and Medium	112	104	99	94	90	88	86	84	81	77	74	71	68	66	62	59	56	53	51	48
Net Conventional Heavy to Market	74	70	66	63	60	59	56	54	51	49	47	45	42	39	36	33	30	27	25	22
<b>TOTAL CONVENTIONAL</b>	<b>185</b>	<b>174</b>	<b>165</b>	<b>157</b>	<b>150</b>	<b>147</b>	<b>143</b>	<b>138</b>	<b>132</b>	<b>126</b>	<b>121</b>	<b>116</b>	<b>110</b>	<b>105</b>	<b>98</b>	<b>92</b>	<b>86</b>	<b>81</b>	<b>75</b>	<b>70</b>
NGL Mix	6	6	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
<b><u>OIL SANDS</u></b>																				
Upgraded Light (Synthetic)	60	74	78	89	79	98	96	112	117	119	163	190	215	235	249	268	289	309	313	311
<b>Heavy Equivelant</b>																				
Dil Bit Blend and Synthetic Heavy	69	71	84	93	106	120	122	128	128	156	206	207	204	226	221	237	259	266	269	267
Syn-Bit	1	1	1	11	14	17	50	59	92	116	95	101	140	141	142	139	114	103	107	123
<b>Total Heavy Equivelant</b>	<b>70</b>	<b>72</b>	<b>85</b>	<b>104</b>	<b>120</b>	<b>136</b>	<b>172</b>	<b>187</b>	<b>220</b>	<b>272</b>	<b>302</b>	<b>308</b>	<b>344</b>	<b>368</b>	<b>363</b>	<b>376</b>	<b>373</b>	<b>370</b>	<b>376</b>	<b>390</b>
<i>Synthetic Used as Diluent</i>	0	0	1	5	6	7	23	27	42	52	43	45	63	64	64	62	51	47	48	55
<b>TOTAL OIL SANDS AND UPGRADERS</b>	<b>130</b>	<b>146</b>	<b>164</b>	<b>193</b>	<b>199</b>	<b>234</b>	<b>269</b>	<b>299</b>	<b>337</b>	<b>391</b>	<b>465</b>	<b>498</b>	<b>559</b>	<b>603</b>	<b>612</b>	<b>644</b>	<b>662</b>	<b>678</b>	<b>689</b>	<b>701</b>
Total Light Supply	178	184	182	187	172	189	186	199	201	200	241	265	287	305	315	331	348	366	367	363
Total Heavy Supply	144	142	152	167	180	195	228	241	272	321	348	353	386	407	399	409	403	397	401	412
<b>WESTERN CANADA OIL SUPPLY</b>	<b>321</b>	<b>326</b>	<b>334</b>	<b>354</b>	<b>353</b>	<b>384</b>	<b>415</b>	<b>440</b>	<b>473</b>	<b>521</b>	<b>589</b>	<b>618</b>	<b>672</b>	<b>712</b>	<b>714</b>	<b>740</b>	<b>752</b>	<b>763</b>	<b>768</b>	<b>775</b>

**CAPP WESTERN CANADIAN CRUDE OIL SUPPLY FORECAST 2006 - 2020**

Table 9

**Summary of Western Canadian Supply and Pipeline Capacity ex Western Canada**

**Supply Scenario with Synthetic Crude Used as Diluent**

	Thousand m3 Per Day															
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Light Crude Supply</b>	172	189	186	200	202	186	207	235	257	277	288	296	305	323	326	321
<b>Non Enbridge Demand</b>	110	113	114	114	121	122	122	122	122	122	122	122	122	122	122	122
<b>Supply to Enbridge</b>	62	78	72	84	81	65	86	114	137	156	167	175	184	202	203	199
<b>Enbridge Light Capacity (Line 2 &amp; Line 13)</b>	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92
<b>Capacity Surplus / (Shortfall)</b>	30	14	21	8	13	27	6	(22)	(44)	(62)	(75)	(83)	(92)	(110)	(111)	(106)
<b>Heavy Crude Supply</b>	181	195	229	240	272	327	364	362	396	416	407	421	420	413	418	429
<b>Non Enbridge Demand</b>	51	52	59	59	60	60	60	60	60	60	60	60	60	60	60	60
<b>Supply to Enbridge</b>	129	141	170	181	211	269	304	302	335	356	348	362	361	354	358	369
<b>Enbridge Heavy Capacity (L3 &amp; L4)</b>	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178
<b>Capacity Surplus / (Shortfall)</b>	48	35	8	(5)	(35)	(91)	(126)	(126)	(159)	(180)	(170)	(184)	(183)	(176)	(180)	(191)
<b>Total Supply to Enbridge</b>	191	219	242	265	292	334	389	416	472	512	515	537	545	556	561	567
<b>Total Enbridge Capacity</b>	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270
<b>Net Surplus / (Shortfall)</b>	79	51	29	5	(22)	(64)	(119)	(146)	(202)	(242)	(245)	(267)	(275)	(286)	(291)	(297)
<b>Planned Western Canadian Capacity Expansion Projects:</b>																
<b>Enbridge Southern Access</b>	0	0	19	43	50	50	50	50	50	50	50	50	50	50	50	50
<b>Trans Canada Keystone</b>	0	0	0	0	27	54	54	54	54	54	54	54	54	54	54	54
<b>Total Capacity Added</b>	0	0	19	43	77	104	104	104	104	104	104	104	104	104	104	104
<b>Net Surplus / (Shortfall)</b>	79	51	48	47	55	41	(15)	(42)	(98)	(137)	(141)	(163)	(171)	(182)	(187)	(193)

Notes:

Enbridge capacities reflect Terrace III annual capacity  
May, 2006

**CAPP WESTERN CANADIAN CRUDE OIL SUPPLY FORECAST 2006 - 2020**

Table 10

**Summary of Western Canadian Supply and Pipeline Capacity ex Western Canada**

**Supply Scenario with Condensate Used as Diluent**

	Thousand m3 Per Day															
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Light Crude Supply</b>	172	189	186	200	202	200	242	265	286	305	315	331	348	365	367	362
<b>Non Enbridge Demand</b>	110	113	114	114	121	122	122	122	122	122	122	122	122	122	122	122
<b>Supply to Enbridge</b>	62	78	72	84	81	78	119	143	165	183	194	210	227	245	246	242
<b>Enbridge Light Capacity (Line 2 &amp; Line 13)</b>	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92
<b>Capacity Surplus / (Shortfall)</b>	30	14	21	8	13	14	(27)	(51)	(73)	(91)	(102)	(118)	(135)	(153)	(154)	(149)
<b>Heavy Crude Supply</b>	181	195	229	240	272	321	348	353	386	407	399	408	404	397	400	412
<b>Non Enbridge Demand</b>	51	52	59	59	60	60	60	60	60	60	60	60	60	60	60	60
<b>Supply to Enbridge</b>	129	141	170	181	211	261	289	292	326	346	338	350	343	337	342	351
<b>Enbridge Heavy Capacity (L3 &amp; L4)</b>	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178
<b>Capacity Surplus / (Shortfall)</b>	48	35	8	(5)	(35)	(84)	(111)	(116)	(149)	(170)	(162)	(172)	(167)	(160)	(164)	(175)
<b>Total Supply to Enbridge</b>	191	219	242	265	292	338	408	435	491	529	532	559	570	582	588	593
<b>Total Enbridge Capacity</b>	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270
<b>Net Surplus / (Shortfall)</b>	79	51	29	5	(22)	(68)	(138)	(165)	(221)	(259)	(262)	(289)	(300)	(311)	(318)	(323)
<b>Planned Western Canadian Capacity Expansion Projects:</b>																
<b>Enbridge Southern Access</b>	0	0	19	43	50	50	50	50	50	50	50	50	50	50	50	50
<b>Trans Canada Keystone</b>	0	0	0	0	27	54	54	54	54	54	54	54	54	54	54	54
<b>Total Capacity Added</b>	0	0	19	43	77	104	104	104	104	104	104	104	104	104	104	104
<b>Net Surplus / (Shortfall)</b>	79	51	48	47	55	36	(34)	(61)	(117)	(155)	(158)	(185)	(196)	(207)	(214)	(219)

Notes:

Enbridge capacities reflect Terrace III annual capacity  
May, 2006