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## PROPANE MARKET STUDY

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*Prepared For*  
**Propane Gas Association of Canada**

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C-2646

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## **I. INTRODUCTION**

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Purvin & Gertz was engaged by the Propane Gas Association of Canada (PGAC) to provide an update to Purvin & Gertz' Propane Market Study report which was prepared for the PGAC in April 2006 (C-2568). The report is an analysis of the Canadian Propane market. The data in the report will be used in communications prepared by the PGAC for the benefit of members.

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## II. EXECUTIVE SUMMARY

Purvin & Gertz was engaged by the Propane Gas Association of Canada to prepare an analysis of the Canadian propane markets including supply, demand and economic indicators.

Canadian propane supply and demand results are shown in Table II-1.

	2001	2002	2003	2004	2005	2006E
<b>Supply</b>						
Gas Plant	8,625,192	10,197,510	9,699,175	9,515,351	9,490,163	9,583,353
Refinery	2,061,981	2,023,088	2,006,490	1,570,928	1,400,428	1,253,018
Imports	166,026	110,671	105,021	124,554	92,500	165,840
Inventory Adjustment	-529,347	694,496	1,122,376	50,351	126,432	57,319
<b>Total</b>	<b>10,323,852</b>	<b>13,025,765</b>	<b>12,933,062</b>	<b>11,261,184</b>	<b>11,109,523</b>	<b>11,059,530</b>
<b>Demand</b>						
Wholesale	396,690	557,606	636,693	484,747	720,906	724,389
Retail	1,713,988	2,441,023	2,769,011	1,990,787	2,956,709	3,026,362
Exports	8,213,174	10,027,137	9,527,358	8,785,650	7,431,909	7,308,779
<b>Total</b>	<b>10,323,852</b>	<b>13,025,765</b>	<b>12,933,062</b>	<b>11,261,184</b>	<b>11,109,523</b>	<b>11,059,530</b>

There are a variety of sources of publicly available data for propane supply and demand. These data sources have all been prepared with different objectives and using different analytical approaches. Purvin & Gertz' approach is to focus on the most reliable data sources for the largest components of supply and demand. Then, any remaining uncertainties would be contained in the smaller components and would be less significant in the overall picture.

Propane supply was developed on an individual supply source basis for product originating from natural gas processing plants. To the extent that plant products consist of a mix product, a percentage of propane in the mix was estimated. Corrections for obvious reporting errors were made.

Propane supply originating from refineries was accepted as reported by the National Energy Board of Canada. Propane underground storage data as reported by the NEB was used to adjust supply availability. Purvin & Gertz adjusted the reported underground storage changes with an estimate of the change in tertiary, or end market storage. Based upon previous work by Purvin & Gertz, tertiary storage can represent up to an additional 90 percent of storage, over and above underground storage. This stored product is not publicly reported however, and generally runs counter-cyclical with relative propane prices. In other words, when prices rise, tertiary inventory is drawn down, and when prices fall, tertiary inventory rises.

Propane demand, both export and domestic, was developed using public data, adjusting for revised supply, and heating-degree days data. It was determined that the reported export data could be verified. However, domestic market data was inconsistent. To develop a more consistent view, weather related demand segments, namely residential and commercial demand,

were normalized, and then adjusted using provincial heating-degree days data and reported demand data. Remaining available Canadian supply was then allocated to the non-weather related demand segments proportionally using Statistics Canada data.

## **INDUSTRY INDICATORS**

Purvin & Gertz estimates that the total value of the Canadian propane industry is approximately \$3.8 billion per year. With an overall industry multiplier of approximately 2.5 the total economic value of the propane industry in Canada is approximately \$9.6 billion per year.

Purvin & Gertz estimates that the total direct employment in the propane industry in Canada is approximately 8,200 and the total indirect employment in the propane industry in Canada is approximately 20,000.

Purvin & Gertz estimates that the total payments of royalties, fees, income and other taxes was approximately \$875 million in 2006.

## **FUTURE WORK**

This study has a degree of uncertainty due to the lack of publicly available data and inconsistent industry reporting. A more thorough analysis, using a direct survey with all industry participants, from suppliers to end users, may provide more accurate results.

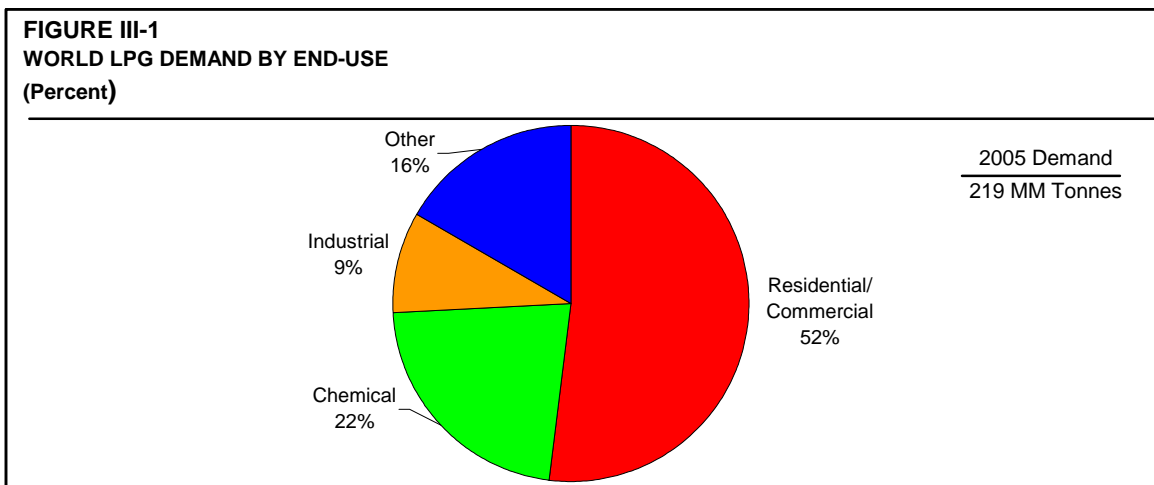
### III. MARKET OVERVIEW

#### WORLD AND NORTH AMERICAN ENERGY CONSUMPTION

Throughout much of the world, propane is produced and consumed as part of a Liquefied Petroleum Gas (LPG) mixture consisting primarily of propane and butane. The international LPG industry has expanded rapidly over the past two decades and has undergone many profound changes. New markets for LPG have emerged in many locations, and LPG consumption is increasing in virtually every region of the world. Utilization of LPG as fuel in residential and commercial markets has been rising fairly rapidly in many developing countries as access to LPG is expanded and markets are liberalized. Nevertheless, per capita LPG consumption in most developing regions remains substantially below consumption patterns in well-established markets such as Japan, North America and Western Europe.

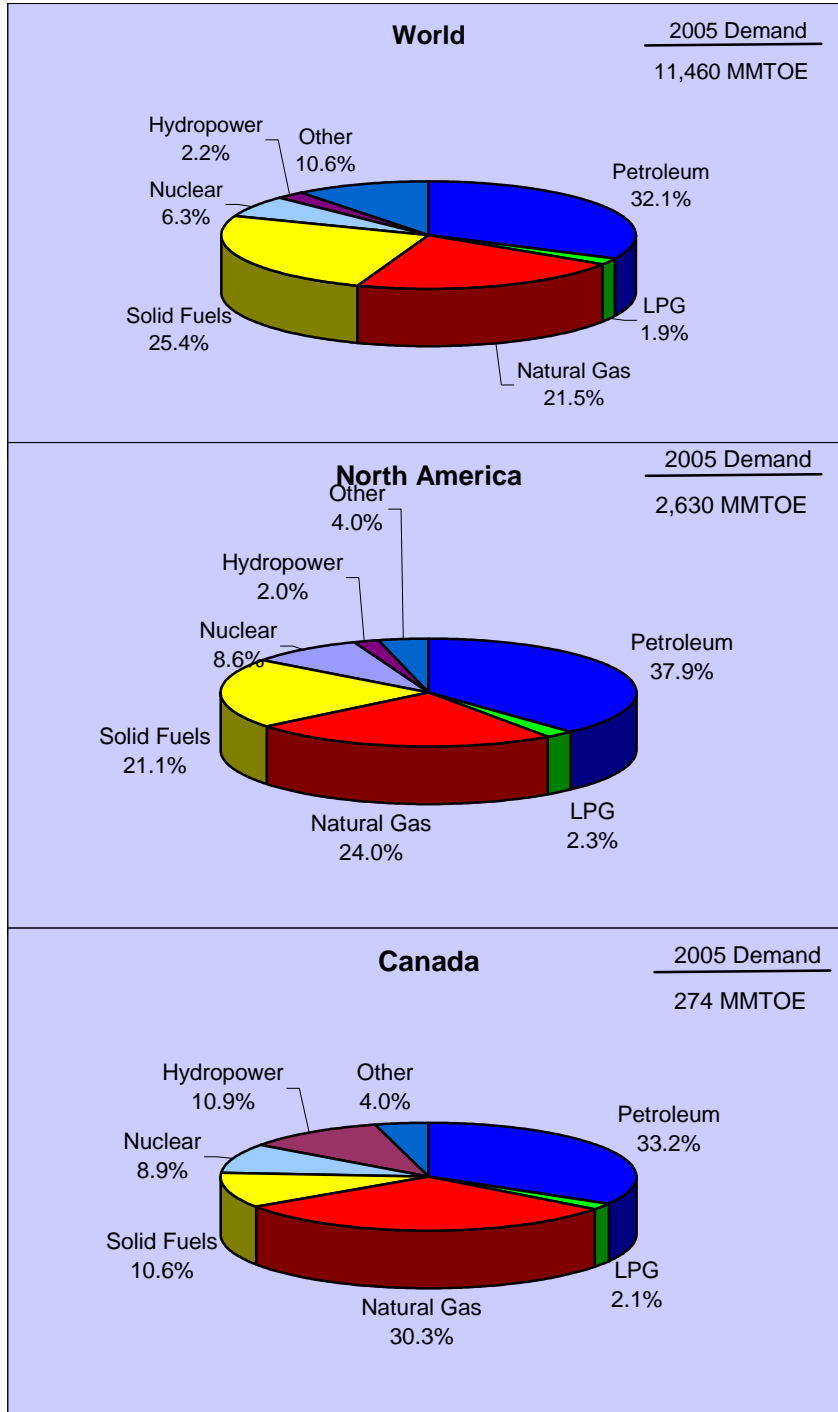
The petrochemical industry is a large consumer of LPG as feedstock. The global petrochemical industry represents a key market for LPG, and the evolution of regional petrochemical industries and feedstock markets will continue to be a key driver in international LPG markets.

About 74% of world LPG consumption is concentrated in two end-use sectors — the residential/commercial and the chemical markets. The residential/commercial sector is expanding quickly in developing markets and the chemical sector is undergoing dramatic growth, especially in the Middle East.



Worldwide, propane is a relatively small component of the total energy supply spectrum. Purvin & Gertz' estimates of the distribution of world, North American and Canadian energy sources are illustrated in Figure III-2.

**FIGURE III-2  
WORLD, NORTH AMERICAN AND CANADIAN ENERGY SOURCES**



Purvin & Gertz estimates that North American (excluding Mexico) LPG demand was approximately 2.3% of total energy consumption. In Canada, LPG demand was approximately 2.1% of total energy demand. Propane is estimated to be 60% to 70% of the LPG volumes, so propane's share of total energy demand in Canada is estimated to be in the 1.25% to 1.5% range.

Statistics Canada estimates that propane's share of total energy consumption in Canada was approximately 1.25% in 2004. The Statistics Canada data, by province and sector, is presented in Table III-1.

<b>Propane vs Total Energy</b>	<b>NL</b>	<b>PE</b>	<b>NS</b>	<b>NB</b>	<b>QC</b>	<b>ON</b>
Agriculture	0.45%	1.08%	1.13%	1.62%	10.96%	3.88%
Commercial and other institutional	3.28%	6.45%	5.06%	6.63%	2.57%	2.03%
Public administration	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Residential	0.75%	4.29%	2.34%	1.34%	0.36%	1.02%
Total industrial	0.19%	0.03%	0.51%	1.94%	0.47%	0.44%
Total transportation	0.01%	0.01%	0.09%	0.04%	0.14%	0.52%
<b>TOTAL</b>	<b>0.55%</b>	<b>2.21%</b>	<b>1.63%</b>	<b>1.86%</b>	<b>0.84%</b>	<b>0.95%</b>

<b>Propane vs Total Energy</b>	<b>MB</b>	<b>SK</b>	<b>AB</b>	<b>BC</b>	<b>NWT</b>	<b>TOTAL</b>
Agriculture	3.09%	0.22%	0.58%	1.12%	0.00%	2.98%
Commercial and other institutional	3.20%	1.10%	3.27%	1.87%	7.06%	2.58%
Public administration	0.00%	0.00%	0.00%	0.00%	0.16%	0.00%
Residential	0.67%	1.02%	0.81%	0.73%	7.73%	0.87%
Total industrial	3.31%	3.22%	3.22%	0.83%	2.44%	1.34%
Total transportation	0.39%	0.22%	0.84%	1.18%	1.08%	0.54%
<b>TOTAL</b>	<b>1.78%</b>	<b>1.28%</b>	<b>2.16%</b>	<b>1.10%</b>	<b>3.87%</b>	<b>1.25%</b>

**Notes:** 1) The data is from Statistics Canada.

## MARKET OUTLOOK

The vast majority of Canada's propane production results from natural gas processing. Propane production in Canada has declined slightly over the 2003 to 2006 period while natural gas production has remained relatively flat. Gas oriented drilling rates have increased dramatically in recent years throughout North America with no significant increase in overall production. Many forecasts call for declining conventional natural gas production as a result of drilling rates being unable to overcome field production declines. This would result in declining propane production. Unconventional gas production, such as coal bed methane (CBM), may offset some of the gas declines. However, CBM generally contains little, if any, recoverable gas liquids.

A relatively new source of production is the recovery of gas liquids from bitumen upgrader "off-gas" streams. One facility currently operates at the Suncor oil sands facility in Ft. McMurray, Alberta and another has been announced at an upgrader currently under construction in Ft. Saskatchewan, Alberta. The off gas streams typically contain large quantities

of olefinic materials and expensive separation processes are required to produce specification products. The expected growth in oil sands production over the next decade in Western Canada has the potential to be a very large source of gas liquids supply. However, significant infrastructure investments will be required to realize that supply.

Canadian propane markets are expected to tighten with declining gas production and steady markets in most of the traditional propane demand areas. Petrochemical usage is expected to increase and exports should decrease.

## LOGISTICS

Canada has over 800 gas processing facilities in operation, mostly in Alberta. About 475 of these plants recover propane as a constituent of an un-fractionated mix ("propane-plus" or "ethane-plus") which is trucked or moved by pipeline to fractionation facilities. Twenty-five (25) plants recover propane as a specification product. The largest volumes of propane are produced at eight straddle plants that reprocess gas volumes destined for export or for domestic consumption. The straddle plants also recover large volumes of ethane for petrochemical use in Alberta. Approximately one-half of the un-fractionated propane plus material is moved from Alberta to Sarnia, Ontario and Marysville, Michigan for fractionation.

NGL supplies from British Columbia are primarily delivered to fractionators in Alberta, with small amounts fractionated and sold locally. The largest deepcut facility is located at Taylor, British Columbia.

Natural gas liquids have also been removed from British Columbia and Northwest Alberta on the Alliance gas pipeline. Rich gas is delivered to the Aux Sable straddle plant and fractionator at Chicago. Aux Sable recovers ethane, propane, butane and pentanes plus. These NGLs are produced with gas in Canada, but recovered in the U.S. In addition, Alliance may receive injected NGL's from the Edmonton area. This activity occurs on an opportunistic basis. Aux Sable and NOVA Chemicals recently announced a project to construct a straddle plant at Fort Saskatchewan to process Alliance Pipeline gas to recover ethane for NOVA's Joffre petrochemical facility. Propane plus material will also be produced and will either be recovered at the site or re-injected into Alliance for recovery at Chicago.

In Alberta not all of the propane is segregated. Large volumes move to Sarnia/Marysville through the Enbridge/Lakehead pipeline and some is used in NGL mixes as solvent for miscible floods. The segregated propane is around 120,000 barrels per day, but nearly 100,000 barrels per day leave Alberta by truck, rail and the Cochin pipeline.

Present market access to Sarnia/Marysville through the Enbridge/Lakehead pipeline system is limited to parties with throughput rights or ownership interests in the existing NGL delivery systems. Provident Energy Trust (which acquired EnCana's NGL assets in 2005) has access to Enbridge at Kerrobert through the Kerrobert storage facility in which it has an ownership interest. This should reduce the barrier to access to Eastern markets through the Enbridge and Lakehead systems.

As in the United States and Europe, Eastern Canadian olefin plants developed significant feedstock flexibility during the 1980s. The feedstock economics of naphtha and gas oil cracking impact the price-sensitive demand for propane and butane which is an important market clearing mechanism for propane and butane in Eastern Canada.

The Cochin pipeline transports specification-grade propane to the U.S. Midwest and eastern Canadian markets. Connections to other pipelines gives Cochin shippers access to terminals on the Enterprise (formerly Williams/MAPCO) pipeline system, including deliveries to Conway, Kansas, thereby allowing shippers access to Enterprise points further downstream. Depending on market considerations, the pipeline can also transport field grade butane and propane-plus NGL mix. Propane has always been the dominant product for Cochin, historically taking anywhere from 60-75% of the shipped volume. In the 2004 through 2006 period Cochin volumes averaged approximately 9,000 bpd of ethane and 35,000 bpd of propane.

A fire and explosion on the pipeline occurred in August 2003. The resulting investigation is continuing and the line is still not operating at full capacity. The cause is suspected to be Stress Corrosion Cracking. In March 2005, the pipeline operator announced a voluntary pressure restriction on the Cochin line which resulted in the indefinite suspension of ethylene deliveries. In late November 2006, the pipeline operator announced a substantial tariff increase on Cochin to fund continued pressure testing to qualify the line for long term operation. The final tariff is subject to ongoing negotiations among the shippers, the pipeline operator and the regulators. We anticipate that future Cochin NGL volumes will be reduced significantly.

While investigations have been made into the marine export of propane and/or butane at Prince Rupert, British Columbia, it does not appear that any project is imminent. A NGL extraction plant and fractionator at Port Hawkesbury, Nova Scotia recovers propane, butane and pentanes plus from offshore gas production. Most of the products are exported. Ethane is not recovered but may be recovered in the future if a petrochemical industry can be developed.

There are 17 refineries in Canada that produce significant quantities of propane either as a specification product or as part of an olefinic or LPG mix. They are listed in Table III-2.

**TABLE III-2  
CANADIAN REFINERIES BY PROVINCE**

<b>ALBERTA</b>	<b>LOCATION</b>
Imperial Oil Limited	Strathcona
Petro-Canada Inc.	Edmonton
Shell Canada Limited	Scotford
<b>BRITISH COLUMBIA</b>	
Chevron Canada Limited	Burnaby
Husky Energy Inc.	Prince George
<b>NEW BRUNSWICK</b>	
Irving Oil Ltd.	Saint John
<b>NEWFOUNDLAND</b>	
North Atlantic Refining, Ltd.	Come by Chance
<b>NOVA SCOTIA</b>	
Imperial Oil Limited	Dartmouth
<b>ONTARIO</b>	
Imperial Oil Limited	Nanticoke
Imperial Oil Limited	Sarnia
Petro-Canada Inc.	Oakville
Shell Canada Limited	Corunna
Sunoco Refining	Sarnia
<b>QUEBEC</b>	
Petro-Canada Inc.	Pointe aux Trembles
Shell Canada Limited	Montreal
Ultramar Canada Inc.	St Romuald
<b>SASKATCHEWAN</b>	
Consumers Co-op Refineries	Regina

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## **IV. PROPANE SUPPLY AND DEMAND**

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There is a well-developed propane infrastructure in Canada. Propane supply is dominated by Alberta gas plant production, from which it is moved by truck, rail and pipeline throughout the province, across Canada, and for export to the United States. Significant volumes are also produced in Central and Eastern Canadian refineries. Propane demand is seen across all the provinces, with consumption dominated by conventional and industrial customers.

### **METHODOLOGY**

The supply and disposition numbers in this report are based on a variety of sources including statistics published by the National Energy Board (NEB), Natural Resources Canada (NRCan), Statistics Canada, the Alberta Energy and Utilities Board (AEUB), the British Columbia Department of Energy and Mines, the Saskatchewan Department of Mineral Resources, industry surveys and other sources.

Alberta propane supply was determined using data from the Alberta Energy and Utilities Board, the NEB and the LPG Almanac.

British Columbia propane supply was taken directly from the British Columbia Energy and Mines monthly "Production of By-Products at British Columbia Gas Plants and Refineries" report as well as the NEB and the LPG Almanac.

Saskatchewan propane supply was derived from data supplied by the Saskatchewan Ministry of Industry and Resources, the NEB and the LPG Almanac.

Nova Scotia gas plant propane production was determined from the NEB and the LPG Almanac data.

Based on Purvin & Gertz analysis, it was concluded that the reported NEB refinery propane production was accurate and we have used these values in our analysis.

Propane demand was developed by establishing total Canadian net supply and then allocating the supply to individual provinces and demand segments based on ratios calculated from Statistics Canada and NEB data. Net supply includes total gas plant and refinery production, plus imports, minus exports and adjusting for a primary inventory draw or build. The net Canadian supply, which represents domestic propane demand, was then allocated to the individual provinces based on the provincial ratios observed in the NEB supply and disposition report. These ratios were derived using total "Own Consumption" as well as sales to "Petrochemical" and sales to "Household, Commercial and Industrial Accounts".

Disposition within the individual provinces was determined by first allocating non-energy demand and then the remaining supply was used to calculate energy demand. Ratios for each energy demand sector were applied to the remaining provincial supply to create a breakdown of provincial energy demand. Ratios for “Residential” and “Commercial and Institutional” use were adjusted based on annual heating degree-days. The provincial heating degree data is shown in Table IV-1.

	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Nova Scotia	4,074	4,273	4,245	4,469	4,167	3,797
New Brunswick	4,643	4,741	5,003	5,045	4,603	4,155
Quebec	4,004	4,180	4,557	4,937	4,618	4,193
Ontario	3,422	3,630	3,981	4,028	3,966	3,180
Manitoba	5,368	5,730	5,662	5,936	5,491	5,127
Saskatchewan	5,395	5,698	5,815	5,843	5,580	5,344
Alberta	4,752	5,339	5,524	4,981	4,921	4,739
BC	2,853	2,854	2,659	2,528	2,668	2,725
<b>Total Canada</b>	<b>34,511</b>	<b>36,445</b>	<b>37,447</b>	<b>37,767</b>	<b>36,011</b>	<b>33,261</b>

In order to determine reasonable provincial “Producer Consumption”, “Non-Energy Use” and “Refinery Feedstocks” demand, individual provincial ratios, rather than Canadian ratios, needed to be applied. Purvin & Gertz identified which provinces would have each of these demand segments and established ratios for each segment. For all provinces, except Alberta and Ontario, these ratios were based on total NGL supply and demand. The demand ratios were then applied to the total provincial net supply. Once these demand segments were calculated the remaining supply was allocated to energy demand sectors. A sample calculation for 2005 propane demand in Alberta is shown in Table IV-2.

**TABLE IV-2**  
**SAMPLE PROPANE DEMAND CALCULATION - ALBERTA**  
 (Cubic Metres)

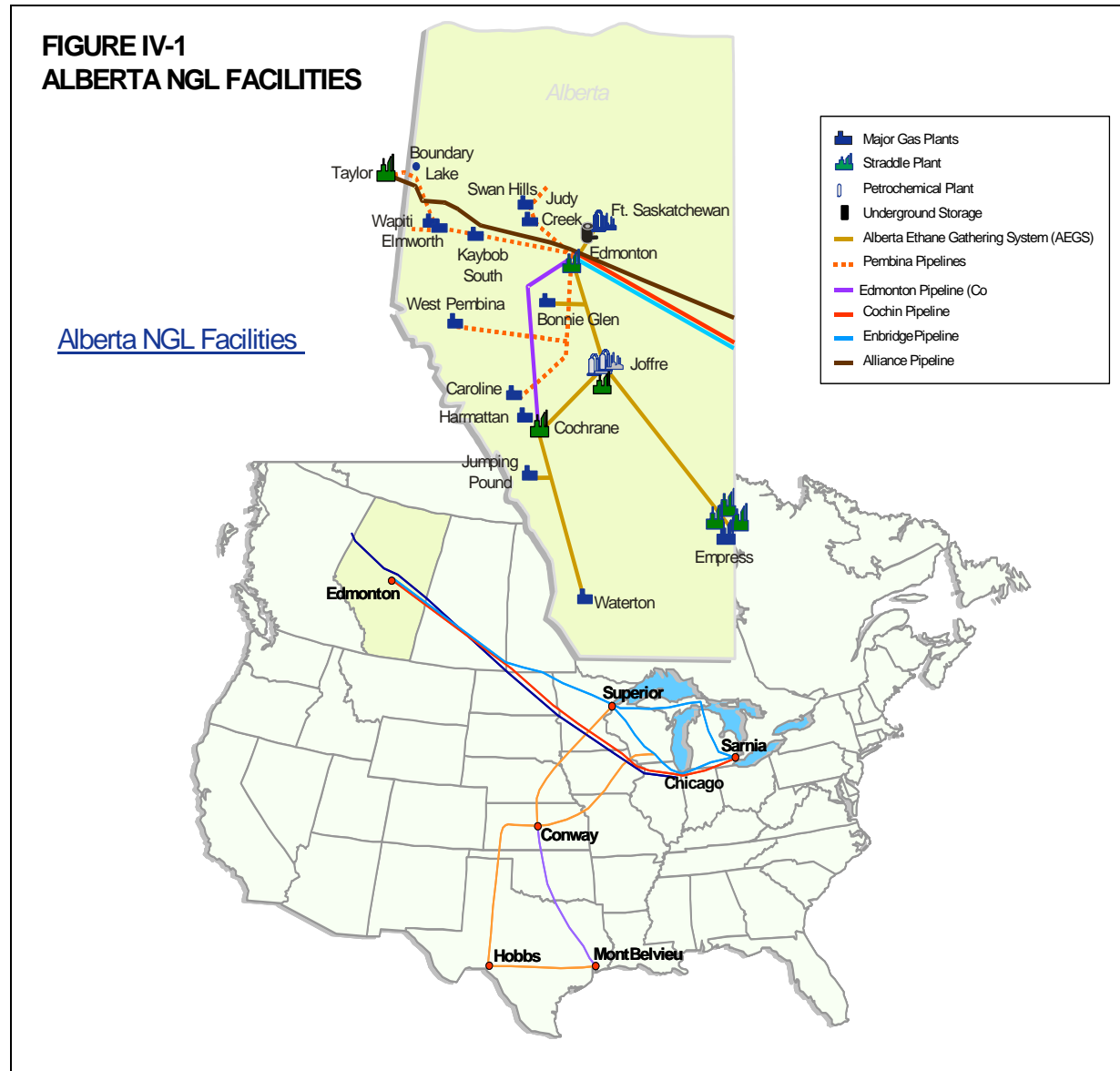
		2005	Source
<b>Supply</b>			
1	Canadian Production	10,890,591	P&G Calculation
2	Imports	92,500	NEB
3	Total Supply	10,983,091	1+2
4	Exports	7,431,909	NEB
5	Primary Inventory Draw	176,432	NEB
6	Tertiary Inventory Draw	-50,000	P&G Estimate
7	Net Canadian Supply	3,677,614	3-4+5+6
8	% of Canadian Consumption	27.46%	NEB
9	Available for Alberta Consumption	1,009,848	7 x 8
<b>Non-Energy Demand Ratios</b>			
10	Producer Consumption	1.67%	Statistics Canada
11	Non-energy Use	1.31%	Statistics Canada
<b>Retail Demand Breakdown</b>			
12	Total Mining & oil & gas extraction	25.38%	P&G Calculation and Statistics Canada
13	Total Manufacturing	8.21%	P&G Calculation and Statistics Canada
14	Construction	2.92%	P&G Calculation and Statistics Canada
15	Total Industrial	36.51%	P&G Calculation and Statistics Canada
16	Transportation	11.00%	P&G Calculation and Statistics Canada
17	Agriculture	5.00%	P&G Calculation and Statistics Canada
18	Residential	11.51%	P&G Calculation and Statistics Canada
19	Public Administration	0.00%	P&G Calculation and Statistics Canada
20	Commercial and other Institutional	35.98%	P&G Calculation and Statistics Canada
<b>Alberta Demand</b>			
21	Producer Consumption	16,900	9 x 10
22	Non-energy Use	13,266	9 x 11
23	Total Mining & oil & gas extraction	248,637	(9-21-22) x 12
24	Total Manufacturing	80,399	(9-21-22) x 13
25	Construction	28,649	(9-21-22) x 14
26	Total Industrial	357,686	(9-21-22) x 15
27	Transportation	107,765	(9-21-22) x 16
28	Agriculture	48,984	(9-21-22) x 17
29	Residential	112,741	(9-21-22) x 18
30	Public Administration	0	(9-21-22) x 19
31	Commercial and other Institutional	352,506	(9-21-22) x 20

## PROPANE SUPPLY

Over 85% of the propane available in Alberta is recovered by gas plants. In Saskatchewan, the recovery is lower while in British Columbia recovery is around 90%. The balance of Canadian propane supply is recovered primarily in refineries.

Alberta dominates the natural gas processing industry with a well-developed infrastructure including both field facilities and straddle plants (Figure IV-1). The Alberta straddle

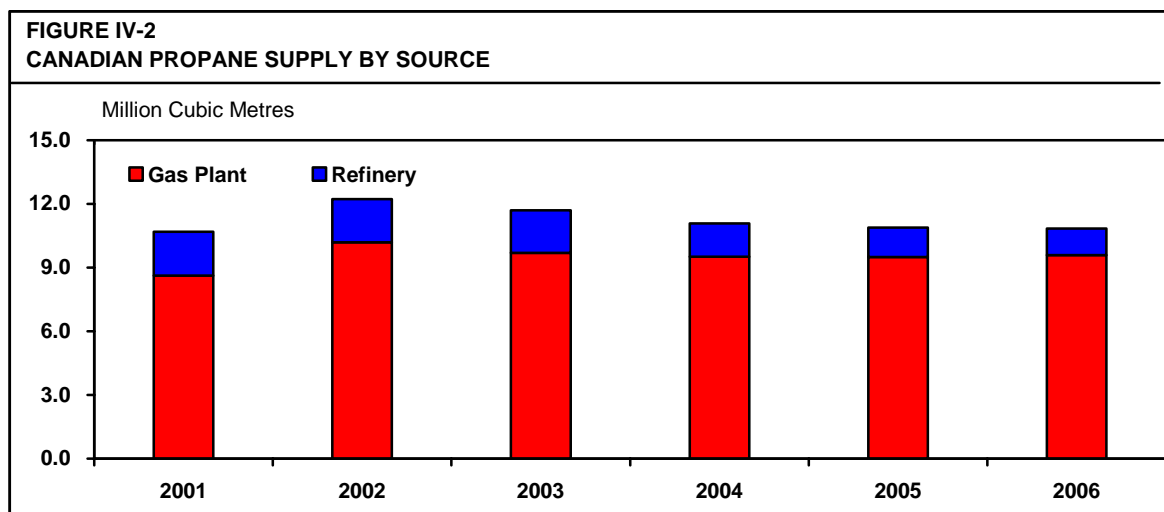
plant complexes at Cochrane and Empress reprocess large volumes of gas destined for export or domestic consumption.



In Atlantic Canada, propane production has been limited by disappointing offshore gas production.

The Alliance pipeline typically exports about 16,000 to 20,000 barrels per day of propane with natural gas. This volume may be recovered in Canada in the future with the development of a straddle plant on the Alliance pipeline at Fort Saskatchewan. We expect propane to be re-injected seasonally into Alliance. Propane exports are discussed below.

Canadian refinery propane production has been relatively stable over the last three years, but has remained at below 15 percent of total supply. Refinery LPG production, as defined in this analysis, excludes volumes which are utilized within the refinery to produce other products, but are not recovered in segregated form for sale or storage. Total Propane supply for the years 2001 to 2006 is shown in Figure IV-2. The supply by province is shown in Table IV-3.



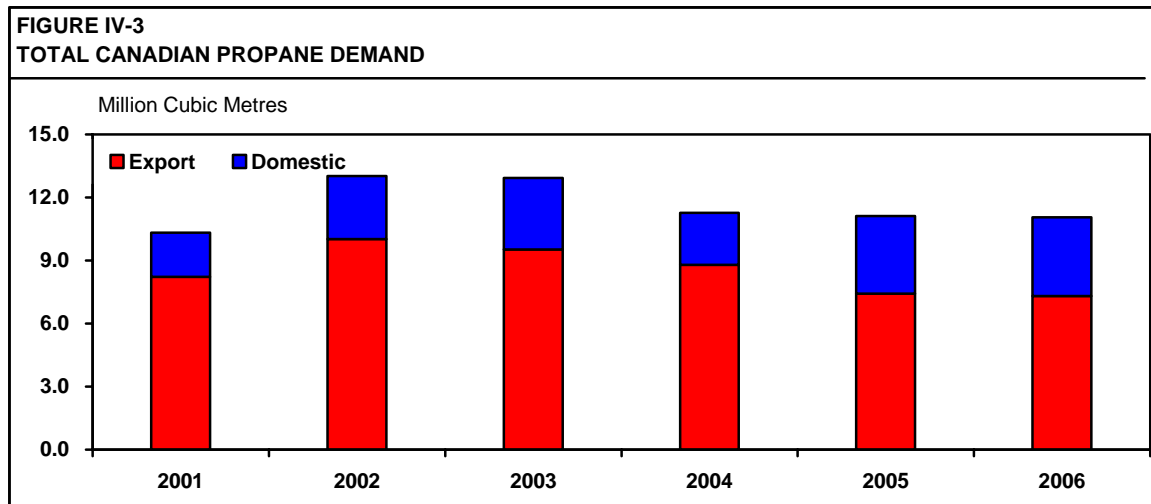
**TABLE IV-3**  
**CANADIAN PROPANE SUPPLY BY SOURCE AND PROVINCE**  
**(Cubic Metres)**

	Purvin & Gertz					
	2001	2002	2003	2004	2005	2006
<b>Gas Plant<sup>c</sup></b>						
British Columbia	457,783	364,752	360,742	353,554	354,535	360,201
Alberta	7,851,656	9,469,513	9,003,966	8,840,598	8,779,929	8,885,362
Saskatchewan	128,253	119,546	130,197	132,800	131,700	133,175
Ontario	0	0	0	0	0	0
Quebec	0	0	0	0	0	0
New Brunswick	0	0	0	0	0	0
Nova Scotia	187,500	243,700	204,270	188,400	224,000	204,616
Newfoundland	0	0	0	0	0	0
<b>Total</b>	<b>8,625,192</b>	<b>10,197,510</b>	<b>9,699,175</b>	<b>9,515,351</b>	<b>9,490,163</b>	<b>9,583,353</b>
<b>Refinery<sup>2</sup></b>						
British Columbia	53,450	48,001	46,140	48,965	42,581	46,658
Alberta	497,153	476,852	477,314	436,701	414,859	348,036
Saskatchewan	74,464	70,455	80,105	69,315	74,286	85,517
Ontario	500,190	386,490	399,285	407,749	272,415	224,674
Quebec	363,828	399,778	452,308	428,152	432,215	373,193
New Brunswick	484,212	560,906	475,888	105,590	99,064	92,717
Nova Scotia	60,255	62,083	55,519	51,933	39,658	51,405
Newfoundland	28,429	18,523	19,931	22,523	25,350	30,818
<b>Total</b>	<b>2,061,981</b>	<b>2,023,088</b>	<b>2,006,490</b>	<b>1,570,928</b>	<b>1,400,428</b>	<b>1,253,018</b>
<b>Imports</b>						
British Columbia	49,060	40,628	47,282	44,693	33,191	59,507
Alberta	9,543	10,778	1,012	6,961	5,169	9,268
Saskatchewan	2,010	293	3,967	2,046	1,519	2,724
Manitoba	277	660	228	380	282	506
Ontario	54,456	47,404	49,663	49,441	36,718	65,830
Quebec	4,239	3,995	1,499	3,176	2,359	4,229
New Brunswick	46,440	6,915	1,371	17,857	13,262	23,776
<b>Total</b>	<b>166,026</b>	<b>110,671</b>	<b>105,021</b>	<b>124,554</b>	<b>92,500</b>	<b>165,840</b>
<b>Provincial Totals</b>						
British Columbia	560,293	453,380	454,164	447,212	430,307	466,365
Alberta	8,358,352	9,957,142	9,482,291	9,284,259	9,199,957	9,242,666
Saskatchewan	204,727	190,293	214,269	204,161	207,505	221,416
Manitoba	277	660	228	380	282	506
Ontario	554,646	433,894	448,948	457,190	309,133	290,504
Quebec	368,067	403,773	453,807	431,328	434,574	377,422
New Brunswick	530,652	567,821	477,259	123,447	112,326	116,493
Nova Scotia	247,755	305,783	259,789	240,333	263,658	256,020
Newfoundland	28,429	18,523	19,931	22,523	25,350	30,818
<b>Canadian Total</b>	<b>10,853,199</b>	<b>12,331,269</b>	<b>11,810,686</b>	<b>11,210,833</b>	<b>10,983,091</b>	<b>11,002,211</b>

**Notes:** 1) National Energy Board 2006 numbers are year-to-date  
2) National Energy Board gas plant numbers include purchases from "Non-reporting companies"  
3) 2006 refinery numbers have been annualized

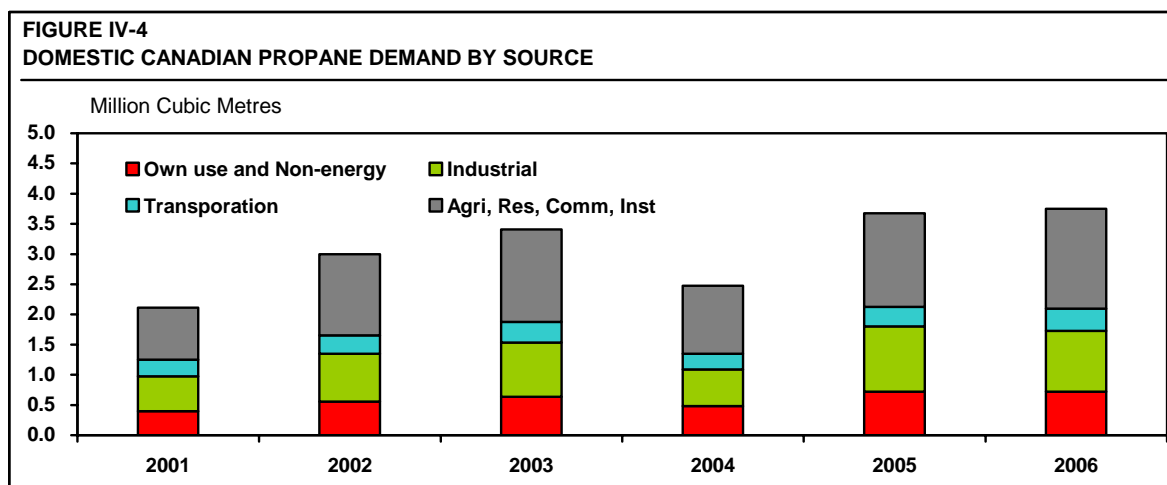
## PROPANE DEMAND

Propane demand is shown in Figures IV-3 and IV-4 and Tables IV-4 and IV-5.



## EXPORTS

By far the most significant demand segment is exports. Exports account for 2/3 of the overall market with virtually all of the exports destined for the United States. In the U.S., propane is consumed in a number of markets including space heating, crop drying, and as a petrochemical feedstock. The U.S. Gulf Coast centered petrochemical segment drives the market price for propane across North America.



**TABLE IV-4**  
**CANADIAN PROPANE DEMAND BY SOURCE AND PROVINCE**  
**(Cubic Metres)**

	Purvin & Gertz					
	2001	2002	2003	2004	2005	2006
<b>Wholesale Demand</b>						
British Columbia	22,125	26,895	33,123	23,808	32,955	27,497
Alberta	23,083	29,408	35,323	20,580	30,166	33,264
Saskatchewan	33,772	47,465	54,201	38,121	59,634	55,409
Manitoba	0	0	0	0	0	0
Ontario	100,073	193,072	190,378	170,563	262,787	281,401
Quebec	112,392	184,197	195,277	157,897	249,630	237,334
New Brunswick	89,233	55,871	103,720	53,741	56,092	56,494
Nova Scotia	16,011	20,697	24,671	20,037	29,642	32,989
Newfoundland	0	0	0	0	0	0
<b>Total</b>	<b>396,690</b>	<b>557,606</b>	<b>636,693</b>	<b>484,747</b>	<b>720,906</b>	<b>724,389</b>
<b>Retail Demand</b>						
British Columbia	184,625	224,429	276,400	198,670	274,995	229,454
Alberta	749,645	955,070	1,147,160	668,345	979,681	1,080,293
Saskatchewan	53,669	75,430	86,134	60,582	94,768	88,055
Manitoba	78,632	96,191	118,063	97,743	131,159	99,482
Ontario	350,584	676,387	666,948	597,532	920,618	985,829
Quebec	176,123	288,644	306,007	247,431	391,180	371,912
New Brunswick	44,626	27,942	51,871	26,876	28,052	28,253
Nova Scotia	36,541	47,234	56,304	45,728	67,648	75,287
Prince Edward Island	8,330	10,828	12,869	12,065	16,904	13,479
Newfoundland	12,441	15,109	18,618	14,443	21,793	31,500
Territories	18,772	23,760	28,638	21,372	29,909	22,818
<b>Total</b>	<b>1,713,988</b>	<b>2,441,023</b>	<b>2,769,011</b>	<b>1,990,787</b>	<b>2,956,709</b>	<b>3,026,362</b>
<b>Exports</b>						
British Columbia	87,655	72,183	52,950	67,326	56,952	56,008
Alberta	5,161,564	6,370,903	5,369,682	5,347,815	4,523,795	4,448,845
Saskatchewan	208,616	162,242	109,324	151,929	128,519	126,389
Manitoba	136,065	166,129	181,070	152,904	129,344	127,201
Ontario	2,462,262	3,117,142	3,623,446	2,911,768	2,463,107	2,422,299
Quebec	106,928	84,310	112,056	95,962	81,175	79,831
New Brunswick	20,457	20,781	23,926	20,618	17,441	17,152
Nova Scotia	28,973	33,039	54,622	36,903	31,217	30,700
Prince Edward Island	81	215	107	128	108	106
Newfoundland	100	100	59	82	69	68
Territories	474	93	117	216	183	180
<b>Total</b>	<b>8,213,174</b>	<b>10,027,137</b>	<b>9,527,358</b>	<b>8,785,650</b>	<b>7,431,909</b>	<b>7,308,779</b>
<b>Provincial Totals</b>						
British Columbia	206,750	251,324	309,523	222,478	307,950	256,951
Alberta	772,728	984,478	1,182,484	688,925	1,009,848	1,113,558
Saskatchewan	87,441	122,895	140,335	98,703	154,402	143,464
Manitoba	78,632	96,191	118,063	97,743	131,159	99,482
Ontario	450,657	869,459	857,326	768,096	1,183,405	1,267,230
Quebec	288,516	472,840	501,284	405,329	640,810	609,246
New Brunswick	133,859	83,813	155,590	80,617	84,144	84,747
Nova Scotia	52,552	67,931	80,975	65,765	97,290	108,276
Prince Edward Island	8,330	10,828	12,869	12,065	16,904	13,479
Newfoundland	12,441	15,109	18,618	14,443	21,793	31,500
Territories	18,772	23,760	28,638	21,372	29,909	22,818
<b>Total Canadian Domestic Demand</b>	<b>2,110,678</b>	<b>2,998,628</b>	<b>3,405,704</b>	<b>2,475,534</b>	<b>3,677,614</b>	<b>3,750,751</b>
<b>Total Canadian Demand</b>	<b>10,323,852</b>	<b>13,025,765</b>	<b>12,933,062</b>	<b>11,261,184</b>	<b>11,109,523</b>	<b>11,059,530</b>

**Note:** 1) National Energy Board 2006 numbers are annualized from year-to-date data

**TABLE IV-5  
CANADIAN PROPANE DEMAND BY SOURCE AND PROVINCE  
(Cubic Metres)**

	2001	2002	2003	2004	2005	2006
<b>Canadian Disposition</b>						
<b>Exports</b>	<b>8,213,174</b>	<b>10,027,137</b>	<b>9,527,358</b>	<b>8,785,650</b>	<b>7,431,909</b>	<b>7,308,779</b>
Wholesale demand						
Producer consumption	123,562	150,382	185,086	130,696	188,669	183,663
Non-energy use	238,760	340,919	386,227	295,476	441,990	444,087
Refinery Feedstocks	34,367	66,305	65,380	58,575	90,247	96,639
<b>Total Wholesale Demand</b>	<b>396,690</b>	<b>557,606</b>	<b>636,693</b>	<b>484,747</b>	<b>720,906</b>	<b>724,389</b>
Retail demand						
Total Mining & oil & gas extraction	399,934	543,863	616,939	415,425	750,396	691,291
Total Manufacturing	138,695	194,198	220,292	146,199	242,647	237,126
Construction	42,094	53,735	60,955	42,386	86,465	73,186
Total Industrial	580,722	791,796	898,185	604,011	1,079,508	1,001,603
Transportation	271,159	303,285	344,036	262,105	325,238	369,119
Agriculture	97,542	155,607	176,515	128,456	147,835	179,838
Residential	182,214	287,052	325,622	243,917	340,255	358,318
Public Administration	0	0	0	0	0	0
Commercial and other Institutional	582,351	903,283	1,024,652	752,298	1,063,873	1,117,483
<b>Total Retail Demand</b>	<b>1,713,988</b>	<b>2,441,023</b>	<b>2,769,011</b>	<b>1,990,787</b>	<b>2,956,709</b>	<b>3,026,362</b>
<b>Total Canadian Demand</b>	<b>2,110,678</b>	<b>2,998,628</b>	<b>3,405,704</b>	<b>2,475,534</b>	<b>3,677,614</b>	<b>3,750,751</b>
<b>Newfoundland Disposition</b>						
Exports	100	100	59	82	69	68
Producer consumption	0	0	0	0	0	0
Non-energy use	0	0	0	0	0	0
Refinery Feedstocks	0	0	0	0	0	0
Total Mining & oil & gas extraction	2,903	3,366	4,148	3,014	5,531	7,195
Total Manufacturing	1,007	1,202	1,481	1,061	1,788	2,468
Construction	306	333	410	308	637	762
Total Industrial	4,215	4,901	6,039	4,382	7,957	10,425
Transportation	1,968	1,877	2,313	1,902	2,397	3,842
Agriculture	708	963	1,187	932	1,090	1,872
Residential	1,323	1,777	2,189	1,770	2,508	3,730
Public Administration	0	0	0	0	0	0
Commercial and other Institutional	4,227	5,591	6,889	5,458	7,841	11,631
<b>Total Domestic Demand</b>	<b>12,441</b>	<b>15,109</b>	<b>18,618</b>	<b>14,443</b>	<b>21,793</b>	<b>31,500</b>
<b>Nova Scotia Disposition</b>						
Exports	28,973	33,039	54,622	36,903	31,217	30,700
Producer consumption	16,011	20,697	24,671	20,037	29,642	32,989
Non-energy use	0	0	0	0	0	0
Refinery Feedstocks	0	0	0	0	0	0
Total Mining & oil & gas extraction	8,526	10,524	12,545	9,542	17,169	17,197
Total Manufacturing	2,957	3,758	4,479	3,358	5,552	5,899
Construction	897	1,040	1,239	974	1,978	1,821
Total Industrial	12,381	15,321	18,263	13,874	24,699	24,917
Transportation	5,781	5,869	6,995	6,020	7,441	9,183
Agriculture	2,080	3,011	3,589	2,951	3,382	4,474
Residential	3,885	5,555	6,621	5,603	7,785	8,914
Public Administration	0	0	0	0	0	0
Commercial and other Institutional	12,415	17,479	20,835	17,280	24,341	27,800
<b>Total Domestic Demand</b>	<b>52,552</b>	<b>67,931</b>	<b>80,975</b>	<b>65,765</b>	<b>97,290</b>	<b>108,276</b>
<b>Prince Edward Island Disposition</b>						
Exports	81	215	107	128	108	106
Producer consumption	0	0	0	0	0	0
Non-energy use	0	0	0	0	0	0
Refinery Feedstocks	0	0	0	0	0	0
Total Mining & oil & gas extraction	1,944	2,412	2,867	2,518	4,290	3,079
Total Manufacturing	674	861	1,024	886	1,387	1,056
Construction	205	238	283	257	494	326
Total Industrial	2,822	3,512	4,174	3,661	6,172	4,461
Transportation	1,318	1,345	1,599	1,588	1,859	1,644
Agriculture	474	690	820	778	845	801
Residential	886	1,273	1,513	1,478	1,945	1,596
Public Administration	0	0	0	0	0	0
Commercial and other Institutional	2,830	4,007	4,762	4,559	6,082	4,977
<b>Total Domestic Demand</b>	<b>8,330</b>	<b>10,828</b>	<b>12,869</b>	<b>12,065</b>	<b>16,904</b>	<b>13,479</b>

**TABLE IV-5  
CANADIAN PROPANE DEMAND BY SOURCE AND PROVINCE  
(Cubic Metres)  
(continued)**

	2001	2002	2003	2004	2005	2006
<b>New Brunswick Disposition</b>						
Exports	20,457	20,781	23,926	20,618	17,441	17,152
Producer consumption	30,135	18,868	35,027	18,149	18,943	19,079
Non-energy use	59,098	37,003	68,692	35,592	37,149	37,415
Refinery Feedstocks	0	0	0	0	0	0
Total Mining & oil & gas extraction	10,413	6,225	11,557	5,608	7,119	6,454
Total Manufacturing	3,611	2,223	4,127	1,974	2,302	2,214
Construction	1,096	615	1,142	572	820	683
Total Industrial	15,120	9,063	16,825	8,154	10,242	9,351
Transportation	7,060	3,472	6,445	3,538	3,086	3,446
Agriculture	2,540	1,781	3,307	1,734	1,403	1,679
Residential	4,744	3,286	6,100	3,293	3,228	3,345
Public Administration	0	0	0	0	0	0
Commercial and other Institutional	15,162	10,340	19,194	10,156	10,094	10,432
<b>Total Domestic Demand</b>	<b>133,859</b>	<b>83,813</b>	<b>155,590</b>	<b>80,617</b>	<b>84,144</b>	<b>84,747</b>
<b>Quebec Disposition</b>						
Exports	106,928	84,310	112,056	95,962	81,175	79,831
Producer consumption	33,898	55,554	58,896	47,622	75,288	71,580
Non-energy use	78,495	128,643	136,381	110,275	174,342	165,754
Refinery Feedstocks	0	0	0	0	0	0
Total Mining & oil & gas extraction	41,096	64,310	68,179	51,632	99,279	84,953
Total Manufacturing	14,252	22,963	24,345	18,171	32,103	29,141
Construction	4,325	6,354	6,736	5,268	11,440	8,994
Total Industrial	59,673	93,627	99,260	75,071	142,822	123,088
Transportation	27,863	35,863	38,020	32,577	43,030	45,361
Agriculture	10,023	18,400	19,507	15,966	19,559	22,100
Residential	18,724	33,943	35,985	30,316	45,017	44,034
Public Administration	0	0	0	0	0	0
Commercial and other Institutional	59,840	106,810	113,236	93,502	140,753	137,328
<b>Total Domestic Demand</b>	<b>288,516</b>	<b>472,840</b>	<b>501,284</b>	<b>405,329</b>	<b>640,810</b>	<b>609,246</b>
<b>Ontario Disposition</b>						
Exports	2,462,262	3,117,142	3,623,446	2,911,768	2,463,107	2,422,299
Producer consumption	0	0	0	0	0	0
Non-energy use	65,706	126,767	124,998	111,988	172,540	184,762
Refinery Feedstocks	34,367	66,305	65,380	58,575	90,247	96,639
Total Mining & oil & gas extraction	81,804	150,700	148,597	124,689	233,648	225,186
Total Manufacturing	28,369	53,811	53,060	43,882	75,552	77,243
Construction	8,610	14,889	14,682	12,722	26,922	23,840
Total Industrial	118,782	219,400	216,338	181,293	336,122	326,269
Transportation	55,464	84,038	82,865	78,670	101,268	120,240
Agriculture	19,952	43,117	42,516	38,556	46,031	58,582
Residential	37,271	79,540	78,430	73,212	105,944	116,721
Public Administration	0	0	0	0	0	0
Commercial and other Institutional	119,116	250,292	246,799	225,801	331,254	364,017
<b>Total Domestic Demand</b>	<b>450,657</b>	<b>869,459</b>	<b>857,326</b>	<b>768,096</b>	<b>1,183,405</b>	<b>1,267,230</b>
<b>Manitoba Disposition</b>						
Exports	136,065	166,129	181,070	152,904	129,344	127,201
Producer consumption	0	0	0	0	0	0
Non-energy use	0	0	0	0	0	0
Refinery Feedstocks	0	0	0	0	0	0
Total Mining & oil & gas extraction	18,347	21,431	26,305	20,396	33,288	22,724
Total Manufacturing	6,363	7,653	9,393	7,178	10,764	7,795
Construction	1,931	2,117	2,599	2,081	3,836	2,406
Total Industrial	26,641	31,201	38,296	29,655	47,887	32,924
Transportation	12,440	11,951	14,669	12,869	14,428	12,134
Agriculture	4,475	6,132	7,526	6,307	6,558	5,912
Residential	8,359	11,312	13,884	11,976	15,094	11,779
Public Administration	0	0	0	0	0	0
Commercial and other Institutional	26,716	35,595	43,688	36,936	47,193	36,734
<b>Total Domestic Demand</b>	<b>78,632</b>	<b>96,191</b>	<b>118,063</b>	<b>97,743</b>	<b>131,159</b>	<b>99,482</b>

**TABLE IV-5  
CANADIAN PROPANE DEMAND BY SOURCE AND PROVINCE  
(Cubic Metres)  
(continued)**

	2001	2002	2003	2004	2005	2006
<b>Saskatchewan Disposition</b>						
Exports	208,616	162,242	109,324	151,929	128,519	126,389
Producer consumption	8,461	11,892	13,579	9,551	14,940	13,882
Non-energy use	25,311	35,573	40,621	28,571	44,693	41,527
Refinery Feedstocks	0	0	0	0	0	0
Total Mining & oil & gas extraction	12,523	16,806	19,191	12,642	24,052	20,114
Total Manufacturing	4,343	6,001	6,853	4,449	7,777	6,899
Construction	1,318	1,660	1,896	1,290	2,771	2,129
Total Industrial	18,184	24,467	27,939	18,381	34,600	29,143
Transportation	8,491	9,372	10,702	7,976	10,424	10,740
Agriculture	3,054	4,808	5,491	3,909	4,738	5,233
Residential	5,706	8,870	10,129	7,423	10,906	10,426
Public Administration	0	0	0	0	0	0
Commercial and other Institutional	18,235	27,912	31,873	22,893	34,099	32,514
<b>Total Domestic Demand</b>	<b>87,441</b>	<b>122,895</b>	<b>140,335</b>	<b>98,703</b>	<b>154,402</b>	<b>143,464</b>
<b>Alberta Disposition</b>						
Exports	5,161,564	6,370,903	5,369,682	5,347,815	4,523,795	4,448,845
Producer consumption	12,932	16,476	19,789	11,529	16,900	18,636
Non-energy use	10,151	12,933	15,534	9,050	13,266	14,629
Refinery Feedstocks	0	0	0	0	0	0
Total Mining & oil & gas extraction	174,918	212,791	255,589	139,466	248,637	246,764
Total Manufacturing	60,661	75,982	91,264	49,082	80,399	84,645
Construction	18,410	21,024	25,253	14,230	28,649	26,124
Total Industrial	253,990	309,796	372,105	202,778	357,686	357,533
Transportation	118,596	118,663	142,529	87,994	107,765	131,761
Agriculture	42,662	60,882	73,128	43,125	48,984	64,195
Residential	79,695	112,312	134,900	81,888	112,741	127,906
Public Administration	0	0	0	0	0	0
Commercial and other Institutional	254,702	353,417	424,498	252,561	352,506	398,898
<b>Total Domestic Demand</b>	<b>772,728</b>	<b>984,478</b>	<b>1,182,484</b>	<b>688,925</b>	<b>1,009,848</b>	<b>1,113,558</b>
<b>British Columbia Disposition</b>						
Exports	87,655	72,183	52,950	67,326	56,952	56,008
Producer consumption	22,125	26,895	33,123	23,808	32,955	27,497
Non-energy use	0	0	0	0	0	0
Refinery Feedstocks	0	0	0	0	0	0
Total Mining & oil & gas extraction	43,079	50,003	61,582	41,457	69,792	52,413
Total Manufacturing	14,940	17,855	21,989	14,590	22,568	17,979
Construction	4,534	4,940	6,084	4,230	8,042	5,549
Total Industrial	62,553	72,798	89,656	60,277	100,402	75,940
Transportation	29,208	27,884	34,341	26,157	30,249	27,986
Agriculture	10,507	14,307	17,620	12,819	13,750	13,635
Residential	19,627	26,392	32,503	24,342	31,646	27,167
Public Administration	0	0	0	0	0	0
Commercial and other Institutional	62,729	83,048	102,280	75,075	98,948	84,726
<b>Total Domestic Demand</b>	<b>206,750</b>	<b>251,324</b>	<b>309,523</b>	<b>222,478</b>	<b>307,950</b>	<b>256,951</b>
<b>Territories Disposition</b>						
Exports	474	93	117	216	183	180
Producer consumption	0	0	0	0	0	0
Non-energy use	0	0	0	0	0	0
Refinery Feedstocks	0	0	0	0	0	0
Total Mining & oil & gas extraction	4,380	5,294	6,381	4,460	7,591	5,212
Total Manufacturing	1,519	1,890	2,278	1,570	2,455	1,788
Construction	461	523	630	455	875	552
Total Industrial	6,360	7,707	9,289	6,484	10,920	7,552
Transportation	2,970	2,952	3,558	2,814	3,290	2,783
Agriculture	1,068	1,515	1,826	1,379	1,495	1,356
Residential	1,996	2,794	3,368	2,619	3,442	2,702
Public Administration	0	0	0	0	0	0
Commercial and other Institutional	6,378	8,792	10,597	8,076	10,762	8,426
<b>Total Domestic Demand</b>	<b>18,772</b>	<b>23,760</b>	<b>28,638</b>	<b>21,372</b>	<b>29,909</b>	<b>22,818</b>

## **DEMAND CATEGORIES**

The demand categories in Table IV-5 are categories identified in NEB and Statistics Canada reports. The descriptions or definitions of the various categories are limited. In general, wholesale demand is comprised of large industrial consumer demand. These include refineries (refinery feedstocks) and petrochemical facilities (non-energy use). Retail demand is almost entirely fuel use in the various industries identified. Purvin & Gertz divides the retail market for propane into conventional markets and auto propane.

The following discussion of demand deals with the major categories but, for simplicity, doesn't mirror exactly the categories identified in Table IV-5.

### **CONVENTIONAL MARKETS**

A major use of propane in Canada is for residential and commercial consumption as a heating and cooking fuel. There is also industrial demand including paving applications, construction heating, heavy industrial use, food processing, and agricultural demand for crop drying. Annual conventional demand for propane grew significantly over the 2001 to 2006 period.

Where natural gas is available, propane is not generally cost competitive on a thermal basis with gas supplies by pipeline. Propane is widely used as a fuel in sparsely populated areas, which are not connected to the natural gas distribution system. In these areas, the alternative energy sources are propane, fuel oil, and electricity. Many customers in these areas have opted for propane due to its convenience and clean burning characteristics and costs.

### **ENGINE FUEL/AUTO PROPANE**

Propane use in transportation was promoted for several years by the Government of Canada, by some provincial governments (particularly Ontario), and by propane distributors. Initially, provincial and federal governments viewed the concept as a means of reducing crude oil imports by the substitution of domestically produced alternative liquid fuels. One consequence of Canada's propane surplus is that incentives to increase domestic propane use tend to be viewed by governments as being consistent with public policy. To a significant extent, past efforts to increase propane consumption were successful. Fleet vehicles currently represent the major market for propane as a transportation fuel, and propane is now widely available at a broad network of retail outlets across the country. Some of the more significant applications are taxis, delivery and service vehicles, and school buses.

In the future, environmental or clean air initiatives may provide some renewed stimulus for auto propane in Canada. However, the development of more complicated, fuel-efficient gasoline engines increases the conversion cost. Market demand for vehicle conversion to propane has dropped as a result of increased prices and conversion costs.

It is difficult to find reliable data on auto propane demand in North America. The data that is available is often conflicting. For example, the Ontario Propane Association reports

170,000 propane fueled vehicles and 5,000 fueling stations in Canada. At the same time, the Propane Education and Research Council (PERC) quotes U.S. Energy Information Administration (EIA) data that there were 187,680 propane fueled vehicles in the U.S. in 2002. However PERC suggests that this number is significantly overstated and estimates that the real number is around 110,000 and has been declining steadily. PERC suggests that forklifts are a growing market for propane as an internal combustion engine fuel. They estimate that there were between 450,000 and 500,000 units in operation in 2002. PERC also estimates that there were 200,000 light commercial units consuming about 1,000 gallons of propane per unit per year. PERC doesn't provide definitions to distinguish between "propane fueled vehicles" and "light commercial units".

Superior Propane continues to report declines in automotive propane sales. Sales dropped from 204 million litres in 2004 to 174 million litres in 2005 to 152 million litres in 2006<sup>1</sup>. Superior also estimates that it supplies 50% of the Canadian retail propane market. If that ratio holds for the automotive market, then the total automotive market was approximately 300 million litres in 2006. If we use PERC's consumption estimate, then the number of propane fuelled vehicles in Canada would be approximately 79,000. However, if the majority of propane fuelled vehicles are high mileage fleet vehicles, then it would be reasonable to assume that the annual fuel consumption would be higher and the number of vehicles correspondingly lower. Purvin & Gertz estimates that the number of propane fueled vehicles in Canada is probably in the 50,000 to 60,000 range. A considerable amount of further investigation would be required to improve this estimate.

The PGAC reports 2,114 propane refueling stations in Canada. The distribution of these stations across the country is shown in Table IV-6. Purvin & Gertz estimates that the total number of automotive refueling stations in Canada is probably in the 2,200 to 2,500 range.

	<u>NL</u>	<u>PE</u>	<u>NS</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NWT</u>	<u>TOTAL</u>
PGAC Distribution	8	11	37	20	266	273	151	256	238	821	33	2,114
PGAC %	0.38%	0.52%	1.75%	0.95%	12.58%	12.91%	7.14%	12.11%	11.26%	38.84%	1.56%	100.00%

## PROPANE PRICE-SENSITIVE DEMAND

Petrochemical consumption is comprised of a price-sensitive component and a base petrochemical demand. The price-sensitive use represents consumption in olefin plants with feedstock flexibility, where the choice of feedstock is determined primarily on the basis of economics. Base petrochemical consumption includes relatively small refinery streams which are used in olefin plants and which do not have a viable alternative economic disposition.

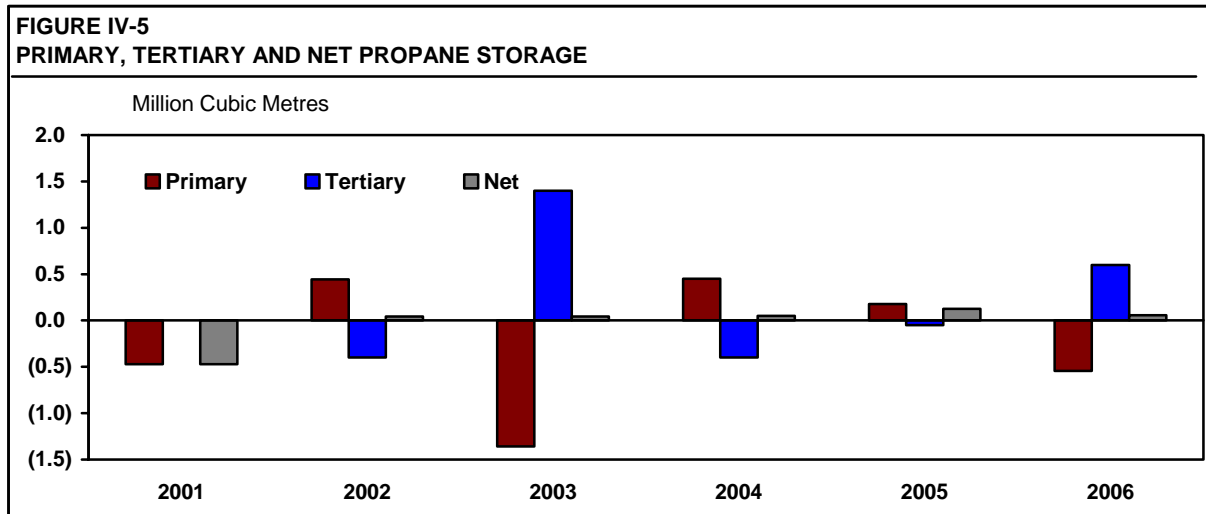
<sup>1</sup> Superior Plus Income Fund Q4 2006 Year End Results

Three ethylene plants in Eastern Canada consume some propane and/or butane. Actual consumption is seasonal and is generally higher in the summer than in the winter. Expansion at the Nova Chemicals plant at Corunna in 1997 added one additional cracker. Aside from potential debottlenecking, no grassroots expansion of Eastern Canadian propane cracking capacity is expected in the short term. However, propane feedstock for flexible crackers is expected to rise as supplies increase and ethane transfers from Western Canada fall. In early 2005, NOVA Chemicals completed the construction of a propane feedstock pipeline from Ft. Saskatchewan, Alberta to their Joffre facility. The new line can transport up to 50,000 bpd although the capacity to crack propane at Joffre is estimated to be limited to about 20,000 bpd.

## TERTIARY STORAGE

Tertiary storage, for the purposes of this report, is defined as all storage that is not reported to the NEB as underground storage. In the United States, a market with a similar structure to Canada, it has been estimated that there is approximately 120 million barrels of tertiary storage. Underground storage capacity as reported by the Energy Information Agency in the U.S. is 131 million barrels. Given that the Canadian market for propane, relative to its domestic supply is much less compared to the U.S. market, swings in unreported tertiary storage can dramatically impact market assessments. Purvin & Gertz has estimated the tertiary storage use in Canada based on U.S. data obtained through the Propane Education Research Council. A detailed review of Canadian tertiary storage has not been performed. Such a study would require much broader input from suppliers and end users of propane.

Purvin & Gertz estimate of primary, tertiary and net propane storage is presented in Figure IV-5.



## V. INDUSTRY ECONOMIC INDICATORS

Industrial activities cause direct impacts or first round effects on the economy from expenditures such as salaries as well as investments such as construction and capitalized goods and services. Indirect impacts are caused by the impact of these expenditures on other firms to satisfy this increase in demand. Consumer induced or spin-off impacts occur when consumer spending changes in response to an increase in income taken after taxes and savings.

### MULTIPLIERS

Multipliers are summary statistics of the impact of the contribution of a specific industry. Multipliers vary in magnitude depending on the extent of “leakages” such as imports. They are often used to predict the economic impacts of similar activity of different magnitudes. For example, a dollar of expenditure and investment for a gas processing facility in Alberta translates into an additional 48 cents of activity giving a gross output multiplier of 1.48 for Canada. The vast majority of direct and indirect gross production is concentrated in Alberta. Looking at the employment multiplier for Alberta, for every direct job created, an additional 0.65 job is generated. There are also induced impacts from the available disposable income (wages and salaries net of income taxes and savings). Although they are smaller than the direct and indirect effects, induced effects are significant and should be added to give a total impact. Additionally, different sectors of the propane industry have different multipliers in different parts of the country. In the United States, PERC has estimated a factor of 2.54. On an overall basis, Purvin & Gertz estimates that the propane industry has a multiplier of 2.5. Tables V-1A and V-2A present Purvin & Gertz’ estimate of total economic impact by province. Details are presented in Tables V-1B and V-2B.

	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
British Columbia	149,136,020	110,979,485	174,032,491	153,613,453	191,816,129	182,372,085
Alberta	1,701,554,767	1,528,714,504	2,162,770,588	2,138,626,307	2,710,747,875	2,814,328,406
Saskatchewan	53,219,863	55,836,130	69,488,830	63,214,261	84,314,976	86,884,752
Manitoba	26,189,235	31,406,581	38,519,117	34,232,546	44,252,190	36,126,166
Ontario	124,137,311	217,774,383	207,006,192	188,217,842	260,433,024	312,206,177
Quebec	82,555,740	132,299,259	135,705,407	111,699,777	159,678,306	157,614,151
New Brunswick	25,069,024	15,329,669	29,895,848	19,948,338	19,735,417	23,531,056
Nova Scotia	77,005,155	87,392,816	115,018,030	116,159,032	155,502,321	138,599,939
Prince Edward Island	3,793,785	5,135,171	6,542,054	6,733,812	8,577,129	6,640,195
Newfoundland	5,787,832	8,053,654	8,914,878	7,198,862	9,798,111	15,950,696
Territories	7,501,403	9,110,038	12,691,497	10,262,176	14,887,359	10,921,586
<b>Total Canada</b>	<b>2,255,950,135</b>	<b>2,202,031,689</b>	<b>2,960,584,931</b>	<b>2,849,906,406</b>	<b>3,659,742,838</b>	<b>3,785,175,209</b>

**TABLE V-1B  
CANADIAN PROPANE VALUE BY PROVINCE  
(Dollars)**

	2001	2002	2003	2004	2005	2006
<b>British Columbia</b>						
Extraction	17,304,211	14,022,014	14,159,107	14,265,518	14,734,245	15,448,751
Wholesale Transportation	6,066,928	4,853,793	5,980,473	5,597,786	5,888,634	5,807,309
Exploration	69,601,960	33,125,982	68,592,660	71,499,387	88,050,579	87,965,223
Sales Tax	13,095,404	12,720,878	21,324,886	15,836,238	23,334,822	19,923,061
Retail Margin	31,436,114	38,213,652	47,062,670	33,827,570	54,260,176	44,584,832
Transportation - Pipeline	3,489,421	2,412,950	5,073,808	3,776,086	1,664,302	2,592,873
Transportation - Rail	8,141,982	5,630,216	11,838,886	8,810,867	3,883,371	6,050,037
<b>Total</b>	<b>149,136,020</b>	<b>110,979,485</b>	<b>174,032,491</b>	<b>153,613,453</b>	<b>191,816,129</b>	<b>182,372,085</b>
<b>Alberta</b>						
Extraction	296,792,905	364,033,049	353,405,053	356,708,673	364,888,562	381,086,947
Wholesale Transportation	98,930,968	121,344,350	117,801,684	118,902,891	121,629,521	127,028,982
Exploration	1,087,719,948	796,700,007	1,369,325,728	1,474,956,661	1,920,190,687	1,957,376,634
Sales Tax	25,182,096	26,316,081	38,971,325	23,486,416	40,080,903	45,401,545
Retail Margin	127,642,339	162,620,165	195,327,487	113,799,480	193,304,263	209,910,313
Transportation - Pipeline	19,585,953	17,310,255	26,381,793	15,231,656	21,196,182	28,057,195
Transportation - Rail	45,700,557	40,390,596	61,557,518	35,540,530	49,457,758	65,466,788
<b>Total</b>	<b>1,701,554,767</b>	<b>1,528,714,504</b>	<b>2,162,770,588</b>	<b>2,138,626,307</b>	<b>2,710,747,875</b>	<b>2,814,328,406</b>
<b>Saskatchewan</b>						
Extraction	4,847,967	4,595,647	5,110,223	5,358,338	5,473,373	5,711,780
Wholesale Transportation	3,529,766	4,746,684	5,476,022	4,516,940	6,492,028	6,641,376
Exploration	25,035,183	18,154,558	28,862,688	31,669,333	39,111,338	40,723,734
Sales Tax	2,309,175	3,056,240	3,754,956	2,756,318	4,664,322	4,603,887
Retail Margin	9,138,290	12,843,499	14,666,114	10,315,245	18,699,031	17,109,854
Transportation - Pipeline	2,507,845	3,731,850	3,485,648	2,579,426	2,962,465	3,628,236
Transportation - Rail	5,851,638	8,707,651	8,133,179	6,018,661	6,912,419	8,465,884
<b>Total</b>	<b>53,219,863</b>	<b>55,836,130</b>	<b>69,488,830</b>	<b>63,214,261</b>	<b>84,314,976</b>	<b>86,884,752</b>
<b>Manitoba</b>						
Sales Tax	6,106,495	6,774,074	9,629,699	8,708,564	12,419,820	9,839,179
Retail Margin	13,388,621	16,378,405	20,102,586	16,642,683	25,879,523	19,330,149
Transportation - Pipeline	2,008,236	2,476,230	2,636,050	2,664,390	1,785,854	2,087,052
Transportation - Rail	4,685,884	5,777,871	6,150,782	6,216,909	4,166,993	4,869,787
<b>Total</b>	<b>26,189,235</b>	<b>31,406,581</b>	<b>38,519,117</b>	<b>34,232,546</b>	<b>44,252,190</b>	<b>36,126,166</b>
<b>Ontario</b>						
Wholesale Transportation	4,400,149	7,339,171	8,997,908	6,520,572	9,749,427	11,248,164
Sales Tax	14,097,252	22,940,572	25,610,468	23,546,519	37,603,565	42,973,669
Retail Margin	59,694,062	115,168,666	113,561,587	101,742,112	181,650,300	191,555,132
Transportation - Pipeline	13,783,754	21,697,792	17,650,869	16,922,591	9,428,920	19,928,764
Transportation - Rail	32,162,094	50,628,182	41,185,361	39,486,047	22,000,813	46,500,449
<b>Total</b>	<b>124,137,311</b>	<b>217,774,383</b>	<b>207,006,192</b>	<b>188,217,842</b>	<b>260,433,024</b>	<b>312,206,177</b>
<b>Quebec</b>						
Wholesale Transportation	9,703,828	15,394,579	18,732,083	15,383,918	20,687,337	18,233,687
Sales Tax	16,380,075	24,314,589	28,198,692	23,627,125	37,616,019	36,605,354
Retail Margin	29,988,623	49,147,479	52,103,932	42,130,252	77,185,111	72,265,694
Transportation - Pipeline	7,944,964	13,032,784	11,001,210	9,167,544	7,256,952	9,152,825
Transportation - Rail	18,538,249	30,409,828	25,669,489	21,390,937	16,932,887	21,356,591
<b>Total</b>	<b>82,555,740</b>	<b>132,299,259</b>	<b>135,705,407</b>	<b>111,699,777</b>	<b>159,678,306</b>	<b>157,614,151</b>

**TABLE V-1B  
CANADIAN PROPANE VALUE BY PROVINCE  
(Dollars)  
(continued)**

	2001	2002	2003	2004	2005	2006
<b>New Brunswick</b>						
Wholesale Transportation	7,079,437	4,328,454	10,021,789	7,872,692	8,066,748	9,966,549
Sales Tax	4,494,213	2,542,337	5,323,365	3,291,402	3,508,852	3,958,259
Retail Margin	7,598,488	4,757,630	8,832,054	4,576,187	5,535,021	5,489,780
Transportation - Pipeline	1,769,066	1,110,374	1,715,592	1,262,417	787,439	1,234,940
Transportation - Rail	4,127,820	2,590,873	4,003,048	2,945,640	1,837,357	2,881,528
<b>Total</b>	<b>25,069,024</b>	<b>15,329,669</b>	<b>29,895,848</b>	<b>19,948,338</b>	<b>19,735,417</b>	<b>23,531,056</b>
<b>Nova Scotia</b>						
Extraction	7,087,507	9,368,471	8,017,584	7,601,739	9,309,306	8,775,824
Wholesale Transportation	4,295,974	5,627,507	7,483,081	7,250,835	10,088,812	9,136,075
Exploration	48,617,018	49,995,157	70,895,884	75,784,246	101,779,926	83,598,117
Sales Tax	4,248,154	5,176,940	7,666,405	6,956,469	10,321,555	10,823,211
Retail Margin	6,221,830	8,042,628	9,586,869	7,786,119	13,347,859	14,628,954
Transportation - Pipeline	1,960,401	2,754,634	3,410,462	3,233,887	3,196,459	3,491,327
Transportation - Rail	4,574,270	6,427,479	7,957,745	7,545,737	7,458,404	8,146,431
<b>Total</b>	<b>77,005,155</b>	<b>87,392,816</b>	<b>115,018,030</b>	<b>116,159,032</b>	<b>155,502,321</b>	<b>138,599,939</b>
<b>Prince Edward Island</b>						
Sales Tax	442,295	553,802	817,750	856,522	1,203,629	904,249
Retail Margin	1,418,396	1,843,624	2,191,285	2,054,299	3,335,433	2,619,016
Transportation - Pipeline	579,928	821,324	1,059,906	1,146,897	1,211,420	935,079
Transportation - Rail	1,353,166	1,916,422	2,473,113	2,676,094	2,826,648	2,181,851
<b>Total</b>	<b>3,793,785</b>	<b>5,135,171</b>	<b>6,542,054</b>	<b>6,733,812</b>	<b>8,577,129</b>	<b>6,640,195</b>
<b>Newfoundland</b>						
Sales Tax	1,445,934	1,861,168	2,387,894	1,962,160	2,946,362	4,654,573
Retail Margin	2,118,371	2,572,675	3,170,022	2,459,190	4,300,015	6,120,717
Transportation - Pipeline	667,058	1,085,943	1,007,089	833,254	765,520	1,552,622
Transportation - Rail	1,556,469	2,533,868	2,349,873	1,944,259	1,786,214	3,622,784
<b>Total</b>	<b>5,787,832</b>	<b>8,053,654</b>	<b>8,914,878</b>	<b>7,198,862</b>	<b>9,798,111</b>	<b>15,950,696</b>
<b>Territories</b>						
Sales Tax	874,544	1,062,085	1,479,626	1,196,406	1,735,629	1,273,283
Retail Margin	3,196,376	4,045,561	4,876,152	3,639,044	5,901,479	4,433,723
Transportation - Pipeline	1,029,145	1,200,718	1,900,716	1,628,018	2,175,075	1,564,374
Transportation - Rail	2,401,338	2,801,674	4,435,003	3,798,708	5,075,176	3,650,206
<b>Total</b>	<b>7,501,403</b>	<b>9,110,038</b>	<b>12,691,497</b>	<b>10,262,176</b>	<b>14,887,359</b>	<b>10,921,586</b>
<b>Canada</b>						
Extraction	326,032,590	392,019,181	380,691,967	383,934,268	394,405,486	411,023,303
Wholesale Transportation	134,007,051	163,634,539	174,493,040	166,045,635	182,602,506	188,062,143
Exploration	1,230,974,109	897,975,704	1,537,676,960	1,653,909,627	2,149,132,530	2,169,663,709
Sales Tax	88,675,636	107,318,767	145,165,066	112,224,139	175,435,477	180,960,268
Retail Margin	291,841,512	415,633,985	471,480,757	338,972,182	583,398,211	588,048,165
Transportation - Pipeline	55,325,771	67,634,854	75,323,142	58,446,166	52,430,588	74,225,286
Transportation - Rail	129,093,467	157,814,659	175,753,998	136,374,388	122,338,040	173,192,335
<b>Total</b>	<b>2,255,950,135</b>	<b>2,202,031,689</b>	<b>2,960,584,931</b>	<b>2,849,906,406</b>	<b>3,659,742,838</b>	<b>3,785,175,209</b>

**TABLE V-2A  
CANADIAN PROPANE TOTAL ECONOMIC IMPACT BY PROVINCE  
(Dollars)**

	2001	2002	2003	2004	2005	2006
British Columbia	378,375,986	284,800,141	450,046,200	392,878,400	492,228,414	466,258,337
Alberta	4,165,240,889	3,667,288,009	5,329,149,997	5,222,206,312	6,719,976,800	6,984,943,624
Saskatchewan	139,322,331	149,737,140	184,655,191	165,258,010	223,308,733	230,029,609
Manitoba	72,461,210	87,445,667	105,927,651	93,989,073	120,336,751	98,539,320
Ontario	358,314,681	630,382,577	595,408,109	541,107,006	743,695,509	893,644,863
Quebec	231,287,144	372,583,189	378,917,528	311,472,206	441,418,897	436,237,100
New Brunswick	70,712,860	43,446,669	84,364,179	56,553,612	55,697,398	66,634,909
Nova Scotia	195,294,741	221,475,105	295,015,774	297,699,493	398,700,650	356,043,970
Prince Edward Island	10,939,060	14,851,711	18,808,411	19,344,914	24,527,760	19,016,337
Newfoundland	15,917,563	22,299,794	24,356,739	19,634,427	26,447,971	43,197,514
Territories	21,629,664	26,268,030	36,594,865	29,590,122	42,926,447	31,491,474
<b>Total Canada</b>	<b>5,659,496,129</b>	<b>5,520,578,032</b>	<b>7,503,244,643</b>	<b>7,149,733,574</b>	<b>9,289,265,330</b>	<b>9,626,037,057</b>

**TABLE V-2B  
CANADIAN PROPANE TOTAL ECONOMIC IMPACT BY PROVINCE  
(Dollars)**

	2001	2002	2003	2004	2005	2006
<b>British Columbia</b>						
Extraction	25,610,232	20,752,581	20,955,479	21,112,967	21,806,683	22,864,151
Wholesale Transportation	18,200,785	14,561,380	17,941,419	16,793,359	17,665,901	17,421,926
Exploration	179,171,608	85,273,972	176,573,437	184,056,027	226,662,637	226,442,912
Sales Tax	26,190,808	25,441,757	42,649,772	31,672,476	46,669,644	39,846,122
Retail Margin	94,308,343	114,640,955	141,188,009	101,482,711	162,780,528	133,754,497
Transportation - Pipeline	10,468,263	7,238,849	15,221,425	11,328,258	4,992,906	7,778,618
Transportation - Rail	24,425,947	16,890,648	35,516,659	26,432,602	11,650,114	18,150,110
<b>Total</b>	<b>378,375,986</b>	<b>284,800,141</b>	<b>450,046,200</b>	<b>392,878,400</b>	<b>492,228,414</b>	<b>466,258,337</b>
<b>Alberta</b>						
Extraction	439,253,500	538,768,913	523,039,478	527,928,836	540,035,072	564,008,682
Wholesale Transportation	296,792,905	364,033,049	353,405,053	356,708,673	364,888,562	381,086,947
Exploration	2,800,043,746	2,050,890,834	3,524,962,420	3,796,880,973	4,943,016,752	5,038,742,015
Sales Tax	50,364,192	52,632,162	77,942,650	46,972,831	80,161,806	90,803,091
Retail Margin	382,927,018	487,860,496	585,982,462	341,398,439	579,912,790	629,730,939
Transportation - Pipeline	58,757,859	51,930,766	79,145,380	45,694,968	63,588,546	84,171,585
Transportation - Rail	137,101,670	121,171,788	184,672,554	106,621,591	148,373,273	196,400,364
<b>Total</b>	<b>4,165,240,889</b>	<b>3,667,288,009</b>	<b>5,329,149,997</b>	<b>5,222,206,312</b>	<b>6,719,976,800</b>	<b>6,984,943,624</b>
<b>Saskatchewan</b>						
Extraction	7,174,991	6,801,557	7,563,130	7,930,340	8,100,592	8,453,435
Wholesale Transportation	10,589,297	14,240,052	16,428,066	13,550,820	19,476,085	19,924,128
Exploration	64,446,375	46,734,048	74,299,263	81,524,217	100,681,668	104,832,350
Sales Tax	4,618,349	6,112,481	7,509,912	5,512,635	9,328,643	9,207,774
Retail Margin	27,414,870	38,530,498	43,998,342	30,945,734	56,097,092	51,329,563
Transportation - Pipeline	7,523,535	11,195,551	10,456,944	7,738,279	8,887,396	10,884,708
Transportation - Rail	17,554,914	26,122,952	24,399,536	18,055,984	20,737,257	25,397,651
<b>Total</b>	<b>139,322,331</b>	<b>149,737,140</b>	<b>184,655,191</b>	<b>165,258,010</b>	<b>223,308,733</b>	<b>230,029,609</b>
<b>Manitoba</b>						
Sales Tax	12,212,990	13,548,149	19,259,399	17,417,128	24,839,639	19,678,357
Retail Margin	40,165,862	49,135,216	60,307,757	49,928,048	77,638,570	57,990,447
Transportation - Pipeline	6,024,707	7,428,691	7,908,149	7,993,169	5,357,563	6,261,155
Transportation - Rail	14,057,651	17,333,612	18,452,347	18,650,728	12,500,980	14,609,361
<b>Total</b>	<b>72,461,210</b>	<b>87,445,667</b>	<b>105,927,651</b>	<b>93,989,073</b>	<b>120,336,751</b>	<b>98,539,320</b>
<b>Ontario</b>						
Wholesale Transportation	13,200,446	22,017,513	26,993,724	19,561,716	29,248,281	33,744,491
Sales Tax	28,194,504	45,881,144	51,220,936	47,093,038	75,207,129	85,947,337
Retail Margin	179,082,187	345,505,998	340,684,760	305,226,337	544,950,901	574,665,397
Transportation - Pipeline	41,351,263	65,093,376	52,952,607	50,767,774	28,286,759	59,786,291
Transportation - Rail	96,486,281	151,884,545	123,556,082	118,458,140	66,002,438	139,501,346
<b>Total</b>	<b>358,314,681</b>	<b>630,382,577</b>	<b>595,408,109</b>	<b>541,107,006</b>	<b>743,695,509</b>	<b>893,644,863</b>
<b>Quebec</b>						
Wholesale Transportation	29,111,484	46,183,738	56,196,250	46,151,755	62,062,010	54,701,062
Sales Tax	32,760,150	48,629,178	56,397,385	47,254,250	75,232,038	73,210,707
Retail Margin	89,965,870	147,442,437	156,311,796	126,390,757	231,555,332	216,797,083
Transportation - Pipeline	23,834,892	39,098,351	33,003,629	27,502,633	21,770,855	27,458,475
Transportation - Rail	55,614,748	91,229,485	77,008,468	64,172,810	50,798,662	64,069,774
<b>Total</b>	<b>231,287,144</b>	<b>372,583,189</b>	<b>378,917,528</b>	<b>311,472,206</b>	<b>441,418,897</b>	<b>436,237,100</b>

**TABLE V-2B**  
**CANADIAN PROPANE TOTAL ECONOMIC IMPACT BY PROVINCE**  
**(Dollars)**  
**(continued)**

	2001	2002	2003	2004	2005	2006
<b>New Brunswick</b>						
Wholesale Transportation	21,238,312	12,985,362	30,065,367	23,618,077	24,200,244	29,899,648
Sales Tax	8,988,425	5,084,675	10,646,729	6,582,804	7,017,704	7,916,518
Retail Margin	22,795,464	14,272,891	26,496,162	13,728,561	16,605,063	16,469,339
Transportation - Pipeline	5,307,198	3,331,122	5,146,776	3,787,251	2,362,316	3,704,821
Transportation - Rail	12,383,461	7,772,619	12,009,145	8,836,919	5,512,071	8,644,583
<b>Total</b>	<b>70,712,860</b>	<b>43,446,669</b>	<b>84,364,179</b>	<b>56,553,612</b>	<b>55,697,398</b>	<b>66,634,909</b>
<b>Nova Scotia</b>						
Extraction	10,489,510	13,865,337	11,866,024	11,250,573	13,777,772	12,988,220
Wholesale Transportation	12,887,923	16,882,522	22,449,242	21,752,506	30,266,436	27,408,226
Exploration	125,151,494	128,699,144	182,502,469	195,086,247	262,005,166	215,200,966
Sales Tax	8,496,308	10,353,880	15,332,809	13,912,939	20,643,111	21,646,422
Retail Margin	18,665,491	24,127,884	28,760,608	23,358,356	40,043,577	43,886,861
Transportation - Pipeline	5,881,204	8,263,901	10,231,387	9,701,662	9,589,377	10,473,982
Transportation - Rail	13,722,810	19,282,437	23,873,235	22,637,210	22,375,212	24,439,292
<b>Total</b>	<b>195,294,741</b>	<b>221,475,105</b>	<b>295,015,774</b>	<b>297,699,493</b>	<b>398,700,650</b>	<b>356,043,970</b>
<b>Prince Edward Island</b>						
Sales Tax	884,590	1,107,603	1,635,500	1,713,043	2,407,257	1,808,497
Retail Margin	4,255,189	5,530,871	6,573,854	6,162,897	10,006,298	7,857,049
Transportation - Pipeline	1,739,785	2,463,971	3,179,717	3,440,692	3,634,261	2,805,237
Transportation - Rail	4,059,497	5,749,266	7,419,340	8,028,281	8,479,943	6,545,554
<b>Total</b>	<b>10,939,060</b>	<b>14,851,711</b>	<b>18,808,411</b>	<b>19,344,914</b>	<b>24,527,760</b>	<b>19,016,337</b>
<b>Newfoundland</b>						
Sales Tax	2,891,867	3,722,335	4,775,788	3,924,320	5,892,724	9,309,145
Retail Margin	6,355,114	7,718,026	9,510,066	7,377,570	12,900,046	18,362,151
Transportation - Pipeline	2,001,175	3,257,830	3,021,266	2,499,761	2,296,561	4,657,865
Transportation - Rail	4,669,407	7,601,603	7,049,620	5,832,776	5,358,641	10,868,352
<b>Total</b>	<b>15,917,563</b>	<b>22,299,794</b>	<b>24,356,739</b>	<b>19,634,427</b>	<b>26,447,971</b>	<b>43,197,514</b>
<b>Territories</b>						
Sales Tax	1,749,088	2,124,171	2,959,253	2,392,812	3,471,258	2,546,566
Retail Margin	9,589,129	12,136,683	14,628,457	10,917,132	17,704,436	13,301,169
Transportation - Pipeline	3,087,434	3,602,153	5,702,147	4,884,053	6,525,226	4,693,122
Transportation - Rail	7,204,013	8,405,023	13,305,009	11,396,124	15,225,527	10,950,617
<b>Total</b>	<b>21,629,664</b>	<b>26,268,030</b>	<b>36,594,865</b>	<b>29,590,122</b>	<b>42,926,447</b>	<b>31,491,474</b>
<b>Canada</b>						
Extraction	482,528,234	580,188,388	563,424,111	568,222,717	583,720,119	608,314,488
Wholesale Transportation	402,021,152	490,903,618	523,479,119	498,136,906	547,807,519	564,186,429
Exploration	3,168,813,223	2,311,597,998	3,958,337,588	4,257,547,464	5,532,366,223	5,585,218,244
Sales Tax	177,351,272	214,637,534	290,330,132	224,448,278	350,870,953	361,920,537
Retail Margin	875,524,535	1,246,901,955	1,414,442,271	1,016,916,545	1,750,194,632	1,764,144,496
Transportation - Pipeline	165,977,314	202,904,562	225,969,426	175,338,499	157,291,765	222,675,859
Transportation - Rail	387,280,400	473,443,977	527,261,995	409,123,165	367,014,119	519,577,005
<b>Total</b>	<b>5,659,496,129</b>	<b>5,520,578,032</b>	<b>7,503,244,643</b>	<b>7,149,733,574</b>	<b>9,289,265,330</b>	<b>9,626,037,057</b>

## EMPLOYMENT

Employment estimates for the propane industry in Canada vary. Purvin & Gertz used employment numbers from PGAC members as well as estimates of the proportion of the propane industry to the total upstream petroleum industry. Purvin & Gertz estimates that the total direct employment in the propane industry in Canada is approximately 8,200 and the total indirect employment in the propane industry in Canada is approximately 20,000. The employment breakdown by province is presented in Table V-3.

**TABLE V-3  
CANADIAN PROPANE INDUSTRY EMPLOYMENT**

	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
BC/Territories	376	382	467	474
Alberta	3628	3682	4500	4568
Saskatchewan/Manitoba	305	310	379	385
Ontario	902	916	1119	1136
Quebec	753	764	934	948
Atlantic Provinces	<u>535</u>	<u>543</u>	<u>664</u>	<u>674</u>
Total	6500	6598	8063	8184

## TAXES & ROYALTIES

The industry's activities also have positive impacts on governmental revenues. The industry contributes to government revenues through income taxes and royalties. Furthermore, property taxes and other indirect taxes should be taken into account. There is, of course, an additional fiscal impact from other direct and indirect activities generated by the industry's activities. Purvin & Gertz estimates that the total payments of royalties, fees, income and other taxes has averaged over \$675 million per year for the period from 2003 through 2006. The breakdown by province is presented in Table V-4.

**TABLE V-4  
CANADIAN PROPANE INDUSTRY TAXES & ROYALTIES**

(\$ millions)	2003	2004	2005	2006
<b>Taxes</b>				
Territories	\$1.0	\$1.2	\$1.7	\$1.3
BC	\$14.5	\$15.8	\$23.3	\$19.9
Alberta	\$26.6	\$23.5	\$40.1	\$45.4
Saskatchewan	\$2.6	\$2.8	\$4.7	\$4.6
Manitoba	\$6.6	\$8.7	\$12.4	\$9.8
Ontario	\$17.4	\$23.5	\$37.6	\$43.0
Quebec	\$19.2	\$23.6	\$37.6	\$36.6
New Brunswick	\$3.6	\$3.3	\$3.5	\$4.0
Nova Scotia	\$5.2	\$7.0	\$10.3	\$10.8
PEI	\$0.6	\$0.9	\$1.2	\$0.9
Newfoundland	\$1.6	\$2.0	\$2.9	\$4.7
Total Taxes	\$98.9	\$112.2	\$175.4	\$181.0
<b>Royalties</b>				
Alberta	\$401.9	\$392.7	\$492.8	\$618.4
BC	\$20.1	\$19.6	\$24.6	\$30.9
Saskatchewan	\$8.4	\$8.2	\$10.3	\$13.0
Nova Scotia	\$20.7	\$20.2	\$25.3	\$31.8
Total Royalties	\$451.1	\$440.8	\$553.1	\$694.1