

## QUARTERLY FOCUS

### *1999 NATURAL GAS IMPORT/EXPORT TRADE: A SECOND LOOK*

The Focus feature that was included in the fourth quarter 1999 *Quarterly Report of Natural Gas Imports and Exports* ("Report") provided an overview of natural gas import/export activity for calendar 1999. This Focus feature, like the ones found in the *Report* issued in the first quarter of the past three years, provides additional information on the North American natural gas trade. Specifically, this Focus provides more volume and price information on our natural gas import trade with Canada; reviews volume and price trends with respect to natural gas exports to Mexico; looks at gas marketing developments in California and New England, two important regional markets for imported gas; examines recent developments with regard to Canadian gas imports under long-term contracts, and identifies the major importers and exporters transacting cross-border sales between the United States, Canada and Mexico.

#### **1999 Natural Gas Trade with Canada**

Canadian natural gas imports continue to be an increasingly important supplemental source of natural gas to the markets in the United States. Import volumes from Canada over the past fourteen years have increased by more than three-fold. **Figures 1 and 2** on page iii illustrate the significant growth over the past fourteen years (1986-1999) in Canadian gas exports to the United States and the growing importance of this trade to Canadian producers in terms of expanded markets and revenues generated from this cross-border trade.

In **Figure 1**, the first bar chart shows Canadian natural gas exports to the United States as a percentage of its total marketable production from 1986 to 1999. During this fourteen-year period, this percentage has grown from 29 percent in 1986 to 58 percent in 1999 [National Energy Board of Canada's (NEB) *1999 Annual Report*]. From 1998 to 1999, exports as a percentage of Canadian

marketable production grew from 54 to 58%; this year-to-year increase was caused by a 10.3 percent increase in gas exports to the U.S. in 1999, while Canadian domestic demand grew by only 2.3 percent. The 58 percent in 1999 is an historic high and is the sixth year in a row where gas exports to the U.S. equaled more than half of Canada's marketable production. It seems likely that Canadian natural gas exports as a percentage of total marketable gas production will continue to grow during the next few years as exports are forecasted to increase substantially with the scheduled completion of new pipeline facilities serving the export market, e.g., Alliance pipeline.

The second bar chart in **Figure 1** shows the growth in U.S. market shares for Canadian gas imports from 1986 to 1999. As illustrated, net Canadian natural gas imports as a percentage of total domestic gas demand grew from 4.6 percent in 1986 to an estimated 15.4 percent in 1999. The significant year-to-year increase from 1998 to 1999 (14 v. 15.4%) was caused by a 315 billion cubic feet (Bcf) increase in Canadian gas exports, while there was only a 116 Bcf increase in overall demand in the United States during 1999 [a preliminary figure from the Energy Information Administration's (EIA) *Natural Gas Monthly* (May 2000, p.10)].

Both of the indicators shown in the two bar charts included in **Figure 1** should continue their upward trend in the foreseeable future. Recent projections by virtually all forecasters show continuing growth in Canadian gas sales to the U.S., including Natural Resources Canada (NRC), EIA, and the National Petroleum Council (NPC) in its recently issued natural gas study. The NRC's recent annual report, titled *Canadian Natural Gas: Review of 1999 & Outlook to 2010* (May 2000), forecasts that annual Canadian gas exports to the United States likely will reach 4 Trillion cubic feet (Tcf) by 2005 and 4.1

Tcf by 2010. The NRC's forecasts are very conservative because they are based largely on its examination of existing or planned pipeline capacity to serve the U.S. markets and historic load factors on these systems. As new or expanded pipeline proposals materialize, which would seem likely, the NRC's export projections probably will be revised upward. The EIA, on the other hand, projects in its reference case forecast that Canadian natural gas imports will grow to 4.3 Tcf by 2010 and 5 Tcf by 2020 [*Annual Energy Outlook 2000*, DOE/EIA-0383(2000), December 2000]. EIA's forecast assumes an annual growth rate in gas imports of 2.3 percent from 1998 to 2020 and an annual demand growth rate of 1.8 percent during the same time period. The NPC issued its natural gas study in December 1999. The study, titled *Natural Gas: Meeting the Challenges of the Nation's Growing Natural Gas Demand*, has net Canadian natural gas imports growing to 3.7 Tcf by 2005, 3.8 Tcf by 2010, and 4.3 Tcf by 2015.

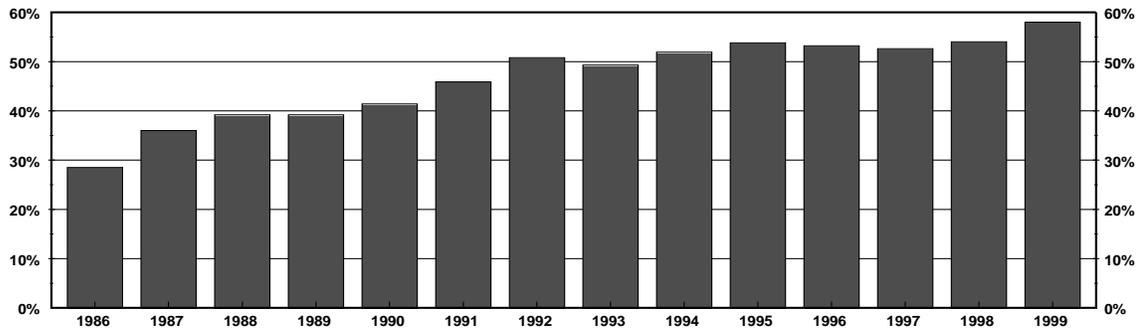
Shown in **Figure 2** are the estimated revenues accrued to Canadian natural gas exporters for natural gas sales to the United States over the past fourteen years (1986-1999). In 1999, FE estimates that Canadian gas exports to the United States generated over \$7.3 billion in revenues, up almost 26 percent from last year's earnings of \$5.8 billion. The sharp rise in Canadian export revenues is the direct result of record volumes entering the United States at prices significantly higher than in 1998. The weighted average international border price of Canadian gas natural gas imported into the United States during 1999 was \$2.19 per million British thermal units (MMBtu). This represented an increase of 14.7 percent over last year's average price of \$1.91 per MMBtu. Last year's average price for Canadian natural gas was the highest in thirteen years and the \$7.3 billion in revenues

generated from this trade was a historic high. The increase in the average price for Canadian natural gas imports during 1999 was consistent with what occurred in the entire industry, particularly during the latter part of the year. However, based on preliminary data from EIA, the price for Canadian natural gas at the international border rose faster than the price for domestic supplies at the wellhead. EIA reports that the average domestic wellhead price for natural gas in 1999 was \$2.07 per thousand cubic feet (Mcf), which was \$0.13, or 6.7 percent more than the 1998 average price of \$1.94 per Mcf [*Natural Gas Monthly* (April 2000), p. 14]. As mentioned above, this compares with an average price of \$2.18 per MMBtu for Canadian gas supplies and a 14 percent year-to-year increase in price.

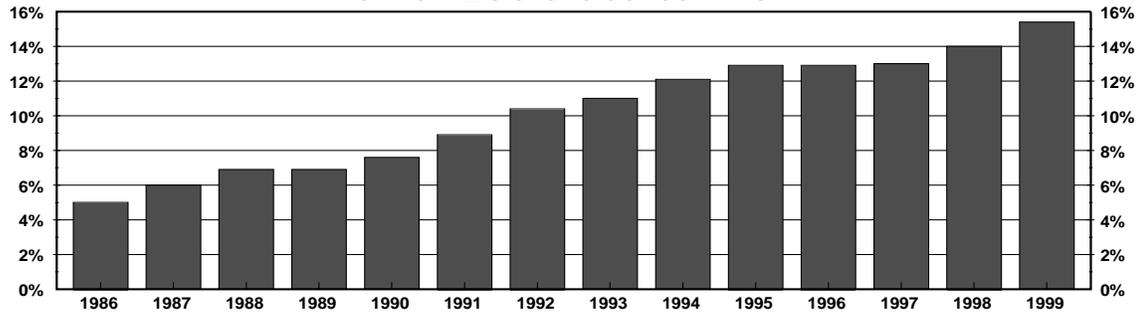
During 1999, 112 companies imported Canadian natural gas under short-term authorizations, and 91 companies used 216 gas purchase contracts to import volumes under long-term arrangements. These importers brought into the United States a record volume of 3,368 Bcf of natural gas during the year. This represented an increase of 315 Bcf, or 10.3 percent over the 1998 total of 3,053 Bcf. Canadian natural gas imports have increased every year over the past thirteen years (1986-1999). However, the rate of growth in 1999 was the highest since 1995, when imports grew 10.7 percent from the previous year. Almost 90 percent of this 315 Bcf of gas was sold in the Midwest, including 80 percent that was transported there via the expanded Northern Border Pipeline. The daily throughput on the Northern Border Pipeline increased by about 610 MMcf/day in 1999, or by 223 Bcf annually. The only other region which registered Canadian gas import gains was the U.S. Northeast, increasing by almost 10 percent.

**CANADIAN NATURAL GAS EXPORTS TO THE U.S.  
AS A PERCENTAGE OF CANADIAN MARKETABLE PRODUCTION**

**Figure 1**



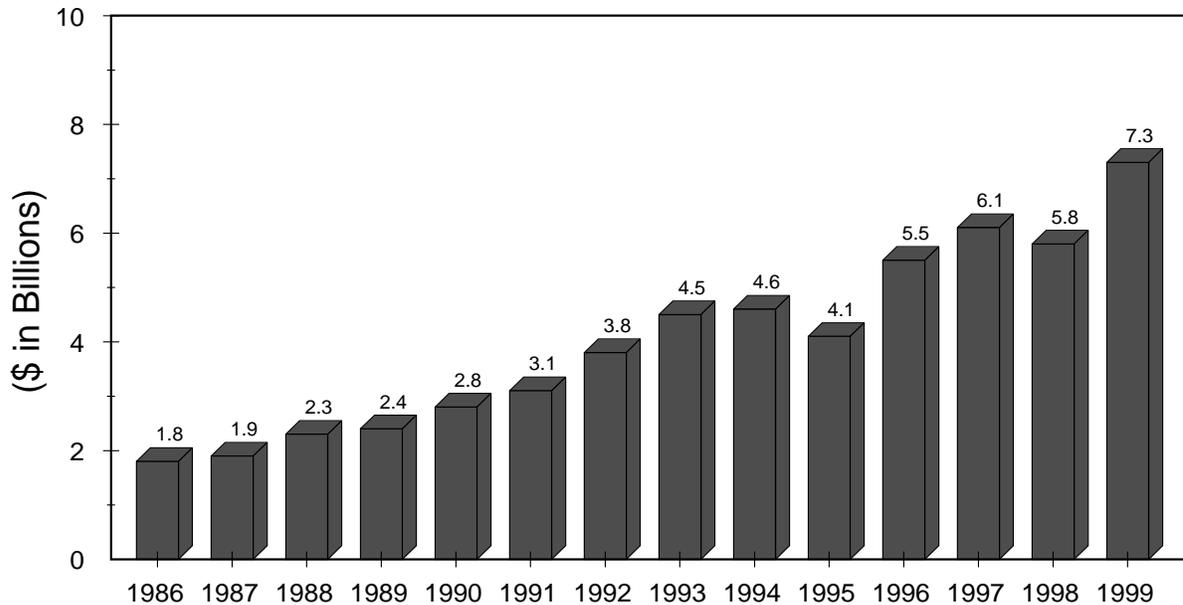
**NET CANADIAN IMPORTS AS A PERCENTAGE  
OF TOTAL U.S. GAS CONSUMPTION**



Sources: Statistics Canada, Natural Resources Canada, company filings with FE.

**CANADIAN REVENUES DERIVED FROM  
NATURAL GAS EXPORTS TO THE U.S.  
(U.S. Dollars)**

**Figure 2**



Sources: 1992 - 1999 estimates derived from company filings with FE; 1986 - 1991 estimates from *Natural Gas Monthly*, [DOE/EIA - 0130 (97/08), table SR7, page XIV].

With regard to U.S. natural gas exports to Canada during 1999, there were a total of 11 firms making sales of 42.4 Bcf of natural gas to Canada at an average price of \$2.31 per MMBtu. Exports to Canada in 1999 decreased by 6 percent over the 1998 level of 45.3 Bcf. All of the natural gas export transactions were accomplished under the Department of Energy's (DOE) two-year "blanket" export authorizations (for gas sales contracts of two years or less). Like previous years, most of the natural gas exports to Canada occurred at the Michigan exit points of Detroit (25 Bcf) and St. Clair (11.3 Bcf). These two exit points accounted for more than 85 percent of all natural gas exports to Canada during the year. [The 1999 natural gas exports of 42.4 Bcf reflect exports to Canada on an equity (sales) basis rather than on a custody (physical movements) basis; total gas exports on a **custody only basis** equaled 38.5 Bcf for the year.]

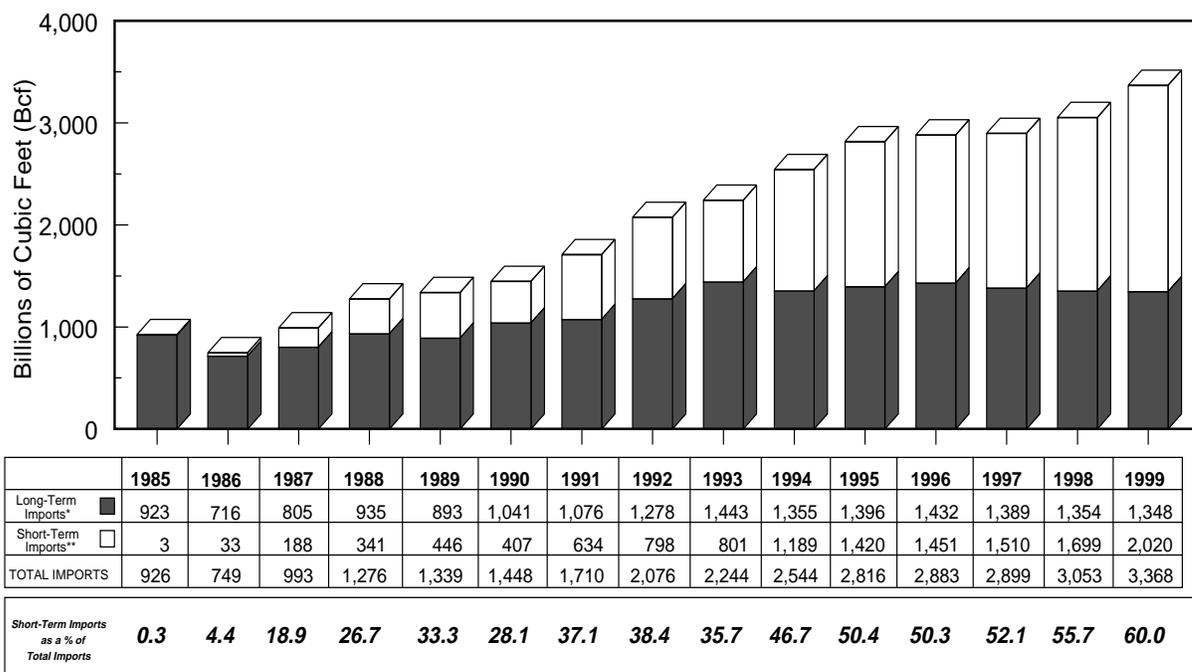
As stated earlier, the weighted average international border price of Canadian natural gas imported into the United States during 1999 was \$2.19 per MMBtu. This represented an increase of 14.7 percent over last year's average price of \$1.91 per MMBtu. Under DOE's two-year "blanket" import authorizations (for gas purchase contracts of two years or less), the average border price of gas supplies imported from Canada in 1999 was \$2.13 per MMBtu. This price rose 22.4 percent over last year's average price of \$1.74 per MMBtu for short-term Canadian imports. Under DOE's long-term import authorizations (for gas purchase contracts longer than two years), the average border price was \$2.28 per MMBtu, or an increase of 6.5 percent over last year's average price of \$2.14 per MMBtu. For the purposes of comparison, the estimated

average domestic wellhead price for marketable production in 1999 was \$2.07 per thousand cubic feet [*Natural Gas Monthly*, DOE/EIA-0130, April 2000, Table 4 (p. 14)], and the average NYMEX futures price for natural gas in 1999 was \$2.32 per MMBtu, [provided by the NYMEX statistical support group]. Therefore, the average NYMEX futures price in 1999 was \$0.14 per MMBtu or 6.4 percent higher than the average price of \$2.18 per MMBtu for Canadian gas supplies.

Of the 3,368 Bcf of Canadian gas imported in 1999, 60 percent (2,020 Bcf) was imported under DOE's short-term import authority, while 40 percent (1,348 Bcf) was imported under its long-term authority. 1999 represented the fifth straight year in which more Canadian natural gas was imported under DOE's short-term import authorizations than under its long-term import authorizations. Comparing 1999 Canadian imports with 1998 imports by type of authorization used, natural gas imported under short-term contractual arrangements rose approximately 19 percent (321 Bcf), representing the largest volumetric increase in these imports since 1992. Imports this year under long-term contractual arrangements fell slightly (6 Bcf). **Figure 3** on the following page illustrates the steady growth in the use of short-term import authorizations over the past 15 years (1985-1999). For the past six years, gas imports under long-term import authorizations have remained relatively constant and virtually all of the growth in Canadian gas imports during this period have come from increased sales under short-term import authorizations. This trend is expected to continue even though certain gas importers likely will continue to utilize long-term contractual arrangements, e.g., cogeneration facilities.

Figure 3

## CANADIAN NATURAL GAS IMPORTS BY TYPE OF IMPORT AUTHORIZATION 1985 - 1999



\* Imports made under gas purchase contracts longer than 2 years.  
 \*\* Imports made under gas purchase contracts which are 2 years or less.

### Canadian Gas Marketed in California

Figure 4 shows the volume of Canadian natural gas marketed in California under both short-term and long-term contracts during the past 13 years (1987-1999). As shown in Figure 4, most Canadian gas sales to California consumers prior to 1993 were transacted under long-term supply contracts; however, beginning in 1994 and in every subsequent year, the great majority of Canadian gas volumes now marketed in the California market are now done under short-term supply arrangements (contracts of 2 years or less). During 1999, a total of 646 Bcf of Canadian natural gas was marketed in California. This represents a decrease of 75.4 Bcf, or 10.5 percent from the 1998 level of 721.4 Bcf. Approximately 83 percent of the Canadian volumes marketed in California were under short-term supply contracts. The average international border price

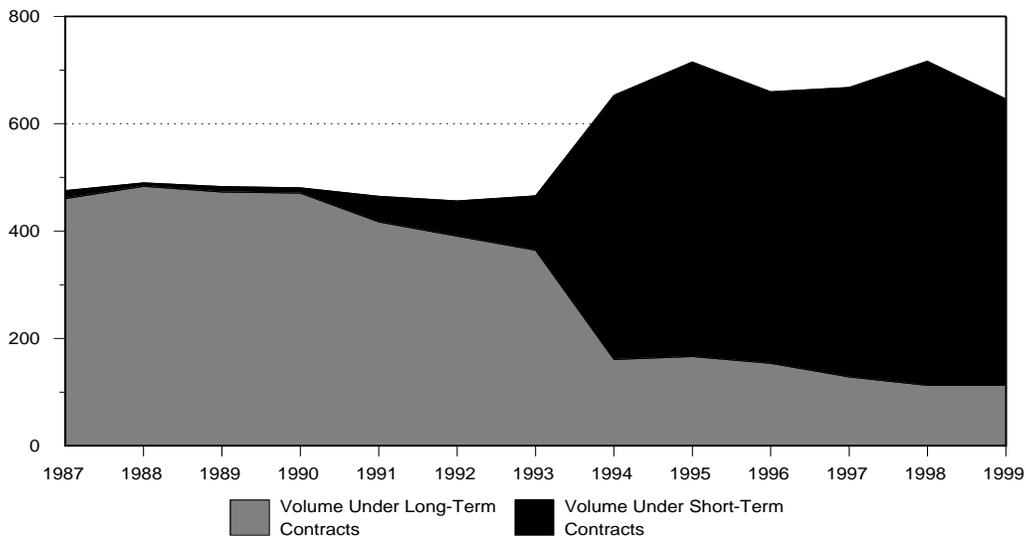
for all Canadian natural gas supplies marketed in California in 1999 was \$1.99 per MMBtu; this compares with a price of \$1.54 per MMBtu in 1998. In 1999, sales to California under short-term import authorizations had an average international border price of \$2.04 per MMBtu, while sales under long-term import authorizations had an average international border price of \$1.76 per MMBtu. In 1998, the international border prices for sales to California under short-term and long-term import authorizations were \$1.57 per MMBtu and \$1.39 per MMBtu, respectively. In comparing 1999 prices with those of 1998, the international border price for short-term sales to California increased \$0.47 per MMBtu, or almost 30 percent, while the price under long-term sales increased \$0.37 per MMBtu, or 26.6 percent.

Based on preliminary figures published by EIA in its *Natural Gas Monthly* [DOE/EIA-130 (April 2000), Tables 15-19], total natural gas deliveries to California in 1999 increased by only 10.4 Bcf, or 0.5 percent from the 1998 level (1943.8 v. 1933.4 Bcf). The overall modest growth in gas demand during 1999 is consistent with the supply and demand forecasts found in the *1998 California Gas Report (1998 Report)*. The *1998 Report*, which is the most current in a series of reports prepared by the California gas and electric utilities in accordance with a directive issued by the California Public Utilities Commission, forecasts that natural gas demand will grow at an annual rate of 1.0 percent from 1998 to 2015. EIA's preliminary demand breakdown by sector shows that gas consumption grew in the residential and industrial sectors, but this growth was largely offset by declines in the

commercial and electric utility sectors. The two sectors showing the greatest year-to-year change were the industrial and electric utility sectors. The industrial sector experienced an increase of 117.2 Bcf, or 14.2 percent over the 1998 consumption level (944.6 v. 827.4 Bcf). The electric utility sector decreased its natural gas consumption in 1999 by 103 Bcf, or 38 percent from the 1998 level (168.2 v. 271.2 Bcf). During 1999, there was a surplus of hydroelectric generation in the West, which displaced the more expensive gas-fired electric generation. For example, in 1999 the Bonneville Power Administration reported that it had produced 87.5 million Gigawatt Hours of hydroelectric generation; this compares with its fifty year annual average of 78 million Gigawatt Hours of hydroelectric generation.

Figure 4

**CANADIAN NATURAL GAS EXPORTS TO CALIFORNIA UNDER LONG-TERM AND SHORT-TERM CONTRACTS OVER THE PAST TWELVE YEARS: 1987 - 1999 (Bcf)**

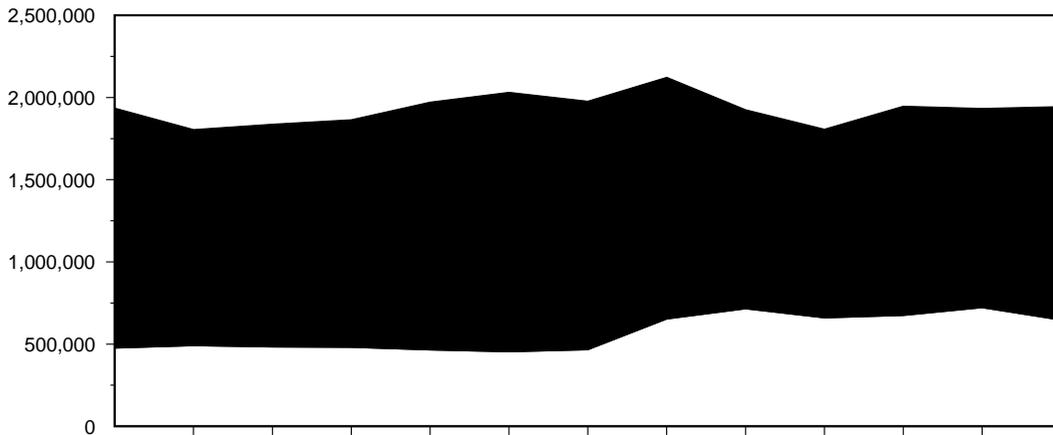


Notes: Long-term contracts are defined as supply contracts which are over two years in length and short-term contracts are defined as supply contracts which are two years or less in duration. The data are from filings submitted by natural gas importers to the Office of Fossil Energy.

**Figure 5** shows Canadian natural gas marketed in California as a percentage of total gas consumption for the State during the past thirteen years (1987-1999). This figure merely displays the estimated annual market shares during this time period. Canada's share of the California gas market declined to 33.2 percent from 1998's figure of 37.3 percent. In 1999, Canadian gas producers sold

increasing volumes of gas to the Midwest with the completion of the Northern Border Pipeline expansion; it is likely that these increased volumes may have displaced volumes that normally would have gone to California. In addition, the loss of Canadian market share in California also was caused by the availability of less expensive domestic supplies serving this market.

**Figure 5**  
**CANADIAN NATURAL GAS MARKETED IN CALIFORNIA AS A PERCENTAGE OF TOTAL STATE GAS CONSUMPTION (MMCF)**



	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Canadian Gas Supplies to CA	475,449	489,807	482,935	480,493	464,676	452,642	465,561	652,628	714,695	659,435	673,804	721,411	645,976
Total Gas Consumption	1,934,909	1,804,452	1,837,831	1,864,057	1,970,709	2,030,564	1,976,397	2,123,310	1,925,110	1,807,314	1,946,945	1,933,371	1,943,814

% Share of the CA Market	<b>24.6</b>	<b>27.1</b>	<b>26.3</b>	<b>25.8</b>	<b>23.6</b>	<b>22.3</b>	<b>23.6</b>	<b>30.7</b>	<b>37.1</b>	<b>36.5</b>	<b>34.6</b>	<b>37.3</b>	<b>33.2</b>
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Sources: Consumption data for 1987 thru 1998 obtained from the *Natural Gas Annual* (DOE/EIA-0131); 1999 consumption figure is an FE estimate based on preliminary EIA data. Canadian natural gas supplies marketed in California are from reports filed by importers with FE.

**Table 1** shows the monthly international border prices for Canadian natural gas imports, by region, for 1998 and 1999. The three principal marketing regions for Canadian gas are the West, the Midwest, and the Northeast. The prices for these regions are derived by combining the international border prices of the two principal pipelines serving each of the three regions. As illustrated in **Table 1**, the average international border price for Canadian gas increased from \$1.91 per MMBtu in 1998 to \$2.19 per MMBtu in 1999, or by 14.7 percent.

However, there were significant differences in year-to-year price increases among the regions. The price of Canadian natural gas marketed in the West Region rose significantly in 1999, increasing from \$1.60 per MMBtu in 1998 to \$2.04 per MMBtu in 1999. This was a \$0.44 per MMBtu, or a 27.5 percent increase over the 1998 average price. In contrast, the Northeast Region experienced the smallest year-to-year increase in price; going from \$2.44 to \$2.52 per MMBtu during the same time period.

**Table 1**

INTERNATIONAL BORDER IMPORT PRICES (\$/MMBtu)								
Month	WEST		MIDWEST		NORTHEAST		AVERAGE	
	1998	1999	1998	1999	1998	1999	1998	1999
January	\$1.62	\$2.04	\$2.08	\$1.75	\$2.64	\$2.29	\$2.13	\$1.99
February	\$1.44	\$1.73	\$1.92	\$1.72	\$2.52	\$2.24	\$1.86	\$1.86
March	\$1.47	\$1.63	\$2.05	\$1.57	\$2.58	\$2.10	\$1.93	\$1.74
April	\$1.57	\$1.59	\$2.06	\$1.72	\$2.58	\$2.17	\$1.98	\$1.79
May	\$1.66	\$1.92	\$1.90	\$2.08	\$2.53	\$2.49	\$1.96	\$2.13
June	\$1.42	\$1.91	\$1.84	\$2.00	\$2.37	\$2.44	\$1.83	\$2.09
July	\$1.48	\$1.92	\$2.00	\$2.05	\$2.51	\$2.48	\$1.92	\$2.11
August	\$1.56	\$2.06	\$1.65	\$2.31	\$2.24	\$2.75	\$1.76	\$2.33
September	\$1.42	\$2.34	\$1.51	\$2.57	\$2.13	\$2.92	\$1.63	\$2.57
October	\$1.62	\$2.31	\$1.86	\$2.37	\$2.34	\$2.79	\$1.88	\$2.45
November	\$1.92	\$2.69	\$1.95	\$2.78	\$2.42	\$3.01	\$2.05	\$2.80
December	\$1.99	\$2.25	\$1.97	\$2.12	\$2.42	\$2.60	\$2.10	\$2.29
<b>Average</b>	<b>\$1.60</b>	<b>\$2.04</b>	<b>\$1.90</b>	<b>\$2.09</b>	<b>\$2.44</b>	<b>\$2.52</b>	<b>\$1.91</b>	<b>\$2.19</b>

**Natural Gas Imports Into New England**

Historically, natural gas use in New England was limited due to the region’s geographical location at the end of the domestic interstate natural gas transmission system. However, an improved and expanded gas pipeline infrastructure, particularly to allow Canadian gas to serve the area, has resulted in

a dramatic increase in the use of gas in the region over the past twelve years (1988-1999). Despite these marketing inroads gains during this period, New England still lags behind the rest of the country in natural gas consumption. Natural gas represents about 18 percent of New England’s primary energy

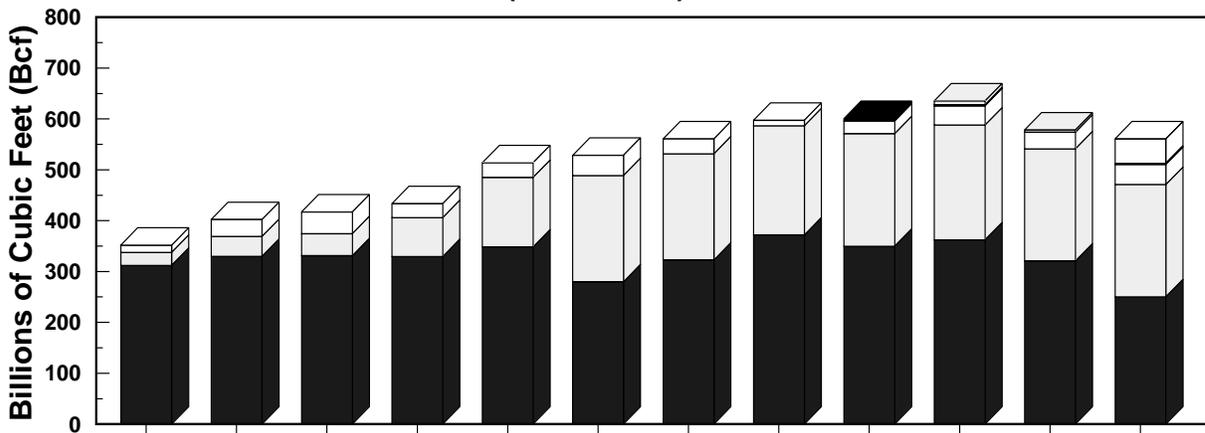
consumption, compared to the national average of 24 percent [2000 Statistical Guide of the New England Gas Association (NEGA)]. As shown in **Figure 6**, natural gas consumption in New England has declined somewhat during the past two years. This decline in gas sales largely was the result of warmer than normal weather during the past couple of heating seasons.

The latest improvement in the natural gas pipeline infrastructure serving the New England region is the recent completion and commercial operation of the Maritimes & Northeast Pipeline (Maritimes). The Maritimes pipeline, which became operational on the last day of the year, transports gas from the Sable Island Offshore Energy Project in offshore

Nova Scotia to markets in the Atlantic Provinces and New England. The entire pipeline system, including numerous laterals, extends from the gas plant at Goldboro, Nova Scotia, to Wells, Maine, and is approximately 795 miles long (347 in Canada and 448 miles in the U.S.). From the international border (near Woodland, Maine), the Maritimes travels to Westbrook, Maine (near Portland), where it interconnects with pipeline facilities of the Granite State Transmission System and the pipeline jointly owned by Maritimes and the Portland Natural Gas Transportation System. The current capacity of the pipeline at the international border is about 440 MMcf/day. Although the pipeline had some initial start-up problems, Maritimes shipped about 282 MMcf/day to New England in March of this year.

Figure 6

### Sources of Natural Gas Marketed in New England (1988 - 1999)



	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Domestic Supplies	312.3	329.9	331.4	329.6	348.2	279.8	322.6	372.2	350.0	362.4	320.6	250.4
Canadian Supplies	25.4	39.3	43.1	76.6	137.0	209.1	209.0	214.6	221.1	225.8	220.8	220.9
Algerian Supplies	13.9	33.0	42.5	27.1	28.5	39.6	29.1	10.5	25.0	37.6	32.7	39.4
U. Arab Emirates	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	2.4	0.0	0.0
Australian	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	4.1	2.3
Trinidad	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.9
<b>TOTAL SUPPLIES</b>	<b>351.6</b>	<b>402.2</b>	<b>417.0</b>	<b>433.3</b>	<b>513.7</b>	<b>528.5</b>	<b>560.7</b>	<b>597.3</b>	<b>600.5</b>	<b>635.4</b>	<b>578.2</b>	<b>560.9</b>

Imports as a % of Total Consumption	11.2	18.0	20.5	23.9	32.2	47.1	42.5	37.7	41.7	43.0	44.6	55.4
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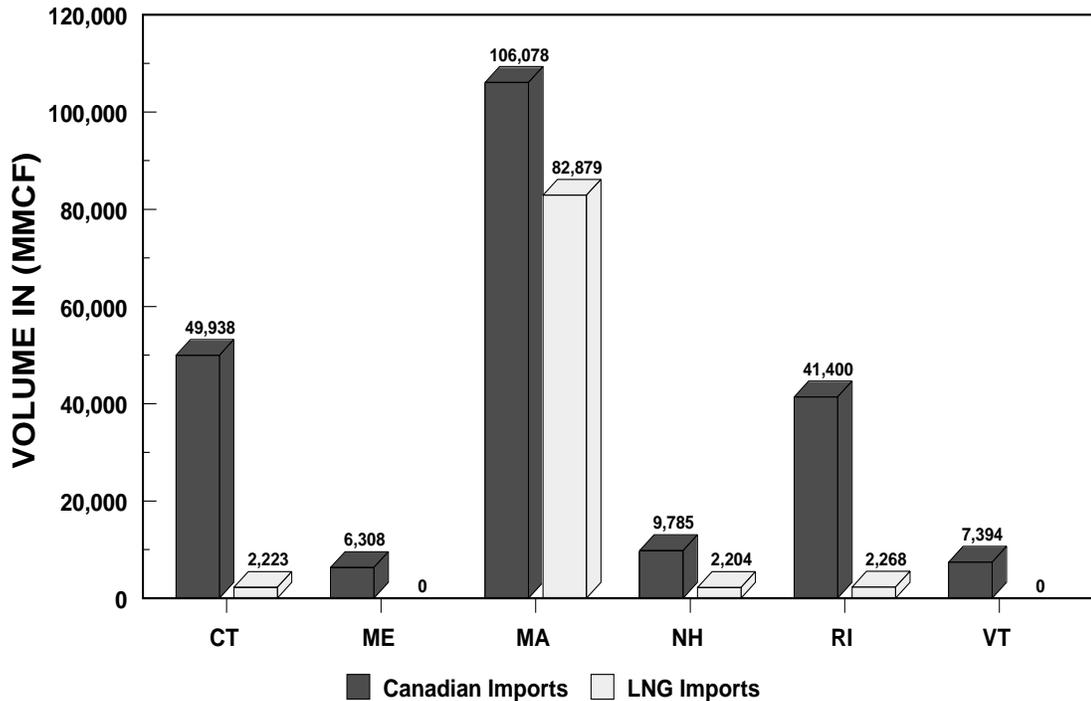
Sources: Natural gas consumption data from 1988 - 1998 came from EIA's *Natural Gas Annual* (DOE/EIA - 0131); 1999 consumption figure is an estimate from FE based on EIA data; Import data are derived from company filings made with FE.

**Figure 7** shows the type and distribution of natural gas imports marketed during 1999 in the 6 states comprising New England. As shown, the bulk of the imports destined for sale in New England is sold in the state of Massachusetts. Of the total volumes marketed in New England, 48 percent of the Canadian gas import volumes and 95 percent of

the liquefied natural gas (LNG) volumes imported from Algeria, Trinidad and Tobago, and Australia are sold in this state. In 1999, 84 percent of the volumes were imported under long-term arrangements (contracts greater than two years) and 16 percent were imported using short-term arrangements (contracts of two years or less).

*Figure 7*

**NATURAL GAS IMPORTS SUPPLYING NEW ENGLAND - 1999**



Source: Quarterly filings by natural gas importers to FE. These figures represent sales rather than imports; therefore, data differs slightly from import total.

**Figure 8** lists the top ten importers of Canadian natural gas for the year. These ten firms imported a total of 1,685.3 Bcf of natural gas, or 50 percent of the total Canadian gas imported for the year. **Figure 8** also indicates whether the imports were made under short-term or long-term import authorizations. About 70 percent of the volumes imported by this group of importers was done under DOE's short-term import authority and 30 percent was under long-term import authority. Nine out of the top ten Canadian natural gas importers listed in 1999 were also among the top ten companies listed for 1998. This year's addition to the list was Avista Corporation (formerly Washington Water Power Company). Among the top importers in 1999, there were only two end-users: both combined electric/gas utilities -- the rest of the importers were marketers, producer affiliates, or gas aggregators. Compared with import levels of 1998, the two importers in **Figure 8** which experienced the largest year-to-year volumetric and percentage gains were PanCanadian and Duke Energy. Natural gas imports by Duke Energy and PanCanadian grew by 105 and 59.6 percent, respectively. The only two importers on this list which experienced declines in sales from the 1998 levels were Pan-Alberta Gas (U.S.) and PG&E. Both of these importers serve the California gas market which, as noted earlier, had a drop-off in Canadian gas purchases in 1999.

**Figure 9** lists the ten largest suppliers of Canadian natural gas to the United States in 1999. The volumes supplied by each company include both short-term and long-term sales. Eight out of ten of these suppliers were also on the list of top gas suppliers for 1998. Two companies that joined the list this year include Producers Marketing, Ltd. and Poco Petroleum Ltd. The two companies that dropped off the list since 1998 were Renaissance Energy and Husky Oil. As shown, most of the top suppliers of Canadian natural gas to the United States in 1999 were gas aggregators. The top ten suppliers of Canadian natural gas listed in **Figure 9** supplied two-thirds of all Canadian gas imports during 1999 (2,254.3 Bcf).

Figure 8

TEN LARGEST IMPORTERS OF CANADIAN NATURAL GAS IN 1999

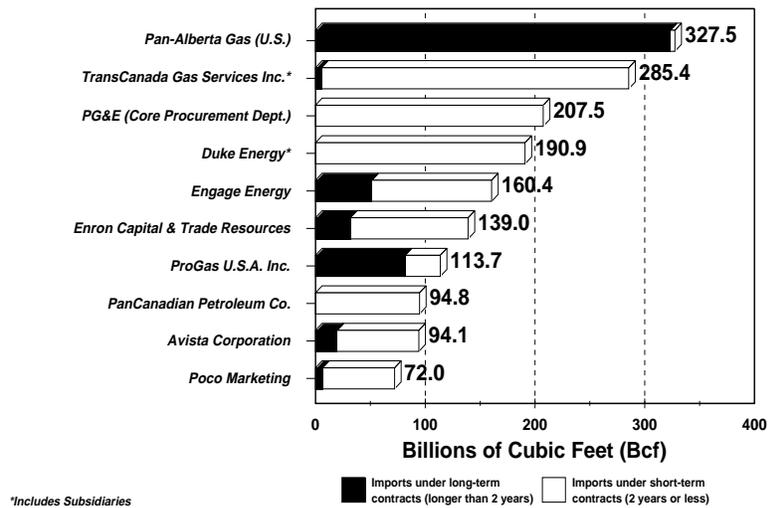
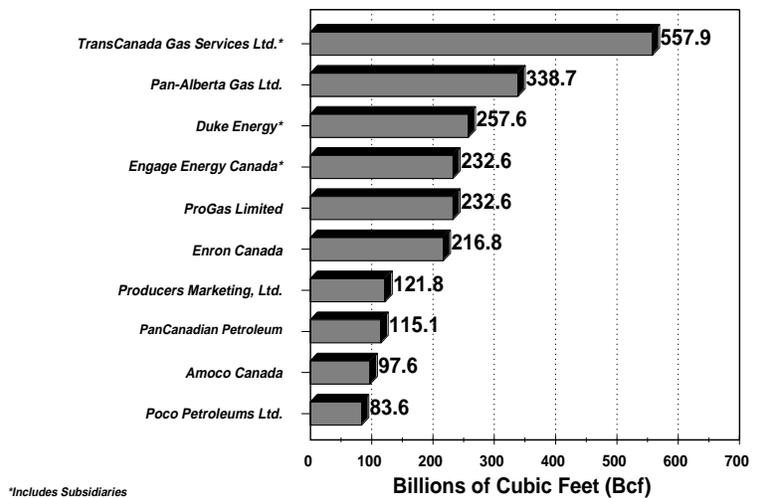


Figure 9

TEN LARGEST SUPPLIERS OF CANADIAN NATURAL GAS IN 1999



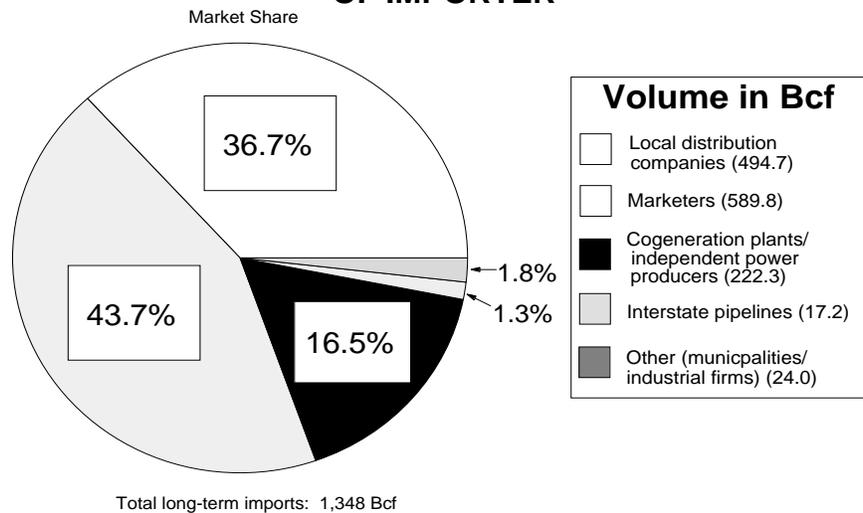
### Long-Term Imports from Canada

As illustrated in **Figure 3** on page v, the importation of Canadian natural gas under long-term contracts (terms longer than 2 years in length) continues to diminish in importance vis-a-vis short-term, spot market purchases over the past 15 years (1985 - 1999). Natural gas imports from Canada under both long-term and short-term contracts have grown during this period; however, short-term imports have grown at a much faster rate, particularly during the past 6 years. For example, during the past five years (1994 - 1999), long-term imports have remained at virtually the same level, while short-term imports have grown by 70 percent (1,189 v. 2,020 Bcf). Although there has been a diminishment in importance for long-term imports over the past 15 years, we believe that these long-term import arrangements will continue to play an important role in overall gas trade with Canada in the foreseeable future.

**Figure 10** shows what type of importer was purchasing Canadian natural gas under long-term supply contracts during 1999. Comparing 1999 imports with 1998, there was an overall decline of less than one percent (1,348 v. 1,354 Bcf). The

figure indicates, by type of importer, the actual volumes imported and percentage of market share. Comparing 1999 with 1998, there were only two import categories which experienced growth in terms of volume imported and percentage of market share: the “municipalities/industrial firms” category increased by 20.6 percent (24.0 v. 19.9 Bcf) and the “marketers” category grew by 5.9 percent (589.8 v. 557.1 Bcf). All other importer categories experienced declines in purchases of Canadian gas under long-term contracts in 1999: “Local Distribution Companies” by 0.7 percent (494.7 v. 498.0 Bcf); “Cogeneration Plants/Independent Power Producers” by 9 percent (222.3 v. 244.2 Bcf); and “Interstate Pipelines” by 28.6 percent (17.2 v. 24.1 Bcf). In addition, in 1999 there were no imports of Canadian natural gas by companies in the “Electric Utilities” category. The elimination of gas imports by the “electric utilities” category was directly the result of the termination of four long-term contracts by Southern California Edison. As of June 1998, Southern California Edison had completed the sale of all 12 of its gas-fired power plants, thereby eliminating its need of gas import supplies.

**Figure 10 1999 CANADIAN NATURAL GAS IMPORTS UNDER LONG-TERM IMPORT AUTHORIZATIONS BY TYPE OF IMPORTER**



**Notes:**

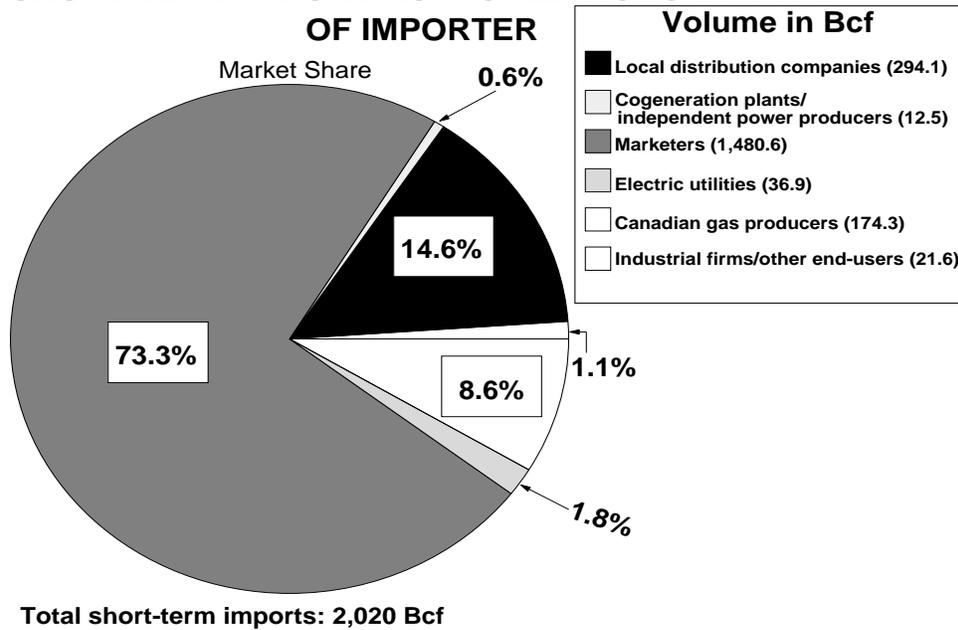
Long-term Canadian gas imports totaled 1,348 Bcf in 1999. Imports by Northwest Alaskan Pipeline Company were included in the "marketers" category; imports by combined gas/electric utilities were included in the "local distribution companies" category.

The next two graphs provide information on Canadian natural gas imported under DOE’s short-term blanket authorizations during 1999. As mentioned earlier, Canadian natural gas imports under this type of import authority have exceeded the volume imported under long-term authority for the past five years. **Figure 11** below identifies, by class of importer, the market share of those who imported Canadian natural gas in 1999 under short-term import authorizations. As displayed in **Figure 11**, there were three principal types of short-term importer: marketers, LDCs, and Canadian gas producers or their U.S. affiliates.

These three types of importer brought in over 96 percent of all short-term Canadian natural gas imports in 1999. In addition, five of the six categories experienced growth in Canadian import volumes under short-term authority. These include: “Marketers” (1,480.6 v. 1,245.3); “Canadian Gas Producers (174.3 v. 116.4); “Industrial Firms/Other End-Users” (21.6 v. 13.9); Electric Utilities (36.9 v. 22.2); and “Local Distribution Companies” (294.1 v. 285.7). The only category that experienced a decrease in volumes this year was the “Cogeneration Plants/Independent Power Producers”(12.5 v. 15.3).

Figure 11

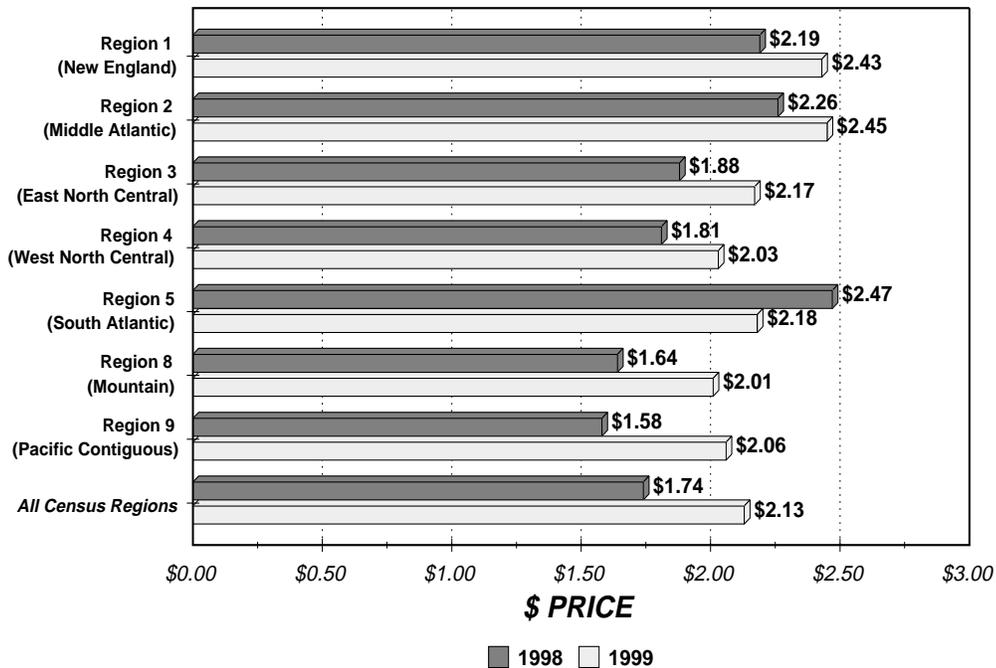
**1999 CANADIAN NATURAL GAS IMPORTS UNDER SHORT-TERM IMPORT AUTHORIZATIONS BY TYPE OF IMPORTER**



**Figure 12** shows for 1998 and 1999 the weighted average international border price for Canadian natural gas imported under short-term contracts by Census Region. Approximately 98 percent of all short-term Canadian natural gas sales to the United States in 1999 were concentrated in five Census Regions (2,3,4,8,9), as was the case over the past few years, and almost 48 percent of this year's volumes were marketed in the Western regions (Census Regions 8 and 9). As indicated, the average border price for **all** short-term imports in 1999 was \$2.13 per MMBtu, compared with \$1.74 per MMBtu in 1998, an increase of 22.4 percent. **Figure 12** also illustrates the price split among the

various regions. The bar chart shows that the price split among the various regions has narrowed significantly during the past year. Although the price of natural gas marketed in the western part of the country (Census Regions 8 & 9) continues to be less than the price of Canadian gas going to other parts of the U.S. due its proximity to gas production areas, the price differential among the regions narrowed dramatically in 1999. For example, in 1999 the price of Canadian gas supplies sold in Census Regions 8 & 9 increased markedly (22.6 and 30.4 percent, respectively), while the price increases for Canadian gas sales to the Northeast (Census Regions 1 & 2) were up only about 10 percent.

**Figure 12 THE WEIGHTED AVERAGE PRICE IN 1998 & 1999 FOR CANADIAN NATURAL GAS IMPORTED UNDER SHORT-TERM CONTRACTS BY CENSUS REGION (\$/MMBtu)**



## Mexican Gas Trade

The last six graphs provide information on Mexican gas trade during 1999. **Figure 13** identifies the 21 firms that exported a total of 61.3 Bcf of natural gas to Mexico in 1999, and indicates the market share of the five largest exporters. Pemex Gas was the year's largest exporter of natural gas to Mexico, increasing their market share substantially from last year (56% v. 10%). Although the number of exporters totaled 21 in 1999, Pemex Gas and the other top five gas exporters represented about 81 percent of the Mexican import market.

**Figure 14** shows the 10 companies that imported a record 54.5 Bcf of Mexican natural gas into the United States, up 276 percent from the 1998 level (14.5 Bcf). In 1999, 75 percent of the gas entered the United States at Hidalgo, Texas on the Texas Eastern Pipeline. The remaining 25 percent were brought into the country on the newly operational Tennessee Pipeline, located near Alamo, Texas. It is interesting to note that the number of companies importing natural gas from Mexico has dropped significantly over the last two years even as volumes reached record levels. This is the direct result of Pemex Gas holding a larger share of this market. Mexican sources predict that exports to the United States will continue to grow; however, Mexico is expected to be a net importer of gas during the foreseeable future.

**Figures 15 and 16** provide monthly volume and price information with regard to natural gas exports to Mexico over the past three years (January 1997 - December 1999). Natural gas exports to Mexico this year were the highest since 1992, when volumes reached 94.1 Bcf. The 1999 annual weighted average price was \$2.29 per MMBtu, a rise of more than 13% from last year's price of \$2.02 per MMBtu. **Figures 17 and 18** show monthly volumes and prices for natural gas imports from Mexico from 1997 through 1999.

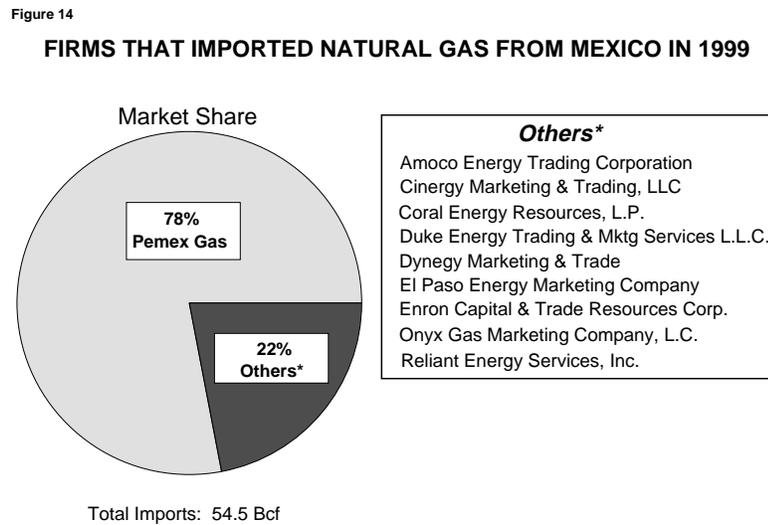
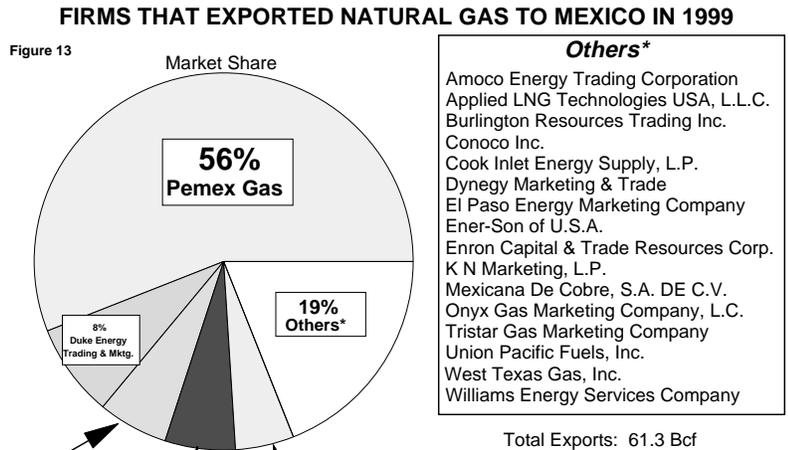
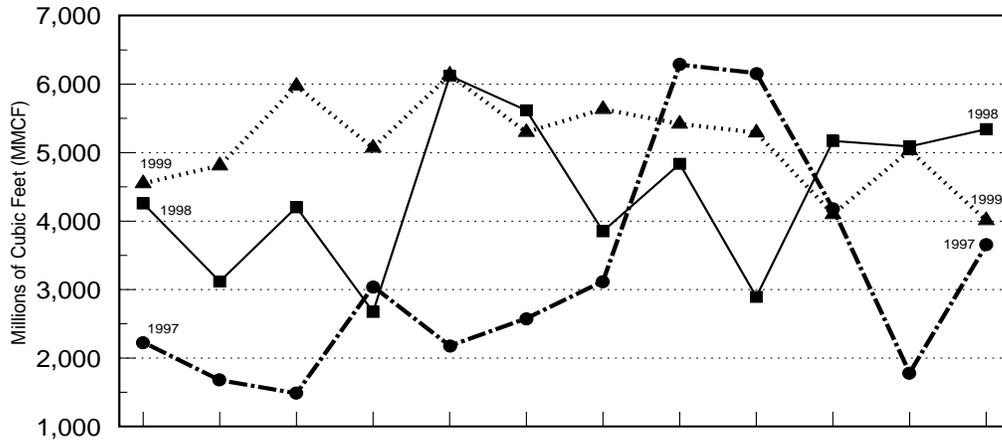


Figure 15

## NATURAL GAS EXPORTS TO MEXICO

### 1997 - 1999

#### MONTHLY VOLUMES



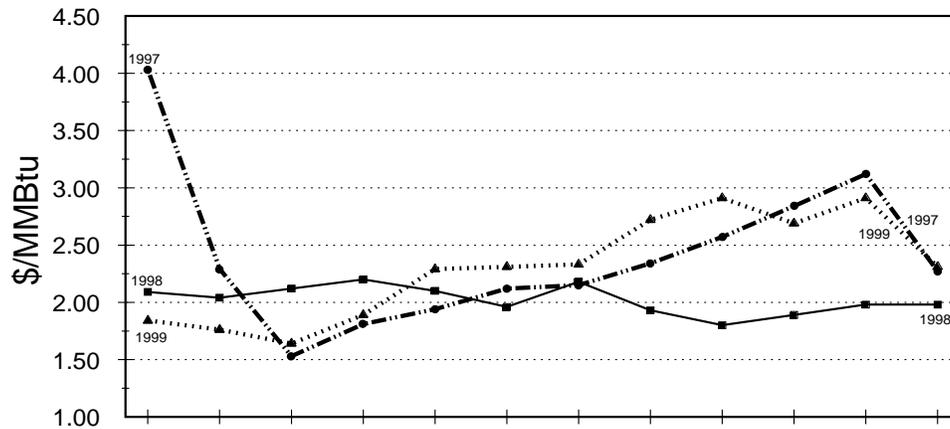
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1997	2,231	1,677	1,486	3,044	2,177	2,579	3,122	6,282	6,159	4,182	1,782	3,650	<b>38,372</b>
1998	4,257	3,117	4,202	2,675	6,119	5,617	3,852	4,835	2,892	5,170	5,088	5,342	<b>53,165</b>
1999	4,548	4,809	5,971	5,068	6,133	5,296	5,632	5,419	5,289	4,099	5,031	4,009	<b>61,304</b>

Figure 16

## NATURAL GAS EXPORTS TO MEXICO

### 1997 - 1999

#### WEIGHTED AVERAGE PRICE



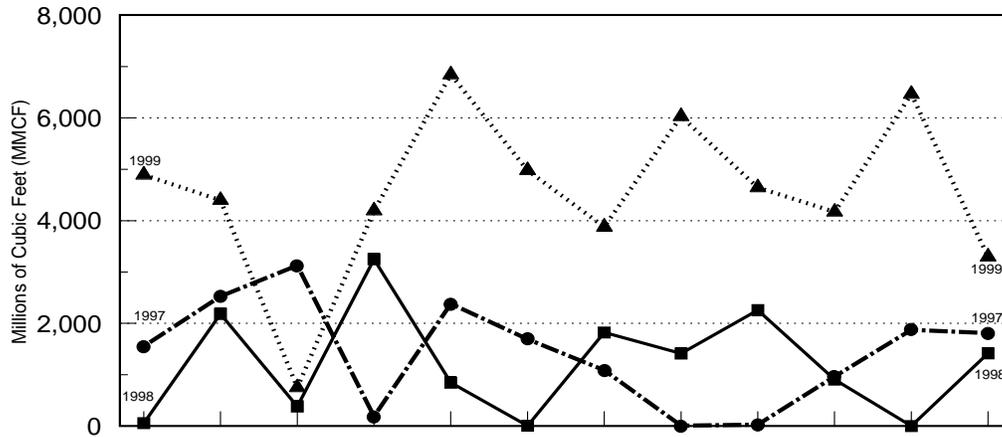
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
1997	4.03	2.29	1.53	1.81	1.94	2.12	2.15	2.34	2.57	2.84	3.12	2.27	<b>2.43</b>
1998	2.09	2.04	2.12	2.20	2.10	1.96	2.18	1.93	1.80	1.89	1.98	1.98	<b>2.02</b>
1999	1.84	1.76	1.64	1.89	2.29	2.31	2.33	2.72	2.91	2.69	2.91	2.31	<b>2.29</b>

Figure 17

## NATURAL GAS IMPORTS FROM MEXICO

### 1997 - 1999

#### MONTHLY VOLUMES



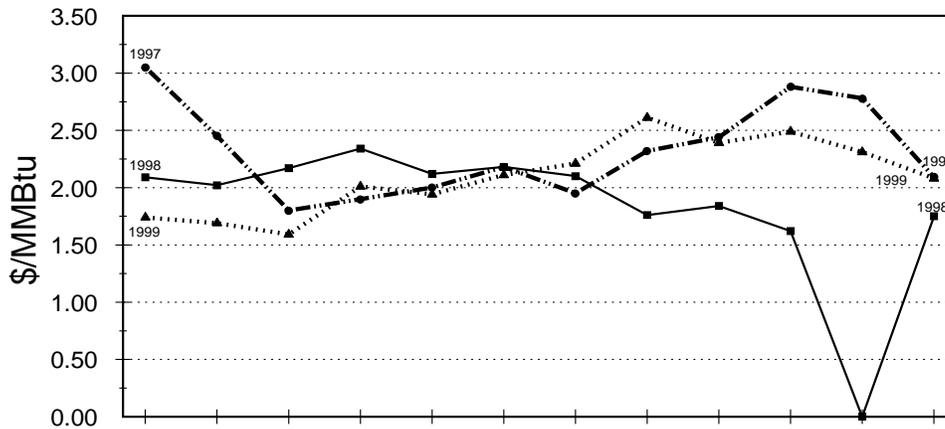
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1997	1,554	2,525	3,126	189	2,380	1,692	1,087	6	29	965	1,874	1,810	<b>17,243</b>
1998	55	2,183	380	3,248	845	5	1,820	1,412	2,257	905	0	1,417	<b>14,532</b>
1999	4,891	4,397	751	4,193	6,843	4,978	3,876	6,028	4,643	4,168	6,463	3,297	<b>54,528</b>

Figure 18

## NATURAL GAS IMPORTS FROM MEXICO

### 1997 - 1999

#### WEIGHTED AVERAGE PRICE



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
1997	3.05	2.45	1.80	1.90	2.00	2.18	1.95	2.32	2.44	2.88	2.78	2.09	<b>2.28</b>
1998	2.09	2.02	2.17	2.34	2.12	2.18	2.10	1.76	1.84	1.62	0.00	1.75	<b>2.01</b>
1999	1.74	1.69	1.59	2.01	1.94	2.11	2.21	2.61	2.39	2.49	2.31	2.08	<b>2.15</b>