

National Energy
Board



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Natural Gas Prices

in the **Maritimes**

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An **ENERGY MARKET ASSESSMENT** • March 2004

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INTRODUCTION

Since 2002, the National Energy Board has enhanced its monitoring of the emerging natural gas market in the Maritimes. It began by issuing a report in June 2003 on the state of the market entitled *The Maritimes Natural Gas Market, An Overview and Assessment*. The Board also began public reporting of monthly prices for exports at the St. Stephen location and moved to provide additional information on the wholesale price of gas.

After further consultation and input from key stakeholders, the Board undertook a survey of the wholesale natural gas prices paid by Canadian buyers in the Maritimes for the period November 2002 through October 2003. The results and analysis of that survey are contained in this report. *Natural Gas Prices in the Maritimes* aims to facilitate understanding of the market factors that may affect wholesale natural gas prices in the Maritimes.

SUMMARY OF FINDINGS

- A comparative analysis of domestic and export prices indicates a very close linkage and consistency in pricing between these markets. These comparisons show that Canadian buyers have historically had access to gas at prices similar to the export market at St. Stephen, N.B..
- The small number of participants and transactions in the domestic market means that a few or even a single large buyer may have a significant influence on average prices in the region. The low liquidity also limits the amount of pricing information and price transparency in this market. Currently, four buyers account for over 90 percent of the gas consumed and purchased in the domestic market.
- Challenges will continue to exist especially for smaller buyers. Without incremental gas supply, these buyers will need to purchase gas from others who have an ability to divert some of their own sales or use. These sellers, however, may be reluctant to over-commit to new firm sales or may seek higher prices to cover the risk of having to re-purchase these quantities during shortages that may arise from production or pipeline fluctuations.
- New gas supply development, or the importation of liquefied natural gas (LNG) into the region, would help support a larger number of buyers and sellers, and may eventually lead to a more transparent and distinct Maritime natural gas market. Having incremental gas supply may also enable domestic buyers to better leverage their advantage of being located closer to regional supply. However, natural gas will continue to be challenged to compete against other fuels that have been historically relied upon. This can be indicated by current domestic consumers using significantly less gas than they have contracted.
- While acknowledging that some natural gas buyers will continue to face considerable challenges in this market, the Board remains satisfied that the Maritime natural gas market continues to function as well as can be expected given its stage of development. The Board will continue to monitor the activity and pricing in this market and may consider similar price surveys in the future.

OBJECTIVES OF THIS REPORT

The objectives of this report and the survey of natural gas prices in the Maritimes are to provide:

- i) pricing information regarding this developing market that may otherwise be difficult to obtain; and
- ii) a comparative analysis between domestic and export prices to assess the pricing and access of natural gas in the Canadian market.

In general, this report aims to provide an indication of the wholesale price of natural gas to Canadian buyers in this region and to facilitate further understanding of the regional market factors which may affect the price. The report is an examination of historical pricing and is not intended to provide detailed information on the current market.

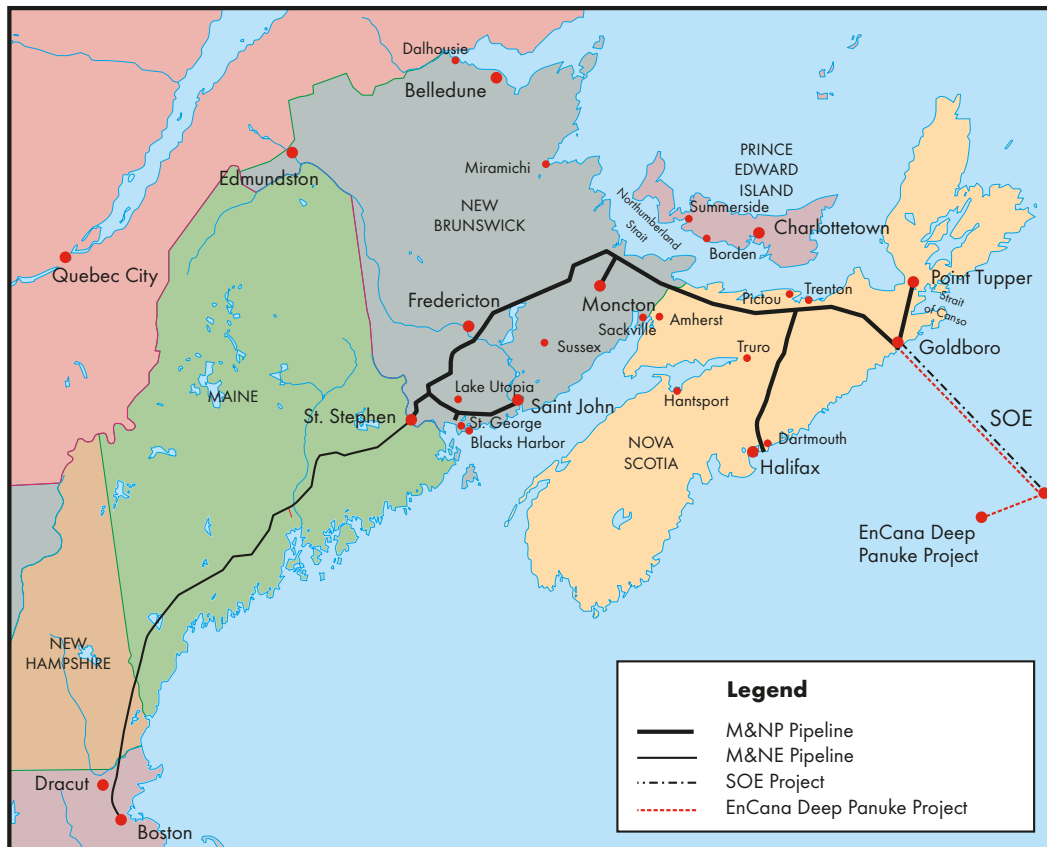
BACKGROUND

The Maritimes and Northeast Pipeline (M&NP) commenced operation in 1999 and carries natural gas produced from the Scotian offshore basin to anchor markets in the U.S. Northeast and large industrial and power generation customers in Nova Scotia and New Brunswick. To a lesser extent, facilities have also been added to serve residential and commercial customers in the Maritimes. While the U.S. Northeast market sources its gas from various regions via a number of pipelines and an LNG facility, the Maritime natural gas market is served only by this one supply source and single pipeline.

In 2002, the Province of New Brunswick, in an application to the National Energy Board (the NEB or Board) and subsequent public hearing, expressed concerns that Canadian gas buyers were disadvantaged and did not have access to gas at fair market terms and conditions. In its decision in the MH-2-2002 public hearing, the NEB acknowledged that buyers of natural gas in the developing Maritime natural gas market faced challenges in obtaining pricing information that may not be

FIGURE 2.1

M&NP Pipeline and Maritimes Canada



experienced by buyers in more mature markets. The Board decided that it would enhance its market monitoring efforts in the Maritimes and committed to the following courses of action:

- 1) Engage in the ongoing monitoring of the Maritime gas market and issue public reports from time to time on the state of the market.
- 2) Publish additional data on export prices that is received in monthly reports from holders of export authorizations.
- 3) Move to collect data on domestic and export prices through surveys and publish the results in an aggregated format.

In this regard, a report was issued in June 2003 on the state of the market entitled *The Maritimes Natural Gas Market, An Overview and Assessment* and the Board has commenced reporting additional details of monthly prices for exports at the St. Stephen location.

After further consultation and input from key stakeholders, the Board undertook a survey of natural gas prices paid by Canadian buyers in this region for the period November 2002 through October 2003. This report utilizes the domestic pricing information collected from this survey and relies on export prices from existing monthly reports prepared by the Board.

SURVEY RESULTS

Maritime Domestic & Export Prices

This report incorporates pricing information collected from: the survey of domestic gas buyers; regular monthly export reports; and published information on U.S. pricing indices. To enable comparison of gas prices across the various domestic locations to export prices at St. Stephen, the posted transportation toll on the Maritimes & Northeast Pipeline (MN365) is used to estimate an equivalent domestic price at St. Stephen (Appendix I – Comparative Analysis Methodology).

In the Maritime domestic market, the average price of gas is more sensitive to transactional details such as the terms and conditions, volumes, and contracting practices than in a larger market with a variety and greater number of players and transactions. As a result, the difference between the average domestic and export price may not be a perfect theoretical netback relationship. In theory, buyers located closer to the source of supply would be able to purchase gas at lower prices than similar buyers further downstream who must pay higher transportation costs. The difference in price would simply be equal to the incremental transportation cost.

Nevertheless, the following general relationships between the domestic and export prices are expected and are used to indicate reasonable market function and adequate access to gas by Canadian buyers:

- Similar seasonal and monthly pricing patterns for average domestic and export prices,
- Weighted average domestic price equal to or less than that for exports. However, the range in domestic prices may extend above and below the average export price.

Due to the limited size and low number of participants in the Maritime natural gas market, the presentation and discussion of domestic pricing are limited to aggregated weighted-average information. The portrayal of survey results is a balance between providing as much market context as possible without revealing proprietary and sensitive company information. For the same reason, fixed-priced purchases are excluded from the data in Table 3.1 to avoid disclosure of commercially sensitive pricing information. No further detail or breakdown of the survey results will be provided beyond what is contained in this report.

In general, the comparisons of the weighted average and range of gas prices for the domestic and export markets (Table 3.1 and Figure 3.1) illustrate a very close linkage and consistency in pricing between the domestic and export markets. At this level, both indicators seem to suggest reasonable market function. Although legitimate deviations can exist, the inconsistencies may identify issues which warrant further analysis or could provide further insight into market function and behavior in specific situations. A closer examination and discussion of domestic and export prices is provided in the following section.

T A B L E 3 . 1

Comparison of Average Export and Domestic Natural Gas Prices

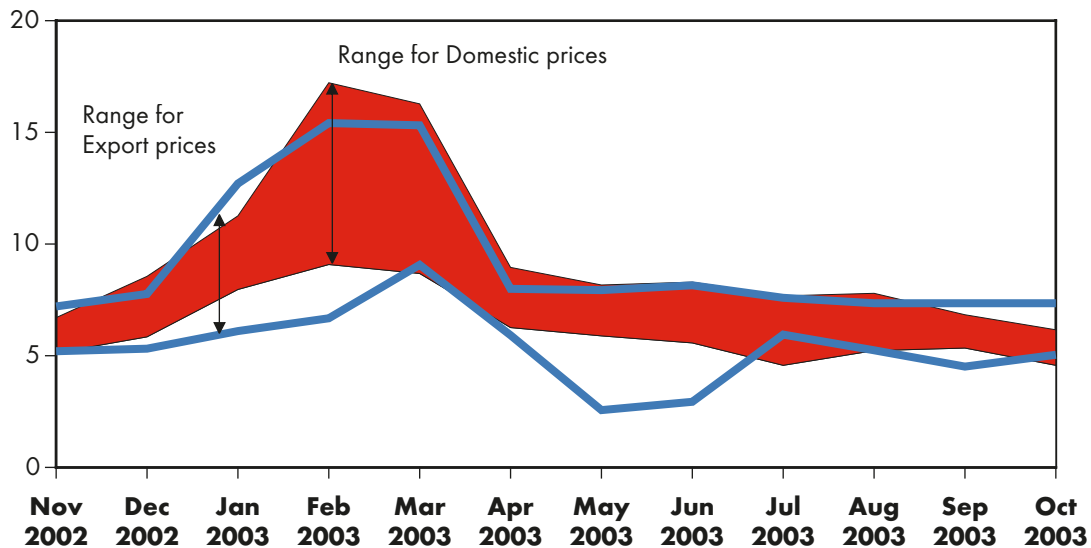
	Weighted Average Prices		Range of prices (Excluding long-term fixed purchases)			
			Domestic @ St. Stephen		Export @ St. Stephen	
	Domestic @ SS	Export @ SS	High	Low	High	Low
Nov-2002	5.74	5.78	6.71	5.13	7.21	5.20
Dec-2002	6.02	6.27	8.56	5.85	7.77	5.32
Jan-2003	7.31	7.88	11.26	7.96	12.71	6.10
Feb-2003	8.22	8.44	17.22	9.08	15.42	6.67
Mar-2003	12.02	13.65	16.28	8.68	15.31	9.07
Apr-2003	6.21	7.04	8.95	6.25	7.99	5.92
May-2003	6.07	6.80	8.16	5.89	7.94	2.57
Jun-2003	6.50	7.23	8.29	5.57	8.15	2.94
Jul-2003	6.17	6.80	7.68	4.57	7.60	5.95
Aug-2003	5.61	6.26	7.79	5.23	7.35	5.25
Sep-2003	5.64	6.36	6.83	5.35	7.35	4.51
Oct-2003	5.25	6.09	6.17	4.57	7.35	5.04

All prices in \$/GJ. Domestic prices reflected as netforward price @ St. Stephen

F I G U R E 3 . 1

**Domestic vs. Export Range of Natural Gas Prices
(Excludes long-term fixed purchases)**

Price Range (\$/GJ)



Limitations of the Domestic Price Survey

Although the domestic price survey accounts for almost 100 percent of the gas consumed in the Canadian market, the ability of the aggregate “average” to accurately represent current pricing and trends in the domestic market is limited. The very low number of players and transactions means that a few or even a single large deal can have a significant influence on the average price. Transactional level details that may clarify pricing relationships, such as counterparty, timing, prevailing market conditions, and other information specific to each contractual arrangement, were outside of the scope of the survey and were not collected.

For example, the timing of specific transactions was not surveyed. However, the timing and prevailing market conditions are a very significant influence on the purchase price. For this reason, long-term gas purchases made when there was a more optimistic view on future gas production may yield lower prices than gas purchased in the current market. Today, lower production and a less optimistic view on near-term gas supply may make longer-term purchases more difficult to secure and yield higher prices.

Corporate business and risk management decisions are also not accounted for in this survey. This includes decisions by companies to utilize “fixed” or “index-based” pricing arrangements, which may result in significantly different prices through time. In some cases, choosing “fixed prices” in the past would have yielded prices significantly lower than the indexed-based prices observed in the survey. The prices observed may then be more indicative of corporate decisions than necessarily of their access to natural gas.

Finally, the domestic price survey was a voluntary submission of information by companies in response to a request from the Board. While we are pleased with the support and participation by all parties, it is important to note that in some instances there was only partial disclosure of information. Although further information may have provided some more detail into this market, the level of disclosure did not impact the objectives of this report. Generally, the observations in this report help to illustrate historical trends and market context, but may or may not reflect the changing trends and future market activities in this region.

OBSERVATIONS AND ANALYSIS OF RESULTS

Market Context & Canadian Access to Natural Gas

Today, Canadian gas consumption in the Maritimes varies between 10 to 25 percent of the total gas produced in the region, with the remainder destined for more distant markets in the U.S. Northeast (Figure 4.1). The gas purchased by Canadian buyers, however, may be up to several times the amount consumed, which indicates that some gas is traded or re-sold amongst the area players (Figure 4.2). The quantity purchased and traded will vary from month to month, depending on the ability of players to arbitrage price differences and to use alternative fuels. Moreover, the actual consumption of gas relative to the amount contracted by the domestic market is indicative of the challenge natural gas faces as a new fuel in a market historically dominated by other fuels.

The small number of players in this market also means that a few or even a single large buyer may have a significant influence on average prices in the region. In fact, the four largest buyers currently account for over 90 percent of the gas purchased and consumed in the Maritime domestic market (Figure 4.3). Considering that there may also be competition, contractual obligations, or corporate affiliations amongst some of these players, the effect of limited liquidity and scarcity of suppliers easily becomes exacerbated.

FIGURE 4.1

Monthly Natural Gas Production and Consumption

Gas Disposition (TJ)

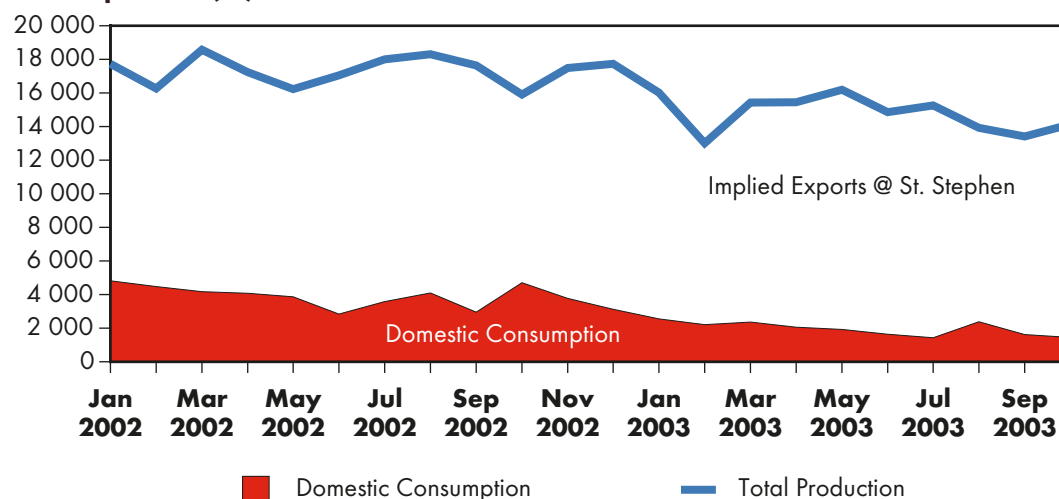


FIGURE 4.2

Monthly Domestic Gas Purchases and Consumption
Domestic Purchases and Consumption (TJ)

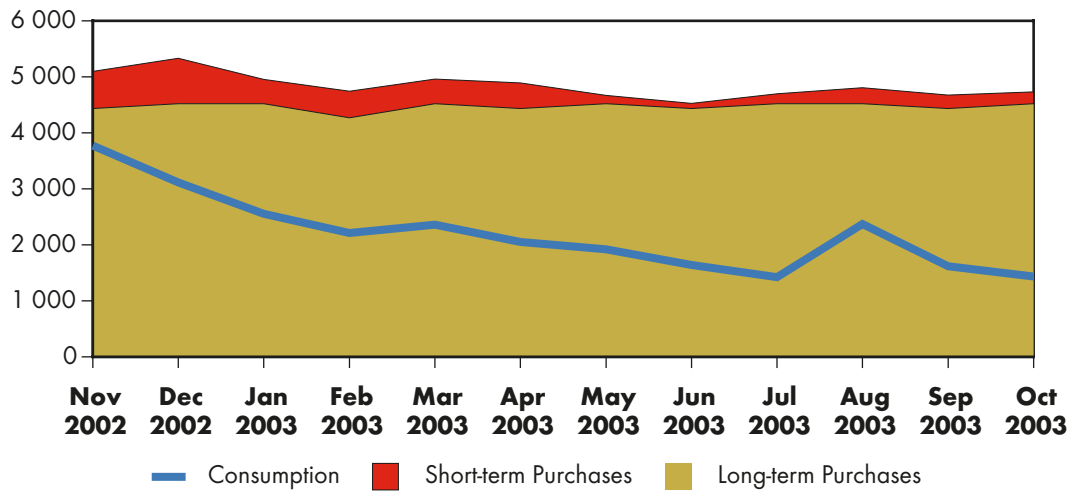
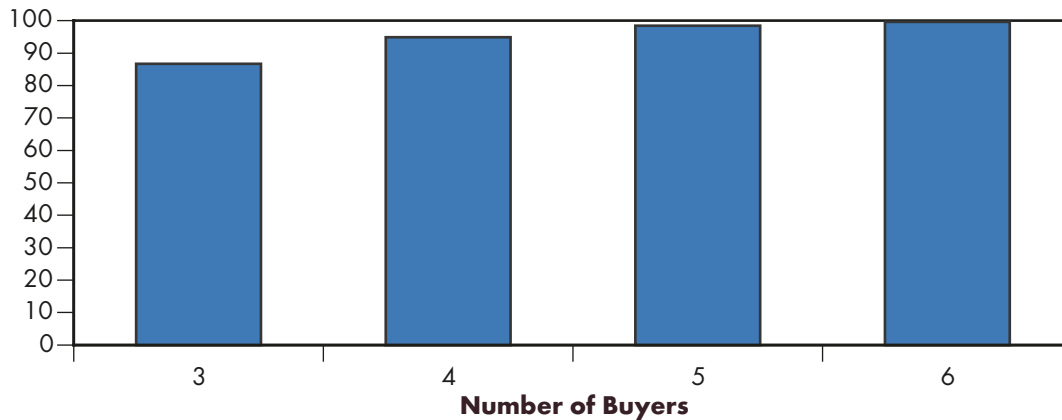


FIGURE 4.3

Limited Buyers in the Domestic Market
Percent of Total Purchases



Most parties generally accept that the tight balance observed between regional gas supply and demand has also meant limited opportunities to contract for incremental supply, especially for longer terms. Also, some Canadian buyers remain concerned over their ability to secure incremental gas supply and seek assurance of access to new gas once it becomes available.

A comparison of the average domestic and export prices (Chapter 3), indicates that historically Canadian buyers have had access to gas at similar prices as the export market at St. Stephen. Furthermore, buyers who have held transportation contracts to serve domestic markets currently supply about 15 percent of the gas exported at St. Stephen despite the concerns expressed by other Canadian buyers in securing supply. This would suggest that access to natural gas is not an issue faced by all domestic buyers.

The average price for a particular month will include gas contracted in the past, under different circumstances, and likely under terms and conditions that may be difficult to obtain in today's market.

In particular, the long-term and fixed-price deals in previous arrangements may be very difficult to secure today, and may skew comparisons for the current market.

For that reason, and to protect commercially sensitive information, fixed-priced purchases for terms over 1-year have been excluded from domestic and export prices to reduce the effect of some of these historical factors in pricing. This provides another view and additional insight into more recent market pricing (Figure 4.4). This perspective yields a higher average domestic gas price, and very little distinction between export and domestic prices despite equal or lower transportation costs to domestic markets. The inconsistency, though, may be explained through differences in the terms and conditions of the individual deals which form these averages. This discrepancy is noted as a possible area for future analysis.

The price range observed for domestic purchases also compares very well with the range of export prices at St. Stephen (Figure 3.1). This provides additional support that there is little distinction in pricing and access between domestic and export markets.

Pricing Dynamics in the Maritimes Region

Closer examination helps to illustrate some of the key factors which influence area pricing. In particular, a limited gas supply and uncertainty surrounding new gas development means that buyers will be challenged to purchase from other users or marketers who may have an ability to divert some of their own sales or use.

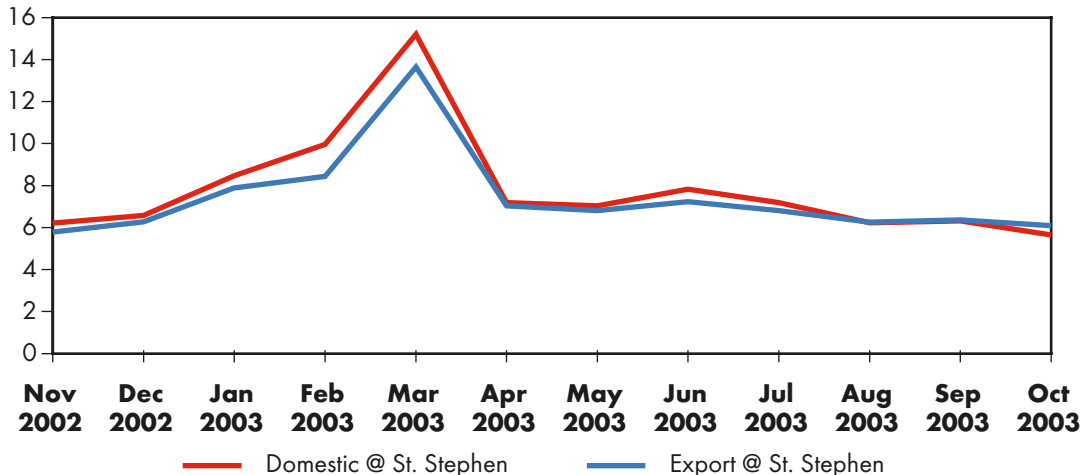
Further, these potential sellers may be reluctant to over-commit to new firm sales or may seek higher prices to cover the risk of having to re-purchase quantities to fulfill sales commitments during shortages that may arise from production or pipeline fluctuations.

For example, in February 2003, some companies were forced to buy additional gas to make up for shortfalls in production to fulfill their firm sales commitments. The incremental short term purchases were made at significantly higher prices even though those parties had low-priced,

FIGURE 4.4

Maritimes Domestic vs. Export Natural Gas Prices (Excludes long-term fixed price purchases)

Weighted Average Price (\$/GJ)



long-term purchases far in excess of their own consumption (Figure 4.5). This situation and the inherent price and supply risk would cause these selling parties to be more reluctant to commit to new firm or long-term sales.

The lack of alternate sources of gas increases the risks associated with uncertain supply and prices in the Maritimes relative to the U.S. Northeast where buyers obtain most of their gas from other regions and can also access liquefied natural gas (LNG) to make-up any supply shortfalls from offshore Nova Scotia. The fact that the U.S. Northeast has access to other sources of supply may be discomfoting to some domestic buyers as they may not enjoy the same bargaining position. Without incremental gas supplies, it will remain difficult for domestic buyers to leverage their advantage of being located closer to regional supply.

However, it is not clear whether the supply and price risks associated with short term production or pipeline operation would result in a significant difference between domestic and export prices. A comparison of only short-term pricing suggests it would not, and that the domestic and export prices are virtually the same (Figure 4.5). However, this is based on only limited data as the overwhelming share of domestic gas purchases are currently under long-term arrangements. The Board will continue to monitor the developments in this market; detailed analysis into short-term pricing may be an area of further study.

Improving Price Discovery in the Maritimes Market

Despite the challenges with the limited size and liquidity in this market, there is a very good general correlation observed in the seasonal and monthly trends between the average domestic price, the average price at export, and U.S. Northeast pricing points.

Although domestic pricing information remains limited, the correlation seems to provide a reasonable indication of average domestic prices and gives some comfort that the domestic market responds similarly to the same market forces affecting the larger export market (Figure 4.6). Similarly, other comparisons in this report show that export price ranges may also be used as an indirect indicator of domestic prices.

FIGURE 4.5

Short-Term Natural Gas Prices in the Maritimes Market
Weighted Average Price (\$/GJ)

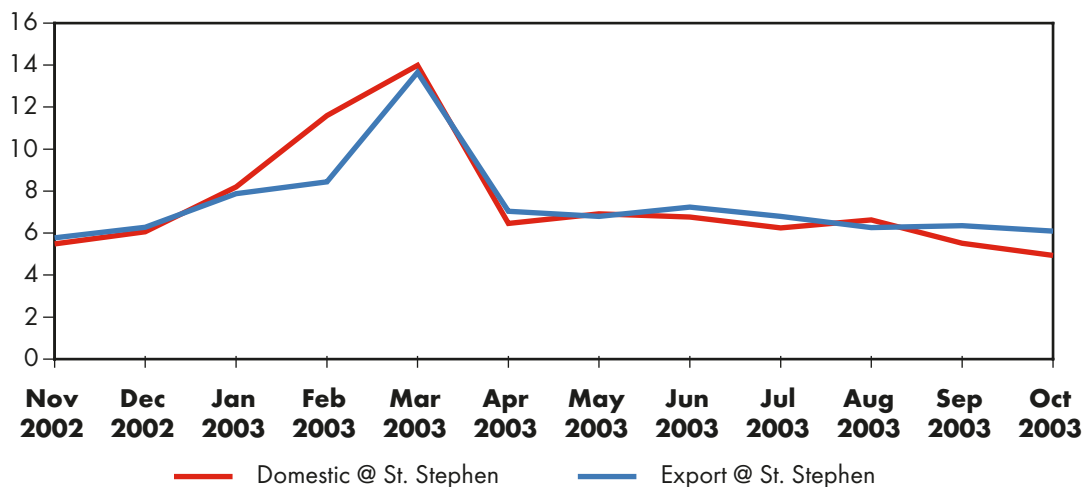
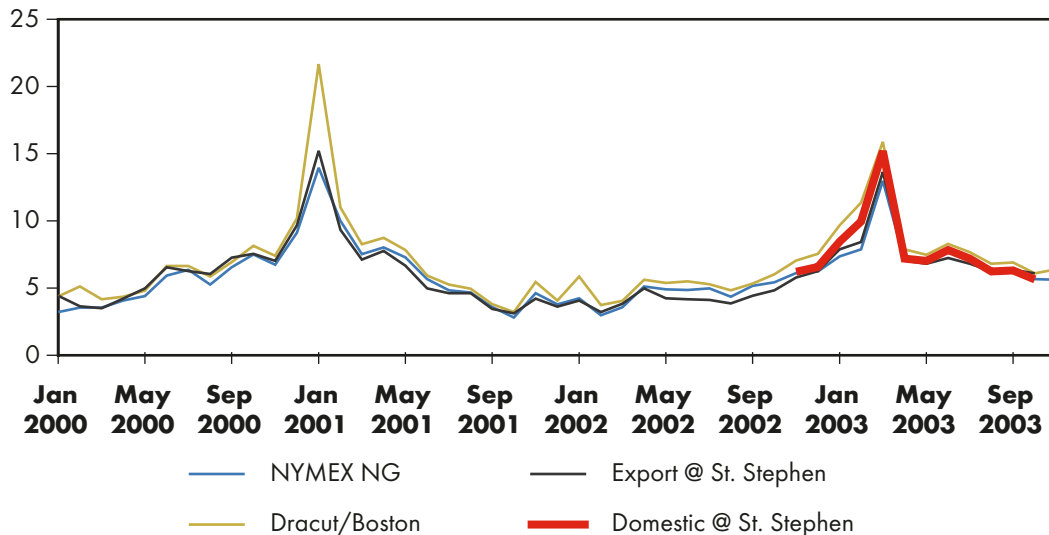


FIGURE 4.6

**Comparison of Regional Natural Gas Prices
Monthly Gas Price (\$/GJ)**



While monitoring and reporting of prices by the NEB may provide some context behind market prices, the addition of incremental gas supply remains the critical factor in future improvements to domestic price discovery. New gas development or perhaps the importation of LNG would be needed to enable greater availability of gas and support a much larger number of buyers and sellers in this market. More market participants would be the most important factor that would enable the formation of a local and more distinct domestic price for natural gas. Until that time, a reasonable degree of price discovery is possible through comparison with export and U.S. pricing information.

While acknowledging that some natural gas buyers will continue to face considerable challenges in this market, the Board remains satisfied that the Maritime natural gas market continues to function as well as can be expected given its stage of development. The Board will continue to monitor the activity and pricing in this market and may consider similar price surveys in the future.

The NEB Survey of Domestic Natural Gas Prices:

Although the information collected from respondents on average price and quantity were not audited by the NEB, certain cross checks were made against aggregate information such as total consumption and pipeline throughput to provide some assurance of overall reasonableness and completeness of the surveyed data. The survey and analysis was made possible through the cooperation and voluntary submission of information in response to our request by a number of organizations, which represent over 95% of the gas consumed in this Canadian market.

The Board would also like to acknowledge and thank these organizations for their participation and cooperation in this survey:

- | | |
|-----------------------------------|---------------------------------|
| Bayside Power L.P. | Irving Oil |
| Emera Energy Inc. | J.D. Irving Limited |
| Enbridge Atlantic Energy Services | New Brunswick Power Corporation |
| Enbridge Gas New Brunswick | Nova Scotia Power Inc. |
| Heritage Gas | Stora Enso North America |
| Irving Energy Services Limited | WPS Energy Services, Inc. |

COMPARATIVE PRICING ANALYSIS - METHODOLOGY

Domestic gas purchases in the Maritimes typically specify the location for delivery or custody transfer of the gas at a number of possible locations on the M&NP pipeline. Most commonly used locations include:

- Goldboro, the upstream terminus of M&NP. This transaction point is useful especially for buyers who may hold their own transportation on the pipeline; or alternatively,
- Any downstream point of consumption or delivery in Nova Scotia or New Brunswick.

As a result, the price of gas may differ and is dependent on the point of delivery, as purchases further downstream will likely include additional costs for transportation.

In order to compare domestic prices to the price of exports, it is then necessary to estimate an equivalent price at a common point of comparison. The theoretical or equivalent price assumes that the gas price difference between locations will be equal to the difference in transportation cost. This 'Netback' or 'Netforward' price is derived by adding or deducting the difference in transportation cost to the gas purchase price at one location to estimate an equivalent price at the common location used for comparative purposes.

Although any location may be used, for practical reasons we have chosen to compare domestic and export prices at the St. Stephen location. This choice enables the use of reported export price data 'as-is' and avoids having to derive prices for both export and domestic gas purchases at an alternate location. Since domestic purchases prices are already at a variety of locations, some estimation of domestic prices will be required regardless of the location used in comparison.

In short:

$$\begin{array}{l}
 \text{Domestic price} \\
 \text{@ St. Stephen} \\
 \text{'Net-forward'}
 \end{array}
 =
 \begin{array}{l}
 \text{Domestic Price} \\
 \text{@ Point of} \\
 \text{Purchase}
 \end{array}
 +
 \begin{array}{l}
 \text{Difference between the} \\
 \text{Transportation cost to the Point} \\
 \text{of Purchase and Transportation} \\
 \text{cost to St. Stephen}
 \end{array}$$

