

**OPTIMIZING THE DEVELOPMENT OF
NATURAL GAS DISTRIBUTION IN NEW BRUNSWICK**

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1. INTRODUCTION: THE NEW BRUNSWICK SITUATION

Natural gas has recently become available for distribution to commercial and residential customers in New Brunswick. Enbridge Gas New Brunswick (EGNB) is the province's local distribution company (LDC) and has invested in excess of \$100 million to make natural gas available for retail sales. At present, however, results have failed to meet expectations. While initial projections called for 8,200 customers by the end 2002, instead there were only approximately 1100. This paper's objective is to look at the situation and consider whether an alternative industry model could enhance the growth of New Brunswick's natural gas distribution sector.

In New Brunswick, the chosen approach for gas distribution is that of an "unbundled" model¹. This is an experimental model, never before tested in a "greenfield" (or undeveloped) market like New Brunswick's. The unbundled approach restricts the LDC to distributing gas and forbids it from selling directly to customers. Other economic agents have the task of signing up customers, supplying the gas, converting or supplying and installing equipment as well as providing after sale service. EGNB has thus brought gas to neighbourhoods, but its growth – and consequently that of the province's natural gas distribution sector – is dependent on marketers for the sale of gas and on heating ventilation and air conditioning (HVAC) contractors for the sale and installation of equipment.

The model has merits, at least theoretically. One of its principal objectives is to try to foster increased competition. However, as we will see, the model also has major disadvantages, especially in a market in its infancy stage. Facts demonstrate that the model constitutes a barrier to the sector's development. Indeed, its complicated structure seems to be extremely confusing for consumers, a confusion that may lead to frustration and thus create another unnecessary barrier. In section 2, we will present a brief quantitative analysis of New Brunswick's energy sector, based on the most recent data

¹ New Brunswick and the state of Georgia are the only jurisdictions in North America where consumers do not have access to natural gas from the utility. However, in face of mounting criticism and public complaints about natural gas deregulation, the State of Georgia significantly reformed the natural gas legislative framework in April 2002 by adopting the Natural Gas Consumers' Relief Act (HB 1568).

available from Statistics Canada. Section 3 discusses policy issues. It is followed by a conclusion.

2. NEW BRUNSWICK’S ENERGY SECTOR: A QUANTITATIVE OVERVIEW

An overview of New Brunswick’s energy sector yields very interesting results. Using most recent Statistics Canada data (see Tables 1-16 in Appendix 1), we first find that in most categories, New Brunswick is lumped with other Atlantic provinces. A notable exception is electricity. This lumping together of New Brunswick with the other Atlantic provinces is in part due to the small size of the four provinces’ markets. However, another important factor is most probably at play – confidentiality considerations on the part of Statistics Canada. When only one or a few players “dominate” a sector, confidentiality of data becomes a problem for statistical agencies. This is probably the case in most of the region’s energy sub-fields. Electricity being a regulated natural monopoly, data is generally widely distributed, eliminating the confidentiality obstacle. From this, we can safely assume that Atlantic Canada’s energy sector, including New Brunswick’s, has very few important players, a situation which could be described as being an oligopoly. From this, one could further assume that any additional player would greatly enhance competition².

A more detailed analysis confirms this scenario. While we need, in all cases but that of electricity, to perform our analysis for the four Atlantic provinces as a whole, the results are nonetheless revealing. For seven energy sub-markets, we have compared Atlantic Canada and all of the other Canadian provinces to the national average based on two references. The first is the size of each sub-market as a ratio of gross domestic product. The second is the size of those same energy sub-markets on a per capita basis. We use those two references to gain a broader picture since economic activity and

² To support our statement, we can make reference to recent legislation adopted in Georgia which, referring to the energy sub-market of natural gas states that, “market conditions are considered non-competitive if three or fewer marketers are supplying more than 90 percent of the customers in any of the state’s nine delivery zones.” (Quinn, Matthew C., “PSC studies rules to cap gas prices”, *The Atlanta Journal and Constitution*. September 13, 2002, page 1F).

population can both affect energy usage. The analysis is performed for the years 1989 to 2001.

Our first energy sub-market is refined petroleum products as measured by the value of domestic sales (Tables 1 and 2). The region's high dependence on this energy sub-market is striking. Only Québec, at a much lower rate than Atlantic Canada, is above the national average. As measured as a ratio of gross domestic product, the region's dependence on this energy source is between four and five-and-a-half times above the national average. If we use population as the reference, the dependency falls to between three and four times the national average.

The second energy sub-market is refined petroleum products sales – stove and kerosene (Tables 3 and 4). The results follow the previous pattern, although the dependency level is lower and Québec has for some years been relatively more dependent than Atlantic Canada. The reduction of Manitoba's dependency is also noteworthy.

The region's relative dependency on refined petroleum products – heavy fuel oil (Tables 5 and 6) is very important. As measured as a ratio of gross domestic product, the region's relative dependency is between six and eight times the national average. As measured as a ratio of population, the relative dependency is between four and six times the national average. Again, with the exception of a few years for British Columbia, Québec is the only other region above the national average.

The results are radically different for natural gas, whether measured by direct sales (Tables 7 and 8), sales to residential customers (Tables 9 and 10), sales to commercial customers (Tables 11 and 12) or sales to industrial customers (Tables 13 and 14). In all cases, Atlantic Canada is found at the lowest end of the dependency spectrum. Provinces with the highest degree of dependency vary, but are generally western provinces or Ontario. This is consistent with the fact that natural gas has only recently become available on the east coast.

Finally, for electricity generation, we have results by province (Tables 15 and 16). New Brunswick is one of the leading provinces, both relative to the province's gross domestic product and to the province's population. Only Newfoundland and Labrador and, for most years, Manitoba generate relatively more energy.

From this overall picture, a general trend emerges: the province/region is relatively dependent on energy sources other than natural gas, compared to other Canadian provinces.

3. POLICY ISSUES

A first question we need to answer is whether growth of New Brunswick’s natural gas distribution is a worthy policy objective. To answer this question, one also has to answer another question: is a diversity of energy sources a worthy policy objective? Three factors lead us to answer yes to both questions. First, diversity is a form of insurance. If the province were ever to experience any kind of challenge from a given energy source, diversity would make meeting that challenge easier. Second, if we rightly feel that one must analyse the energy sector as a whole with various energy sources regularly being substitutes, then greater diversity of energy sources translates into increased competition – a positive scenario for consumers. Third, by comparing ourselves to other provinces, we see that our energy sources are indeed not as diversified as most other jurisdictions.

One must then ask whether the situation that the natural gas sector is facing warrants further policy considerations. In this case, we find that the unbundled model has hampered the sector’s development. The economic agent which has invested the most in the sector is not allowed to take all measures to bring about the sector’s growth. To further analyse the issue, we need to have a closer look at the economic incentives for the various economic agents.

The LDC: With its significant investment, EGNB’s interest lies in expanding the market. Economic incentives should therefore lead it to take all measures at its disposal to bring growth to the sector. At present, EGNB is limited in the actions it can take. As for the danger of the LDC using its “monopoly position” to “abuse” consumers, its incentive to increase the size of the market should be sufficient to limit such actions. Only if the natural gas sector were large enough to generate an interesting return on investment could the LDC, at least theoretically, start considering such actions. At such a

time, additional regulatory oversight could be considered³. Until such a “mature” market is developed, sector growth would benefit from greater flexibility for the LDC. Finally, if faster growth is not achieved, allowing for recovery of costs and a reasonable return on investment, one could seriously ask whether the LDC may need to postpone or even cancel future investment. We must also recognize that those investments have an economic impact that should not be underestimated.

The marketers: Marketers should, at least theoretically, have an incentive to work towards the development of the sector: profit margins are thin and important volumes are required to provide a reasonable return. However at this time, it appears that at least some of the marketers are not as aggressive in the sector’s development as is required to grow a new business. From a broader corporate perspective, the marketers may consider that the investments required to fully develop New Brunswick’s natural gas sector are too high when compared to the net gain they can generate. In fact, it does seem that most if not all marketers simply do not have sufficient economic incentive to dedicate the resources necessary to develop the sector. Incentive, or rather the lack of it, could at least partly explain the sector’s lacklustre performance. Indeed, the marketers could be much more comfortable in managing a mature sector.

This would be consistent with a scenario where the LDC plays a greater role in bringing the sector to a more mature level. Such a scenario is also consistent with the model used in virtually every jurisdiction in North America, where consumers have access to gas from both the LDC and marketers. Further, the verdict is not very positive for Georgia, the only other jurisdiction in North America which has adopted the unbundled model:

[In the United States,] only in Georgia are consumers required to choose a gas marketer or be assigned to one, the study [by the National Center for Appropriate Technology] noted. In other states, consumers had the option of staying with the longtime monopoly supplier.

That, according to the study, was one of the major defects in Georgia’s 1997 deregulation law that covered 1.5 million homes and

³ Note that by considering alternative energy sources as substitutes, natural gas consumers could always transfer to those other sources. The cost of this transfer, in a sense, constitutes the extent of the LDC’s “monopoly” power.

businesses that receive natural gas from Atlanta Gas Light Co.'s pipeline system.

“This requirement resulted in a situation marked by confusion, complaints, unexpectedly high prices, an unprecedented number of disconnections, high (past-due bills), large-scale public dissatisfaction, and finally, corrective actions by the state's governor and legislature,” the study noted.

(Quinn, Matthew C., “Study Condemns Georgia Gas Deregulation”, *The Atlanta Journal and Constitution*, September 18, 2002)

Heating, Ventilation and Air Conditioning (“HVAC”) contractors: For these contractors, natural gas is a new venture. Their economic incentive may not be significant enough for them to contribute significantly to the growth of the sector. Most of them are small businesses with limited resources and may simply want natural gas as “another service” offered to clients. Such a position, which has an economic rationale, may translate into a situation where HVAC contractors do not have any incentive to be “ahead of the curve” and have excess capacity for the service of natural gas clients. This could translate into periodic – if not consistent – shortages of service personnel, equipment, etc.

“Players” in alternative energy sources: Competitors selling alternative energy sources have little incentive in seeing the natural gas distribution sector develop. Considering the energy sector as a whole, this will translate into increased competition which economic theory suggests should lead to lower profits. An interesting scenario pertains to NB Power. New Brunswick Natural Resources Minister Volpé recently indicated that the electricity company's move to lower the level of consumption through pricing was aimed at decreasing demand and, therefore, the company's use of more costly means of production. Based on that, we can make the following assumption. With a bigger natural gas consumption sector, reduced demand for NB Power-generated electricity will indeed allow the company to decrease its dependency on its most costly sources of production, thus allowing a reduction of its average cost of production. Furthermore, it will decrease the need for investment to increase electricity production capacity, at a time when such a scenario may be beneficial for the company's financial profile. This would benefit New Brunswick as a whole.

4. CONCLUSION

To conclude this paper analysing some impediments to the growth of New Brunswick's natural gas sector, we can state that at this stage in the sector's development, the LDC should be given much greater flexibility to allow the sector to develop to its full potential. This would increase the actors "on the ground" (i.e. in addition to marketers and HVAC) directly involved in increasing the number of natural gas customers, whether at the residential, commercial or industrial levels. We have also demonstrated that no stakeholder has greater incentive to increase the size of the sector than the LDC, a fact which should lead to a more rapid increase of the size of the sector. Once the sector has matured, consideration could then be given to regulating the LDC's position⁴. Until that point, an analysis of economic incentives indicates that it would not be in the LDC's interest to use its monopolistic powers, assuming such powers exist, to "take advantage" of its customers.

⁴ We need to reiterate the fact that we are not proposing the reduction of "players" in the sector. We are rather proposing the elimination of barriers limiting the scope of activities for the LDC. Consequently, with respect to retail sale of gas and the sale and installation of equipment, the LDC would never be in a monopolistic position. In fact, our proposal would increase competition for those activities.

APPENDIX 1: DATA

Table 1 : Refined petroleum products domestic sales by province ('000 cubic metres / gross domestic product in million \$) Canada = 100								
Year	Atlantic	Québec	Ontario	Manitoba	Sask.	Alta	B.C.	Cnd
1989	431,4	150,1	68,7	23,4	26,8	7,8	56,3	100,0
1990	468,4	144,4	67,4	21,9	28,5	8,8	55,6	100,0
1991	493,9	143,0	61,9	22,9	27,6	8,0	56,2	100,0
1992	498,8	149,8	61,6	18,8	21,2	5,8	48,8	100,0
1993	477,2	149,4	66,5	16,9	18,6	7,4	47,7	100,0
1994	481,9	153,1	68,9	21,6	21,2	10,6	30,1	100,0
1995	503,4	158,4	64,3	21,1	19,2	8,0	31,4	100,0
1996	472,5	159,0	73,3	22,1	17,8	8,8	32,2	100,0
1997	557,9	159,7	64,9	14,4	16,9	9,4	31,0	100,0
1998	570,2	162,0	60,0	17,6	15,3	8,5	31,8	100,0
1999	540,3	164,1	62,0	18,8	14,6	6,0	36,0	100,0
2000	529,6	162,9	66,3	18,4	13,0	6,5	39,1	100,0
2001	550,7	169,2	60,9	15,2	10,1	4,4	42,6	100,0
Source : Statistics Canada, Catalogue 57-601								

Table 2 : Refined petroleum products domestic sales by province ('000 cubic metres / per capita) Canada = 100								
Year	Atlantic	Québec	Ontario	Manitoba	Sask.	Alta	B.C.	Cnd
1989	309,2	133,8	78,5	20,5	21,8	8,7	55,2	100,0
1990	338,7	129,1	75,3	19,5	24,4	10,3	54,6	100,0
1991	367,8	128,9	68,6	20,2	23,9	9,2	56,4	100,0
1992	373,9	135,5	67,6	16,8	18,1	6,7	49,6	100,0
1993	357,4	133,9	71,9	14,7	16,8	8,9	49,5	100,0
1994	355,8	136,8	74,5	18,8	19,4	13,0	31,0	100,0
1995	375,3	140,9	69,9	18,2	18,1	9,7	31,7	100,0
1996	347,3	140,3	79,1	19,6	18,0	11,0	32,0	100,0
1997	402,5	140,4	70,3	12,8	16,4	12,0	30,4	100,0
1998	422,0	144,4	65,8	15,8	14,4	10,4	30,3	100,0
1999	406,8	146,2	68,2	16,4	13,4	7,4	33,7	100,0
2000	397,8	143,6	70,9	15,8	12,4	9,0	35,8	100,0
2001	415,4	149,5	64,6	13,3	9,4	6,2	38,9	100,0
Source : Statistics Canada, Catalogue 57-601								

Table 3 : Refined petroleum products sales by province – stove and kerosene ('000 of cubic metres / gross domestic product in million \$) Canada = 100								
Year	Atlantic	Québec	Ontario	Manitoba	Sask.	Alta	B.C.	Cnd
1989	278,6	107,1	45,8	203,2	302,4	39,7	92,4	100,0
1990	290,4	145,2	40,6	131,0	237,8	32,4	64,8	100,0
1991	266,3	141,6	41,0	232,9	134,3	33,3	63,7	100,0
1992	282,7	143,2	43,8	171,0	249,0	28,7	41,8	100,0
1993	288,8	152,1	37,0	71,0	243,2	43,2	59,6	100,0
1994	324,7	164,3	39,2	33,1	158,0	24,5	57,1	100,0
1995	282,5	182,2	33,1	65,7	67,0	20,8	58,6	100,0
1996	245,0	170,4	37,2	72,8	93,3	25,8	67,3	100,0
1997	242,9	161,9	44,0	67,9	80,8	28,3	58,8	100,0
1998	229,5	206,3	40,7	77,6	96,2	24,2	46,7	100,0
1999	224,2	221,2	41,6	47,1	85,1	18,3	46,0	100,0
2000	219,6	239,5	38,2	53,9	81,6	17,5	44,6	100,0
2001	237,5	203,7	42,3	58,0	96,8	27,1	51,3	100,0

Source : Statistics Canada, Catalogue 57-601

Table 4 : Refined petroleum products sales by province – stove and kerosene ('000 of cubic metres / per capita) Canada = 100								
Year	Atlantic	Québec	Ontario	Manitoba	Sask.	Alta	B.C.	Cnd
1989	199,7	95,5	52,4	178,2	245,6	44,4	90,6	100,0
1990	210,0	129,9	45,3	116,5	203,9	37,9	63,6	100,0
1991	198,3	127,6	45,5	206,0	116,1	38,3	63,9	100,0
1992	211,9	129,5	48,1	152,3	212,1	33,0	42,6	100,0
1993	216,3	136,3	40,1	61,8	219,6	51,8	61,9	100,0
1994	239,8	146,8	42,4	28,8	144,3	29,9	58,6	100,0
1995	210,6	162,1	36,0	56,7	63,1	25,3	59,2	100,0
1996	180,1	150,4	40,1	64,6	94,1	32,5	66,8	100,0
1997	175,2	142,4	47,7	60,3	78,2	36,2	57,7	100,0
1998	169,9	184,0	44,7	69,6	90,2	29,5	44,6	100,0
1999	168,8	197,0	45,8	40,9	78,1	22,6	43,1	100,0
2000	165,0	211,2	40,9	46,3	77,9	24,2	40,8	100,0
2001	179,2	179,9	44,9	50,7	90,2	38,1	46,8	100,0

Source : Statistics Canada, Catalogue 57-601

Table 5 : Refined petroleum products sales by province – heavy fuel oil ('000 of cubic metres / gross domestic product in million \$) Canada = 100								
Year	Atlantic	Québec	Ontario	Manitoba	Sask.	Alta	B.C.	Cnd
1989	724,7	124,5	36,4	17,5	13,1	3,8	90,3	100,0
1990	642,1	122,8	45,8	19,0	14,0	6,9	100,7	100,0
1991	701,7	116,7	31,8	26,1	12,1	6,4	116,4	100,0
1992	780,3	102,8	36,5	23,7	11,3	7,6	82,8	100,0
1993	756,0	107,2	41,7	31,5	6,8	4,1	80,6	100,0
1994	683,6	115,7	48,0	34,5	17,1	7,5	83,8	100,0
1995	769,0	102,2	44,0	19,8	18,3	21,4	72,9	100,0
1996	707,2	126,7	46,8	25,1	20,8	16,3	65,4	100,0
1997	850,5	125,6	32,7	39,3	26,9	7,4	62,0	100,0
1998	773,6	143,0	35,6	33,7	24,7	4,9	55,8	100,0
1999	798,2	136,4	29,9	32,4	31,6	6,1	71,2	100,0
2000	813,0	143,2	28,2	31,2	30,6	3,2	72,8	100,0
2001	702,8	158,2	32,2	34,0	34,6	2,7	88,8	100,0

Source : Statistics Canada, Catalogue 57-601

Table 6 : Refined petroleum products sales by province – heavy fuel oil ('000 of cubic metres / per capita) Canada = 100								
Year	Atlantic	Québec	Ontario	Manitoba	Sask.	Alta	B.C.	Cnd
1989	519,4	111,0	41,5	15,3	10,6	4,2	88,6	100,0
1990	464,3	109,9	51,1	16,9	12,0	8,1	98,9	100,0
1991	522,6	105,2	35,3	23,1	10,5	7,3	116,8	100,0
1992	584,9	93,0	40,1	21,1	9,6	8,8	84,3	100,0
1993	566,1	96,1	45,1	27,4	6,2	4,9	83,7	100,0
1994	504,9	103,4	51,9	30,0	15,6	9,2	86,0	100,0
1995	573,3	90,9	47,8	17,1	17,2	26,0	73,6	100,0
1996	519,8	111,8	50,5	22,3	21,0	20,5	64,9	100,0
1997	613,6	110,5	35,4	34,9	26,0	9,5	60,8	100,0
1998	572,5	127,5	39,0	30,3	23,2	6,0	53,3	100,0
1999	601,0	121,5	32,9	28,2	29,0	7,6	66,7	100,0
2000	610,7	126,3	30,2	26,7	29,2	4,4	66,6	100,0
2001	530,2	139,7	34,1	29,7	32,2	3,8	81,0	100,0

Source : Statistics Canada, Catalogue 57-601

Table 7 : Natural gas, direct sales by province ('000 of cubic metres / gross domestic product in million \$) Canada = 100								
Year	Atlantic	Québec	Ontario	Manitoba	Sask.	Alta	B.C.	Cnd
1989	0,0	5,7	110,0	32,3	773,6	0,0	239,3	100,0
1990	0,0	5,1	92,8	13,7	906,0	0,0	270,4	100,0
1991	0,0	2,6	99,8	4,3	988,4	0,0	227,8	100,0
1992	0,0	2,3	80,2	119,3	1070,4	0,0	243,4	100,0
1993	0,0	1,7	86,3	102,3	1018,5	0,0	225,2	100,0
1994	0,0	1,4	96,3	88,4	922,0	0,0	219,5	100,0
1995	0,0	1,7	116,1	75,9	735,6	0,0	199,7	100,0
1996	0,0	1,6	128,8	68,1	645,8	0,0	176,7	100,0
1997	0,0	1,2	140,0	52,6	610,7	0,0	161,0	100,0
1998	0,0	2,6	150,9	52,9	547,4	0,0	138,4	100,0
1999	0,0	2,0	156,0	73,4	479,0	0,0	142,1	100,0
2000	0,0	2,4	158,2	70,4	456,7	0,0	153,6	100,0
2001	3,0	0,7	158,5	77,3	439,7	0,0	162,3	100,0

Source : Statistics Canada, Catalogue 57-601

Table 8 : Natural gas, direct sales by province ('000 of cubic metres / per capita) Canada = 100								
Year	Atlantic	Québec	Ontario	Manitoba	Sask.	Alta	B.C.	Cnd
1989	0,0	5,1	125,7	28,3	628,4	0,0	234,7	100,0
1990	0,0	4,5	103,8	12,2	776,6	0,0	265,5	100,0
1991	0,0	2,4	110,7	3,8	854,4	0,0	228,7	100,0
1992	0,0	2,1	87,9	106,2	911,8	0,0	247,6	100,0
1993	0,0	1,5	93,4	89,1	919,9	0,0	233,8	100,0
1994	0,0	1,2	104,1	76,9	842,3	0,0	225,5	100,0
1995	0,0	1,5	126,2	65,5	693,1	0,0	201,8	100,0
1996	0,0	1,4	139,0	60,5	650,8	0,0	175,5	100,0
1997	0,0	1,0	151,8	46,8	591,6	0,0	157,9	100,0
1998	0,0	2,3	165,5	47,5	513,6	0,0	132,2	100,0
1999	0,0	1,8	171,6	63,8	439,4	0,0	133,0	100,0
2000	0,0	2,1	169,3	60,4	436,0	0,0	140,6	100,0
2001	2,3	0,6	168,3	67,5	409,9	0,0	148,0	100,0

Source : Statistics Canada, Catalogue 57-601

Table 9 : Natural gas sales to residential customers ('000 of cubic metres / gross domestic product in million \$) Canada = 100								
Year	Atlantic	Québec	Ontario	Manitoba	Sask.	Alta	B.C.	Cnd
1989	0,0	19,7	114,6	145,7	232,1	227,8	100,0	100,0
1990	0,0	21,4	113,1	157,4	221,4	219,6	102,9	100,0
1991	0,0	19,3	115,1	145,3	232,0	220,5	103,1	100,0
1992	0,0	20,4	121,5	137,0	216,7	211,1	95,1	100,0
1993	0,0	17,4	122,1	137,3	212,0	197,6	99,3	100,0
1994	0,0	20,9	121,7	129,7	198,3	203,5	95,4	100,0
1995	0,0	19,8	118,7	134,2	197,4	212,6	95,8	100,0
1996	0,0	19,3	117,0	131,0	193,8	209,1	98,6	100,0
1997	0,0	20,6	122,1	126,2	176,8	193,8	95,6	100,0
1998	0,0	20,9	106,4	128,1	198,3	227,9	113,0	100,0
1999	0,0	21,8	103,3	135,1	211,9	220,3	121,9	100,0
2000	0,0	23,3	101,2	139,0	203,7	212,1	119,0	100,0
2001	0,0	21,9	101,3	134,1	222,4	204,2	123,9	100,0

Source : Statistics Canada, Catalogue 57-601

Table 10 : Natural gas sales to residential customers ('000 of cubic metres / per capita) Canada = 100								
Year	Atlantic	Québec	Ontario	Manitoba	Sask.	Alta	B.C.	Cnd
1989	0,0	17,6	130,9	127,8	188,5	254,9	98,1	100,0
1990	0,0	19,2	126,5	140,0	189,8	257,0	101,1	100,0
1991	0,0	17,4	127,6	128,5	200,5	253,4	103,4	100,0
1992	0,0	18,5	133,3	121,9	184,6	243,1	96,8	100,0
1993	0,0	15,6	132,1	119,5	191,5	236,8	103,1	100,0
1994	0,0	18,7	131,6	112,9	181,2	249,1	98,0	100,0
1995	0,0	17,6	129,0	115,8	185,9	258,2	96,8	100,0
1996	0,0	17,0	126,3	116,3	195,3	262,6	97,9	100,0
1997	0,0	18,1	132,4	112,2	171,3	248,1	93,8	100,0
1998	0,0	18,6	116,7	115,0	186,1	277,7	107,9	100,0
1999	0,0	19,5	113,7	117,4	194,4	271,7	114,1	100,0
2000	0,0	20,5	108,3	119,3	194,5	293,5	108,9	100,0
2001	0,0	19,4	107,6	117,2	207,3	286,8	113,0	100,0

Source : Statistics Canada, Catalogue 57-601

Table 11 : Natural gas sales to commercial customers ('000 of cubic metres / gross domestic product in million \$) Canada = 100								
Year	Atlantic	Québec	Ontario	Manitoba	Sask.	Alta	B.C.	Cnd
1989	0,0	52,1	99,8	158,1	197,4	226,0	97,9	100,0
1990	0,0	55,4	94,5	169,4	182,7	225,0	105,3	100,0
1991	0,0	54,1	98,1	162,0	184,6	220,1	103,0	100,0
1992	0,0	58,4	101,6	181,9	164,4	211,1	91,4	100,0
1993	0,0	60,3	101,9	189,5	160,6	193,8	95,3	100,0
1994	0,0	62,5	104,3	188,3	168,4	174,0	96,4	100,0
1995	0,0	62,7	101,7	197,5	170,0	174,0	100,8	100,0
1996	0,0	61,7	98,8	192,7	176,3	173,3	105,6	100,0
1997	0,0	70,1	96,7	199,2	186,4	159,9	103,8	100,0
1998	0,0	76,3	78,4	207,8	215,6	196,1	113,5	100,0
1999	0,0	78,7	79,1	203,2	223,7	187,0	115,9	100,0
2000	0,0	84,5	51,6	219,3	230,4	170,5	112,5	100,0
2001	0,0	83,4	76,8	218,5	238,7	168,4	113,4	100,0

Source : Statistics Canada, Catalogue 57-601

Table 12 : Natural gas sales to commercial customers ('000 of cubic metres / per capita) Canada = 100								
Year	Atlantic	Québec	Ontario	Manitoba	Sask.	Alta	B.C.	Cnd
1989	0,0	46,4	114,0	138,6	160,3	252,8	96,0	100,0
1990	0,0	49,5	105,6	150,7	156,7	263,3	103,4	100,0
1991	0,0	48,8	108,8	143,3	159,6	253,0	103,4	100,0
1992	0,0	52,8	111,4	161,9	140,1	243,0	93,0	100,0
1993	0,0	54,1	110,2	165,0	145,0	232,3	99,0	100,0
1994	0,0	55,8	112,7	163,9	153,9	213,0	99,1	100,0
1995	0,0	55,8	110,5	170,5	160,1	211,3	101,9	100,0
1996	0,0	54,4	106,6	171,2	177,7	217,6	104,9	100,0
1997	0,0	61,6	104,8	177,1	180,6	204,6	101,8	100,0
1998	0,0	68,1	86,0	186,4	202,2	239,0	108,4	100,0
1999	0,0	70,1	87,0	176,5	205,2	230,7	108,5	100,0
2000	0,0	74,6	55,2	188,2	219,9	235,9	103,0	100,0
2001	0,0	73,7	81,5	190,9	222,5	236,6	103,4	100,0

Source : Statistics Canada, Catalogue 57-601

Table 13 : Natural gas sales to industrial customers ('000 of cubic metres / gross domestic product in million \$) Canada = 100								
Year	Atlantic	Québec	Ontario	Manitoba	Sask.	Alta	B.C.	Cnd
1989	0,0	54,1	76,6	48,5	13,4	426,0	83,5	100,0
1990	0,0	59,8	78,4	54,5	12,4	414,8	59,2	100,0
1991	0,0	60,7	78,1	58,0	7,2	426,5	52,9	100,0
1992	0,0	62,4	81,8	11,3	6,4	433,0	44,6	100,0
1993	0,0	62,0	77,5	13,0	3,8	429,3	50,1	100,0
1994	0,0	60,5	73,1	13,6	7,8	447,5	41,3	100,0
1995	0,0	68,1	62,7	16,8	3,0	476,6	37,5	100,0
1996	0,0	72,5	55,2	16,8	1,0	490,1	28,9	100,0
1997	0,0	75,0	46,8	18,8	1,4	498,9	29,6	100,0
1998	0,0	79,0	29,3	24,0	1,8	563,8	31,2	100,0
1999	0,0	83,5	23,9	30,2	2,7	580,3	13,2	100,0
2000	0,0	77,2	19,1	29,2	2,5	539,1	16,3	100,0
2001	0,0	71,9	14,3	25,5	3,4	553,1	12,9	100,0

Source : Statistics Canada, Catalogue 57-601

Table 14 : Natural gas sales to industrial customers ('000 of cubic metres / per capita) Canada = 100								
Year	Atlantic	Québec	Ontario	Manitoba	Sask.	Alta	B.C.	Cnd
1989	0,0	48,2	87,6	42,5	10,9	476,6	81,9	100,0
1990	0,0	53,4	87,7	48,5	10,6	485,5	58,2	100,0
1991	0,0	54,7	86,7	51,3	6,2	490,2	53,1	100,0
1992	0,0	56,4	89,8	10,0	5,4	498,5	45,4	100,0
1993	0,0	55,6	83,8	11,3	3,4	514,6	52,0	100,0
1994	0,0	54,1	79,0	11,8	7,1	547,7	42,5	100,0
1995	0,0	60,6	68,2	14,5	2,9	578,9	37,9	100,0
1996	0,0	64,0	59,6	14,9	1,1	615,5	28,7	100,0
1997	0,0	65,9	50,7	16,7	1,4	638,5	29,0	100,0
1998	0,0	70,4	32,2	21,5	1,7	687,2	29,8	100,0
1999	0,0	74,4	26,3	26,3	2,5	715,8	12,3	100,0
2000	0,0	68,1	20,4	25,1	2,4	745,9	14,9	100,0
2001	0,0	63,5	15,1	22,3	3,1	777,0	11,7	100,0

Source : Statistics Canada, Catalogue 57-601

Table 15 : Electricity generation by province (megawatt hours / gross domestic product in million \$) Canada = 100											
Year	Nfld	PEI	NS	NB	Qc	Ont	Man	Sask	Alta	BC	Cnd
1989	528,5	6,9	76,6	182,7	132,8	69,3	109,6	92,3	87,8	104,0	100,0
1990	577,6	5,4	80,9	180,7	128,5	66,8	121,8	96,0	85,5	111,6	100,0
1991	539,2	4,4	74,3	161,6	127,9	69,6	133,4	89,6	85,2	106,4	100,0
1992	536,4	2,0	75,1	158,8	129,3	67,6	152,8	93,5	88,7	102,6	100,0
1993	594,5	3,4	75,4	146,3	135,0	68,3	156,4	94,5	84,7	89,0	100,0
1994	540,1	2,3	75,5	149,8	137,7	69,0	158,3	91,3	85,9	87,8	100,0
1995	536,2	0,9	74,6	116,6	146,4	67,6	163,8	93,6	85,9	82,9	100,0
1996	535,6	0,5	77,7	140,2	142,8	65,8	166,3	86,4	79,8	100,1	100,0
1997	630,2	1,2	82,1	157,8	139,8	65,0	180,7	92,2	80,5	93,3	100,0
1998	675,7	0,1	84,9	181,9	131,8	62,9	172,9	98,0	87,3	98,6	100,0
1999	602,8	0,5	84,2	173,8	141,0	63,8	158,0	97,6	81,2	98,7	100,0
2000	561,0	2,6	87,4	172,6	145,7	64,5	174,3	94,5	72,7	96,9	100,0
2001	569,3	2,5	89,5	188,3	151,2	66,4	183,3	99,7	76,1	84,6	100,0

Source : Statistics Canada, Catalogue 57-601

Table 16 : Electricity generation by province (megawatt hours / per capita) Canada = 100											
Year	Nfld	PEI	NS	NB	Qc	Ont	Man	Sask	Alta	BC	Cnd
1989	342,3	4,5	57,4	135,4	118,3	79,2	96,1	75,0	98,3	102,0	100,0
1990	375,3	3,7	61,6	133,8	114,9	74,6	108,3	82,3	100,0	109,5	100,0
1991	365,0	3,1	58,7	121,0	115,2	77,2	118,0	77,5	97,9	106,8	100,0
1992	357,7	1,5	59,8	120,7	117,0	74,1	136,0	79,6	102,1	104,4	100,0
1993	395,2	2,5	59,0	113,2	121,0	73,9	136,1	85,3	101,5	92,4	100,0
1994	363,6	1,6	57,3	115,0	123,0	74,6	137,7	83,4	105,2	90,2	100,0
1995	364,7	0,7	56,3	92,1	130,2	73,4	141,4	88,1	104,4	83,8	100,0
1996	353,1	0,3	57,6	109,7	126,0	71,0	147,7	87,1	100,2	99,4	100,0
1997	407,5	0,8	60,7	119,8	122,9	70,5	160,6	89,3	103,0	91,5	100,0
1998	460,1	0,1	63,9	140,2	117,5	69,0	155,1	92,0	106,4	94,2	100,0
1999	430,9	0,3	64,4	134,6	125,6	70,2	137,2	89,6	100,2	92,3	100,0
2000	428,0	1,8	65,0	131,1	128,5	69,0	149,6	90,2	100,6	88,7	100,0
2001	425,1	1,8	67,8	144,0	133,6	70,5	160,2	92,9	107,0	77,1	100,0

Source : Statistics Canada, Catalogue 57-601

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Pierre-Marcel Desjardins has taught economics at the Université de Moncton since 1990. Since July 2001, he is a Research Associate at the Canadian Institute for Research on Regional Development, a position he also held from 1990 to 1996. From 1996 to 2001 he held the *Chaire des caisses populaires acadiennes en études coopératives*. Pierre-Marcel has a Ph.D. in economics from the University of Texas at Austin. He received both his bachelor's and master's degrees in economics from the Université de Moncton. His doctoral dissertation was titled "Trade Liberalization and Subnational Regions; with Evidence from Atlantic Canada".

His current research projects focus on interregional transfers, the development of peripheral regions, innovative and performing rural communities and exporting SMEs. He is regularly called upon by the governments of Canada and New Brunswick to work on studies pertaining to economic development.