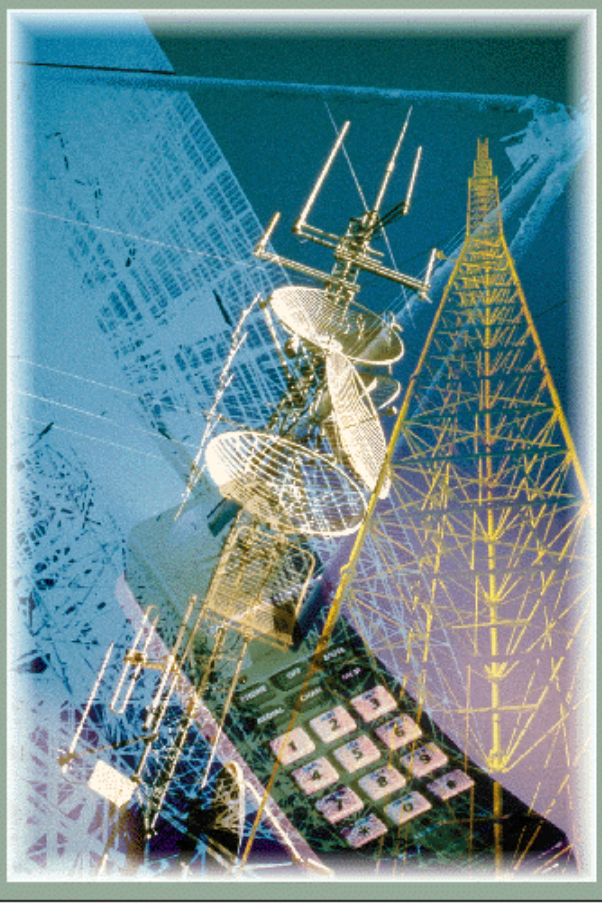
Industry Canada Industrie Canada

TELECOMMUNICATIONS SERVICE IN CANADA

AN INDUSTRY OVERVIEW



1999-2000

Canada

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HIGHLIGHTS

- The telecommunications service industry *remains a key sector of the Canadian economy* generating 2.5% of economy-wide gross domestic product (GDP), revenues of $28.8 billion, 104,600 employees and 5.1% of total capital investment in Canada in 1999.

- In terms of revenues, *the local market continues to surpass the long distance market.* In 1999, the wireline local service market generated $6.8 billion, relative to $6.2 billion in long distance (excluding private line and data/high speed revenues). In addition, the wireless local market generated revenues of $3.1 billion.

- *Convergence of the traditional communication service markets is well on its way* especially when it comes to the provision of Internet access. By December 2000, there were more than 1.3 million subscribers to high-speed Internet, 917,000 of them to cable modem service offered by cable companies and about 500,000 to digital subscriber line (DSL) service offered by telecommunications and Internet service providers.

- In September 2000, *Bell Canada Enterprises (BCE), the largest telecommunications holding company in Canada, created a new market structure along five business groups:*1) **Globemedia** (a multi-media company which includes CTV, Sympatico-Lycos Internet portal, The Globe and Mail, and the Globe and Mail's interactive web-site); 2) **Bell Canada**; 3) **Teleglobe**; 4) **Bell Emergis**; and, 5) **Bell Ventures** (includes more peripheral operating units, among others, Bell Canada International, Telesat Canada, CGI Group Inc. and BCE Capital)

- *One of the largest telecommunications acquisitions occurred* when Telus Mobility acquired Clearnet in October 2000 to form a national wireless company.

- In mid-January 2001, *Industry Canada held its second radio spectrum auction, this time for additional PCS spectrum*. The five successful provisional bidders were: Bell Mobility, Rogers Wireless Inc., Telus Communications Inc., W2N Inc. and Thunder Bay Telephone. These five provisional winners of 52 licenses bid a total of $1.5 billion.

- Effective January 1, 2001 *the CRTC changed the way of collecting the explicit subsidy* provided to basic residential telephone rates. The CRTC adopted a revenue-based mechanism under which Canadian telecommunications service providers must pay a percentage (4.5% in 2001) of their gross telecommunications revenues into a national fund to subsidize affordable residential telephone service in high-cost areas. The new levy will be adjusted annually (Telecom Decision CRTC 2000-745).

INTRODUCTION

Competition in all segments of the communications sector is changing and will continue to change the structure and dynamics of the Canadian industry. In the entertainment and communications industries, business growth strategies have resulted in an unprecedented level of mergers, alliances and partnerships within sectors and across sectors worldwide as a means to compete successfully. Global media conglomerates reduce business uncertainty and control more of the media value chain.

The Canadian telecommunications service industry continued to experience tremendous changes and developments in 1999 and 2000. These included government and industry activities aimed at ensuring sustainable competition and market expansion. Some of the areas of particular interest include high-speed Internet service and wireless digital services that allow for text Internet service. In addition, the Canadian Radio-television and Telecommunications Commission's (CRTC's) decision in 1999 required incumbent cable companies offering Internet services to resell these services to Internet Service Providers (ISPs).

In a similar decision the CRTC ruled in 2000 that for purposes of offering Digital Subscriber Line (DSL) services, ISPs and others may co-locate their own equipment in incumbent local telephone company central offices and resell their local copper telephone lines on the same terms and conditions as apply to local telephone companies.

In 1999-2000, the CRTC identified a level of basic telephone service that all Canadians should have access to and began requiring telephone companies to implement service improvement plans that would bring that level of service to the unserved and underserved areas of their operating territories. The CRTC also changed the way it collects the explicit subsidy provided to basic residential telephone rates by adopting a revenue-based mechanism under which Canadian telecommunications service providers must pay a percentage of their gross eligible telecommunications revenues into a national fund.

This publication provides an overview of economic activity, financial performance, and corporate and regulatory developments in the Canadian telecommunications service industry. The publication draws on information brought together from several different sources, including Statistics Canada, public company reports, and the Canadian Radio-Television and Telecommunications Commission (CRTC).

Section 1 describes the telecommunications service industry's contribution to the overall economy, providing a snapshot of the industry's economic performance, and offers some insight into its development since the early 1980s. **Section 2** provides a more detailed description of the telecommunications service industry's different segments, focusing on the local, long distance, and international telecommunications markets. In addition, it also examines the major participants in the wireline and wireless market segments and historical revenue trends for the sector as a whole. **Section 3** examines wireline access lines and wireless subscribers, it also examines the Internet service providers, highlighting their segment size, access services, and number of subscribers. **Section 4** and **Section 5** summarize the financial performance of the major players in the Canadian telecommunications, broadcasting and cable TV companies. They also highlight corporate information and financial data for the wireline and wireless companies in 1999. **Section 6** summarizes the telecommunications service industry's policy and regulatory environment.

1.0 CONTRIBUTION TO THE OVERALL ECONOMY

This section describes how the telecommunications service industry contributes to the overall Canadian economy. The focus is on value added, employment, salaries, capital investment and price trends. Tables 1-1 shows the relationship between the economy and its two major divisions, goods and services. Table 1-2 provides a financial overview of the telecommunications carriers[1].

Table 1-1

Overall Economy & Services Sector								
	1994	**1995**	**1996**	**1997**	**1998**	**1999**	**2000 Q1***	**2000 Q2***
GDP (Value Added)	**millions of 1992 dollars**							
All industries	645,956	663,082	673,088	700,804	721,003	750,581	772,103	779,674
Services	434,823	445,685	451,327	466,523	482,141	500,846	513,253	518,036
Goods	211,133	217,397	221,761	234,281	238,862	249,735	258,850	261,638
Employment	**thousands**							
Overall economy	10,592	10,816	10,907	11,204	11,476	11,679	14,486	14,950
Services	8,150	8,332	8,393	8,598	8,772	8,914	10,794	11,049
Goods	2,441	2,484	2,515	2,606	2,704	2,765	3,692	3,901
Average salary	**current dollars per year**							
Overall economy	29,550	29,835	30,475	31,110	31,529	31,741	32,316	32,523
Services	27,319	27,540	28,043	28,525	28,801	29,078	29,495	29,693
Goods	36,997	37,534	38,592	39,636	40,376	40,325	41,594	41,483
Consumer Spending	**millions of current dollars**							
Overall economy	447,748	462,865	482,367	512,454	532,926	558,567	144,145	146,131
Services	240,241	249,368	261,707	276,614	288,578	300,705	77,196	78,552
Goods	207,507	213,497	220,660	235,840	244,348	257,862	66,949	67,579
Prices	**CPI January 1990 = 100**							
All items	112.3	112.9	114.8	117.2	118.5	119.3	122.4	123.4
Services	114.6	117.3	119.7	121.8	123.6	125.3	127.3	128.9
Goods	110.1	109.2	110.4	113.3	114.3	114.2	118.4	118.8
Economy	**% change from last period**						**% change from last Quarter**	
GDP (real)	4.5	2.7	1.5	4.1	2.9	4.1	1.0	0.9
Consumer Spending	4.1	3.4	4.2	6.2	4	4.8	0.8	1.8
Prices	0.2	2.2	1.6	1.6	0.9	1.7	2.6	0.8

* Quarterly levels are seasonally adjusted annual values. The quarterly growth rates are with respect to the previous quarter.

Source: Statistics Canada

[1]The existing 1980 SIC-482 *Telecommunications Carrier Industry* is defined as establishments primarily engaged in operating telephone and other telecommunications transmission services by electro-magnetic means. SIC-483 *Other Telecommunications* is defined as establishments primarily engaged in telecommunications operations not classified in SIC-482. It is expected that the implementation of the North American Industry Classification System (NAICS) will greatly facilitate defining the telecommunications service industry. In the rest of this report, the telecommunications service industry is more in line with the 1997 NAICS.

Table 1-2

Telecommunications Services*								
	1994	1995	1996	1997	1998	1999	2000 Q1**	2000 Q2**
GDP (Value Added)	millions of 1992 dollars							
Carriers/other telecom	12,945	13,391	13,781	14,513	15,684	18,670	21,048	21,854
Overall economy	645,956	663,082	673,088	700,804	721,003	750,581	772,103	779,674
Employment	thousands							
Telecommunications Services	111	116	104	103	105	105	107	107
Average salary	current dollars per year							
Telecom carriers	42,805	43,629	43,859	44,867	44,624	43,725	43,224	43,282
Other telecommunication	32,400	33,104	32,301	29,878	33,002	33,275	32,853	33,144
Prices	CPI January 1990 = 100							
Telecommunications Services	102.5	102.0	107.5	113.5	119.8	110.6	110.8	112.2
	millions of current dollars							
Operating revenues	17,645	19,445	21,647	24,136	27,454	29,683	7,575	7,366
Operating expenses	13,258	15,500	16,789	18,624	22,009	25,275	6,343	6,075
Operating profit	4,387	3,945	4,858	5,512	5,445	4,409	1,171	1,291
Net profit	1,551	1,188	1,780	239	1,707	1,529	385	354
Balance Sheet								
Assets	57,388	59,710	61,105	60,802	56,779	61,493	60,840	61,999
Liabilities	34,966	37,624	39,425	39,261	36,935	38,237	38,859	40,563
Equity	22,422	22,086	21,681	21,541	19,843	23,256	21,981	21,436
Share capital	17,205	17,418	16,076	16,764	18,376	23,609	24,395	24,711
Retained earnings	14,176	12,024	15,769	13,194	3,228	(4,770)	(3,309)	(4,123)
Analytical table								
GDP (real)	% of Canada's GDP							
Carriers/other telecom.	2.0	2.0	2.1	2.1	2.2	2.5	2.7	2.8
	% change from last year						% change from last quarter	
GDP (real)								
Carriers/other telecom.	4.0	3.4	2.9	5.3	8.1	19.0	4.7	3.8
Overall economy	4.5	2.7	1.5	4.1	2.9	4.1	1.1	1.0
Employment								
Telecommunications Services	2.9	4.6	(10.0)	(0.9)	1.9	(0.5)	0.6	0.2
Prices								
Telecommunications Services	0.9	(0.5)	5.4	5.6	5.5	(7.6)	0.0	1.2
Financial								
Operating revenues	6.9	10.2	11.3	11.5	13.7	8.1	3.8	(2.0)
Operating expenses	9.1	16.9	8.3	10.9	18.2	14.8	5.7	(4.2)
Assets	6.5	4.0	2.3	(0.5)	(6.6)	8.3	2.3	1.9
Liabilities	10.1	7.6	4.8	(0.4)	(5.9)	3.5	10.1	4.4

* Telecommunications services include the Telecommunication carriers and Other telecommunications services. Examples of the companies under these categories can be found in Appendix B.

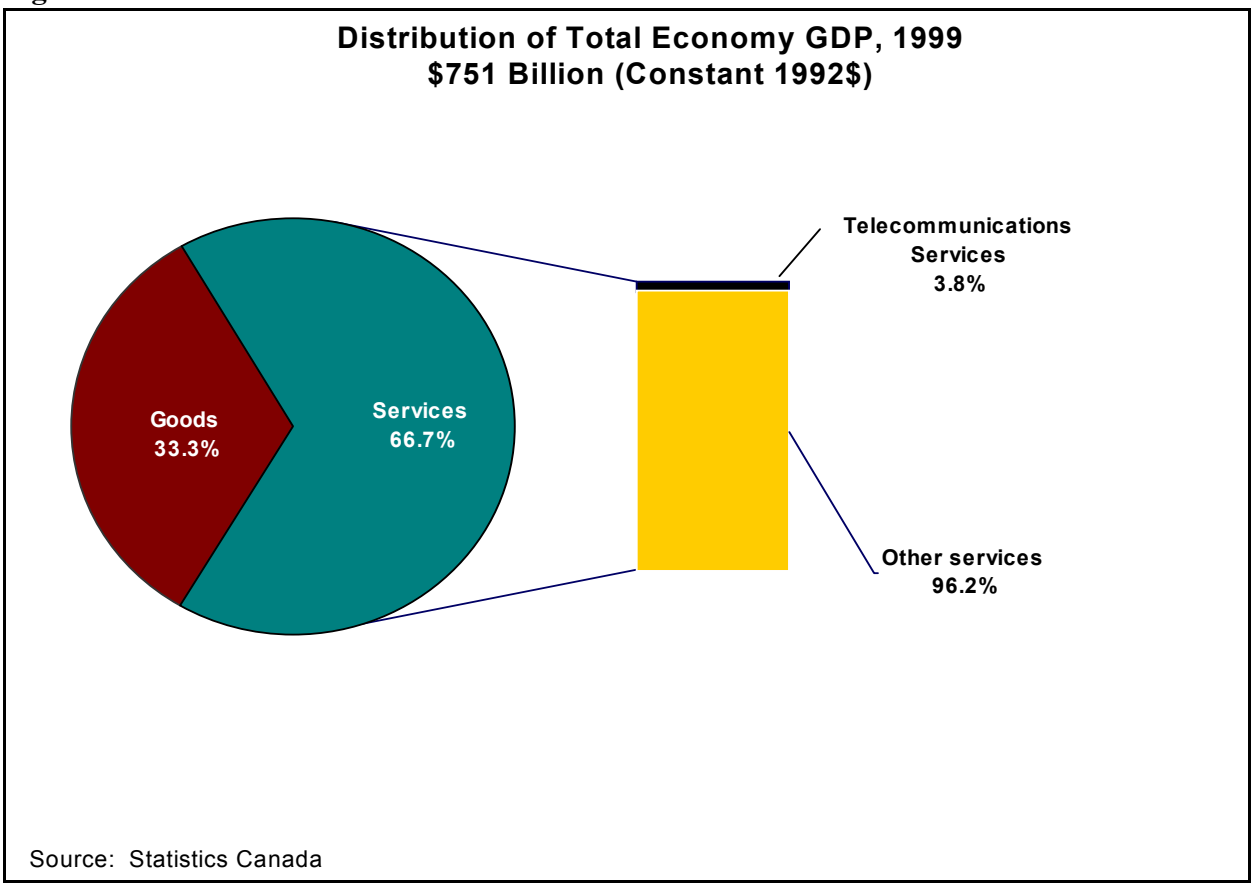
**Quarterly levels are seasonally adjusted annual values except for the income statement variables which refer to that quarter. The quarterly growth rates are with respect to the previous quarter.

Source: Statistics Canada

1.1 VALUE ADDED[2] (GROSS DOMESTIC PRODUCT)

In 1999, the services sector contributed about 68.6% of total Canadian Gross Domestic Product (GDP). Of this amount, telecommunications services contributed about 3.8% of the service sector's GDP, (Figure 1-1).

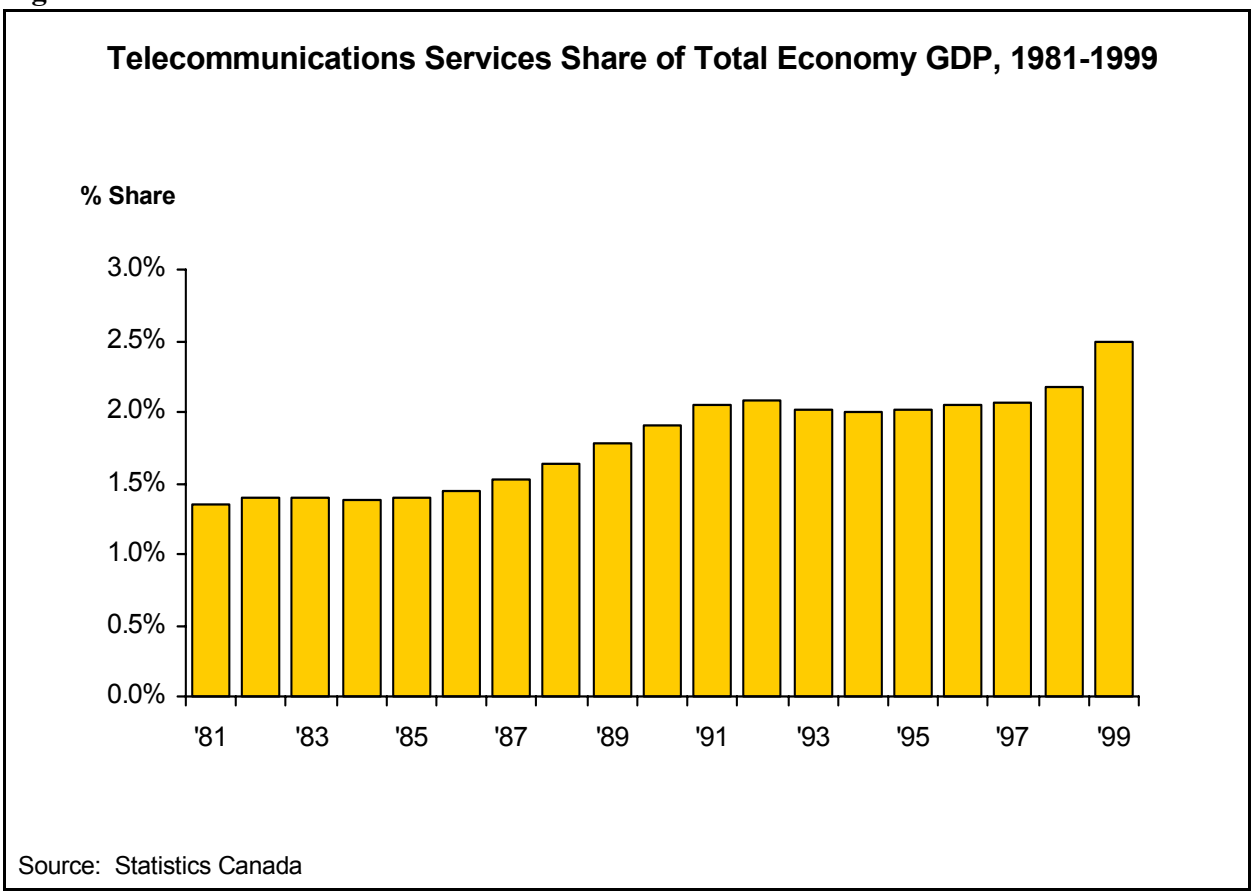
Figure 1-1



[2]Value added is the term used to describe the net value of production by an industry group. It is equivalent to the differences between the value of an industry's output and the value of the inputs used by the industry in the production of its output, (i.e., labour, capital and raw materials).

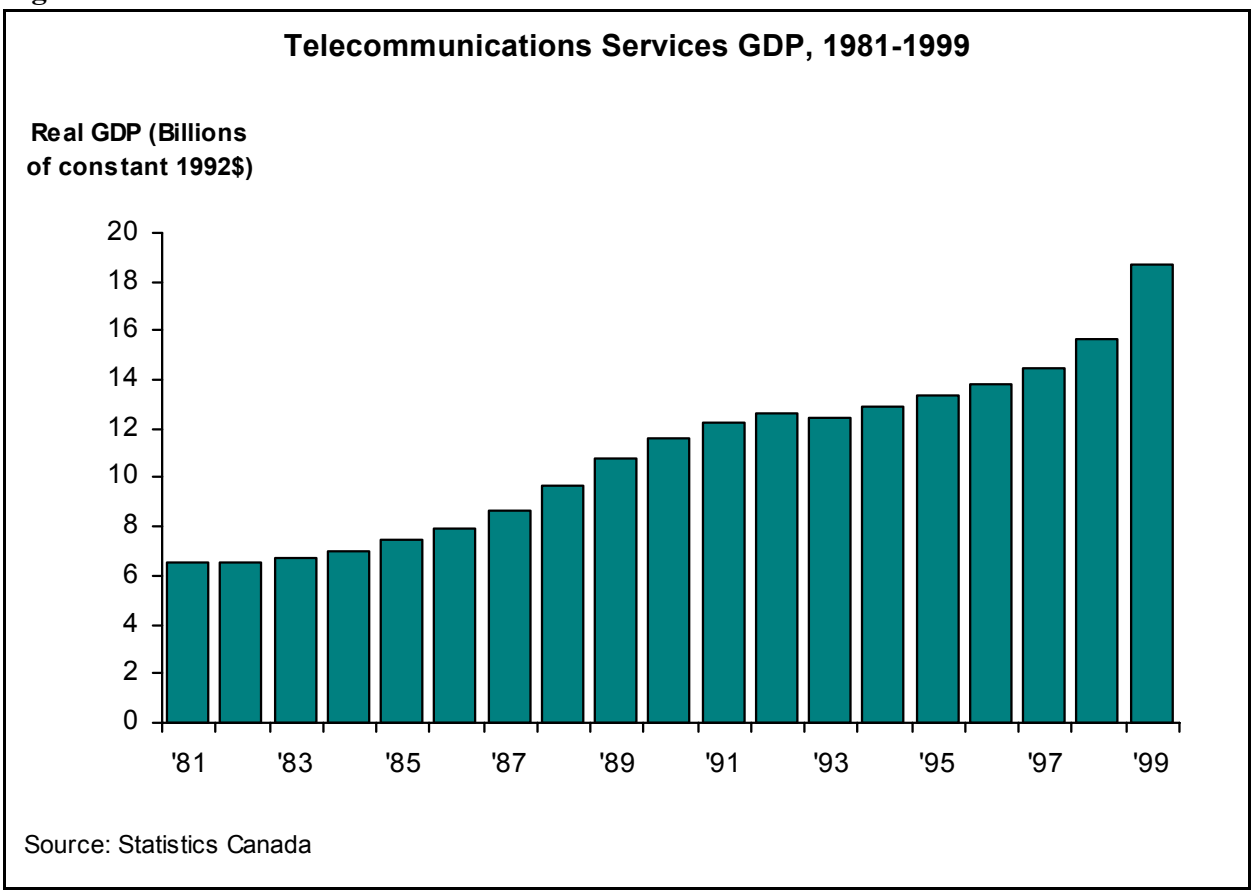
Figure 1-2 shows that telecommunications services contributed about 2.5% to the total economy's value added.

Figure 1-2



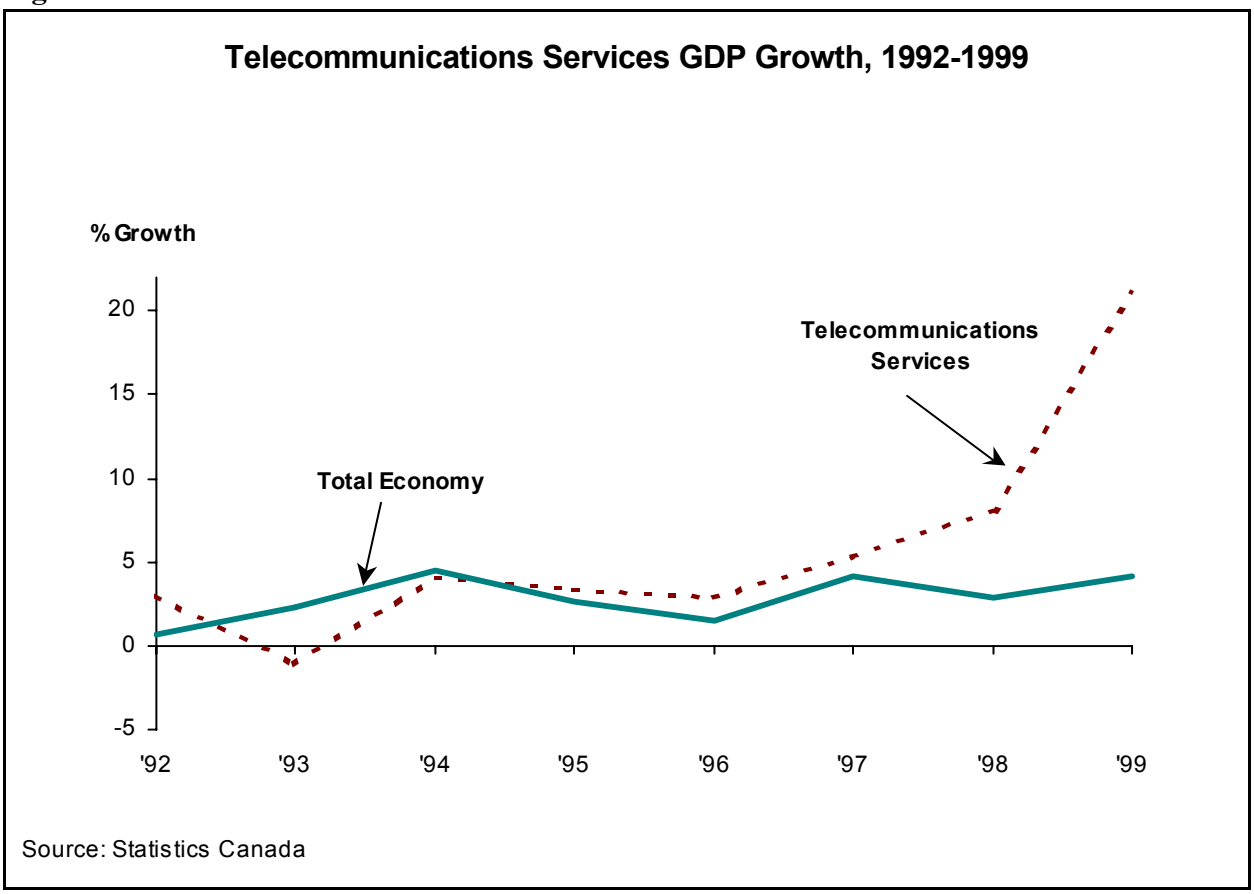
Telecommunications services produced $19 billion of valued added, a 19% increase from the year before. Since 1981 the Compound Annual Growth Rate (CAGR) was 6%, resulting in a total increase of $12.2 billion or 187%, (Figure 1-3, Appendix A, Table A-1)

Figure 1-3



Over this same period, telecommunications services have for the most part out-performed the overall economy. In some years they have grown five times faster than the overall economy. For example, in 1999, telecommunications services out-performed the economy by 15%, (Figure 1-4, Appendix A, Table A-1).

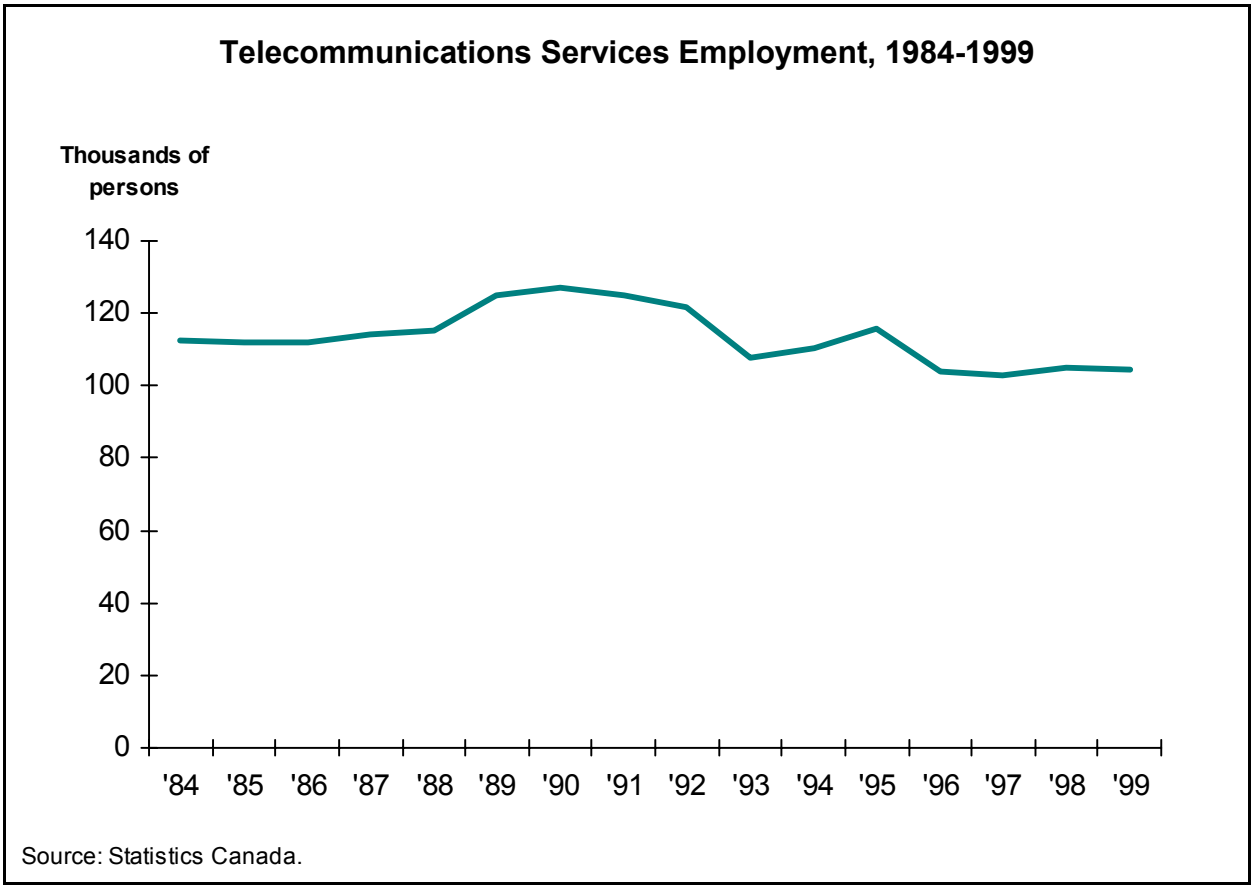
Figure 1-4



1.2 EMPLOYMENT

Over the last four years employment in the telecommunications service industry has remained stable. In 1999 it employed an average of 104,600 persons. This is a decrease of 0.5% from the year before, and a 18% decrease from the early 90s when employment was at its peak. The CAGR of the industry's employees is a 0.5% decrease from the mid-1980s to 1999, (Figure 1-5, Appendix A, Table A-2).

Figure 1-5



1.3 SALARIES

For 1999, the average salary in the telecommunications industry was about $43,725. This is 38% higher than the overall economy ($31,741) and approximately 50% higher than the services sector ($29,078) as a whole. The CAGR of the industry's average salary is about 0.6% from 1992-1999, (Figure 1-6).

The average salary in the overall economy, the services sector and telecommunications services all tend to be moving upward. However, there was more fluctuation in the telecommunications services average annual wage. This phenomena is related to the occupational employment ratio of the telecommunications services industry and their relative wages, (i.e., number of technicians relative to the number of managers), (Figure 1-6).

Figure 1-6

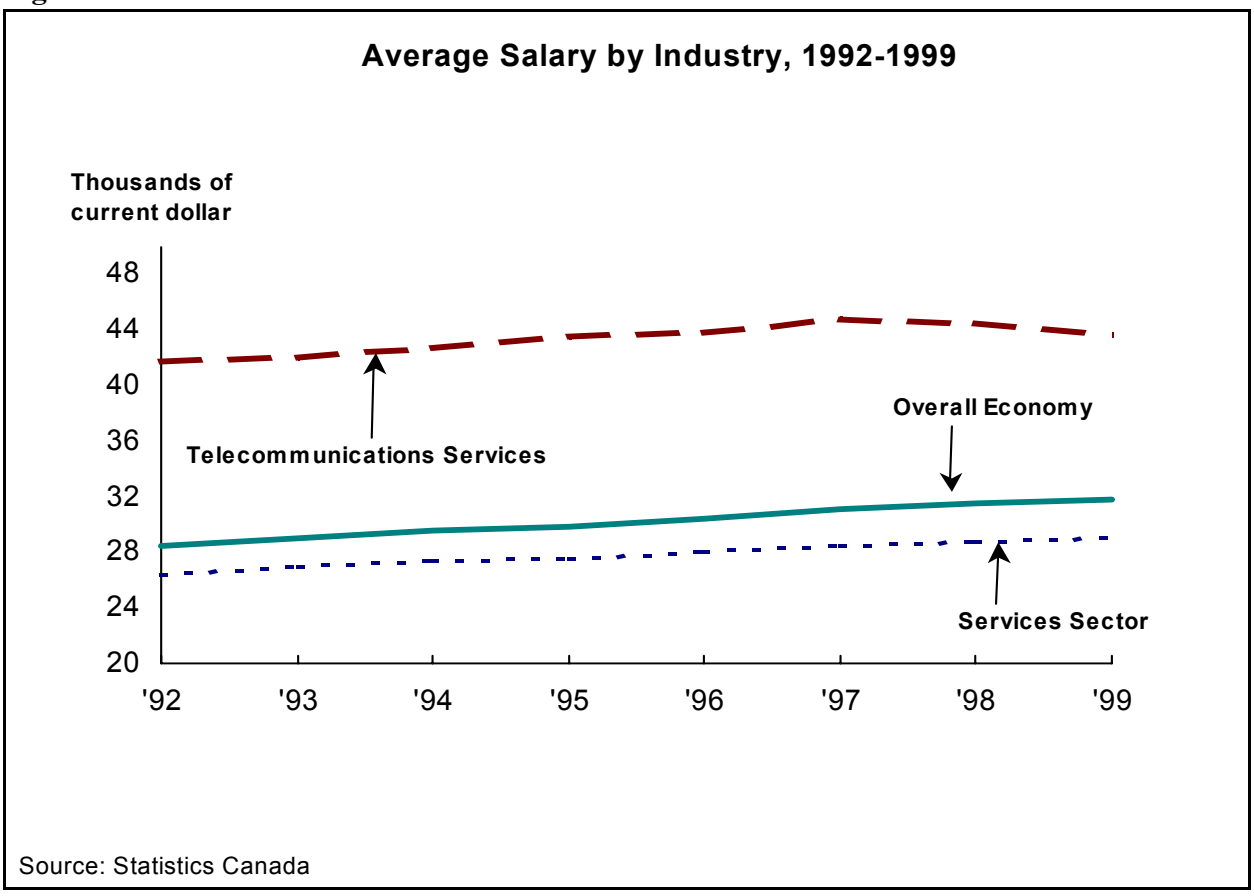


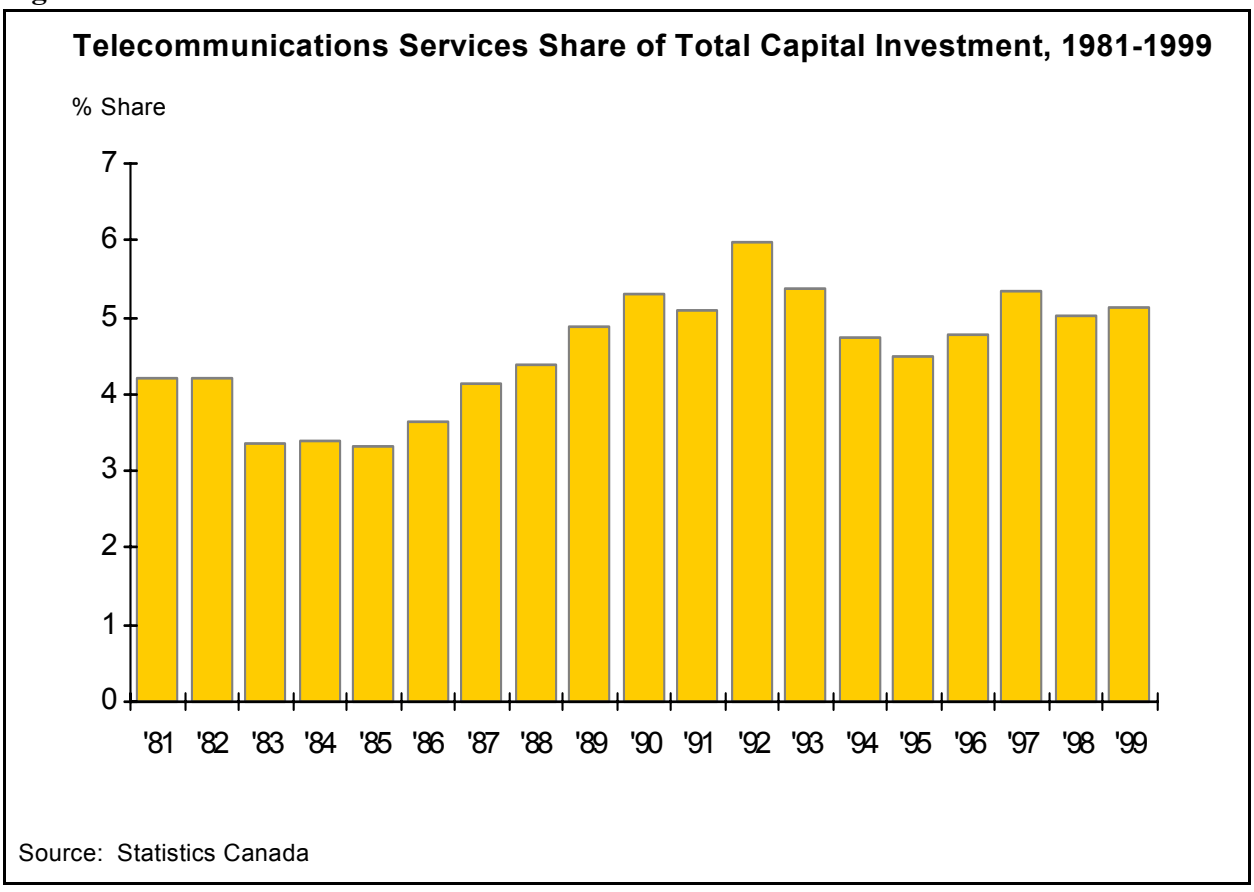
Table 1-1 and 1-2 provide additional data on average salary.

1.4 CAPITAL INVESTMENT[3]

As Figure 4-3 in section 4 will show, in 1999, capital investment reached $6.3 billion in constant 1992 dollars. This is a 4.6% increase over 1998 and an increase of 93% since 1981. The CAGR of the industry's capital investment is around 2.7% over the same period.

Relative to the total economy, the industry's share of the economy's capital investment was 5.1% in 1999, a modest increase over 1998's 5.0%. Figure 1-7, shows that this percent has fluctuated over the entire 19 years, reaching a peak of 6% in 1992. This was followed by a slight decline over the next few years. The graph also shows that this share has stabilized over the last part of the 1990's, (Figure 1-7, Appendix A, Table A-3).

Figure 1-7



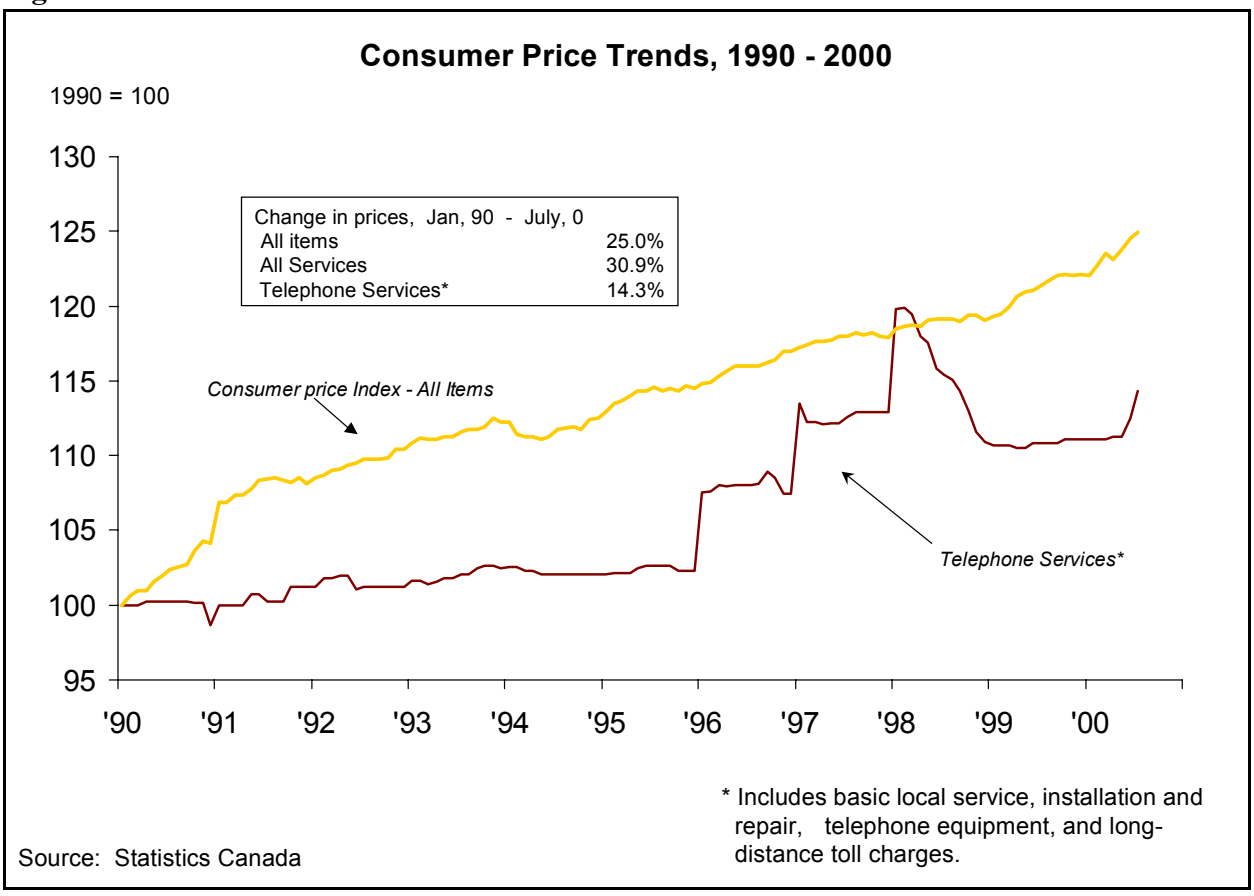
[3]Additional information on capital investment is provided in Section 4.

1.5 PRICE TRENDS FOR TELEPHONE SERVICES

Statistics Canada's telephone services price index[4] compared to the all-items Consumer Price Index (CPI) shows that between January 1990 and July, 2000, the CPI for all items increased by 25.0%, while a basket of telephone services increased by only 14.3%, (Figure 1-8, Appendix A, Table A-4).

The effect of local telephone rate increases (rate rebalancing) is clear in Figure 1-8. These rate increases were implemented at the beginning of 1996, 1997, and 1998 in order to make local service prices for residential service better reflect the cost of providing local service, prior to the introduction of competition in the local segment.

Figure 1-8



[4] The telephone services price index is a composite of prices for basic local telephone charges, other local charges, installation and repair charges, telephone equipment charges, and long distance toll charges. Basic local charges and long distance toll charges make up most of the index. The basket of telephone services is held constant over time. In particular, the amount and composition of long distance minutes are assumed to be constant over time.

The rate-rebalancing increases are represented in the graph by the jumps in the telephone services price index line[5].

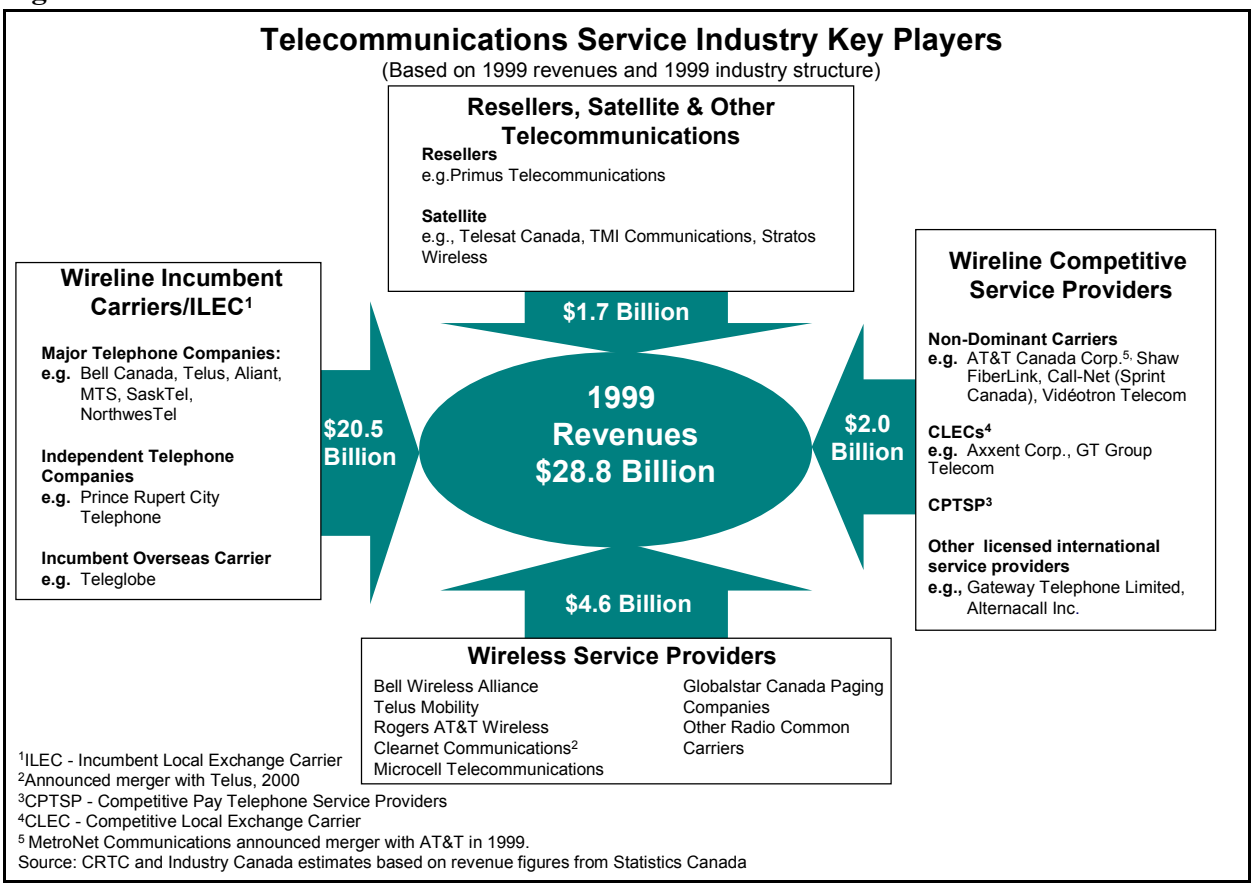
The reductions in the price index starting in 1998 can be explained by price declines predominantly in long-distance services in the face of increased competition in this market segment. The recent increase in the price index starting in April 2000, can be attributed to increases in the cost of local service in all regions of the country.

[5]For additional information please see Section 6.

2.0 MARKET SEGMENTS

Figure 2-1 illustrates the segmentation of the Canadian telecommunications service industry. In 1999, the total annual operating revenue of the telecommunications service industry increased by 4% over 1998, to $28.8 billion.

Figure 2-1



The **Wireline Incumbent Carriers** segment is the largest in terms of annual revenue. This segment includes Bell Canada, Telus Communications, Aliant Communications, MTS Communications, SaskTel, and 43 independent telephone companies operating in Quebec, Ontario, and Prince Rupert, British Columbia. Together these incumbent carriers, including Teleglobe, generated a total of $20.5 billion in revenues in 1999, (Appendix B, Table B-2 and Table B-3).

Until October 1, 1998 Teleglobe Canada enjoyed a monopoly on overseas facilities. On October 1, 1998, this market segment was opened to competition. Bell Canada announced on February 15, 2000 that it would increase its ownership in Teleglobe from 23.1% to 100%. This was completed in the third quarter of 2000.

The **Wireline Competitive Service Providers** include all telecommunications service providers (carriers and non-carriers) competing with the incumbent carriers in various local and long distance service markets. These service providers generated revenue of $2.0 billion in 1999. Major competitive non-dominant carriers include AT&T Canada, Shaw FiberLink, Call-Net (Sprint Canada), and Videotron Telecom, (Appendix B, Table B-4). Competitive local exchange carriers (CLECs) include Axxent Corp., GT Group Telecom, and Futureway Communications, (Appendix B, Table B-5, Table B-6, and Table B-7). In addition, this segment includes Gateway Telephone Ltd., Alternacall Inc., TMI Communications, and 188 other licensed international service providers, (Appendix B, Table B-12, and Table B-13).

In 1999, the **Wireless Service Providers** segment generated a total of $4.6 billion in revenues. This segment includes Bell Wireless Alliance, Telus Mobility, Rogers AT&T Wireless, Clearnet Communications and Microcell Telecommunications. It also includes paging companies and other radio common carriers, such as mobile radio dispatch service providers, (Appendix B, Table B-10).

The **Resellers, Satellite and other Carrier** segment includes Telesat Canada. Prior to March 1, 2000 Telesat Canada was the only company authorized to carry domestic and Canada-U.S. fixed satellite services. The monopoly ended in March, 2000. In 1999, the resellers, satellite and other carrier segment contributed $1.7 billion in revenues to the Canadian telecommunications service industry, (Appendix B, Table B-11). The telecommunications resellers, (over 436), such as Primus Telecommunications are also included in this segment, (Appendix B, Table B-8, and Table B-14)[1].

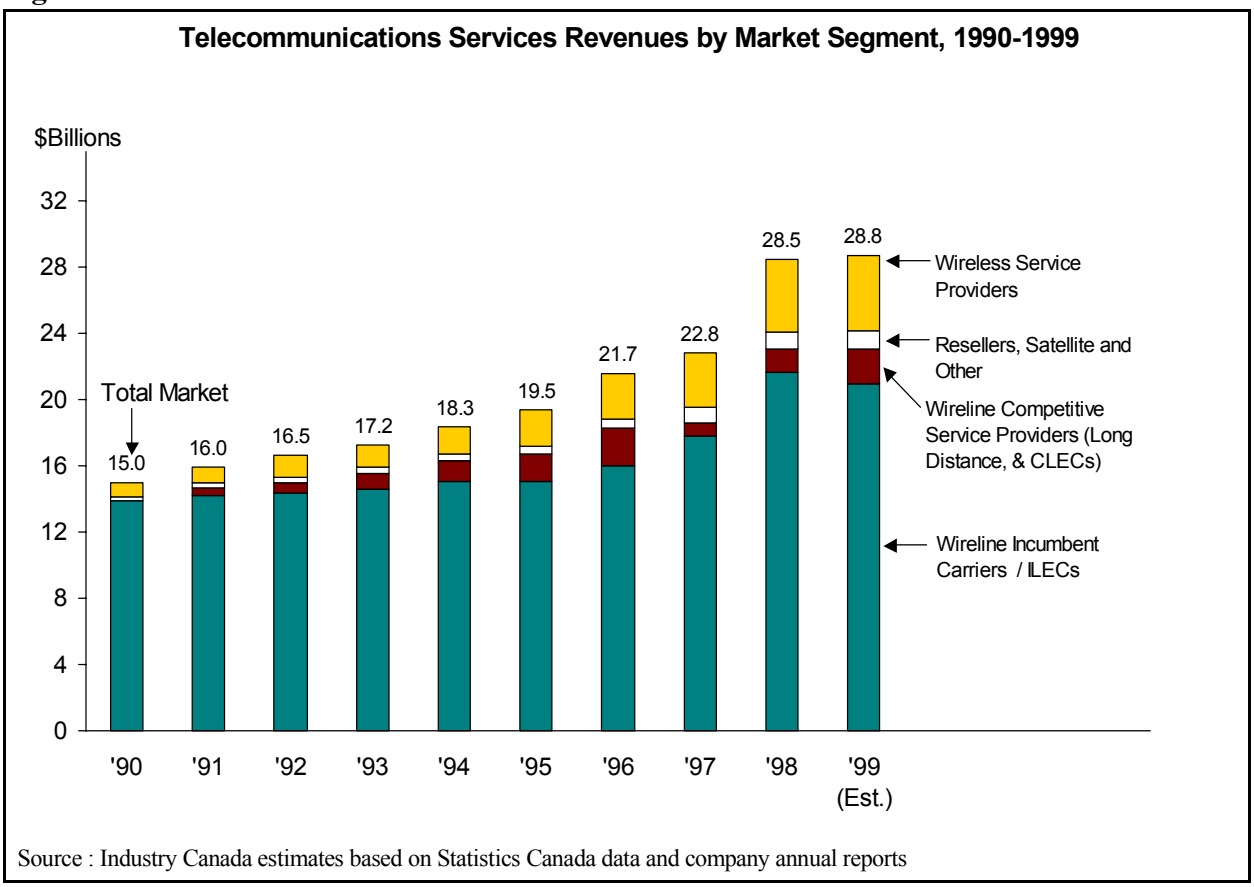
Figure 2-2 shows that between 1998 and 1999, revenues of the wireline incumbent carriers dropped by 3.2% ($687 million) mainly due to a reduction in their long distance revenues[2]. The reduction was offset by revenue increases of $952 million in other segments.

[1]There are also 22 sharing groups which aggregate demand for telecommunications services in specific buildings, (Appendix B, Table B-9).

[2]The long distance market is examined in more detail in Section 2.3.

The wireline competitive service providers accounted for about 77%, ($729 million) of this increase; while the wireless service providers contributed around 18% ($176 million); and resellers, satellite and other communications accounted for the remaining 5% ($47 million).

Figure 2-2



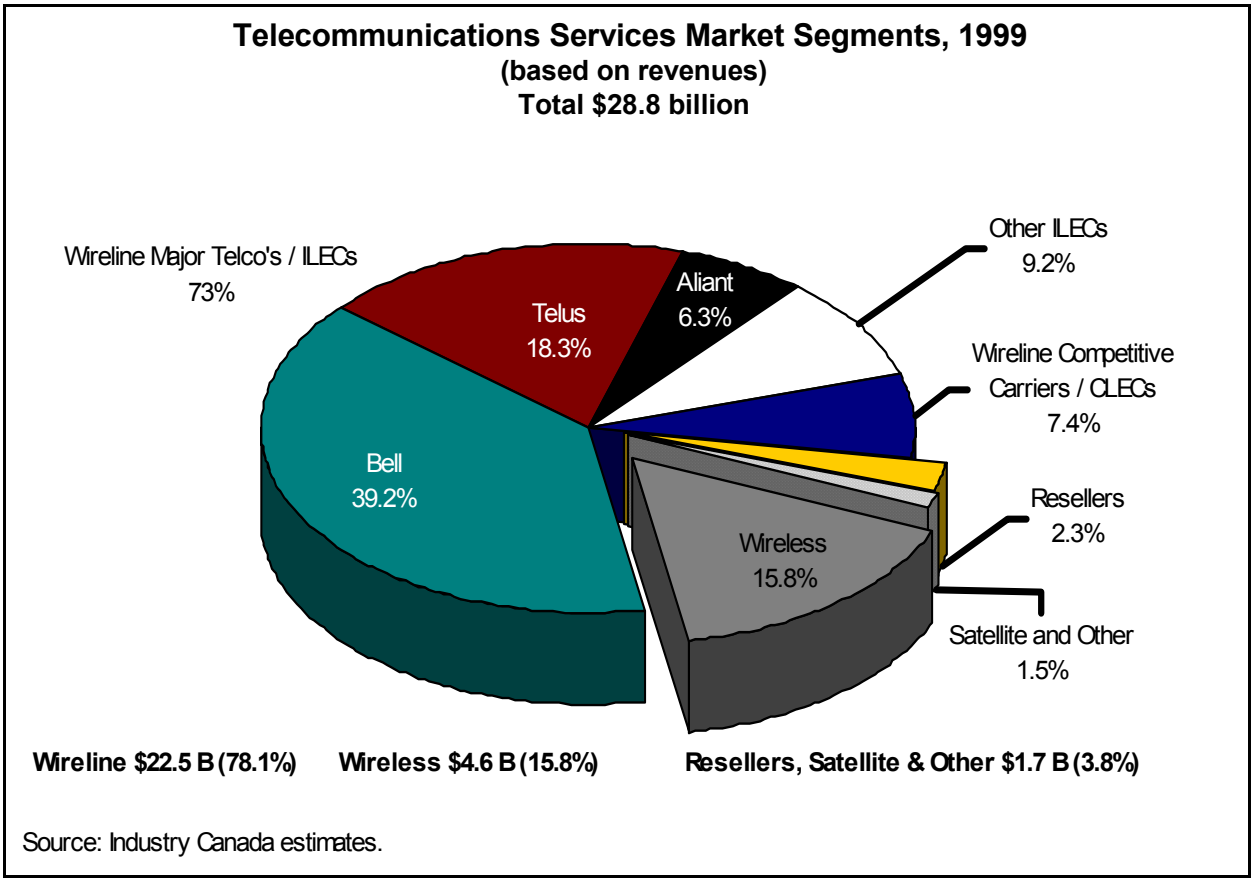
The large increase between 1997 and 1998 is due to accounting changes, specifically the treatment of intra-industry transactions, e.g., interconnection, contribution.[3] Starting in 1998, these transactions were reported on a gross basis, as opposed to a net basis.

[3] Interconnection refers to services and facilities beyond the point of interconnection, such as switching and aggregation, to terminate traffic on behalf of an originating telecommunication service provider. This includes transiting or transport where provided pursuant to an interconnection tariff or agreement. Contribution refers to the payments (per minute or per circuit) derived from domestic and international long-distance telecommunications revenues to cover the revenue shortfall in the provision of local/access services.

2.1 CANADIAN TELECOMMUNICATIONS SERVICE MARKET, 1999

Figure 2-3 examines 1999 revenues by market segments. The wireline major and independent telcos generated approximately 73% of the total $28.8 billion revenues in 1999. Wireline competitive long distance and competitive local exchange carriers (CLECs), generated 7.4% of the operating revenues. The wireless providers accounted for 15.8% of the 1999 industry revenues. Resellers, satellite and others had a 3.8% market share.

Figure 2-3

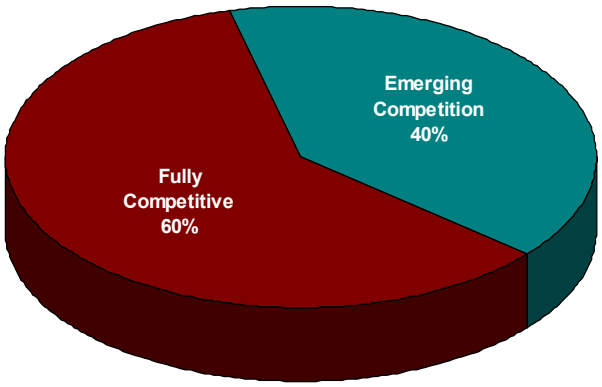


Source: Industry Canada estimates.

About 60% of the activity in the telecommunications service industry took place in fully competitive markets by the fall of 2000. These markets include long distance, wireless, equipment and other telecommunications related services, where at least two companies are competing to provide services. In these markets, long distance transactions account for the largest share, (Figure 2-4).

Figure 2-4

Canadian Telecommunications Services Industry Structure
(percentages based on 1999 revenue*)



• Long Distance

• Wireless

• Other Telecom Related Services (e.g., Terminal equipment, wholesale Internet services, private lines)

•Local Service

•Domestic and Canada-U.S. Fixed Satellite Transmission Services

* Percentages represent the approximate share of telecommunications service industry revenue generated in each segment
Source: Industry Canada estimates

The cellular/personal communication service (PCS) market is among the most competitive segment of the overall telecommunication industry. The introduction of new competitors has fueled innovation and price competition in the marketplace. Forecasts are for continued growth over the next year. In addition, advanced satellite services have, and will continue to provide, both fixed and mobile telecommunication services, bringing the benefits of advanced telecommunication services to all parts of Canada. Coupled with these developments, new terrestrial high-speed services, such as 24/38 GHz and Multipoint Communications Services (MCS), will add new dimensions to the local competitive market with the promise of high-speed wireless access for business and consumers.

Another 40% of the telecommunications service market is fully open to competition, but has yet to develop a competitive structure in which two or more companies compete in most regions and product markets, (Figure 2-5).

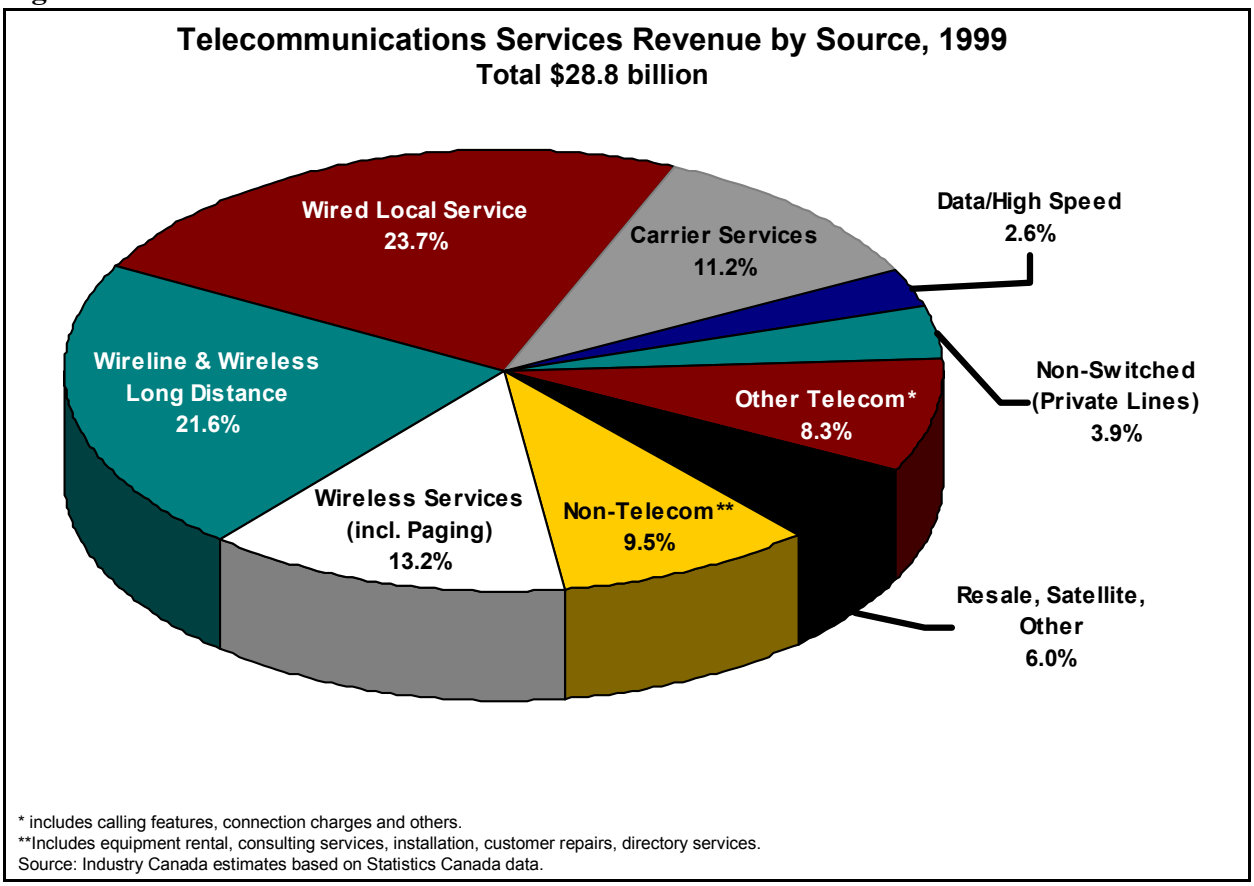
Competition in the local service market, which is relatively new, has not been fully implemented due to the low expected returns given the required investment. While there are now multiple players in the largest markets, and this is expanding quickly, all regions of Canada have yet to see local competition. For example, there are a large number of registered Competitive Local Exchange Carriers (CLECs), (44), among the largest being; Axxent, GT Telecom Group, and Futureways that are competing in select areas. Local competition is mainly in urban cores serving high traffic business customers and high density urban residential developments. Further details on local telephone service competition are provided in section 2-2.

In 1999, wired local services generated the largest share of revenues 23.7% ($6.8 billion). Wireline and wireless long distance service[4] generated the second largest share, 21.6% ($6.2 billion). Wireless services, primarily local mobile cellular and paging local services, accounted for another 13.2% ($3.8 billion). The remainder of $12 billion revenues came from the provision of carrier services (11.2%), calling features, connection charges and other telecom (8.3%), data or high-speed internet (2.6%), non-switched private lines (3.9%), resale, satellite and other (6.0%) and non-telecom services (9.5%), (Figure 2-5).

[4]Long distance services exclude private lines and data/high-speed revenues which are generally included under long distance service revenue in company annual reports.

The non-telecom portion of revenues includes retail Internet. However, this value does not include operating revenues from the largest dial-up retail Internet providers, (i.e., Bell Sympatico). It also does not reflect the independent dial-up retail Internet providers (i.e., UUNet) or the cable Internet service providers, (i.e. Rogers@home, Shaw@home). Further details on these are provided in Section 3. Additionally, the data/high speed component of revenues includes wholesale Internet revenues, (Figure 2-5).

Figure 2-5

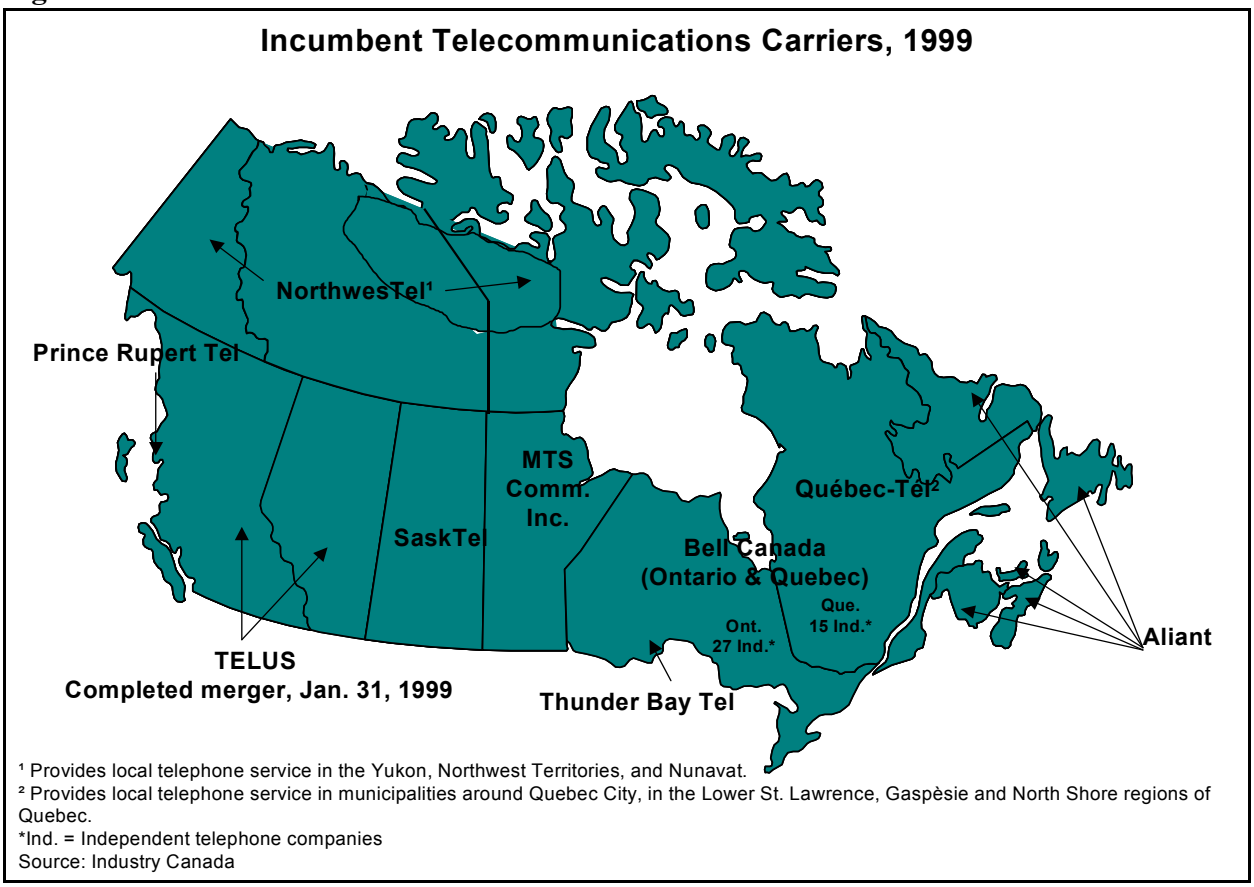


* includes calling features, connection charges and others.
**Includes equipment rental, consulting services, installation, customer repairs, directory services.
Source: Industry Canada estimates based on Statistics Canada data.

2.2 LOCAL SERVICE MARKET

The local service segment of the telecommunications market is largely made up of revenues generated from providing households and businesses with access to the public-switched telephone network (PSTN).

Figure 2-6



Most of the local service market is controlled by the regional wireline incumbent carriers listed in Figure 2-6 and in Appendix B, Table B-2 and Table B-3.

Aliant Communications provides local and long-distance services in the Maritime provinces and Newfoundland. Bell Canada provides these services in both Ontario and Quebec. Telus provides the services in both British Columbia and Alberta. NorthwesTel provides the service in the Northwest Territories, Nunavut, Yukon Territory and parts of northern British Columbia.

There are also 43 independent telephone companies that provide local and long distance telephone services to specific rural communities in Quebec, Ontario, and Prince Rupert, BC (Appendix B, Table B-2). Some of these independent telephone companies have private ownership, but most are either municipally owned or operating as customer co-operatives.

Local Telephone Service Competition[5]

In order to provide facilities-based services in the local telephone service market, companies other than Incumbent Local Exchange Carriers (ILECs), must register with the CRTC as Competitive Local Exchange Carriers (CLECs). As noted previously, 44 companies have either registered with the CRTC as CLECs or registered their intention to become CLECs, (Appendix B, Table B-5).

Roll-out of competition in the provision of local telephone service by CLECs is being implemented gradually on a local exchange basis. These local exchanges are owned and operated solely by ILECs, but they must make space available to CLECs to offer service. There are approximately 160 exchanges identified by CLECs as potential markets. Of these exchanges, a majority are still in the planning stage, in that competition has not yet been implemented or an actual implementation date has not yet been set, (Appendix B, Table B-6, Table B-7).

One of the first companies to roll out service was MetroNet Communications Corp., which has since joined with AT&T Canada. It began providing local service in Calgary, Montréal, Toronto and Vancouver in December 1997. As of May 2000, it has expanded its local telephone service to 16 local exchanges in Bell Canada, Aliant and Telus markets, (Appendix B, Table B-6).

Since this early entrant, other CLECs have started to provide local telephone service. For example, Axxent Corp., (formerly Optel Communications Corp.) competes in 23 local exchanges, Call-Net Communications Inc. in 30, and GT Group Telecom in 12 local exchanges. Currently there is no single CLEC targeting markets in all ILECs' exchanges. A few of them are only targeting markets in a couple of ILECs' exchanges. For example, Call-Net and Axxent are only targeting Bell Canada and Telus exchanges. Even AT&T is not in every ILECs operating territory, (Table 2-1 and Appendix B, Table B-6). In addition to these telecommunications wireline entrants, wireless providers (i.e., Clearnet, Microcell) have registered as CLECs, primarily to be eligible for number portability and the portable contribution.

[5]The framework for local competition was set up in the *CRTC's Telecom Decision 97-8, Local Competition*

Table 2-1

Number of ILEC Exchanges Targeted by CLECs*				
ILECS / CLECs	Manitoba Telephone System (Manitoba)	Aliant Communications (Atlantic Canada)	Telus (British Columbia and Alberta)	Bell Canada (Quebec and Ontario)
AT&T		1	4	11
Axxent			3	20
Call-Net			7	23
GT Group Telecom	1		4	7
Others		3	12	49

*Since many exchanges are targeted by more than one company, the numbers reflect double counting and therefore it is estimated that there are 70 exchanges identified as possible markets by the registered CLECS.
Source: Industry Canada estimates based on CRTC Website.

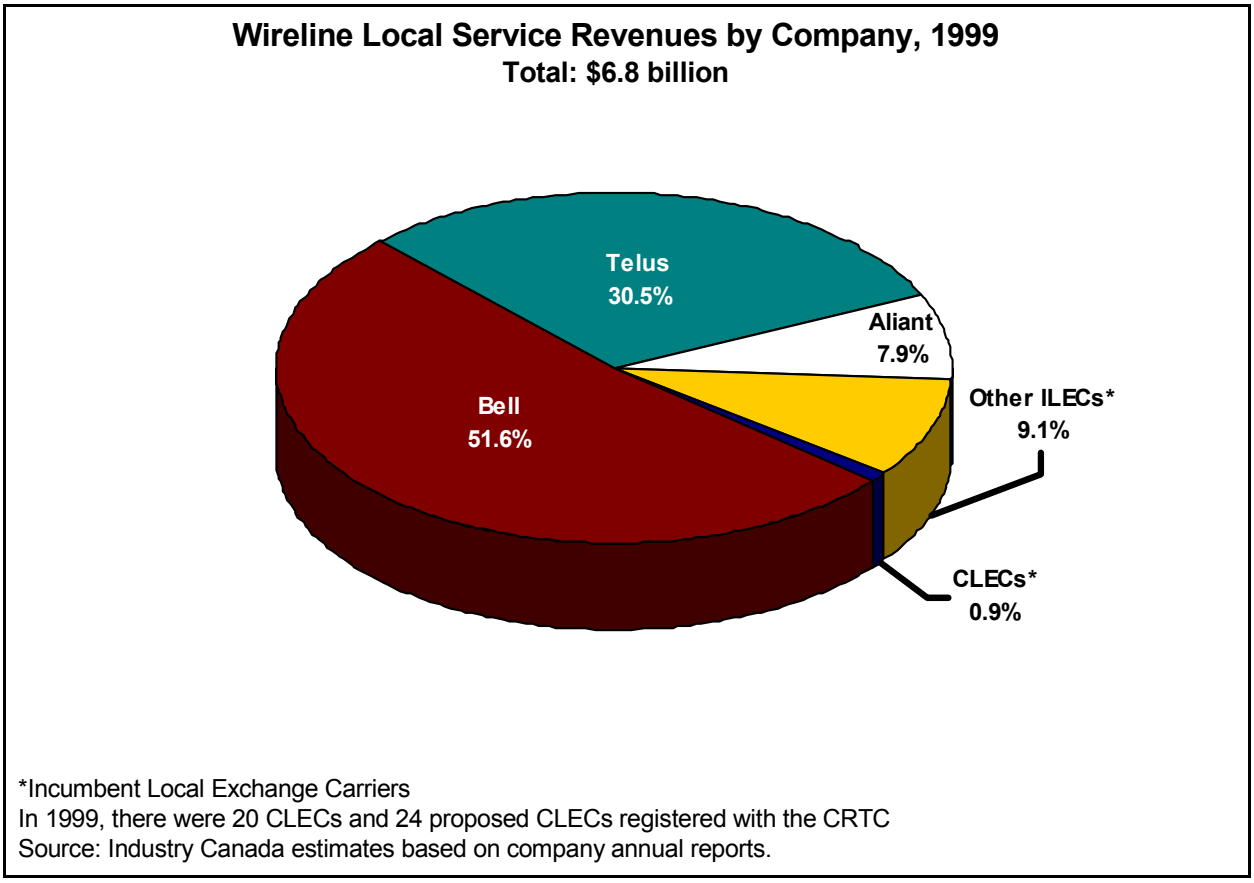
Cable companies have also registered to provide local service in specific regions. The three largest ILEC's they are competing against include: Bell Canada, Aliant, and Telus. In February, 2000 the CRTC granted the large Quebec-based cable operator, Vidéotron ltée, CLEC status, thereby allowing it to offer local telephone services to its residential customers. C1.Communications Inc., (formerly Fundy Cable Ltd.), Cable Atlantic, and Cogeco Cable have also become CLECs, (Appendix B, Table B-6). Telephony service for these customers will be offered via Internet Protocol (IP), rather than conventional switched services. Roger's Cable and Shaw Cable have also made announcements regarding future entry into the local service market.

Consolidation among CLECs is expected. For example, in October 2000, Rogers Communications Inc. purchased 15 to 22 percent of Futureway Communication Inc., an Ontario local service provider. Also in October, 2000 GT Group Telecom Inc. expanded its presence in eastern Canada by purchasing C1 Communications Inc. local telephony business in eastern Canada. C1 Communications Inc. now plans to merge with Montreal based Wispra Networks, taking the name XO Communications Canada.

Wireline Local Service Revenues

Revenues in the wireline local service market reached $6.8 billion in 1999, and were for the most part attributable to the major incumbent and independent telephone companies, (Figure 2-8 and Figure 2-9). The three largest incumbents, Bell, Aliant and Telus in total accounted for 90% of the local wireline revenue. The remaining 10% was split between other ILECs (9.1%), and CLECs (0.9%), (Figure 2-7).

Figure 2-7



*Incumbent Local Exchange Carriers
In 1999, there were 20 CLECs and 24 proposed CLECs registered with the CRTC
Source: Industry Canada estimates based on company annual reports.

Figure 2-8

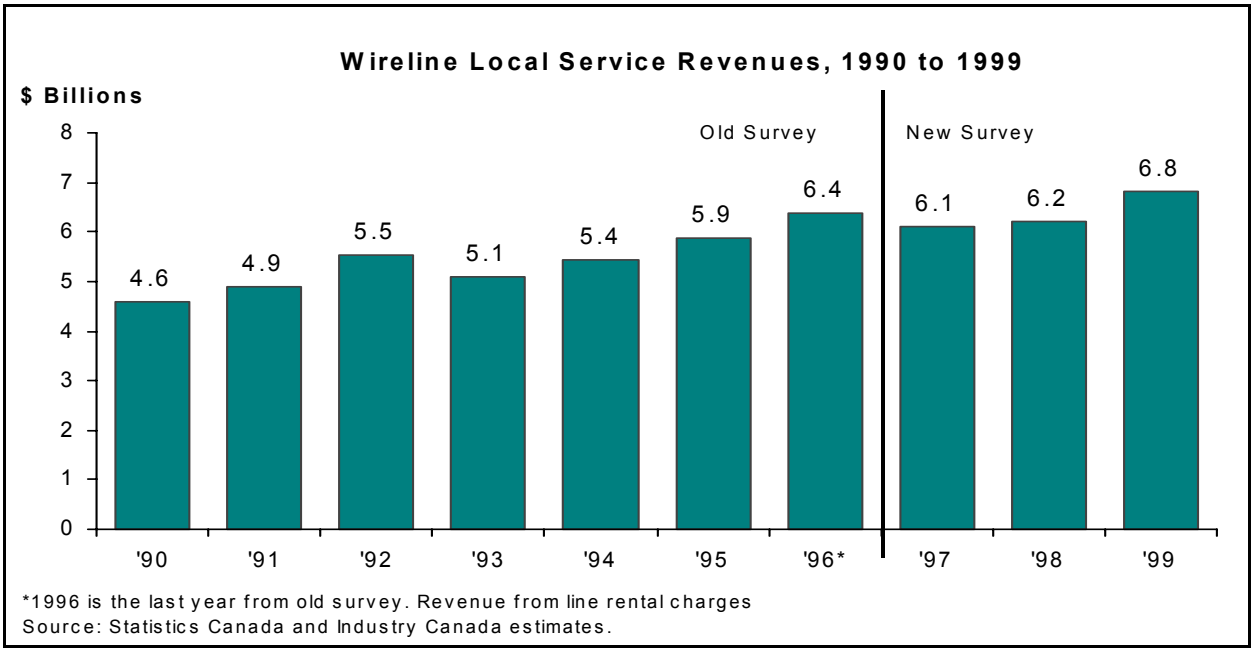
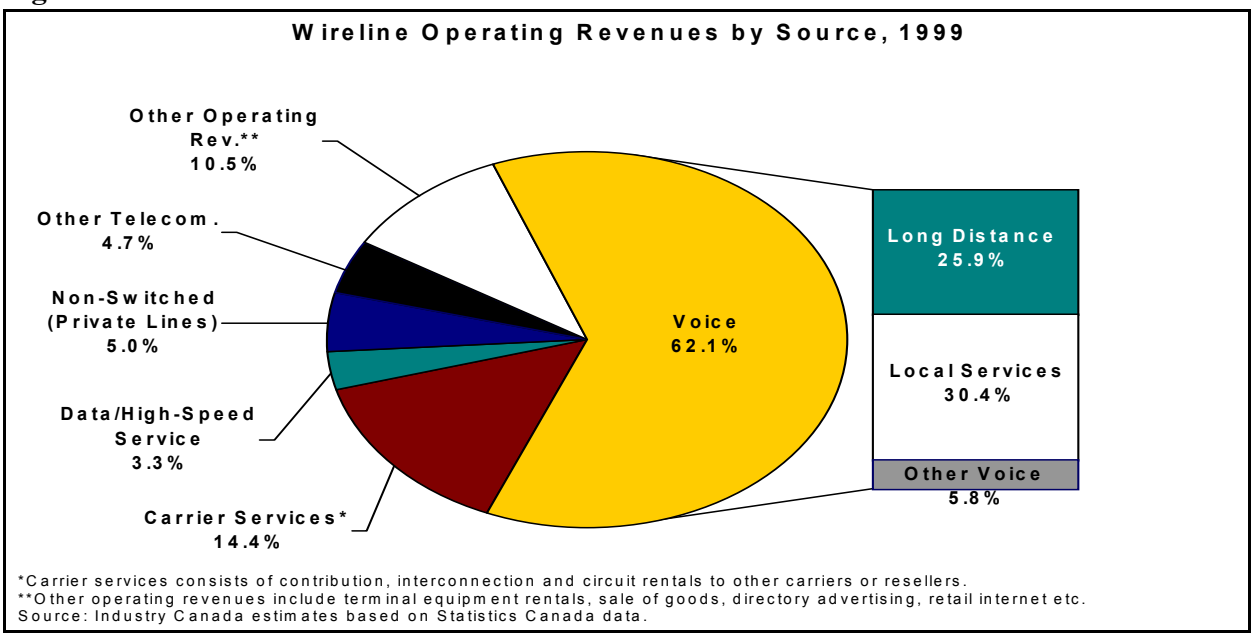


Figure 2-8 shows wireline local service revenue between 1990 and 1999. It shows that between 1997 and 1998 there was an apparent drop in local service revenues but this was due to a redesign of new survey resulting in more detailed responses to the Statistics Canada survey as to what constitutes wireline local service revenues. Local service continued to represent the largest source of revenues for wireline providers at 30.4% ($6.8 billion) in 1999, (Figure 2-9).

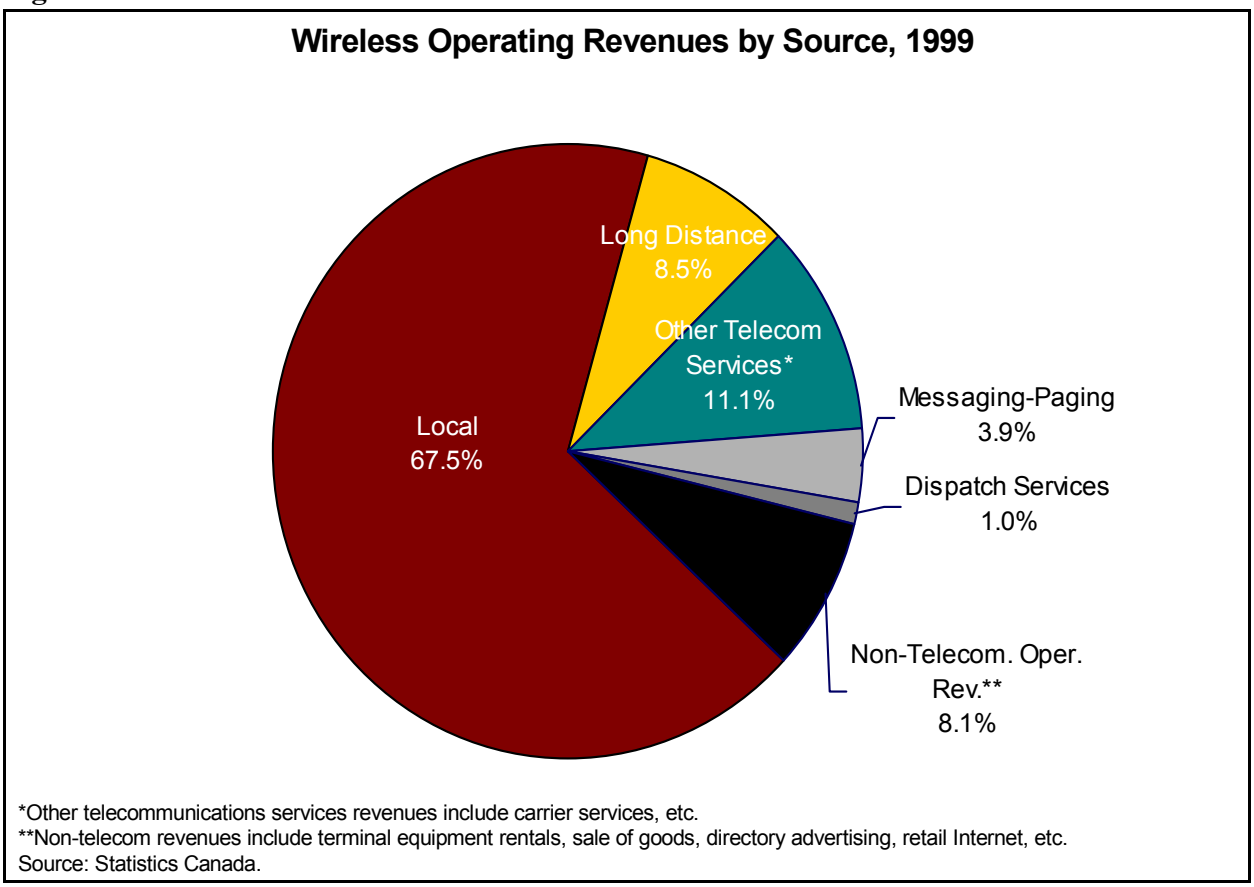
Figure 2-9



Wireless Local Revenues

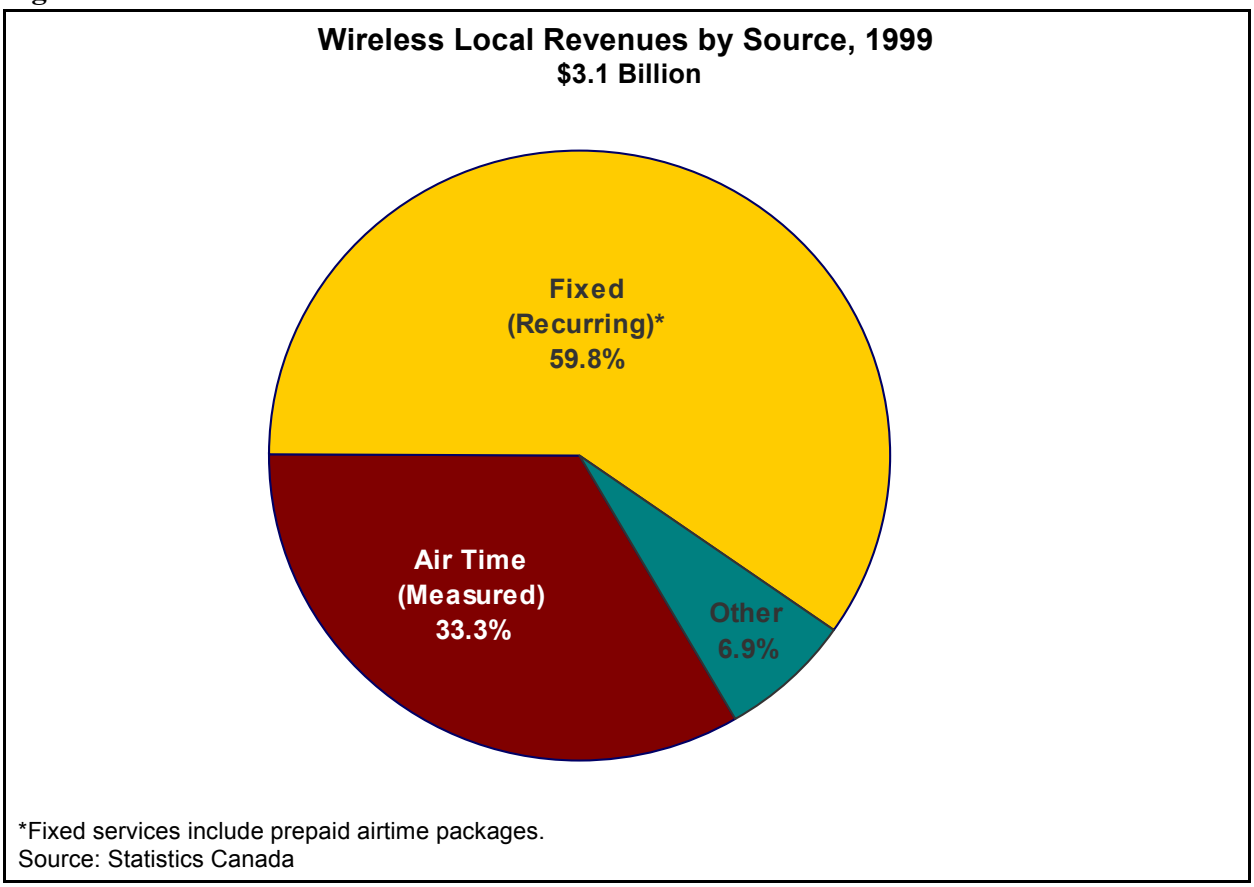
Of the total $4.6 billion wireless telecommunication revenues, local telephony accounted for 67.4% ($3.1 billion) of wireless revenues in 1999, (Figure 2-10).

Figure 2-10



Fixed services (including prepaid airtime packages) were the main source of revenue for local wireless 59.8% ($1.8 billion)[6] of the total. By comparison, air time accounted for 33.3% ($1.0 billion) of local wireless revenues in 1999, (Figure 2-11).

Figure 2-11

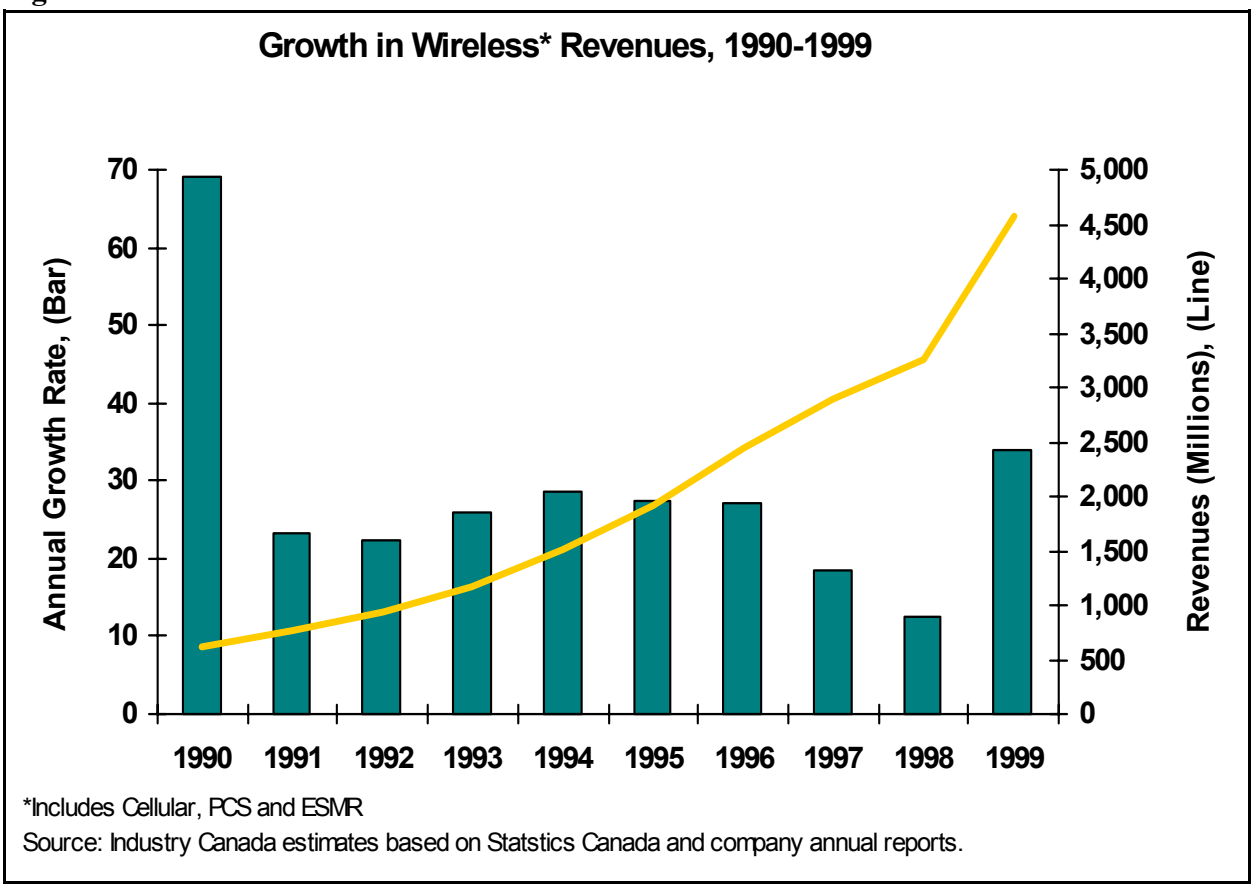


[6]Fixed services are those services which are recurrent, while air time is a measured service.

Traffic

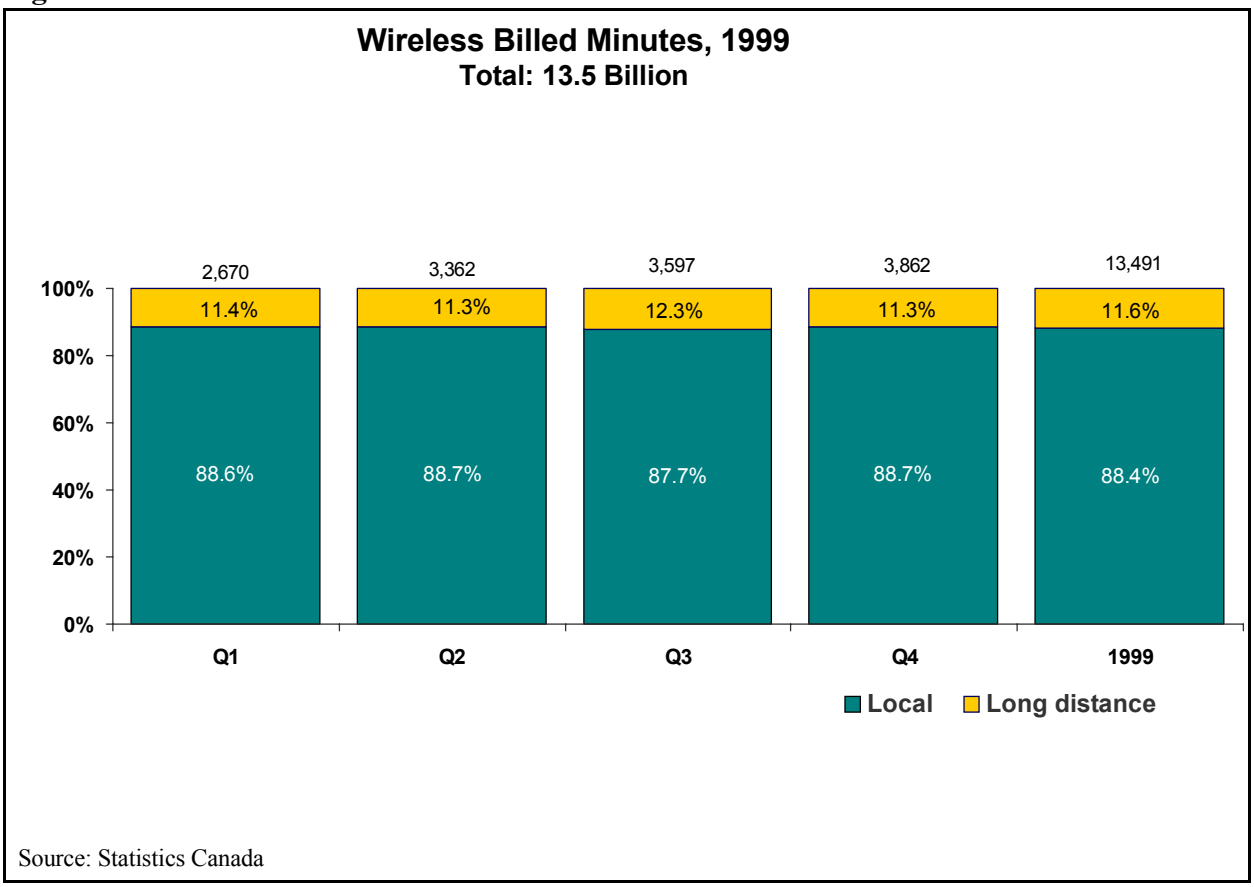
The wireless telecommunications industry demonstrated strong growth in 1999. Cellular revenues have experienced tremendous growth in the 1990s with an average annual growth rate of 29%. Beginning in late 1996, consumer demand has been led by the continued expansion of cellular service areas and the introduction of digital personal communication service (PCS). The addition and increased usage of data services, such as mobile Internet and e-mail, among consumers is expected to continue driving future growth. (Figure 2-12 and Appendix A, Table A-8).

Figure 2-12



Growth in wireless revenues can be attributed to billed minutes, which rose every quarter in 1999, from 2.7 billion minutes in the first quarter to 3.9 billion minutes in the fourth quarter for a total of 13.5 billion[7]. The split between local and long distance has remained constant throughout 1999, (Figure 2-13). The share of long-distance minutes should increase as users become more comfortable with using their wireless phones as their main phones.

Figure 2-13



Source: Statistics Canada

A subset of the billed minutes is outgoing minutes, which is an indicator of wireless use. In 1999, Canadians made 5.5 billion minutes of outgoing calls using wireless networks. Approximately 86% of these calls were local and 14% were long distance. This ratio has remained constant throughout the entire year which suggests that usage by Canadians follows a consistent pattern.

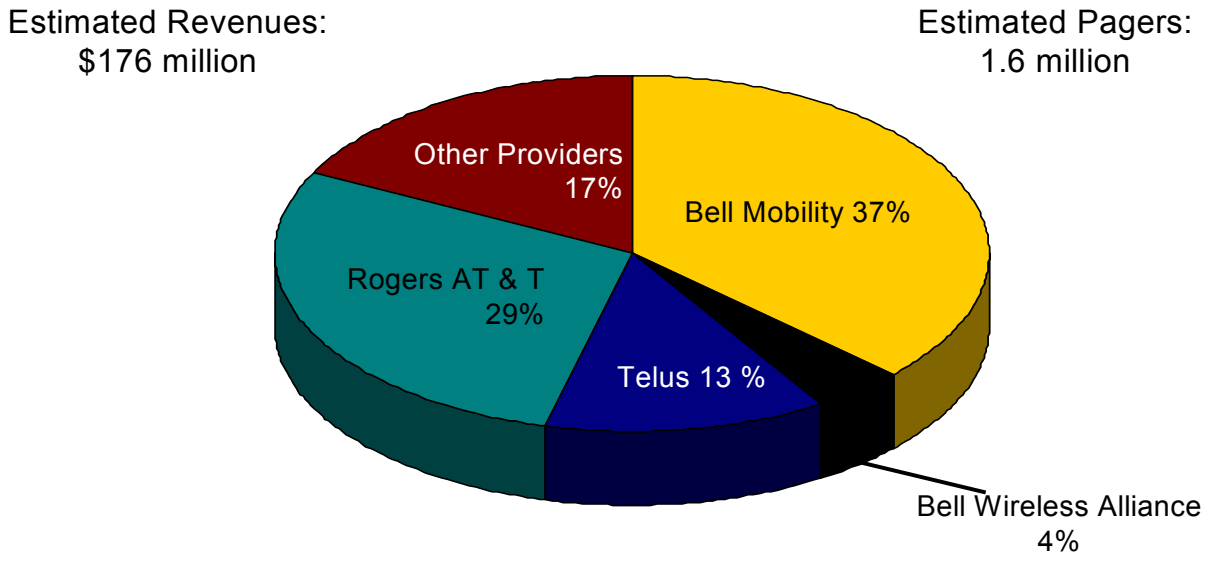
[7]Billed minutes = incoming + outgoing + other minutes.

Paging Market

In 1999, there were approximately 1,619,000 paging services subscribers with estimated paging revenues of $176 million. Since 1997, the paging market has experienced growth of 30% in the number of subscribers. Paging revenues however, have decreased by 14% since 1997, which seems to indicate a decrease in the amount of paging usage. The versatility of the new interactive pagers which allow for sending and receiving e-mails and access to the Internet may signal a future rise in both consumer adoption and usage. Rogers AT&T and Bell Mobility still dominate the market, with Rogers AT&T gaining 9% market shares since 1997 at the expense of other providers, (Figure 2-14).

Figure 2-14

Paging Market Revenues by Service Provider, 1999
(Market share based on number of pagers)



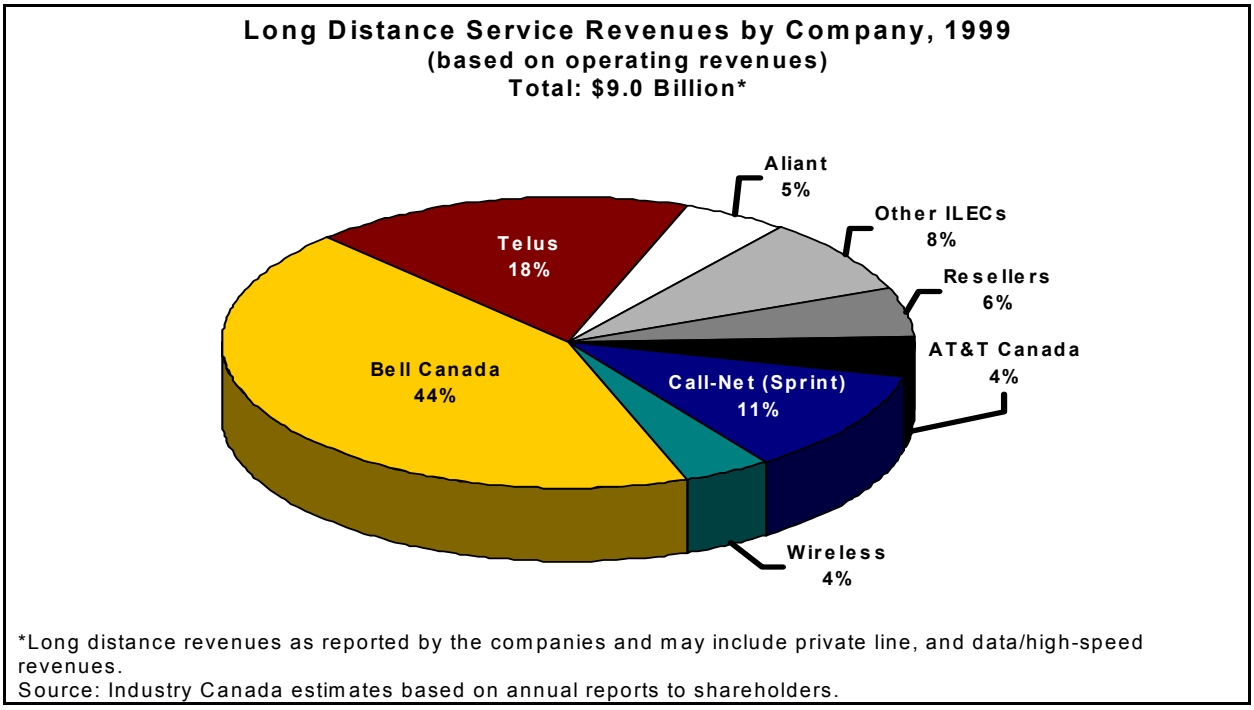
Source: Industry Canada estimates based on data from the Company reports to shareholders.

2.3 LONG DISTANCE MARKET

The market for long distance services have undergone several stages of liberalization going as far back as 1979. In that year, the CRTC eliminated the wireline incumbent carriers' monopoly on leased private lines and ended the monopoly by allowing CNCP (later renamed Unitel; now named AT&T Canada) to offer such services. In 1990, the CRTC began to permit the reselling of long distance voice services[8]. It was in 1992, however, that the biggest step towards competition in the long distance segment occurred, when the CRTC eliminated the incumbent telecommunications carriers' monopoly in the provision of public inter-exchange voice services[9].

The long distance market is composed primarily of revenues earned from the provision of inter-exchange communication services to residential and business customers. These services generated revenues of close to $6.2 billion in 1999. Another way of examining the long distance market is to look at the revenues as reported by the companies, which may also include revenues from the provision of private lines and data/high-speed networking services to business customers. As such, long distance revenues, as reported by the companies, increased from $6.2 billion to $9.0 billion in 1999 (Figure 2-15 and Figure 2-16; Appendix A, Table A-1).

Figure 2-15



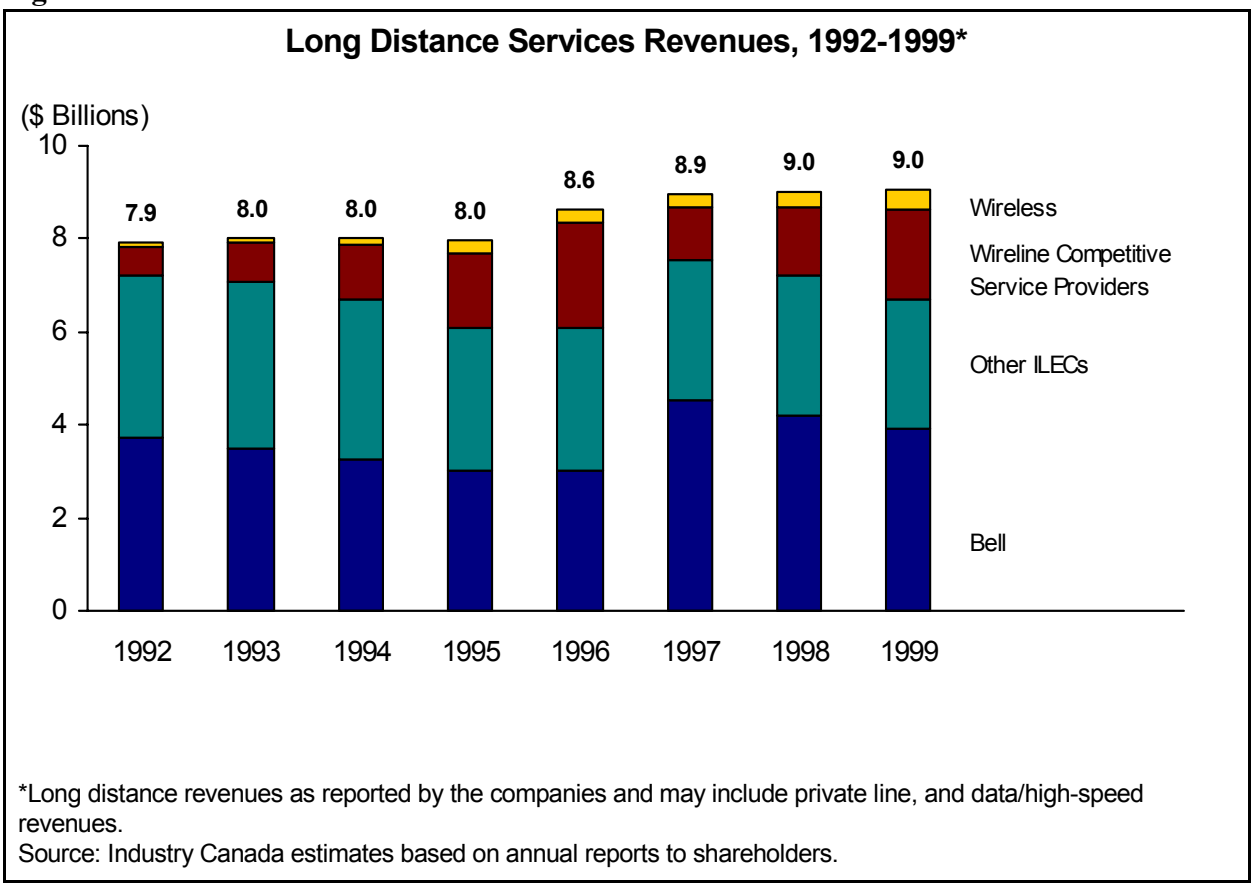
*Long distance revenues as reported by the companies and may include private line, and data/high-speed revenues.
Source: Industry Canada estimates based on annual reports to shareholders.

[8]CRTC Telecom Decision 90-30.

[9]CRTC Telecom Decision 92-12.

Incumbents like Aliant (5%), Bell Canada (44%) and Telus (18%) still control over 67% of the Canadian long distance market. AT&T Canada and Call-Net Enterprises (parent company of Sprint Canada) had approximately 15% of the overall market, which is up from 10% in early 1998. Other wireline-based long distance service providers and resellers accounted for about 14% of the national market while wireless long distance calling accounts for 4%, (Figure 2-15). In 1992, wireline competitive carriers, such as AT&T Canada, Sprint Canada and resellers, accounted for 7% of revenues generated in the long distance segment. In 1999, these same wireline service providers and resellers captured 21% of the market, (Figure 2-16). It is estimated that in Quebec and Ontario Bell Canada accounts for more than two-thirds of the long distance market.

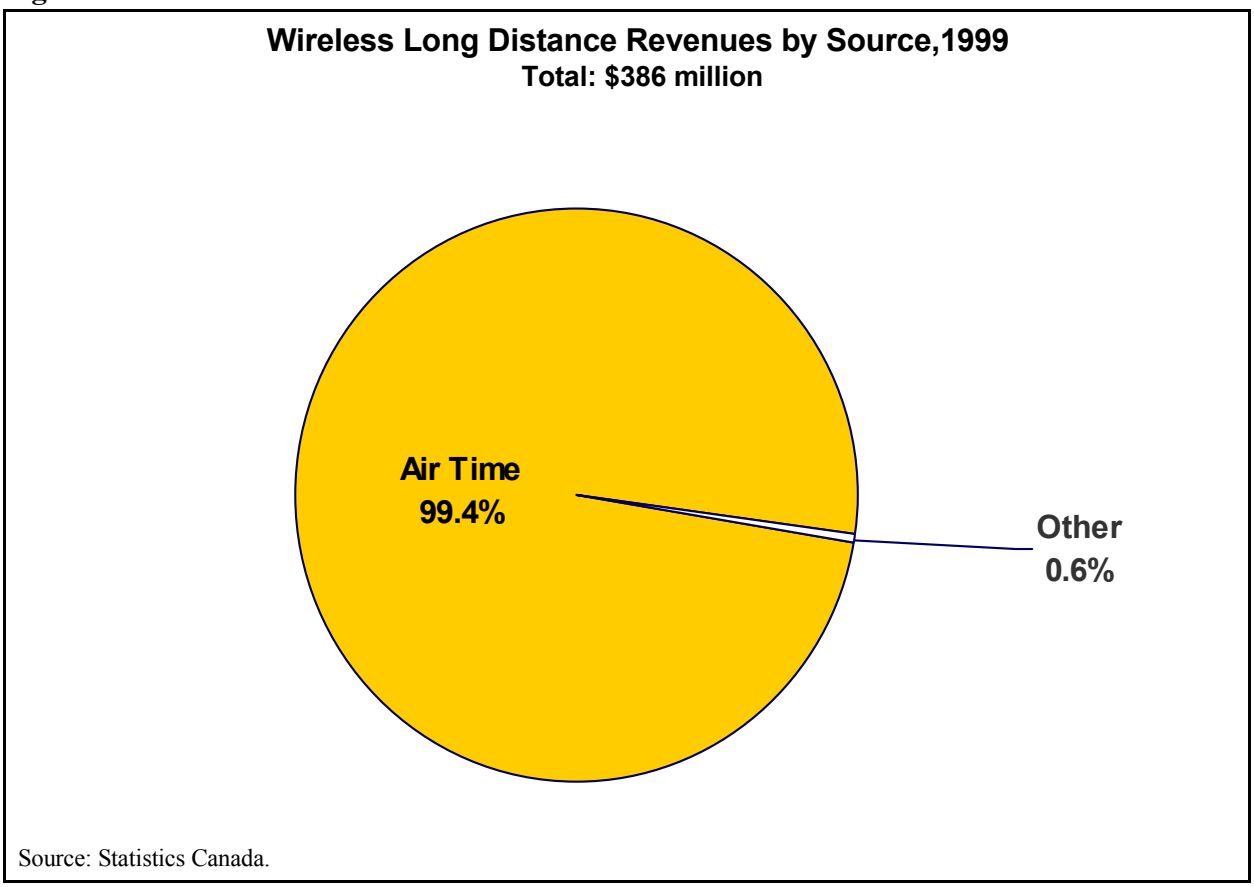
Figure 2-16



*Long distance revenues as reported by the companies and may include private line, and data/high-speed revenues.
Source: Industry Canada estimates based on annual reports to shareholders.

When looking at wireless long distance revenue, airtime (including prepaid services and additional minutes on plans) was the major source of revenues. In 1999, it was 99.4% ($383.9 million) of the total $386 million in wireless long distance revenues, (Figure 2-17).

Figure 2-17



Source: Statistics Canada.

In conclusion, long distance revenues alone do not necessarily reflect the growth of the segment in a thorough manner. With intensifying competition in the long distance market, market prices for the services have dropped significantly while annual revenues have stayed relatively stable. Submissions to the CRTC suggest that minutes of long distance communication have grown on average by 10% per year since 1993. According to submissions to the CRTC, contribution eligible minutes[10] grew by 12% in 1994, 10% in 1995, 4% in 1996, 10% in 1997, and a further 10% in 1998[11].

[10] Contribution eligible minutes underestimate the volume of the long distance traffic since certain types of traffic are excluded, such as data traffic, traffic over direct access lines, and private line traffic, among others.

[11] Based on data compiled by AT&T Canada Corp. as part of comments submitted for Telecom Public Notice CRTC 99-5. Data compiled from CRTC Telecom Decisions 92-12, 93-11, 95-4, 95-21 (BCTel revised), 96-11, 98-2. 1993 data for MTS are estimates based on public sources.

2.4 INTERNATIONAL TELECOMMUNICATIONS MARKET

Prior to 1998, Canada's international telecommunication services market was divided into Canada-U.S. and overseas traffic[12]. Up to, and including 1997, Teleglobe Canada had a monopoly on Canadian overseas telecommunications facilities. In 1996 other companies were permitted to offer overseas service on lines leased from Teleglobe. Teleglobe's monopoly on overseas facilities ended on October 1, 1998.

In addition, the CRTC eliminated restrictions on the routing of traffic and instituted a licensing system for international service providers (facilities-based providers, and resellers). By December 1998, the CRTC had issued 70 licenses for the provision of international telecommunication services. The number increased to 185 licenses as of July 2000, (Appendix B, Table B-1 and Table B-12).

One of the first companies to take advantage of this situation was Call-Net Enterprises Inc. (Sprint Canada). The most recent addition to this specialized group of companies is 360networks. In 1999, Teleglobe was still the largest in terms of revenues, but Call-Net appears to be closing the gap, and 360networks has experienced rapid growth in the past 12 months. (Table 2-2).

Table 2-2

Major Publicly Reporting International Telecommunications Carriers
Year-End Financial Results, 1998 and 1999

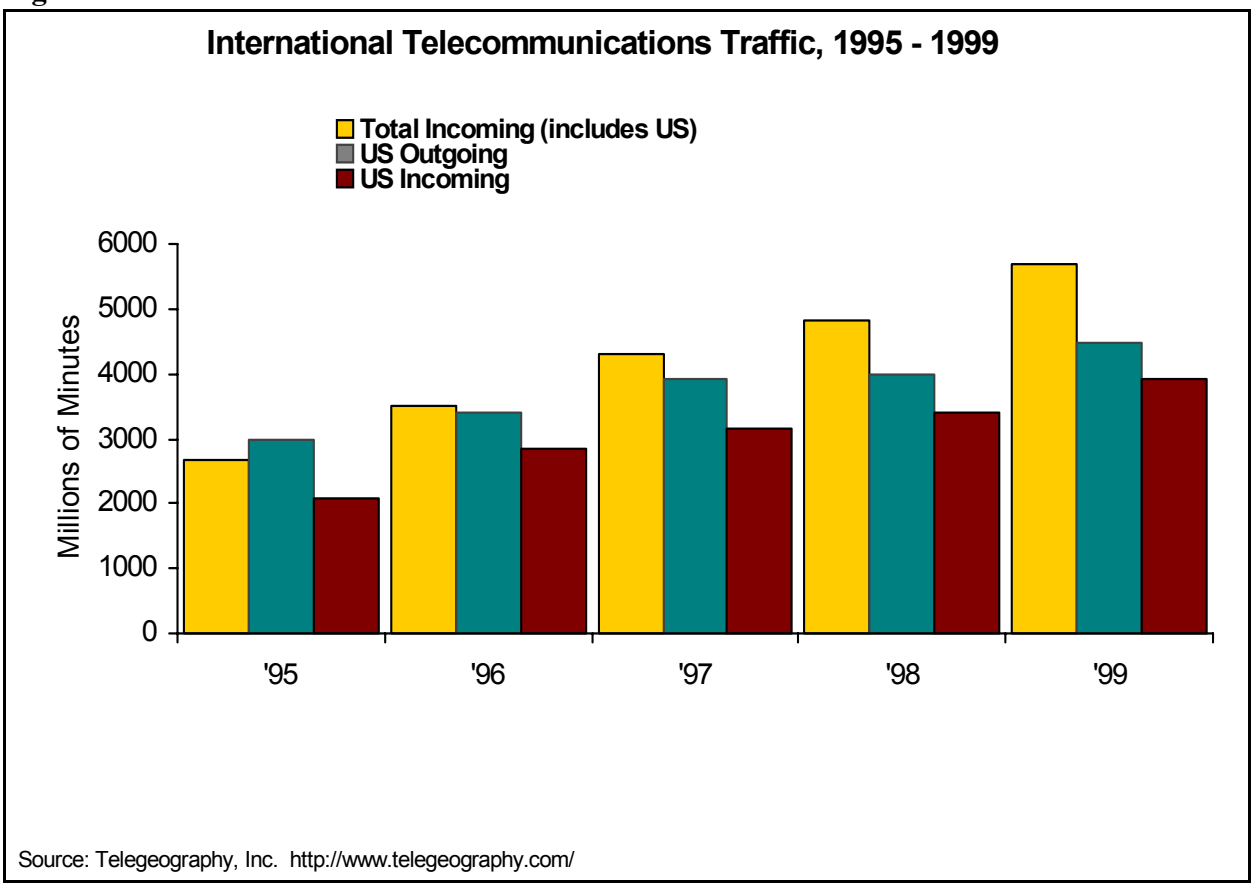
	Year	Revenue	Operating Expenses	EBITDA	EBITDA Margin	Dep. & Amort.	EBIT	EBIT Margin	Net Income	Net Margin	Capital Exp	CFO
Millions of dollars unless indicated otherwise												
Teleglobe Communications Corporation (TCC)	**1998**	1611.2	n/a	n/a	--	79.7	n/a	--	-1	(0.1)%	283.8n/a	
	1999	1417.3	n/a	n/a	--	78.3	n/a	--	116.4	8.2%	412.5	n/a
	12-month change	(12.0)%	--	--	--	(1.8)%	--	--	(11740)%	--	45.3%	--
360networks Inc.	**1998**	24.8	3.4	21.4	86.3%	0.7	20.7	83.5%	13.4	54.0%	n/a	n/a
	1999	161.8	32.4	129.4	80.0%	4.4	125.0	77.3%	35.1	21.7%	n/a	n/a
	12-month change	552.4%	852.9%	504.7%	--	528.6%	503.9%	--	161.9%	--	--	--

Dep. & Amort.-Depreciation and Amortization Expense; EBITDA-Earnings Before Interest, Taxes, Depreciation and Amortization; EBIT-Earnings Before Interest and Taxes; Capital Exp.-Capital Expenditures; CFO-Cash Flow from Operations; n/a not available; -- not applicable;
Source: Public financial statements

[12] As of October 1, 1998, the distinction between the overseas and the Canada-U.S. telecommunications markets ended. As of that date, a common set of rules began to apply to international telecommunications service, irrespective of the country involved in the transmission.

Figure 2-18 shows that outgoing traffic has always been larger than incoming traffic. There has also been an increase in level of traffic over the entire period.

Figure 2-18



Like the long distance segment, the overseas telecommunications segment has experienced much change due primarily to two factors: technological improvement and competition. Technological improvement has made transmission infrastructure more efficient. Competition and industry liberalization have diminished a system whereby many countries charged high rates in the international segment. However, the trend has been to gradually decrease these previously high rates.

3.0 COMMUNICATION PATHS AND CONVERGENCE

The Teledensity Indicator

The number of main lines per 100 inhabitants, or teledensity, has traditionally been used as an indicator of a country's telecommunications network's deployment and the degree to which its households and businesses are connected to that network. In its original version, this indicator provided a measure of the development of the wireline public switched telephone network (PSTN)[1] in a specific country or region. In Canada, it has been the custom to publish the number of PSTN residential and business individual access lines per 100 inhabitants.[2]

The definition of the teledensity indicator was modified in the 1990's to reflect the introduction and importance of wireless access. The indicator was broadened to include mobile (wireless) subscribers to the PSTN in addition to residential and business wireline access.[3] The fast growth in the number of mobile (wireless) subscribers explains a large proportion of the growth in teledensity in the 1990's, but wireline teledensity continues to grow as well.

In Canada, there were 67.1 PSTN residential and business wireline access lines per 100 inhabitants as of June 2000. The corresponding teledensity indicator of mobile (wireless) subscribers was 25.1. Total teledensity reached 92.1 access lines per 100 inhabitants, (Figure 3-1). Figure 3-1 shows the evolution of teledensity in Canada over time. It has increased significantly from 1990 (57.3 access lines per 100 population) to 2000 (92.1 access lines per 100 inhabitants).

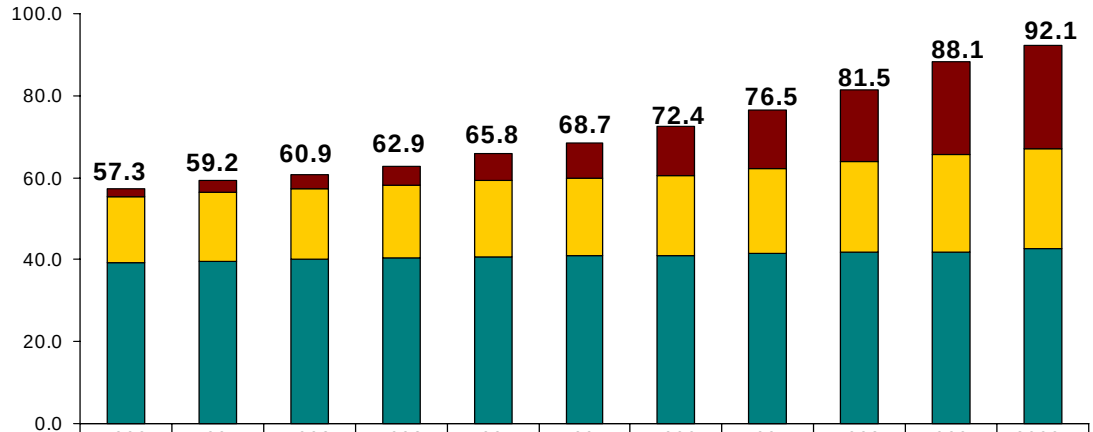
[1] Public Switched Telephone Network (PSTN) is defined by Statistics Canada (STC) as, "the world wide dial-up network (switching, circuits, transmissions and access services) or a portion of that network, used to establish voice and non-voice (text, audio or data) communications carried over a path initially established using normal telephone signaling and ordinary switched long-distance telephone circuits."

[2] PSTN individual access line is defined by STC as, "a subscriber line arranged to service one main telephone. This includes private branch exchange (PBX) lines for businesses that have corresponding dedicated ports in the telephone exchange equipment."

[3] International Telecommunications Union (ITU), "World Telecommunications Development Report," and Organization for Economic Development and Co-operation (OECD), "Communications Outlook," and Statistics Canada, "Quarterly Telecommunications Statistics".

Figure 3-1

Teledensity
PSTN Wireline Access Lines & Mobile (Wireless) Subscribers
(per 100 population)



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999*	2000*
Wireless	2.1	2.8	3.6	4.6	6.4	8.8	11.8	14.2	17.7	22.7	25.1
Business	16	16.8	17.2	17.8	18.6	18.9	19.6	20.8	22.1	23.7	24.5
Residential	39.2	39.6	40	40.4	40.8	40.9	41	41.5	41.7	41.8	42.6

*As of June, 2000. Data for 1999 and 2000 are preliminary based on quarterly reports.
Source: Statistics Canada.

Other measures of teledensity are the PSTN residential access lines per 100 households and PSTN business access lines per 100 persons employed.[4] In Canada, teledensity, using all these indicators, has increased over time, (Figure 3-1 and Table 3-1).

Table 3-1

Other Teledensity Indicators	1994	1995	1996	1997	1998	1999*	2000*
PSTN residential access lines per 100 households	110.6	110.5	110.2	110.8	110.8	110.3	112.0
PSTN business access lines per 100 persons employed	50.8	51.1	53.0	55.1	57.6	61.1	60.3

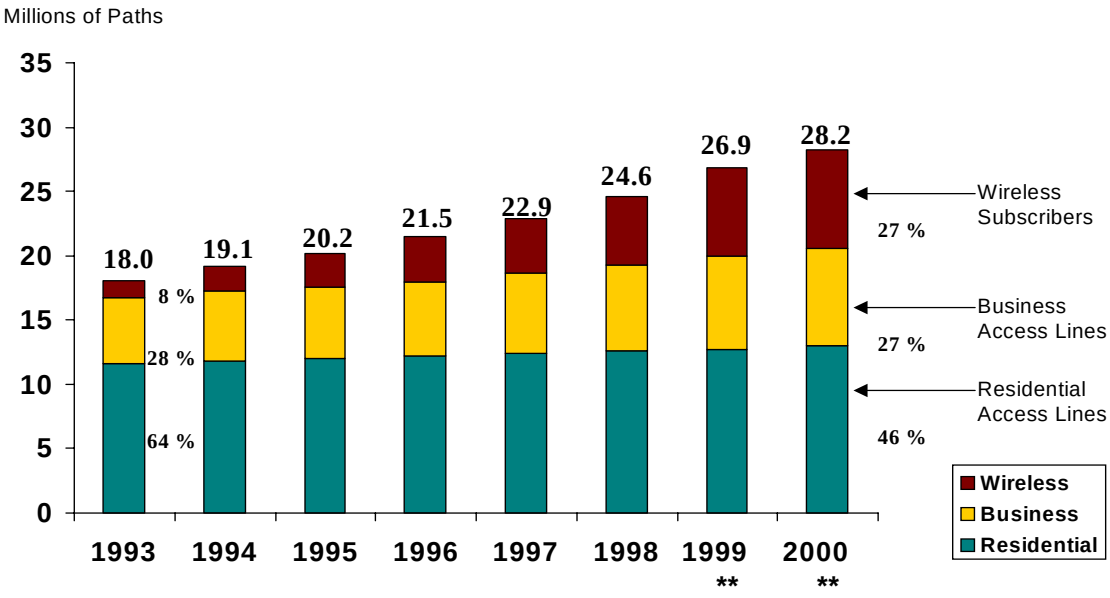
*As of June, 2000. Data for 1999 and 2000 are preliminary based on quarterly reports.
Source: Statistics Canada

[4] PSTN individual access line is defined by STC as, "a subscriber line arranged to service one main telephone. This includes private branch exchange (PBX) lines for businesses that have corresponding dedicated ports in the telephone exchange equipment."

Wireline and Wireless Access in Canada - An Historical Perspective

At the end of 1993, there were an estimated 18.0 million PSTN wireline access lines and mobile (wireless) subscribers. This increased to 26.9 million at the end of 1999 and to 28.2 million by June 2000, (Figure 3-2).

Figure 3-2



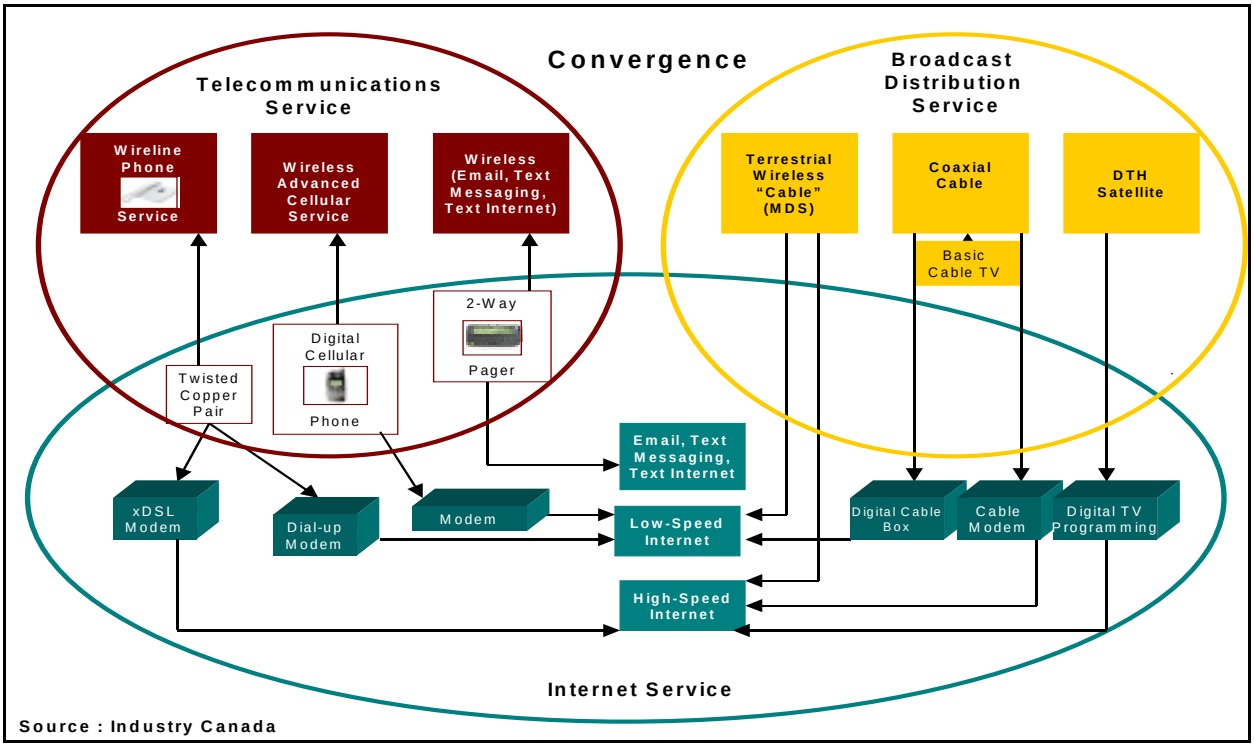
*Wireline access paths are in voice grade equivalents, (B-channel equivalents).
**As of June 2000. Data for 1999 and 2000 are preliminary based on quarterly reports.
Source: Statistics Canada

The share of residential wireline access lines declined from 64% of the total in 1993 to 46% in June 2000, while the share of business wireline access lines remained stable at 27%. The largest change has been in wireless subscribers's share which increased from 8% in 1993 to 27% in June 2000, (Figure 3-2).

The Need to Enhance the Teledensity Measure

Teledensity, the traditional measure of overall telecommunications development, should perhaps be reviewed given that rapidly changing technology has created many more means by which electronic communications takes place. One could see *communication paths* as perhaps an extension of the concept of teledensity which would include the following: wireline access lines, wireless access, and Internet access through different technologies, including dial-up (telephone) Internet access, digital subscriber line (DSL)[5] and cable Internet access (cable modem), (Figure 3-3 and Table 3-2). Figure 3-3 depicts the different types of two-way communication paths available today and the different types of suppliers providing access to these paths.

Figure 3-3



The use of Internet has grown considerably in recent years. In 1999, 28.7% of households (3.3 million connected households) had Internet access at home.[6] Some of these households subscribe to low-speed Internet access and others to high-speed Internet access. It is estimated that as of December 2000, there were more than 1.3 million subscribers to high-speed Internet in

[5]DSL is a modem technology that provides greater bandwidth (speed) from copper telephone lines. The most commonly used application of this is asymmetrical digital subscriber line, or ADSL.

[6]The Daily,"Household Internet Use", May 19 2000, Statistics Canada.

Canada, 917,000 of them to cable modem service and about 500,000 to ADSL service. Despite their growing importance, these connections or communication paths are not included in the traditional measure of teledensity at this point in time.

While most mobile wireless providers in Canada now offer low-speed Internet access on specialized handsets, using technologies such as Wireless Application Protocol (WAP), other two-way communication paths are being introduced on a trial or limited basis in Canada. These include two-way pager (such as RIM and Blackberry), Internet access via direct-to-home satellite (DTH) or multi-point distribution system (MDS). Some of these communication paths will require the purchase of additional equipment in order to offer alternative ways to access the Internet, (Figure 3-3 and Table 3-2). As these newer forms of Internet access become more prevalent in the market and data are collected, these communication paths should be included in the calculation of teledensity.

Table 3-2

Convergence

The convergence of traditional telecommunications broadcasting distribution media is most apparent in the area of high speed Internet access. In Canada some of the largest ISPs are also telecommunications service providers, for example Bell Canada owns Bell Sympatico, which provides both dial-up, low speed Internet access over traditional copper networks as well as 'always on', high speed access using ADSL over these same copper networks. Similarly, most of the larger cable television companies are offering high speed Internet access over these cable television networks, for example, Rogers Cable also provides Rogers@Home service. As well as by these now traditional means, Internet access can now be secured via satellite and terrestrial wireless means.

Telecommunications Service & Internet Access

As outlined in Figure 3-3, wireline phone service is provided through twisted copper pair telephone line or access line. It provides two-way communication. If this telephone service is combined with a dial-up modem then customers can further subscribe not only to two-way phone service but also to two-way low speed Internet service through a computer terminal using up to a modem, for which the current technology has a limit of 56K/sec. If the service provider has made the necessary improvements to its switching and network, the high speed access can be achieved through digital subscriber line technology, most commonly on a asynchronous basis (hence ADSL), that is, with upstream capacity being much slower than the downstream.

Many PCS providers have now begun to offer low speed Internet access on specialized web-enabled handsets. While these speeds are currently very slow, the General Packet Radio Services (GPRS) now being deployed will improve access speeds.

Some interactive pagers can provide portable two-way communication, such as sending and receiving e-mails, access to the Internet, as well as information from a personal computer (PC) or laptop.

Table 3-2 (Cont'd)

Convergence (Cont'd)

Broadcast Distribution Services and Cable Internet Access

Basic cable television service is provided through coaxial cable[7], in networks originally configured to be only uni-directional. Most of Canada's large cable companies have improved their networks to allow two way Internet access at high speeds. In order to achieve this a cable subscriber needs to pay an additional amount, and buy, or rent, a cable modem. Some cable companies have made additional investments to make their networks fully digital, principally to increase overall channel capacity. However, some of these digital cable boxes also permit the user to have low-speed Internet access by means of a wireless keyboard using the television set as a monitor. This low-speed Internet access service also referred to as interactive TV or WebTV is mainly provided by Rogers in Ontario and British Columbia to certain of its subscribers.

Direct-to-home (DTH) satellite television service, presently provided by Bell ExpressVu and Star Choice, provides television programming services similar to those provided by cable companies. With additional equipment, high speed Internet access is also available from ExpressVu under the trade name DirecPC. High-speed wireless Internet access is provided via satellite with download speeds of up to 400 kbps, with the uplink provided via telephone lines. Services now being developed commercially will permit both the uplink and the downlink to be done via the satellite, that is, without the use of the phone line.

Another new technology now being deployed is multi-point distribution system (MDS) service which provides television programming services comparable to cable and DTH via terrestrial wireless technology. With additional equipment, this MDS technology can also provide high speed Internet service. LookTV offers dial-up asymmetric high speed Internet access (i.e., uplink via a telephone and downlink via wireless). LookTV recently conducted two-way high-speed Internet access trials. Sky Cable and Image Wireless have rolled out similar services.

It is proposed here to group existing and newer communication paths into a single indicator because they all share one basic characteristic, that of allowing the user to enter into two-way communication. It is not suggested that access to broadcast distribution services, such as basic cable television, be included because such types of access do not offer interactivity.

The following provides more detailed information on the various types of two-way communications paths and the view is that it should be considered for inclusion in the traditional teledensity measure. The objective is to show how the inclusion of these various communication paths would enhance the analytical value of the traditional teledensity indicator. It is recognized that it will take some time before complete and unduplicated statistics are available to construct the new indicator, but it is hoped that the information and arguments presented here will favour an informed discussion on the merits of this proposal.

[7]Basic service refers to those services provided on a non-discretionary basis, to all subscribers, upon payment of a single monthly fee.

3.1 WIRELINE ACCESS LINES[8]

As noted in Table 3-3 wireline access paths consist mainly of individual telephone lines, party lines, Integrated Service Digital Network (ISDN), centrex and public phones.

Table 3-3

**Wireline Access Paths*
Second Quarter, 2000**

Type	Residential	Business	Total
Individual	12,432,199	3,210,367	15,642,566
Party Line	95,496	1,572	97,068
ISDN	610	836,177	836,787
Centrex	na	2,418,629	2,418,629
Public Phones	na	175,905	175,905
Other	528,613	862,647	1,391,260
Total	**13,056,918** (63.5%)	**7,505,297** (36.5%)	**20,562,215** (100%)

*Wireline access paths are in voice grade equivalent,(VGE) or B-Channel equivalent.[9]
Data for second quarter 2000 are preliminary based on quarterly reports.
Source: Statistics Canada

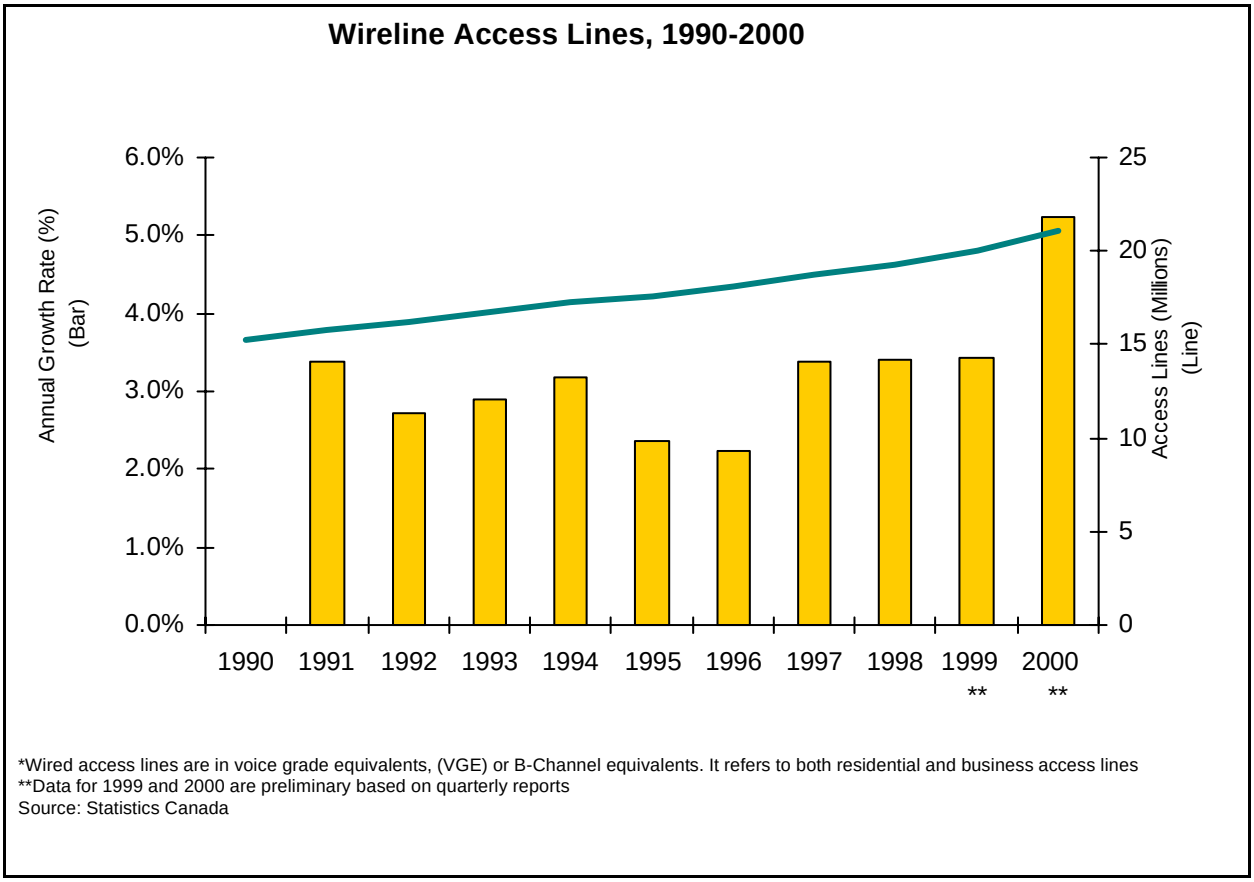
Residential wireline access lines accounted for 13.1 million (63.5%) of the total 20.6 million wireline access lines in June 2000. Business wireline access paths accounted for the remaining 36.5% or 7.5 million lines, (Table 3-3, Appendix A, Table A-6).

[8]This section only discusses wireline access lines. Wireless access paths are discussed in the following section.

[9]Voice grade equivalent (VGE) has been increasingly used to reflect the different carrying capacity of different access paths. For example, a single ISDN line, can carry the same amount of voice traffic as 23 individual voice lines.

Since 1988, there has been a constant growth in number of residential and business wireline access paths although growth rates have varied, (Figure 3-4, Table 3-4 and Appendix A, Table A-6).

Figure 3-4



The wireline access paths continue to grow. Residential wireline access paths increased from 12.7 million in December 1999 to 13.1 million (2.5%) as of June 2000. Similarly, business wireline access paths increased from 7.2 million in December 1999 to 7.5 million (3.9 %). In total, wireline access paths was 20.6 million, an increase of (3.0 %) since December 1999 and a 5.0% growth since June 1999. This is a strong growth given most would consider wireline access paths to be a mature market segment. Most of the growth though can be attributed to business access lines, (Table 3-4).

Table 3-4

Growth in PSTN* Wireline Residential and Business Access Lines 1988 to 1999

Year	Residential Lines		Business Lines		Local Access Lines	
	Number (000)	Annual % Change	Number (000)	Annual % Change	Number (000)	Annual % Change
1988	10,228	--	3,748	--	13,976	--
1989	10,578	3.4%	4,070	8.6%	14,648	4.8%
1990	10,866	2.7%	4,430	8.8%	15,296	4.4%
1991	11,109	2.2%	4,706	6.2%	15,815	3.4%
1992	11,354	2.2%	4,893	4.0%	16,247	2.7%
1993	11,607	2.2%	5,110	4.4%	16,717	2.9%
1994	11,840	2.0%	5,411	5.9%	17,250	3.2%
1995	12,012	1.5%	5,556	2.7%	17,567	1.8%
1996	12,162	1.2%	5,812	4.6%	17,974	2.3%
1997	12,430	2.2%	6,229	7.2%	18,660	3.4%
1998	12,602	1.4%	6,692	7.4%	19,294	3.4%
1999	12,737	1.1%	7,219	7.9%	19,957	3.4%
Period Change 1988 - 1999	2,509	24.5%	3,471	92.6%	5,981	42.8%
CAGR** 1988 to 1999	2.0%	--	6.1%	--	3.3%	--

*PSTN- Public Switched Telephone Network
**CAGR- Compound Annual Growth Rate
Source: Statistics Canada

3.2 WIRELESS SUBSCRIBERS

Most people today think of cellular when referring to wireless phone service. Not all are aware that there are many kinds of mobile phone services, driven by different technologies that operate in various frequency bands. In addition to cellular and digital cellular service in the 800 MHz band, enhanced specialized mobile radiotelephony (ESMR) and Personal Communications Services (PCS) also exist and operate in the 800 MHz and 1.9 GHz frequency bands respectively. In Canada, these services use many basic types of technology consisting of Advanced Mobile Phone Service (AMPS), Code Division Multiple Access (CDMA), Time Division Multiple Access (TDMA) and Global Systems Mobile (GSM) depending on the service provider they choose.

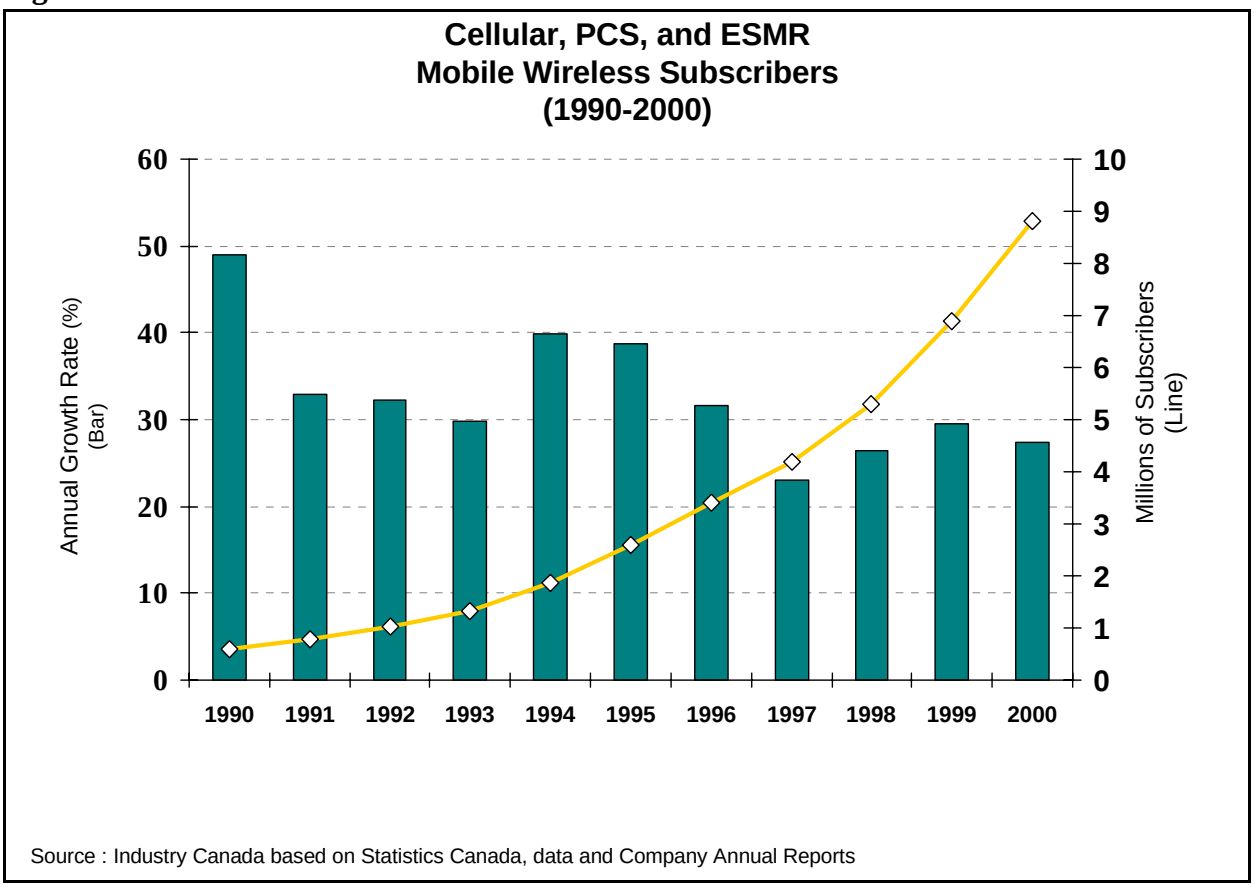
In the mobile world, new services and communication paths, such as mobile Internet access and fully functional remote e-mail, are driving the marketplace. In the fixed services area, the implementation of wireless communication paths, such as high-speed Internet access to businesses and consumers, will have a significant impact in the near future.

The wireless industry in Canada consists of not only cellular/PCS service but also paging, high-speed fixed wireless, and satellite services and communication paths. In addition, hand held interactive pagers offered by various companies defy strict categorization, providing portable two-way communication allowing access to e-mails, personal information on a laptop, Internet service and traditional paging.

Mobile phone service is the largest portion of the Canadian wireless market. ESMR provides half-duplex dispatch service as well as access to the PSTN and is provided by the former Clearnet, now Telus Mike service, while a similar service exists with Telus Tango in Alberta. Digital cellular and PCS enables both voice and limited data services such as e-mail recognition, call display, and access to the Internet through web-enabled handsets, which cannot be provided by traditional analogue cellular.

At the end of 2000, there were 8.8 million Canadian mobile (wireless) subscribers or approximately 28.4% of the population were mobile (wireless) subscribers, (Figure 3-5). This rate represents an increase of 2.0 percentage points since the third quarter of 2000, which is one of the largest recorded quarterly increases to date. Between 1996 and 2000, the number of cellular and PCS subscribers more than doubled from 3.4 million to 8.8 million representing an annual growth rate of 26.8%, (Figure 3-5). The introduction of pre-paid pricing packages and declining prices have contributed to the increased popularity of mobile wireless services in the past two years.

Figure 3-5

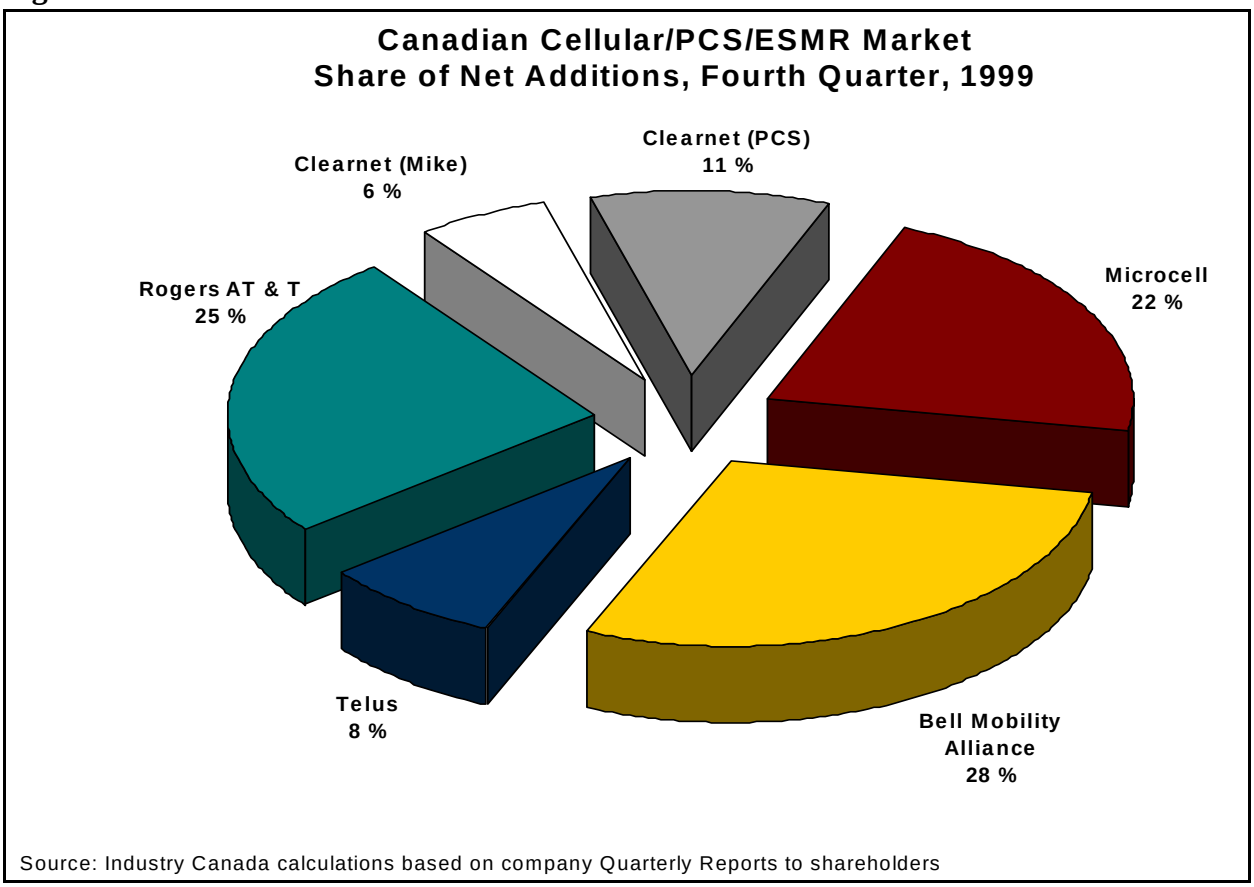


Source : Industry Canada based on Statistics Canada, data and Company Annual Reports

More specifically, pre-paid service, first introduced in late 1998, enables consumers to have wireless on their terms, meaning control over air time usage by allowing customers to pay for cellular service in advance without the need for signing contracts with long term commitments. It is aimed at broadening the availability and affordability of cellular service and communication paths. The lack of a required long term commitment has also increased the number of subscribers switching from one service provider to another, thus fuelling additional competition between service providers.

Microcell and Clearnet were licensed in 1995 for PCS service and have made substantial gains in attaining market shares for new subscribers, creating an increasingly competitive environment as demonstrated by their respective 22% and 17% share of fourth quarter 1999 net additions, (Figure 3-6).

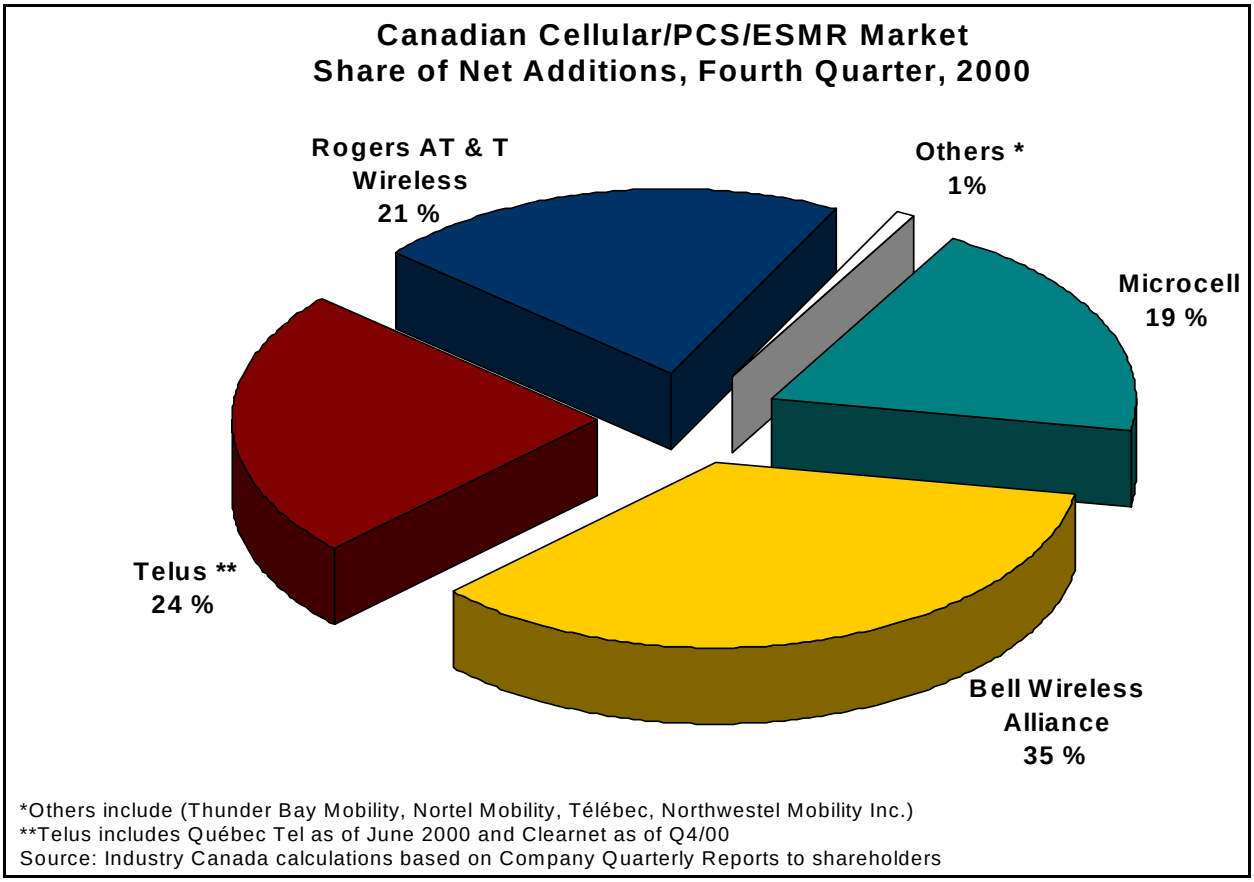
Figure 3-6



Source: Industry Canada calculations based on company Quarterly Reports to shareholders

At the end of year 2000, Bell Wireless Alliance dominated with 35% of the net additions, while Telus captured 24% of the fourth quarter 2000 net additions, (Figure 3-7).

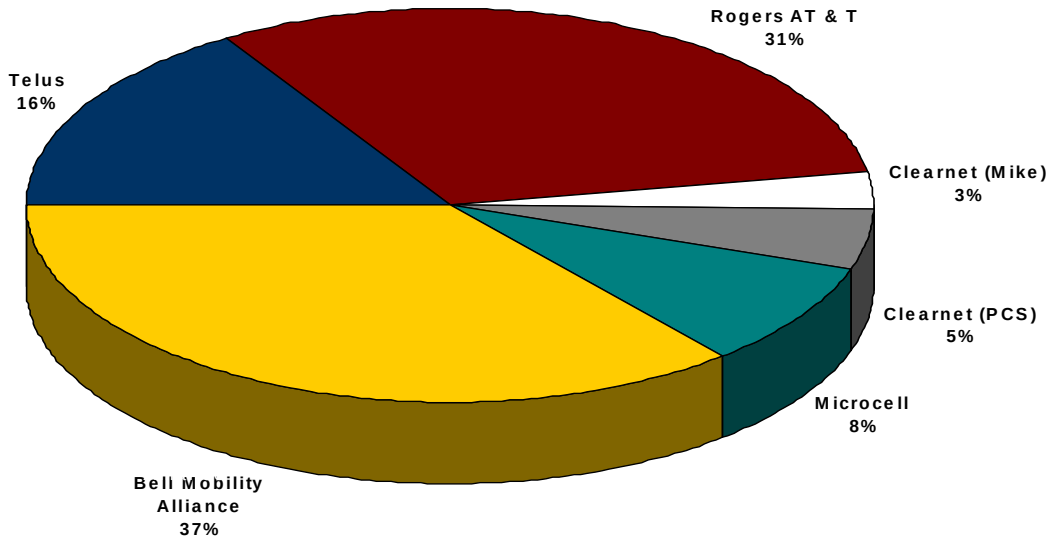
Figure 3-7



The competitive market has led to a widespread rollout of Cellular service, which is now available to over 94% of the Canadian population, while 88% have access to a digital cellular network. PCS service is not as pervasive as analogue cellular, covering over 50% of the population, yet, service areas continue to be expanded by the industry.

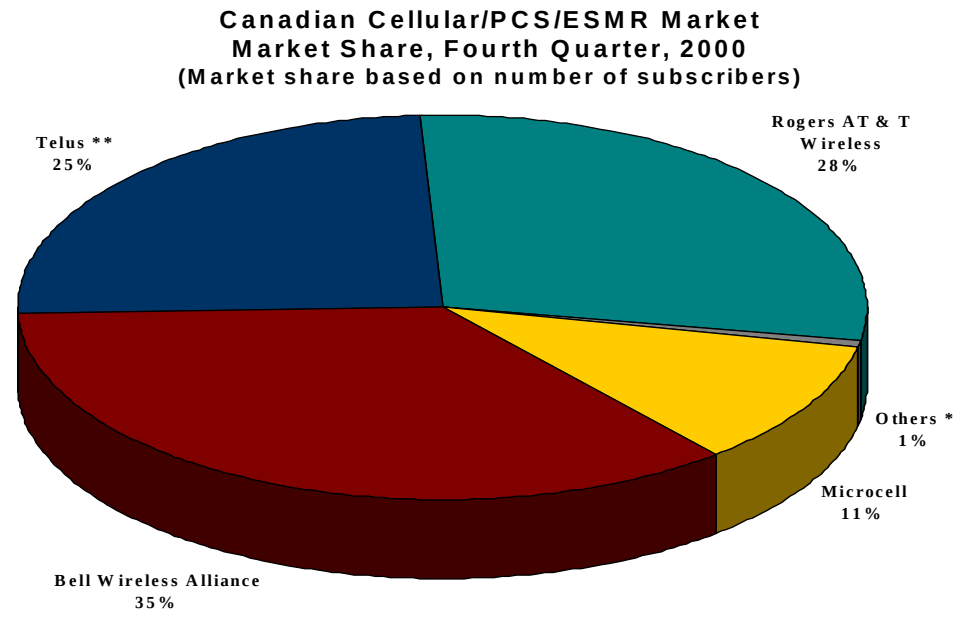
In terms of market shares for total number of subscribers, the Bell Wireless Alliance, (35%) and Rogers AT&T Wireless (28%) were still the largest wireless service providers for year end 1999 and 2000, (Figure 3-8 and Figure 3-9). Telus (25%) has gained total subscriber market shares over the past year due its acquisition of Clearnet in October of 2000. In addition, Microcell (11%) also gained market shares in the fourth quarter 2000, with a three percentage point increase over fourth quarter 1999.

Figure 3-8



Source: Industry Canada calculations based on Company Quarterly Reports to shareholders

Figure 3-9

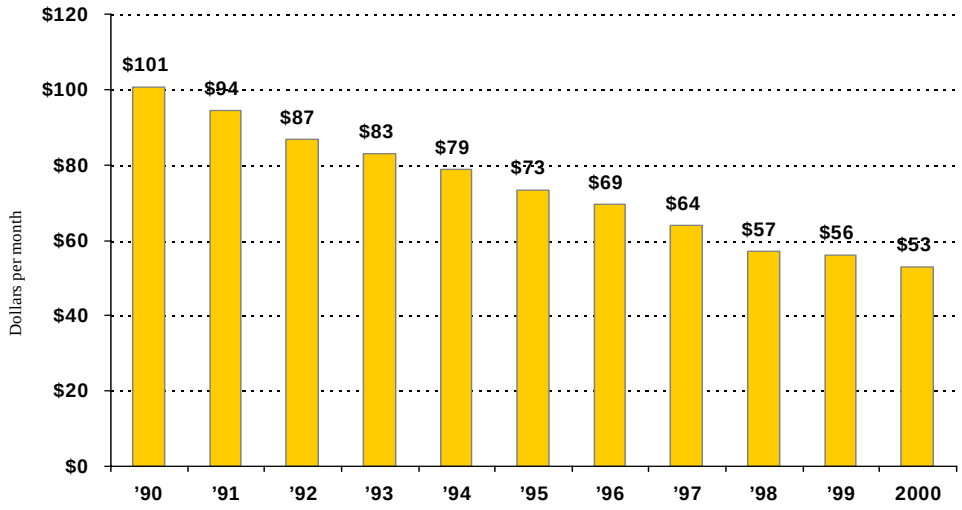


*Others include (Thunder Bay Mobility, Nortel Mobility, Télébec, Northwestel Mobility Inc)
**Telus includes Québec Tel as of June 2000 and Clearnet as of Q4/00
Source: Industry Canada calculations based on Company Quarterly Reports to shareholders

Figure 3-10 demonstrates that the monthly Average Revenue per Subscriber Unit (ARPU)[10] of cellular/ PCS service providers has been decreasing at a slower rate over the past three years. The ARPU for 1999 was $56 and decreased to $53 in 2000. Reductions in prices, along with control over monthly costs enabled by the advent of pre-paid price plans, have contributed to the reduction in monthly ARPU.

Figure 3-10

Cellular, PCS and ESMR
Average Revenue per Subscriber Unit (ARPU),
1990 to 2000



Source: 1990 to 1996 data from Statistics Canada 1997 and 1998 figures by Industry Canada based on public reports of Mobility, Rogers Wireless, Clearnet, Microcell. 1999 figures by Industry Canada based on Statistics Canada data.

[10]The ARPU is stated in $ per month. Thus, an ARPU of $56, implies that an average subscriber contributes $56 per month to the wireless carriers. It is a rough approximation of the monthly wireless bill.

3.3 EVOLUTION OF BROADCAST DISTRIBUTION INDUSTRY

Competition in the broadcast distribution industry intensified as incumbent cable companies, direct-to-home (DTH) satellite service providers and multipoint distribution system (MDS) competitors pursued aggressive customer acquisition strategies. In 1999, based on the most current publicly available data, cable companies retained the majority of customers at 94%, while DTH and MDS captured 6% of the industry.[11]

As mentioned previously, competition in all segments of the communications sector is changing and will continue to change the structure and dynamics of the Canadian industry. In Canada, five major companies are rapidly redrawing the broadcast distribution landscape[12]:

a. BCE Inc. owns CTV and Bell ExpressVu,

b. Rogers Communications purchased the Toronto Blue Jays and Cable Atlantic,

c. Shaw Communications bid for the fifth largest cable company, Videon,

d. Quebecor purchased the third largest cable company, Vidéotron, and TVA, and,

e. Cogeco remains an important player in the broadcast distribution industry.

Basic Cable Television Services

While the distribution of television programming is still the cable industry's most important source of revenues, new technologies and services continue to be launched. Cable companies are upgrading their systems to enable them to provide more channels and two-way interactive services, including high-speed Internet access. More and more cable companies are deploying digital technology, and some cable companies are preparing to enter the telephone services' market using Voice Over Internet Protocol (VOIP) technology.

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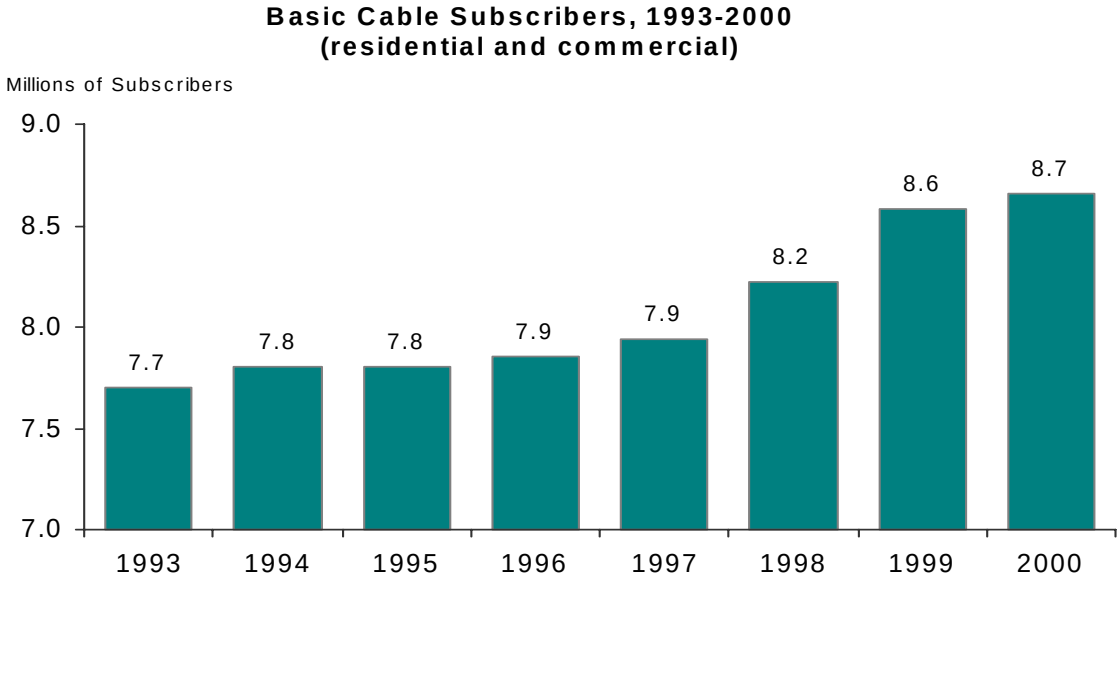
[11] Canadian Radio-television and Telecommunications Commission (CRTC), "Broadcast Distribution Statistical and Financial Summaries, 1995-1999."

[12] Some of the following are pending regulatory approval as of March, 2001.

Figure 3-11



Source: Industry Canada estimates based on Statistics Canada, CRTC, and company annual reports.

Figure 3-11 shows that the growth rate of subscription to basic programming services, which includes subscribers to cable, DTH and MDS, has been modest in recent years (8.6 million residential and commercial subscribers with growth of 0.5% in 1999). Basic cable TV is also a one-way communication service unless, as previously noted, a cable modem is also supplied.

With the increased trend to two-way communication paths, cable companies have rapidly expanded their range of product offerings. In particular, high-speed Internet access through cable modems and digital cable box subscriber figures show strong growth. At the beginning of 2000, the five largest cable companies, Rogers, Shaw, Cogeco, Videotron, and Videon (collectively representing roughly 85% of the cable subscribers), had 480,000 high-speed cable modem subscribers (or 180% annual growth from year end of 1998). As previously stated, cable television operators now service about 917,000 cable modem subscribers. Similarly, subscriptions to digital television (digital set-top boxes) increased from 155,000 at year end of 1999, to 537,000 by the end of December 2000.

Cable companies have undertaken massive system upgrades to enable the provision of new communication paths such as high-speed Internet access to homes and businesses, as well as other interactive services. Overall, the cable industry's investment in high-speed networks has resulted in 7 million homes being high-speed Internet ready, and the industry is forecasted to provide service to 3 million digital cable modem customers across Canada by 2005.

3.4 DIRECT-TO-HOME SATELLITE & MULTI-POINT DISTRIBUTION SYSTEM

In addition to wireline delivery systems, new wireless technologies offer broadcasting services and, with extra equipment, Internet access as well. The first wireless technology offering broadcasting service is direct-to-home satellite (DTH), which has two competitors, (Bell ExpressVu and Star Choice). The second wireless technology offering broadcasting service is the multipoint distribution system (MDS), which has three major players, LookTV, Sky Cable and Image Wireless.

In December 2000, Bell Express Vu and Star Choice had a combined subscriber base of more than 1.2 million, up from roughly 650,000 at year end of 1999. Bell ExpressVu also offers DirecPC, an asymmetric, high-speed Internet service via satellite with download speeds of up to 400 kbps (upload via telephone line, download via satellite).

Currently, high-speed fixed terrestrial wireless access is in its infancy with limited service rollout but widespread high-speed Internet, data and video communication paths will soon be available.

More specifically, LookTV offers dial-up asymmetric high speed Internet access (i.e., uplink via a telephone and downlink via wireless). LookTV recently conducted two-way high-speed Internet access trials. Sky Cable and Image Wireless have rolled out similar communication paths.

Still a nascent industry, growth to date in MDS has been modest. For example, at the end of December 2000 Look TV had 91,800 wireless subscribers, 186,600 subscribers to its Internet access of which 10,600 subscribed to asymmetric high-speed wireless access or communication paths.

3.5 INTERNET SERVICE

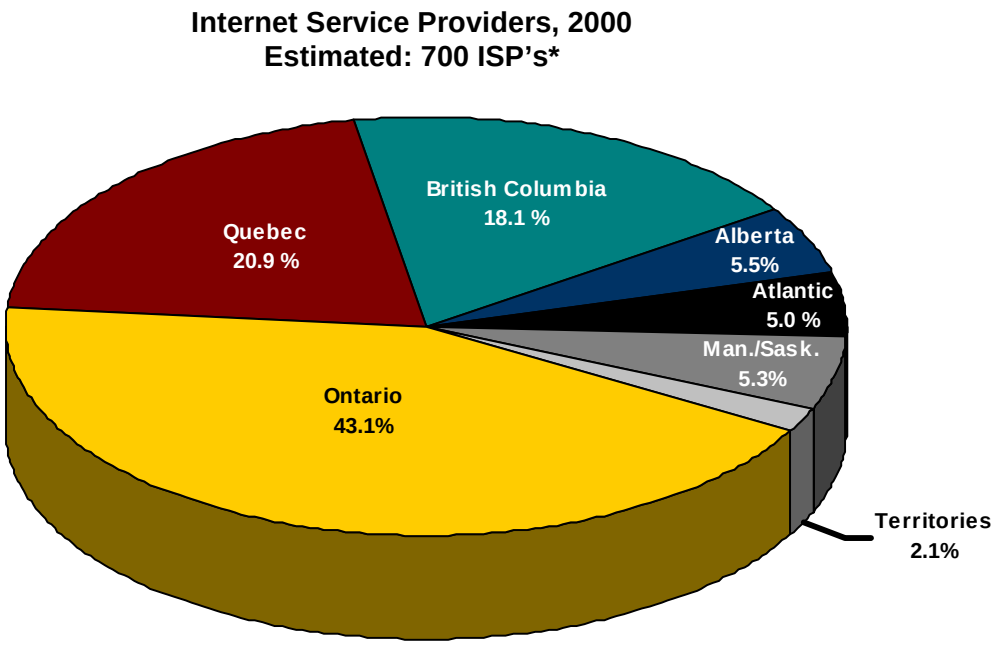
The Internet's rapid growth and its increasing capabilities have moved it from a specialty service, serving a limited market, to a mass-market service targeting a wide audience. This medium, and the businesses offering access to it (Internet service providers, (ISP)), can no longer be ignored when analyzing the growth of communication paths.

The relatively recent introduction of the Internet, its rapidly changing nature and lack of regulatory history make it difficult to profile this rapidly growing and innovative market segment. This section focuses on the infrastructure component and leaves the financial details for a later time. The following specifically looks at the number of providers, services offered and number of subscribers to Internet access.

Number of Internet Service Providers

Using business directories, yellow pages and membership lists from the Canadian Association of Internet Providers (CAIP), approximately 700 Internet Service Providers were found in Canada. Figure 3-12 shows the geographic division of Canadian ISPs. While a majority of these 700 companies serve a specific area, there are a number of ISP's who serve almost all of the country. Examples of these national ISP's are: AOL Canada, Bell Canada (Sympatico-Lycos), PSINet/iSTAR, and AT&T Canada.

Figure 3-12



*In addition there are national ISPs such as AOL Canada, Bell Canada (Sympatico-Lycos), PSINet/iSTAR and AT&T Canada
Source: Industry Canada

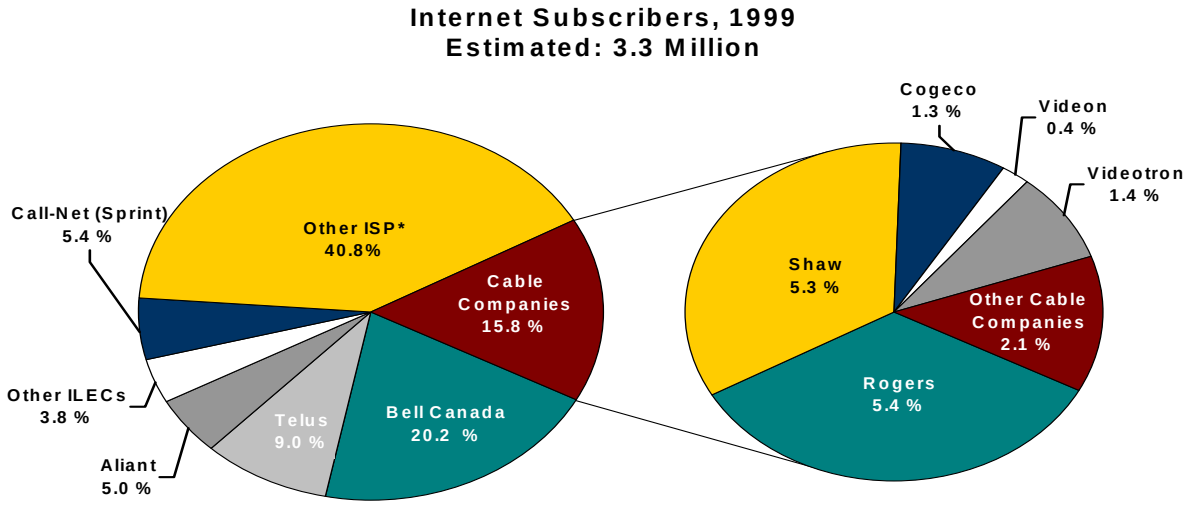
Services Offered

The majority of ISP's provide dial-up access lines, (i.e., connection over regular phone lines at 56.6 kbs or less). Approximately 46% (318) also provide high-speed access or communication paths,[13] (i.e., ISDN, T1 or ADSL, cable, wireless). The larger companies are supplying technologies that can be combined with minor modifications to the existing infrastructure, (i.e., DSL (e.g., Sympatico), or high-speed Internet cable modems, (e.g., Rogers@home, Shaw@home)). In effect the larger cable operators now offer basic cable, digital cable, as well as high-speed Internet cable modem services. Many of the independent ISPs also provide similar high-speed Internet access at competitive rates, (i.e.,Cyber Beach Communications, Magma Communications).

Number of ISP Subscribers

As previously stated, there were approximately 3.3 million residential Internet access subscribers in 1999,[14] (Figure 3-13).

Figure 3-13



*Includes AT & T Canada, PSINet/iSTAR, independent ISP's and others.
Source: Industry Canada

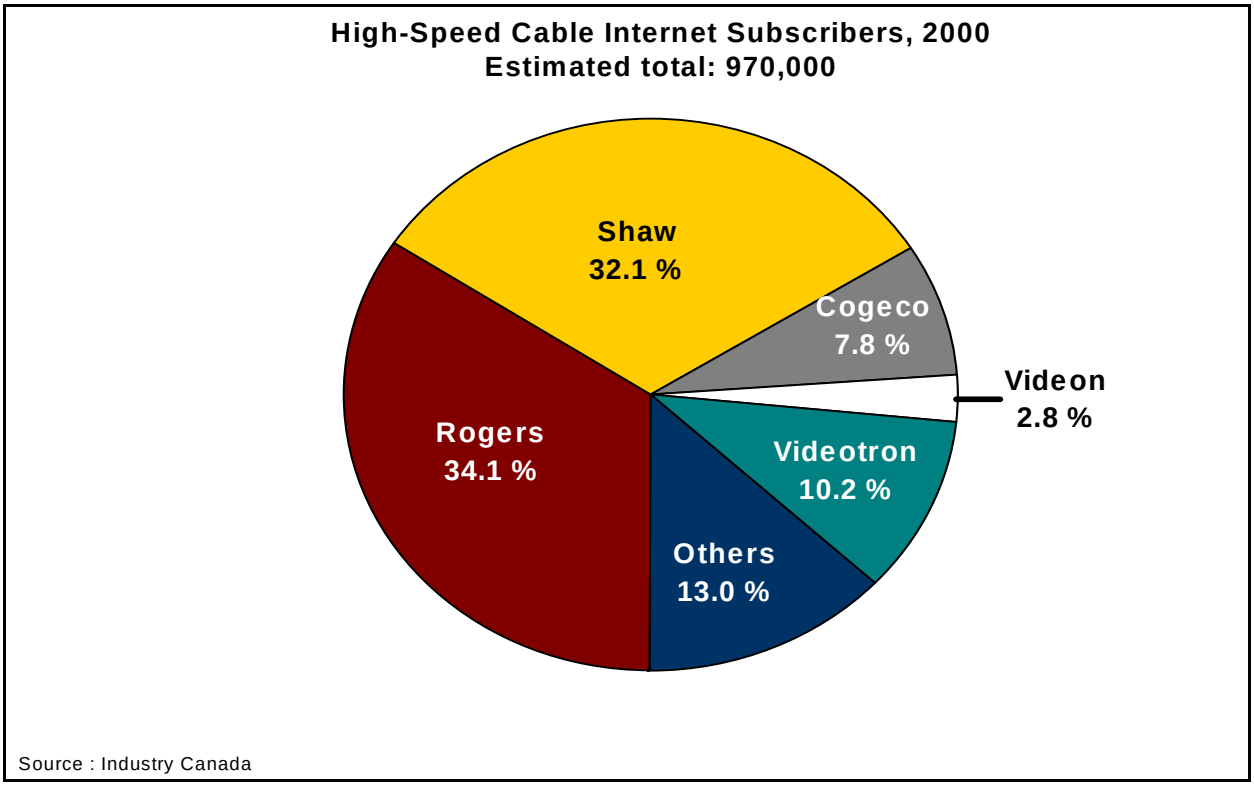
[13]The CRTC has a listing of 57 registered resellers of high-speed retail Internet service on their website: http://www.crtc.gc.ca/ENG/public/Iplists/Internet.htm

[14]The Daily, "Household Internet Use", May 19, 2000, Statistics Canada.

Bell Canada, Telus, Aliant and other ILECs provided Internet access or communication paths to 43% (1.5 million) of all Canadian Internet subscribers in 1999. The telephone companies also experienced high growth rates for their high-speed Internet access service. For example, Bell Canada High-Speed Edition (Sympatico-Lycos) reported that its household penetration rate grew from 0.7% at the end of 1999 to 3% by November 2000. Its coverage over the same period also increased from 40% to 65% of total homes in Quebec and Ontario.

The cableTV companies also provide high-speed Internet cable modem access or communication paths to another 15.8% (approximately 550 thousand subscribers). In August 1999, the 61 cable companies that provided Internet access had approximately 360 thousand subscribers.[15] It is also interesting to note that, while there are over 60 cable companies providing Internet access, the five largest cable companies have over 85% of the high-speed cable Internet market. The rest of the subscribers are serviced by wireless service providers, other high-speed access providers and ISPs, (Figure 3-13). In 2000, it is estimated that there was a 76% increase in the number of high-speed Internet cable modem subscribers, from 550 thousand in December 1999 to 970 thousand in December 2000, (Figure 3-14). Within 2000, this represented a 6% increase (from 917 to 970 thousand) among cable modem subscribers.

Figure 3-14



[15]Statistics Canada, "The Daily", Friday August 25, 2000.

Conclusion

This section indicates a convergence of the communication service markets, especially in the area of providing Internet access. Telephone companies are providing cable service and cable companies are getting involved in the telecommunications market. It may be time to consider modifying traditional basic telecommunications indicators, specifically teledensity, to take into account the fact that, as a result of new technologies, more companies (i.e., telecommunications, cableTV and ISPs) are providing Internet access and other two-way communication paths.

4.0 FINANCIAL OVERVIEW OF TELECOMMUNICATIONS SERVICE INDUSTRY

The following section provides a brief financial overview of the Canadian telecommunications service industry. This is followed by a more detailed corporate and financial profile of the major wireline and wireless service providers for the years 1991 to 1999.

Operating Revenues and Expenses

Section 2 noted that telecommunications service industry operating revenues were $28.8 billion in 1999, (Figure 2-3). This was an increase of $300 million over 1998. Wireline telecommunications carriers accounted for 78.1% ($22.5 billion) of total operating revenues. Wireless carriers accounted for 16.0% ($4.6 billion), while 'resellers, satellite and other' telecommunications service providers accounted for 5.9% ($1.7 billion), (Figure 4-1).

Figure 4-1

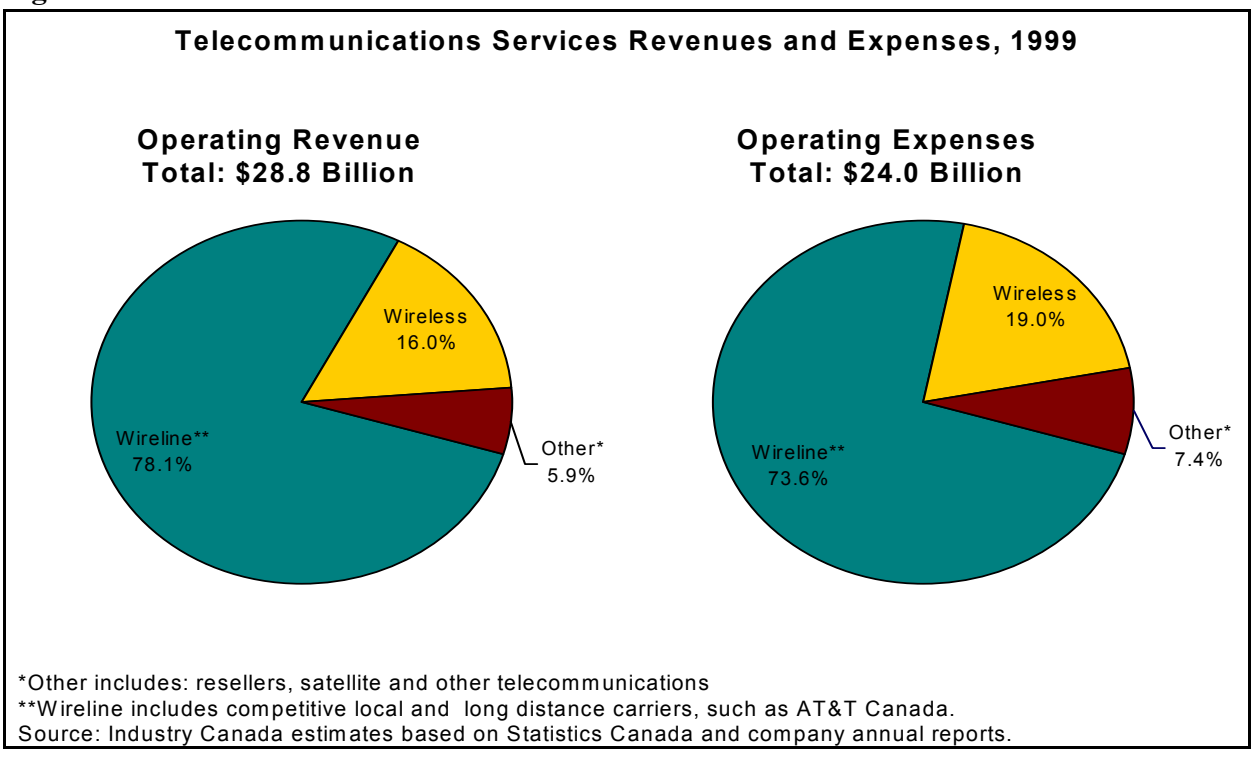
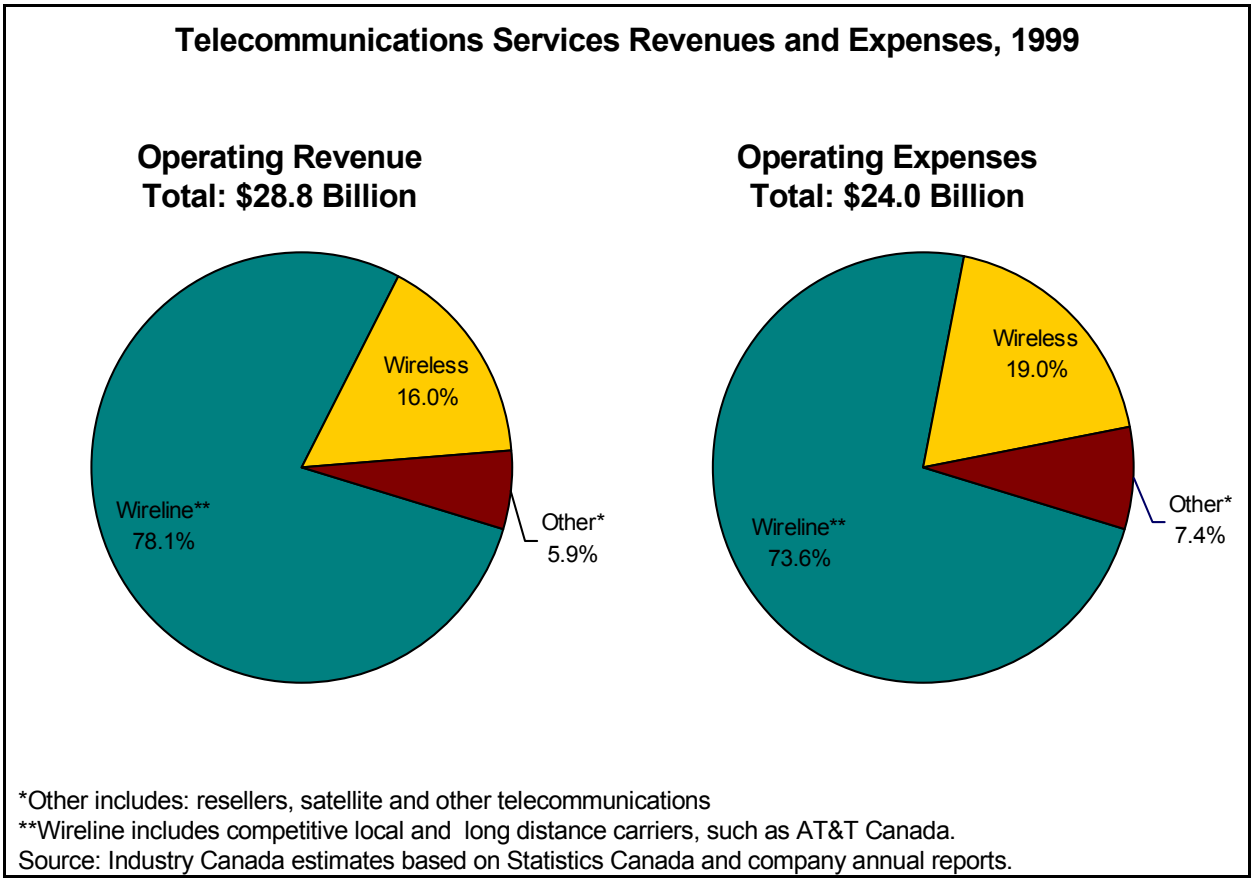


Figure 4-1 also shows that wireline carriers accounted for 73.6% ($17.7 billion) of the total $24 billion in operating expenses. The remaining 26.4% was divided as follows: wireless carriers, 19.0% ($4.6 billion), and 'resellers, satellite and other' telecommunications service providers, 7.4% ($1.7 billion).

Operating Profit

In 1999, the industry's operating profit[1] was $4.8 billion, or 16.5% of operating revenues. Figure 4-2, shows that the positive result can be attributed to the wireline segment. The 'resellers, satellite and other' segment has consistently had negative operating revenues over the 1997 to 1999 period. Starting in 1998, the wireless segment also started to experience negative operating revenues due to the significant start up costs associated with the introduction of PCS service.

Figure 4-2

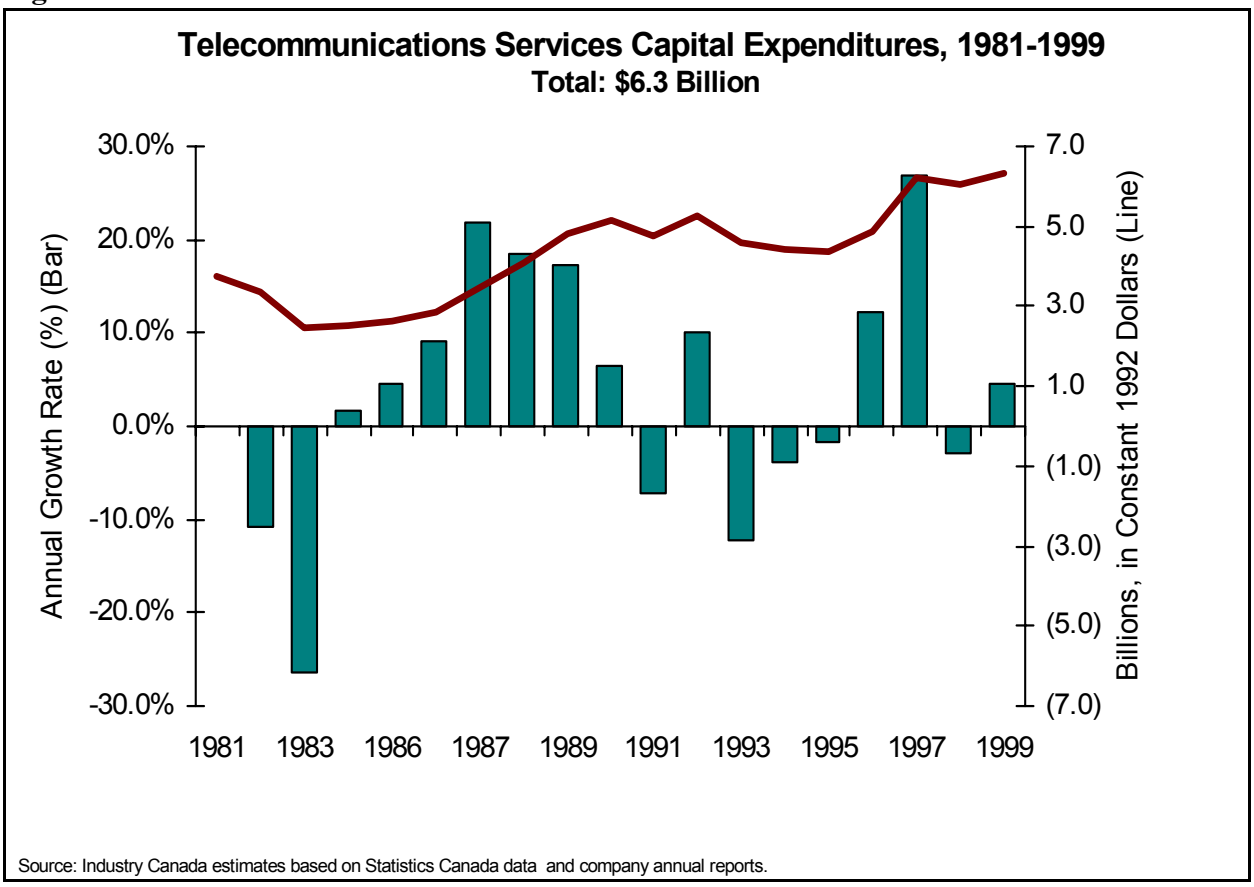


[1]Operating profit is operating revenues minus operating expenses. It is also referred to as earnings before interest and taxes (EBIT).

Capital Expenditures

In 1999, the Canadian telecommunications service industry had capital expenditures of $6.3 billion (in constant 1992 dollars), up from 1998 when capital expenditures were $6.0 billion (in constant 1992 dollars). This is the third year in a row that capital expenditures were at or near this level, (Figure 4-3, Appendix A, Table A-3).

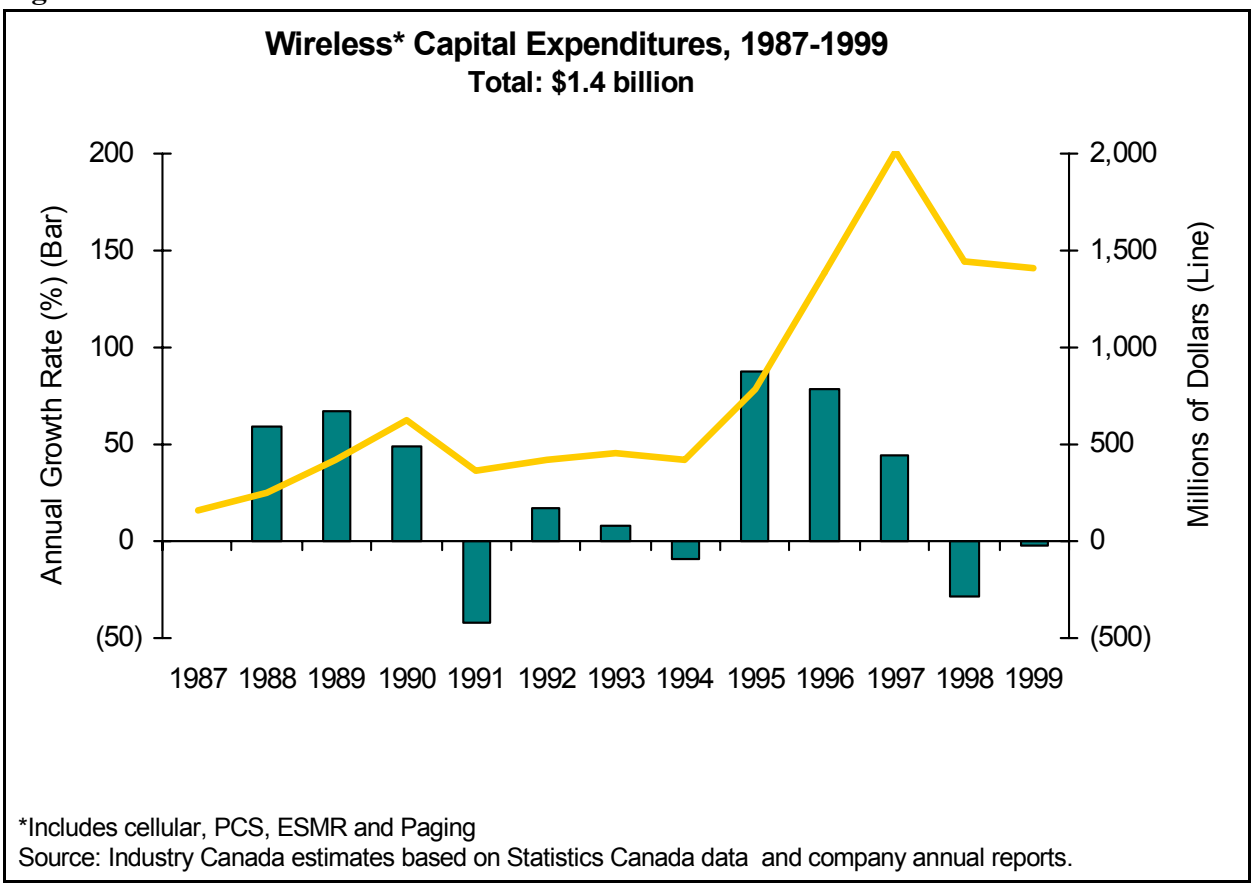
Figure 4-3



Source: Industry Canada estimates based on Statistics Canada data and company annual reports.

Capital expenditures often have a large impact on the wireless segment due to the significant initial investments needed to deploy new cellular and PCS infrastructure. In 1999, wireless capital expenditures were $1.4 billion, a decrease of 2% from 1998, down from the peak of $2.0 billion in 1997 when investment to roll-out digital PCS was at its peak, (Figure 4-4).

Figure 4-4

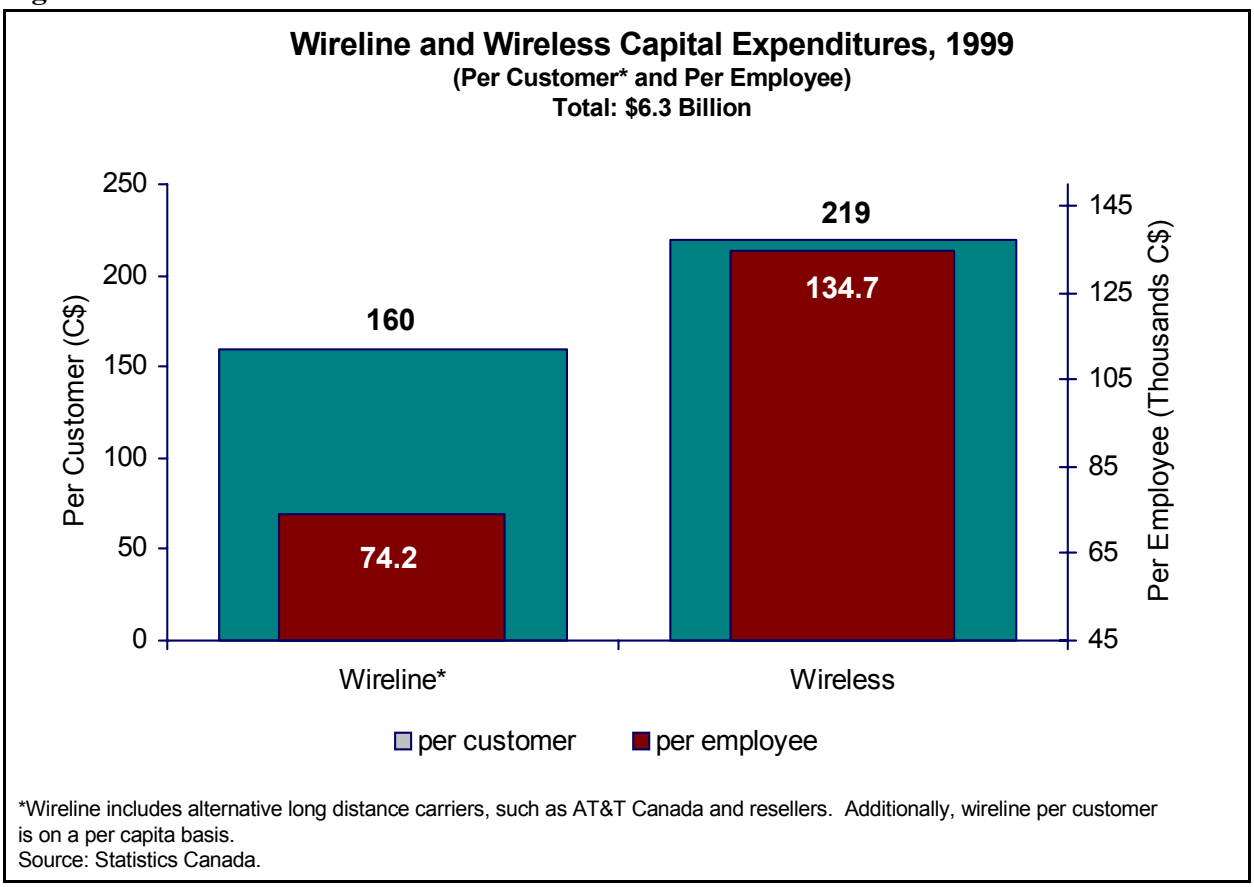


*Includes cellular, PCS, ESMR and Paging
Source: Industry Canada estimates based on Statistics Canada data and company annual reports.

Capital expenditures in the wireless segment were more intensive than in the wireline segment on both a per employee and a per revenue basis with a total of $134,681 per employee or 29.3 cents per dollar of operating revenue in 1999. The comparable wireline carriers' capital expenditures ratios were $74,241 per employee or 21.4 cents per dollar of operating revenue.

Figure 4-5 examines capital expenditures per customer[2] and per employee. In this case capital expenditures were higher for wireless carriers: $160 per capita, versus $219 per wireless subscriber.

Figure 4-5



*Wireline includes alternative long distance carriers, such as AT&T Canada and resellers. Additionally, wireline per customer is on a per capita basis.
Source: Statistics Canada.

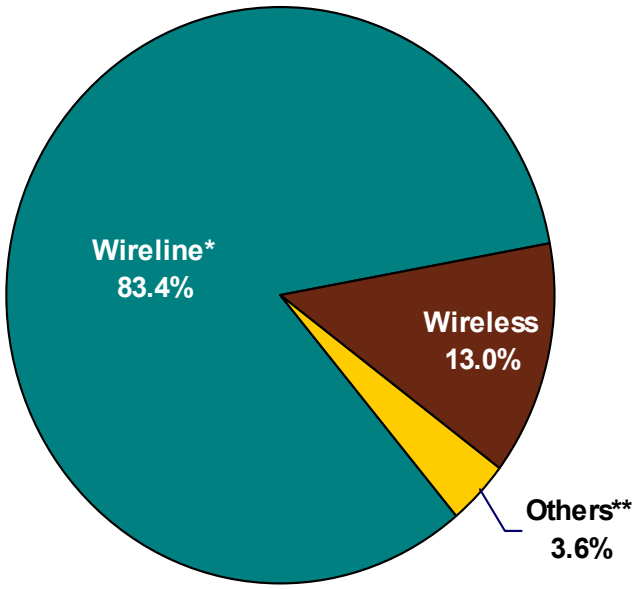
[2]Since not all wireline capital expenditures were for the PSTN network, wireline capital expenditures per customer are in terms of per capita and the number of mobile subscribers for the wireless segment.

Number of Employees

The wireline segment employs more than four times the number of employees than the other segments. In 1999, the wireline segment employed 83.4% and the wireless segment employed 13% of total telecommunications services employment. The 'resellers, satellite and other' segment employed the remaining 3.6%, (Figure 4-6).

Figure 4-6

Telecommunications Services Employment by Segment, 1999



*Wireline includes alternative long distance carriers, such as AT&T Canada.
**Other includes: resellers, satellite, and other telecommunications.
Source: Industry Canada estimates based on Statistics Canada.

Average full-time (annualized) salaries at the end of 1999 were 8.4% higher in the wireline industry ($67,373) than in the wireless industry ($62,157).

4.1 CORPORATE COMPANY PROFILES, 2000

The following provides a summary of the principal activities of the three largest telecommunications service providers, Bell Canada Enterprises (BCE), Aliant, and Telus. Each section contains a brief description of the company and a recent organizational chart based in part on information obtained from the CRTC and by Industry Canada. In addition, each write-up summarizes some of the major lines of business as well as more recent corporate activities that may not be reflected in the organizational chart.

Bell Canada Enterprises

Bell Canada Enterprises (BCE) Inc. is the largest telecommunications holding company in Canada. Among others BCE owns Bell Canada; Bell Canada International; Bell Mobility; BCE Emergis Inc.; and CGI Group Inc. In 1999, BCE had assets of $37 billion and revenues of $14.2 billion.

On September 15, 2000 BCE, Thomson and Woodbridge announced the creation of five business units. The first business unit is a multi-media company established in January 2001 called Bell Globemedia. The new multi-media company includes CTV, Sympatico-Lycos Internet portal, The Globe and Mail, and the Globe and Mail's interactive web-site. This convergence between communications and the media occurred with BCE's (70.1%) acquisition of CTV and BCE's partnership with Thomson's Corp (20%) and with Woodbridge Company Ltd.'s (9.9%)[3] participation.

This same announcement mentioned the formation of the second (Bell Canada), third (Teleglobe Inc.), and fourth (BCE Emergis) business groups. A fifth group, called BCE Ventures, will include more peripheral operating units including Bell Canada International (BCI), Telesat Canada, Look Communications Inc., CGI Group Inc., BCE Capital, Bimcor and Excel Communications.

The following section groups selected recent corporate activities as they relate to some broadly defined lines of business. The organization chart can also be used to put these activities into a wider corporate overview, (Figure 4-7).

Telecommunications

In addition to the telecommunication services provided through Bell Canada, Bell Mobility, Northwestel, Telebec, and Northern Telephone, Bell Canada also owns a

[3]Similar convergence transactions in Canada include Quebecor's acquisition of Le Groupe Vidéotron; Corus Entertainment's proposed acquisition of Nelvana; CanWest Global's acquisition of Hollinger's Canadian newspapers.

majority of Aliant Communications and has a joint initiative with Manitoba Telephone Systems through Bell Intrigna.

In 2000, BCE expanded its ownership interest of Teleglobe to 100% which included the Dallas-based long distance retailer Excel Communications bought by Teleglobe in 1998. Bell Mobility signed up its 2.3 millionth cell phone subscriber by the end of 2000.

By 2002, Telesat will have invested more than $1 billion in its fleet of new satellites, (i.e., Nimiq, Anik F1 and Anik F2). The Anik F2 will be capable of delivering two-way multimedia services anywhere in Canada.

In January 2001, Bell Mobility confirmed it would spend about $100 million to upgrade its wireless network in Ontario and Quebec in 2001 in anticipation of offering third generation wireless services. The aim is to expand its digital services to about 95% of the population in its operating territory.

Internet

Before the creation of Globemedia, Bell ActiMedia was a majority owner of Sympatico-Lycos providing dial-up and high-speed Internet connectivity. Bell Sympatico had 800,000 dial-up residential Internet subscribers, and some 264,000 high-speed Internet subscribers by the end of 2000, which is 34% of the Canadian high-speed market. It plans to have high-speed service available to 85% of Bell Sympatico's customers by the end of 2002.

Bell ExpressVu now offers high-speed Internet access via satellite. Its DirecPC is the only mass market Canadian high-speed Internet service available via satellite.

Look Communications Inc. sold its 50% share in Inukshuk Internet Inc., which is building a wireless Internet access network, to Microcell Telecommunications Inc. in January 2001.

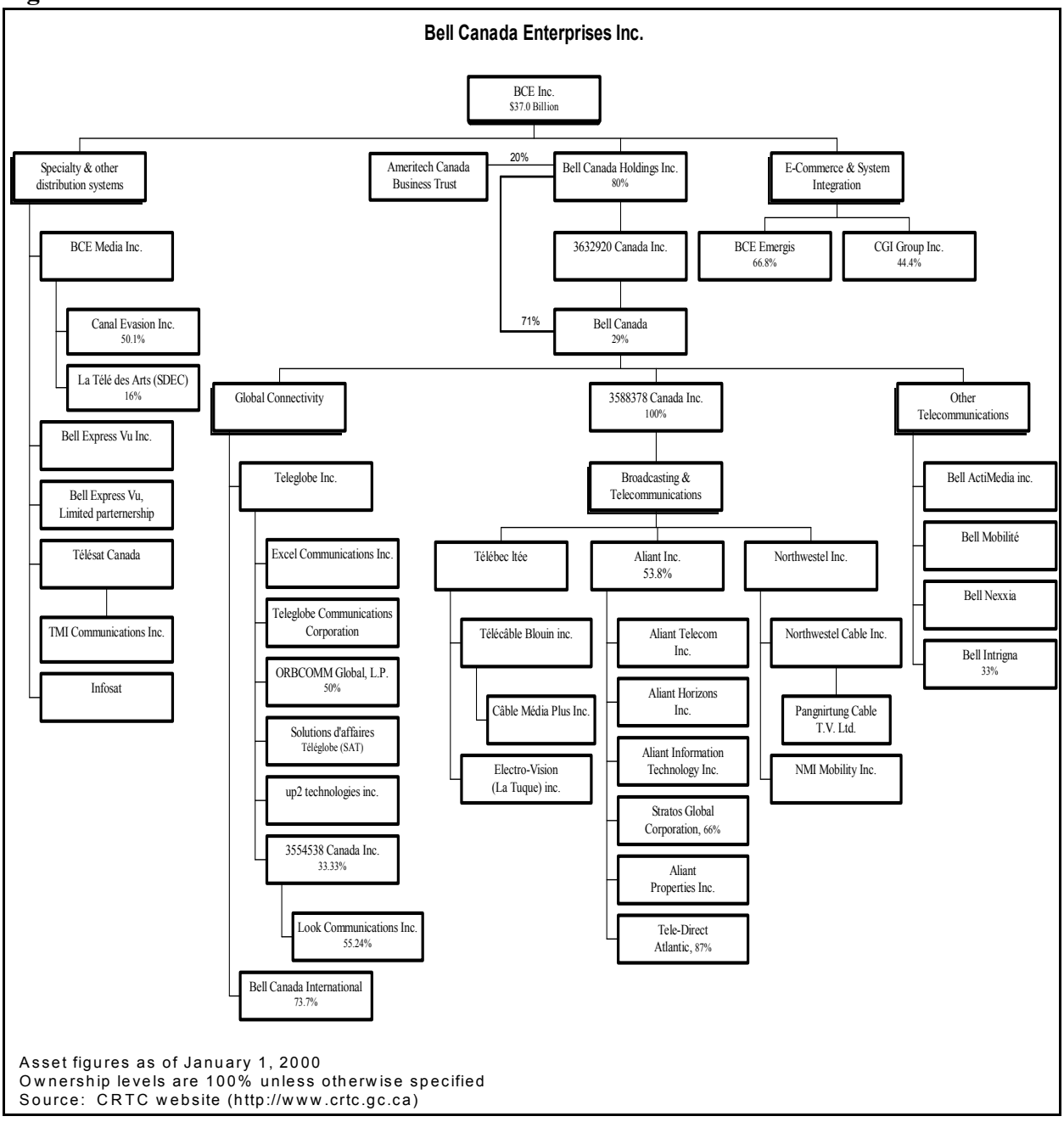
Broadcasting

BCE broadcasts through its direct-to-home TV satellite business, Bell ExpressVu. Bell ExpressVu had 722,000 Digital Broadcasting System subscribers by the end of 2000.

BCE has positioned itself as a leading player in the converging industries of broadcasting and new media when it bought the outstanding shares of CTV in 2000. Through its network operations, CTV reaches 99% of English-speaking households, offering a wide range of news, sports, information and entertainment programming.

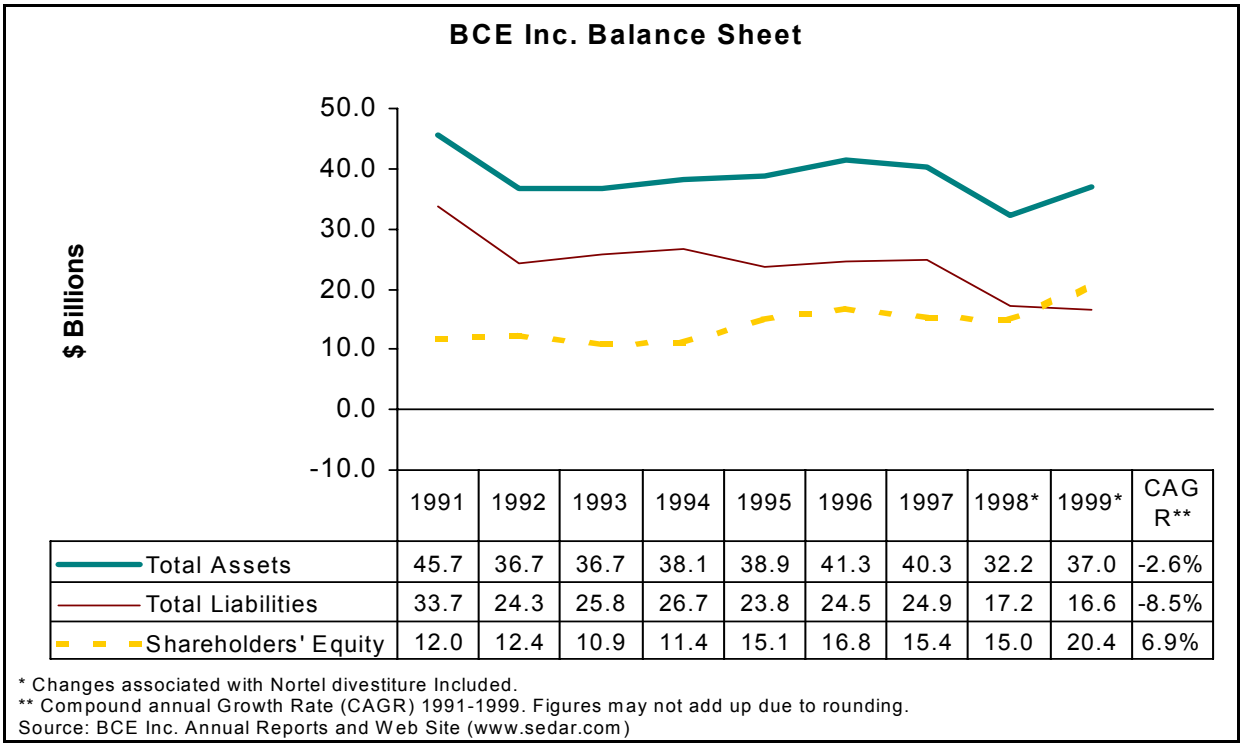
Key historical financial data on BCE are provided in Figure 4-8 and Figure 4-9.

Figure 4-7



Structure as of Fall 2000.
Ownership levels are 100% unless otherwise specified
Source: Industry Canada based on CRTC website (http://www.crtc.gc.ca)

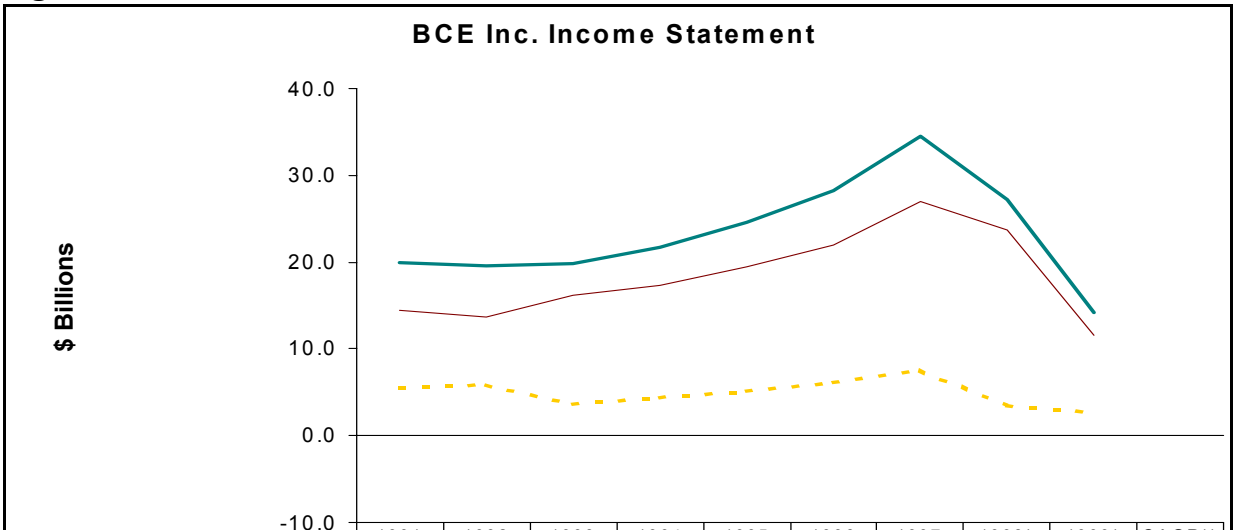
Figure 4-8



	1991	1992	1993	1994	1995	1996	1997	1998*	1999*	CAGR**
Total Assets	45.7	36.7	36.7	38.1	38.9	41.3	40.3	32.2	37.0	-2.6%
Total Liabilities	33.7	24.3	25.8	26.7	23.8	24.5	24.9	17.2	16.6	-8.5%
Shareholders' Equity	12.0	12.4	10.9	11.4	15.1	16.8	15.4	15.0	20.4	6.9%

* Changes associated with Nortel divestiture Included.
** Compound annual Growth Rate (CAGR) 1991-1999. Figures may not add up due to rounding.
Source: BCE Inc. Annual Reports and Web Site (www.sedar.com)

Figure 4-9



	1991	1992	1993	1994	1995	1996	1997	1998*	1999*	CAGR**
Operating Revenue	19.9	19.6	19.8	21.7	24.6	28.2	34.5	27.2	14.2	-4.1%
Operating Expenses	14.4	13.7	16.2	17.3	19.4	22.0	27.0	23.7	11.5	-2.3%
Operating Profit (EBITDA)	5.5	5.9	3.6	4.4	5.2	6.2	7.5	3.5	2.7	-10.8%

*: Changes associated with Nortel divestiture included as well as changes in accounting procedures.
** Compound Annual Growth Rate (CAGR), CAGR 1991-1999. Figures may not add up due to rounding.
Source: BCE Inc. Annual Reports and Web Site (www.sedar.com)

Aliant Communications Inc.

BCE is the largest single owner of Aliant Inc at 53.8%. Aliant had assets of $2.9 billion and revenues of $2.0 billion in 1999. The following groups Aliant activities into some broad lines of business. The organizational chart can also be used to put these activities into a wider corporate view, (Figure 4-10).

Effective January 1, 2001 Aliant Telecom Inc. amalgamated its wholly owned subsidiaries, (i.e., NBTel Inc., NewTel Communications Inc., Island Telecom Inc., and Maritime Tel & Tel Ltd.). This was done to align Aliant's legal structure with its operational structure. While the subsidiaries will legally operate under Aliant Telecom, they will continue to use their existing brand names in their respective jurisdictions.

Telecommunications

Aliant Telecom Inc. delivers telecommunication service in Newfoundland, Prince Edward Island, New Brunswick and Nova Scotia. In 1999, the operating revenue of Aliant Telecom increased by 5.1% to $1.6 billion, as increased revenues in local and wireless services offset lower long-distance revenues. For wireless, cellular revenues reflected a 29% increase in cellular customers. The wireless customer base increased from 231,031 in 1998 to 298,448 in 1999.

Internet & Information Technology

Internet access is available to all subscribers in Newfoundland, Prince Edward Island, New Brunswick, and Nova Scotia. For 1999, Aliant Telecom Inc. generated $34.7 million from Internet and other e-commerce services. Aliant expects to invest about $50 million by the end of 2000 so as to extend its high-speed network to pass 70% of total households in its service area. Xwave is an Aliant subsidiary providing e-business solutions with annual revenue exceeding $300 million.

Mobile Satellite

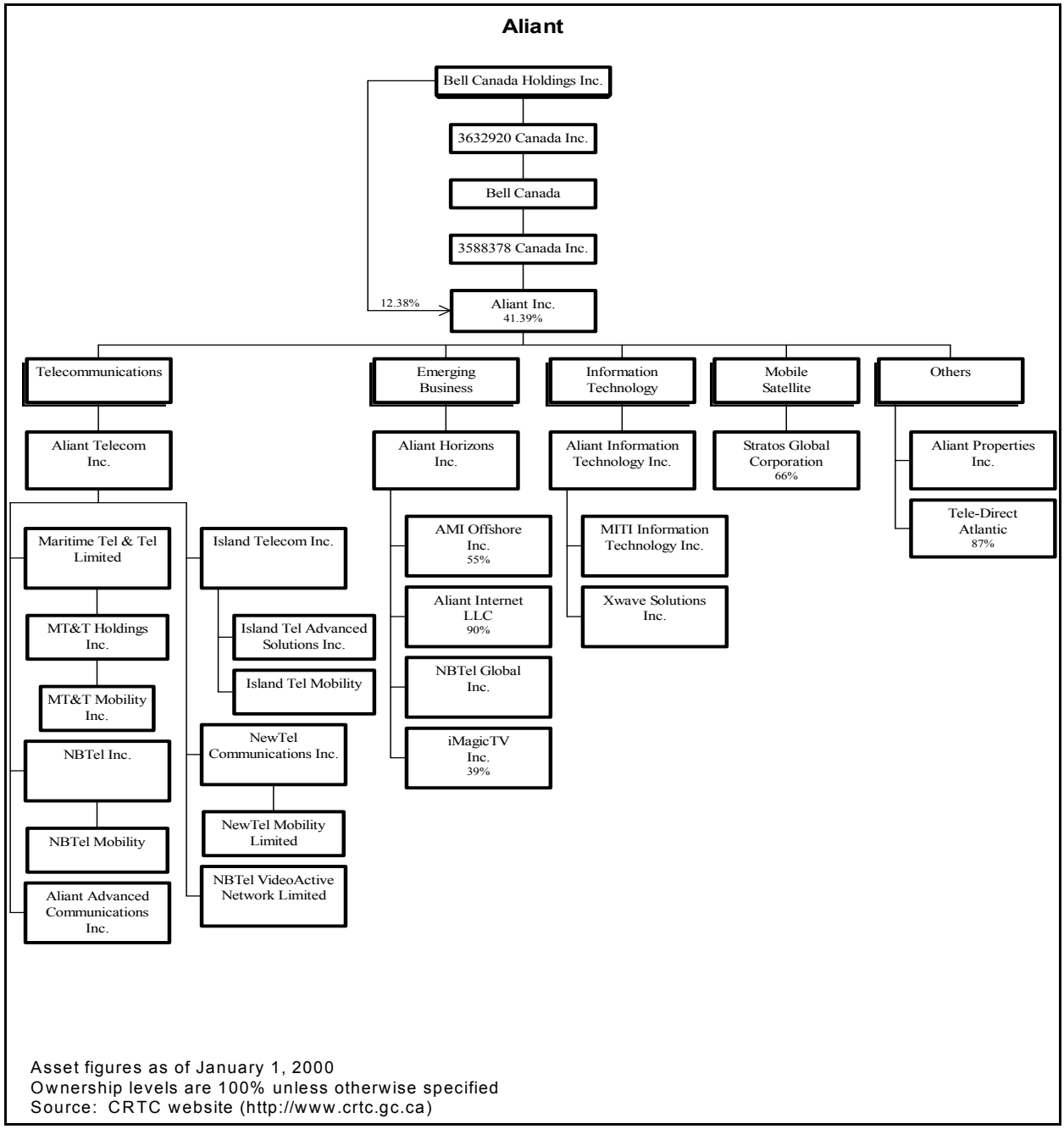
Stratos is an international telecom service provider offering customers operating in remote locations a variety of voice, fax, data and wireless Internet Protocol (IP) solutions using a range of satellite technologies. The annual revenues of Stratos were around $145.8 million in 1999. Québec

Emerging Business and Broadcasting

Innovatia is an IT consulting firm focusing on Internet application development and sales. Innovatia owns broadcasting-related companies like ImagicTV and Salter Street Film. On behalf of E-education, Innovatia owns Tecknowledge and InfoInteract.

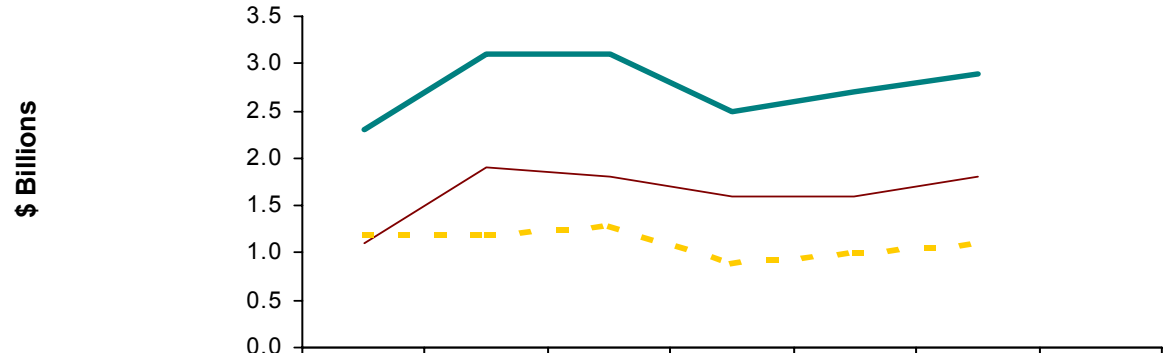
Key historical financial data on Aliant are provided in Figure 4-11 and Figure 4-12.

Figure 4-10



Structure as of Fall 2000.
Ownership levels are 100% unless otherwise specified
Source: Industry Canada based on CRTC website (http://www.crtc.gc.ca)

Figure 4-11



	1994	1995	1996	1997	1998	1999	CAGR*
Total Assets	2.3	3.1	3.1	2.5	2.7	2.9	4.7%
Total Liabilities	1.1	1.9	1.8	1.6	1.6	1.8	10.4%
Shareholders' Equity	1.2	1.2	1.3	0.9	1.0	1.1	-1.7%

* Compound Annual Growth Rate (CAGR), CAGR 1994-1999 Figures may not add up due to rounding.
Source: Aliant Inc. Annual Reports and Web Site (www.sedar.com)

Figure 4-12

	1994	1995	1996	1997	1998	1999	CAGR*
Operating Revenue	1.23	1.28	1.37	1.61	1.72	2.03	10.5%
Operating Expenses	0.89	0.97	1.01	1.23	1.31	1.57	12.0%
Operating Profit (EBITDA)	0.34	0.31	0.36	0.38	0.41	0.46	10.5%

* Compound Annual Growth Rate (CAGR), CAGR 1994-1999. Figures may not add up due to rounding.
Source: Aliant Inc. Annual Reports and Web Site (www.sedar.com)

Telus Communications Inc.

Telus owns Telus Communications, Telus Mobility, Clearnet and QuébecTel Group. The latter provides telecommunication services to Eastern Québec. Telus's assets were $7.8 billion and its revenues were $5.9 billion in 1999.

Effective January 1, 2001 Telus Corporation simplified its corporate structure by amalgamating its major operating subsidiaries (i.e., Telus Communications (B.C.) Inc., Telus Communications Inc., and Telus Mobility Cellular Inc.), into Telus Communications Inc.

The following groups Telus activities into some broad lines of business. The organizational chart can also be used to put these activities into a wider corporate view, (Figure 4-13).

Telecommunications

Telus provides the majority of its telecommunication services in British Columbia and Alberta. The wireline segment generated around $3.8 billion and the wireless subsidiary, generated $960 million in revenues in 1999. The network access lines experienced a 1% increase in 1999.

QuébecTel Group is 100% owned by Telus and is the second largest telecommunications company in the province of Québec. The territory served by QuébecTel comprises 304 municipalities located around Québec City and in the Lower St. Lawrence, Gaspésie and the North Shore regions. QuébecTel employs over 1,600 people.

In August, 2000, Telus offered to acquire all of the shares of the national digital wireless company Clearnet Communications Inc., which operates in major cities all across Canada. It is viewed as one of the biggest corporate acquisitions in the history of the Canadian telecommunication industry.

Internet

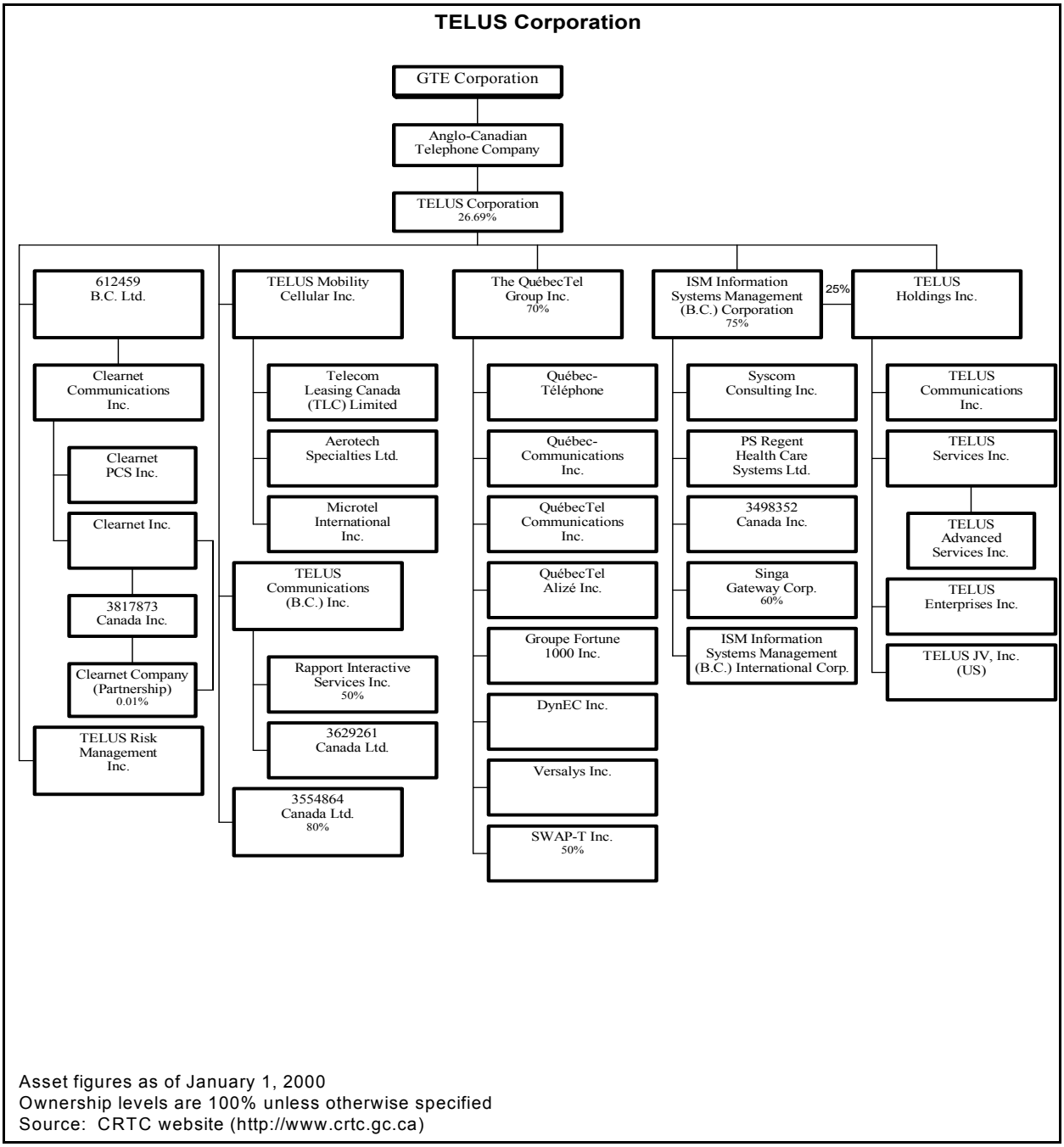
Advanced Communications provides high speed digital data transmissions for business customers in British Columbia and Alberta. Other services include data communications, internet, network management, information services and consulting. In 1999, Advanced Communications generated $801 million in revenues. In addition, the goal of Telus is to increase its high-speed customer base from 80,000 in 2000 to 160,000 by 2001.

Others

Telus Advertising Services produces white and yellow pages in British Columbia and Alberta. This group contributed $292 million of Telus's total revenues.

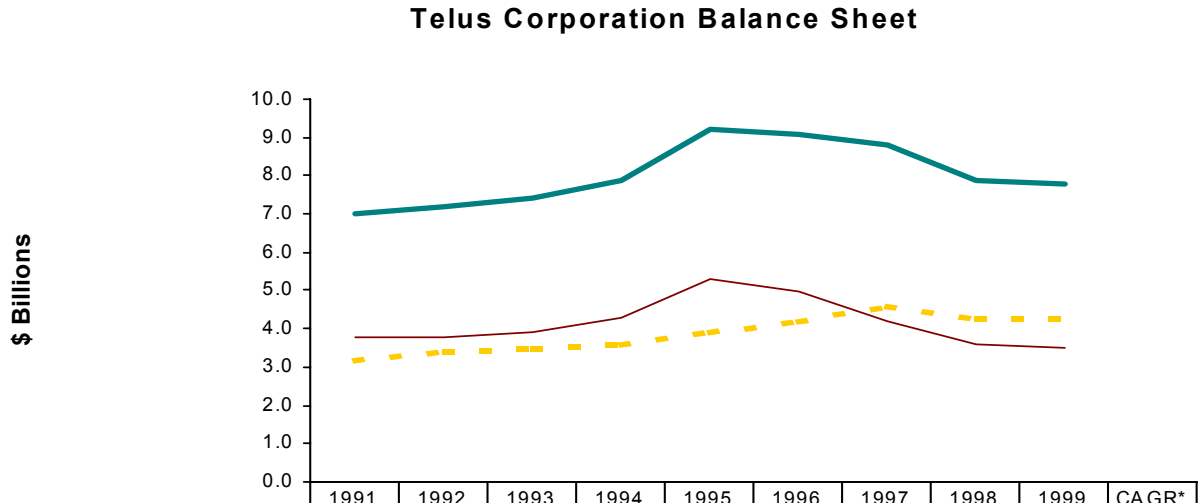
Key historical financial data are provided in Figure 4-14, and Figure 4-15.

Figure 4-13



Structure as of Fall 2000.
Ownership levels are 100% unless otherwise specified
Source: Industry Canada based on CRTC website (http://www.crtc.gc.ca)

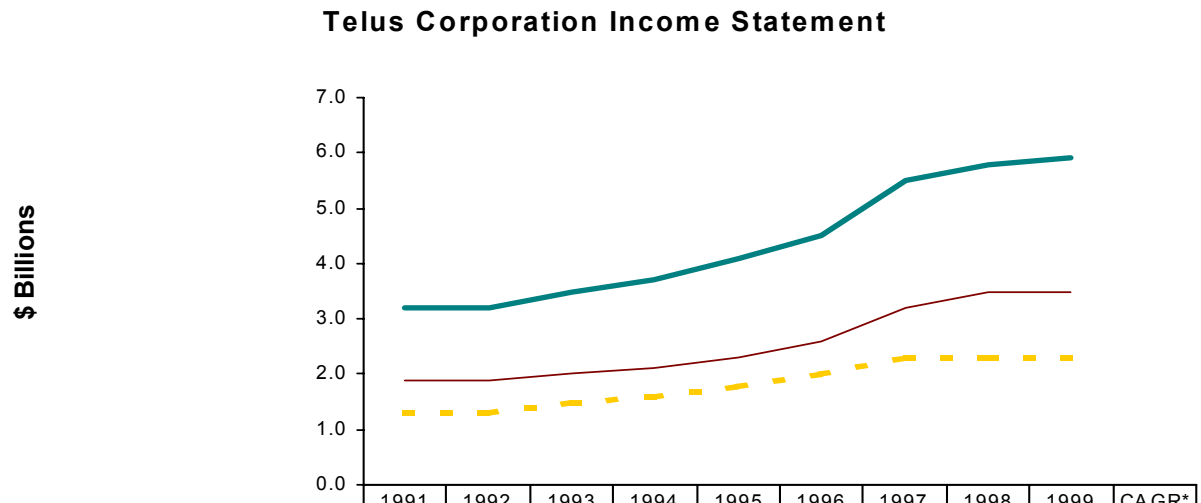
Figure 4-14



	1991	1992	1993	1994	1995	1996	1997	1998	1999	CAGR*
Total Assets	7.0	7.2	7.4	7.9	9.2	9.1	8.8	7.9	7.8	1.4%
Total Liabilities	3.8	3.8	3.9	4.3	5.3	5.0	4.2	3.6	3.5	-1.0%
Shareholders' Equity	3.2	3.4	3.5	3.6	3.9	4.2	4.6	4.3	4.3	3.8%

* Compound Annual Growth Rate (CAGR), CAGR 1991-1999. Figures may not add up due to rounding.
Source: TELUS Corporation Annual Reports and Web Site (www.sedar.com)

Figure 4-15



	1991	1992	1993	1994	1995	1996	1997	1998	1999	CAGR*
Operating Revenue	3.2	3.2	3.5	3.7	4.1	4.5	5.5	5.8	5.9	7.9%
Operating Expenses	1.9	1.9	2.0	2.1	2.3	2.6	3.2	3.5	3.5	7.9%
Operating Profit (EBITDA)	1.3	1.3	1.5	1.6	1.8	2.0	2.3	2.3	2.3	7.4%

* Compound Annual Growth Rate (CAGR), CAGR 1991-1999. Figures may not add up due to rounding.
Source: TELUS Corporation Annual Reports and Web Site (www.sedar.com)

4.2 FINANCIAL PROFILES OF TELECOMMUNICATION COMPANIES, 1998-1999

Table 4-1 provides financial information for the major publically reporting holding companies of the telecommunications carriers for 1998 and 1999. Tables 4-2 and 4-3 provide, where possible, the information on the actual telecommunications operations.

Table 4-1

Major Parent/Holding Telecommunications Companies
Year-End Financial Results, 1998 and 1999

	Year	Revenue	Operating Expenses	EBITDA	EBITDA Margin	Dep. & Amort.	EBIT	EBIT Margin	Net Income	Net Margin	Capital Exp.	CFO
Millions of dollars unless indicated otherwise												
BCE Inc.*	**1998**	27207	23719	3488	7.9%	3813	5959	21.9%	4598	16.9%	3774	3506
	1999	14214	11522	2692	15.3%	4742	6921	48.7%	5459	38.4%	3588	2598
12-month change		(47.8)%	(51.4)%	(22.8)%	--	24.4%	16.1%	--	18.7%	--	(4.9)%	(25.9)%
Aliant Inc.	**1998**	1723.8	1313.1	410.7	42.7%	326.1	410.6	23.8%	171.7	10.0%	305.1	450.1
	1999	2026.3	1570.5	455.8	35.5%	340.6	377.8	18.6%	148.2	7.3%	365.6	435
12-month change		17.5%	19.6%	11.0%	--	4.4%	(8.0)%	--	(13.7)%	--	19.8%	(3.4)%
Teleglobe Inc.	**1998**	5026.1	4697.6	328.5	6.5%	196.4	132.1	2.6%	22.1	0.4%	645.9	469.4
	1999	4253.4	3769.2	484.2	11.4%	225.7	258.5	6.1%	30.1	0.7%	704.6	228.5
12-month change		(15.4)%	(19.8)%	47.4%	--	14.9%	95.7%	--	36.2%	--	9.1%	(51.3)%
Manitoba Telecom Services Inc.	**1998**	696.9	383	314	45.1%	185	129	18.5%	95.4	13.7%	166.4	292
	1999	722.1	397.3	324.8	45.0%	190.1	134.7	18.7%	93.9	13.0%	169.4	315.8
12-month change		3.6%	3.7%	3.4%	--	2.8%	4.4%	--	(1.6)%	--	1.8%	8.2%
TELUS Corporation	**1998**	5833.9	3515.2	2318.7	39.7%	1021.9	1296.8	22.2%	66.9	1.1%	1093.2	1496.3
	1999	5872.3	3544.9	2327.4	39.6%	1062.1	1265.3	21.5%	349.7	6.0%	1199.2	1645.1
12-month change		0.7%	0.8%	0.4%	--	3.9%	(2.4)%	--	422.7%	--	9.7%	9.9%
The QuébecTel Group Inc.	**1998**	328.5	188.1	140.4	42.7%	70.7	69.8	21.2%	37.3	11.4%	49.7	87.9
	1999	356.1	217	139.1	39.1%	68.6	70.5	19.8%	-19.9	(5.6)%	75.8	95.9
12-month change		8.4%	15.4%	(0.9)%	--	(3.0)%	1.0%	--	(153.4)%	--	52.5%	9.1%
Saskatchewan Telecom Holding Corporation	**1998**	752.6	478.9	273.7	36.4%	146.7	127	16.9%	93.2	12.4%	170.2	219
	1999	737.7	517.7	220	29.8%	154.3	65.8	8.9%	67.5	9.2%	155.3	196.3
12-month change		(2.0)%	8.1%	(19.6)%	--	5.2%	(2.0)%	--	(27.6)%	--	(8.6)%	(10.4)%

*: The large decline in BCE's operating revenues and expenses is due to the divestiture of Nortel.
Dep. & Amort.-Depreciation and Amortization Expense; EBITDA-Earnings Before Interest, Taxes, Depreciation and Amortization; EBIT-Earnings Before Interest and Taxes; Capital Exp.-Capital Expenditures; CFO-Cash Flow from Operations; n/a not available; -- not applicable.
Source: Public financial statements

Table 4-2

Major Publicly Reporting Incumbent Telecommunications Carriers Year-End Financial Results, 1998 and 1999

	Year	Revenue	Operating Expenses	EBITDA	EBITDA Margin	Dep. & Amort.	EBIT	EBIT Margin	Net Income	Net Margin	Capital Exp.	CFO
Millions of dollars unless indicated otherwise												
Bell Canada	**1998**	12405	7273	5132	41.4%	2634	2498	20.1%	1089	8.8%	2629	3535
	1999	12583	7247	5336	42.4%	2440	2896	23.0%	1309	10.4%	2499	2778
12-month change		1.4%	(0.4)%	4.0%	--	(7.4)%	15.9%	--	20.2%	--	(4.9)%	(21.4)%
Telebec ltee**	**1998**	205.9	111.1	94.8	46.0%	51.8	43	20.9%	18	8.7%	44.7	58.7
	1999	219.3	126.7	92.6	42.2%	50.5	42.1	19.2%	16	7.3%	33.1	68.2
12-month change		6.5%	14.0%	(2.3)%	--	(2.5)%	(2.1)%	--	(11.1)%	--	(26.0)%	16.2%
Northwestel Inc.**	**1998**	131.4	76	55.4	41.2%	26.8	28.6	21.8%	6.1	4.6%	33.4	33.2
	1999	139.9	75.8	64.1	45.8%	29.3	34.8	24.9%	13.1	9.4%	30.5	44.1
12-month change		6.5%	(0.3)%	15.7%	--	9.3%	21.7%	--	114.8%	--	(8.7)%	32.8%
Northern Telephone Limited**	**1998**	57.1	33.3	23.8	41.7%	10.8	13	22.8%	4.7	8.2%	17.3	17.1
	1999	59.9	35.9	24	40.1%	11.3	12.7	21.2%	3.7	6.2%	19.3	17.7
12-month change		4.9%	7.8%	0.8%	--	4.6%	(2.3)%	--	(21.3)%	--	11.6%	3.5%
Teleglobe Communications Corporation (TCC)	**1998**	1611.2	n/a	n/a	--	79.7	n/a	--	-1	(0.1)%	283.8	n/a
	1999	1417.3	n/a	n/a	--	78.3	n/a	--	116.4	8.2%	412.5	n/a
12-month change		(12.0)%	--	--	--	(1.8)%	--	--	(11740)%	--	45.3%	--
Aliant Telecom Inc.	**1998**	1519.2	833.3	685.9	45.1%	309.5	376.4	24.8%	153.3	10.1%	292.8	375.3
	1999	1596.8	955	641.7	40.2%	308.1	333.6	20.9%	130.3	8.2%	338.4	422.1
12-month change		5.1%	14.6%	(6.4)%	--	(0.5)%	(11.4)%	--	(15.0)%	--	15.6%	12.5%
MTS Communications Inc.	**1998**	594	318	276	46.5%	156	120	20.2%	n/a	n/a	118	n/a
	1999	607	319	288	47.4%	157	131	21.6%	n/a	n/a	92	n/a
12-month change		2.2%	0.3%	4.3%	--	0.6%	9.2%	--	--	--	(22.0)%	--
TELUS Communications (BC) Inc.	**1998**	2641.4	1554.4	1087	41.2%	437.3	649.7	24.6%	-248	(9.4)%	472	593.5
	1999	2635.6	1532	1103.6	41.9%	411.1	692.5	26.3%	234.1	8.9%	482.3	756.8
12-month change		(0.2)%	(1.4)%	1.5%	--	(6.0)%	6.6%	--	(194.4)%	--	2.2%	27.5%
TELUS Communications Inc.	**1998**	2478.2	1438.3	1039.9	42.0%	472.7	567.2	22.9%	207.5	8.4%	476.7	824.9
	1999	2566.1	1593.4	972.7	37.9%	534.1	438.6	17.1%	82.8	3.2%	393.1	874.9
12-month change		3.5%	10.8%	(6.5)%	--	13.0%	(22.7)%	--	(60.1)%	--	(17.5)%	6.1%

Dep. & Amort.-Depreciation and Amortization Expense; EBITDA-Earnings Before Interest, Taxes, Depreciation and Amortization; EBIT-Earnings Before Interest and Taxes; Capital Exp.-Capital Expenditures; CFO-Cash Flow from Operations; n/a not available; -- not applicable; * Includes the results of Mobility Canada affiliate; **Subsidary of Bell Canada

Source: Public financial statements

Table 4-2 (Cont'd)

Major Publicly Reporting Incumbent Telecommunications Carriers Year-End Financial Results, 1998 and 1999

	Year	Revenue	Operating Expenses	EBITDA	EBITDA Margin	Dep. & Amort.	EBIT	EBIT Margin	Net Income	Net Margin	Capital Exp.	CFO
Millions of dollars unless indicated otherwise												
Québec-Telephone	**1998**	261.3	146.9	114.4	43.8%	59.3	55.1	21.1%	29.2	11.2%	34.1	60.8
	1999	254.8	149.5	105.3	41.3%	56	49.3	19.3%	-26.8	(10.5)%	52.1	52.8
12-month change		(2.5)%	1.8%	(8.0)%	--	(5.6)%	(10.5)%	--	(191.8)%	--	52.8%	(13.2)%
Saskatchewan Telecommunications	**1998**	626.1	407.3	218.8	34.9%	124.1	94.7	15.1%	71.4	11.4 %	137.6	n/a
	1999	613.2	435	178.1	29.0%	130.1	48	7.8%	n/a	--	134.5	n/a
12-month change		(2.1)%	6.8%	(18.6)%	--	4.8%	(49.3)%	--	--	--	(2.3)%	--
AT&T Canada Inc.	**1998**	76.2	135.4	-59.2	(77.7)%	54.7	-113.9	(149.5)%	-212.8	(279.3)%	373.9	-83.2
	1999	866.7	998.2	-131.5	(15.2)%	232.8	-364.3	(42.0)%	-5.3	(0.6)%	724.4	-162.6
12-month change		1037.4%	637.2%	122.1%	--	325.6%	219.8%	--	(97.5)%	--	93.7%	95.4%
Call-Net Enterprises Inc. (Sprint Canada)	**1998**	1227.6	1249.6	-22	(1.8)%	111.7	-133.7	(10.9)%	-236.7	(19.3)%	346.7	-74.1
	1999	1284.2	1283.7	0.5	0.0%	206.2	-205.7	(16.0)%	-399.3	(31.1)%	591	-80.6
12-month change		4.6%	2.7%	(102.3)%	--	84.6%	53.9%	--	68.7%	--	70.5	8.8

Dep. & Amort.-Depreciation and Amortization Expense; EBITDA-Earnings Before Interest, Taxes, Depreciation and Amortization; EBIT-Earnings Before Interest and Taxes; Capital Exp.-Capital Expenditures; CFO-Cash Flow from Operations; n/a not available; -- not applicable; * Includes the results of Mobility Canada affiliate; **Subsidary of Bell Canada
Source: Public financial statements

Table 4-3

Major Publically Reporting Wireless Companies Year-End Financial Results, 1998 and 1999

	Year	Revenue	Operating Expenses	EBITDA	EBITDA Margin	Dep. & Amort.	EBIT	EBIT Margin	Net Income	Net Margin	Capital Exp.	CFO
Millions of dollars unless indicated otherwise												
Rogers AT&T Wireless	**1998**	1242.9	857.3	385.6	31.0%	274.3	111.4	9.0%	-78.6	(6.3)%	301.3	250.8
	1999	1351.7	939.2	412.5	30.5%	285.5	127	9.4%	-35.8	(2.6)%	401	265.9
12-month change		8.8%	9.6%	7.0%	--	4.1%	14.0%	--	(54.5)%	--	33.1%	6.0%
Clearnet	**1998**	228.2	510.6	-282.4	(123.8)%	135.1	-417.5	(183.0)%	-544	(238.4)%	266.8	-265.8
	1999	353.5	550.8	-197.3	(55.8)%	183.8	-381.1	(107.8)%	-581.8	(164.6)%	356.4	-198.1
12-month change		54.9%	7.9%	(30.1)%	--	36.0%	(8.7)%	--	6.9%	--	33.6%	(25.5)%
Microcell	**1998**	143.4	362.5	-219.1	(152.8)%	75.6	-294.6	(205.4)%	-408.9	(285.1)%	201.8	-220.7
	1999	271.4	434.4	-163	(60.1)%	107.4	-270.4	(99.6)%	-432.6	(159.4)%	133.6	-230.4
12-month change		89.3%	19.8%	(25.6)%	--	42.1%	(8.2)%	--	5.8%	--	(33.8)%	4.4%
Bell Mobility	**1998**	1294.2	990.8	303.4	23.4%	245.4	58	4.5%	0.3	0.0%	392.5	368.3
	1999	n/a	n/a	n/a	--	n/a	n/a	--	n/a	--	n/a	n/a
12-month change		--	--	--	--	--	--	--	--	--	--	--

Dep. & Amort.-Depreciation and Amortization Expense; EBITDA-Earnings Before Interest, Taxes, Depreciation and Amortization; EBIT-Earnings Before Interest and Taxes; Capital Exp.-Capital Expenditures; CFO-Cash Flow from Operations; n/a not available; -- not applicable; * Includes the results of Mobility Canada affiliate; **Subsidary of Bell Canada

Source: Public financial statements

5.0 FINANCIAL OVERVIEW OF BROADCASTING AND CABLE TV INDUSTRY[1]

This section provides a brief summary of financial performance in the Canadian broadcasting and cableTV industry. It is followed by a more detailed corporate and financial profile of the major broadcasting and cableTV companies for the years 1991 to 1999[2].

5.1 CORPORATE COMPANY PROFILES, 2000

The following provides summary of the principal activities of the three major broadcasting and cableTV service providers, Rogers Communication Inc., Shaw Communications Inc. and CanWest Global. Each section contains a brief description of the company and a recent organizational chart based in part on information obtained from the CRTC and by Industry Canada. In addition, each write-up summarizes some of the major lines of business as well as more recent corporate activities that may not be reflected in the organizational charts.

Rogers Communications

Rogers Communications Inc. owns Rogers AT&T Wireless, Rogers Cable Inc. and Rogers Media Inc. Its assets were $6.4 billion and its revenues were $3.1 billion in 1999.

The following section groups select recent corporate activities as they relate to some broadly defined lines of business. The organization chart can also be used to put these activities into a wider corporate overview, (Figure 5-1).

Telecommunications

Rogers AT&T Wireless is a national carrier with approximately 2.6 million wireless customers. Its networks cover 93% of the Canadian population with analog service and 81% with digital service. Revenues of Rogers AT&T Wireless were $1.4 billion in 1999. In 2000, it announced it would invest over $14.7 million to expand its wireless network coverage in New Brunswick, an additional $17.7 million in Nova Scotia, a further $6 million in Alberta and $11 million in Manitoba.

[1]This report does not attempt to provide a full description of the broadcasting industry. The CRTC has a comprehensive document on broadcasting titled, "*Broadcasting Policy Monitoring Report*" released in January 2001.

[2]Ibid.

Internet
Rogers@Home provides high-speed Internet access for residential subscribers through cable modems. As of September 30, 2000 they had approximately 300,000 @Home subscribers. Its cable network currently has over 92% two-way transmission capability. Rogers Cable had revenues of $1.1 billion in 1999. In October 2000, Rogers announced that it would partner with Futureways Communications Inc. to construct high-speed fibre links to the home.

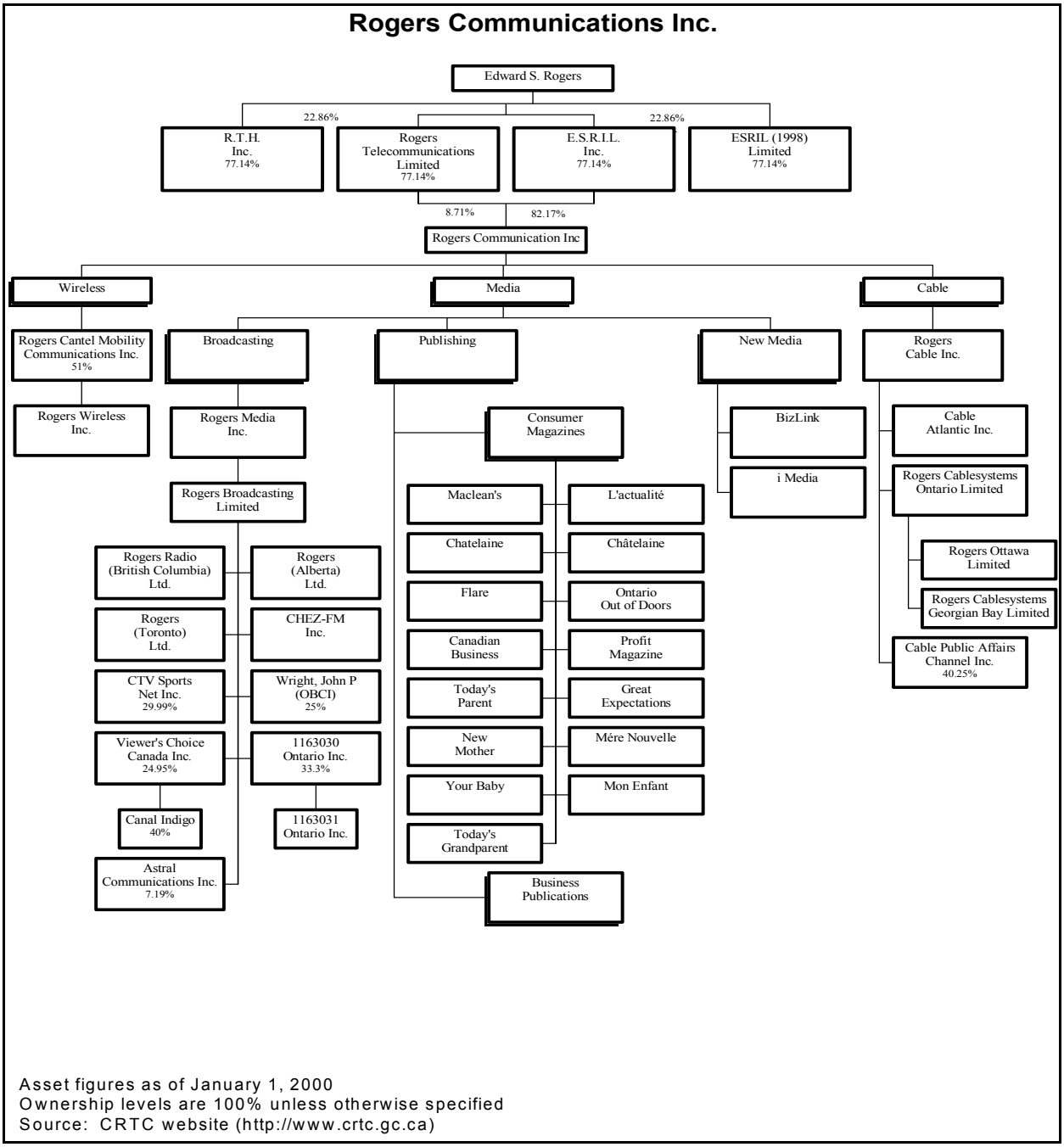
Cable
Rogers Cable is Canada's largest cable television service provider with over 2.2 million customers in Toronto, Ottawa, Vancouver and Southwestern Ontario. Rogers also owns 11.6% of Cogeco cable, and 11.4% of Cogeco Inc. Cogeco cable has 914,000 cable subscribers in Ontario and Quebec. Rogers Cable acquired Cable Atlantic Inc. with approximately 75,000 subscribers in 2000.

Broadcasting
Rogers Media comprises 30 radio stations, a televised home shopping channel *(The Shopping Channel)*, a multi-cultural television station in Toronto (*CFMT-TV*), ownership interests in three cable programming services. Rogers Media had revenues of $607.6 million in 1999.

Publishing
Rogers Media also has 11 consumer magazines, 40 business periodicals, directories and information products, and a new media division. Some of these include *Maclean's, Today's Parent,* and *MoneySense*.

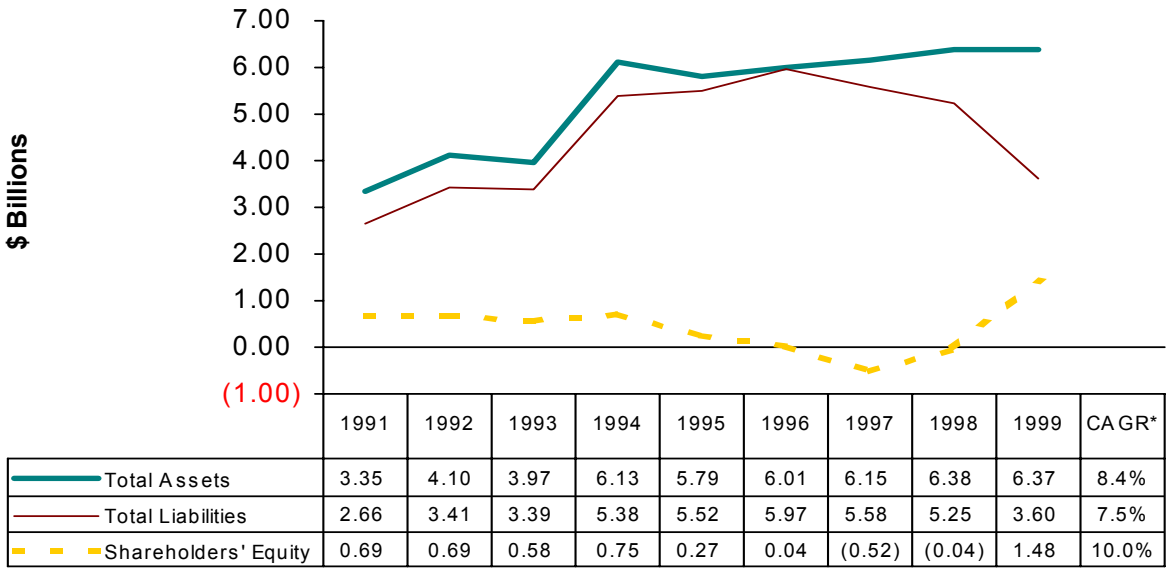
Key historical financial data are provided in Figure 5-2, and Figure 5-3.

Figure 5-1



Structure as of Fall 2000.
Ownership levels are 100% unless otherwise specified
Source: Industry Canada based on CRTC Website (http://www.crtc.gc.ca)

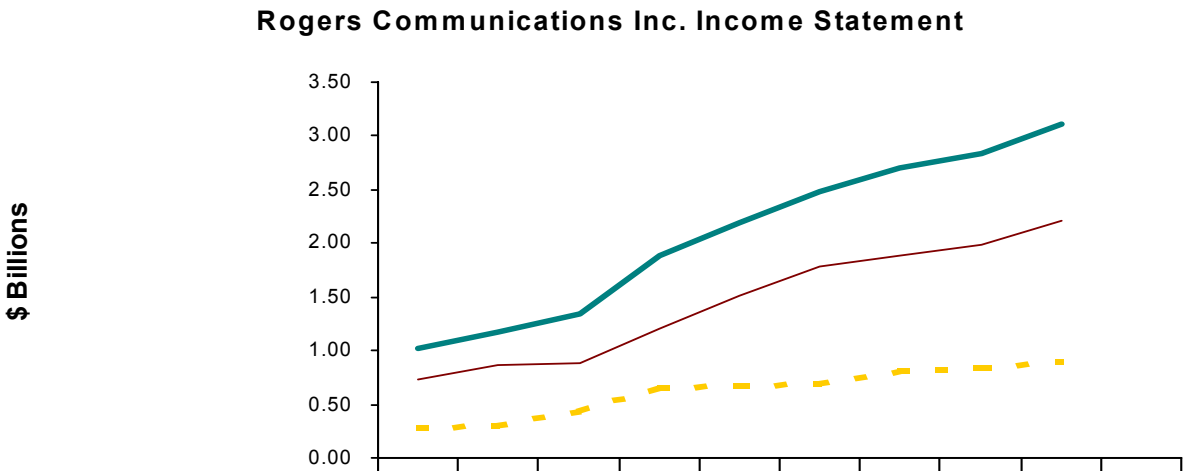
Figure 5-2



	1991	1992	1993	1994	1995	1996	1997	1998	1999	CAGR*
Total Assets	3.35	4.10	3.97	6.13	5.79	6.01	6.15	6.38	6.37	8.4%
Total Liabilities	2.66	3.41	3.39	5.38	5.52	5.97	5.58	5.25	3.60	7.5%
Shareholders' Equity	0.69	0.69	0.58	0.75	0.27	0.04	(0.52)	(0.04)	1.48	10.0%

* Compound Annual Growth Rate (CAGR), CAGR 1991-1999. Figures may not add up due to rounding.
Source: Rogers Communications Inc. Annual Reports and Web Site (www.sedar.com)

Figure 5-3



	1991	1992	1993	1994	1995	1996	1997	1998	1999	CAGR*
Operating Revenue	1.01	1.17	1.34	1.88	2.20	2.48	2.70	2.84	3.11	15.1%
Operating Expenses	0.73	0.86	0.89	1.21	1.52	1.78	1.88	1.98	2.21	14.9%
Operating Profit (EBITDA)	0.29	0.31	0.45	0.67	0.68	0.7	0.81	0.86	0.89	15.0%

* Compound Annual Growth Rate (CAGR), CAGR 1991-1999. Figures may not add up due to rounding.
Source: Rogers Communications Inc. Annual Reports and Web Site (www.sedar.com)

Shaw

Shaw Communications Inc. owns Shaw Cable Systems, Shaw FiberLink Ltd. and Shaw MobileComm. It also owns directly and indirectly 94.5% of Cancom. Its assets were $3.7 billion and its revenues were $728 million in 1999.

The following section groups recent corporate activities as they relate to some broadly defined lines of business. The organization chart can also be used to put these activities into a wider corporate overview, (Figure 5-4).

Telecommunications

SHAW FiberLink – provides data, Internet, local and wide area network, video and voice connectivity to business customers over high speed fiber optic synchronous optical networks (SONET). Revenues from telecommunications and paging were $57.7 million in 1999.

The fiber network increased from 3,300 to 4,800 route kilometers; fibre strand kilometers from 197,000 to 230,000; and points of presence from 570 to 974 in 1999.

Internet

Shaw@home provides high-speed Internet access for residential subscribers through cable modems. In September, 2000 it had approximately 280,000 @Home subscribers. Planned plant upgrades are expected to provide two-way capability to 90% of homes passed, permitting high-speed Internet access. Revenues from Internet service were $40.1 million in 1999.

Broadcasting

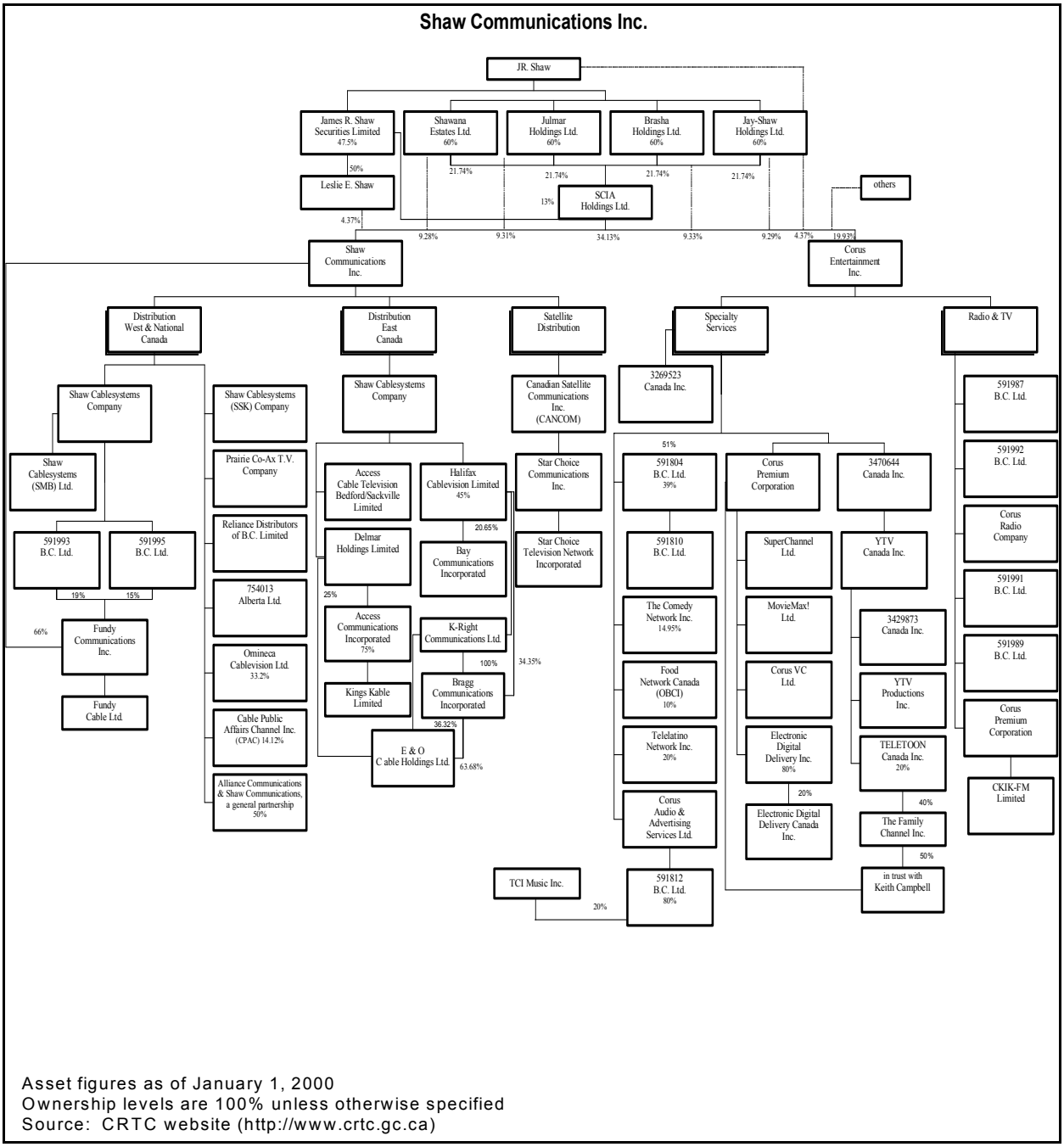
Shaw provides cable television to customers in seven provinces across Canada and 98% of these customers have access to digital services. In March, 2000 it had 1.8 million subscribers. Revenues from cable operations were $637.1 million in 1999.

Star Choice is one of Canada's two licensed Direct to Home (DTH) satellite operators distributing digital subscription video and audio programming services. In September, 2000 it had 470,000 subscribers.

Effective September 1, 1999 CORUS Entertainment Inc. became a publically traded corporation operating radio broadcasting, specialty TV, digital audio services and cable advertising services previously owned by Shaw. Corus's revenues were $162.4 million in 1999. Shaw also owns assets transferred from Western International Communications Ltd.(WIC).

Key historical financial data are provided in Figure 5-5 and 5-6.

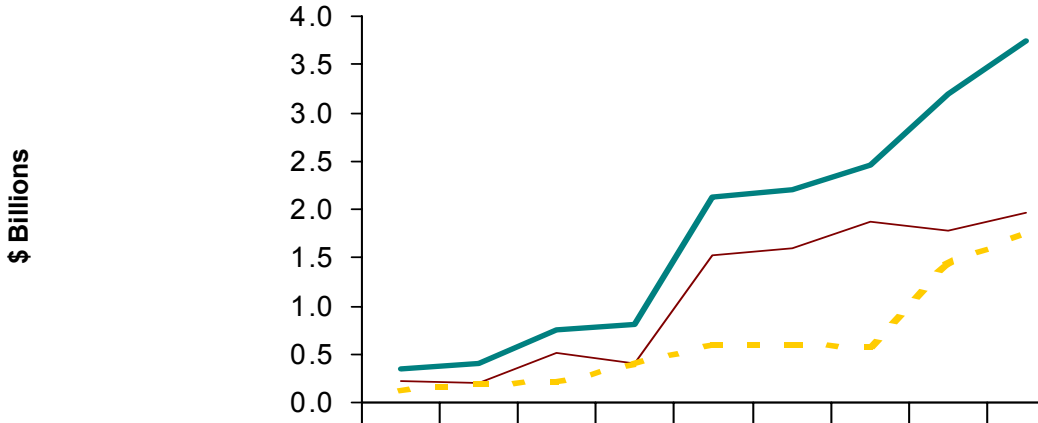
Figure 5-4



Structure as of Fall 2000.
Ownership levels are 100% unless otherwise specified
Source: Industry Canada based on CRTC Website (http://www.crtc.gc.ca)

Figure 5-5

Shaw Communications Inc. Balance Sheet

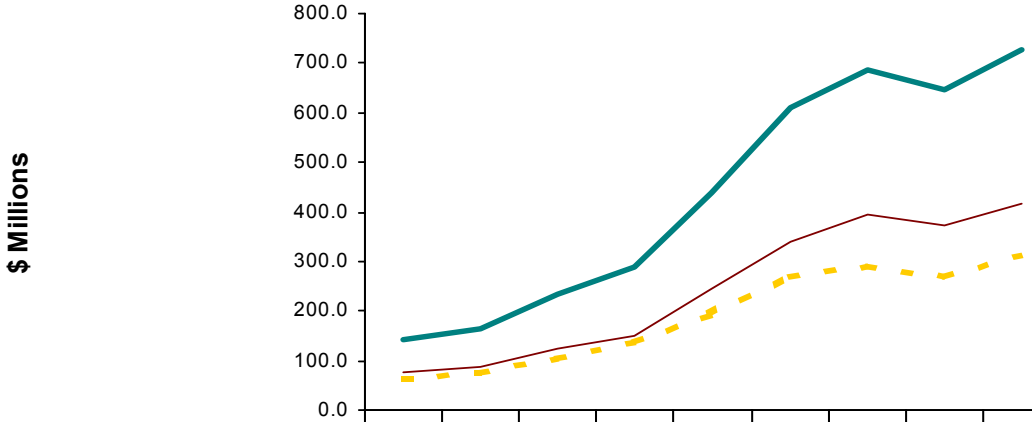


	1991	1992	1993	1994	1995	1996	1997	1998	1999	CAGR*
Total Assets	0.3	0.4	0.7	0.8	2.1	2.2	2.5	3.2	3.7	36.9%
Total Liabilities	0.2	0.2	0.5	0.4	1.5	1.6	1.9	1.8	2.0	33.4%
Shareholders' Equity	0.1	0.2	0.2	0.4	0.6	0.6	0.6	1.4	1.8	43.5%

* Compound Annual Growth Rate (CAGR), CAGR 1991-1999. Figures may not add up due to rounding.
Source: Shaw Communications Inc. Annual Reports and Web Site (www.sedar.com)

Figure 5-6

Shaw Communications Inc. Income Statement



	1991	1992	1993	1994	1995	1996	1997	1998	1999	CAGR*
Operating Revenue	142.1	166.0	233.0	287.0	438.5	611.0	688.4	646.0	728.3	22.7%
Operating Expenses	77.0	89.0	125.7	148.0	246.3	339.0	395.2	374.0	415.1	23.4%
Operating Profit (EBITDA)	65.1	77.0	107.4	139.0	192.3	272.0	293.2	272.0	313.2	21.7%

* Compound Annual Growth Rate (CAGR), CAGR 1991-1999. Figures may not add up due to rounding.
Source: Shaw Communications Inc. Annual Reports and Web Site (www.sedar.com)

CanWest Global Communications Corp.

CanWest Global owns the Global Televison Network, the principal metropolitan operations of the Hollinger group, 57.5% of the Network TEN in Australia, CanWest Radio New Zealand, CanWest Entertainment, CanVideo Television Sales and Internet Broadcasting System. Its assets were $1.6 billion and its revenues were $602 million in 1999.

The following section groups recent corporate activities as they relate to some broadly defined lines of business. The organization chart can also be used to put these activities into a wider corporate overview, (Figure 5-7).

Internet

CanWest provides interactive media, as such it does own 30% of Medbroadcast.com, and 20% of Internet Broadcasting Systems. The former is a Canadian based online medical service providing information on health related subjects. The latter is a US-based Website developer specializing in local television news and information portals. CanWest also has more than 40 North American television Websites.

Broadcasting

The Global Television Network, which consists of 10 Canadian television stations owned by CanWest, reaches 88% of English-speaking Canada. In 1999, the broadcasting revenues of CanWest were around $0.6 billion.

In July 2000, the CRTC approved CanWest's purchase of television stations in British Columbia, Alberta, and Ontario, formerly owned by WIC Western International Communications Ltd., and WIC's video-on-demand (VOD), and *Report on Business Television*.

Publishing

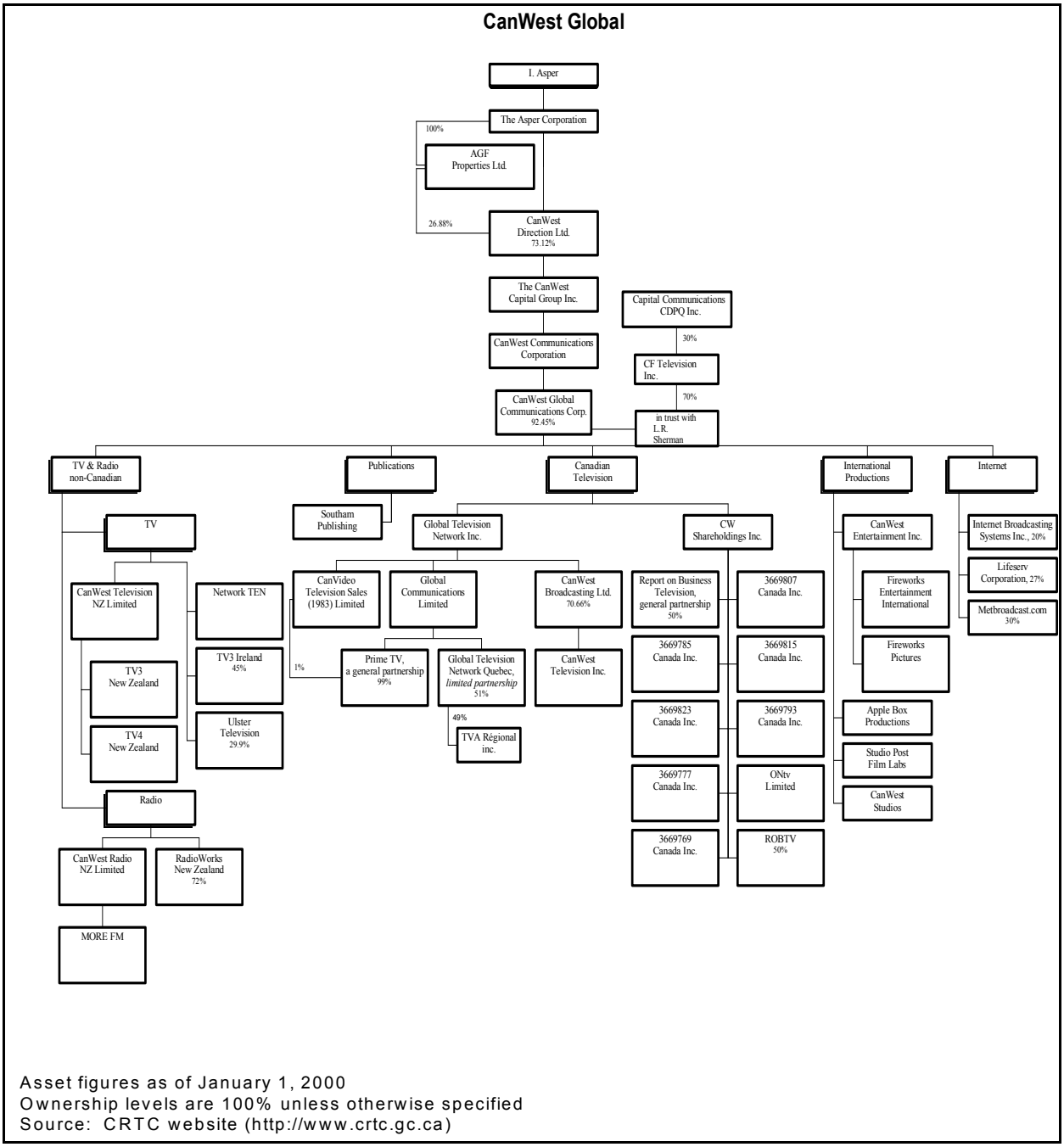
In July, 2000, CanWest became involved in the publication business when it announced that it would purchase select assets of Hollinger Inc., worth more than $3.0 billion. The more than 180 small newspaper and trade publications include a 50% interest in the *National Post* and Hollinger's 13 big city dailies.

Mergers and Acquisitions

In addition to the publishing assets of the July acquisition, Canwest gained control of Hollinger's operating Canadian Internet properties including various Websites. CanWest will control more than two dozen popular Websites tied to the newspapers and television stations. CanWest will compete with BCE's new media company, Bell Globemedia.

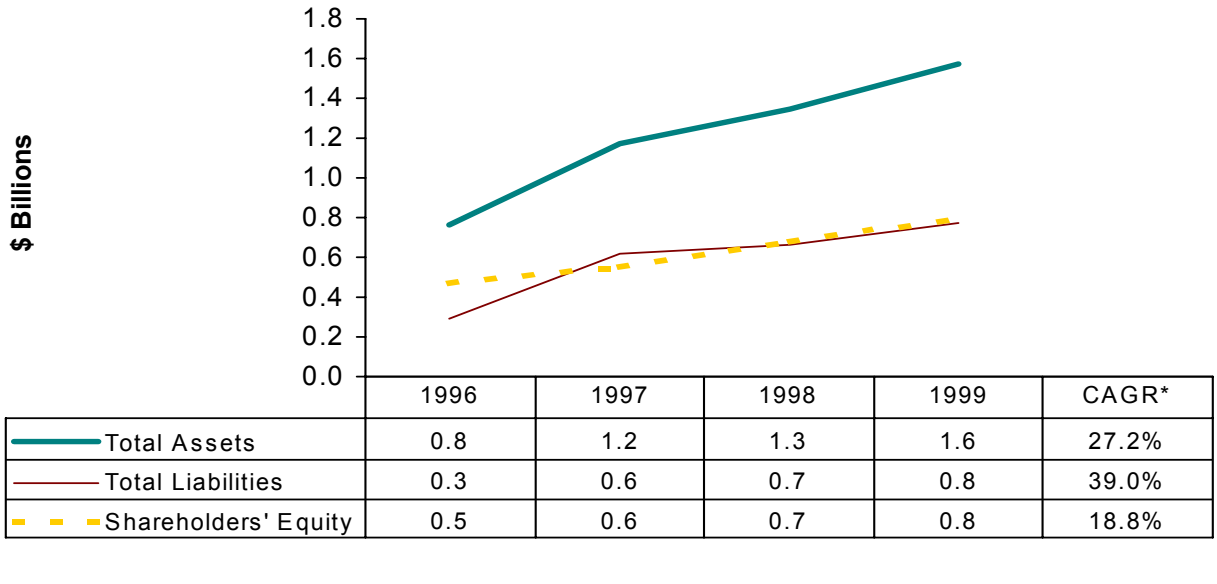
Key historical financial data are provided in Figure 5-8 and 5-9.

Figure 5-7



Structure as of Fall 2000.
Ownership levels are 100% unless otherwise specified
Source: Industry Canada based on CRTC Website (http://www.crtc.gc.ca)

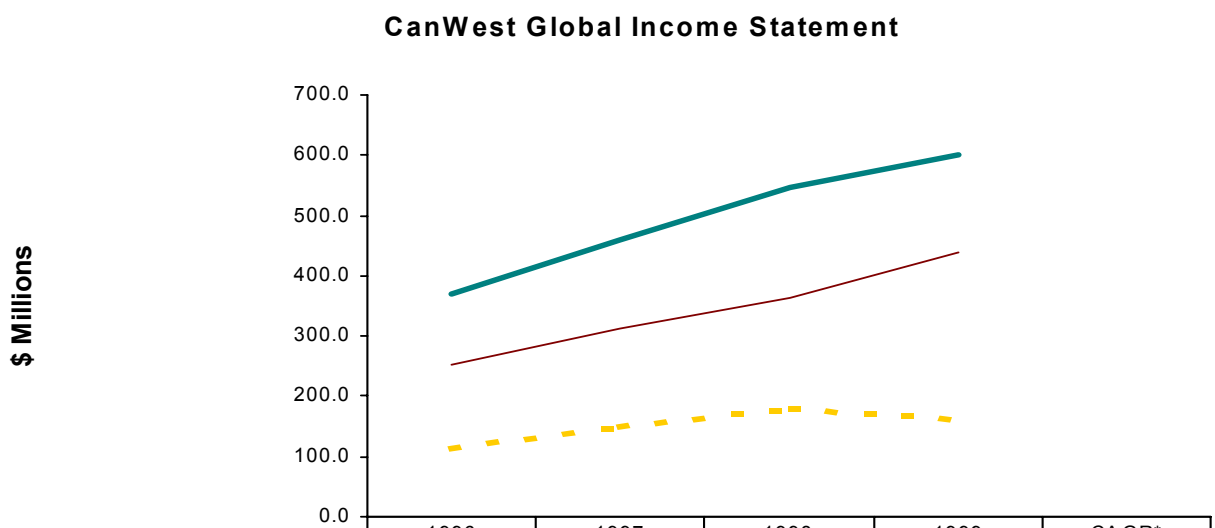
Figure 5-8



	1996	1997	1998	1999	CAGR*
Total Assets	0.8	1.2	1.3	1.6	27.2%
Total Liabilities	0.3	0.6	0.7	0.8	39.0%
Shareholders' Equity	0.5	0.6	0.7	0.8	18.8%

* Compound Annual Growth Rate (CAGR) CAGR 1996-1999
Source: CanWest Global Communications Corp. Annual Reports and Web Site (www.canwestglobal.com)

Figure 5-9



	1996	1997	1998	1999	CAGR*
Operating Revenue	368.6	460.4	545.3	602.3	17.8%
Operating Expenses	253.5	311.2	364.5	439.1	20.1%
Operating Profit (EBITDA)	115.2	149.2	180.8	163.2	12.3%

* Compound Annual Growth Rate (CAGR) CAGR 1996-1999
Source: CanWest Global Communications Corp. Annual Reports and Web Site (www.canwestglobal.com)

5.2 FINANCIAL PROFILES OF CANADIAN BROADCASTING AND CABLE TV COMPANIES, 1991-1999

Table 5-1 provides financial information for the major publically traded holding companies of the broadcasting and cable companies. Table 5-2, provides, where possible, the information on the actual cable operations. Table 5-3 provides information on the broadcasting company included in this overview report.

Table 5-1

Major Parent/Holding Cable Companies
Year-End Financial Results, 1998 and 1999

	Year	Revenue	Operating Expenses	EBITDA	EBITDA Margin	Dep. & Amort.	EBIT	EBIT Margin	Net Income	Net Margin	Capital Exp.	CFO
Millions of dollars unless indicated otherwise												
Rogers Communications Inc.	**1998**	2839.2	1984.1	855.1	30.1%	569.6	285.5	10.1%	634.8	22.4%	658.5	331.6
	1999	3107.8	2214	893.8	28.8%	607.5	286.3	9.2%	840.5	27.0%	832.4	366.2
12-month change		9.5%	11.6%	4.5%	--	6.7%	0.3%	--	32.4%	--	26.4%	10.4%
Shaw Communications Inc.	**1998**	646	373.8	272.2	42.1%	137.1	135.1	20.9%	13.5	2.1%	252.8	113.4
	1999	728.3	415.1	313.2	43.0%	159.1	154.1	21.2%	45.8	6.3%	313.8	220.6
12-month change		12.7%	11.0%	15.1%	--	16.0%	14.1%	--	239.3%	--	24.1%	94.5%
COGECO Inc.	**1998**	316.1	181.7	134.4	42.5%	43.8	90.6	28.7%	20.2	6.4%	82.5	85.2
	1999	358.9	210.9	148	41.2%	52.2	95.8	26.7%	53.3	14.9%	136.5	126.5
12-month change		13.5%	16.1%	10.1%	--	19.2%	5.7%	--	163.9%	--	65.5%	48.5%
Moffat Communications Ltd. (Videon)	**1998**	140.8	89.2	51.6	36.6%	17	34.6	24.6%	24.6	17.5%	23.7	35.5
	1999	233.5	139.4	94.1	40.3%	31.6	62.5	26.8%	21	9.0%	43.9	61.1
12-month change		65.8%	56.3%	82.4%	--	85.9%	80.6%	--	(14.6)%	--	85.2%	72.1%
WIC*	**1998**	570.4	483.2	87.2	15.3%	12.8	74.4	13.0%	6.6	1.2%	21.1	63.7
	1999	562.1	477.4	84.8	15.1%	12.9	71.8	12.8%	24	4.3%	19	60.8
12-month change		(1.5)%	(1.2)%	(2.8)%	--	0.8%	(3.5)%	--	263.6%	--	(10.0)%	(4.6)%

Dep. & Amort.-Depreciation and Amortization Expense; EBITDA-Earnings Before Interest, Taxes, Depreciation and Amortization; EBIT-Earnings Before Interest and Taxes; Capital Exp.-Capital Expenditures; CFO-Cash Flow from Operations; n/a not available; -- not applicable.
*: At the end of June, beginning of July 2000, WIC communications assets were divided between CanWest Global, Corus Enetertainment Inc, and Shaw Communications Inc.
Source: Public financial statements

Table 5-2

Major Cable Companies
Year-End Financial Results, 1998 and 1999

	Year	Revenue	Operating Expenses	EBITDA	EBITDA Margin	Dep. & Amort.	EBIT	EBIT Margin	Net Income	Net Margin	Capital Exp.	CFO
Millions of dollars unless indicated otherwise												
Rogers Cable	**1998**	1027	649.1	377.9	36.8%	244.9	133	12.9%	70.8	6.9%	310.3	n/a
	1999	1148.5	760.5	388	33.8%	281	107	9.3%	-97.3	(8.5)%	413.5	n/a
12-month change		11.8%	17.2%	2.7%	--	14.7%	(19.5)%	--	(237.4)%	--	33.3%	--
Shaw Cable	**1998**	589.3	322.1	267.2	45.3%	n/a	n/a	n/a	n/a	n/a	185.7	n/a
	1999	637.1	349.4	287.7	45.2%	n/a	n/a	n/a	n/a	n/a	207.2	n/a
12-month change		8.1%	8.5%	7.7%	--	--	--	--	--	--	11.6%	--
Cogeco Cable Inc.	**1998**	286.9	160.2	126.7	44.2%	42.1	84.6	29.5%	32.5	11.3%	79.1	80.2
	1999	325.4	186.6	138.8	42.7%	49.9	88.9	27.3%	29	8.9%	134.4	121.9
12-month change		13.4%	16.5%	9.6%	--	18.5%	5.1%	--	(10.8)%	--	69.9%	52.0%
Videotron ltee	**1998**	574.6	340	234.6	40.8%	106.5	128.1	22.3%	142.3	24.8%	150.5	164
	1999	580.1	361.9	218.3	37.6%	104.1	114.2	19.7%	23.6	4.1%	189.9	198.1
12-month change		1.0%	6.4%	(6.9)%	--	(2.3)%	(10.9)%	--	(83.4)%	--	26.2%	20.8%

Dep. & Amort.-Depreciation and Amortization Expense; EBITDA-Earnings Before Interest, Taxes, Depreciation and Amortization; EBIT-Earnings Before Interest and Taxes; Capital Exp.-Capital Expenditures; CFO-Cash Flow from Operations; n/a not available; -- not applicable.
Source: Public financial statements

Table 5-3

Major Broadcasting Companies
Year-End Financial Results, 1998 and 1999

	Year	Revenue	Operating Expenses	EBITDA	EBITDA Margin	Dep. & Amort.	EBIT	EBIT Margin	Net Income	Net Margin	Capital Exp.	CFO
Millions of dollars unless indicated otherwise												
Corus Entertainment Inc.	**1998**	146.2	102.5	43.7	29.9%	12	31.7	21.7%	-4.3	(2.9)%	8.3	24.3
	1999	162.4	113.3	49.1	30.2%	13.5	35.6	21.9%	7.4	4.6%	6.5	35.4
12-month change		11.1%	10.5%	12.4%	--	12.5%	12.3%	--	(272.1)%	--	(21.7)%	45.7%
CanWest Global Communications Corp.	**1998**	545.3	364.5	180.8	33.2%	22.1	158.7	29.1%	200.1	36.7%	43.5	151.6
	1999	602.3	439.1	163.2	27.1%	29.3	133.9	22.2%	146.1	24.3%	17.9	106.1
12-month change		10.5%	20.5%	(9.7)%	--	32.6%	(15.6)%	--	(27.0)%	--	(58.9)%	(30.0)%

Dep. & Amort.-Depreciation and Amortization Expense; EBITDA-Earnings Before Interest, Taxes, Depreciation and Amortization; EBIT-Earnings Before Interest and Taxes; Capital Exp.-Capital Expenditures; CFO-Cash Flow from Operations; n/a not available; -- not applicable.
Source: Public financial statements

6.0 THE EVOLUTION OF COMPETITION IN THE CANADIAN TELECOMMUNICATIONS SERVICE MARKET

6.1 INTRODUCTION

Competition has been introduced gradually to the Canadian telecommunications service market over the last 20 years through policy and regulatory initiatives by the federal government and its regulator. This process started in 1979 with the end of the telephone companies' monopoly on private lines interconnected with the public switched telephone network. This was soon followed by similar liberalization of the market for providing telephones and other customer premises equipment in 1980. In the 1980s, competition was allowed in the resale of certain telecommunication services. In 1984, the government established a more competitive industry structure–duopoly–in the mobile cellular telephone market, through its licensing of two providers in each region of the country.

The pace of liberalization accelerated in the 1990s. In 1992, the market for public long distance voice services was opened to competition. This was consistent with the policy objectives of legislation introduced by the government earlier that year, which passed into law in 1993 as the *Telecommunications Act* (the *Act*). The *Act* provided the legislative framework for future initiatives to introduce competition in the telecommunications market. Through the licensing of Personal Communication Service (PCS) spectrum in 1995 under the *Radiocommunication Act*, two more competitors were allowed into the mobile cellular telephone market. In 1997, the Canadian Radio-television and Telecommunications Commission (CRTC) announced the regulatory framework for competition in local telephone services. In 1998, the CRTC liberalized the public pay telephone service market. Also in 1998, the CRTC opened the facilities-based international telecommunications market to competition and established a new regulatory framework for all international services, thus fulfilling part of Canada's commitment in the World Trade Organization (WTO) Agreement on Basic Telecommunication services. In further fulfilment of the WTO agreement, Canada ended Telesat Canada's monopoly on satellite telecommunications carriage, effective March 1, 2000.

There are a few geographic areas in southern Canada served by "independent" local telephone companies which are not yet fully open to competition but are in the process of being liberalized. These companies serve rural areas and small towns, and represent less than 5% of total telecom revenues. In the case of northern Canada, (Northwest Territories, Yukon, Nunavut and northern British Columbia), the CRTC issued a decision in November of 2000 that will introduce long distance competition in the territory served by Northwestel.

Following the brief description of the roles of the government of Canada and the CRTC set out below, this section provides a description of the *1993 Telecommunications Act.* It then traces the evolution of competition in the Canadian telecommunications industry by describing the major regulatory and policy initiatives that contributed to the development of what has become a very

open and competitive industry structure. Table C-1 in Appendix C, provides a list of major milestones in this evolution**.**

Government of Canada

Industry Canada, the government department headed by the Minister of Industry, has responsibility for telecommunications policy and international submarine cable licensing under the *Telecommunications Act*, and responsibility for spectrum policy and management under the *Radiocommunication Act*.

Under the *Radiocommunication Act*, licences issued by Industry Canada are required for the use of radio spectrum to provide a wide range of radiocommunication including satellite and wireless communications services. Industry Canada allocates the spectrum with a view to advancing public policy objectives, preventing harmful interference and enforcing international obligations. When exercising powers under the *Radiocommunication Act*, the Minister of Industry may take into account all matters considered relevant for ensuring the orderly establishment or modification of radio stations and the orderly development and efficient operation of radiocommunication in Canada. The Minister may also have regard to the Canadian telecommunications policy objectives set out in the *Telecommunications Act*.

More information regarding international submarine cable licensing requirements can be found in section 6.5. In addition, more information on spectrum policy and management can be found on Industry Canada's Web site at http://strategis.ic.gc.ca/sc_mrksv/spectrum/engdoc/spect1.html.

The Canadian Radio-television and Telecommunications Commission

The CRTC is responsible for the regulation and supervision of telecommunications and broadcasting services in Canada. The CRTC is an independent federal agency with quasi-judicial status. Its institutional structure and powers are outlined in the *CRTC Act*, the *Broadcasting Act* and, as described above, the *Telecommunications Act*. The *CRTC Act* provides for up to 13 full-time and 6 part-time members (Commissioners), to be appointed by the Governor in Council for terms not exceeding five years. The CRTC currently functions with 13 full-time members and no part-time members.

More information about the CRTC can be obtained on the CRTC's Web site at http://www.crtc.gc.ca or by phone at (819) 997-0313.

6.2 THE 1993 TELECOMMUNICATIONS ACT

Introduced in Parliament in February 1992, Canada's *Telecommunications Act* came into force on October 25, 1993. The *Act* consolidated and updated laws governing Canadian telecommunications, some of which dated from 1908. The legislation brought amendments to the *Radiocommunication Act*, and to the *Special Acts* relating to Bell Canada, BC Tel, Teleglobe Canada and Telesat Canada. It repealed the *National Telecommunications Powers and Procedures Act* and the *Telegraphs Act*, and those sections of the *Railway Act* which formerly dealt with telecommunications. It represented a hard-won consensus, built on consultations with industry, business users, consumers, unions and the provinces. Key factors underlying the need to modernize Canadian law in this field included:

- rapid developments in telecommunications technologies and accelerated introduction of new services;
- a global trend toward greater reliance on market forces and competition in telecommunication services; and
- a 1989 Supreme Court decision which confirmed federal jurisdiction over all of Canada's major telephone companies.

The *Telecommunications Act* established a new legislative framework for all federally-regulated common carriers. In so doing, it provided for an integrated Canadian market for telecommunication services. In addition, it allowed the federal regulator, the CRTC, to put in place a more flexible regulatory framework that fosters competition, innovation and the development of Canada's telecommunications service industry. This is becoming increasingly important as global markets continue to become more competitive.

Scope of the *Act*

The *Act* provides for the regulation, where required, of Canadian telecommunications common carriers. These include, among others, the incumbent telephone companies, the new competitive local and long distance service providers, mobile and fixed wireless service providers, as well as satellite services providers.

"Resellers", who do not own or operate transmission facilities but rather lease them from Canadian carriers, are not subject to direct regulation under the *Act*. However, resellers contribute to a fund to support affordable local service and resellers of international services are subject to certain licencing requirements (see section 6.4).

Canadian Telecommunications Policy

One of the significant features of the *Telecommunications Act* that distinguishes it from previous legislation is the inclusion in section 7 of a statement of Canadian Telecommunications Policy. Section 7 of the *Telecommunications Act* reads as follows:

> "7. It is hereby affirmed that telecommunications performs an essential role in the maintenance of Canada's identity and sovereignty and that the Canadian telecommunications policy has as its objectives
>
> (a) to facilitate the orderly development throughout Canada of a telecommunications system that serves to safeguard, enrich and strengthen the social and economic fabric of Canada and its regions;
>
> (b) to render reliable and affordable telecommunication services of high quality accessible to Canadians in both urban and rural areas in all regions of Canada;
>
> (c) to enhance the efficiency and competitiveness, at the national and international levels, of Canadian telecommunications;
>
> (d) to promote the ownership and control of Canadian carriers by Canadians;
>
> (e) to promote the use of Canadian transmission facilities for telecommunications within Canada and between Canada and points outside Canada;
>
> (f) to foster increased reliance on market forces for the provision of telecommunication services and to ensure that regulation, where required, is efficient and effective;
>
> (g) to stimulate research and development in Canada in the field of telecommunications and to encourage innovation in the provision of telecommunication services;
>
> (h) to respond to the economic and social requirements of users of telecommunication services; and
>
> (i) to contribute to the protection of the privacy of persons."

Powers of the Government and the CRTC

Under the *Telecommunications Act*, the Governor in Council has the authority to issue directions of general application on broad policy matters to the CRTC (s.8). The Governor in Council may also vary, rescind or refer back CRTC telecommunications decisions - either on petition in writing presented to the Governor in Council within 90 days after a decision, or of its own motion (s.12). The Minister of Industry has the authority to establish technical standards and to require the CRTC to enforce these standards (s.15). Both the public and the provinces must be informed and have an opportunity to comment before any of these powers are used. The Governor in Council may also require the Commission to make a report on any telecommunications matter within the Commission's jurisdiction (s.14). The Minister also has the authority to issue licences for international submarine cables that pass through, or land in Canada, and the Governor in Council may issue regulations in relation to those licences (s.17-22). In addition, the Governor in Council can make regulations to implement various aspects of the Canadian ownership requirements (s.22). The Governor in Council power to review CRTC telecommunications decisions has existed since 1976 and has been used sparingly (22 times in 24 years out of a total of over 26,000 CRTC decisions). The *Telecommunications Act* power to issue policy directions has never been used.

The *Telecommunications Act* gives the CRTC a broad range of powers, which must be exercised with a view to implementing the policy in section 7 of the *Act* and any directions issued by the Governor in Council. For example, the CRTC must ensure that rates are just and reasonable and that Canadian carriers do not discriminate unjustly or accord any undue preference with respect to the telecommunications services they offer (s.27). The CRTC may also settle disputes between Canadian carriers and municipalities or other public authorities regarding the use of rights-of-way (s.42-45).

An important and frequently used new power granted to the CRTC in the *Act* is the power to forbear (s.34). Section 34 (1) gives the CRTC the power to forbear from regulating a service or a class of services provided by a Canadian carrier where it finds that to do so would be consistent with the *Act*'s telecommunications policy objectives. Under section 34 (2), the CRTC must forbear where it finds that a service or class of services is or will be subject to competition sufficient to protect the interests of users. The Commission can forbear from the exercise of only certain of its responsibilities and obligations under the *Act*. Moreover, it may do so in whole or in part, with or without conditions. In many of its forbearance determinations, the CRTC has eliminated the requirement for carriers to file tariffs and agreements for approval but has retained its powers to address instances of undue preference or anti-competitive behaviour, should they arise. The CRTC has forborne from regulation for most of the services of wireless carriers and new entrants and for a significant portion of services offered by the incumbent telephone companies. Table C-2 in Appendix C, provides a list of the CRTC's major forbearance determinations.

The *Telecommunications Act* was amended in May, 1998, by *An Act to Amend the Telecommunications Act and the Teleglobe Canada Reorganization and Divestiture Act*. The Act repealed sections of the *Teleglobe Canada Reorganization and Divestiture Act* that were related to Teleglobe's special investment and regulatory regime. It also amended the *Telecommunications Act* to exempt international submarine cables and earth stations from the foreign ownership and control restrictions (s.16(5)).

The 1998 amendments also provided the CRTC with authority to introduce a licensing regime for international services (s.16.1 - 16.4) and gave it responsibility for numbering administration (s. 46.1). Finally, the amendments authorized the CRTC to require any telecommunications service provider to contribute to a fund to support continuing access by Canadian to basic telecommunication services and to designate a person to administer that fund (s.46.5).

Canadian Ownership Policy

Section 16 of the *Act* establishes the Canadian ownership and control requirements applicable to the telecommunications industry. The fundamental objective of these rules is to ensure that the Canada's telecommunications infrastructure is owned and controlled by Canadians. Canadian carriers, that is companies owning telecommunications transmission facilities, used to offer service to the public, must have at least 80% of their voting shares owned by Canadians and not less than 80% of the members of their board of directors must be Canadians. In addition, these Canadian carriers must be controlled in fact by Canadians at all times. The Governor in Council has issued *The Canadian Telecommunications Common Carrier Ownership and Control Regulations* which establish that investor companies in such Canadian carriers will be treated as Canadian if at least 66 2/3% of their voting shares are held by Canadians. Resellers are not subject to these rules, nor do they apply to satellite earth stations or international submarine cables.

The *Radiocommunication Regulations*, made pursuant to the *Radiocommunication Act*, establish the Canadian ownership and control requirements for radiocommunication carrier licensees. These requirements are the same as those of section 16 of the *Telecommunications Act*.

6.3 MAJOR GOVERNMENT POLICY AND OTHER INITIATIVES ANNOUNCED SINCE 1995

Personal Communications Services (PCS)

PCS is a family of advanced mobile wireless digital telecommunication services rich in features that offers voice, data, and image communications. In December 1995, Industry Canada licensed fourteen companies to provide PCS services on a competitive basis across Canada. Two national 30 MHz PCS licences were awarded to Clearnet PCS Inc. and Microcell Telecommunications Inc. One national 10 MHz PCS licence was awarded to Rogers Wireless Inc. and 11 regional 10 MHz licences were awarded to the members of the Mobility Canada consortium. The Mobility Canada consortium dissolved in 1999 with three members, TELUS, BCTel Mobility, and Quebec Telephone, merging under TELUS and the remaining members forming the Bell Wireless Alliance. In October 2000, TELUS acquired Clearnet to form a national wireless company.

Convergence Policy

On August 6, 1996, the Government issued its Convergence Policy Statement, which established broad policy objectives for telecommunications and broadcasting in the context of the information highway. The Policy Statement was issued following an extensive public consultation process launched by the issuance of an Order in Council in October 1994. It covers three broad subject areas: network facilities, Canadian content, and competition. In summary, the Policy supports:

- interconnection, interoperability, unbundling and resale and sharing of network facilities that deliver telecommunication services to the public;
- continued measures to support the production and exhibition of Canadian content in broadcasting; and
- competition in facilities, products and services for the Information Highway.

Of particular interest, the Statement established a framework for competition between telecom carriers and cableTV companies in their core markets. Adopting a “no head starts” rule, the policy stated that telecom carriers may enter broadcasting distribution only after the CRTC has set the regulatory framework for competition in local telephone service and has approved related tariffs filed by the telephone companies. By January 1, 1998, barriers to entry into local telephony had been sufficiently addressed that the CRTC began permitting telephone companies to apply for broadcasting distribution licences.

The Convergence Policy also supports regulatory safeguards to ensure that competition is fair and that policy objectives are met. Consistent with the Policy Statement, the *Bell Canada Act* was subsequently amended to remove the prohibition on Bell Canada from holding a broadcasting licence.

Wireless Broadband

On October 29, 1996 the Minister announced that WIC Connexus Ltd. (33 major markets), MaxLink Communications Inc. (33 major markets) and RegionalVision Inc. (127 smaller communities) had been selected, through a comparative review process, to receive licences to provide Local Multipoint Communications Services (LMCS) in the 28 GHz frequency range. WIC Connexus and Regional Vision were subsequently acquired by MaxLink in June of 1999. MaxLink has rolled out commercial service in Ottawa, Montreal, Vancouver, Toronto and Calgary. It plans to be in 60 communities across Canada by 2003. Additional spectrum in the 28 GHz frequency will be made available for LMCS in the future through an auction process.

In a competitive licensing process in 2000, Inukshuk Internet Inc. and SaskTel were selected to offer Multipoint Communications System (MCS) broadband services at 2500 MHz to Canadians in service areas from coast to coast. Inukshuk will provide high-speed Internet service to small and medium sized businesses covering 70 per cent of Canadian households by their fifth year of deployment. The MCS licensing process also included a Learning Plan component to ensure the technology and service will benefit educational institutions and the broader learning community across the country. SaskTel proposes to offer access to 95 per cent of Saskatchewan's population and service more than 500 schools and libraries throughout the province by their third year of deployment. By the end of their fifth year, total investment for SaskTel and Inukshuk will reach more than $40 million, and $540 million respectively. A link to the Learning Plans and Non-Confidential Applications can be found at http://strategis.gc.ca/SSG/sf01920e.html.

WTO Agreement on Basic Telecommunication services

WTO negotiations on basic telecommunication services were held under the framework established by the General Agreement on Trade in Services (GATS). The two primary objectives of the negotiations were to allow more competition in the provision of telecommunication services, and to establish a transparent and predictable framework for trade and investment in telecommunication services. Canada's goal in the negotiations was to help Canadian telecommunications companies gain secure access to foreign markets such as the United States, Europe, Japan and developing markets in Asia and Latin America, and to ensure that Canadians continue to benefit from world-class communication services at competitive prices provided by a strong domestic industry.

The WTO negotiations concluded on February 15, 1997 with an agreement which came into force February 5, 1998. The WTO Agreement on Basic Telecommunication services established commitments on the part of signatory countries and created a dispute settlement process which provides the necessary safeguards to ensure that those commitments are respected.

The WTO Agreement on Basic Telecommunication services followed the Information Technology Agreement signed December 13, 1996, which liberalized trade in information technology equipment. The combined effects of these agreements has been to spur telecommunications investment around the world, increasing opportunities for Canadian telecommunications service providers and equipment manufacturers.

Industry Canada has adopted all necessary measures to implement, and in important areas, to exceed its obligations under the WTO Agreement. These measures include introducing amendments to the *Telecommunications Act* as described above in section 6.2.5.

In fulfilment of its obligations, Canada has removed foreign ownership restrictions in the areas of global mobile satellite services and in the ownership of submarine cables. Telesat Canada's monopoly on domestic and trans-border telecommunications carriage was ended on March 1, 2000, and Teleglobe's monopoly on October 1, 1998. Teleglobe special ownership restrictions were also eliminated at the same time.

In March 1999, the government made amendments to the *Radiocommunication Regulations* in order to remove the requirement of Canadian ownership and control that applied to fixed and mobile satellite earth station licence holders.

Application of Telecommunications Act to SaskTel

In October 1998, the federal government passed an Order in Council that established June 30, 2000 as the date on which SaskTel would be subject to CRTC regulation.

Connecting Canadians Agenda

In a move to help Canadians reap the rewards made possible by the rapid expansion of the Information Highway, the Government of Canada announced the Connecting Canadians Agenda in the 1997 Speech from the Throne, with the goal of making Canada the most connected country in the world by the year 2000. The six pillars of the Agenda are entitled: Canada Online; Smart Communities; Canadian Content On-line; Electronic Commerce; Canadian Government On-line; Connected Canada to the World.

Making Canada the most connected country in the world promotes a more innovative and competitive economy, puts Canadians in a better position to capitalize on economic and learning opportunities in the knowledge-based economy and enhances Canada's ability to attract investment from home and abroad. Though the private sector will lead in building the information highway, the Government of Canada will continue to create the most suitable policy and legislative framework to support connecting Canadians to each other and the world in a way that is affordable and accessible.

Accomplishments to date under the Connecting Canadians Agenda include: all public schools and libraries have been connected to the Internet; close to 5000 community access sites have been established; over 210,000 computers have been delivered to schools; demonstration projects for smart communities have been announced; 2,500 young Canadians have been hired to digitize content for the Web; and, Canada's Digital Collections and almost 5,500 volunteer organisations are either connected or are about to be connected.

Spectrum Auctions

In June of 1998, Industry Canada announced that it would be making available, across the country, new wireless broadband spectrum at 24 GHz and 38 GHz to accommodate the increased demand for high-speed local access infrastructure. This spectrum is aligned with that in the United States, thus enabling Canadian service providers to take advantage of the economies of scale that equipment manufacturers will gain from a combined North American marketplace.

In November of 1999, Industry Canada held an auction for the 1200 MHz of spectrum in the 24 GHz and 38 GHz frequency range. The auction, the first ever held in Canada, was conducted securely over the Internet employing Canadian public key infrastructure (PKI) encryption and digital signature technologies to ensure the confidentiality and authenticity of all bids. A total of 256 licences were awarded to 12 companies. The winning companies bid a total of more than $171 million.

In January 2001, the Department held its second auction, this time for additional PCS spectrum in the 2 GHz range. Consistent with its policy of fostering competitive telecommunications markets, all are eligible to apply to participate in the PCS auction. This auction will provide opportunities for existing companies to obtain additional spectrum and will open up opportunities for new entrants with viable business plans. The availability of this spectrum will enable the enhancement of existing PCS systems, provide for the introduction of new third generation-like services and stimulate innovation in the dynamic wireless environment.

The PCS auction ended February 1, 2001 following 51 rounds of bidding over 14 days. Fifty two out of a total of 62 licenses were auctioned. The five provisional winners[1] of the 52 licenses bid a total of $1.5 billion, (Table 6-1).

Table 6-1

PCS Auction Provisional Winners (5)	
BIDDER[2]	BIDS ($millions)
Bell Mobility Inc.	720.5
Rogers Wireless Inc.	393.5
Telus Communications Inc.	356.0
W2N Inc.	11.4
Thunder Bay Telephone Ltd.	0.6
Source: Industry Canada	

Bell Mobility is the provisional winner of 20 licenses in all service areas except Northern Quebec and the Territories where no licenses were sold. **Rogers AT&T Wireless** is the provisional winner of 23 licenses in each of the service areas except Northern Quebec and the Territories. **Telus** is the provisional winner of five licenses in each of Nova Scotia, PEI, Eastern Ontario, Southern Ontario and Manitoba. **W2N** is the provisional winner of three licenses in each of Eastern Quebec, Alberta and the Telus area of British Columbia. **Thunder Bay Telephone** is the provisional winner of one license in Northern Ontario.

Undersea Cable Landings

There are currently six different cable landings in Canada, under licences issued by the Minister of Industry to 3 different companies. Teleglobe Inc. still dominates this component of international telecommunications infrastructure, but new entrants are beginning to build their infrastructure,
(Table 6-2). A description of the licensing conditions is provided in Table 6-3.

[1]The term "provisional winner" is used at this stage because until each successful bidder meets certain requirements, such as ownership and control, it is not technically an official license holder.

[2] The results (statistics, tables, maps) of PCS Auction are in English at http://agora.ic.gc.ca/pcs_auction/navpage_1.cfm and in French at http://agora.ic.gc.ca/pcs_auction/navpage_fr_1.cfm

Table 6-2

Undersea Cable Landings (Cable Station) By Company	
Cable Company	**Landing (Cable Station)**
Cantat-3, Teleglobe Inc.,	Pennant Point, Nova Scotia
Canus-1, Teleglobe Inc.,	Pennant Point, Nova Scotia
Tat-9, Teleglobe Inc.,	Crystal Crescent Beach, Pennant Point, Nova Scotia
Tpc-4, Teleglobe Inc.,	Port Alberni, British Columbia
3477967 Canada Inc., Ledcor Industries Limited, and American-1,	Cordova Bay, and Fleming Bay British Columbia
360networks Inc., Hibernia,	Hospital Point, Nova Scotia
Source: Industry Canada.	

Table 6-3

Regulatory Regime for the Construction and Operation of an International Submarine Cable

Section 17 of the Telecommunications Act (the Act), requires a licence to construct and operate an international submarine cable. Subsection 19 (1) of the Act states that the Minister of Industry (the Minister) may issue an international submarine cable licence to a person that is eligible under the regulations to hold a licence. When exercising this authority the Minister is subject to the International Submarine Cable Licences Regulations (the regulations) made by the Governor in Council under Subsection 22 (2) of the Act. These regulations provide for two types of licence; a 'terminating licence' for cables that interconnect with Canadian networks, and 'through licence' for cables which do not interconnect in Canada. For example, a cable passing through ocean under Canadian jurisdiction.

Licensing Procedures

Section 18 of the Act provides that an application for the issuance, renewal or amendment of a licence must be made in accordance with the prescribed regulations. The application for a terminating cable licence or through cable licence must be submitted in writing to the Minister of Industry, and must contain the requested information set out in Subsection 4 (1) of the Regulations, this being:

(a) the name of the applicant;
(b) the address of the head office of the applicant or, in absence of a head office in Canada, the address in Canada where service on the applicant may be effected;
(c) if the applicant is a corporation, the province, state or country where the applicant was incorporated and the date of incorporation;
(d) the origin and intended route of the international submarine cable and, in the case of an application for a terminating cable licence, the points where the cable will connect to telecommunications facilities in Canada;
(e) documentation indicating compliance with the requirements set out in the *Canadian Environmental Assessment Act*;
(f) the term being requested for the licence, which may not exceed 10 years; and,
(g) information relating to the capital costs and technical capabilities of the international submarine cable and its associated works or facilities.

Any project to construct or operate international submarine cables must be screened under the Canadian Environmental Assessment Act (CEAA), which has as its objective to ensure that any environmental impact is thoroughly assessed before a license is issued.

Source: Industry Canada

CRTC Report on Status of Competition

In response to concerns that had been expressed about the status of competition in Canadian telecommunications markets, and about the availability of advanced telecommunication services at affordable prices, the Governor in Council, on the recommendation of the Minister of Industry,

required the CRTC to submit annual reports for five years on the status of competition in Canadian telecommunications markets and on the deployment and accessibility of advanced telecommunications infrastructure and services in urban and rural areas in all regions of Canada[3]. These reports are expected to assist both the CRTC and the Government in designing further regulatory, policy and program initiatives that may be needed to achieve the objectives of the *Telecommunications Act*. The CRTC's first report is to be submitted no later than September 28, 2001.

National Broadband Task Force

On October 16, 2000, the federal government mandated the creation of a "broadband task force" to map out a strategy and advise on approaches for achieving the government objective of making high speed broadband Internet services available to businesses and residences in every community in Canada by the year 2004. The task force has been asked to report by May 31, 2001.

6.4 MAJOR CRTC DECISIONS

Liberalization of Long Distance Market

On June 12, 1992, the CRTC issued Telecom Decision CRTC 92-12, which removed the telephone companies' monopoly in the provision of public long distance voice telecommunication services. This was consistent with the policy objectives of the *Telecommunications Act*, the draft form of which had been introduced by the government earlier that year.

Decision 92-12 mandated trunk-side access to local exchange carrier switches, enabling local telephone subscribers to pre-select their long distance carrier and avoid having to dial extra digits to make long distance calls. The decision also established a regime to maintain and make explicit the long standing subsidy from long distance revenues used to support the provision of basic local telephone service to residential subscribers. This subsidy, called "contribution", was based on a fixed per-minute rate paid by all long-distance carriers (both the incumbents and their competitors). For the first five years after the decision, new entrants benefited from contribution discounts designed to foster the introduction of long distance competition. Contribution rates were calculated based on the specific needs of each telephone company and thus varied from one telephone company's territory to another.

Review of Regulatory Framework

On September 16, 1994, the CRTC issued Telecom Decision CRTC 94-19, *Review of Regulatory Framework*. This decision established a new regulatory policy framework that would enable the

[3]Order in Council P.C. 2000-1053, June 26, 2000.

Commission to streamline or eliminate regulation, to place greater reliance on market forces, to establish safeguards to protect against abuses of market power, to encourage the provision of innovative new services and to establish an alternative to rate-base rate-of-return regulation. In so doing, it mapped out the regulatory transition from the monopoly provision of telecommunication services to full competition. The decision reflected the policy objectives included in the 1993 *Telecommunications Act* and the high priority that the government has placed on the development of a competitive telecommunications environment

Since the issuance of Decision 94-19, the CRTC has initiated a number of proceedings in order to fully implement the numerous elements of the framework it established. Implementation of some of the key elements such as forbearance, local competition and price caps are described in separate sections appearing below. Another significant reform announced in the decision was a program of rate rebalancing and restructuring designed to bring local telephone rates closer to the cost of providing the service. Basic local residential service rates for the major telephone companies were subsequently increased by $2/per month in 1996 and 1997 and between $2 and $3 per month in 1998, co-incident with the implementation of price cap regulation.

Decision 94-19 also recognized that prior to the implementation of price caps, it would be necessary to make changes to the then existing rate-base rate-of-return regime; namely, splitting the telephone companies' rate bases into two separate segments - Utility (local monopoly or near monopoly) and Competitive. Having so split the rate bases in a subsequent proceeding, only the Utility segment remained subject to rate-of-return regulation.

Local Competition

On May 1, 1997 the CRTC issued Telecom Decision CRTC 97-8, *Local Competition*. In its decision, the CRTC expressed the view that efficient and effective local competition would be best achieved by facilities-based service providers, and that such providers should not be simply customers of the incumbents, but co-carriers, equal in status. The CRTC concluded that facilities-based entry would be the only sustainable basis for competition in the long run.

Decision 97-8 did not attempt to fully implement a local competition regime. Rather, it established the policy framework and many of the underlying rules but left a number of the technical, operating and other details to be established through subsequent proceedings and through meetings of a committee known as the CRTC Interconnection Steering Committee (CISC). CISC is an assembly of CRTC representatives, industry players, members of the public and public interest and consumer groups brought together to deal with telecommunications matters. CISC and its working groups have been successful in resolving many complex and controversial issues, including the development of administrative and operational systems needed to implement Decision 97-8. By bringing parties together to work on resolving issues in an open forum, results such as these have been accomplished on a timely basis, largely without recourse to formal CRTC proceedings.

Major issues dealt with in Decision 97-8, through subsequent proceedings or by CISC are described briefly below.

1. **Unbundling:** The CRTC ordered the incumbent telephone companies to unbundle the components of their local networks which have the characteristics of "essential facilities" that competitors require but cannot technically or economically duplicate themselves. In Telecom Decision CRTC 98-22, the CRTC established the rates that new entrants must pay incumbent local telephone companies for use of the unbundled components of their local networks, including local loops. The rates set by the CRTC are intended to allow telephone companies to recover their incremental costs, plus a 25% mark-up.

2. **Interconnection:** In order to ensure that subscriber-to-subscriber access is maintained, the CRTC required that, within each incumbent telephone company exchange, all local telephone companies must be interconnected with each other and with all long distance and wireless carriers providing service in that exchange. The CRTC also required the costs of establishing such interconnection between local telephone companies to be shared equally. With respect to compensation for call termination among local telephone companies, the CRTC adopted a "bill and keep" approach whereby, within appropriate limits, originating carriers are not required to compensate terminating carriers for the costs of completing calls from the former to locations within the same incumbent carrier exchange.

3. **Resale:** The CRTC found that resale competition can help promote the development of a competitive market. Accordingly, the Commission concluded that the incumbents must allow for unrestricted resale by competitors of unbundled components, and for the resale of residential service. However, the Commission did not mandate wholesale discounts for the incumbents' local retail services.

4. **Contribution:** In order to facilitate the development of local competition in all regions of Canada, the CRTC instituted a "portable subsidy" mechanism that would assist new local telephone companies in offering service in rural and remote areas where residential telephone service is offered by the incumbents at below-cost rates. Under this "portable subsidy" system, the contribution payments required to be paid by long distance service providers are remitted to a central fund administered by a third party. The fund administrator redistributes the subsidy among local service providers pursuant to a formula approved by the CRTC.

5. **Consumer Safeguards:** The Commission determined that new entrants to the local market must adhere to a set of consumer safeguards, including: complying with regulatory requirements to protect customer privacy; the provision of 9-1-1 emergency service and message relay service; and providing customers with detailed information (e.g., billing policies, local calling area boundaries, details of service options, etc.).

6. **Co-location**: In order for new entrants to be able to interconnect their networks with those of the incumbents without being forced to lease transmission lines from the incumbents, they must be allowed to "co-locate" their own transmission facilities within the central offices of the incumbents. Having found it appropriate to mandate co-location, the CRTC subsequently determined the rates, terms and conditions under which it is to be provided by the incumbent telephone companies.

7. **Local Number Portability**. The CRTC found that the establishment of a system to enable customers of incumbent local telephone companies to keep their existing telephone numbers when switching to a new entrant provider, was vital to facilitating a competitive market in local telecommunications. It approved a method of Local Number Portability (LNP) whereby the telephone numbers of customers located within an exchange can be transferred or "ported" to another location or to another telephone company within that exchange. Pursuant to CRTC rulings, a consortium of service providers has been established to administer a database of telephone numbers, costing issues have been resolved and appropriate rates, terms and conditions have been established. LNP is now available in most major centres in Canada and will continue to be rolled out to meet the demands of competitive local service providers.

Price Cap Regulation

With a view to reducing the regulatory burden, creating incentives for efficiency, fostering competition and providing continued price protection for consumers, the CRTC adopted a form of regulation known as "price caps". The local services of incumbent telephone companies came under price cap regulation on January 1, 1998.

Price cap regulation is less intrusive than the traditional "rate-base rate-of-return" regulation which sets prices by establishing a revenue requirement for a company (or a segment of a company) based on the difference between total forecast revenues and total forecast allowable expenses, including an allowable rate-of-return on investment. By contrast, price cap regulation ignores revenues and expenses during the multi-year price cap period and focuses instead on capping consumer price increases. It requires the company to flow through to consumers specified productivity gains within a formula that also takes into account the rate of inflation.

Under the CRTC's price cap regime, all capped services form a single "basket" and are subject to a price cap index (PCI). The PCI constrains changes in prices to the annual change in the rate of inflation minus an adjustment for productivity gains of 4.5% (productivity offset), adjusted for

limited exogenous factors arising from events which are beyond the telephone company's control. The productivity offset serves to ensure that overall telephone rates continue to decline relative to inflation. Three sub-baskets consisting of basic residential local services, basic business local services, and other local services are subject to additional pricing constraints. Residential rate increases are limited to inflation, on average, and increases for any individual rate are limited to 10% per year. The current four-year price cap period will end on December 31, 2001. A review of the price cap regime is expected to begin in January 2001.

Regulatory Regime for the Provision of International Telecommunication Services

On October 1, 1998, the CRTC issued Telecom Decision CRTC 98-17, *Regulatory Regime for the Provision of International Telecommunication services*. Implementation of the regime established in this decision allowed Canada to meet many of the commitments it made in the WTO Agreement on Basic Telecommunication services. The regime includes a licensing system for providers of basic international services intended to ensure that foreign monopolies cannot use their dominance in their home markets to gain an unfair competitive advantage in the Canadian market and to minimize barriers to entry for new service providers by enforcing provisions against anti-competitive practices. Two class of licences were created: Class A licences, which are issued to firms that own or operate telecommunications facilities used in transporting basic telecommunications service traffic to or from Canada and thus can control the routing of that traffic; and Class B licences, which are issued to firms that provide basic telecommunications service to or from Canada but do not own or operate the associated telecommunications facilities.

The Commission also eliminated international traffic routing rules. Under Canada's previous rules, calls to overseas destinations were required to be routed through Teleglobe's facilities. The elimination of this rule allows service providers to route international calls through competing networks, including those serving the U.S. The Commission also eliminated restrictions that prevented Canada-to-Canada calls from being routed via U.S. facilities.

In Telecom Decision CRTC 99-14, the Commission forbore from regulating the Teleglobe service that allows domestic carriers to connect with Teleglobe's international network for purposes of providing outgoing direct dial telephone service. The Commission also forbore from regulating Teleglobe's international interconnection agreements.

Local Pay Telephone Service

In June 1998, the CRTC announced the introduction of competition in the local pay phone service market. While the rates charged by new entrants will not be regulated, the CRTC will continue to regulate the rates of existing pay telephone providers. The CRTC will hold a review within three years to investigate the impact of competition in the local pay telephone market.

Access to CableTV Network Facilities by Third Parties

In Telecom Decision CRTC 98-9 (July 9, 1998), the Commission determined that it will not regulate the rates that broadcast carriers charge their customers for retail level Internet services and certain other telecommunication services (e.g., security services, telemetry, video-conferencing, Local Area Network and Wide Area Network). However, the Commission decided to mandate access to the facilities of cable companies to enable third party Internet Service Providers (ISPs) to offer competitive high speed Internet cable modem services.

As an interim measure, in Telecom Decision CRTC 99-11, the Commission required incumbent cable companies offering Internet cable modem services to resell those services to ISPs. The CRTC mandated resale at a discount of 25% from the lowest retail Internet service rate charged by the cable carrier to a cable customer in its service area during any one month period. The Commission stipulated that this resale would cease to be mandated once facilities-based access is available to ISPs.

In Order CRTC 2000-789, issued on August 21, 2000, the Commission approved the terms and per end-user rates to charge to ISPs for access to cable company facilities used to provide cable modem Internet services. The Commission expects that high speed access service will foster increased competition by permitting other Internet service providers to use the cable companies' facilities to provide high speed retail Internet access. The Commission stated that the service charges and conditions for co-location and interconnection of the ISP facilities at the specific cable company hub-sites would be determined in a separate follow-up proceeding to be initiated shortly. The unresolved technical, operational and business issues relating to the implementation of access service are to be addressed within the CRTC Interconnection Steering Committee (CISC) framework.

Telephone Service to High-cost Serving Areas

On October 19, 1999, the Commission issued Telecom Decision CRTC 99-16 regarding the provision of telephone service to high-cost serving areas (HCSAs). Decision 99-16 set three goals to be achieved over time: extend service to unserved areas; upgrade service levels in underserved areas; maintain service levels, and ensure that existing levels of service do not erode under competition. Recognizing that level of telephone service throughout Canada is very high, the Commission identified a basic level of service that all Canadians should have access to and took steps to ensure that, over time, this basic level of service would be made available to

currently unserved and underserved areas. The Commission's basic service objective includes: single line touch-tone access; the capability to access the Internet at low speed without paying long distance charges; access to 911, voice relay services for the hearing impaired, directory assistance services, and long distance services; and, a copy of the local telephone directory.

The Commission noted in its decision that telephone service improvement plans currently being implemented by the telephone companies are improving service for approximately 90,000 Canadians. Decision 99-16 aims to upgrade service for those not targeted by the existing plans - the roughly 13,000 residences and/or businesses that have been identified in over 700 localities that, still, do not have any access to telephone service, and the close to 7,700 customers that do not have single line service. To address the remaining unserved and underserved population in HCSAs, the telephone companies are directed to file service improvement plans. The independent telephone companies were required to file their plans by March 1, 2000, and the former Stentor companies were required to do so at the time of the review of the price cap regime in 2001. By 2002, the service improvement plans should all be underway. The Commission will monitor implementation of the plans.

The Commission indicated that while the telephone companies in southern Canada should be able to fund their service improvement plans through the existing contribution mechanism, there may be a need for some additional subsidy to the HCSAs in the North (i.e. in Northwestel's territory).

DSL Access for Resellers

Digital subscriber line (DSL) service provides high-speed access to digital networks using the same copper telephone lines as are used for basic voice telephone service. In a letter decision dated September 21, 2000, the CRTC ruled that telephone companies are to provide resellers wishing to offer DSL service with co-location and unbundled loop access at the same rates and on the same terms and conditions as are required for competitive local telephone companies. DSL resellers are precluded from using these facilities to provide switched local voice services. Reasons for the CRTC's decision were provided in Order 2000-983.

Contribution Collection Mechanism

On November 30, 2000, the CRTC issued Decision CRTC 2000-745 in which it changed the way it collects the subsidy provided to basic residential telephone rates in high-cost serving areas. Effective January 1, 2001, the CRTC adopted a revenue-based mechanism, under which Canadian telecommunications service providers must pay a percentage of their gross telecommunications revenues into a national fund to subsidize affordable residential telephone service in high-cost areas. This new mechanism replaces the previous regime, under which long distance service providers alone paid into regional subsidy funds. The new levy initially set at 4.5 percent for 2001 will be fine-tuned during 2001 and adjusted annually thereafter. The Commission exempted providers with $10 million or less in revenues from paying contribution

and ruled that revenues from retail Internet services, retail paging, and terminal equipment are not contribution-eligible.

Implementation of Long Distance Competition in Northwestel's Territory and Review of its Regulatory Framework

In Decision CRTC 2000-746 issued on November 30, 2000, the CRTC established the terms and conditions necessary to provide northern residents with a choice in long-distance suppliers, and long-distance rates comparable to the rest of the country. Effective January 1, 2001 the long-distance market will open to competition in the northern portion of the country served by Northwestel (NWTel), which includes the Northwest Territories, Yukon, Nunavut and northern British Columbia.

Consistent with its previous decisions on high-cost serving areas, the CRTC approved: (1) extending single-line service to over 500 homes currently unserved; (2) upgrading service to over 2,600 customers and eliminating mileage charges; and (3) NWTel's plan to upgrade its long-distance network to digital technology, which will improve the quality of service of both local and long-distance service. In order to fund these service improvements and reduce long-distance rates, the Commission concluded that subsidies from three sources will be needed: (1) NWTel residential customers can expect a $3 increase in their monthly telephone rates, with business rates to increase by $5; (2) long-distance competitors entering NWTel's territory will be required to pay a carrier access fee of 7 cents per minute on originating and terminating calls; and (3) for the year 2001, the first year of the four-year service improvement program, a subsidy of approximately $15 million will flow from contribution charges levied against telecommunications service providers in southern Canada. The amount of subsidy will be reviewed and adjusted annually.

Access to Municipal Rights-of-Way

The CRTC has recently ruled on a dispute between the City of Vancouver and Ledcor Industries Limited involving access to municipal rights-of-way in that city. The CRTC determined that it has full jurisdiction under the *Telecommunications Act* to deal with rights-of-way issues in the context of resolving disputes brought before it, subject only to the requirement that it give due regard to the use and enjoyment of those rights-of-way by others. The CRTC anticipates that the principles established in its decision will assist carriers and municipalities in successfully negotiating agreements in the future without the need for CRTC intervention.

Under the terms and conditions established by the Commission, the City of Vancouver is entitled to recover all of the causal costs it incurs as a result of the construction, maintenance and operation of carrier transmission lines in its municipal rights-of-way. It is not, however, entitled to any compensation in the form of "market-based" or other fees charged for the use of space in rights-of-way. Among other things, the CRTC also found it inappropriate for municipalities to require carriers to construct spare capacity, or to require other carriers to use this capacity rather

than construct their own. It stated, however, that it expects carriers to participate with municipalities in joint planning and co-ordination committees, and that it considers it reasonable for carriers to contribute to the costs of any such committees.

6.5 MAJOR ONGOING REGULATORY PROCEEDINGS

Restructured Rate Bands

On February 18, 2000, the Commission initiated a proceeding under Public Notice CRTC 2000-27 in order to determine whether incumbent local exchange carriers' rate bands should be restructured. Rate bands, established as part of the CRTC's local competition regime, divide the operating territories of incumbent telephone companies into a number of bands or regions based on average loop provisioning costs. They are used in establishing both unbundled loop rates and per residential network access line portable subsidies. The Commission noted that the expected benefits from this proceeding are that the subsidies will eventually be targeted only to high-cost service areas and that the local loop rates in less remote areas will decrease. The Commission expects that this will provide cost reductions and incentives for competitive local exchange carriers to provide local telephone service. Any revisions to bands and local loop rates are expected to become effective on January 1, 2002.

Access to Multi-dwelling Units, In-building Wiring and Riser Space

On August 25, 2000, the CRTC initiated a proceeding under Public Notice CRTC 2000-124 for the development of a fair regulatory approach to providing telephone and cable companies with access to multi-dwelling units. The Commission noted in the public notice that government policy supports end-user choice among broadcasting and telecommunications service providers, including in apartment buildings and office complexes. The Commission is seeking comments on, among other things, the regulatory approach (including possible fees, charges or other terms and conditions) that should be used to facilitate non-discriminatory access and customer choice in multi-dwelling units.

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Table A-1

Value Added Telecommunications Industry and Overall Economy, 1981 to 1999 (GDP at factor cost)

Year	Carriers and Other Telecommunications* Gross Domestic Product			Overall Economy	
	Millions of constant 1992 dollars	Annual change (%)	Percent of overall economy GDP (%)	Millions of constant 1992 dollars	Annual change (%)
1981	6,512	--	1.35%	483,350	--
1982	6,506	-0.1%	1.39%	469,034	-3.0%
1983	6,697	2.9%	1.39%	481,402	2.6%
1984	7,023	4.9%	1.38%	508,010	5.5%
1985	7,466	6.3%	1.40%	534,324	5.2%
1986	7,956	6.6%	1.45%	548,405	2.6%
1987	8,679	9.1%	1.52%	569,537	3.9%
1988	9,677	11.5%	1.63%	594,891	4.5%
1989	10,762	11.2%	1.77%	607,564	2.1%
1990	11,604	7.8%	1.90%	609,231	0.3%
1991	12,225	5.4%	2.04%	600,004	-1.5%
1992	12,592	3.0%	2.08%	604,279	0.7%
1993	12,453	-1.1%	2.01%	618,422	2.3%
1994	12,945	4.0%	2.00%	645,956	4.5%
1995	13,391	3.4%	2.02%	663,082	2.7%
1996	13,781	2.9%	2.05%	673,088	1.5%
1997	14,513	5.3%	2.07%	700,804	4.1%
1998	15,684	8.1%	2.18%	721,003	2.9%
1999	18,670	19.0%	2.49%	750,581	4.1%
Period Change 1981 - 1999	12,158	186.7%	1.14%	267,231	55.3%
CAGR 1981 - 1999	6.0%	--	--	2.5%	--

*Based on 1980 SIC 482 - Telecommunications Carriers and SIC 483 Other Telecommunications
Source: Statistics Canada, Catalogue No. 63-016.

Table A-2

Canadian Telecommunications Service Industry Employment, 1984 to 1999		
Year	Telecommunications Service Industry Employment (Persons)	Annual growth (%)
1984	112,700	--
1985	111,900	-0.7%
1986	112,200	0.3%
1987	114,400	2.0%
1988	115,200	0.7%
1989	124,700	8.2%
1990	127,100	1.9%
1991	125,000	-1.7%
1992	121,700	-2.6%
1993	107,500	-11.7%
1994	110,600	2.9%
1995	115,600	4.5%
1996	104,100	-9.9%
1997	103,100	-1.0%
1998	105,100	1.9%
1999	104,600	-0.5%
Period Change 1984 - 1999	(8,100)	-7.2%
CAGR 1984 - 1999	-0.5%	--

Source: Telecommunications carriers (SIC 482), and other telecommunications (SIC 483) data are from Statistics Canada, *Survey of Employment Payrolls and Hours*, Catalogue No. 72-002.

Table A-3

Telecommunications Service Industry and All Industries Capital Expenditures, 1981 to 1999
(Millions of current and constant dollars as listed)

Year	Total (Current dollars)	Total (Constant 1992 dollars)	Annual change (%)	All Industrial (Constant 1992 dollars)	Annual change (%)	Telecom Industry Share of All Industrial (%)
1981	2,986	3,734	--	88,606		4.21%
1982	3,014	3,332	-10.8%	79,408	-10.4%	4.20%
1983	2,361	2,455	-26.3%	72,757	-8.4%	3.37%
1984	2,498	2,498	1.8%	73,991	1.7%	3.38%
1985	2,686	2,610	4.5%	78,871	6.6%	3.31%
1986	3,016	2,849	9.2%	78,356	-0.7%	3.64%
1987	3,670	3,471	21.8%	83,880	7.1%	4.14%
1988	4,367	4,112	18.5%	94,022	12.1%	4.37%
1989	5,098	4,829	17.4%	98,894	5.2%	4.88%
1990	5,470	5,142	6.5%	97,115	-1.8%	5.29%
1991	4,913	4,773	-7.2%	93,978	-3.2%	5.08%
1992	5,260	5,260	10.2%	88,004	-6.4%	5.98%
1993	4,624	4,616	-12.2%	85,943	-2.3%	5.37%
1994	4,344	4,437	-3.9%	93,858	9.2%	4.73%
1995	4,092	4,362	-1.7%	97,071	3.4%	4.49%
1996	4,751	4,893	12.2%	102,128	5.2%	4.79%
1997	6,122	6,205	26.8%	116,430	14.0%	5.33%
1998	5,969	6,030	-2.8%	120,046	3.1%	5.02%
1999	6,266	6,308	4.6%	122,700	2.2%	5.14%
Period Change 1981 - 1999	3,280	2,574	68.9%	34,094	38.5%	2.2%
CAGR 1981 - 1999	4.2%	3.0%	--	1.8%	--	1.1%

Note: Data differ slightly from capital expenditure data found in Industry Canada, *Information and Communications Technology Statistical Review*. This difference can be attributed to revisions based on more up-to-date data, adjustments arising from integration with other series, or adjustments due to coverage of investment in machinery and equipment by leasing companies. For more information, see Statistics Canada, Catalogue No. 13-568.

Source: Industry Canada calculations based on data from company annual reports and Statistics Canada, CANSIM Matrices 11053, 11153 and 11100 (Gross fixed capital formation).

Table A-4

Telephone Services and Other Consumer Items Price Indices, 1990 to 1999 January 1990 = 100				
	Telephone Services	All-items CPI	Goods CPI	Services CPI
1990 - January	100.0	100.0	100.0	100.0
1991 - January	100.0	106.9	106.0	107.8
1992 - January	101.2	108.5	106.8	110.6
1993 - January	101.6	110.8	108.8	113.0
1994 - January	102.5	112.3	110.1	114.6
1995 - January	102.0	112.9	109.2	117.3
1996 - January	107.5	114.8	110.4	119.7
1997 - January	113.5	117.2	113.3	121.8
1998 - January	119.8	118.5	114.3	123.6
1998 - December	111.0	119.1	113.5	125.4
1999 - January	110.6	119.3	114.2	125.3
1999 - December	111.1	122.1	117.2	127.9
2000 - January	111.1	122.0	117.0	127.7
2000 - July	114.3	125.0	119.8	130.9
Source: Statistics Canada, CANSIM Matrix 9940				

Table A-5

Impact of Rate Rebalancing

Company	Jan. 1, 1996	Jan. 1, 1997	Jan. 1, 1998			Total amount of 3 rate increases	Total amount of rate increases attributable to rate rebalancing
			Approved rate increase	Amount of rate increase attributable to rate rebalancing	Amount of rate increase attributable to going-in revenue requirement shortfall		
BC Tel	$2.00	$2.00	$3.20	$2.24	$0.96	$7.20	$6.24
Bell Canada	$2.00	$2.00	$2.72	$0.00	$2.72	$6.72	$4.00
Island Tel	$2.00	$2.00	$2.60	$2.60	$0.00	$6.60	$6.60
MT&T	$2.00	$2.00	$3.19	$3.19	$0.00	$7.19	$6.00
MTS	$2.00	$2.00	$0.84	$0.00	$0.84	$4.84	$4.00
NBTel	$2.00	$2.00	$0.00	$0.00	$0.00	$4.00	$4.00
NewTel Comm. Inc.	$2.00	$2.00	$2.64	$0.00	$2.64	$6.64	$4.00
TELUS Comm. Inc.	$2.00	$2.00	$1.33	$0.00	$1.33	$5.33	$4.00

Notes:
MT&T's rate increases were as of May 1, 1996 and May 1, 1997 rather than January 1 for those two years.

The January 1, 1998 rate increases for Bell Canada, MTS, NBTel, NewTel Communications, and TELUS Communications Inc. did not include a component for rate rebalancing because these companies' contribution rates were already below 2 cents per minute as required by the Commission

Source: CRTC

Table A-6

Access Path Growth Residential and Business Segments, 1988 to 1999								
Year	Residential Access Lines			Business Access Lines			Total Access Line	
	Number (000)	Teledensity		Number (000)	Teledensity		Number (000)	Teledensity
		(per 100 population)	(per 100 households)		(per 100 population)	(per 100 persons employed)		(per 100 population)
1990	10,866	39.2	108.4	4,430	16.0	n/a	15,296	55.2
1991	11,109	39.6	108.9	4,706	16.8	n/a	15,815	56.4
1992	11,354	40.0	109.3	4,893	17.2	n/a	16,247	57.3
1993	11,607	40.4	110.0	5,110	17.8	n/a	16,717	58.2
1994	11,840	40.8	110.6	5,411	18.6	50.8	17,250	59.4
1995	12,012	40.9	110.5	5,556	18.9	51.1	17,567	59.8
1996	12,162	41.0	110.2	5,812	19.6	53.0	17,974	60.6
1997	12,430	41.5	110.8	6,230	20.8	55.1	18,660	62.2
1998	12,602	41.7	110.8	6,692	22.1	57.6	19,294	63.8
1999	12,737	41.8	110.3	7,219	23.7	61.1	19,957	65.4
Source: Statistics Canada.								

Table A-7

Rates for Unbundled Local Loops
(Dollars per month)

Loop Type	BC Tel	TELUS Comm. Inc.	MTS	Bell Canada	NB Tel	MT&T	Island Tel	NewTel
Type A Loops - Analogue Service								
Rate Band A	11.73	9.84	8.64	12.22	12.63	12.35	13.92	20.73
Rate Band B	20.18	18.33	20.31	18.38	16.06	16.03	19.22	30.68
Rate Band C	29.82	28.81	18.40	20.28	--	25.61	29.71	--
Rate Band D	35.14	33.00	34.98	33.12	--	--	--	--
Rate Band E	--	--	75.44	--	--	--	--	--
Type B Loops - Digital Service								
Rate Band A	11.23	9.89	13.17	13.54	13.65	12.30	12.37	19.02
Rate Band B	18.91	18.96	68.16	28.06	17.23	14.46	14.50	--
Rate Band C	26.49	30.61	--	46.08	--	24.48	26.32	--
Rate Band D	33.69	35.72	--	44.18	--	--	--	--

-- Not applicable
Source: CRTC, Telecom Decision 98-22

Table A-8

Cellular/PCS/ESMR Market Revenues and Subscribers, 1987 to 1999						
Year	Revenue (Millions of dollars)	Twelve-month change (%)	Subscribers (December 31)	Twelve-month change (%)	ARPU* ($ per month)	Teledensity Subscribers (per 100 population)
1987	117.6	--	98,364	--	116.4	--
1988	226.0	92.2%	20,633	-79.0%	110.7	--
1989	361.9	60.1%	345,178	1572.9%	99.2	--
1990	619.2	71.1%	583,766	69.1%	100.7	2.1
1991	762.8	23.2%	775,831	32.9%	94.3	2.8
1992	932.2	22.2%	1,026,611	32.3%	86.9	3.6
1993	1,173.5	25.9%	1,332,982	29.8%	83.1	4.6
1994	1,508.5	28.5%	1,865,779	40.0%	78.8	6.4
1995	1,921.8	27.4%	2,589,780	38.8%	73.2	8.8
1996	2,440.8	27.0%	3,497,779	35.1%	69.4	11.8
1997	2,870.3	17.6%	4,265,778	22.0%	64.0	14.2
1998	3,223.2	12.3%	5,354,133	25.5%	57.0	17.7
1999	4,402.6	36.6%	6,907,626	29.0%	56.0	22.7

*Average Revenue per (Subscriber) Unit
Source: Statistics Canada.

Table B-1

CRTC Registered Carriers and Other Telecom Service Providers in 2000*	
Division	Number of registrants July 24th
Wireline Incumbent Carriers**	
Major Telephone Companies:	
Telephone Companies	9
Independent Telephone Companies	
-Ontario	27
-Québec	15
-British Columbia	1
Total	52*
Wireline Competitive Carriers	
Non-Dominant Carriers	60
Resellers	436
Sharing Groups	22
Competitive Local Exchange Carriers (CLECs)	
-Registered	20
-Proposed	24
Total	562*
Wireless Service Providers	
Wireless Service Providers	14
Total	14*
Satellite and Other Telecommunications	
Other Carriers (Overseas & Satellite)	2
International Telecom Service Providers	
-Class A Licenses Issued	85
-Class B Licenses Issued	100
Total	187*

* Certain organizations are registered in more than one of the listed categories resulting in double counting - Refer to more detailed listing in the appendix of this report. In addition, there are 542 competitive pay telephone service providers.

** Also Incumbent Local Exchange Carriers (ILECs)

Source: CRTC, http://www.crtc.gc.ca

Table B-2

Telephone Companies by Principal Operating Territory* (9 registered)	
Northwest Territories, Yukon Territory, Northern B.C. Northwestel Inc.	www.nwtel.ca
British Columbia and Alberta TELUS Communications Inc.	www.telus.ca
Saskatchewan Sasktel	www.sasktel.com
Manitoba MTS Communications	www.mts.mb.ca
Ontario and Québec Bell Canada	www.bell.ca
New Brunswick Aliant (NBTel Inc.)	www.nbtel.nb.ca
Newfoundland and Labrador Aliant (NewTel Communications)	www.newtel.com
Nova Scotia Aliant (Maritime Tel & Tel Limited)	www.mtt.ca
Prince Edward Island Aliant (Island Telecom Inc.)	www.islandtel.pe.ca
*Also referred to as Incumbent Local Exchange Carriers (ILECs) Source: CRTC, http://www.crtc.gc.ca	

Table B-3

Independent Telephone Companies (43 registered ON-27, PQ-15, BC-1)	
Ontario	
Abitibi Consolidated	www.abicon.com
Amtelecom Inc.	www.amtelecom.ca
Bruce Municipal Telephone System	www.bmts.com
Cochrane Public Utilities Commission	www.puc.net
Corporation of the City of Thunder Bay	www.tbaytel.net
Dryden Municipal Telephones	
Gosfield North Communications	www.windsor.igs.net
Hay Communications Co-operative Limited	www.hay.net
Huron Telecommunications Co-operative Limited	www.hurontel.on.ca
Hurontario Telephones Ltd.	
Keewatin Municipal Telephone System	
Kenora Municipal Telephone System	www.kmtsonline.com
Lansdowne Rural Telephone Company	www.1000island.net/maintele.html
Mornington Communications	www.perth.net
Nexicom Telecommunications	www.nexicom.net
North Frontenac Telephone Company Ltd.	www.frontenac.net
North Renfrew Telephone Co. Ltd.	www.nrtco.net
Northern Telephone Limited	www.ntl.sympatico.ca
O.N. Tel	www.ontel.com
Ontario Telephone Association (OTA)	www.ota.ca
People's Telephone Company of Forest Ltd.	www.xcelco.on.ca/ptc
Quadro Communications Co-operative Inc.	www.quadro.net
Roxborough Telephone Company Limited	www.ontarioeast.net
South Bruce Rural Telephone Company Ltd.	
Tuckersmith Communications	www.tcc.on.ca
Westport Telephone Company Limited	
Wightman Telephone Limited	www.wcl.on.ca
Québec	
Association des Compagnies de Téléphone	www.actq.qc.ca
CoopTel	www.cooptel.qc.ca
La Cie de Téléphone de Courcelles Inc.	www.telcourcelles.qc.ca
La Compagnie de Téléphone de St-Victor	
La Compagnie de Téléphone de Warwick	
La Compagnie de Téléphone Nantes Inc.	
La Compagnie de Téléphone Upton	
La Corporation de Téléphone de La Baie	
Le Téléphone de St-Éphrem Inc.	
Le Téléphone de St-Liboire de Bagot Inc.	
Québec-Téléphone	www.Québectel.qc.ca
Sogetel Inc.	www.sogetel.com
Télébec Ltée	www.telebec.qc.ca
Téléphone Guèvremont Inc.	www.guevremont.com
Téléphone Milot Inc.	
British Columbia	
Prince Rupert City Telephone	www.citytel.net

* Also referred to a Incumbent Local Exchange Carriers (ILECs)
Source: CRTC, http://www.crtc.gc.ca

Table B-4

Non-Dominant Canadian Carriers (60 registered)	
360 Networks	www.360.net
520743 B.C. Ltd.	www.novus-tele.com
AT&T Canada Corp.	www.attcanada.com
AT&T Canada Telecom Services Company	www.attcanada.com
Axxent Corporation	www.axxent.ca
BCE Nexxia Inc.	www.bce.ca
Bell Intrigna Inc.	www.bell.ca
Binary Solutions	www.binary-solutions.net
Blood Hills Telecommunications Inc.	
C1.com Inc.	www.c1.com
Cable Atlantic Inc.	www.cableatlantic.nf.ca
Câble-Axion Digitel Inc.	www.cdi-axion.com
Câble-Axion Québec Inc.	
Call-Net Technology Services Inc.	www.callnet.ca
Clearnet PCS Inc.	www.clearnet.com
Cogeco Câble Canada Inc.	www.cogecocable.com
Cogeco Cable Canada	www.cogecocable.com
ComNet Developers	
Enercom Communications	www.enercom.ca
EPCOR Utilities Inc.	www.epcor-group.com
Fibretech Waterloo Inc.	
Gateway Telephone Limited	www.gatewaytel.com
GT Group Telecom Services Corp.	www.gt.ca
Halifax Cablevision Limited	
IMS Télécom Inc.	
ISP Telecom Inc.	
La Fédération des Coopératives du Nouveau-Québec	
M.I.M Telecommunications	www.go-steeltown.com/MIM/index.html
MaxLink Communications Inc.	www.maxlink.net
Mississauga Public Networks Inc.	

Source: CRTC, http://www.crtc.gc.ca

Table B-4 (cont'd)

Non-Dominant Canadian Carriers (60 registered)	
MK Telecom Network (MK Telecom)	
Muskoka Wordlink Corporation	
Northern Link Road Ltd.	
NTnet Society	www.ntnet.nt.ca
Okanagan Skeena Group Limited	www.osg.net
Ontario Hydro Telecom Company	
Peterborough Utilities Commission	www.puc.net
Q-NET Wireless Resources	
QuébecTel Alizé Inc.	
Réseautel Communications Inc.	
Riptide Networks	www.riptide.ca
Rogers Cablesystems	www.rogers.com
Seaside Cable TV Limited	
Shaw FiberLink Limited	www.shaw.ca
Stratos Wireless Inc.	new.stratos.ca
Stream Intelligent Networks Corp.	www.stream.ca
Sudbury Hydro	www.shec.com
Sunshine Communications	www.sunshinecable.com
TELUS Integrated Communications	www.telus.ca
Telus Multimedia	www.telus.ca
Total Telcom	www.totaltelcom.com
Transvision Cookshire	www.transvision.net
ViaNet Internet Solutions	www.vianet.on.ca
Videon Cablesystems Alberta Inc.	www.videon.ca
Videon Cablesystems	www.videon.ca
Vidéotron Ltée	www.videotron.com
Vidéotron Télécom	www.videotron.com
Vidéotron Télécom Ltée	www.videotron.com
Western Co-Axial Limited	
Windsor Utilities Commission	www.wuc.on.ca

Source: CRTC, http://www.crtc.gc.ca

Table B-5

Competitive Local Exchange Carriers (20 registered, 24 proposed)	
CLECs	
AT&T Canada Telecom Services Company	www.attcanada.com
Axxent Corporation	www.axxent.ca
Bell Intrigna Inc.	www.bell.ca
C1.com Inc.	www.c1.com
Cable Atlantic Inc.	www.cableatlantic.nf.ca
Call-Net Communications (CNCI)	www.callnet.ca
Clearnet PCS Inc.	www.clearnet.com
Cogeco Cââble Canada Inc.	www.cogecocable.com
Cogeco Cable Systems Inc.	www.cogecocable.com
East Link Limited	www.eastlink.ca
Futureway Communications	www.futureway.ca
Gateway Telephone Limited	www.gatewaytel.com
GT Group Telecom Services Corp.	www.gt.ca
Maskatel Inc.	
Microcell Connexions Inc.	www.microcell.ca
Norigen Communications Inc.	www.norigen.com
Novus Telecom Inc.	www.novus-tele.com
TELUS Integrated Communications	www.telus.ca
Vidéotron Ltée	www.videotron.com
Vidéotron Télécom Ltée	www.videotron.com
Proposed CLECs	
3620221 Canada Inc.	
Cannect Communications Inc.	www.cannect.com
CAS Communications Services (CAS)	
CityWave Communications Corp.	
Combined Exchange Telecom Inc (CXT)	www.combinedtel.com
Combined Telecom (CTI)	www.combinedtel.com
DACo Telecommunications Inc.	
Enercom Communications inc.	www.enercom.ca
ExaTEL Inc.	
ISP Telecom Inc.	
Managed Network Systems Inc.	www.mnsi.net
MaxLink Communications	www.maxlink.net
NORTEC Corporation	www.magma.ca/~nortec
Northgrove Communications	www.northgrove.com
Packet-Tel Corp.	
Phonetime International Inc.	www.phonetime.com
Riptide Networks Inc.	www.riptide.ca
Rogers Cablesystems Limited	www.rogers.com
Savage TeleCom Canada Ltd.	www.savagetele.com
Sprint Canada Inc. (SCI)	www2.sprintcanada.ca
Suite System Inc.	www.bwalk.com
Wispra Networks Inc.	www.wispra.com
WizTel Inc.	www.wiztel.ca
Zeuter Development Corporation	www.zeuter.com
Source: CRTC, http://www.crtc.gc.ca	

Table B-6

Market - Competitive Local Exchange Carriers, October 3, 2000			
CLEC	**Market (Name of exchange)**	**ILEC Operating Territory**	**Proposed Launch Date**
AT&T Canada Telecom Services Company Inc. (formerly "MetroNet Communications Group Inc.")	a. Calgary b. Cooksville c. Halifax d. Hamilton e. Kitchener f. London g. Malton h. Montréal i. North Vancouver j. Ottawa-Hull k. Québec City l. Richmond m. Streetsville n. Toronto o. Unionville p. Vancouver	Bell Canada Aliant (MT&T) TELUS Communications	a. before 1999 b. 1999 c. 2000 d. 1999 e. 1999 f. 1999 g. 1999 h. before 1999 i. 1999 j. before 1999 k. before 1999 l. 1999 m. 1999 n. before 1999 o. 1999 p. before 1999
Axxent Corp. (formerly "Optel Communications Corporation")	a. Ajax-Pickering b. Burlington c. Calgary d. Clarkson e. Cooksville f. Edmonton g. Galt h. Guelph i. Hamilton j. Kitchener k. London l. Markham m. Montréal n. Ottawa-Hull o. Port Credit p. Québec City q. Richmond Hill r. South Pickering s. St. Catharines t. Streetsville u. Toronto v. Vancouver w. Woodbridge	Bell Canada TELUS Communications	a. 2000 b. 2000 c. 1999 d. 2000 e. 2000 f. 1999 g. 2000 h. 2000 i. 2000 j. 2000 k. 2000 l. 2000 m. 1999 n. 2000 o. 2000 p. 2000 q. 2000 r. 2000 s. 2000 t. 2000 u. 1999 v. 1999
Source: CRTC, http://www.crtc.gc.ca			

Table B-6 (cont'd)

Market - Competitive Local Exchange Carriers, October 3, 2000			
CLEC	**Market (Name of exchange)**	**ILEC Operating Territory**	**Proposed Launch Date**
Bell Intrigna Inc. (formerly "Intrigna Communications Inc." and "3554546 Canada Ltd.")	a. Crescent Heights b. Kingsland c. Lendrum d. Main (Calgary) e. Main (Edmonton) f. Trinity	TELUS Communications	a. 2000 b. 2000 c. 2000 d. 2000 e. 2000 f. 2000
C1.com Inc. (formerly "Fundy Cable Ltd./Ltée")	Halifax	Aliant (MT&T)	1999
Cable Atlantic	St. John's	Aliant (NewTel)	2000
Cogeco Cable Canada Inc.	Trois-Rivières	Bell Canada	2000
Cogeco Cable Systems Inc.	Hamilton	Bell Canada	2000
EastLink Telephone	Halifax	Aliant (MT&T)	1999
Call-Net Communications Inc.	a. Airdrie b. Ajax-Pickering c. Aurora d. Brampton e. Calgary f. Clarkson g. Cochrane h. Cooksville i. Guelph j. Hamilton k. High River	Bell Canada TELUS Communications	a. 1999 b. 1999 c. 1999 d. 1999 e. 1999 f. 1999 g. 1999 h. 1999 i. NA j. NA k. 1999
Source: CRTC, http://www.crtc.gc.ca			

Table B-6 (cont'd)

Market- Competitive Local Exchange Carriers, October 3, 2000			
CLEC	**Market (Name of exchange)**	**ILEC Operating Territory**	**Proposed Launch Date**
Call-Net Communications Inc. (Cont'd)	l. Kitchener-Waterloo m. London n. Malton o. Markham p. Montréal q. Oakville r. Okotok s. Oshawa-Withby t. Port Credit u. Richmond v. Richmond Hill w. South Pickering x. Streetsville y. Thornhill z. Toronto aa. Unionville ab. Vancouver ac. Woodbridge ad. Québec	Bell Canada TELUS Communications	l. NA m. NA n. 1999 o. 1999 p. NA q. 1999 r. 1999 s. NA t. 1999 u. 1999 v. 1999 w. 1999 x. 1999 y. 1999 z. 1999 aa. 1999 ab. 1999 ac. 1999 ad. NA
Gateway Telephone	a. North Bay Area b. Sudbury Area	Bell Canada	1999
GT Group Telecom Services Corp.	a. Calgary b. Edmonton c. Hamilton d. Kitchener-Waterloo e. London f. Montréal	Bell Canada MTS TELUS Communications	a. 2000 b. 2000 c. Not available d. Not available e. Not available f. 2000
Source: CRTC, http://www.crtc.gc.ca			

Table B-6 (cont'd)

Market - Competitive Local Exchange Carriers, October 3, 2000			
CLEC	**Market (Name of exchange)**	**ILEC Operating Territory**	**Proposed Launch Date**
GT Group Telecom Services Corp. (Cont'd)	g. Ottawa/Hull h. Québec City i. Richmond j. Toronto k. Victoria l. Winnipeg	Bell Canada MTS TELUS Communications	g. Not available h. Not available i. 2000 j. 1999 k. Not available l. 1999
Maskatel Inc.	St. Hyacinthe Area	Bell Canada	1999
Norigen Communications Inc.	a. Calgary b. Edmonton c. Hamilton d. Montréal e.Ottawa f. Toronto g.Vancouver	Bell Canada TELUS Communications	a. 2000 b. 2000 c. 2000 d. 2000 e. 2000 f. 2000 g. 2000
Riptide Networks Inc (formerly "Riptide Communications Inc.)	a. Thornhill b. Toronto c. Unionville	Bell Canada	2000
TELUS Integrated Communications Inc., a division of TELUS Mobility Inc. (formerly "3605892 Canada Ltd.")	a. Toronto	Bell Canada	2000
Vidéotron (1998) ltée	a. Beloeil b. Boucherville c. Chomedey d. Lachine e. Longueuil f. Montréal	Bell Canada	a. 2000 b. 2000 c. 2000 d. 2000 e. 1999 f. 1999
Source: CRTC, http://www.crtc.gc.ca			

Table B-6 (cont'd)

Market - Competitive Local Exchange Carriers, October 3, 2000			
CLEC	**Market (Name of exchange)**	**ILEC Operating Territory**	**Proposed Launch Date**
Vidéotron (1998) ltée (Cont'd)	g. Pointe-Claire h. Pont-Viau i. Roxboro j. Saint-Bruno k. Sainte-Geneviève l. Sainte-Julie de Verchères m. Saint-Lambert n. Sainte-Rose	Bell Canada	g. 2000 h. 1999 i. 2000 j. 2000 k. 2000 l. 2000 m. 1999 n. 2000
Vidéotron Télécom (1998) ltée	ab. Newmarket ac. North Vancouver ad. Oak Ridges ae. Oakville af. Olds ag. Orangeville ah. Oshawa ai. Ottawa-Hull a. Boucherville b. Chicoutimi c. Hull d. Lachine e. Longueuil f. Montréal g. Pont-Viau h. Québec City i. St-Jean-sur-Richelieu j. St-Lambert k. Sainte-Thérèse l. Sherbrooke	Bell Canada	a. 2000 b. 2000 c. 2000 d. 2000 e. 1999 f. before 1999 g. 1999 h. 1999 i. 1999 j. 2000 k. 2000 l. 2000
Source: CRTC, http://www.crtc.gc.ca			

Table B-7

Market - Proposed Competitive Local Exchange Carriers, October 3, 2000			
Proposed CLEC	**Market**	**ILEC Operating Territory**	**Proposed Launch Date**
1349654 Ontario Limited (not recognized as CLEC)	Various major centres		Not available
3620221 Canada Inc.	a. Toronto b. Vancouver	Bell Canada TELUS Communications	Not available
AT&T Canada Corp.	Major centres across Canada		Not available
Cannect Communications Inc.	Vancouver	TELUS Communications	Not available
CAS Communications Services Ltd.	Toronto	Bell Canada	Not available
Clearnet PCS Inc.	a. Ajax-Pickering b. Aldergrove c. Barrie d. Beauharnois e. Brampton f. Brantford g. Burlington h. Caledon East i. Calgary j. Chilliwack k. Cooksville l. Edmonton m. Guelph n. Halifax o. Hamilton p. Hespeler q. Kelowna r. Kingston s. Kitchener t. Lethbridge u. London v. Markham w. Medicine Hat x. Millet y. Milton z. Montréal aa. Nanaimo aj. Peterborough ak. Québec City al. Red Deer	Bell Canada Aliant (NewTel) TELUS Communications	a to bb: 2000
Source: CRTC, http://www.crtc.gc.ca			

Table B-7 (cont'd)

Market - Proposed Competitive Local Exchange Carriers, October 3, 2000			
Proposed CLEC	**Market**	**ILEC Operating Territory**	**Proposed Launch Date**
Clearnet PCS Inc. (Cont'd)	am. Richmond an. Sherbrooke ao. St. Catharines ap. Ste-Madeleine aq. Ste-Thérèse ar. Stayner as. Streetsville at. Thornhill au. Toronto av. Unionville aw. Vancouver ax. Victoria ay. Whistler az. Whitby ba. Windsor bb. Woodbridge	Bell Canada Aliant (NewTel) TELUS Communications	a to bb: 2000
Combined Telecom Inc.	a. British Columbia b. Alberta c. Manitoba d. Ontario e. Québec f. New Brunswick g. Nova Scotia h. Prince Edward Island i. Newfoundland	Bell Canada MTS Aliant (Island Tel) Aliant (MT&T) Aliant (NBTel) Aliant (NewTel) TELUS Communications	Not available
Combined Exchange Telecom Inc.	a. Cambridge b. Guelph c. Kitchener d. Waterloo	Bell Canada	a, b, d: Not available c: 2000
DACo Telecommunications Inc.	550 Berry St., Winnipeg 575 Berry St., Winnipeg	MTS	Not available
Enercom Communications Inc. (formerly "Scotiacom Telecommunications Inc.")	Halifax	Aliant (MT&T)	Not available
Source: CRTC, http://www.crtc.gc.ca			

Table B-7 (cont'd)

Market - Proposed Competitive Local Exchange Carriers, October 3, 2000			
Proposed CLEC	**Market**	**ILEC Operating Territory**	**Proposed Launch Date**
ExaTEL	a. Elliott Lake b. Sudbury and surrounding area	Bell Canada	Not available
ISP Telecom Inc.	Metropolitan areas of: a. Toronto b. Montréal c. Ottawa d. Vancouver	Bell Canada TELUS Communications	a: 1999 b: 1999 c, d: Not available
Knowledge Systems International Inc. (not recognized as CLEC)	Not available		Not available
Managed Network Systems Inc.	Small and medium sized cities in Southwestern Ontario.	Bell Canada	Not available
MaxLink Communications Inc.	Not available		Not available
Microcell Connexions Inc.	a. Abbotsford b. Aldergrove c. Barrie d. Brantford e. Caledon East f. Calgary g. Chilliwack h. Edmonton i. Guelph	Bell Canada Aliant (NewTel) TELUS Communications	a to ab: 2000
Source: CRTC, http://www.crtc.gc.ca			

Table B-7 (cont'd)

Market - Proposed Competitive Local Exchange Carriers, October 3, 2000			
Proposed CLEC	**Market**	**ILEC Operating Territory**	**Proposed Launch Date**
Microcell Connexions Inc. (Cont'd)	j. Hamilton k. Kitchener l. London m. Milton n. Montréal o. Newmarket p. Oakville q. Oshawa r. Ottawa-Hull s. Québec t. Sherbrooke u. St. Catherines v. St. Hyacinthe w. St. Jérôme x. St. John's y. Toronto z. Vancouver aa. Victoria ab. Whistler	Bell Canada Aliant (NewTel) TELUS Communications	a to ab: 2000
NORTEC Corporation	a. Ottawa-Carleton Area b. Toronto c. Calgary d. Montréal e. Vancouver	Bell Canada Aliant (NewTel) TELUS Communications	a, b: before 1999 c, d, e: Not available
Northgrove Communications Inc.	All across Canada, in the ILEC's serving areas.	Bell Canada MTS Aliant (Island Tel) Aliant (MT&T) Aliant (NB Tel)	Not available
Source: CRTC, http://www.crtc.gc.ca			

Table B-7 (cont'd)

Market - Proposed Competitive Local Exchange Carriers, October 3, 2000			
Proposed CLEC	**Market**	**ILEC Operating Territory**	**Proposed Launch Date**
NorthPoint Canada Communications Inc.	Various urban and rural areas across Canada.	Bell Canada MTS Aliant (Island Tel) Aliant (MT&T) Aliant (NBTel) Aliant (NewTel) TELUS Communications	Not available
Packet-Tel Corp.	Not available		Not available
Phonetime International Inc.	Major centres across Canada.	Bell Canada MTS Aliant (Island Tel) Aliant (MT&T) Aliant (NBTel) Aliant (NewTel) TELUS Communications	Not available
QuébecTel Alizé Inc.	a. Major centres across Québec b. Ottawa/Hull Area	Bell Canada	Not available
Savage TeleCom Canada Ltd. (formerly "Savage Communication Corporation"	a. Vancouver b. Toronto	Bell Canada TELUS Communications	Not available
Sprint Canada	Various major centres	Bell Canada MTS Aliant (Island Tel) Aliant (MT&T)	Not available
Source: CRTC, http://www.crtc.gc.ca			

Table B-7 (cont'd)

Market - Proposed Competitive Local Exchange Carriers, October 3, 2000			
Proposed CLEC	**Market**	**ILEC Operating Territory**	**Proposed Launch Date**
Sprint Canada (Cont'd)	Various major centres.	Aliant (NBTel) Aliant (NewTel) TELUS Communications	Not available
Sun Rivers Development Corp.	Kamloops Indian Band Reserve near Kamloops, British Columbia	TELUS Communications	Not available
Suite Systems Inc.	a. Calgary b. Edmonton c. Major metropolitan centres	TELUS Communications	Not available
Wispra Networks Inc.	a. Calgary b. Edmonton c. Montréal d. Ottawa e. Toronto f. Vancouver	Bell Canada TELUS Communications	Not available
WizTel Inc.	Major centres across Canada.	Bell Canada Aliant (Island Tel) MTS Aliant (MT&T) Aliant (NBTel) Aliant (NewTel) TELUS Communications	Not available
Zeuter Development Corporation	a. District of Muskoka b. District of Parry Sound	Bell Canada	Not available
Source: CRTC, http://www.crtc.gc.ca			

Table B-8

Telecommunications Resellers Registered with the CRTC (436 registered)	
.comfax Inc.	www.comfax.com
101-6555 Long Distance Corp	
1010215 Tel. Inc.	
1032468 Ontario Inc. (Dial-Tel Network)	
1233779 Ontario Inc.	
1304008 Ontario Inc.	
1385254 Ontario Inc.	
2485694 Nova Scotia Limited	
3252647 Canada Inc. (CTE Network)	
3261492 Canada Inc. (Union Telecom)	
3271684 Canada (Union Telecom)	
3297691 Canada Inc. (GHC)	
3358852 Canada Ltd. o/a Ring Canada	
3362426 Canada Inc.	
3431860 Canada Ltd. (VTC Canada)	www.vtc.ca
360networks services ltd.	www.360.net
3694798 Canada Inc.	
500864 BC Ltd.	
503197 NB Limited	
567562 BC Ltd.	
606109 Alberta Ltd.	
777 Long Distance Inc.	www.777online.com
9073 3932 Québec Inc.	
A&A Call Link Telesolution Inc.	
A&A Call Link Telesolutions (Vancouver) Ltd.	
A&H Telecom	
AC Telecommunications Group	
Ability Telecom	www.abilitytel.ca
ABS-CBN Telecom, North America Inc.	
ACC TelEnterprises Company	
Access Calling Services Inc.	
Achat Plus	www.achatplus.com
Active Running Courier Inc.	
Airnex Communications Inc.	www.airnex.com
AIT Services	www.ait.acl.ca
All Communications Network of Canada	www.acncanada.com
Allied Telecom	
Alphanet Telecom Inc.	www.alphanet.net
Alternacall Inc.	www.1-800-hi-its-me.com
American Network Inc., d/b/a ANI	www.ani.net
American Power Associates Inc.	
AMI Telecommunications Inc.	www.amitel.com
Amtelecom Business Services	www.amtelgroupinc.com
Andromeda Telecom Inc.	
Antillara Communications	
Appro-Net (RAAN)	

Source: CRTC, http://www.crtc.gc.ca

Table B-8 (cont'd)

Telecommunications Resellers Registered with the CRTC (436 registered)	
Approvisionnements	www.appromtl.com
Archer Telecom	
ASC Telecom Inc.	
Asia International Services (Ontario) Corporation	www.aicom.com
AT&T Canada Enterprises Company	www.attcanada.com
AT&T Canada Telecom Services Company	www.attcanada.com
AT&T Global Network Services Canada CO. (AGNS)	www.attcanada.com
AT&T PrePaid Card Company	www.attcanada.com
ATELBC Communications Services	
Axxent Corporation	www.axxent.ca
B&C List	
BV Communications	
Bassey Osagie	
BCT. Telus Communications Inc.	www.telus.ca
Bell Advanced Communications	www.bell.ca
Bell Canada	www.bell.ca
Bell Intrigna	www.bell.ca
Bell Satellite Services	www.bell.ca
BEL TELECO	
Bentley International Communications	
Better Net	www.better.net
Bleam Star Communications Inc. o/a PriNet	
Blue Mountain Techonologies	
Borg Telecommunications Inc.	
Boulton Communications	
BPA Gescom Inc.	www.bpa.ca
Bradson Business Centre	www.bradson.com
Broadwing Communications Services	www.broadwing.com
Budget Express Inc.	
Buehner-Fry Inc.	www.buehner-fry.com
Business Telecom Inc.	www.btitele.com
Bzaat Inc.	
CLDS Canadian Technology Exchange Inc.	
Cable and Wireless HKT	www.cwhkt.com
Cable and Wireless USA Inc.	www.cwusa.com
Cable Atlantic Inc.	www.cableatlantic.nf.ca
Cabletec Limited	
Cabletec NFLD Limited	
Call for Less	
Call-Net Technology Services	www.callnet.ca
Call-Savers Longdistancing	
Canada Reconnect (Alberta) Inc.	
Canada Reconnect (Ontario) Inc.	
Canada Reconnect Inc.	
Canada Telecom Network Inc.	
Source: CRTC, http://www.crtc.gc.ca	

Table B-8 (cont'd)

Telecommunications Resellers Registered with the CRTC (436 registered)	
Canadian Homebuilders' Association of BC	www.chbabc.org
Canadian International Telecom Corp (CITC)	
Canadian Telesave	
Canadian Tire	www.canadiantire.ca
Cannect Communications	www.cannect.com
CanopCo Incorporated	www.canopco.com
Canquest Communications (Canada) Inc.	www.canquest.com
Captelco Inc.	www.captelco.qc.ca
Central Telecommunications (d/b/a Central Telecom)	www.centraltele.com
CESCOM Inc.	www.cescom.ca
Channel Telecom	www.channel.ca/CORPRATE.htm
Cignal Carrier Services	www.cignal.com
City 2 City Inc.	
City Access Telecom Inc.	
City Dial Network Services Ltd.	
City Telecom Inc.	www.citytelecom.com
Clubtel (Girlec Telecom Inc.)	
CMT ENTERPRISES	
Cogeco Cable Canada	www.cogecocable.com
Cogenix Telecom Inc.	www.cogenix.com
Combined Telecom Inc. (CTI)	www.combinedtel.com
Comet Telecommunications Inc.	www.comettele.com
Communication Mont-Tel	
COMMUNICATION SERGAU Inc.	
Computerized Business Solutions	
Concept Tel Inc.	
Connectivity Contact Centre Solutions Inc.	www.connectivity.ca
Connexions Interurbaines	
Consolidated Technologies Inc.	www.cti-tel.com
Contour Telecom Management Inc.	www.contour.ca
Coren Telecommunications Inc.	
Covad Canada Communications	www.covad.com
Crystal Hill Technologies Inc.	
DACo Telecommunications Inc.	
Dana Telecom Inc.	
DCI Telecom (Ditell Consultants Inc.)	
Deluxe Telephone Systems Limited	
Deutsche Telekom Canada	www.deutschetelekomcanada.com
Digital Courier International	www.digitalcourier.com
Direct Line Communications Inc.	
Discount Dialing Inc.	
Distributel Communications Limited	www.distributel.ca
E-Cable Services Inc.	
E-Z Loans Ltd.	
EDS of Canada Ltd.	www.eds.ca
Source: CRTC, http://www.crtc.gc.ca	

Table B-8 (cont'd)

Telecommunications Resellers Registered with the CRTC (436 registered)	
East Link Telephone Eastern Telecom Inc.	www.eastlink.ca
Eastern Telecom Inc.	www.easterntelecom.com
Eclipse Telecommunications Inc.	www.eclipsetel.com
Econolink	
Économux Telecom Inc.	www.economux.net
EconoPhone Inc.	www.econophone.com
Emerald Consulting &Management	
Enercom Communications Inc.	www.enercom.ca
Enrich International Industries Ltd.	www.enrich.com
Equess Communications Inc.	www.equess.com
Eritel Telecommunications	www.eritel.com
Everest Broadband Network	www.everestbroadband.com
ExaTEL Inc.	
Excel Telecommunications (Canada)	www.excel.com
ExTel Communications	
FaciliCom International, LLC	www.facilicom.com
Fibretech Waterloo Inc.	
First Debit Corp	
FIRST TELEVOICE INC.	
Fone Pass	
Fontek Communications Inc.	
Foxtel Inc.	
Future Link Teleocommunications	
Future Tel Communications	www.futuretel.net
Futureway Communications	www.futureway.ca
Gabsonn Communications Group	
Galaxy Data Services	www.galaxy-data.com
Gateway Telephone Limited	www.gatewaytel.com
Gescom FRL Inc.	
GianTel INC.	
Glentel Inc.	www.glentel.com
Global Crossing Telecommunications	www.globalcrossing.com
Global Linx Internet Inc.	www.glinx.com
Global Network Telephone LLC	
Global One	www.globalone.net
Global Quest Communications, LLC	
Gold Line Telemanagement Inc.	www.goldline.net
Golden Bridge Networks Inc.	
Goldiphones/Tel D'or	
Great Lakes Interlinks Inc.	
Greenland Corporation	
Groupe Jeshka Ltée	www.jeskha.com
Groupe Negotel Inc.	
Groupe Telecom SIS Inc.	
GT Group Telecom Services Corp	www.gt.ca
Source: CRTC, http://www.crtc.gc.ca	

Table B-8 (cont'd)

Telecommunications Resellers Registered with the CRTC (436 registered)	
GTE Communications Corporation	www.gte.com
Hakim Ezith Import Export Inc	
Halton Discount Dialing Inc.	
Hamilton Telecom	
Heartline Inc.	www.heartline.com
Hitel Communications Canada	www.hitelcanada.com
HMNet Communications Inc.	www.hmnet.net
I DON'T CARE INC.	
iClub Inc.	
Illimitel enr.	
Incotel Technologies Inc.	www.incotel.ca
Independent Telephone Reconnection Service (ITRS)	
LDS Network Limited	savings.phonecall.net
Level 3 Communications, LLC	www.level3.com
Lightwave Communications	www.lightwave.bc.ca
Lightway Networks Inc.	
Link-On Telecom	
LinkStar Telecommunications Ltd.	
Local Fone Service Inc.	www.lda.ns.ca
Long Distance Atlantic Inc.	www.ldmi.com
Long Distance of Michigan Inc. d/b/a/LDMI	www.go-steeltown.com/MIM
M.I.M Telecommunications (Minds in Motion)	
Macro Communications	
Magic-Tel Communications Ltd.	www.mnsi.net
Managed Network Systems Inc.	www.mts.mb.ca
Manitoba Telephone Service (MTS)	
Manitoba Network Systems	www.mtt.ca
Maritime Tel &Tel Ltd.	
Marverick Communications	
Mskatel Inc.	www.maxlink.net
MaxLink Communications Inc.	www.means.net
MEANS Telecom	
Media Casting Telecommunications	www.metcomcanada.com
Info Systems	
Innofone Canada Inc.	www.innofone.com
InterFun Communication	
Interban Inc.	
International Exchange Networks Ltd. (IXnet)	www.ixnet.com
International Telephone Products Ltd.	moore.sac.on.ca/jramlochan/
Interpretel (Canada) Inc.	
Interurbain Guèvremont Ltée	
Intuitive Publishing	www.ipcquotes.com/intuitive/
Island Telecom Inc.	www.islandtel.pe.ca
Itel Communications	www.itel.com
Itel Telecommunications Inc.	www.itel.com

Source: CRTC, http://www.crtc.gc.ca

Table B-8 (cont'd)

Telecommunications Resellers Registered with the CRTC (436 registered)	
ITG	www.itgnet.ca
IXC Communications Services Inc.	www.ixc-comm.com
Jay's Trading Co. Ltd.	
KALL Telemanagement Inc.	
Kayhay Internet & Communications	www.kayhay.com
KOSMOTEL COMMUNICATIONS INC.	www.kosmotel.com
LCI International Telecom Corp.	
LDFR Telco	
Metcom Canada Limited	www.interlink.net
Metrix Interlink Corporation	www.metroaccess.com
Metro Access Ltd.	
Metro East Telecom	
Metrophone Telecommunications Inc.	www.metroplus.bc.ca
MetroPlus Communications Corporation	
MFS Communications of Canada Inc.	
MHM Enterprises	www.minitel.ca
Minitel Communications Corporation	www.mymondetta.com
Mondetta Telecommunications	
Moonstar Technology Integration Corporation	www.mtt.ca
MT&T Advanced Communications	
Multinet Norwes Inc.	
Municipal Tel	www.muskoka.com
Muskoka.com Inc.	www.myfreetelecom.com
My Free Telecom	
My Toronto Line Inc.	
Nanci International (Canada) Ltd.	
National Teleconsulting (Nat-Tel)	
Nav Communications Inc -Infosat	
NBTel Inc.	www.nbtel.nb.ca
NBTel Interactive	www.nbtel.nb.ca
NBTel VideoActive Network Limited	www.nbtel.nb.ca
NCL Inc.	
NDT TELECOM Inc	www.ndt.ephone.net
Net2Phone Global BV	www.net2phone.com
Netasia Telecom (NTC)	
Netcruiser On-Line Communication Services	
NetStone Communications	www.netstonecommunications.com
Network Consultants International Inc.	
New Vision Telecom Inc. (NVT)	
New Wave Telecommunications Inc.	
NewTel Communications Inc	www.newtel.com
Nexstar Communications Inc.	www.nexstarcommunications.com
NextCall Communications Inc.	
NIVAL Communications	
No Deposit Required Phone Service	

Source: CRTC, http://www.crtc.gc.ca

Table B-8 (cont'd)

Telecommunications Resellers Registered with the CRTC (436 registered)	
Noble Systems	www.noblesys.com
Norfolk Telecom Inc.	
Norigen Communications Inc.	www.norigen.com
Norstan Network Services Inc.	www.norstan.com
North American Network Company Inc.	
North American Telephone Network	www.natn.com
North Shore Internet Services	www.nsis.com
NorthPoint Canada	www.northpointcanada.net
NorthVoice Communications Inc.	www.northvoice.ca
Northwoodcare Inc.	
O.N. Tel	www.ontel.com
Omnes Canada Limited	
Québec Communications Inc.	
Quick Connect	
Qwest Communications Corporation	
R&P Telecom	
RACO International Ltd.	
Real Estate Council of Alberta	
Real-Tel International Corporation	
Rebel Communications	
Rent 2 Own Depot Inc.	
Resolute Telecom Ltd.	
Resort Long Distance Service	
Revenue Plus Ltd.-o/a Stellarcom	
Revere Communications Inc.	
Rhythms Canada Inc.	
Omnitel Communications Inc.	www.omnitele.com
One Call Communications Inc. d/b/a OPTICOM	www.onecall.net
Orion Communications	
Oslec Telecom Inc.	
Osler Hoskin & Harcourt	www.osler.com
OXFORDONSITE	
P.A.V.E.L (division of 9047-9767 Québec)	
Pacfic Gateway Exchange	www.pgexch.com
Pacifictel Communications	
Perfect Health Group	
Petro-Canada	www.petro-canada.ca
Phone Re-Connect	
PhoneLine CardCall International	
Phones R Us	
Phonetime Inc.	www.phonetime.ca
Photonic Telecommunications Company	
Planetel Telecommunications Inc.	
PMTel Inc.	
Posicom Inc.	www.posicom.com
Source: CRTC, http://www.crtc.gc.ca	

Table B-8 (cont'd)

Telecommunications Resellers Registered with the CRTC (436 registered)	
Premiere Communications Inc.	
Primus Telecommunications Canada Inc.	www.primus.ca
Prism Canadian Operators, LLC	
Pro-Tel Reconnect Inc.	
Protel 2000 Enrg.	
Protocall Message Centre Inc.	
PT-1 Communications Inc.	www.phonetimeinc.com
Quadnet Communications Inc.	
Quality Connections Communications Inc.	
Quartet Service Corporation (Quartet)	www.quartetservice.com
Richard Cuthbert & Associates	
Right Rate Long Distance Company Inc.	
Rogers AT&T Wireless	
RSL COM Canada (RSL) Inc.	
RSL COM PrimeCall Inc.	
SCL Atlantic	
Sears PhonePlan	
Selltek Inc.	
Sensitel Telecommunications Ltd.	
Services de Secretariat Executif M&M (Metronet)	
Shared Technologies of Canada Inc.	
Simcoe County Long Distance Corporation	
Single Source Communications	
Softalk Inc.	
Sonic Networks Inc.	
Sprint Canada Inc. (SCI)	
Startec global Communications Company (Canada)	
Sun Telecom	
Sunny International Services Corporation	
Sussex Centre Communications Inc.	www.sussexgroup.ca
Sussex Long Distance Inc.	www.sussexgroup.ca
Sussex Telecom Inc.	www.sussexgroup.ca
Symphony Telecom Inc.	www.symphony.net
TFI Communications Inc.	www.tficommunications.com
Talk is Cheap (Telehop)	www.telehop.com
Tangotel (Canada) Inc.	
TAR-BANI CANADA Ltd.	
TC2 Communications Ltd.	
Tekbilt World Communications	
Tel Net Communications	
Tel Saver	
Tel-e Connect Systems	www.tcscanada.com
Telchoix	
Téléban	
Télébec Solutions Évoluées	www.telebec.qc.ca
Source: CRTC, http://www.crtc.gc.ca	

Table B-8 (cont'd)

Telecommunications Resellers Registered with the CRTC (436 registered)	
Telecom brokerage Services Inc.	
Télécom Expert	
Telecom Options Inc.	www.telecomoptions.com
Télécom Outaouais	
Télécommunication Interville	
Télécommunication NT	
Teledebit One Inc.	
Telefficiency Corporation	www.telefficiency.com
Teleglobe Communication Services Inc.	www.teleglobe.com
Telehop Communications Inc.	www.telehop.com
Telenet	
Telesave Communications	
Telmax	
Telmax du Lac	
TELPUB MEDIACOM INC.	
TelTrust Communications Services Inc.	
Telus Advanced Communications Inc.	www.telus.com
Telus Communications Inc.	www.telus.com
Telus Integrated Communications	www.telus.com
TFL Telecom	www.tfltelecom.ca
The Call Zone	
The Owl Corporation	
Tom Makrisopoulos	
Toronto Telecom Co.	
Tortel Canada	www.tortelcanada.com
Total Telecom Ltd.	www.totaltelcom.com
TotalNet Inc.	www.totalnets.com
Trans-Canada Audit	www.cadvision.com/Home_Pages/accounts/gought
Transaction Network Services Inc.	www.tnsi.com
TransGlobe Internet and Telecom Co. Ltd.	
Trilogic Communications	
Triton Hospitality	www.triton-com.com
Tyroute Communications	
US Long Distance Inc.	
Unidial	
Unilink Telecom	www.unilink-tel.com
University of British Columbia	www.ubc.ca
Unlimited Telecom Network	
UUnet Canada Inc.	www.uunet.ca
Uxbridge Tele-Com	
ValleyTel Inc.	web.trytel.com/at_work/valleytel
Vancouver Telephone Company (VTC)	www.vtcinet.com
Vanguard Telecommunications Inc.	
Venture Elite Telecommunications	
VicComm Communications Inc.	
Source: CRTC, http://www.crtc.gc.ca	

Table B-8 (cont'd)

Telecommunications Resellers Registered with the CRTC (436 registered)	
VideoCall Canada	
Videon CableSystems Inc.	www.videon.ca
Vidéotron Ltée	www.videotron.com
Vidéotron Télécom Ltée	www.videotron.com
Vietnam Telecommunications Inc.	
Viscount Communication and Control Systems Inc.	
VoCall Communications Corp.	www.vocall.com
Vsoft Communications	www.vsoft.net
VVD Networks Ltd.	
West Can Telecommunications	
West World Communications	
Western Télécom	
Westmount Telecom Inc.	www.westmount.net
Whisper Telecom Inc.	
Whistler Telephone Company	www.whistler.net/whistel/
Wise Advantage	
World Wide Telecom	
World Link Telecom	
Yak Communications (Canada) Inc.	
York Discount Dialing	
TigerTel	www.tigertel.com
Toll-Free Telecommunications Inc.	
ZENEX Long Distance Inc.	
York University	www.yorku.ca
Yours	
Source: CRTC, http://www.crtc.gc.ca	

Table B-9

Sharing Groups (22 Registered)	
A.Harvey & Company Limited	LDS Network Limited
Alberta Assocation of Municipal Districts	M.J.S. Marketing Inc.
Alberta Hotel Association	Manitoba Motor Dealers Association
AMEC (Alliance of Manufacturers & Exporters Canada)	Manitoba Trucking Association
Anthony Insurance Inc.	Nexicom Inc.
Approvisionnements-Montréal	Pathfinder Long Distance Group
Argos Alliance	Posicom Inc.
Associated homes for Special Care	The Bedford Business Place Limited
Club L'Échange	TIANS Member Web
Edperbrascan Corporation	Uni-Plus Communications
Groupe Jeskha Ltée	Uni-Plus Long Distance
Source: CRTC, http://www.crtc.gc.ca	

Table B-10

Wireless Providers (Cellular/PCS/Satellite) by Principal Operating Territory (15 registered)	
National	
Rogers AT&T Wireless Inc.	www.rogers.com
Microcell Telecommunications Inc.	www.microcell.ca
Clearnet Communications Inc.	www.clearnet.com
Globalstar Canada Co.	www.globalstar.com
Bell Mobility	www.bellmobility.ca
Rogers Wireless	www.rogers.com
Northwest Territories, Yukon Territory, Northern B.C.	
Northwestel Inc.	www.mobility.nwtel.com
British Columbia and Alberta	
Telus Mobility	www.telus.ca
W2N Inc.	www.w2n.com
Saskatchewan	
Sasktel Mobility	www.sasktel.com
Manitoba	
MTS Mobility Inc.	www.mts.mb.ca
Telus	www.telus.com
Ontario and Québec	
Telus	www.telus.com
Thunder Bay Telephone Ltd.	www.thunderbaytelephones.com
Québec	
Québectel Mobilité	www.Québectel.com
Télébec Mobilité	www.telebec.qc.ca
W2N Inc.	www.w2n.com
New Brunswick	
Aliant (NBTel Mobility)	www.nbtel.nb.ca
Newfoundland and Labrador	
Northwestel Inc.	www.newtel.com
Nova Scotia	
Aliant (MT&T Mobile Inc.)	www.mtt.ca
Telus	www.telus.com
Prince Edward Island	
Aliant (Island Tel Mobility)	www.islandtel.pe.ca
Telus	www.telus.com
Source: CRTC, http://www.crtc.gc.ca	

Table B-11

Other Telecommunications Carriers (2 registered)	
Téléglobe Inc. Telesat Canada	www.teleglobe.com www.telesat.ca
Source: CRTC, http://www.crtc.gc.ca	

Table B-12

International Telecommunications Services Providers Licensed by the CRTC (Class A-85)	
Class A*	
1285103 Ontario Inc. (Uni-Link Gateway Exchange)	
3461386 Canada Inc. (Econophone Canada)	
3543676 Canada Inc. (ICS Telecom)	
360 Atlantic (Canada) Inc.	www.360networks.com
503197 N.B. Limited	www.cwc.com
507964 N.B. Ltd.	
857903 Alberta Ltd.	
ACCTelenterprises	
AIC Asian International Services (Alberta) Corporation	www.aicom.com
ARC Phone Canada Inc.	
AT&T Canada Corp.	www.attcanada.com
AT&T Global Network Services Canada Co.	www.attcanada.com
BCE Mobile Communicatons (Bell Mobility)	www.bce.ca
BCE Nexxia	www.bce.ca
Bell Canada	www.bell.ca
Bell Mobility Cellular Inc.	www.bell.ca
Brain Trust International	www.braintrust-tele.com
Bzaat Communications	
Cable and Wireless HKT (Pacific) Limited	www.cwhkt.com
Call-Net Technology Services	www.callnet.ca
Can-Med Telecom Corporation	
Cap-Com Telecommunications Inc.	
Cignal Global Communications Canada ULC	www.cignal.com
Deutsche Telekom (Canada) Inc.	www.deutschetelekomcanada.com
Digital Broadcast Network Corporation	
EDS of Canada Ltd.	www.eds.ca
EQUANT Canada Inc.	www.equant.com
Far East Gateway Telecom Inc.	
Gateway Telephone Limited	www.gatewaytel.com
Global One Communications	www.globalone.net
Globalstar Canada Co.	www.globalstar.ca
Hanbu Communications Inc.	www.hanbu.com
Hitel Communications Canada Inc.	www.hitelcanada.com
iBasis Inc.	www.ibasis.net
Incomtel Global Network Inc.	www.incomtel.com
Innofone Canada Inc.	www.innofone.com
International Exchange Networks, Ltd. (IXnet)	www.ixnet.com
Interoute Networks Ltd.	
JUCH-TECH Inc.	www.juch-tech.com
LDMI Telecommunications of Canada Limited	www.ldmi.com
Maritime Tel & Tel (MTT)	www.mtt.ca
MFS Communications of Canada Inc.	
MTS Communications Inc.	www.mts.mb.ca
NBTel	www.nbtel.nb.ca
*List of Licenses Issued on June 8th 2000 Source: CRTC, http://www.crtc.gc.ca	

Table B-12 (cont'd)

International Telecommunications Services Providers Licensed by the CRTC (Class A - 85)	
Class A*	
NewTel Communications Inc.	www.newtel.com
Nexgen Communications Inc.	
North American Gateway Inc.	www.nag.ca
Northwestel Inc.	www.nwtel.ca
One Team Communications	
Pacific Gateway Exchange (Canada) Inc.	www.pgexch.com
Phonetime International Inc.	www.phonetime.ca
Primus Telecommunications	www.primus.ca
Québec-Téléphone	www.Québectel.com
QuébecTel Alizé	
QuébecTel Mobilité	www.Québectel.com
Rogers AT&T Wireless	www.rogers.com
RSL COM CANADA INC.	www.rslcom.ca
Société Internationale de Télécommunications	
STAR Telecommunications	www.startel.com
Startec Global Communications Company	www.startec.com
Stratos Wireless	www.stratos.ca
T-One Communications	www.t-onecom.com
TYT Enterprises	
TC2 Communications	
TelCanada Universal Network Corporation	
Teleglobe Communications Services Inc.	www.teleglobe.com
Téléglobe Inc.	www.teleglobe.com
Telehop Communications Inc.	www.telehop.com
Telesat Canada	www.telesat.ca
TELUS Communications (BC) Inc.	www.telus.ca
TELUS Communications Inc.	www.telus.ca
TELUS Mobility Cellular Inc.	www.telus.ca
TELUS Services	www.telus.ca
TELUS Systems Support	www.telus.ca
TMI Communications	www.tmisolutions.com
TUN International Networks Limited	
TV2GO Inc.	www.tv2go.com
UTI-Unilink Telecommunications Inc.	www.unilink-tel.net
Vancouver Teleport Ltd.	
Vidéotron Teleport Ltd.	www.videotron.com
VMR TEL INC	
Voice-Tel of Canada Ltd.	
WorldxChange Communications	www.worldxchange.com
*List of Licenses Issued on June 8th 2000 Source: CRTC, http://www.crtc.gc.ca	

Table B-13

International Telecommunications Services Providers Licensed by the CRTC (Class B - 105)	
Class B*	
101-6555 Long Distance Corp.	
1032468 Ontario (Dial-Tel Network)	
1071837 Ontario Inc.	
ABS-CBN Telecom, North America Inc.	www.abs-cbn.com/international
Achatplus Inc.	www.achatplus.com
Advanced Communications Systems	
AIC Asia International Services	www.aicom.com
Aimex Communications Inc.	www.airnex.com
AirOne Canada Communications Inc.	
All Communications Network of Canada Co.	www.acncanada.com
Allied Telecom Inc.	
Alternacall Inc.	www.1-800-hi-its-me.com
Altline Communications Inc.	www.altline.com
Americatel Corporation	www.americatel.net
Ameritech Communications International, Inc.	
AMI Telecommunications	www.amitel.com
Amtelecom Inc.	www.amtelgroupinc.com
AT&T Canada Enterprises Company	www.attcanada.com
AT&T Canada Telecom Services Company	www.attcanada.com
AT&T PrePaid Card Company	www.attcanada.com
Aurora International Telecommunications Inc.	
BABCN, L.L.C.d/b/a Service Net	
Bell Satellite Services Inc. (BBSI)	www.bell.ca
Blood Hills Telecommunications Inc.	
BT Toronto Telecommunications Inc.	
BV Communications	www.bvcom.com
Cable and Wireless Global Markets Inc.	www.cwusa.com
Cable and Wireless USA	www.cwusa.com
Call-Net Communications Inc. (CNCI)	www.callnet.ca
CanopCo Incorporated	www.canopco.com
Canquest Communications (Canada) Inc.	www.canquest.com
Celluworld Inc.	www.celluworld.com
Cityfone Telecommunications Inc.	www.cityfone.net
Clearnet Inc.	www.clearnet.com
CNC Admin Inc.	
CNT Admin Inc.	
Communications Télosystème Inc.	
Corporation of the City of Thunder Bay	www.tbaytel.com
Darome Canada Inc.	www.darome.com
Distributel Communications Ltd.	www.distributel.ca
Ditell Consultants Inc.	
Dryden Municipal Telephone System	
ECS Enhanced Cellular Systems Inc.	
*List of Licenses Issued on May 1st 2000 Source: CRTC, http://www.crtc.gc.ca	

Table B-13 (cont'd)

International Telecommunications Services Providers Licensed by the CRTC (Class B - 105)	
Class B*	
EOT Telecommunications of Canada	
Excel Telecommunications (Canada) Inc.	www.excel.com
FIRST TELEVOICE INC.	
Gold Line Telemanagement Inc.	www.goldline.net
Island Telecom	www.islandtel.pe.ca
Korea Telecom America Inc.	www.ktamerica.com
Maskatel Inc.	
Microcell Connexions	www.microcell.ca
Microcell Solutions	www.microcell.ca
Millennium Global Telecom Inc.	
MT&T Mobility	www.mtt.ca
MTS Mobility	www.mts.mb.ca
NEF Canada Inc.	www.nefcanada.com
New Millenium ConQuest Service Corporation	
NewTel Mobility Limited	www.newtel.com
Nexicom Mobility Inc.	www.nexicom.net/mobility/
NMI Mobility	www.nmi.ca
NorTel Mobility Inc.	www.nortelmobility.on.ca
Northern Telephone Limited	northerntel.on.ca
Northwestel Mobility	www.nwtel.ca
Novus Telecom	www.novus-tele.com
One Call Communications, Inc. d/b/a	www.onecall.net
Optel Communications Corporation	
Pacifictel Communications Inc.	www.pacifictel.com
Planetel Telecommunications Inc.	
Primus Network Services Inc.	www.primustel.ca
Progressive International Telecommunications	
PT-1 Communications Canada Inc.	www.pt-1.com
Quartet Service Corporation	www.quartetservice.com
Québec Communications Inc.	www.Quebectel.qc.ca
Qwest Communications Corporation	www.qwest.com
Réseau Tel-Synergie Inc./Tel-Synergy	
Rhino Com International Inc.	www.rhinocom.com
SelectCom Inc.	www.selectcom.ca
Shared Technologies of Canada	www.sharedtechnologies.com
Skytel Communications Corporation	
Sogetel Inc.	www.sogetel.com
Sonic Networks Inc.	www.gosonic.com
Sprint Canada Inc.	www2.sprintcanada.ca
Tel-e Connect Systems Ltd.	www.tcscanada.com
Télébec Ltée	www.telebec.qc.ca
Télébec Mobilité	www.telebec.qc.ca
Telus Mobile Inc.	www.telus.ca
*List of Licenses Issued on May 1st 2000 Source: CRTC, http://www.crtc.gc.ca	

Table B-13 (cont'd)

International Telecommunications Services Providers Licensed by the CRTC (Class B - 105)	
Class B*	
TON Services	www.tonservices.com
Town of Kenora Telephone Division	
TransGlobe Internet and Telecom Co. Ltd.	
ValleyTel Inc.	web.trytel.com/at_work/valleytel
Vanguard Telecommunications Inc.	
Vidéotron Ltée	www.videotron.com
Vidéotron Télécom Ltée	www.videotron.com
VoCall Communications Corp	www.vocall.com
Westmount Telecom	www.westmount.net
Westport Telephone Company Limited	www.westportel.com
Worldwide Fiber (FOTS) No. 3 Ltd.	
Yak Communications (Canada) Inc.	www.yak-attack.net
*List of Licenses Issued on May 1st 2000 Source: CRTC, http://www.crtc.gc.ca	

Table B-14

Resellers of High Speed Retail Internet Service (57 Registered)	
1215012 Ontario LTD. / Webgate Internet Services	
9088-4495 Québec Inc. (doing a business under Réseaux Canada/ Networks Canada and etcan.com)	
Atréide Communications Inc.	www.atreide.net
Barrie Connex Inc.	www.bconnex.net
Cablovision Warwick Inc.	
Captelco inc.	www.captel.com
ClicNet Télécommunications, Inc.	www.qbc.clic.net
Comnet Communications	www.comnet.ca
Compu-SOLVE Internet Services Inc.	www.csolve.net
CoopTel	www.cooptel.qc.ca
Cyberus Online Inc.	www.cyberus.ca
DLC-West Internet	www.dlcwest.com
Dotcom Inc.	www.dotcom.qc.ca
Efni Connect Ltd.	www.efni.com
Emonda Networks Inc.	
Everest Broadband Network	www.everestbroadband.com
FibreTech Telecommunications Inc.	www.fibretech.net
FMMO Publications Informatiques Inc.	www.fmmo.ca
François D. Ménard	
Global Net Inc.	
iClub Inc.	www.iclub.org
Interbaun Communications	www.interbaun.com
Interjonction Inc.	www.jonction.net
Internet Access Worldwide	www.iaw.com
InterNet Kingston	www.kingston.net
InterPacific Online Inc.	www.iponline.com
Source: CRTC, http://www.crtc.gc.ca	

Table B-14 (cont'd)

Resellers of High Speed Retail Internet Service (57 Registered)	
Islandnet AMT Solutions Group Inc.	www.islandnet.com
ISTOP.com	www.istop.com
ITI Inc.	www.iti.qc.ca
Look Communications Inc.	www.look.ca
Managed Network Systems Inc.	www.mnsi.net
Mondenet Technical Services Inc.	www.mondenet.com
Monisys Inc.	www.monisys.ca
NCG - The Connection	www.connection.com
NorthPoint Canada	www.northpointcanada.net
Octomedia Internet Corporation	
Octonet Communications Corporation	www.octonet.com
Pangea.ca Inc.	www.pangea.ca
Pavliks.com	www.pavliks.com
Proxymedia Inc. Division of Ontrack Ventures	www.proxymedia.net
PSINet limited	www.psi.ca
Qualitas	www.qualitas.com
Quik Internet	www.quik.com
Réseau Internet Québec Inc.	www.riq.net
RiverNet connections	www.rivernet.net
RSL COM Canada Inc.	www.rslcom.ca
Services Graphiques Multi-Média Inc.	www.multi-media.ca
ShockWare Inc.	www.Shockware.com
Six Dot Net Informatique Inc.	www.six.net
SMARTNET.CA	www.smartnet.ca
Softcom	www.softcom.ca
Technovision Systems, Inc.	www.tvs.net
Toronto Datacomm & Cables Inc.	www.tdc.on.ca
Trillium Soluctions Inc.	www.trilli.com
Trytel Internet Inc.	www.trytel.com
Vaxxine Computer Systems	www.vaxxine.com
Versus Informatique Inc.	www.versus.com
Vidéotron Télécom (1998) ltée (a/s Videotron Communications Inc.)	www.videotron.com
Source: CRTC, http://www.crtc.gc.ca	

Table B-15

Digital Subscriber Line Providers Registration 2000 (Registered)	
C1.com Inc.	www.c1.com
CoopTel	www.cooptel.qc.ca
Hostars Enterprises Inc.	www.hostars.com
ISTOP.com	www.istop.com
Look Communications Inc.	www.look.ca
NorthPoint Canada	www.northpointcanada.net
Rhythms Canada Inc. c/o Axxent Corp.	www.rhythmscanada.com
RSL COM Canada Inc.	www.rslcom.ca
Source: CRTC, http://www.crtc.gc.ca	

Table C-1

Toward a Competitive Canadian Telecommunications Market Major Milestones 1979-2000	
1979	Telecom Decision CRTC 79-11- *CNCP Telecommunications: Interconnection with Bell Canada,* (17 May 1979).
1982	Telecom Decision CRTC 82-14 - *Attachment of Subscriber-Provided Terminal Equipment* (23 November 1982).
1984	Licensing of competitive cellular telephone service providers.
1987	Privatization of Teleglobe.
1989	Supreme Court confirms federal jurisdiction over "Stentor" telephone companies.
	Radiocommunication Act updated.
	Canada - U.S Free Trade Agreement: provided for Canada-U.S. competition in the the provision of enhanced telecommunication services (January 1 1989).
1992	Telecom Decision CRTC 92-12 - *Competition in the Provision of Public Long Distance Voice Telephone Services and Related Resale and Sharing Issues* (12 June 1992).
	Privatization of Telesat Canada.
1993	New pro-competitive *Telecommunications Act* comes into force.
1994	*North American Free trade Agreement (NAFTA)* : provided for North American-wide competition in the provision of enhanced telecommunication services (1 January 1994).
	Supreme Court confirms federal jurisdiction over "independent" telephone companies.
	Federal government commitment to Canadian Information Highway Strategy. Information Highway Advisory Council (IHAC) established.
	Global and regional mobile Satellite policy announced.
	Telecom Decision CRTC 94-19 - *Review of Regulatory Framework* (16 September 1994)
1995	Competitive wireless Personal Communications Services (PCS) licenced.
	Licensing of Local Multipoint Communications Systems (LMCS).
1996	Government's Convergence Policy (August 1996).
	Federal government releases, *Building the Information Society: Moving Canada into the 21st Century* - Provides an information highway plan of action.
	Mobile satellite launch (MSAT).
Source: Industry Canada	

Table C-1 (Cont'd)

Toward a Competitive Canadian Telecommunications Market Major Milestones 1979-2000	
1997	Telecom Decision CRTC 97-8 - Local Competition (1 May 1997).
	Telecom Decision CRTC 97-9 - Price Cap Regulation and Related Issues (1 May 1997).
	Telecom Decision CRTC 97-15 - *Co-location* (16 June 1997).
	Telecom Decision CRTC 97-18 - *Implementation of Price Cap Regulation - Decision Regarding Interim Local Rate Increases and Other Matters* (18 December 1997).
	69 countries reach agreement on basic telecommunications under the WTO (15 February 1997).
1998	Telecom Decision CRTC 98-2 - *Implementation of Price Cap Regulation and Related Issues* (5 March 1998).
	Telecom Decision CRTC 98-8 - *Local Pay Telephone Competition* (30 June 1998)
	Telecom Decision CRTC 98-17 - *Regulatory Regime for the Provision of International Telecommunications Service* (1 October 1998).
	Telecom Decision CRTC 98-22 - *Final Rates for Unbundled Local Network Components* (30 November 1998).
	End of Teleglobe monopoly (1 October 1998).
1999	Telecom Decision CRTC 99-16 - *Telephone Service to High-Cost Serving Areas* (19 October 1999).
2000	End of Telesat's monopoly (1 March 2000).
	Order in Council P.C. 2000-1053 - Requires the CRTC to submit a report to the Governor in Council annually, for the next five years, on the status of competition in the Canadian telecommunications market and on the availability of advanced telecommunication services in all regions (26 June 2000).
	Decision CRTC 2000-745 - Changes to the Contribution Regime (30 November 1999).
	Decision CRTC 2000-746 - Long-Distance Competition and Improved Service for Northwestel Customers (30 November 1999).
Source: Industry Canada	

Table C-2

Major CRTC Forebearance Determinations	
Terminal Equipment	
Forbearance - Sale of Terminal Equipment by Canadian Carriers	Telecom Decision CRTC 94-14
TELUS (Edmonton) - Forbearance from the sale, lease and maintenance of terminal equipment	Telecom Order CRTC 99-69
Long Distance Services	
Forbearance - Services Provided by Non-Dominant Canadian Carriers	Telecom Decision CRTC 95-19
Forbearance - Regulation of Toll Services Provided by Incumbent Telephone Companies	Telecom Decision CRTC 97-19
Private Line and Data Services	
Forbearance - Services Provided by Non-Dominant Canadian Carriers	Telecom Decision CRTC 95-19
Forbearance - Regulation of the Stentor Companies' Packet Switched Services	Telecom Order CRTC 96-130
Forbearance - Stentor Companies' Interexchange Private Line Services	Telecom Decision CRTC 97-20
Forbearance - Wide Area Network (WAN) services provided by regulated telephone companies	Order CRTC 2000-553
Wireless Services	
Regulation of Wireless Services	Telecom Decision CRTC 94-15
Forbearance from Regulation of Mobile Wireless Telecommunication services Offered by Non-telephone Companies (including affiliates of telcos)	Telecom Decision CRTC 96-14
Forbearance from Regulation of Bell's Mobile Wireless Telecommunication services	Telecom Decision CRTC 98-15
Forbearance in relation to the provision of current and future mobile wireless services by BC TEL, Bell, Island Tel, MTT, MTS, NBTel, NewTel and Québec-Téléphone	Telecom Order CRTC 99-991
Source: Industry Canada, based on CRTC information	

Table C-2 (Cont'd)

Major CRTC Forebearance Determinations	
Internet (services provided by telecommunications carriers)	
Regulation of Certain Telecommunication services offered by Broadcast Carriers	Telecom Order CRTC 98-9
Forebearance from retail Internet services	Telecom Order CRTC 99-592
Inside Wiring	
Bell Canada - Forbearance from Regulation of Single Line Inside Wiring Services.	Telecom Order CRTC 99-1016
Satellite Services	
Forbearance from the Regulation of Digital Video Compression Services by Telesat	Telecom Decision CRTC 94-20
Forbearance from the Sale and Lease by Telesat of Earth Stations	Telecom Decision CRTC 94-23
Telesat Canada - Forbearance from the Sale and Lease of Earth Stations	Telecom Order CRTC 95-892
Telesat Canada - Forbearance from the Regulation of RF Channel Services	Telecom Decision CRTC 98-24
Non-Programming Full Channel TV Services by Canadian Carriers	
Regulation of Full Channel TV Services	Telecom Decision CRTC 97-2
International Services	
Regulatory Regime for the Provision of International Telecommunication services (all providers except Teleglobe Canada)	Telecom Decision CRTC 98-17
Teleglobe Canada Inc. - Forbearance for GlobeaccessTel and Related Matters	Telecom Decision CRTC 99-14
Forbearance for agreements between domestic and foreign common carriers	Telecom Order CRTC 99-1202
Source: Industry Canada, based on CRTC information	

Amortization

The gradual expensing of capitalized intangible assets and deferred charges (e.g., goodwill, patents, financing costs, business transformation costs).

Asset

Any possession that has value in an exchange.

Average Annual % Change (Compounded) or **CAGR** *(Compounded Annual Growth Rate)*

$(((a / b)^{1/t})-1) \times 100$

a = End of period number
b = Beginning of period number
t = Number of years

ARPU (Average Monthly Revenue per Unit)

$$\frac{\text{(Revenue from cellular/PCS/ESMR service)} \div 12}{\text{Annual average number of subscribers}}$$

Measures the average amount of revenue that a cellular/PCS ESMR service earns from each subscriber.

Capital Expenditures

Amount used during a particular period to acquire or improve long-term assets such as property, plant, or equipment.

Cash From Operations

The cash generated from operating activities. Equal to net income + non-cash expenses + decrease in non-cash working capital assume the cost of capital.

CPI (Consumer Price Index)

An index used by Statistics Canada to measure price inflation in the economy. The CPI tracks the price changes experienced by a fixed basket consumer items.

Debt-to-Equity Ratio

Represents the portion of capital financed by long-term debt.

$$\frac{\text{Long Term Debt}}{\text{Shareholders'Equity}}$$

Depreciation

The gradual expensing of fixed assets such as property, plant and equipment.

EBIT ***(Earnings before interest and taxes)***

The operating revenue net of operating expenses but before including charges for interest payments and taxes.

EBITDA ***(Earnings before interest, taxes, depreciation and amortization)***

The operating revenue net of operating expenses but before including charges for depreciation and amortization, interest payments and taxes.

Equity ***(or shareholders' equity)***

Includes capital invested by shareholders through the purchase of common and preferred shares and the accumulated earnings from profitable operations.

GDP

Is a measure of an industry's value-added to the economy. GDP at factor cost is essentially total sales by the industry (gross output) less the input of goods and services provided by sources other that the industry itself.

Liabilites

The term used to describe financial obligations that appear on a firm's balance sheet (e.g., accounts payable, debt).

Monopoly

An industry in which one firm serves the whole market.

Net Income

The company's total earnings, reflecting revenues adjusted for costs of doing business, depreciation, interest, taxes and other expenses **.**

Net Margin

$$\frac{\text{Net Profit (Loss)} \times 100}{\text{Operating Revenue}}$$

An Indicator of profitability.

Net Profit (Loss) Margin

The net income measured as a percentage of operating revenues.

Net Revenue

Refers to the revenue earned by international telecommunications carriers after they account for payments to other carriers for the traffic termination.

Operating Expenses

Costs associated with sales and administrative functions as distinct from those associated with production.

Operating Margin

$$\frac{\text{(Operating Revenue - (Operating expenses + Depreciation \& Amortization)) x 100}}{\text{Operating Revenue}}$$

Operating Profit

Operating revenue after operating expenses are deducted.

Operating Revenues

The income earned from the provision of services and the sale of goods during a given period.

Other Investments

Investments in assets other than capital assets. For example, an acquisition of another business' assets.

Percentage Change 1995 / 1996

$$\frac{a \times 100}{b} - 100$$

a = End of period number
b = Beginning of period number

Period % Change

$$\frac{(a - b) \times 100}{b}$$

a = End of period number
b = Beginning of period number

Profit Margin

$$\frac{\text{Profit (Loss) x 100}}{\text{Operating Revenue}}$$

An Indicator of profitability.

Return on Assets

$$\frac{\text{Profit (Loss) x 100}}{\text{Total Assets}}$$

Return on Equity

$$\frac{\text{Profit (Loss)} \times 100}{\text{Total Equity}}$$

An indicator of profitability that is based on net profit after taxes.

Share Capital

The combined book value of a firm's common and preferred stock.

Working Capital Ratio

$$\frac{\text{Current Assets}}{\text{Current Liabilities}}$$

An indicator of financial liquidity. Current assets are assets that can quickly converted into cash. Current liabilities are liabilities that are due within a short period of time. Current assets are usually required to meet current liability obligations.

CLEC

Competitive Local Exchange Carrier. A company that has registered with the CRTC to provide local exchange services in competition to the incumbent telephone companies.

Contribution

Refers to the flow of revenues from services with rates above cost to those with rates below cost, mainly basic local residential services, specifically, the revenues that flow from toll services to subsidize residential services.

ESMR (Enhanced Specialized Mobile Radio)

A wireless telecommunications system that uses radio frequencies in the 800 MHz frequecy band to provide mobile dispatch services and access to the PSTN. ESMR uses digital technology over a multi-cell network architecture.

Essential Facility

Defined in the Decision on Local Competition to be a facility, function, process or service that meets three criteria: it is monopoly controlled; a CLEC requires it as an input to provide services; and a CLEC cannot duplicate it economically or technically. Facilities that meet this definition shall be subject to mandatory unbundling and mandated pricing. ILECs must also treat the tariffed rates for these facilities as costs in applying the imputation test.

Exchange

The basic unit for the administration and provision of telephone service by an ILEC, which normally encompasses a city, town or village and adjacent areas. Within an exchange and to other exchanges that have extended area service (EAS) or similar services with that exchange, all subscribers may place an unlimited number of calls of any duration to all other subscribers without incurring long distance toll charges. Exchanges for which EAS or similar services have been established continue, nevertheless to be separate and distinct exchanges.

Exogenous Factor (Z-Factor)

A component of the price cap formula incorporating a change, specific to the telecommunications industry, resulting from legislative, judicial or administrative actions which are beyond the control of the company.

Explicit and Implicit Subsidy

Local residential rates have traditionally been set below cost. The resulting shortfall has been funded by profits (i.e., contribution) from other services. The toll contribution is an explicit charge on long distance services and service providers. Implicit subsidies represent the internal flow of profits from certain local services, such as optional and some business services.

Gross Domestic Product Price Index (GDP-PI)

An index which measures the cost of a fixed basket of goods and services that make up the GDP in a particular base year. This is the inflation factor (I) used in the Price Cap Index.

ILEC

Incumbent Local Exchange Carrier—the existing monopoly telephone companies.

Imputation Test

A test adopted by the Commission to detect anti-competitive targeted pricing strategies. This test is to ensure that all telephone company services are priced to recover all causal costs including contribution and network access charges.

ISP (Internet Service Provider)

Sells Internet access to business and residential customers.

LEC

Local Exchange Carrier, defined in the Decision on Local Competition to mean either an ILEC or a CLEC.

Local/Access Shortfall

The term "local/access shortfall" refers to the deficit that occurs because the revenues from combined local and access services are not sufficient to cover the associated costs.

Loops

Refers to local loop(s). A term used to describe the wire that connects a business or residence to the PSTN.

Network Access Service (NAS)

A connection or line that provides customers with access to the public-switched telephone network.

Portable Subsidy

Subsidies currently going to the ILEC for a service that reverts to the CLEC when the CLEC takes over the service receiving the subsidy.

PSTN (Public Switched Telephone Network)

Refers to the worlwide dial-up telephone network made up of switching technology and transmission media that is used to communicate voice, other audio, video and data signals.

Rate Rebalancing

The term "rate rebalancing" refers to an increase in the price of local/access services in order to bring the rates for these services more closely in line with their costs and the corresponding reduction in the toll contribution rate, thereby reducing the subsidy that flows between these two classes of services.

Service Baskets

A group of services, based on criteria such as homogeneity and similarity in demand price elasticities, subject to pricing constraints under price regulation.

Toll Contribution Rates

Rates paid by providers of long distance service to subsidize the local/access shortfall.

Transit

International telecommunications traffic that does not originate or terminate in a carrier's own country. For example, telecommunications traffic carried by Teleglobe Canada between the United States and the United Kingdom.

Unbundled Local Loops

Refers to the process in which ILECs provide other telecommunications service providers with use of their local loops.

Unbundling

The policy of requiring ILECs to make available individual essential facilities on a tariffed basis.