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A comparison of business costs in
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**A COMPARISON OF BUSINESS COSTS IN
CANADA AND THE UNITED STATES**

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Project Report

A COMPARISON OF BUSINESS COSTS IN CANADA AND THE UNITED STATES

Prepared for

USA Trade and Investment Division
Department of Foreign Affairs and
International Trade
Ottawa, Ontario
Canada

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I.

Introduction And Summary

On behalf of the Government of Canada, KPMG Management Consulting has carried out an analysis of the relative costs of doing business in the United States and Canada in 1995. This study is an update and extension of a similar assignment performed in 1994.

The study included the development of illustrative business scenarios, and is based on current tax rates, cost factors and exchange rates. We used a computer-based financial model to compare typical operating costs, from start-up to ten years of operation, for facilities in fifteen cities—seven in the U.S. and eight in Canada. All figures in this report are expressed in U.S. dollars (USD\$), unless Canadian dollars (CDN\$) are specified.

The study examined the impact of location on key location-sensitive capital and operating costs for seven industries. Each facility was assumed to have sales in excess of \$10 million, and a minimum of 100 employees. The analysis focused on costs of establishing facilities on 5-10 acre sites in suburban areas zoned for light-to-medium industrial purposes.

The specific industries, jurisdictions, and location-sensitive cost factors examined included:

<u>Industry</u>	<u>Jurisdictions</u>	<u>Location-sensitive Cost Factors</u>
Autoparts	Calgary, AB	Industrial Land Costs
Environmental Waste Treatment Systems	Halifax, NS	Construction Costs
Frozen Foods	Langley (Vancouver), BC	Labour Costs:
Medical Devices	Laval (Montreal), QC	• Wage & salary
Pharmaceuticals	London, ON	• Employer-sponsored benefits
Software	Moncton, NB	• Statutory benefits
Telecommunications	Ottawa, ON	Electricity Costs
	Winnipeg, MB	Transportation/distribution costs
		Interest costs
	Austin, TX	Federal, Regional and local taxes
	Bellingham, WA	• Income and Property Taxes
	Columbus, OH	• Research Tax Credits
	Manchester, NH	
	Minneapolis, MN	
	Raleigh, NC	
	Sacramento, CA	

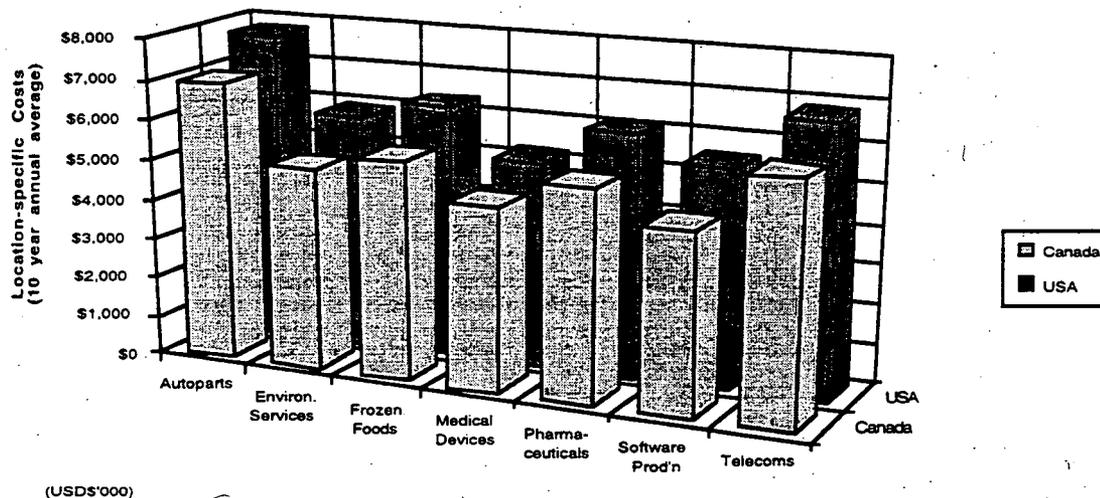
The model developed standard financial statements (balance sheet, income statement, etc.) for ten years, treating each facility as a stand-alone operation. The model also incorporates a number of standard financial and operating assumptions.

A. Summary of findings

1. For every industry, overall costs are lower in Canada than the U.S.

Exhibit I-1 summarizes the Canadian and U.S. results, by industry. In each of the seven industries examined, overall location-sensitive costs are consistently lower in Canadian jurisdictions than in U.S. ones.

Exhibit I-1
Location-sensitive costs, by industry¹



¹Based on annual average U.S. dollar costs as follows:

	U.S. (USD\$'000)	Canada (USD\$'000)
Autoparts	7,775	6,945
Environmental Services	5,882	5,055
Frozen Food	6,331	5,443
Medical Devices	5,164	4,572
Pharmaceutical	6,091	5,292
Software	5,469	4,540
Telecoms	6,782	5,946
Average	6,213	5,399

2. The Canadian advantage is consistent among cities and regions

In the rankings among cities, Canadian cities are ranked first through sixth in every industry. On a regional basis, West Coast locations tend to experience the highest costs. Within this region, the Canadian location ranks above its two U.S. counterparts, in all seven industries.

3. Most individual cost components are favourable to Canada

In terms of individual cost components, general trends are summarized as follows:

- **Industrial land costs** tend to be highest in areas located on the West coast. In the other regions, land costs in Canadian cities are generally higher than those in U.S. cities.
- **Construction costs** in Canadian cities are competitive with the U.S. cities examined.
- **Labour costs** in Canada are generally lower than those in the United States.
- **The costs of employer-sponsored benefits** in Canada are lower than those in the United States.
- **The costs of employer-paid statutory employee benefits and taxes** tend to be lower in Canada than in the United States, reflecting the existence of a public-sponsored health care system in Canada.
- **Electricity costs** for industrial users are significantly lower in Canada than in the United States.
- **Transportation costs** vary by jurisdiction and industry, but reflect lower rates in Canada than the United States.
- **Interest costs** are higher in Canada than in the United States.
- **Federal regional and local taxation rates** vary significantly among the locations examined.
- **Income tax credits for research and development** in Canada provide a significant cost advantage over those in U.S. locations. In addition, income tax legislation in Canada allows capital assets associated with research and development to be depreciated at a faster rate in Canada than the United States.

The combined impact of these factors creates a significant cost advantage for Canadian locations. The strongest factors underlying the net advantage for Canada are labour and benefits, which together account for about three-quarters of location-sensitive costs.

B. Comparison with 1994 results

1. Canada's competitiveness increased between 1994 and 1995

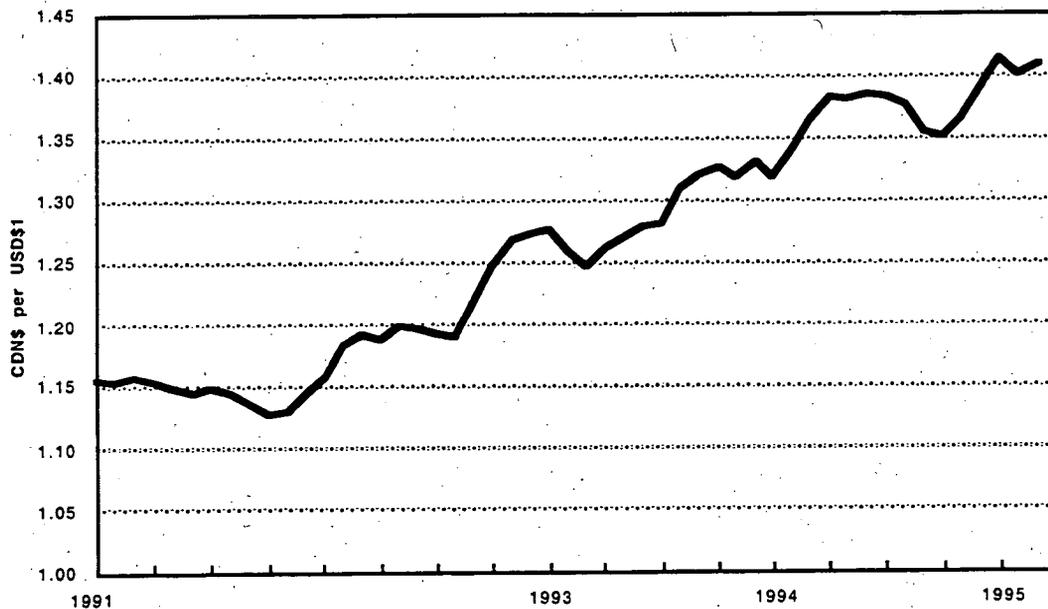
All costs in this study are presented in U.S. dollars. While the 1994 results showed Canadian jurisdictions to be cost **competitive**, the results for 1995 show a significant cost **advantage** for Canadian locations.

2. Exchange rates trends have increased Canada's cost advantage

Much of the increase in competitiveness is attributable to the increasing value of the U.S. dollar in Canada—up from \$1.33 Canadian in our March 1994 report to \$1.41 Canadian in March 1995. The change in exchange rates has increased the purchasing power of U.S. dollars in Canada, and has dramatically increased the cost-competitiveness of Canadian jurisdictions. Exchange rate trends are illustrated in Exhibit I-2.

Exhibit I-2

Trends in the value of the U.S. dollar in Canadian funds

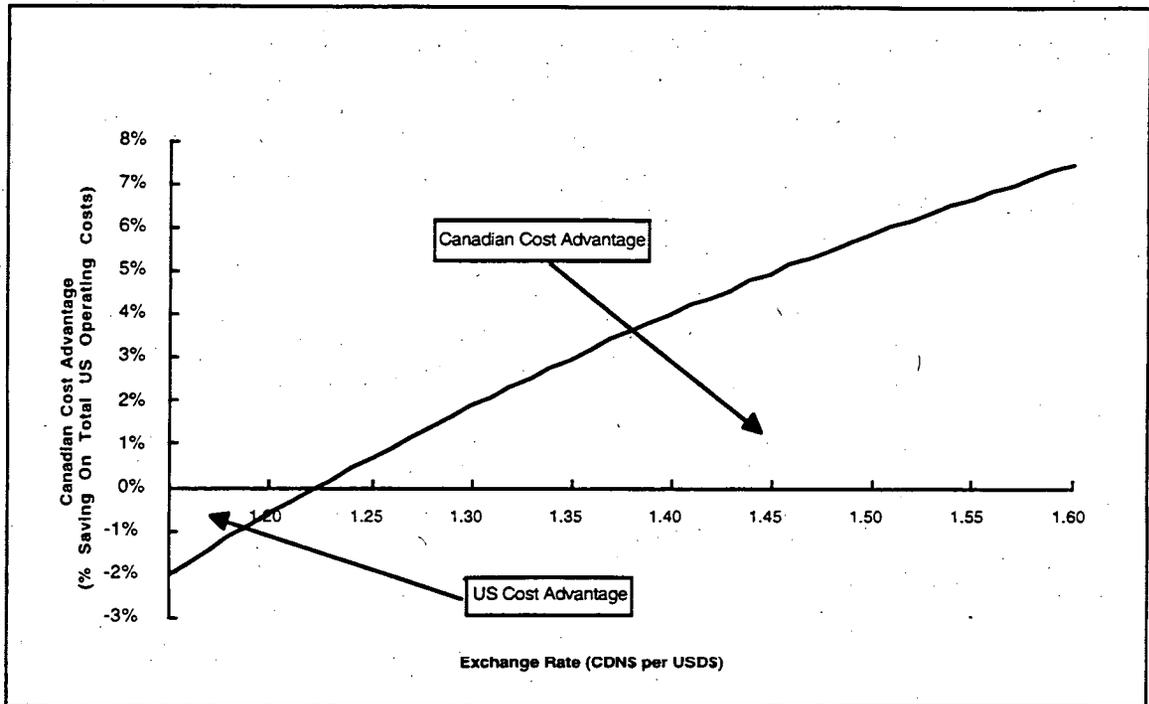


Source: Bank of Canada monthly average exchange rates.

3. Canada's cost advantage holds over a wide range of exchange rates

As illustrated in Exhibit I-3, Canada's cost advantage holds over a wide range of exchange rates. Even with a significant decline in the purchasing power of the U.S. dollar—to as low as \$1.22 CDN—Canada would still have a comparative cost advantage.

Exhibit I-3
Sensitivity of comparative costs to exchange rates



C. Further Information

This study is based on current tax rates and cost factors, all of which are subject to change. Major investment decisions require investigation of situation-specific cost factors. Business location decisions also require a detailed investigation of non-cost-related factors, including: work force availability, quality of life, transportation infrastructure, education, medical care and other factors.

For assistance in addressing specific opportunities, please contact:

*Information on this study
and its results*

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II

Study Objectives, Scope And Methodology

This chapter describes the conduct of the comparative cost review in terms of:

- Study objectives and scope.
- The seven U.S. and eight Canadian locations selected for detailed analysis.
- The seven representative industries selected for analysis.
- Design of the comparative cost model, and the methodology employed.

A. The study is national in scope

The objective of the study is to perform an independent analysis of the overall costs of doing business in Canada, in comparison to costs in the United States. The study scope is national and accordingly we examined 105 representative business operations, covering seven industries and 15 cities.

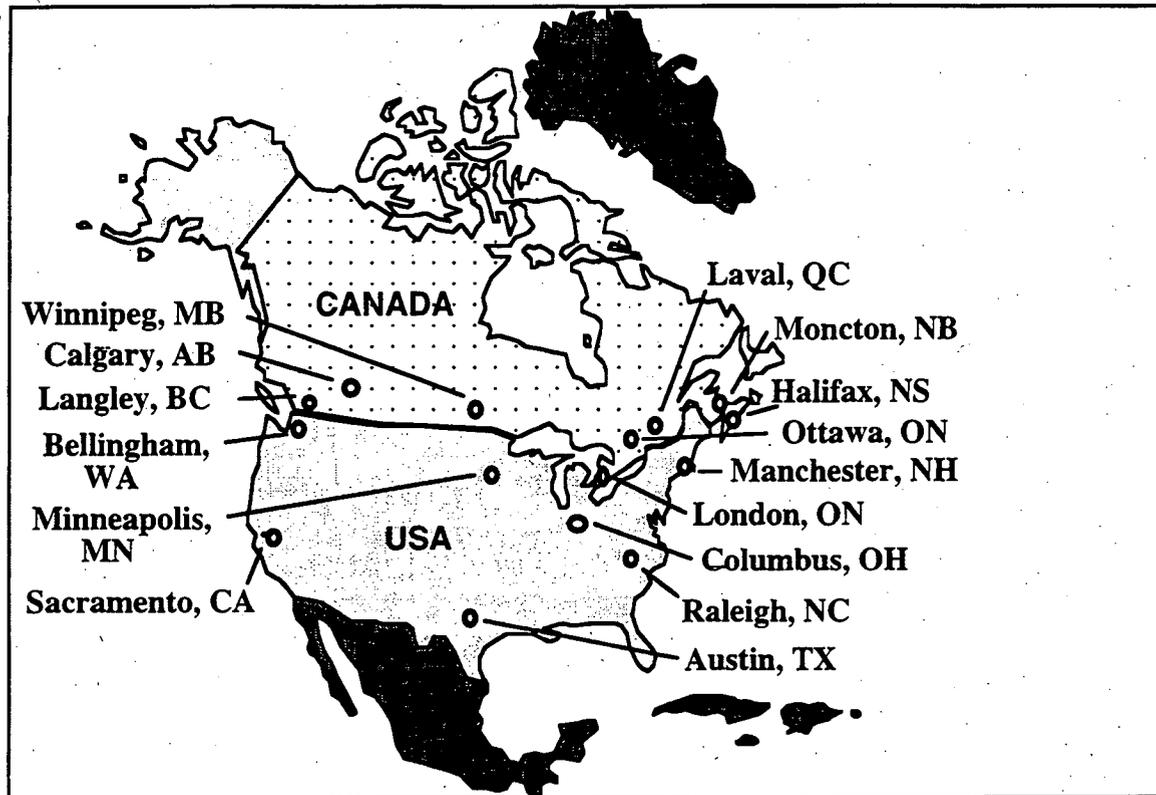
For each of the model operations, a detailed analysis of key location-sensitive factors was performed. These factors included the cost of land, buildings, wages and salaries, benefits, electricity, transportation, interest, and federal, regional and municipal taxes. While the national scope of the analysis precluded inclusion of local licenses and fees, all of the major location-sensitive costs identified were analyzed and compared.

B. Seven U.S. and eight Canadian sites were analyzed

15 locations, seven in the United States and eight in Canada, were selected in consultation with industry experts. The cities represent a cross-section of locations, in terms of both industrial base and regional representation.

The 15 locations selected for analysis are shown in Exhibit II-1. U.S. locations were selected on the basis that they represent some of the fastest growing business and manufacturing locations in the United States. Canadian locations were selected on the basis of developing a good geographical representation across the country, as well as on the basis of being logical alternatives.

Exhibit II-1
Locations of cities examined



Each of the fifteen locations selected are profiled in Chapter III.

C. Seven representative industries were selected and modelled

Seven industries were selected for business model analysis:

- Autoparts manufacturing.
- Environmental services (waste treatment systems).
- Food processing (frozen entrees).
- Medical devices manufacturing.
- Pharmaceuticals manufacturing.
- Software production.
- Telecommunications equipment manufacturing.

These industries were selected because they represent a mix of traditional and emerging industries, and have a wide range of land, building, equipment, management and labour requirements.

D. Model design

1. Standard investment and operating characteristics were specified

Each model industry operation was defined by a number of standard characteristics, such as:

- Annual sales revenue
- Staffing requirements
- Land and building requirements
- Machinery and equipment investments
- Financing assumptions (debt/equity).
- Working capital requirements
- R&D expenditures
- Sales and distribution patterns.

These specifications, made in consultation with industry representatives, were held constant for all jurisdictions to enhance comparability of results.

2. A computer model was designed

Based on these parameters, we developed a computer model to analyze the costs that each operation would experience in its first ten years of business in a new location. In each industry, the operations modeled had annual sales revenue of over \$10 million, and at least 100 employees.

3. The model focusses on location-sensitive costs

The model analyzed the impact of the following location-sensitive cost drivers:

- Initial facility investment, including land acquisition and construction.
- Labour costs, including wages, statutory payroll benefits and taxes, and employer-sponsored benefits.
- Electricity costs.
- Transportation costs.
- Interest costs.
- Taxation costs, including income taxes and research tax credits.

Other less location-sensitive cost factors were held constant for all industries and jurisdictions.

4. Ten-year financial statements were developed

The model developed financial statements to assess the costs over a ten year operating horizon, including:

- Balance Sheet
- Income Statement
- Statement of Changes in Financial Position
- Federal Income Tax Calculation
- Province/State Income Tax Calculation
- Research & Development (or Research & Experimentation) Tax Credit Calculation.

These statements form the basis of the cost comparisons.

5. A transportation/distribution model was developed

To estimate transportation and distribution costs, we analyzed transportation costs for six industries based on standard distribution patterns for each industry:

	Autoparts	Environmental, Medical, Pharmaceutical	Software, Telecommunications
Atlanta	13%	26%	
Chicago	11%	23%	
Cleveland	10%		
Detroit	30%		
Los Angeles	18%	15%	40%
New York City	11%	23%	40%
Seattle	4%	7%	
Toronto	3%	6%	20%
	100%	100%	100%

Because markets for processed food products are likely to be regional, we estimated these costs based on a standard distribution distance of the greater of (1) a 250 mile radius, and (2) the radius required to give access to a population base of 5 million consumers. This distribution calculation resulted in the following distances for the frozen food industry:

	Distance in miles		Distance in miles
Calgary, AB	600	Austin, TX	250
Halifax, NS	775	Bellingham, WA	250
Langley, BC	250	Columbus, OH	250
Laval, QC	250	Manchester, NH	250
London, ON	250	Minneapolis, MN	380
Moncton, NB	650	Raleigh, NC	250
Ottawa, ON	250	Sacramento, CA	250
Winnipeg, MB	475		

6. Other model notes

The analysis is focused on the treatment of the facility as a stand-alone operation. The scope of this analysis does not include an assessment of the impact of withholding taxes, or taxation of individuals.

This study is based on current rates and cost factors, which are subject to change. While every effort has been made to ensure the accuracy of the information contained in this report, KPMG Management Consulting cannot accept liability for actions taken on the basis of the study.

III

Profile Of Jurisdictions

This chapter highlights the seven United States and eight Canadian jurisdictions selected for analysis. Detailed profiles of each of these fifteen cities are contained in Appendix H of this report.

A. United States locations

1. Austin, Texas

Austin is located 233 miles north of the US-Mexico border and 202 miles south of Dallas. The population in 1992 was 901,048 with a projected population for 1995 of 1,016,400.

Since the mid 1950's Austin has become a significant centre for high-technology industries. In 1994 Austin's three largest private sector employers were IBM Corporation, Motorola Inc. and Dell Computer Corporation.

2. Bellingham, Washington

Bellingham is located 25 miles south of the US-Canada border, 90 miles north of Seattle and 60 miles south of Vancouver, BC. The city is located in Whatcom County which had a population of 140,900 in 1993 and is expected to grow by between 1.5 and 3.0% annually through the year 2000.

The major industrial employers in Bellingham include Georgia Pacific, Bellingham Frozen Foods and Ershigs Inc.

3. Columbus, Ohio

Columbus is centrally located within the state of Ohio, 186 miles south of Detroit and 311 miles south-east of Chicago. The population in 1990 was 1,377,419 and is expected to reach 1,504,000 by the year 2000.

The three largest manufacturing employers in Columbus are Honda of America, AT&T and Abbott Laboratories.

4. Manchester, New Hampshire

Manchester is located approximately 58 miles north-west of Boston. The population in 1992 was 173,800 with a projected population for 1999 of 173,700. The Greater Manchester Trade Area, covering all towns within a 20 mile radius of Manchester City, had an estimated population of 558,300 with a projected average annual growth rate of 0.8% through to the year 2000.

The three largest private sector employers in Manchester are Optima Health Inc., First NH Bank and Alexander's Shop & Save with the three largest manufacturing employers being Osram Sylavania, General Electric and Velcro USA.

5. Minneapolis-St Paul, Minnesota

Minneapolis-St Paul (the Twin Cities) are located approximately 410 miles north-west of Chicago and 240 miles south of the US-Canada border. Their 1990 population was 2,278,721 and is projected to be 2,571,000 by the year 2000.

Seventeen Fortune 500 companies have their headquarters in the Twin Cities with major private sector employers including 3M, General Mills and Honeywell.

6. Raleigh-Durham, North Carolina

Raleigh-Durham is located 270 miles south-west of Washington DC and 408 miles north-east of Atlanta. The 1990 population was 855,545 with a projected population of 1,058,000 for the year 2000.

In recent years high-technology industries have come to play a significant role in the economy of Raleigh-Durham. The three largest private sector employers are IBM Corporation, Northern Telecom Inc. and Glaxo Inc.

7. Sacramento, California

Sacramento is located 85 miles north-east of San Francisco. In 1994 the population of Sacramento was estimated to be 1,698,400.

The economic base of Sacramento covers all main business sectors with the most significant growth being in high-technology businesses. The three largest manufacturing employers are Hewlett-Packard, Intel Corporation and Sacramento Bee Newspapers.

B. Canadian locations

1. Calgary, Alberta

Calgary is located at the eastern foot of the Rocky Mountains, approximately 150 miles north of the Canada-US (Montana) border. The population of Calgary in 1994 was 738,184 and is expected to be 775,000 in 1998. Calgary is the largest city on the Canadian Prairies.

Calgary is the headquarters for the majority of Canadian oil and gas producers. Amoco Canada Petroleum Co., Petro Canada and Shell Canada are all major employers within the city. Recent diversification in Calgary's economy has resulted in the significant growth of high-technology industries. The three largest private sector employers in Calgary today are AGT Limited, Nova Corporation and Northern Telecom Canada.

2. Halifax-Dartmouth, Nova Scotia

The Halifax-Dartmouth metropolitan area is located on the Atlantic coast and is approximately 750 miles east of Montreal and 600 miles north-east of Boston. The 1993 population was 327,800 and is expected to be 350,000 by 1998.

The Halifax port is the northern-most ice-free port on the East Coast and is also the most easterly of all major North American ports, offering the shortest voyage time across the North Atlantic.

The most significant manufacturing industries include the production of transportation equipment, food and beverage products, and printing and publishing.

3. Langley (Greater Vancouver), British Columbia

Langley is located in the Greater Vancouver Regional District ("GVRD") and is approximately 130 miles north of Seattle. The population of the GVRD in 1992 was 1.65 million. Langley's 1991 population was 85,805 and is expected to be 114,800 by the year 2001, as the traditional agricultural base is augmented by industrial development in a number of industrial parks.

Vancouver is Canada's major Pacific terminal for grain, coal, potash, forest products, and container freight, and in terms of volume is the same size as the three busiest American ports: New York, Los Angeles and Long Beach. The Vancouver port also has the advantage of being one day's sailing time closer to main Asian markets than the ports of Los Angeles or Long Beach.

Vancouver's traditional employers include major forest products firms, as well as other primary manufacturers and bulk transportation firms. In recent years the tourism and hospitality industry has grown dramatically, as has the resident population.

4. Laval (Montreal), Quebec

Laval is located within the Greater Montreal area and is approximately 40 miles north of the Canada-US (New York State) border. Laval's 1994 population was approximately 325,000 and is expected to reach 345,000 by 2001.

The most significant industrial market sectors in Laval include food processing, timber, pulp and paper products, printing and publishing, chemical products and plastics, metal products fabrication and pharmaceuticals.

5. London, Ontario

London is located centrally between Toronto, 118 miles to the north-east, Detroit, 120 miles to the south-west and Cleveland, approximately 120 miles to the south. The population of London in 1991 was 381,500 and is estimated to reach 366,000 by 2021.

In 1994 there were 14 manufacturers in London, each with more than 500 employees. Examples are major employers are Ford Motor Company of Canada Ltd, General Motors of Canada Ltd, 3M Canada Inc., Kellogg Canada Inc. and Labatt's Ontario Breweries.

6. Moncton, New Brunswick

Moncton is located approximately 140 miles north-east of the Canada-US (Maine) border and is located 520 miles north-east of Boston and 660 miles east of Montreal. Moncton's 1991 population was 106,503 and is expected to grow to 123,300 by 2001.

Moncton has a diversified economy; its most significant manufacturing sectors include food processing, transportation equipment and metal, wood, electrical and electronic products. In the last few years there has been rapid growth in telecommunications centres, and as a result Moncton is rapidly becoming a "call centre" capital for North America.

7. Ottawa-Hull, Ontario-Quebec

Comprising a total of 16 municipalities straddling the Ottawa River, which forms the border between the provinces of Ontario and Quebec, the Ottawa-Hull metropolitan area is the fourth largest metropolitan area in Canada. Ottawa lies approximately 60 miles north of the Canada-US (New York State) border. Toronto is 246 miles away to the south-west, while New York City is 464 miles south-east.

The 1991 population was 920,857 and is expected to reach 1,050,000 by the year 2001. Ottawa is Canada's national capital and was recognized in 1994 by The Globe and Mail ("Canada's national newspaper") as one of the five best cities in Canada for conducting business.

Ottawa-Hull's industry base has traditionally been forestry and agriculture, but the area is now home to 489 high-technology businesses employing more than 30,000 employees.

8. Winnipeg, Manitoba

Winnipeg is at the geographic centre of North America, located approximately 60 miles north of the Canada-US (Minnesota-North Dakota) border and 450 miles north-west of Minneapolis. Winnipeg's 1994 population was 659,361 and it is expected to reach 676,800 by the year 2001.

Traditionally Winnipeg's economy has involved the grain growers of the Canadian prairies. Other important industry sectors are transportation, food processing, primary metals and printing and publishing. In more recent years, electronics products, software development and health care products have come to play a significant role in the local economy.

IV

Comparison Of Cost Factors

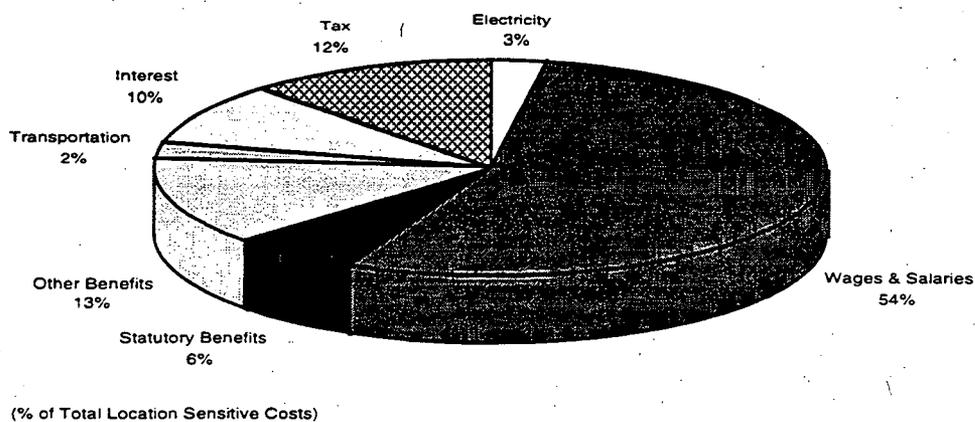
We gathered data from a number of sources to compare the cost of doing business in each of the locations under study. The location-sensitive factors examined were:

- Industrial land costs.
- Construction costs.
- Labour costs including salary, wages and benefits.
- Electricity costs.
- Transportation and distribution costs.
- Interest costs.
- Federal, regional and local taxes.

An exchange rate of 1.41 Canadian dollars per U.S. dollar (70.922 U.S. cents per Canadian dollar) has been used in the analysis of costs.

Exhibit IV-1 shows the relative importance of each key location-sensitive cost. (The capital costs of industrial land and construction are reflected in ongoing interest costs.) A list of sources of data is provided in Appendix H.

Exhibit IV-1
Relative importance of key location-sensitive costs



A. Industrial land costs

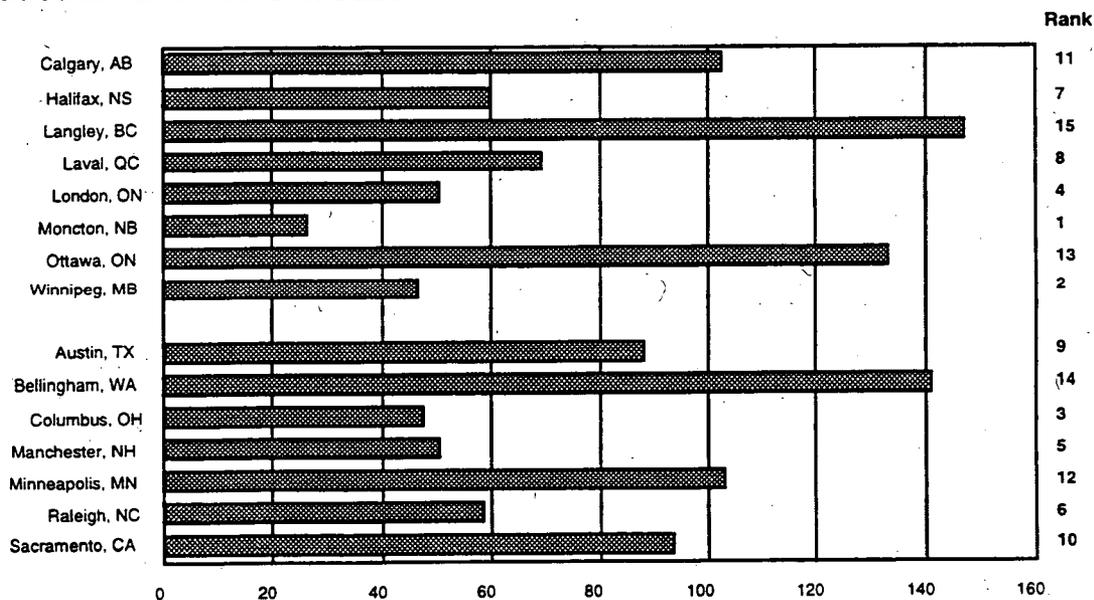
Our analysis focused on the costs of establishing facilities in suburban areas zoned for light-to-medium industrial purposes. We gathered land cost data through interviews with representatives of the economic development offices and realty firms in each location. Land costs quoted were an average for a 3-15 acre sites of fully serviced industrial land in a light to medium-industrial park.

The survey found the lowest costs in Moncton, and the highest costs in Langley. The cost of industrial land in Langley is more than five times the cost in Moncton.

Costs tend to be higher in areas located away from the East Coast. Costs in Langley, Bellingham and Ottawa are significantly higher than in other areas.

With the exceptions of Langley, Ottawa and Calgary land costs in Canadian cities are comparable or preferable to American cities. Canadian cities fill five of the top eight rankings amongst the locations examined. Industrial land costs for the locations under examination are shown in Exhibit IV-2.

Exhibit IV-2
Industrial land costs in suburban areas of selected locations



Note: Based on an average cost per acre for 3-15 acres of fully serviced, light to medium industrial land in suburban areas of each location.

Source: KPMG survey of realty firms and economic development offices in each city.

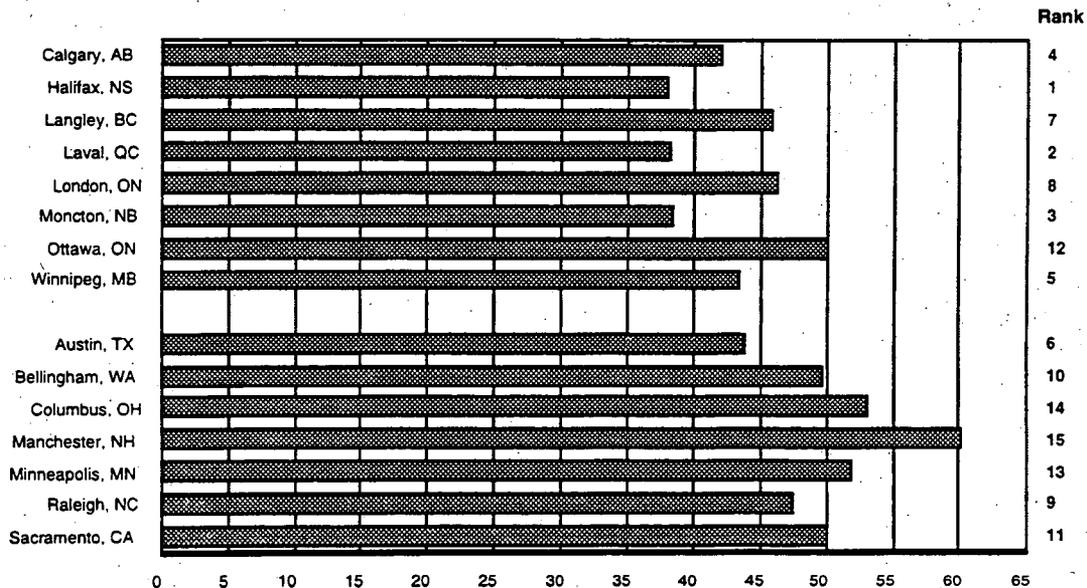
B. Construction costs

We assumed that our model businesses would establish "greenfield" facilities in the selected location. Average construction costs for a one-story factory with 60,000 square feet in floor space are shown in Exhibit IV-3.

Of the fifteen cities examined, Halifax provides the lowest construction costs, at \$38 per square foot. The highest costs are found in Manchester where costs are 58% higher, at \$60 per square foot.

Construction costs in Canadian cities are generally competitive with or lower than the U.S. cities examined.

Exhibit IV-3
Construction costs in selected locations



Note: Based on an average cost for a 60,000 square-feet of factory/warehouse shell with 10-20% office space built in the manner most commonly used in each location (concrete tilt-up or steel frame construction - construction methods vary between locations dependent upon availability of materials and climatic factors) and includes both soft and hard construction costs.

Source: KPMG survey of realty firms and economic development offices in each city. Means Square Foot Construction Costs, 1995 edition.

C. Labour costs

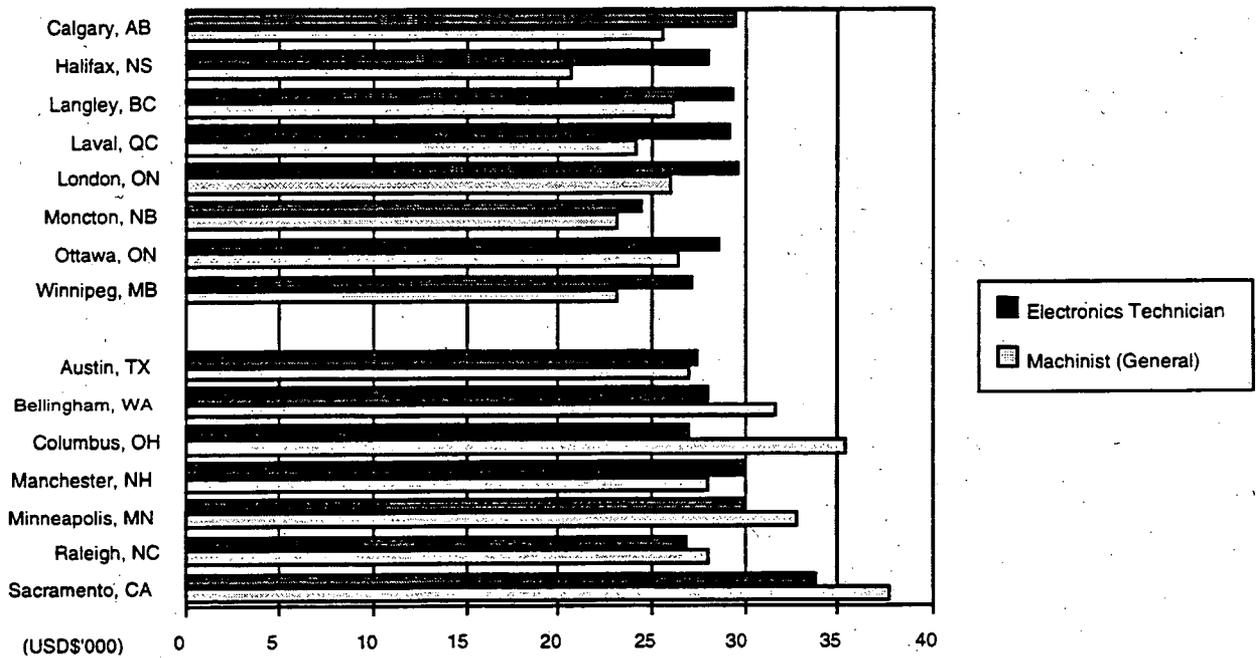
In the industries examined, labour costs represent 14%-31% of total operating costs. The labour costs examined were broken down into:

- Wages and salaries
- Employer-sponsored benefits
- Employer-paid statutory benefits and taxes.

1. Wage and salary costs

Annual wage costs for two typical manufacturing positions are shown in Exhibit IV-4. Wage costs in Canada for these positions are comparable to, if not lower than those in the United States.

Exhibit IV-4
Annual wages in Canada and the U.S.^a



^aAll figures in US dollars.

Source: The 1995 Geographic Reference Report, BTA Economic Research Institute.

2. Employer-sponsored benefits

A comparison of employer-sponsored benefits in Canada and the United States is shown in Exhibit IV-5. The exhibit compares benefit costs as a percentage of gross annual payroll.

Employer-sponsored benefits in Canada are lower than in the United States. Costs for hospital, surgical, medical and major medical insurance premiums are the prime reason for the difference in costs. These insurance premiums represent a cost of 8.2% of gross pay in the United States compared with 1.0% in Canada.

Exhibit IV-5 Employer-sponsored benefits in Canada and the United States

	United States		Canada	
	(a)	%	(b)	%
Overall	40.2		35.4	
Payments for or in lieu of vacation	5.6		3.2	
Payments for or in lieu of holidays	3.3		1.5	
Self-insured short term disability /sick leave pay	1.2		0.8	
Other	0.4		0.9(c)	
Payments for Time Not Worked	10.5		6.4	
Retirement and pension plan payments	6.1		6.3	
Life insurance and death benefits	0.5		0.4	
Hospital, surgical, medical and major medical insurance premiums	8.2(d)		1.0	
Short term disability, sickness or accident insurance and long term disability or wage continuation	0.6		1.6	
Dental insurance premiums	0.5		1.0	
Other (Vision care, physical and mental fitness, etc.)	0.5		(e)	
Other	1.0		2.6(f)	
Employer-sponsored Plans	17.4		12.9	

(a) U.S. Source: *Employee Benefits, 1993 prepared by the Research Centre, Economic Policy Division, The Chamber of Commerce of the United States.*

(b) Canadian Source: *KPMG Management Consulting.*

(c) Canadian figures include rest periods, bereavement, jury duty and other paid time off.

(d) Includes payments for retired employees.

(e) Canadian figures included in hospital, surgical, medical, etc.

(f) Figure includes the cost of thrift savings and share purchase plans.

3. Employer-paid statutory benefits and taxes

Employer-paid statutory benefits and taxes based on wages include:

- Unemployment insurance premiums
- Medicare (U.S.) and medical plan premiums (Canada)
- Social Security and Canada Pension Plan payments
- Workers' compensation
- Other payroll taxes.

A KPMG study of employee benefit costs in Canada and the U.S. identified differences between the costs of statutory plans in the two countries. The study found that statutory plans represent 9.2% of gross annual payroll in the U.S., compared with 11.2% in Canada. This difference is mainly due to the total amount of dollars paid by employers for unemployment insurance premiums. Although the percentage of gross pay for these premiums is lower in Canada than in the U.S., the base maximums for individual employers is lower in the U.S.

A summary of employer-paid statutory benefits and taxes in Canadian and U.S. cities is shown in Exhibit IV-6.

Exhibit IV-6
Labour wage rates, statutory benefits and taxes^a

	Canada								United States						
	Calgary, AB	Halifax, NS	Langley, BC	Laval, QC	London, ON	Moncton, NB	Ottawa, ON	Winnip., MB	Austin, TX	Belling., WA	Colum., OH	Manch., NH	Minn., MN	Raleigh, NC	Sacra., CA
Wages For Selected Manufacturing Positions^b															
Electronics Technician	\$29,478	\$28,060	\$29,255 ⁱ	\$29,167 ^j	\$29,570	\$24,367	\$28,560	\$27,122	\$27,638	\$28,084	\$27,144	\$30,008	\$30,106	\$27,021	\$33,842
Machinist	\$25,434	\$20,725	\$26,180 ⁱ	\$24,119 ^j	\$26,035	\$23,045	\$26,347	\$23,104	\$27,108	\$31,774	\$35,589	\$28,127	\$32,851	\$28,257	\$37,935
Social insurance^{c,p}															
Base maximum	2.60%	2.60%	2.60%	2.60%	2.60%	2.60%	2.60%	2.60%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%
	\$24,397 ^d	\$61,200	\$61,200	\$61,200	\$61,200	\$61,200	\$61,200	\$61,200							
Unemployment Insurance^p															
Federal	4.30%	4.30%	4.30%	4.30%	4.30%	4.30%	4.30%	4.30%	6.2% ⁿ	6.2% ⁿ	6.2% ⁿ	6.2% ⁿ	6.2% ⁿ	6.2% ⁿ	6.2% ⁿ
Base maximum	\$28,766	\$28,766	\$28,766	\$28,766	\$28,766	\$28,766	\$28,766	\$28,766	\$7,000	\$7,000	\$7,000	\$7,000	\$7,000	\$7,000	\$7,000
Provincial/State ^g	—	—	—	—	—	—	—	—	2.7%	\$0.58 ^{k,l}	3.30%	2.70%	2.00%	2.25%	3.40%
Base maximum	—	—	—	—	—	—	—	—	\$9,000	\$19,900	\$9,000	\$7,000	\$14,300	\$12,500	\$7,000
Payroll Tax^p															
	—	—	—	3.75% ^e	1.95% ^e	—	1.95% ^e	2.25% ^f	1.45% ^m	1.45% ^m	1.45% ^m	1.45% ^m	1.45% ^m	1.45% ^m	1.45% ^m
Workers' Compensation^{o,p}															
Autopartss	3.44%	2.39%	4.21%	4.92%	4.56%	3.52%	4.56%	3.85%	6.84%	\$0.58 ^l	5.35%	9.38%	9.07%	5.04%	2.41%
Environmental Serv	1.70%	5.60%	4.13%	5.00% ^h	5.00% ^h	1.66%	5.00% ^h	N/A	22.00%	\$0.59 ^l	10.74%	18.73%	8.87%	9.43%	8.17%
Food Processing	N/A	2.55%	2.87%	4.08%	4.00% ^h	1.90%	4.00% ^h	2.22%	11.65%	\$0.78 ^l	6.22%	11.65%	14.90%	4.34%	6.95%
Medical Devices	1.25%	N/A	2.87%	1.34%	1.25%	1.73%	1.25%	4.02%	3.27%	\$0.24 ^l	3.16%	4.46%	2.97%	1.78%	1.52%
Pharmaceuticals	2.26%	1.94%	0.69%	1.50%	1.67%	1.76%	1.67%	1.28%	5.41%	\$0.53 ^l	3.16%	4.20%	1.99%	0.79%	3.86%
Software	N/A	N/A	N/A	N/A ^h	N/A ^h	N/A	N/A ^h	1.24%	0.61%	\$0.39 ^l	6.72%	1.00% ^h	N/A	1.00% ^h	0.30%
Telecommunication	1.39%	0.75%	0.69%	1.15%	1.00% ^h	1.73%	1.00% ^h	1.24%	5.86%	\$0.24 ^l	3.04%	4.44%	4.58%	1.45%	1.52%

^aAll figures in US dollars.

^bSource: The 1995 Geographic Reference Report—9th Annual Edition (BTA Economic Research Institute).

^cCanada Pension Plan, Quebec Pension Plan, FICA (Federal Income Contribution Act).

^dFirst \$2,411 exempt.

^eHealth insurance premium.

^fFirst \$531,915 exempt.

^gRates apply to new employees.

^hEstimate.

ⁱVancouver labour costs.

^jMontreal labour costs.

^kAverage for industries chosen.

^lDollars per hour.

^mMedicare.

ⁿState unemployment insurance costs can be credited to federal costs to a maximum of 5.4% of the first \$7,000 paid to each employee.

^oBased on provincial & state classifications for each industry.

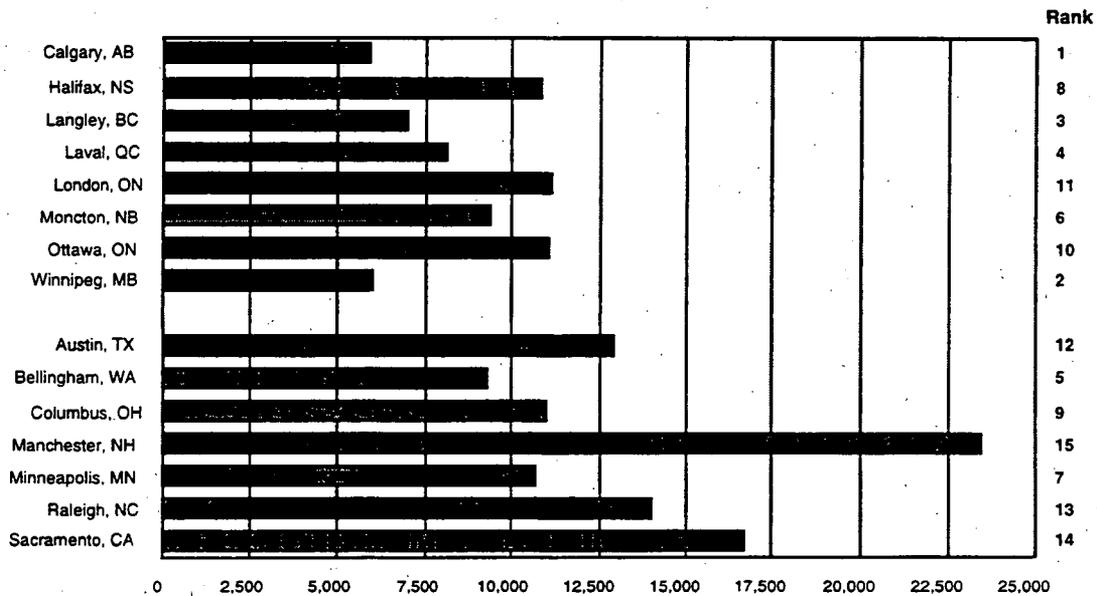
^pBased on percentage of gross pay.

D. Electricity costs

Electricity costs for industrial users are significantly lower in Canada than the United States. Based on consumption of 250,000 kilowatt hours (KwH) per month and a demand load of 400 kilo-volt-amperes (KvA), electricity costs are on average 38% lower in the Canadian cities than in the U.S. cities.

The monthly electricity costs for an example industrial user is shown in Exhibit IV-7.

Exhibit IV-7
Monthly electricity costs in selected locations

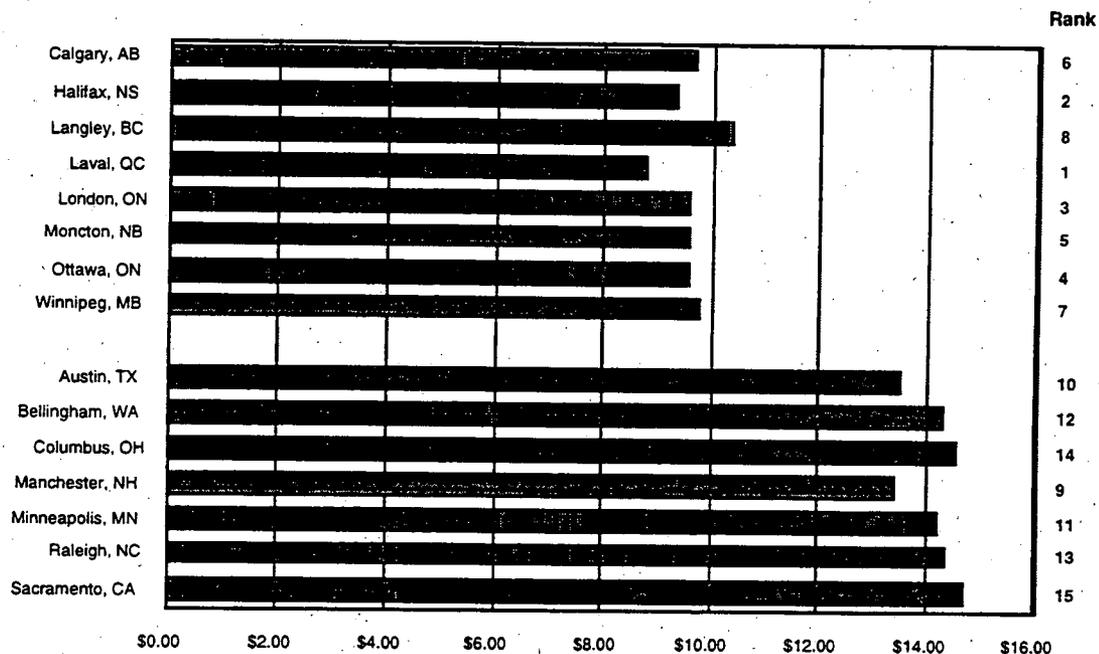


*Notes: Rates quoted are for monthly consumption of 250,000 KWH and 400 KVA demand load.
 Demand charges based on peak load are applied where required by the local utility.*

E. Transportation and distribution cost factors

Our research found that truck transportation costs per tonne in Canada are considerably lower than in the U.S., because of the effect of exchange rates and also because legal gross vehicle weight limits are higher in Canada than in the U.S. As illustrated in Exhibit IV-8, road transportation costs in Canada, calculated in dollars per tonne, are on average, 32% lower than in the United States.

Exhibit IV-8
Intra-state/provincial transportation cost factors



Notes: Represents cost per tonne to transport a single shipment of goods 250 miles within the state/province in which each city is located. Cost is based on using a five axle tractor/semi-trailer combination loaded to the legal gross vehicle weight limit for that state/province.

Because of differing operating regulations, rates and fuel taxes, and other factors, transportation costs can vary significantly for any given shipment depending upon the states or provinces being traversed. The impact of these factors on the relative interstate and inter-provincial transportation costs are analyzed in subsequent chapters, in conjunction with the specific distribution patterns applicable to each industry being modelled.

F. Interest costs

Depending on the industry, we assumed that 33% - 55% of property acquisition and construction costs would be funded through owner equity, and that the balance would be funded through debt.

We applied an interest rate on debt of 9% for U.S. locations, and 11% for Canadian locations. This 2% "spread" tends to favour U.S. locations.

G. Federal, regional and local taxation rates

1. Overview

Federal, regional and local taxation rates vary significantly among the locations examined. A summary of corporate taxes in each city is shown in Exhibit IV-9.

The federal tax rate for Canadian manufacturers is 21.84% of taxable income. In the U.S., a graduated scale of rates provides a rate of 34.00% for taxable income in excess of \$335,000 and below \$10 million. In the U.S., state taxes are deductible from federal taxable income.

Various states and provinces offer differing tax incentives for start-up business in their locations. The most notable difference between Canada and the USA, with respect to tax, is the write off of eligible research and development (R&D) expenditures. In Canada there is a 100% deduction for all qualified current and capital expenditures and an additional 20% federal investment tax credit. In addition, some provinces have chosen to provide additional tax credits for R&D expenditures, these being: Nova Scotia, New Brunswick, Quebec, Ontario and Manitoba. In the United States, the general tax treatment for similar R&D expenditures is a 20% credit at the federal level.

Nominal taxation rates should not be used as the sole measure of the impact of taxation in each location. Other factors, such as depreciation rates and the availability of investment incentives, have a significant impact on the amount of taxes paid.

2. The February 1995 Canadian federal budget

The federal tax rates shown in Exhibit IV-9 includes the current Canadian corporate surtax. The new budget proposes an increase in this surtax from 3% to 4% for tax years ending after February 27, 1995. The federal Large Corporate Tax charged on taxable capital employed in Canada in excess of \$10 million is currently 0.20%; the budget proposes increasing this rate to 0.225%. These changes do not have a substantive impact on the comparisons among jurisdictions.

Exhibit IV-9 Corporate and other taxes

	Canada								United States						
	Calgary, AB	Halifax, NS	Langley, BC	Laval, QC	London, ON	Moncton, NB	Ottawa, ON	Winnip., MB	Austin, TX	Belling., WA	Colum., OH	Manch., NH	Minn., MN	Raleigh, NC	Sacra., CA
Corporation Income Tax (% of Taxable Income)															
Federal	21.84% ^a	34.00% ^b	34.00% ^b	34.00% ^b	34.00% ^b	34.00% ^b	34.00% ^b	34.00% ^b							
Provincial/State	14.50% ^a	16.00%	16.50%	8.90%	13.50% ^a	17.00%	13.50%	17.00%	---	---	8.90% ^{d,e}	7.50%	9.80%	7.75%	9.30%
Corporation Capital ^m	0.20% ^c	0.20% ^c	0.50% ^c	0.76% ^c	0.50% ^c	0.20% ^c	0.50% ^c	0.50% ^c	0.25%	---	---	---	---	0.15%	---
Franchise Tax	---	---	---	---	---	---	---	---	---	---	0.58% ^e	---	---	---	---
Business & Occupation Tax (% of Property Market Value)	9.73% ⁿ	1.785%	---	---	2.10%	---	---	9.20% ⁿ	---	---	---	---	---	---	---
Sales Tax (% of Purchases)	---	11.00%	7.00%	--- ⁱ	8.00%	11.00%	8.00%	7.00%	6.25%	6.50%	5.00%	---	6.00%	4.00%	6.00%
Property Tax (% of market value)	3.02% ^l	3.86%	2.70%	3.83%	3.50%	4.53%	3.65%	4.56%	0.63%	1.34%	4.00% ^f	2.86%	4.60% ^h	1.33%	1.08%
Real Property Transfer Tax (% of Purchase Price)	---	---	2.00% ^j	1.50% ^g	1.50% ^g	0.25%	1.50% ^g	1.50% ^k	---	1.28%	0.10%	0.50%	---	0.20%	---

^aRate for manufacturing and processing firms.

^bMarginal tax rate applies if earnings exceed \$335,000 and are less than \$10 million.

^cIncludes federal Large Corporations Tax of 0.20%.

^dHighest nominal tax rate applies if earnings exceed \$50,000.

^eCorporation pays the greater of Ohio Corporate Income Tax or Business Franchise Tax. Business Franchise Tax is based on net worth.

^fAssessed value may not exceed 35% of market value.

^gMaximum rate. Lower rates apply for values less than \$177,305.

^hRate is on the excess over \$100,000 the rate for the first \$100,000 is 3.0%.

ⁱQuebec Sales Tax is 6.5% for goods and services but registered companies may claim an input tax refund for tax incurred relating to commercial activities.

^jMaximum rate. Lower rates apply for values less than \$141,844.

^kMaximum rate. Lower rates apply for values less than \$106,383.

^lPer \$1,000 of assessed value.

^mCorporation capital tax is based on paid-up capital.

ⁿRate applied on assessed property value.

V

Comparison Of Overall Costs, By Industry And City

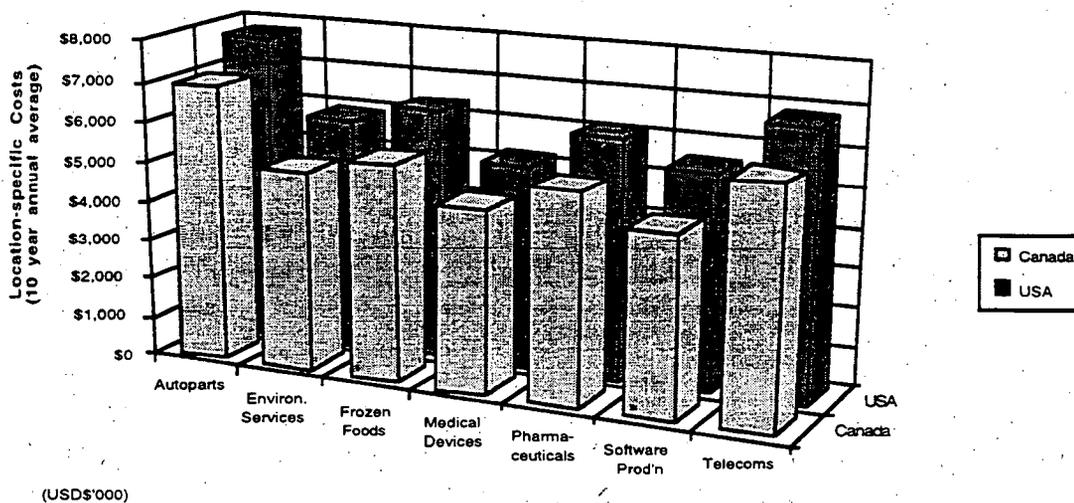
This chapter summarizes the results, for each industry, of the modelling exercise as follows:

- Overall comparison of Canadian and U.S. locations, for each industry.
- Comparisons among cities, by industry and overall.

A. Overall U.S. - Canada comparison

An overall comparison of annual average location-sensitive costs for each industry is contained in Exhibit V-1. In each of the seven industries, location-sensitive costs are consistently lower in Canadian jurisdictions than in U.S. ones.

Exhibit V-1
Location-sensitive costs, by industry



Detailed calculations for each industry are contained in Appendices A through G. In general, much of the differential is explained by lower labour and benefits costs in Canada, although other factors are also significant.

B. Comparisons among cities

The ranking of each city, by industry and overall, is illustrated in Exhibit V-2.

Exhibit V-2
Ranking of each city, by industry and overall

Location	Autoparts		Frozen Foods	Medical Devices	Pharmaceuticals	Software Prod'n	Telecoms	
Calgary, AB	2	1	1	3	4	5	2	2
Halifax, NS	1	4	4	1	1	1	4	1
Langley, BC	13	13	11	15	12	8	12	12
Laval, QC	3	2	2	4	3	3	1	3
London, ON	7	7	8	7	7	6	8	7
Moncton, NB	4	5	6	2	2	2	6	4
Ottawa, ON	6	6	3	6	6	7	3	6
Winnipeg, MB	5	3	5	5	5	4	5	5
Austin, TX	9	12	12	9	9	10	11	10
Bellingham, WA	15	14	13	13	13	11	14	14
Columbus, OH	10	11	7	11	15	9	7	9
Manchester, NH	11	9	10	10	10	13	10	11
Minneapolis, MN	12	10	14	12	11	12	13	13
Raleigh, NC	8	8	9	8	8	15	9	8
Sacramento, CA	14	15	15	14	14	14	15	15

In the rankings among cities, Canadian locations are ranked first through sixth in every industry.

On a regional basis, West Coast locations have higher costs than other regions. On the West Coast, the Canadian location (Langley) is consistently ranked ahead of its U.S. counterparts (Bellingham, Sacramento).

C. Detailed analysis of each industry, by jurisdiction and cost component

Detailed analyses of each industry have been performed and are contained in the following appendices:

- Appendix A—Autoparts.
- Appendix B—Environmental Waste Treatment Systems.
- Appendix C—Frozen Foods.
- Appendix D—Medical Devices.
- Appendix E—Pharmaceuticals.
- Appendix F—Software.
- Appendix G—Telecommunications.

VI

Conclusions

This chapter summarizes our key findings in terms overall costs by industry, individual cost components, and changes from 1994. It also briefly outlines a number of other important factors to be considered in the site location decision, and indicates where to seek further information.

A. Summary of findings

1. For every industry, overall costs are lower in Canada than the U.S.

In each of the seven industries examined, the location-sensitive costs are consistently lower in Canadian jurisdictions than in U.S. ones.

In the rankings among cities, Canadian cities are ranked first through sixth in every industry, and are ranked first through seventh overall. On a regional basis, the Canadian West Coast location ranks ahead of US West Coast locations.

2. Most individual cost components are favourable to Canada

In terms of individual cost components, general trends are summarized as follows:

- **Industrial land costs** tend to be highest in areas located on the West coast. In the other regions, land costs in Canadian cities are generally higher than those in U.S. cities.
- **Construction costs** in Canadian cities are competitive with U.S. cities examined.
- **Labour costs** in Canada are generally lower than those in the United States.
- **The costs of employer-sponsored benefits** in Canada are lower than those in the United States.
- **The costs of employer-paid statutory employee benefits and taxes** tend to be lower in Canada than in the United States, primarily because of the existence of a public-sponsored health care system in Canada.
- **Electricity costs** for industrial users are significantly lower in Canada than in the United States.

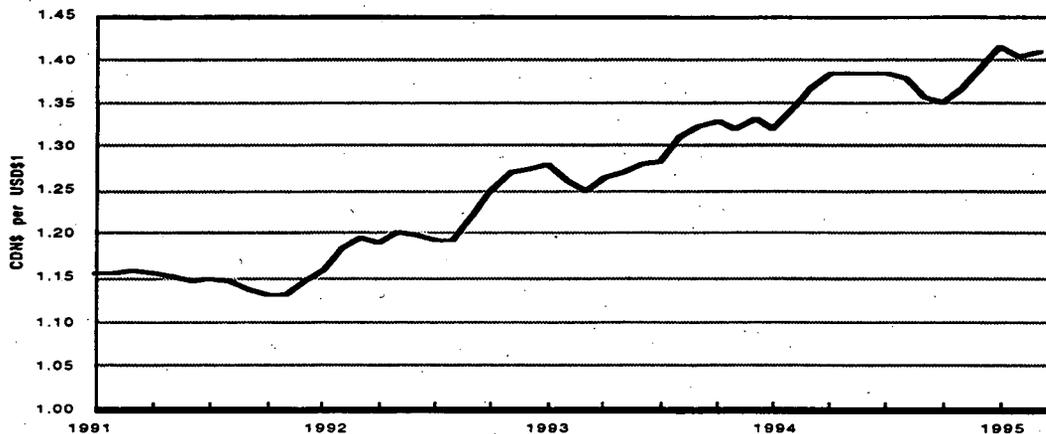
- **Transportation costs** vary by jurisdiction and industry, but reflect lower rates in Canada than the United States.
- **Interest costs** are higher in Canada than in the United States.
- **Federal regional and local taxation rates** vary significantly among the locations examined.
- **Income tax credits for research and development** in Canada provide a significant cost advantage over those in U.S. locations. In addition, income tax legislation in Canada allows capital assets associated with research and development to be depreciated at a faster rate in Canada than the United States.

The combined impact of these factors results in a significant cost advantage for Canadian locations. The strongest factors underlying the net advantage for Canada are labour and benefits, which together account for about three-quarters of location-sensitive costs.

3. Exchange rates have increased Canada's competitiveness

All costs in this study are presented in U.S. dollars. While the 1994 results showed Canadian jurisdiction to be cost competitive, the results for 1995 show a significant cost advantage for Canadian locations. Much of this increase is attributable to the increasing value of the U.S. dollar in Canada—up from \$1.33 Canadian in our 1994 report to \$1.41 Canadian in this report. The change in exchange rates has increased the purchasing power of U.S. dollars in Canada, and has dramatically increased the cost-competitiveness of Canadian jurisdictions. Exchange rate trends are illustrated in Exhibit VI-1.

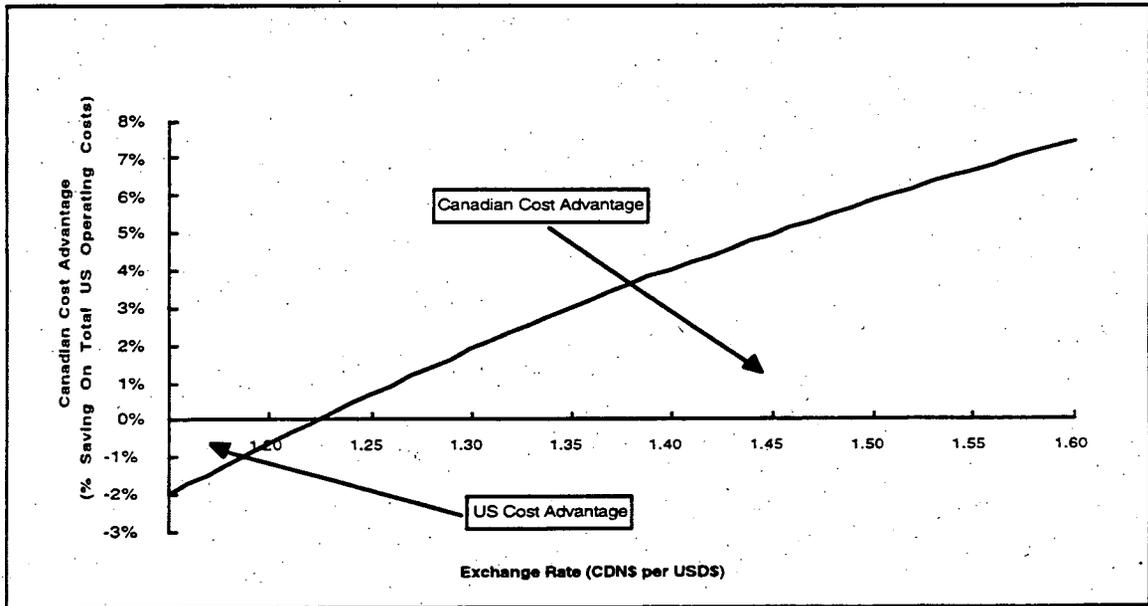
Exhibit VI-1
Trends in the value of the U.S. dollar in Canadian funds



4. Canada's cost advantage holds over a wide range of exchange rates

As illustrated in Exhibit VI-2, Canada's cost advantage holds over a wide range of exchange rates. Even with a significant decline in the purchasing power of the U.S. dollar—to as low as \$1.22 CDN—Canada would still have a comparative cost advantage.

Exhibit VI-2
Sensitivity of comparative costs to exchange rates



Source: Bank of Canada monthly average exchange rates.

B. Further Information

This study is based on current tax rates and cost factors, all of which are subject to change. Major investment decisions require investigation of situation-specific cost factors. Business location decisions also require a detailed investigation of non-cost-related factors, including: work force availability, quality of life, transportation infrastructure, education, medical care and other factors.

For assistance in addressing specific opportunities, please contact:

*Information on this study
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Appendix A

***Comparison Of Canadian And U.S. Business
Costs***

Autoparts Industry

Comparison Of Canadian And U.S. Business Costs

Autoparts Industry

On behalf of the Government of Canada, KPMG Management Consulting performed an independent analysis of the relative costs of doing business in the United States and Canada in 1995. We developed a model to compare typical operating costs from start-up to ten years of operation that is based on current tax rates, cost factors and exchange rates. In total seven industry areas were examined, including the autoparts industry. Our results for the autoparts industry are detailed in the following pages.

A. The autoparts industry

In 1993, the U.S. autoparts industry had shipments of \$105 billion, representing an increase of 10% over 1992 shipments. Exports continue to play an important role in this sector, as 33% of shipments by U.S. manufacturers were exported. Fifty-seven percent of those exports were destined for Canada.¹

Our model autoparts manufacturing facility employs 150 people, and generates annual sales revenues of \$21 million. The facility requires a site of ten acres of fully serviced land in an industrial park setting, with access to major roads. A 100,000 square foot building will be constructed on the site. A summary of the key operating parameters for our model facility is shown in Exhibit 1.

B. Summary of location-sensitive costs

The average annual costs in the eight Canadian cities is significantly lower than the average costs in the seven U.S. cities examined. Average Canadian location-sensitive costs were \$6.6 million, compared with \$7.5 million in the U.S. cities. Canadian cities represented the six lowest-cost jurisdictions. Halifax and Calgary had the lowest location-sensitive operating costs. Bellingham had the highest costs, \$1.6 million higher than in Calgary and \$1.8 million higher than in Halifax.

On a regional basis, the costs for Langley are virtually equal to those of Bellingham, located just across the U.S./Canada border.

¹Source: U.S. Industrial Outlook, 1994, U.S. Department of Commerce.

Exhibit 1
Key operating parameters for autoparts manufacturing facility model

Labour Requirements

Plant management	1 General Manager 6 Senior Managers (e.g., Finance, Purchasing, Personnel) 19 Administrative Support (e.g., secretaries, receptionist, clerks)
Supervisors	10 Production Supervisors
Technical	10 Engineers and Technicians 4 Lab Technicians
Operators	50 Machine Tool Operators 25 Machinists and Mechanics
Other	20 Warehouse Workers & Material Handlers 5 Helpers, Guards, and Facility Maintenance
Total	<u>150</u>

Electrical power requirements:

500 KVA demand
450,000 KWH monthly consumption

Site requirements:

10 acre site
100,000 square foot building

Initial investment requirements:

\$3,000,000 Inventory
\$2,500,000 Machinery & equipment
\$500,000 Research & experimentation equipment
\$300,000 Office equipment and furniture
45% Percentage equity financing

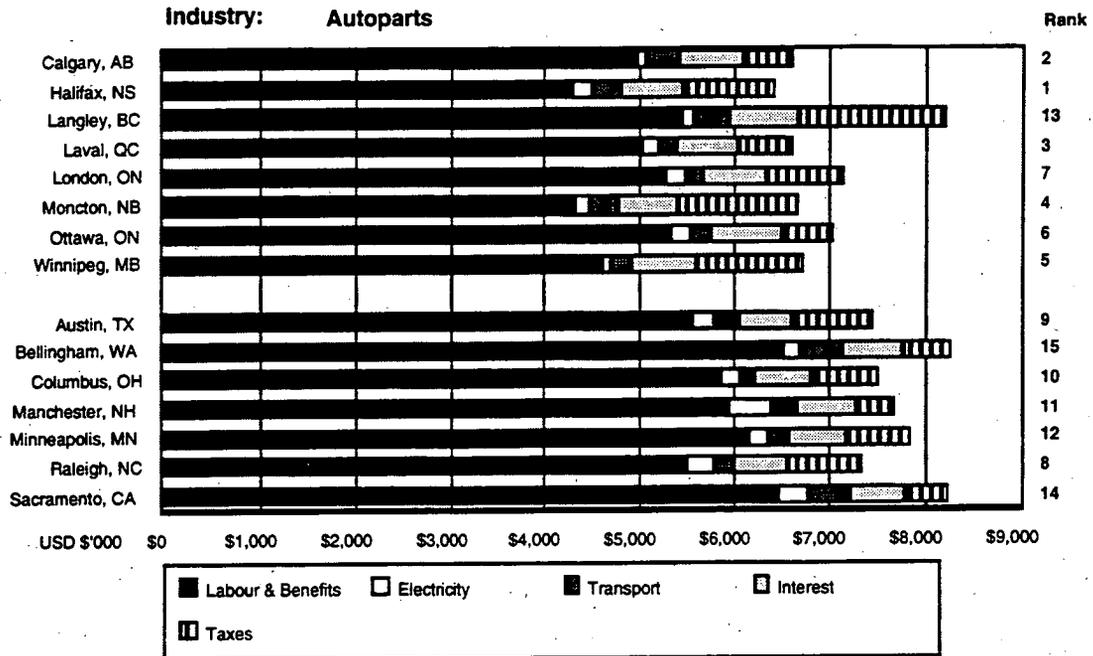
Operating characteristics:

\$21,000,000 Annual sales at steady state production
\$500,000 Annual investments in research and experimentation
30% Material costs as a percentage of sales revenue
25% Other operating costs as a percentage of sales revenue

Distribution Pattern
(Truckloads per annum)

	20 Atlanta
	16 Chicago
	15 Cleveland
	45 Detroit
	27 Los Angeles
	16 New York City
	6 Seattle
	<u>5 Toronto</u>
Total	<u>150</u>

Exhibit 2 Location-sensitive operating costs for autoparts manufacturing facility model



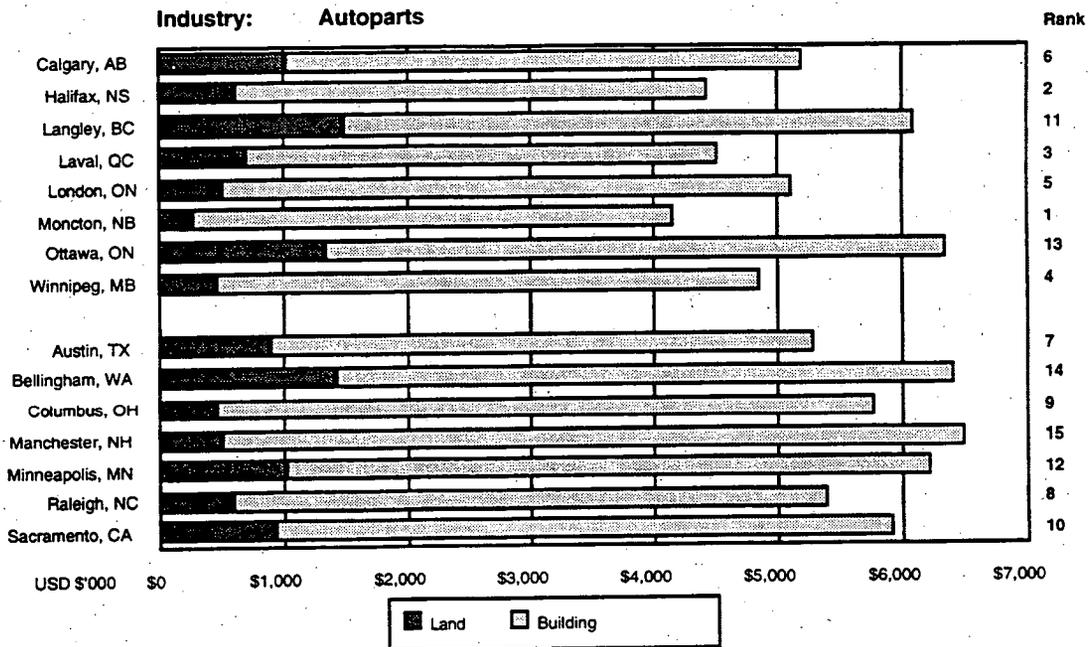
C. Details of component costs

Initial facility investment costs are generally lower in Canada than the United States, although two Canadian jurisdictions (Langley, Ottawa) are comparable with higher-cost U.S. jurisdictions.

The low cost of land and construction costs in Moncton provide this city with the lowest initial investment costs of the fifteen cities examined. The highest initial investment costs are found in Bellingham and Langley (located just across the Canada/U.S. border).

The Canadian cities of Halifax, Laval, Winnipeg, London and Calgary follow Moncton as the jurisdictions with the lowest initial investment costs. A comparison of the initial facility investment required in each of the cities examined is shown in Exhibit 3.

Exhibit 3
Initial facility investment costs for autoparts manufacturing facility model

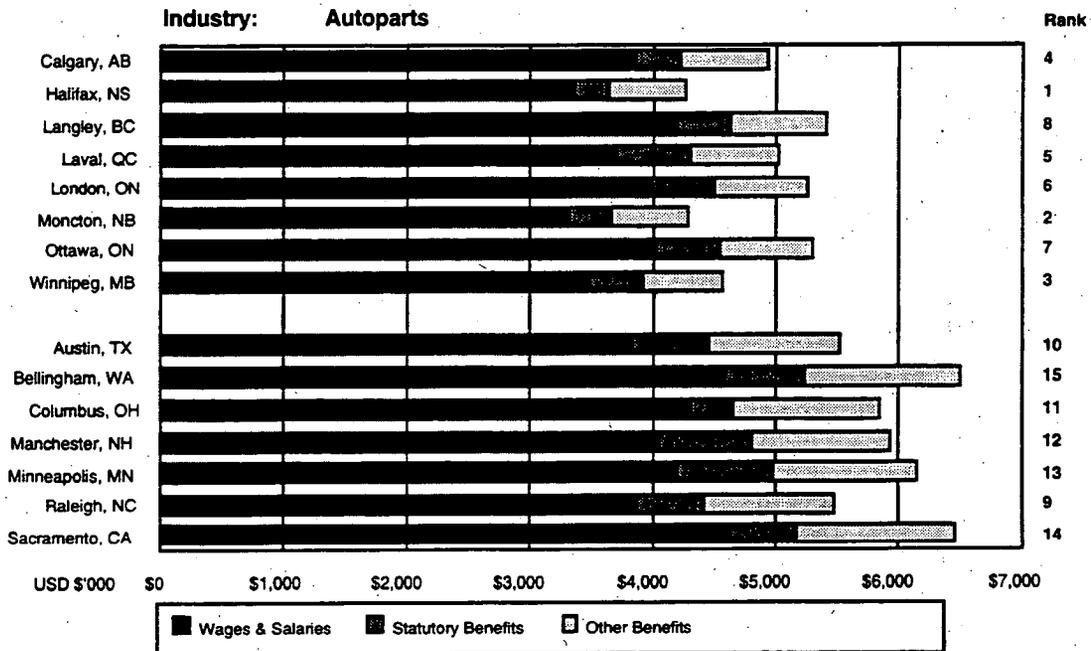


2. Labour costs

Overall, Canadian labour costs are significantly lower than those in the U.S. The average of labour costs for the eight Canadian locations is 22.3% lower than that for the seven U.S. cities examined. A comparison of annual labour costs in each of the locations is shown in Exhibit 4.

Halifax had the lowest labour costs due to low wage rates. Labour costs for this facility in Halifax are 28.0% lower than costs in Raleigh, the best ranking city in the U.S.

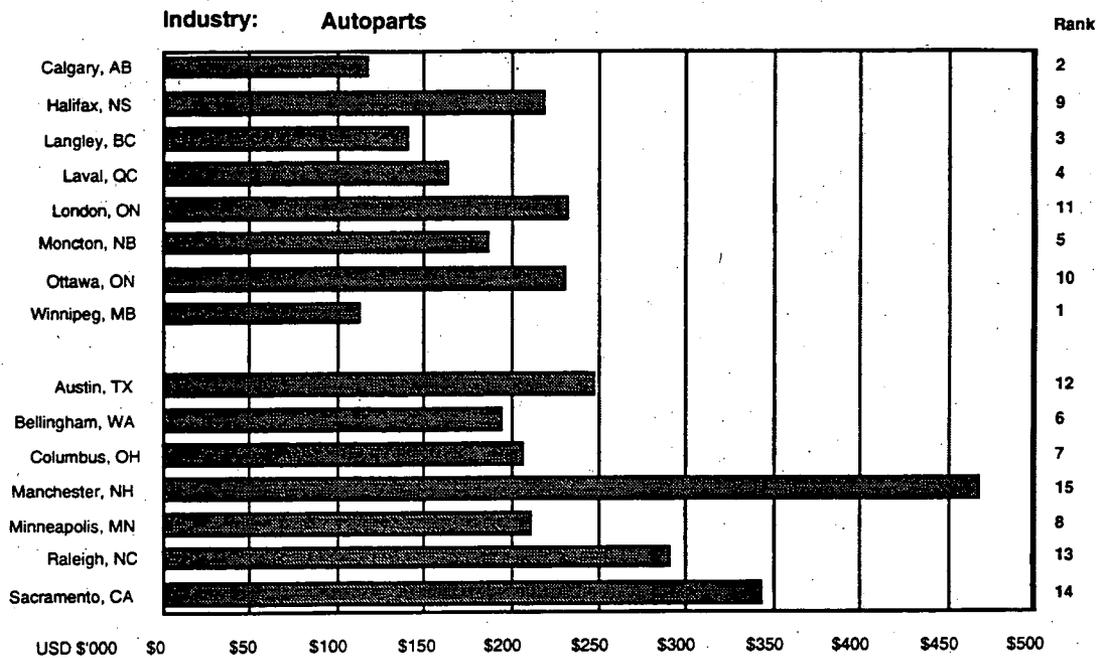
Exhibit 4
Labour costs for autoparts manufacturing facility model



3. Electricity costs

Electricity costs represent less than four per cent of the location-sensitive costs examined. Canadian electricity costs, in general, are favourable when compared to the U.S. locations studied. A comparison of the annual electricity costs for the model manufacturer of autoparts is shown in Exhibit 5.

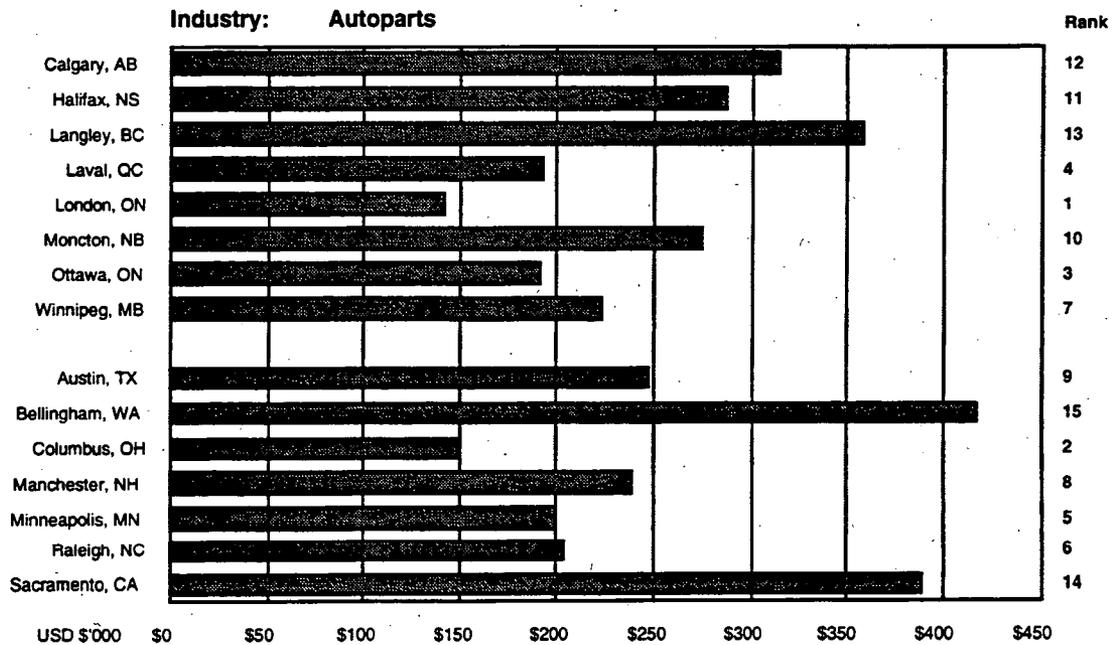
Exhibit 5
Electricity costs for autoparts manufacturing facility model



4. Transportation and distribution costs

Transportation costs represent less than four per cent of the location-sensitive costs examined. Transport costs are lowest for those manufacturers, both Canadian and U.S., located in the central industrial heartland of North America, due to their close proximity to the major automotive production centres of Detroit and Cleveland. Canadian transportation costs, in general, are favourable when compared to the U.S. locations studied on a cost per mile basis but in some cases are slightly higher than U.S. costs due to the greater distances involved. A comparison of the annual transportation costs for the model manufacturer of autoparts is shown in Exhibit 6.

Exhibit 6
Transportation costs for autoparts manufacturing facility model



5. Taxation costs

Interest and taxation costs are dependent on the other location-sensitive factors examined. As discussed in Chapter IV, interest rates are set at 9% for U.S. and 11% for Canadian jurisdictions, giving an advantage to U.S. sites.

Also as discussed in Chapter IV, corporate taxation rates vary widely by jurisdictions. Research tax credits tend to favour Canadian jurisdictions.

Appendix B

***Comparison Of Canadian And U.S. Business
Costs***

Environmental Waste Treatment

Comparison Of Canadian And U.S. Business Costs

Environmental Waste Treatment Facilities

On behalf of the Government of Canada, KPMG Management Consulting performed an independent analysis of the relative costs of doing business in the United States and Canada in 1995. We developed a model to compare typical operating costs from start-up to ten years of operation that is based on current tax rates, cost factors and exchange rates. In total seven industry areas were examined, including the environmental waste treatment industry. Our results for the environmental waste treatment industry are detailed in the following pages.

A. The waste treatment systems industry

The water and waste water treatment industry is the largest segment of the environmental industry worldwide. The estimated worldwide sales of water treatment equipment in 1990 was approximately \$60 billion and is projected to be \$83 billion for the year 2000. The U.S. water and waste water markets had sales of \$13 billion in 1992 of which approximately \$4.8 billion represented treatment technology. The U.S. demand for this equipment has been mainly generated due to the passing of four laws by the federal government between 1972 and 1990 requiring the treatment of waste water.¹

Our model facility, which is engaged in the manufacture of water treatment systems which comply with strict environmental guidelines, employs 100 people and generates annual sales revenues of \$20 million. The facility requires a site of six acres of fully serviced land in a medium to light industrial park setting, with access to major roads. A 70,000-square foot building will be constructed on the site. A summary of the key operating parameters for our model facility is shown in Exhibit 1.

B. Summary of location-sensitive costs

A comparison of the location-sensitive operating costs for each of the cities examined is shown in Exhibit 2.

Location-sensitive operating costs represent 25%-30% of total costs for this model facility. On a regional basis, Canada compares favourably against the U.S. All Canadian cities ranked better than their U.S. counterparts, including Langley, which is located across the Canada/U.S. border from Bellingham,

¹Source: *U.S. Industrial Outlook, 1994, U.S. Department of Commerce.*

Exhibit 1
Key operating parameters for waste treatment systems manufacturing facility model

Labour Requirements

Plant management	1 General Manager 5 Senior Managers (e.g., Finance, Purchasing, Personnel) 18 Administrative Support (e.g., secretaries, receptionist, clerks)
Supervisors	4 Production Supervisors
Technical	10 Engineers and Technicians 8 Lab Technicians
Operators	30 Skilled Machine Operators 7 Machinists and Mechanics
Other	12 Warehouse Workers & Material Handlers 5 Helpers, Guards, and Facility Maintenance
Total	<u>100</u>

Electrical power requirements:

450 KVA demand
 400,000 KWH monthly consumption

Site requirements:

6 acre site
 70,000 square foot building

Initial investment requirements:

\$2,500,000 Inventory
 \$2,000,000 Machinery & equipment
 \$1,500,000 Research & experimentation equipment
 \$200,000 Office equipment and furniture
 40% Percentage equity financing

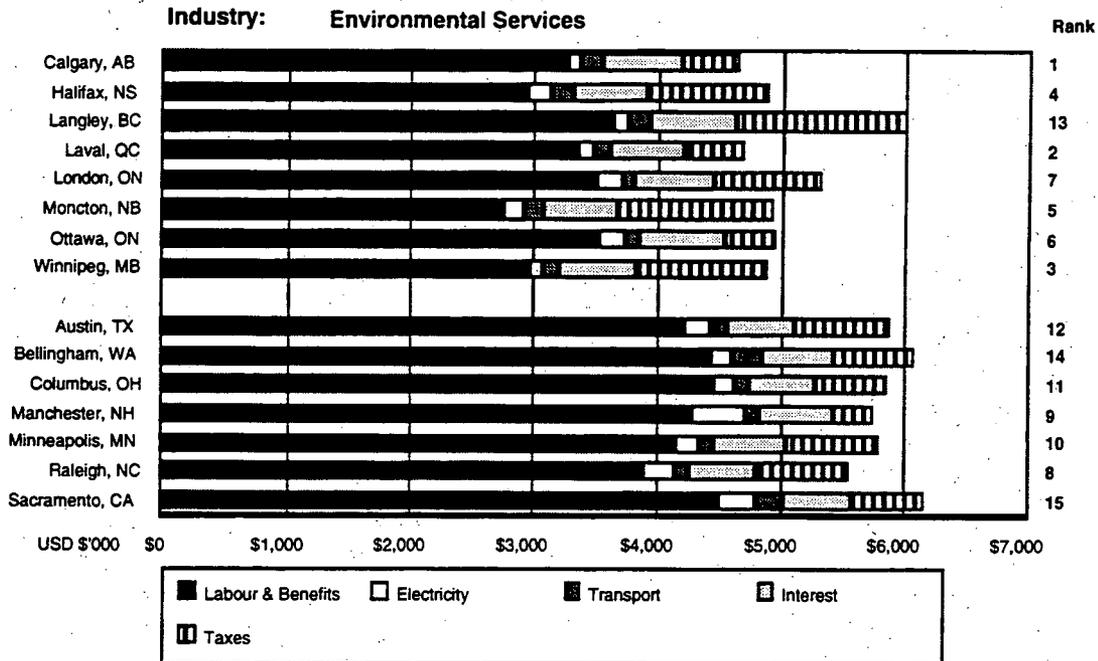
Operating characteristics:

\$20,000,000 Annual sales at steady state production
 \$1,400,000 Annual investments in research and experimentation
 45% Material costs as a percentage of sales revenue
 18% Other operating costs as a percentage of sales revenue

Distribution Pattern
 (Truckloads per annum)

	21 Atlanta
	18 Chicago
	12 Los Angeles
	18 New York City
	6 Seattle
	5 Toronto
Total	<u>80</u>

Exhibit 2
Location-sensitive operating costs for waste treatment systems
manufacturing facility model



C. Initial facility investment costs

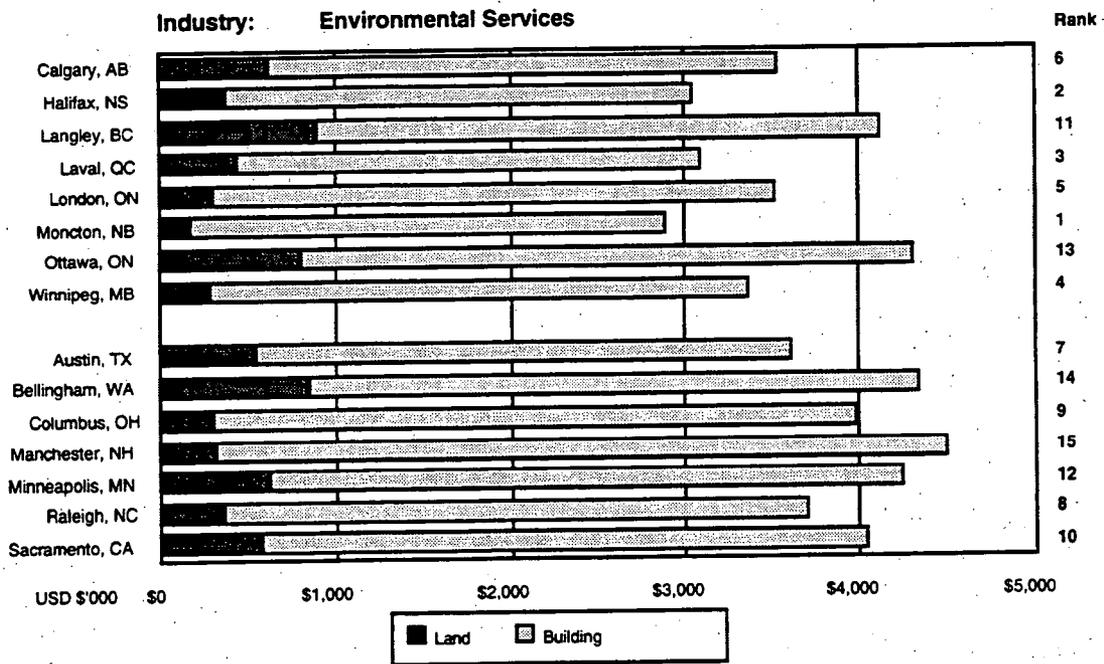
A comparison of the initial facility investment required in each of the cities examined is shown in Exhibit 3.

Initial facility investment costs represent approximately 40% of total start-up costs for this model facility.

Based on the site and building requirements, costs range from \$2.9 million in Moncton to \$4.5 million in Manchester.

Canadian cities have captured the top six rankings in this area of the model facility.

Exhibit 3
Initial facility investment costs for waste treatment systems manufacturing facility model



D. Labour, electricity, transportation and taxation costs

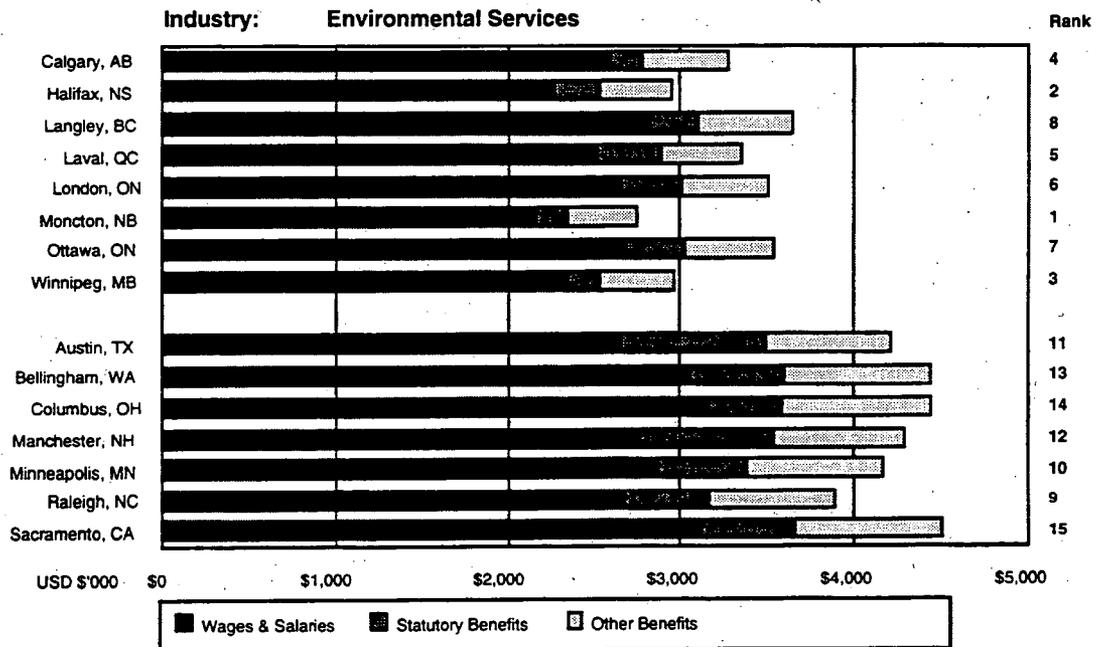
1. Labour costs

A comparison of annual labour costs for the model facility in each city is shown in Exhibit 4.

Our model facility employs 100 people. Annual labour costs include wages and salaries, statutory benefits, taxes and other benefits.

Average labour costs for the eight Canadian locations examined are lower than for the seven U.S. locations.

Exhibit 4
Labour costs for waste treatment systems manufacturing facility model

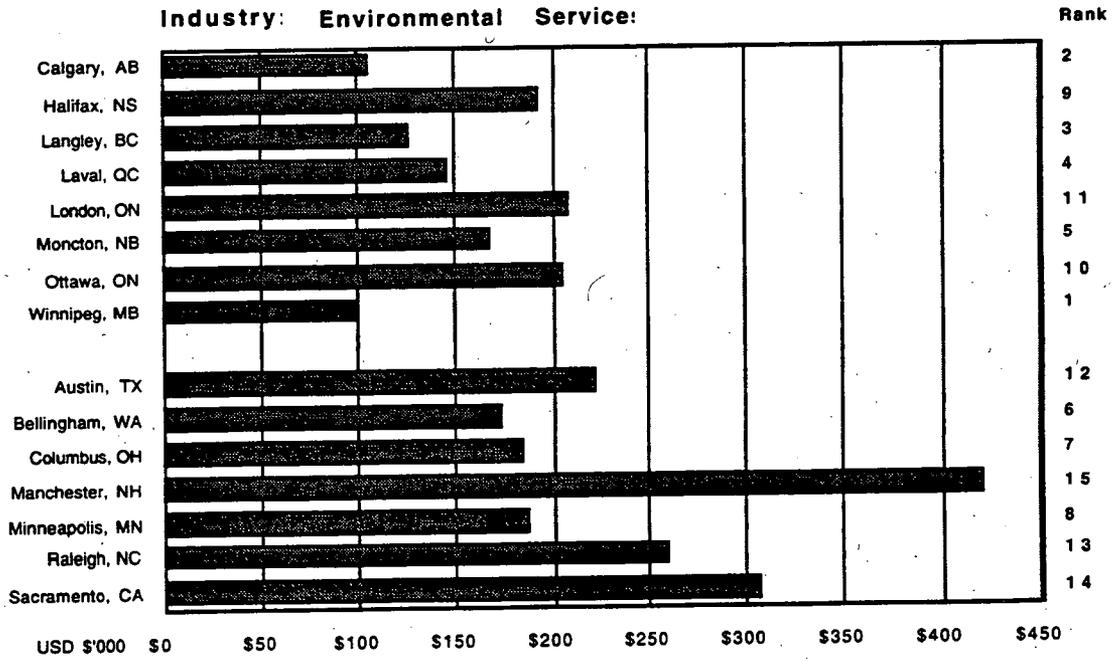


2. Electricity costs

A comparison of the annual electricity costs for the model facility is shown in Exhibit 5.

Electricity costs represent less than five per cent of the location-sensitive costs examined.

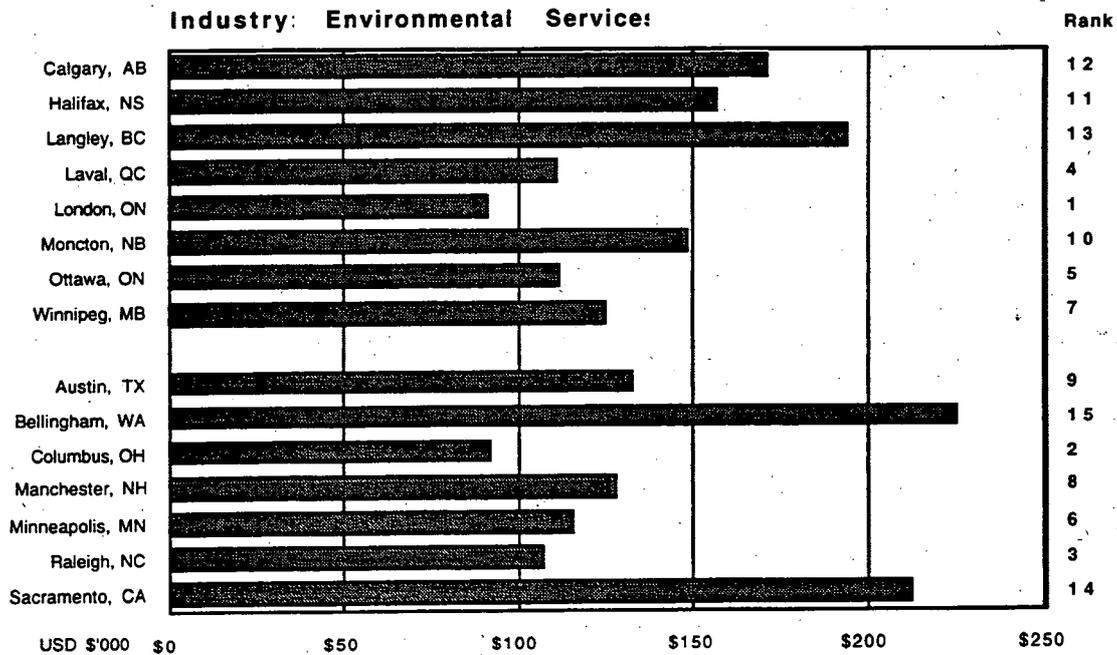
Exhibit 5
Electricity costs for waste treatment systems manufacturing facility model



3. Transportation and distribution costs

Transportation costs represent less than three per cent of the location-sensitive costs examined. Transport costs are lowest for those manufacturers, both Canadian and U.S., located in the central industrial heartland of North America, due to their close proximity to the greatest concentration of industrial users. Total transportation costs faced by Canadian companies within this region are comparable to the costs faced by companies in similarly located U.S. cities. A comparison of the annual transportation costs for the model manufacturer of waste treatment systems is shown in Exhibit 6.

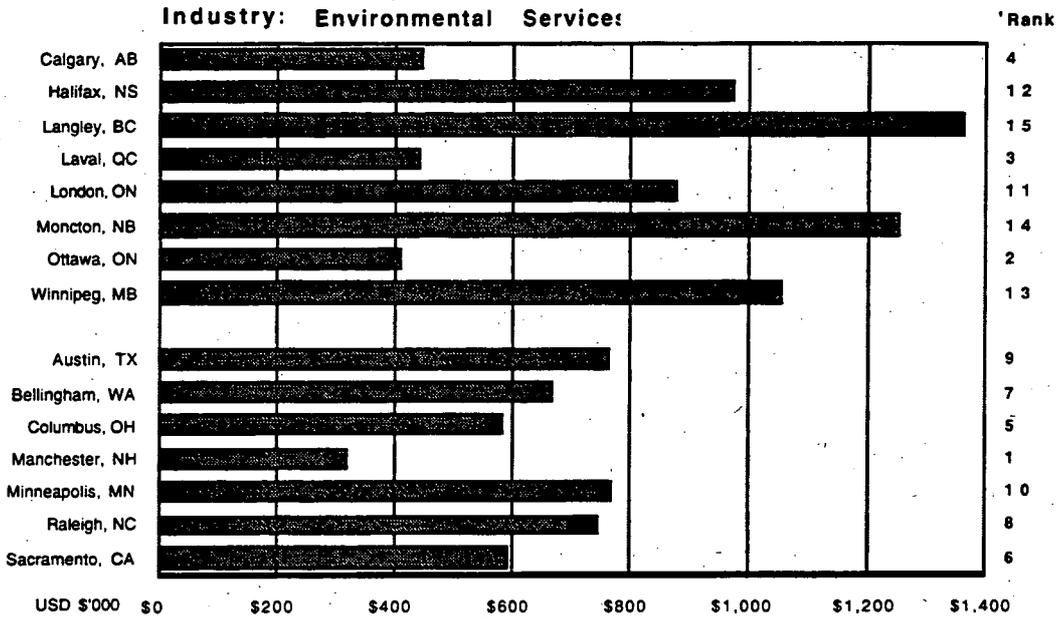
Exhibit 6
Transportation costs for waste treatment systems manufacturing facility model



4. Taxation costs

A comparison of the annual taxation costs for this model manufacturer is shown in Exhibit 7.

Exhibit 7
Annualized taxation costs for waste treatment systems manufacturing facility model



Appendix C

***Comparison Of Canadian And U.S. Business
Costs***

Frozen Foods

Comparison Of Canadian And U.S. Business Costs

Frozen Foods

On behalf of the Government of Canada, KPMG Management Consulting performed an independent analysis of the relative costs of doing business in the United States and Canada in 1995. We developed a model to compare typical operating costs from start-up to ten years of operation that is based on current tax rates, cost factors and exchange rates. In total seven industry areas were examined, including the frozen food industry. Our results for the frozen food industry are detailed in the following pages:

A. The food processing industry

The processed food and beverage industry sector is the U.S.' largest manufacturing sector. In 1993 the value of shipments was \$404 billion, an increase of more than 2 percent from 1992 while its export market grew by almost 3 percent with shipments of approximately \$22.5 billion. Canada purchased \$1.9 billion worth of higher-value food (the category that frozen entrees falls under) from the U.S. in 1992.¹

Our model facility is engaged in the manufacture of frozen entrees. This facility employs 110 people, and generates annual sales revenues of \$23 million. The facility requires a site of five acres of fully serviced land in a medium-industrial park setting, with access to major roads. A 50,000-square foot building will be constructed on the site. A summary of the key operating parameters for this model facility is shown in Exhibit 1.

B. Summary of location-sensitive costs

A comparison of the location-sensitive costs for each of the cities examined is shown in Exhibit 2.

Location-sensitive operating costs represent 25%-30% of total costs for this model facility.

Canadian cities capture the top six rankings with respect to overall location-sensitive costs. On a regional basis, location-sensitive costs in Langley are only marginally lower than those of neighbouring Bellingham.

¹Source: *U.S. Industrial Outlook, 1994, U.S. Department of Commerce.*

Exhibit 1
Key operating parameters for the food processing facility model

Labour Requirements

Plant management	1 General Manager
	5 Senior Managers (e.g., Finance, Purchasing, Personnel)
	12 Administrative Support (e.g., secretaries, receptionist, clerks)
Supervisors	4 Production Supervisors
Technical	2 Engineers and Technicians
Operators	18 Machine Tool Operators
	52 Machinists and Mechanics
Other	12 Warehouse Workers & Material Handlers
	4 Helpers, Guards, and Facility Maintenance
Total	<u>110</u>

Electrical power requirements:

400 KvA demand
 500,000 KwH monthly consumption

Site requirements:

5 acre site
 50,000 square foot building

Initial investment requirements:

\$1,500,000 Inventory
 \$3,000,000 Machinery & equipment
 \$1,000,000 Research & experimentation equipment
 \$300,000 Office equipment and furniture
 33 1/3% Percentage equity financing

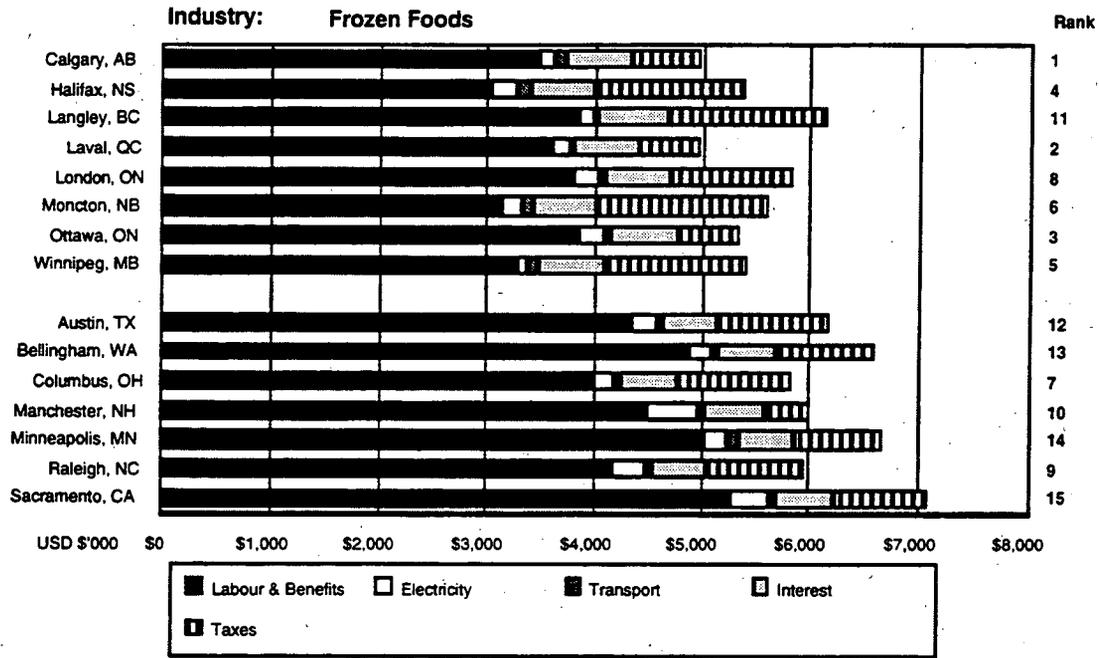
Operating characteristics:

\$23,000,000 Annual sales at steady state production
 \$1,000,000 Annual investments in research and experimentation
 60% Material costs as a percentage of sales revenue
 5% Other operating costs as a percentage of sales revenue

Distribution Pattern
 (Truckloads per annum)

150 Regional distribution, average distance 250 miles

Exhibit 2 Location-sensitive operating costs for food processing manufacturing facility model



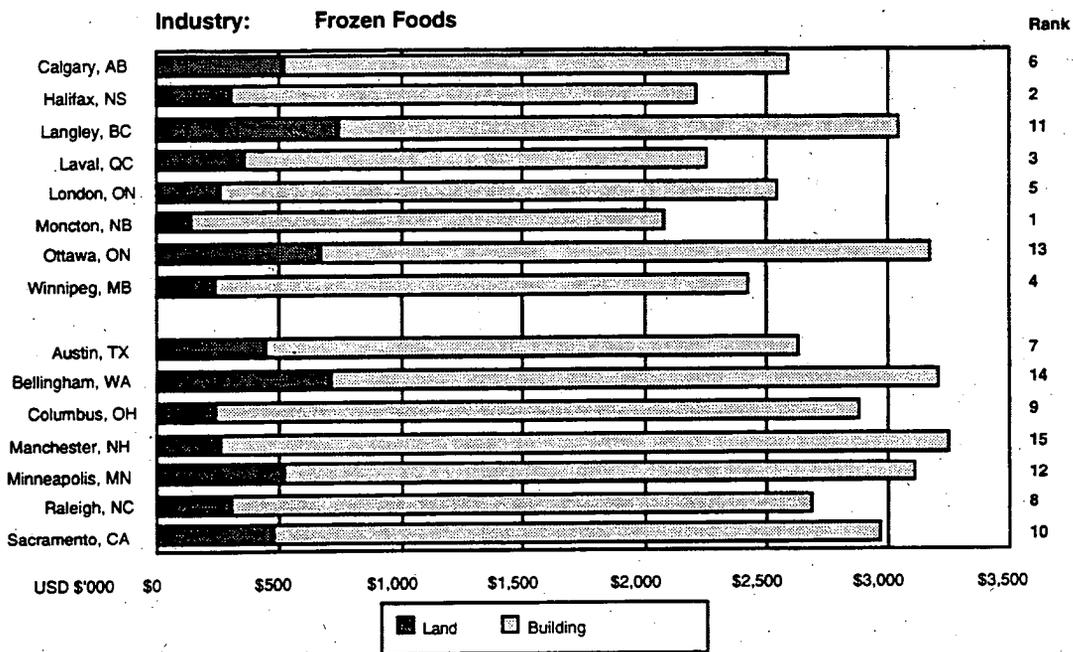
C. Initial facility investment costs

A comparison of the initial facility investment required in each of the cities examined is shown in Exhibit 3.

Initial facility investment costs represent between 30%-35% of total start-up costs for this model facility.

Based on the site and building requirements, costs range from \$2.1 million in Moncton to \$3.3 million in Manchester. On average the initial facility investment costs for the eight Canadian cities is \$2.5 million compared to \$3.0 million for the seven U.S. cities, a favourable difference of 20% for Canada.

Exhibit 3
Initial facility investment costs for food processing manufacturing facility model



D. Labour, electricity, transportation and taxation costs

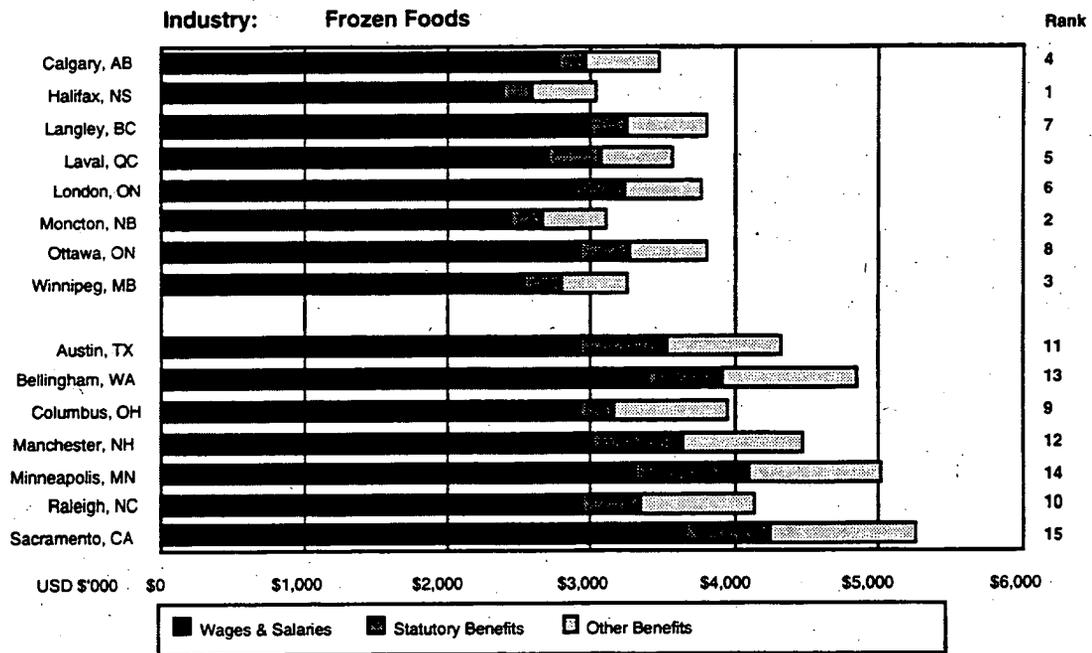
1. Labour costs

A comparison of annual labour costs for each of the locations is shown in Exhibit 4.

Our model facility employs 110 people. Annual labour costs include wages and salaries, statutory benefits, taxes and other benefits.

In all eight Canadian cities examined, labour costs are lower than for the U.S. Labour costs are approximately 31% lower in Canada for this model facility.

Exhibit 4
Labour costs for food processing manufacturing facility model

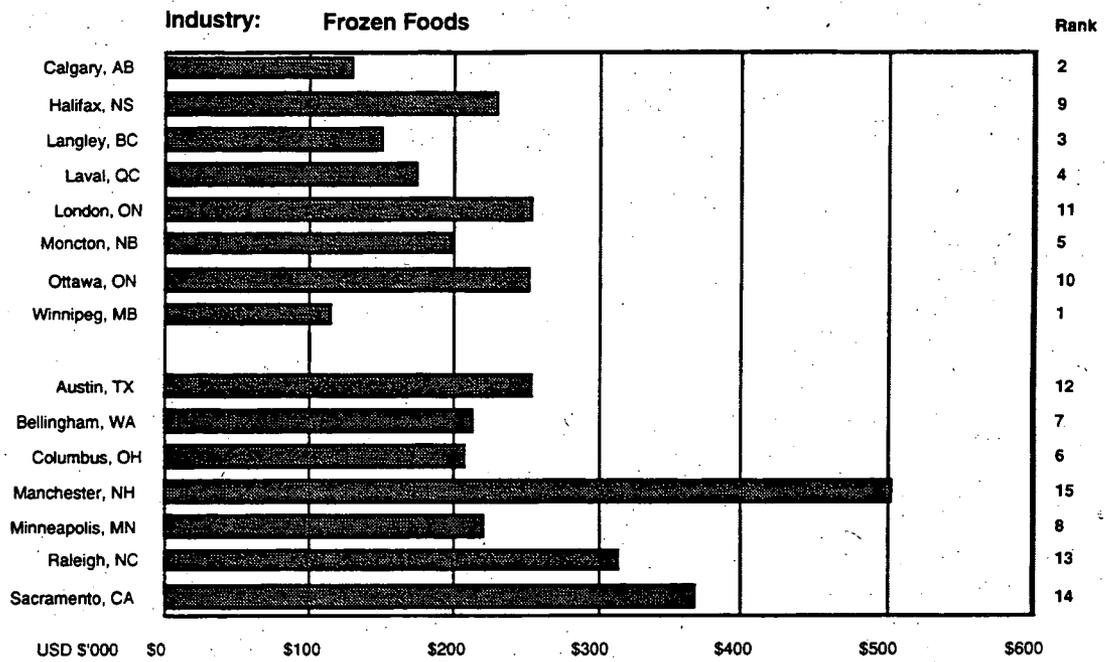


2. Electricity costs

A comparison of the annual electricity costs for the model manufacturer of food processing is shown in Exhibit 5.

Electricity costs represent less than five per cent of the location-sensitive costs examined.

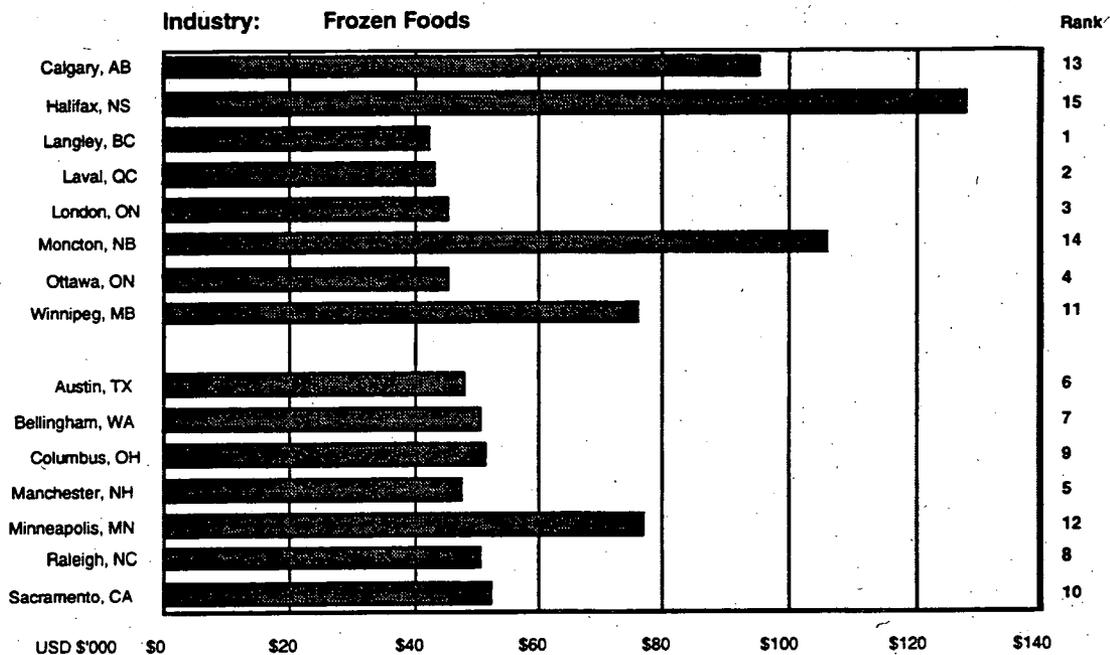
Exhibit 5 Electricity costs for food processing manufacturing facility model



3. Transportation and distribution costs

For the food processing industry, a regional distribution pattern was adopted, rather than the North America-wide distribution patterns utilized in modeling the other six industries. Distribution costs were based on 150 shipments per annum for a shipping distance of 250 miles or the radius required to encompass a population base of 5 million people, whichever is greater. Transportation costs were consistently lower in Canadian centres than in the U.S. A comparison of the annual transportation costs for the model manufacturer of frozen food products is shown in Exhibit 6.

Exhibit 6
Transportation costs for food processing manufacturing facility model



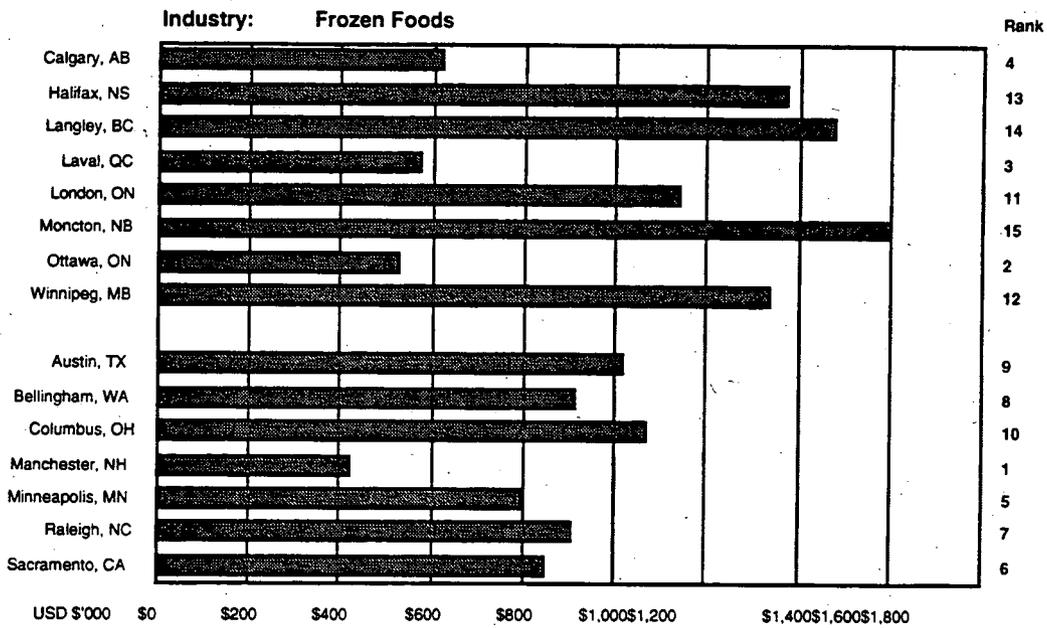
Calgary, Halifax, Moncton, Winnipeg and Minneapolis all fare poorly in this comparison as they are the only locations for which a population base of 5 million consumers extends over an area with a radius in excess of 250 miles.

It should be noted however, that the above comparison is based on a fixed number of shipments per annum. In Canada, however, legal gross vehicle weight limits exceed those in the U.S. by between 15% and 38% depending upon which province goods are being transported in. The possibility exists, therefore, for Canadian producers to further reduce their transportation costs by making fewer shipments per annum in order to move the same quantity of goods.

4. Taxation costs

A comparison of annualized taxation payments for each of the locations studied is shown in Exhibit 7.

Exhibit 7
Annualized taxation costs for food processing manufacturing facility model



Appendix D

***Comparison Of Canadian And U.S. Business
Costs***

Medical Devices

Comparison Of Canadian And U.S. Business Costs

Medical Devices

On behalf of the Government of Canada, KPMG Management Consulting performed an independent analysis of the relative costs of doing business in the United States and Canada in 1995. We developed a model to compare typical operating costs from start-up to ten years of operation that is based on current tax rates, cost factors and exchange rates. In total seven industry areas were examined, including the medical devices industry. Our results for the medical devices industry are detailed in the following pages.

A. The medical devices industry

In 1993, the value of shipments by the U.S. medical equipment and supplies industry rose more than eight percent, to \$35 billion¹. This increase was partly due to the strong overseas demand for medical equipment. Exports accounted for 23% of industry shipments by U.S. manufacturers.

Our model facility is engaged in the manufacture of electro-medical equipment. The electro-medical equipment sector represents 16 percent of U.S. medical and dental industry shipments. This industry sector includes a wide range of powered devices, ranging from pace makers and patient monitoring systems to diagnostic products such as ultrasonic scanning devices and magnetic resonance imaging equipment. U.S. exports of electro-medical equipment increased nearly eight percent in 1993 to \$2.4 billion. Major export items for this industry sector were electrode diagnostic devices, ultrasonic scanners, and patient monitoring systems. Canada, with a market estimated at \$421 million, is a major purchaser of electro-medical equipment made in the United States.

Our model medical devices manufacturing facility employs 100 people, and generates annual sales revenues of \$14 million. The facility requires a site of six acres of fully serviced land in a medium to light industrial park setting, with access to major roads. A 70,000-square foot building will be constructed on the site. A summary of the key operating parameters for our model facility is shown in Exhibit 1.

B. Summary of location-sensitive costs

A comparison of the location-sensitive operating costs for each of the cities examined is shown in Exhibit 2.

¹Source: *U.S. Industrial Outlook, 1994, U.S. Department of Commerce.*

Exhibit 1
Key operating parameters for medical devices manufacturing facility model

Labour Requirements

Plant management	1 General Manager 5 Senior Managers (e.g., Finance, Purchasing, Personnel) 15 Administrative Support (e.g., secretaries, receptionist, clerks)
Supervisors	5 Production Supervisors
Technical	14 Engineers and Technicians 10 Lab Technicians
Operators	30 Machine Tool Operators 6 Machinists and Mechanics
Other	10 Warehouse Workers & Material Handlers 4 Helpers, Guards, and Facility Maintenance
Total	<u>100</u>

Electrical power requirements:

300 KVA demand
200,000 KWH monthly consumption

Site requirements:

6 acre site
70,000 square foot building

Initial investment requirements:

\$2,500,000 Inventory
\$2,000,000 Machinery & equipment
\$1,000,000 Research & experimentation equipment
\$200,000 Office equipment and furniture
55% Percentage equity financing

Operating characteristics:

\$14,000,000 Annual sales at steady state production
\$800,000 Annual investments in research and experimentation
20% Material costs as a percentage of sales revenue
35% Other operating costs as a percentage of sales revenue

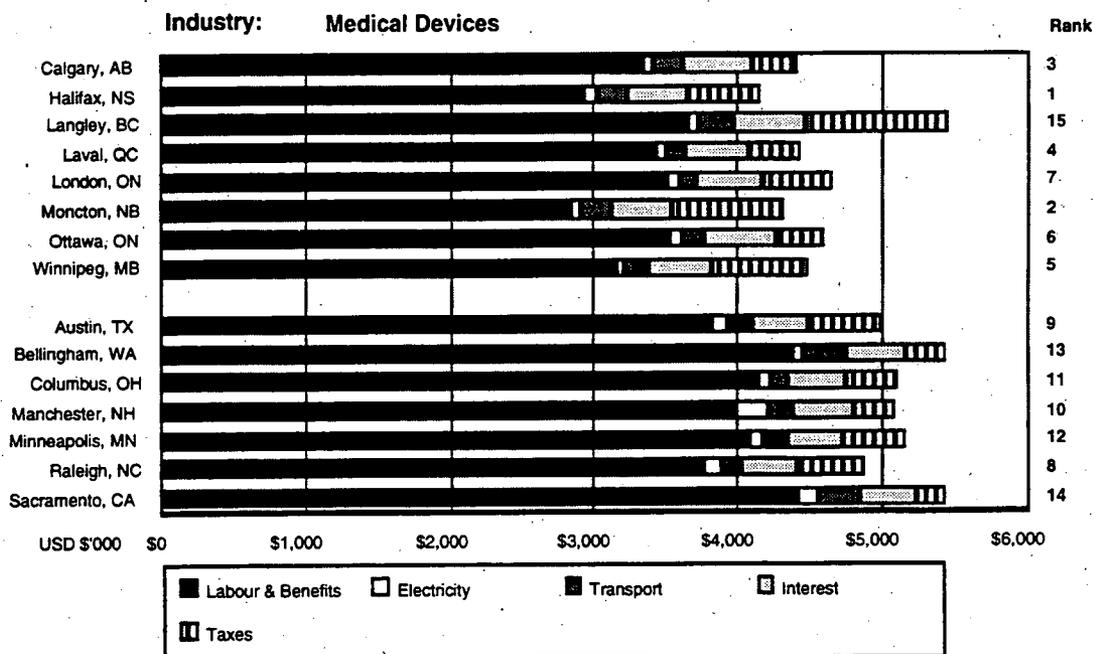
Distribution Pattern
(Truckloads per annum)

	26 Atlanta
	23 Chicago
	15 Los Angeles
	23 New York City
	7 Seattle
	<u>6 Toronto</u>
Total	<u>120</u>

Location-sensitive operating costs represent 30%-40% of the total costs for this model facility.

With the exception of Langley, all Canadian cities fare better than the seven U.S. cities examined for this facility.

Exhibit 2
Location-sensitive operating costs for medical devices manufacturing facility model



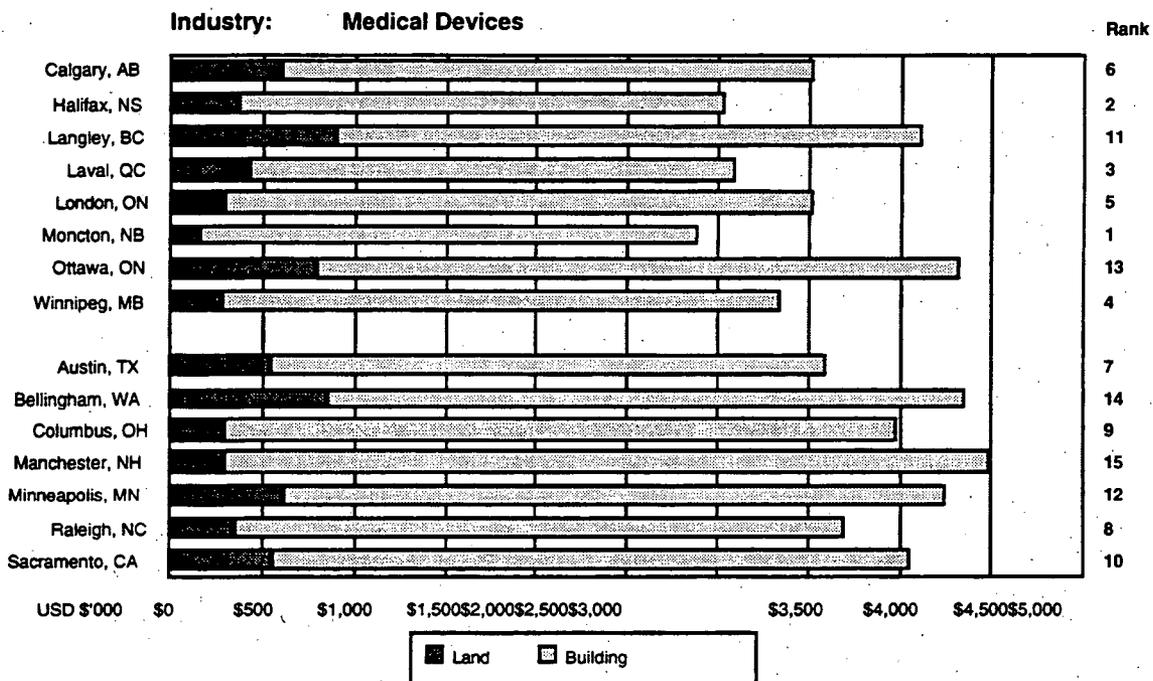
C. Initial facility investment costs

A comparison of the initial facility investment required in each of the cities examined is shown in Exhibit 3.

Initial facility investment costs represent approximately 40% of total start-up costs for the model medical devices manufacturer.

Based on the site and building requirements, costs range from \$2.9 million in Moncton to \$4.5 million in Manchester. On average the initial facility investment costs for the eight Canadian cities is \$3.5 million compared to \$4.1 million for the seven U.S. cities, a favourable difference of 17% for Canada.

Exhibit 3
Initial facility investment costs for medical devices manufacturing facility model



D. Labour, electricity, transportation and taxation costs

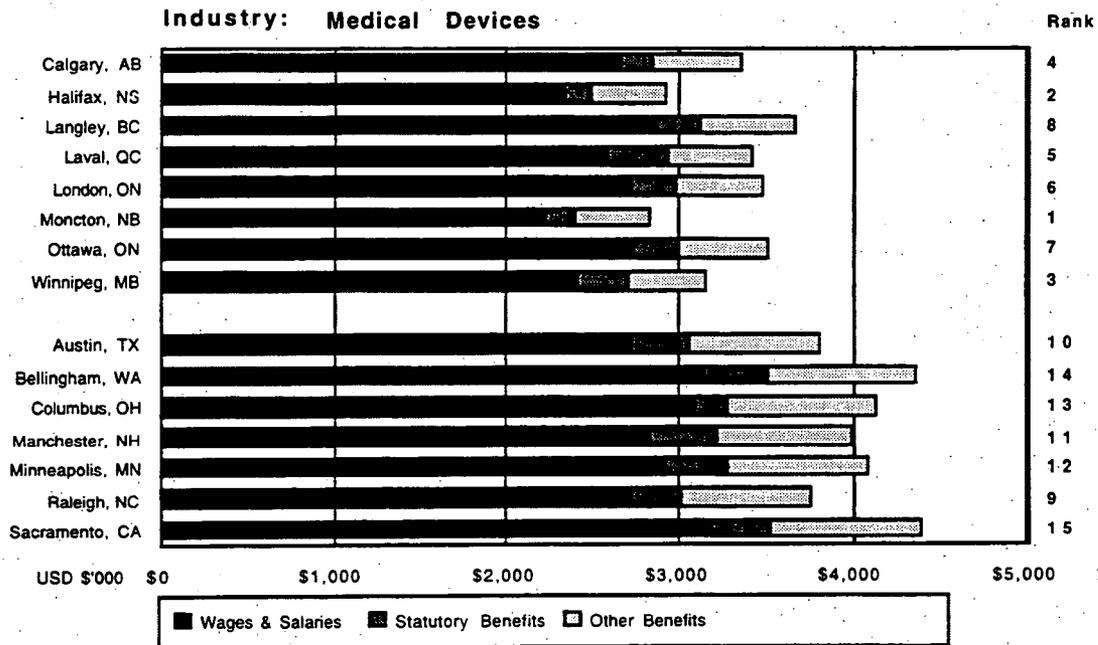
1. Labour costs

A comparison of annual labour costs for the model facility in each city is shown in Exhibit 4.

Our illustrative medical devices manufacturing facility employs 100 people. Annual labour costs include wages and salaries, statutory benefits and taxes and other benefits.

In all eight Canadian cities examined labour costs are lower than for the U.S. Labour costs are approximately 24% lower in Canada for this model facility.

Exhibit 4
Labour costs for medical devices manufacturing facility model

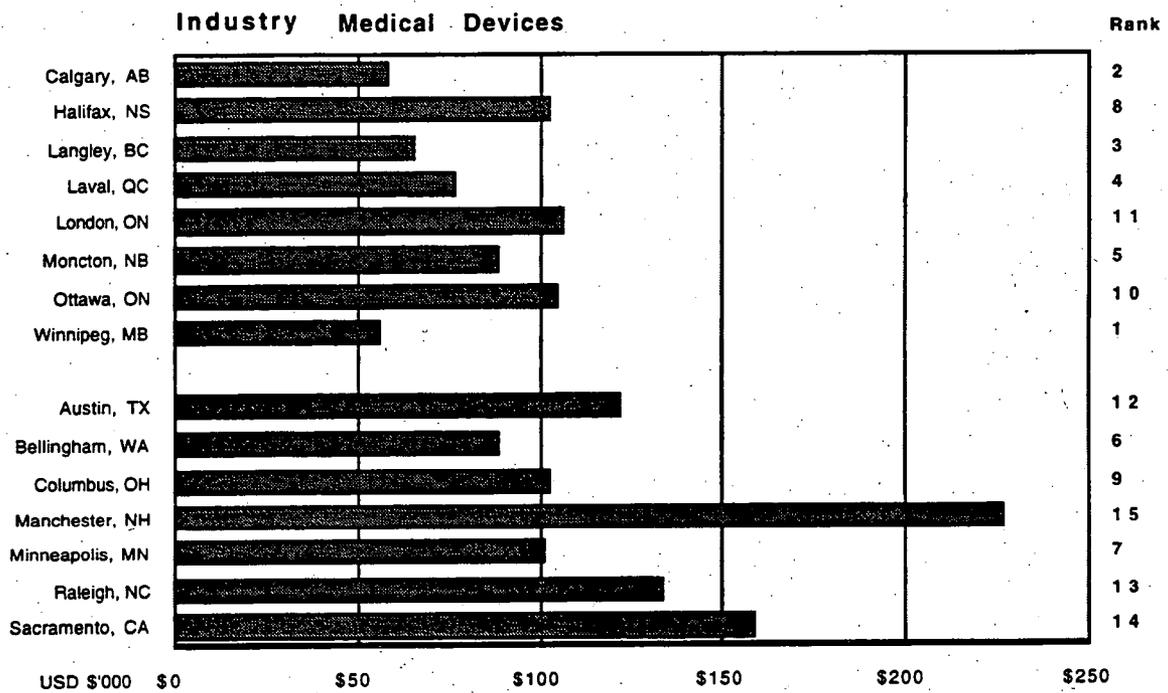


2. Electricity costs

A comparison of the annual electricity costs for the model manufacturer of medical devices is shown in Exhibit 5.

Electricity costs represent less than three per cent of the location-sensitive costs examined.

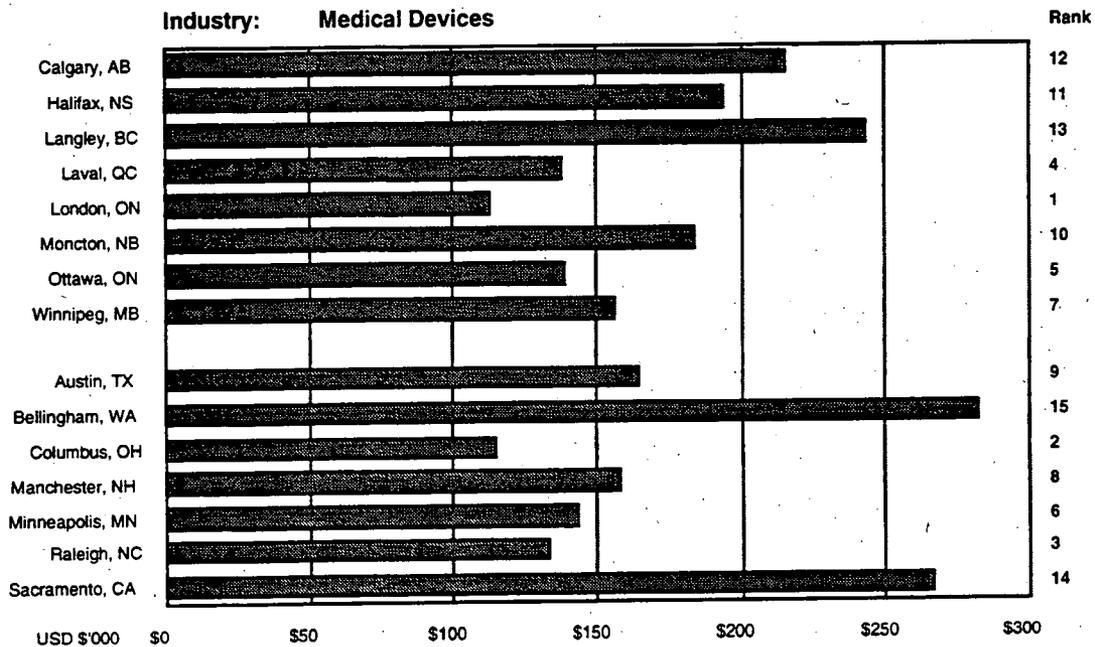
Exhibit 5
Electricity costs for medical devices manufacturing facility model



3. Transportation and distribution costs

Transportation costs represent less than three per cent of the location-sensitive costs examined. Transport costs are lowest for those manufacturers, both Canadian and U.S., located in the central industrial heartland of North America, due to their location within the region of greatest population density in North America. Due to their distance from the major Eastern population centres, West Coast producers face particularly high transportation costs. Of the West Coast locations, transportation costs for Langley are lower than those for either Bellingham or Sacramento. A comparison of the annual transportation costs for the model manufacturer of medical devices is shown in Exhibit 6.

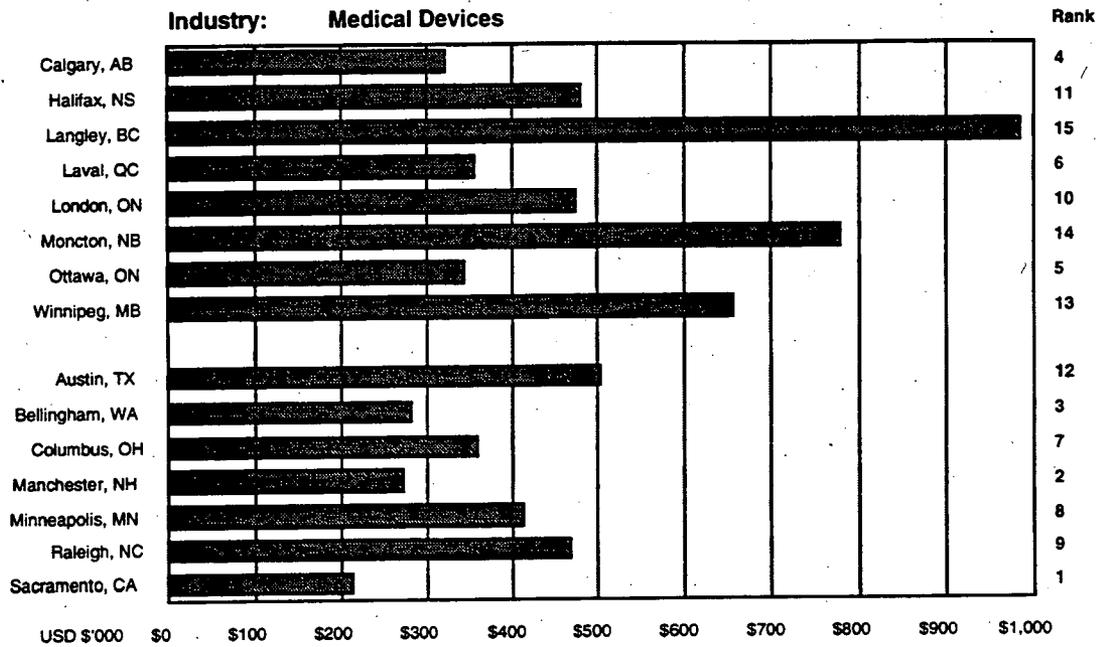
Exhibit 6
Transportation costs for medical devices manufacturing facility model



4. Taxation costs

A comparison of annualized taxation payments for each of the locations studied is shown in Exhibit 7.

Exhibit 7
Annualized taxation costs for medical devices manufacturing facility model



Appendix E

***Comparison Of Canadian And U.S. Business
Costs***

Pharmaceuticals

Comparison Of Canadian And U.S. Business Costs

Pharmaceuticals

On behalf of the Government of Canada, KPMG Management Consulting performed an independent analysis of the relative costs of doing business in the United States and Canada in 1995. We developed a model to compare typical operating costs from start-up to ten years of operation and is based on current tax rates, cost factors and exchange rates. In total seven industry areas were examined, including the pharmaceuticals industry. Our results for the pharmaceuticals industry are detailed in the following pages.

A. The pharmaceuticals industry

In 1993, U.S. pharmaceutical industry had shipments of \$69 billion, 5.6% higher than in the previous year¹. Exports represented 10% of industry shipments by U.S. manufacturers. In addition, exports to Canada reached \$844 million, representing 12.5% of industry exports.

The \$54 billion pharmaceutical preparations sector represents 78 percent of pharmaceutical industry shipments. In 1993, shipments by this sector increased by 5.5%. During the same period, exports increased by 13% to \$2.1 billion.

Our model facility is engaged in the manufacture of pharmaceutical preparations. This facility employs 120 people, and generates annual sales revenues of \$14 million. The facility requires a site of four acres of fully serviced land in a medium-industrial park setting, with access to major roads. A 70,000-square foot building will be constructed on the site. A summary of the key operating parameters for this model facility is shown in Exhibit 1.

B. Summary of location-sensitive costs

A comparisons of the location-sensitive costs for each of the cities examined is shown in Exhibit 2.

Location-sensitive operating costs represent 30%-35% of total costs for this model facility.

With the exception of Langley, all Canadian cities fare better than the seven U.S. cities examined for this facility. Location-sensitive costs in Langley are marginally lower than those of neighbouring Bellingham.

¹Source: *U.S. Industrial Outlook, 1994, U.S. Department of Commerce.*

Exhibit 1
Key operating parameters for pharmaceuticals manufacturing facility model

Labour Requirements

Plant management	1 General Manager
	6 Senior Managers (e.g., Finance, Purchasing, Personnel)
	16 Administrative Support (e.g., secretaries, receptionist, clerks)
Supervisors	5 Production Supervisors
Technical	4 Engineers and Technicians
	20 Lab Technicians
Operators	40 Machine Tool Operators
	8 Machinists and Mechanics
Other	15 Warehouse Workers & Material Handlers
	5 Helpers, Guards, and Facility Maintenance
Total	<u>120</u>

Electrical power requirements:

400 KVA demand
 200,000 KwH monthly consumption

Site requirements:

6 acre site
 70,000 square foot building

Initial investment requirements:

\$2,000,000 Inventory
 \$2,000,000 Machinery & equipment
 \$1,000,000 Research & experimentation equipment
 \$200,000 Office equipment and furniture
 50% Percentage equity financing

Operating characteristics:

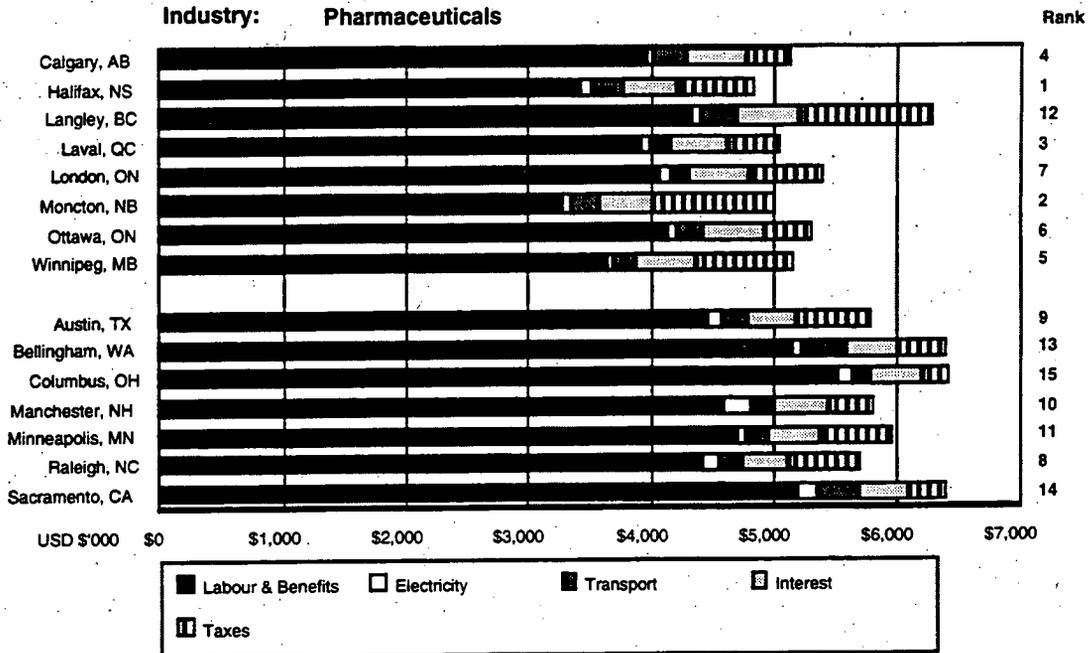
\$18,000,000 Annual sales at steady state production
 \$1,100,000 Annual investments in research and experimentation
 25% Material costs as a percentage of sales revenue
 33% Other operating costs as a percentage of sales revenue

Distribution Pattern

(Truckloads per annum)

	31 Atlanta
	28 Chicago
	18 Los Angeles
	28 New York City
	8 Seattle
	<u>7 Toronto</u>
Total	<u>120</u>

Exhibit 2
Location-sensitive operating costs for pharmaceuticals manufacturing facility model



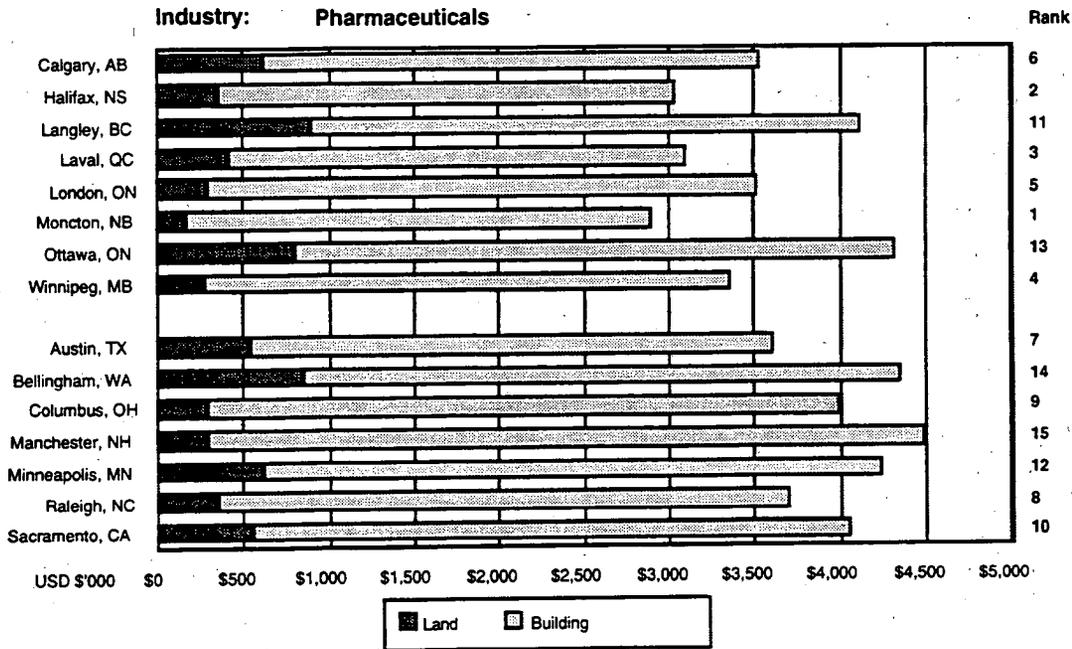
C. Initial facility investment costs

A comparison of the initial facility investment required in each of the cities examined is shown in Exhibit 3.

Initial facility investment costs represent between 40%-45% of total start-up costs for this model facility.

Based on the site and building requirements, costs range from \$2.9 million in Moncton to \$4.5 million in Manchester. On average the initial facility investment costs for the eight Canadian cities is \$3.5 million compared to \$4.1 million for the seven U.S. cities, a favourable difference of 17% for Canada.

Exhibit 3
Initial facility investment costs for pharmaceuticals manufacturing facility model



D. Labour, electricity, transportation and taxation costs

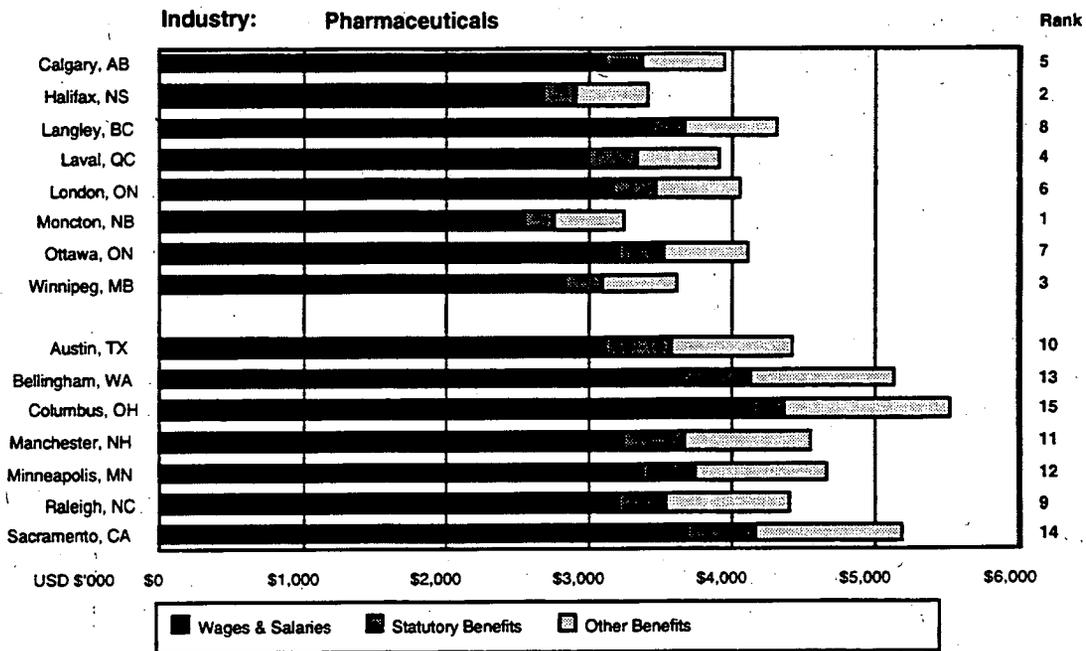
1. Labour costs

A comparison of annual labour costs for each of the locations is shown in Exhibit 4.

Our model facility employs 120 people. Annual labour costs include wages and salaries, statutory benefits, taxes and other benefits.

In all eight Canadian cities examined, labour costs are lower than for the U.S. Labour costs are approximately 26% lower in Canada for this model facility.

Exhibit 4
Labour costs for pharmaceuticals manufacturing facility model

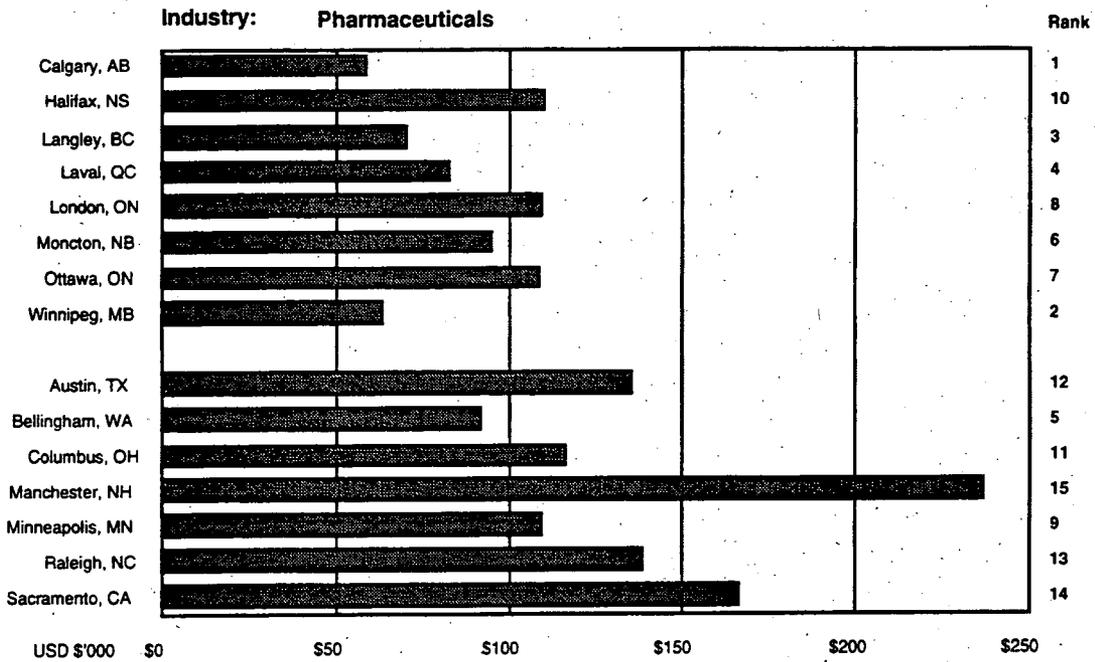


2. Electricity costs

A comparison of the annual electricity costs for the model manufacturer of pharmaceuticals is shown in Exhibit 5.

Electricity costs represent less than three per cent of the location-sensitive costs examined.

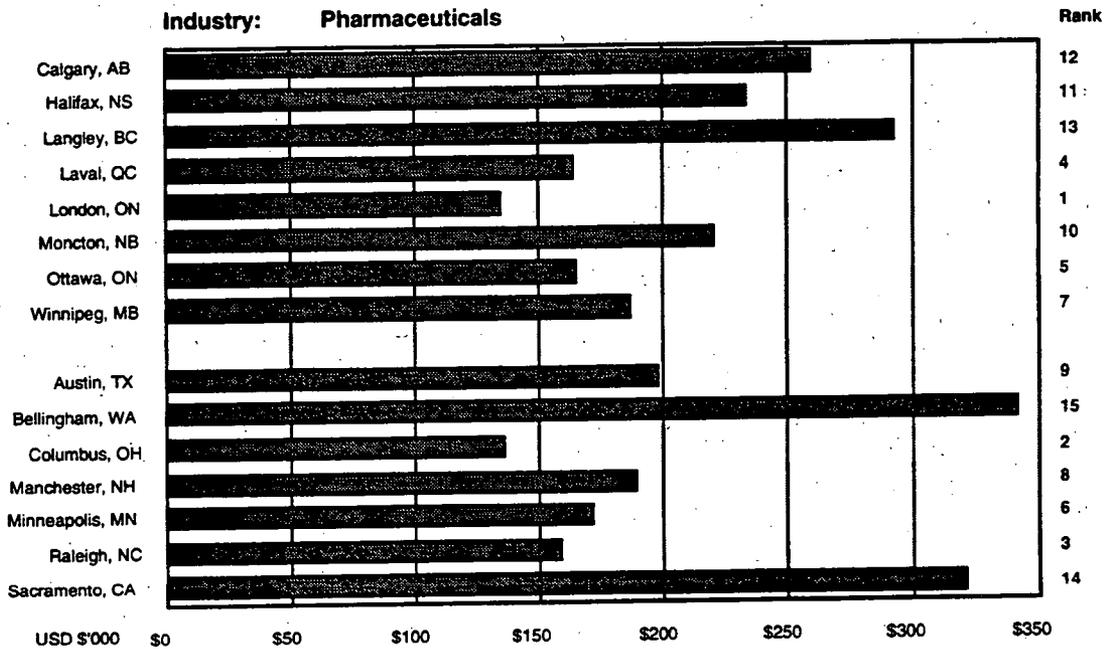
Exhibit 5
Electricity costs for pharmaceuticals manufacturing facility model



3. Transportation and distribution costs

Transportation costs represent less than four per cent of the location-sensitive costs examined. Although transportation costs faced by Canadian producers are lower on a per-mile basis than those faced by their U.S. counterparts, the greater shipping distances from the Canadian locations means that total transport costs for the Canadian cities are comparable to or slightly higher than for the U.S. cities. A comparison of the annual transportation costs for the model manufacturer of pharmaceuticals is shown in Exhibit 6.

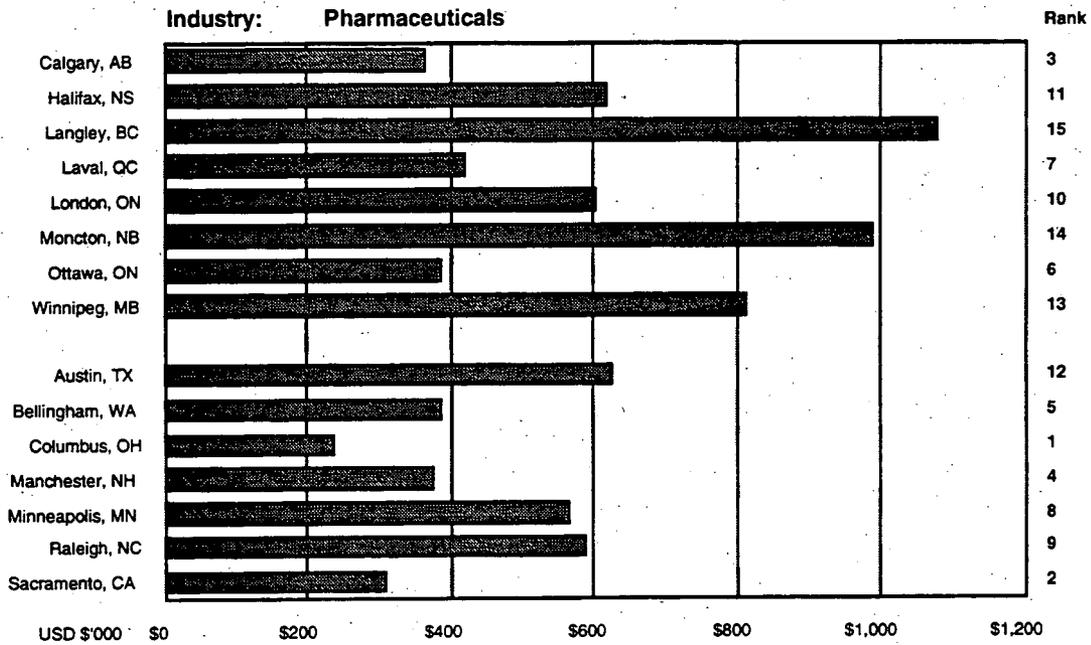
Exhibit 6
Transportation costs for pharmaceuticals manufacturing facility model



4. Taxation costs

A comparison of annualized taxation payments for each of the locations studied is shown in Exhibit 7.

Exhibit 7
Annualized taxation costs for pharmaceuticals manufacturing facility model



Appendix F

***Comparison Of Canadian And U.S. Business
Costs***

Software

Comparison Of Canadian And U.S. Business Costs

Software

On behalf of the Government of Canada, KPMG Management Consulting performed an independent analysis of the relative costs of doing business in the United States and Canada in 1995. We developed a model to compare typical operating costs from start-up to ten years of operation that is based on current tax rates, cost factors and exchange rates. In total seven industry areas were examined, including the software industry. Our results for the software industry are detailed in the following pages.

A. The software industry

The packaged software industry was one of the fastest growing sectors of the U.S. economy in 1993. The software market was approximately \$32 billion in 1993, an increase of 12.6% over 1992. Employment in this industry has risen steadily since labour statistics have been available with approximately 435,000 people employed in the U.S. at June 1993. The U.S. has remained the largest single-country market for packaged software with a world market share of 44.7% in 1993.¹

Our model facility, which is engaged in the development and production of software, employs 100 people and generates annual sales revenues of \$17 million. The facility requires a site of five acres of fully serviced land in a medium to light industrial park setting, with access to major roads. A 50,000-square foot building will be constructed on the site. A summary of the key operating parameters for our model facility is shown in Exhibit 1.

B. Location-sensitive operating costs

A comparison of the location-sensitive costs for each of the cities examined is shown in Exhibit 2.

Location-sensitive costs represent 30%-35% of total costs for this model facility.

All eight Canadian cities that were examined ranked higher than the seven U.S. cities.

¹Source: *U.S. Industrial Outlook, 1994, U.S. Department of Commerce.*

Exhibit 1
Key operating parameters for software production facility model

Labour Requirements

Plant management	1 General Manager 5 Senior Managers (e.g., Finance, Purchasing, Personnel) 15 Administrative Support (e.g., secretaries, receptionist, clerks)
Supervisors	4 Production Supervisors
Technical	4 Engineers and Technicians
Operators	53 Programmers and Analysts 4 Skilled Machine Operators 4 Machinists and Mechanics
Other	7 Warehouse Workers & Material Handlers <u>3</u> Helpers, Guards, and Facility Maintenance
Total	<u>100</u>

Electrical power requirements:

250 KVA demand
 225,000 KWH monthly consumption

Site requirements:

5 acre site
 50,000 square foot building

Initial investment requirements:

\$3,000,000 Inventory
 \$1,000,000 Machinery & equipment
 \$2,000,000 Research & experimentation equipment
 \$100,000 Office equipment and furniture
 50% Percentage equity financing

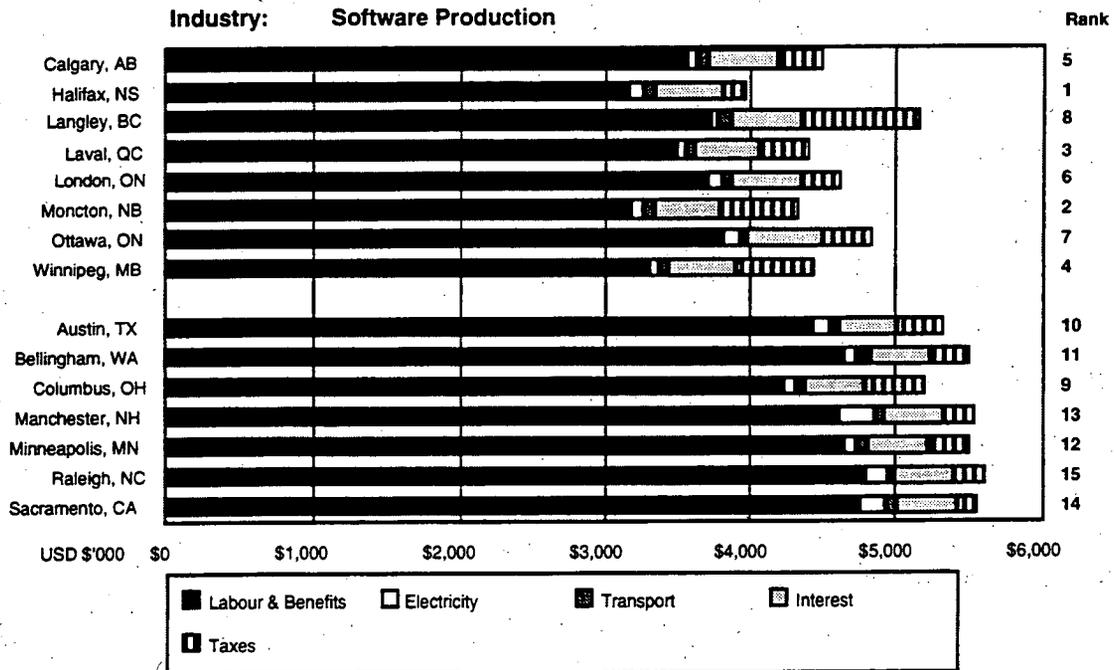
Operating characteristics:

\$17,000,000 Annual sales at steady state production
 \$3,500,000 Annual investments in research and experimentation
 4% Material costs as a percentage of sales revenue
 55% Other operating costs as a percentage of sales revenue

Distribution Pattern
 (Truckloads per annum)

	12 Los Angeles
	12 New York City
	<u>6</u> Toronto
Total	<u>30</u>

Exhibit 2
Location-sensitive operating costs for software manufacturing facility model



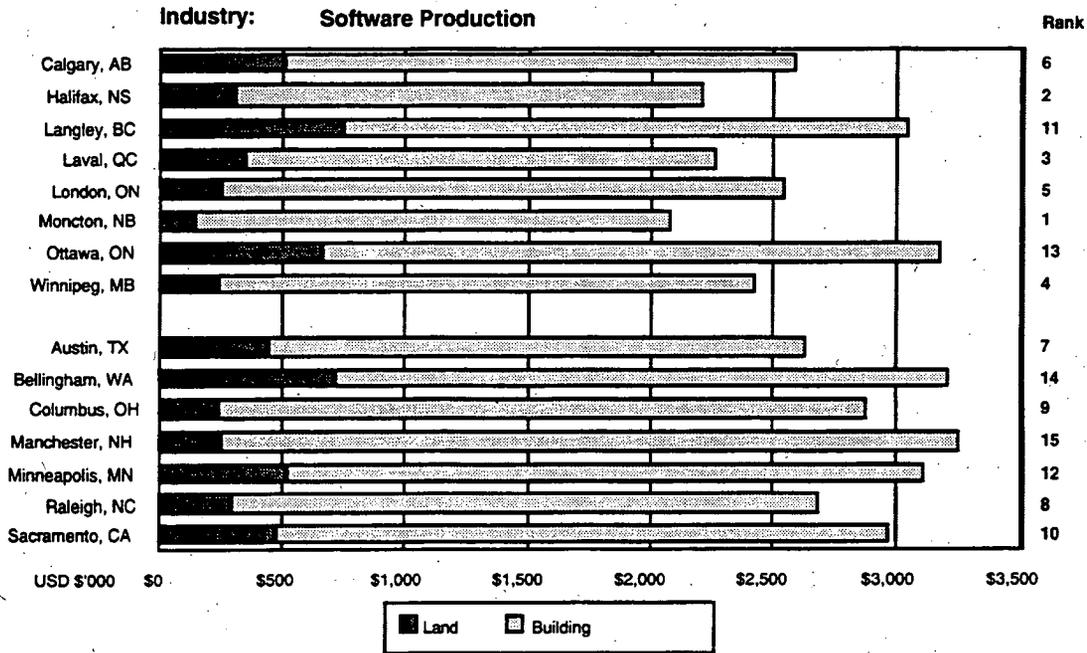
C. Initial facility investment costs

A comparison of the initial facility investment required in each of the cities examined is shown in Exhibit 3.

Initial facility investment costs represent 28%-34% of total start-up costs for the model software manufacturer.

Based on the site and building requirements, costs range from \$2.1 million for Moncton to \$3.3 million for Manchester. On average the initial facility investment costs for the eight Canadian cities is \$2.6 million compared to \$3.0 million for the seven U.S. cities, a favourable difference of 15% for Canada.

Exhibit 3
Initial facility investment costs for software manufacturing facility model



D. Labour, electricity, transportation and taxation costs

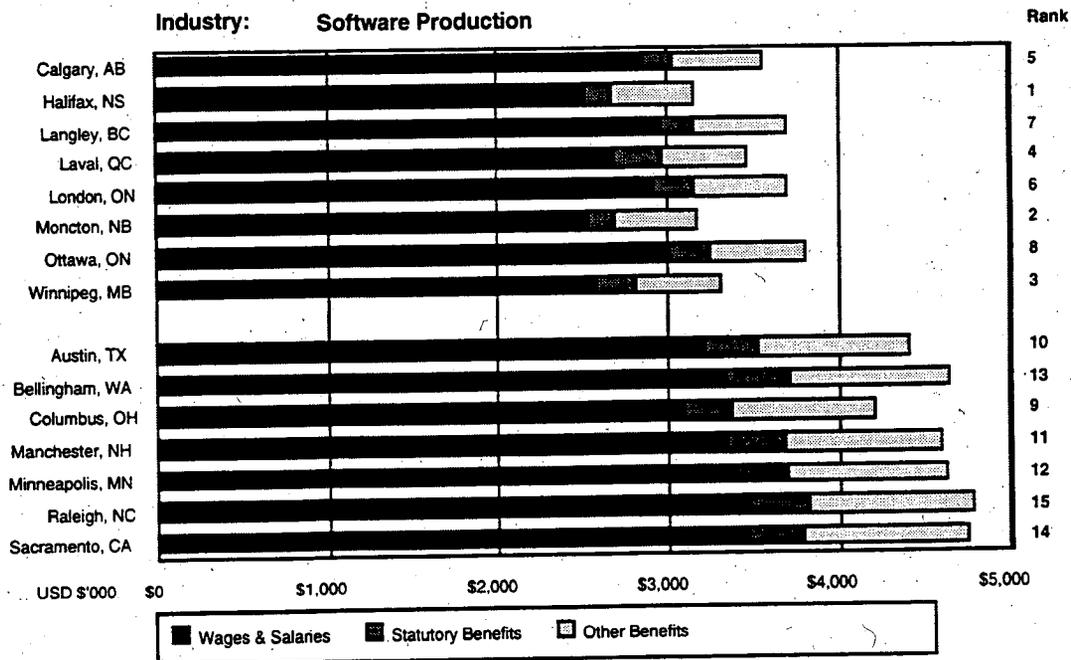
1. Labour costs

A comparison of annual labour costs for the model facility in each city is shown in Exhibit 4.

Our illustrative software manufacturing facility employs 100 people. Annual labour costs include wages and salaries, statutory benefits and taxes and other benefits.

In all Canadian cities examined, labour costs are lower than for the U.S. Labour costs are approximately 31% lower in Canada for this model facility.

Exhibit 4
Labour costs for software manufacturing facility model

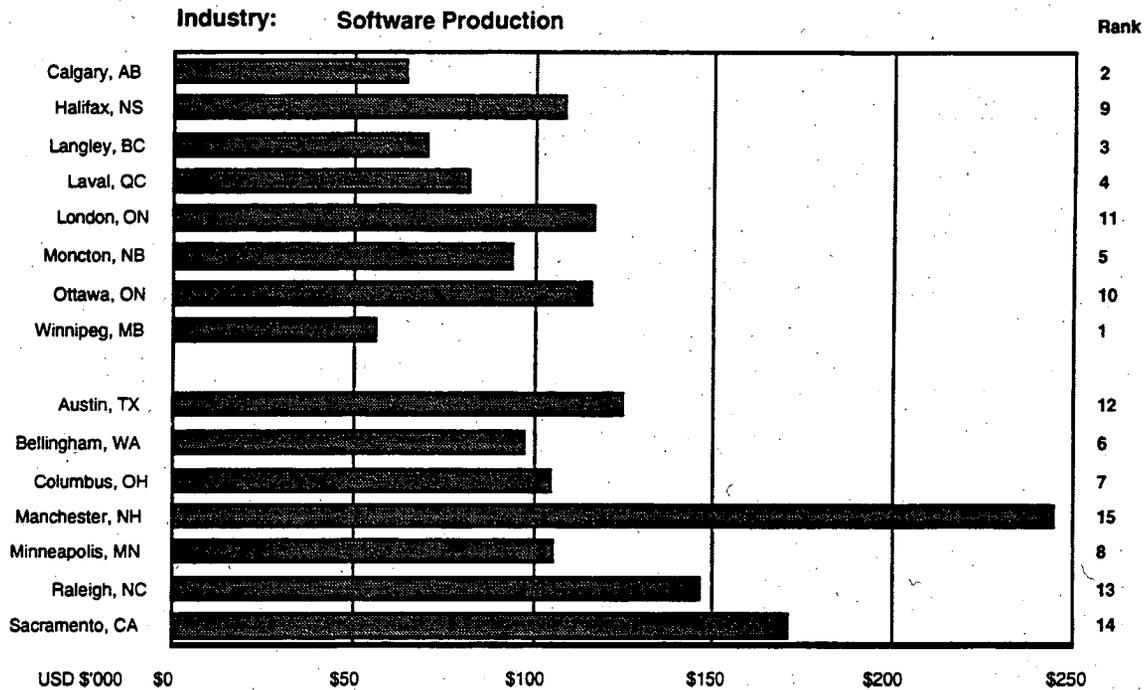


2. Electricity costs

A comparison of the annual electricity costs for the model manufacturer of software is shown in Exhibit 5.

Electricity costs represent less than three per cent of the location-sensitive costs examined.

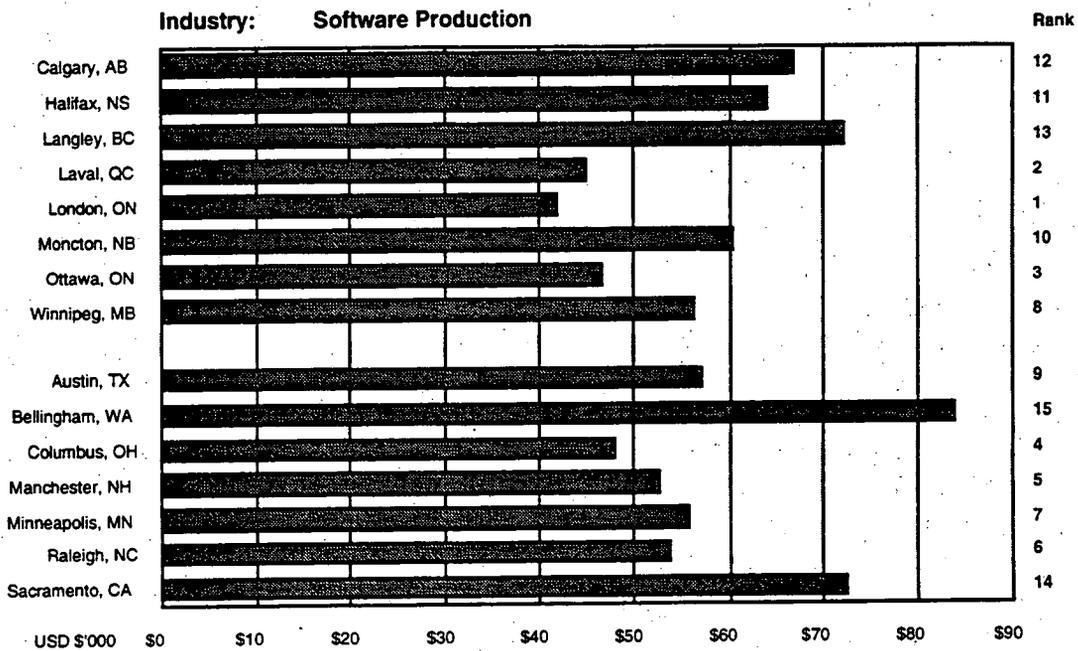
Exhibit 5
Electricity costs for software manufacturing facility model



3. Transportation and distribution costs

Transportation costs represent less than two per cent of the location-sensitive costs examined. The Canadian cities of London, Laval and Ottawa have the lowest overall transportation costs. However these cities represent the only three Canadian cities out of the top seven rankings. Producers in other Canadian cities fare less well due to increased shipping distances. A comparison of the annual transportation costs for the model software producer is shown in Exhibit G-6.

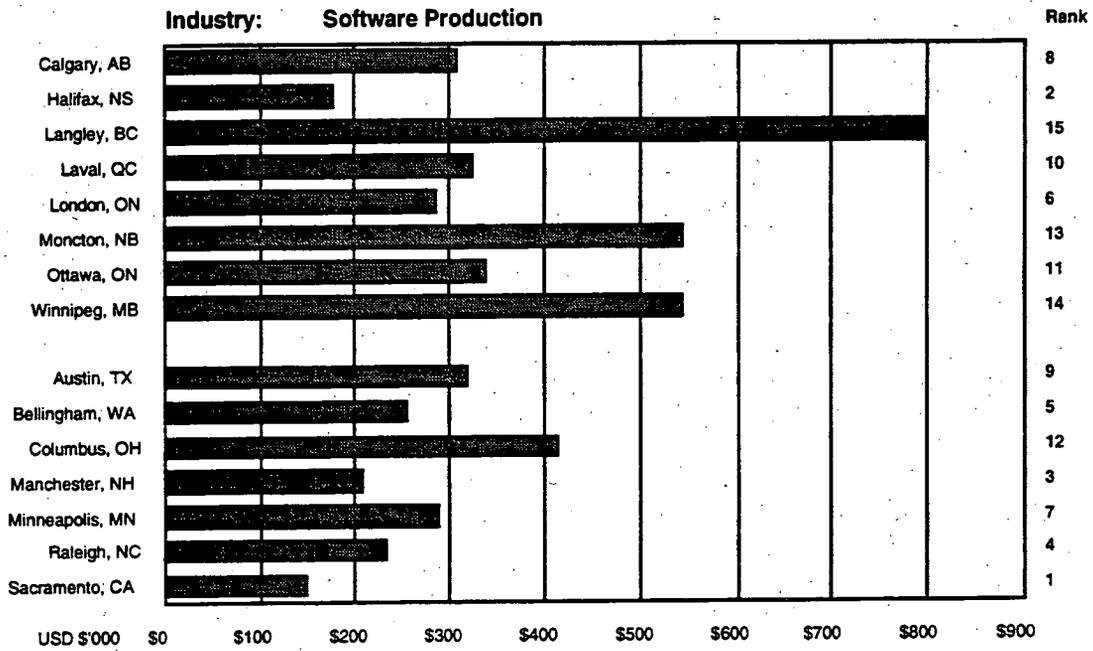
Exhibit 6
Transportation costs for software manufacturing facility model



4. Taxation costs

A comparison of annualized taxation payments for each of the locations studied is shown in Exhibit 7.

Exhibit 7
Annualized taxation costs for software manufacturing facility model



Appendix H

***Comparison Of Canadian And U.S. Business
Costs***

Telecommunications

Comparison Of Canadian And U.S. Business Costs

Telecommunications

On behalf of the Government of Canada, KPMG Management Consulting performed an independent analysis of the relative costs of doing business in the United States and Canada in 1995. We developed a model to compare typical operating costs from start-up to ten years of operation and that based on current tax rates, cost factors and exchange rates. In total seven industry areas were examined, including the telecommunications industry. Our results for the telecommunications industry are detailed in the following pages.

A. The telecommunications industry

The U.S. telecommunications equipment industry had shipments of \$35.5 billion in 1993 with Canada accounting for 16% of the U.S. export market. Facsimile-modem boards for use in personal computers equaled facsimile shipments in 1993 and are expected to continue to increase over the next five years.¹

Our model facility is engaged in the manufacture of modems. This facility employs 120 people, and generates annual sales revenues of \$30 million. The facility requires a site of six acres of fully serviced land in a medium-industrial park setting, with access to major roads. A 60,000-square foot building will be constructed on the site. A summary of the key operating parameters for this model facility is shown in Exhibit 1.

B. Summary of location-sensitive costs

A comparison of location-sensitive operating costs for each of the cities examined is shown in Exhibit 2.

Location-sensitive costs represent approximately 25% of total costs for this model facility.

With the exceptions of Langley and London, all Canadian cities fare better than the seven U.S. cities examined for this facility. Location-sensitive costs in Langley are 3.6% lower than those of neighbouring Bellingham.

¹Source: *U.S. Industrial Outlook, 1994, U.S. Department of Commerce.*

Exhibit 1
Key operating parameters for telecommunications equipment manufacturing facility model

Labour Requirements

Plant management	1 General Manager 6 Senior Managers (e.g., Finance, Purchasing, Personnel)
Supervisors	20 Administrative Support (e.g., secretaries, receptionist, clerks) 9 Production Supervisors
Technical	25 Engineers and Technicians
Operators	10 Machine Tool Operators 30 Machinists and Mechanics
Other	14 Warehouse Workers & Material Handlers 5 Helpers, Guards, and Facility Maintenance
Total	<u>120</u>

Electrical power requirements:

400 KVA demand
 250,000 Kwh monthly consumption

Site requirements:

6 acre site
 60,000 square foot building

Initial investment requirements:

\$5,000,000 Inventory
 \$4,000,000 Machinery & equipment
 \$2,000,000 Research & experimentation equipment
 \$400,000 Office equipment and furniture
 50% Percentage equity financing

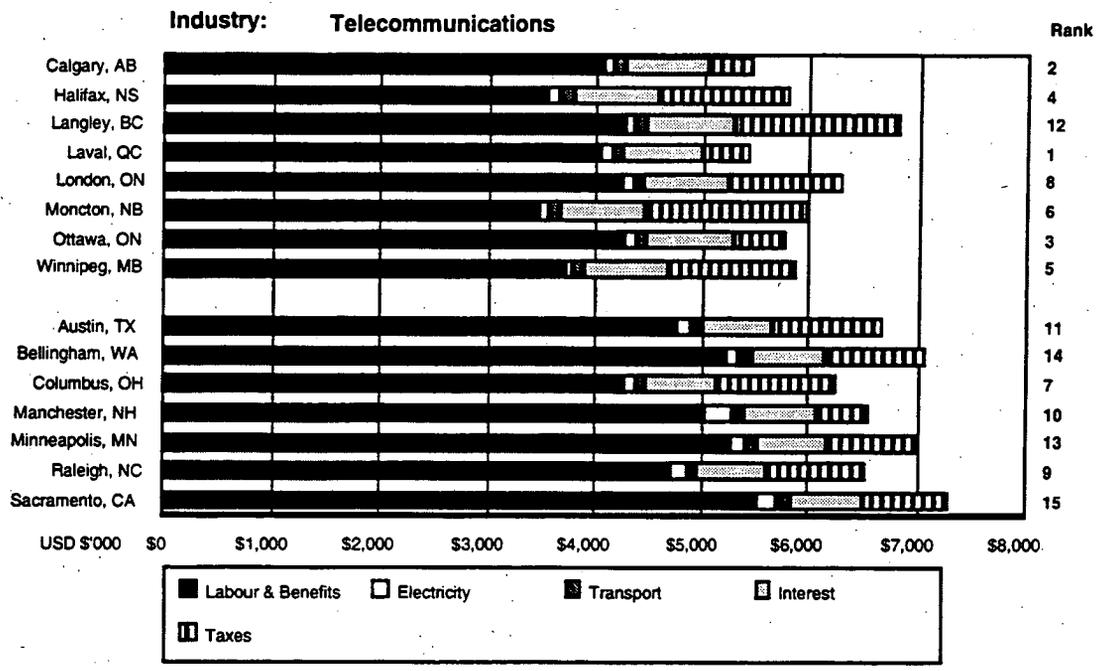
Operating characteristics:

\$30,000,000 Annual sales at steady state production
 \$2,000,000 Annual investments in research and experimentation
 40% Material costs as a percentage of sales revenue
 30% Other operating costs as a percentage of sales revenue

Distribution Pattern
 (Truckloads per annum)

	20 Los Angeles
	20 New York City
	10 Toronto
Total	<u>50</u>

Exhibit 2
Location-sensitive operating costs for telecommunications manufacturing facility model



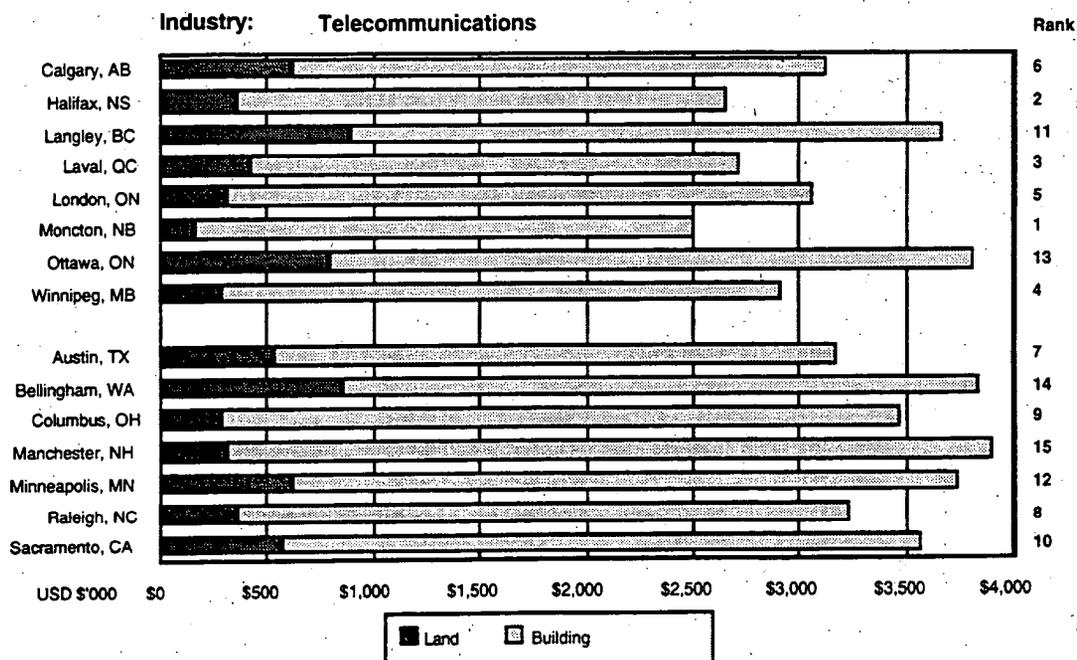
C. Initial facility investment costs

A comparison of the initial facility investment required in each of the cities examined is shown in Exhibit 3.

Initial facility investment costs represent 20%-25% of total start-up costs for the model telecommunications manufacturer.

Based on the site and building requirements, costs range from \$2.5 million for Moncton and \$3.9 million for Manchester. On average the initial facility investment costs for the eight Canadian cities is \$3.1 million compared to \$3.6 million for the seven U.S. cities, a favourable difference of 16% for Canada.

Exhibit 3
Initial facility investment costs for telecommunications manufacturing facility model



D. Labour, electricity, transportation and taxation costs

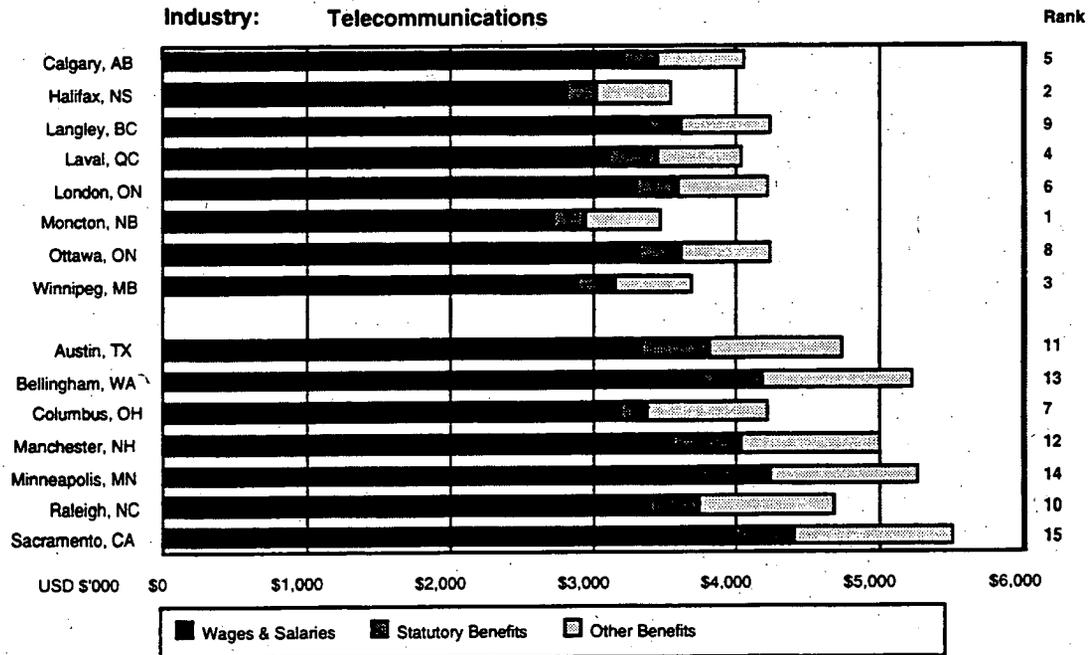
1. Labour costs

A comparison of annual labour costs in each of the locations is shown in Exhibit 4.

Our model telecommunications manufacturing facility employs 120 people. Annual labour costs include wages and salaries, statutory benefits, taxes and other benefits.

In all Canadian cities examined, labour costs are lower than for the U.S. Labour costs are approximately 26% lower in Canada for this model facility.

Exhibit 4
Labour costs for telecommunications manufacturing facility model

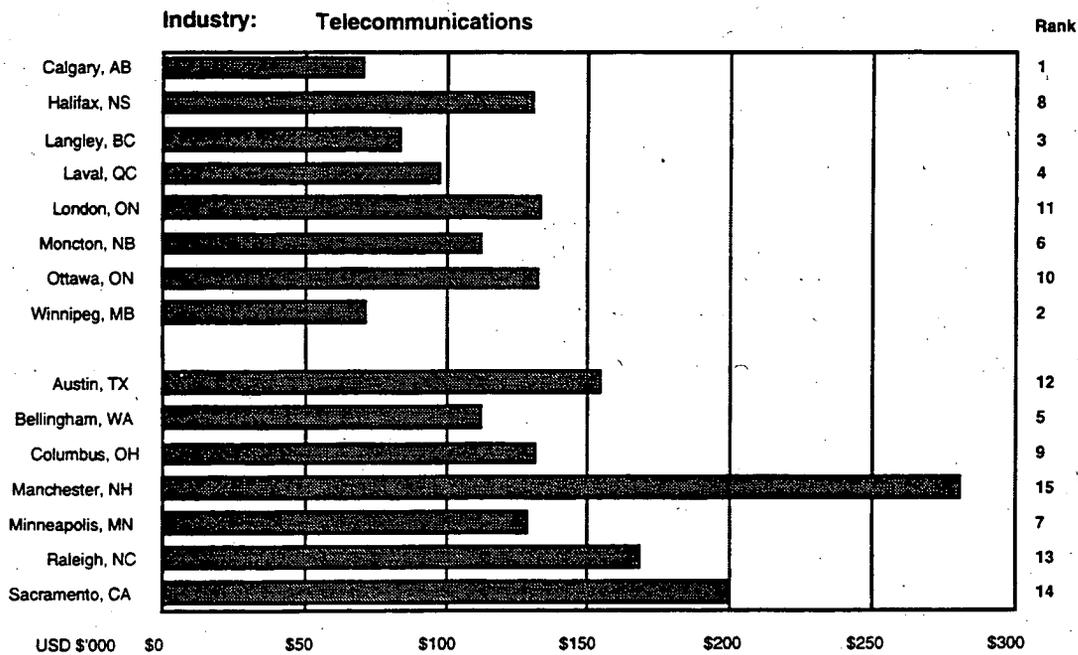


2. Electricity costs

A comparison of the annual electricity costs for the model manufacturer of telecommunications is shown in Exhibit 5.

Electricity costs represent less than three per cent of the location-sensitive costs examined.

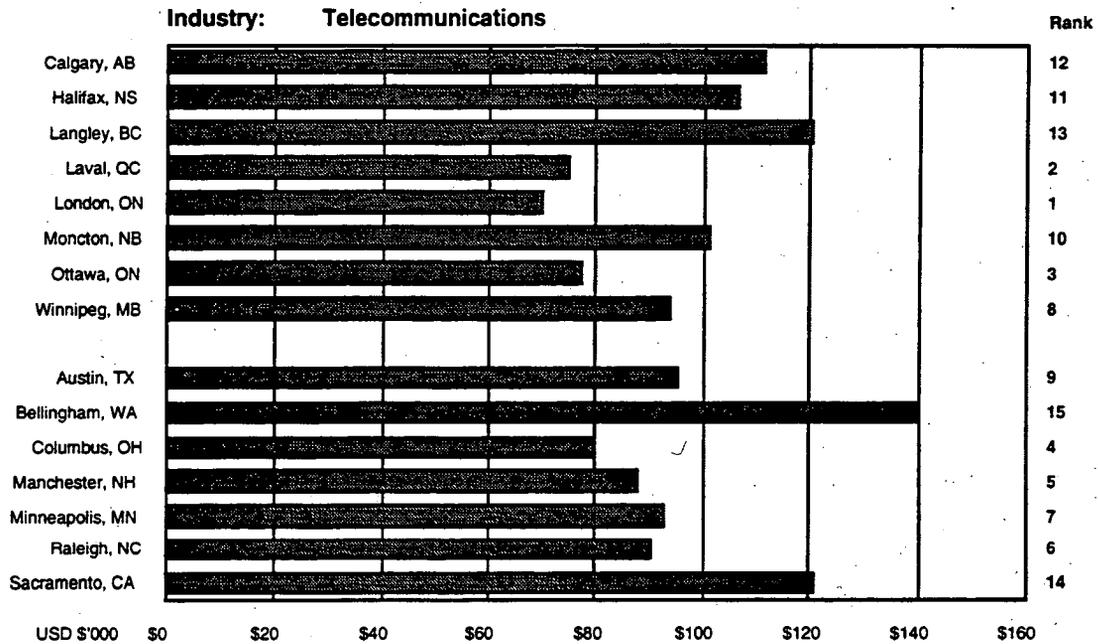
Exhibit 5
Electricity costs for telecommunications manufacturing facility model



3. Transportation and distribution costs

Transportation costs represent less than two per cent of the location-sensitive costs examined. The Canadian cities of London, Laval and Ottawa have the lowest overall transportation costs. However these cities represent the only three Canadian cities out of the top seven rankings. Producers in other Canadian cities fare less well due to increased shipping distances. A comparison of the annual transportation costs for the model telecommunications equipment manufacturer is shown in Exhibit 6.

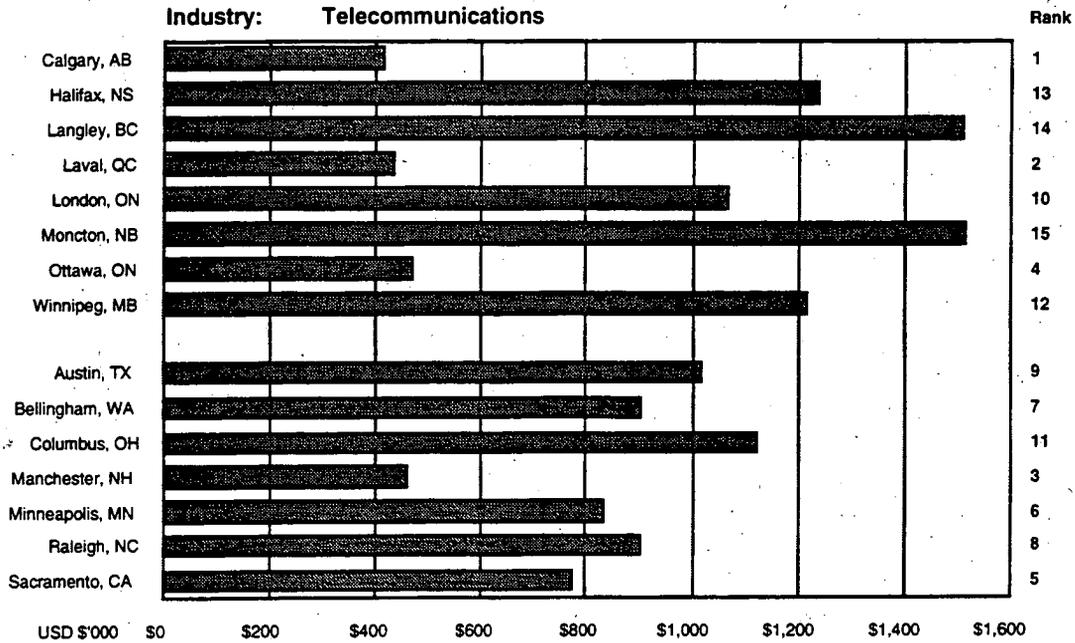
Exhibit 6
Transportation costs for telecommunications manufacturing facility model



4. Taxation costs

A comparison of annualized taxation payments for each of the locations studied is shown in Exhibit 7.

Exhibit 7
Annualized taxation costs for telecommunications manufacturing facility model



Appendix H

Detailed Profiles Of Jurisdictions

Appendix H

Detailed Profiles Of Jurisdictions

This appendix describes the seven United States and eight Canadian jurisdictions selected for analysis.

A. United States locations

1. Austin, Texas

Austin is located 233 miles north of the US-Mexico (Tamaulipas) border and 202 miles south of Dallas. The city is centered in Travis County, with the Austin metropolitan statistical area ("MSA") also including Bastrop, Caldwell, Hays and Williamson Counties.

The Austin MSA had a population of 901,048 in 1992 and the projected population for 1995 is 1,016,400, representing an average annual growth rate of 4.1%. For the decade from 1980 to 1990, Austin was the fastest growing metropolitan area in Texas.

Since the mid 1950's, Austin has become a significant centre for high-technology industries. In 1994 Austin's three largest private sector employers were IBM Corporation, Motorola Inc. and Dell Computer Corporation. In 1993, Fortune Magazine rated Austin fifth in its list of the ten best American cities for conducting business in the knowledge-intensive, high-technology industries. A further incentive to do business in Austin is provided by the existence of eight Foreign Trade Zones, covering 1,400 acres of industrial land. These zones make it possible for companies to realize tax savings and deferrals in respect of customs duties and excise taxes.

The Robert Mueller Municipal Airport in Austin is served by major airlines including American, American West, Continental, Delta, Northwest, Southwest, TWA, US Air, and United. Austin is also serviced by the Southern Pacific, Union Pacific, Missouri Pacific and Amtrak railway companies. The closest port facilities are located in Houston, 170 miles south-east from Austin.

Trucking companies, from local operators to interstate lines, provide full carrier services. Austin is located on Interstate Freeway I35, which is the main route between Dallas and Monterrey, Mexico's northern industrial hub. The Dallas-Fort

Examples of recent business investment decisions in Austin include the following:

- In 1995 Power Computing, a manufacturer of Apple Macintosh-clone computers announced its intention to establish a manufacturing facility in Austin, which is expected to create 500 new jobs.
- In 1994 Southwestern Bell Technology Resources Inc., part of the Southwestern Bell Telephone Group, announced its intention to relocate its research and development headquarters to Austin, creating a potential 175 new jobs.
- Also in 1994, Tokyo Electron Ltd, a producer of computer chip manufacturing equipment, announced the establishment of a new plant in Austin, creating 500 new jobs.
- In 1994 construction work began on additional factory space for both Advanced Micro Devices and Motorola Inc. Both of these companies are manufacturers of computer micro-chips, and the expansions in their operations are expected to result in 1,000 and 700 new jobs respectively. The new investment being made by each of these two corporations is estimated to be between \$700 million and \$1 billion.
- Other expansions and new investments in Austin in recent years include manufacturers of industrial lighting, orthopedic implants, telecommunications equipment, computer software, frozen foods, car batteries, heavy industrial equipment and satellites. New investments in the service industries in recent years include freight forwarders, advertisers, publishers and financial services specialists.

2. Bellingham, Washington

Bellingham is located 25 miles south of the US-Canada (British Columbia) border, 90 miles north of Seattle and 60 miles south of Vancouver, B.C. The city is located in Whatcom County.

Whatcom County had a population of 140,900 in 1993, making it the ninth most populous county in Washington State. The population of the county is expected to grow by between 1.5 and 3.0% annually through to the year 2000. In the five years to 1993, the employment growth rate in Bellingham was amongst the highest in the United States, with total job growth for the five year period reaching 32.2%. Also, in 1993, Whatcom County was one of only a few counties in Washington State to show a net increase in manufacturing jobs.

Although primary industries have been the traditional base for the economy of Whatcom County, significant industrialization began to occur in the 1960's. Today, the major industrial employers in Bellingham include Georgia Pacific, Bellingham Frozen Foods, and Ershigs Inc.

Bellingham International Airport provides passenger, freight, and general aviation services with a primary runway and an additional 1,300 acres for expansion. Horizon Air and United Express provide daily scheduled commuter services between Bellingham and Seattle-Tacoma International Airport. A number of industrial developments are in close proximity to Bellingham Airport and the Foreign Trade Zone 129 which covers 630 acres of industrial land in this area. The Port of Bellingham is the northernmost port district in the continental United States, and the closest deep water port in the U.S. to the eastern Pacific Rim countries and Alaska.

Rail transportation is provided by the Burlington Northern Railroad Company with 37 active spurs in Whatcom County. The Canadian Pacific and Canadian National railways provide rail links to Canada. The Interstate Freeway I5 is within 30 minutes of all identified industrial locations in Whatcom County, and both Vancouver, BC and Seattle, WA are less than 90 minutes away. Together, these two cities represent a potential market in excess of 3.5 million.

Examples of recent business investment decisions in Whatcom County include the following:

- Tenaska completed construction of a \$100 million co-generation plant which produces steam and electricity. The facility employs 23 people.
- Layfield Plastics opened a facility designed to manufacture plastic membrane liners. Capital investment is estimated at \$1 million. The facility will employ 18 people at start-up and will grow to 25 people at the beginning of the second year of operation.
- Shotco Ammunition Inc. opened a facility designed to manufacture shotgun shells. The \$1 million facility is expected to employ 10-15 people. The company plans to expand production to manufacture brass cartridge cases in the future.
- Padden Creek Marine, which established its custom yacht and fiberglass products manufacturing operations in 1990, recently expanded its existing operations in the Whatcom County area. The company expects employment to increase from 25 to 50 employees.
- The Beacon Group will be establishing a 148-acre film studio and industrial/commercial complex. At project completion, employment is expected to be 375 and investment is expected to be \$65 million.

3. Columbus, Ohio

Columbus is centrally located within the state of Ohio, 186 miles south of Detroit and 311 miles south-east of Chicago. The Columbus MSA covers a total of seven counties, with the city of Columbus in Franklin County.

The 1990 census reported the population of the Columbus MSA as 1,377,419, with an average annual growth rate of 1.03% since 1980. The population growth rate is expected to slow slightly during the 1990's to an average annual rate of 0.88%, and the population is expected to reach 1,504,000 by the year 2000.

Columbus is a major distribution hub, with over 40 million square feet of building space allocated to major logistical functions. Three major trade companies collectively occupy ten million square feet of this space. The three largest manufacturing employers in Columbus are Honda of America, AT&T and Abbott Laboratories. Honda is also the largest private sector employer in Columbus.

Columbus is also the only United Nations designated Trade Point Centre in North America. This network of 40 cities worldwide was established by the United Nations Conference on Trade and Development, to help develop and speed up international trade through the use of information technologies. Locally, this project has been dubbed "Info-Port".

Columbus International Airport is serviced by nine major airlines with non-stop services to 30 main American cities. A second airfield for freight operations exists at Rickenbacker Air/Industrial Park, which combines a major airfield, an industrial park and the benefits of a Foreign Trade Zone.

The closest port facilities to Columbus are located in Cleveland. However this port is predominantly a commodity port and does not handle container goods. Significant intermodal facilities exist in Columbus to expedite the transfer of goods by road or rail to deep water port facilities in Baltimore or New York on the east coast or to Seattle or Los Angeles on the west coast. These intermodal facilities are being actively developed by the Greater Columbus Inland Port Commission in partnership with a number of private enterprises.

Rail services are provided by three carriers offering intrastate and interstate service. Motor carrier services are provided by 142 firms, with over 30 firms providing inter-state and international services. More than one half of the population of America is located within 500 miles, or one day's drive, of Columbus.

Examples of recent business investment decisions in Columbus include the following:

- In 1993 Aeroflot, the Russian International Airline, established its new North American cargo hub in Columbus, and now has daily cargo flights between Moscow and Rickenbacker Airfield.
- During 1994 Honda Of America Inc. announced two significant expansions to its operations in Columbus. The first related to a \$15 million expansion of its vehicle production facilities, leading to the creation of 200 new jobs. Six months later Honda announced a further investment of \$10 million in a 73,000 square-foot expansion of its

research and development facilities, a move expected to create 250 new jobs.

- In 1992 retail giant Wal-Mart opened a new \$57 million state-of-the-art distribution centre in Columbus.
- In March 1994, Worthington Cylinder Corp. announced plans to invest \$21 million in a new facility for the manufacture of propane gas tanks. The new investment is expected to create up to 100 new jobs.
- In June 1994, Roxanne Laboratories, a German based pharmaceuticals manufacturer, announced a \$74 million expansion to its existing manufacturing facilities. The 185,000 square foot expansion is expected to add 199 new jobs by 1997 and a total of 250 new jobs over the next seven years.

4. Manchester, New Hampshire

Manchester is located approximately 58 miles north-west of the Boston. The city is centered in Hillsborough County, with the Manchester MSA also including parts of Rockingham and Merrimack Counties.

The Manchester MSA had an estimated population of 173,800 in 1992, and the projected population for 1999 is 173,700. The Greater Manchester Trade Area, covering all towns within a 20 mile radius of Manchester City, had an estimated population of 558,300, representing exactly 50% of the population of the state of New Hampshire. The population of the Greater Manchester Trade Area is expected to grow at an average annual rate of 0.8% through to the year 2000.

Manchester is home to more than 200 diversified manufacturing firms, with key industries being metal products, electrical products, machinery and plastics. Manchester is also the financial and commercial centre for the northern New England region. The three largest private sector employers in Manchester, all of which are in service industries, are Optima Health Inc., First NH Bank and Alexander's Shop & Save. The three largest manufacturing employers are Osram Sylvania, General Electric and Velcro USA.

Manchester Airport is serviced by four regional airlines as well as Continental, Delta, US Air and United, who provide daily non-stop services to Washington DC (National), Chicago, Pittsburgh, Philadelphia and New York. The Port of New Hampshire, located 45 minutes away in Portsmouth, provides intermodal transport services and is a year-round deep water port. Railway services are provided by the Boston and Maine Railroad Company. A full range of trucking services are also available. Both the industrial area surrounding the airport and the Portsmouth shipping terminal are federally designated Foreign Trade Zones.

Examples of recent business investment decisions in Manchester include the following:

- McCord-Winn Textron, a manufacturer of automotive parts, expanded employment in its 148,000 square foot facility from 50 people to 200 people.
- Southeastern Container, a plastics manufacturer, doubled employment in its 148,000 square foot facility from 53 people to 106 people.
- Cabletron Systems, Inc., a supplier of local area network (LAN) products, will be establishing a 62,000 square foot facility that employs 300 people.
- Windshields America, Inc., increased employment in its 30,000 square foot corporate headquarters by 20 people. The company's headquarters now employ 90 people.
- Oxford Health Plans, Inc., a health insurance firm, will be increasing employment in its 30,000 square foot offices from 300 people to 1,000 people.

5. Minneapolis-St Paul, Minnesota

Minneapolis and St Paul are the first and second largest cities in the State of Minnesota. Together they make up the Twin Cities metropolis. The Twin Cities are located approximately 410 miles north-west of Chicago and 240 miles south of the US-Canada (Ontario) border. The Twin Cities metropolitan area covers seven counties, with the city of Minneapolis being centered in Hennepin County.

The population of the Twin Cities was recorded as 2,278,721 in the 1990 census. The population of the Minneapolis MSA (which includes an additional four counties) in that year was 2,464,124. By the year 2000, the projected population of the Twin Cities is 2,571,000, representing an average annual growth rate of 1.21%. Between 1980 and 1990, the Twin Cities was the twelfth fastest growing region in America.

The Twin Cities is one of the major business centres in America. Seventeen Fortune 500 companies have their headquarters in the Twin Cities. Only New York, Chicago and Houston have higher concentrations of Fortune 500 headquarters. The Twin Cities are also headquarters for a further 14 companies from the Fortune 500 Services list. The industrial base is highly diversified, with some of the main industries being the manufacturing of computers, electronics, medical instruments, machinery and food processing. Major private sector employers in the Twin Cities include 3M, General Mills and Honeywell.

Minneapolis-St Paul International Airport is serviced by nine regional airlines, eight major American airlines and KLM Royal Dutch Airlines. The airport, along with some 200 acres of adjacent industrial land, comprises one of four Foreign Trade Zones in Minneapolis. Collectively, these four zones cover an area in excess of 4,200 acres.

As the northern-most navigable port on the Mississippi River, the port of Minneapolis-St Paul is able to handle goods both for the domestic market and for export. The port is served by barge traffic, which is able to transport a wide variety of cargo down river either for distribution or for transfer to ocean-going vessels.

Railroad services are provided by six railroad companies, with the four major companies being Burlington Northern Incorporated, Chicago and Northwestern Transportation Company, Soo Line Railroad Company and Amtrak. Minneapolis is one of the largest trucking centres in America and the Twin Cities are serviced by no fewer than 150 trucking firms. Other major centres such as Chicago, St Louis and Kansas City are all within reach for overnight road distribution.

Examples of recent business investment decisions in Minneapolis-St Paul include the following:

- In July 1994 West Publishing announced plans to expand its Minneapolis headquarters by 38%, adding an additional 300,000 square-foot to its existing 790,000 square-foot headquarters.
- In September 1994 Lund Industries Inc. announced its intention to invest \$5.5 million in the construction of a new 228,000 square-foot manufacturing facility in the Twin Cities' Anoka Enterprise Park.
- In December 1994 retail giant Dayton Hudson announced plans to relocate its credit operations from downtown Minneapolis to a new eight story office building on the city's western edge. At the same time, those credit operations currently conducted in Hayward, CA are to be relocated to Minneapolis, creating 500 new jobs in the Twin Cities.
- Rivertown Trading Co., a St Paul based distribution and fulfillment company, announced in August 1994 that it is constructing a new 202,000 square-foot distribution centre on a 25 acre site in the Twin Cities.
- In June 1994 Chicago-based First Industrial Realty Trust Inc. entered the Twin Cities market for the first time, buying up a total of 37 industrial properties. The first package, comprising 22 properties totalling 1.8 million square-feet, was purchased for \$71.7 million. A second package, comprising a further 15 properties, was subsequently purchased.

6. Raleigh-Durham, North Carolina

The Raleigh-Durham Metroplex is located 270 miles south-west of Washington, DC and 408 miles north-east of Atlanta. The city of Raleigh is centered in Wake County, while the Raleigh MSA includes all of Wake County and four neighbouring counties.

During the 1980's, the population of the Raleigh MSA grew at an average annual rate of 2.55%, to achieve a total population of 855,545 in 1990. Through the 1990's, the average population growth rate is expected to be 2.15% per annum and the expected population of the Raleigh MSA in the year 2000 is 1,058,000.

Although the economy in North Carolina is traditionally based on tobacco production, in recent years high-technology industries have come to play a significant role in the economy of Raleigh-Durham. Hundreds of high-technology firms operate within the metroplex, covering such diverse industries as software, biotechnology, electronics and telecommunications. The three largest private sector employers in Raleigh-Durham in 1992 were IBM Corporation, Northern Telecom Inc. and Glaxo Inc.

In 1993, Fortune Magazine rated Raleigh-Durham first in its listing of the ten best American cities for conducting business in the knowledge-intensive, high-technology industries. In 1994, Money Magazine rated Raleigh-Durham first in its listing of the 300 best places to live in America. Raleigh-Durham also has a designated Foreign Trade Zone as a further business incentive.

Raleigh-Durham International Airport is the east coast hub for American Airlines. Five other major airlines also provide services to the airport. Daily non-stop flights are available to all major centres in eastern USA as well as to London, Paris and a number of destinations in Latin America and the Caribbean. The closest port facilities are located in Wilmington and Morehead City, both of which are only a few hours from Raleigh-Durham by either road or rail.

Three major carriers provide rail transport services: Norfolk Southern, CSX Transportation and Amtrak. Road transport currently accounts for eighty percent of all goods moved out of North Carolina. Road freight services are provided to Raleigh-Durham by more than three hundred carriers with forty freight terminals located in the area. Raleigh's location in central North Carolina places it within a two day trucking distance of 60% of the American industrial base.

Examples of recent business investment decisions in the Raleigh-Durham Metroplex include the following:

- In 1993 IBM Corporation moved its telephone sales operations from Atlanta to Raleigh-Durham, creating 200 new jobs in the Raleigh area.

- In 1992 Glaxo Inc. began construction of a new 120,000 square-foot, \$34 million building which was scheduled to be completed by January 1995 and will house up to 250 employees.
- Mallinckrodt Veterinary Inc., a manufacturer of veterinary pharmaceuticals, is building a \$30 million facility to manufacture vaccine products to prevent diseases in livestock. The 100,000 square foot facility is located on a 100-acre site and should employ 80 people when it is completed in 1996.
- In 1993 EDS Corporation announced the relocation of their telemarketing division to Raleigh. This relocation, along with a simultaneous expansion of these operations, is expected to result in the creation of up to 250 new jobs.
- Creative Advertising and Marketing, an advertising and telemarketing company formerly based in Santa Barbara, California, is moving its corporate office to Raleigh, creating up to 200 new jobs for the region.

7. Sacramento, California

Sacramento is located 85 miles north-east of San Francisco in central California. The Sacramento MSA includes five counties, with the city being centered in Sacramento County. Sacramento is the capital of California.

In 1994, the population of the Sacramento MSA was estimated to be 1,698,400. From 1980 to 1994, population growth in Sacramento averaged 3.58% per annum, outpacing the Californian average of 2.5%.

The economic base of the city includes a broad spectrum of companies covering all main business sectors; manufacturing, services, wholesaling, retailing and transportation. The manufacturing sector has grown steadily since the late 1970's, with the most significant growth being in high-technology industries. In 1994, the three largest manufacturing employers in Sacramento were Hewlett-Packard, Intel Corporation and Sacramento Bee Newspapers.

The Sacramento Metropolitan Airport is serviced by nine major American airlines, with direct flights to all major centres in the western U.S. as well as non-stop services to Chicago, Dallas/Fort Worth, and Minneapolis, plus current services to New York and Washington, DC. Although Sacramento is located inland, a deep water shipping channel provides access from the port of Sacramento to the Pacific Ocean via San Francisco Bay. The port is located within the California Free Trade Zone, making it possible for companies to realize tax savings and deferrals in respect of customs duties and excise taxes.

The Sacramento region lies on the main lines of the Southern Pacific and Union Pacific railways, and is home to a major Southern Pacific Railroad marshaling yard.

Trucking companies, from local operators to interstate lines, provide full carrier services to the city. Sacramento is within one day's driving distance of almost the entire state of California, which has a population of 31.5 million.

Examples of recent business investment decisions in Sacramento include the following:

- In December 1994 Packard Bell announced its intention to establish a new computer manufacturing plant, which is expected to result in 2,500 additional jobs being created.
- In November 1994 Apple Computers Inc. announced plans to expand its computer circuit board manufacturing facilities in Sacramento. This is expected to increase Apple's total Sacramento workforce from 700 to 1,000.
- Futuremarket, a telemarketing company, established its operations in Sacramento in January 1994, with projected employment of 200.
- In January 1995, California Precision Molding announced its intention to establish a new plant for manufacturing compact disc cases. The projected employment from this new facility is 150.
- Purolater announced in October 1994 that it is to expand its filter manufacturing operations in Sacramento, creating an additional 100 jobs.

B. Canadian locations

1. Calgary, Alberta

Calgary is located in the south of the province of Alberta, at the eastern foot of the Rocky Mountains. Calgary is approximately 150 miles north of the Canada-US (Montana) border.

The population of Calgary in 1994 was 738,184. The population of the city has grown at an average annual rate of 1.76% for the ten years to 1994. By 1998 the population is expected to grow to 775,000. Calgary is the largest city on the Canadian Prairies.

Traditionally the energy sector has been the cornerstone of Calgary's economy. While Calgary is still the headquarters for the majority of oil and gas producers in Canada, in more recent years the City's economy has greatly diversified and manufacturing has grown significantly, particularly in high-technology industries. In 1994, the three largest private sector employers in Calgary were AGT Limited,

Nova Corporation and Northern Telecom Canada. Reflecting the continuing role of the energy sector, Amoco Canada Petroleum Co., Petro Canada and Shell Canada are also major employers.

Calgary International Airport is located 11 miles from the central business district. It is serviced by American Airlines, Air Canada, Canadian Air, KLM Royal Dutch Airlines and other Canadian and U.S. carriers. Non-stop services are available to 29 cities throughout North America and overseas. From Calgary, the closest water port facilities are located in Vancouver, 610 miles away by road or rail. Full intermodal container services are provided in Calgary by Alberta Intermodal Service Limited, to help facilitate transport of goods through remote port facilities.

Railway services are provided to Calgary by Canadian Pacific ("CP") Rail and Canadian National ("CN") Rail for freight and by Via Rail for passenger services. Calgary is located on the Trans-Canada Highway, and road transport services are provided by hundreds of Canadian and American firms to most points on the continent.

Examples of recent business investment decisions in Calgary include the following:

- Canada Safeway Ltd., the largest food retailer in Western Canada and a subsidiary of Safeway Inc. of Oakland, CA, is consolidating its administrative operations at its Calgary head office. The company expects to increase office staff in Calgary, currently at 225 employees, by 200 over the next year. Canada Safeway Ltd also recently invested CDN\$1.6 million in expanding its Lucerne Foods meat processing plant in Calgary.
- Computing Devices Canada, a designer and manufacturer of national defense products, opened a new 113,000 square foot plant to house the headquarters of its communications systems division. The company employs 320 people in Calgary, and expects to increase that number to 425.
- In 1993, Canadian Foremost Ltd, a manufacturer of commercial and industrial all terrain vehicles, invested CDN\$2.2 million in the construction of a new production facility. The facility was required to accommodate the business growth being achieved by Canadian Foremost, which is based partly on significant export sales to Russia.
- Greenfield Plastics Inc., a manufacturer of injection molded plastic garbage cans, furniture and other products, established a manufacturing plant in a former warehouse valued at CDN\$9 million. The plant is located on a 12.5 acre site and the company plans to double the size of its facility, currently 350,000 square feet, in about two years. The plant will initially employ 50 people, but the company expects to expand employment to 200 after two years.

- Crystalline Manufacturing Limited, a subsidiary of Crystalline Materials Corp. of San Ramon, CA, invested CDN \$6 million to establish manufacturing operations. The plant will employ about 15 people in the production of synthetic diamond powder.

2. Halifax-Dartmouth, Nova Scotia

The Halifax-Dartmouth metropolitan area is located on the Atlantic coast in central Nova Scotia. Halifax is approximately 750 miles east of Montreal and 600 miles north-east of Boston.

The population of the Halifax metropolitan area grew at an average annual rate of 1.39% between 1981 and 1993, by which time the metropolitan area had an estimated population of 327,800. The population is expected to continue growing for the five year period from 1993 to 1998, and by the end of this period the expected population is 350,000.

The most significant manufacturing industries in the Halifax-Dartmouth metropolitan area include the production of transportation equipment, food and beverage products and printing and publishing. Major private sector employers in the Halifax area include IMP Group, Newfoundland Capital Corporation, Farmers Co-operative Dairy and Pratt & Whitney Canada.

Halifax International Airport is the hub for air services in Atlantic Canada. It is serviced by two major Canadian airlines, KLM Royal Dutch Airlines and four regional airlines. Non-stop services are available from Halifax to Montreal, Ottawa, Toronto, Boston, New York, London, Amsterdam and Bermuda, as well as to a number of regional centres in Atlantic Canada.

The Halifax port is one of the world's deepest ports and is the northern-most ice-free port on the East Coast. Halifax is also the most easterly of all major North American ports, offering the shortest voyage times across the North Atlantic. As a result, Halifax tends to be the first point of call for westbound shipping and the last port of call for eastbound Trans-Atlantic shipping. Integral to the port facility are rail freight services provided by CN Rail. CN Rail completed construction of a major new intermodal freight terminal in Halifax in 1993. Rapid distribution at lower cost is aided by the use of double-stacking, on-dock container transport. With the completion of the Port Huron tunnel (between Ontario and Michigan) in 1995, rail distribution times from Halifax to the American central states will be cut significantly, and container freight unloaded in Halifax will be able to be delivered to Chicago before its ship reaches New York harbour.

Halifax is connected by major freeway to the Trans-Canada Highway, providing access to U.S. Interstate Highway 95 for access to Boston, New York and the Eastern Seaboard. Numerous major trucking firms provide road freight services for distribution across the city or across the continent.

Examples of recent business investment decisions in Halifax-Dartmouth include the following:

- The Canadian Red Cross and its German based partner, Miles Laboratories Inc., are establishing a CDN \$150 million plasma processing plant, the first such facility in Canada. This investment is expected to lead to the creation of 400 new jobs.
- Dynatek, a manufacturer of computer data storage systems, invested CDN \$17.5 million in a new manufacturing facility that will employ 250 people.
- Volvo Canada Ltd established car production facilities in Halifax's new Bayers Lakes Industrial Park. The facility, which employs 140 people, is Volvo's only production plant in North America and is also the processing and shipping centre for all fully imported Volvos bound for the Canadian market.
- Sears Canada will be expanding its call center for its catalogue operations, a CDN \$1.5 million project that involves 150 jobs.
- Intertape Polymer, a manufacturer of shrink wrap film, will be expanding its manufacturing operations in a CDN \$15.6 million project that involves 45 jobs.

3. Langley (Greater Vancouver), British Columbia

Langley is located in the Greater Vancouver Regional District and is approximately 30 miles south-east of downtown Vancouver and 130 miles north of Seattle. Langley comprises of two separate municipalities, the City of Langley and Langley Township. The southern boundary of Langley is defined by the Canada-US (Washington State) border.

In 1992, the population of the Greater Vancouver Regional District was 1.65 million. In the 1991 census, the population of Langley had reached 85,805, having grown at an average annual rate of 4.16% since the previous census in 1986. This rapid population growth is expected to slow to an average annual rate of 2.96% during the ten years to 2001, by which time it is expected that the population reach 114,800.

In recent years, business activity has flourished in Langley as industrial land becomes increasingly scarce in Vancouver. Both manufacturing and distribution enterprises have been locating in Langley, and major manufacturing sectors include wood products, plastics and printing.

Airport services are provided by Vancouver International Airport. Vancouver International Airport is serviced by two major Canadian airlines, 13 regional

airlines, five American airlines and nine foreign carriers. Together these airlines provide direct services to six European cities, 14 cities in the Asia-Pacific region, ten cities in America and Mexico and all major Canadian cities. With the signing of the open-skies agreement between Canada and America, in the next 14 months, five more American airlines are scheduled to commence flights to Vancouver, providing direct flights to an additional 12 American cities. A new terminal and runway are under construction.

The Port of Vancouver is Canada's largest port and Canada's only Pacific Ocean port. Measured in term of cargo volumes handled, the Vancouver port is the same size as the three busiest American ports: New York, Los Angeles and Long Beach, each of which handle approximately 65 to 70 million tons of cargo annually. The Vancouver port also has the advantage of being one-day's sailing time closer to the main Asian markets than the ports of Los Angeles or Long Beach.

Railway services to Greater Vancouver are provided by CN Rail, CP Rail, Burlington Northern, and BC Rail, with good rail access from Langley. By road, Seattle and its market of 2.1 million potential consumers are less than 2.5 hours away. There is one Canadian-US border crossing located in Langley, and the start of the U.S. Interstate Highway to Seattle and California, the I5, is only minutes from Langley. A number of sizable road freight companies are headquartered in Langley, with many more from Greater Vancouver being available to provide road freight services.

Examples of recent business investment decisions in Langley include the following:

- General Motors of Canada (Pacific Division) is moving their parts distribution, training and office facilities to a new CDN\$9 million, 160,000 square foot building in Langley. This facility is scheduled to be opened in April 1995 and will see the creation of 75 new jobs. In addition, the training facility is expected to host from 100 to 150 trainees daily.
- Columbia Chrome, a producer of turbine and mechanical power components, has chosen to locate its world headquarters in Langley. Internationally, Columbia Chrome employs 400 people, of which 45 are based in Langley. The numbers are expected to increase in the near future, as the company has recently signed a major new contract.
- Ledalite Architectural Products Inc. moved their manufacturing plants and corporate headquarters from a U.S. location to Langley. The company manufactures interior fluorescent lights for public spaces and ergonomic office environments, with 70% of their market in the United States. Their new facility employs 110 people and includes 50,000 square feet of office and plant space.

- Mitsui Home Company Limited, the largest home builder using 2x4 construction methods in Japan, opened a CDN \$12.5 million manufacturing facility. The 70,000 square foot facility currently employs 20 people, but this figure is expected to grow to 50. The output of the factory is solely destined for the Japanese market.
- West Coast Drugs, which operates the Pharmasave chain of drug stores, opened a new CDN \$4.8 million facility that includes its corporate headquarters offices, and warehouse and distribution operations. The new 80,000 square foot facility is located on a ten acre site and employs 80 people.

4. Laval (Montreal), Quebec

Laval is located directly across from the Island of Montreal, approximately 40 miles north of the Canada-US (New York State) border. From Laval, Toronto is approximately 335 miles to the south-east and New York City is approximately 365 miles to the south.

Laval is part of the Montreal Census Metropolitan Area, which in 1992 had an estimated population of 3.2 million. In 1994 the estimated population of Laval was 325,000, having grown at an average annual rate of 1.70% from 1986 to 1994. By 2001, Laval's population is expected to reach 345,000.

Laval has a significant and diversified industrial base. The most significant industrial market sectors in Laval include food processing, timber, pulp and paper products, printing and publishing, chemical products and plastics, metal products fabrication and pharmaceuticals. The three largest private-sector manufacturing employers in Laval are Nordic Marion Merrel Dow Canada, Les Piscines Trevi Inc. and Biochem Pharma Inc.

Laval is adjacent to Montreal, giving commuters 25-minute access to both Dorval airport and Mirabel International airport. Dorval and Mirabel airports are served by two major Canadian airlines, six U.S. airlines, 16 international airlines and 13 regional carriers. Collectively they provide direct, scheduled flights (non-stop, one-stop or multi-stop) to 58 cities in Canada, 44 cities throughout America and 33 cities in 22 countries throughout Europe, the Middle East, the Caribbean and Latin America. Water port facilities are provided through the Port of Montreal. When the Port of Montreal is closed by ice, alternative port facilities in Halifax, Boston and New York City are readily accessible by rail or road. Intermodal transportation services exist in Laval, making it possible to transfer sealed containers directly from the ship to the factory floor and vice-versa.

Rail cargo services are provided by CN Rail and CP Rail. Approximately thirty trucking firms located in Laval are engaged in regional and national deliveries. A major highway from Montreal links directly to American Interstate Highway 87, providing easy access to major centres such as New York City and Washington DC.

Examples of recent business investment decisions in Laval include the following:

- Servier Canada, an independent laboratory, is building a head office and research institute. The company is investing CDN \$10 million in a 140,000 square foot complex.
- The Institute for Research in Industrial Pharmacy has completed construction of a new CDN \$6.5 facility for basic and applied research in industrial pharmacy.
- Space Camp Canada Corporation will be building a CDN \$32 million facility that includes a museum and a training centre for space technologies.
- Hydro Quebec will be building a 102,000 square foot network distribution centre, at a cost of CDN \$258 million.
- The Armand Frappier institute is building a 58,000 square foot experimental biology facility, at a cost of CDN \$13 million.

5. London, Ontario

London, the regional center of southwestern Ontario, located on the strip of land lying between Lake Erie and Lake Huron. London is located centrally between Toronto, 118 miles to the north-east, Detroit, 120 miles to the south-west, and Cleveland, approximately 120 miles to the south.

Between 1986 and 1991, the population of the City of London grew at an average annual rate of 2.41% to 311,900. In the same year, the Greater London metropolitan area had a recorded population of 381,500. The city's population is expected to reach 366,000 by the year 2021.

London is located in the heart of the North American central industrial region. Manufacturing plays a major role in the economy of the city, and in June 1994 there were 14 manufacturers in London with more than 500 employees each. The most significant industries are automotive and transportation equipment, food processing and building products. The three largest manufacturing employers in London are Ford Motor Company of Canada Ltd, General Motors of Canada Ltd and Cami Automotive Inc. Other major employers, include 3M Canada Inc., Kellogg Canada Inc. and Labatt's Ontario Breweries.

London International Airport is located adjacent to prime industrial land. Four regional airlines service London, providing direct flights to Toronto, Ottawa, Montreal, Sarnia, Pittsburgh and Detroit. Connecting flights are available to New York and Washington DC. Full charter and air freight services are also provided. Port facilities are 24 miles away in Port Stanley, on Lake Erie. The nearest port capable of handling container cargo is Toronto, 118 miles away by road. In winter,

container traffic is sent by rail from the Port of Toronto to ice-free ports in Halifax and New York.

Rail freight services are provided to London by CN Rail, on a network that is fully integrated to the U.S. rail network. Passenger rail services are provided by both Via Rail and Amtrak. London is well placed for road transport, with Highway 401 access to Toronto in the east and Detroit in the west. A full range of road freight firms provide for all requirements from regional to continental distribution, including the handling of container traffic between London and the Port of Toronto.

Examples of recent business investment decisions in London include the following:

- 3M Canada Inc. has constructed a new Canadian Headquarters and Research complex on a 50 acre site. The 94,000 square foot office building is valued at CDN \$18 million. In addition, 3M has recently spent CDN \$12 million extending and upgrading their London production facilities.
- Kaiser Aluminum has constructed a 300,000 square foot aluminum extrusion plant on a 22-acre site in London. The value of the investment is CDN \$24 million. The plant currently employs a workforce of 170 and Kaiser intends to export 80% of its production from this plant.
- Bell Canada opened a direct marketing centre in London in May 1994, creating 120 new jobs.
- Diamond Aircraft Industries began production of its single-engine, two-seater DV20 Katana aircraft in a facility purchased in 1992. The facility is located on a 52-acre site that formerly housed a packaging plant and currently employs 120 people, with 80 more jobs expected to be added by the time full production levels are reached. In addition, Diamond have joined with Tacke Windpower for a CDN \$1.29 million project to produce a state-of-the-art wind turbine. Design and prototype construction work are taking place at the Diamond plant in London and, if plans for mass production go ahead, a further 100 jobs will be created.
- Siemens Automotive Ltd have recently invested CDN \$3 million in adding 124,000 square feet of space to its London production facilities.

6. Moncton, New Brunswick

Moncton is located in the eastern part of the province of New Brunswick, approximately 140 miles north-east of the Canada-US (Maine) border. Moncton is located 520 miles north-east of Boston and 660 miles east of Montreal. Moncton is located at the geographic centre of the Canadian Maritimes-region.

From 1981 to 1991, the Greater Moncton metropolitan area achieved an average population growth rate of 2.28% per annum, with the population being recorded as 106,503 in the 1991 census. By the year 2001, the population is expected to grow to 123,300.

Moncton has long had a mixed economy, with transportation, manufacturing and service firms all playing significant roles in the local economy. The most significant manufacturing sectors today include food processing, metal products, wood products, electrical and electronic products and transportation equipment. In the last few years there has been a rapid growth in telecommunications centres in Moncton, with Federal Express, Camco, Purolator, CP Express, CP Hotels & Resorts, UPS and Royal Bank of Canada all establishing major call centres in Moncton. As a result of these new arrivals, Moncton is rapidly becoming a call centre capital of North America. The largest private sector employers in Moncton today include Hub Meat Packers, Irving Tissue, Apex Industries, Telemonitoring Manufacturing, Eastern Bakeries and Greystone Energy Systems.

Moncton Airport is served by three regional airlines, providing frequent flights to Halifax, Montreal, Toronto and Boston. A significant advantage of the Moncton Airport is its virtually fog-free location, meaning that it suffers fewer weather-related air-traffic diversions than any other airport in Atlantic Canada. The closest water port facilities are located 146 miles to the south-east in Halifax-Dartmouth. Seasonal port facilities are also available through a number of New Brunswick ports located on the Gulf of St Lawrence.

Railway services are provided by CN Rail, which has its regional headquarters located in Moncton. CN Rail also operates a 380 acre marshalling yard in Moncton as its Atlantic region hub. The marshalling yard has full intermodal facilities to expedite the transport of goods to nearby ports. With a total workforce of 2,000, CN Rail is Moncton's largest single employer. Moncton is located on the Trans-Canada Highway and is at the road hub of Atlantic Canada. The Trans-Canada Highway provides access to all major centres in Canada as well as connection to American Interstate Highway 95 for access to Boston and New York. A number of regional and national trucking firms are based in Moncton.

Examples of recent business investment decisions in Moncton include the following:

- Purolator Courier recently announced a doubling of employment at its new Moncton "supercentre", a national telephone communications centre. The addition of 200 new jobs increases Purolator's total Moncton workforce to 400. In a similar move, United Parcel Service opened a new national call centre in Moncton in October 1994. The centre already employs 132 people and is expected to grow to 150 employees.

- Pepsi Cola Canada is expanding their Moncton manufacturing facility to handle the company's soft drink production requirements for all of Atlantic Canada.
- Shoppers Drug Mart have announced plans for the construction of a 150,000 square-foot distribution centre in Moncton, with construction to begin in the first half of 1995. The facility will service all 120 Shoppers Drug Mart stores in Atlantic Canada and will be the largest distribution centre in Moncton. It is expected that this investment will create 80 new jobs.
- Domtar Packaging is investing to allow for business expansion. The company recently announced a 30,000 square-foot extension of its Moncton corrugated packaging materials plant.
- In July 1994 the Royal Bank of Canada announced plans to open a new national telebanking centre in Moncton. The centre is to be housed in a new 30,000 square-foot building in Moncton Industrial Park and is due to be completed in May 1995. Over the next two to three years, the centre is expected to grow to employ 500 people.

7. Ottawa-Hull, Ontario-Quebec

Comprising a total of 16 municipalities straddling the Ottawa River, which forms the border between Ontario and Quebec, the Ottawa-Hull metropolitan area is the fourth largest metropolitan area in Canada. Ottawa lies approximately 60 miles north of the Canada-US (New York State) border. Toronto is 246 miles away to the south-west, while New York City is 464 miles south-east.

In 1991 the Ottawa-Hull combined metropolitan area had a population of 920,857. In the five years from 1986, the average population growth rate was 2.37% per annum. By the year 2001, the expected population for Ottawa-Hull is approximately 1,050,000.

Ottawa, being the capital of Canada has contributed significantly to business in the Ottawa-Hull area. Supply and Services Canada, the federal government purchasing body, is located in Hull. Annually this department buys and contracts out more than \$6 billion worth of goods and services. Approximately one third of these purchases are made in the Ottawa-Hull region. This healthy business climate was recognized in August 1994 when The Globe and Mail newspaper named Ottawa as one of the five best cities in Canada for conducting business.

Industry in Ottawa-Hull has traditionally been in forestry and agriculture. EB Eddy, a forest products firm, is one of the regions largest private sector employers. In addition, since the start of the 1980's, high-technology businesses have boomed in Ottawa-Hull, leading to the region being dubbed the "Silicon Valley of the North". By February 1994 Ottawa-Hull was home to 489 high-technology businesses

employing more than 30,000 employees. This mix of traditional and emerging industries is reflected in the list of Ottawa-Hull's largest private sector employers, a list which is headed by Bell (Bell Canada and Bell Northern Research both have more than 4,000 employees), EB Eddy, Northern Telecom and Mitel Corporation.

For air travel, Ottawa-Hull is serviced by the Macdonald-Cartier International Airport in Ottawa. Air Canada, Canadian, US Air and a number of regional airlines all operate flights out of Ottawa, with direct services available to major centres in Canada and the eastern United States. The closest water port facilities are located 127 miles away in Montreal, which is able to handle container freight. Ice-free port facilities in Quebec City (288 miles), and Boston (438 miles) can also be utilized and are readily accessible by road or rail.

Rail services are provided by CP Rail and Via Rail. The rail network in the region is fully integrated to the U.S. rail network. Ottawa is connected by major highway to the Trans-Canada Highway. Due south of Ottawa, U.S. Interstate Highway 81 branches off the Trans-Canada Highway, providing ready access to both New York City and Washington DC. Trucking companies, from local operators to interstate lines, provide a full range of carrier services.

Examples of recent business investment decisions in Ottawa-Hull include the following:

- SR Telecom is currently building a manufacturing facility of 120,000 square-feet in Ottawa. SR Telecom has its headquarters in Montreal, but chose to build in Ottawa due to the large pool of highly skilled workers available in Ottawa, from which it would be able to draw its expected workforce of 500. SR Telecom expects the new plant to be fully functional in September 1995.
- Canadian Forest Products recently invested nearly CDN \$300 million in Gatineau (Hull) to establish a paper de-inking plant. The plant is the largest of its kind in Canada.
- In recent years multi-national, high-technology companies Intergraph and Oracle Corporation have both established significant facilities in Hull. For Intergraph, their Hull laboratory rates third in scale out of their worldwide operations, while Oracle's laboratory rates fourth on that company's worldwide scale.
- In 1993 Control Micro Systems relocated their operations to Ottawa for a variety of reasons, including: lifestyle factors, ability to attract technically skilled employees and relative business costs.
- Primus Automotive, a subsidiary of Ford Credit Canada Ltd, recently chose Ottawa as the base for its operations. Primus, which provides

financial services to automotive dealers, was expecting to issue more than CDN \$100 million in loans from its Ottawa office in 1994.

8. Winnipeg, Manitoba

Winnipeg is located in southern Manitoba, at the geographic centre of the North American continent. Winnipeg is approximately 60 miles north of the Canada-US (Minnesota-North Dakota) border and 450 miles north-west of Minneapolis.

From 1986 to 1994 the population of Winnipeg grew at an average rate of 0.67% per annum, with the estimated population of metropolitan Winnipeg in 1994 being 659,361. By the year 2001, the population is expected to reach 676,800.

Historically, the economy of Winnipeg has been based on its importance as a commercial and transportation centre for the grain growers of the Canadian prairies. Transportation, covering freight services, repair facilities and spare parts production have all come to be important industries in Winnipeg. Other important industry sectors include food processing, primary metals and printing and publishing. In more recent years, electronics products, software development and health care products have come to play a significant role in the local economy. The largest private sector employers in Winnipeg include Cargill Ltd, United Grain Growers Ltd, Palliser Furniture Ltd, Boeing Canada Technology Ltd and Monarch Industries Ltd. In August 1994 the Globe and Mail newspaper named Winnipeg as one of the five best cities in Canada for business.

Winnipeg International Airport is located 4.5 miles from downtown Winnipeg. The airport is serviced by both major Canadian airlines, 12 regional carriers as well as Northwest Airlines. Direct services are available to all major Canadian centres as well as Chicago and Minneapolis. Due to its central location, a number of different port facilities are available from Winnipeg. Westbound freight moves through Vancouver while eastbound freight moves through Montreal, Thunder Bay, or Halifax.

Rail freight services are provided by CN Rail, CP Rail and Burlington Northern Railways. Both CN Rail and CP Rail operate extensive marshalling yards in Winnipeg, which collectively handle approximately 5,000 rail cars per day. Both these companies also have significant servicing and repair facilities in Winnipeg. The services of these two companies and the intermodal facilities they provide in Winnipeg facilitate direct movement of goods between Winnipeg and seaports. Burlington Northern provides direct access to the U.S. rail network.

For road transport, Winnipeg is located on the Trans-Canada Highway, providing good road access to all major centres in eastern and western Canada. Two highways run from Winnipeg to Minnesota border points, with Manitoba Highway 75 linking directly to U.S. Interstate Highway 29, which runs south to Kansas City. Eighteen major trucking depots exist in Winnipeg, and full freight services for local, national or cross-border distribution are available.

Examples of recent business investment decisions in Winnipeg include the following:

- Palliser Furniture announced in March 1995 plans to expand its Winnipeg production facility to meet increased export demand. The expansion represents an additional investment of CDN \$14 million by the company and will create 284 new jobs when completed.
- In March 1995 Franklin Enterprises, a manufacturer of truck parts, announced that it had secured a new ten year CDN \$75 million supply contract. The new contract will lead to a CDN \$3.78 million expansion by the company of its production facilities, and will create 55 new jobs.
- In August 1994 Faneuil ISG announced the establishment of a major call centre, specializing in market research and database management, in Winnipeg. The CDN \$28 million project is expected to generate 300 to 400 new jobs in the first year, with a total of at least 1,000 new jobs being created within seven years.
- In March 1994 a consortium under the name of TRILabs announced the establishment of a CDN \$7.7 million research laboratory in Winnipeg, intending to focus on computer networking systems and software. Major sponsors of the consortium include AT&T, Northern Telecom, ISM Information Systems Management and Manitoba Telephone System. The project is also affiliated with the University of Manitoba.
- In May 1994 AT&T Transtech Canada, the company behind Unitel long-distance phone services, opened a new call centre in Winnipeg, taking advantage of the city's location in Canada's central time zone. The centre has already created over 200 jobs, and this number is expected to grow to over 400 within five years.

Appendix H

Sources Of Data

Appendix H

Sources Of Data

We contacted various sources in each city to gather recent and accurate statistical inputs for the industry models. These sources are listed below.

A. Location, population, local Industry and transportation

Calgary:	Calgary Economic Development Authority
Halifax:	City of Halifax, Development and Planning Department City of Dartmouth, Development Services Department
Langley:	Langley Chamber of Commerce City of Vancouver, Economic Development Department YVR Vancouver International Airport Authority
Laval:	CODEL - Corporation de Development Economique de Laval <i>Scotts Directory of Quebec Manufacturers</i> Scotts Directories, 1994 edition. Aeroportes de Montreal Statistics Canada
London:	City of London, Economic Development Office Customs Claims Services Ltd
Moncton:	Moncton Industrial Development Ltd
Ottawa:	Ottawa-Carleton Economic Development Corporation Ville de Hull, Economic and Touristic Development
Winnipeg:	Winnipeg 2000 Economic Development Corporation
Austin:	Greater Austin Chamber of Commerce
Bellingham:	Fourth Corner Economic Development Group
Columbus:	Greater Columbus Chamber of Commerce
Manchester:	Manchester Economic Development Office
Minneapolis:	Greater Minneapolis Chamber of Commerce Greater Metropolitan Trade Zone Commission
Raleigh:	Greater Raleigh Chamber of Commerce
Sacramento:	Sacramento Area Commerce and Trade Organisation
General:	<i>The 1995 Geographic Reference Report</i> BTA Economic Research Institute <i>The Oxford Hammond Atlas</i> Oxford University Press, 1993 edition.

B. Real estate, utilities and transportation

Land Purchase Price and Building Construction Costs—

Calgary:	Re/Max Commercial Properties Royal LePage Target Realty Corp.
Halifax:	Commercial Leasing and Brokerage Ltd The General Realty Group Ltd Leasecom Inc. Market Experts Realty Inc.
Langley:	Goddard & Smith International Realty Inc. Re/Max Balloon Country Realty Richard Huston International Associates
Laval:	Michael White Realities
London:	CB Commercial Real Estate Services Geomac Real Estate Ltd Sutton Group Select Realty Inc. Tapping, Telford & Associates
Moncton:	Francis T Leblanc & Associates Ltd Investment Realty Services Ltd Moncton Industrial Development Ltd The Prudential Property Specialists Ltd
Ottawa:	First Estate Realty Regional Realty
Winnipeg:	Chartier & Associates Inc. Colliers Pratt McGarry McKeag Realty Ltd
Austin:	Commercial Industrial Properties Co. Harrison-Pearson Realty Trammell Crow Company
Bellingham:	Eldred & Essex Construction Inc. Follis Real Estate Pacific Continental Realty Pacific International Properties Inc.
Columbus:	Hadler Realty Co. Mathews, Click, Bauman Realtors Wears, Kahn, McMenamy Realtors
Manchester:	Metro Realty Group Monks & Co. Inc. Stebbins Realty Corp.
Minneapolis:	Diversified Commercial Brokers Smith Russell Associates Inc. Thorpe Bros. Inc.
Raleigh:	Capital Associates Commercial Carolina Corporation Graham Realty

Sacramento: Bishop Hawk
CB Commercial Real Estate Brokerage Services
Saca Commercial

General: *Comparative Statistics of Industrial & Office Real Estate Markets*
The Society of Industrial and Office Realtors, 1995 edition.
Means Square Foot Construction Costs
R S Means Co. Inc, 1995 edition.

Utility Costs—

Calgary: City of Calgary Electric System
Halifax: Nova Scotia Power Inc.
Langley: BC Hydro
Laval: Hydro Quebec
London: London Hydro
Moncton: New Brunswick Power Co.
Ottawa: Ottawa Hydro
Winnipeg: Winnipeg Hydro
Austin: Austin Electric Utility Co.
Bellingham: Puget Sound Power and Light Co.
Columbus: Columbus Southern Power Co.
Manchester: Public Service Company of New Hampshire
Minneapolis: Northern States Power Co. (Minnesota)
Raleigh: Carolina Power & Light
Sacramento: Sacramento Municipal Utility District
General: *Typical Residential, Commercial and Industrial Bills*
Edison Electric Institute, Summer 1994 edition.

Transportation Costs—KPMG (Montreal) National Road Transport Model

C. Taxes

Corporation income tax—KPMG Peat Marwick Thorne.

Unemployment insurance—KPMG Peat Marwick Thorne; 1994 All States Tax Handbook, Research Institute of America; Ohio Employer Services; Texas Employment Commission; Department of Labor and Industries, Washington.

Corporation capital tax—KPMG Peat Marwick Thorne; 1994 All States Tax Handbook, Research Institute of America.

Franchise Tax—1994 All States Handbook, Research Institute of America.

Workers' compensation—Departments within state/provincial Workers' Compensation or government labour departments:

Calgary	:	Employer Services
Halifax	:	Assessment
Langley	:	Assessment
Laval	:	CSST
London	:	Employer Registration
Moncton	:	Assessment
Ottawa	:	Employer Registration
Winnipeg	:	Employer Services
Austin	:	Insurance
Bellingham	:	Workers' Compensation Board
Columbus	:	Employee Services
Manchester	:	Insurance
Minneapolis	:	Insurers
Raleigh	:	Rates Bureau
Sacramento	:	Rates Bureau

Property tax—Calgary Economic Development Authority; City of Halifax, Development and Planning Department; City of Dartmouth, Development Services Department ; Langley Chamber of Commerce; CODEL - Corporation de Development Economique de Laval; City of London, Economic Development Office; Moncton Industrial Development Ltd; Ottawa-Carleton Economic Development Corporation; Winnipeg 2000 Economic Development Corporation; Greater Austin Chamber of Commerce; Fourth Corner Economic Development Group, Bellingham; Greater Columbus Chamber of Commerce; Manchester Economic Development Office; Greater Minneapolis Chamber of Commerce; Greater Raleigh Chamber of Commerce; Sacramento Area Commerce and Trade Organisation

Real property transfers tax—KPMG Peat Marwick Thorne; Greater Austin Chamber of Commerce; Fourth Corner Economic Development Group, Bellingham; Greater Columbus Chamber of Commerce; Manchester Economic Development Office; Greater Minneapolis Chamber of Commerce; Greater Raleigh Chamber of Commerce; Sacramento Area Commerce and Trade Organisation

Sales tax—KPMG Peat Marwick Thorne; 1994 All States Tax Handbook, Research Institute of America

Business & Occupation Tax—Calgary Economic Development Authority; City of Halifax, Development and Planning Department; City of London, Economic Development Office; Winnipeg 2000 Economic Development Corporation

D. Specific industry data and statistics

- Auto Parts:** *Manufacturing Survey*, Statistics Canada, 1990
Automotive Original Equipment Parts Industry Profile, Industry Canada, 1991
The Canadian Corporate Financial Performance Survey, Canadian Institute of CA's, 1994 edition.
RMA Annual Statements Studies
Robert Morris Associates, 1992 edition.
The Canadian Small Business Financial Performance Survey, Canadian Institute of CA's, 1994 edition.
- Environmental Services:** *The Canadian Small Business Financial Performance Survey*, Canadian Institute of CA's, 1994 edition.
- Frozen Foods:** *Manufacturing Survey*, Statistics Canada, 1990
The Canadian Corporate Financial Performance Survey, Canadian Institute of CA's, 1994 edition.
RMA Annual Statements Studies
Robert Morris Associates, 1992 edition.
The Canadian Small Business Financial Performance Survey, Canadian Institute of CA's, 1994 edition.
- Medical Devices:** *RMA Annual Statements Studies*
Robert Morris Associates, 1992 edition.
- Pharmaceuticals:** *Manufacturing Survey*, Statistics Canada, 1990
- Software:** *Software Industry Profile*, Industry Canada, 1994
RMA Annual Statements Studies
Robert Morris Associates, 1992 edition.
- Telecommunications:** *The Canadian Corporate Financial Performance Survey*, Canadian Institute of CA's, 1994 edition.
RMA Annual Statements Studies
Robert Morris Associates, 1992 edition.
The Canadian Small Business Financial Performance Survey, Canadian Institute of CA's, 1994 edition.
- General:** *Scotts Directory of Western Manufacturers*,
Scotts Directories, 1994 edition.
Trucking In Canada, Statistics Canada, 1991 edition.
Business Opportunities Sourcing Systems,
Industry Canada, 1991 edition
Numerous Canadian manufacturers who willingly provided financial data but who were assured of anonymity.

Appendix J

Business Model Assumptions

Appendix J

Business Model Assumptions

A. Common assumptions for each location

- 1) For each type of facility, the following items are identical in each location:
 - Sales revenue
 - Staffing requirements
 - Building and land requirements
 - Machinery and equipment investments
 - Working capital requirements
 - R&D expenditures
 - Inventory levels
 - Cost of capital
 - Percentage of initial investment funded with equity.
- 2) The firm is a start-up enterprise and operates as a limited company.
- 3) All revenue earned in a given period is collected in the same period.
- 4) All expenses incurred in a given period are paid in the same period.
- 5) All of the firm's business income is related to operations.
- 6) The company does not qualify as a Canadian-controlled private corporation.

B. Other general assumptions

The following assumptions were made:

- 1) All figures are shown in current dollars (US dollars).
- 2) Expenditures for land only occur in Year 0.
- 3) After Year 0, expenditures on machinery and equipment made only in Year 5. Expenditures are limited to four depreciable asset classes.

- 4) Net cash flow from operations is added to Cash on the Balance Sheet.
- 5) The initial investment is partially financed with debt. Debt servicing costs are expensed in the year that they are incurred. No principal payments are made during the 10-year horizon and the level of debt remains fixed.
- 6) An initial investment in inventory is made in Year 0. Inventory levels are assumed to remain fixed over the ten-year horizon. In the United States, this assumptions will tend to understate tax liabilities.
- 7) Material costs are based on a pre-determined percentage of sales. The percentage will vary with the industry type. The base cost of materials does not change between locations. However, sales taxes are calculated in addition, where applicable.
- 8) The operations qualify for Manufacturing and Processing tax rates.
- 9) Interest and property taxes during construction are capitalized in the cost of buildings.
- 10) Machinery and equipment is assumed to have zero scrap value and no capital gains are realized on the sale of capital assets.
- 11) In Canada, the provincial Corporation Capital Tax, where applicable, and the Canadian Large Corporations Tax are calculated on capital employed (i.e., liabilities, owner's equity and retained earnings).
- 12) In Canada, the half-year rule applies to capital investments, except in the case of R&D capital investments.
- 13) Research and development (R&D) costs are expensed in the year that they are incurred. Where the tax liability is less than tax credits for R&D, the credits are carried forward. In the United States, Research and Experimentation tax credits are reduced to reflect taxation at the maximum rate. We have assumed that all research and development or experimentation expenses will qualify for tax credits in all locations.
- 14) In the United States, state taxes paid are deductible for federal tax calculation purposes.
- 15) Withholding taxes and personal taxation matters are beyond the scope of this analysis.

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