



# Final Report

## *Burnaby's Economy in 2013: An Analysis of Trends*

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the City of Burnaby

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## BURNABY'S ECONOMY IN 2013: AN ANALYSIS OF TRENDS

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### I. INTRODUCTION

Two research assignments - a trend analysis and a cluster analysis - were undertaken by Simon Fraser University under a joint agreement with the City of Burnaby in support of the process initiated to update the 1990 Burnaby Economic Development Strategy. The Economic Development Strategy "describes principles to guide economic development and ... contains a wide range of specific actions that will create, encourage, or assist employment growth and investment." It is committed to the principle of sustainable development and seeks to manage economic growth in such a way that social and environmental values are enhanced. This report presents a view of the economy of the City of Burnaby in 2013, based on an analysis of expected trends over the next 10 years.

For our purposes, the economy of Burnaby includes firms and other employers that are located within Burnaby and is limited to the economic activity that occurs in Burnaby. Burnaby's city government might desire growth in the Burnaby economy for the following reasons:

1. Expanding the number of jobs in Burnaby will create new opportunities for Burnaby residents to work within Burnaby. This will contribute to making Burnaby a more "complete community", in the words of the Official Community Plan.
2. More jobs in Burnaby will increase Burnaby's population and ensure that property values and residential property tax revenues remain strong.
3. A bigger economy will increase commercial and industrial property tax revenues. The amount of this increase will depend on which industries expand since the output/land use ratio varies considerably between industries.
4. With a larger population and more economic activity, the City might enjoy economies of scale in the costs of providing some urban services.

A useful starting point for trend analysis is describing and understanding recent and current trends. However, a trend analysis must do more than merely extrapolate recent trends. Other approaches will be used to develop a more comprehensive view of the future Burnaby economy in 2013.

1. Summary of other relevant forecasts concerning Burnaby's future.
2. Consideration of regional development plans, land use plans, and zoning, which to some degree reflect a vision of, and an influence on, the future economy.

3. Exploration of " technology roadmapping " which would allow the impact of likely future inventions and applications on various industry sectors to be assessed.
4. Appraisal of future market prospects for major Burnaby industries and clusters.
5. Assessment of the ongoing competitiveness of Burnaby as a location for economic activity within the GVRD. This is important in understanding the effects of region-wide trends on industrial location in Burnaby.

The report has three main sections. First, the economy of Burnaby in the present is described and recent trends discussed. The second section analyzes influences that are likely to have a significant effect on how Burnaby's economy evolves over the next 10 years. Finally, the Burnaby economy of 2013 is described in narrative form including projections of major economic variables.

## II. BURNABY'S ECONOMY

Statistics are not available for output (GDP) below the provincial level. Thus, it will be necessary to measure Burnaby economic activity using employment in Burnaby. For Burnaby, the employed labour force and employment in Burnaby are not the same. While Burnaby's employed labour force and employment are about the same size, over 70 percent of Burnaby's employed residents worked outside the City, according to the 2001 Census. Employment of Burnaby residents is important because this is what determines consumer spending, much of which will occur where employees live. There are important sectoral differences between employment in Burnaby and employment of Burnaby residents. Appendix Table 1 presents these comparisons. However, the focus of this report is on employment located in Burnaby, over two-thirds of which is comprised of residents of other Lower Mainland municipalities.

### 1. The Structure of Burnaby's Economy Today

Burnaby's most important employment sectors are somewhat different compared to the rest of the GVRD, reflecting a different economic structure. As Figure 1 shows, according to the 2001 Census Burnaby's economy has relatively more economic activity in utilities, wholesale trade and the information and culture sectors than the rest of the GVRD and less in transportation and warehousing, finance and insurance, health care and social assistance, and accommodation and food services sectors.

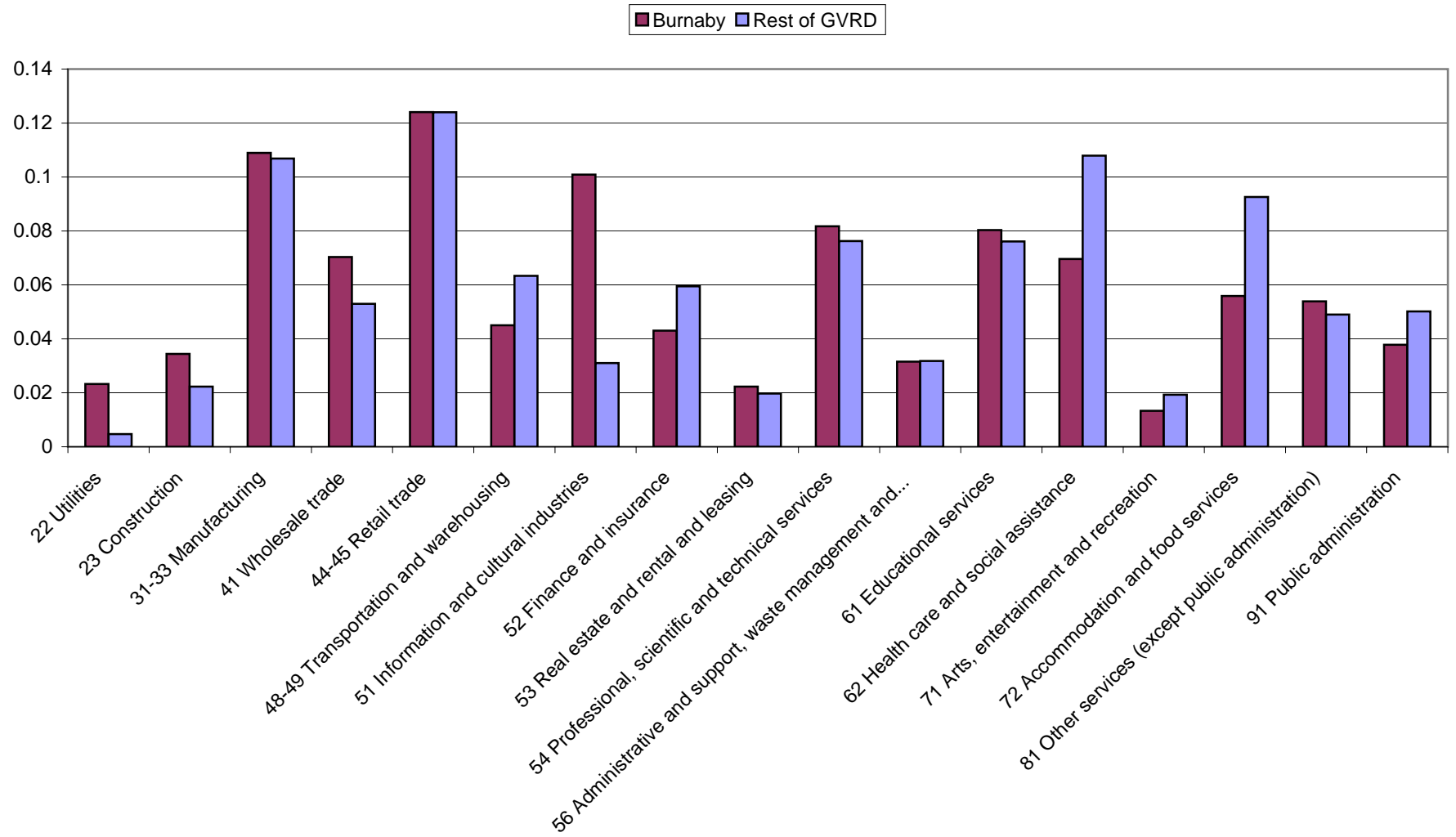
### 2. Economic Specialization in Burnaby and the GVRD

While Burnaby's economic structure differs from the rest of the GVRD, economic development trends at the municipal level are influenced by the hierarchy of economies that exist above it. Arguably, the most important influence on Burnaby's future economy is the future economy of Greater Vancouver.

We will view Burnaby as a sub-economy within the GVRD economy and the GVRD economy as a sub-economy within Canada's economy. We begin by comparing Burnaby's economic specializations with those of the whole GVRD. In Table 1 the industrial sectors in which Burnaby is more and less specialized than the GVRD are compared with those where the GVRD is more and less specialized than Canada. Here, "more specialized" means that Burnaby has a higher proportion of its employment in a particular sector than the GVRD and "less

Figure 1

Employment Shares by Industrial Sector, 2001 Census



specialized" means the opposite. The level of specialization is determined by calculating simple location quotients (LQ) for Burnaby industrial sectors compared to GVRD industrial sectors and the GVRD compared to Canada.

$$LQ_{jB} = (\text{emp}_{jB} / \text{emp}_B) / (\text{emp}_{jV} / \text{emp}_V)$$

Where emp = employment, B = Burnaby, V = GVRD, and j = an industrial sector.

If  $LQ_{jB}$  is greater than 1, then Burnaby is more specialized in sector j than the GVRD; if it is less than 1, then Burnaby is less specialized. Similar calculations compare specialization in the GVRD economy against the whole Canadian economy. Appendix Tables 2 and 3 report location quotients by industry and occupation.

Table 1 only includes sectors where GVRD employment is greater than 10,000 unless Burnaby employment is greater than 1,000. Sectors where location quotients are greater than 1.1 or less than 0.9 are shown in bold type to identify highest and lowest levels of employment specialization. We see in Table 1 that Burnaby mirrors the GVRD's specialization in wholesale trade and information and cultural industries.<sup>1</sup> Burnaby differs from the GVRD in its specialization in utilities (reflecting Burnaby's BC Hydro employment) and construction.<sup>2</sup> Also, Burnaby does not share the GVRD's relative specialization in the transportation and warehousing; finance and insurance; arts, entertainment, and recreation; and accommodation and food services sectors.

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<sup>1</sup> Overall, Burnaby's more specialized sectors account for 30.5 percent in sectors where the GVRD is more specialized and 29.1 percent in sectors where the GVRD is less specialized.

<sup>2</sup> Note that the construction sector is often excluded from location-based statistics because the place of work of construction employees is so changeable.

Table 1

Comparison of Employment Specialization by Industrial Sector,  
Burnaby and GVRD, 2001

	Burnaby More Specialized	Burnaby Less Specialized
GVRD More Specialized	<b>41 Wholesale trade</b>  <b>51 Information and cultural industries</b>  61 Educational services  81 Other services (except public administration)	<b>48-49 Transportation and warehousing</b>  <b>52 Finance and insurance</b>  53 Real estate and rental and leasing  54 Professional, scientific and technical services  56 Administrative and support, waste management and remediation services  <b>71 Arts, entertainment and recreation</b>  <b>72 Accommodation and food services</b>
GVRD Less Specialized	<b>22 Utilities</b>  <b>23 Construction</b>  31-33 Manufacturing  44-45 Retail trade	<b>62 Health care and social assistance</b>  <b>91 Public administration</b>

Note: Two-digit codes are Statistics Canada NAICS industrial sector codes throughout the report. Similarly, in Table 2 two-digit occupational codes are Statistics Canada NOC occupation codes.

We can also use location quotients to measure relative employment specialization by occupation. This is done in Table 2; the definitions and calculations are analogous to those used for industrial sectors. Table 2 only includes occupations where the GVRD has more than 5,000 employees. Sectors where the location quotients are greater than 1.1 or less than 0.9 are shown in bold type.



**Table 2**  
 Comparison of Employment Specialization by Occupation,  
 Burnaby and GVRD, 2001

	Burnaby More Specialized	Burnaby Less Specialized
GVRD More Specialized	01-09 Middle and other management occupations  <b>14 Clerical occupations</b>  <b>21 Professional occupations in natural and applied sciences</b>	00 Senior management occupations  <b>11 Professional occupations in business and finance</b>  12 Skilled administrative and business occupations  <b>31 Professional occupations in health</b>  <b>32 Technical and skilled occupations in health</b>  41 Professional occupations in social science, education, government services and religion  51 Professional occupations in art and culture  52 Technical and skilled occupations in art, culture, recreation and sport  <b>62 Skilled sales and service occupations</b>  <b>64 Intermediate sales and service occupations</b>
GVRD Less Specialized	<b>22 Technical occupations related to natural and applied sciences</b>  72-73 Trades and skilled transport and equipment operators  74 Intermediate occupations in transport, equipment operation, installation and maintenance	<b>34 Assisting occupations in support of health services</b>  <b>42 Paraprofessional occupations in law, social services, education and religion</b>  <b>66 Elemental sales and service occupations</b>  <b>92 Processing, manufacturing and utilities supervisors and skilled operators</b> <b>96 Labourers in processing, manufacturing and utilities</b>

Burnaby has a narrower range of employment specialization compared to the GVRD when occupations are measured rather than industrial sectors. Burnaby's most specialized occupations are professional and technical occupations in natural and applied sciences, along with clerical occupations.

Why does Burnaby have different patterns of industrial and occupational specialization than the GVRD as a whole? Within a metropolitan region, influences on firm location decisions include the following:

1. Location and accessibility factors for goods, information, and people

Burnaby is located near the economic center of the GVRD but this advantageous location depends on effective transportation for people and freight. Accessibility for information flows will not have a major negative effect because even though the B.C. node for these flows is in Downtown Vancouver, Burnaby's location and information network are satisfactory.

2. Land supply and land prices, especially commercial and industrial land

Burnaby has a limited supply of undeveloped industrial land. While commercially-zoned land is also scarce, redevelopment of existing commercial land should meet Burnaby's needs for population-serving commercial use for the foreseeable future. Burnaby's housing prices are relatively high for the average family income of Burnaby residents.<sup>3</sup>

3. Local taxation and regulatory costs

Surveys of the development community show that Burnaby has low property taxes, short development approval times, and low development costs relative to many other Lower Mainland municipalities.

4. Urban service scope and quality

Burnaby has committed almost 25 percent of its land area to parks and has a comprehensive program of community services. Continued population growth suggests that Burnaby is an attractive residential area. Local transportation service by transit and automobile are relatively good - this is especially true for rapid transit; Burnaby has a disproportionate share of rapid transit facilities in the GVRD. Freight transport services by highway, which are important for industrial location, are experiencing increased congestion. However, Burnaby has good access to railways.

3. Employment by Detailed Industry

In assessing Burnaby's future economy, it is useful to develop a more refined picture of which industries provide employment in Burnaby today. Table 3 shows employment at the level of a mix of 3- and 4-digit industry types that employed more than 1,000 persons in 2001. This provides a view of the diversity of Burnaby's economy that is hidden by more aggregated statistics. The 35 industries listed in this table employed about 70 percent of those working in Burnaby in 2001.

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<sup>3</sup> Burnaby average family income is 11 percent below the GVRD average. Average owned dwelling prices are 2 percent below the GVRD average; however, average annual owners' payments are 13 percent lower in Burnaby than in the GVRD as a whole.

Table 3

## Employment by Detailed Industry, Burnaby, 2001 Census

5133 Telecommunications	6,730
722 Food services and drinking places	5,375
561 Administrative and support services	3,180
6113 Universities	3,100
5415 Computer systems design and related services	2,960
6111 Elementary and secondary schools	2,765
445 Food and beverage stores	2,505
452 General merchandise stores	2,355
232 Trade contracting	2,280
812 Personal and laundry services	2,140
5413 Architectural, engineering and related services	2,050
622 Hospitals	2,025
621 Ambulatory health care services	2,015
2211 Electric power generation, transmission and distribution	2,010
522 Credit intermediation and related activities	1,985
913 Local, municipal and regional public administration	1,960
524 Insurance carriers and related activities	1,880
6112 Community colleges and C.E.G.E.P.s	1,855
623 Nursing and residential care facilities	1,840
448 Clothing and clothing accessories stores	1,800
813 Religious, grant-making, civic, and professional and similar organizations	1,710
811 Repair and maintenance	1,675
624 Social assistance	1,630
531 Real estate	1,620
311 Food manufacturing	1,550
484 Truck transportation	1,475
231 Prime contracting	1,435
443 Electronics and appliance stores	1,355
485 Transit and ground passenger transportation	1,235
2325 Building equipment installation	1,185
912 Provincial and territorial public administration	1,145
3344 Semiconductor and other electronic component manufacturing	1,065
5112 Software publishers	1,050
441 Motor vehicle and parts dealers	1,045
713 Amusement, gambling and recreation industries	1,030
Total, top 35 Industries	73,015

#### 4. Employment by Detailed Occupation

Available occupational statistics are less detailed than industry statistics but Table 4 provides some information about types of occupations that account for about 75 percent of Burnaby's employment.

**Table 4**

Employment by Occupation, Burnaby, 2001 Census

14 Clerical occupations	13,955
01-09 Middle and other management occupations	11,950
64 Intermediate sales and service occupations	10,195
66 Elemental sales and service occupations	7,695
21 Professional occupations in natural and applied sciences	7,620
41 Professional occupations in social science, education, government services and religion	6,475
12 Skilled administrative and business occupations	6,075
72-73 Trades and skilled transport and equipment operators	5,735
22 Technical occupations related to natural and applied sciences	5,035

#### 5. Employment by Location

Most of Burnaby's 37 Planning Study Areas contain relatively little employment. As Table 5 shows, 12 PSAs mainly located in southwest Burnaby account for about three-quarters of total Burnaby employment.

**Table 5**

Burnaby Employment Locations by Planning Study Areas

Burnaby, Maywood (CU7919293)	12,395
Burnaby, Douglas-Gilpin & Oakalla (CU1)	10,630
Burnaby, West Central Valley (CU7919269)	9,735
Burnaby, Cascade - Schou (CU7919295)	8,750
Burnaby, Big Bend (CU7919289)	7,925
Burnaby, Lake City (CU7919281)	6,110
Burnaby, Stride Avenue (CU7919287)	3,595
Burnaby, Garden Village (CU7919294)	3,480
Burnaby, Windsor (CU7919298)	3,310
Burnaby, Marlborough (CU7919297)	3,305
Burnaby, Government Road (CU7919276)	3,235
Burnaby, Cameron (CU7919283)	3,005
Total, 12 Planning Study Areas	75,475

## 6. Place of Residence of Burnaby Employees

As observed earlier, a large majority of those who work in Burnaby live elsewhere in the GVRD. Table 6 shows how Burnaby employment is broken down by place of residence of employees and how this distribution has changed over time. Excluding those who worked at home, the proportion of Burnaby's jobs filled by Burnaby's residents has declined from 38 percent in 1971 to 26 percent in 2001. In 2001, almost 40 percent of Burnaby's jobs were filled by persons who lived east of Burnaby.

**Table 6**

Place of Residence of Burnaby Employees, 1971 and 2001

	2001	Percent	1971	Percent
Burnaby	26,175	26.4%	14,620	38.3%
Vancouver	21,875	22.1%	8,265	21.7%
Tri-Cities	15,795	15.9%	4,580	12.0%
Surrey	12,05	12.2%	3,210	8.4%
North Shore	5,865	5.9%	2,315	6.1%
New Westminster	5,145	5.2%	2,235	5.9%
Richmond	3,755	3.8%	810	2.1%
Delta	3,150	3.2%	1,205	3.2%
Maple Ridge/Pitt Meadows	2,810	2.8%	465	1.2%
Langley	2,515	2.5%	445	1.2%
Total	101,830	100.0%	38,150	100.0%
Work at home	6,145		1,335	
Total, All Employment	107,795		39,485	

### III. TREND ANALYSIS

#### A. BURNABY'S EXPERIENCE WITH GROWTH AND CHANGE

##### 1. Population Growth in the GVRD and Burnaby

The following table shows that (1) annual population growth rates in the GVRD<sup>4</sup> have varied considerably by decade over the last 50 years and (2) except for 1951-61, Burnaby has grown more slowly than the GVRD as a whole, although the difference in growth rates was quite small in the 1991-2001 period.

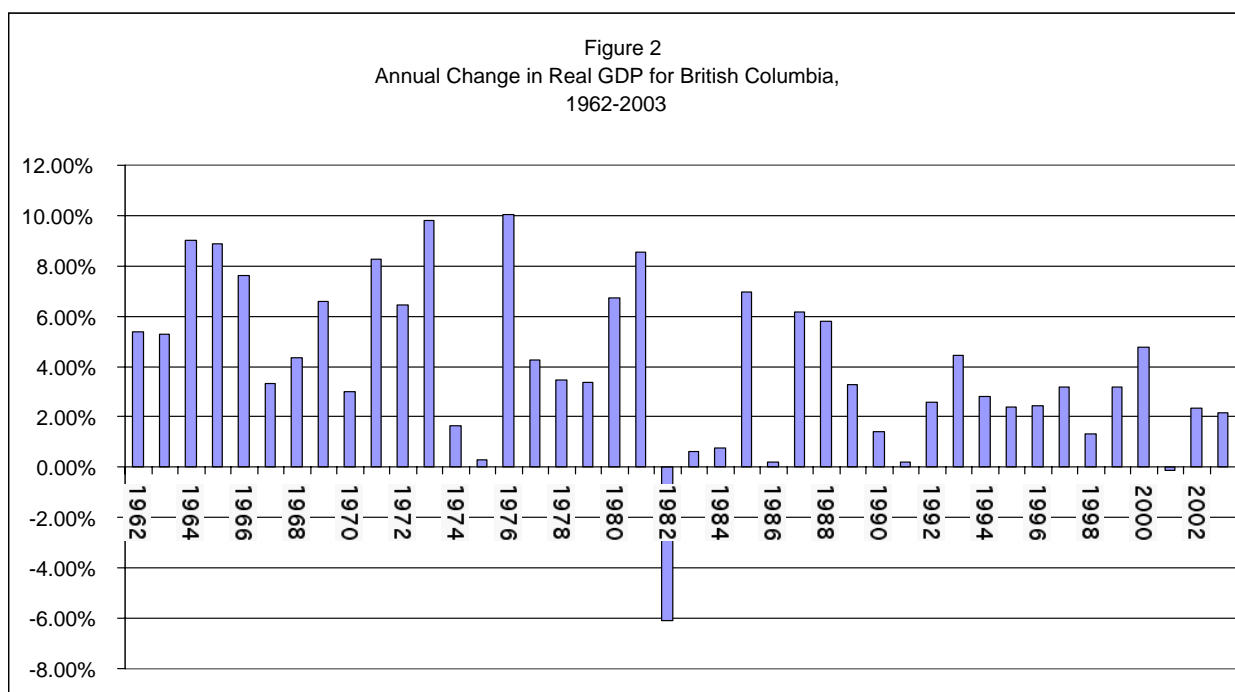
<sup>4</sup> Technically this is the Vancouver CMA (=current GVRD) until the 1991/2000 period. We use "GVRD" in this report to refer to all periods.

Table 7

Annual Census Population Growth Rates by Decade, 1951-2001

	GVRD	Burnaby
1951/61	3.44%	5.40%
1961/71	2.69%	2.27%
1971/81	1.58%	0.83%
1981/91	2.34%	1.52%
1991/2001	2.15%	2.00%

These changing rates of population growth have occurred across substantial changes in the rate of economic growth in British Columbia. Figure 2 shows how the annual rate of change in real GDP has varied over the last 40 years. Note generally lower growth since 1981.



## 2. Burnaby's Future Population Projections

Earlier assessments of future population illustrate the difficulties of making accurate predictions. A 1980 Report prepared by the Burnaby Planning Department<sup>5</sup> contained a historical overview of Burnaby's growth management over the last 90 years. In 1921 Burnaby had a census population of 13,000, about the same as in 1911. Population doubled in the 1920s as people settled along transportation routes connecting Vancouver and New Westminster. Few of these people worked in Burnaby.

<sup>5</sup> Burnaby, Planning Department, A Residential Growth Management Study for Burnaby: Draft Report for Discussion Purposes, September, 1980.

The 1930s were a period of low population growth in almost all areas of British Columbia and Burnaby was no exception. After World War 2, Burnaby's population began to grow rapidly and by 1951 over 58,000 people lived in Burnaby. Concerns over scattered low density development led to a range of municipal policies concerning zoning, urban services, roads, and subdivision controls. By 1961 Burnaby had over 100,000 residents and employment in the municipality was increasing. Policies to guide development of apartments were introduced in the 1960s and were associated with adoption of a residential and commercial planning hierarchy to guide urban development.

Burnaby's government was active in projecting future population growth and its plans up to 1970 envisaged a maximum future population of 230,000. This was only about 100,000 more than Burnaby's population in the 1971 census and a continuation of 1951-71 population growth rates would have given Burnaby this much population in less than 20 years. Consideration was even given to Burnaby growing to a population of 600,000 by 2021. This future, which would have meant commitment of most land in Burnaby to higher-density residential use, was rejected and population growth in Burnaby was slowed and more attention given to expanding commercial and industrial land use, thus creating a higher ratio of employment to population.

The 1980 report set out various land use and development guidelines that envisaged Burnaby's "saturation" population at 190,000. This projection was that Burnaby would have a population of 175,000 by 2001. The 1987 Official Community Plan has a roughly similar projection horizon to the current report. Burnaby's 2001 population, projected to be 163,000, was actually 202,000<sup>6</sup> and its employment was 108,000 rather than 102,000. Contrary to what was foreseen 14 years earlier, Burnaby's population expanded more rapidly than its employment. The 1987 Official Community Plan projected a 2001 population of up to 163,000 and employment of 102,000.

Earlier forecasts of Burnaby's future have missed the mark. In the case of population forecasts for a single municipality, there are many sources of errors. These include:

- Changes in regional rates of natural increase in population
- Changes in migration to the region
- Changes in the municipal share of regional population influenced by:
  - Land prices and availability
  - Zoning and other development regulations
  - Transportation systems changes
- Employment changes caused by change in economic growth or change in economic structure

Currently, the 1998 Official Community Plan projects 2006 population of 207,000 with a fully built-out population for Burnaby in 2021 of 260-280,000, depending on public consultation and housing occupancy assumptions. The 1998 OCP sees a continuation of the decrease in the

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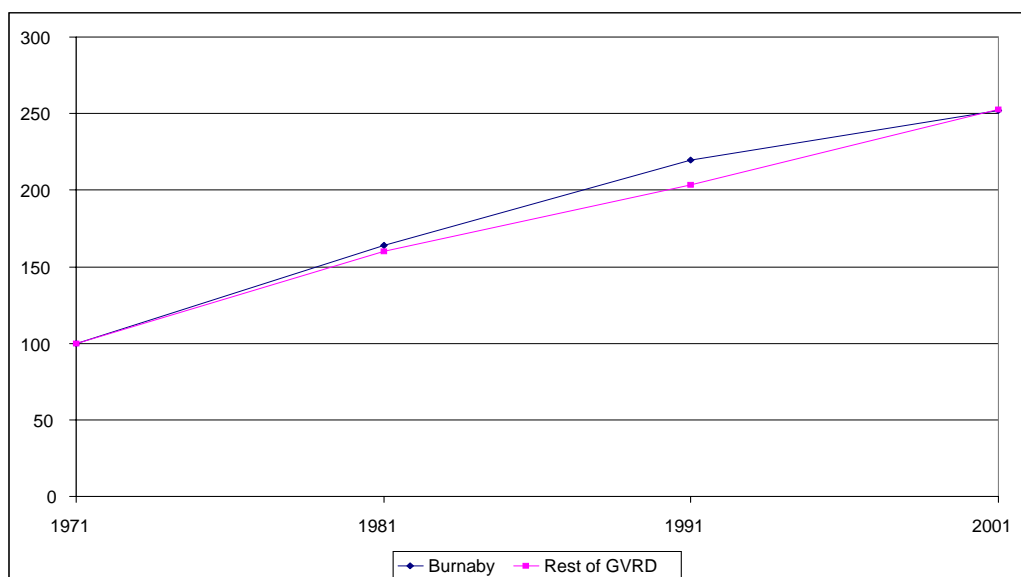
<sup>6</sup> As estimated by BC Stats. The Census count was 191,000.

employment/population ratio<sup>7</sup> so that 2006 employment is projected at 119,700 and 2021 employment at 152,000.

### 3. Employment in Burnaby

Employment in Burnaby has maintained a constant share of total GVRD employment over the last 30 years. In fact, as Figure 3 shows, the rate of employment increase has been remarkably identical in Burnaby and in other GVRD areas over the 1971-2001 period. Both Burnaby and the whole GVRD have experienced a decreasing rate of employment growth over this period, measured at the decade level. Burnaby's employment grew more rapidly than other areas in the 1970s and, especially, in the 1980s but then less rapidly in the 1990s.

Figure 3  
Employment, Burnaby and Rest of GVRD, 1971-2001  
(1971=100)



Detail to support Figure 3 is provided in Table 8. The most interesting pattern is the increasing ratios of employment to population (and to the Burnaby-resident labour force) over the last 30 years. However, most of this increase occurred in the 1970s and, to a lesser extent, in the 1980s. Table 9 reports similar information for the GVRD. At the regional level employment and labour force are closely correlated (jobs almost all filled by GVRD-resident labour force) and so the increasing employment/labour force ratio reflects decreasing unemployment and the increasing employment/population ratio is driven by lower unemployment and more of the total population being in the labour force. One interesting difference between Burnaby and the GVRD is the lower rate of labour force growth over all three decades since 1971. In 2001, relative to its population Burnaby, had a larger labour force and more jobs than the GVRD as a whole.

<sup>7</sup> The calculated ratio is actually resident labour force/employment but labour force growth and population growth are closely linked.



Table 8

Burnaby Population, Labour Force, and Employment, 1971-2001

	1971	1981	1991	2001
Population	125,660	136,494	158,858	193,954
Labour Force	57,825	76,065	89,520	100,515
Employment	42,528	69,796	93,495	107,235
Labour Force/Population	0.460	0.557	0.564	0.518
Employment/Population	0.338	0.511	0.589	0.553
Employment/Labour Force	0.735	0.918	1.044	1.067
		1981/1971	1991/1981	2001/1991
Population Growth Rate		0.83%	1.52%	2.00%
Labour Force Growth rate		2.74%	1.63%	1.16%
Employment Growth Rate		4.95%	2.92%	1.37%

Source: Basic data are Census statistics from GVRD Key Facts. 1971 Burnaby employment was reported as 47,100 in various GVRD publications in the 1970s and 1980s. Burnaby 2001 population is estimated at BC Stats at 202,221. The Census population "undercount" of 8,300 (4.3 percent of reported population) may be lower for labour force and employment.

Table 9

GVRD Population, Labour Force, and Employment, 1971-2001

	1971	1981	1991	2001
Population	1,082,352	1,268,183	1,602,502	1,986,965
Labour Force	482,230	680,550	894,130	1,073,010
Employment	394,204	632,191	808,915	996,390
Labour Force/Population	0.446	0.537	0.558	0.540
Employment/Population	0.364	0.499	0.505	0.501
Employment/Labour Force	0.817	0.929	0.905	0.929
		1981/1971	1991/1981	2001/1991
Population Growth Rate		1.58%	2.34%	2.15%
Labour Force Growth rate		3.44%	2.73%	1.82%
Employment Growth Rate		4.72%	2.47%	2.08%

#### 4. Changes in Burnaby's Economy in the Last Decade

Burnaby's economy has changed in the last decade, as have many of the variables that influence and reflect the performance of the economy. The following is a small sample of change from the early 1990s.

- 34,000 more people lived in Burnaby in 2003 than in 1993
- Burnaby's employment increased by 14,000 between 1991 and 2001
- Average household income in 2001 (\$48,300) was slightly lower in 1997 dollars compared to 1991 (\$48,700)
- The unemployment rate in the GVRD declined from 9.3 % in 1993 to 7.3% in 2003
- In 1997 dollars, from 1993 to 2003 total GDP in British Columbia increased from \$103 billion to \$131 billion; high tech GDP increased from \$2.0 billion to \$3.7 billion, and tourism GDP increased from \$4.0 billion to \$5.0 billion
- The prime interest rate, which was 5.94% in 1993 had fallen to 4.69% in 2003 and to 3.75% at the present time
- Vancouver's annual inflation rate fell from 3.6% in 1993 to 2.1% in 2003
- The exchange rate between the U.S and Canadian dollars, which was 77.53 cents in 1993, fell to the 62 cent range in 2001 and rose to 71.38 cents in 2003 and is presently 75.43 cents

The point of these comparisons is that change occurs constantly and on many fronts. Predictions are difficult, particularly for macroeconomic indicators that are subject to a wide variety of global influences.

#### 5. Recent Trends in Industrial Structure Change in the GVRD

Because of Statistics Canada's change from the SIC industrial classification to the NAICS industrial classification, we cannot compare Burnaby's industrial structure in 2001 with its industrial structure in the years before 1996. Comparisons over the period since 1996 have to use Labour Force Survey statistics and these are not available at the municipal level. Table 10 shows the changes in employment by industry in the GVRD.

Over this seven-year period the annual increase in service sector employment in the GVRD was 2.56 percent, almost three times as large as the annual increase in goods sector employment. This familiar pattern of economic shift to the production of services was not repeated across all sectors, however.

**Table 10**  
Industrial Sector Employment in the GVRD 1996-2003 (Labour Force Survey)

	1996 (thousands)	2003 (thousands)	Annual Rate of Change	Absolute change (thousands)
<b>ALL INDUSTRIES</b>	948.6	1110.8	2.25%	162.2
<b>GOODS-PRODUCING SECTOR</b>	183.4	195.4	0.91%	12
Agriculture	5.9	9	6.03%	3.1
Forestry, Fishing, Mining, Oil and Gas	10.1	7.2	-4.84%	-2.9
Utilities	5.4	7.9	5.44%	2.5
Construction	59.4	57.7	-0.41%	-1.7
Manufacturing	102.7	113.7	1.45%	11
<b>SERVICE-PRODUCING SECTOR</b>	765.1	915.4	2.56%	150.3
Retail and Wholesale Trade	153.7	180.8	2.32%	27.1
Transportation and Warehousing	57.2	66	2.04%	8.8
Finance, Insurance, Real Estate and Leasing	78.1	85.2	1.24%	7.1
Professional, Scientific and Technical Services	72.3	99.5	4.56%	27.2
Management, Administrative and Other Support	37.8	47.8	3.35%	10
Educational Services	55	79.9	5.33%	24.9
Health Care and Social Assistance	88.5	105.2	2.47%	16.7
Information, Culture and Recreation	50.6	66.8	3.97%	16.2
Accommodation and Food Services	76	84.9	1.58%	8.9
Other Services	45.8	50.3	1.34%	4.5
Public Administration	49.9	49	-0.26%	-0.9
Service Sector Share	0.807	0.824		

Among the large sectors, retail and wholesale trade; professional, scientific and technical services; education, health care and social assistance; and information, culture and recreation all showed above-average employment growth. Employment growth in manufacturing, transportation and warehousing, finance, insurance, real estate and leasing were just below the average for all GVRD industrial sectors.

## B. BURNABY IN 2013

### 1. Introduction

The economist Richard Freeman concludes a book chapter on work in the new millennium with this caution:<sup>8</sup>

"I am near certain that there will be some major development or event that has utterly escaped my imagination that will shake up our economies and our working lives. Any honest seer knows that in peering into the future the only certainty is that the future will surprise us."

This report has more limited geographical and temporal scope than Freeman's work but the increased linkages between regions and the world plus the apparently increasing ability of the world to change without observed warning, make this a necessary caution.

Nevertheless, if we want to look into the future, we must start with where we are. Section II of this report identified and compared Burnaby's and the GVRD's industrial sector specializations. Looking at Table 1, the sectors in the upper left-hand quadrant of the table account for almost one-third of Burnaby's current employment and present good opportunities for growth. Another 28 percent of Burnaby's 2001 employment was in upper right-hand quadrant sectors where Burnaby is not specialized but the GVRD is. Some of these sectors offer limited potential for expansion in Burnaby (transportation, for example because of the absence of port facilities and finance and insurance because of the dominance of Downtown Vancouver as a location) but professional, scientific, and technical services, where Burnaby already has a location quotient very close to 1.0 offer potential for useful growth.

Another aspect of Burnaby's growth potential from section II is commuting accessibility of Burnaby's employment locations, especially for employees who live in areas east of the city. More of the 7,925 persons who worked in the Big Bend PSA lived in Surrey and Langley (1,635) than in Burnaby (1,405) and another 1,410 lived in other areas to the east of Burnaby. Commuting access is an important factor in securing and retaining a suitable labour force. A sizeable proportion of the urban transportation investments planned by Translink over the next 10 years will do little to improve transport access to Burnaby, particularly western Burnaby.<sup>9</sup>

Section III.A of this report examined Burnaby's recent growth experience. Burnaby's slower employment growth rate in the 1990s was noteworthy, especially since it was a change from the 1980s and was not typical of employment growth across the whole GVRD. Table 10, which reported sectoral change across the GVRD from 1996 to 2003, provides some optimism for Burnaby's employment future because a number of sectors that are important in Burnaby showed more rapid growth than others which are less important. Even maintaining the same share of fast-growing GVRD sectors will be positive for Burnaby's employment. Of the seven GVRD industries that added over 10,000 employees between 1996 and 2003, all but manufacturing and health are sectors where Burnaby's location quotient was over 1.0 and the

<sup>8</sup> Richard B. Freeman, "The World of Work in the New Millennium", Chapter 6 in Richard N. Cooper and Richard Layard, eds., What the Future Holds: Insights from Social Science, Cambridge, MIT Press, 2002.

<sup>9</sup> Translink, 2005-2007 Three-Year Plan & Ten-Year Outlook, February, 2004.

GVRD sector with the largest absolute growth (Professional, Scientific and Technical Services) was one of Burnaby's leading specializations.

## 2. Macro Forecasts

Every financial institution and many government agencies publish predictions of how the future will unfold for the sectors and regions in which they are interested. Almost all of these forecasts are short term in nature. However, there is also a set of forecasts that look beyond the next few years and attempt to describe and, in some cases, measure the forces which will drive the economy 10 years, 20 years, and even longer into the future.

In the late 1990s Industry Canada commissioned series of research papers entitled "Canada in the 21<sup>st</sup> Century". One of the papers, written by Berkeley economist Bradford De Long<sup>10</sup>, identified several ongoing global economic trends such as globalization and its consequences, diminished expectations among populations of industrial countries, industrialization in East Asia, and changes in the international division of labour. Differences in the power and direction of these trends was used to create three scenarios: East Asia's Rise to Economic Dominance, the End of the Free-Trade Era, and the Increasing Virulence of International Financial Crises. (This was done before September, 2001; since then a scenario that considered the economic ramifications of continuing manifestations of organized terrorism would be a commonplace addition.) The detail of these scenarios was probed to explore the differences each would make for the Canadian economy. De Long concluded with the following list of expected changes.

- Canadian governments will lose their residual ability to manage Canada's macroeconomy in their own or in the country's interest.
- Large-scale international capital flows will make it possible for countries following prudent economic policies to attract investment and grow rapidly.
- Large-scale international capital flows will also make it next to impossible for governments of countries like Canada to follow policies that do not have the confidence of the international community of financial speculators.
- The world labor movement will face the enormous challenge of organizing industries across national borders, and might grow or shrink depending on how well this challenge is handled.
- Semi-stagnant incomes as a result of the productivity slowdown will continue to generate distrust of all governments.
- Slow productivity growth will mean the end of the expansion of the social welfare system and will lead to a crisis of social democracy when political leaders tell voters that social democratic promises, made on the assumption that 3 percent per year productivity growth would continue forever, cannot be kept.

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<sup>10</sup> J. Bradford De Long, Global Trends: 1980-2015 and Beyond, Industry Canada, 1998.

These global macro trends may seem quite distant from the local concerns about the future Burnaby economy but they would all have some impact and the complex interactions among them makes it impossible to predict whether the net impact will be positive or negative.

In 2001 Burnaby's Planning and Building Department published a report entitled "Guiding Change: Leading Burnaby into the Future". This report identified dozens of ongoing trends of interest organized under eight trend headings.

- Governmental framework
- Economic health
- Social health
- Environmental health
- Shifting demographics
- Technological change
- People and goods movement
- Urban design and sense of place

Each of these was accompanied by a brief description of the trend (e.g., under "people and goods movement" increasing problems from automobile dominance were listed) and a set of policy questions posed. (e.g., under the same trend, What are the longer term consequences for Burnaby if TransLink funding falls short of the requirements implied in the Livable Region Strategic Plan?)

### 3. Burnaby's Official Community Plan and the Livable Region Strategic Plan

Burnaby's 1998 Official Community Plan contains a number of elements that reflect the City's view of the future and will have some effect in shaping it. The first strategic direction in the Plan is to pursue the concept of a "more complete community". This includes a closer balance between residents and jobs and the provision of good local services, including transportation. The Plan recognizes that matching the number of jobs and the labour force does not mean that all Burnaby jobs are filled by Burnaby residents or even that a majority of Burnaby jobs are matched to Burnaby residents (in the GVRD that matching level is only attained by Vancouver and Richmond). A number of measures to enable Burnaby "to keep capturing significant shares of new higher quality, intensive commercial and industrial development ..." are included. The designation of four Town Centres, one for each quadrant of the City, is an important spatial planning element in the OCP.

The OCP's planning horizon is 1996-2006. Over that period Burnaby is expected to have increased its dwelling units by 24 percent, commercial floorspace is expected to increase at about the same rate, and industrial land is expected to be developed at a slower rate (around 10 percent over the decade) but with increasing floorspace/land ratios, the actual industrial building space will be greater. The OCP contains projections of employment that see it increasing from 88,000 in 1991 to 119,700 in 2006 and 152,000 in 2021. Based on the 2001 Census number of 108,000 jobs in Burnaby, the 2006 projection appears to be within reach.

Burnaby's OCP contains the "Regional Context Statement" required by provincial statute. This statement connects the OCP to the GVRD's Livable Region Strategic Plan (LRSP). The most important feature of the LRSP for Burnaby's future growth is that Burnaby is in the "Growth Concentration Area" (GCA) which is targeted to have 70 percent of the Region's population by 2021, up from 65 percent in 1991. The GCA objective for Burnaby is supposed to guide infrastructure spending and planning actions across GVRD municipalities. The importance of this for Burnaby is that this should tend to boost Burnaby's share of GVRD population and employment. However, in 2001 the GCA's population share was still 65 percent. Future success of the LRSP will be important in determining how much Burnaby grows over the next 10 years to 2013.

#### 4. Specific Forecasts

There are a number of existing forecasts that apply to Burnaby's future. Table 11 summarizes a number of population forecasts. The forecasts might be compared to the LRSP 2021 population target of 2,676,000 (1,832,000 in the GCA). The target implies a 30-year annual population growth rate of 1.71 percent; the forecasts for the middle decade of the LRSP period are somewhat lower (in the 1.3-1.4 range). The forecasts for Burnaby (and Burnaby/New Westminster) are more variable ranging from 1.88 percent to as low as 1.02 percent. (Recall that 1991-2001 growth in Burnaby's population was 2 percent.)

Table 12 presents forecasts of employment. Burnaby's employment grew at an annual rate of 1.4 percent between 1991 and 2001 and three of these four forecasts are in the 1.8 percent range.

**Table 12**  
Employment Forecasts

		2001	2003	2006	2011	2013
GVRD	Urban Futures for GVRD	1,159,080	1,200,570			1,440,790
	Annual 10 year Growth Rate					1.82%
	Royal LePage for GVRD	1,006,200		1,107,500	1,208,900	
	Annual 10 year Growth Rate				1.84%	
Burnaby/New Westminster	Royal LePage for GVRD	147,600		162,700	177,700	
	Annual 10 year Growth Rate				1.86%	
		<b>1996</b>				
Burnaby	Planning Department	93,019		119,691		151,649
	Annual 10/15 year Growth Rate			2.52% (10 years)		2.88% (17 years)

Table 11

## Burnaby and GVRD Population Forecasts

		2001	2003	2006	2011	2013	2016	2021
Burnaby Actual	BC Stats Estimate	202,421	205,261					
Burnaby School District	BC Stats PEOPLE 27	204,407	208,114			245,440		275,251
	Annual 10 year Growth Rate					1.65%		
Burnaby/ New Westminster	Urban Futures for GVRD	261,260	272,328		289,244		310,418	333,616
	Annual 10 year Growth Rate				1.02%			
	Royal LePage for GVRD	259,300		286,200	313,000		339,300	
	Annual 10 year Growth Rate				1.88%			
GVRD Actual	BC Stats Estimate	2,073,681	2,126,806					
GVRD	BC Stats PEOPLE 27	2,091,080	2,147,317			2,469,193		2,720,227
	Annual 10 year Growth Rate					1.40%		
	Urban Futures for GVRD	2,078,824	2,117,047			2,407,067		2,680,896
	Annual 10 year Growth Rate					1.28%		



The two forecasts done for the GVRD also contain employment forecasts by sector. Urban Futures<sup>11</sup> forecasts employment for 11 industrial sectors for each year from 2001 to 2031. Annual growth rates for the 2003-2013 period can be calculated from their forecasts. There are considerable variations by sector, as shown in Table 13.

**Table 13**

Projected Annual GVRD Employment Growth Rates by Sector, 2003-2013

FIRE	2.80
Construction	2.59
Health and Welfare	2.48
Education	2.44
Retail	1.87
<b>GVRD Total</b>	<b>1.82</b>
Wholesale	1.77
Commercial Services	1.64
Public Administration	1.64
Transportation, Communication, Utilities	1.04
Manufacturing	0.93
Primary	0.93

Table 14 shows the sectoral detail of the employment forecasts for 2001, 2006, 2011, and 2016 according to Royal LePage forecasts<sup>12</sup>. While both GVRD and Burnaby/New Westminster forecasts are available, there is limited sectoral detail because the forecasts are for type of land use, not type of employment.

**Table 14**

Projected Annual Employment Growth Rates by Land Use Type, 2001-2011

	GVRD	Burnaby/ New Westminster
Office	2.70 percent	3.75 percent
Industrial	1.48	-0.70
Retail	0.98	0.64

There is a striking difference between growth across these sectors between the GVRD and Burnaby/New Westminster as projected by Royal LePage. Burnaby/New Westminster office employment will grow at a rapid rate while retail land use employment will grow slowly and industrial land use will actually decline. GVRD retail employment growth is slower than in the Urban Futures forecasts.

<sup>11</sup> Urban Futures Incorporated, A Context for Change Management in the Lower Mainland, August, 2003.

<sup>12</sup> Royal LePage Advisors Inc., Commercial and Industrial Real Estate Development Trends and Forecast for the Greater Vancouver Region, 1991 to 2021, 2003.

## 5. Technology Road Mapping

Technology roadmapping could provide a method of assessing the challenges and opportunities facing the technologies that are important in the Burnaby economy, now and in the future. A recent survey describes the technology roadmapping approach in this way.<sup>13</sup>

"Technology roadmaps provide an extended look at the future of a chosen field of inquiry drawn from the collective knowledge and imagination of the groups and individuals driving change in that field. Roadmaps include statements of theories and trends, the formulation of models, identification of linkages among and within sciences, identification of discontinuities and knowledge voids, and interpretation of investigations and experiments. Roadmaps often include the identification of instruments and tools needed to solve problems, as well as an identification of problems that could become showstoppers."

"The process for gathering and selecting the content of roadmaps includes [putting] as many practicing professionals as possible in workshops to allow all suggestions to be considered and to objectively evaluate the consensus and divergent ideas that emerge. Equal treatment is usually given to minority views and individual advocacies. Roadmaps communicate visions, attract resources from business and government, stimulate investigations, and monitor progress. A roadmap becomes the inventory of possibilities for a particular field, thus stimulating more targeted investigations. The roadmapping process encourages more interdisciplinary networking and teamed pursuit."

It is beyond the scope of this report to undertake technology roadmapping but it could be an important part of gaining further understanding of Burnaby's economic future. The process itself would also be an important feature of cluster networking that is discussed in the companion report by Adam Holbrook.

## 6. Cluster Summary Table

Table 15 presents a preliminary assessment of future trends in Burnaby's industry clusters. Most of these are positive, which means employment growth in the future. Some of the positive clusters should experience a growing share of GVRD employment. Whether this occurs will depend on the successes and failures of Burnaby-based firms and the relative locational advantages of Burnaby.

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<sup>13</sup> Robert Galvin, "Roadmapping: A Practitioner's Guide," Technological Forecasting & Social Change, vol. 71, 2002, pp. 101-103.

Table 15

## Preliminary Assessment of Trends for Burnaby Clusters

	Comments on Trends and Reasons
<b>KNOWLEDGE-BASED</b>	
Alternative Energy	Positive - sector will expand worldwide as long term shift away from petroleum begins.
Biotechnology	Positive - but depends on research and development success of local firms.
Film and Services	Stable - "old-fashioned" film and video increasingly replaced by digital imaging but quality of local industry preserves its size.
Fuel Cells	Stable or negative - local future is in research and development of new non-transport applications and government support of firms in this sector will decline.
Multimedia	Positive - see comment on film above.
Marketed Post-secondary Education	Probably positive although the Burnaby locational advantages for the private part of this sector are not obvious. Large public institutions will expand but this is not a top priority.
Sustainable Technology	Positive - much interest and considerable reputation for Vancouver in various aspects of urban sustainability.
Wireless/ICT/software/electronic manufacturing	Positive- local firms have expertise in products and operations but these sectors are very competitive and manufacturing has not recovered from its post-2000 slump.
<b>CONSUMER-BASED</b>	
Sport/tournaments	Positive - but economic impact not large
Tourism	Stable to negative. Tourism increasingly focussed on Downtown Vancouver and recreational areas. Burnaby has no major "draw".
Miscellaneous Light Manufacturing	Declining because the sector is slow growth and attracted to other areas.
Retail	Stable - will depend on where population growth actually occurs.
<b>LOGISTICS</b>	
Warehousing/ Wholesale	Positive as long as Burnaby's relative highway access quality does not deteriorate.
Bulk Intermodal	Stable - Burnaby has pipeline commodities but not other bulk transport. There are virtually no port facilities (general or specialized) in Burnaby and their development is unlikely.
<b>HEAVY INDUSTRY</b>	
Oil Refining	Declining
Wood Products	Declining as coastal forest industry declines.
<b>OFFICE SERVICES</b>	
Finance, Insurance, Real Estate	Stable - Burnaby employment in these sectors is mainly determined by local population.
Business Services	Positive - sector is growing and Burnaby will obtain some benefits.

## 7. A Moderate Scenario for 2013

Earlier sections of this report provide seven important conclusions for a 2013 scenario for the Burnaby economy.

- There will be no major global or national economic upheavals before 2013
- It is not likely that pre-1980 growth rates will return, despite the boost from such events as the 2010 Olympics and some evidence of increasing economic growth B.C.-wide
- Some aspects of Burnaby's current mix of industries are favourable to future employment growth at or above the GVRD rate but some of Burnaby's most prominent and buoyant clusters face important technical, financial and market challenges
- Population growth in the GVRD should have a major impact on employment growth in Burnaby
- Sorting through all the positive and negative influences that have been identified as bearing on the GVRD/Burnaby relationship, there is reason to expect a decline in Burnaby's ratio of employment to population
- Burnaby should be concerned about receiving less locational advantage from transportation investments over the next 10 years than in the 1985-2002 period
- The Livable Region Strategic Plan with its emphasis on sustainability and on directing population growth to an area that includes Burnaby is a positive influence for Burnaby's growth

Table 16 organizes the predictions about future growth in employment in the GVRD and Burnaby. The growth employment rates of 3,2, and 1 percent represent, respectively, the fastest recent GVRD growth, an average recent growth rate, and the slowest likely growth. The numbers in the cells of the table are the probabilities of various combinations of Burnaby and GVRD growth rates. Thus, there is a .15 (15 percent) probability that both Burnaby and the GVRD will experience employment growth averaging 3 percent annually between 2003 and 2013. The high values along the diagonal reflect the view that Burnaby growth and GVRD growth are likely to be linked; the table also reflects the view that it is more likely that Burnaby will grow more slowly than the GVRD than the other way around.

Table 16

## Employment Growth Prediction Scenarios

	GVRD High (3%)	GVRD Middle (2%)	GVRD Low (1%)	Total
Burnaby High (3%)	.15	.08	.01	.24
Burnaby Middle (2%)	.1	.4	.03	.53
Burnaby Low (1%)	.05	.12	.06	.23
Total	.3	.6	.1	1.0

Table 17 contains the conclusions of this report concerning the size and structure of the Burnaby economy in 2013. It is based on the author's judgement of the information contained in Tables 10 through 16 and the general conclusions listed at the beginning of this section. With the current employment/population ratio of 0.55, Burnaby's 2013 population would be 251,000; a decrease to 0.5 would mean population of 276,000 while a recovery to the 1991 level would imply 2013 population of 237,000.

Table 17

## Projected Employment in Burnaby by Industrial Sector, 2013

	2001	2013	Annual Percent Growth Rate
22 Utilities	2,510	3,376	2.5
23 Construction	3,715	4,712	2.0
31-33 Manufacturing	11,760	14,060	1.5
41 Wholesale trade	7,595	10,829	3.0
44-45 Retail trade	13,395	16,015	1.5
48-49 Transportation and warehousing	4,860	5,811	1.5
51 Information and cultural industries	10,890	16,456	3.5
52 Finance and insurance	4,650	5,240	1.0
53 Real estate and rental and leasing	2,410	3,056	2.0
54 Professional, scientific and technical services	8,825	13,335	3.5
56 Administrative and support, waste management and remediation services	3,405	4,318	2.0
61 Educational services	8,675	11,002	2.0
62 Health care and social assistance	7,515	8,985	1.5
71 Arts, entertainment and recreation	1,440	1,826	2.0
72 Accommodation and food services	6,035	6,800	1.0
81 Other services (except public administration)	5,820	6,958	1.5
91 Public administration	4,080	4,597	1.0
Others	390	556	3.0
Total Employment	107,970	137,933	2.04

Appendix Table 1

## Comparison of Burnaby Employment and Burnaby Labour Force by Industry Sector

	Employment	Labour Force	Employment Share	Labour Force Share	Share Difference	Labour Force "Surplus" or "Deficit" *
22 Utilities	2,500	745	2.46%	0.76%	1.69%	-1,755
23 Construction	3,410	5,190	3.35%	5.31%	-1.96%	1,780
31-33 Manufacturing	11,440	9,245	11.23%	9.45%	1.78%	-2,195
41 Wholesale trade	7,215	5,550	7.09%	5.67%	1.41%	-1,665
44-45 Retail trade	13,030	11,110	12.80%	11.36%	1.44%	-1,920
48-49 Transportation and warehousing	4,680	5,150	4.60%	5.27%	-0.67%	470
51 Information and cultural industries	10,655	5,170	10.46%	5.29%	5.18%	-5,485
52 Finance and insurance	4,285	5,220	4.21%	5.34%	-1.13%	935
53 Real estate and rental and leasing	2,020	2,075	1.98%	2.12%	-0.14%	55
54 Professional, scientific and technical services	7,360	9,030	7.23%	9.23%	-2.00%	1,670
56 Administrative and support, waste management and remediation services	3,065	4,400	3.01%	4.50%	-1.49%	1,335
61 Educational services	8,355	6,615	8.20%	6.76%	1.44%	-1,740
62 Health care and social assistance	6,890	8,575	6.77%	8.77%	-2.00%	1,685
71 Arts, entertainment and recreation	1,260	1,865	1.24%	1.91%	-0.67%	605
72 Accommodation and food services	5,940	7,795	5.83%	7.97%	-2.14%	1,855
81 Other services (except public administration)	5,435	5,230	5.34%	5.35%	-0.01%	-205
91 Public administration	3,985	4,075	3.91%	4.17%	-0.25%	90
Total	101,830	97,810				-4,110

- = Labour Force minus Employment

Appendix Table 2

## Location Quotients by Industry, GVRD

	GVRD/Canada LQ
51 Information and cultural industries	1.448
48-49 Transportation and warehousing	1.389
54 Professional, scientific and technical services	1.345
53 Real estate and rental and leasing	1.269
52 Finance and insurance	1.234
41 Wholesale trade	1.196
72 Accommodation and food services	1.174
71 Arts, entertainment and recreation	1.065
81 Other services (except public administration)	1.047
61 Educational services	1.038
56 Administrative and support, waste management and remediation services	1.023
44-45 Retail trade	0.977
62 Health care and social assistance	0.972
22 Utilities	0.820
23 Construction	0.811
55 Management of companies and enterprises	0.744
91 Public administration	0.733
31-33 Manufacturing	0.682
11 Agriculture, forestry, fishing and hunting	0.649
21 Mining and oil and gas extraction	0.200

## Location Quotients by Industry, Burnaby

	Burnaby/GVRD LQ
22 Utilities	3.448
51 Information and cultural industries	2.604
23 Construction	1.402
41 Wholesale trade	1.282
81 Other services (except public administration)	1.075
61 Educational services	1.070
31-33 Manufacturing	1.049
44-45 Retail trade	1.032
53 Real estate and rental and leasing	0.988
56 Administrative and support, waste management and remediation services	0.948
54 Professional, scientific and technical services	0.939
91 Public administration	0.806
48-49 Transportation and warehousing	0.754
52 Finance and insurance	0.734
71 Arts, entertainment and recreation	0.669
72 Accommodation and food services	0.665
62 Health care and social assistance	0.658
21 Mining and oil and gas extraction	0.328
55 Management of companies and enterprises	0.278
11 Agriculture, forestry, fishing and hunting	0.249



Appendix Table 3

## Location Quotients by Occupation, GVRD

	GVRD/ Canada LO
52 Technical and skilled occupations in art, culture, recreation and sport	1.2544
11 Professional occupations in business and finance	1.2420
51 Professional occupations in art and culture	1.2166
64 Intermediate sales and service occupations	1.1444
00 Senior management occupations	1.1351
01-09 Middle and other management occupations	1.1161
21 Professional occupations in natural and applied sciences	1.1035
14 Clerical occupations	1.0854
62 Skilled sales and service occupations	1.0616
32 Technical and skilled occupations in health	1.0569
12 Skilled administrative and business occupations	1.0545
31 Professional occupations in health	1.0170
41 Professional occupations in social science, education, government services and religion	1.0169
42 Paraprofessional occupations in law, social services, education and religion	0.9983
22 Technical occupations related to natural and applied sciences	0.9958
66 Elemental sales and service occupations	0.9455
74 Intermediate occupations in transport, equipment operation, installation and maintenance	0.9418
34 Assisting occupations in support of health services	0.9392
72-73 Trades and skilled transport and equipment operators	0.7764
96 Labourers in processing, manufacturing and utilities	0.7717
86 Labourers in primary industry	0.7395
84 Intermediate occupations in primary industry	0.6848
76 Trades helpers, construction labourers and related occupations	0.6756
94-95 Processing and manufacturing machine operators and assemblers	0.6181
92 Processing, manufacturing and utilities supervisors and skilled operators	0.5192
82 Skilled occupations in primary industry	0.4591

## Location Quotients by Occupation, Burnaby

	Burnaby/ GVRD LQ
21 Professional occupations in natural and applied sciences	1.8551
22 Technical occupations related to natural and applied sciences	1.6457
14 Clerical occupations	1.1999
01-09 Middle and other management occupations	1.0775
72-73 Trades and skilled transport and equipment operators	1.0254
74 Intermediate occupations in transport, equipment operation, installation and maintenance	1.0245
52 Technical and skilled occupations in art, culture, recreation and sport	0.9980
94-95 Processing and manufacturing machine operators and assemblers	0.9798
41 Professional occupations in social science, education, government services and religion	0.9600
00 Senior management occupations	0.9362
51 Professional occupations in art and culture	0.9340
12 Skilled administrative and business occupations	0.9046
64 Intermediate sales and service occupations	0.8790
76 Trades helpers, construction labourers and related occupations	0.8746
11 Professional occupations in business and finance	0.8620
66 Elemental sales and service occupations	0.8527
92 Processing, manufacturing and utilities supervisors and skilled operators	0.8476
62 Skilled sales and service occupations	0.8401
34 Assisting occupations in support of health services	0.8031
96 Labourers in processing, manufacturing and utilities	0.7847
42 Paraprofessional occupations in law, social services, education and religion	0.7668
32 Technical and skilled occupations in health	0.6881
82 Skilled occupations in primary industry	0.6723
31 Professional occupations in health	0.5539
86 Labourers in primary industry	0.5476
84 Intermediate occupations in primary industry	0.2988