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The UBC-Broadway Corridor –
Unlocking the Economic Potential

February 28, 2013

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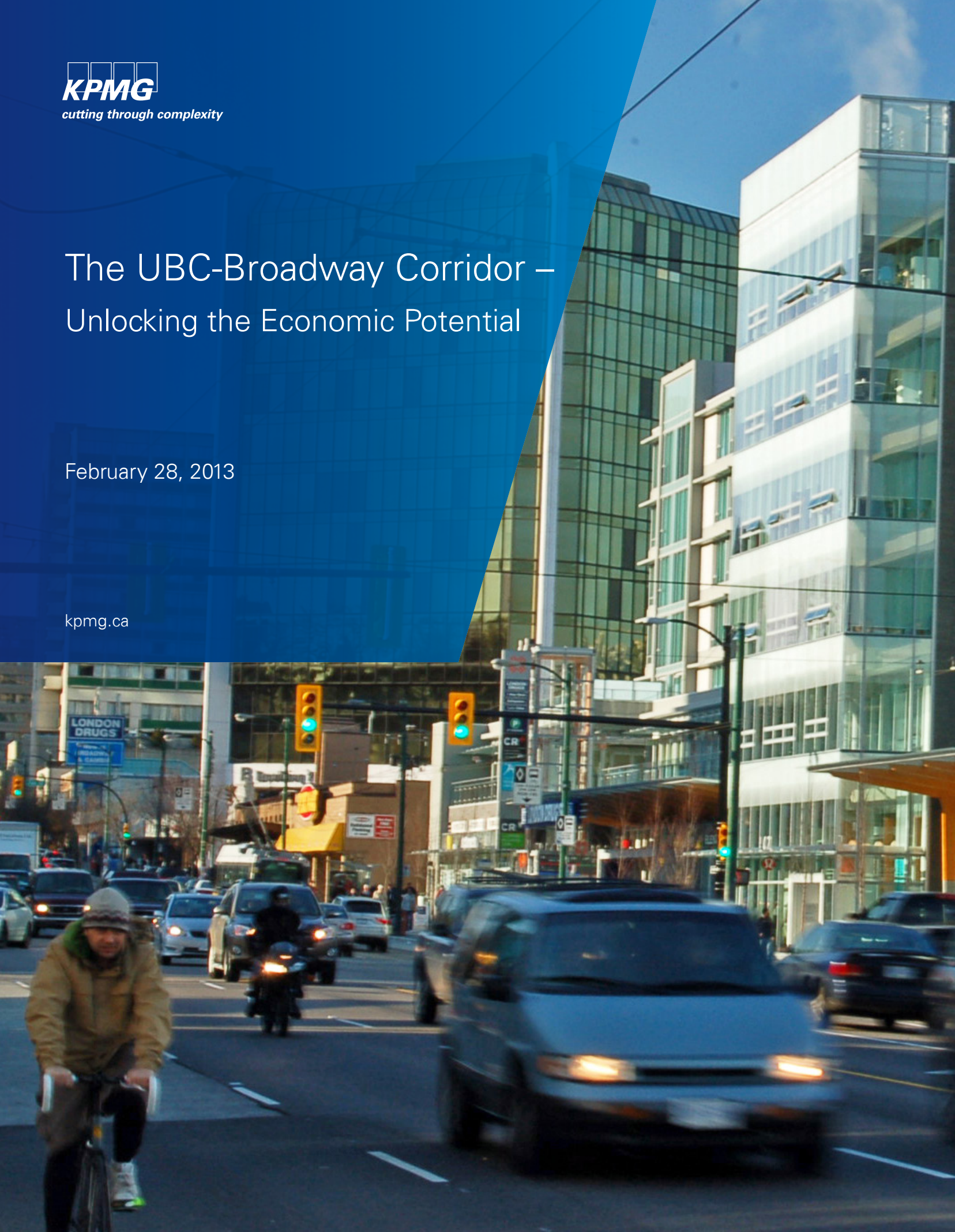

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Executive Summary

The UBC-Broadway Corridor (the Corridor) is the second largest business and innovation centre in British Columbia. Running from Commercial and Broadway, the busiest transit hub in the region, all the way to the University of British Columbia (UBC), the province's largest and most globally significant educational institution, it is currently the busiest bus corridor in North America.

The economic potential of the UBC-Broadway Corridor is enormous. The linkage between its health care precinct, life sciences hub, burgeoning technology industry, and UBC's research enterprise, sets the stage for significant growth in the coming decades. With UBC's annual economic impact estimated at more than $10 billion annually, and more than 150 spin-off companies, 100 of which are in life sciences and have raised more than $2 billion in capital, decisions made today on the development of the UBC-Broadway Corridor will determine how Vancouver, the region, and the province capitalize on these economic benefits.

The corridor linking Vancouver to UBC has the potential to become a technology hub on par with Toronto's MaRS district, San Diego's CONNECT or London's Tech City. Already, growth in the Corridor is outpacing predictions from just a few years ago, with estimates currently predicting an increase in employment and population of 150,000 over the next 30 years. A number of key enablers favour the UBC-Broadway Corridor in becoming a top-tier global research hub: a concentration of academic research excellence; locally available, well-trained graduates; and an appealing lifestyle to attract and retain top talent.

The research conducted by KPMG identifies two major weaknesses that are currently limiting the economic potential of the UBC-Broadway Corridor. These are the lack of a collaborative approach among stakeholders, and the absence of superior transit infrastructure. Cities such as Toronto and New York have developed partnerships with local academic institutions that have strengthened technology hubs and attracted significant investment from both the public and private sectors.

These cities have another clear competitive advantage over Vancouver: they have a public transportation network that provides rail rapid transit between their major employment centres and their academic research facilities. The UBC-Broadway Corridor is already at full transit capacity during peak hours, with an estimated 500,000 pass-ups a year, and off-peak service up to 75 percent of capacity. TransLink's preliminary evaluation of options for the UBC-Broadway Corridor, along with work done by the City of Vancouver, concludes that rail rapid transit – a subway – all the way to UBC best meets the needs of today's transit riders and tomorrow's population and economic growth.

Without an investment in rail-based rapid transit along the UBC-Broadway Corridor, the province's principal health and technology sectors will be at a disadvantage in attracting talent, venture capital, and businesses to the Corridor because of the serious inconvenience of increasing gridlock and a lack of transit capacity. The combination of UBC's long-term plan for the campus, which will see a daytime population of 87,000 by 2041, and continued development in Vancouver around existing transit nodes along Broadway and on Musqueam lands, will drive significant population and job growth in the Corridor.

But this is only one piece of the puzzle. To fully capitalize on this coming growth, a strategy needs to be in place now, delivering a transportation system that will enable the UBC-Broadway Corridor to take its place as a top-tier, globally leading research and technology hub.

Key Study Findings – At a Glance

Key features of the UBC-Broadway Corridor:

- After Downtown Vancouver, the largest business and innovation centre in the province, with more jobs and people than any other town centre in the region;
- Growing faster than previously projected in the 2011 Regional Growth Strategy, with an estimated increase in employment and population of 150,000 over the next 30 years due to growth both at UBC and in Vancouver;
- The combined commercial/institutional floor space in the Corridor is almost equal to that found in the Downtown and is experiencing significant growth;
- The Corridor includes UBC, BC's largest and most globally significant and research-focused university, and has the largest health care/life sciences precinct in the province; and
- Lacking adequate transportation infrastructure to meet the current and future economic and population needs of both UBC and the City of Vancouver.

Unlocking the economic potential of the UBC-Broadway Corridor to become a globally significant high-tech hub like Toronto's MaRS, San Diego CONNECT or London's Tech City requires:

- High-capacity, fast, reliable rail-based rapid transit connecting UBC with essential research partners and job centres along the Corridor, including the health and research precinct around Vancouver General Hospital, and throughout the Metro Vancouver Region, and
- Strong, intentional City and UBC collaboration to support economic growth with a focus on high technology, life sciences and green business expansion, to better leverage both public and private sector investment.

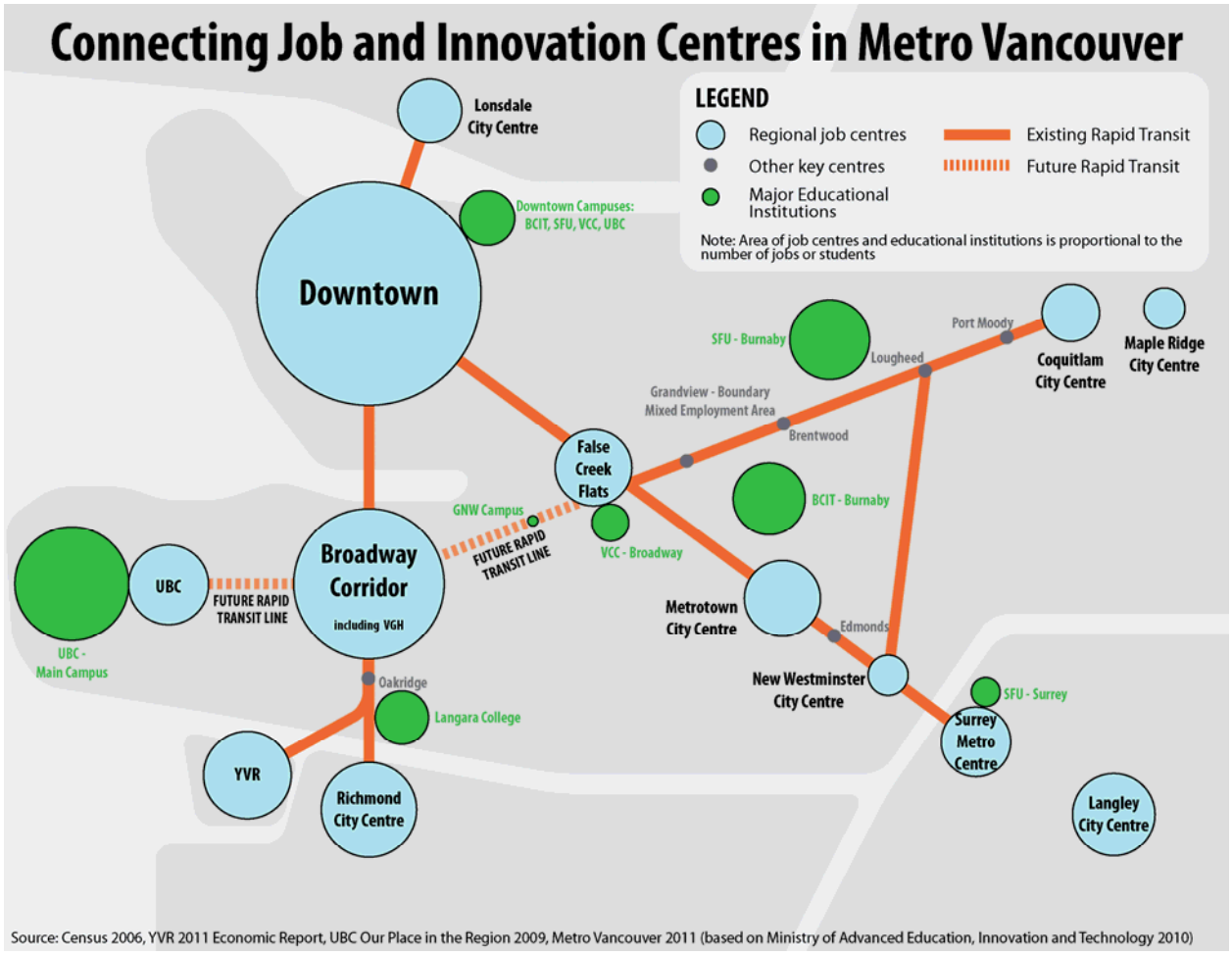
The Regional Case

The creation of rail-based rapid transit through the UBC-Broadway Corridor stands to benefit not just UBC and the City of Vancouver, but the Metro Vancouver region, and the province as a whole. The UBC-Broadway Corridor is unique in that 50 percent of all transit riders come from outside of the City's boundaries. This is driven by the high concentration of academic and economic activity within the Corridor, particularly in the health sector. Some of the province's top medical research centres are along the Corridor, including:

- Vancouver General Hospital
- BC Centre for Disease Control
- BC Cancer Agency
- BC's only Schools of Dentistry, Medicine, and Pharmaceutical Sciences
- Vancouver Coastal Health Research Institute
- UBC Hospital
- Centre for Brain Health
- Centre for Drug Research and Development.

These medical facilities provide support and care for people throughout British Columbia, and provide the employment that makes the UBC-Broadway Corridor the second largest job district in BC. A world-class life sciences cluster along the Corridor that is connected by rail-based rapid transit would provide even greater benefits to British Columbians.

The UBC-Broadway Corridor is the critical geographic connection between Vancouver's Central Business District, UBC, other innovation centres, and key regional business centres and communities in Metro Vancouver, but it needs rapid transit to better link it to the region, as illustrated in the following figure.



The Corridor is unique in that it intersects the major north/south and east/west rapid transit lines: Canada, Expo and Millennium Lines. With the Evergreen Line opening in 2015, a subway along Broadway would connect Vancouver via rapid transit to Richmond, Burnaby, Surrey, New Westminster, Coquitlam, and Port Moody, benefiting other municipalities across the region. A subway would enhance the connections among regional town centres to the UBC-Broadway Corridor, which is the second largest business centre in the province after Downtown Vancouver, with more jobs than the next eight largest Metro Vancouver town centres combined.

The technology industry in British Columbia is a major contributor to the provincial economy, particularly in the Lower Mainland, and Vancouver has the potential to develop into a globally significant technology hub. The technology industry is:

- The second fastest creator of new jobs in the private sector;
- Growing more than twice as fast as the balance of the provincial economy; and
- Intrinsically linked to UBC through funded research (public and private), operation of research centres of excellence, spin-off companies and collaboration in areas such as health care/life sciences.

About one-quarter of current employment in the technology sector in Vancouver is located in the UBC-Broadway Corridor, as well as forty per cent of all jobs in the health care/social assistance sector in the city, with a significant linkage between these two sectors and UBC. The economic potential of the Corridor will be significantly tied to the further development of the technology sector.

UBC is closely linked to research institutes and technology firms throughout the Corridor:

- UBC is a leading international research institution (30th out of 500 in the world and 2nd in Canada in 2010).
- In 2010-11, UBC attracted more than $549 million in research funding from all sources for 8,054 projects. A large proportion of these funds are expended in the Corridor.
- One hundred of the 152 spin-off companies have been in the health care sector, creating more than 2,500 jobs and over $2 billion in capital to date.

A 2009 UBC study estimated the university's economic impact at more than $10 billion annually, half of which is due to UBC's research activities. Research intensive universities are a critical component in the economic growth and development of the technology sector.

What needs to be done?

Based on the findings of this study, the priority actions to unlocking the UBC-Broadway Corridor's economic potential include the following.

1. Implement rail-based rapid transit, linking the UBC-Broadway Corridor's academic and research institutes to each other and to the Metro Vancouver community

The ability of the Corridor to achieve its economic and development potential will depend on the implementation of high-capacity, fast, reliable rapid transit as the long-term solution to its current and growing transportation congestion and transit capacity issues. In light of the TransLink study and based on work by the City of Vancouver, alternatives such as expanding bus service, or building light rail transit simply do not have the capacity to meet the population and economic growth that the Corridor will experience in the coming years.

International experience with global technology hubs indicates that effective infrastructure is a key enabler for collaboration and economic growth. Knowledge, workforce, funding, business acumen and appropriate space need to be effectively linked for technology hubs to work. Cities like New York and Toronto have a strategic advantage over Vancouver when it comes to transit connections for technology hubs.

For the UBC-Broadway Corridor to strengthen its competitive edge as a world-class life sciences and technology hub, rail-based rapid transit infrastructure is critical.

2. Provide appropriate and affordable commercial and residential space

Commercial space

One of the necessary components of economic development is the need to develop attractive and affordable commercial space along the UBC-Broadway Corridor – to enable fast-growing technology and other firms to take advantage of the Corridor's proximity to UBC, downtown, YVR, and adjacent residential neighbourhoods. The strongest opportunities for growth include (1) increasing the allowable density for existing commercial areas in the central and western parts of the Corridor, and (2) developing new higher-density commercial areas in eastern sections of the Corridor, in conjunction with improved rapid transit services.

Residential space

The UBC-Broadway Corridor is already seen as a highly attractive residential area within Metro Vancouver. Increasing the supply of affordable residential dwellings along and near the Corridor will assist Corridor-based firms in attracting talented employees, by enabling them to live and work in close proximity.

3. Develop an intentional, collaborative strategy to deliver a strong, vibrant and resilient technology sector

Culture of Collaboration

City/university collaboration in other cities — e.g. MaRS in Toronto (U of Toronto and City of Toronto), San Diego CONNECT (UC San Diego and City of San Diego) and New York City's new partnership with Cornell — has been proven to attract significant investment from both the public and private sectors. There is similar potential for UBC and the City of Vancouver. The City of Vancouver and UBC have strong partnerships in a number of areas, and should continue to strengthen collaboration and complementarities in the areas of land use and economic planning. The critical mass of research facilities and businesses, geographic proximity and shared economic spin-offs create the potential for a powerful collaboration between BC's biggest city and its largest post-secondary institution.

Business attraction strategy

Leading economic development centres typically result from the successful implementation of an intentional and targeted business attraction strategy – drawing on support at the local, regional, state/provincial, and national levels. The Vancouver Economic Commission and UBC are well positioned to develop and deliver such a strategy. Development of specific strategies and incentive programs to attract targeted industry sectors and firms — learning from the successes of other jurisdictions — is a key to realizing the economic potential of the UBC-Broadway Corridor. A targeted strategy focused on world-class research facilities and start-ups, access to capital and quality of life can spur new investment and allow the Corridor's technology and science sectors to enhance its standing relative to other global cities.

An analysis of Vancouver's position as a world-class technology hub shows that while the Corridor has many strengths, there are weaknesses that need to be addressed moving forward.

Key Enablers	UBC-Broadway Corridor's Relative Strength
Building out of academic research excellence within a university	Strong
Supply of locally available well-trained graduates	Strong
Proximity and access to hospitals & clinical trial opportunities	Strong
Attractive lifestyle to attract top young talent	Strong
Clustering/critical mass considerations	Strong
Close proximity of world-class technological research capabilities	Moderate
Proximity to arts-oriented residential communities	Moderate
Access to the business community/ financial support	Moderate
Access to affordable office/lab space	**Weak**
Collaborative approach from stakeholders	**Weak**
Superior transit infrastructure	**Weak**

* * *

It is clear that the economic potential of the UBC-Broadway Corridor is significant and can build off an already strong base, with many of the enablers for future growth already in place. The City of Vancouver and UBC are taking steps to realize this potential, but ultimately a rail-based rapid transit link is essential to provide the mobility required for this economic potential to be fully realized.

To develop a technology hub economy that is second to none at a global scale, a new approach is needed – one that sees UBC and Vancouver collaborating closely on a long-term plan to invest in the UBC-Broadway Corridor, through strategic land-use planning, targeted economic strategies and the development of a rail-based rapid transit line to meet the population and economic needs of the future.

1 Introduction

The UBC-Broadway Corridor (the Corridor) has strategic importance to the economy of Metro Vancouver, British Columbia and Western Canada. The Corridor is home to:

- The main Vancouver campus of UBC, a globally significant research intensive university in the top 30 in the world, with a daytime population of more than 60,000 and more than 20 million square feet of institutional space, including significant affiliated research facilities located on campus.
- The second largest office district in BC, next to downtown Vancouver, with more than 25 million square feet[1] of business, commercial and institutional space in the Vancouver portion of the Corridor.
- Approximately 200,000 people living and/or working within the Corridor, with employment of 95,000 and a residential population of 104,000 (as of 2006 census[2]).
- The largest healthcare precinct in British Columbia, located in proximity to Vancouver General Hospital (VGH), between Oak and Cambie Streets and with strong links to UBC (medical school, research, UBC Hospital and other clinical facilities).
- Other educational institutes and campuses located towards the east end of the Corridor (e.g. Vancouver Community College, UBC/SFU/BCIT/Emily Carr's Great Northern Way campus).
- Areas with significant potential for commercial/light industry enterprises (e.g. Mt. Pleasant, False Creek Flats).

The UBC-Broadway Corridor is the key geographic connection between Vancouver's central business district, the University of BC, and regional business centres and communities in Metro Vancouver

Geographically, the Corridor is uniquely located within the Metro Vancouver regional economy – linking the world-class capabilities of UBC, the downtown Vancouver financial/business district, YVR, and the rapidly-growing economic and business and economic centres located in Richmond, Burnaby, Surrey, and other Metro Vancouver municipalities.

1.1 Unlocking the Corridor's economic potential

The Corridor's residential population, employment, commercial building facilities, and public transportation services (particularly north-south routes) all have grown significantly in recent years.

As UBC has matured and its global stature has grown, so too has its outreach to the broader Metro Vancouver community. UBC has numerous campuses around the region and the province, including academic campuses at Robson Square, Great Northern Way, and in Kelowna; and clinical academic/research campuses at VGH, Women's and Children's, BC Cancer Agency, St. Paul's, Surrey Memorial, Royal Columbian, Prince George, Kelowna and Victoria; along with over 20 community education facilities in every municipality in the region and other communities throughout BC. As with other leading universities, much of UBC's business outreach is with respect to technology-based businesses, one of BC's fastest-growing industry sectors. The technology sector includes a significant life sciences component, much of which also links to the medical precinct in the Corridor.

[1]City of Vancouver

[2]Statistics Canada 2006.

Leading global technology centres typically feature a combination of research excellence, world-class business support services, strong workforce accessibility, and a high personal quality of life. The Corridor is thus positioned to be at the heart of the Metro Vancouver technology sector – connecting cutting-edge researchers at UBC with corridor and downtown business services, as well as providing linkages to business centres located in other Metro Vancouver municipalities.

At the same time, the Corridor's east-west public transit, currently restricted to bus transit, is over-capacity, and traffic congestion is growing. The lack of high capacity, reliable and fast rapid transit is a significant potential barrier to future economic growth.

1.2 Study objective

The objective of this study is to define the opportunities and priority actions required to unlock the economic development potential of the UBC-Broadway Corridor – with particular emphasis on (1) the potential of technology-based industries, and (2) the role of rapid transit in unlocking this economic potential.

The Corridor already has many of the attributes of leading global technology centres – proximity to a leading university, nearby business and financial services, a technically-skilled workforce and a high quality of life. However, it is missing high-capacity rapid transit.

1.3 Study conduct and reporting

This study has been led by KPMG, in association with MMK Consulting (MMK). We would like to acknowledge with appreciation the significant contributions of UBC, the City of Vancouver, the Vancouver Economic Commission, and Colliers in providing information and report content.

The contents of this report, and in particular the recommendations for unlocking the Corridor's economic potential, represent the combined inputs of KPMG, MMK, UBC, the City of Vancouver, and the Vancouver Economic Commission.

2 The Corridor in 2012

2.1 Geographic description of the Corridor

Figure 2.1 – The Broadway Corridor

The UBC-Broadway corridor study area (the Corridor) for this report is outlined in grey in **Figure 2.1**. The Corridor is bounded roughly by 4th Avenue to the north, 16th Avenue to the south, UBC in the west and the Commercial Broadway SkyTrain Station in the east. The Corridor measures approximately 13km from east to west, and a little over one kilometre from north to south.

2.2 Economic importance of the Corridor

The UBC-Broadway Corridor represents the second largest business centre in the province after Downtown Vancouver. Central Broadway and UBC employ and are populated by more people than any other town centre in the region outside the Vancouver downtown area, as illustrated in **Figure 2.2**.

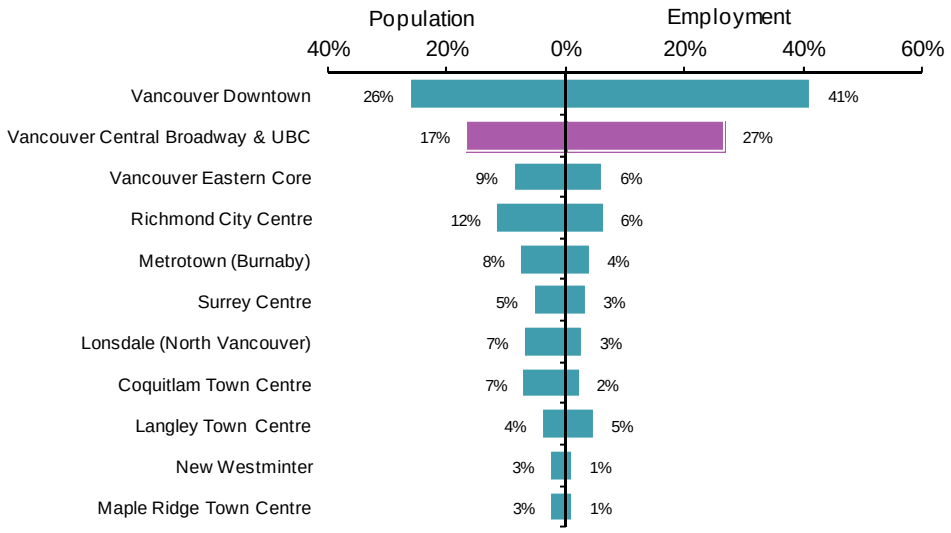
Central Broadway and UBC together account for 27 percent of employment (including students), while totalling 17 percent of population in the region's town centres and UBC.

The UBC-Broadway Corridor represents:

17% of population

27% of employment.

Figure 2.2 – Regional population and employment in town centres and UBC



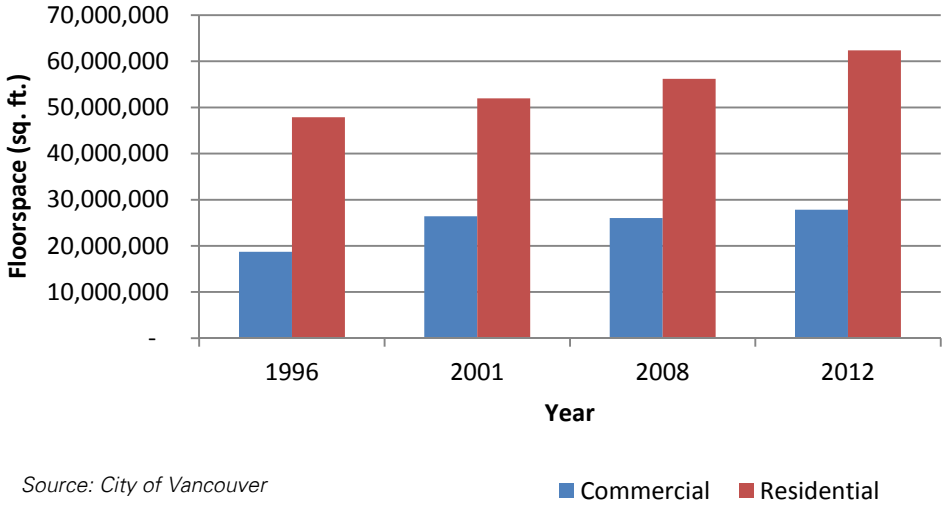
Note: UBC employment and population figures include the University Endowment Lands. The UBC employment figure also includes the non-resident student population at UBC as the transportation needs of students and employees are similar.
Source: Census data 2006 and UBC 2012

2.3 Buildings and facilities

2.3.1 Vancouver portion of the Corridor

Figure 2.3 illustrates floor space trends in the Vancouver section of the Corridor (Boundary Road to Blanca Street), between 1996 and 2012.

Figure 2.3 - Vancouver's Portion of the Corridor Commercial and Residential Floorspace



Source: City of Vancouver

Key highlights from this chart are:

- Residential floor space grew between 1996 and 2012 at a compound annual growth rate of 1.5 percent.
- Commercial floor space grew about 50 percent over the period 1996 to 2012, representing a compound annual growth rate of 2.5 percent.

The 2008 to 2012 period is particularly interesting because it begins to reflect changes to land use policy along the Corridor that may be indicative of future changes to development capacity and the rate of development along Broadway. Some highlights of the 2008 to 2012 period are[3]:

- Corridor floor space (both residential and commercial) has grown by almost 10 percent over four years.
- 500,000 square feet of commercial space was added annually during this period.
- 1,500,000 square feet of residential space was added annually during this period.
- 25 percent of the City's floor space growth occurred in the Corridor.

2.3.2 UBC portion of the Corridor

Figure 2.4 illustrates UBC's institutional floor space trends, between 1991 and 2012, along with projections for the next four years. In summary:

- Institutional/business floor space at UBC (including affiliated office, hospital and research space located on campus) has grown almost 50 percent over the past eleven years (average annual growth of 3.9 percent).
- Total institutional/business floor space today, including buildings currently under construction, is 18 million square feet (or 1.7 million square metres). When the UBC Hospital and high technology research facilities located on campus are included, this space expands to nearly 20 million square feet.
- Known projects in the capital planning process will begin to add another 1.8 million square feet (or 170,000 square metres) of institutional/business space over the next four years, bringing the total institutional/business floor space to approximately 22 million square feet (or 2.0 million square metres).

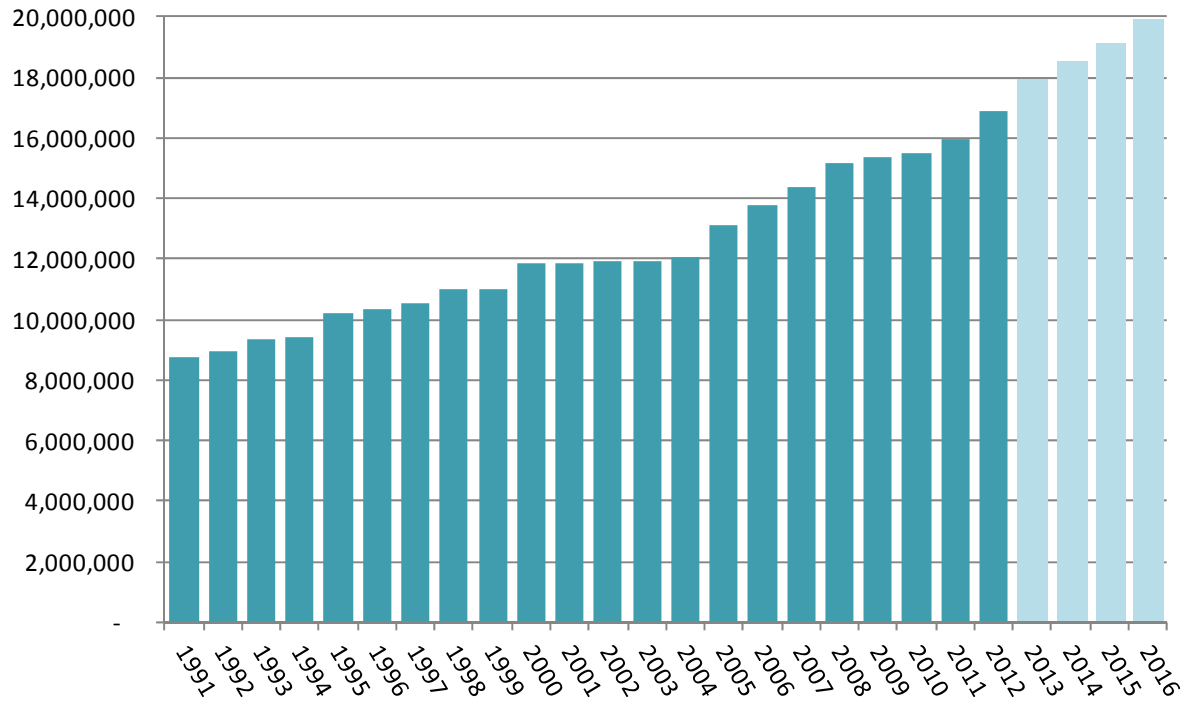
Institutional space at UBC has grown by 50% over the past eleven years and is expected to continue to grow rapidly to meet academic and research needs.

Combining the City and UBC statistics, total institutional/business oriented floor space in the UBC-Broadway Corridor is estimated at over 50 million square feet – approximately 75 percent of the total commercial floor space of Downtown Vancouver.

The total of UBC institutional space and Broadway commercial space is approximately 75% of the total commercial floor space of Downtown Vancouver.

[3] Source: City of Vancouver

Figure 2.4 – Institutional Floor Space (gross ft²) UBC Pt. Grey Campus (1991-2016)

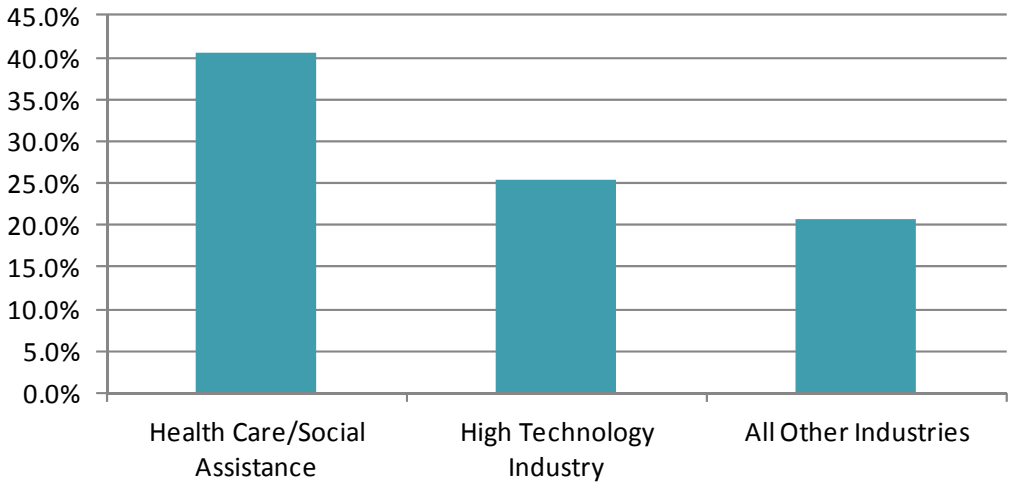


Source: University of British Columbia

2.4 Economic importance of the City portion of the Corridor

The UBC-Broadway Corridor is a major part of the regional economy. The City portion of the UBC-Broadway Corridor represents the City of Vancouver's second largest business centre, accounting for approximately 22 percent of businesses within the City. As illustrated in **Figure 2.5**, the technology sector and health care/social assistance sectors rank much higher in terms of representation within the Corridor than do other industries.

Figure 2.5 – Corridor as Percentage of City of Vancouver Business Counts



Source: KPMG/MMK analysis of Dun & Bradstreet Data for 2012

As the home of the Oak-Cambie healthcare precinct adjacent to Vancouver General Hospital, the Corridor accounts for 40 percent of the City's health care and social assistance businesses. According to 2006 Census data, this equates to approximately 8,000 health care jobs in the Vancouver portion of the Corridor (there were approximately 23,000 health care jobs city-wide).

The Corridor also accounts for 25 percent of the City's high technology businesses. A number of notable high-technology & media/entertainment companies are located in the Corridor, including: Stemcell Technologies, Zymeworks, Slant Six Games, Genivar, and Deluxe Entertainment. In 2013, the rapidly expanding social media firm, Hootsuite Media Inc., will be relocating from Downtown to the Mt. Pleasant area of the Broadway Corridor.

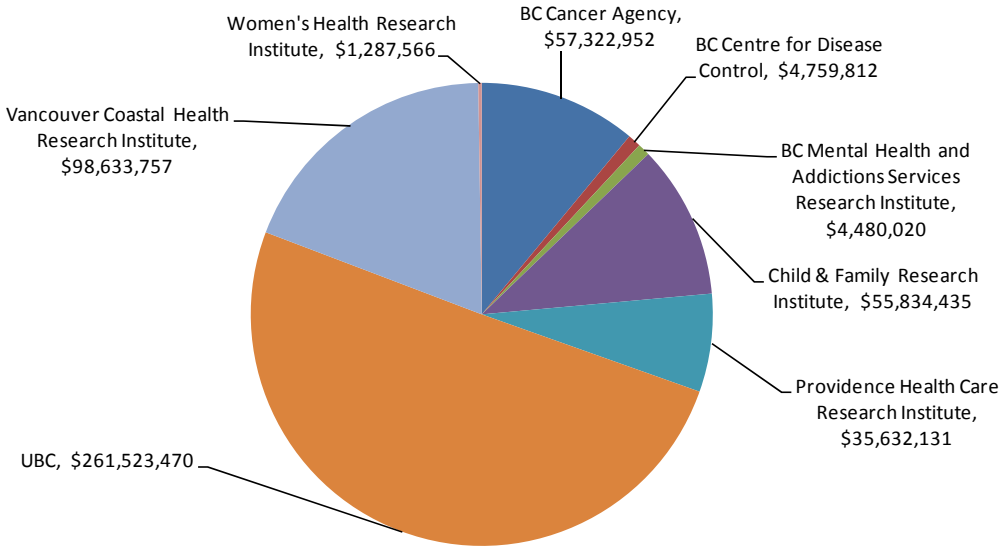
2.4.1 Economic importance of the health care precinct

The health care precinct surrounding Vancouver General Hospital (VGH) and the BC Cancer Agency is a significant regional asset, serving not only Vancouver, but the province as a whole for more complex and urgent health care matters. It is also the focus of a large life sciences research initiative between the hospital and UBC. Vancouver Coastal Health employs approximately 7,500 personnel in its corporate offices and health care facilities in the Corridor. The majority of the BC Cancer Agency's 2,800 staff also work in the Corridor.

Health research is a significant activity in the Corridor, with over $480 million of research funding provided in 2011/12. As illustrated in **Figure 2.6**, Vancouver Coastal Health Research Institute, BC Cancer Agency and Child and Family Research Institute are the major recipients of this research funding.

The vast majority of BC's healthcare research takes place within the Corridor, at UBC, Vancouver Coastal/VGH, BC Cancer Agency and other centres.

Figure 2.6 – 2011/2012 Research Awards by Institution



Source: UBC Office of Research Services (ORS)

2.5 Economic importance of the UBC portion of the Corridor

The University of British Columbia is a public research university located on Point Grey, at the west end of the Corridor. UBC is the largest and oldest university in British Columbia. It is ranked second in Canada and 30th worldwide in the Times Higher Education rankings. It is also ranked fifteenth amongst world public universities and eight overall in Newsweek's ranking of top universities outside of the United States. UBC is

the leading university in Canada in producing high-quality patentable research in life sciences and other areas. UBC has spun-off more than 100 life sciences companies creating more than 2,500 jobs and raising more than $2 billion in capital.

The quality of UBC research is recognized globally. High Impact Universities ranked UBC's research 30th out of 500 universities globally and second in Canada in 2010. UBC's research budget of $550 million is the second-largest of the universities in Canada.

UBC is a member of Universitas 21, a leading international association of research-led institutions. The member universities collaborate to foster global citizenship and innovation through research-inspired teaching and learning, connecting students and staff, and promoting wider advocacy for internationalization. The network allows the Deans and Directors of Graduate Studies to exchange ideas, build cross-border relationships with colleagues, and increase knowledge. Joint PhD programs provide graduate students with opportunities to experience two diverse research communities.

2.5.1 Growth in campus population and trips to UBC

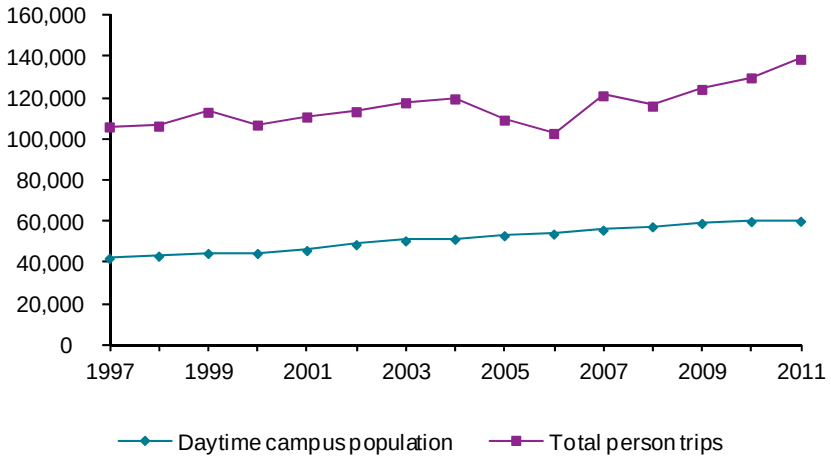
UBC's daytime campus population has increased from 42,300 to 60,300 between 1997 and 2011, including students, faculty and staff, representing a compound annual growth rate of 2.6 percent. UBC also has a residential capacity of 40,000, including student and family neighbourhoods.

UBC is one of the most important transportation destinations in the Corridor. Average weekday trips to UBC have increased by 30 percent over the last 14 years, from 106,100 in 1997 to 138,900 in 2011.

UBC is the 3rd largest employer in the Lower Mainland. There is a hospital on campus and other facilities offering medical services. In addition, there are major cultural facilities (e.g. Chan Centre, Museum of Anthropology). All of these generate significant regional benefits and transit demand.

Figure 2.7 illustrates the growth in daytime Campus population and total trips by all modes to UBC.

Figure 2.7 – UBC Campus Population and Trips to UBC



UBC has grown to become the third largest employer in the Lower Mainland.

Source: University of British Columbia

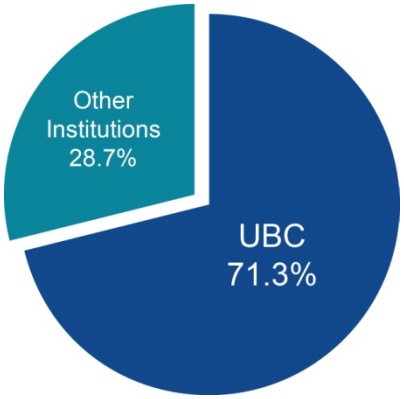
2.5.2 Economic impact of UBC

A 2009 UBC study[4] estimated UBC's annual economic impact as more than $10 billion annually.

Source of economic impact	Impact after local multiplier ($ millions)
Direct spending by UBC	$1,879
Student spending (excluding direct UBC spending)	306
Visitor spending	270
Increased income resulting from education (alumni in BC) net of costs	2,600
Impact of UBC research on BC economy (new knowledge and knowledge transfer)	**$5,000**
Total economic impact of UBC (spending in BC)	**$10,055**

UBC's contribution to the BC economy is especially important in research and development. According to the Canadian Association of University Business Officers, UBC accounts for 71.3 percent of the $755 million in sponsored research funding that comes to the province, as illustrated in **Figure 2.8**. UBC also undertakes 91 percent of all research funded by business enterprises at BC universities.

Figure 2.8 – Proportion of Sponsored Research Funding



UBC accounts for more than 70% of all sponsored research funding coming to BC -- funding that has particularly high employment, salary and GDP spin-off benefits.

2.6 Life Sciences connections along the Corridor

The life sciences cluster in the UBC-Broadway Corridor is unique within British Columbia, with particular concentration in facilities around the Cambie-Oak superblock and the University of British Columbia. As the Vancouver Economic Commission (VEC) notes, Vancouver's competitive advantage in life sciences is based on a talented workforce, government investment, and high quality university R&D and education programs. Vancouver draws top-notch, international life sciences talent because of flexible federal immigration policies, Vancouver's outstanding quality of life, and strong R&D infrastructure.

[4] The Economic Impact of the University of BC, Walter Sudmant, UBC Planning and Institutional Research, September 2009.

The existing life sciences connections between researchers and institutions within the Corridor are rich and collaborations are frequent, producing outstanding results for British Columbians, particularly in the field of medicine. For example, in June 2012, a team led by human genetic researchers at UBC and the Vancouver Coastal Health Research Institute (VCHRI) identified a gene found to be unequivocally associated with typical late-onset Parkinson's disease. The team, led by UBC Medical Genetics Professor Matthew Farrer – a federally-funded Canada Excellence Research Chair – contributed through their research to better understanding of late-onset Parkinson's disease and the future cure for the debilitating disease based on their collaborative effort within the Corridor.

Many researchers and faculty members at the VCHRI, UBC Faculty of Medicine and other research agencies are cross appointed between various institutions located within the Broadway Corridor. Examples of cross appointments are found at the ICORD spinal cord injury research centre at Vancouver General Hospital, the Centre for Hip Health and Mobility at VGH, the Vancouver Prostate Centre (a UBC and VGH Centre of Excellence), and the Brain Research Centre at the UBC Hospital site. The Djavad Mowafaghian Centre for Brain Health at UBC Hospital is expected to open in 2013. There is also growing collaboration and significant potential for collaborations in pharmacy-related fields with the establishment of the Centre for Drug Research and Development in the new Pharmacy building at UBC.

The Broadway Corridor is host to many productive research collaborations, and work by members of the life sciences sector in the area holds a strong economic value for the region at present. British Columbia could enjoy even greater benefits in the future through the pursuit of a world renowned Life Sciences cluster on the Broadway Corridor.

2.6.1 Case Study: Boston, MA

One of the world's premier life science clusters is found in Boston, MA. Like the one found within Vancouver's Broadway Corridor, Boston's life sciences sector benefits from the clustering of teaching hospitals, and medical and academic institutions with a growing number of private sector firms working in the areas of pharmaceuticals, biotech, and medical instruments. Decision makers in the Boston area have already taken note of the need for improved transportation infrastructure as a means of bolstering their city's advantage in the life sciences sector.

As a 2007 report[5] on the subject from Boston's *A Better City* notes transportation infrastructure plays an important role in creating stronger and better connections among the institutions and businesses in the life sciences sector, connections that can provide a critical competitive advantage to Metropolitan Boston's life sciences cluster. The *Better City* report goes on to note face-to-face and institutional connections as one of the keys to the success of Boston's life sciences cluster and recommends strategic use of public infrastructure investments to support improved access to, and connections among, the life sciences facilities that are largely financed by the private and institutional sectors as a means of fortifying the dominance of the city's life sciences sector and its ability to attract top researchers and firms.

Many life sciences centres in the Cambie-Oak section of the Corridor operate on an integrated basis with UBC-based life sciences/Faculty of Medicine operations.

[5] http://nuweb9.neu.edu/dukakiscenter/wp-content/uploads/LifeSciences_exec_summ_final2_PDF.pdf

2.7 Other Corridor-based institutions

The UBC-Broadway Corridor is also home to numerous other private and public institutions, such as:

- Vancouver General Hospital (VGH), BC's largest hospital.
- BC Centre for Disease Control.
- BC Cancer Agency and Canada's Michael Smith Genome Sciences Centre.
- UBC Dentistry and Medical School that offer undergraduate, postgraduate and continuing professional development educational programs to all doctors and dentists in BC. Similarly, the Pharmacy program is closely integrated with the professions.
- UBC Hospital.
- Vancouver Coastal Health Research Institute, BC's largest medical research institute and four national Centres of Excellence for Commercialization and Research (Centre for Drug Research and Development, Prostate Centre's Translational Research Initiative for Accelerated Discovery and Development, Advanced Applied Physics Solutions; and Centre for Excellence for the Prevention of Organ Failure).
- Numerous medical/dental healthcare clinics and offices.
- Vancouver City Hall, plus several adjacently-located City departments.
- Vancouver Community College, located in the Eastern part of the Corridor, with 6,000 students.
- Great Northern Way Campus, a cooperative venture of several Metro Vancouver educational institutes, also located in the Eastern part of the Corridor.
- The Vancouver School Board Offices, numerous community centers, libraries and other smaller public facilities spread along the Corridor.
- Numerous private institutes (e.g. ESL training schools) and non-profit organizations (Arthritis Society, Heart and Stroke Foundation, BC Lung Association, Cancer Society) are located along the Corridor.
- Numerous associations (BC Medical Association, Health Employers Association of BC, Vancouver Real Estate Board, Teamsters Union).

2.8 Corridor population and employment

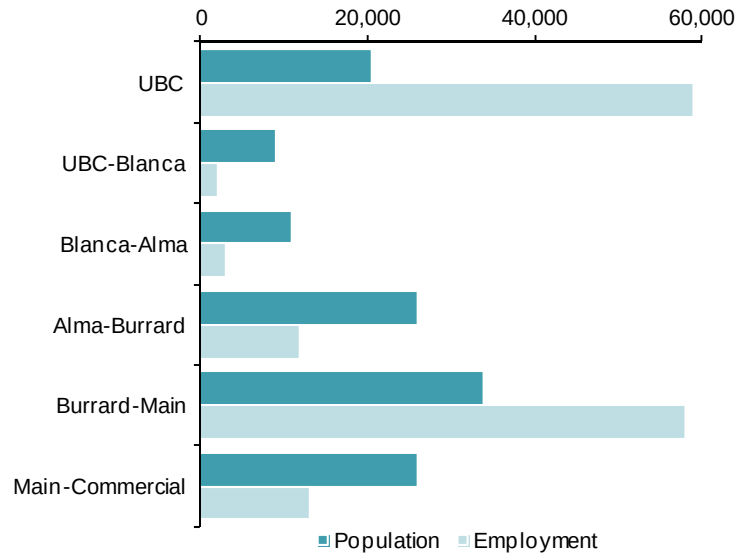
2.8.1 Overview of the Vancouver portion of the Corridor

Census data indicates that in 2006 there were approximately 97,000 people living in the Vancouver portion of the corridor (2011 Census shows 101,000 people), representing 16.1 percent of the City of Vancouver's total population. In 2006 there were approximately 86,000 jobs in the Vancouver portions of the Corridor (2011 Census data is not available for employment).

2.8.2 Distribution of population/employment along the Corridor

The distribution of population and employment along the Corridor is illustrated in **Figure 2.9**. UBC population includes University Endowment Lands population, while UBC employment includes the non-resident students as they behave in a similar fashion to workers in terms of travel. Central Broadway (Burrard-Main) is the largest population area. The employment effect of UBC (including non-resident students) is as significant as the employment effect in Central Broadway.

Figure 2.9 – Corridor Population and Employment



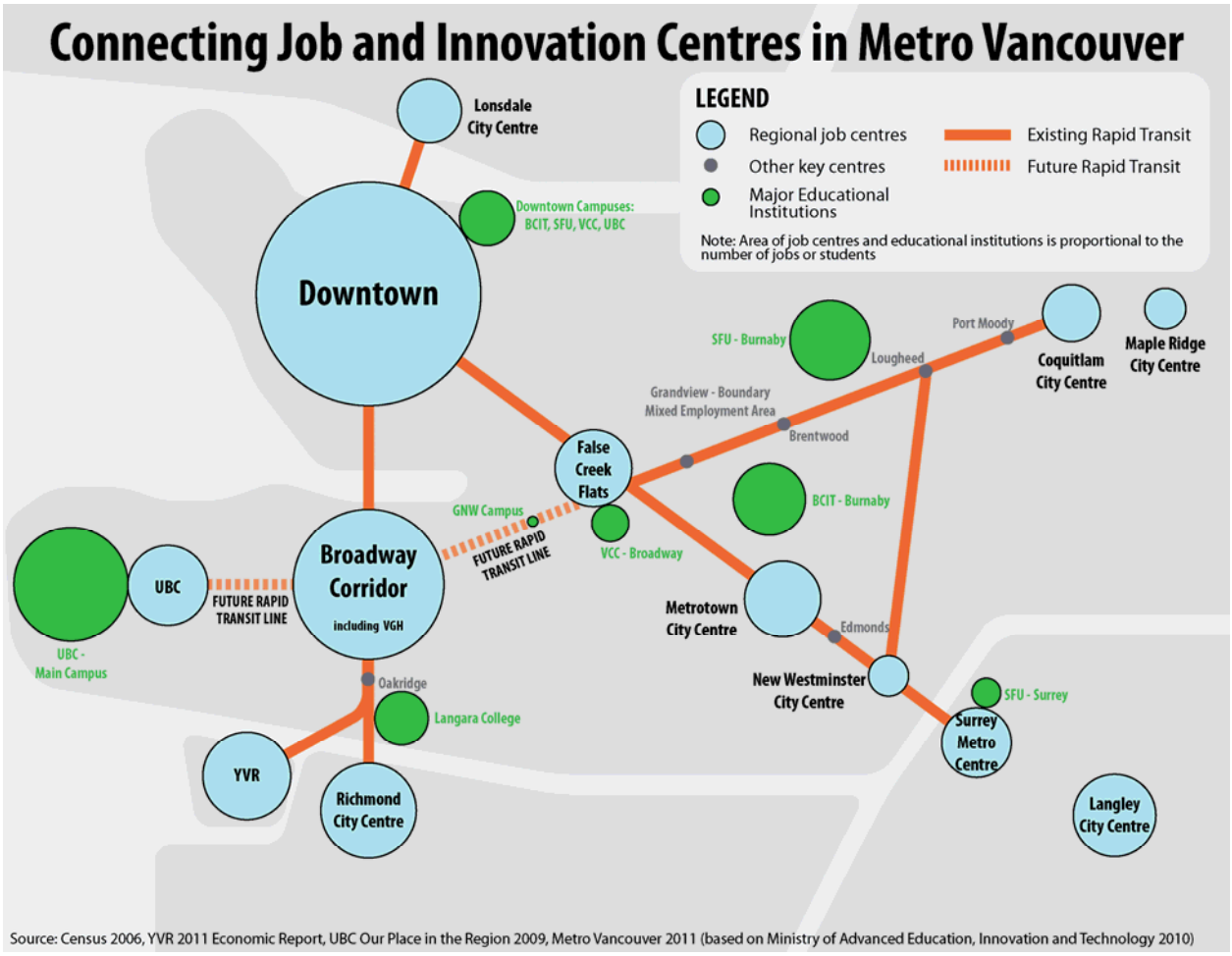
Note: UBC employment includes non-resident students.

Source: Statistics Canada 2006, UBC 2006.

2.9 Linkages to Metro Vancouver Job and Innovation Centres

Figure 2.10 indicates how the major town centres, business districts, research centres and post-secondary educational institutions are linked by rapid transit. Most of the regional town centres, business districts and post-secondary educational institutions are well connected by rapid transit. The obvious exceptions are Central Broadway, the location of the major health care facilities in the province and UBC, the province's largest university.

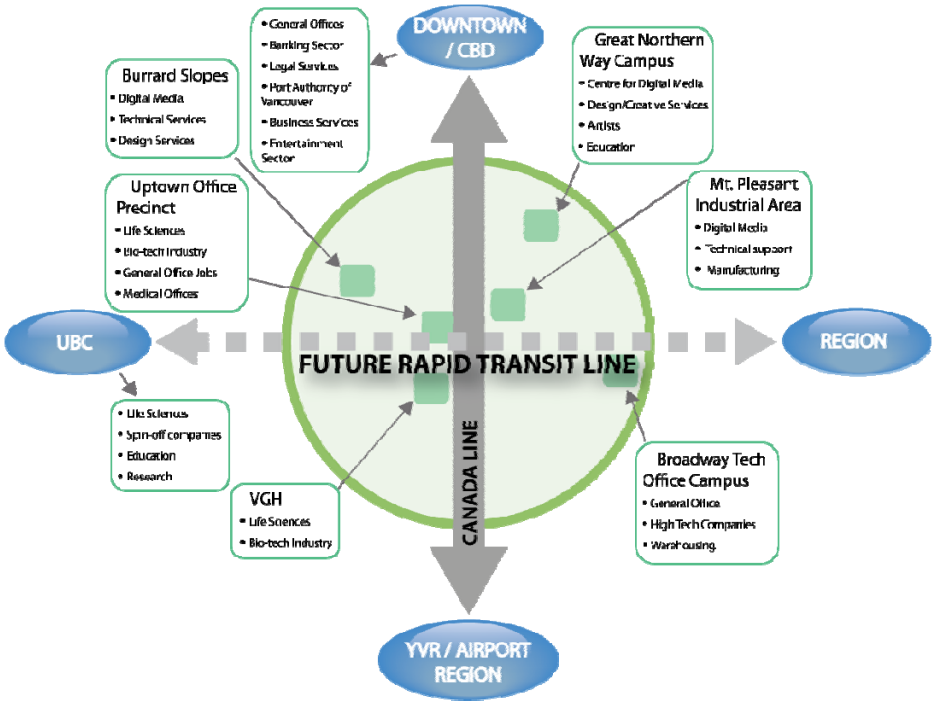
Figure 2.10 - Connecting Jobs and Innovation Centres in Metro Vancouver



The UBC-Broadway Corridor is intersected by rail-based transit at two places – at Cambie (Canada Line) and at Commercial Drive (Expo and Millennium Lines). However, the Corridor itself is presently served by bus transit service only, though current ridership within the Corridor is comparable to that of the Canada Line.

Figure 2.11 illustrates many of the major economic hubs in the Corridor and illustrates the potential for an effective rapid transit connection to foster further development and growth. Most of the other pieces of the puzzle are there – technology clusters, a health care/life sciences precinct, access to the financial centre, research-based post-secondary educational facilities, arts and culture precincts, and potential for property redevelopment.

Figure 2.11 – Economic Opportunity on the Broadway Corridor



Source: City of Vancouver.

2.10 Current transit service along the Corridor

The Broadway Corridor is the busiest bus corridor in North America[6]. Frequent east–west service is provided by local (#9 bus) and express buses (#99 B-Line) on Broadway and 10th Avenue. The Corridor is also served by many other bus routes as depicted in **Figure 2.12**.

The limited-stop 99 B-Line is the highest frequency route serving the Corridor with up to 22 buses per hour and carrying approximately 55,000 passengers daily. Buses on the UBC-Broadway Corridor carry over 100,000 transit riders per day.

[6] *Mass Transit Modes: How They Fit*; Michael Shiffer, Vice President Planning, Strategy & Technology, TransLink; Presentation to - Streetcars: The Missing Link Symposium; Vancouver; September 29, 2010.

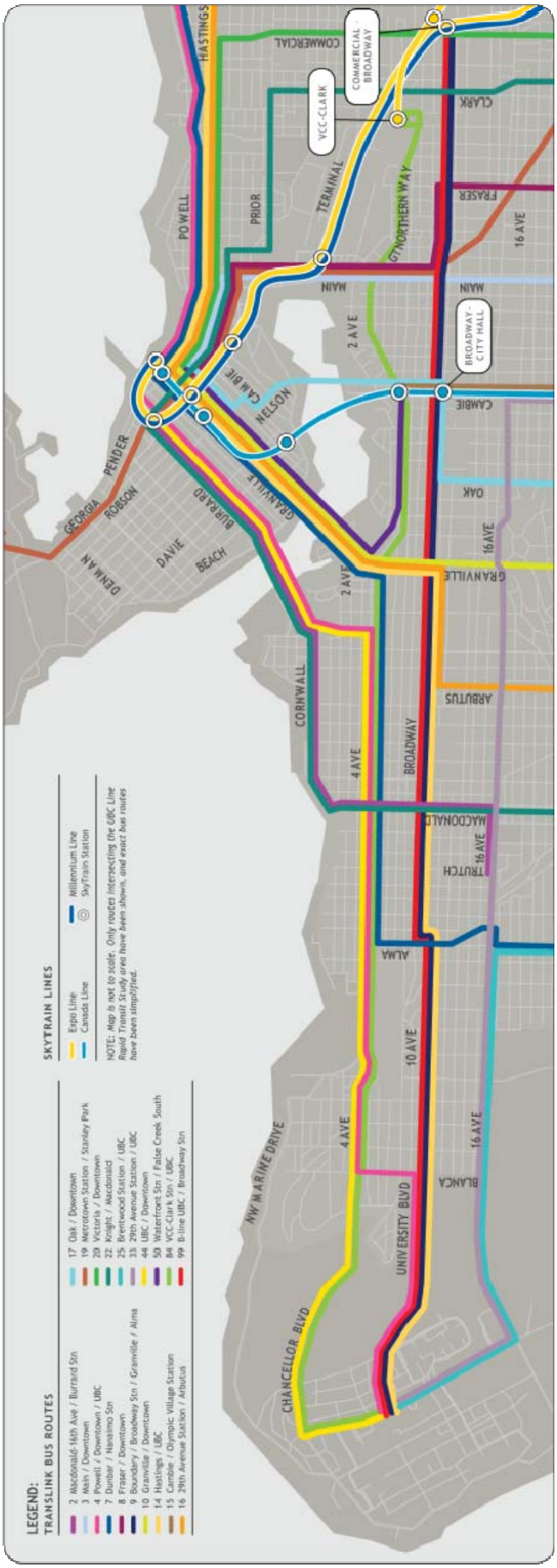


Figure 2.12 – Bus Service in the UBC-Broadway Corridor

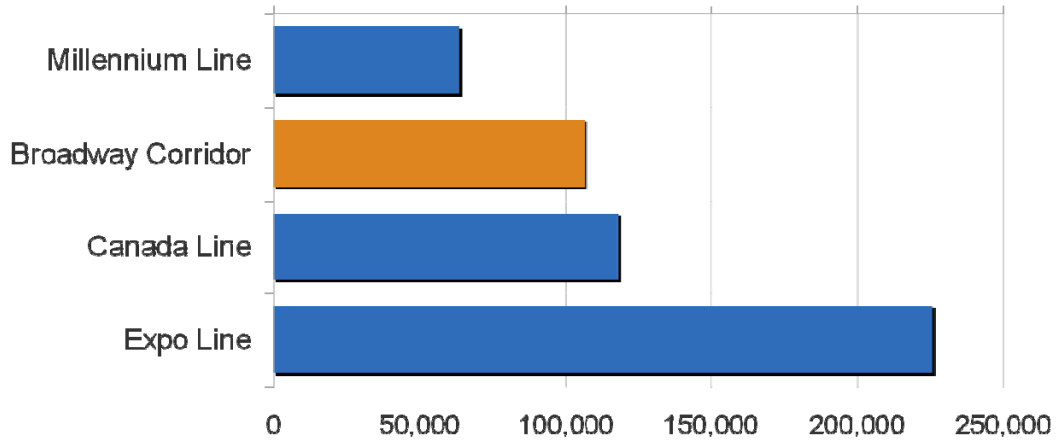
During peak times when transit movements are most critical, the B-Line capacity is insufficient to meet demand. Passenger pass-ups are common. In the westbound morning peak, TransLink's data indicates that approximately 2,000 passengers are passed up by at least one bus at the Commercial-Broadway station each morning. On an annual basis the combined east and west bound pass-ups for the 99 B-Line has been estimated by UBC as approximately 500,000 per year. Off-peak bus service on the UBC-Broadway corridor is also well used, with occupancy rates up to 75 percent of the capacity provided.

TransLink and UBC estimate that there are over 500,000 pass-ups each year along the Corridor on the 99 B-Line.

2.10.1 Transit on the UBC-Broadway Corridor

Broadway buses carry over 100,000 passengers a day, a level of ridership that is comparable to Canada Line and nearly twice that of the Millennium Line as indicated in **Figure 2.13**.

Figure 2.13 – Existing Transit Ridership in Rapid Transit Corridors



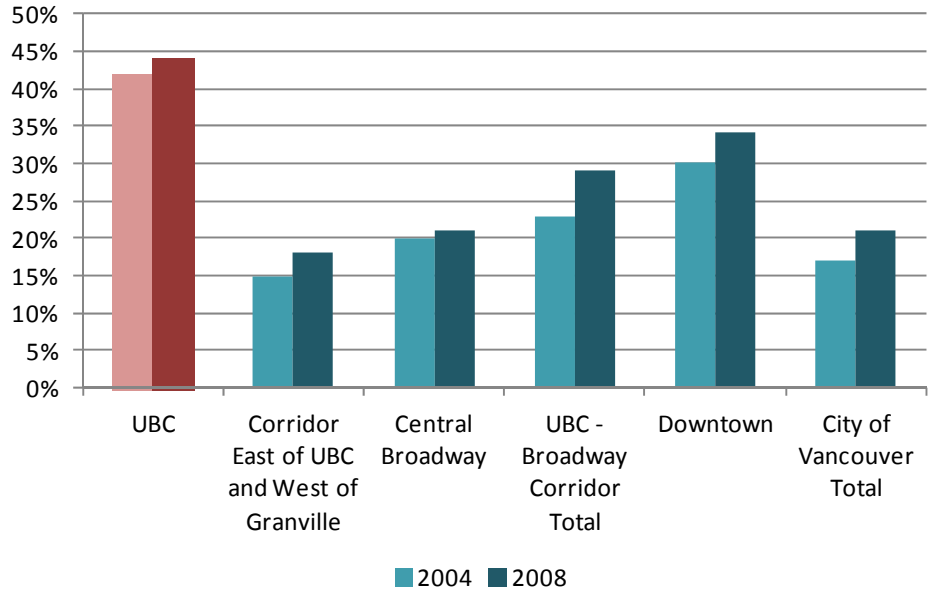
Source: APC data Sept – Dec 2010 (bus), Canada Line Oct 2010 – Sept 2011, SkyTrain June 2011

The transit mode share (percentage of total trips taken by transit) in the high employment, Central Broadway portion of the Corridor is about the same as it is for the City of Vancouver overall as illustrated in **Figure 2.14**. At present, the ability of transit mode share along the Corridor to increase is limited by a lack of transit capacity. This is in contrast to the growth in transit mode share to the Downtown which has the highest mode share in the City as a result of being well served by rail rapid transit – SkyTrain.

Given consumer preference for rail rapid transit and the mode share achieved Downtown, the expectation is that transit mode share on the UBC-Broadway corridor would increase significantly with the introduction of rail-based rapid transit. The success of Canada Line, and the near doubling of transit ridership in the Cambie Corridor, also demonstrates the attractiveness of high-capacity, fast and reliable rapid transit. Given that bus transit demand on the UBC-Broadway Corridor is significantly greater than bus transit on Cambie prior to the Canada Line, it is reasonable to expect a high-capacity rail-based rapid transit line on the Corridor to significantly increase and perhaps double the existing transit ridership on opening day.

Bus transit ridership along the Corridor is already more than 100,000 per day.

Figure 2.14 – Transit Mode share of All Trips



Source: TransLink and UBC

UBC had the highest transit mode share at 44 percent in 2008. Other sections of the Corridor had lower transit mode shares, and the Corridor's overall transit mode share was 29 percent in 2008.

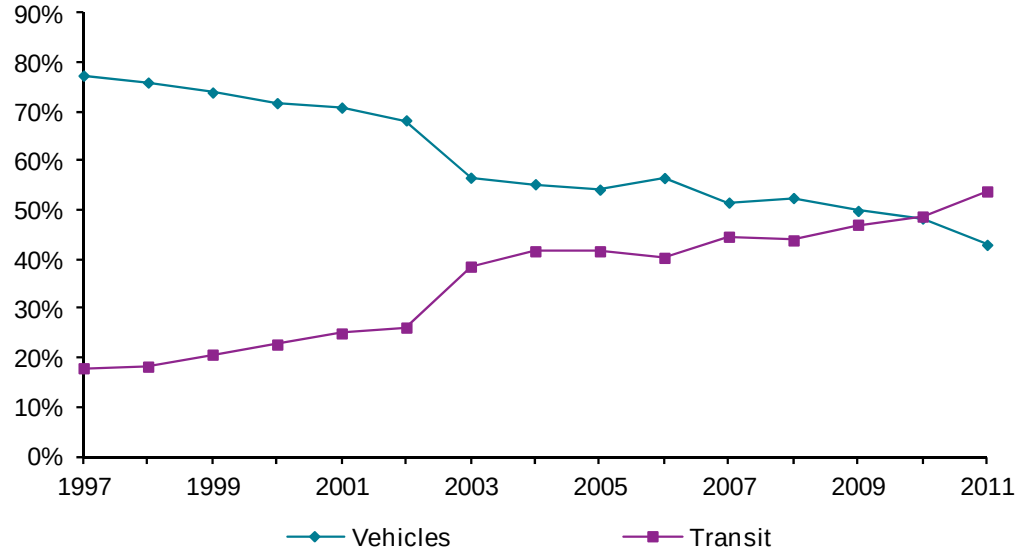
It is not easy to significantly increase transit ridership or mode share in the Corridor given that the buses are already full during peak times. To achieve ambitious mode share and GHG targets and serve future growth, significant new rapid transit service is needed in the UBC-Broadway Corridor. The Corridor is an important regional destination with over half the trips destined for the Corridor coming from outside Vancouver. Connecting the UBC-Broadway corridor to the existing rapid transit network will provide significant benefits to both the City and the region as whole and is the key to achieving important mode share targets.

2.10.2 Trends in UBC transit mode share

Over the past 14 years vehicle trips to and from UBC have declined dramatically from 77 percent in 1997 to 43 percent in 2011, while transit trips have increased. The number of transit trips to UBC has more than tripled over this period, and transit mode share (along all corridors serving the Point Grey campus) has increased to 54 percent, as illustrated in **Figure 2.15.** These changes are due to a number of factors including:

- Introduction of the U-PASS in 2003.
- The increasing cost of owning and operating a car.
- TDM measures at UBC such as reduced parking supply.
- Introduction of B-Line service and additional service hours for bus routes to UBC.
- Societal trends (particularly with those in younger age brackets) to use alternative modes of transportation. For example, the percentage of BC residents aged 18-24 with a drivers licence has dropped from 79 percent to 69 percent between 1994 and 2011 (ICBC, 2011).

Figure 2.15 – UBC Vehicle and Transit Mode Share



Note: Vehicles include single occupancy vehicles and carpools

Source: UBC

2.11 Summary – the Corridor in 2012

The UBC-Broadway Corridor is defined by a number of key features:

- It is the busiest bus corridor in North America.
- Bus transit ridership along the Corridor is already more than 100,000 per day – higher than, or close to, the rail-based Millennium and Canada Lines. However, the transit mode share in the Corridor cannot increase due to the lack of transit capacity.
- The Corridor has the second largest concentration of jobs and employment in the province – less than Downtown Vancouver, but significantly larger than any other town centre.
- The combined commercial/institutional floor space in the corridor is almost equal to that found in Downtown Vancouver and is experiencing significant growth.
- The Corridor includes UBC, BC's largest and most globally significant research-focused university, and research institutes and technology firms closely linked to UBC. The Corridor has the largest health care/life sciences precinct in the province, and provides services to residents throughout the province.
- The Corridor has a major technology focus with strong linkages between the health care/life sciences precinct and UBC.
- The Corridor and the people that live and work in it are major consumers of transit services – buses are already over capacity-- 500,000 riders are passed up every year.
- Current bus transit services along the Corridor are unable to meet peak-period demand.

3 Economic planning and strategy context for the Corridor

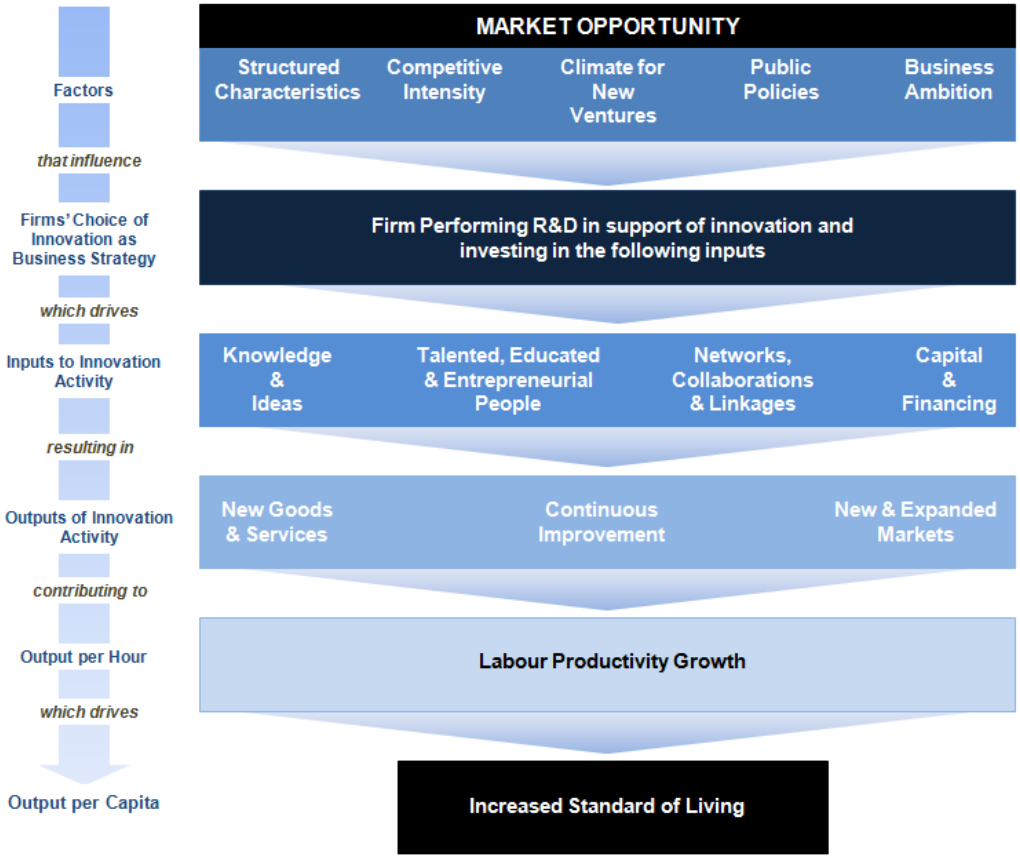
The future of the Corridor may be enhanced by a number of economic strategies developed by various levels of government.

3.1 Federal policy on technology sector

3.1.1 Innovation Canada: A Call to Action

The "Jenkins Report"[7] of early 2012 provides recommendations for federal government policy on the future of the technology sector in Canada. This report illustrates how the technology sector contributes to the standard of living in Canada. This economic map is illustrated in **Figure 3.1**.

Figure 3.1 Economic Map of the Technology Sector in Canada



[7] Innovation Canada: A Call to Action, Review of Federal Support to Research and Development – Expert Panel Report, Government of Canada, 2012.

The chart identifies four key inputs to innovation activity as follows:

1. Knowledge and ideas
2. Talented, educated and entrepreneurial people
3. Networks, collaborations and linkages
4. Capital and financing.

As discussed later in this report, British Columbia and Vancouver in particular, generally have the first two inputs in hand and capital & financing is always a challenge for industry. The technology sector in British Columbia has fared relatively well compared to that of other provinces. One area of potential concern is networks, collaboration and linkages.

How the results of the Jenkins Report affects government policy is still evolving and how government interprets and takes action to deal with each of the key inputs remains to be seen.

The federal government's 2012 Jenkins Report identified the development of a robust technology industry as key to Canada's future economic prosperity. The province's BC Jobs Plan has also identified technology as one of the key sectors for economic growth.

3.2 Provincial priorities and strategies

The Province of British Columbia's economic development vision and principles are summarized in the 2011 BC Jobs Plan. The Jobs Plan builds on fiscal discipline and a skilled workforce. The three pillars at the heart of the Jobs Plan are:

- Enabling job creation
- Getting goods to market
- Opening / expanding markets.

The eight focus sectors in the Jobs Plan are technology, international education, transportation, tourism, agri-foods, natural gas, mining and forestry. These sectors were chosen based on a combination of having a competitive advantage for BC, having the potential to create a platform for future expansion, and/or having significant promise of direct job growth.

The industry sector of particular relevance to the UBC-Broadway Corridor is the technology sector. As a part of the BC Jobs Plan, the BC Technology Sector Strategy was developed to establish goals to grow the technology sector in BC.

The vision, as summarized in the strategy, states "BC is a recognized leader for developing and growing innovative technology companies, and is a destination for technology investment. BC's technology sector improves the quality of life and provides enduring value to the people of British Columbia."

The strategy also highlights how BC's technology labour pool has recently expanded and will continue to expand because of strongly linked networks – between entrepreneurs, post-secondary institutions, acceleration and commercialization programs, and regional industry clusters (such as the healthcare research cluster in the UBC-Broadway Corridor).

To further accelerate the tech sector and support commercialization and adoption of technology in all BC Jobs Plan sectors, the strategy established the following goals:

- Accelerate technology commercialization and adoption
- Build on regional strengths to create new opportunities
- Develop talent for a knowledge-based economy
- Expand markets for BC technology.

For each of these goals, the technology strategy outlines a number of specific initiatives and programs.

3.3 Regional Plans

The Regional Growth Strategy (the RGS) was officially adopted by the Greater Vancouver Regional District (Metro Vancouver) Board on July 29, 2011. The RGS is primarily concerned with regional land use policies for the provision of transportation, infrastructure and community services. The RGS is not an economic development strategy for the region; it seeks to support the regional economy through its broad land use policies.

The RGS provides the overarching framework for detailed transportation and municipal planning. TransLink's mandate is to provide a regional transportation system that supports the RGS, and, separately, the region's economic development. Each municipality develops its official community plan in the context of the RGS.

3.3.1 Goals of the Regional Growth Strategy and Transport 2040

The goals of the RGS are designed to support Metro Vancouver's "sustainability framework" – a philosophy that guides all operating and planning processes so they are consistent with the RGS' vision for the region. The five goals include:

The development and growth of a technology industry hub along the Corridor is consistent with Metro Vancouver's Regional Growth Strategy and with TransLink's Transport 2040 vision.

- **Create a compact urban area** – Urban areas are to be contained within established areas, and rural areas are to be protected from urban development. In addition, urban growth is to be focused in urban centres in development areas along TransLink's frequent transit network.
- **Support a sustainable economy** – Land patterns are to be developed so that people are able to work close to where they live. Agricultural lands, particularly areas used for food production, are to be protected; and access to industrial land is to be assessed based on whether there is sufficient capacity to meet the needs of the regional economy.
- **Protect the environment and respond to climate change impacts** – Conservation and recreation lands are to be preserved and the connectivity of other natural environment is to be improved. Furthermore, land use and transportation infrastructure is to be developed with an ability to withstand climate change impacts and natural hazard risks, while also encouraging reduced energy consumption and greenhouse gas emissions and improved air quality.
- **Develop complete communities** – Develop diverse and affordable housing choices in communities that are walkable, mixed use, transit-oriented, and appropriate for people at all stages of their lives, to earn a living, pursue education, and participate in social, cultural and recreational activities.
- **Support sustainable transportation choices** – Land use and transportation strategies are to be aligned, to encourage transit ridership, multiple-occupancy vehicles, cycling and walking, and support the safe and efficient movement of vehicles for passengers and commercial purposes.

The RGS was developed in parallel with TransLink's Transport 2040; the two strategies are aligned and reinforce each other. The goals of TransLink's Transport 2040 include:

- Greenhouse gas emissions from transportation are aggressively reduced, in support of federal, provincial and regional targets.
- Most trips are by transit, walking and cycling.
- The majority of jobs and housing in the region are located along the Frequent Transit Network.
- Travelling in the region is safe, secure, and accessible for everyone.

- Economic growth and efficient goods movement are facilitated through effective management of the transportation network.
- Funding for TransLink is stable, sufficient, appropriate and influences transportation choices.

These regional plans provide high-level guidance and support for linking land use, transit and economic development along the Broadway Corridor.

3.4 City of Vancouver: Vancouver Economic Action Strategy and Related Plans

3.4.1 The Vancouver Economic Action Strategy: An Economic Development Plan for the City

The Vancouver Economic Commission has developed the Vancouver Economic Action Strategy (EAS) to increase the City's economic performance over the coming years. The strategy focuses on three key aspects of economy:

1. A Healthy Climate for Growth and Prosperity
2. Support for Local Business, New Investment and Global Trade
3. A Focus on People – Attracting and Retaining Human Capital.

Protecting job spaces is an important component of the EAS. The EAS states that the downtown core and the Central Broadway Corridor "is the economic heart of the region and the province and accounts for about half of the City's total tax base" [8]. The EAS identifies the technology sector as one of the fastest growing sectors of the local economy, and focuses a number of actions to support this growth over the next decade.

The Vancouver Economic Commission is currently working with partners, including governments, business and academic institutions to advance development of an incubator/accelerator hub in Vancouver's city centre. The intention is to build a facility that focuses on growing small- and medium-sized businesses. This facility would focus on growing innovative local companies in key sectors, including digital media, clean technologies, life sciences, information technology and renewable energy.

The Vancouver Economic Commission's initiative to work with the City, industry and universities to develop a technology incubator is the kind of collaboration that will drive further development of a technology hub in the Corridor.

The centre would assist entrepreneurs through facilitating access to education, expert mentoring from successful serial entrepreneurs, and through connecting businesses to investment resources. The centre would be the first of its kind in Canada to support both technology and social enterprise initiatives within one facility. The centre would require access to the financial community, the University and other support entities for it to be successful.

3.4.2 Metropolitan Core Jobs and Economy Land Use Plan

The City of Vancouver Metro Core Land Use Plan (2007) supports the Regional Growth Strategy by developing a land use plan to improve and preserve job spaces and industrial land, while enhancing connections between neighbourhood population and employment. The Metro Core Land Use Plan lays out principles for land use in the Vancouver Metro Core over the next 25 years. The Issues and Direction Report adopted in July 2007 confirms the role and direction for many areas within the Metro Core and along the Broadway Corridor.

[8] The Vancouver Economic Action Strategy: An Economic Development Plan for the City, Vancouver Economic Commission, 2011.

These directions form the basis for additional area planning to enhance economic activity and intensification of jobs. The directions also provide policy support for rezoning to increase job capacity in some employment areas.

The City defines the Metro Core as an area that includes the downtown peninsula and extends to 16th Avenue in the South, Burrard Street in the west and Clark Drive in the east – including a significant portion of the UBC-Broadway Corridor.

The goal of the Metro Core Plan is to ensure that there is enough land supply – and transportation capacity – for future job growth, while meeting other city objectives for heritage, cultural amenities and affordable housing.

The Metro Core is the region's "downtown" with the following characteristics and roles: business and cultural centre of the region; diverse economy; sustainable; competitive; jobs close to home for city residents; "alive" downtown where people live, shop, play and work, and; where transportation favours transit, walking and cycling.

Among the various Metro Core areas under analysis, four specific areas are within the UBC-Broadway Corridor. Each area's opportunities and challenges are assessed, along with their future desired role, and a description of what future policy directions should be explored to address a potential shortage of commercial space over the next 25 years. The buildings that can be developed in these four specific areas of the Corridor have the potential to provide space for the technology sector to expand and to house the required workers. These are some of the most attractive areas of the City for the types of workers that would be attracted to the technology sector in Vancouver, as they contain the lifestyle amenities that are expected of a major cosmopolitan city.

- **Mount Pleasant** – This I-1 zoned area is located near Broadway and Main Streets. Nearly 7,100 people work in the Mount Pleasant Industrial Area (as of 2006). Employment density in the area is over 200 employees per hectare, likely the highest industrial densities in the region according Metro Vancouver's Industrial Land Intensification Study (2012). While there is a strong foothold of manufacturing and more traditional industrial uses in the area, it is estimated that high tech and creative activities account for about 20 percent of overall jobs in this area. This includes users like Deluxe Entertainment and the soon to be relocated HootSuite Media Inc.

  The area is also home to an active arts and culture community with live-work space for artists and strong connections to Emily Carr University. Emily Carr University plans to move its campus from Granville Island to the Great Northern Way Campus, thus further enhancing this new hub for digital media, visual arts and design programs. The University expects to develop capacity for 1,800 students on the Great Northern Way site. A number of newer industrial developments in the Mount Pleasant Industrial Area have been built to densities that are well above anything previously experienced in the region. An example of this is MP Lighting (a LED lighting manufacturer), where the building they occupy achieves the full potential under the I-1 zone with a 2.98 floor area ratio and a building site coverage of nearly 100 percent. Currently underway is a review of the Mount Pleasant I-1 zoning, where the City of Vancouver is looking to increase the allowable limit for general office uses while still retaining the industrial job base in the area.

The Corridor has a strong arts and culture link through the presence of the new Digital Media Centre on Great Northern Way Campus, Emily Carr University, the gallery district on South Granville, the live-work artist studios near Main Street, and the eclectic residential and business community along Main Street.

- **Burrard Slopes** – This area is located between Burrard and Granville Streets, and is mainly zoned for light industrial, advanced technology and commercial purposes. Nearly 2,750 people work in the Burrard Slopes Industrial Area (as of 2006). Approximately 25 percent of the jobs in this area are in professional, scientific and technical services (especially architects and engineers). Retail (e.g. car dealerships) and manufacturing also have a presence in this area. Some of the more notable businesses located in this area include: Molson Coors

Canada Brewery; Nettwerk Music Group; Lululemon Athletica corporate headquarters and, Ferrari Maserati retail/service centre.

- **Broadway Choice-of-Use areas** – These areas are spread across the Broadway Corridor, South of Mount Pleasant, North of Cambie and Broadway Streets, and between Oak and Burrard Streets. They form opportunities for housing and retail use and a diversity of office space. These areas could accommodate some of the excess demand for job space not available in the Downtown.
- **Broadway Uptown Office District** – This area which is sometimes referred to as "Vancouver's second downtown", is roughly located between Oak and Cambie Streets, and is the second largest concentration of job space in the Metro Core, with major employers such as Vancouver General Hospital, Vancouver City Hall, Vancouver Coastal Health and BC Cancer Agency. This area has a large concentration of health sector jobs (especially offices of physicians), public administration, accommodation and food (restaurants); and professional, scientific and technical services. Total employment is estimated at about 20,000. The area has the most potential to accommodate future demand of job space from Downtown by increasing commercial density. The Metropolitan Core Jobs & Economy Land Use Plan adds directions to strengthen this area's role as a major job centre by increasing allowable heights and densities for employment uses.

3.4.3 City of Vancouver – Green Enterprise Zone

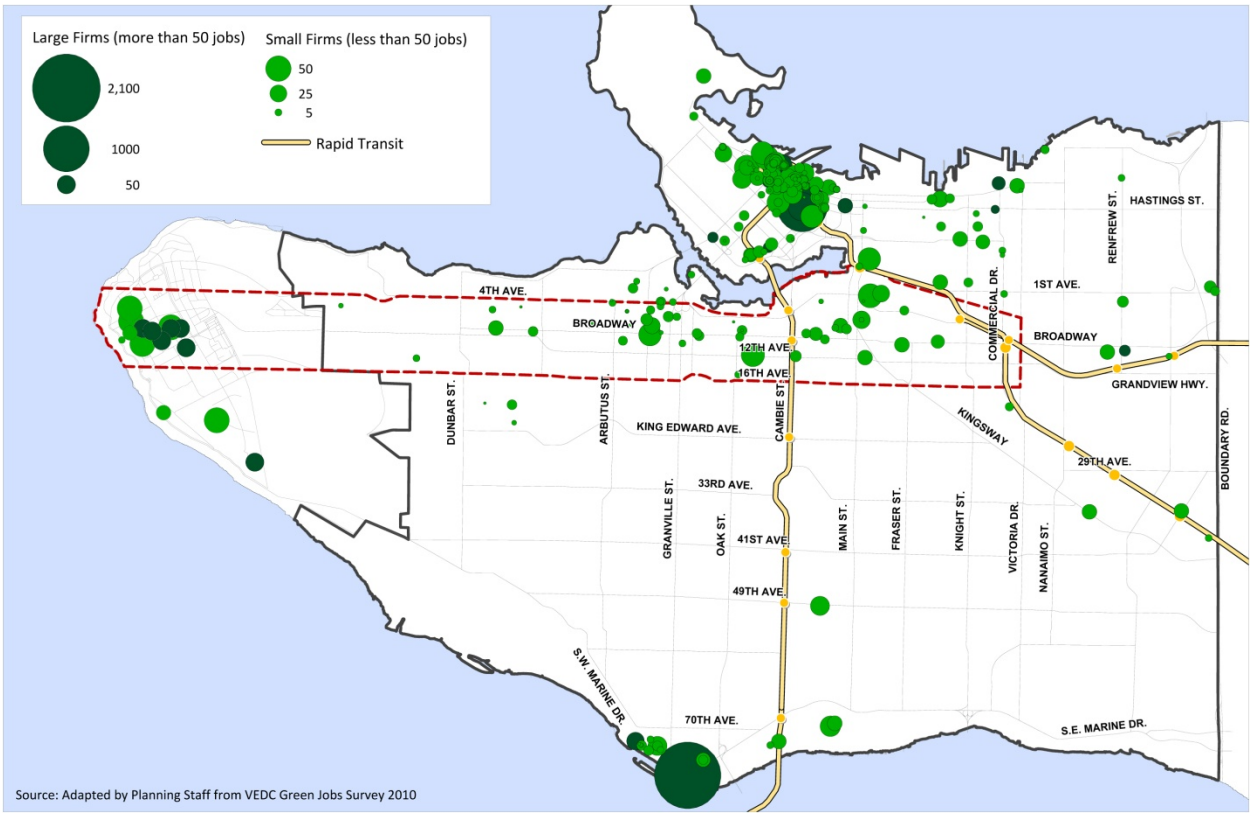
The proposed Green Enterprise Zone (GEZ) would be an area where a diversity of green jobs are created, ranging from low threshold through to high skilled employment opportunities. This area will also have high green standards to make it the "greenest job space in the world", including improved environmental performance for business operations, urban infrastructure, transportation, and district energy. The strategies developed in this area will be scale-able, replicable, and teachable for other areas of the city and the region. A possible location for the green enterprise zone in Vancouver is in the downtown Eastside and False Creek Flats with a possible partnership with Vancouver Port Authority.

Vancouver has a significant Clean Technology Sector that has significant ties to UBC and is planned to be linked with the Green Enterprise Zone proposed by the City of Vancouver.

The GEZ is envisioned as including businesses in the Clean Technology sector. Vancouver has excellent resources in research and development (particularly through UBC) but small start-ups need support for commercialization of technology.

Figure 3.2 provides an indication of the location of green businesses in Vancouver. As is evident in Figure 3.2, many of the green businesses in Vancouver are located adjacent to a rapid transit line. The major exception is those located within the Broadway Corridor where a significant number of these are firms located. Given the strong linkages between the research activities of UBC and the green technology sector, the lack of a good transit linkage is a concern for future development.

Figure 3.2 - Location of Green Business and Research Nodes – City of Vancouver & UBC (2010)



3.5 Summary – Influence of economic planning considerations

Current broader planning initiatives will have a significant impact on the Corridor.

- Federal policy on economic development and the technology sector specifically is evolving and will likely build off the findings of the Jenkins Report. More investment in knowledge generation is anticipated. UBC is well positioned to take advantage of this.
- The BC Jobs Strategy and the BC Technology Sector Strategy will focus on creating jobs in the technology sector, which plays a significant role in the Corridor.
- Regional plans provide guidance for future land use, transportation and growth in the Vancouver metropolitan region and are consistent with visions for the potential future of the Corridor in terms of complete communities, sustainable economy and compact urban areas.
- The City of Vancouver's Metropolitan Core Jobs & Economy Land use Plan indicates that there is significant potential for further development of employment opportunities in certain sections of the Corridor.
- The City of Vancouver's Economic Action Strategy recognizes the potential of the Corridor for further economic development and a significant role in the technology sector.
- UBC's role as an innovation engine will continue to expand, supported by federal, provincial, regional and local policy and through collaboration.
- The Vancouver Economic Commission has started an initiative to bring together the various parties in a collaborative planning process to develop a technology incubator and further spark the development of the City's technology sector.
- The City's Green Enterprise Zone initiative is good example of a plan to build from existing strengths in the local economy. The key enabler that needs further work is the east-west transportation linkage.

4 Planning initiatives and developments

4.1 Planning initiatives along the Broadway Corridor

The City has a number of planning initiatives that are in the planning or implementation stages. These initiatives are generally seeking to improve and intensify employment and housing opportunities along the Corridor, while also addressing needs for community services and other basic infrastructure. Several of these have already been discussed in the previous section under the Metro Core directions discussion. This includes areas such as:

- Uptown Office Precinct
- Mount Pleasant Employment Area
- Burrard Slopes Employment Area
- Eastern Core/False Creek Flats.

In addition, several other area planning projects are underway or being implemented along the Corridor. These include:

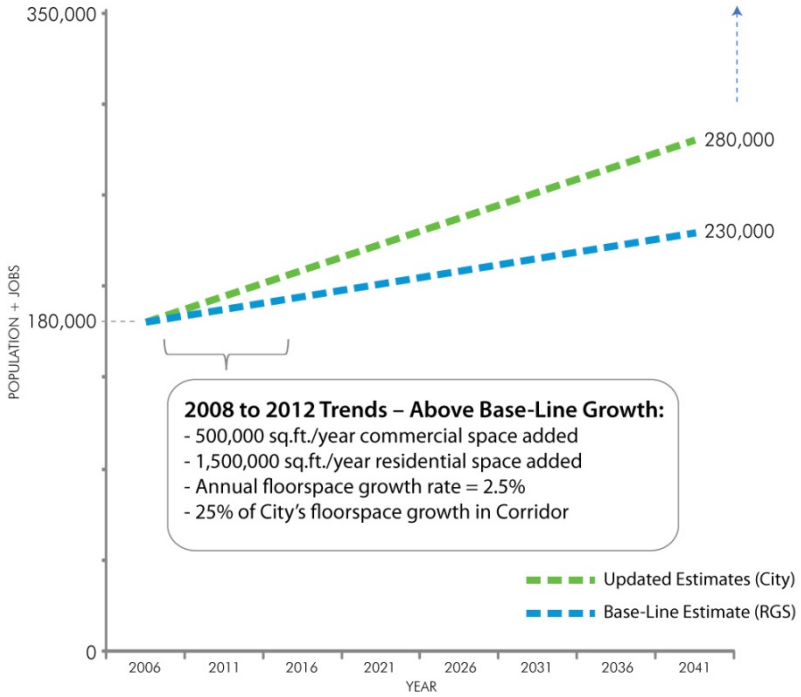
- Mount Pleasant Community Plan
- Central Broadway C-3A Zoning Review
- Grandview Woodlands Community Plan.

4.1.1 Growth implications of Corridor planning and development initiatives

As previously identified in this report, there has been a significant shift in both the pace of development and scale of development being considered along the Broadway Corridor. As a result, the City of Vancouver has adjusted its estimates of future growth in the Corridor from the growth established in the Regional Growth Strategy. The RGS growth scenario was based on planning policy and trends up to 2008. Since 2008, several policy planning initiatives have been completed, or started, along the Corridor and rezoning proposals have been approved that add significant capacity to the corridor (see examples in next section). **Figure 4.1** illustrates the City's current growth estimates for the Corridor and compares this to the RGS base-line estimates.

A key finding from this change in growth estimates in the Corridor is the doubling of anticipated job and population growth to 2041, as compared to the RGS base-line. It is worth noting that floor space growth from 2008-2012 (as shown earlier) suggests that 3,000 to 4,000 jobs/people have been added to the Corridor each year (based on an estimate of floor space per person/worker).

Figure 4.1 - Updated Growth Estimates (Population and Jobs) – Vancouver Portion of Corridor



Source: RGS 2011, City of Vancouver, 2012

The City has also adjusted the overall growth estimates from those identified in the RGS. Based on current trends and policy planning work, the City anticipates that 60-65 percent of the City's future growth could be absorbed in the Broadway Corridor. The City considers this feasible, given the redevelopment experience in the Cambie/Broadway area that accompanied the opening of the Canada Line. Realization of the more ambitious growth along Broadway would be heavily influenced by the introduction of rapid transit on this Corridor. Conversely, without rapid transit, these growth estimates may not be achieved.

4.1.2 Recent and current redevelopment proposals in City of Vancouver

The Corridor is currently experiencing a large volume of residential and commercial development, particularly around its existing rapid transit stations. This development which has either recently completed or is currently underway will add thousands of additional residents and jobs to the Corridor.

Residential Projects Recently Completed or Underway

A number of housing developments have been recently completed, are under construction or are in pre-sale along the Corridor. The following table provides a summary of many of these developments. As indicated in this table, over 1,600 housing units are being developed along the City portion of the Corridor.

Development	Units	Address
2020 Living	33	2020 East 12th Avenue
238 West Broadway	61	238 West Broadway
2211 Cambie Street	15	2211 Cambie Street
Almeral	29	3639 West Broadway
Bayswater	31	Bayswater and Broadway
Cambie +7	50	538 West 7th Avenue
Central	304	Quebec Street and 1st Avenue
Collection	45	133 East 8th Avenue
Italia	41	1616 West 7th Avenue
Kits 360	267	1717 West 6th Avenue
Musee	56	1690 West 8th Avenue
Pinnacle	134	2080 West Broadway
Pulse	74	Maple and Broadway
Rize	214	Kingsway and Broadway
Sixth and willow	25	2200 Willow Street
Spruce	49	1595 West Broadway
The District	103	299 East 7th Avenue
The Werks	20	555 West 7th Avenue
Wsix	50	1525 West 6th Avenue
Total	**1,601**	

Source: KPMG Research

These developments alone are likely to add 3,000+ people to the Corridor's population in the short term. Other developments that were not captured in the research could add more. This suggests that population could continue to grow at historical growth rates, similar to an earlier analysis in this report.

Commercial Projects Recently Completed or Underway:

Similar to the residential development activity shown above, the Corridor has experienced notable commercial development over the past few years and continues to experience new commercial development activity, particularly around the Broadway-City Hall Canada Line station.

Crossroads, 525 West Broadway (Completed 2009)

Built in 2009, Crossroads is mixed-use office/retail/residential project that was constructed across from the Canada Line Rapid Transit Station. The project includes 200,000 square feet of commercial space and is tenanted by the City of Vancouver (general office component), London Drugs, Whole Foods, Milestones, and others.

1669 East Broadway (Completed 2010)

Built in 2010, this 60,000 square foot general office building is close to the corner of East Broadway and Commercial and the Commercial Drive Expo Line Station. This building is occupied by Vancouver Coastal Health Authority.

Broadway Central (Under Construction)

Currently under construction, Broadway Central is a general office development on the 500 block of West Broadway. This project is situated in the 'Uptown' commercial-only stretch of Broadway, close to the Broadway-City Hall Canada Line station. Initially marketed for lease, the project was switched to 127 strata office units and had a successful pre-sale campaign. Once complete, this project will add approximately 100,000 square feet of new strata office inventory to the Corridor.

Oak Street/West Broadway Office Building (Approved Rezoning)

Blue Sky Properties plans to build a 10-storey office building, with ground floor retail, at the south-east corner of Broadway and Oak (to replace an aging mini-mall). The rezoning was approved in March 2011. This project is situated in the 'Uptown' commercial-only stretch of Broadway, approximately 800 meters west of the Broadway-City Hall Canada Line station.

4.2 Place and Promise: The UBC Plan

Place and Promise – the UBC Plan was adopted by the University in 2010 and provides the vision and strategies to guide the development of the University over the next 20 years.

The University of British Columbia's vision is as follows:

> "As one of the world's leading universities, The University of British Columbia creates an exceptional learning environment that fosters global citizenship, advances a civil and sustainable society, and supports outstanding research to serve the people of British Columbia, Canada and the world."

The University of British Columbia has established nine "commitment areas" – (1) student learning, (2) research excellence, (3) community engagement, (4) Aboriginal engagement, (5) alumni engagement, (6) intercultural understanding, (7) intercultural engagement, (8) outstanding work environment, and (9) sustainability. In support of these commitment areas, UBC has developed a number of ambitious plans to increase its size, both in terms of campus-based activities and also in terms of interfacing with the wider Metro Vancouver community.

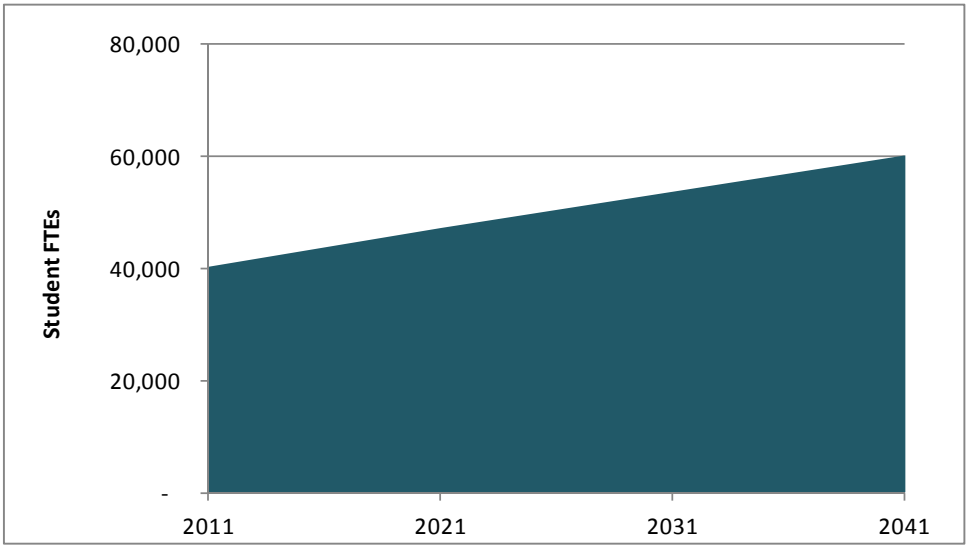
As UBC has matured and its global stature has grown, so too has its outreach to the broader Metro Vancouver community. UBC has numerous campuses around the region and the province, including academic campuses at Robson Square, Great Northern Way, and in Kelowna, and clinical academic campuses at VGH, Women's and Children's, BC Cancer Agency, St. Paul's, Surrey Memorial, Royal Columbian, Prince George, Kelowna and Victoria, along with over 20 community education facilities in every municipality in the region and other communities throughout BC. As with other leading universities, much of UBC's business outreach is with respect to technology-based businesses, one of BC's fastest-growing industry sectors. The technology sector includes a significant life sciences component, much of which also links to the medical precinct in the Corridor.

UBC expects enrolment at the Vancouver Point Grey campus to continue to grow, reaching 60,000 FTEs by 2041. With this growth will come growth in faculty and staff employment, and the need to develop new facilities for teaching, research and campus life. Over the next two years, the University intends to add about 1,000,000 square feet of new academic and research space. Known projects in the capital planning process will add an additional 1,800,000 million square feet over the next 4 to 10 years. Projects include some of the additional 6,000 new student housing beds that will eventually be added to the current 10,000 beds as well as related support space. Additional residential housing in the campus neighbourhoods is also planned. Total neighbourhood population at full build out in 2041 is projected to be 24,000 people.

UBC's Campus and Community Planning Department has prepared forecasts for employment, student population and full-time population at UBC for the period 2011 to 2041, which are presented below.

Figure 4.2 portrays the forecast for FTE students at UBC. As indicated, the number of full-time equivalent students is expected to grow by about 50 percent (20,000 student FTEs) over the indicated period.

Exhibit 4.2 – UBC Student FTE Forecast

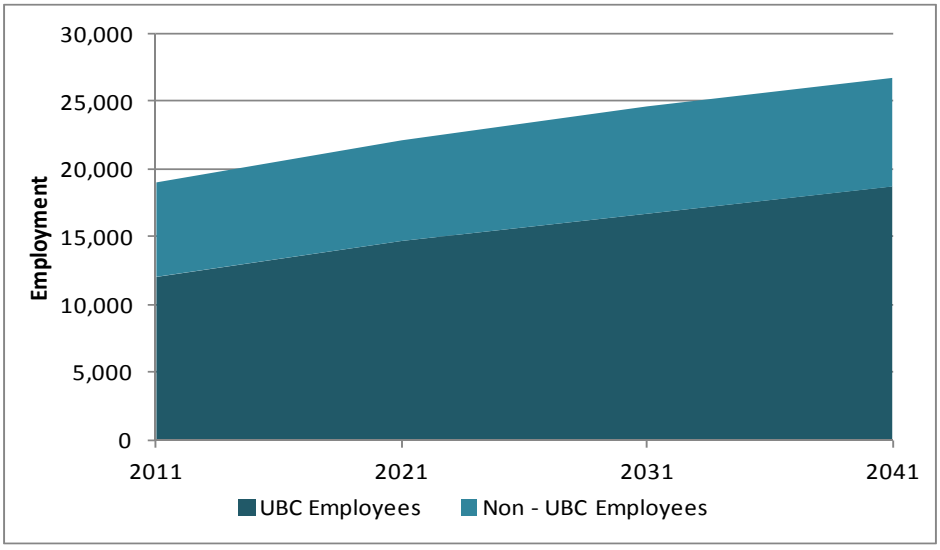


Source: University of British Columbia

The implication of the above is that the number of individuals on campus that act like employees in terms of travel considerations is going to increase from about 60,000 in 2011 to 87,000 in 2041, a 45 percent increase. This will have significant transportation implications.

Employment on the campus is also expected to grow at a rate similar to the rate at which institutional/business space is projected to grow. As the neighbourhoods grow, new employment in the service sectors will also be created. A significant part of this growth is expected to come from an increase in UBC faculty and staff, as indicated in the **Figure 4.3**. UBC is also developing an Innovation Strategy that is anticipated to result in even higher levels of employment as UBC pursues enhanced linkages with the business sector, including life sciences and high technology firms based in the Corridor and the Lower Mainland.

Figure 4.3 – UBC Employment Forecast

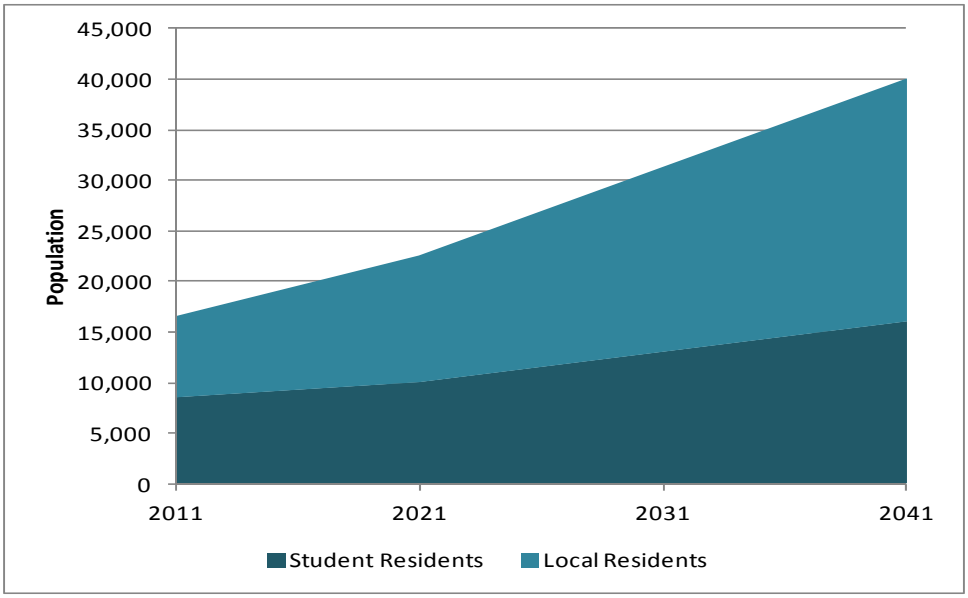


Source: University of British Columbia

Another factor to be considered with respect to employment is that of the students living off-campus. These students behave in a similar manner to employees in that they travel during similar time periods: Monday to Friday, early morning arrival, and late afternoon departures. They already place significant demands on the existing transportation system.

As indicated in **Figure 4.4**, UBC expects the population to increase from just over 16,000 in 2011 to nearly 40,000 in 2041. This represents a compound annual growth rate of about 3.0 percent. Much of the increase is due to a significant increase in local residents, due to the ongoing development of residential housing across the campus, but particularly on the eastern edge of the campus. The number of students living on campus is also expected to double over this planning horizon.

Figure 4.4 – UBC Population Forecast



UBC is planning for its residential population to grow 150% between 2011 and 2041 and for its student population to grow by 50%.

Source: University of British Columbia

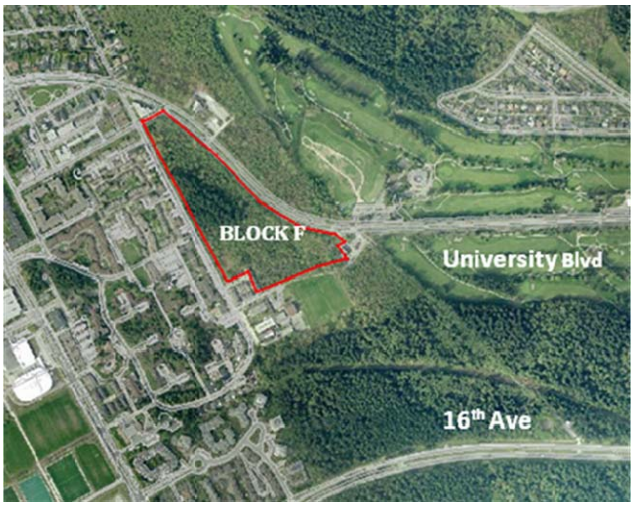
4.3 First Nations[9]

There are a number of potential developments related to First Nations land either in or adjacent to the Corridor that could have an impact on future transportation requirements in the Corridor. These developments also provide the relevant First Nations with an opportunity to become involved in the economic development prospects of the Corridor, including development of employment opportunities either directly or indirectly associated with these developments or enabled by the financial benefits obtained by the bands.

[9] The information in this section has largely been derived from a meeting with Mr. H. Charters, Vice President and Managing Director of Colliers International Consulting, May 1, 2012.

4.3.1 Block F

In 2007, the Province of BC negotiated an agreement with the Musqueam First Nation in an effort to move towards reconciliation of long standing legal issues and create certainty with respect to land ownership and use. One of the key aspects of the agreement was finalization of land ownership and use respecting the University Golf Course and a parcel of adjacent land noted as Block F (see figure to the right).



Under the terms of the agreement, the Musqueam First Nation received the 8.5 hectares of Block F. The only restriction on this land is that 1.2 hectares will need to remain as public parkland. The balance, 7.3 hectares, will be available for development consistent with adjacent land use. The Musqueam First Nation is currently examining options for development, but first indications are that up to 1,400 residential units could be built on this site along with a small amount of commercial space. Development is likely to occur in concert with UBC's plans for Acadia Park.

4.3.2 Jericho Lands

The provincial and federal governments each own parcels of land in Vancouver adjacent to the Corridor that are generally referred to as the Jericho Lands. These lie between 8th Avenue and 4th Avenue just west of Alma. These lands currently include the Jericho Armed Forces Base, West Point Grey Academy (a private school) and a number of community amenities and parkland. (See figure to the right.)

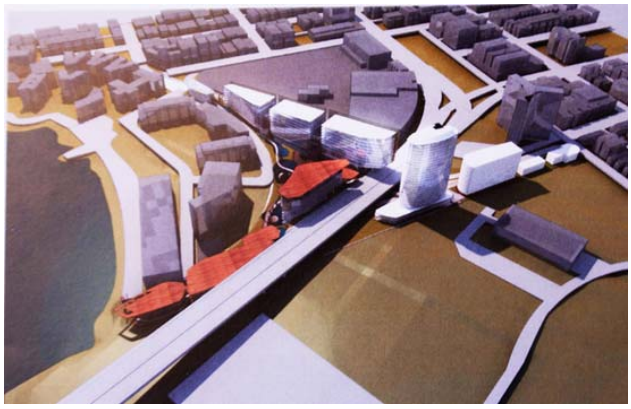
These are lands that the three local First Nations (Musqueam, Squamish and Tsleil-Waututh) have made claims on with respect to historical use and are in included in their comprehensive land claims.

The federally owned lands, which are currently occupied by the Department of National Defence (DND), amount to about 45 acres. Once DND moves its operations to the Seaforth Armory, these lands may be developed by a partnership of the Canada Lands Corporation and the three First Nations, similar to the arrangement contemplated for the Garden City Lands in Richmond. The scope of the potential development is unclear at this point in time.

The provincially owned lands (35 acres) are currently occupied by the West Point Grey Academy, some community amenities and parkland. The Province of British Columbia will likely divest of the property involving the three First Nations through a consultation and accommodation process that would involve private sector development partners.

4.3.3 Burrard Lands

The Squamish First Nation has put forward a proposal to build two large condominium towers at the west end of the Burrard Bridge on a parcel of land associated with an historic First Nations village, which was returned to them following a court decision in 2002.



4.4 Summary – impact of planning initiatives and current development proposals

Local planning initiatives and recent development proposals will have a significant impact on the Corridor:

- Based on recent development trends and policy planning work in Vancouver and at UBC, growth estimates for the Corridor are now expected to be higher than the growth identified in the Regional Growth Strategy. These updated growth estimates suggest that by 2041, approximately 150,000 more people, jobs and students could be added to the Corridor, based on take up within existing zoning and policy.

- "Place and Promise: The UBC Plan" and related initiatives will result in significant increases in the number of students, faculty and staff on campus. While more student and faculty and staff housing will be built on campus, there will be significant growth in the number of employees and students needing to commute to the campus. UBC also has other academic campuses and clinical academic campuses throughout the region and community education facilities in every municipality in the region. UBC's Innovation Strategy which is under development will further strengthen UBC's economic contribution.

- First Nations have an interest in the Corridor due to the acquisition of lands that are suitable for future development. These developments will contribute to potential population growth, and will also provide indirect and direct opportunities for employment and sharing of the economic potential of the Corridor with the First Nations.

- The impact of these three factors will be a pronounced need for improved transit, otherwise the Corridor risks mobility and economic restrictions.

5 Why the technology focus in the Corridor

The BC technology industry is a significant economic engine for the province and is outpacing the province's traditional resource-based industries in revenue and employment growth. The technology industry is also a key component of the Broadway Corridor, with the Corridor having many core elements of leading global technology centres and housing prominent technology organizations such as Discovery Parks and HootSuite.

This chapter provides some context to the technology industry, and also highlights how other jurisdictions have developed technology clusters.

The BC technology industry:

- Employs over 80,000 people, more than the forestry, mining and oil and gas sectors combined.
- Has been the second fastest creator of new jobs (after construction) in the private sector over the previous decade.
- Contributes more to the provincial gross domestic product than any of the traditional resource-based sectors.
- Has grown revenue from $12.1 billion in 2001 to $18.9 billion in 2009, an average of 5.7 percent annually, more than double the rate of overall provincial GDP growth.

The BC technology sector was the second fastest creator of private sector jobs between 2001 and 2009, with revenue growth averaging 5.7% annually.

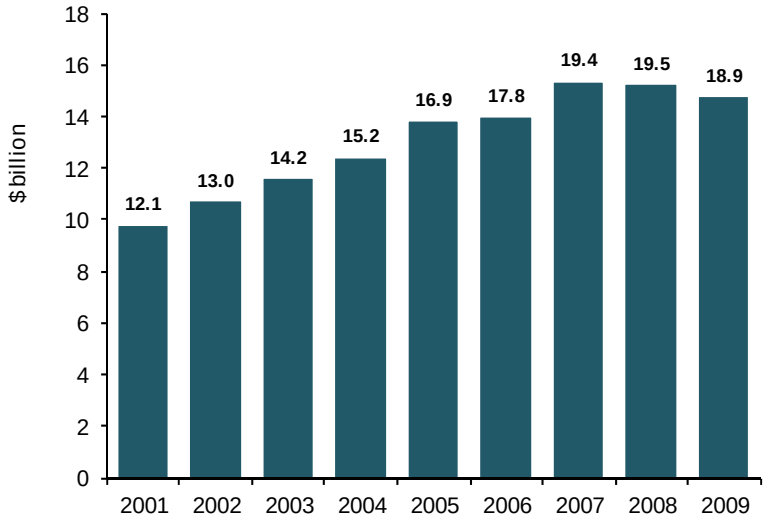
5.1 Technology sector profile and growth

The Vancouver Economic Commission views the technology industry as comprising four key sub-sectors: cleantech, information technology/wireless, digital media/gaming, and life sciences. Vancouver is fortunate to host many world-class organizations within each of these sub-sectors, with a substantial number choosing to call the Broadway Corridor home. Prominent examples include:

- **Cleantech:** Genivar, Fast + Epp, EPI Environmental Products
- **Information technology/wireless:** Convergent.io, Simba Technologies
- **Digital media/gaming:** Hootsuite, Slant Six Games, Rainmaker, Deluxe
- **Life sciences:** Stemcell Technologies, Genome British Columbia, Discovery Parks, Zymeworks.

The BC technology industry embarked on a significant growth spurt following the dot com crash of 2000/01. Industry revenues grew over the period 2001 to 2009 by 56 percent, representing a compound annual growth rate of 5.7 percent, about double that of the BC economy as a whole. BC technology industry growth is illustrated in **Figure 5.1**.

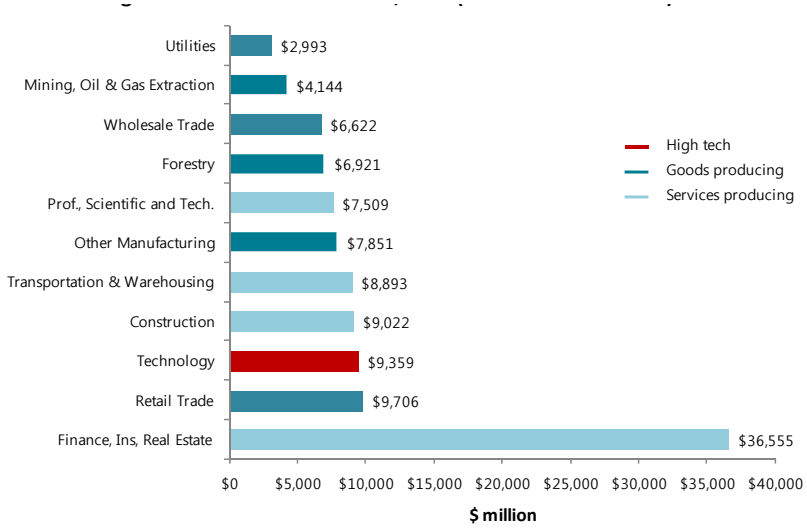
Figure 5.1 – BC Technology Revenues



Source: BC Technology Report Card – 2012, KPMG LLP, June 2012

Over the past decade, the BC technology industry has evolved into a major contributor to the provincial gross domestic product (GDP). The GDP contribution of the technology industry now tops that of more traditional sectors of the economy such as transportation & warehousing, construction, mining and forest products as indicated in **Figure 5.2**. The technology industry is also a key facilitator for the economic growth of other sectors of the economy.

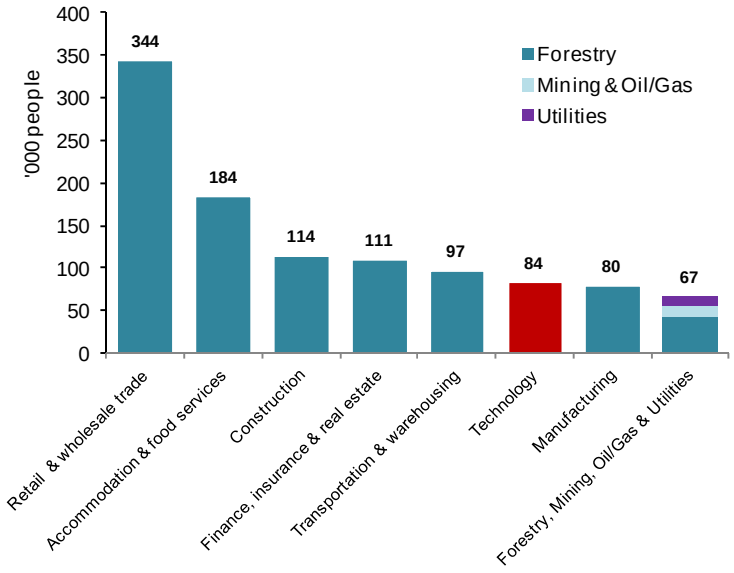
Figure 5.2 – GDP Contribution, 2009 (chained 2002 dollars)



Source: BC Technology Report Card – 2012, KPMG LLP, June 2012

Technology is also embedded in manufacturing processes, information and transaction systems used in the financial sector and internet/wireless applications used in the hospitality sector. Technology is ubiquitous to our daily lives. This includes the life sciences/health sector.

Figure 5.3 – Employment in 2009

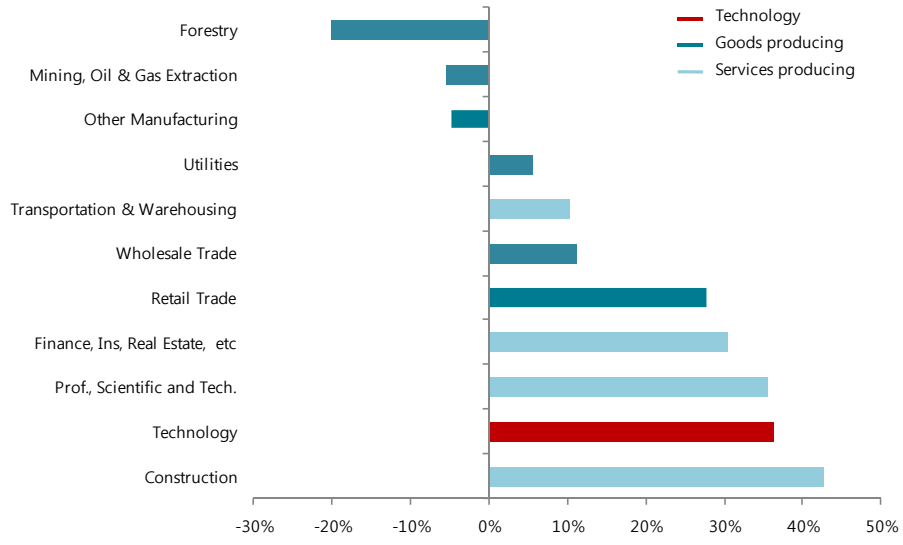


Source: BC Technology Report Card – 2012, KPMG LLP, June 2012

In 2009, the BC technology industry employed 84,000 British Columbians – more than the total of the forest products, mining, oil & gas and utilities industries in the province as indicated in **Figure 5.3**. If growth continues, sector employment will soon surpass that of other more traditional sectors of the provincial economy.

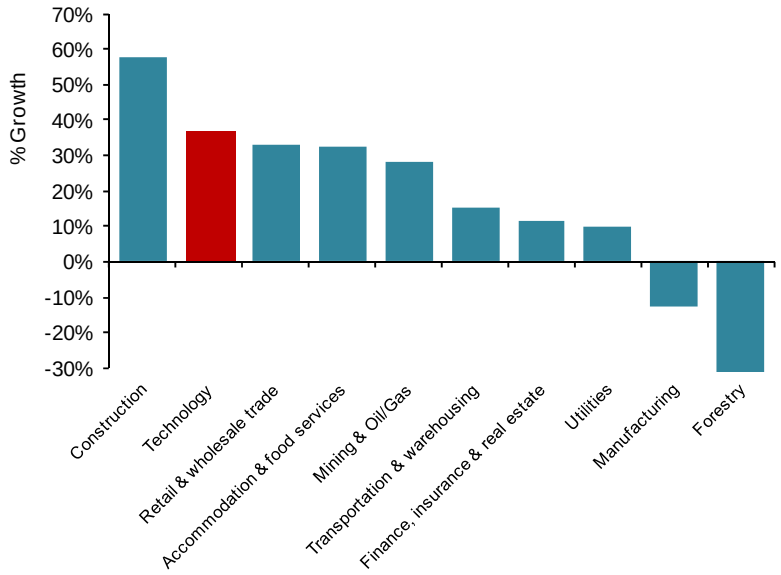
The technology sector has grown faster than any other sector of the economy over the past decade in terms of employment and GDP, with the exception of the construction industry, as illustrated in **Figures 5.4 and 5.5**.

Figure 5.4 – Growth Rate of GDP Contribution, 2002-2009



Source: BC Technology Report Card – 2012, KPMG LLP, June 2012

Figure 5.5 – Employment Growth Between 1999 and 2009



Source: BC Technology Report Card – 2012, KPMG LLP, June 2012

This rate of growth is of significance to the Lower Mainland as a whole, as well as the Broadway Corridor. The portion of the Broadway Corridor in the City of Vancouver already accounts for well over 4,000 technology jobs. The compound annual growth rate of technology sector employment of 3.4 percent is 50 percent higher than that of total employment growth in the province over the same time period. If this growth rate continues, employment would nearly double over the next 20 years.

The BC Technology Industries Association believes that, with more attention and support, the BC technology industry could meet its full potential and perhaps increase the rate of growth by a further 50 percent. This would result in a doubling of technology jobs in the Corridor in 14 years.

5.2 Role of University of BC

The University of British Columbia plays a key role in the health and development of the technology sector in both British Columbia and more specifically, the Broadway Corridor.

UBC supports a community of talented research faculty and staff whose ideas, discoveries and innovations seek to advance the community and society as a whole. This community includes over 12,000 faculty and staff members, 8,000 graduate students, and a growing number of undergraduate researchers.

This research community is largely based at the Point Grey campus as well as in the health care precinct adjacent to Vancouver General Hospital – both of which are part of the Broadway Corridor.

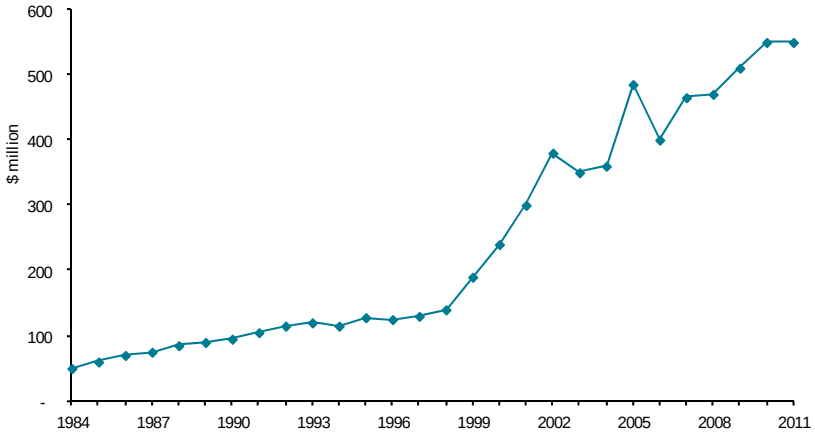
Many new faculty members are drawn to UBC because of the well-supported and open-minded research environment. For example, UBC actively encourages interdisciplinary research through the Peter Wall Institute for Advanced Studies, Green College, and the College for Interdisciplinary Studies.

In 2010-11, UBC attracted more than $549 million in research funding – a ten-fold increase in less than 30 years. Most of this funding relates to technology-based life science research, performed in association with healthcare research institutes located within or adjacent to the Corridor.

Collaborations between faculties and departments help to break down traditional disciplinary boundaries and promote discovery and innovation.

UBC ranks among the top three Canadian universities in attracting research funding from a wide range of sources, including: competitive government grants, awards from non-profit foundations, and contracts with industry or government for prescribed research. In 2010-11, UBC attracted more than $549 million in research funding from all sources for 8,054 projects. The research funding has increased by approximately 10 times from the level in 1984, as shown in **Figure 5.6**.

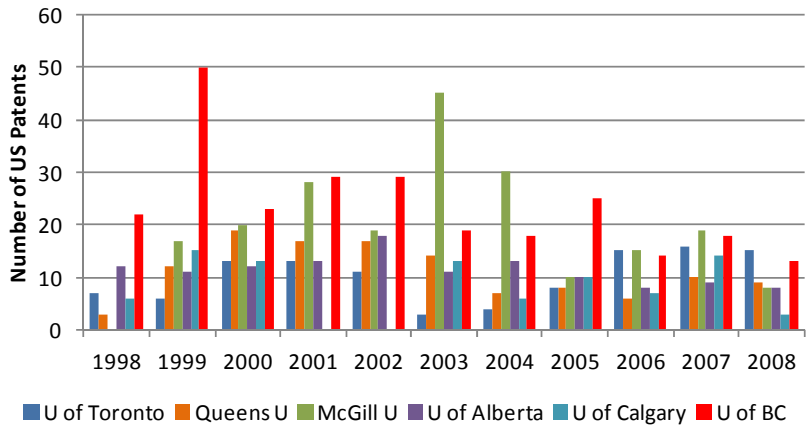
Figure 5.6 – UBC External Research Funding



Source: University of British Columbia

UBC generates 70 percent of the sponsored research funding that comes to BC, and undertakes 91 percent of all university-based research funded by BC companies. The research success is illustrated in the number of US patents granted from research initiated at the University of BC. As indicated in **Figure 5.7**, UBC has been the leader in US patents issued to Canadian universities for six of the ten years examined in the *BC Technology Report Card*, and second for four of the years.

Figure 5.7 – Number of US Patents Issued



Source: BC Technology Report Card – 2012, KPMG LLP, June 2012

Technology licensing revenue is another good indication of the quality and relevance of research. UBC ranks number one among Canadian universities with $9 million in technology licensing revenue annually[10].

UBC is a leader among North American universities in the area of technology transfer. UBC hosts four out of 22 Centres of Excellence for Commercialization and Research (CECR) set up by the Government of Canada in 2007. The function of the CECRs is to advance research and facilitate commercialization of technologies, products and services. The four CECRs hosted by UBC are:

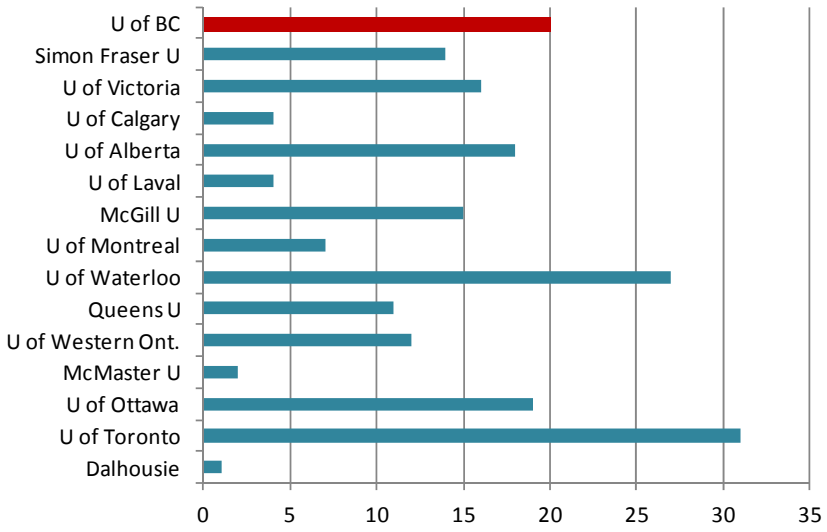
- Centre for Drug Research and Development
- The Prostate Centre's Translational Research Initiative for Accelerated Discovery and Development
- Advanced Applied Physics Solution
- Centre of Excellence for the Prevention of Organ Failure.

UBC's leading position in research and technology transfer has led to a high number of spin-off companies. Most of the University's spin-off companies are based in British Columbia and have made a significant contribution to the provincial economy, as well as providing numerous societal benefits in the areas of health care and technology.

A total of 152 UBC spin-off companies had been created by March 2012. One hundred and forty (140) of the companies have been based in British Columbia and the cumulative sales for these companies are estimated at $5 billion. Some of the more well-known spin-offs include Xenon Pharmaceuticals, Westport Innovations, NxtPHase Corporation, ID Biomedical and QLT.

UBC also compares well to other Canadian universities in number of spin-off companies, as shown in **Figure 5.8**.

Figure 5.8 – Start-up Companies Formed 2003-2009



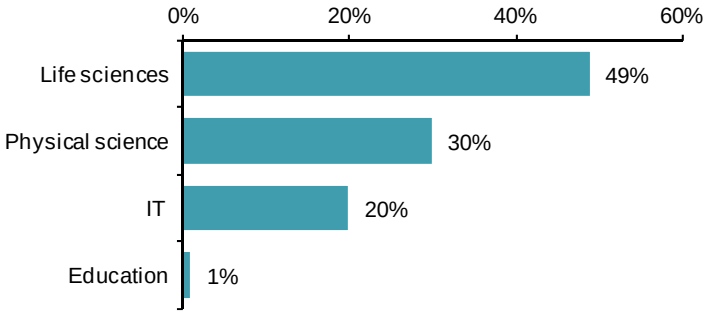
Source: BC Technology Report Card – 2012, KPMG LLP, June 2012

UBC leads all other Canadian universities in terms of technology licensing revenues and is also a leader in terms of US patents issued. More than 150 spin-off companies have been created, mainly in the life sciences, information technology and physical sciences sectors, with cumulative sales to date of $5 billion as estimated by UBC.

[10] Source: University of British Columbia

A large portion of the UBC spin-off companies have specialized in technology related fields, as shown in **Figure 5.9**. While some of these companies have located along the Corridor, depending on the stage of development, they have spread across the region, providing regional economic benefits. Not surprisingly, there is a heavy focus on life sciences in these spin-off companies, which meshes well with the life sciences/health care focus of the Corridor to the east of UBC.

Figure 5.9 – UBC Spin-off Company Specializations



Source: University of British Columbia

The Broadway Corridor is home to one of the fastest growing life sciences clusters in North America, with a particular strength in biotechnology.

BC's life sciences industry includes about 100 biopharmaceutical companies, 60 medical device manufacturing and distribution companies, and 30 bio products companies. Vancouver's competitive advantage in life sciences is based on a talented workforce, government investment, and high quality university R&D and education programs. As the Vancouver Economic Commission notes, UBC has spun-off more than 100 life sciences companies, creating more than 2,500 jobs and raising more than $2 billion in private investments.

5.3 Research Centres of Excellence and Industry Clusters

The University of British Columbia is home to dozens of research institutes, centres of excellence and interdisciplinary organizations that make a significant contribution to BC's technology industry[11]. These include:

- **Centre for Interactive Research on Sustainability**: An international centre for research, partnership and action on sustainability issues, including green building design and operations, environmental policy and community engagement. CIRS is housed in North America's most sustainable building.
- **Institute for Computing, Information and Cognitive Systems:** A multidisciplinary research institute promoting collaboration and commercialization among UBC faculty involved with research in advanced technology systems.
- **Centre for Advanced Wood Processing**: Canada's national centre for education and training related to wood products processing and advanced wood products manufacturing.
- **Clean Energy Research Centre**: A state-of-the-art research facility investigating clean energy problems and the development of environmentally-friendly solutions.
- **Brain Research Centre**: A partnership of the UBC Faculty of Medicine and Vancouver Coastal Health Research Institute that brings together more than 200 investigators with broad expertise in neuroscience research and industrial spin-offs.

[11] A full list of UBC-affiliated research organizations is available here: http://www.ubc.ca/directories/institutescentres.html

- **Michael Smith Laboratories**: A biotechnology laboratory with approximately 250 researchers focusing on: medical molecular genetics; statistics, genomics and experimental evolution; bioengineering and bioanalytical/process technologies; and plant and forestry molecular genetics.
- **MRI Research Centre**: A centre established by a Canadian Foundation for Innovation grant to provide researchers access to state of the art in vivo MR imaging and spectroscopy.
- **Biomedical Research Centre**: A multidisciplinary centre that investigates the cellular and molecular basis of inflammation, repair and regeneration, and has led to a series of discoveries that have proceeded to commercial development.
- **Pulp and Paper Centre**: A multidisciplinary research centre that brings together academia and industry to conduct research for the benefit of the pulp and paper industry.
- **Advanced Materials and Process Engineering Laboratory**: A research collaboration to produce new manufacturing materials between the departments of Chemistry, Electrical and Computer Engineering, Metals and Materials Engineering, and Physics and Astronomy.
- **Wine Research Centre**: A pioneering facility with modern molecular biology and mass spectrometry laboratories that promotes Canada's wine industry through scientific expertise and technological advancement.

UBC's campus also hosts centres of excellence and industry organizations that contribute to BC's technology sector and are affiliated with the university, including:

- **TRIUMF**: Canada's national laboratory for particle and nuclear physics and one of the world's leading physics laboratories. TRIUMF has a staff of 340 scientists, engineers and technicians along with 140 postgraduate fellows and students, and is responsible for significant innovations in life sciences and physics.

UBC's research institutes, centres of excellence and interdisciplinary organizations cover a wide range of technology-based research programs, in many industry sectors and provide the region with a diversification safety net in terms of the future focus of global research priorities.

- **National Research Council Institute for Fuel Cell Innovation**: A major catalyst for Canadian fuel cell research, development, demonstration and commercialization.
- **FPInnovations**: One of the world's largest private forest research organizations, with three laboratory facilities on UBC's campus.
- **MITACS**: A federally- and provincially-funded research network that bridges the gap between academia and industry through placements of researchers and graduate students with industry partners.
- **MPrime Inc**.: One of a number of federally-funded Networks of Centres of Excellence affiliated with UBC. MPrime brings together researchers for the generation, application and commercialization of mathematical tools and methodologies.

5.4 International technology policy – the UK approach

A recent report by the UK Department for Business Innovation and Skills lays out a strategy for the technology sector in the United Kingdom. One of the opening statements illuminates thinking on the importance of technology and innovation to economic sustainability:

> *"Innovation is the development of new products, services and processes, which may be based on cutting edge research. Improving the UK's innovation performance is an essential component of the government's growth plan.*

A large body of evidence shows that innovative economies are more productive and faster growing. They deliver higher returns on investment and increased living standards. They are better at responding to changing circumstances through redeploying old activities and jobs. They are more able to find solutions to global challenges such as reducing dependence on fossil fuels, helping people live longer and healthier lives. UK businesses have to invest more in innovation activities to grow. Innovative businesses grow twice as fast, both in employment and sales, as businesses that fail to innovate.

Innovation will drive the competitiveness of our businesses in the global economy. In technology-based sectors, research is a primary driver of innovation, and research can also discover and exploit new technologies, sometimes giving rise to new industries. In other sectors the rapid adoption of technologies and the development of intangible assets are essential to innovate, sometimes transforming existing industries".

The UK government has recognized that "innovative economies… deliver higher returns on investment and increased living standards" and that "in technology-based sectors, research is the primary deriver of innovation".

The UK government has considered this in the development of its innovation strategy and has undertaken a number of initiatives that will actively support the rebalancing of the economy, empower local communities and address barriers to growth, including:

- Consulting on proposed changes to the current planning legislation with a new emphasis on supporting economic growth.
- Investing in improved transport links and a modern digital infrastructure.
- Making the skills system more business driven and locally responsive. This will ensure that employers can access the skills they need to support the growth of their business and the wider clusters.

The UK approach is consistent with the findings of the Jenkins Report, which noted that the key enablers of the technology sector in Canada include:

- Improving linkages.
- Talented, educated and entrepreneurial people.

5.5 Technology centres and initiatives in other jurisdictions

Key global locations for the development of competitive, economically significant and growing technology sectors have developed strategies to foster development of the local technology industry through technology precincts, incubators, research centres of excellence and other economic/policy initiatives. Highly successful initiatives are also characterized by strong City/University partnerships. The following are a number of examples that illustrate the importance of these networks.

City/university collaboration in other cities (e.g. MaRS in Toronto – University of Toronto and City of Toronto; San Diego CONNECT – University of California at San Diego and City of San Diego; and New York City's new partnership with Cornell) have proven to attract significant investment from both the public and private sectors. There is similar potential in Vancouver.

For example, the City, though its land use planning, could improve conditions for the establishment of a vibrant technology focused job centre in Mount Pleasant. UBC could plan to build an incubator in Mount Pleasant, linking its innovation and research capacity to strategically located job space in the Broadway Corridor. Given Mount Pleasant's location at the intersection of two major transit lines (proposed UBC Line and Canada Line) the new job centre would have seamless connectivity to UBC, the downtown business district,

airport and other job centres throughout the region. This collaborative effort could enable both the City and UBC to realize significant economic benefits for the benefit of the City, region, Province and country.

5.5.1 San Diego CONNECT (San Diego, USA)

CONNECT is a technology incubator, advocate, and think tank in San Diego, California. Their core mission is to assist entrepreneurs in technology and life science fields transfer research into commercialization. San Diego CONNECT was originally founded in 1985 as a part of the University of California at San Diego, but in 2005 it became two separate entities, a trade organization and a charitable foundation. The organization has one office in San Diego, next to the University of California at San Diego, and another in Washington, DC.

The flagship program of CONNECT is "Springboard" – a business advisory service. This program assists technology-based companies and entrepreneurs in refining their business strategies through a group mentoring process. Companies are paired with expert advisors, who provide business advice and assist in finding strategic alliances. CONNECT also provides educational/public policy programming, networking events and workshops, and access to venture capitalists and other investors.

San Diego CONNECT is a global technology hub success story – combining academic research excellence (UC San Diego), the "Springboard" business advisory program, a culture of collaboration and investment in infrastructure.

Since its inception, CONNECT has assisted over 3,000 companies in attracting more than $10 billion in investment capital, with the Springboard program having assisted over 1,000 companies raise over $700 million in funding.

There are a range of key success factors behind CONNECT's track record. Most important has been the culture of collaboration fostered by CONNECT's first executive director, Bill Otterson. Bill believed that a "rising tide" would "lift all boats." He convinced competitors to collaborate and build a thriving life sciences and technology cluster together for the benefit of all. All CONNECT's members are engaged in active roles within the organization and make it possible for CONNECT to offer a deep and wide range of high quality services to the innovation community to catalyze and accelerate the process of product commercialization. This level of engagement keeps CONNECT in touch with the economic and policy needs of the community and the trends, challenges and opportunities that must be addressed.

The critical success factors that created the economic growth in the San Diego region today include[12]:

- Creation of a world-class research university by a group of committed local boosters, funded by the state of California and the University of California, and the recruitment of a talented group of faculty, all interested in interdisciplinary research at the cutting edge. Early support and involvement from the private sector. In 1985 there was considerable commitment of time and resources by the private sector, all "pooling" assets in order to support new and uncertain entrepreneurial ventures. The business community looks to the university for academic leadership and assists scientists commercialize the results of their research discoveries and lead spin off companies out of the university.
- Regional land use decisions and state infrastructure investments in the 1950's and 1960's that allowed these companies to grow.
- Avoiding a prescriptive focus limited to one or two existing sectors, recognizing that new ones will emerge around research excellence and international innovation.

[12] The Partnership Between Entrepreneurial Science and Entrepreneurial Business: A Case Study of the Integrated Development of UCSD and San Diego's High-Tech Economy by Mary L. Walshok† & Carolyn W.B. Lee

- Identifying and supporting the champions (companies and individuals) who have the potential to drive a city/region's economic change. There is a long history of a local culture of collaboration between all the relevant parties, private, public and academic, which goes "beyond networking" and involves shared agenda setting, shared investment, shared risk and shared rewards.
- Understanding that companies are attracted to hot spots where customers, competitors and research excellence are located; a cluster cannot be created in a vacuum. San Diego CONNECT has fostered a powerful "sense of place," which continues to bind people to the San Diego region and creates incentives for "making things work" — helping new initiatives and enterprises start and succeed — through a reinvestment of personal time, connections and cash.

Many regions around the world also recognize the power of collaboration to accelerate the communications and partnerships critical to innovation and cluster growth. In response, there are now **CONNECT** types of organizations in New Zealand, Sweden, Finland, Denmark, Norway, Jordan, Estonia, Latvia, Taiwan, Mexico, Japan, Scotland, and England, with others at an early stage of participation.

5.5.2 MaRS (Toronto, Canada)

MaRS is a technology incubator in Toronto, Ontario, established in 2000. The name MaRS was originally an acronym for "Medical and Related Sciences," but the full name was dropped as the organization's technology mandate broadened.

MaRS' mission is to help entrepreneurs create and grow successful science, technology, and social innovation businesses. MaRS is a public-private-partnership focussing on five key sectors:

- Advanced materials and engineering
- Cleantech
- ICT and entertainment
- Life sciences and healthcare
- Social innovation.

Primarily, MaRS provides business advisory services to eligible ventures (defined as early-stage organizations). Similarly to San Diego CONNECT, eligible entrepreneurs can access business planning and strategic management consulting services from expert advisors. MaRS also offers support programs for entrepreneurs, including access to strategic networks, educational programming, and market intelligence.

Toronto's "MaRS" is a leading Canadian example of the potential to develop technology centres by bringing together academic, research (U of T), business advisory and financial services, and healthcare and other research institutions.

In 2005, the MaRS facility, known as "MaRS Center," opened in the centre of downtown Toronto in the area known as the discovery district – next to the University of Toronto, Toronto General Hospital and close to the financial district on Bay Street. The facility has lab and office space, event venues, meeting places, incubator space, and retail services; and in 2009 the facility was awarded the Creative City Award by the Canadian Urban Institute.

In 2010, client companies raised over $108 million in third party capital funding, and they generated over $70 million in revenue and created over 600 new jobs. To date, MaRS has advised over 1,200 companies.

The MaRS model generally follows the recipe for success that defines San Diego Connect:

- Proximity of key stakeholders
- Partnerships
- Private sector involvement and engagement

- Building off of academic research excellence within a university
- Allowing for innovation to develop in multiple sectors.

5.5.3 Tech City (London, England)

Tech City is a relatively new technology hub in London, England. The Tech City area broadly encompasses London's east end, which is near health facilities and educational institutes such as University College London and Imperial College London. In the past five years, the number of tech companies in the area has grown from 15 to over 850.

In April 2011, the UK Trade and Investment department created the Tech City Investment Office (TCIO), with the chief objectives to:

- Assist Tech City in securing foreign direct investment.
- Facilitate access to investment capital for Tech City companies.
- Promote the Tech City area and success stories of Tech City companies.
- Assist Tech City companies expand into international markets.

In its first year of operation, TCIO secured 37 companies to locate operations in Tech City, and also established a mixture of programming for existing Tech City companies (e.g. networking events, educational workshops, and mentorship programs).

London's Tech City is a relatively new and fast-growing technology hub that has all of the attributes of leading technology centres – proximity to rapid transit, academic and research institutes, access to business and financial services, relatively affordable office space and housing, access to talent, and access to the arts and culture sector.

The key attributes of the area associated with Tech City[13] include:

- Key connections – world class international transportation links (connected to both the Tube as well as Crosslinks Rail).
- Lower cost office rentals, relative to the centre of London.
- Lower cost housing, relative to the centre of London.
- Incubators.
- Proximity to financial institutions and venture capital markets/players.
- Proximity of leading technology universities – research centres, intellectual capital.
- Access to talent - pool of graduate students, pool of undergraduate students.
- Access to the creative sector (arts and culture) – located adjacent to University of the Arts London and a major arts district.

[13] London: World Capital of Business, London & Partners, January 2012.

5.5.4 Cornell – NYCTech

In December 2011, Cornell University and Technion- Israel Institute of Technology won a New York City contest to build an engineering campus with a grant of land on Roosevelt Island and $100 million for infrastructure improvements.

The NYCTech Campus is intended to bolster job creation in the city and is estimated to generate 600 spinoff companies and $23 billion in economic activity over the next 30 years. The new campus will offer a distinctive model of graduate tech education that fuses educational excellence with real-world commercial applications and entrepreneurship, rooted in the latest academic research. Students, faculty and industry experts will learn and work together to launch ideas and create new ventures that have global impact.

The new campus has a number of attributes, including:

- Proximity to the financial district of New York
- Adjacent to the New York Presbyterian University Hospital of Columbia and Cornell
- Served by both subway and tram.

5.5.5 Vancouver versus the competition

Most of the attributes required for success, as described previously, are readily available in Vancouver. However, one significant difference relates to proximity/connectivity. The following two charts (**Figures 5.10 and 5.11**) compare the proximity and connectivity situations in Toronto versus Vancouver with respect to the life sciences technology sector.

Figure 5.10– Technology Sector Connectivity – Toronto

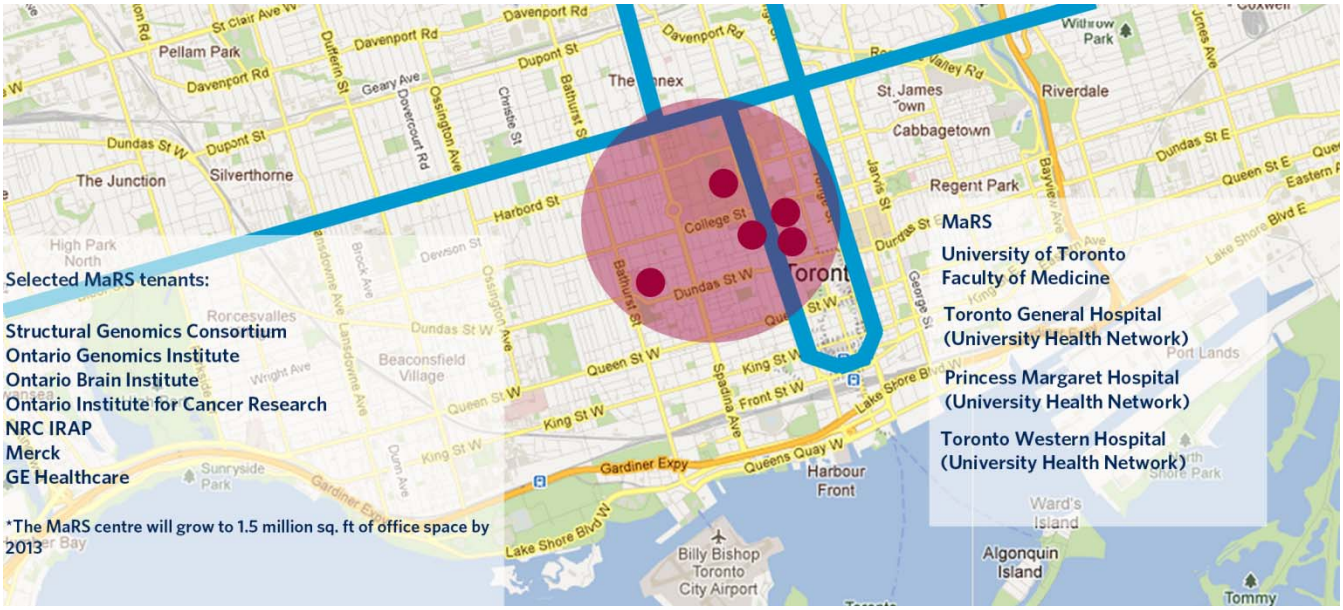
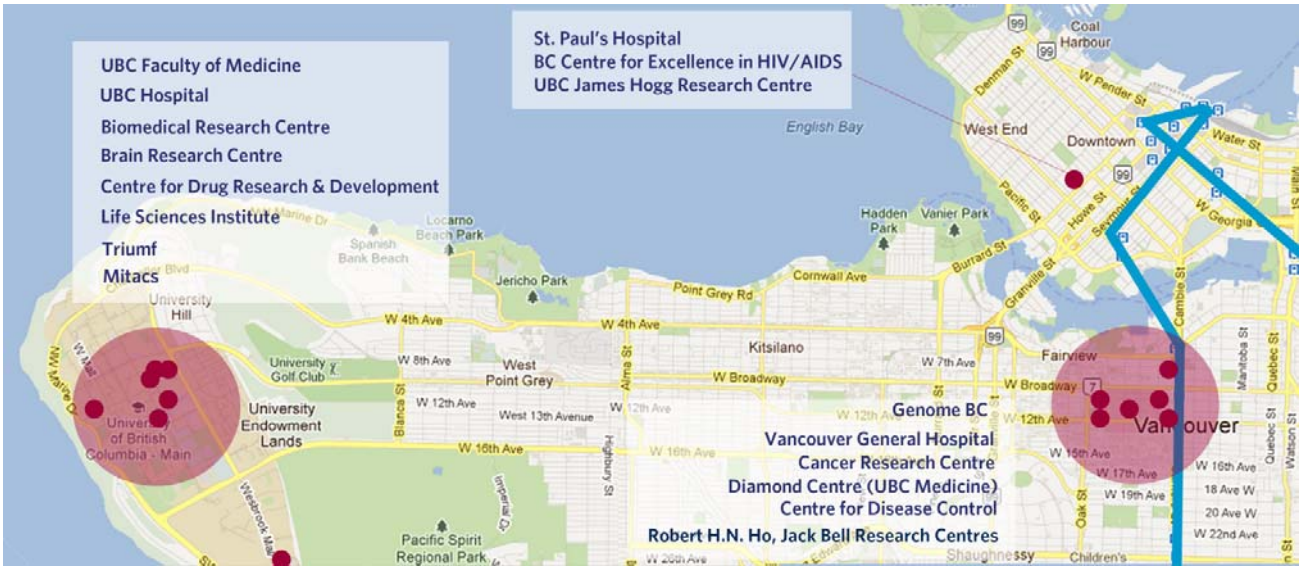


Figure 5.11 – Technology Connectivity - Vancouver



UBC and the life sciences cluster between Cambie and Oak along Broadway share many of the elements of the MaRS project. The obvious differences are the proximity of the University, Hospital, business and financial offices in Toronto compared to Vancouver. Good transportation links can help to overcome the need for proximity that occurs naturally in Toronto but not in Vancouver.

5.6 Rapid transit and technology nodes

Fast and reliable transit connections between UBC's health sciences teaching and research facilities and the medicine/life sciences cluster in the Central Broadway "superblock" is critical for Vancouver to compete successfully with competitors like Toronto for talent, federal and third-party research funding, and job creation. A rapid transit link will also connect the Corridor to other centres of innovation such as Great Northern Way Campus and other academic institutions and business clusters within the Metro region.

The technology sector in British Columbia is a key and integral part of the overall provincial economy, and is expected to grow at a significantly faster rate than other sectors. A variety of parties are already embarking on initiatives to facilitate this growth, in line with some of the leading global practices.

Vancouver already has most of the natural attributes required for developing a vibrant tech sector, including a major international research university and a highly skilled workforce. However, for the tech sector to grow within the Corridor, technology industry leaders note some challenges that will need to be overcome:

- **Lack of suitable and affordable commercial/industrial space** along the Corridor. UBC industry development specialists indicate that when start-up technology businesses "graduate" from UBC and require significant business space, they, they have no close-to-UBC option. Many of the Vancouver's top 100 technology companies have strong UBC roots, but are currently located at Richmond/Burnaby/Surrey sites that are not easily accessible to UBC, making it difficult to maintain the connection to on-campus expertise and innovation.
- **The high cost of residential housing** along the Corridor, especially in west-side Vancouver, resulting in workforce recruitment and retention challenges – particularly for growing technology companies that rely on a young and technically skilled workforce.

- **Lack of rapid transit for commuters** from Metro Vancouver's suburban municipalities, other than at two points of intersection at Commercial Drive and Cambie. UBC departments focussing on technology indicate that many faculty, staff and research associates are typically facing 1.0 to 1.5 hour transit commutes from suburban residences, and the current Broadway bus transit service is generally seen as the "bottleneck" in the journey to work. The length of the commute is seen as impacting both (1) faculty and staff recruitment and retention, and (2) productivity, because of the time spent commuting to work.
- **Poor daytime access to downtown, YVR, and other business/academic locations.** Lack of efficient daytime access between the Corridor and other business/academic locations in Metro Vancouver is often cited as a major barrier to the growth of the technology and other sectors. Representative comments of UBC experts with business liaison responsibilities include:
  - "You can waste an entire day making one trip downtown."
  - "It's difficult to impress investment executives from major US and global companies (who are typically staying in a downtown hotel while visiting UBC), when there are no rapid transit services linking UBC with either the downtown business district or the Airport."

5.7 How Vancouver compares

The following table provides an assessment of how Vancouver rates in terms of the key success factors/enablers for a strong technology sector. The key success factors/enablers have been drawn from the examples of global leaders discussed previously.

Success Factors	Vancouver's Relative Strength
Building out of academic research excellence within a university	Strong
Supply of locally available well-trained graduates	Strong
Proximity and access to hospitals & clinical trial opportunities	Strong
Attractive lifestyle to attract top young talent	Strong
Clustering/critical mass considerations	Strong
Close proximity of world-class technological research capabilities	Moderate
Proximity to arts-oriented residential communities	Moderate
Access to the business community/ financial support	Moderate
Access to affordable office/lab space	**Weak**
Collaborative approach from stakeholders	**Weak**
Superior transit infrastructure	**Weak**

As indicated in this table, the biggest opportunities to improve the potential for success are to deal with the proximity/connectivity issue (rapid transit), develop supportive land use policy that preserves and enhances affordable job space, and to develop a fully collaborative environment between UBC, the City and entrepreneurs.

5.8 Summary – Technology Sector

A comparison of the technology sector in British Columbia and more specifically Vancouver, compared to other successful technology clusters reveals:

- Innovation leads to healthy economies.
- The technology sector in British Columbia is already outperforming other sectors of the provincial economy, but there is a significant potential to increase its role in the economy through effective management and policy development.
- UBC already has a significant role in technology development in British Columbia and is a focus for research in a large number of areas.
- San Diego CONNECT, MaRS, Cornell NYC Tech and Tech City London are all good examples of purposeful policy, planning and collaboration to take advantage of natural attributes of the regions and the technology industry base. These initiatives are all supported by proximity/connectivity to rapid transit.
- While the Corridor has many of the same natural attributes (strong research oriented university, access to capital, access to the creative sector, existing technology clusters and an attractive lifestyle), some key enablers are not present.
- The biggest opportunities to improve the potential for success are to deal with the proximity issue (rapid transit), develop supportive land use policy that preserves and enhances affordable job space, and develop a fully collaborative environment between UBC, the City and entrepreneurs.

6 Rapid transit and economic development

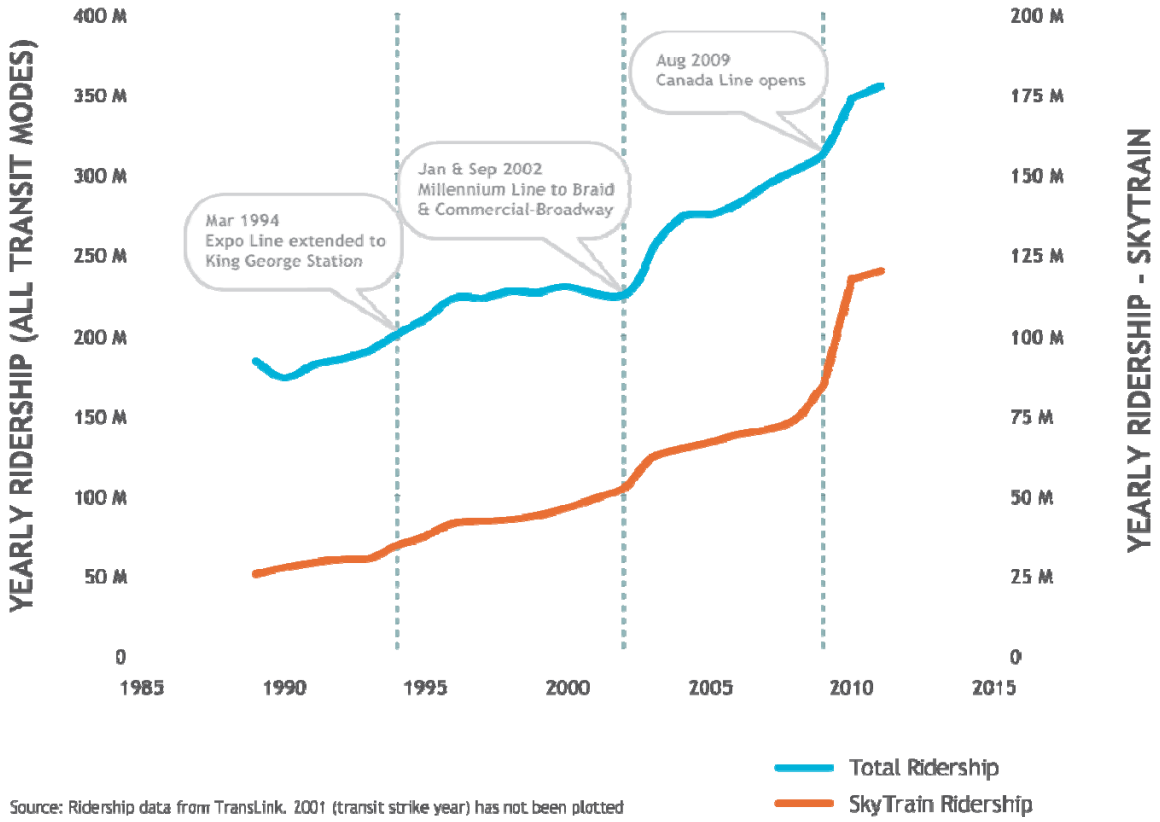
High capacity rapid transit is needed to unlock the economic potential of the UBC-Broadway Corridor. It is the only way to significantly improve connections along the Corridor to the region and encourage growth.

The City of Vancouver's Transportation Plan 2040 has identified the need for a high-capacity, subway rapid transit solution for the Corridor that is fast, frequent and reliable. TransLink is currently evaluating rapid transit options for the Corridor through its UBC Line Rapid Transit Study. The study results are expected to be released shortly.

6.1 Transit ridership – growth

In 2010, Transit ridership in the region increased by 20 percent. 2010 was an Olympic year with exceptionally high transit use, yet despite this phenomenon, TransLink's 2011 data shows an additional 6 percent increase in transit use over and above the Olympic year. The success of Region's transit shows the benefit of transit investment, especially rail rapid transit. The yearly ridership data shown in **Figure 6.1** demonstrates that with the opening of rail rapid transit lines, the region experiences a significant increase in transit ridership. The opening of the Expo Line, the Millennium Line and most recently the Canada Line, shows that high capacity rapid transit attracts new riders and stimulates additional transit growth.

Figure 6.1 – TransLink Yearly Ridership 1989 - 2011



Source: Ridership data from TransLink. 2001 (transit strike year) has not been plotted

6.2 Impact of transit services on economic development

One of the keys to a successful economic hub is its connections to the region. Each of the other technology hubs reviewed and discussed as part of this study have strong connections between academic and business/creative sectors. These connections allow for collaboration and for dynamic relationships between the sectors.

On the UBC-Broadway Corridor, the only way to achieve this connectivity is with high-capacity rapid transit. With a Millennium Line extension to UBC, a technology business in the Mount Pleasant Industrial Area could have staff at a meeting at UBC, downtown, or the airport in under 20 minutes.

This kind of mobility is critical for the economic success of the UBC-Broadway Corridor. The existing bus-based transit service is not conducive to the collaboration that is seen in other technology hubs around the world. They have the advantage of strong, rail-based rapid transit links which are proven to be more attractive than buses at attracting users[14]. The alternative in Vancouver is to use vehicles for this travel, which runs counter to transportation initiatives at UBC and the City of Vancouver, as well as TransLink.

6.3 Canada Line

The Canada Line opened in August 2009 and since this time has shown strong ridership growth – much stronger than had been anticipated. The north-south Canada Line is 19.2 kilometres in length and runs along the Cambie Corridor, and connects Downtown Vancouver, with Richmond City Centre, and the Vancouver International Airport. The line intersects the UBC-Broadway Corridor at Broadway-City Hall station (Broadway and Cambie).

Ridership levels on the Canada Line, the most recent expansion of the Metro Vancouver rail transit network, have been much higher than forecast, and have led to significant additional residential and commercial development along the Line.

6.3.1 Ridership

During the planning process, the ridership forecasts for the Canada Line were developed by the Halcrow Group, and Booz Allen Hamilton conducted a peer review of the study methodology and a reasonableness check of the study results. The study projected that ridership levels would reach an average of 100,000 passengers per day, in a seven-day week, after about four years of service (by 2013). This milestone was marked as the financial break-even point; the point where fare revenues would cover operating costs.

As illustrated in following table, the ridership on the Canada Line actually grew much faster than was anticipated. Ridership passed the average 100,000 passenger mark in 2010.

Canada Line – Average ridership per day

	Weekday	7-day Week
June 2010	106,320	97,969
2011	136,000 (June)	109,000 (Jan-Dec)

[14] As indicated in the assessment of transit options for the Corridor in the *UBC Rapid Transit Line Study: Evaluation Summary*, Updated April, 2011, TransLink (http://www.translink.ca/~/media/Documents/plans_and_projects/rapid_transit_projects/UBC/feedback_reports/UBC%20Line%20RT%20Study%20Evaluation%20Summary.ashx).

For the most recent time period available from TransLink (January to December 2011), the Canada Line averaged over 109,000 passengers per day (in a 7-day week), with a weekday average of more than 136,000 passengers per day in June 2011.

As Canada Line ridership indicates, there is a strong demand for high capacity rapid transit. New riders are attracted to this type of service, and it is reasonable to expect that with fast, frequent and reliable rapid transit on the UBC-Broadway Corridor ridership could significantly increase, resulting in less congestion, improved air quality and improved mobility.

6.3.2 Impact on development

The Canada Line created opportunities for growth and development along the Cambie Corridor, particularly near Canada Line stations. Both the City of Vancouver and the City of Richmond developed plans to capitalize on these opportunities. These are representative of types and scope of development that can be fostered by rail rapid transit and which meet overall regional goals for transit oriented, sustainable development, compact urban form and economic development. As shown in the section below, a number of development sites next to rapid transit stations have been sought out by the development industry.

6.3.3 City of Vancouver

The City of Vancouver developed the Cambie Corridor Planning Program, to define the principles for land use planning and policies for future development at strategic sites and in transit-influenced development areas. As illustrated in the illustration to the right, the City of Vancouver envisaged four principal nodes for future development centred on the new stations at King Edward Avenue, 41st Avenue, 49th Avenue and Marine Drive. Further future development is also considered at 33rd Avenue and 57th Avenue, but this would require the development of new stations on the Canada Line.

Source: City of Vancouver, 2011

There are a number of projects that are either underway or in the approvals and inquiry state. A few recent large projects along the Cambie Corridor in Vancouver include:

- Marine Gateway (approved in 2011 and currently under construction) – Redevelopment of a site at Cambie and Marine Drive that will entail the development of nearly 1.0 million square feet of space, including 415 units in a residential tower/complex, an office tower, theatre complex and significant amount of retail. Once complete, this development will be directly connected to the Marine Drive Canada Line Station.

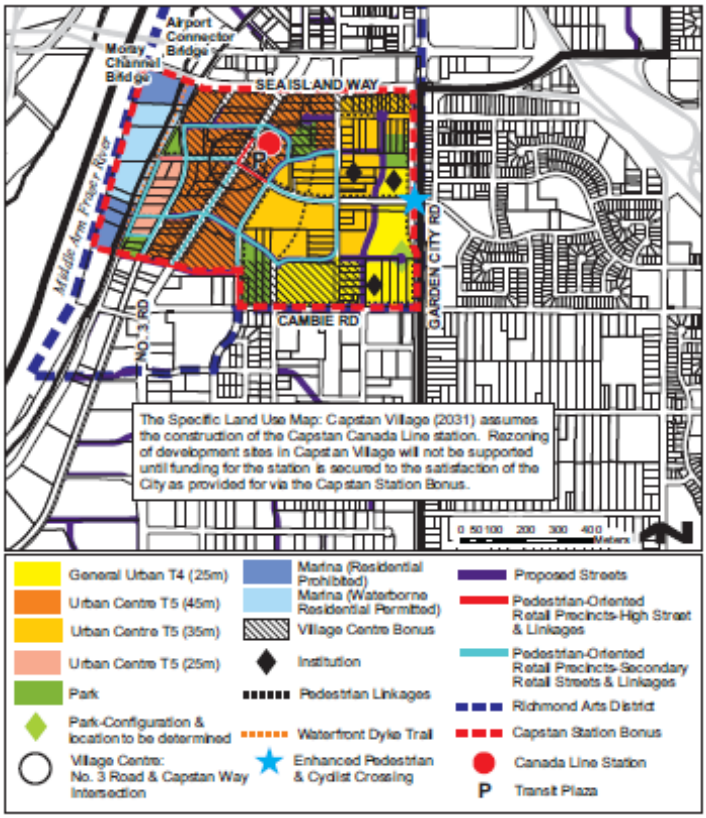
- MC² (approved in 2012) – This development, which was recently approved by Council, will include over 500 residential units. It is located across the street from the Marine Drive Canada Line Station.

- The owners of Oakridge Centre have submitted a major rezoning application for the redevelopment of their 11.5 hectare site. The proposed redevelopment includes the addition of a broad range housing (2,800 units) ranging from luxury to affordable, as well as a doubling of the existing office and retail space, The proposal includes parks, bikeways, walking paths and a library. The proposed redevelopment will be directly connected to the Oakridge-41st Avenue Canada Line Station.

6.3.4 City of Richmond

As a part of the City of Richmond Community Plan, Richmond has multiple area plans for different zones around the community; some of these plans were amended to better capture the potential benefits of having a rapid transit system running through the city. Two recently announced projects that will build off the presence of the Canada Line include:

- Capstan Village – Concord Pacific and Pinnacle International have submitted applications to construct up to 3,250 condominiums at a yet to be built Canada Line station at Capstan Way and No. 3 Road. The developers are proposing to put up $25 million for the construction of the new station. Richmond ultimately sees the development of about 6,600 housing units to be built in this area.
- Vancouver International Plaza at Duck Island – Jingon International Development Group is seeking to redevelop a site adjacent to



the existing River Rock Casino in Richmond adjacent to the Bridgeport Station on the Canada Line. This development will include about four million square feet of new space, including six hotels, a trade and convention centre and other amenities.

6.4 Summary

A review of transit service and its impacts on economic development indicate that:

- High capacity, fast and reliable rapid transit has been the key to transit ridership growth over the past twenty years in Vancouver. The SkyTrain system has been responsible for about two-thirds of all transit ridership growth over that period.
- The Canada Line has improved mobility and transit use between places where people live, work and shop. The commercial, retail and residential development along the line is indicative of the positive impact that it is having on Vancouver and Richmond. This development is consistent with the key attributes of that Corridor prior to construction of the line.
- A rapid transit line in the UBC-Broadway Corridor is expected to have similar impacts as that of the Canada Line. It will build off the existing attributes of the Corridor, to create stronger linkages for academic and commercial activity (especially in the technology sector). As noted in the previous section of this report, the technology sector will be of increasing economic importance to the City, Region and Province, and effective transit is a key enabler of this sector.

7 Unlocking the Corridor's economic development potential

Based on the findings of this study, the priority actions to unlocking the Corridor's economic potential include the following.

1) Implement rail-based rapid transit, linking the Corridor's academic and research institutes to each other and to the Metro Vancouver community

The ability of the Corridor to achieve its economic and development potential will depend on implementation of high-capacity, fast, reliable rapid transit as the solution to its current and growing transportation congestion and transit capacity issues.

International experience with global technology hubs indicates that effective infrastructure is a key enabler for collaboration and economic growth. Knowledge, workforce, funding, business acumen and appropriate space need to be effectively linked for technology hubs to work.

2) Provide appropriate and affordable commercial and residential space

Commercial space

One of the necessary components of economic development is the need to develop attractive and affordable commercial space along the Corridor – to enable fast-growing technology and other firms to take advantage of the Corridor's proximity to UBC, downtown, YVR, and adjacent residential neighbourhoods. The strongest opportunities for growth include (1) increasing the allowable density for existing commercial areas in the central and western parts of the Corridor, and (2) developing new higher-density commercial areas in eastern sections of the Corridor, in conjunction with improved rapid transit services.

Residential space

The Corridor is already seen as a highly attractive residential area within Metro Vancouver. Increasing the numbers of attractive and affordable residential dwellings along and near to the Corridor, will assist Corridor-based firms in attracting talented employees, by enabling them to live and work in close proximity.

3) Develop an intentional, collaborative strategy to deliver a strong, vibrant and resilient technology sector

Culture of collaboration

City/university collaboration in other cities — e.g. MaRS in Toronto (U of Toronto and City of Toronto), San Diego CONNECT (UC San Diego and City of San Diego) and New York City's new partnership with Cornell — has been proven to attract significant investment from both the public and private sectors. There is similar potential for UBC and the City of Vancouver. The City of Vancouver and UBC have strong partnerships in a number of areas, and will continue to strengthen collaboration and complementarities in the areas of land use and economic planning.

Business attraction strategy

Leading economic development centres typically result from the successful implementation of an intentional and targeted business attraction strategy – drawing on support at the local, regional, state/provincial, and national levels. The Vancouver Economic Commission and UBC are well positioned to develop and deliver such a strategy. Development of specific strategies and incentive programs to attract targeted industry sectors and firms – learning from the successes of other jurisdictions – is a key to achieving the economic potential of the Corridor.

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It is clear that the economic potential of the UBC-Broadway Corridor is significant, and can build off an already strong base, with many of the enablers for future growth already in place. The City of Vancouver and UBC are taking steps to realize this potential, but ultimately a rail-based rapid transit link is fundamental to provide the mobility required for this economic potential to be fully realized.

To develop a technology hub economy that is second to none at a global scale, a new approach is needed – one that sees UBC and Vancouver collaborating closely on a long-term plan to invest in the UBC-Broadway Corridor, through strategic land-use planning, targeted economic strategies and the development of a rail-based rapid transit line to meet the population and economic needs of the future.

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