Finding Balance:

Greater Vancouver's Changing Office Market Drivers 2005-2020



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Executive Summary

OFFICE MARKET DRIVERS 2005

1. Forestry and Forest Products
2. **Knowledge Economy**
3. Gateway Function
4. Mining and Energy

OFFICE MARKET DRIVERS BY 2020

1. **Knowledge Economy**
2. Forestry and Forest Products
3. Gateway Function
4. Mining and Energy

Driver industries: Drivers are the economic sectors that create demand for office space. Drivers are those sectors that generate demand -- direction and indirectionly-- for the multitude of business services that fill typical office space. Drivers can also be occupants themselves, although this is typically involves less space than their impact through indirect means and economic multipliers.

KEY FINDINGS

British Columbia's largest economic driver -- forestry & forest products -- also continues to be the most significant driver of demand for office space in Greater Vancouver. Forest companies themselves, but especially the industry's broader multiplier impacts within the provincial economy, anchor the province's businesses.

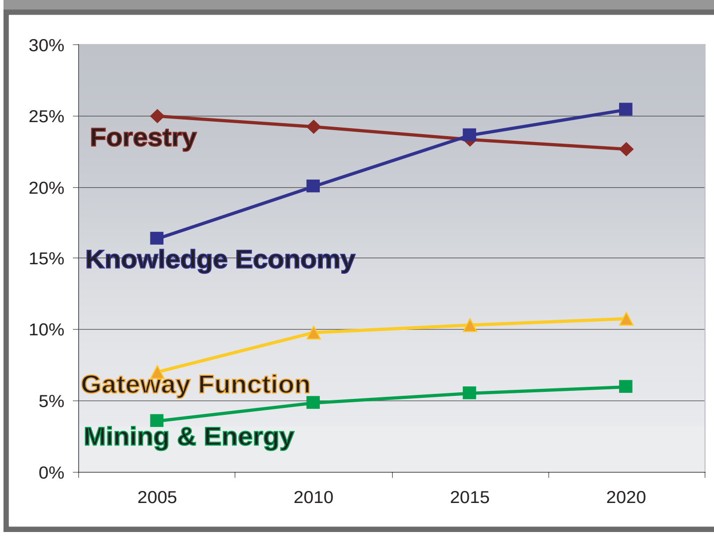
This is changing. Although forestry will remain essential to provincial economic health and that of the office market, other industries are growing in importance, creating a more balanced economy and office market.

Industries growing in importance include: Mining & Energy, Gateway Function (trade and transportation services through the port, airport, trucking, rail shipping etc.), and especially the Knowledge Economy.

Implications

- Having multiple strong office market demand drivers will reduce wild swings in vacancy rates over time.
- Long term office building leasing revenue will likely trend upwards supported by fewer periods of high vacancy rates and low demand ("tenants markets").

Greater Vancouver's Changing Office Market Drivers - Forecast



FOREWORD

Introduction

Knowing what industries are ultimately responsible for office space demand is essential to real estate planning. It allows landlords, investors, tenants and real estate service providers to anticipate when demand for their product or service will increase, decrease or stay the same.

Understanding the drivers behind office space demand in Greater Vancouver is not straight forward. **Drivers are not found by simply looking at which industry sectors occupy space.**

Occupants tend to be those companies and organizations that provide services to other businesses. Legal, accounting, consulting, engineering, insurance, real estate, or financial service companies tend to be the beneficiaries of growth in office market drivers rather than the root cause of office demand.

Our interest is in understanding what industry sectors (or their employees) ultimately pay for professional or producer services -- that is, who buys engineering and business consulting work, financial planning advice, or accounting audits.

Finding Drivers

Because tracing the sources of each company's revenue is not practical, we had to develop an alternative approach to uncovering the major office market demand drivers. We began by examining the major economic drivers for British Columbia, starting with the natural resource sector. We then developed techniques for approximating their impact on office demand. Indeed the resource sector proved important to Vancouver's office leasing market through direct, but especially through indirect and economic multiplier impacts.

We then broadened our vision and considered services exported from BC. Two significant additional groups emerged: the high technology sector, particularly software publishing, and the Gateway Function -- international trade and transportation services.

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Determining Demand Share

We developed a methodology using provincial and federal economic and employment statistics together with published studies from various organizations on specific British Columbia industries and their broader economic and employment impacts on British Columbia or Greater Vancouver.

Linking a sector's importance as an economic or employment generator in BC with its part in driving office demand in Greater Vancouver then required making assumptions and creating estimates based upon them. Our conclusions are therefore only estimates and our reasoning is explained on the pages below.

Forecasting the future

Looking 15 years ahead required making further assumptions based on economic forecasts. First, our own research on the broader economic impact of hosting the Olympics suggests that positive and even strong economic growth is likely through 2012, with perhaps a minor slow down in 2010 (Avison Young, *Olympics and Beyond,* 2003). Second, global economic development over the next decade and beyond should sustain demand and prices for BC's natural resources as well as Greater Vancouver's trade and transportation services. Third, BC is doing well fostering particular high technology and knowledge economy clusters, which should continue to grow. Based on these assumptions -- that all pointed to positive economic growth overall as well as in particular industries -- we built a forecasting model explained below..

Organization of This Report

In this report we first assess the present day drivers of Greater Vancouver's office market. From that foundation we analyze how current and future world and local trends will impact the office market. We conclude the report with an assessment of the implications of this research for tenants, landlords, real estate brokers and others with a stake in Vancouver's changing office market.

Background

This report updates the findings in previous Avison Young publications on office market drivers released in 2003. It also provides a written version of a presentation given to NAIOP's Vancouver chapter in October 2004.

Office Market Drivers as of 2005

Forestry & Forest Products

25%

The Greater Vancouver office market continues to grow on (harvested) trees. The forestry and forest products sector is the major force behind BC’s economy and a major source of the Lower Mainland’s prosperity.

An estimate made by the Vancouver Board of Trade is that for every forestry industry job outside of the Lower Mainland, the economic linkages generate one job in the Vancouver area (*Taking Stock,* 2001*)*. This is approximately 235,000 jobs.

If we estimate that 25% are office jobs (or full time equivalent positions based in offices), this would equal 59,000 jobs. If we assume 210 square feet per person, this would fill 12.4 Million square feet of office space. In our 44 million square foot inventory, that equates to 28% of the market.

On the other hand if we assume that 18% of jobs generated through forest industry linkages are office jobs, this equates to 42,300 jobs or 8.9 Million square feet -- the equivalent of 20% of our office market.

Taking a middle ground, we estimate that forestry drives 25% of demand for office space in Greater Vancouver.

Forestry & Forest Products

Total office based jobs generated: 42,300
Total square footage driven = 8,900,000

Mining & Energy

4%

World commodity and energy prices have risen in recent months, increasing the importance of these resource sectors to both the provincial economy and Greater Vancouver office market. Nevertheless, the mining and energy industries (including mineral processing) have less impact on the office market than the forestry sector for several reasons:

- Energy companies tend to be based in Alberta, resulting in profits being spent there rather than BC, reducing the economic multiplier effect of this industry in BC.
- Many BC mining companies have worldwide operations. While the profits

Square Feet Per Person Assumption:

In this report, calculating the amount of office space demand driven by a particular industry is generally achieved by multiplying the estimated number of full time equivalent office jobs generated by 210 square feet. We chose 210 square feet per person based on previous research involving interviews with Vancouver area tenants, most of whom had square foot per person ratios between 200 and 275. Although we are aware of studies suggesting a lower ratio, having no direct evidence that this is true for the Vancouver market, we selected 210 square feet as a compromise number.

may be spent in BC, the employees' salaries are not.

Over the next few years both mining and energy companies are expected to grow their BC operations thereby increasing these sectors' impacts on office market demand. Below we examine each sector in more detail.

Mining Sector

According to BC government reports, approximately 12% of the 38,000 people who work in mining have office related jobs (BC Government, *Guide*, 2002 and BC Stats, *Employment*, 2005). If 30% of those positions are in Vancouver-area office buildings, that would equate to 1,368 direct office jobs from mining or 287,000 square feet of office space demand.

Mining
Total office based jobs generated: 3,743

Total square footage driven = 786,000

Indirect and multiplier-induced jobs also occur. If we assume that induced and indirect job creation in the Lower Mainland happens at the rate of .25 (1 job in the Lower Mainland for every 4 direct jobs throughout BC), then 9,500 Greater Vancouver jobs are created from mining. If 25% are office jobs, this equates to 2,375 full-time position equivalents. At 210 square feet per person, this would fill 498,000 square feet.

Energy Sector

Approximately 14,500 people work directly in the oil and natural gas production in British Columbia with another 23,000 jobs linked to this work as indirect positions according to a BC government report (*Strategic Considerations,* March 2002). No detailed study on the sector's broader economic or employment impact on the Vancouver area could be found so we made some estimates.

Energy
Total office based jobs generated: 3,745

Total square footage driven = 786,000

If we assume that as with mining, 12% of the 14,500 direct jobs are office based, and half of those based in Vancouver at corporate offices, then 870 office-based jobs come directly from energy or approximately 183,000 square feet of office demand.

Of the 23,000 indirect jobs the energy sector generates, if we assume that 50% are in Greater Vancouver and 25% of those are office based positions, then a further 600,000 square feet of office space demand is generated by the energy sector.

Mining & Energy

Total office based jobs generated: 7,488
Total square footage driven = 1,572,000

Gateway Function

7%

Vancouver as an International Trade Gateway

Vancouver's "Gateway Function" is a large economic generator for the country and province as well as the Greater Vancouver area. This sector includes shipping through the Port of Vancouver, air freight and passenger services through the Vancouver International Airport (YVR) as well as trucking, railway and related industries such as ship building and maintenance.

Goods going to and from regions across Canada and the USA ship through Vancouver. This industry therefore does more than support BC export industries. Nevertheless, its influence on office market demand overlaps with that of forestry and mining. We have accounted for this in our estimates.

Maritime Cargo
Total office based jobs generated: 7,934

Total square footage driven = 1,670,666

Maritime Cargo

According to a report, completed by Intervistas Consulting for the Vancouver Port Authority (Intervistas, *Port Vancouver*, 2001), the Port generated the equivalent of 46,513 full time jobs through direct, indirect and induced economic activities. 25,700 were full time equivalent jobs directly connected to maritime cargo (the majority not office-based). In breaking down this number into types of positions, the Intervistas report categorizes approximately 6,100 of these full-time equivalent positions as office-based types of work. Not all office-type work will take place in offices, so we have estimated that 3,050 equivalent jobs take place in offices in Greater Vancouver. Based on the growth in trade through Vancouver's port since then, we are assuming a 10% growth in employment to 3,355 positions. Using 210 square feet of space per person as our ratio, direct Port-related jobs fill approximately 704,550 square feet.

In 2001 there were also 20,813 other indirect jobs generated by Port activity, for which it's difficult to discern where the work might take place. The Intervistas report does offer some estimates as to which municipalities hold these positions, and about 20 percent of such jobs exist outside of districts that we track within the "Greater Vancouver Office Market" (in Delta and Port Moody). This leaves 16,650 full time equivalent indirect jobs in the Greater Vancouver area. If we also assume a 10% growth since 2001, the new total is 18,315. If 25% of these positions take place in offices (4,579 positions) then the indirect office demand would be 966,116 square feet for a total of 1,670,666 square feet of office space demand generated by maritime cargo. This is approximately 3.5 percent of Greater Vancouver's office market.

Trucking
Total office based jobs generated:4,085

Total square footage driven = 857,850

Trucking

The trucking sector employs approximately 18,200 people in the Greater Vancouver area. If we assume 5% of these workers are in formal office space (as opposed to a small office attached to a warehouse), it would equate to 191,100 square feet of office space. No figures for employment impact in other sectors exist, however the BC Trucking Association does estimate that for every $1 spent on trucking, 70 cents goes back to the economy in other ways. If we take this 70% figure and apply it to employment, then we can estimate that 12,700 induced or indirect jobs spin off from the trucking industry. Putting 25% in offices would fill 666,750 square feet of space. Adding the 191,100 square feet from direct demand gives a total of 857,850 square feet created by the trucking industry.

Railway Industry
Total office based jobs generated: 1,607

Total square footage driven = 337,470

Railway Industry

Little information is available on the rail industry economic impact on Greater Vancouver. We can estimate from BC government figures that 7,150 people work in the railway industry in Greater Vancouver. Using the same multipliers as for trucking, placing 5% in offices and using the 70% multiplier for indirect and induced employment we can estimate that 337,470 square feet of office demand is generated by the railroad industry.

YVR
Total office based jobs generated:3,750

Total square footage driven = 787,000

Vancouver International Airport

According to the president of the Vancouver International Airport, the facility generates 60,000 direct and indirect jobs in BC (Larry Berg, "YVR," 2004). If we assume that 25% of these are based on the airport being an economic driver -- rather than providing services for domestic consumption -- and 25% of those positions are in Greater Vancouver office space, then the airport drives 787,000 square feet of office demand.

Gateway Function
Total office based jobs generated:17,376

Total square footage driven = 3,648,960

High Technology and Knowledge Economy
16%

Unlike the three other industry sectors covered above, the high technology and knowledge economy sector tracked here is primarily based in Lower Mainland and in office space. Therefore, this sector has a much larger impact on office space demand in Greater Vancouver than natural resource and transportation based industries even though its provincial GDP share and overall economic impact is much lower. Moreover, the knowledge and technology sector is the fastest growing segment of the provincial economy, expanding much faster than the economy generally.

High technology and knowledge economy industries in Greater Vancouver provide products and services to local businesses and consumers as well as to global markets. For the purposes of this study, we’ve selected sectors and segments that serve as economic and office market drivers by selling their services or products outside the province.

Software Publishing - 6%
Software publishing is BC’s fastest growing industry. It expanded at an annual average rate of 30% from 1997 through 2002. Available employment figures do not segregate the software sector from publishing in general. We do know that 14,600 people working in publishing (BC Stats, *Employment*, 2005),

For this report, we estimate that 10,000 of these workers are Vancouver-area software industry employees. This would fill 2.1 Million square feet of office space, assuming all software industry workers work in office space. (Note: the software industry category does not include the thousands of additional people who work as software developers for non-software companies such as those firms that design and build electronics and computer-aided machinery.)

Software Publishing

Total office based jobs generated: 10,825

Total square footage driven = 2,273,250

Using the conservative multiplier for indirect and induced employment generated from the industry of 0.75 (0.75 jobs for every 1 software job) and putting 25% of them in offices yields a further 1,875 office jobs or 394,000 square feet. Therefore, from direct, indirect and induced employment the software industry generates 2.5 million square feet of office space demand or 5.7% of the office market in 2005.

Architecture, Engineering, Scientific, and Technical Services - 2%
This is a combination of two classifications -- “Architectural, Engineering & Design Services” and “Management, Scientific & Technical Services.” (It should be noted that this aggregate category includes biotechnology and fuel cell research, important growing industries.) Approximately 69,500 people work in these combined sectors in BC. However not all will be in Greater Vancouver and a significant percentage of these jobs would not fit our “driver” definition -- that is, they provide services locally and are already included in the induced and indirect employment categories from other drivers.

Arch. Eng. Sci & Tech Services
Total office based jobs generated: 3,909

Total square footage driven = 820,969

We estimate that 15% provide export or driver services and that only 25% of them occupy office space in Greater Vancouver. This would equate to 2,606 office positions, filling 547,260 square feet of office space.

Using a conservative 0.5 multiplier for induced and indirect jobs created by the driver component of this industry and assuming 25% are office jobs, produces a further 1,303 full time equivalent positions filling 273,565 square feet of office demand. This gives us a total of 820,969 square feet or 1.8% of Greater Vancouver's office market in 2005.

Computer Systems Design

Total office based jobs generated: 12,400

Total square footage driven = 2,600,000

Computer Systems Design - 6%
This category includes the development of specialized high technology computerized devices and the software that runs it. Over the past five years it has been the fourth fastest growing industry in the province.

We estimate that 20% of the 32,000 BC jobs (BC Stats, *Employment*, 2005) in this sector take place in Lower Mainland offices, or 6,400 positions. Assuming that 0.75 induced and indirect jobs are generated for each computer system design job (regardless of whether it takes place in office space), and 25% of them are in offices, then 6,000 additional office jobs are generated. The total office space driven by Computer Systems Design would therefore be 2.6 Million square feet or 5.9%.

Educational Services

Total square footage driven = 1,300,000

Educational Services - 3%
Private educational institutions are a growing local and export industry that is increasingly absorbing office space. This sector includes private ESL colleges, business and technical training schools as well as other continuing education institutions.

There are inherent difficulties in estimating office space demand driven by this sector. Provincial statistics do not separate private post-secondary institutions such as the Vancouver Film School or an ESL college from GDP or employment in all post secondary institutions. Also, employment in the education sector is harder to use as an indicator of office space filled because of the classroom structure of these types of office users. Therefore, we've had to make estimates based on our knowledge of schools occupying office space. We estimate that private educational institutes themselves fill 1 million square feet of office space. We added 30% to that figure to account for indirect and induced office jobs generated by this sector.

Knowledge Economy

Total office based jobs generated: 27,134

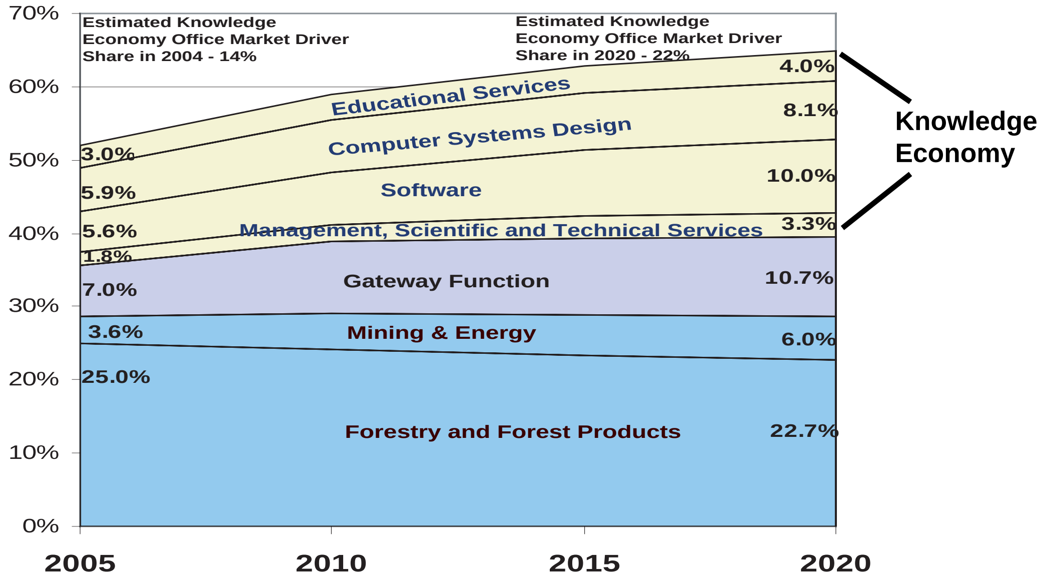
Total square footage driven = 5,700,000

Evidence of these drivers having an impact:

From 2001-2003, the forestry and mining sectors were in decline, world trade had slowed in the aftermath of Sept 11, and the knowledge economy was recovering from the dot com crash. Office demand was soft. Negative absorption common in most markets.

Fast forward to 2004-2005. Forestry and commodity markets are thriving as is world trade especially between Asia and North America -- through Vancouver. The knowledge economy has regained a strong growth pace based upon sound business principals. Demand for office space is booming.

Changing Office Market Drivers 2005-2020



Introduction

Looking ahead to 2020, Vancouver's office market drivers will change as global economic development impacts the region's economy in profound ways. Economic growth and development in China and India is driving increased trade between North America and Asia, through the Port of Vancouver. Moreover, global economic growth -- including that in China and India is increasing demand for BC's mining, energy and (to a lesser extent) forestry products. These trends should continue to boost BC and Greater Vancouver's growth for the next 5-15 years.

The Greater Vancouver is also fast becoming a successful centre for high technology and knowledge economy companies, a trend we expect to continue over the next several decades.

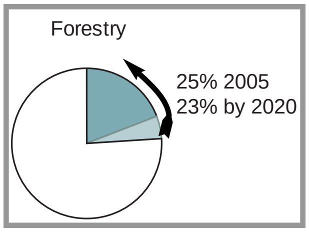
Other Assumptions:

For the sake of the models used to estimate future drivers, we assumed:

- That the office inventory will grow at an average rate of 0.5% per year. This means that the present inventory of 44,200,000 square feet will grow to 47,400,000 square feet by 2020.

- That the economy will maintain steady growth ranging from 2% to 6% depending upon the year, with the high growth rates happening shortly before and after 2010, when Vancouver will likely see considerable economic investment as a result of hosting the Winter Olympics.*

**For more information on how the Olympics could generate business development and office market activity for Vancouver, see our report, "Olympics and Beyond: Implications for the Greater Vancouver Office Market."*

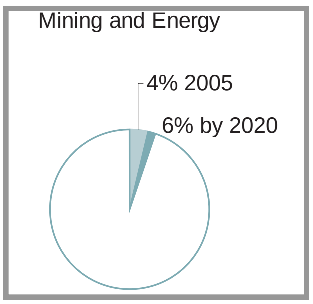


Forestry and Forest Products:

In terms of absolute square footage, the forestry industry's role as a driver is expected to decline only slightly over the next 15 years. Mergers are consolidating the industry, reducing the number of companies operating, which in turn reduces their direct demand for office space. Moreover productivity gains through increased efficiency brought by technology is further reducing the number of workers in this industry, also expected to have a modest downward impact on the office market through decreasing economic multipliers.

Finally and primarily, as newer industries such as the knowledge economy grow, along with the size of the office inventory, forestry's share as a driver of office market demand will naturally decrease.

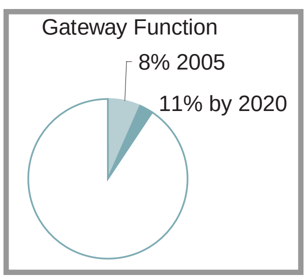
Demand Share: 25% 2005 declining toward 22.7% by 2020



Mining & Energy

Looking to 2020, we anticipate that mining and energy companies themselves will increase their office space in Vancouver as well as their numbers of employees. Largely through multiplier effects, their impact on the office market is expected to increase. Rapid economic development in China and India as well as other world regions should help this industry to grow for the remainder of the decade. Beyond that, other world sources of these resources combined with capacity issues in BC will likely limit further growth of this industry.

Demand Share: 4% 2005 rising toward 6% by 2020



Gateway Function

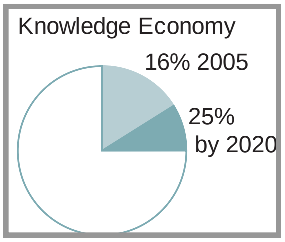
This trade-and-transportation-based sector is growing in importance to the regional economy because of the rise in trade between Asia and North America. Vancouver's Port and Airport offer among the fastest and most efficient connections between North American and Asia.

Over the next decade, expansions at the Port of Vancouver, increased trade as well as tourist traffic will boost Gateway’s impact on the office market. Looking beyond 2014, we anticipate that growth for the Gateway sector will level off as capacity in geographically-constrained Greater Vancouver limits further growth.

Demand Share: 8% 2005 rising to 11% by 2020

Knowledge Economy

Enormous potential exists for growth in the high technology and knowledge economy sector. Unlike the natural resource or gateway function sectors that have capacity limitations, the knowledge sector is theoretically boundless. The only limits would be attracting and retaining quality workers in Vancouver, as well as ensuring quality education for the local population to grow a workforce organically. For this study, we assumed that both will occur.



The estimates for knowledge economy growth outlined below assume that the Vancouver region will continue to offer an environment attractive to knowledge workers. This includes having a vibrant, cultural and recreational scene as well as quality education, competitive income tax rates and a safe, friendly atmosphere that welcomes skilled immigrants from around the world. If the region does a poor job fostering this environment, growth in some knowledge sectors may stop by 2010 - 2012 and our model will not hold.

Because of this sector's importance to future office market demand, additional detail on the key component segments follows below.

Software

We estimate that software growth in the next few years will be strong before declining to levels moderately above the overall economic growth rate for BC. Several local companies have announced aggressive expansion intentions for the next few years, making us comfortable with strong short-term growth predictions in this sector. Based on these assumptions, by 2020 software alone will drive 10% of demand for office space in Greater Vancouver.

Software

Expected to drive 10% of office market demand by 2020

Architecture, Engineering, Scientific, and Technical Services

The professional, scientific and technical services portion of this category was the second-fastest growing sector of the BC economy from 1997 through 2002, expanding by an average annual rate of 10% according to the Business Council of BC.

Arch. Eng. Sci & Tech Services

Expected to drive 3% of office market demand by 2020

Looking ahead, we assume that this industry's growth will drop to single digits but will remain above the growth rate for the economy generally for the next five years before paralleling general provincial economic growth.

Therefore, by 2020 this sector will generate approximately 1.6 million square feet or 3.3 percent of office demand.

Computer Systems Design and Related Services

From 1997-2002 this was the fourth fastest growing industry in the province. Looking ahead, we expect this industry to grow faster than the economy through 2012 and thereafter keep pace with BC economic growth.

Computer Systems Design

Expected to drive 8.1% of office market demand by 2020

Based on these assumptions, this will result in approximately 3,132 more direct office-based jobs in the industry by 2020 for a sub total of 9,532. Additionally, it will generate 2,936 more indirect office-based jobs for a subtotal of 8,936 . Total office jobs generated will reach 18,469 and this sector will then drive 8.1% of the office market.

Educational Services

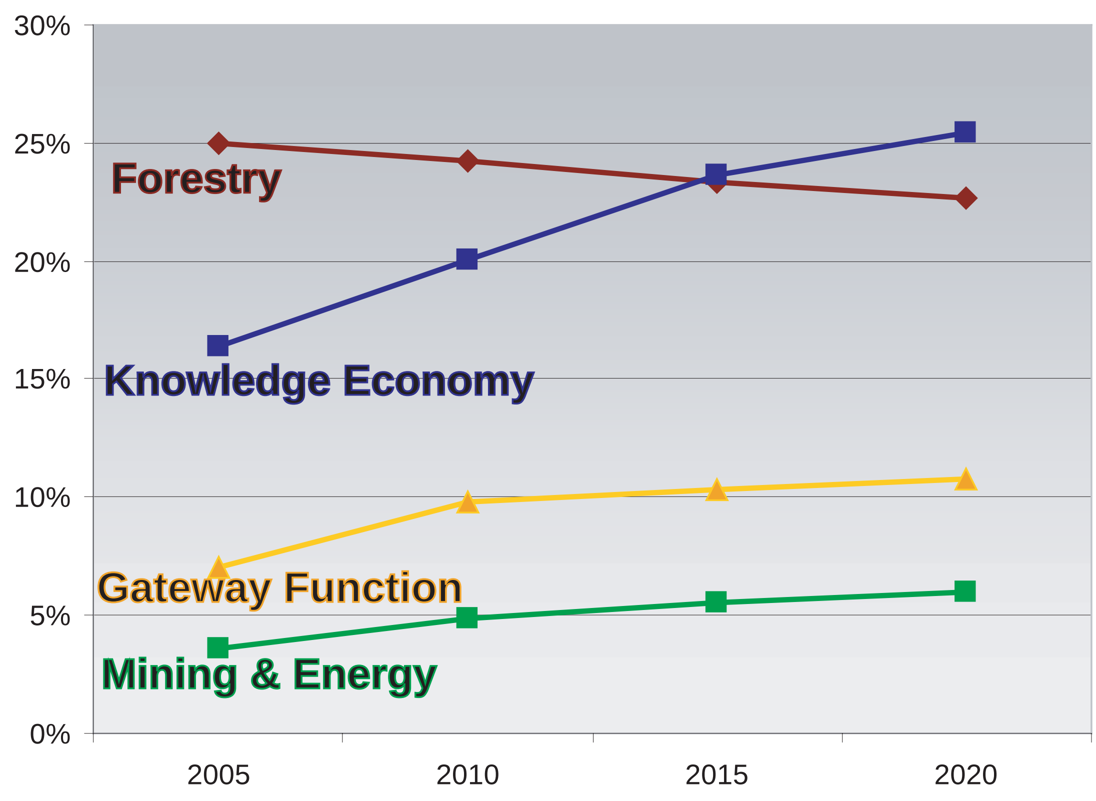
As previously mentioned, this is the hardest industry to grasp as an office market driver. We estimate that demand for private education will grow faster than the economy generally over the next 15 years. With more immigrants arriving to fuel the economy, ESL training needs will increase; the knowledge economy will also generate demand for technical training institutions. As a result, we expect the Educational Services' share as a driver of office market demand to grown from 3% in 2005 to 4% in 2020. Overall square footage driven in 2020 would therefore be 1,420,000 square feet.

Educational Services

Expected to drive 4% of office market demand by 2020

Knowledge Economy Demand Share: 14% 2005 rising to 22% by 2020

Greater Vancouver's Changing Office Market Drivers - Forecast



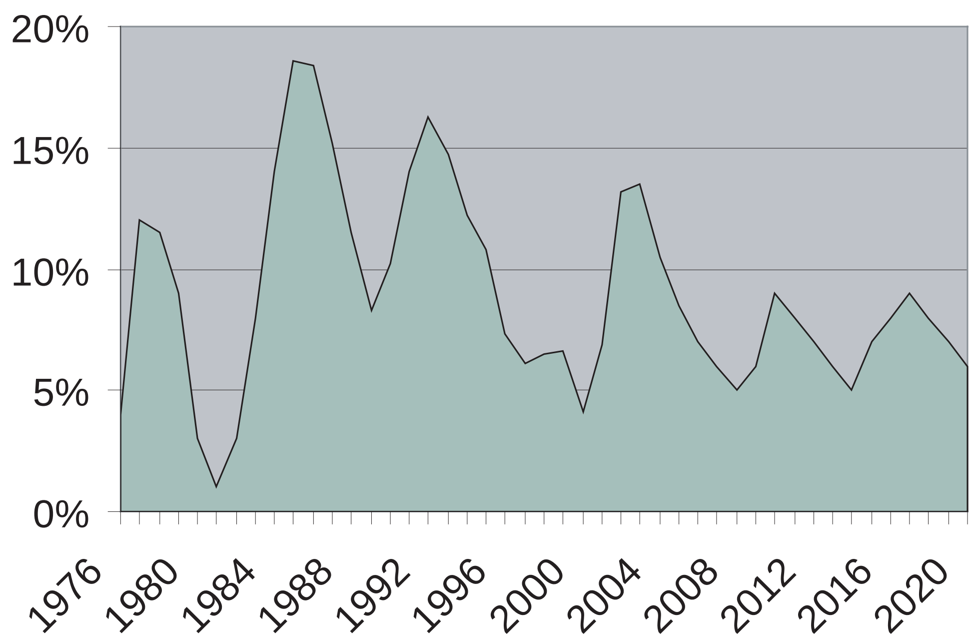
Conclusions

The good news for landlords is that demand for space in the future Greater Vancouver office market should become more consistent in the years to come. Having several unrelated economic sectors as strong drivers of demand will increase the likelihood that the peaks and valleys of economic cycles in different sectors will tend to be off-setting.

For tenants, a main potential implication of this report is that the future Greater Vancouver office market will likely have fewer long periods of "tenants markets" marked by high vacancy rates and landlords willing to offer discounts on rent in order to fill space.

For owners and investors, office building income should rise. If there are not prolonged periods with high vacancy rates and limited demand, there will be no need to sign long term leases at low rates to keep tenants.

What the future vacancy rate cycle downtown might resemble:



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About Avison Young

Building upon our collective experience and knowledge, Avison Young provides value-added client-centric investment sales, leasing, advisory, management and financial services to owners and users of commercial, industrial and multi-residential real estate properties in Canada and world-wide.

Through our alliance with Grubb & Ellis in the United States and Knight Frank in Europe, Asia Pacific, and Africa, we can rely on more than 8,000 real estate professionals in 200 offices through 30 countries on five continents in serving the needs of our clients.

Our expertise and experience includes serving as an out-sourced real estate advisor and service provider to leading corporations, including TELUS Communications, Business Objects (formerly Crystal Decisions), Pacific Blue Cross, eBay, Teck Cominco, Alderwoods, Vancouver Coastal Health Authority, and Canaccord Capital.

These clients and others benefit from our professional research and analysis work as exemplified by this report. To discuss how our research services can assist your company, please contact us.

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