

# Calgary Residential and Commercial Real Estate Markets

*Corporate Economics occasionally publishes briefing notes to help interested readers understand the economy. Most of our briefing notes are highly technical and are geared toward an audience that is aware of the current economic state of Calgary, Alberta, Canada and the world. This note is part of our non-technical series aimed at introducing the Calgary economy to interested readers.*

## Summary

The Calgary real estate market slumbered long before roaring to life in recent years. The dramatic and sudden change has left many wondering what's next? Our research indicates the future of residential real estate in Calgary is for modest price increases keeping up with the general level of inflation for the next 5-10 years. The Commercial market is expected to see high vacancy rates slowly diminish over the next 5-10 years with rents slowly rising from lows that are expected to hit in late 2011.

## Introduction

Municipalities in Canada are interested in real estate prices. Prices indicate how attractive a region is to reside in. They indicate current and foreshadow future economic performance, and most importantly for Canadian municipalities, provide revenue opportunities through property taxation. Construction starts are also watched as these represent opportunities for revenue from development and building permits and licences, but a large share of municipal revenues come from property taxes so prices are the key real estate variable for Canadian municipalities.

This paper reveals research that has been done to shed light on the movement of prices in the Calgary real estate markets over time, with a view to predicting those price change in the future. We investigate only residential and commercial markets in this paper as they represent the core sources of property tax revenue in Calgary.

## Real Estate Economics

Much has been written about land economics, the financial minutia of real estate transactions and there are hosts of bodies engaged in forecasting real estate market activities from CMHC to Teranet. This paper reveals our research into the Calgary market exclusively, and does so in an accessible manner. Readers interested in more detail of the theoretical underpinnings of this work may find a good general description of real estate economics at [http://en.wikipedia.org/wiki/Real\\_estate\\_economics](http://en.wikipedia.org/wiki/Real_estate_economics).

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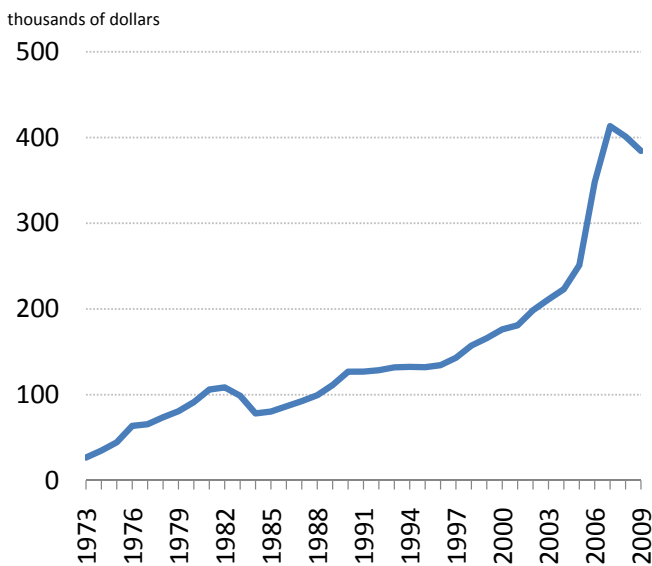


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### Residential Market

Prices in the Calgary residential market have changed significantly over the past 20 years.

**MLS Housing Prices in Calgary (1973-2010)**



Note: Average sale price, all MLS.

Alberta suffered a recession in the early 1980's as a result of the National Energy Program. This caused some out-migration and stagnation of house prices for almost a decade. The market was starting to recover in the early 1990's with prices escalating at an annual rate of 10% when the 1992 recession hit, causing another out-migration and another period of zero price growth. Prices began recovering again in 1997 and until 2004 average price escalation was almost 7% per year. Although this looked like a strong recovery compared to the previous 15 years, house price increases were in fact only treading water. From 1971 to 2004 average house prices in Calgary increased by almost 8% per year, including the two periods when there were no price increases.

In 2005-2007 Calgary house price increases averaged 24%, peaking in 2006 at 39%. Since then they have backed off somewhat recording a 9.4% decline in 2009. The questions of interest are: was this normal and what does the future hold? To answer these questions we modeled the Calgary real estate market to find out what factors were responsible for the recent rapid price change. What follows is a summary of the most important factors and an estimate of how much they impacted residential house prices in Calgary.

### Public Policy

Public policy has the greatest impact on prices in Calgary. When the National Energy Program (NEP) was announced in 1981 average house prices in the Calgary residential market collapsed. They then languished for decades, so long in fact that some researchers even now<sup>1</sup> believe those depressed prices should continue to be the norm for Calgary. Calgary prices did not start to recover from the NEP until 1997 and by 2006 they still had not fully recovered.

Recently prices rose dramatically and public policy had a significant part to play. While house prices were continuing to correct from their undervaluation caused by the aftermath of the NEP, CMHC began changing its rules regarding the amortization period of mortgages it is willing to insure. Starting in late 2005 CMHC offered insurance for 30 year amortized mortgages, a significant increase from the standard 25 year mortgages of the day. In late 2006 insurance was offered for 40 year terms and in late 2008 the federal government imposed restrictions on insurable mortgage terms through CMHC. The general rule now is that a maximum of 35 year terms

<sup>1</sup> Canada's Housing Bubble, David Macdonald, Canadian Centre for Policy Alternatives, August 2010

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are insurable while further restrictions were imposed in 2010 (minimum deposit and qualification rules).

Our analysis of CMHC rule changes on Calgary prices indicates that for every year that insured mortgage terms were extended beyond 25 years Calgary house prices rose by between \$6,000 and \$10,000. Between 40% and 70% of residential price changes in Calgary between 2004 and 2009 can be attributed to CMHC amortization rule changes.

### Income

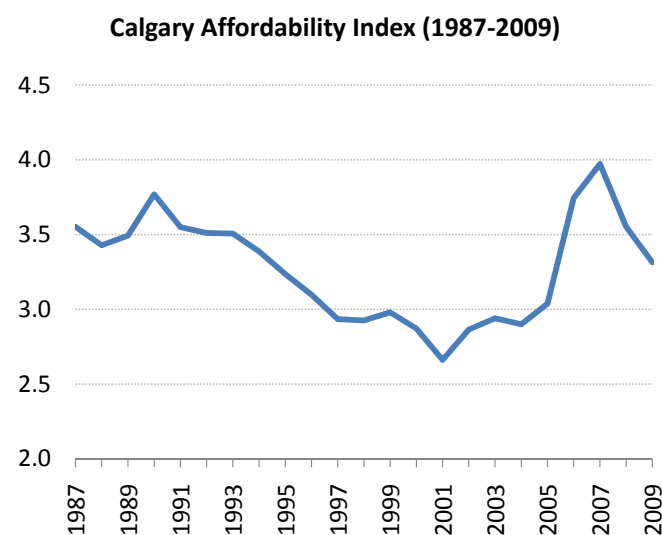
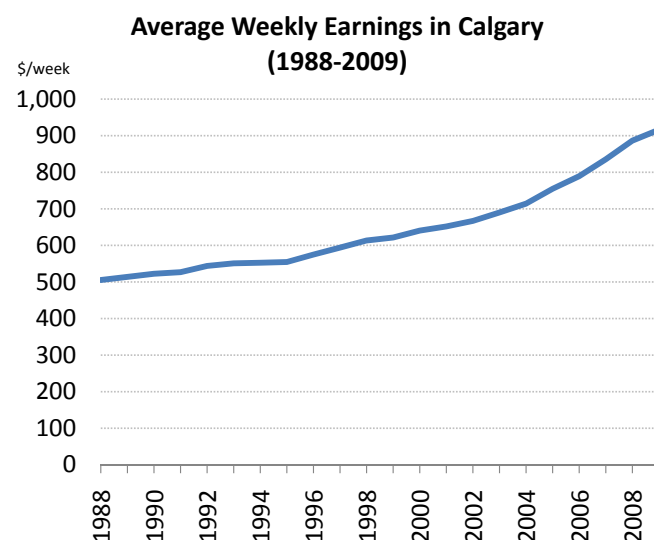
Income is of critical importance in home buying. Income determines how much you can borrow, and by logical extension, how much you can afford to spend for a house. House prices must therefore be measured against income in order to determine if changes to other variables are influencing prices.

One way of measuring the affordability of housing is to estimate how many years of household income is needed to buy a house. From 1990 to 2001 this was declining in Calgary from a high of 3.7 to a low of 2.7 years.

The affordability of housing in Calgary improved as a result of the interplay of mortgage rates and income. Between 1990 and 2001 Mortgage rates fell from 14.25% to 6.85% while average incomes rose by 24% and housing prices rose 42%. Though house prices rose twice as fast as income affordability improved over 1990-2001 because interest rates dropped by more than half.

However, from 2001 to 2007 affordability worsened as house prices continued to increase while interest rates couldn't drop much more and average incomes, though up were not up sufficiently. It wasn't until 2008 that wage increases managed to rise enough to start making housing more affordable in Calgary.

In 2004 and 2009 prices appear to have been where they belonged (average \$223,124 and 394,847 respectively) given public policy, average wages and generally accepted bank lending rules stating that mortgage, taxes and heating costs should not exceed 32% of gross household income.



Note: CAI is the average number of years of household income it takes to buy the average dwelling. The 22 year average is 3.4, which is also the most recent value.

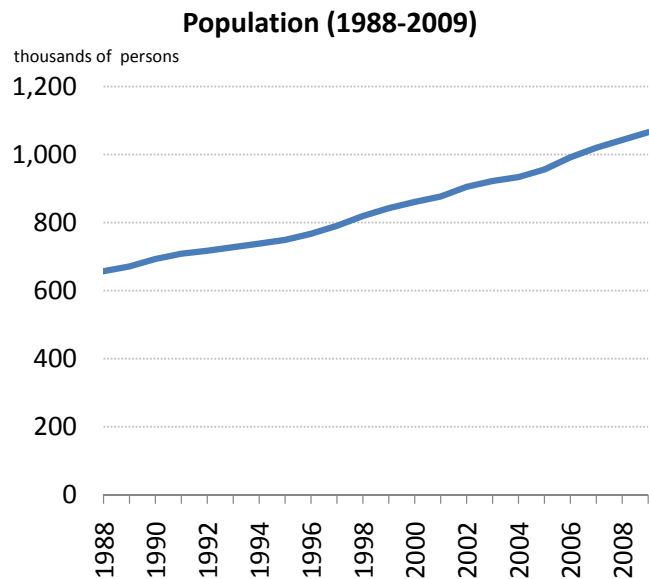


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By looking at the affordability index we see that in-between 2004 and 2009 there were wide swings in prices - both up and down - which can not be explained by public policy and income alone. Explaining these price changes requires looking into demand and supply dynamics, it requires looking into the impact population changes had on the local Calgary market.

### Population

Population is a significant determinant of the demand for housing but it's not as simple as adding up the total number of people and saying this is the demand for housing. We need to look into what makes a household.



The first defining characteristic of housing is that “households” of one or more people live in dwellings. Household formation traditionally occurs when some people get together and decide to form a single economic unit. Whether that be husband and wife or another arrangement the defining characteristic has been

that a new household consists of at least 2 people and frequently more. When formed, it is the household unit that demands housing. Increases in household units, from both local formation and from net in-migration, have resulted in increased demand for about 11,000 units of housing per year over 2004-2009 in Calgary.

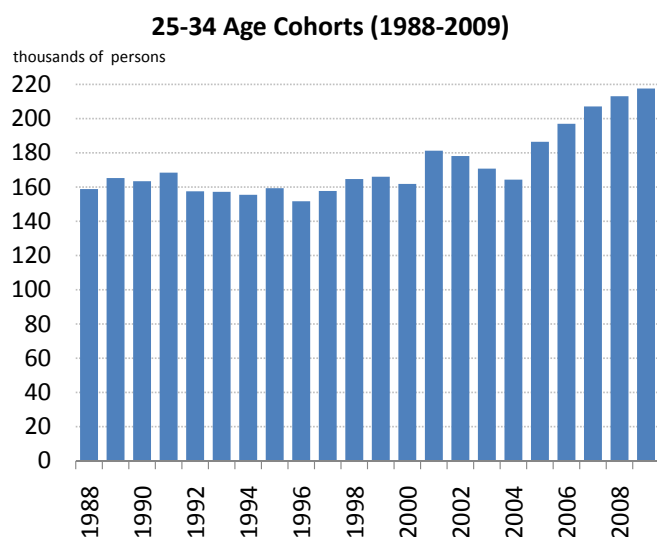
Though traditional household formation continues there is another type of household in Calgary that is now prevalent in significant numbers. Almost 100,000 people in Calgary currently reside in single person households. Further, real estate ownership rates have been rising lately, particularly among young people<sup>2</sup> and particularly for condos. Recently the population demographic of 25-34 years old jumped due to the “baby boom” phenomenon while Calgary experienced proportionately greater increase in this demographic as a result of in-migration. About 3,000 dwelling units per year have been sold to young singles since 1997. As a result of servicing this market segment the average household size in Calgary has dropped from about 2.5 to 2.4 persons over the past 13 years.

To a fair extent rapidly changing prices in Calgary over the past few years are the result of supply and demand dynamics in servicing the “young single” market segment. The story is that demand for new housing picked up in 1997 with the end of the last recession. Pent up demand for single family housing needed to be satisfied. At the same time there was a differential property tax rate incentive to convert apartments to condos and rents had risen in Calgary so much that the price point to own a converted apartment was equivalent to rent. Many chose to own and hoped to build equity rather than “throw money away” renting.

<sup>2</sup> Adrienne Warren, Scotiabank Group Global Economic Research, Global Real Estate Trends March 23, 2010

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From 1988 to 2004 the 25-34 age cohort group had a relatively stable 170,000 members in Calgary. 2005 saw sudden growth in this age group and over 2005-2009 an average 204,000 people in Calgary were members of this group. It was a perfect storm of migration of young workers while a disproportionately large population of people born in 1980<sup>3</sup> and already present in Calgary entered the household formation age cohorts. It was impossible to supply the demand of this rapidly rising age cohort when the construction industry was already going full speed and dramatic price spikes resulted in 2006 and 2007. By early 2007 the construction industry had increased its capacity and a record number of housing units were under construction with 17,046 housing units started in 2006. Most of these units were still under construction when the first signs of recession hit in mid 2007. By 2009, growth in the 25-34 age cohort group stopped and demand for housing stabilized.



<sup>3</sup> Calgary had a small baby boom just before the NEP was announced and over the years many people have migrated to Calgary with their children, a disproportionate number of which happened to be born around 1980

Prices in Calgary peaked in mid 2007. Since then they have fluctuated as the balance between supply and demand have fluctuated. The market currently sits with about 40,000 units, mostly condos, owned and occupied by singles. This is not sustainable and half of these units should be considered as supply that can enter the market imminently when these people form households. In addition, there is an unknown number of units held by investors which are currently being rented, or are sitting vacant, which could enter the market when the price is right.

The outlook is for household formation age cohorts (24-35 years old) to show very little growth for at least the next 5 years. As a result of the recession, the demographic outlook and the fact that so many condos are currently owned by singles there is likely to be little demand for new condo developments for several years to come.

### Construction Costs

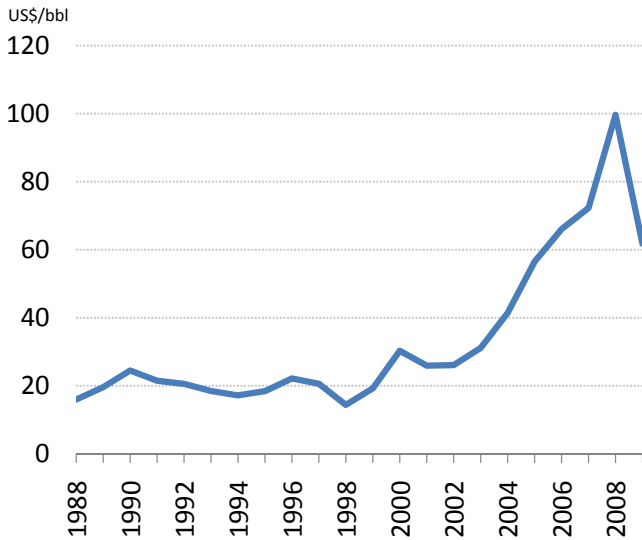
The standard economic analysis of residential real estate indicates that in the short run prices are quite responsive to changes in construction costs. In the longer time horizons, however, this sensitivity disappears as builders optimize their mix of inputs. As things like materials become more expensive builders substitute for different materials, use designs that require less materials or use construction techniques that require less labour to make up for the increased materials costs<sup>4</sup>. Our analysis takes the investigation one step further. Instead of looking to supply as being driven by the prices of inputs like materials we look to the driving forces behind those prices. Energy is the key housing construction cost variable.

<sup>4</sup> [http://en.wikipedia.org/wiki/Real\\_estate\\_economics](http://en.wikipedia.org/wiki/Real_estate_economics)



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### Oil Price (1988-2009)



A house is a roof, a floor, walls, carpets, counters, sinks and a host of other things all put together in a pretty package, but what a house really is - is energy. Energy to cut trees down, strip them, transport them to a mill, mill them into timbers, transport them to a job site, lift them in place and secure them together. The energy in manufactured and delivered materials, site preparation, and hiding in labour itself, makes up the vast majority of construction costs. Our models utilize the price of oil to measure how changes in energy costs affect housing prices in Calgary. On average a US\$1/bbl change in the price of oil results in average house prices going up by around \$500. To put this in perspective, compared to 2005, the oil price spike of 2008 added about \$35,000 to the average house in Calgary. Roughly 15% of the increase in house prices in Calgary over 2005-2008 was purely cost driven.

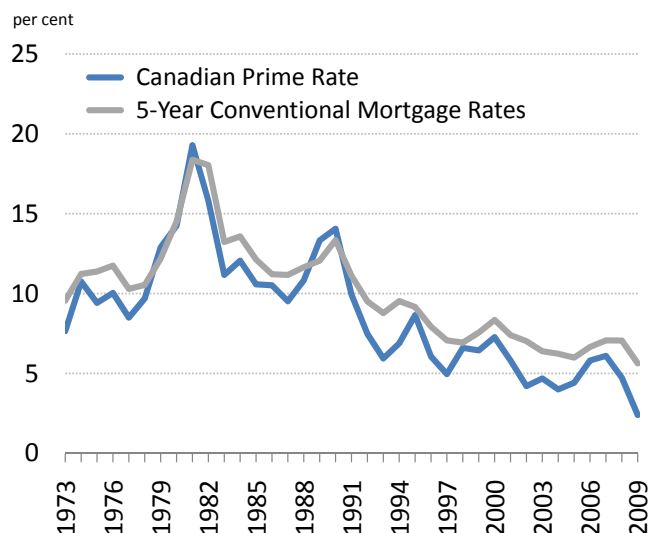
### Factors that Don't Matter:

There are other factors that one would think should have influenced market prices in Calgary over the years. Surprisingly they have had little impact. Here is a short list and explanation why they have had little impact.

#### Interest rates

It would seem obvious that as interest rates rise the cost to service a mortgage rises so rising interest rates must put downward pressure on prices. However, that's not quite the way it is. When the Bank of Canada raises the bank rate the Prime lending rate adjusts automatically but it is up to individual banks to decide if they will change their mortgage rates. Usually they do, but not always and not always by the same amount as the Bank of Canada altered the bank rate. So there isn't a strong link between the Prime lending rate and mortgage rates. Rather there is only a general trend that when the Bank of Canada raises the bank rate and the Prime rate goes up, it generally becomes more expensive to service a mortgage.

### Prime Rates and Mortgage Rates (1973-2009)



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Meanwhile when builders and suppliers need to borrow to build houses they generally borrow at the Prime lending rate so when interest rates rise their costs go up. This result in upward pressure on house prices.

Who wins? The pressures seem to be pretty well balanced most of the time so that when the Bank of Canada changes interest rates it does not affect house prices in Calgary. If interest rates do impact house prices it would seem that interest rate increases cause Calgary house prices to go up - by about \$400 per quarter percent hike in the prime lending rate, but the evidence of this is very weak.

### Planning / Building Codes

There is a general sense that planning rules determine prices more than anything else. Though there is a certain amount of land in an area it is the municipalities' plans that determine which parcels may be utilized for which purposes, thereby limiting the amount of land that is available for any particular purpose within a given area. For example, rules in Richmond B.C. designating certain land as farmland have been blamed for high house prices in Vancouver. Similar arguments have been made across the country and the logic seems to have some validity at first glance. However, the only evidence supporting it is that certain parcels would be worth different values if they were zoned differently and it seems logical that this should extend across properties. Unfortunately all this amounts to when we aggregate it across all properties in a municipality is pure wishful thinking. All this argument says is property values in a municipality would be different if the entire municipality were different, and that is an extreme proposition that just isn't realistic. More realistically is the possibility of there being significant changes to property values from single, discrete, rule changes.

Planning rules in Calgary have been fairly consistent since 1988, but there have been three significant rule changes recently which have the potential to impact prices for land in Calgary.

The first change was a building code change that requires the installation of exterior drywall to enhance fire protection for single family houses constructed within 6 feet of each other. It was widely reported last year that this would increase the construction costs to build such units by \$10,000. We have not been able to measure a change in house prices that corresponds to this reported change in construction cost.

The second change is a recent ruling by the City that new developments will absorb a greater share of the cost to install their water and sewer service. At 25 units per acre (UPA) the increase in cost sums to about \$8,000 per dwelling. As this rule change has not come into force yet we are not surprised that we have not been able to measure it affecting market prices yet.

Supply forces do not set prices alone. It is the interplay of demand, the appetite of consumers to accept price changes, that must also be considered. These three rule changes will undoubtedly increase the cost to construct housing in Calgary, however, currently the market favors buyers rather than builders and as such builders have limited opportunity to pass these cost increases on. It is likely that these cost increases will be passed on if and when the market turns to favor builders over buyers. Unfortunately, by then the passage of time will make it impossible for us to point to a particular rule change and say that house price increases today are the result of that building code rule change several years ago.

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### Residential Market Outlook

We have to make some assumptions in order to make a prediction about the future of house prices in Calgary. First, we assume that rules around mortgage amortization periods will not change again. We are aware that the federal government has discussed lowering allowed amortization periods from 35 years down to 30 years but there hasn't been any discussion of this over the summer while the Bank of Canada has been busy raising the bank rate, with a tepid impact on mortgage rates at major banks, in an attempt to prevent any "housing bubbles" from forming.

Our second assumption is that mortgage rates will rise gradually throughout the next 10 years.

Thirdly, we have incorporated the energy and population forecasts from our soon to be published quarterly forecast into this Calgary house price outlook. Finally, we presume that personal income will rise at close to the same pace as inflation over the next 10 years.

Should this materialize our models indicate that average house prices in Calgary can be expected to increase continuously but modestly over the next 10 years, maintaining value against inflation.

We find no evidence that there is a "bubble" in the Calgary residential real estate market. We would comment that little bits of "foam" might exist among certain market segments in Calgary, however, our models indicate that the average price of housing would not be materially impacted over the course of a year by random popping of "foam", if any "foam" exists.

### Bubbles



If people want something for no other reason than everyone else wants it then the price can be driven up, sometimes dramatically so. (eg. Dutch Tulip mania of 1637) A price "bubble" forms when such demand drives the price higher than would be if people only considered what the product is actually useful for. "Bubbles" grow when investors see the price rising and decide they can make some profit by just holding the product. The price rises and rises and eventually gets so high that people either refuse to pay the price or they just do not have enough money. Demand stops growing, and prices stop going up. At this point investors usually decide to cash-in, and they flood the market causing the price to fall abruptly. Seeing prices start to fall, would-be buyers decide to wait to see if they can get a better price. Demand disappears completely while supply is abundant and the price crashes, "the bubble bursts".



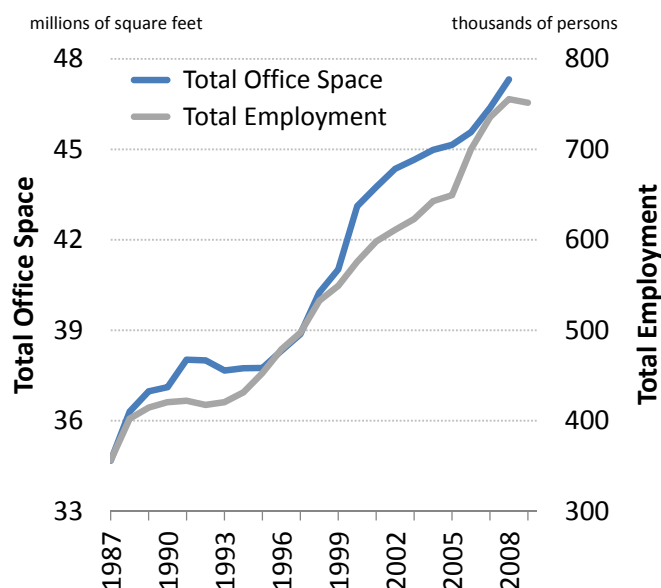
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### Commercial Market

The Calgary office market seems to grow in spurts. Undoubtedly the largest office construction spurt occurred in 1979-1983 when almost 24 million square feet of office space was completed. About half of the currently existing office space in Calgary was built in those short four years. Other growth spurts have happened since then but none of them have come anywhere near matching the magnitude of those four years when a city of tall skyscrapers cropped up like corn on the prairies.

Other growth spurts have coincided with employment growth. 1988 to 1992 saw about 4.3 million square feet built (9% of current market) then the market took a pause until 2000. 2000-2001 added 3 million square feet and 2007-2010 saw about 9 million square feet (18% of current market) completed with about another 4.5 million square feet to be finished by the end of 2012.<sup>5</sup> During these periods total employment grew in step, neither leading nor lagging behind the increase in office space. It would seem that since the first “boom”, office space has been provided on a Just in Time basis in Calgary.

**City of Calgary: Total Office Space and Employment (1987-2009)**



Canadian municipalities are concerned about the health of their office markets for many reasons. A healthy office market indicates good opportunities for local municipalities to compete in the global economy. Secondly, municipalities are concerned as a significant portion of their revenue comes from the office market. In Calgary about 14% of total municipal revenues come from each of residential and commercial property taxes. In addition, Calgary has a kind of “business occupancy tax”, as it has been known in other Canadian municipalities<sup>6</sup>. About 6% of municipal revenues are derived from what is known locally as a business tax<sup>7</sup>.

<sup>5</sup> Avison Young Calgary Office Market Report, Second Quarter 2010

<sup>6</sup> Several Canadian municipalities have opted to abolish this type of tax and “roll” the taxes into the commercial property tax system. This has required the introduction of multiple commercial property tax rates and essentially forced landlords to be the tax collectors for municipalities wishing to tax business occupants.

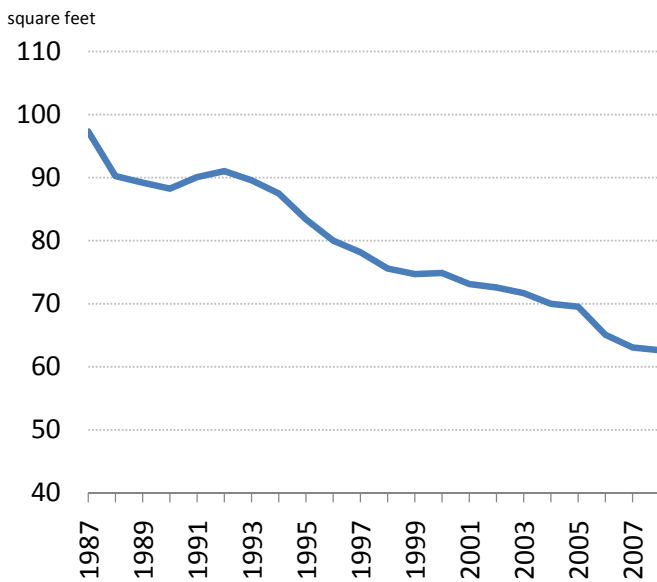
<sup>7</sup> City of Calgary Annual Report 2009



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### The Cubing of Calgary:

**Average Office Space per Employee in Calgary (1987-2008)**



Another trend which should be noticed is that average office space for each employee has been decreasing since 1987 in Calgary. In 1987, the average space for every employee was over 97 square feet, while in 2008 this number dropped to less than 63 square feet.

The speed of growth in office space was slower than that of employment, especially in the past a few years. This could partly be explained by the increasing proportion of jobs in construction, mining sectors, and trade, which require less office space than average.

Since 1987 the average office space per employee in the downtown core has been dropping. From almost 100 square feet per employee (about a 7 x 9 office space with

common hallways) the space per employee has dropped to the current level of 62.6 square feet. That is roughly the equivalent of a 2 m x 2 m square work area with barely enough room for common hallways. The standard is so tight that but for cubicle walls, most downtown Calgary office workers could lean over and touch each other without having to move their chairs.

There are several reasons for this type of office environment. It minimizes environmental control cost, minimizes floor space rental cost per employee, minimizes construction and maintenance costs and, for most workers, has minimal impact upon their actual output. Our statistical modeling indicates that things are not going to change much for sandwiched employees. With current office furniture sizes it appears that the minimum employee configuration is 59 square feet per employee while current trends indicate the average Calgary office will reach that density within 3 years. After that, further floor space optimizations will require new investment in furniture that has a smaller footprint.

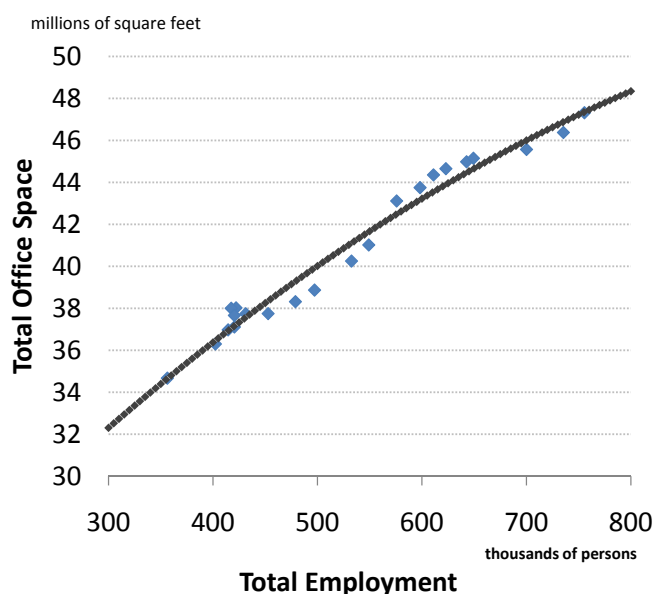
### Demand for Office Space

Office vacancies are expected to rise with the completion of several office towers over the next couple of years. Currently we are expecting the average vacancy rate to jump from just over 9% to about 16% then to slowly diminish over the next 8 years to about 8%. Even with the relatively high vacancy rates we anticipate that downtown workers will continue to work in cubicles as businesses attempt to sublet any space that they deem might be surplus to their actual or anticipated future needs.

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- Employment is the key driver of office space demand in Calgary, net of the “cubicization” effect as the following diagram shows.

### Calgary Office Space and Employment



- Current office market expectations are for projects that are currently under active construction, like The Bow, to be completed by the end of 2012. This will result in a total market supply in 2012 of about 54.5 million square feet while the market demand is expected to be just over 50 million square feet yielding an overall market vacancy rate of 8% at the end of 2012<sup>8</sup>.
- At the start of the 1980’s office vacancy rates soared with additions of more than 24 million square feet of

inventory. Our current expectations are for vacancy rates to rise but for demand to rise as well so that at the end of 2012 the market should experience balanced conditions, given that this market generally operates with vacancy rates of around 8-10%. Though there will be a short term run up in vacancies it will not be too long before the vacancy rate dips and more space is required, prompting the restarting of currently capped projects.

- Our models indicate that an additional 1 million square feet of downtown office space should be needed between the end of 2012 and the end of 2015 to meet demand. Further an additional 6 million square feet should be needed by the end of 2020 just to maintain an overall and relatively low vacancy rate of 6%.

Additionally, before 2020 Calgary may see its first major skyscraper demolition and corresponding replacement. Slightly less than half of Calgary’s current office inventory will be about 40 years old by 2020. About 20% will be even older. A recent study of demolitions between 2000 and 2003 in Minneapolis/St. Paul revealed some surprising facts regarding the longevity of steel and concrete structures in northern climates.

Of the concrete buildings that were demolished in Minneapolis/St. Paul between 2000 and 2003, only 1/3 were at least 50 years old, well short of their expected service life of 87.2 years. Of steel buildings, 80% of demolitions occurred before their 50 year mark, well before their expected retirement at 77.3 years.

The reasons for the Minneapolis demolitions had little to do with the expected service life of the buildings but rather had everything to do with their useful life given their

<sup>8</sup> Other market observers are expecting a vacancy rate of around 15% by 2015, with respect we disagree. We anticipate a tightening office space market as employment increases over the forecast horizon.



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design and upkeep. Reasons for demolition were related to plans to redevelop an area (35%), lack of suitability for current needs (22%) and lack of maintenance in non-structural elements (24%). Less than 4% of the buildings taken down in Minneapolis over 2000-2003 were retired because they had reached their designed service life and were suffering structural problems.<sup>9</sup>

## Conclusion

### Residential Market

The outlook is for slowly rising average prices over the next 10 years, keeping up with inflation.

There is no indication that a housing bubble has formed in Calgary. Some market segments might see some prices adjust downward over the next little while but this is an indication of normal market operations and does not affect our outlook of rising average prices.

Demand in the condo market is down compared to a few years ago. We anticipate reduced condo market sales activity will be the norm for the next 10 years.

Calgary house prices are responsive to:

- ▶ public policy rules,
- ▶ immigration,
- ▶ employment,
- ▶ income and mortgage rates, and
- ▶ construction costs including planning and building code compliance costs.

Changes in the outlook of these items will alter the outlook for Calgary house prices.

### Office Market:

Employment drives the demand for new office space in Calgary. The recent downturn in employment has put the brakes on office development in Calgary.

Over the next 5 years the Calgary office market should be well served by existing structures and projects that are currently under active development.

By 2020 we anticipate that increased employment will drive a need for an additional 6 million square feet of office space in Calgary. This takes into account possible “efficiencies” in making office work spaces even smaller than they currently are.

It is likely that before 2020 Calgary will see some office redevelopment activity occur with at least one older downtown tower being demolished and rebuilt.

<sup>9</sup> Survey on actual service lives for North American buildings, October 2004, Jennifer O'Connor, Forintek Canada Corp. Vancouver B.C.

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# Briefing Note

## Who We Are

Over the past ten years Corporate Economics has researched dozens of economic topics and developed reliable methods of forecasting and analysis. Monitoring economic trends allows us to develop unique insights on how external events are impacting the local economy and the Municipal Corporation. We provide services in four areas: forecasting, information provision, consulting and policy analysis.

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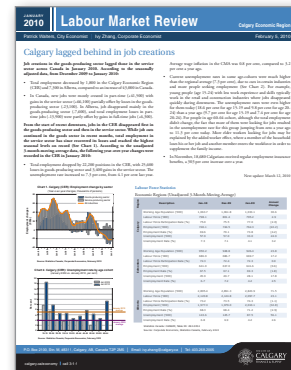
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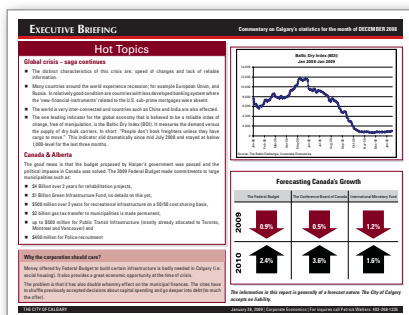
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