

OBSOLESCENCE AS AN OPPORTUNITY: THE ROLE OF ADAPTIVE REUSE IN CALGARY'S OFFICE MARKET

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SUMMARY

Long before the global pandemic, Calgary was already experiencing a serious office-vacancy crisis. Now, with more companies adapting to having employees work from home, the outlook has become more bleak. The pandemic has highlighted the need for flexible and innovative strategies to deal with the glut of unoccupied office space in Calgary's downtown as it is anticipated that the absorption of the space will take 10 to 15 years. Maintaining the status quo will continue to have serious economic impacts and runs the risk of vandalism, degradation, squatting and various other safety hazards that come with unoccupied buildings.

One potential strategy is to convert vacant office space to residential uses, a process known as adaptive re-use. However, there are several barriers to this undertaking as not all buildings are well-suited for conversion, depending on their structure, design, systems and location. Building owners must be convinced that conversion is a better alternative than demolition or to maintaining the existing condition and waiting for economic conditions to recover.

Office to residential conversion offers numerous benefits, particularly if it is done in lieu of demolishing unwanted office buildings, which results in much greater environmental waste and can be a much more expensive alternative. Conversions help to limit further urban sprawl, can revitalize neighbourhoods in decline, and align with the City of Calgary's own evolving policy.

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The municipal government can play a key role in supporting the process of adaptive re-use, and it certainly has an incentive to do so as the declining values of property in the downtown core erode its own fiscal situation. Along with the local development community and other partners, they can develop an inventory of buildings that are best suited for conversion to residential. Additionally, the city can provide incentives for conversions, such as tax holidays, while making improvements to the ease and speed of assessments, approvals and permits, lowering the risk and cost for proposed conversion projects. With Calgary also facing a shortage of affordable housing, the city could make conversions a part of a plan to increase the stock of, market, non-market, and short-term affordable housing options, given that the economics of these conversions will be more feasible than would be the case for market housing projects.

Adaptive reuse is a promising approach to help address Calgary's serious office-space surplus and build a resilient recovery, but it can be a highly complicated and often expensive undertaking. The stakeholders have every incentive to make the process as functional as possible, particularly now that the pandemic's work-from-home trend could soften demand even further. Without the right incentives and processes in place for conversion, the city could be facing an increasingly hollowed-out downtown, with all the physical and economic deterioration that it will bring.

INTRODUCTION

Calgary has an office-vacancy crisis. As Table 1 indicates, since 2014, the city’s office vacancy rate has increased significantly and steadily, with some projections that in the coming years it may exceed 30 per cent.

TABLE 1. DOWNTOWN OFFICE VACANCY RATES (2014–20)

Year (Q1)	Vacancy Rate
2020	24.7%
2019	25.3%
2018	25.6%
2017	23.9%
2016	17.6%
2015	9.1%
2014	6.1%

(Avison Young 2019, 2020).

While the Calgary and Edmonton office markets continue to perform poorly, Table 2 indicates that comparable Canadian markets have performed well due to continued and high demand for office space.

TABLE 2. DOWNTOWN OFFICE VACANCY IN MAJOR CANADIAN MARKETS

City	Q2 2020 Downtown Office Vacancy	Q2 2020 Suburban Office Vacancy
Calgary	27%	20.2%
Edmonton	19.7%	19.8%
Winnipeg	11.5%	6.9%
Vancouver	3.3%	6%
Toronto	2.7%	11.6%
Ottawa	7.7%	6.8%
Montreal	7.3%	13.9%
Canada	10%	11.9%

(CBRE 2020).

High vacancy is most prevalent in downtown Calgary, where the majority of the city’s office space is concentrated. In the first quarter of 2020, approximately 11.4 million square feet of downtown office space sat vacant (O’Brien n.d.). The general sentiment is that it will take at least a decade for the market to absorb the current amount of vacant office space. An already oversupplied market was further exacerbated when Brookfield Place was completed in 2017, adding 2.5 million square feet, and Telus Sky was completed in 2020, adding an additional 500,000 square feet. These upmarket developments (classes A and AA) have exacerbated vacancies in lower-class office buildings (classes B and C) by fuelling a “flight to quality,” where tenants are able to relocate to buildings with better amenities at comparable rents (CBC News 2020).

As Table 3 demonstrates, population growth in Calgary has slowed over recent years, meaning that office development planned during high-growth years were completed under different market conditions.

TABLE 3. POPULATION GROWTH IN CALGARY METROPOLITAN AREA

Year	Population of Calgary Metropolitan Area	Change
2019	1,285,711	1.45%
2018	1,267,344	1.69%
2017	1,246,337	0.9%
2016	1,235,171	0.35%
2015	1,230,915	2.99%
2014	1,195,194	3.33%
2013	1,156,686	3.25%
2012	1,120,225	2.68%
2011	1,090,936	1.81%
2010	1,071,515	0.57%

(City of Calgary n.d).

WHAT ARE THE IMPLICATIONS OF HIGH OFFICE VACANCY?

High office vacancy has certain ramifications for the owners of these assets, but also has broader societal impacts. For building owners, a partial or total vacancy means that the building is not functioning in a way that maximizes revenues and, as a worst-case scenario, is not generating enough revenue to cover the costs of ownership (e.g., maintenance and operating expenses). More broadly, a glut of vacant buildings has broader societal implications, including the potential to create conditions ripe for vandalism, unwanted and illegal occupancy, or cultivating an environment and experience that feels unsafe (Remøy and van der Voordt 2007).

The effects of the COVID-19 pandemic starkly illustrate the economic impacts of high office vacancy. As people shifted to working from home, retailers who typically depend on foot traffic experienced a dramatic decline in patronage, leading to uncertainty about the long-term viability of their businesses and raising the possibility of increased retail vacancies (George-Parkin 2020). It also led to a dramatic reduction in transit users, bringing into question the capacity for communities to fund quality public transit amid declining ridership (Wilson 2020).

High vacancy rates also have a significant impact on property values and their associated property-tax revenues (Heath 2001). This is an issue evident in Calgary, where property values in the downtown have declined dramatically over the last five years, as illustrated by the 19-per-cent drop from 2018 to 2019 in the assessed value of the Bow Tower (from \$957 million to \$779 million). This decrease is part of a longer decline, as in 2015 the Bow Tower was valued at \$1.43 billion (Smith 2019). A similar story has played out across the downtown, where between 2015 and 2019, the total value of office buildings has declined by more than \$14 billion. This has had a

dramatic impact on the municipal government's fiscal health. In 2015, downtown office properties represented 32 per cent of the city's non-residential tax-assessment base, but by 2019 that number had decreased to just 18 per cent. The fallout of this includes a tax shift, where to compensate for reduced downtown property values, property taxes have increased on buildings located outside the downtown. City Council has further responded by cutting \$60 million worth of services and jobs, and by dipping into reserve funds to hold the line on tax increases (Varcoe 2020).

Despite the vast reduction in office-building value, non-residential property is taxed at a higher rate than residential property (Dahlby 2018), thereby making the extent of residential conversions potentially less appealing from a municipal-finance standpoint. In recent years, the recommendation has been to shift the reliance on non-residential property taxes by increasing residential property taxes. This has been a difficult progression in Calgary, as the ongoing recession has impacted jobs and the income of many homeowners and residents.

There is, then, a need to consider the relative level of obsolescence of a building and the direct and broader financial considerations of potential options. Furthermore, there may be an "optimal stopping point," wherein leaving a building vacant for a certain number of years is financially feasible, however, beyond this point it becomes an unnecessary burden on the built environment.

WHAT CREATED CALGARY'S OFFICE-VACANCY CRISIS?

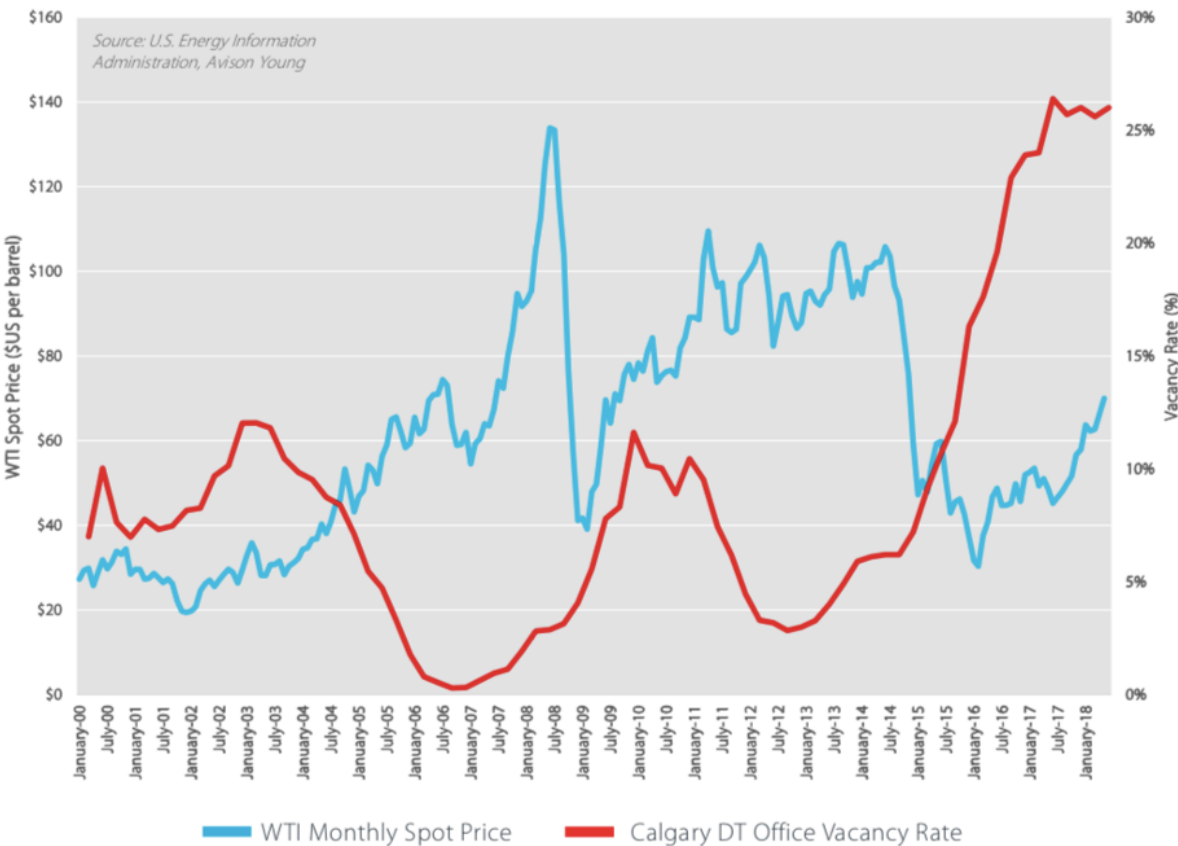
The oversupply of office space is not unique to Calgary. Numerous cities have experienced a similar crisis due to comparable histories and underlying issues. Throughout the 1980s, many cities experienced a boom in office-building construction, fuelled by a transition away from manufacturing or resource-dependent economies and the emergence of an office-based service economy. However, the global economic recession that followed in the 1990s resulted in decreased demand, declining rents and a glut of office space. Remøy and van der Voordt (2007) associate the office-vacancy crisis with the burst of the internet bubble in 2001, as buildings were planned during a period of growth, but upon completion only added to an already oversupplied market.

While economic conditions have a significant impact on vacancy, other factors such as location and building characteristics also play a role. For instance, buildings not easily retrofitted to meet current workspace demands, that have outdated building systems, or that are in poor condition are more likely to become vacant. So too are buildings located in areas with poor reputations, or that are not easily accessible via transit or car. Furthermore, an exodus of other businesses from the area or a plan for neighbourhood revitalization can also lead to vacant buildings (Geraedts and van der Voordt 2003). In markets where the demand for office space is soft, tenants can upgrade to higher-quality buildings at comparable rental rates. Ultimately, this leaves outdated older buildings, particularly those built prior to 1970, as the most susceptible to vacancy. Significant improvements to the building systems, facade and other physical features would be required to make these spaces competitive in the market (Heath 2001). Heath (2001) offers an account of characteristics common among vacant buildings, noting that many of them were developed between 1950 and 1970. Typically,

these buildings are 16.5 metres wide, with a central corridor that connects individual offices, low floor-to-ceiling heights, and obtrusive columns (ibid.).

In the Calgary context, the growing surplus of vacant office space can be attributed to changing and challenging economic conditions. As the administrative hub for Canada’s oil and gas sector, economic conditions have long mirrored the sector’s changes and trends and the volatile nature of the industry. During boom years, construction activity is high as developers respond to the needs of companies and organizations for additional office space to accommodate their growing workforces. Conversely, recessions caused by falling oil prices stifle demand for existing and additional office space, as companies attempt to reduce costs through job cuts and space requirements. This relationship is illustrated in Figure 1, where periods of low oil prices correlate with high office vacancies.

FIGURE 1. HISTORICAL PRICE OF OIL VERSUS CALGARY DOWNTOWN OFFICE VACANCY RATE



(Avison Young 2018).

Further evidence of changes in the office market can be seen in Table 2, which illustrates that office space under construction in Calgary has declined significantly over the last several years.

TABLE 4. TOTAL OFFICE SPACE CONSTRUCTED BY YEAR

Year (Quarter 1)	Office Space Under Construction (square feet)
2020	212,281
2019	138,000
2018	700,000
2017	2,430,000

(Avison Young 2019, 2020).

As Table 3 indicates, periods of strong economic growth have resulted in the development of a large amount of office space in Calgary, which is third only to Toronto and Montreal in total office space.

TABLE 5. TOTAL OFFICE SPACE IN MAJOR CANADIAN MARKETS

	Calgary	Edmonton	Vancouver	Winnipeg	Toronto	Ottawa	Montreal
Downtown Net Rentable Area (square feet)	42,803,044	16,045,040	24,073,242	9,880,134	87,711,285	18,706,965	45,112,814
Suburban Net Rentable Area (square feet)	25,800,170	10,037,106	23,946,547	3,944,583	77,018,053	22,338,987	30,623,057
Total Rentable Area (square feet)	68,603,214	26,082,146	48,019,789	13,824,717	164,729,338	41,045,952	75,735,871

(CBRE 2020).

WHAT OPTIONS DO BUILDING OWNERS HAVE?

With a vacant building in their portfolio, building owners typically have four options to address the issue: consolidation; renovation or upgrading; demolition and development; and conversion/adaptive reuse. These options are explained as follows:

- **Consolidation:** Building owners will maintain the status quo, continuing to advertise the space to prospective tenants, with expectations that the space will eventually be occupied again in its current use and form.
- **Renovation or upgrading:** To make the space more appealing to prospective tenants, the building owner will undertake renovations to upgrade the building, including changes to its features, amenities, and systems. However, in weak markets where vacancy rates are high, owners run the risk that potential benefits accruing from renovations will not outweigh costs.
- **Demolition and development:** Building owners may consider demolishing the existing building on site and redeveloping the land for a use with greater market potential. This is typically carried out where economic considerations are the driving factor, however it ignores environmental or sustainability objectives, as demolition creates excess waste. Moreover, it is important to note that demolition creates a lag in income, as the period of time between demolition and completion does not generate income.

- **Conversion/adaptive reuses:** Building owners may consider how an existing structure could be adapted for an alternative use. For example, the conversion of a vacant office building into residential suites. Where possible, this presents an opportunity to maintain building functionality, reduces unnecessary waste created through demolition, and expedites revenue generation (Remøy and van der Voordt 2014).

Many building owners opt to maintain the status quo, hoping that the future will bring more positive economic conditions and new tenants. This may also be the preferred option where renovation or adaptive reuse are determined as too costly to result in an improved financial situation for the owner. Where a change in conditions is unlikely in the foreseeable future, building owners are more likely to pursue one of the other options.

While building owners must consider a range of factors in contemplating which approach is best suited for their building, we focus the remaining discussion on building conversion or adaptive reuse. We first discuss the benefits and noted barriers to this process. We conclude this discussion with a series of recommendations embedded within the Calgary context to support adaptive reuse as a solution to addressing the city's high office vacancy.

WHAT ARE THE BENEFITS OF BUILDING CONVERSION?

Adaptive reuse is defined as “a process that changes a disused or ineffective item into a new item that can be used for a different purpose” (Bullen and Love 2009, 32). There is a growing recognition of the benefits in maintaining and repurposing buildings, which represents a shift from the perspective that buildings should be demolished where they are viewed as old or inefficient (Bullen and Love 2009). Extending the life of a building, as opposed to demolishing it, entails lower material and energy consumption, transportation costs and pollution, and thus plays an integral role in meeting sustainability objectives (ibid.). Furthermore, repurposing buildings is often more inexpensive than demolition and redevelopment, as there are structural components that can be reused, and the costs of borrowing capital is reduced due to shorter construction timelines. Additionally, there are certain conveniences offered through reuse, such as the existing structure offering an enclosed workspace for construction workers, which mitigates the impacts of inclement weather on construction timelines (ibid).

The reuse of buildings is also regarded as a safer alternative relative to demolition, as it reduces disruption of hazardous materials, contaminated lands, and the risk of falling materials (Bullen and Love 2009). While older buildings are typically not as environmentally efficient, the upgrading of building systems and recladding as part of the adaptive reuse process allows for deficiencies to be addressed. Demolition also has other implications, such as embodied energy that may include “the extraction, transport, processing of raw materials, manufacturing of building materials and components, the energy used for the supply, various processes of the in-site assembly, storage, performance, deconstruction and disposal of materials” (Gaspar and Santos 2014). While these may be perceived as externalities for building owners, it is important to consider the broader environmental impacts of these possibilities. Furthermore, the benefits of working across sectors can only be realized once the entire system is understood, versus the impact on one stakeholder.

Conversion of buildings from one use to another has a number of positive societal implications. As adaptive reuse is a form of intensification, where development is directed towards existing urbanized areas, it is lauded for its numerous economic, environmental and social benefits, which include:

- Using existing infrastructure and services and reducing the need for a costly expansion of either.
- Preserving non-urban areas, such as agricultural land, wetland, grasslands, or other natural areas from development.
- Revitalizing neighbourhoods in decline.
- Meeting sustainability goals by maintaining the embodied energy of the building (Barrs 2004).

The conversion of office buildings to residential has become common practice, beginning in the early 1990s in Toronto, London, Boston, Chicago, Vancouver, Sydney and Melbourne, and subsequently extended to smaller communities where office vacancy was high (Heath 2001). More recently, places such as Washington, D.C. have witnessed a high number of conversions amid a slumping office market and increased demand for more affordable rental housing (Chung 2017; Turner 2015).

Given the important economic, social and cultural function of Calgary's downtown, maintaining the status quo presents serious ramifications for the community. Indeed, waiting for economic conditions to shift and absorb the current vacancy is anticipated to take 10 to 15 years (Stephenson 2020). Repurposing viable vacant office buildings would help to achieve a series of goals and objectives set forth within the Municipal Development Plan (MDP) including:

- 2.2: Direct future growth of the city in a way that fosters a more compact efficient use of land, creates complete communities, allows for greater mobility choices and enhances vitality and character in local neighbourhoods.
- 2.6.2: Minimize the amount of land that is taken from undeveloped areas and placed in permanent use for residential, commercial, industrial, transportation or utility corridors.
- 2.6.5: Encourage the conversion and reuse of existing buildings. (City of Calgary 2009)

ADAPTIVE REUSE IN CALGARY

Over the years, as buildings aged, businesses relocated or closed, and the primary function of a building was no longer viable, owners reimagined how the space might be repurposed. Recent examples in Calgary include the former St. Louis Hotel, located in East Village, a century-old landmark that now houses the corporate offices of the city's development agency, the Calgary Municipal Land Corp. Similarly, the King Edward Hotel has been reconfigured for use as office space for the National Music Centre, a radio station, and a restaurant and bar on the ground floor. Nearby, the Simmons Building, originally constructed as a mattress factory in the early 20th century, now is a popular destination along the river with a restaurant, coffee shop and bakery. There

has also been a push to convert underutilized office buildings to residential uses. In 2019, construction was finalized on Cube, transforming a mostly vacant office building into 61 residential units. The project brought additional rental housing to the Beltline, removed excess office space from the market, and saved 80,000 tonnes of material from the landfill (Toneguzzi 2020). That same developer is in the process of converting the Barron Building, a historic office building in Calgary’s downtown, into 107 new residential units.

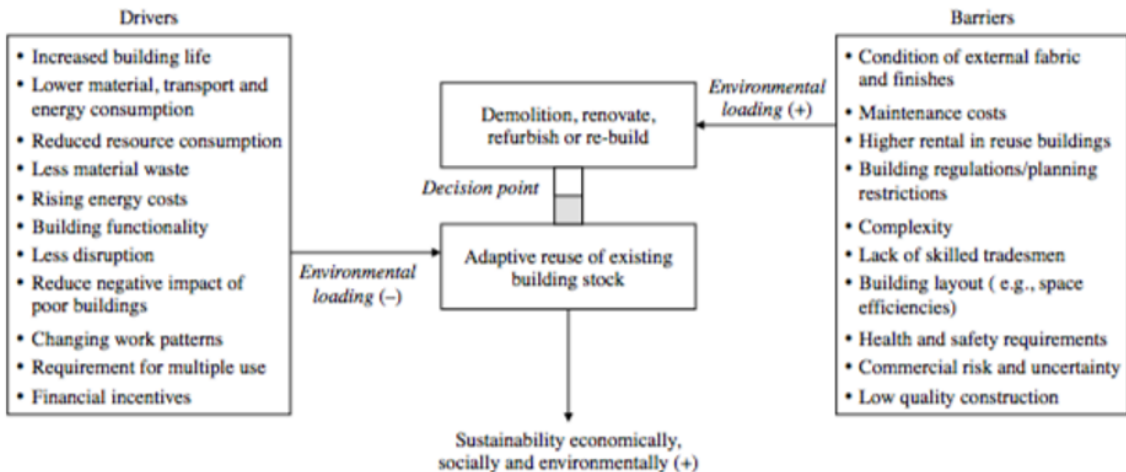
The reuse of buildings, as noted previously, presents numerous benefits. While this process continues to play out in the Calgary context, there are noted challenges that affect the extent to which it can address Calgary’s high office vacancy. The subsequent discussion draws upon the literature by presenting the often-cited barriers to adaptive reuse.

DISCUSSION

WHAT ARE THE CHALLENGES TO ADAPTIVE REUSE?

While adaptive reuse is often presented as a solution to address high office vacancy, there are a number of challenges in doing so. Figure 2 illustrates the common drivers and barriers of adaptive reuse. These factors influence whether building owners proceed with adaptive reuse or pursue an alternative option. Ultimately, decisions present implications with respect to the impacts of the built form on sustainability.

FIGURE 2. BARRIERS TO ADAPTIVE REUSE



Reprinted from Bullen and Love (2011).

The barriers to adaptive reuse can be grouped into five themes: *location, building characteristics, financial, demand, and legislative*. We expand upon these barriers in the subsequent discussion.

Location

Context, or the location of a vacant office building, influences the likelihood of conversion. Generally, buildings located in the city centre, residential areas, or along the edges of either, offer greater potential for conversion to residential relative to those situated in what are primarily commercial or industrial districts (Remøy and van der Voordt 2014). The preferred locations stand out because of their comparable and complementary uses, quality urban realm and better public transit. For similar reasons, offices located in less desirable districts present as less likely candidates because of the presence of incompatible or noxious uses, absence of neighbourhood amenities including public transit, a poor-quality public realm, uninteresting views, and issues related to safety and security (Heath 2001; Remøy and van der Voordt 2007). For example, Remøy and van der Voordt (2007) argue that buildings located off of highways are poor candidates for conversion to housing because they often lack quality public transit and are typically inundated with noise and air pollution. For buildings in less desirable locations, a neighbourhood transformation is likely required, whereby a critical mass of housing is introduced (Heath 2001).

Building characteristics

The physical features of a building influence the feasibility of conversion. Buildings that have a complex or unique footprint and configuration do not necessarily lend themselves to adaptation. Similarly, buildings with internal space that includes plenty of columns or partition walls are not easily adapted for other uses (Bullen and Love 2011). Buildings with “deep floor plates” are often unsuitable because they create long and narrow suites where natural lighting cannot penetrate (Heath 2001). In addition, many older buildings do not offer the space needed to incorporate modern building systems (e.g., air conditioning). Upgrades to improve sound and thermal insulation, or ventilation and fire safety may add costs that undermine the financial feasibility of conversion (Barrs 2004).

Additional complexities include tradespeople being unfamiliar with working with older building materials, and therefore hesitant to take on the work because they anticipate lengthy and complex renovations with the potential to decrease profits (Municipal Research and Services Center of Washington 1997). Furthermore, as Bullen (2007) notes, there is less critical acclaim in adaptive reuse relative to the creativity and celebration that comes in designing a new building.

Additionally, developers may not have accurate information or up-to-date building drawings, which creates uncertainty (Bullen and Love 2011; Remøy and van der Voordt 2007). The lack of information means developers may face inconsistency in the building material, inconsistent separation between columns, or the prevalence of asbestos hidden behind walls (Remøy and van der Voordt 2007). This presents hidden costs that are not known at the time of project initiation but ultimately will impact costs. To mitigate risks, developers will often build in a contingency plan of up to as much as 25 per cent of the cost (Barrs 2004). While these latter issues may not entirely undermine adaptive reuse, they do add complexities to the design and construction processes and may extend timelines. Buildings with a simple shape, large and open floor plates, and

appropriate spacing between structural supports are better candidates for conversion. As Remøy and van der Voordt (2007) indicate, there are certain standards that must be met to ensure these buildings meet regulations, citing the Netherlands, where laws require a minimum floor-to-ceiling height of 2.6 metres. Thus, in order for conversions to be feasible, they must adhere with applicable building codes.

Buildings that offer unique or interesting architecture, including those that have been designated as a heritage resource, offer more potential for conversion as opposed to buildings that offer little by way of unique or distinctive elements. These latter buildings will only be converted if they are economically feasible (Remøy and van der Voordt 2007). Indeed, even where the reuse of 1950s and '60s office buildings are possible, they still would not be aesthetically pleasing (Bullen 2007).

Financial

Building owners often cite the economics of adaptive reuse as a common barrier (Bullen 2007). In order for a building to be a suitable candidate, conversion must make financial sense. As Heath (2001) outlines, conversion of obsolete office space in Toronto and London only occurred once rental rates for offices decreased to a point where they were lower than what could realistically be generated as a residential use. This, as Heath further notes, is not viewed necessarily as a positive situation, as it means that a building's value has declined significantly. In order for conversion to be feasible, there must be an appropriate rent gap in the likely revenue generated between commercial and residential rents. By the mid-1990s in Toronto, the return on residential space was 90-per-cent higher than commercial returns, a gap large enough to stimulate the conversion of office space to residential use. Accordingly, owners will have to compare options to assess the economic feasibility of conversion, including current and anticipated revenues if the building is retained as office use compared to residential, and similarly, the capital value of the building if it is retained as office and the projected value of the building if sold as residential (Heath 2001).

Many building owners will predictably take a cautious approach when deciding to sell or convert their building. In London, building owners took a wait-and-see approach, hoping that the previous era of high office rents would return (Heath 2001). Part of this hesitancy to convert office space is likely tied to a lack of expertise. Developers tend to specialize in specific real estate types (e.g., developers who specialize in office rarely build residential). Instead, developers often find the process of adaptive reuse to be complex and challenging, in part because of limited knowledge in the field (Kurul 2007). A lack of experience may mean that building owners do not have the knowledge to successfully complete a project of this nature or may not be motivated to alter their core business. Alternatively, affordable-housing providers might be strong candidates to carry out conversions. Unlike private developers, where the primary objective is to maximize a return on investment, housing providers have lower expectations for an immediate financial windfall, as their primary motivation is the provision of quality housing (Remøy and van der Voordt 2007).

Furthermore, there are often challenges in raising the necessary capital, as lenders are hesitant to invest in projects that present greater uncertainties and complexities (Bullen

and Love 2011; Shipley et al. 2006). It is also important to note that older buildings often have higher maintenance costs than a new build, as they cannot meet the efficiency of new technology (Bullen 2007). When a building owner updates a building to make it more sustainable, it is unlikely to accrue any financial gains (Bullen and Love 2011).

Demand

Buildings that have remained vacant for an extended period of time are likelier candidates for conversion, as soft demand for the space as office suggests that the space is no longer valued as such (Geraedts and van der Voordt, 2003). Conversely, if over the same period, demand for other uses increases (e.g., housing), building owners will consider conversion. The proliferation of conversions in Toronto and London derived from an underlying demand for living in central locations, with residents looking to be closer to the city centre amid rising transportation costs and increased congestion (Heath 2001). However, projects initiated amid high demand for housing may come onto the market under different circumstances. This presents a similar problem, where owners could find themselves challenged to sell or rent in a weakening housing market (Remøy and van der Voordt 2007).

Building owners may take a wait-and-see approach, hoping that the demand for office space will increase in the near future, thereby avoiding having to reimagine the building as residential. Heath (2001) explains that in Toronto, following a period of high office vacancies in the 1990s (approximately 20 per cent), the vacancy rate dropped to around nine per cent by 2000, reducing the impetus to convert buildings. Demand for residential conversions is dependent on a variety of factors, including overall municipal/metropolitan population growth, migration patterns indicative of recentralization, interest among renters/purchasers in living in converted buildings, and overall community objectives to facilitate intensification and restrict additional peripheral growth.

Legislative

The regulatory framework can often serve as an impediment to adaptive reuse. Developers often cite inflexible building codes and development regulations as challenges to adaptive reuse (Shipley et al. 2006). This includes strict and rigid requirements pertaining to zoning, land use, density, design or occupancy (Barrs 2004). Similarly, Bullen and Love (2011) suggest that upgrades for fire protection and accessibility and minimum parking requirements often impede adaptive reuse. Not only does upgrading to meet code add costs, it also has the possibility to undermine a project. For example, minimum parking requirements vary by use. Said requirements have the potential to undermine building conversions if the expected provision of parking is greater than what already exists on site. Given the built-up nature of an existing structure, it is often difficult or unlikely that additional parking can be provided on site. Without a variance or relaxation, it is difficult for the project to meet regulatory requirements.

Similarly, the municipal approvals process can be lengthy and complex. Projects that encounter complex negotiations, extended timelines and delayed approvals, can

undermine the financial viability of a project (Remøy and van der Voordt 2007). Public policy can also serve as a barrier to conversion if the associated risks are not clearly thought out. In the U.K., policy changes introduced in 2013 were instituted to increase housing supply and signalled a shift in responsibility from the state-led process to one that was developer-led (Muldoon-Smith et al. 2016). Despite this attempt at reducing red tape, the result has been the creation of “sub-standard” homes, as over 20,000 permitted development conversion projects have been approved without adequate review (Wise 2020). Over a five-year period to September 2019, there were 115,448 permitted developments approved, more than 4,000 of which were office to residential conversions as developers could convert offices without requiring a planning application (Wise 2020). This can serve as a warning to other jurisdictions that too much flexibility in policy, without associated conditions and detailed building assessments, can lead to substandard development.

Rating buildings for conversion

Kurul (2007) argues that building owners and developers often base decisions for building conversions on perceptions rather than objective analysis. However, efforts have focused on translating the knowledge of the barriers to adaptive reuse into something that can effectively inform practice. Geraedts and van der Voordt (2003) developed a framework to evaluate the potential for building conversions, which is presented in Table 4. As the authors explain, every additional check reduces the likelihood that an office building can be successfully converted to residential.

TABLE 6. FRAMEWORK TO ASSESS FEASIBILITY OF OFFICE CONVERSIONS

Aspect	Criterion	Check
Location		
Urban situation	<ul style="list-style-type: none"> • Office in remote industrial zone • Office in the middle of an office park • Office in area defined as priority area for offices 	
Land property	<ul style="list-style-type: none"> • Land rent 	
Vacancy	<ul style="list-style-type: none"> • Vacant for more than one year • Vacancy of surrounding buildings 	
Character of urban situation	<ul style="list-style-type: none"> • Location on or near city edge, ring roads • Desolated area • No greenery in the neighbourhood • Social depreciation, vandalism • Pollution: smell, noise, visual 	
Distance and quality of facilities	<ul style="list-style-type: none"> • Shop for daily errands > 1 kilometre • Meeting place (cafe, snack bar, etc.) > 500 metres • Bank/post office > 2 kilometres • Basic medical facilities (doctor, pharmacy) > 5 kilometre • Sport facilities (fitness, swimming pool, sports park) > 2 kilometres 	
Accessibility by public transport	<ul style="list-style-type: none"> • Distance to station > 2 kilometres • Distance to bus, metro, tram stop > 1 kilometre 	
Accessibility by car; parking	<ul style="list-style-type: none"> • Many obstacles, limitations, poor flow • Distance to parking place > 250 metres • < 1 parking space/100 m² dwelling realizable 	
Building		
Year of construction	<ul style="list-style-type: none"> • Building was built or renovated recently (three years) 	
Character of the building	<ul style="list-style-type: none"> • Unrecognizable, non-eloquent • Poor maintenance 	
Extensibility	<ul style="list-style-type: none"> • Not extensible horizontally • Not extensible vertically 	
Structure	<ul style="list-style-type: none"> • Structure in technically bad condition • Dense structural grid < 3.6 metres 	
Dimensions	<ul style="list-style-type: none"> • Net storey height < 2.6 metres 	
Facade	<ul style="list-style-type: none"> • Facade openings not adaptable • Impossible to create windows that can be opened manually • Daylight entry < 10 per cent of the living area 	
Entrance (building, dwelling)	<ul style="list-style-type: none"> • Impossible to create a socially secure entrance • Impossible to realize elevator in the building (if more than four floors) • Distance from dwelling to stairs/elevator > 50 metres • Impossible to realize escape stairs according to escape demands 	
Installations	<ul style="list-style-type: none"> • No or insufficient conduits realizable 	
Environment	<ul style="list-style-type: none"> • Noise level at the facade > 50 decibels • Sufficient isolation between dwellings impossible • Sufficient isolation of facade impossible • Presence of dangerous materials in construction • No or little sunlight 	

Adapted from Geraedts and van der Voordt (2003).

This framework-assessment tool could be combined or used in addition to a risk-assessment tool, similar to that used by Remøy and van der Voordt (2014, 16) in their comparative assessment of buildings in the Netherlands. This would be useful as part

of the planning-application process, most likely at the pre-application stage (City of Calgary 2020a), to determine the feasibility of the project early on.

Similarly, Gensler, an architectural firm that practices globally, developed a scorecard to assist owners who are contemplating conversion in assessing whether it is sensible to convert a building to residential rather than investing in upgrades that would make it more competitive on the office market. Buildings that rank highly on the points listed in Table 5 present as stronger candidates for conversion.

TABLE 7. GENSLER FRAMEWORK TO ASSESS OFFICE CONVERSION

Theme	Attributes
Context	Buildings that have cultural or heritage value, are located in a mixed-use neighbourhood, and are within walking distance to retail, employment, parks and transit
Usable Form	Buildings that are square/rectangular and have at least 12 metres in depth
Location	Buildings located on corner lots and that are at a minimum 20 metres away from adjacent mid- or high-rise
Windows	Buildings with windows on a minimum of three sides of the building face, and have south-facing windows, and where fenestration is greater than 40 per cent of the wall area
Floor Plate	Buildings with floors of at least 8,000 square feet and floor-to-ceiling heights of at least 9 feet, and have multiple elevators
Structure and Servicing	Buildings where the mechanical, electric and plumbing systems can be easily upgraded, and offer sufficient on-site parking

Adapted from Immen (2020).

Some thought has also been given to the practice of conversion in Calgary. Strategic Group, a company with a diverse real estate portfolio that includes older office buildings, has successfully completed conversions in the Calgary and Edmonton markets. In evaluating its portfolio for possible conversions, Strategic Group outlines that buildings should be located in an urban context; walkable; in close proximity to amenities, employment and transit; and easily adaptable (i.e., regular shape and compact floorplates) (White 2017).

EXISTING POLICY MECHANISMS

The existing policy climate in Calgary, specifically in the downtown area, is evolving based on recent and ongoing projects. The 2007 Centre City Plan briefly speaks to the importance of the downtown as a primary office location and of incentives to adapt obsolete office buildings (City of Calgary 2007, 36) with some relevant policies, including:

4.1 Downtown

1. Enhance the Downtown as a primary office location through the provision of a quality public realm and supportive amenities and services.
7. Encouraging new residential developments in the downtown by:
 - Provide incentives to adapt obsolete office buildings to residential;
 - Provide incentives to encourage residential in the downtown such as:

- Encouraging mixed-use projects by implementing any Land Use Bylaw changes that better accommodate residential developments;
- Providing incentives to adapt obsolete office buildings to residential;
- Supporting the refurbishment of older existing residential buildings.

Despite its adoption in 2017, the Centre City Guidebook has no reference to office or commercial vacancy and conversion. Although it is positioned as a strategic component of citywide policy, its structure more loosely intends to guide growth and change to work in alignment with a more detailed local area plan (City of Calgary 2020b).

When adopted, Calgary’s Greater Downtown Plan will replace the 2007 Centre City Plan as a more accurate reflection of its evolution over the past 13 years. The plan intends to help stakeholders understand the direction for placemaking in Calgary’s downtown over the next decade (City of Calgary 2020c). While it presumably will not refer directly to office vacancy or conversion, the first principle is to “support economic vitality by creating exciting places that attract and retain businesses, entrepreneurs, and desired talent” (ibid).

The existing City of Calgary statutory policy documents offer only limited direction and guidance on the potential options for office-building conversion and adaptation. It is not uncommon in planning to encounter difficulties and hesitation over proper direction caused by “multiple objectives, confused implementation, and belated, if any, evaluation” (Stewart 1987, 13). Consideration could be given to methods such as policy networks where “the approach of a policy problem happens in a network in which public and private parties are active” (Heurkens et al. 2018, 5). This approach, as well as others considered based on the preceding detailed analysis, will be explored in the following recommendations.

RECOMMENDATIONS

Heath (2001) argues that the likelihood of conversion depends upon local market conditions. In an analysis of Toronto and London, Heath highlights how, in Toronto, the municipality was deeply involved in formulating policy and establishing a regulatory climate that worked to support adaptive reuse projects. Alternatively, in London, conversions were spearheaded by the private sector, where municipal action was perceived as more reactive. Further consideration ought to be given to establishing which courses of action are needed to support adaptive reuse in Calgary. Specifically, next steps should include outlining the roles and actions of key stakeholders, including the development industry, building owners, and the municipal and provincial governments. The following six recommendations provide direction to address Calgary’s vacancy crisis and offer a starting point in developing a more comprehensive strategy:

1. Develop an accessible inventory that identifies buildings in Calgary that are most suitable for conversion based on the known constraints. This would help more clearly define the possibilities available for involved parties, and could highlight larger pockets of vacant buildings that may be limiting activity in certain areas. Even with the addition of this tool, challenges may remain with some buildings that do

not suit the needs of changing consumer demands and expectations (Chung 2017). Although the fluctuating vacancy of 25 to 30 per cent in Calgary's office market suggests that there is a significant amount of space, there are notable limitations to conversion. For one, newer, high-quality office space labelled as class A or AA is not suitable for conversion because of building design and the economics of conversion. Moreover, competition from new condos and purpose-built rentals, as well as slowed population growth in the Calgary area, also present limitations to office-to-residential conversion. Taking these factors into consideration when taking inventory would help narrow the scope of vacant buildings that hold the most potential for adaptive reuse.

2. Engage with stakeholder and community organizations who:
 - I. Might be seeking additional space to meet their organizational needs; and
 - II. Might be seeking an increased presence within the downtown core.

Recent initiatives offer examples of the above recommendation. These include the University of Calgary's School of Architecture, Planning and Landscape moving into the Castell Building (the former site of the Central Library) as a teaching, research, and event space. Similarly, the Southern Alberta Institute of Technology recently announced that it will establish the School for Advanced Digital Technology in the historic Odd Fellows Temple in downtown Calgary. Platform Calgary also recently announced plans to open the Platform Innovation Centre in the East Village in 2021 with eight program partners. Although they plan to be located within a newly constructed multi-use parkade on 9 Ave. S.E. in Spring 2021 (Platform Calgary 2020), there could be future opportunities where existing space could be repurposed for Calgary's innovation economy. Efforts should be made to better foster relationships between building owners and Calgary's educational institutions and the burgeoning tech community. Finding synergies between these groups could increase their presence within the downtown and could offer a subtle transformation and quick occupancy of vacant office space.

3. Further consideration should be given to the pivotal role of local government in stimulating office conversions. Amid the onslaught of challenges for downtown Calgary, in 2017 the City of Calgary introduced the City Centre Enterprise Area. The intent of the pilot was to expedite building improvements and to allow new businesses to open quickly. The city estimates that from June 2017 to July 2018, the policy saved applicants over 2,000 days in processing time (Mahler 2018). While the city's role has largely focused on ensuring that administrative processes support development, further consideration should be given to other supports that the municipality might offer. For one, fiscal incentives have helped building owners ensure that adaptive reuse projects are financially viable. In Baltimore, the city has offered support by providing building owners with a 10-year tax credit for conversions that will create 20 or more residential units, have construction costs that exceed \$60,000 per unit, and which, at a minimum, meet an LEED Silver certification (Baltimore Development Corporation 2020). In addition to efforts to reduce regulatory barriers, the City of Calgary might consider developing a program that helps offset the costs of adaptive reuse by focusing on the importance of climate-resilient and energy-efficient buildings.

4. Potential efficiencies could be achieved through the creation of an office-vacancy policy in combination with a team that helps facilitate conversion. In Rotterdam, this was achieved through the creation of the Covenant Tackling Office Vacancy. The agreement was used “in combination with a transformation team assigned by the Rotterdam Department of Urban Development to stimulate land use change developments, including conversions from offices to housing” (Heurkens et al. 2018, 7). Requiring a funded position or group of positions could serve to expedite the process and enable efficient communication between public and private partners. Further, demonstrating barriers in the regulatory framework through constructive feedback can also assist the conversion process. In Ontario, the building code includes alternative development standards, providing a flexible regulatory framework that supports conversion, while also ensuring that safety standards are achieved (Bullen and Love 2011).
5. Alignment with related projects, policies and targets could enable harmonization with broader environmental goals. The federal government recently announced \$10 billion in funding for sustainability-related infrastructure projects under the Canada Infrastructure Bank Plan, \$2 billion of which is for large-scale energy-efficient building retrofits (Harris 2020). This focus on sustainable building practices also aligns with that of National Housing Strategy Solutions Labs funded through the Canada Mortgage and Housing Corp., which works in partnership with Alberta Ecotrust, the City of Calgary, Attainable Homes Calgary, Intelligent Futures and the Better Housing Lab. The Better Housing Lab launched in late September 2020 in Calgary with the goal of answering “how can environmental performance be fundamentally integrated into the economic model of affordable housing projects in order to enhance the long-term livability and viability of projects?” (Better Housing Lab 2020). The Alberta Ecotrust Foundation is also partnering with Calgary and Edmonton through a \$40-million Climate Innovation Fund. Within both cities, the goal is to implement a local program framework to identify, invest in, and scale-up carbon-reduction solutions (Alberta Ecotrust Foundation 2020). It is evident that there are numerous emerging sustainability and climate initiatives and an attempt at greater alignment with municipal climate plans. These essential considerations should be integrated while addressing office vacancy and conversion in the Calgary context.
6. The period of high office vacancy comes at a time where there is a pressing need for additional affordable housing in Calgary. Approximately 28 per cent of housing in Calgary is rental, which is below the national average of 31 per cent and other large Canadian cities including Montreal (64 per cent), Toronto (45 per cent) and Edmonton (35 per cent) (City of Calgary 2020d). Furthermore, only 3.6 per cent of Calgary’s housing supply operates as non-market housing, which is also lower than the national average of six per cent. An additional 15,000 units of affordable housing are needed to bring Calgary in line with the Canadian average. Calgary’s mayor, Naheed Nenshi, has also recently spoken of a two-year plan to end homelessness in Calgary. This requires funding and support from both the provincial and federal government, and having more affordable housing units means less impact on shelters and lower rates of homelessness (MacVicar

2020). Given this, relationships should be fostered between building owners and affordable-housing providers to explore what could be a mutually beneficial outcome: reduced office vacancy through additional affordable-housing units. As previously noted, affordable-housing providers make for strong candidates to carry out office conversions. The success of such a collaboration will ultimately depend on adequate funding sources, and further collaboration with the federal government, which, through the Canada Mortgage and Housing Corp., has a renewed interest in playing a greater role in the provision of affordable housing and, through the Canada Infrastructure Bank, promoting the retrofit of buildings to be more sustainable.

CONCLUSION

Amid the COVID-19 pandemic, much remains to be seen about the future of the workplace and demands for office space. In April 2020, numerous companies were contemplating the redesign of offices to include sneeze-guard partitions, safe zones and contact-tracing apps (McGregor 2020). In the following months, with continuous cases and waves of infection resulting in further mandated lockdowns, many businesses are opting to forego existing leases, despite the cost, in favour of more employees working remotely (Economist 2020).

As discussed, Calgary and Alberta have the highest office vacancy rates of any major Canadian city and province. The rate of office vacancy has continued to grow substantially since 2014 and has coincided with periods of slower population growth. This trend has been exacerbated by the completion of numerous office towers in recent years and subsequent declines in property values. Broader ramifications have negatively impacted the city's fiscal health and led to societal impacts, such as reduced employment and downtown vibrancy. Despite these conditions, recent successes in repurposing buildings through adaptive reuse have occurred within the downtown and adjacent communities. Nevertheless, Calgary's existing policies pertaining to the downtown provide limited direction on adaptive reuse.

Existing research indicates that adaptive reuse is one of four options available to building owners when presented with a vacant building. However, the process of adaptive reuse is fraught with barriers and may require collaboration between a range of actors. Similar conditions in cities from Toronto to Amsterdam have demonstrated the vast potential in using targeted conversion-assessment tools and specific and implementable policy to address the problem at various scales.

Irrespective of the global pandemic, Calgary has been challenged by a surplus of vacant offices without functional mechanisms to address the issue. Given that vacant buildings reduce the vibrancy and activity in the downtown and decrease economic activity, it is crucial this be addressed as part of a resilient recovery (Sorkin et al. 2020). As outlined in the recommendations, a comprehensive approach to addressing this issue could and should align with citywide goals of reducing administrative barriers, reduced carbon emissions, increased affordable housing, and long-term economic resiliency.

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