



Plug in to Peak Productivity

Why Fibre Optic Should Be a Critical Factor in Choosing Office Space



Accelerating success.

Introduction

The real estate needs of businesses continue to diversify beyond cost and available space. As companies adopt new technological processes to improve their business operations, their real estate needs expand by requiring efficient technological infrastructure. When selecting an office location, companies are increasingly requesting efficient telecommunication infrastructure—specifically fibre optic internet. Internet connectivity is the foundation of numerous day-to-day applications such as video conferencing, cloud computing and big data analytics. As many firms move towards using these applications, their bandwidth requirements intensify, underscoring the importance of internet connectivity for workplace productivity. With the high cost of installing a fibre optic internet network, along with service provider fees, many office suites in the Greater Toronto Area (GTA) are currently not using fibre optic internet. Despite this, companies should consider real estate options that provide fibre optic internet, as increased connectivity and speed helps improve workplace productivity. Many companies sign long-term leases and therefore businesses must also take into account their future connectivity needs when looking for office space now.

This Spark Report focuses on the benefits of fibre optic internet for commercial real estate occupiers. The report also discusses the City of Markham, as the municipality has continually focused on developing advanced fibre optic telecommunication infrastructure throughout its employment areas. Innovative companies find locating in Markham appealing for various reasons, but the city's telecommunication infrastructure is one of its main competitive advantages.

Companies that use cloud computing need reliable transfer of data over the internet, to store and access their information from data centres. The “cloud” is an extension of the office facility, and therefore, high-quality and redundant internet connectivity should be a paramount consideration.

Geoff Kee - Manager, Real Estate at TeraGo Networks Inc.



Fibre Optic Spotlight

Office workspaces are constantly transforming as companies diversify and change. As the development of human capital becomes ever more important for businesses, companies are demanding office space that has a mix of amenities that are conducive to developing a productive workforce. Internet connectivity and speed is a vital real estate amenity that directly impacts the day-to-day productivity of a company's workforce. Colliers reviewed numerous econometric papers for this report that have found a correlation between firms increasing broadband efficiency and overall productivity growth.

Companies within the technical services and media industries have led the demand for high-quality telecommunication infrastructure within their offices, as internet connectivity and speed is crucial for firms in these industries to perform daily tasks. The demand for efficient telecommunication infrastructure is increasing beyond technical service companies, as more corporations across all industries adopt internet intensive strategies such as big data analytics, cloud computing or mobile device solutions. A 2014 technology investment plan survey by Gartner, Inc. found that 73 percent of their survey respondents have invested or plan to invest in big data in the next 24 months, up from 64 percent in 2013¹. Also, according to the IBM Business Tech

Trends Study, "big data and analytics, cloud, mobile and social are each now used by 7 in 10 enterprises"². The increase in use of big data analytics is also being fueled by the increase in availability of useful publicly accessible data. Governments and other organizations are further expanding their publicly open data, which is helping increase the number of companies using data analytics. As more firms adopt bandwidth-intensive internet applications in their day-to-day operations, efficient telecommunication becomes essential.

Internet traffic in Canada is expected to more than triple between 2014 and 2019³

Fibre optic internet is the most efficient telecommunication infrastructure available today. Fibre optic internet provides faster upload and download speeds, along with superior connectivity when compared to traditional fixed-line copper broadband. Table 1 displays the difference in speed between fibre optic and traditional fixed-line copper broadband. For reference, according to the Canadian Internet Registration Authority, the average download speed in the City of Toronto was 22.33 Mbps, while fibre can currently reach speeds of up to 1000 Mbps.

TABLE 1: Fibre Optic Download Speed Comparison Table

LENGTH AND TYPE OF MEDIA DOWNLOAD	APPROXIMATE SIZE	DOWNLOAD SPEED				
		BROADBAND			FIBRE OPTIC	
		5Mbps	10Mbps	20Mbps	100Mbps	1000Mbps (Gigabit)
4-minute song or PDF report	4 MB	5s	3s	1.5s	0.3s	0.03s
5-minute video or HD videoconferencing	30 MB	40s	26s	13s	2.5s	0.2s
9-hour audiobook	110 MB	2m	1.5m	46s	9.2s	0.9s
45-minute marketing Sales Video	200 MB	5m	3m	1.5m	16s	1.7s
45-minute HD marketing Sales Video	600 MB	15m	8.5m	4m	50s	5s
2-hour movie	1.0-1.5 GB	24m	21.5m	10.5m	1.5m	8s
2-hour HD movie	3.0-4.5 GB	72m	60m	32m	4.5m	25s
Miscellaneous archive	10 GB	No	Too long	Slow	Better	1m 20s

Source: Fastmetrics: <https://www.fastmetrics.com/how-fast-is-fiber-optic-internet.php>

Table 1 displays the loss in efficiency resulting from a slower internet connection. When performing numerous large-bandwidth tasks throughout the day, the opportunity costs from having a slower internet connection can add up.

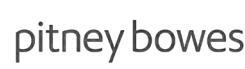
If your business depends on any of the applications listed below, your productivity will improve with fibre optic internet.

BUSINESS APPLICATIONS:

CONFERENCING,
EMAIL &
TELEPHONY



DATA MANAGEMENT
& ANALYTICS

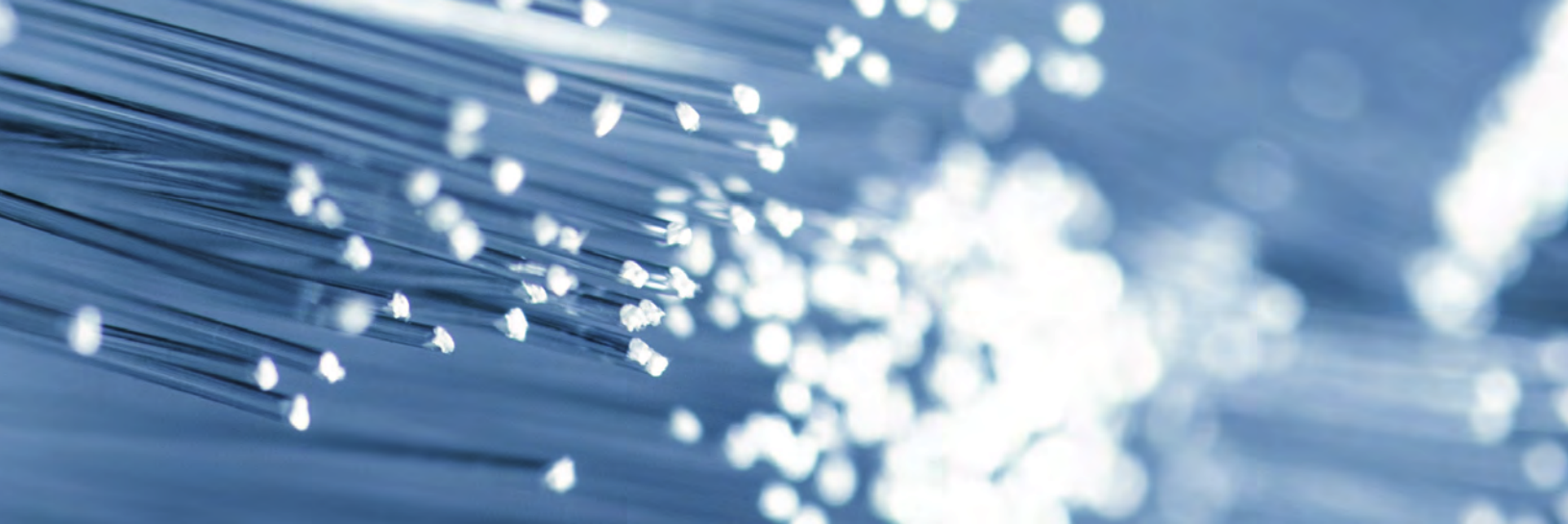


INDUSTRY-SPECIFIC
APPS



DIGITAL REALTY





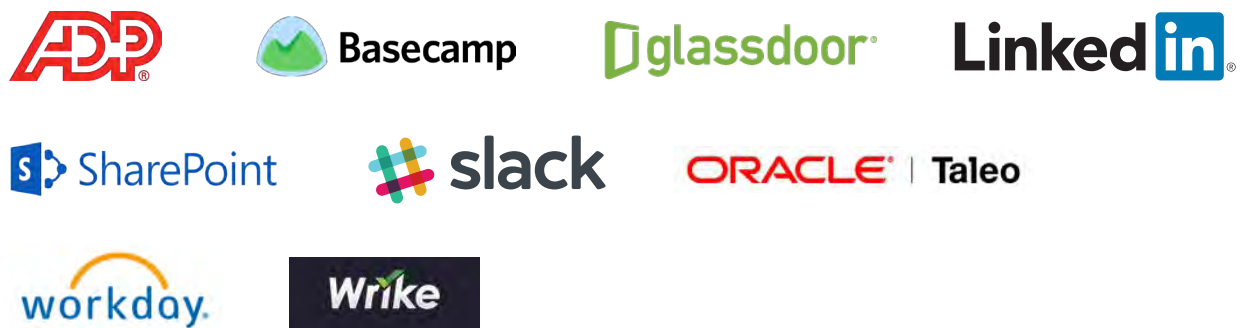
MARKETING,
SALES & CRM



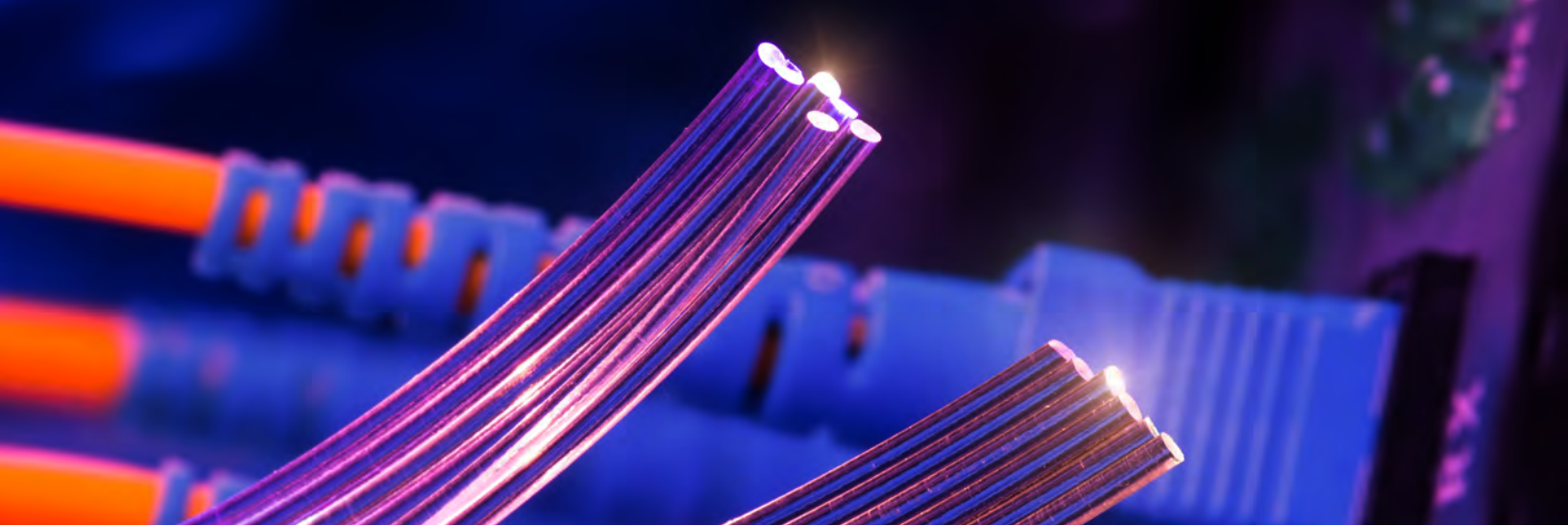
SUPPLY CHAIN &
LOGISTICS



WORKPLACE
MANAGEMENT
& HR



The graphic above presents some of the foremost internet-based business applications that firms use in their day-to-day operations. Organizations using these types of applications should consider office space with fibre optic internet.



While there are numerous benefits to choosing an office location that is fibre optic-ready, this is often a challenging task for companies in the GTA and North America in general. The supply of office suites that are connected with fibre is low as the GTA does not have a complete fibre optic network. This is partially because constructing an underground fibre optic network throughout a neighbourhood can be expensive and time-consuming. Even when a

neighbourhood network is constructed and buildings become “fibre available”, the individual buildings need to be wired throughout each office suite—a costly proposition. Therefore, companies looking to increase their efficiency by improving their connectivity should ask certain questions when looking for office space. Colliers International has compiled a standard checklist for organizations seeking office space.

Tenant Fibre Optic Checklist:

- Which buildings have fibre optic broadband in my market?
 - Is the fibre optic plug and go-ready throughout each suite within a building?
 - If you need an on-premise server room, is it fibre-ready?
 - What is the downtime (breaks in service) for the location?
 - Who are the service providers? Are there multiple service providers? (To mitigate risk and cost)
 - Does the building allow for two memberships with different service providers in order to avoid dependency on just one?
 - Is there a fibre connection to accommodate a wide area network that will handle business technology services such as an active directory, a VoIP system or private data services accessed by multiple offices?
 - What are the monthly costs for different fibre speeds and usage?
 - Are there redundant fibre lines from different access points?
 - Are there multiple fibre pathways into the building?
-

Colliers International is a typical example of a company that relies on office space with efficient internet connectivity. Bede Searchfield, Infrastructure Manager at Colliers International, is responsible for IT infrastructure set-ups for Colliers’ offices across North America. Searchfield says buildings not provisioned for high-speed (fibre) internet usually do not meet the technology requirements of companies today. “With the

decline in traditional, locally-hosted IT systems and the growing adoption of internet services like cloud storage and software as a service (SaaS), our business is now heavily reliant on internet bandwidth, and buildings without fibre are frankly not an option for us,” said Searchfield. “Organizations should continue to demand highly efficient internet from their office space, as it has become an essential workplace amenity.”



Spotlight on Markham, Ontario

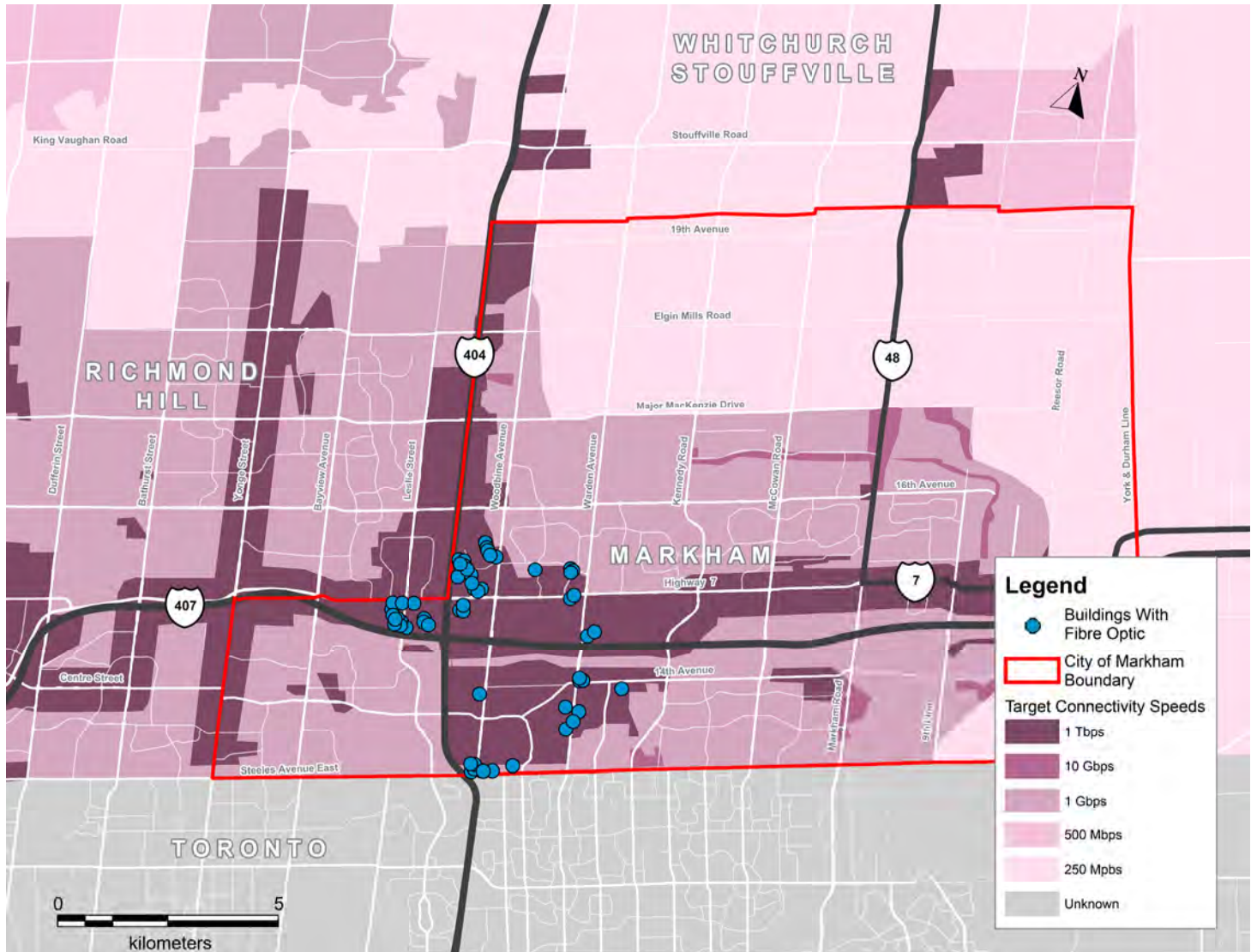
The challenges associated with installing fibre optic internet warrant a concerted effort among the municipality, building owners and telecommunication providers. This in itself can prove to be difficult, but can be increasingly beneficial to regional economic and employment growth, which is why more regions are trying to construct fibre optic networks⁴. When Google announced that municipalities could bid for an opportunity to have Google install their fibre optic network, more than 1,100 cities applied⁵. Despite this interest, many major North American regions still do not have comprehensive fibre optic networks, or plans to upgrade any time soon.

York Region is one area that is continually providing broadband connectivity at appropriate costs and speeds through its regional broadband strategy⁶. Within York Region, Markham provides a case study of a municipality that is continually developing advanced fibre optic infrastructure⁷. High-quality telecommunication infrastructure has been a competitive advantage for Markham, as it is an influential locational determinant for companies choosing an office location in that city.

Companies in Markham ranked Telecommunication Infrastructure as the most important site selection factor above 19 other factors such as transportation infrastructure, skilled labour, cost of utilities, taxes and quality of real estate, according to a survey of Markham businesses⁸.

Companies should consider Markham as an advantageous location because of the availability of fibre optic internet. Markham has numerous fibre optic lines and is determined to constantly improve the city's telecommunication infrastructure. Map 1 provides an outline of the current and future fibre optic network throughout Markham based on the Colliers survey initiated for this report. As displayed in Map 1, many office buildings in Markham already have access to fibre optic internet. Map 1 also outlines that every Markham employment area has an eight-year speed target of 1TBps, which is faster than current speeds offered.

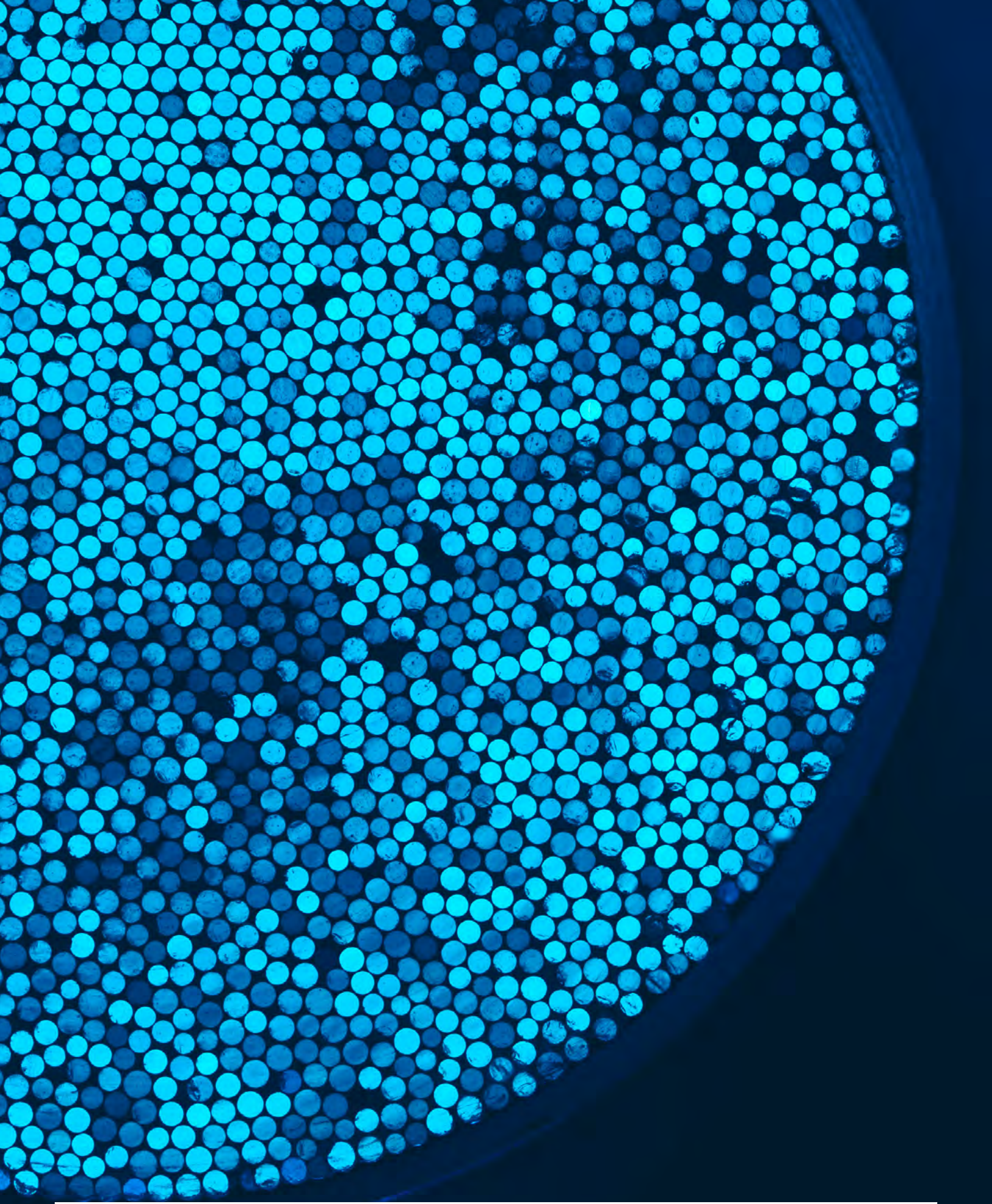
MAP 1: City of Markham Fibre Optic Availability Map



Office buildings that currently have fibre optic available are highlighted as a blue dot. The background shade outlines the eight-year connectivity speed targets set out by York Region.

Colliers Fibre Optic Survey Statistics

- 99 percent of the buildings surveyed in Markham currently have access to fibre optic internet
- Approximately 7.7 million square feet of office space has access to fibre optic internet
- Approximately 5.5 million square feet of Class A office space in Markham has access to fibre optic internet
- Approximately 2.3 million square feet of Class B office space in Markham has access to fibre optic internet



The large amount of office space in Markham with fibre optic internet available helps the city attract businesses. For firms that have adopted, or are looking to adopt internet bandwidth intensive applications, locating in Markham is ideal. Data centres and information and communications technology companies are examples of businesses that demand high-quality internet and cannot afford to choose a location with inefficient internet capabilities. The City of Markham has attracted over 65% of the many data centres located in York Region, some being the centres of the most prominent tech companies in the GTA⁹. Telus, Alcatel Lucent, Primus Business Services and CenturyLink are a few examples of companies that have chosen to locate their data centres in Markham.

As it stands, Markham is recognized as Canada's high-tech capital with approximately 1,000 high-tech and life sciences companies and the highest concentration of ICT businesses per capita in Canada¹⁰. Some of the most innovative companies have selected Markham for their Canadian head offices, such as IBM, AMD, Huawei, Toshiba, Lenovo, TeraGo Networks and GE (more than 400 head offices in total). While companies choose to locate in Markham for many reasons, telecommunications infrastructure is an important factor. By continually focusing on developing the infrastructure that helps innovative businesses perform daily tasks more productively, Markham places itself in a favourable position to further retain and attract companies. When scouting an office location in Ontario, innovative firms should consider Markham because of the advantages created by the region's commitment to developing innovative infrastructure.

Conclusion:

Internet-based workplace applications are becoming the backbone of many corporations adopting data storage, public messaging, online advertising and advanced analytics at a rapid pace. Subsequently, internet connectivity and speed have become increasingly critical to workplace productivity. Therefore, Colliers International has recognized fibre optic internet as an amenity that companies should seek out when choosing office space. While finding fibre optic-connected space can be difficult, this Spark Report has identified Markham as an advantageous location for firms, as the municipality continues to develop extensive fibre optic networks throughout its employment areas.

Survey Methodology:

For this Spark Report, Colliers conducted a survey asking respondents if their building currently had access to fibre optic internet. Buildings that are owned and operated by a single company, such as IBM's buildings, were not surveyed, but it can be assumed that they have access to fibre optic internet services. Single-tenant buildings that are not available to the market were also not surveyed. In total, more than 70 buildings were surveyed or approximately 80% of all Class A and B office space in Markham. The 20% of Class A and B office space that was not surveyed belongs in the aforementioned owner-occupied or single-tenant building category not available for lease to the market.

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3. The Globe and Mail, Internet fibre race down to the wire for telecoms as broadband demand rises, (2015).
4. International Telecommunication Union (ITU), The Impact of Broadband on the Economy, (2012).
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6. York Region, Broadband Strategy, (2014).
7. Ibid
8. Urbanmetrics Inc, Town of Markham Business Survey and Focus Group Results, (2006).
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10. The City of Markham, Markham is Canada's High-Tech Capital, www.markham.ca

485 offices in 63 countries on 6 continents

United States: **146**

Canada: **44**

Latin America: **25**

Asia Pacific: **186**

EMEA: **84**

\$2.1

billion in
annual revenue

1.46

billion square feet
under management

15,800

professionals
and staff

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