

## **Attachment 2: Jurisdictional Scan of Municipal Fibre Networks**

Staff have identified five types of Municipal Fibre Network models commonly deployed by municipalities:

- **Full Service:** Municipalities act similarly to ISPs and have full accountability over the network's success;
- **Open Access:** Municipalities build their own fiber infrastructure including the components needed to operate services. Network access is leased to private ISPs who connect residents and businesses;
- **Dark Fibre:** Municipalities install fibre without the components needed to provide services. Capacity is leased, and material costs for providing services are shifted to ISPs;
- **Public Services:** Municipalities build a fibre network to connect city facilities and buildings, such as schools and community centres. Over time, the municipal network may expand to an Open Access model that can reach residents and businesses;
- **Public Private Partnership (PPP):** Municipalities work with a private ISP to build the fibre network, typically in exchange for concessions in access to public spaces, permitting, and fees. Public ownership over the network is compromised in this model, and there is a risk of long-term cost increases.

Key considerations for a Municipal Fibre Network include careful assessment of the local competitive market, of the municipality's existing network infrastructure, and its operational capabilities to support the fibre network.

Staff have assessed Municipal Fibre Network projects from various jurisdictions in terms of their success in achieving stated objectives (i.e. broadening internet access and lowering operating costs), their longevity (i.e. did the municipality retain the asset), and their return on investment (i.e. did the municipality derive value from the investment).

Failed examples correspond to capital investment shortfalls on the part of the municipality, lack of technical expertise and resources to manage the network, and the competing interests of private ISP partners who may subsequently withdraw when ROI objectives are no longer attainable (San Francisco, 2005; Philadelphia, 2006; Kansas City, 2011).

Successful examples correspond to projects wholly owned by the municipality, deployed alongside existing capital construction projects, principally designed to support the network needs of municipal assets (i.e. transportation), and that generate revenue through leasable capacity and open-access provisions (Calgary, 2015; Chattanooga, 2015; New York, 2019).

Jurisdiction and Program	Network Type	Background	Notable Policies	Results
City of Toronto  <i>Toronto Hydro Telecom (2000-2008)</i>	Dark Fibre; PPP	<ul style="list-style-type: none"> <li>- 400 km of fibre sold to Cogeco Cable Inc. in 2008 for \$200M (\$240M in 2020 dollars).</li> <li>- Reaches throughout the City with strong connectivity in Downtown, particularly the Financial District</li> </ul>	<ul style="list-style-type: none"> <li>- Contract between City and Toronto Hydro Telecom created a <i>Public Policy Benefits</i> reserve fund</li> <li>- This reserve was for safety and emergency; education, knowledge and public good; and city administrative purposes</li> </ul>	<ul style="list-style-type: none"> <li>- \$200M in one-time cash to Toronto Hydro</li> </ul>
City of Montréal  <i>City Fibre Expansion Plans and MTLWi-Fi</i>	Public Services; Open Access	<ul style="list-style-type: none"> <li>- Deployed 30 km of fibre in the Quarter des Spectacles, downtown and the Quartier de l'Innovation (2015-2017)</li> <li>- Focus on linking municipal buildings and future free Wi-Fi zones in major public spaces.</li> </ul>	<ul style="list-style-type: none"> <li>- MTLWi-Fi is a partnership with ZAP, who is responsible for the maintenance of the network. ZAP is a Montréal not-for-profit in operation for 18 years.</li> </ul>	<ul style="list-style-type: none"> <li>- MTLW-iFi has 825 access points across the island of Montreal</li> <li>- Plan to expand fibre even further</li> <li>- Bell Canada invested \$850 million to build 7000 km of private fibre in 2018.</li> </ul>
City of Calgary  <i>City owned fibre network</i>  <i>Infrastructure leasing</i>	Public Services; Dark Fibre	<ul style="list-style-type: none"> <li>- City owns over 400 kms of leasable fibre reaching all quadrants of the city</li> <li>- City leases street poles and rooftops to connect fibre to 5G infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>- Services all networks and operators</li> <li>- Not for residential use</li> <li>- City has a 'Dig Once' policy— installation of dark fibre during unrelated street digs (e.g. road/water/sewer)</li> </ul>	<ul style="list-style-type: none"> <li>- Free public Wi-Fi at LRT stations and City facilities</li> <li>- Revenue opportunities in leasing access to network being explored</li> <li>- University of Calgary research done using the municipal dark fibre network published in <i>Nature</i></li> </ul>

<p>City of Coquitlam, BC</p> <p><i>Coquitlam Optical Network Corporation (QNet)</i></p>	<p>Open Access; Public Services</p>	<ul style="list-style-type: none"> <li>- 85 kms of unused capacity in the City's fibre network</li> <li>- Colocation facility leased to third-party data centres</li> </ul>	<ul style="list-style-type: none"> <li>- Services all networks and operators</li> <li>- Includes businesses and residences, except for single family homes</li> </ul>	<ul style="list-style-type: none"> <li>- QNet continues to pay off debt to the City. QNet had an operating surplus of \$250k and made loan payments of \$340k in 2018, which reduced its remaining debt to \$4.4M.</li> </ul>
<p>Eastern Ontario Municipalities</p> <p><i>EORN Broadband Project</i></p>	<p>Dark Fibre; PPP</p>	<ul style="list-style-type: none"> <li>- 5,500 kms of fibre connecting 60+ business parks and clusters in Eastern Ontario</li> <li>- Project of the Eastern Ontario Wardens' Caucus</li> </ul>	<ul style="list-style-type: none"> <li>- Services all networks and operators</li> <li>- Maintain relationships with local First Nations to determine how to improve service within communities</li> <li>- Priority on cell service throughout all homes, roads and businesses in the region and broadband throughout Ontario</li> </ul>	<ul style="list-style-type: none"> <li>- Broadband coverage to ~90% of Eastern Ontario</li> <li>- Improved cellphone service throughout</li> <li>- A total network worth \$260 million.</li> <li>- 140,000 subscribers in 2018.</li> </ul>
<p>Region of Peel (and constituent municipalities)</p> <p><i>Municipalities-owned fibre network (Public Sector Network)</i></p>	<p>Public Services</p>	<ul style="list-style-type: none"> <li>- Over 800 kms of fibre connect over 290+ sites across the city.</li> <li>- Established 1996</li> <li>- Owned/governed by constituent municipalities and other public sector users</li> </ul>	<ul style="list-style-type: none"> <li>- Only public sector and broader public sector organizations can access the network</li> <li>- Currently implementing private sector leasing</li> </ul>	<ul style="list-style-type: none"> <li>- Generated over \$100 million in savings, a return on \$25 million total investment.<sup>1</sup></li> <li>- 1/3<sup>rd</sup> of fibre laid is in use</li> <li>- Free public Wi-Fi across City of Mississauga</li> </ul>

<sup>1</sup> <https://pub-peelregion.escribemeetings.com/filestream.ashx?DocumentId=1428>  
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				(Wireless Mississauga)
Region of York  <i>Region owned fibre network (YorkNet)</i>	Dark Fibre	<ul style="list-style-type: none"> <li>- Over 200 kms of fibre connecting Regional and Broader Public Sector buildings and assets</li> <li>- Governed as a Municipal Services Corporation, whose board is controlled by the region and its municipalities</li> <li>- Established 2017 with an allocation of \$500k as an offshoot of the York Telecom Network</li> <li>- Cost \$16M to lay existing fibre since 2002</li> </ul>	<ul style="list-style-type: none"> <li>- Services all networks and operators</li> <li>- Receives federal grants under the Universal Broadband Fund</li> <li>- Three policy objectives: <ul style="list-style-type: none"> <li>1. Serving public sector operational needs effectively</li> <li>2. Driving economic and social benefits in communities</li> <li>3. Extending high speed broadband into under-served areas of the Region</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Spun off York Telecom Network into a new Municipal Services Corporation with public governance</li> <li>- Shares corporate functions (legal, IT, finance, comms) with York Region divisions</li> <li>- 9 MUSH sector partners on the Network</li> </ul>
City of Chattanooga, Tennessee  <i>City owned fibre network (EPB Fibre Optics)</i>	Full Service	<ul style="list-style-type: none"> <li>- Fully connected fibre-to-the-home City (150,000 homes)</li> <li>- Owned/operated by the City's electrical utility, originally as a 'smart grid' exercise</li> </ul>	<ul style="list-style-type: none"> <li>- Guaranteed offer of a 'Chattanooga Gig' (1 Gbps downstream speeds to all 150,000 homes)</li> <li>- Public mandate results in rapid crisis response infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>- April 21, 2020, tornados knocked out 106,000 EPB customers, but the smart grid prevented 44,000 further outages.</li> <li>- During Covid-19, EPB suspended disconnections and waived late fees, and implemented a program that: <ul style="list-style-type: none"> <li>- provided new internet access to 523 families in need and continued free access to</li> </ul> </li> </ul>

				<p>1,182 more families.</p> <ul style="list-style-type: none"> <li>- Created 130 free "EPB Quick Connect Wi-Fi Hot Spots" in areas with high numbers of students, resulting in 13,000 user sessions in 3 months.</li> <li>- Received \$110M in stimulus grant from the Department of Energy in 2009, and EPB paid \$160M of the network's \$220M cost.</li> </ul>
<p>New York City <i>Internet Master Plan</i></p>	<p>Open Access; PPP</p>	<ul style="list-style-type: none"> <li>- <i>The New York City Internet Master Plan</i> was passed in January 2020, with a goal of city-wide fibre and multiple choices for service.</li> <li>- Anticipated total costs of \$2.1B.</li> <li>- 46% of NYC households living in poverty do not have broadband at home.</li> <li>- Accelerated deployment timeline</li> </ul>	<ul style="list-style-type: none"> <li>- NYC is 'neutral-host' infrastructure, shared between operators</li> <li>- Heavy focus on public/private partnerships, with 'seed investments' from the City</li> <li>- Focus on poorly connected areas first and improving digital equity/avoiding 'digital redlining' of fibre deployment.</li> </ul>	<ul style="list-style-type: none"> <li>- In 2014, the City contracted Verizon to do a citywide fibre rollout, and in 2017 the City sued Verizon for not meeting the obligation.</li> <li>- City contributed a \$157 million broadband investment in July.</li> </ul>