Attachment 1 – Deferral Motion Questions and Issues on ConnectTO Update Report

1. Questions and Issues Raised at Executive Committee, March 30, 2022

On March 30, 2022, Executive Committee directed staff to address questions and issues raised during the meeting in this supplementary report. Staff have captured the issues and questions with answers below.

1.1 The Ryerson Leadership Lab report indicates that 3% of households in Toronto don't have an internet connection and 5% did not use the internet in 2020. Stated otherwise, 97% do connect.

> Although most Toronto residents live where there is the infrastructure to connect to the internet, a significant proportion of low-income individuals, older adults, and people with disabilities are not connected to home internet service at sufficient speeds.

> The inability to access high-speed internet at home is more pronounced for low-income individuals in Toronto. According to the Ryerson Leadership Lab and Brookfield Institute's 2020 survey of 2,500 Toronto residents, half of Toronto households (52%) with incomes less than $30,000 report download speeds below the CRTC's 50 Mbps target, compared to 31% of households with incomes above $70,000. Moreover, 17% of households with incomes less than $30,000 say their internet is slow relative to their needs, compared to just 6% of households with incomes over $70,000.

> During the first phase of the pandemic, and when confronted with the acute nature of digital inequity in Toronto, public agencies including the Toronto Public Library (TPL) and the Toronto District School Board (TDSB) implemented programs to help ameliorate the digital divide within their communities. The TDSB responded to 72,201 requests for internet connectivity and device support from students, while the TPL facilitated 962 WiFi Hotspot loan requests. These responses were much needed but are not long term and sustainable.

> It is important to recognize there is a difference in having access at home and the financial ability to maintain that access. Research highlights the lengths low-income households go to in order to "keep the internet on", including diverting finances from other critical areas (e.g. utilities, food, and clothing), as well incurring debt.[1] Research has also highlighted how racialized communities, in particular, are frequently forced to choose between having internet at home

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[1] Mersereau, M. (2021). The essential Internet: Results from a study into household internet use at the Toronto Community Housing Corporation. *First Monday*, *26*(3); Gonzales, A. (2015). The contemporary US digital divide: from initial access to technology maintenance. *Information, Communication & Society*, *4462*(December 2015)

versus having mobile services.[2] These are a quantified examples of the limited options and opportunities for connectivity faced by low-income households.

[2] van Deursen, A. J. A. M., & van Dijk, J. A. G. M. (2019). The first-level digital divide shifts from inequalities in physical access to inequalities in material access. *New Media and Society*, *21*(2), 354–375; Fernandez, L., Reisdorf, B. C., & Dutton, W. H. (2020). Urban Internet myths and Realities: A Detroit case study. *Information Communication and Society*, *23*(13)

1.2.   There are low-cost internet service offerings already that ISPs like Bell, Rogers, Telus and Beanfield are federally mandated to provide. A municipal broadband network would duplicate what is already being done well by ISPs who are mandated to provide the service to customers.

The low-cost internet services offered in today's Canadian marketplace are not mandated and are not universally available, leaving many Torontonians behind.

In November 2018, the Government of Canada launched the Connecting Families initiative to help bridge the digital divide by enabling more Canadian families to access to home Internet. Through this initiative, Internet Service Providers (ISPs) participate voluntarily, without government subsidy, offering $10/month home internet packages with at least 10 Mbps download speed and 100 GB of data usage to eligible families who currently receive the maximum Canada Child Benefit (CCB).

In August 2021, the initiative's eligibility expanded to seniors who currently receive the maximum Guaranteed Income Supplement (GIS). A second offer was added for a minimum 50/10 Mbps speed with a minimum 200 GB of data usage for $20/month.

There are currently 15 ISPs voluntarily participating in the Connected Families initiative across Canada.

Eligible households must receive a letter from the Government of Canada containing an access code that is needed to sign up. The Connecting Families initiative is being offered until March 31, 2027 with eligibility of participant households verified annually.

It is important to note that the cost of living in Toronto is one of the highest in Canada. For reference of a family of four, maximum Child Care Benefit corresponds to an adjusted family net income of $32,028. According to the most recent living wage calculation by the Canadian Centre for Policy Alternatives, the same family would need to have a net household income of approximately $70,000 to cover basic expenses and participate in their community in Toronto. Based on an analysis of the most recently available 2016 Census data, there were over 350,000 households who could materially benefit from more affordable Internet access and who would not otherwise be eligible for low-income Internet access programs.

Another group facing gaps are those who are not in families and are thus ineligible for the Connected Families program. These are the same residents who comprise a significant proportion of Torontonians living in poverty. According to the 2019 Taxfiler dataset from Statistics Canada, almost 250,000 individuals were in low-income and not living with family.

1.3   In addition to poverty and affordability impacting households' access to high-speed internet, there is also the problem of individuals lacking devices such as a tablet, laptop or cell phone. Is the issue of people not connecting more about digital literacy than internet access? If so, how will increased access solve this problem?

Adequate access to the internet is increasingly recognized by countries and organizations[3] around the world as an essential tool for participation in modern democratic society. In Canada, the Canadian Radio-television and Telecommunications Commission (CRTC) has acknowledged "broadband internet access services are vital to Canada's economic, social, democratic, and cultural fabric.[4]" In 2019, the Federal Government indicated "internet connectivity is essential for personal and professional communications, to grow a business, to apply to jobs, to do homework and to access government services"[5].

Poverty impacts residents' abilities to obtain, maintain, and make constructive use of digital technologies.[6] This compounds the deficit cycle wherein barriers to accessing services in other critical areas, such as employment, education, or healthcare, are further compromised.[7] This worsens the poverty cycle as a whole. It is critical to not view barriers to the internet as independent from the other primary informers of poverty. Basic internet connectivity, access to devices, and literacy are co-determinant, meaning, each piece of the puzzle must be in place.[8]

As indicated in the Ryerson Leadership Lab report, too many people in Toronto still cannot afford sufficient internet services and these disparities also run along demographic and socioeconomic lines. For households in Toronto without home internet access and income under $30,000, 75% of these households cited the monthly cost as a barrier.

When asked how much, if at all, they worry about being able to pay for their home internet bill over the next few months, one-third (34%) of households in Toronto indicated they worry a lot or some. This is concentrated among lower-income households where a majority (51%) of households with incomes under $30,000 are worried. Similarly, 51% of those not employed or unable to work indicated the same level of worry. There are significant differences in worry about ability to pay by race and ethnicity. Latin American (53%), South Asian (46%), Black (42%) and Southeast Asian (40%) respondents were all significantly more likely to indicate they were worried.

Access to technology devices is also impacted by individuals' ability to afford them, and is therefore correlated with income. The inability to afford digital access at home has forced some Toronto residents to rely on other public locations to use the internet. A Toronto Public Library (TPL) survey found that of

[3] https://documents-dds-ny.un.org/doc/UNDOC/GEN/G17/077/46/PDF/G1707746.pdf?OpenElement
[4] https://crtc.gc.ca/eng/publications/reports/rp161221/rp161221.htm
[5] https://www.ic.gc.ca/eic/site/139.nsf/eng/h_00002.html#d
[6] Robinson, L. et.al. (2020). Digital inequalities in time of pandemic: COVID-19 exposure risk profiles and new forms of vulnerability. *First Monday*, *25*(7)
[7] Mikkonen, J., & Raphael, D. (2010). Social Determinants of Health: The Canadian Facts. In *The Canadian Facts*. York University School of Health Policy and Management
[8] Reisdorf, B. C., Dutton, W. H., Triwibowo, W., & Nelson, M. E. (2017). The unexplored history of operationalising digital divides: a pilot study. *Internet Histories*, *1*(1–2)

users who borrowed an internet hotspot, more than half had a household income that was less than $20,000, about 80% said they did not have internet access at home because they could not afford it, and nearly two-thirds said the library was their only source of connectivity.

City staff continue to partner with TPL and other community organizations to explore opportunities to improve access by providing digital literacy training and lending or donating devices to youths, older persons and others in need.

1.4   Why would the City of Toronto try to compete with ISPs that already effectively provide the beginning, middle and last mile of internet connectivity to households? How is a municipal broadband network not a duplication?

ConnectTO does not make the City an internet service provider and therefore does not compete with existing ISPs. The deployment of a City-owned fibre network to connect City facilities, buildings, and services is intended to enhance the City's ability to deliver services more efficiently on a network asset that is scalable and upgradable.

The middle mile refers to where in the internet delivery process conduit is placed, meaning a public ROW is the middle mile regardless of who is deploying a network. ConnectTO creates an opportunity for City-owned conduit placed in the public right of way to be accessible to ISPs for their use in delivering internet to residents and businesses. Currently, the majority of the middle mile in Toronto is comprised of closed and proprietary networks owned by a limited number of private ISPs.[9]

These efforts will also help the City leverage its assets in partnerships with ISPs, making high quality and reliable internet more accessible and affordable.

In Toronto, access to high capacity fibre is only available on the closed and proprietary networks owned by a limited number of private ISPs. These privately-owned fibre networks do not work on an open access basis (like a public road). Providing access to ISPs to access excess capacity on City-owned fibre networks allows multiple ISPs to deliver internet to households without the need for each ISP to build its own assets entirely.

Municipalities across Canada have realized that leasing fibre access from private ISPs is unsustainable, costly, and a constraint on their ability to expand their own public services. Deputations made to the Federal Standing Committee on Industry and Technology in March 2022[10] explicitly identify the closed nature of networks built by private ISPs contribute to the risk of duplication.

A municipality's ability to leverage fixed overhead costs to deploy fibre infrastructure in the public ROW presents a compelling rationale that has led several Canadian cities deploy their own networks and operate them on a neutral and open access basis as suggested by deputations to the Federal Standing

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[9] https://www.ic.gc.ca/app/sitt/bbmap/hm.html?lang=eng
[10]
https://www.ourcommons.ca/Content/Committee/441/INDU/Reports/RP11564890/indurp01/indurp01-e.pdf

Committee on Industry and Technology.[11] A separate report from the Standing Committee on Industry, Science and Technology in June, 2021 recommends federal funding be deployed to support (local) partners, such as municipalities, in the "installation and ongoing operations" of broadband infrastructure.[12]

To dig further, concerns over the duplication (overbuilding) of existing infrastructure have been raised by incumbent ISPs in numerous municipal fibre network initiatives across Canada and the United States (Chattanooga, Calgary, Campbell River, Kansas City, Red Deer, Fredericton, etc.). Arguments put forward in opposition to Municipal Broadband Networks is that capital investments made by ISPs in fibre result in scale-efficiencies that are threatened by any additional infrastructure which could be used to provide similar services. Some ISPs have argued that they would be forced to increase the costs for their own services or, in extreme cases, abandon a local market altogether.[13] There is no evidence of these consequences having resulted from over 40 municipal broadband initiatives across North America.

1.5   The City already provides the public with opportunities to have free internet services at libraries, civic centres, and community centres. Sometimes the private sector provides access opportunities at coffee shops, stores, etc. Do residents already have sufficient access to free internet access?

The pandemic has illustrated the necessity of at home internet services, with research highlighting how gaps in at-home internet service delivery cannot be resolved by access in public spaces alone.[14] Many residents who are most in need of at-home internet services are also those for whom public space access is a barrier in itself (e.g. older adults). Low-income residents have the same needs in managing their households, finances and basic needs as higher income households, and the digitalization of basic service delivery (public and private) has compounded the need for at home internet regardless of socio-economic status. Despite similarity in the need for at home internet, low-income households are disproportionately affected by internet affordability barriers. Access to reliable high-speed internet at home enables residents to receive essential services such as education and healthcare, and participate fully in the economy and in their communities.

The City continues to work with private sector partners to expand public internet access. For example:

- The 2020 Digital Canopy initiative's donations were charitably extended for another year, meaning that free Wi-Fi network will continue to operate in 22

[11] Anderson, K. M. (2021). *Public Good Through Public Broadband: The City of Calgary's Fibre Network* (CRTC Prize for Excellence in Policy Research)

[12]

https://www.ourcommons.ca/Content/Committee/432/INDU/Reports/RP11439444/indurp07/indurp07-e.pdf

[13] Shaffer, G. (2007). Frame-Up: An Analysis of Arguments For and Against Municipal Wireless Initiatives. *Public Works Management & Policy, 11*(3)

[14] Robinson, L., et.al. (2020). Digital inequalities in time of pandemic: COVID-19 exposure risk profiles and new forms of vulnerability. *First Monday, 25*(7)

apartment buildings and surrounding areas with approximately 11,000 residents in low-income neighbourhoods until September 2022.

- Free Public Wi-Fi is being implemented in the common areas of 143 Community Centres and adjacent parks in Neighbourhood Improvement Areas, where feasible, by 2024. Similarly, Free Public Wi-Fi is being implemented in the common areas of 154 TCHC buildings by 2024.

1.6   In the ConnectTO pilot that involved issuing a negotiated Request for Proposal to for the private sector to provide more affordable internet in low-income communities, most of the buildings already had fibre available, and sometimes property owners/landlords stated that they would not allow an ISP to provide internet access to their building because the building already had an arrangement with another ISP. Is what the ConnectTO program is proposing duplicating what the private sector is already doing in a more comprehensive and financially reasonable way?

Based on lessons learned through the pilot Negotiated Request for Proposals (nRFP), the ConnectTO program is currently focused on interconnecting and centralizing City assets to deliver effective and efficient City services. Staff will report back on how excess infrastructure capacity on City-owned infrastructure networks can be used to bridge the digital divide.

Many of the buildings included in ConnectTO nRFP are provisioned with fibre that is privately-owned by a dominant ISP(s), and yet many residents in those buildings do not have sufficient high-speed internet at home. Affordability versus access to high-speed internet service is their issue. The intent of ConnectTO Phase 1 was to provide those residents with an affordable access option.

ConnectTO will not be engaged in delivering internet services to residences or businesses, rather, access to City owned fibre infrastructure may, in the future, be offered to private ISPs on a neutral and open access basis. Subsequently, any ISP who wishes to access the City owned network would be responsible for deploying their own infrastructure to connect from the City's network to the target facility, and to negotiate access to private residential or business facilities. This is what the CRTC defines as "facilities based competition", a regulatory model where the commission favours the building of infrastructure in-lieu of mandating access to incumbent networks (middle mile or in-building) by leasing alone. This is a model for competition that the CRTC has mandated.

In another nRFP area, fibre infrastructure itself is lacking along a commercial corridor leaving local businesses without sufficient high-speed internet service. The intent of ConnectTO nRFP was to provide these businesses with an affordable access option.

1.7   What is the right price and the right internet speed for people who need access?

The intent of ConnectTO is not for the City to directly provide affordable high-speed internet service to end users. The intent is for the City to collaborate with ISPs that will do so. Further, the current focus of ConnectTO is expanding City-owned fibre network to deliver secure and reliable City services. However, staff

intend to bring further reports back to City Council on how to leverage excess connectivity capacity from the City-owned network to bridge the digital divide.

True competition creates choices and lower costs for the consumer. ConnectTO has the potential, in the longer term, to significantly incentivize and catalyze increased availability in the internet service provider sector, resulting in more affordable internet access for Toronto residents. While there are multiple internet service providers in Toronto, much of these service offerings still rely on the core infrastructure owned by relatively few incumbents.[15]

The prohibitive costs for a newer entrants that do not have existing network assets mean that any new investments in infrastructure will be weighted towards higher income areas of Toronto, in many cases, those already experiencing rapid development, where there can be an expectation for short to medium-term return on investment. This leaves the majority of older, tower neighbourhoods out of scope for new network investment, and with the few incumbent ISPs already in place benefitting from limited viable competition.

There is limited capacity for the private sector, on its own, to be able to make a long-term investment in infrastructure in areas of the City where affordability is more of a factor. A municipality, like the City of Toronto, however, has the capacity and lower risk profile to be able to make strategic investments in "middle mile" infrastructure to lower the barrier of entry for those ISPs that would like to service the affordable internet access space in the market. As a result, ConnectTO has significant potential to increase competition and innovation, which is key for Toronto as a global technology centre.

1.8   How often does fibre need to be replaced or upgraded in a network?

Evidence from field examples show that there have been no large scale failure of a fibre network deployed with tier 1 components for the past 35 years. The average lifespan of tier 1 fibre conduit is 75 years, and routine maintenance of associated network hardware (i.e. transmission equipment), informed by industry best practices, will minimize network failures to incidents of damage caused by unforeseen events (i.e. damage from nearby construction). Industry standard response/repair times in these cases is less than 24 hours. Proper network design, which includes redundancies and backup routing, minimizes the risk of network downtime even further.

The City, in its ordinary course of business, manages and maintains a fibre optic network, staff in TSD and Transportation Services, for example, have long standing technical expertise in this area. Building out our capacity to manage a dedicated network of the proposed scope will require additional human resources with expertise in network design, analysis and management. The experiences of other Canadian municipalities have also provided invaluable lessons regarding the quality, capacity and engineering specifications required to deploy a robust and "future proof" network.

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[15] Winseck, D. (2016). Media Ownership and Concentration in Canada. In E. M. Noam (Ed.), *Who Owns the World's Media?: Media Concentration and Ownership around the World*

It is important to distinguish between replacement, upgrading, and maintenance. Fibre optic networks are quite robust, and therefore ideal for handling large amounts of data at very high speeds. They are also a requirement for a range of next generation wireless technologies (i.e. 5G requires a fibre connection to its base). The design of the network, including the selection of appropriate components and materials, has a significant effect on network performance as well as on the maintenance cycles required of all fibre networks. Fibre manufacturing technology has advanced considerably, with commercially produced fibre strands having very few material flaws (the primary cause of network degradation). Component failure, absent material flaws, is typically associated with poor installation processes (i.e. pulling the fibre through the conduit), or damage to the enclosing conduit that allows environmental ingress. Both of these risks can be mitigated with the application of strict construction and design standards.

2. Time Frame for Business Plan

On March 30, 2022, Executive Committee directed staff to provide the following in this supplementary report:

"A time frame for developing a ConnectTO Business Plan, which will include:

a. *the short, medium and long term costs of building and maintaining the proposed networks;*

b. *the end-user price and download/upload capacity that will be available through the City's Municipal Broadband Network;*

c. *proof of the City's ability to create better access and pricing for high speed internet than established Internet Service Providers, when the city does not have existing infrastructure or funding;*

d. *address how ConnectTO will gain access to apartment buildings that already have contracts with other Internet Service Providers;*

e. *the number of Full Time Equivalent staff required for the planning, implementation, and on-going operations and management of this project, in addition to the 1000+ existing Technology Services Full Time Equivalents;*

f. *evidence that price is the main factor that challenges the use of internet services in priority neighbourhoods, and not lack of computers, computer literacy, or other fears or concerns about internet use; and*

g. *a statement of the metrics for success, including the anticipated number of new internet subscriptions from residents who previously could not afford and/or lacked access to high speed internet."*

A full business plan on ConnectTO will be completed and submitted through the appropriate processes, supported by Financial Planning Division, for the 2023 budget cycle.

3. Justification for City-Owned Infrastructure

On March 30, 2022, Executive Committee directed staff to provide the following in this supplementary report:

"The justification for creating this new internet infrastructure, given that most buildings already have high speed internet, and affordable high speed internet plans are available to low income families with sufficient download/upload capacity for video streaming for classroom use"

It is important to note that ConnectTO is not an ISP service that provides internet directly to residences or businesses. City-owned infrastructure is also not new – rather, the City is expanding and interconnecting City-owned fibre to deliver better municipal services City-wide.

Toronto's Digital Divide

The current market leaves many Torontonians with inadequate, precarious, and unaffordable at home internet services; particularly those in equity-deserving deserving communities.

It is critical to differentiate between having access at home and the financial ability to maintain that access. Household internet services are "de-facto compulsory", meaning, without reliable internet at home, Toronto residents' face significant barriers to maintaining the basic activities of daily living. While having reliable internet access is, typically, taken for granted in higher income households, low-income residents frequently struggle to maintain basic connectivity. Research highlights the lengths low-income households must go to in order to "keep the internet on" including incurring debt and diverting finances from other necessities (e.g. utilities, food, and clothing).[16] Research has also highlighted how racialized communities, in particular, are frequently forced to choose between having internet at home versus having mobile services.[17] These are quantified examples of the limited options and opportunities for connectivity faced by low-income households.

ConnectTO creates an opportunity for the City to provide access to City-owned fibre networks – which are, and will continue to be, primarily used to deliver City services – to ISPs to support ISPs in delivering internet services to residents.

Affordable Plans for Low-Income Families

The low-cost internet services offered in today's Canadian marketplace are not mandated as participation is entirely voluntary on the part of ISPs. These plans are also not universally available to all communities in need.

Currently families who receive the maximum Canada Child Benefit and seniors who receive the maximum Guaranteed Income Supplement are eligible for the Connecting Families program. For a reference family of four, that corresponds to an adjusted family net income of $32,028. According to the most recent living wage calculation by the

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[16] Gonzales, A. (2015). The contemporary US digital divide: from initial access to technology maintenance. *Information, Communication & Society*, *4462*(December 2015)

[17] Reisdorf, B. C., Fernandez, L., Hampton, K. N., Shin, I., & Dutton, W. H. (2020). Mobile Phones Will Not Eliminate Digital and Social Divides: How Variation in Internet Activities Mediates the Relationship Between Type of Internet Access and Local Social Capital in Detroit. *Social Science Computer Review*

Canadian Centre for Policy Alternatives, the same family would need to have a net household income of approximately $70,000 to cover basic expenses and participate in their community in Toronto. Based on an analysis of the most recently available 2016 Census data, there were over 350,000 households who could materially benefit from more affordable Internet access and who would not otherwise be eligible for low-income Internet access programs.

Another group facing gaps are those who are not in families and are ineligible for the Connected Families program. These are the same residents who comprise a significant proportion of Torontonians living in poverty. According to the 2019 Taxfiler dataset from Statistics Canada, almost 250,000 individuals were in low-income and not living with family.

Businesses Lacking Adequate Connectivity

The business community has also given feedback to City staff for several years on the lack of availability of high-speed internet in some employment zones. The lack of fibre connection is preventing local businesses from making investments and expanding as they could if not constrained by bandwidth limitations

4. Cost Benefits Analysis and Comparisons

On March 30, 2022, Executive Committee also directed staff to provide the following in this supplementary report:

"A comparative analysis of short and long term costs, capital and operating, of existing service versus the proposed service; such cost analysis should separate the costs for service to City properties from service to residential communities and should also show the cost differences between using private sector providers for internet service versus City-owned and managed assets"

By interconnecting and centralizing City assets, based on current calculations, the City should see a return on investment on capital and operating costs approximately 6 years after starting this work. Once the project is successfully delivered, there should be a significant cost benefit savings annually.

A full business plan on ConnectTO will be completed and submitted through the appropriate processes, supported by Financial Planning Division, for the 2023 budget cycle.