



SUBJECT: Halton Digital Access Strategy Status Update
TO: Environment, Infrastructure & Community Services Cttee.
FROM: City Manager's Office

Report Number: CM-01-22

Wards Affected: not applicable

File Numbers: 155-03-01

Date to Committee: April 7, 2022

Date to Council: April 19, 2022

Recommendation:

Receive and file city manager's office report CM-01-22 providing an update regarding the Halton Digital Access Strategy review; and

Direct the City Manager to report back in June 2022 on the implementation of the Halton Digital Access Strategy, inclusive of a municipal infrastructure deployment model to support the multi-year 5G network installation by telecom service providers (based on options outlined in report CM-01-22), along with an associated financial forecast and a summary of formal agreements in support of the recommended deployment model.

PURPOSE:

Vision to Focus Alignment:

- Increase economic prosperity and community responsive city growth
 - Support sustainable infrastructure and a resilient environment
 - Deliver customer centric services with a focus on efficiency and technology transformation
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Background and Discussion:

Summary

- On April 21, 2021, Regional Council adopted Halton Digital Access Report No. ST-05-21 which authorized the development of a Halton-wide Digital Access

Strategy. The strategy will further the work to promote enhanced broadband services in both the rural and urban areas. Also, to establish a framework process to deal with requests from national and regional telecommunications companies to utilize municipal vertical infrastructure assets including streetlight poles (in their advancement of 5G plans).

- The exponential growth in the demand for mobile and internet services has led to major advancements in wireless network technologies from the current 4G networks introduced in 2010 to the world-leading 5G technology that presents significant economic opportunities for Burlington.
- 5G technology implementation will be a key economic driver over the next decade generating significant economic growth and it's important that Burlington be positioned to benefit from that growth.
- The next generation 5G connectivity will rely on both a comprehensive fibre network scalable to at least 1 Gbps services as well as a 5G wireless network across all of Halton Region. There are currently significant gaps in the fibre network in Halton, including Burlington which will need to be addressed to achieve the benefits of 5G technology.
- A 5G network implementation requires the attachment of wireless transmitting devices to vertical poles or buildings typically along road right of ways. The opportunity for Burlington is to give service providers access to vertical assets for these 5G device attachments on City streetlight and Burlington hydro poles.
- The four Hydro Electric Distribution companies, referred to as the Halton Utilities Group (HUG), have proposed a draft business model and implementation strategy for oversight and coordinating the deployment of 5G wireless technology that would leverage the context of a comprehensive assessment of options on a Halton Region-wide basis.
- General health concerns related to 5G technology have been raised. According to Health Canada, based on the available scientific evidence, there are no health risks from exposure to the low levels of radiofrequency (RF) electromagnetic fields emitted by 5G devices.
- On March 4, the Halton CAO's met with senior representatives from the telecommunications companies – Rogers, Bell, Telus and Cogeco. The discussion centered around Halton's Digital Access Strategy and telcos feedback

based their respective 5G business plans. Overall, there was a positive response to the Halton strategy for 5G implementation; and, there was agreement that a streamlined approach to permitting and deployment of municipal infrastructure would be beneficial with potential HUG coordination.

Strategy/process

Digital Access Strategy

In April 2021, Regional Council adopted Report No. ST-05-21 which authorized the development of a Digital Access Strategy, including:

- Broadband Digital Readiness Report:
 - Preparing implementation for Halton Region and the local municipalities - urban and rural.
 - Sizing next generation broadband network infrastructure.
- Benefits and Implementation plan:
 - Halton Region-wide 5-year digital access implementation plan.
- Strategic and commercial reports:
 - Individual reports for each of the local municipalities and Halton Region.

A consultant was subsequently retained - Nordicity Group Limited, to prepare the Digital Access Strategy. This work proceeded under the direction of Halton CAO's and was led by a staff team comprised from local municipalities and Nordicity. The staff team also worked with three staff subgroups: Legal, Engineering and Finance.

A copy of the Nordicity Digital Access Strategy Report, dated November 23, 2021, is attached as Appendix A for information. The report has also been presented along with a Regional staff report which was approved by Region of Halton at their meeting on December 15, 2021.

5G Technology Overview

Innovation, Science and Economic Development Canada (ISED) manages the governance and licensing of cellular spectrum in Canada. The most recent broadband spectrum auction took place in July 2021 and the successful telecom operators spent almost \$9 billion on new 5G spectrum and they are now actively working on 5G plan implementation throughout the GTA.

The term 5G represents the “fifth generation technology standard for cellular networks”. Over the last 50 years, there has been innovation evolving from 2G, 3G to 4G in order to meet consumer demand for a range of services with high quality and reliability. The

latest 5G technology will provide higher capacity than the current 4G networks creating bandwidth speed and capacity necessary for the massive number of connected devices relying on the internet. It's predicted that by 2024 more than 1.5 billion devices worldwide will be connected to 5G.

A fully integrated broadband network, inclusive of all urban and rural areas, is critical and essential infrastructure to create a reliable internet service for Burlington and to accommodate strong economic development. The "Gigabit economy" that is often referred to involves the commercialization of these technologies. Only 5G wireless networks can deliver higher data rates, improved spectral efficiency coverage, lower delays and greater reliability. With exponential growth in demand for bandwidth speed and capacity in wireless networks, it's expected that the current 4G will soon reach its limits.

Simply stated, 5G will enable applications that are currently not possible with 4G technology. The future with 5G will see increased broadband speeds, smart vehicle innovation, secure connections to the cloud, super high-definition media distribution and enhanced control of remote devices that will be used in areas of traffic management and metering infrastructure. The fibre and 5G antenna upgrades will increase the efficiency of roads, improve healthcare data and support more reliable power grids.

The provision of high-speed fibre based broadband will enable better services to be provided to all residents. Connectivity plays an important role in all aspects of our society: economic, social, health, education, resilience and next-generation municipal and agency services. Just as we move people, goods and services, fibre optics moves information – the digital version of people, goods and services.

5G/Small Cell Plan Implementation

The global deployment of 5G is taking place with varying degrees of implementation, ranging from full-scale builds to pilot projects that demonstrate capabilities and economic benefits. It entails installing a fibre network and the introduction of a proliferation or mesh of small cell equipment placed within the street right-of-way on streetlight and hydro poles. The appearance of the small cells is illustrated in Appendix B. It's important to note that in Burlington/Halton cell placements will utilize streetlight and hydro poles and not traffic signal poles.

Connectivity will rely on a fully integrated fibre-based wire line and 5G wireless network (small cells). Wireless infrastructure requires fibre optic to transport data and wireless service providers lack sufficient fibre optic to achieve this. 5G small cell is the next

advancement in mobile and wireless technology. To implement the 5G technology, network operators such as Bell, Rogers, Telus, Cogeco and others need to create a network of small cell technology in order to deliver the technology into mobile devices, homes and businesses. The small cells serve as antennas which are similar in size to a standard laptop and can be installed on top of buildings, streetlight and utility poles. Based on this, local municipalities and hydro distribution companies can leverage their existing pole infrastructure to facilitate the small cell needs and 5G deployment.

The small cell technology is a major uplift in network infrastructure for wireless service providers. In order to minimize the impacts of the small cell equipment on the streetscape, some cities have addressed the concern for clutter and design by redesigning street light poles into “smart poles” that incorporate the required features needed for 5G small cell deployment. Urban design standards will apply to all pole attachments in accordance with installation approvals.

Service Providers

The Halton CAO's have met with representatives from major national telecommunications companies for introductory meetings including – Rogers, Bell, Telus and Cogeco. The Halton's Digital Access Strategy was discussed, and feedback was received based on their respective 5G business plans. Overall, there was a positive response to the Halton Digital Access Strategy for 5G implementation; and there was agreement that a streamlined approach to permitting, municipal infrastructure deployment etc., would be beneficial with HUG coordination.

Among other comments shared: continue to collaborate with carriers to pilot the HUG process to derive key learnings before full implementation; form a collaborative for open dialogue with each telecommunications service provider for broadband deployment; and, recent legislation ([Ontario Connecting More Communities to High-Speed Internet Access](#)) introduced on March 7, 2022 will need to be reviewed against proposed regional approach.

5G Health Studies

Halton Region's Public Health Department and Public Health Ontario has identified Health Canada as the authority on health effects of cell phones, cell phone towers, antennas and 5G devices.

In Canada, Industry Canada (ISED) sets stringent standards for radio frequency emissions for all emitting devices including cell phones and towers, which concord with

those of international organizations such as the Institute of Electrical and Electronics Engineers, International Telecommunications Union and Federal Communications Commission. Similarly, Health Canada sets RF standards for devices under its Safety Code 6 within its public health mandate.

Both ISED and Health Canada have concluded that the RF emissions – including those from 5G networks, do not pose a danger to the public.

Options Considered

HUG Model

One of the critical aspects of the Regional 5G deployment relates to how to administer the system in an efficient manner.

The Halton Utility Group or local hydro companies (HUG) through their non-regulated affiliated companies, are proposing a new business model to coordinate and streamline the deployment of the 5G wireless technologies by the telecommunications companies leveraging municipal assets, both City and Hydro owned. Based on the HUG draft proposal, HUG intends to provide/coordinate the majority if not all of the permitting, inspection and installation work on behalf of the municipalities. There are a number of details that need to be resolved such as the handling of municipal consent permits and related charge-backs.

In the coming weeks, the Regional CAOs and Hydro CEOs will work closely to discuss and refine the development of business a model and governance framework.

Strategy Development: Next Phase

Staff will present a report in June 2022 to Committee to endorse a Halton Digital Access Strategy which will also accompany information on the financial analysis and formal agreements with service providers. Similarly, in the coming months, staff of the local municipalities and Halton Region will continue to report to their respective Councils to also consider and approve their respective customized local 5G Commercial Strategy reports as prepared by Nordicity.

The staff working team will continue its work to develop a Halton Digital Access Strategy implementation business model and governance framework. New standards, processes and agreements will need to manage both operational and financial risks while preserving aesthetics and public safety.

A consultant will be engaged to work with municipalities and locally-owned hydro companies regarding the detailed development of the HUG model.

At this point, options for implementation could include: i) HUG, ii) affiliated non-regulated companies (ie BESI), iii) a hybrid involving a phase-in of HUG after starting with non-regulated affiliates. Staff will be reporting back to Committee in June with a request to endorse a recommended approach.

Financial Matters:

Total Financial Impact

There is an opportunity for generating annual revenue from the use of municipal vertical infrastructure assets as the mounting system for 5G small cell deployment. However, work in this area continues with the Halton Finance sub-group in consideration of the cost of installation, ongoing maintenance and administration.

Source of Funding

Not applicable.

Other Resource Impacts

Not applicable

Climate Implications

Not applicable

Engagement Matters:

Halton Digital Access Strategy meetings have been held on a weekly basis with a Halton municipalities' staff working group and sub-groups. Bi-weekly meetings have involved Halton CAOs. There have also been meetings with internal stakeholders and telecommunication providers. Information regarding the Region staff report ST-08-21 regarding the Halton Digital Access Strategy Report was circulated to Council members in December 2021. There is also a meeting being planned with local hydro companies' CAOs and Halton CAOs. Staff working group and CAO meetings will continue for the duration of Strategy development.

Conclusion:

Report CM-01-22 provides information on the status of the Halton Digital Access Strategy and the key considerations that remain under review. By participating in the Halton Digital Access Strategy review with our Halton colleagues, City staff are continuing to help form a strategy that provides the essential 5G services to the City.

Respectfully submitted,

Mike Greenlee
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Appendices:

- A. Halton Digital Access Strategy Report
- B. Small Cell Illustration

Report Approval:

All reports are reviewed and/or approved by Department Director, the Chief Financial Officer and the Executive Director of Legal Services & Corporation Counsel.