

PART 2 of 2 - Internet Service: Last Mile Strategy

(As part of its program to rectify unserved or underserved areas with respect to internet services, the province engaged a study by Brightstar, Markham, Ontario. The firm submitted two reports in March 2018. Last month, we published the executive summary of the 50 page Middle Mile Strategy report. This month we focus on "Last Mile Strategy").

Internet service improvements are being handled by Develop Nova Scotia (formerly Water Front Development Corporation). Develop NS is currently administering a pre-qualification of ISP companies, who will be permitted to submit construction and implementation plans starting later this year. Pre-qualification deadline is mid-March 2019.

Develop Nova Scotia has indicated following selection of approved ISP providers, municipalities or any group may apply for funding assistance from the \$190-Million Internet Fund, but they must include their chosen ISP provider and include all relevant data concerning the ISP. Develop NS says it makes recommendations to the fund, who approve funding allotments.

Executive Summary

Significant parts of rural Nova Scotia are either unserved or under-served with respect to high-speed Internet services. This means businesses, citizens, health workers, and education providers lack access to the benefits of utilizing the Internet for work or pleasure. The Province of Nova Scotia recognizes access to the Internet is essential to the province's economic and social well-being. Enhancing a connected Nova Scotia, especially in the unserved and under-served communities, will help bring sustainable services to all parts of the Province and help grow the local and provincial economies.

Part of the vision for a connected Nova Scotia includes the expansion and upgrade of the networks needed to deliver broadband Internet services. This includes the middle mile and last mile networking equipment. Last mile is the final leg of a telecommunications network that delivers Internet services to end-users. It connects the middle mile—normally from a Point of Presence (POP) location—to the users in that geographic area. The last mile technology can be delivered by a wired, wireless, or satellite solution, and the actual distance covered may be anything from a few metres to many miles, depending on the proximity of the end user to the middle mile POP, as well as on the technology being used.

A middle mile strategy, which includes infrastructure performance goals, a reference design, and financial analysis, was released in March, 2018. One of the key findings of the middle mile strategy was that a last mile strategy was required, since the business case for the expanded middle mile infrastructure required last mile revenue in order to be financially viable. The current document, Nova Scotia Department of Business Last Mile Strategy, is complementary to that of the middle mile strategy.

Brightstar's development process for the last mile strategy included consulting with Internet Service Providers (ISP), mapping existing ISP last mile infrastructure, creating reference designs for wireless and wireline last mile networks to address service gaps, conducting the business case analysis, and creating a satellite strategy to ensure an option exists for customers who may not have access to the expanded last mile infrastructure.

The last mile infrastructure that is developed should support Internet service speeds of at least up to 50 Mbps download and 10 Mbps upload for wireline last mile services; and at least up to 25 Mbps download for wireless last mile and satellite services. The 50 Mbps target is consistent with recent CRTC goals for connectivity in Canada. A 25 Mbps download service is appropriate for Internet browsing, and video streaming purposes for a small household. The 50 Mbps target is appropriate for heavier use and can support multiple connected devices simultaneously within a household or business. These last mile speed targets are tabulated below.

- Service Type Minimum Speed (Mbps) - Wireline (e.g., Fibre and Hybrid Fibre-Coax) Up to 50 Mbps down/10 Mbps up.
- Fixed Wireless Service - Up to 25 Mbps down/5 Mbps up;
- Satellite Service - Up to 25 Mbps down/1 Mbps up.

In terms of coverage, the last mile infrastructure should cover at least 95 per cent of populated property locations outside of urban Sydney and urban Halifax with a wireline or wireless service. The majority of the balance of populated rural property locations could then be serviced through satellite technologies. Due to the expense of the last mile infrastructure, the timeline for its usefulness must extend over several years. For the last mile infrastructure, the team is recommending that the infrastructure electronics selected for design should be suitable to meet 5-year de-



mand projections.

Proponents should, however, be asked to indicate how they will address scalability to help ensure continued growth in the quality of the service.

The Brightstar team has developed a reference wireless and wireline design for the expanded last mile infrastructure that can meet the infrastructure performance goals. The reference design was developed so as to estimate the costs of the expanded infrastructure and to serve as a reference for evaluation of potential applications for funding from the service providers. The reference design for the last mile infrastructure will very likely not be the actual design to be implemented by the service provider(s), since there are many possible design solutions. For example, the technologies proposed for implementation by the service providers are not likely to align perfectly with those projected by the team to be built out in all areas where there are service gaps. The reference design is based on Internet demand maps generated from Property Valuation Services Corporation (PVSC) data and consider existing last mile infrastructure supply, using confidential service provider input.

Using 5-year demand projections derived from the PVSC property locations and published Internet usage forecasts, the wireless reference design shows a need for approximately 55 site locations.

Similarly, the wireline reference design shows a need for approximately 8,900 km of last-mile fibre. The variation in infrastructure requirements for tower sites and last mile fibre exists because a trade-off exists between cost and wireless and wireline coverage.

If all partners contribute, the expected benefit is that approximately 72,000 under-served households will have access to broadband speeds consistent with the infrastructure performance goals.

Even with this expanded infrastructure, there will remain some remote areas of the province that may still not have access to high-speed Internet services. To enable service for a majority of these users, Brightstar is recommending that Nova Scotia issue an RFP (Request for Proposal) for satellite services that are capable of achieving the satellite broadband speed targets of at least 25 Mbps download and 1 Mbps upload.

It is projected that between roughly 15,000 and 24,000 households could benefit from a satellite service in areas where suitable wireline or wireless services will be unavailable from the expanded broadband infrastructure.

The estimated total last mile infrastructure cost to implement the 5-year reference design is about \$250-300 million. The annual last mile operating costs are estimated to be about \$8-10 million.

When combined with the middle mile business case for

the 5-year design, the total infrastructure cost is estimated to be about \$300-500 million, while annual operating expenses are estimated to be about \$10-15 million.

Recommendations:

Coverage: At least 95 per cent of populated property locations outside of urban Sydney and urban Halifax.

Speed targets:

Wired: 50 Mbps download/10bps upload

Wireless: 25 Mbps download/5 Mbps upload

Timeline:

Build: 2-5 years to complete the build

Infrastructure: electronics built to meet 5-year network demand projections, with requirement that they can evolve to continue to meet future demands

Finances:

Government and its partners provide investment as required to alleviate market failure and create the business case for private sector to proceed; Subsidies provided should support capital costs and not be provided for ongoing operating expenses

Process:

Recommend competitive process for all services, inclusive of those that may have limited providers, such as satellite.

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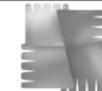
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