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Standing Committee on Industry, Science and Technology

Study on Broadband Connectivity in Rural Canada

Comments

of

Northwestel Inc.

7 February 2018

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Submission of Northwestel Inc.
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I. Introduction

1. Northwestel appreciates the opportunity to participate in this consultation on important matters related to broadband connectivity in rural Canada and we are hopeful that this consultation will result in a plan to continue to improve rural connectivity in Canada's remote North.

2. Northwestel is the incumbent telecommunications service provider for Northern Canada, serving 125,000 Canadians in 96 communities spread throughout the Yukon, the Northwest Territories, Nunavut, Northern British Columbia and Fort Fitzgerald, Alberta. We also provide cable TV services in Whitehorse, YT, Yellowknife, NT, Fort Smith, NT, Norman Wells, NT, Fort Nelson, BC and High Level, AB. We are one of the largest private employers in the north as most of our 600 employees live and work in our northern communities.

3. In these comments, we provide our response to the Standing Committee's questions where we highlight the high cost of provisioning broadband in the remote North, the necessity for public private partnerships, access to funding, and the need to consider redundancy in future funding programs.

4. As the largest Internet provider in Canada's North, we know well the challenges of providing Internet to rural and remote areas at speeds that are comparable to urban areas in Southern Canada. It has been long recognized that it is a challenge to serve rural and remote communities with comparable speeds due to vast distances and low population densities and because input costs are substantially higher than in urban areas. In Section IV below we explain in detail the challenges we face. We begin this submission by outlining the status of Internet facilities in our 96 communities and are pleased to describe the investments we have made alone and in partnership with Governments to ensure the ubiquity of broadband access throughout the majority of our communities.

II. The Status of Internet Services in the Remote North

5. In early 2013, 52 of 58 terrestrial served communities in our serving area had at best 5 Mbps download speeds, and one community had no Internet service at all. Our largest residential Internet package in our largest communities was 50 Mbps download and 2 Mbps upload with 150 GB of usage included. Since then, with the completion of our 5-year modernization plan, the largest package available to residential customers in the Company's largest communities has grown to 250 Mbps down and 15 Mbps upload with 500 GB of usage included in the package. Most importantly, we have provisioned 15 Mbps

download with a 200 GB usage included in the package price to all 60 terrestrial served communities by the end of 2017[1].

6. This rapid growth in the availability of higher speed Internet was made possible by our substantial investment in fibre connecting the remote North to Southern Canada, and in our smaller routes connecting communities by microwave transport spurs. About 50 fibre and microwave backhaul projects completed since 2013 have resulted in increasing our total network transport capacity by more than 20 times, and increased capacity on most microwave spurs by as much as 500%.

7. With regards to communities in our service area supported with satellite, at of the beginning of 2018 we provision 14 of the 36 satellite served communities with broadband Internet ranging from 2.5 to 5 Mbps download service[2]. More importantly, as will be highlighted below, with the support of Innovation, Science and Economic Development Canada's Connect to Innovate program, we will provision all 25 Nunavut communities with 15 Mbps download and 2 Mbps upload service before the end of 2020. By then, we will have successfully brought broadband access to all our communities in Northern Canada but one. [3]

8. In addition to these network upgrades by Northwestel described above, in 2017 the Government of the Northwest Territories (GNWT) in partnership with Northwestel and Ledcor provisioned the Mackenzie Valley Fibre Link (MFVL). The MVFL is a high capacity fibre network with transmission rates up to 100 Gbps which extends about 1200 km across the Northwest Territories starting in the south at McGill Lake, NWT and proceeding north up the Mackenzie Valley to Inuvik. It runs through the Northwestel served communities of Fort Simpson, Wrigley, Tulita, Norman Wells, Fort Good Hope and Inuvik.

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[1] In early 2013, 51 terrestrial served communities had 5 Mbps DSL download service and one community had no broadband Internet. Six communities had various speeds between 16 and 50 Mbps download service provided over our cable television platform. With completion of our 5-year modernization plan that began in 2013, we have provisioned all terrestrial served communities with 15 Mbps download service plus an additional two satellite communities upgraded with microwave transport and then provided with 15 Mbps download service. Our six cable tv communities have also been upgraded to between 100 to 250 Mbps download service.

[2] With regards to satellite served communities since 2013, three communities were upgraded from 1.5 to 2.5 Mbps download service, 11 communities were upgraded from 2.5 to 5 Mbps download service and 2 communities were upgraded to 15 Mbps service after receiving transport upgrades to Microwave radio.

[3] After completion of the Nunavut upgrades 85 communities will have access to at least 15Mbps, ten will have access to 5 Mbps and one satellite served community (Bob Quinn, a community with less than 10 households) in Northwestel's service area will not have broadband Internet from Northwestel.

9. These transport investments (both Northwestel's and GNWT's) ultimately allow for the provision of improved telecommunications services including higher speed Internet services being available at lower prices than could have been available prior to these investments being made.

III. <u>What Constitutes Acceptable High-Speed Service?</u>

10. The Canadian Radio-television and Telecommunications Commission (CRTC) has established a universal service objective of 50 Mbps download and 10 Mbps upload[4]. In many remote communities including much of Canada's remote North it is not reasonable that this objective will be achieved in the near future. However, while this is a very ambitious target, we support this aspirational target for terrestrial served communities.

11. With regards to communities that rely on satellite service for backhaul transport, of which there are about 100 communities in Canada[5] including 36 communities in Northwestel's serving area, we believe that pursuing a 50/10 objective is too ambitious given current satellite technology[6]. If this requirement is established for proposals to access funding, we believe that the vast majority of satellite communities will not qualify for funding in the near future given the availability of satellite bandwidth across northern Canada in the near term. Therefore, for the foreseeable future, we recommended that the goal for satellite served communities should be 15 Mbps download and a 2 Mbps with a minimum usage of 100 GB per month.[7]

12. In a few cases, a satellite served community may become served with a terrestrial based solution, and in these cases a target of 50 Mbps download and 10 Mbps upload may be reasonable.

13. In Northern Canada, to achieve these aspirational targets public-private partnerships are required to bring higher levels of service to most communities given the sparse population and challenges described in Section IV. We support these partnerships that improve availability of speeds even if those speeds continue to be below the targets described above and submit that priority of public funding should be focused on funding to communities in the North that are not yet receiving 15/1 Mbps.

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[4] Telecom Regulatory Policy CRTC 2016-496 21 December 2016 Modern telecommunications services – The path forward for Canada's digital economy.
[5] The CRTC Satellite Inquiry Report October 2014.
[6] We believe that setting a target beyond 15 Mbps/2 Mbps may prevent applicants from bidding, excluding residents of satellite-dependent communities from any benefit from the broadband fund; or it may unfairly limit the benefits to only a very small subset of residents located in satellite-dependent communities in light of the current availability of bandwidth that can be used by bidders seeking to provide service using subsidy.
[7] Bell et al(CRTC)16Oct17-25, TNC 2017-112.

IV. Financial Challenges of Implementing High-Speed Services in the Remote North

14. In Canada's remote North it is a challenge to meet national speed targets such as those set by the CRTC. The cost to provision Internet service both on the access side (i.e., within the local community) as well as on the backbone transport make it exceedingly difficult to achieve these goals. Although we have made significant strides to improve both access and transport facilities as explained in Section II, implementing further speed improvements will be an ongoing challenge.

IV.1 Costs in the North are much higher than in Southern Canada

15. To highlight just a few of the characteristics of the remote North, 43 of our 96 communities do not have year-round road access and of these, 30 have no road access all year. This means that equipment and supplies must be flown in, or brought in, by ocean barge in the case of the Eastern & northern Arctic. This substantially increases the cost of telecommunications infrastructure and maintenance. In some cases, these remote communities may have between two or three commercial flights per week, which means air charters often need to be booked causing additional costs.

16. The distance between communities also increases the costs to serve these communities. The 96 communities are spread across nearly 40% of Canada's land mass. In the most extreme case, Grise Fiord, NU, is 1500 km from the nearest hospital (in Iqaluit) and 400 km to the nearest community (Resolute).

17. In addition, our commercial power costs in the North are significantly higher than the rest of Canada. In Nunavut, commercial rates can be as high as $1.11/kWh (Whale Cove) and $1.06/kWh (Grise Fiord) with the lowest rates in Iqaluit at $0.51/kWh[8]. Rates can be 15 times higher than in equivalent consumption bands in Quebec. Moreover, rates in Nunavut are expected to go up an average of 7.6% in 2018-2019[9] with rates in Iqaluit increasing until they are equal to rates in other communities.

18. While commercial power rates in the Northwest Territories and Yukon are lower than in Nunavut, they are nearly double the national average and climbing at a higher rate than inflation[10]. As electricity is a

[8] http://www.qec.nu.ca/customer-care/accounts-and-billing/customer-rates
[9] https://www.qec.nu.ca/qec-submits-2018-2019-general-rate-application)
[10]https://www.neb-one.gc.ca/nrg/ntgrtd/mrkt/snpsht/2017/02-03hghcstpwr-eng.html?=undefined&wbdisable=true)

key input cost to broadband service delivery, continued rate increases place upward pressure on residential and business rates.

19. In addition to commercial power, our network's remote locations require us to generate our own power at many sites as no commercial power is available. We maintain approximately 4000 km of fibre optic cable and 8000 km of microwave radio, serving 80,000 residents. Operating our remote microwave sites pose significant challenges as we must generate our own power at 81 of 156 sites.

20. Many of these sites (36) can be accessed by helicopter-only, and fueling these sites requires diesel be transported to site by helicopter. Repair and maintenance trips to these sites are also very costly.

21. Low population density also prevents Telecom Service Providers (TSPs) in the remote North from enjoying efficiencies available to service providers in the South. 70% of our communities have less than 500 people and 75% have less than 200 subscriber lines. Therefore, the remote North does not benefit from the same economics of scale as do providers in Southern Canada.

22. The most remote communities in our serving area are served by satellite backhaul, as terrestrial based solutions are typically not practical or economical for these locations. The high cost of satellite bandwidth adds to the challenges we have providing broadband Internet to the 36 communities served by this technology.

23. As highlighted by the CRTC's Satellite Inquiry Report, "The largest single cost item for providers of telecommunications services that serve satellite communities are payments to satellite operators for FSS capacity, which range from 37% to 65% of a provider's costs of delivery of satellite capacity to a community. Given that satellite transport is significantly more expensive than terrestrial transport and that it makes up a large portion of the overall costs of delivery of capacity to a community, FSS capacity expenses play a major role in the difficulty for providers to offer telecommunications services, especially broadband Internet services, that are comparable to those in terrestrially served communities."[11]

24. Furthermore, on-going maintenance expenses are typically much higher in satellite communities as highlighted by the CRTC's Satellite Inquiry Report. "Maintenance expenses generally make up the third largest expense related to the delivery of satellite capacity to a community Maintenance personnel

[11] The CRTC Satellite Inquiry Report October 2014 Para. 87.

often need to be flown into communities to service or install equipment and may receive higher compensation than their southern counterparts due to the higher cost of living in satellite-dependent communities, both of which contribute to higher maintenance expenses compared to terrestrially served communities."[12]

25. Northern input costs are substantially higher than in Southern Canada including labour, transportation, and electricity. This challenge, combined with the small community size and vast distance between communities means that northern service providers do not have the economies of scale nor revenues from other sources to cross subsidize the provisioning of broadband Internet that would meet the speeds available in urban Canada.

IV.2 Regulation Restricts Price Increases

26. The challenges we face operating a telecommunications network in Canada's North are underscored by the fact that our terrestrial Internet services are **rate regulated** by the CRTC and with the exception of our two largest communities, residential access services are priced below cost[13]. Moreover, residential rates are not permitted to increase. A complex system of cross-subsidies between business and residential, urban and rural is required to sustain residential Internet services below cost. While we have brought 15 Mbps service to all terrestrially-served communities in the North, the business case is based on significant implicit cross subsidies. Specifically, revenues from services offered in the two largest centers (Whitehorse and Yellowknife) cross subsidize rural communities, and business customers cross subsidize residential subscribers. Given the high level of cross subsidization and the regulatory restrictions on pricing, there is little room for any additional cross subsidy to be utilized to provision higher speeds in remote areas.

V. <u>Regulatory and Policy Changes to Encourage the Implementation of High-Speed Service</u>

27. First and foremost, public-private partnerships have been essential to our success in enhancing connectivity and coverage. Funding envelopes that are dedicated to Northern and rural telecommunications infrastructure development are essential in order to recognize the uniqueness of the

[12] The CRTC Satellite Inquiry Report October 2014 Para. 89.
[13] Telecom Decision CRTC 2015-78, 4 March 2015, Northwestel Inc. - Tariffs for terrestrial retail Internet services, Dissenting opinion by Commissioner Candice Molnar.

North (i.e., remote locations, higher input costs, limited access, small client base). This is especially true for small fly-in communities. By working in partnership with various governments, we have managed to make significant improvements towards providing comparable Internet services at comparable rates as those offered in Southern Canada. Although there are many funding programs/partnerships that we have participated in over the last 18 years, three of the most important are:

i. Yukon - From 1999 to 2003, Northwestel and the Yukon Government partnered to roll-out the Connect Yukon project. This partnership provisioned high speed Internet to every community in the Yukon by the end of 2003. This was one of the first important examples of how public/private partnerships enabled early adoption of high-speed Internet. Through this initiative, Yukon was one of the first jurisdictions in Canada to provision every community with broadband Internet.

ii. Northwest Territories - Between 2012 to 2015, Falcon Communications, Industry Canada's Strategic Infrastructure Fund and Northwestel partnered to bring high speed Internet to 9 communities and 4G cellular service to 15 communities in the Northwest Territories.

iii. Nunavut - Most recently, starting in 2018, with the support of Innovation, Science and Economic Development Canada's Connect to Innovate program, Northwestel is provisioning high speed Internet to all 25 communities in Nunavut by the end of 2020. This $125 million project enhances the satellite backbone which will allow Northwestel to provision 15 Mbps service to residential and small business customers across Nunavut. Customers will be able to browse, load and stream at speeds that are at least three times faster than the highest speed Internet connection available today.

Recommendation #1:

28. Given the sparse population and challenges described in Section IV, future broadband programs must dedicate funds for the North that recognize the unique characteristics of operating there and high costs including ongoing operating costs of provisioning high speed Internet in the North.

29. Another matter that government programs will need to consider in future broadband subsidies will be the issue of redundancy. In the remote North, redundancy in telecommunications backhaul is typically more limited than in Southern Canada due to high costs and low population density of northern communities. Northern Canada is dependent on three primary fibre routes, one fibre route traveling south from Yellowknife to Edmonton, AB, one from Inuvik, NT, to Edmonton, AB, and another route

traveling from Dawson City YT, to Edmonton, AB. Highway construction and forest fires have severed cables a number of times and the impact to public safety and the economy can be quite significant. Businesses increasingly rely on the Internet to operate 24/7, whether for point-of-sale equipment, inventory management, purchasing, or for airline passenger check-in. Any service outage can result in complete closures of these businesses until service is restored resulting in a real economic impact on these businesses. An example of an outage occurred on 23 September 2015, when a construction contractor (not working for Northwestel) cut our fibre transport near Watson lake, Yukon. Internet in all Yukon Communities as well as in the Mackenzie Delta was shut down for 6 hours during business hours. Although we have committed to improving redundancy in the telecommunications system, for example, in May 2011 we completed a $10 M project to construct a fibre optic cable link between Fort Nelson, BC and Hay River, NT, more must be done to reduce the risk of outages to Internet caused by these events.

30. The solution to these fibre cuts is to build fibre rings; however, government funding programs have typically not invested directly in redundancy, most likely because redundancy does not explicitly result in faster-speed or higher bandwidth service offerings at lower prices to consumers. However, investment in redundancy is extremely important and can only be achieved in the North with significant Government support.

Recommendation # 2

31. If Northern Canada is to be fully engaged in the digital economy with reliable Data and Internet services comparable to the South, public broadband programs must provide funding specifically for infrastructure that will add redundancy to the telecommunications infrastructure in Canada's most remote northern regions. We recommend that broadband programs set aside specific funds specifically to address redundancy concerns in remote and rural regions of Canada.

32. As we explained in Section III, the CRTC has established a universal service objective of 50 Mbps download and 10 Mbps upload. However, with regards to communities that rely on satellite service for backhaul transport, due to the exceptionally high cost to provision Internet in these communities, particularly the high cost of satellite backhaul, we believe that the vast majority of satellite communities will not qualify for funding in the near future of access to funding requires these speed levels. Therefore, a more reasonable target for satellite served communities must be established.

Recommendation # 3

33. *For the foreseeable future, we recommended that the speed target for satellite served communities be set at 15 Mbps download and a 2 Mbps with a minimum usage of 100 GB per month*.

34. The costs to build out infrastructure to the remote North are substantial. When coupled with a small customer base and high operating and maintenance costs, as described in section IV, TSPs face a significant economic challenge finding a business case to recover the investment. However, this challenging business case is made significantly more adverse by a requirement to provide wholesale access. There is simply not enough revenue from local services to support one service provider let alone two or more.

35. Wholesale access requirements increase the amount of government subsidy needed to fund the provision of Internet and the amount of communities in need of subsidy. We caution that imposing low wholesale pricing in Canada's highest cost regions undermines incentive to build, expand and invest. Clearly rates for wholesale services must reflect the true cost of providing Infrastructure including the risks facilities-based providers take in providing networks. When prices are not reflective of the cost of investment, investments will not be made. A recent example of how the heavy hand of regulation applied in error resulted in delays to facilities being provisioned was the CRTC's decision on our Wholesale Connect tariff which erroneously assumed certain costing methodologies which heavily underestimated our true costs and resulted in regulated wholesale pricing so low that we were forced to suspend a planned fibre build from Stewart Crossing, YT, to Dawson City, YT[14]. The CRTC later reversed its decision on two key costing elements in the Wholesale Connect costing model and we were able to resume the fibre transport build.

Recommendation #4

36. We recommend that the Government abandon the obligation for subsidy recipients in Canada's remote North to offer Wholesale Access and instead promote affordability through retail price commitments.

[14] Northwestel's Wholesale Connect service transports competitors' telecom traffic across the Company's fibre and microwave network from a point of presence in a northern community to a southern hand-off point. In Telecom Order 2013-93 the CRTC set Northwestel's Fibre Cost Factor (FCF), that is the ratio of fibre cable investments to the related fibre electronic investments, erroneously low. The CRTC's initial decision also did not appropriately estimate Northwestel fibre investment risk by setting a mark up on phase II costs at 30%. In Telecom Regulatory Policy 2013-711, the CRTC reversed its decision recognizing that Northwestel (the far North) is in a different stage of Fibre investment with relatively more fibre plant being provisioned and based on historical data increased Northwestel's FCF by 685% from the earlier decision. The CRTC also increased the mark-up over phase II costs from 30 to 40% to "recognize the additional risk associated with the upfront investment in fibre facilities in Northwestel's terrestrially served areas…because of the challenges of provisioning fibre facilities to small remote terrestrially served communities scattered over the company's operating territory."

Mandating wholesale access drives up the cost of the subsidy required and reduces investment in high speed Internet to some remote communities.

VI. Summary

37. Despite the low population density of Canada' remote North and the high cost of operating telecommunication networks in these regions, substantial progress has been made to bring broadband Internet to the remote North for both terrestrial and satellite served communities. However, in addition to the investment of telecom service providers such as Northwestel, this could not have been achieved without public subsidies and partnerships with various governments. In sum, to address how Canada can best continue to alleviate the existing divide between high speed Internet available in the North relative to Southern Canada, we recommend that:

    i. Future broadband programs must dedicate funds for the North that recognize the unique characteristics of operating there and high costs of providing high speed Internet in the North.

    ii. If Northern Canada is to be fully engaged in the digital economy with reliable data and Internet services comparable to the South, public broadband programs must set aside funds specifically to address redundancy concerns in remote and rural regions of Canada.

    iii. For the foreseeable future, speed targets for satellite served communities should be set at 15 Mbps download and a 2 Mbps with a minimum usage of 100 GB per month.

    iv. The Government must abandon the obligation for subsidy recipients in Canada's remote North to offer Wholesale Access and instead promote affordability through retail price commitments.

38. We thank the Standing Committee on Industry, Science and Technology for initiating this proceeding and eagerly await an outcome that will support continued improvements to broadband connectivity in Northern Canada.