Telecom Notice of Consultation CRTC 2017-112

Development of the Commission's broadband funding regime

Intervention of the First Mile Connectivity Consortium

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General comments and introduction

1. The First Mile Connectivity Consortium (FMCC) is an incorporated independent not-for-profit national association. Our members are First Nations Internet service providers – what we call "community/regional intermediary organizations." Our associate members are university and private sector researchers and others interested in Indigenous and community communications and telecommunication services for the public good. Our work focuses on innovative solutions to digital infrastructure and services with and in rural and remote regions and communities across Canada. More details about our members and activities is available: http://firstmile.ca

2. The FMCC is seeking means to ensure access to reliable, affordable and scalable broadband in rural, remote, northern and Indigenous communities, in ways that involve residents of these communities in the provision of digital services. Importantly, our FMCC member organizations provide and support the delivery of broadband-enabled public services such as online education and telehealth, as well as entertainment services for household consumers.

3. The FMCC commends the Commission's decision in CRTC 2016-496 not only to establish a basic service objective for broadband, but also to create a new funding mechanism to support its implementation in underserved regions. In this intervention, we comment on the Commission's proposal for the structure and governance of this new mechanism.

4. In our intervention in CRTC 2015-134, we put forward a proposal to modify and update the National Contribution Fund (NFC), which is the existing Commission-administered funding mechanism for digital infrastructure and services in under-served and unserved regions. Specifically, the FMCC pointed out the following shortcomings of the Canadian Telecommunications Contribution Consortium (CTCC):

   - **Existing approaches have not been effective for the North**. As demonstrated by a number of interveners from rural, remote, Northern and Indigenous regions, and well as academic, government and private sector funded studies, residents of northern communities continue to experience poor reliability, inadequate bandwidth, and high prices, despite years of Commission-administered funding for the infrastructure.

   - **The existing mechanisms are open only to incumbents.** A variety of organizations other than incumbent operators build and provide infrastructure and services in rural, remote, Northern and Indigenous regions. However, these organizations cannot directly access existing funding mechanisms. In the interest of competitive fairness and equity, we stressed that any funding mechanism provided by the Commission must be open to all providers.

   - **The current CTCC board consists entirely of members who are based in southern Canada, most from the telecommunications industry.** The board does not include any representatives from Northern regions or community-based service providers. In addition, the criteria and selection process for board members are not transparent.

- **Information about existing criteria used to access and approve proposals for CTCC funds is difficult to find.** Our search of the CRTC website did not find any reports or information concerning the level of detail required in proposals currently put forward by telecommunications providers to access the current NCF fund.

5. To address these shortcomings, the FMCC proposed a new funding mechanism, the Northern Infrastructure and Services Fund (NISF). The distinguishing characteristics and core components of this proposal are included in paragraphs 11 and 12 below.

The 'Whole Community' approach to broadband development

6. The FMCC encourages the Commission to examine strategies for the new broadband funding mechanism that will support organizations based in these regions to leverage broadband infrastructure for community and economic development. Therefore, we propose that the Commission consider community as well as household needs by applying project assessment metrics that include a 'whole community' analytical framework. We introduced this framework during our presentation to the CRTC BSO hearings, and further documented it in our report to ISED in 2016.[1] The 'whole community' approach consists of four interconnected levels of factors:

   o Community members / household factors

   o Community services and community-organization-level factors

   o Local and transport infrastructure supporting individual and community adoption.

   o The Indigenous relationship to "all our relations" (land, air, water, plants, animals, etc.), which provides an overarching moral principle guiding the realization of 'whole community' development projects in Indigenous territories.

7. The fourth element is expressed by David Perley, an Elder and academic from the University of New Brunswick, in a 2016 report on *Supporting Indigenous Language and Cultural Resurgence with Digital Technologies*:

   "The five key messages from our knowledge synthesis developed by the team:
   - Using a "whole community" approach;
   - A community or nation should own its digital language resources;
   - Indigenous people should control the technology as well as the language resources;
   - The knowledge of Elders should guide the development of technology resources; and

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[1] See: http://firstmile.ca/report-digital-technology-adoption-in-northern-and-remote-indigenous-communities-in-canada/

- Policies for digital resources for Indigenous languages should be guided by the UN Declaration on the Rights of Indigenous Peoples and the report of the Truth and Reconciliation Commission".[2]

These principles are reflected in our comments below.

8. This principle is also expressed in a statement by Chief Matthew Kakekaspan from Fort Severn First Nation in Ontario: "First Mile is critical as each of us plans and prepares to do the work that is needed to sustain and protect our families and our communities."[3]

9. The 'whole community' approach aims to ensure that adequate transport and last/first mile local fibre infrastructure is put in place to support the immediate and future development needs of regions and communities. By building open access[4] fibre transport to a community Point of Presence (PoP) and then opening local competition through community-owned first/last mile fibre infrastructure, residents of these regions secure economic and community development benefits for years to come.

10. Many examples of this approach are found in communities across Canada – including dozens of First Nations and Inuit communities in regions such as Northwest Ontario (K-Net), Nunavik (Taamani), and in Quebec, Atlantic Canada, and Manitoba (see: firstmile.ca). For one recent example, see the Clear Sky Connections project established by the Manitoba First Nations Technology Council.[5]

11. In our submissions in CRTC 2015-134, the FMCC recommended that the new Fund include the following elements:
    - Focus on northern/remote regions (including northern parts of the provinces as well as the northern territories);
    - Focus on community providers, particularly Indigenous regional community intermediary organizations;
    - A governance structure that includes representatives from these regions and communities;
    - A funding mechanism that provides ongoing operating support where needed, and not simply one-time infrastructure funding;
    - Inclusion of funding for digital literacy and training local residents in IT skills needed by providers and other organizations; and
    - Inclusion of funding for monitoring of service quality in remote/isolated communities.

    We believe these criteria are relevant for the new broadband fund approved in CRTC 2016-496.

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[2] See page 5: http://firstmile.ca/wp-content/uploads/2016-Perley-Nov-Supporting-Indigenous-Language-Resurgence-with-Digital-Technologies.pdf

[3] See: http://fortsevern.firstnation.ca/node/130

[4] Open access in this context includes co-location facilities and interconnection. Projects should provide evidence that they will stimulate and enable services-based competition at reasonable, transparent and non-discriminatory rates and conditions within reasonable time frames.

[5] See: http://www.wireservice.ca/index.php?module=News&func=display&sid=13881

12. Based on the above principles, the following key criteria guide our comments regarding the adjudication of proposals to the new Fund:

Whole Community Use
Proposes demonstrate how they will include: number of community members / households to be served; number and type of community services and community-based organizations to be served; local and transport infrastructure supporting individual and community adoption. "Use" in this context recognizes the diversity of users in a community – household users focused on consumption may desire asymmetrical bandwidth, while organizational and business users focused on production or interaction may desire symmetrical bandwidth that enables faster upload speeds.

Sustainable Community Benefits
Proposals demonstrate sustainable community and economic development benefits such as: the extent of community ownership and control of local broadband infrastructure; local employment and jobs created; environmentally-friendly practices and local materials used to build the infrastructure where possible.

Local Consultation, Engagement and Support
Communities to be served and named in a proposal to the Fund must be meaningfully engaged in developing and delivering projects to improve their access to broadband. Any provider applying for funds must consult with every community named and give them opportunities to contribute to the proposed project and understand their needs and concerns, including local/regional benefits. Letters of support from the leadership of all communities named in the proposal must be included in all applications to the Fund. Support letters must state that the leadership has reviewed the proposal, was given adequate time to contribute to the proposal, and supports the proposal as written. Applicants must submit copies of all proposals submitted to the Fund to the leadership of each community named in the proposal.

Local Hiring and Training
Applicants must demonstrate that their projects will employ local people in both construction and operation/maintenance of facilities and services, and that they will provide training where necessary. The details should be included in the proposal and confirmed in the support letters by the community leadership. The details include: the number of community members to be employed, the titles of the positions to be hired for, the minimum duration of employment for each position, the salary scale for each position, and the training to be offered, if required.

Local/Regional Management and Capacity
Preference should be given to applicants that demonstrate how the networks will be managed by staff living in the region to be served. Regional community intermediary organizations typically have direct ties to the regions and are accountable to their residents, and therefore have many incentives to keep revenues circulating in a region, provide adequate and affordable QoS, and engage in long-term economic and community development. Applicants should have demonstrated the capacity to plan, build, operate,

and manage proposed facilities and services in partnership with local communities. If management training is required it should be specified in the application.

Local/Regional Organizational Structure and Governance
Applicants may consist of individual organizations or partnerships, including public/private partnerships. Applicants that propose partnerships must specify the extent to which governance and control of the project and the resulting infrastructure is vested in regional and/or community organizations. We note that different levels of control are embedded in the ownership, management and operations of telecommunications infrastructure and services, including at physical, network management, and service provision functions.

Adequate Quality of Service
Applicants must propose speed and reliability targets and demonstrate how they would monitor reliability of networks, including data collected at the community level.

Affordability
Infrastructure upgrades are of limited value if customers (households, organizations and businesses) cannot afford to use them, or to use them to their full potential. Extensive evidence from many participants on the unaffordability of broadband (where available) in rural and remote areas was provided in CRTC 2015-134. The Fund should require applicants to specify wholesale prices for transport access and retail services (and associated fees) for each community for 5 years following the completion of the project, and a cost structure that will be used for any increases in prices afterwards.

Network Scalability
Networks should be built so that they can scale to accommodate more users and/or more bandwidth-intensive uses. To address these needs, this requirement for scalability must include the installation of new infrastructure technologies – fibre optics where feasible.

In some northern regions, populations are increasing rapidly (although absolute numbers remain small); also, more individuals within households may become subscribers. Also, exhibits by the Commission and interveners in CRTC 2015-134 pointed to the increase in bandwidth required for many applications, as well as the need for greater bandwidth for health care, education, and other organizational requirements. Projects that serve isolated communities, however, should not be evaluated on covering larger areas, as populations are typically highly concentrated.

Sustainability: The Need for Operational Subsidies
We commend the Commission for establishing this fund of $750 million to invest in broadband infrastructure in rural and remote regions. However, we note that operating subsidies may also be required in some regions to complement this infrastructure funding to ensure that the broadband services resulting from this investment are sustainable.

We elaborate on these points in our responses to the Commission's questions below.

Roles of the Commission and the third-party administrator(s)

Q1. Should additional roles and responsibilities be considered for each entity?

13. We generally agree with the Commission's proposal regarding the roles and responsibilities associated with the administrator(s) of this fund. In our intervention in CRTC 2015-134, we noted the third-party administrator should be responsible for project selection, oversight, and accountability of the fund:

    - The administrator(s) should assess funded projects through regular, publicly available progress reports that demonstrate their ability to meet implementation deadlines and remain within budget, with expenditures subject to audit. The successful applicants should have regular reporting requirements on the principles included in the project proposal (listed earlier in paragraph 12, including whole community use, sustainable community benefits and so on).

    - The licensed body should have the right to request the CRTC to fine or otherwise sanction organizations that do not meet required targets or do not otherwise fulfill their obligations.

    - Regular and standardized progress reports should be made to the CRTC, which in turn should make information publicly available and easily accessible on its website.

14. The administrator should identify infrastructure (and other funding) needs in the regions, and then monitor and review their implementation on an ongoing and transparent basis. This two-step assessment process acknowledges the limitations in attempting to estimate specific figures for funding projects using a 'one-size-fits-all' approach. Frequent cost overruns in many large-scale infrastructure projects in rural, remote, Northern and Indigenous regions, illustrate that many variables affect the costs of construction in these regions, including delivery, labour, materials, and other costs.[6] Dollar values and costs for various items (transport, labour, equipment, materials, etc.) fluctuate yearly; therefore, projects should be assessed on a case-by-case basis.

15. The FMCC recommends that evaluation of proposals should be coordinated by a committee appointed by the Board whose members with direct financial ties to entities applying to the Fund recuse themselves from decision making associated with their project applications. Guidelines on conflict of interest would be modeled on those in force in other federal government bodies.

16. This Proposal Review Committee that would engage adjudicators and reviewers with expertise in the geographic regions, communities, technologies, business models, and institutional structures present in affected areas. These experts should complete the initial review of proposals with reference to 'whole community' metrics and implications for long-

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[6] See for example the Mackenzie Valley Fibre Link: http://www.cbc.ca/news/canada/north/mackenzie-valley-fibre-optic-line-to-now-cost-82m-1.2827002

term community and economic development and other factors and metrics listed in paragraph 12. The Proposal Review Committee can use information from the expert external reviewers when determining which proposals should be funded. Both the expert reviewers and the adjudicators of the Proposal Review Committee should be rotated from a roster of qualified professionals for each round of funding. This approach is modelled on the one used by the Social Sciences and Humanities Research Council (SSHRC) to assess proposals for publicly-funded research projects.[7]

Q2. Is there a need to amend or eliminate certain roles or responsibilities?

17. The FMCC reserves the right to comment on this in a future phase of the proceeding.

Governance structure of the third-party administrator(s)

Q3. Should there be a single administrator/board or separate administrators/boards for each of the fund's two functions (project management and accounting)?

18. The third-party administrator should be a newly established not-for-profit organization dedicated to distributing funds to projects and providing oversight of usage of funds and completion of an approved investment plan. If the third-party administrator is an independent organization with a Board structure following the approach outlined in this intervention, the FMCC believes that a single administrator/board can perform both project management and accounting, with the use of appropriate contracting services as needed.

Q4. Describe the composition of the board(s). For example, would the Canadian Telecommunications Contribution Consortium Inc. (CTCC) be an appropriate choice for the accounting function? How should board members be selected?

19. In our intervention in CRTC 2015-134, we raised concerns with the governance structure of the Canadian Telecommunications Contribution Consortium (CTCC), which administers the National Contribution Fund (NCF). In particular, we noted the lack of representation from Northern communities and community-based organizations on the CTCC Board of Directors. Nine of the 11 board members are from Ontario, with one each from Saskatchewan and Nova Scotia. None are from the North. Further, most are current or former employees of major telecommunications services providers. In addition, the criteria and selection process for board members are not transparent.

20. The membership of the Board should consist of representatives from both the public and private telecommunications industry, including small providers and community and regional representatives. The Board must include membership from underserved regions, including Northern and Indigenous communities. Knowledge of and experience in the regions and communities, especially with Indigenous communities, should be important criteria for Board membership.

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[7] For information on SSHRC's review process, see: http://www.sshrc-crsh.gc.ca/funding-financement/merit_review-evaluation_du_merite/index-eng.aspx

21. For example, the Board must include representation from Indigenous service providers. For years, these organizations have developed and delivered broadband infrastructure services in rural, remote, Northern and Indigenous regions; as residents, their staff know these regions best. Furthermore, these organizations have advocated for the need to include Indigenous peoples in decision-making about broadband development taking place in their territories and communities.[8] Inclusion in the Board governing this Fund is one important step in institutionalizing this activity at the CRTC.

22. We understand that Board members may belong to organizations who may wish to be recipients of project funds. In such cases, these Board members would recuse themselves from all decisions regarding applications made by their organizations. This includes decisions made regarding the composition and activities of the Proposal Review Committee. In such cases, representation from affected regions can be supported through letters of support and/or nomination of candidates from involved organizations endorsing appropriate representatives for their regions. A conflict of interest policy and practices would of course apply.

23. The process used by the CRTC to select representatives to the Board should:

- be open, transparent and public;
- ensure balanced representation of cultural populations and geographic regions across the North (in particular, including people from Indigenous and remote regions);
- be based on nomination, including self-nomination;
- include endorsements from at least three appropriate regional or community digital technology groups with a demonstrated engagement with digital infrastructure and/or services;
- include enough positions to ensure that directors are representative of the diverse communities and entities involved; and
- include representatives from private, public and civil society organizations with ties to rural, remote and northern regions and/or communities.

24. One example that we drew on to develop our proposal for the composition of the Board is the CRTC-associated Community Radio Fund of Canada (CRFC).[9] To avoid potential conflicts of interest, the review of applications is undertaken by a committee of individuals with no direct link to applicants (or the associations representing them).

25. Another example is the CRTC-associated Broadcasting Participation Fund (BPF). At least two thirds of this Fund's directors represent public interest and consumer groups with non-commercial mandates. The BPF has three directors: a Broadcasting Industry Director; a Consumer/Public Interest Director; and a Jointly Approved Director. Prior to their election,

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[8] See Report of the National Broadband Task Force (2001); and comments submitted to Industry Canada's 2010 'Digital Economy 150' consultation (2010). This includes two papers submitted by FMCC members: "Ensuring Aboriginal Involvement in Canada's National Digital Strategy" (https://www.ic.gc.ca/eic/site/028.nsf/eng/00448.html) and "Aboriginal Connectivity Strategy" (https://www.ic.gc.ca/eic/site/028.nsf/eng/00397.html).

[9] See: http://www.crfc-fcrc.ca/en/

the Broadcasting Industry Director is to be nominated by the Broadcasting Industry Stakeholders, while the Consumer/Public Interest Director is to be nominated by the Consumer/Public Interest Stakeholders. The Jointly Approved Director is to be proposed by the Consumer/Public Interest Stakeholders and approved by the Broadcasting Industry Stakeholders prior to his or her election.[10] The BPF model of nomination by both industry and the public interest sector with a majority of public interest/nonprofit directors is a relevant example for the Broadband Fund.

26. A third relevant example, given its focus on northern communities and representation from community-based organizations, is the governance structure of the Northern Indigenous Community Satellite Network (NICSN). While not a funding organization, this organization's governance model includes opportunities for community representation. NICSN was initially conceived as a cooperative user group of member communities, designed to allow local representatives to dialogue directly with government funders. Along with ensuring that the NICSN cooperative's governance remained rooted in the communities and regions that it serves, this structure was designed to encourage user communities to become invested in the ownership and operations of the network.

27. Under NICSN's bylaws, local representatives vote to appoint a six-person Executive Board of Directors.[11] Active members (restricted to communities receiving satellite services from the operating partners) with full voting privileges can be elected to serve on the Board. Non-voting general members consisted of parties with a vested interest in NICSN, such as government representatives.

28. NICSN's Executive Board oversees the NICSN-related activities of the three regional community intermediary organizations that operate the network (K-NET in Ontario, Keewatin Tribal Council in Manitoba, and Kativik Regional Government in Nunavik). These three operators administer NICSN on behalf of its member communities. They regularly solicit participation and feedback from community members by conducting interviews, surveys and focus groups to support local planning.

Q5. Should any other considerations be taken into account?

29. We also note some shortcomings of the governance of the Deferral Account Fund, another CRTC funding mechanism that was created to address access infrastructure requirements in designated rural/remote/Northern/Indigenous regions In February 2016, the CRTC announced that over 280 communities served by Bell, TELUS, and MTS gained access to broadband through this fund. While Deferral Fund expenditures have helped to extend limited broadband to these regions, access to the funding is limited to incumbent Telecommunications Service Providers (TSPs), and is not accessible to other providers.

30. Proposals to access the new Broadband Infrastructure Fund must include commitment and understanding from each of the communities that will be impacted by this development. This

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[10] Broadcasting Regulatory Policy: CRTC 2012-181, para. 7.

[11] NICSN Draft Bylaws (2005). *Northern Indigenous Community Satellite Network: Draft Bylaws* (January 20, 2005).

statement demonstrates their involvement, support and plans for the project. Going forward, it is important to ensure communities know and understand possible development opportunities and be included in the planning and operational aspects of these projects. Local infrastructure development requires local involvement and engagement to determine, support and address local needs and priorities.

Accountability and fairness

Q6. How should the fairness monitor be selected and what metrics should be used to assess whether they have fulfilled their responsibilities?

31. Accountability and fairness can be addressed through regular reports to stakeholders and the public, such as through annual reports, and requirements to meet specified targets as a condition for release of final amounts of funding.

32. If the Commission decides to select a fairness monitor, we note that it should make adjustments to the monitoring activities used under the NCF, including issues of transparency and enforcement. For example, in order to access its portion of the existing NCF, Northwestel was required to generate Service Improvement Plans. However, FMCC noted in its intervention in CRTC 2012-669 the lack of publicly available details on core elements of these Plans, including the communities served, the timeframe for upgrades, and the Quality of Service standards associated with upgrade plans. Therefore, these details should be provided by fund recipients in regular reports to the Commission that are made publicly available and subject to audit.

Q7. Should any additional safeguards be put in place to ensure that the broadband fund is operated fairly and efficiently?

33. Current data regarding access, affordability and quality of service (QoS) levels of telecommunications infrastructure and services in many remote, Northern and Indigenous regions are limited at best. Therefore, we point out the need for regular monitoring of these issues by third-party measures (such as SamKnows and CIRA[12]) as well as by the telecommunications providers themselves, to be put into place.

34. The methodology and metrics guiding such monitoring practices must be made transparent and subject to periodic review by the Board administering the Fund, to ensure that they accurately represent the realities of access and use in these regions.

35. When measuring QoS, the Administrator should consider the following points:

- It is a moving target (as demand increases and new services and applications are adopted);
- Recognize upload (production) as well as download (consumption) activities to stimulate economic and community development, and recognize the diversity of users;

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[12] See: https://performance.cira.ca/

- Consider a broad array of QoS metrics beyond download speeds;
- Include a community-based performance monitoring regime to supplement data provided through the Commission's SamKnows initiative and by industry;
- Be capable of supporting mobile and fixed networks across entire remote and rural communities in place of household metrics;
- Recognize the different characteristics of user environments, such as the high number of people in northern households who share bandwidth (up to 15 people per household in some Manitoba First Nations); and
- Conceptualize needs beyond household/residential services to include minimum community bandwidth requirements that include community-based organizations such as schools, clinics, nonprofit organizations and businesses, particularly in remote and rural communities. These organizations act as key anchor tenants that provide predictable and stable support of broadband systems through the purchase of broadband services. This helps ensure the sustainability and development of networks in these regions.

36. Concerning technical standards, a multi-faceted approach to determining Quality of Service (QOS) is critical in isolated communities. Therefore, such standards should include bandwidth, latency, jitter, and reasonable data usage allocations. They should also include minimal outage times.

37. Pricing of services should also be monitored – including the affordability of transport services purchased by local providers, as well as of retail services purchased by individual consumers. This monitoring of prices should include all relevant costs, including co-location and access fees, etc.

38. As an example of pricing discrepancies, in late 2011, in the territories of the Nishnawbe Aski Nation in Northwest Ontario, the cost for community-owned local networks to connect to Bell Canada's regional fiber network was approximately twenty times what a home pays for even more bandwidth on a Bell FibreOp connection in Fredericton, New Brunswick. In Fredericton, households can purchase Bell FibreOp to access speeds of 100Mbps down and 50Mbps up for $80; and speeds of 300Mbps down and 100Mbps for $110.[13] In contrast, in November 2011, communities participating in the fibre construction project described above could purchase a wholesale 100Mbps symmetrical multiple use Point-of-Presence on a 3-year term for $1,650 a month, plus $2,500 in installation costs (see figure below)[14].

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[13] See: http://www.bellaliant.ca/fibreop-internet/service-plans

[14] Source: PowerPoint presentation given to the Chiefs of these communities by Bell Canada and the Nishnawbe Aski Nation in 2011.

Broadband Pricing

Access Type	1 Year Term	3 Year Term	Installation
T1	$ 1,595.00	$ 1,225.00	$ 500.00
10BT - SPO	$ 2,210.00	$ 1,700.00	$ 2,500.00
10BT - Multi	$ 2,431.00	$ 1,870.00	$ 2,500.00
100BT-SPO	$ 2,600.00	$ 2,000.00	$ 2,500.00
100BT - Multi	$ 2,860.00	$ 2,200.00	$ 2,500.00

• Ethernet Access Monthly Rate Only
• Last mile access fibre to customer prem based on presales; construction fees are in addition to rates shown.
• Logical Path is separate item and chargeable based on existing price book rates.

- These rates would be specific to these communities.

- Wholesale rates would have the same installation charge, and have the same terms and conditions with respect to construction charges, logical paths, etc..

- Wholesale monthly rates would be 75% of the retail monthly rates. The 25% discount is in recognition of the additional costs that the Wholesale customer would incur, including:
  – customer acquisition
  – Customer premise equipment
  – Billing
  – Service Assurance
  – Etc.

39. We raise this example to illustrate the huge discrepancies in access and affordability between publicly funded network infrastructure in remote regions of Canada, and household network infrastructure available in urban centres as small as Fredericton, New Brunswick.

Calls for applications

Q8. Taking into consideration the administrative burden on all stakeholders, how frequently should calls for applications be issued?

40. The Commission has specified that the total of $750 million be made available in annual increments:

"no more than $100 million for the first year, an amount that would increase by $25 million annually over the following four years to reach an annual cap of $200 million."

41. We believe that the funding should also be disbursed in a flexible manner, through annual calls for applicants. There are several reasons for this approach:

- It may take considerable time to obtain the required funding from a government entity;
- It will take time to find partners and establish public-private partnerships, if applicants want to use that model;
- It will take time for the applicant to consult with the communities to be served (as we propose in paragraphs 90-93);

- Some potential applicants may not find out about the availability of funds and criteria for applying in time to apply in the first round.
- The fund administrator may apply lessons learned from its initial rounds of funding to modify procedures or criteria for future rounds.

42. It is important for the Commission to establish calls for applications that consider the administrative burden on all stakeholders – including stakeholders from small, under-resourced, community-based organizations. Local and regional innovation should not be constrained by a lack of human resource capacity; rather it should be enabled to support community and economic development and competition for telecommunications services.

43. We note that the recent ISED Connect to Innovate program proved to be a very challenging and technical proposal development process for under-resourced community-based organizations. The program supported incumbents to build upon their legacy infrastructure either through an upgrade or the replacement of existing broadband delivery strategies.

44. FMCC recommends that the administrator consult with existing regional government agencies (federal and provincial) involved in telecom infrastructure development initiatives. These agencies have project officers with the experience and knowledge required to know what infrastructure is required in the different regions across Canada. FMCC partner organizations have found in the past that government-funded programs are most effective where a regional government agent from the region is available to support the development and delivery of projects.

45. We agree with the Commission that the administrator should have "the flexibility to consider both large, multi-year projects and smaller ones, while respecting the funding cap in any given year" (CRTC 2016-496, para 18).

46. For this reason, FMCC proposes that the CRTC establish multiple phases of application development and project implementation. While we recognize that large TSPs play an important part in developing and delivering infrastructure and services, we also stress that other organizations, including regional community intermediary organizations and local community networks, contribute to broadband solutions. Therefore, we propose that the fund include a flexible application process that recognizes this variability in infrastructure development and service delivery. Such a flexible approach to reviewing can enable community-based organizations with limited staff and resources to prepare viable and sustainable project proposals.

Distribution of funding

Q9. How should the distribution of funding be designed (i.e. quarterly, annually, or by project progress payments)?

47. See our response to question #8. A 'one-size-fits-all' funding model, while seemingly efficient, is inherently skewed towards large, well-resourced organizations accountable to primarily urban shareholders rather than regional residents. Small providers will not have access to working capital or human/technical resources available to large incumbents. To

enable these organizations to develop projects in their regions, initial funding allocations will need to be substantial, to cover planning, procurement, and initial installation.

48. The Commission should require that fund recipients submit any proposed changes to approved projects, in writing, to the Administrator. The Administrator, through its Proposal Review Committee or another committee established by the Board, should review these proposed changes, and within ninety (90) days, either approve, reject or propose modifications in the proposal. The potential need for project modifications recognizes the challenges in providing estimates for potential costs to support broadband infrastructure builds in rural, remote, Northern and Indigenous communities. Many variables affect the costs of construction in these regions, including delivery, labour, materials, weather and other factors. Dollar values and costs for various items (transport, labour, equipment, materials, etc.) also vary over seasons and years.

Enforcement of funding agreements

Q10. Should the Commission impose a condition under section 24 of the Act on recipients to ensure that they complete their proposed project as set out in their funding agreement with the third-party administrator?

49. Yes, in our opinion the Commission should retain the power to impose this condition on recipients. We have evidence of cases where projects that have received funding from public sources have either been terminated or adjusted after funds were awarded, resulting in negative impacts in infrastructure and/or services available to communities.

50. One example is the $82M fiber infrastructure construction project undertaken by Bell Aliant (now Bell Canada) in partnership with Nishnawbe Aski Nation.[15] After all the project funds were used, five of the original project communities were not included in this regional fibre optic network.[16]

51. Applicants should also be monitored and held to account for any project cost overruns. In several cases, FMCC members found that large TSPs have submitted a proposal in competition with a community service provider, claiming the project can be done at lower cost. However, after the competition is over and funds transferred, either project costs significantly increase, or the project is modified in ways that negatively impact residents of communities, such as through reducing the service or infrastructure provided by the project.

Q11. Should the Commission take any other measures to ensure the accountability of fund recipients?

52. The new funding mechanism must be subject to stringent transparency requirements so that providers (both those paying into the fund, and those drawing upon it), as well as ordinary citizens and consumers of telecommunications services, can be sure that the funds are used

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[15] See: http://firstmile.ca/northern-ontario-first-nations-upgrade-from-end-of-life-microwave-and-satellite-connections-to-fibre-optic-cable-to-deliver-broadband-services/

[16] See: http://firstmile.ca/wp-content/uploads/2015/03/2014-JoCI-Philpot_Beaton.pdf

fairly and efficiently. The Commission should adopt a transparent process that clearly demonstrates how capital and operational funds will be spent to support and improve telecommunications infrastructures and services in remote and northern regions, and includes clear performance benchmarks and reporting requirements.

53. Final installments of funding should not be approved until the project is complete.

54. Project completion should not be certified solely based on a report from the recipient. A monitor appointed by the Administrator should visit the field sites to ensure that they are complete and in operation. The Administrator should also obtain monitoring data to ensure that the completed project is meeting required QoS targets.

55. Applicants should also sign a letter of intent, stating that they plan to operate the facilities for which they received funding for at least 5 (five) years after completion of the project. We are aware of cases where infrastructure was publicly funded, but services were then withdrawn soon after construction ends.

56. For example, in Labrador, after public funding was provided to develop a SmartLabrador broadband project, the project ended service after three years. As noted by Katrina Peddle:

> "Initially, SmartLabrador had negotiated in-kind contributions from public partners such as provincial departments of health and justice, and the paid use of the network was a cornerstone of the SmartLabrador sustainability plan following the end of Industry Canada funding. There were many factors that influenced why the institutional support anticipated in the Labrador region did not come through in the form of network service usage beyond the pilot phase. When this public partnership did not bridge into a fee-for-service investment, the result was a lack of network traffic and a serious sustainability problem for the community-based technology network (p.295).

> "Although SmartLabrador received provisional funding from the provincial government to continue network operations, these funds were eventually exhausted and the network was shut down" (p.298).[17]

Q12. How should section 39 of the Act be applied to information filed with the Commission and the third-party administrator(s)?

57. The FMCC reserves the right to comment on this question in future phases of this proceeding.

Q13. What information related to the performance of the fund should the administrator(s) be required to report on publicly?

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[17] From "Atlantic Canadian Community Informatics: The Case of the WVDA and SmartLabrador" by Katrina Peddle, in *Connecting Canadians: Investigations in Community Informatics*, Edited by Andrew Clement, Michael Gurstein, Graham Longford, Marita Moll and Leslie Regan Shade; 2012. Chapter available for free download at: http://www.aupress.ca/books/120193/ebook/15_Clement_et_al_2012-Connecting_Canadians.pdf

58. The Administrator(s) should be required to submit annual reports to Commission that outline its decisions and rationale, identify funds spent and committed, projects funded, and any monitoring activities conducted. These reports should be made publicly available.

Q14. How should project and fund results be shared publicly?

59. Regular and standardized reporting should be made by Fund recipients to the Administrator, which in turn should make the information available to the CRTC and also make it publicly available in an easily accessible format on the CRTC website.

60. Fund recipients should also be encouraged to share project results publicly, including through media and their corporate websites.

61. Further, opportunities that have supported the development, management and operations of local/regional telecommunications infrastructures and services to provide community and economic development opportunities for residents of these regions should be reviewed and showcased by the Administrator.

Q15. What performance measures should the administrator for the project management function impose on fund recipients for reporting purposes? For example, should recipients be required to participate in a broadband performance monitoring program?

62. Yes, successful applicants should be required to participate in a broadband performance monitoring program such as SamKnows or CIRA's Internet Performance Test (https://performance.cira.ca).

63. When measuring QoS, the Administrator should consider the following points:

- It is a moving target (as demand increases and new services and applications are adopted);
- Recognize upload (production) as well as download (consumption) activities to stimulate economic and community development;
- Consider a broad array of QoS metrics beyond download speeds;
- Include a community-based performance monitoring regime to supplement data provided through the Commission's SamKnows initiative and by industry;
- Be capable of supporting mobile and fixed networks across entire remote and rural communities in place of household metrics;
- Recognize the different characteristics of user environments, such as the high number of people in northern households who share bandwidth bandwidth (up to 15 people per household in some Manitoba First Nations); and
- Conceptualize needs beyond household/residential services to include minimum community bandwidth requirements that include community-based organizations such as schools, clinics, nonprofit organizations and businesses, in particular in remote and rural communities.

64. Concerning technical standards, a multi-faceted approach to determining Quality of Service (QOS) is critically important in isolated communities. Therefore, such standards should include bandwidth, latency, jitter, and reasonable data usage allocations. They should also include minimal outage times.

Q16. <u>Should any other considerations be taken into account?</u>

65. We reserve the right to comment on this question in future phases of this proceeding.

Eligibility criteria

66. The eligibility criteria associated with the new Fund are of upmost importance to FMCC member organizations, and to the residents of communities located in rural, remote, Northern and Indigenous regions that have the greatest need for support under the new broadband funding regime.

67. We stress that eligibility criteria for the Fund must **NOT** be based strictly on metrics that award the provision of infrastructure and services to the greatest number of households in a given geographic area. Such population density metrics are misleading when applied in rural, remote, Northern and Indigenous contexts. Residences and businesses in communities may be tightly clustered together, or dispersed over a large geographic area. The topology and topography of communities varies greatly depending on the regions they are located in. Further, the presence or absence of existing infrastructure affects how households, businesses and organizations may be served.

68. The problems with focusing on household metrics when developing funding programs for rural, remote, Northern and Indigenous broadband are clear. It is true that private sector-driven innovation focused on delivering connectivity to households has proven successful across approximately 5% of Canada's territory, where billion-dollar investments are connecting whole cities to fibre-to-the-home infrastructure, serving 95% of Canada's urban and southern populations. However, this approach simply does not work across the remaining 95% of the country. Sixteen years after the completion of the National Broadband Task Force, remote and rural communities have yet to receive access to the standards of service proposed at that time (FMCC Final Comments in CRTC 2015-134, para 21).

69. To address this problem, FMCC encourages the Commission to re-frame the assumptions guiding project assessment metrics to consider community as well as household needs. This can be done through applying 'whole community' eligibility criteria that prioritize projects that reflect the on-the-ground realities in these regions. The three salient factors for 'whole community' eligibility criteria in this context are:

    o Community members / household factors
    o Community services and community-organization-level factors
    o Local and transport infrastructure supporting individual and community adoption.

70. Eligibility criteria should assign priority to proposals that provide demonstrated support for broader economic and community development benefits for unserved/under-served

communities, as articulated by leadership located in these regions and accountable to residents of them.

71. The following eligibility criteria for the Fund addresses a 'whole community' perspective:

Local Consultation and Engagement
We emphasize that the communities to be served must be engaged in the process of developing and delivering projects to improve their access to broadband, including through investments made through the Broadband Fund. Any provider applying for funds must consult with the communities involved to make them aware of their application and to understand their needs and concerns, including local/regional benefits.

Local Hiring and Training
Applicants must demonstrate that their projects will employ locals in both construction and operation/maintenance of facilities and services, and that they will provide training where necessary.

Local/Regional Management
Preference should be given to applicants that will manage the networks from within the region rather than from distant urban centres. Regional community intermediary organizations typically have direct ties to the regions and are accountable to their residents, and therefore have many incentives to keep revenues circulating in a region, provide adequate and affordable QoS, and engage in long-term economic and community development.

Utilization of Community Anchor Institutions
Anchor tenants in regions and communities offering public services like health and education provide predictable, stable revenue to enable the ongoing sustainability of network infrastructure and services. This approach also enables residents to make decisions on how infrastructure and bandwidth is made available to deliver essential services such as e-health, e-learning and so on.

Management Capacity
Applicants should have demonstrated the capacity to plan, build, operate, and manage proposed facilities and services. Sustainability in this context refers to a minimum of 5 years of sustainability planning in the project business case.

Organizational Structure and control
Applicants may consist of individual organizations or partnerships, including public/private partnerships.

Organizations that propose partnerships must demonstrate that control is vested in regional and/or community organizations. We note that different levels of control are embedded in the ownership, management and operations of telecommunications infrastructure and services, including at physical, network management, and service provision functions.

Quality of Service

Applicants must propose speed and reliability targets and demonstrate how they would monitor reliability of networks, including data collected at the community level.

Affordability

Infrastructure upgrades are of limited value if customers (households and organizations and businesses) cannot afford to use them, or to use them to their full potential. Extensive evidence from many participants on the unaffordability of broadband (where available) in rural and remote areas was provided in CRTC 2015-134. The Fund should require applicants to provide proposed wholesale prices for transport access and retail service prices.

Eligible geographic areas

Q17. Should an area with access to broadband Internet service speeds of 50 Mbps download, even if it does not meet all the criteria under the universal service objective, be ineligible for Commission funding? If you support that an area is ineligible for Commission funding if it meets the universal service objective, explain how each of the objective's criteria could be measured and evaluated (e.g. the quality of service metrics in a particular area).

72. The FMCC reserves the right to comment on this question in future phases of this proceeding.

Q18. Should the proximity of an area to the nearest fibre transport infrastructure (e.g. point of presence or point of interconnection) also help determine the area's eligibility for funding? If so, explain how an area's proximity to the nearest fibre transport infrastructure should be measured.

73. As was demonstrated repeatedly in the course of the BSO Proceedings, the lack of adequate transport infrastructure serving remote and rural communities remains a challenge.

74. It is tempting to use proximity to fibre PoPs as a criterion in eligibility for funding. On the one hand, the fund might obtain the greatest "bang for the buck" in connecting communities to these nearby PoPs. On the other, the cost of doing this interconnection is relatively minor, and might be borne from other sources.

75. What is needed in remote areas, as was pointed out by many interveners in the BSO proceeding, is extension of transport facilities into these regions, with connections to the remote communities.

Q19. The Commission could use hexagonal units of 25 square kilometres to define geographic areas. What are the benefits and challenges associated with this unit of measurement? If you suggest using other units of measurement to define geographic areas, provide supporting rationale and describe how to implement such units.

76. We agree that hexagon units of 25 square kilometres is a reasonable metric to define geographic areas for the purposes of this fund. However, the unit specifications are not meaningful unless they contain sufficient up-to-date and granular data. We note the lack of

data currently available on facilities, connectivity, and actual bandwidth and QoS in many remote, Northern and Indigenous regions of the country.

77. Therefore, we propose that the Commission work directly with organizations and individuals located within affected areas to verify available data and to help collect missing data.

Q20. Should the Commission consider other criteria for identifying eligible/ineligible geographic areas?

78. We refer to the 2001 National Broadband Task Force report, which provides a methodology to help determine investment models for under-served and unserved regions. The Task Force combined data on unserved communities provided by telecommunications and cable companies with data from Statistics Canada on the characteristics of these communities (p.6). Statistics Canada classifies census subdivisions by their proximity to metropolitan centres (signaling whether a community is, for example, 'outlying', 'far outlying' or 'remote' (pp.62-3). In our research for ISED[18] we similarly used a definition of prescribed northern and intermediate zones as defined by the Canadian Revenue Agency.[19]

79. Once an eligible geographic region is established, the next step is to determine the degree of service available within that region. The 2001 National Broadband Task Force defined "Unserved" communities as communities without access to DSL or cable Internet services as of December 2000. In cases where a provincial government was funding backbone transport infrastructure (e.g. Alberta SuperNet, Saskatchewan CommunityNet) communities were considered "Served". These definitions have evolved over the years and will continue to evolve as new "basic" level of services is determined as essential. For example, many presentations at the BSO hearings outlined the need for symmetrical 10Mb service that is required to properly accommodate high definition video for essential e-health services in remote and rural communities without local hospital and physician services. Therefore, we note the importance of ensuring that such definitions are tied to the evolving requirements of users - both household and institutional - living in these communities.

80. When considering such definitions, coverage maps issued by TSPs are one important source of data on whether a community is served, underserved or unserved as are data collected through initiatives such as the CRTC's SamKnows project. However, our position is that these maps and associated data should be verified by community-based organizations and local residents.

81. The Canadian Internet Registration Authority (CIRA) provides a tool and process for this activity (see the Intervention and Presentation made by Dr. Fenwick McKelvey in CRTC 2015-134). Other sources describing coverage are referenced throughout our document and are included in our 2016 report to ISED.[20]

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[18] See: http://firstmile.ca/report-digital-technology-adoption-in-northern-and-remote-indigenous-communities-in-canada/

[19] See: http://www.cra-arc.gc.ca/tx/ndvdls/tpcs/ncm-tx/rtrn/cmpltng/ddctns/lns248-260/255/zns-eng.html

[20] See Appendix 2 of the report available online at: http://firstmile.ca/wp-content/uploads/Appendix2-Primary-Secondary-Data-Sources.pdf .

Q21. If a geographic area does not meet the eligibility criteria established by the Commission, should applicants still have the opportunity to demonstrate that the area should be eligible for funding? If so, what evidence should applicants be required to submit?

82. The FMCC reserves the right to comment on this question after reviewing the statements of other interveners.

Eligible recipients

Q22. Should any criteria regarding eligible recipients in addition to those stated in the Commission's preliminary view be considered?

83. As stated above and in our Final Comments for the 2015-134 (para 13), subsidies and other mechanisms designed to expand or upgrade infrastructure should be open to all providers that can demonstrate the necessary technical and business skills, including Indigenous regional community providers.

84. We therefore support the eligibility criteria put forward by the Commission in CRTC 2016-496:

> "Eligible recipients will be required to meet the following criteria:
>
> • be legal entities, incorporated in Canada, that already operate or intend to operate broadband infrastructure. These include private sector companies; provincial, territorial, regional, municipal, and First Nations entities; and non-profit organizations. Individuals and federal entities (including Crown corporations) are not eligible.
>
> • demonstrate experience in deploying and operating broadband infrastructure. If the entity does not itself have a track record in operating broadband infrastructure, it must demonstrate that it has appropriate resources with experience deploying and operating broadband infrastructure as part of its project team or contractual resources.
>
> • demonstrate solvency and reliability through supporting documentation."

85. We note that these criteria are similar to those established by the Federal Communications Commission (FCC), which requires that providers eligible for universal service funding be certified as Eligible Telecommunications Carriers (ETCs). ETCs must demonstrate that they have the technical and business capacity required to build the facilities and/or operate the services for which they receive subsidies. They must also be able to operate during emergency conditions and meet consumer protection requirements. Tribal and community entities that meet these criteria are eligible for ETC certification. [21]

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[21] A complete list of ETC requirements is available at Telecommunications Act, Title 47, Section 54.201, as amended October 1, 2012.

86. Many states also provide ETC certification. For example, Washington State includes the federal criteria, but also requires "a substantive plan of the investments to be made with initial federal support during the first two years in which support is received and a substantive description of how those expenditures will benefit customers."[22]

87. We stress that support from the new funding mechanism should not be limited to incumbent providers. It should enable community intermediary organizations and community service providers to access funding to support the development and operations of broadband infrastructure and services required in the North to meet local and regional community connectivity needs. We refer the Commission to our response in paras 66-71 of this intervention regarding some details about our 'whole community' principles and how these articulate with eligibility criteria for the new fund.

88. We note that the Yukon Government's position at the BSO hearings supports this point. Yukon stated that: "The subsidy mechanism for broadband support should be community-based, targeted to needs identified with community input, and transparent" (CRTC 2015-134, Transcript April 11, para 111).

89. Further, we note that in its oral testimony, KRG stated: "… we feel the Commission should put a priority on supporting locally-owned internet service providers, especially in Aboriginal areas" (Transcript April 11, para 380).

90. Regarding **Consultation with Communities to be served**:

    Applicants should be required to consult with communities that they propose to serve, to explain their proposals and to gain an understanding of their concerns and priorities. Their applications should include a summary of who was consulted, how the consultation was carried out, and relevant findings.

91. Consultations should include discussion of services to be provided, technologies to be used, and local considerations such as hiring and training of local residents and interface with existing or planned local facilities. For example, project design typically involves constructing a fibre transport to a community and installing a central office consisting of a secure telco building. However, the community might desire a Community Telecom Facility with production and broadcast space for video, audio and print resources; digital library and archiving space; community server facilities; training space; local administration offices; local community-owned network facilities; and so on. Such options should be raised as a point of discussion with residents of communities during project proposal and review.

92. The applicant should also provide a copy of its application to the communities it proposes to serve. We note that the FCC requires a common carrier seeking designation as an eligible telecommunications carrier (ETC) for any part of Tribal lands "must provide a copy of its

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[22] Washington Utilities and Transportation Commission (WUTC), WAC480-123

petition to the affected tribal government and tribal regulatory authority... at the time it files its petition with the Federal Communications Commission."[23]

93. The administrator should also provide a copy of any decision concerning the application to the communities the applicant proposes to serve. We further note that in the U.S., the FCC must "send any public notice seeking comment on any petition for designation as an eligible telecommunications carrier on Tribal lands, at the time it is released, to the affected tribal government and tribal regulatory authority, as applicable, by the most expeditious means available."[24]

94. **Open Access:** Applicants for funding for backbone or transport infrastructure constructed should be required to provide open access, so that any provider can obtain access at wholesale rates. Open access in this context includes co-location facilities and interconnection. Projects should provide evidence that they will stimulate and enable services-based competition at reasonable, transparent and non-discriminatory rates and conditions within reasonable time frames.

95. **Procurement:** MKO stated that a necessary component of any broadband development funding mechanism "is supporting opportunities for development and growth of First Nations and Aboriginal businesses. This can be done through the implementation of a Procurement Strategy for Aboriginal Businesses or a PSAB-like policy."[25] The Commission should include this mechanism in procurement criteria for the Fund.

Eligible costs

Q23. Should any eligible costs in addition to those stated in the Commission's preliminary view be considered?

96. The Commission proposes that:

"Eligible costs will include costs associated with activities such as engineering and design, environmental scans and assessments, as well as the purchase and installation of equipment and infrastructure (including the provisioning of backhaul capacity and other one-time access-driven costs).

These eligible costs will include, for example,
- equipment costs …;
- material costs associated with the set-up and performance of the proposed project;
- labour costs …;
- labour-related travel costs…; and

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[23] Telecommunications Act, Title 47, Section 54.201, as amended October 1, 2012

[24] Ibid.

[2525] Procurement Strategy for Aboriginal Business. See http://www.aadnc-aandc.gc.ca/eng/1100100032802/1100100032803

• other direct costs associated with the project start-up. (CRTC 2016-496, Appendix A)

97. The FMCC generally agrees with these costs. However, additional costs should be included:

- Capital costs must include expenses associated with the construction of transport to communities, head-end facilities requirements and local network infrastructure requirements.

- Costs of consultation with communities to be served. We note above that applicants should be required to consult with communities to be served.

- Costs of training local workers. We note that applicants should be required to hire local residents to install and maintain facilities, and to provide training when necessary.

- Costs to provide strategic planning, research and business support for community-based projects. This could support, for example, working with anchor tenants offering public services such as health and education, or with regional community intermediary organizations. Such partnerships are required to aggregate demand from multiple low-population communities to achieve economies of scale in the purchasing of hardware, software and bandwidth (including satellite bandwidth and/or mobile spectrum),[26] and in establishing partnerships between community networks and other public and private sector entities.

Q24. What costs should be identified as ineligible and why?

98. The FMCC reserves the right to comment on this question in future phases of this proceeding.

Funding from a government entity

Q25. How should applicants be required to demonstrate that they have secured funding from a government entity (e.g. a promissory note or a signed funding agreement)?

99. In general, the FMCC believes that a signed funding agreement should suffice.

100. In the event that applicants are partnering with an Indigenous government entity, see our response in paragraphs 90-93 with regards to consultation requirements.

101. We reserve the right to comment further on this question in future phases of the proceeding.

Q26. Should any government entities from whom government funding can be secured be added to or removed from the following list, which was included in Telecom Regulatory Policy 2016-

federal, provincial, territorial, regional, and municipal entities; Aboriginal governments; community entities; and non-profit organizations?

102.   We believe this list includes the relevant entities. The FMCC reserves the right to comment further on this question in future phases of this proceeding.

103.   With regards to "Aboriginal governments; community entities; and non-profit organizations", we note that one important type of entity is termed "community/regional intermediary organizations". These entities are community-based digital technology organizations that contribute to the public good by:

- Owning, Controlling, Accessing, and Possessing the digital infrastructure required to support community needs and future desires;
- having their legal membership open to citizens of their community;
- providing equitable Internet access to all citizens in their community;
- supporting exchange, publication and access to the broadest possible range of information of interest to the community;
- empowering citizens by offering Internet related education and support systems

Q27. Should the Commission define the terms "minimum," "nominal," and "commensurate" for the purpose of implementing the government funding requirement? If so, provide definitions.

104.   The FMCC reserves the right to comment on this question in future phases of this proceeding.

Applicant investment

Q28. What evidence should applicants be required to provide that they are able to fund their own investment in the proposed project?

105.   The FMCC reserves the right to comment further on this question in future phases of this proceeding.

Q29. Should the Commission define the terms "minimum," "nominal," and "commensurate" for the purpose of implementing the applicant investment requirement? If so, provide definitions.

106.   The FMCC reserves the right to comment on this question in future phases of this proceeding.

Q30. What requirements, if any, should be imposed on public sector funding recipients regarding the ownership of Commission-funded assets after the initial capital expenditure (e.g. should there be requirements on when they are able to sell the asset)?

107.   As a general principle, if public sector funds are used to support a percentage of project costs, the public sector entity should retain that level of ownership. For example, if a First Nations government contributes 50% support for a project, it should retain 50% ownership of

infrastructure. Revenue and cost-sharing agreements can be put in place to address ongoing costs and benefits.

108.   We know of cases where a community has partnered with a TSP to secure access to public funds to build infrastructure, only to have the TSP retain full ownership of resulting facilities and to charge high rates for organizational and consumer access to services.

109.   For example, our ISED-funded research from 2016 outlines one case from Iskut, B.C.[27] We learned from our interviews with key informants that in 2009, the Iskut Band Council's economic development officer, in partnership with a technology consultant from Northwestel, prepared a proposal for funding to install ADSL to the First Nation Infrastructure Fund (a funding program of Aboriginal Affairs and Northern Development Canada). The project was supported by the Iskut Band Council, which recognized the importance of high-speed internet for the community. The Fund provided $100,000 to establish a point-of-presence in the community and build relay towers for a backhaul link. Last mile local connectivity was provided through the existing telephone lines in the community. By February 2010 the community (109 houses plus offices) had access to the Internet over ADSL.

110.   At the time of our 2016 research, the local network in Iskut was owned and operated by Northwestel. Although the Band considered hiring a third party to build the network and operate an ISP, they decided against that approach since they would have had to address maintenance, repairs and quality of service themselves, a challenge given a lack of local technical capacity. Local customers in Iskut pay Northwestel directly for the service. A major challenge for residents has been the data caps and the high overage fees. One key informant stated that he paid $1,400 the first month he had service in Iskut, and despite disputing the bill and filing a complaint with the CRTC, ended up paying the bill.

111.   In other cases, communities have partnered with TSPs to secure local services to some buildings, but have been quoted extremely high rates to increase their service connections. For example, in Kitcisakik, QC, the Band signed a 20-year contract with Telebec to connect several community service buildings to fibre optic networks. When the community requested adding two additional buildings to the network, they were quoted $15,000 per building. The FNEC subsequently conducted its own engineering study and determined the cost to build a parallel fibre optic network connecting 11 buildings in the community would cost a total of $32,000.

Project viability

Q31. How should applicants be required to demonstrate that the proposal would not be viable without Commission funding?

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[27] See: http://firstmile.ca/wp-content/uploads/Appendix5-Key-Informant-Interviews-Iskut-FN-BC.pdf

112. Applicants should provide evidence of the cost to provide the proposed infrastructure, and expected revenues, based on demographic information such as population size, disposable income, number of public sector services and businesses, etc.

113. Costs should take into consideration remoteness of locations and expense of delivering equipment to project sites.

114. The FMCC reserves the right to provide additional comments in future phases of this proceeding.

Assessment criteria

Project types

<u>Q32. Should any other considerations be taken into account regarding the assessment of project types?</u>

115. We agree with the Commission's designation of project types:

- Fixed broadband infrastructure projects vs mobile infrastructure projects
- Access infrastructure projects vs. transport infrastructure projects
- New builds vs. upgrades of existing broadband infrastructure (CRTC 2017-112, para 42).

116. In general, we recommend prioritizing fixed broadband projects over mobile projects and new builds over upgrades. We note that these types of projects represent different markets and involve different infrastructure technologies (such as the use of spectrum in mobile projects).

117. Fixed broadband projects are likely to provide more bandwidth to users, and bandwidth that can be shared through local Wi-Fi or other networks. We note that transport projects would provide bandwidth that could provide backhaul for both fixed and mobile broadband services.

118. The fund should prioritize projects that would be unlikely to attract funding from other sources. New builds should therefore be prioritized over upgrades, which are less costly.

119. The fund should support a mix of transport and access projects.

Project assessment criteria

<u>Q33. How much weight should be placed on each project assessment criterion?</u>

120. We propose modifications and additions to the criteria proposed by the Commission below. The FMCC reserves the right to comment further on this question in future phases of this proceeding.

121.   We raise the following points of consideration with reference to the Commission's preliminary views in Appendix 1 of CRTC 2016-496

Speed – Weight given to upload as well as download speeds
Given the FMCC's focus on the economic and community development benefits made possible by broadband infrastructure and services, we encourage the Commission to strongly consider upload as well as download speeds (symmetrical data transfer). Network speeds shape how different users experience and utilize bandwidth capacity. Upload capacity can enable productive activities originating in these regions – such as transferring data and content, for example for videoconferencing, telemedicine and uploading content to the cloud. To enable innovation in these regions, it is necessary for infrastructure and services to reflect appropriate upload speeds, particularly for health care and other institutional and business applications.

Capacity –Appropriate metrics
Several interveners in CRTC 2015-134 pointed out that northern households are relatively large, and that multiple family members from youth to Elders typically share one internet connection bandwidth (up to 15 people per household in some Manitoba First Nations). Therefore, for consumer access, number of users per household should be used in estimating bandwidth requirements.

However, as we have stated throughout this intervention, the development of infrastructure and services in these regions must not replicate the problems of the past by foregrounding household coverage metrics at the expense of metrics associated with community organizations and institutions.

Therefore, metrics evaluated should include data transfer capacity per community organization as well as per household. In particular, adequate capacity must be provided to meet the needs of community and public service anchor tenants such as health and education providers that provide sustainable revenues to support connectivity services in these regions.

Quality of Service
We agree with the Commission's proposal, with the recognition that satellite-served communities will include latency effects. Latency impacts the ability of public and community service providers to utilize network applications. For example, latency limits access to eHealth applications such as Panorama, which requires a minimum of 60 ms latency.[28]

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[28] MKO notes that excessive latency has affected operation of telehealth systems in northern Manitoba. Interveners in CRTC 2015-134 stated that latency can affect videoconferencing and cause some software to malfunction or "time-out."

Government and Private Funding

These proposals appear contradictory. Under Government Funding, the proposal states: "Applications will be given more weight the greater the level of financial contribution of the total project costs from a government entity" while under Private Investment, the proposal states: "Applications will be given more weight the greater the level of financial contribution of the total project costs from private investment" (CRTC 2016-496, Appendix 1).

We recognize that some proposals may have a higher proportion of government funding, while others may have more private sector investment. We are concerned that the funding should be adequate for the project, and that there should be sustainable sources of revenue for operation and maintenance of the facilities after the construction phase. This is to ensure that facilities built using capital funds continue to operate over the long term.

We refer the Commission to the case of SmartLabrador (see para. 56 above), as an example of how short-term approaches to government funding used for capital development do not address the sustainability of networks in these regions. Therefore, in some cases, operational subsidies from public sector sources may be required.

We also note that the Commission should require applicants to demonstrate the long-term sustainability of facilities built using the funds. "Long-term sustainability" in this context refers to a minimum of 5 years of sustainability planning in the project business case. We refer the Commission to the 2011 *Arctic Communications Infrastructure Report*, which made the following point concerning infrastructure and services in the three Northern territories:

"[S]uppliers of broadband do operate on somewhat of a competitive basis, but a majority of that competition is for government subsidies" (p.154).[29]

Operating subsidies may be required in some regions to complement the infrastructure funding provided by the Commission's decision in CRTC 2016-496.

Concerning private funding, as noted in our intervention, private investment is an important and necessary component of broadband development. However, we urge the Commission to implement stringent accountability standards for private sector contributions beyond initial capital funds (also see our response to Q11 above).

We refer to the Commission's own determinations regarding some challenges regarding the outcomes of private sector contributions, such as in its review of Northwestel's Modernization Plan (CRTC 2012-669), the Satellite Inquiry Report (2016) and Review of Telesat Canada's price ceiling for C-band fixed satellite services (CRTC 2016-127).

Scalability

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[29] See: http://www.aciareport.ca/resources/acia-ch8-v1.pdf

We agree that networks should be built so that they can scale to accommodate more users and/or more bandwidth-intensive uses. In some northern regions, populations are increasing rapidly (although absolute numbers remain small); also, more individuals within households may become subscribers. Further, exhibits by the Commission and interveners in CRTC 2015-134 pointed to the increase in bandwidth required for many applications, as well as the need for greater bandwidth for health care, education, and other organizational requirements.

Projects that serve isolated communities, however, should not be evaluated on covering larger areas, as populations are typically highly concentrated. To address these needs, this requirement for scalability must include the installation of new infrastructure technologies – fibre optics where feasible.

Wholesale Access
Facilities-based competition is not feasible in most of these regions. All projects should be required to provide open access to their networks, including co-location facilities and interconnection. Projects should provide evidence that they will stimulate and enable services-based competition at reasonable, transparent and non-discriminatory rates and conditions within reasonable time frames.

We refer the Commission to our comment about local network facilities in Kitcisakik First Nation in paragraphs 111, where extremely high costs for access to infrastructure and services from incumbent TSPs pushed a community-based organization to construct its own facilities at a much more reasonable cost.

Mobile Coverage – This assessment criterion must be removed.
Mobile services are a separate market and use different infrastructure technologies (such as those utilizing spectrum), and so should be treated separately from broadband services.

This criterion unfairly prioritizes large companies that already offer mobile services, and/or have already acquired spectrum (or have the capacity to do so). This criterion does not encourage competition but rather threatens to increase concentration of ownership. Therefore, the Commission should remove this criterion.

Timeliness – Weighting of 'Timeliness' must be assessed with reference to the specific project and its associated goals and outcomes.
When determining 'timeliness', the Commission should consider the flexible approach we propose in paragraphs 41-48, and the accountability requirements we note in paragraphs 49-56. This is done to a) recognize the range of organizations that will be applying for the Fund and the unique contexts they are working in; and b) recognize past evidence illustrating the gap between promised and actual 'timeliness' of large-scale projects – including the sustainability of the infrastructure developed by such projects over time (see our discussion of SmartLabrador in para 56). Sustainability in this context refers to a minimum of 5 years of sustainability planning in the project business case.

We also note the need for transparency regarding 'timeliness' of projects, as discussed in our reference to Northwestel's Modernization Plan (see para 32).

Service Coverage – Number of households/businesses and geographic area served are not appropriate metrics for Northern and Indigenous regions.
Northern and Indigenous regions typically have small populations clustered in isolated communities.

In such cases service coverage should instead be assessed with reference to 'whole community' criteria and to providing service to all dwellings, organizations and businesses in these communities, including health and education services. See our discussion of this key issue in the Executive Summary, and in paras 66-71. Also see evidence on the record presented from many interveners from rural, remote, Northern and Indigenous contexts in CRTC 2015-134.

These communities are also generally dispersed over large regions. The area covered could be considered small if it includes just the communities, or very large if it includes the entire region within which the communities are located.

Coverage Density
Service coverage should be assessed with reference to 'whole community' criteria. Projects should be required to connect all of the households, businesses, and organizations in the community. We are concerned that in small population, geographically dispersed communities, networks may only connect central areas, creating internal access divides inside communities. See our discussion of this key issue in the Executive Summary, and in paras 66-71. Also see evidence on the record presented from many interveners from rural, remote, Northern and Indigenous contexts in CRTC 2015-134.

Cost per Household
We agree that costs are relevant, but several factors must be considered. The technical plan should be evaluated on whether it proposes cost-effective solutions appropriate for the region. Service costs, however, should be based on total community costs, and not per household costs, as we have pointed out above. See our discussion of this key issue in the Executive Summary, and in paras 66-71. Also see evidence on the record presented from many interveners from rural, remote, Northern and Indigenous contexts in CRTC 2015-134.

Also, projected costs can be misleading. Large TSPs may be able to cross-subsidize costs from other projects, or otherwise obscure actual infrastructure costs, which would place small and community applicants at a disadvantage.

Costs to community-based anchor tenants (health and education providers) should also be included in this assessment. Much evidence exists of extremely high costs for access to infrastructure and services from incumbent TSPs incurred by community anchor institutions. For example, refer to our discussion of Kitcisakik First Nation in para 111, and of the Nishnawbe Aski Nation project in Northwest Ontario in para 38 of this intervention.

Sustainability

Sustainability in Northern and Indigenous regions must consider the 'whole community' rather than an individual household/business subscriber model. The business model should include discussion of the contributions of local/regional anchor tenants that will provide stable, predictable funds to support the long-term development and operations of infrastructure and services in these regions. As discussed in this intervention, anchor tenants include community and public service providers such as those offering health and education services.

We also note that operational subsidies may be required in some Northern Indigenous regions where capital and operating costs are high and revenues from small populations are low.

Sustainability in this context refers to a minimum of 5 years of sustainability planning in the project business case.

Pricing

Pricing should be an important criterion. As we noted above (para 12) infrastructure upgrades are of limited value if customers (households and organizations and businesses) cannot afford to use them, or to use them to their full potential. Extensive evidence from many participants on the unaffordability of broadband (where available) in rural and remote areas was provided in CRTC 2015-134. Applicants should be required to provide proposed wholesale prices for transport access and retail service prices.

Extremely high costs for access to infrastructure and services from incumbent TSPs have been incurred by community anchor institutions after infrastructure upgrades. For example, we refer to our discussion of Kitcisakik First Nation in para 111, and of the Nishnawbe Aski Nation project in Northwest Ontario in para 38 of this intervention.

Q35. Should any other project assessment criteria be included? If so, provide a description of how they should be assessed and the weight that should be given to them.

122. The following additional criteria should be included:

Local Consultation and Engagement

Any provider applying for funds must consult with the communities involved to make them aware of their application and to understand their needs and concerns, including local/regional benefits.

Local Hiring and Training

Applicants must demonstrate that their projects will employ local people in both construction and operation/maintenance of facilities and services, and that they will provide training where necessary. Training should be shown to prepare these employees for career paths wherever possible.

Local/Regional Management

Preference should be given to applicants that will manage the networks from within the region rather than from distant urban centres.

Local/Regional Ownership: Locally and regionally owned organizations are more likely to understand the long term needs of their communities and to contribute to the development of an economic base in these regions. They also contribute to local economies by circulating revenues locally rather than extracting them for distant owners and shareholders.

123.   We will comment further on these criteria in future phases of this proceeding.

Q36. Should subscriber uses and network resiliency be included in the list of project assessment criteria? If so, explain any anticipated issues and the weight that should be given to each.

124.   The FMCC reserves the right to comment on this question in future phases of this proceeding.

Q37. Should any other considerations be taken into account regarding project assessment criteria?

125.   Many of the criteria proposed in Appendix 1 of CRTC 2016-496 appear to assume a "one-size- fits-all" assessment of project applications. Rural and remote regions differ dramatically in total populations, population density, area of regions, distance from existing infrastructure, and many other factors. Criteria for connecting isolated Northern and Indigenous communities will therefore differ from criteria for connecting farms and for connecting rural cottages.

126.   We also emphasize the importance of accountability (see our responses to Q6 and Q7). Without strict accountability in the assessment phase, applicants may promise more (in terms of population to be served, high QoS, and low prices, for example) than they will actually deliver. We highlighted evidence of this happening in past funding programs.

127.   The FMCC reserves the right to comment on this question further in future phases of this proceeding.

Criteria to identify "priority underserved" geographic areas

Q38. Should the potential criteria identified in paragraph 46 of the notice be used to identify "priority underserved" geographic areas for funding?

128.   We agree that priority should be given to areas that:
- Have lower speeds currently available
- Include anchor institutions
- Are in remote areas.

129.   As we noted above, we do not think number of households or household density are

appropriate criteria (see, for example, paras 67-68).

130.   The FMCC reserves the right to comment further on this question in future phases of this proceeding.

Q39. Should any other criteria to identify "priority underserved" geographic areas be considered?

131.   The FMCC reserves the right to comment on this question in future phases of this proceeding.

Q40. How should each criterion for identifying "priority underserved" geographic areas be measured/defined? How much weight should be given to each one?

132.   The FMCC reserves the right to comment on this question after reviewing the statements of other interveners.

Q41. What additional considerations should the Commission take into account regarding the criteria for "priority underserved" geographic areas?

133.   The FMCC reserves the right to comment on this question after reviewing the statements of other interveners.

Satellite-dependent communities component

Q42. How should this component be implemented?

134.   Our position is that optical fibre backbone should be installed to connect most of these communities. However, we realize that there are some very isolated communities, especially in the far North, where fibre connectivity may not be feasible in the near future. For those communities, and others still dependent on satellite, sufficient technical capacity should be provided to meet the CRTC's bandwidth targets, and prices should not exceed those in terrestrially-served communities.

135.   The Commission stated that 10 percent of the fund, amounting to $75 million over 5 years would be allocated to satellite-dependent communities to support operational costs and potentially certain capital-related costs.

136.   Operational funding should not be limited to incumbent satellite operators. New satellite networks that can meet specified bandwidth, reliability and other QoS requirements should be eligible to apply for operating costs. However, we believed that the community aggregator model should be required, regardless of the provider.

137.   We have pointed out in earlier testimony the advantages of the community aggregator model for satellite deployment, which provides a single point-of-presence to a community and allows for local-level 'first mile' distribution of connectivity. It is important to determine a required minimum level of bandwidth capable of supporting all the broadband applications

required using the whole community framework. Some other interveners noted the benefits of such a model. For example, in its oral testimony, Telesat states:

"… satellite capacity is transmitted to an earth station located in a community and terrestrial local distribution facilities are used to connect to individual households, businesses and government buildings. This model is used to provide service in communities like Iqaluit, and others as small as Old Crow with only 100 households. It is economically efficient, reliable and scalable" (Testimony April 13, para 4338).

138.   During the BSO Hearings (2015-134), we heard from several industry representatives that a decentralized residential consumer model for broadband delivery - such as that delivered by satellite to individual households - will address the Basic Service objectives. We disagree.

139.   As illustrated by numerous interveners from remote and northern regions, and from the Commission's own research (as seen in the Satellite Inquiry and the recent EKOS surveys), decentralized, satellite-based delivery services to individual households are not adequate for consumers, especially those in remote and rural communities. We refer to testimony from several interveners describing low quality of service, inability to support private networking and symmetrical bandwidth, high costs, restrictive data caps, and long wait times for installation and repairs as some of the ongoing problems with such solutions. In their oral testimony, KRG pointed out:

"[Y]ou cannot have a distributed or active directory infrastructure across a high latency network because it doesn't work. And in spite of the fact that latency can be mitigated for certain applications, once you get into kind of a more corporate level it's very, very difficult to operate on high latency" (Transcript April 11, para 536).

140.   Individual entrepreneurs stated in their testimony that Xplornet (which provides services through the decentralized model described above), could not be used for a VPN, or for Skype:

"When I received confirmation that I could participate in these hearings, I was told I could present my submission by Skype. The irony wasn't lost on me. In fact, I cannot reliably use Skype because of frequent interruptions and lost connections on account of the Xplornet service that I have, largely due to the latency no doubt" (Transcript April 25, para 150280).

141.   Latency also impacts the ability of public and community service providers to utilize network applications. For example, latency limits access to eHealth applications such as Panorama, which requires a minimum of 60 ms latency (many satellite networks operating using 200 ms latency).

142.   Also, we do not think that the full $75 million should be used for satellite operating costs. A significant amount should be allocated to upgrading access networks in satellite-dependent communities.

143. Satellite-based communities should be eligible for funding for local fibre networks that can interconnect with any backbone including satellite. This 'First Mile' approach has been piloted with success by Tamaani Internet in Nunavik and K-Net in Ontario. Through this model, local fibre networks are first built to connect homes and organizations in a community. Interconnections to satellite transport networks is provided through a single PoP/head-end (rather than a decentralized model connecting individual homes / businesses.

144. By building a local 'First Mile' fibre network, community infrastructure and organizational capacity is developed in these regions, so that when fibre transport networks are eventually constructed, the required technical expertise is already present in the community and region. This also allows for the development of associated infrastructure at the community level, for example ISP services, VoIP systems, and/or data centres.

Q43. How should eligible satellite-dependent communities be defined?

145. We generally agree with the Commission's definition of communities that have only satellite connectivity available for Internet services.

Q44. What should be the eligible and ineligible costs?

146. The FMCC reserves the right to comment on this question in future phases of this proceeding.

Q45. Should any additional eligibility and/or assessment criteria be applied under the satellite-dependent communities' component?

147. FMCC is concerned that the CRTC may create a funding mechanism which 'locks in' decentralized satellite services as the only form of transport available to communities. Although we recognize that service in many areas is provided on a best-effort basis, and that satellite service is better than no service at all, we urge the Commission to ensure that the possibility for evolution to superior means of transport be kept open. Following from this position, FMCC suggests that any other provider should have the right to install and operate backbone transmission facilities in satellite-served communities.

148. The FMCC reserves the right to comment further on this question in future phases of this proceeding.

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