



The “Affordable Access Coalition”

Phase 1 Intervention

Telecom Notice of Consultation CRTC 2015-134
Review of basic telecommunications services

14 July 2015

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Appendix "D": Summary of government funding for broadband access

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EXECUTIVE SUMMARY

- E1. The following organizations are pleased to provide the Canadian Radio-television and Telecommunications Commission (the “**Commission**” or “**CRTC**”) with their first intervention in this important proceeding titled *Review of basic telecommunications services*:
- The Association of Community Organizations for Reform Now, Canada (“**ACORN Canada**”);
 - The Consumers’ Association of Canada (“**CAC**”);
 - The Council of Senior Citizens Organizations of British Columbia (“**COSCO**”);
 - The National Pensioners Federation (“**NPF**”); and
 - The Public Interest Advocacy Centre (“**PIAC**”)
- together the “**Affordable Access Coalition**” or “**AAC**”.
- E2. The AAC wishes to be considered as an intervener in the proceeding, and requests to appear at the public hearing.
- E3. Attached as Appendix “A” contains a summary of results from an Environics Research Group survey commissioned on behalf of the AAC. The telephone survey was conducted with 1,000 Canadians 18 years of age or over during the period of June 4-11, 2015 and covers a range of issues directly related to the questions posed in this proceeding.
- E4. Attached as Appendix “B” is the report of Edgardo Sepulveda titled *Funding Support for low-income Canadians and for broadband deployment* (the “**Sepulveda Report**”). Mr. Sepulveda is an expert in universal service regimes.
- E5. Attached as Appendix “C” is the report by PIAC, titled *No Consumer Left Behind: A Canadian Affordability Framework for Communications Services in a Digital Age* (January 2015).
- E6. Attached as Appendix “D” is the AAC’s summary of recent and current federal and provincial funding for broadband access.
- E7. Attached as Appendix “E” are the detailed results from the Environics survey.
- E8. In TNC 2015-134, the Commission is examining “*which telecommunications services Canadians require to participate meaningfully in the digital economy and the*

Commission's role in ensuring the availability of affordable basic telecommunications services to all Canadians."

- E9. This proceeding is about the "basic" level of telecommunications service all Canadians can expect to have access to. But this proceeding is not about today, nor is it about the past. This proceeding really is about tomorrow.
- E10. This proceeding is also about inclusiveness – including *all* Canadians in the digital economy through universal service. By definition "all Canadians" must include Canadians living in the North and outside of urban areas, and Canadians of all origins, ages and incomes.
- E11. Given the complexity of the issues raised in this proceeding, the AAC has reduced its position to the following nine key positions.

Key Position 1. Broadband has become an essential telecommunications service. It is essential to individuals (of all ages), to households, to businesses, and to Canada's competitive advantage. Yet, not all Canadians are able to connect: access and socio-economic barriers persist.

- E12. The AAC does not believe there will be much debate over the proposition that broadband has become an essential service, if not *the* essential telecommunications service, from the perspective of all Canadians.
- E13. Indeed, access to the Internet is gaining recognition as a human right.
- E14. To underscore the point that broadband Internet service has become an essential telecommunications service, if not *the* essential telecommunications service, the AAC presents primary and secondary evidence to demonstrate how essential – how vital – broadband Internet is to all Canadians. From a human rights perspective to a national economic competitiveness standpoint, Canada must make universal broadband access a priority.
- E15. The importance of Internet access to Canadians is borne out by the results of the Environics survey.
- E16. It follows that if broadband has become an essential telecommunications service, if not *the* essential telecommunications service, then all Canadians should have access to at least a "basic" level of service. This is currently what Canadians expect of their telephone service.

Key Position 2. *Not all Canadians are able to connect: access and socio-economic barriers persist.*

- E17. Access to broadband has two components: availability and affordability. If one cannot make the connection to the network, physically, no amount of money will solve that problem, whereas connection may be possible, but at an unaffordable level.
- E18. The AAC's research from consultation with coalition members, from the Environics survey, and from secondary sources, including Statistics Canada research, supports the finding that availability and affordability are ongoing barriers to Canadians.
- E19. While the AAC expects the exact numbers to be a factual issue for determination as part of this proceeding, including the planned *Let's Talk Broadband* phase, the AAC's initial research suggests that there are persistent broadband Internet availability gaps in Canada.
- E20. Furthermore, of the over 170 submissions by individuals filed to date in this proceeding, it is clear that many Canadians are unhappy with the status quo.
- E21. Several themes emerge from the interventions of individuals.
- (i) Canadians not being able to access the Internet at speeds they need;
 - (ii) Actual performance (speed) being much lower than advertised;
 - (iii) Large differences between speed in urban and rural areas; and
 - (iv) Large differences between price in urban and rural areas.
- E22. There are problems with both *availability* and *affordability*, and broadband Internet access service gaps are correlated to income, as data from Statistics Canada suggests, with those in the lowest income deciles having the least access to telecommunications at home relative to other households. For example, whereas 82.5% of all households as access to the Internet at home, for example, only 50.3% of household in the lowest decile have access

Key Position 3. Market forces and targeted government funding are not solving the problem.

- E23. The last time the Commission considered the BSO, in 2010, the Commission concluded that “market forces and targeted government funding will continue to drive the rollout and improvement of broadband Internet access services in rural and remote areas.”
- E24. At the same time, the Commission indicated it would monitor the availability of broadband to all Canadians, and “review in the future the matter of funding mechanisms should market gaps persists.”
- E25. The AAC’s primary and secondary research suggests that market forces and targeted government funding have not worked.
- E26. First of all, the 5 Mbps target, may have been appropriate for 2013 but is likely is too low for 2015 and beyond. The AAC comes to this conclusion based on the legal test for “basic telecommunication service”, and the “50-80 rule” which considers a telecommunications service as “basic” for the purposes of determining required universal service if 50% of the population subscribes to a service, and 80% of those subscribers do so at given speed.
- E27. Second, the AAC’s research and analysis indicates that the speeds required today by typical households range from 9 Mbps to 26 Mbps.
- E28. Third, focusing on speed alone ignores the problem of affordability facing low-income Canadians.
- E29. Fourth, other research shows that broadband availability issues persist across Canada, and in particular in northern and rural communities, even at the 5 Mbps level, let alone higher levels.

Key Position 4. Meanwhile, other jurisdictions have taken bold steps to connect their citizens and to address affordability barriers.

E30. Meanwhile, other jurisdictions have taken bold steps to connect all of their citizens, including setting ambitious broadband access goals. These countries recognize the importance of broadband for all citizens, and for their national competitiveness.

E31. The Canadian government, and the Commission, have recognised the importance of broadband to building up Canada’s competitive advantage. Yet there are signs at the macro level that Canada is falling behind.

Peer Countries’ Broadband Access Goals		
Who?	What?	By When?
U.S.A.	10 Mbps (rural/underserved communities) 100 Mbps to 100 million households	(no fixed date) 2020
European Union	30 Mbps to 100%	2020
Australia	50 Mbps to 90% of fixed line premises 25 Mbps to 100%	2019 2021
U.K.	2 Mbps to 100% 24 Mbps to 95%	2016 2017
France	3-4 Mbps to 100% Fibre-to-the-home to 100%	2017 2022
Germany	50 Mbps to 100%	2018

E32. At the same time, some countries have also implemented measures to make telecommunication services more affordable, including the U.S., France and Spain.

E33. In the AAC’s view, bold action is necessary to ensure that all Canadian households have access to broadband Internet service at a speed that allows them to participate in the digital economy, and so that low-income Canadians can afford access to basic telecommunications service of a high quality.

Key Position 5. The Commission now has the opportunity and the duty to do the same.

E34. The Commission is required to exercise and perform its duties under the *Telecommunications Act* with a view to implementing these policy objectives. The objectives include facilitating the development of a telecommunications system that “serves to safeguard, enrich and strengthen the social and economic fabric of Canada and its regions”; the rendering of “reliable and affordable telecommunications services of high quality accessible to Canadians in both urban

and rural areas in all regions of Canada”; “responding to the economic and social requirements of users of telecommunications services”; and contributing to protecting privacy. The objectives also include certain systemic goals for the telecommunications system, including enhancing the national and international competitiveness of the industry; promoting the primacy of Canadian ownership and control and the use of Canadian facilities; and promoting research and development and innovation.

E35. The Commission now has before it not just an important opportunity to ensure all Canadians have access to broadband Internet service and affordable telecommunications service, but a *duty* to do so under the mandate entrusted to in the *Telecommunications Act*.

Key Position 6. Typical Canadian households *currently* use and require anywhere from a 9 Mbps to a 26 Mbps connection, and demand and speeds are expected to continue to rise. According to the 50-80 rule, the “basic” level of broadband access today is at *minimum* 5 Mbps download speed, which the AAC expects will increase to 25 Mbps by 2010. The Commission should therefore set a goal of all Canadian households being able to access 25 Mbps broadband home Internet service by 2020 (the “25 Mbps by 2020” goal), subject to annual updates to the definition of “basic” broadband.

E36. The Affordable Access Coalition’s analysis of current household needs indicates that Canadian households currently use and require anywhere from 9 Mbps to 26 Mbps.

Household Profile			Download Speed Requirement (Mbps)
Household Type	Uni-tasking Users	Multi-tasking Users	
One-person Household	0	1	14.7
Couple without Children	1	1	15.3
Couple with One Child	2	1	20.1
Tech-savvy Household	0	3	26.2

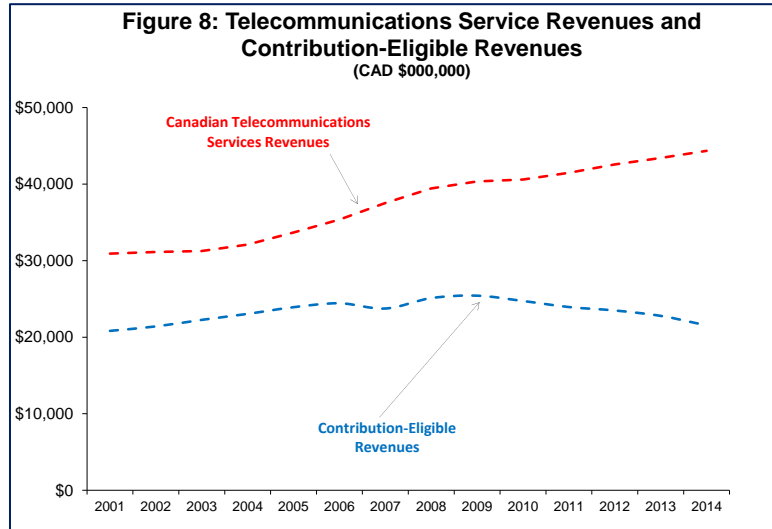
E37. The *minimum* “basic” requirement for Internet access speeds today (based on likely out of date 2013 data) is at least 5 Mbps per household, but the updated number is expected to be approximately 10 Mbps - double the 5 Mbps target set in the 2011 BSO. The AAC expects the “basic” level of broadband available and used by most Canadians to be at least 25 Mbps by 2020, and therefore the Commission should set that as the universal service objective for broadband, subject to yearly updates.

Key Position 7. To support the “25 Mbps by 2020” goal, the Commission should establish a new funding mechanism, financed through the existing but modified National Contribution Fund, to supplement the current residential local wireline subsidy regime, which would continue to operate as is. The new Broadband Deployment Funding Mechanism would be to support broadband deployment. Funding, which would be capped annually, could be achieved through broadening the contribution-eligible “tax base” by including retail Internet and paging service revenues, and by returning the contribution rate to historic (2001-14) levels. The Broadband Deployment Funding Mechanism could be implemented beginning 2017.

- E38. To support the goal of ensuring that all Canadians are able to have access to “basic” telecommunications services, and particularly broadband home Internet service, the AAC is proposing a new funding mechanism – the “Broadband Deployment Funding Mechanism”, as developed by Edgardo Sepulveda, an expert in universal service regimes.
- E39. The new Broadband Deployment Funding Mechanism could be funded through an increase to contributions to the National Contribution Fund (“NCF”), which is reasonable given that the current NCF is small and has decreased significantly in recent years, even as telecommunications service revenues have increased.
- E40. The NCF contribution regime could be expanded to include revenues from certain currently exempted services (retail Internet and paging), and by returning the contribution rate to historic levels.
- E41. The total annual cost of implementing the current subsidy regime, the base Affordability Funding Mechanism plus the Broadband Deployment Funding Mechanism would return the NCF to the historical average for the 2001-2014 period, 0.74% of telecommunications services revenues. The total annual cost with the ambitious Affordability Funding Mechanism would increase the NCF to 1.42% of telecommunications services revenues, approximately equal to the size of the USA Universal Service Fund over the 2001-14 period.
- E42. Doing so will enable the Commission to direct funding to priority areas that are not provided the 25 Mbps by 2020 goal via market forces or targeted government funding.

Key Position 8. To support affordability, the Commission should implement an affordability subsidy to support access by low-income households to the telecommunications services of their choosing from the service provider of their choosing. The AAC proposes, based on approaches taken elsewhere, an “Affordability Funding Mechanism”, financed through the existing but modified NCF, and capped annually. The AAC models a “baseline” approach (\$11 per month for up to 1.34 million households) and an “ambitious” approach (\$22 per month for up to 2.65 million households) based on comparisons to other jurisdictions. Like the Broadband Deployment Funding Mechanism, the Affordability Funding Mechanism could be implemented beginning 2017.

- E43. To support affordability, which the AAC’s evidence indicates is a major barrier to accessing telecommunications services, the AAC recommends that the Commission adopt a low-income affordability subsidy presented in the Sepulveda Report – the “Affordability Funding Mechanism”.
- E44. The Affordability Funding Mechanism would provide a monthly subsidy to low-income households which could be applied to any telecommunications service of their choosing, from any service provider of their choosing, thus reducing a major barrier and enhancing consumer control and choice.
- E45. Like the new Broadband Deployment Funding Mechanism, the Affordability Funding Mechanism could be funded through an increase to contributions to the NCF, which is reasonable given that the current NCF is small and has decreased significantly in recent years, even as telecommunications service revenues have increased. This is depicted by the following chart from the Sepulveda Report.



E46. The AAC presents a “baseline” version of the Affordability Funding Mechanism, based on the comparative “average” of programs in other jurisdictions, and an “ambitious” version based on Mr. Sepulveda’s “best in class” assessment. The “baseline” and “ambitious” Affordability Funding Mechanisms differ by monthly subsidy amount, number of eligible households, and annual cost, with the “base” Affordability Funding Mechanism having a monthly subsidy of \$11 available to about 1.34 million eligible households, for an annual capped cost of \$70 million, and the “ambitious” version having a \$22 subsidy to 2.65 million households and an annual capped cost of \$410 million.

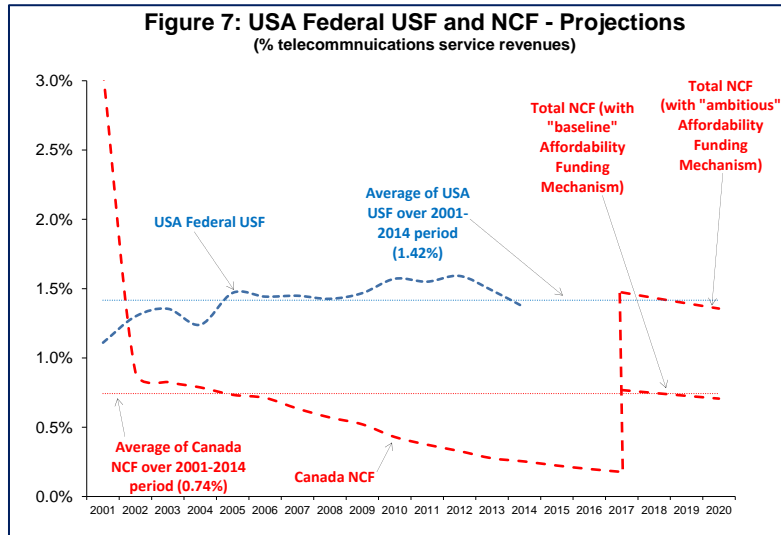
E47. The total annual cost of implementing the current subsidy regime, the “baseline” Affordability Funding Mechanism *plus* the Broadband Deployment Funding Mechanism would return the NCF to the historical average for the 2001-2014 period, 0.74% of telecommunications services revenues. The total annual cost with the “ambitious” Affordability Funding Mechanism would increase the NCF to 1.42% of telecommunications services revenues, approximately equal to the size of the USA Universal Service Fund over the 2001-2014 period.

E48. The total annual capped costs of the Affordability Funding Mechanism and Broadband Deployment Funding Mechanism are depicted below.

Scenario	Existing wireline subsidy	Affordability subsidy	Broadband deployment subsidy	Total cost	Proportion of total CTSRs	Contribution rate under new NCF
Baseline	\$80	\$70	\$220	\$370	0.74%	0.92%
Ambitious	\$80	\$410	\$220	\$710	1.42%	1.77%

Annual capped costs of the AAC's proposed subsidy mechanisms (\$ millions)

E49. The chart below compares the funding levels for the two new funding mechanisms (with both the “baseline” and “ambitious” proposals), relative to historical contribution rates, and relative to industry spending on universal service in the United States.



The AAC’s proposed subsidy mechanisms relative to past average, and relative to U.S.

E50. The AAC believes that the Commission should, in fulfilment of its mandate under the *Telecommunications Act*, adopt the “ambitious” Affordability Funding Mechanism.

E51. Like the Broadband Deployment Funding Mechanism, the Affordability Funding Mechanism could be implemented beginning 2017.

Key Position 9. The Commission should monitor its decision by performing yearly progress checks, and initiating a proceeding if and when timely progress toward availability and affordability goals fails.

E52. To ensure that the Commission keeps up with the rapid pace of change, and to ensure Canadians are well-served by their telecommunications system, the AAC recommends that the Commission implement mechanisms to monitor the decisions which flow from TNC 2015-134, rather than rely solely on periodic reviews every five years.

E53. These key positions are expanded upon in response to the Commission’s consultation questions.

GLOSSARY & LIST OF ABBREVIATIONS

The “50-80” rule	A test for determining whether a telecommunications service should be considered “basic” for the purposes of setting a regulated universal service objective.	
AAC	The Affordable Access Coalition.	
The 25 by 2020 proposal	The Affordable Access Coalition’s recommended target of access by all Canadians to at least 25 Mbps download speeds (and at least 5 Mbps upload speeds) by 2020.	
Affordability Funding Mechanism	The AAC’s proposed funding mechanism to make telecommunications services more affordable for low-income households.	
Bitrate	The number of bits per second that can be transmitted along a digital telecommunications network.	
Broadband Deployment Funding Mechanism	The AAC’s proposed funding mechanism to support the provisioning of residential broadband Internet service to unserved and underserved households.	
BSO	Basic service objective, as defined and mandated by the CRTC.	
The Original BSO The first basic service objective, as set out in Telecom Decision 99-16 (19 October 1999).	The 2011 BSO The second BSO, as set out in Telecom Regulatory Policy CRTC 2011-291 (3 May 2011).	The Proposed BSO The BSO which the AAC recommends should result from this consultation.
CMR	The CRTC’s annual <i>Communications Monitoring Report</i> .	
GB	Gigabyte – a measure of data that is stored on a computer’s storage system (e.g. a hard drive). 1 GB = 1024 MB.	
Gbps	Gigabits per second – a measure of the flow of data through digital networks, such as the speed of an Internet connection. 1 Gbps = 1000 Mbps. The conversion from a <i>bits</i> measure to a <i>bytes</i> measure requires division by 8, <i>i.e.</i> , 1 Gbps = 125 MB per second.	
HD video	High-definition video. Typically also includes a reference to the quality of an individual video frame based on by the number of vertical pixels and whether each frame displays a full image (“progressive”) or half an image (“interlaced”), <i>e.g.</i> , 720p, 1080i, 1080p.	
MB	Megabyte – a measure of data that is stored on a computer’s storage system (e.g. a hard drive). 1 MB = 1024 KB.	
Mbps	Megabits per second – a measure of the flow of data through digital networks, such as the speed of an Internet connection. 1 Mbps = 1000 Kbps. The conversion from a <i>bits</i> measure to a <i>bytes</i> measure requires division by 8, <i>i.e.</i> , 100 Mbps = 12.5 MB per second.	
NCF	National Contribution Fund.	
OTS	The obligation to serve.	
ISP	Internet service provider.	
UHD video	Ultra-high-definition video.	

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1. INTRODUCTION AND KEY POSITIONS

1. The following organizations are pleased to provide the Canadian Radio-television and Telecommunications Commission (the “**Commission**” or “**CRTC**”) with their first intervention in this important proceeding titled *Review of basic telecommunications services*:¹
 - The Association of Community Organizations for Reform Now, Canada (“**ACORN Canada**”);²
 - The Consumers’ Association of Canada (“**CAC**”);³
 - The Council of Senior Citizens Organizations of British Columbia (“**COSCO**”);⁴
 - The National Pensioners Federation (“**NPF**”);⁵ and
 - The Public Interest Advocacy Centre (“**PIAC**”)⁶

— together the “**Affordable Access Coalition**” or “**AAC**”.
2. The AAC wishes to be considered as an intervener in the proceeding, and requests to appear at the public hearing.
3. Attached as Appendix “A” is a summary of results from a survey by Environics Research Group (“**Environics**”) commissioned on behalf of the AAC. The telephone survey was conducted with 1,000 Canadians 18 years of age or over during the period of June 4-11, 2014 and covers a range of issues directly related to the consultation questions posed in this proceeding.

¹ *Review of basic telecommunications services* (Telecom Notice of Consultation CRTC 2015-134) (9 April 2015), as amended. (“**TNC 2015-134**”).

² ACORN Canada is an independent national organization of low and moderate income families with 70,000+ members in 20+ neighbourhood chapters across 9 cities. See ACORN Canada, online: <<https://www.acorncanada.org/>>.

³ CAC is an independent, non-profit, volunteer-based charitable organization with a mandate to inform and educate consumers on marketplace issues, to advocate for consumers with government and industry, and work with government and industry to solve marketplace problems. See CAC, online: <<http://www.consumer.ca/>>.

⁴ COSCO is the largest federation of senior citizens' organizations in the province of British Columbia and is the umbrella organization of 79 seniors' organizations and a significant number of individual associate members. See COSCO, online: <<http://coscobc.ca/>>.

⁵ NPF is a democratic, non-partisan, non sectarian organization with the mission to stimulate public interest in the welfare of aging Canadians, composed of 350 seniors chapters and clubs across Canada with a collective membership of 1,000,000 Canadian seniors and retired workers. See NPF, online: <<http://nationalpensionersfederation.ca/>>.

⁶ PIAC is a non-profit organization that provides legal and research services on behalf of consumer interests, and, in particular, vulnerable consumer interests, concerning the provision of important public services. See PIAC, online: <<http://www.piac.ca/>>.

4. Attached as Appendix “B” is the report of Edgardo Sepulveda titled *Funding Support for low-income Canadians and for Broadband Deployment* (the “**Sepulveda Report**”). Mr. Sepulveda is an expert in universal service regimes. His *curriculum vitae* has also been filed with the Commission.
5. Attached as Appendix “C” is the report by PIAC titled *No Consumer Left Behind: A Canadian Affordability Framework for Communications Services in a Digital Age* (“**PIAC’s Affordability Report**”)⁷ (January 2015).
6. Attached as Appendix “D” is the AAC’s summary of recent and current federal and provincial funding for broadband access.
7. Attached as Appendix “E” are the detailed results from the Environics survey.
8. The Affordable Access Coalition understands that some ACORN Canada members will be individually submitting comments relating to the affordability of broadband as part of Phase 1 of this proceeding. The AAC also understands that ACORN is currently in the process of conducting a survey of its members about the affordability of broadband.
9. In TNC 2015-134, the Commission is examining “*which telecommunications services Canadians require to participate meaningfully in the digital economy and the Commission’s role in ensuring the availability of affordable basic telecommunications services to all Canadians.*”
10. This proceeding is about the “basic” level of telecommunications service all Canadians can expect to have access to. But this proceeding is not about today, nor is it about the past. This proceeding really is about tomorrow.
11. The CRTC seized the moment in its broad review of the television framework, recognizing that the status quo was no longer serving Canadians. As the Chairman said about broadcasting, we as Canadians are now at a “fork in the road” and we can choose the status quo, or go down a less familiar path.⁸ In the result, the

⁷ John Lawford & Alysia Lau, “No Consumer Left Behind: A Canadian Affordability Framework for Communications Services in a Digital Age” (January 2015), online: <<http://www.piac.ca/wp-content/uploads/2015/03/PIAC-No-Consumer-Left-Behind-Final-Report-English.pdf>> (“**Appendix “C”, PIAC’s Affordability Report**”)

⁸ Speech, “Jean-Pierre Blais to the Canadian Club of Ottawa on Let’s Talk TV and the future of content made by Canadians” (12 March 2015):

We are now at a fork in the road. We can choose the status quo which has as a lynchpin a vision of the television media as being essentially linear. That path is known, it is tested; but it does not prepare us for the inevitable future – one that is wholly viewer centric.

Commission went down a less familiar path, initiating a sweeping set of perhaps painful but necessary reforms to the way broadcasting is regulated, and to the expectations placed on large broadcasters who were in need of inspiration and motivation from the CRTC to adapt to inevitable change.

12. So now, having also undertaken major framework reviews of wholesale wireline and wholesale wireless services – frameworks which set new ground rules for competition – the Commission has turned its focus on the end user: Canadians. ***What do Canadians need? What do Canadians expect? How can the Commission help?***
13. The task the Commission faced in Let's Talk TV – reforming a system that was broken, anachronistic, and out-of-touch with consumer needs and the broader public interest – in some way parallels the challenge of updating universal telecommunications in Canada and including broadband access in that “basic” service.
14. Just as Let's Talk TV was about all Canadians, so too is this proceeding. This proceeding is about inclusiveness – including *all* Canadians in the digital economy through universal service. By definition “all Canadians” must include Canadians living in the North and outside of urban areas, and Canadians of all origins, ages and incomes.
15. The AAC believes the remarks made by the government of the day in introducing the *Canadian Radio-television and Telecommunications Commission Act*⁹ are worth remembering:

The essential purpose of this bill is to entrust the regulation of all federally-regulated telecommunications to a single agency to be known in future as the Canadian Radio-television and Telecommunications Commission thus retaining the acronym CRTC-to emphasize the significance which this government sees in both aspects of telecommunications, namely broadcasting an [and] transmission. The integration of the different modes of telecommunication, whether they are

The second path is less familiar. It is therefore daunting for some. It is unpredictable in some respects. But its disruptive nature can be the hot bed of creativity, the refreshing world where true entrepreneurs and innovators triumph. The CRTC has chosen to set its course on this second path.

Our decision this past January was the first step we took down that path. I'll be honest: it wasn't universally loved. Some told us it didn't go far enough. Others said it went too far. We take such criticism in stride. If the players in the industry we regulate were always happy with our decisions, we would not be doing our job – that job is to serve the broader public interest, rather than their specific private interests.

⁹

Canadian Radio-television and Telecommunications Commission Act (R.S.C., 1985, c. C-22).

telephone, broadcasting, coaxial cable or microwave, becomes more and more complete every day. The advent of cable television, with its still undeveloped two-way potential, has made it imperative to entrust the different aspects of telecommunications to a single regulatory agency in order to ensure the harmonious development of these new techniques, **in a manner compatible with the best interests of Canadian citizens.**¹⁰

[...]

This rearrangement of administrative structures, as I have already mentioned, is only the first manifestation of our desire to integrate the various components of telecommunication in **the best interests of all Canadians.** The government is convinced that it will enable the members of the new commission to work in a more adequate and sustained way toward the supervision of the national broadcasting and telecommunication networks.

16. The government could not have been more clear that the CRTC's *raison d'être* is to serve the best interests of *all* Canadians, and indeed the Canadian telecommunications policy objectives of the *Telecommunications Act*¹¹, first expressed in 1993, contain several clear references to ensuring that *all* Canadians are well-served.
17. The objectives include facilitating the development of a telecommunications system that “serves to safeguard, enrich and strengthen the social and economic fabric of Canada and its regions”; the rendering of “reliable and affordable telecommunications services of high quality accessible to Canadians in both urban and rural areas in all regions of Canada”; “responding to the economic and social requirements of users of telecommunications services”; and contributing to protecting privacy.¹²
18. The objectives also include certain systemic goals for the telecommunications system, including enhancing the national and international competitiveness of the industry; promoting the primacy of Canadian ownership and control and the use of Canadian facilities; and promoting research and development and innovation.¹³
19. The objectives also include the fostering of “increased reliance on market forces for the provision of telecommunications services” and that “regulation, where required, is efficient and effective.”¹⁴

¹⁰ *House of Commons Debates*, 30th Parl, 1st Sess, Vol 4 (4 March 1975) at 3760-61 (Hon Gerard Pelletier (Minister of Communications)).

¹¹ *Telecommunications Act* (S.C. 1993, c. 38).

¹² *Telecommunications Act*, s. 7(a), (b), (h) and (i).

¹³ *Telecommunications Act*, s. 7(c), (d) and (g).

¹⁴ *Telecommunications Act*, s. 7(f).

20. The Commission is required to exercise and perform its duties under the *Telecommunications Act* with a view to implementing these policy objectives, in accordance with any orders made by the Governor in Council.¹⁵ The 2006 Policy Direction directs the CRTC to “(i) rely on market forces to the maximum extent feasible as the means of achieving the telecommunications policy objectives,” and “(ii) when relying on regulation, use measures that are efficient and proportionate to their purpose and that interfere with the operation of competitive market forces to the minimum extent necessary to meet the policy objectives.”¹⁶
21. In what follows, the AAC, in responding to the Commission’s consultation questions, presents its view that the Commission can and must mandate the inclusion of broadband Internet access, by upgrading the current National Contribution Fund, and by adding an affordability regime for low-income Canadians.
22. The AAC bases its intervention on the following nine “key positions.”

Key Position 1. Broadband has become an essential telecommunications service. It is essential to individuals (of all ages), to households, to businesses, and to Canada’s competitive advantage. Yet, not all Canadians are able to connect: access and socio-economic barriers persist.

23. The AAC does not believe there will be much debate over the proposition that broadband has become an essential service, if not *the* essential telecommunications service, from the perspective of all Canadians.
24. In 2011 the United Nations Special Rapporteur on Human Rights captured the importance of Internet access as follows:

Unlike any other medium, the Internet enables individuals to seek, receive and impart information and ideas of all kinds instantaneously and inexpensively across national borders. By vastly expanding the capacity of individuals to enjoy their right to freedom of opinion and expression, which is an “enabler” of other human rights, the Internet boosts economic, social and political development, and contributes to the progress of humankind as a whole. [...].¹⁷

¹⁵ *Telecommunications Act*, s. 47.

¹⁶ Order Issuing a Direction to the CRTC on Implementing the Canadian Telecommunications Policy Objectives, SOR/2006-355.

¹⁷ UN, Report of the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression (16 May 2011), online: <http://www2.ohchr.org/english/bodies/hrcouncil/docs/17session/A.HRC.17.27_en.pdf> at para. 67 (“**Special Rapporteur**”).

25. The Commission's U.S. counterpart, the Federal Communications Commission ("FCC") put it even more succinctly less than a month ago: "Today, broadband is essential to participate in society."¹⁸
26. To underscore the point that broadband Internet service has become an essential telecommunications service, if not *the* essential telecommunications service, the AAC presents primary and secondary evidence to demonstrate how essential – how vital – broadband Internet is to all Canadians. From a human rights perspective to a national economic competitiveness standpoint, Canada must make universal broadband access a priority.
27. Moreover, broadband is becoming, in the AAC's view, *the* essential communications service, and one that is becoming increasingly more central to the delivery of both telecommunications services and broadcasting services.
28. Indeed, access to the Internet is gaining recognition as a human right.
29. For example, in 2010, a poll conducted across 26 countries for BBC World Service indicated that four in five adults (79%) regard Internet access as their "fundamental right."¹⁹

¹⁸ FCC, *Second Further Notice of Proposed Rulemaking, Order on Reconsideration, Second Report and Order, and Memorandum Opinion and Order* (22 June 2015), (FCC 15-71A).

¹⁹ BBC, online: <http://news.bbc.co.uk/2/shared/bsp/hi/pdfs/08_03_10_BBC_internet_poll.pdf>.

Canadians are relatively supportive of regulation of the internet, with 51 per cent disagreeing that the internet should never be regulated, compared to 43 per cent worldwide. This may be driven by fears of fraud, as Canadians' concerns about the internet are dominated by fraud and privacy issues. They are relatively unconcerned about explicit content (14% say this is the issue they are most concerned about, compared to 27% worldwide). Canadians tend to derive value from the internet in learning and communicating: 61 per cent strongly agree that the internet is a good place to learn (56% worldwide), and communication is the most valued aspect of the internet to 39 per cent of Canadians compared to 32 per cent elsewhere.

Should the internet be a fundamental right?

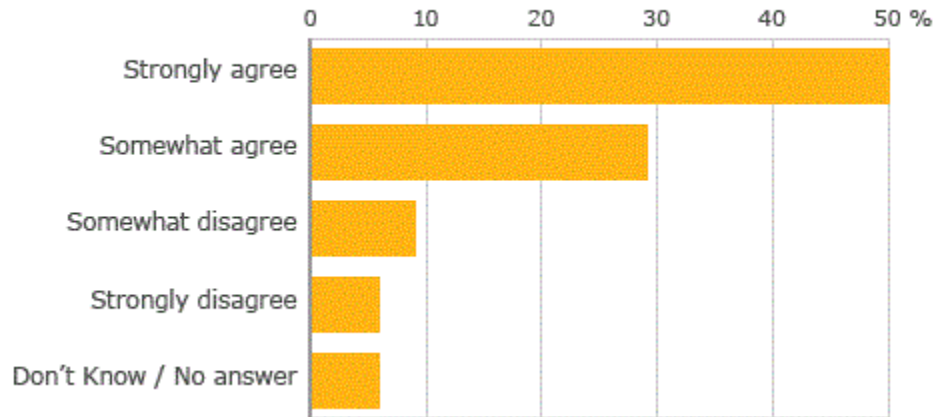


Figure 1. BBC World Service 2010 Global Poll about Internet Service

30. In 2011 the United Nations Special Rapporteur on Human Rights reported that all States have a “positive obligation to promote or to facilitate the enjoyment of the right to freedom of expression and the means necessary to exercise this right, including the Internet,”²⁰ and that States should, through public consultation, adopt policies and strategies “to make the Internet widely available, accessible and affordable to all.”²¹
31. That emphasis on the importance of Internet access is borne out by the results of the Environics survey.
 - 80% of respondents indicated that broadband Internet service at home is essential, to varying degrees, with 37% responding that it is “absolutely essential.”²²
 - 84% of respondents believe that all Canadians should have access to broadband Internet service at home no matter where they live in Canada, compared to only 15% who do not.²³
32. It follows that if broadband has become an essential telecommunications service, if not *the* essential telecommunications service, then all Canadians should have access to at least a “basic” level of service. This is currently what Canadians expect of their telephone service.

²⁰ Special Rapporteur at para. 66.

²¹ Special Rapporteur at para. 66.

²² Environics survey, Q5B: top 5 box.

²³ Environics survey, Q8B: top 2 and bottom 2 boxes.

Key Position 2. Not all Canadians are able to connect: access and socio-economic barriers persist.

33. Access to broadband has two components: availability and affordability. If one cannot make the connection to the network, physically, no amount of money will solve that problem, whereas connection may be possible, but at an unaffordable level.
34. In 2011 the Library of Parliament²⁴ referred to two digital divides: the **technical digital divide** and the **socio-economic digital divide**.

A “digital divide” separates those who use broadband from those who do not. Digital divides can be broadly separated into two categories: the technical digital divide and the socio-economic digital divide. The technical digital divide refers to accessibility or the technical ability to have a broadband connection. Although there may be areas in cities (or on the urban-suburban fringe) with no access to broadband, the technical digital divide generally refers to the gap between urban and rural or remote areas.

The socio-economic divides focus on choice. Those who have access to broadband may choose not to subscribe to it. Such digital divides can be based on age, income, education, language or gender. Overcoming the socio-economic digital divides is important in establishing an inclusive digital society; however, this paper focuses on the fundamental issue of providing the technical access to broadband.

35. The AAC’s research from consultation with coalition members, from the Environics survey, and from secondary sources, including Statistics Canada research, supports the finding that availability and affordability are ongoing barriers to Canadians.
36. While the AAC expects the exact numbers to be a factual issue for determination as part of this proceeding, including the planned *Let’s Talk Broadband* phase, the AAC’s initial research suggests that there are persistent broadband Internet availability gaps in Canada.
37. The 2014 edition of the annual *Communications Monitoring Report* (“**CMR**”) indicates that broadband (at various speed increments) is available (note availability does not mean penetration) to the following percentages of Canadian households.

²⁴ Library of Parliament, “Rural Broadband Deployment (In Brief)” (27 June 2011), online: <<http://www.parl.gc.ca/content/lop/researchpublications/2011-57-e.pdf>>.

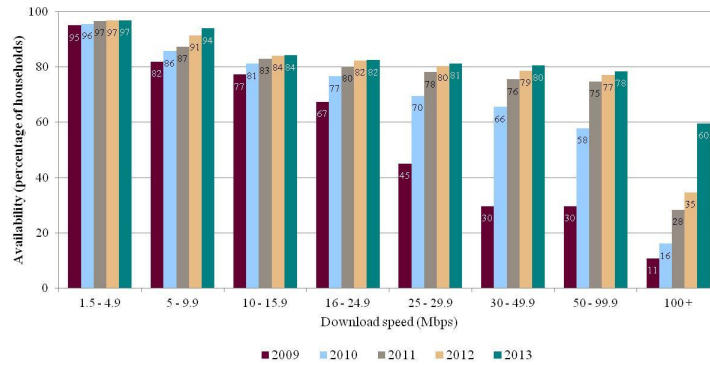


Figure 2. Broadband availability by speed (percentage of households)

38. Furthermore, of the over 170 submissions by individuals filed to date in this proceeding, it is clear that many Canadians are unhappy with the status quo.
39. Several themes emerge from the interventions of individuals.
- (v) Canadians not being able to access the Internet at speeds they need;
 - (vi) Actual performance (speed) being much lower than advertised;
 - (vii) Large differences between speed in urban and rural areas; and
 - (viii) Large differences between price in urban and rural areas.
40. A number of interventions elegantly sum up such concerns.
41. There are problems with both *availability* and *affordability*, and broadband Internet access service gaps are correlated to income, as data from Statistics Canada suggests, with those in the lowest income deciles having the least access to telecommunications at home relative to other households. Whereas 82.5% of all households as access to the Internet at home, for example, only 50.3% of household in the lowest decile have access. (See response to [Consultation Question 1\(c\)](#) below.)
42. The Environics survey results indicate that Canadians believe broadband home Internet service needs to be affordable to low-income Canadians.²⁵
- 89% of respondents believe that broadband should be affordable for low-income Canadians (only 10% do not).

²⁵ Environics survey, Q8D.

43. Accordingly, as part of the AAC's proposals below, the AAC proposes a low-income subsidy mechanism (referred to as the Affordability Funding Mechanism) to address the inverse relationship between income and Internet subscriptions rates.

Key Position 3. Market forces and targeted government funding are not solving the problem.

44. The last time the Commission considered the BSO was in 2010: *Proceeding to review access to basic telecommunications services and other matters*, Telecom Notice of Consultation CRTC 2010-43, as amended (28 January 2010). That proceeding resulted in Telecom Regulatory Policy CRTC 2011-291, *Obligation to serve and other matters* (3 May 2011) (the "**2011 BSO**").
45. In the 2011 BSO, the Commission concluded that "market forces and targeted government funding will continue to drive the rollout and improvement of broadband Internet access services in rural and remote areas."²⁶
46. At the same time, the Commission indicated it would monitor the availability of broadband to all Canadians, and "review in the future the matter of funding mechanisms should market gaps persists."²⁷
47. Have "market forces and targeted government funding" worked?
48. The AAC's primary and secondary research suggests that the answer is "no."
49. First of all, as the AAC will explain, the 5 Mbps target, may have been appropriate for 2013 but is likely is too low for 2015 and beyond.²⁸ The AAC comes to this conclusion based on the legal test for "basic telecommunication service", and the "50-80 rule" which considers a telecommunications service as "basic" for the purposes of determining required universal service if 50% of the population subscribes to a service, and 80% of those subscribers do so at given speed. For example, if 50% of Canadian households subscribed to broadband Internet service,

²⁶ *Obligation to serve and other matters* (Telecom Regulatory Policy CRTC 2011-291) (3 May 2011) at para. 63. (The "**2011 BSO**").

²⁷ 2011 BSO at para. 64.

²⁸ See below: Nordicity report for FCM: "there are reasons to believe this may not be adequate now, let alone in the near future." Also:

A recent report prepared by Nordicity, and delivered to the governments of the three northern territories concluded that there should actually be different speed requirements based on particular user groups. For example, speeds of 9 Mbps were suggested for residential use, 11 Mbps for educational use, and 16 Mbps for healthcare applications. All of these speeds were identified as being required today.

and 80% of those subscribing households did so at 5 Mbps, then that is considered, legally, “basic” service. Indeed, in 2013, the 5 Mbps speed appears to have met that test. In 2015 however the AAC believes that “basic” broadband service is closer to 10 Mbps, and expects that “basic” broadband is likely to be 25 Mbps by 2020.

50. Second, the AAC’s research and analysis indicates that the speeds required today by typical households range from 9 Mbps to 26 Mbps. Obviously, then, the 3 Mbps minimum target for the North set by the Government of Canada’s “Connecting Canadians” program is also too low.²⁹
51. Third, focusing on speed alone ignores the socio-economic divide because it does not consider the affordability of Internet access service (and telecommunications services more broadly), and therefore ignores people who require Internet access service but are unable to purchase it because they cannot afford it.
52. Fourth, other research shows that broadband availability issues persist across Canada, and in particular in northern and rural communities, even at the 5 Mbps level, let alone higher levels.
53. In hindsight, relying exclusively on market forces and targeted government funding to deliver the target of 5 Mbps was perhaps not the appropriate way to achieve universal broadband service, especially because the target was not supported by sufficient monitoring of availability and affordability, and because there were no consequences attached to failing to achieve that target.

Key Position 4. *Meanwhile, other jurisdictions have taken bold steps to connect their citizens and to address affordability barriers.*

54. Meanwhile, other jurisdictions have taken bold steps to connect all of their citizens, including setting ambitious broadband access goals.

Broadband Access Goals		
Who?	What?	By When?
U.S.A.	10 Mbps (rural/underserved communities) 100 Mbps to 100 million households	(no fixed date) 2020

²⁹ See “About Connecting Canadians”, online:
<<http://www.ic.gc.ca/eic/site/028.nsf/eng/50009.html>>:

Connecting Canadians' objective is to increase high-speed Internet to target speeds of 5 megabits per second (Mbps) for most rural and remote areas and 3 to 5 Mbps in areas covered by the northern component of the program.

See also Industry Canada press release, “Improved High-Speed Internet Coming to Nunavut” (8 July 2015).

European Union	30 Mbps to 100%	2020
Australia	50 Mbps to 90% of fixed line premises 25 Mbps to 100%	2019 2021
U.K.	2 Mbps to 100% 24 Mbps to 95%	2016 2017
France	3-4 Mbps to 100% Fibre-to-the-home to 100%	2017 2022
Germany	50 Mbps to 100%	2018

Table 1. Broadband access goals of some of Canada's international peers³⁰

55. These countries recognize the importance of broadband for all citizens. So too does the Canadian government, and the Commission, in repeated policy documents.
56. At the same time, some countries have also implemented measures to make telecommunication services more affordable, including the U.S., France and Spain.
57. There is no doubt that connectivity will be key to building up Canada's competitive advantage, yet there are signs at the macro level that Canada is falling behind. For example, the Internet Association, an industry association, has commented that Canada is facing a "Digital Challenge" on a number of fronts:
 - Generally speaking Canadian businesses have been slow to adopt Internet technologies that are mainstream among key competitors globally.
 - Virtually every major comparative study done in the past few years shows Canada to be firmly in the middle of the pack with respect to the digital economy's contribution to GDP.
 - In assessing the Internet's contribution to growth, Canada falls even further behind.³¹

³⁰ See: *In the Matter of Connect America Fund ETC Annual Reports and Certifications* (18 December 2014), FCC 14-190, online: <https://apps.fcc.gov/edocs_public/attachmatch/FCC-14-190A1.pdf>; FCC, "National Broadband Plan" (17 March 2010), online: <<https://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf>>; European Commission, "Digital Agenda for Europe: key initiatives" (19 May 2010), online: <http://europa.eu/rapid/press-release_MEMO-10-200_en.htm>; Letter from Minister for Communications & Minister for Finance to NBN Co Limited Executive Chairman (8 April 2014), online: <<http://www.nbnco.com.au/content/dam/nbnco2/documents/soe-shareholder-minister-letter.pdf>>; NBN Co, "Strategic Review" (12 December 2013), online: <<http://www.nbnco.com.au/content/dam/nbnco/documents/NBN-Co-Strategic-Review-Report.pdf>>; Department for Culture, Media & Sport, "Broadband Delivery UK" (13 November 2014), online: <<https://www.gov.uk/broadband-delivery-uk>>; "Plan France Très Haut Débit" (March 2015), online: <<http://www.francethd.fr/wp-content/uploads/2015/05/Cahier-des-charges-PFTHD-2015.pdf>>; Federal Ministry for Economic Affairs and Energy et al, "Digital Agenda 2014-2017" (August 2014), online: <http://www.digitale-agenda.de/Content/DE/_Anlagen/2014/08/2014-08-20-digitale-agenda-engl.pdf?__blob=publicationFile&v=6>.

58. Indeed, some media reports and commentary have drawn attention to Canada's lagging status.

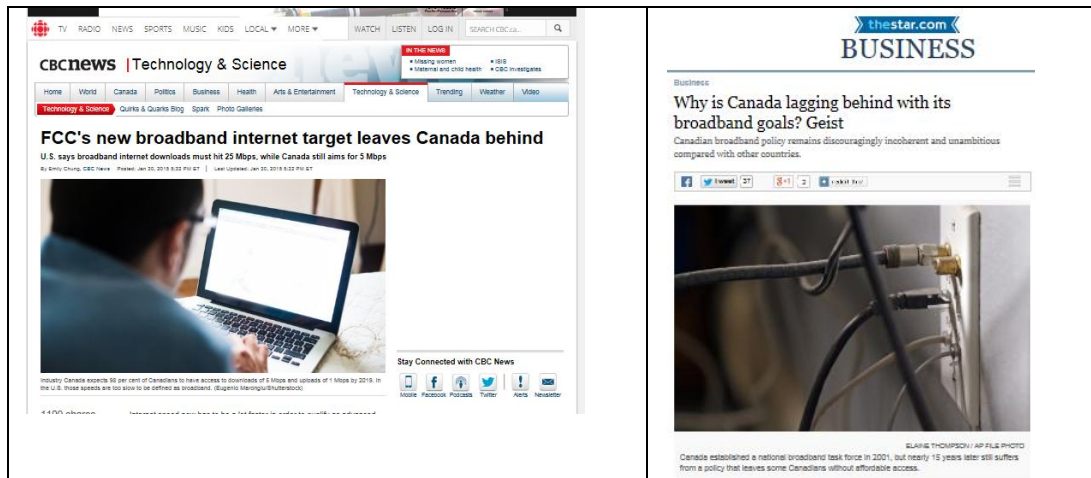


Figure 3. Sample media reports on Canada's digital aspirations³²

59. In the AAC's view, bold action is necessary to ensure that all Canadian households have access to broadband Internet service at a speed that allows them to participate in the digital economy, and so that low-income Canadians can afford access to basic telecommunications service of a high quality.

³¹ The Internet Association, "Reasserting Canada's Competitiveness in the Digital Economy" (September 2014), online: <http://internetassociation.org/wp-content/uploads/2014/10/September-2014_-The-Internet-Association-Canada-Digital-Economy-Paper.pdf> at 5 [citations omitted];

In the Internet Association's view, the cause of Canada's "poor performance" in the digital economy is due to underinvestment, lack of access to domestic and foreign capital, and lack of leadership from Canadian policymakers. In their view "Accessibility and affordability for Canadians requires public investment in infrastructure and dynamic policy choices. Canada's low population density and rugged geography increases the demand for Internet services to bridge the distance gap – such as digital health and education services – and creates economies of scale for businesses. But, the nation's geographic and demographic realities also mean that access and infrastructure costs will be higher than in countries where populations are more concentrated. Consequently, some degree of public funding will be a continuing necessity to ensure that all Canadians receive the services they need and Canadian businesses remain competitive in the digital economy.

³² CBC News, "FCC's new broadband internet target leaves Canada behind" (30 January 2015), online: <<http://www.cbc.ca/news/technology/fcc-s-new-broadband-internet-target-leaves-canada-behind-1.2938440>>; Toronto Star, "Why is Canada lagging behind with its broadband goals? Geist" (15 May 2015) online: <<http://www.thestar.com/business/2015/05/15/why-is-canada-lagging-behind-with-its-broadband-goals-geist.html>>.

Key Position 5. The Commission now has the *opportunity* and the duty to do the same.

60. As the AAC explains throughout its intervention, there should be no question that broadband Internet access should be recognized, in reference to the telecommunications policy objectives, as an essential service which all Canadians should have access to, as well as an essential driver of Canadian economic productivity. It is therefore the AAC's submission that the Commission now has before it not just an important opportunity to ensure all Canadians have access to broadband Internet service, but a *duty* to do so under the mandate entrusted to in the *Telecommunications Act*.

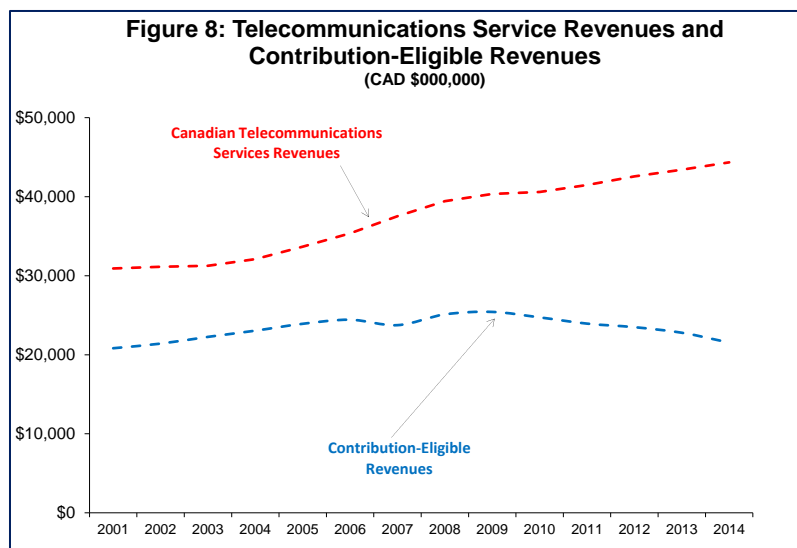
Key Position 6. Typical Canadian households *currently* use and require anywhere from a 9 Mbps to a 26 Mbps connection, and demand and speeds are expected to continue to rise. According to the 50-80 rule, the "basic" level of broadband access today is at *minimum* 5 Mbps download speed, which the AAC expects will increase to 25 Mbps by 2010. The Commission should therefore set a goal of all Canadian households being able to access 25 Mbps broadband home Internet service by 2020 (the "25 Mbps by 2020" goal), subject to annual updates to the definition of "basic" broadband.

61. The Affordable Access Coalition's analysis of current household needs indicates that Canadian households currently use and require anywhere from 9 Mbps to 26 Mbps, and that the *minimum* "basic" requirement for Internet access speeds today (based on 2013 data) is at least 5 Mbps per household, but that the updated number is expected to be approximately 10 Mbps - double the 5/1 Mbps target set in the 2011 BSO.
62. These estimates are based primarily on the AAC's modelling of different types of household profiles, ranging from a single person residence to a "tech-savvy" multi-tasking family of three. The model does not include the more than three million Canadian households that consist of 4 or more people, however doing so would likely yield greater broadband requirements.
63. This analysis is described in detail in response to [Consultation Question 1\(b\)](#) below.

Key Position 7. To support the "25 Mbps by 2020" goal, the Commission should establish a new funding mechanism, financed through the existing but modified National Contribution Fund, to supplement the current residential local wireline subsidy regime, which would continue to operate as is. The new Broadband Deployment

Funding Mechanism would be to support broadband deployment. Funding, which would be capped annually, could be achieved through broadening the contribution-eligible “tax base” by including retail Internet and paging service revenues, and by returning the contribution rate to historic (2001-14) levels. The Broadband Deployment Funding Mechanism could be implemented beginning 2017.

64. The AAC acknowledges the work required to narrow or eliminate the discrepancy of Internet service speeds between rural and urban-dwelling Canadians may be challenging. To support the goal of ensuring that all Canadians are able to have access to “basic” telecommunications services, and particularly broadband home Internet service, the AAC is proposing a new funding mechanism – the “Broadband Deployment Funding Mechanism”, as developed by Edgardo Sepulveda, an expert in universal service regimes.
65. The Broadband Deployment Funding Mechanism is described in response to [Consultation Question 13](#) below, and detailed in the Sepulveda Report attached as Appendix “B”.
66. The new Broadband Deployment Funding Mechanism could be funded through an increase to contributions to the National Contribution Fund (“NCF”), which is reasonable given that the current NCF is small and has decreased significantly in recent years, even as telecommunications service revenues have increased. This is depicted by the following chart from the Sepulveda Report.



67. The NCF contribution regime could be expanded to include certain currently exempted services (retail Internet and paging), and the percentage contribution increased. The total annual cost of implementing the current subsidy regime, the base Affordability Funding Mechanism plus the Broadband Deployment Funding Mechanism would return the NCF to the historical average for the 2001-2014 period, 0.74% of telecommunications services revenues. The total annual cost with the ambitious Affordability Funding Mechanism would increase the NCF to 1.42% of telecommunications services revenues, approximately equal to the size of the USA Universal Service Fund over the 2001-14 period.
68. Doing so will enable the Commission to direct funding to priority areas that are not provided the 25 Mbps by 2020 goal via market forces or targeted government funding.
69. The Sepulveda Report is attached as [Appendix "B"](#), and is referenced extensively in response to [Consultation Question 13](#) below.

Key Position 8. To support affordability, the Commission should implement an affordability subsidy to support access by low-income households to the telecommunications services of their choosing from the service provider of their choosing. The AAC proposes, based on approaches taken elsewhere, an "Affordability Funding Mechanism", financed through the existing but modified NCF, and capped annually. The AAC models a "baseline" approach (\$11 per month for up to 1.34 million households) and an "ambitious" approach (\$22 per month for up to 2.65 million households) based on comparisons to other jurisdictions. Like the Broadband Deployment Funding Mechanism, the Affordability Funding Mechanism could be implemented beginning 2017.

70. To support affordability, which the AAC's evidence indicates is a major barrier to accessing telecommunications services, the AAC recommends that the Commission adopt a low-income affordability subsidy presented in the Sepulveda Report – the "Affordability Funding Mechanism".
71. The Affordability Funding Mechanism would provide a monthly subsidy to low-income households which could be applied to any telecommunications service of

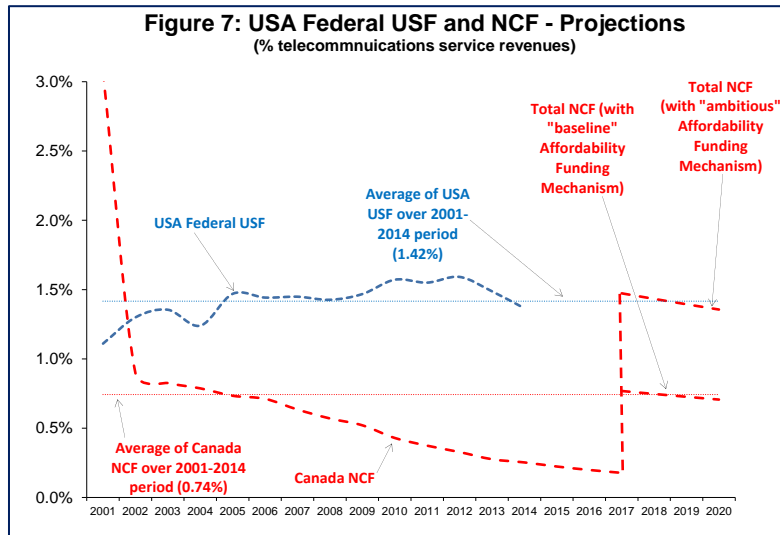
their choosing, from any service provider of their choosing, thus reducing a major barrier and enhancing consumer control and choice.

72. Like the new Broadband Deployment Funding Mechanism, the Affordability Funding Mechanism could be funded through an increase to contributions to the NCF, which is reasonable given that the current NCF is small and has decreased significantly in recent years, even as telecommunications service revenues have increased.
73. The AAC presents a “baseline” version of the Affordability Funding Mechanism, based on the comparative “average” of programs in other jurisdictions, and an “ambitious” version based on Mr. Sepulveda’s “best in class” assessment. The “baseline” and “ambitious” Affordability Funding Mechanisms differ by monthly subsidy amount, number of eligible households, and annual cost, with the “base” Affordability Funding Mechanism having a monthly subsidy of \$11 available to about 1.34 million eligible households, for an annual capped cost of \$70 million, and the “ambitious” version having a \$22 subsidy to 2.65 million households and an annual capped cost of \$410 million.
74. The total annual cost of implementing the current subsidy regime, the “baseline” Affordability Funding Mechanism *plus* the Broadband Deployment Funding Mechanism would return the NCF to the historical average for the 2001-2014 period, 0.74% of telecommunications services revenues. The total annual cost with the “ambitious” Affordability Funding Mechanism would increase the NCF to 1.42% of telecommunications services revenues, approximately equal to the size of the USA Universal Service Fund over the 2001-2014 period.
75. The total costs of the Affordability Funding Mechanism and Broadband Deployment Funding Mechanism are depicted below.

Scenario	Existing wireline subsidy	Affordability subsidy	Broadband deployment subsidy	Total cost	Proportion of total CTSRs	Contribution rate under new NCF
Baseline	\$80	\$70	\$220	\$370	0.74%	0.92%
Ambitious	\$80	\$410	\$220	\$710	1.42%	1.77%

Annual capped costs of the AAC's proposed subsidy mechanisms (\$ millions)

76. The chart below compares the funding levels for the two new funding mechanisms (with both the “baseline” and “ambitious” proposals), relative to historical contribution rates, and relative to industry spending on universal service in the United States.



The AAC’s proposed subsidy mechanisms relative to past average, and relative to U.S.

- 77. Like the Broadband Deployment Funding Mechanism, the Affordability Funding Mechanism could be implemented beginning 2017.
- 78. It is the AAC’s submission that the Commission should, in fulfillment of its mandate under the *Telecommunications Act*, adopt the “ambitious” Affordability Funding Mechanism to support affordability.

Key Position 9. The Commission should monitor its decision by performing yearly progress checks, and initiating a proceeding if and when timely progress toward availability and affordability goals fails.

- 79. To ensure that the Commission keeps up with the rapid pace of change, and to ensure Canadians are well-served by their telecommunications system, the AAC recommends that the Commission implement mechanisms to monitor the decisions which flow from TNC 2015-134.
- 80. These measures include performing yearly progress checks on availability and affordability of basic telecommunications service, and taking immediate action to correct course.
- 81. The AAC believes that waiting five years in between reviews is insufficient, and recommends that follow up regulatory action be implemented on a timely basis in addition to periodic reviews.
- 82. The AAC elaborates on this in [Section 2](#) below.

2. RESPONSES TO CONSULTATION QUESTIONS

83. In its preamble to the consultation questions presented below, the Commission directed parties to answer the questions in the order posed and “take into consideration and address the relevant aspects of the policy objectives set out in section 7 of the Act and the Policy Direction, as applicable.”³³

Canadians’ evolving needs for telecommunications service (Q1 – Q2)

84. The Affordable Access Coalition addresses consultation questions 1(a) and (b) together.

Q1. Canadians are using telecommunications services to fulfill many social, economic, and cultural needs in today’s digital economy.

Q1(a). Explain how telecommunications services are used to meet these needs. For example, uses may include e-commerce (i.e. the online purchase and trade of products or services), e-banking and/or telephone banking, e-health or telehealth services, telework, and distance education. Which of these uses of telecommunications services are the most important to ensure that Canadians meaningfully participate in the digital economy?

Q1(b). Explain which telecommunications services are most important to support these needs and uses. What characteristics (e.g. capacity, mobility, high speed, and low latency) should these telecommunications services have?

Brief answer: *The importance of telecommunications services, especially home broadband Internet access, is no longer in question. Participation in the digital economy is no longer just about taking advantage of e-business or e-commerce opportunities. Today, participation in the digital economy is essential to civic involvement and to everyday life. How Canadians use these services to meet their needs is varied and subject to rapid change, as new applications are developed and adopted. The Commission should ensure Canadians have access to affordable,*

³³ TNC 2015-134, Appendix “B”.

reliable communications with enough download speed, upload speed and data allowance to meet their needs, as individual Canadians define those needs to be, rather than deciding what applications are essential. Taking the most popular services being used today at reasonable performance levels expected by Internet users, household requirements far exceed the 5/1 Mbps target set in 2011; households of 1 to 3 users of varying degrees of multitasking can readily require 15.3 to 26.2 Mbps download speed, upwards of 10 Mbps upload speed, and data allowances exceeding the vast majority of packages offered today.

85. At the outset the Affordable Access Coalition notes that the term “digital economy” should be given a broad interpretation and one that connotes not just ideas of business and commerce, but ideas of social and civic engagement. The term “digital economy” was introduced in 1995 by Don Tapscott, and its meaning has evolved significantly since. Initially, the term was described by Tapscott as the economy for the age of networked intelligence.³⁴ In 2001, the United States Bureau of the Census outlined three main components of the “digital economy” concept as follows:

- Supporting infrastructure (hardware, software, telecoms, networks, etc.);
- E-business (how business is conducted, any process that an organization conducts over computer-mediated networks); and
- E-commerce (transfer of goods, for example when a book is sold online).³⁵

86. Although one can argue these components as described remain critical for the operation of the digital economy, the notion that the “digital economy” remains confined to the realms of e-business and e-commerce is no longer valid. The advent of social media and the overlapping of traditional communication services have resulted in broadening the scope of the digital economy as a concept. In 2010, in its consultation on a Digital Economy Strategy for Canada, Industry Canada defined the digital economy as “the term used to describe the network of suppliers and users of digital content and technologies that enable everyday life.”³⁶

87. In response, a group of scholars and experts in information and communication technology policy, convened by the University of Toronto, emphasized that a broader conceptualization of the “digital economy” was necessary because that definition was

³⁴ Don Tapscott, *The Digital Economy Anniversary Edition: rethinking promise and peril in the age of networked intelligence* (New York: McGraw-Hill, 2015) at 16.

³⁵ Thomas Mesenbourg, *Measuring the Digital Economy* (Suitland, MD: United States Bureau of the Census, 2001) at 2.

³⁶ Industry Canada, “Improving Canada's Digital Advantage” (2010), online: <https://www.ic.gc.ca/eic/site/028.nsf/eng/h_00025.html?Open&pv=1> at 8.

“narrow, and positioned in the framework of a competitive, conventional market-driven model that does not encompass the changing realities of a digitally driven world.”³⁷

88. The group concluded a better way to think about the digital economy is to conceive of it as “one element of a digital society.” Such a digital society would

perform not just the vital function of encouraging and facilitating the development of a strong, trusted and innovative marketplace but also, and equally vitally, considers core Canadian values of inclusiveness, sustainability, and accessibility to the digital infrastructures and services that are increasingly essential to civic participation and everyday life.³⁸ [Emphasis added.]

89. In the Affordable Access Coalition’s view, the critical importance of telecommunications services to fulfill Canadians’ social, economic, and cultural needs in today’s digital economy is no longer open to question, nor is the central role of broadband access to the Internet.

90. **Indeed the Commission appears to have recognized this in *Northwestel Inc. – Regulatory Framework, Modernization Plan, and related matters*:**

91. The Commission has, in particular, acknowledged the importance of broadband access to the Internet for Canadians and Canadian businesses on numerous occasions.³⁹ Very recently, for example, in his address to the Banff World Media Festival, the Chairman described broadband networks as

[...] the platform on which mobile technology stands, the superhighway that we all travel to reach our online destinations, the attractive nuclear force that has fused the telecommunications and broadcasting industries.

³⁷ Andrew Clement & Karen Louise Smith, *Consensus Submission to the Federal Government Consultation on a Digital Economy Strategy for Canada* (University of Toronto, 2010) at 11-12.

³⁸ Clement & Smith at 12.

³⁹ 2011 BSO at para. 71; Peter Menzies, Speech at the 2013 Canadian ISP Summit (12 November 2013), online: <<http://www.crtc.gc.ca/eng/com200/2013/s131113.htm>>; Jean-Pierre Blais, Speech to the Canadian Telecom Summit (4 June 2013), online: <<http://www.crtc.gc.ca/eng/com200/2013/s130604.htm>>; *Review of the Internet traffic management practices of Internet service providers* (21 October 2009), Telecom Regulatory Policy 2009-657, online: <<http://www.crtc.gc.ca/eng/archive/2009/2009-657.htm>> at para. 1; see also *Northwestel Inc. – Regulatory Framework, Modernization Plan, and related matters* (18 December 2013), Telecom Regulatory Policy CRTC 2013-711, online: <<http://www.crtc.gc.ca/eng/archive/2013/2013-711.htm>>. (“**TRP 2013-711**” at para.120:

The Commission recognizes that broadband Internet access is, more than ever, an important means of communication for northern Canadians, and that it is needed to achieve a number of social, economic, and cultural objectives, as evidenced by the parties’ submissions in this proceeding.

In just a few short years, broadband services grew from occasional, nice-to-have amenities to ubiquitous services. In the broadband home of the future, everyone and everything will be connected—the kids, the parents, the grandparents, as well the home monitoring system, the thermostat, the refrigerator and other appliances.

Outside our homes, it will be the mailbox and the vending machine.

As a result, nearly every aspect of our lives will be connected in some way: entertainment, education, health, safety, wellbeing, banking, communication, access to government services, participation in democracy.

Broadband services now are fundamental to Canadians' ability to participate in the digital economy.⁴⁰

92. Canadians subscribe to Internet services in high proportions,⁴¹ regardless of their location or the size of their community. In the Environics survey the AAC commissioned for this proceeding, Canadian consumers confirmed, once again, the importance of access to broadband service.⁴²
93. Broadband access to the Internet, however, is not equally attainable for all Canadians. In response to the AAC's survey, seniors report lower levels of Internet subscriptions⁴³ as do economically vulnerable Canadians.⁴⁴ The AAC will elaborate on the issue of affordability in their response to [Consultation Question 1\(c\)](#), below.
94. The mandate Parliament defined for the Commission in the *Telecommunications Act* calls for the Commission to "facilitate the development of a telecommunications system which safeguards, enriches and strengthens the social and economic fabric of Canada and its regions."⁴⁵ A telecommunications system which safeguards, enriches and strengthens Canada's social and economic fabric must, above all, meet the needs of all users of this system as these users define their needs.

⁴⁰ Jean-Pierre Blais, Speech at the Banff World Media Festival (7 June 2015), online: <<http://news.gc.ca/web/article-en.do?nid=985059>>.

⁴¹ CRTC, "Communications Monitoring Report 2014" (October 2014), online: <<http://www.crtc.gc.ca/eng/publications/reports/PolicyMonitoring/2014/cmr.pdf>> at 171 ("**2014 CMR**").

⁴² 93% of homes reported a subscription to home Internet, the same rate (within the sampling margin of error) across all community sizes. When asked to rate the importance of broadband on a 10 point scale (10 being absolutely essential), 67% of respondents stated broadband home Internet rated a 8, 9 or 10. This result was the same (within the sampling margin of error) across all community sizes.

⁴³ 85% of respondents aged 60+ reported a home Internet subscription as compared to 96%, 97%, and 94% for other age groups.

⁴⁴ 74% of respondents with income under \$20,000 per year reported a home Internet subscription as opposed to 99% of those earning over \$100,000.

⁴⁵ Section 7(a).

95. Parliament has also directed the Commission to promote the rendering of “reliable and affordable telecommunications services of high quality accessible to Canadians in both urban and rural areas in all regions of Canada.”⁴⁶ Once again, Parliament has directed the Commission to focus upon meeting the needs of telecommunications service users, throughout Canada and across all demographic segments.
96. Parliament has directed the Commission to promote reliance on market forces,⁴⁷ to enhance efficiency and competitiveness,⁴⁸ to stimulate research and development and to encourage innovation in telecommunications,⁴⁹ for the benefit of Canadians. To meet these objectives, the telecommunications system must, again, focus above all upon meeting the needs of all Canadians, as Canadians define these needs.⁵⁰
97. The AAC submits that in light of the above, the Commission should strive to ensure that Canadians, regardless of where they live and regardless of their economic circumstances should have access to affordable and high quality telecommunications services to meet the needs they define based on their own circumstances.
98. The needs that telecommunications services meet are as varied as Canadians themselves. Not only are these needs varied but they are changing at a rapid pace as Canadians discover and become reliant upon new and evolving applications. Canadians’ needs have been evolving quickly, reflecting the pace set by a dynamic application ecosystem.

⁴⁶ Section 7(b). Emphasis added.

⁴⁷ Section 7(f).

⁴⁸ Section 7(c).

⁴⁹ Section 7(g).

⁵⁰ The AAC further notes that in the *Policy Direction*, the Governor-in-Council (the GoC) directed the Commission to “rely on market forces to the maximum extent feasible as the means of achieving the telecommunications policy objectives.” The GoC directed the Commission to “use measures that are efficient and proportionate to their purpose and that interfere with the operation of competitive market forces to the minimum extent necessary to meet the policy objectives.” The GoC also directed the Commission, when it relies upon regulatory measures that are of economic nature, to “neither deter economically efficient competitive entry into the market nor promote economically inefficient entry.” When measures are not of an economic nature, they should “to the greatest extent possible, [be] implemented in a symmetrical and competitively neutral manner.” Furthermore, the GoC directed that if regulatory measures relate to network interconnection arrangements or regimes for access to networks, such measures should “ensure the technological and competitive neutrality of those arrangements or regimes, to the greatest extent possible, to enable competition from new technologies and not to artificially favour either Canadian carriers or resellers.” Maximizing reliance on market forces, minimizing interference in the operation of competitive market forces, promoting economically efficient entry, ensuring technical and competitive neutrality and enabling competition from new technologies all require the Commission above all to be responsive to the needs of Canadians as Canadians define these needs to be.

99. In these circumstances, the AAC cautions the Commission against attempting to choose now, on behalf of Canadians, which telecommunications services are most important to support Canadians' individual needs, or which characteristics such services should favour.
100. The AAC does not believe that artificially defining a specific set of social, economic and cultural needs can accurately capture the breadth of the Canadian experience, while at the same time serving as a set of requirements upon which a basic telecommunications service should be built.
101. Canadians themselves are best equipped to make the decisions of what applications will serve their needs. These needs are in constant evolution. Consumers, regardless of their location, should be given an appropriate level of service that provides them the opportunity to make those decisions as they become necessary.
102. In the Commission's previous review of basic telecommunications services⁵¹ the Commission set a non-binding target of 5 and 1 Mbps download and upload respectively, stating:

[...] Canadians should have access to a broadband Internet access service that allows several users in one household to use the World Wide Web (alpha-numeric text, images, and small video files), voice over Internet Protocol services, and other online services (such as email and banking) over a single connection at the same time.

[...] Broadband Internet access service should allow a single user to stream higher-quality audio and video and to participate in video conferencing at reasonable quality using online services.⁵²
103. Canadians still deserve to have access to Internet service capable of delivering these types of applications. However, the technological and societal context, and Canadians' needs have since shifted – substantially.
104. As Canadians' needs have evolved, so too must the Commission update and indeed upgrade the basic service objective to reflect the reality today, and to be ready for the reality of tomorrow. As Canadians are increasingly reliant on broadband access, the AAC submits that the Internet access speed target of 5/1 Mbps established in 2011, although "basic" by reference to likely outdated 2013 data, is likely no longer adequate to meet Canadians' needs today, let alone their needs in the near future.

⁵¹ 2011 BSO at paras. 66-68.

⁵² 2011 BSO at paras. 74-75.

105. There is ample evidence to support the AAC's view that Canadians' needs have grown beyond the 5/1 Mbps target set in 2011. That evidence includes data from the 2014 CMR, the speeds at which ISPs are offering services, as well as the AAC's own needs analysis and the needs analyses performed by others.
106. The AAC begins with its own assessment of household needs, discussed in the next section.

Household needs assessment

107. The AAC considers that assessing bandwidth requirements of commonly used applications can provide a good indication of what consumers' bandwidth needs are likely to currently be.
108. As such, the AAC has examined the bandwidth requirements of applications commonly used by Canadians today, and has developed a model that illustrates the service requirements for common usage patterns of several household profiles in Canada.⁵³ The focus of the model is on *household* requirements. This is consistent with the Commission's approach to measuring Canadians' broadband needs during the most recent review of basic telecommunications services.⁵⁴ Measuring household needs is also reflective of how fixed telecommunication services are typically marketed and sold to Canadians.
109. To arrive at estimations of current broadband needs, the AAC modelled the following profiles:
 - One-person Household: one multitasking user;
 - Couple without Children: one multitasking user, one uni-tasking user;
 - Couple with One Child: one multitasking user, two uni-tasking users; and
 - Tech-savvy Household: three multitasking users

⁵³ Model partially adapted from a report by the Broadband Stakeholder Group, online: <<http://www.broadbanduk.org/wp-content/uploads/2013/11/BSG-Domestic-demand-for-bandwidth.pdf>>. The AAC has reviewed several household broadband requirement estimations, for example the Household Broadband Guide by the Federal Communications Commission (online: <<https://www.fcc.gov/guides/household-broadband-guide>>) and Ofcom's *Infrastructure Report 2014* (online: <<http://consumers.ofcom.org.uk/news/infrastructure-report-2014/>>). The AAC believes that those models involve assumptions or bandwidth estimates that are unduly conservative or not representative of Canadian consumers' expectations today.

⁵⁴ 2011 BSO at para. 74.

110. The model addresses three service characteristics: download speed, upload speed and data allowance (data cap).⁵⁵

Download speed

111. Across North America, Internet usage, in terms of both time spent but also data used (bandwidth), is currently dominated by “real-time entertainment” which accounts for 68% of downstream bandwidth during peak times.⁵⁶ At least 52% of this traffic results from online video services, from providers such as Netflix, Youtube or Amazon Video.⁵⁷ Canadians spend a significant amount of time watching television: 28.4 hours per week among adults over 18.⁵⁸ In fact, Canadians spend over 25% more time watching video content than Americans.⁵⁹
112. The AAC notes that despite the Sandvine report labeling this category “entertainment,” online video usage is not exclusively for personal amusement. Video encompasses all types of other subject matter that contribute to more informed and more engaged citizens, including:

⁵⁵ Assumptions: (1) The model is only concerned with *peak* usage level, *i.e.*, the total bandwidth requirement when all listed applications are running simultaneously. Consumers expect to get the speeds that are advertised to them, and should not be restricted from multitasking simply because they “can wait” until another user is finished their task. (2) The access technology is assumed to be a traditional desktop or laptop computer, *i.e.*, not a mobile device or mobile app which may be presented with data in an alternate format. (3) Traditional television will be delivered over an Internet Protocol Television (IPTV) platform rather than a closed cable network. Several television providers are already offering IPTV, *e.g.*, Bell, MTS, Sasktel, TELUS, and cable providers such as Rogers and Shaw have publicly stated their commitment to move to IPTV: Christine Dobby, “Canadian cable firms struggle to develop IPTV” (15 July 2014), online: <<http://www.theglobeandmail.com/report-on-business/canadian-cablecos-struggle-to-develop-iptv/article19627734/>>. While IPTV may run over a dedicated portion of an Internet connection, the line itself must be capable of providing the speeds necessary to deliver IPTV features, therefore its inclusion in bandwidth estimates is necessary. (4) For some applications, such as web browsing, that do not have a defined bandwidth requirement but instead use all bandwidth on the connection available at the time, reasonable performance expectations will define the bandwidth level.

⁵⁶ Sandvine, “Global Internet Phenomena Report 2H 2014” (20 November 2014), online: <<https://www.sandvine.com/downloads/general/global-internet-phenomena/2014/2h-2014-global-internet-phenomena-report.pdf>> (“**Sandvine Report**”).

⁵⁷ Sandvine Report.

⁵⁸ Television Bureau of Canada, “TV Basics 2014-2015” (3 June 2015), online: <http://www.tvb.ca/page_files/pdf/InfoCentre/TVBasics2014-2015.pdf> . See also Television Bureau of Canada, “Annual Viewing Trends” (15 July 2014), online: <http://www.tvb.ca/page_files/ppt/annual_viewing_trends%5CNew%5CAdults/18+.pptx> at slides 2-9, showing that hours of television watching is increasing.

⁵⁹ ComScore, “Canada Digital Future in Focus 2015” (27 March 2015), online: <<http://www.scribd.com/doc/260236065/2015-Canada-Digital-Future-in-Focus>> at 13.

- 1) education, for example scientific or social science studies from e-learning platforms such as Coursera or edX;
- 2) personal growth and learning new skills, such as cooking or woodworking demonstrations;
- 3) health and wellness, such as fitness demonstrations or nutritional assistance;
- 4) political and news reporting (local, regional, national or international);
- 5) personal enlightenment, such as documentaries that examine issues in depth;
- 6) entrepreneurship, such as interviews with prominent business leaders; and
- 7) communication with friends and relatives.

113. Access to this subject matter is even more important for children. Individuals' comments to this proceeding confirm that their use of video is not exclusively for "entertainment" and is a necessary part of their participation in the digital economy.⁶⁰

114. Canadians are also among the heaviest users of web browsing in the world, at 36.7 hours per month, compared to the global average of 22.8 hours per month.⁶¹ Video games are also a popular form of entertainment, with 54% of Canadians being gamers (average age 33 years),⁶² and 53% of users downloading 1 or more games per month from digital distribution platforms.⁶³

115. To estimate total household download bandwidth requirements, the model will combine the requirements for these types of applications using the following bandwidth estimates:

Application Type	Application Usage	Bandwidth (Mbps)
IPTV	1 channel being viewed or recorded	7 ⁶⁴
Machine-to-machine and	e.g., device updates, cloud	1 ⁶⁵

⁶⁰ See e.g. individual interventions: 47, 52, 94, 105, 111, 121, 125, 144, 159, 196, 204.

⁶¹ ComScore, "Canada Digital Future in Focus 2015" (27 March 2015), online: <<http://www.scribd.com/doc/260236065/2015-Canada-Digital-Future-in-Focus>> at 6.

⁶² Entertainment Software Association of Canada, "2014 Essential Facts About the Canadian Video Game Industry" (November 2014), online: <<http://theesa.ca/wp-content/uploads/2014/11/ESAC-Essential-Facts-2014.pdf>>.

⁶³ Limelight Networks, "Consumer Gaming Trends" (2014), online: <<http://media.limelight.com/documents/Consumer+Gaming+Trends+2014.pdf>> at 3.

⁶⁴ Compression levels have a significant effect on IPTV video quality, however an equivalent quality level to broadcast television requires approximately 7 Mbps, see: Nordicity, "Capacity-Based Bandwidth (CBB) Tariff Charges for Delivering IPTV over Wholesale Network Access" (16 September 2014), online: <http://www.nordicity.com/home/work_download/id/105> at 13.

⁶⁵ This category represents the collection of low bandwidth uses that occur by virtue of having devices constantly connected to the Internet, such as machine-to-machine usage from connected

other low usage applications	backup, sync utilities, remote work	
Over-the-top video services	Medium quality	3.3 ⁶⁶
	High quality	5.6 ⁶⁷
Video conferencing	Low quality	1.5 ⁶⁸
	Medium quality	3.9 ⁶⁹
	High quality	8.7 ⁷⁰
Video game download	12 hour download time	2.8 ⁷¹
Web streaming	Audio streaming	0.3 ⁷²
	Youtube HD	3.9 ⁷³

devices, or cloud backup and sync services, operating system and application updates from desktops, laptops and mobile devices, remote work and so on. 1 Mbps is estimated to account for all such uses. As consumers use more 'connected devices' this estimate will likely grow.

66

2014 CMR at 189. Medium quality generally corresponds to standard definition video.

67

2014 CMR at 189. High quality generally corresponds to high definition video. See: Netflix, "Internet Connection Speed Recommendations" (Accessed 15 June 2015), online: <<https://help.netflix.com/en/node/306>>.

68

See e.g., Skype, "How much bandwidth does Skype need?" (Accessed 15 June 2015), online: <<https://support.skype.com/en/faq/fa1417/how-much-bandwidth-does-skype-need>>. Note that 1.5 Mbps is required for a call with 1 person only, and would increase with more participants.

69

720p video at medium quality using professional video conferencing software, see e.g., bandwidth requirements for a publicly available telepresence software, online: <https://code.google.com/p/telepresence/wiki/Configuration_Video> ("**Telepresence requirements**").

70

Telepresence requirements. 1080p video at medium quality.

71

Video game sizes vary widely, from older games re-released on newer platforms to highly-anticipated so-called "AAA releases" by major studios. For example, the three best selling games from 2014 on the Playstation 4's digital download platform, "Destiny", "Grand Theft Auto V" and "Call of Duty: Advanced Warfare" (see online:

<<http://blog.us.playstation.com/2015/01/16/playstation-store-the-top-sellers-of-2014/>>) had download sizes of 17.4 GB, 41.8 GB and 45.0 GB respectively (see online,

<<https://store.playstation.com>>). Note that game updates can also be very large, see Chad Sapieha, "Can your Internet package handle the PS4 and Xbox One?" (27 January 2014), online:

<<http://business.financialpost.com/fp-tech-desk/post-arcade/can-your-internet-package-handle-the-ps4-and-xbox-one>>. The model uses the bandwidth requirement for a 15 GB game

downloaded over 12 hours, resulting in a sustained download rate of 2.8 Mbps. Note that these game sizes also pose significant problems for consumers with a low data allowance.

While the focus of this usage category is on video games, this same pattern could apply to other large file downloads, such as restoring a full device cloud backup, transferring a non-compressed video captured from a recording device (camcorder, GoPro etc), large business- or research-related projects, or any large data sets more generally.

72

2014 CMR at 189.

73

2014 CMR at 189.

Web usage	2 MB page load in 3 seconds	5.3 ⁷⁴
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Table 2. Downstream bandwidth requirements for common Internet applications

116. Using these bandwidth estimates, a number of “typical households” can be developed. Statistics Canada data from the 2011 census shows that most (83.6%) household types fall into three categories: couples without children (29.5%), one-person (27.6%) and couples with children (26.5%),⁷⁵ and the average household size is 2.5 people.⁷⁶

One-person household: one multitasking user

117. Consider the situation of a single person living in a one bedroom apartment, with a subscription to an over-the-top video streaming service and a modern video game console. The individual frequently multitasks by having an HDTV stream a television show, while checking emails, social media and news stories on their computer and having a video game download from a digital distribution platform in the background.⁷⁷ The individual’s mobile devices are syncing with a cloud backup

⁷⁴ A 2009 study found that consumers were willing to wait 2 seconds for a page to load, down from 4 seconds in 2006: Steve Lohr, “For Impatient Web Users, an Eye Blink Is Just Too Long to Wait” (29 February 2012), online: <<http://www.nytimes.com/2012/03/01/technology/impatient-web-users-flee-slow-loading-sites.html>>. Another 2003 study found that “tolerable waiting time” is approximately 2 seconds: Fiona Fui-Hoon Nah, “A Study on Tolerable Waiting Time: How Long are Web Users Willing to Wait?” (2003), online: <<http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1751&context=amcis2003>>. Microsoft user experience researcher Dr. Steven Seow found that to maintain user interaction for simple tasks, loading times must be under 2 seconds: Steve Seow, “User Interface Timing Cheatsheet” (29 September 2009), online: <<http://www.stevenseow.com/papers/UI%20Timing%20Cheatsheet.pdf>>. Cable ISPs have also recognized the importance of web browsing interactivity with download speed “burst” technologies such as Rogers’ Speedboost or Shaw’s Powerboost, which temporarily increase download speeds for relatively small files such as websites, see online: <<http://www.rogers.com/web/content/speedboostonsb>> and <<https://community.shaw.ca/docs/DOC-1270>>. The model therefore uses a loading time of 3 seconds, 50% longer than the industry standard, in order to provide a conservative estimate of bandwidth requirements. Web analytics site HTTP Archive (online: <<http://httparchive.org/about.php>>), which gathers data on the top 1 million websites, estimates that the average webpage today is just over 2 MB, online: <<http://httparchive.org/interesting.php#bytesperpage>>. This results in an average speed requirement of 2 MB / 3 s * 8 = 5.3 Mbps.

⁷⁵ Statistics Canada, “More one-person households than couple households with children” (19 June 2014), online: <<http://www.statcan.gc.ca/pub/91-003-x/2014001/section03/46-eng.htm>>.

⁷⁶ Statistics Canada, “Household size, by province and territory (2011 Census)” (13 February 2013), online: <<http://www.statcan.gc.ca/tables-tableaux/sum-som/I01/cst01/famil53a-eng.htm>>.

⁷⁷ For Canadians’ videogame downloading activity, see footnotes, **Error! Bookmark not defined.** and **Error! Bookmark not defined.**, above: Entertainment Software Association of Canada, “2014 Essential Facts About the Canadian Video Game Industry” (November 2014), online: <<http://theesa.ca/wp-content/uploads/2014/11/ESAC-Essential-Facts-2014.pdf>>; Limelight

service and periodically “refreshing” – that is checking for updates to their installed applications. Such multitasking may not occur every day but is likely to arise regularly. This usage pattern would require a download speed of **at least 14.7 Mbps**, as depicted in the following table:

User	Application	Bandwidth (Mbps)
Adult (multitasking)	Over-the-top video services (high quality)	5.6
	Web usage	5.3
	Video game download	2.8
All users	Machine-to-machine and other low usage applications	1
Total		14.7

Table 3. Example one-person household bandwidth requirements

Couple without children household: one multitasking user, one uni-tasking user

118. Consider the situation of an average couple without children. One adult is conducting a business conference using HD video streaming and browsing the Internet, while the other adult is streaming music in the background and performing some other tasks. This usage pattern would require a download speed of **at least 15.3 Mbps**:

User	Application	Bandwidth (Mbps)
Adult (multitasking)	Video conferencing (high quality)	8.7
	Web usage	5.3
Adult (uni-tasking)	Audio streaming	0.3
All users	Machine-to-machine and other low usage applications	1
Total		15.3

Table 4. Example two-person household bandwidth requirements

Couple with one child household: one multitasking user, two uni-tasking users

119. Consider a typical family with two parents and one child. One adult is watching local news using an IPTV subscription, one adult is browsing the Internet and catching up on social media, and the child is in a low quality video conference with group members for a school project, while researching the project online. The family's

Networks, “Consumer Gaming Trends” (2014), online:
<<http://media.limelight.com/documents/Consumer+Gaming+Trends+2014.pdf>> at 3.

devices are updating, syncing and backing up as they usually do. This usage pattern would require a download speed of **at least 20.1 Mbps**:

User	Application	Bandwidth (Mbps)
Adult (uni-tasking)	IPTV	7
Adult (uni-tasking)	Web usage	5.3
Child (multitasking)	Video conferencing (low quality)	1.5
	Web usage	5.3
All users	Machine-to-machine and other low usage applications	1
Total		20.1

Table 5. Example family household bandwidth requirements

Tech-savvy household: three multitasking users

120. Consider the modern “connected family” where each user in the household multitasks. One adult is using Youtube to view a “how-to” cooking video for the family dinner while using their IPTV system to record a television show for viewing later, one adult is following a workout video from an over-the-top video service while separately streaming different music, and a child is doing their homework on the Internet while listening to streaming music and waiting for a video game to download. This usage pattern would require a download speed of **at least 26.2 Mbps**:

User	Application	Bandwidth (Mbps)
Adult (multitasking)	Youtube HD	3.9
	IPTV recording	7
Adult (multitasking)	Over-the-top video service (high quality)	5.6
	Audio streaming	0.3
Child (multitasking)	Web usage	5.3
	Audio streaming	0.3
	Video game download	2.8
All users	Machine-to-machine and other low usage applications	1
Total		26.2

Table 6. Example multitasking household bandwidth requirements

121. Downstream bandwidth requirements are expected to grow in the future as applications become more demanding (for example as the result of increasing quality

of video and performance of video terminal equipment), the number of connected devices increases, and a growing number of applications enable greater levels of multitasking.

122. Furthermore, the AAC has assumed relatively small household sizes. As household size increases (for example 2 or more children), the number of users in the household grows and household usage increases. According to the most recent Census data, there are over 3 million households in Canada with 4, 5 or 6+ people, representing approximately 23% of all households.⁷⁸ These households can readily require speeds in excess of 26.1 Mbps—far beyond the 5 Mbps target set in 2011.
123. While not all households may have these bandwidth requirements, 2013 data from the 2014 CMR already shows rapid adoption of speeds higher than 5 Mbps.
124. In 2013, over 57% of residential subscribers have decided they require an Internet package with a download speed of 10 Mbps or higher.⁷⁹ Over 31% of residential subscribers subscribed to an Internet package with a download speed of 16 Mbps or higher.⁸⁰ If the subscription growth rates for 16 Mbps or higher service continue as they have in prior years, subscription rates will reach 85% by 2020.⁸¹ Similarly, for speeds of 50 Mbps or higher, 50% will subscribe by 2020 at recent growth rates.⁸²
125. In fact, many major Canadian ISPs no longer advertise lower-speed broadband packages on their websites. TELUS' slowest advertised package is 15 Mbps.⁸³ Rogers recently rebranded their service offerings, with the lowest entry-level package now having a 30 Mbps download speed.⁸⁴ Bell Aliant's slowest FibreOP package has a 100 Mbps download speed.⁸⁵ Consumer demand has forced these ISPs to offer only higher-quality services.
126. Canadian ISPs are also readying their networks for the coming exponential growth in adoption of high-speed services. Bell Canada recently announced its intention to bring 1 Gigabit per second ("**Gbps**", 1 Gbps = 1000 Mbps) speeds to 50,000 Toronto

⁷⁸ Statistics Canada, "Household size, by province and territory (2011 Census)" (13 February 2013), online: <<http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/famil53a-eng.htm>>.

⁷⁹ 2014 CMR at 185.

⁸⁰ 2014 CMR at 185.

⁸¹ Assuming a modest 15% growth rate, as observed between 2012 and 2013. CAGR since 2008 has been 169%.

⁸² Assuming a modest 38% growth rate, as observed between 2012 and 2013. CAGR since 2009 has been 192%.

⁸³ See online: <<http://www.telus.com/en/bc/internet/>>.

⁸⁴ See online: <<http://www.rogers.com/consumer/internet/>>. Note that Rogers also no longer offers download speeds below 30 Mbps at the wholesale level, see Rogers Tariff Notice 40.

⁸⁵ See online: <<http://www.bellaliant.net/fibreop-internet/service-plans/>>.

homes by the end of summer 2015, and to all 1.1 million homes in the city of Toronto by 2020.⁸⁶ TELUS also recently announced plans to build a gigabit-enabled network to 90% of Edmonton residents over the next five or six years,⁸⁷ and is reportedly in talks with the city of Calgary for a similar network upgrade.⁸⁸

127. As discussed in the preceding paragraphs, major Canadian ISPs appear to be building the capability to offer higher-speed networks based on consumer demand now, as well as forecasted demand. 10 Mbps is already the standard download speed for a majority of subscribers, households can readily reach 14 to 26 Mbps with today's common applications, and publicly available data suggests mass adoption of even higher download speeds is coming within the next few years.

Upload speed

128. In the past, upload speeds have not been as important for retail users as download speeds, since common applications were very asymmetric; far more downstream bandwidth was required for their proper functioning than upstream bandwidth. However usage trends are changing, and upload speed is becoming of greater importance to common applications. 1 Mbps is no longer sufficient for basic consumer usage.
129. With the advent of smartphones with powerful cameras, enabling more sharing of content on social media platforms or video sharing platforms, users now expect Internet service with greater upload capabilities than before. For example, 300 hours of video content are uploaded to Youtube every minute,⁸⁹ and over 1.8 billion photos are uploaded per day to popular social media platforms.⁹⁰ High upload speed also enables higher quality video communication which can be applied in several contexts, including a home business, health or education.

⁸⁶ BCE, "Bell Gigabit Fibe bringing the fastest Internet to Toronto residents with a billion-dollar+ network investment, creation of 2,400 direct jobs" (25 June 2015), online: <<http://www.bce.ca/news-and-media/releases/show/Bell-Gigabit-Fibe-bringing-the-fastest-Internet-to-Toronto-residents-with-a-billion-dollar-network-investment-creation-of-2-400-direct-jobs-1>>.

⁸⁷ Postmedia News, "\$1 billion fibre optic investment will make Edmonton Canada's 'first gigabit society,' Telus Corp says" (19 June 2015), online: <<http://business.financialpost.com/fp-tech-desk/1-billion-fibre-optic-investment-will-make-edmonton-canadas-first-gigabit-society-telus-corp-says>>.

⁸⁸ Mario Toneguzzi, "Telus poised for major investment in Calgary fibre optic network" (26 June 2015), online: <<http://calgaryherald.com/business/local-business/telus-poised-for-major-investment-in-calgary-fibre-optic-network>>.

⁸⁹ Youtube, "Statistics" (Accessed 15 June 2015), online: <<https://www.youtube.com/yt/press/statistics.html>>.

⁹⁰ Mary Meeker, "KPCB Internet Trends 2014" (28 May 2014), online: <<http://www.kpcb.com/file/kpcb-internet-trends-2014>> at 62.

130. Another potential contributor to upload speed requirements is “cloud” computing. Cloud services such as Dropbox, iCloud or Google Drive have become extremely popular in recent years, with Dropbox recently stating they have more than 400 million registered users, and in 2013 Google stating they have 120 million active users. Apple has not stated the number of iCloud users since 2013, but some analysts believe it is more than 500 million. As more users subscribe to cloud services and as they generate more data to be stored in the cloud, their upload needs will increase significantly.⁹¹
131. In general, upload speeds need to rise along with download speeds, as all usage of Internet is in fact a two-way communication. Major Canadian Internet service providers currently offer packages that follow this pattern. However the upload-to-download ratio is very small, ranging from 2.5% to 33%.⁹²
132. Some applications have an upload speed “floor,” below which the application will not properly function without significant degradation in quality. For example, high definition real-time video communication requires significant upload speeds, on the order of 3-10 Mbps.⁹³ Since the communication is real-time, video compression techniques are limited due to very short delay constraints needed to maintain interactivity. Even lower quality consumer-grade video calling software recommends an upload speed of at least 1.5 Mbps.⁹⁴ Similarly, recently launched mobile

⁹¹ See: Matthew Lynley, “Dropbox Now Has More Than 400 Million Registered Users” (24 June 2015), online: <<http://techcrunch.com/2015/06/24/dropbox-hits-400-million-registered-users/>>; Liz Gannes, “With 120M Users, Google Drive Gets Tighter Integration With Gmail” (12 November 2013), online: <<http://allthingsd.com/20131112/with-120m-users-google-drive-gets-tighter-integration-with-gmail/>>; Horace Dediu, “How big is iCloud?” (15 November 2014), online: <<http://www.asymco.com/2014/11/15/how-big-is-icloud/>>.

⁹² Of the Internet packages offered by major Canadian ISPs, upload speed ranges from 3% of download speed (Shaw’s 15/0.5 package, see online: <<http://www.shaw.ca/internet/compare-plans/>>) to 33% of download speed (Videotron’s 30/10 package, see online: <<http://www.videotron.com/residential/internet/residential-internet>>). Eastlink offers a 400/10 package (2.5% ratio) in some areas, see online: <<http://www.eastlink.ca/internet/internetoptions.aspx>>. Note that Bell offers a 15/10 package, but claims “most customers get” 3.5 Mbps upload, see online: <http://www.bell.ca/Bell_Internet/Products/Fibe-Internet-15-FTTN/Specifications.tab>. Some fibre-to-the-home packages offer symmetric upload and download speeds, however they are not yet widely available, see CRTC, “Communications Monitoring Report 2014” (October 2014), online: <<http://www.crtc.gc.ca/eng/publications/reports/PolicyMonitoring/2014/cmr.pdf>> at 147.

⁹³ See download speed section, above. Upload and download speed requirements are the same for many implementations of video conferencing, since both users are receiving and transmitting the same amount of data.

⁹⁴ Skype, “How much bandwidth does Skype need?” (Accessed 15 June 2015), online: <<https://support.skype.com/en/faq/fa1417/how-much-bandwidth-does-skype-need>>.

streaming service Periscope reportedly requires roughly 4.4 Mbps of available upload speed.⁹⁵

133. In general, upload speed requirements will be driven by performance considerations. As download speeds increase and consumers find applications more responsive and waiting times decreased, so too will consumers expect applications that require significant upstream bandwidth to become more responsive, and waiting times to be decreased.
134. As described above, a significant source of uploading activity today is the sharing of content on social media or video platforms. A reasonable measure of performance for uploading videos to sharing platforms, cloud backup services or to a platform for editing uncompressed video is half real-time; that is, for a video length of 5 minutes, uploading it should take at most 10 minutes.⁹⁶
135. Smartphones today create 1080p HD videos at an average bitrate of 20 Mbps, and 4K UHD (ultra high definition) videos at an average of 60 Mbps.⁹⁷ Should a user wish to edit these videos online in uncompressed form, or create a backup in a cloud service, they would require upload speeds of 10 and 30 Mbps respectively to achieve half real-time performance. Smartphone applications generally severely compress videos before uploading to social media or video sharing platforms in order to save bandwidth on data plans; however, such high compression is not necessary when using a home Internet connection and, in any case, may be undesirable for some users.
136. High-quality video sharing platform Vimeo suggests the following compression rates: 2-5 Mbps for SD, 5-10 Mbps for 720p HD and 10-20 Mbps for 1080p HD.⁹⁸ Taking the middle of each range, uploading a video in half real-time would require upload speeds of 1.75 Mbps for SD, 3.75 Mbps for 720p HD and 7.5 Mbps for 1080p HD video.

⁹⁵ Dylan Love, "Meerkat and Periscope are killing your battery and sucking your data plan dry" (2 April 2015), online: <<http://www.dailydot.com/technology/meerkat-periscope-battery-data-plan/>>. 33 MB per minute * 8 / 60 = 4.4 Mbps. While mobile users may generally use the mobile data network while away from home, they would likely use their Wi-Fi connected to their wireline Internet service while at home.

⁹⁶ This performance measurement adapted from a report by the Broadband Stakeholder Group, online: <<http://www.broadbanduk.org/wp-content/uploads/2013/11/BSG-Domestic-demand-for-bandwidth.pdf>>.

⁹⁷ Paul Sawers, "How to shoot, edit and publish videos from your Android smartphone" (27 July 2014), online: <<http://thenextweb.com/creativity/2014/07/27/shoot-edit-upload-movie-android-smartphone/>>.

⁹⁸ Vimeo, "Compression Tutorials" (Accessed 15 June 2015), online: <<https://vimeo.com/help/faq/uploading-to-vimeo/compression-tutorials>>.

137. These various requirements are summarized in the following table:

Application Type	Application Usage	Bandwidth (Mbps)
Video conferencing	Low quality	1.5
	Medium quality	3.9
	High quality	8.7
Video streaming	Periscope	4.4
Video upload at half real-time performance	SD (compressed)	1.75
	720p HD (compressed)	3.75
	1080p HD (compressed)	7.5
	1080p HD (uncompressed)	10
	4K UHD (uncompressed)	30

Table 7. Upstream bandwidth requirements for common Internet applications

138. A majority of Internet subscribers are already subscribed to packages with a download speed of at least 10 Mbps.⁹⁹ These packages have a weighted average upload speed of 2.4 Mbps.¹⁰⁰ For packages 16 Mbps or higher, weighted average upload speeds reach 6.7 Mbps.¹⁰¹
139. Considering similar household usage patterns as described in the download speed section above, and enough extra upload speed for the normal functioning of other applications, reasonable household upload speed requirements can quickly add up to over 10 Mbps.
140. Thus, while 1 Mbps may have seemed forward-looking in 2011, it is not sufficient in the new reality of consumers sharing content online.
141. Consumers are sharing more and more content on social media, and picture, music and video sharing platforms with increasing quality levels, and consumers have increasing performance expectations (*i.e.*, less time to upload content). Consumer devices are increasingly connected and synced to the cloud, and soon may be cloud-only, and with the coming explosion of connected devices, higher upload speeds are necessary to ensure meaningful participation in the next evolution of the digital economy.
142. Therefore in the AAC's view, upload speeds in the near term should be at least 3 to 5 Mbps.

Data allowance

⁹⁹ 2014 CMR at 185
¹⁰⁰ 2014 CMR at 181.
¹⁰¹ 2014 CMR at 181.

143. An Internet service's data allowance or "cap" also plays an important part in defining how Canadians can participate in the digital economy. Should an Internet service package's data allowance be too low, overage charges that would result from normal use of the service can significantly increase the cost of the service to the consumer. These charges could render the service unaffordable and inaccessible for many users, and notably entire classes of users who can least afford to incur high overage charges.
144. The AAC notes that high overage charges can become a significant barrier to Internet use for Canadians. Some users may find it difficult to assess the amount of data any particular application consumes, or to be able to manage such usage over the course of a month.¹⁰² This would be especially difficult for large households with several Internet users.
145. If the data cap associated with a broadband service is set too low, fear on the part of consumers that they will "run out" of data allowance before the end of their billing period is likely to act as a disincentive to access the applications they desire.
146. For example, see the comments of individuals to this proceeding:

Our county (Simcoe County) had provided Bell with money to provide us with portable/rural internet services which cost \$54.95 plus tax and it was unlimited, even though they advertised there was a cap (I think it was 30 gb) I was told by a Bell representative that there were no caps and no additional fees. In the 5+ years that I had this service, my family used the internet without worrying about additional charges. This included: online university courses that my sons & I took, my connecting from home to work for report cards, assessments, lesson planning, advertising & purchasing for my husbands business, online shopping, Skyping with my one son who lives in Alberta, another son who is going to university in Ottawa and with my children when I travel with my husband (e.g. Italy, Caribbean to our home). We also used our internet for entertainment (radio, netflix & online computer games).

When Bell ended our service they offered us a Turbo Hub on the OMAFRA plan which is \$59.95 plus tax a month and we get 40gb. It then costs \$10 per gb if you go over the 40gb and there is no option to add on more gb at an affordable

¹⁰² Some ISPs provide tools to suggest a data cap or notify users when they approach a monthly limit, however users change their usage patterns over time and new applications can quickly make these estimations inaccurate. Data usage for some applications are also not directly correlated to 'hourly' usage (e.g., web usage is 'bursty' vs streaming video which is a constant 'flow'), making it more complex to manage monthly usage for users who are not as technically savvy as others. See e.g., Bell, "Internet Usage Estimator" (Accessed 24 June 2015), online: <<http://support.bell.ca/Internet/Usage/Estimate>> and Bell, "Internet usage notifications" (Accessed 24 June 2015), online: <<http://support.bell.ca/Internet/Usage/Alerts>>.

price...I tried. When each movie that my 3 sons watch is approximately 2 gb and online games 1 gb this means that after about 7 days we have no gb's left and we have to shut the internet off. We are a family of 5 and it is very difficult to go from an unlimited plan to now one in which I am constantly turning the internet off and it is creating a lot of stress in our family.¹⁰³

147. Note that the AAC only addresses the necessary data allowance for common usage patterns due to the prevalence of data caps in the Canadian marketplace today. Unlike utilities that are billed on a usage basis, such as electricity or water, there is no “scarcity of gigabytes” which merits charging users a premium for reasonable levels of usage on fixed home Internet service.
148. For example, as graphs from the Toronto Internet Exchange and Montreal Internet Exchange show,¹⁰⁴ total bandwidth usage is at a minimum between 2am and 8am each day, at less than one third of peak usage. If a user were to fully saturate their Internet connection, exclusively during this period of time, there would be no added stress on the network that could cause congestion, yet under any Internet package with a data cap this user would incur substantial overage charges.¹⁰⁵
149. Internet service providers claim that data caps are necessary to prevent problems associated with network congestion,¹⁰⁶ yet data caps provide no incentive for users to time-shift their Internet usage to non-peak hours to reduce potential congestion.
150. The Commission has recognized that data usage is a poor proxy for assessing the required capacity of a telecommunications network in Telecom Regulatory Policy

¹⁰³ Individual submission 46. See also e.g., individual submissions 5, 8 and 74.

¹⁰⁴ TorIX, “Traffic Statistics for TorIX” (Accessed 15 June 2015), online: <<http://www.torix.ca/stats.php>>; QiX, “The Network” (Accessed 15 June 2015), online: <<http://www.qix.ca/en/qix/network>>.

¹⁰⁵ For currently advertised wireline packages by major ISPs, standard overage charges are as follows: Bell charges \$3 per GB to a maximum of \$100 in a month; Rogers charges \$1.50 per GB; TELUS charges overage fees in ‘buckets’ of 50GB for \$5 or \$10 up to maximum of \$75; Videotron charges \$2.50 per GB to a maximum of \$80. The usage pattern of connection saturation during 2am-8am consumes enough data to reach the maximum overage charge for all of these ISPs. Note also that none of these ISPs state what occurs after the maximum charge is reached. Shaw reportedly does not enforce or charge overage fees for their data caps, see online: <<https://community.shaw.ca/message/100851>>.

¹⁰⁶ For example, TELUS recently announced they will begin implementing usage-based billing between March and July 2015, charging up to \$75 extra per month, stating it is required “to ensure we continue offering a smooth and seamless Internet experience for all customers.” See TELUS, “Internet overage charges” (Accessed 15 June 2015), online: <<http://www.telus.com/en/bc/get-help/account-and-billing/understand-your-bill/ffh/internet-overage-charges/support.do>>.

CRTC 2011-703 *Billing practices for wholesale residential high-speed access services.*¹⁰⁷

151. The AAC's research indicated that data caps specified by major Canadian ISPs today often have low data allowances that can easily be exceeded using the connection at its advertised speed for a relatively brief period of time. For example, data caps specified by major Canadian ISPs today will be exceeded within 30 hours of usage at the advertised speed.¹⁰⁸ For some packages, data allowances would be exceeded within 10 hours of usage at the advertised speed as the following examples demonstrate:

ISP	Package	Monthly Cost	Download Speed (Mbps)	Data Allowance (GB)	Hours to Reach Data Cap
Bell	Fibe Internet 15	\$55.95	15	50	7.6
	Fibe Internet 25	\$65.95	25	125	11.4
Rogers	Internet 30	\$64.99	30	100	7.6
	Ignite 60	\$74.99	60	200	7.6
Shaw	Internet 5	\$50.00	5	65	29.6
	Internet 15	\$60.00	15	150	22.8
TELUS	Internet 15	\$63.00	15	150	22.8
	Internet 25	\$68.00	25	250	22.8
Videotron	Hybrid Fibre 5	\$45.95	5	10	4.6
	Hybrid Fibre 10	\$59.95	10	60	13.7
	Hybrid Fibre 30	\$63.95	30	130	9.9
	Hybrid Fibre 60	\$78.95	60	200	7.6

Table 8. Data usage statistics for major Canadian ISPs' lower-tier packages

¹⁰⁷ At para 47. The Commission considered that a peak bandwidth requirement is more representative of the needs of the network:

The Commission considers that volume could be used as a proxy for traffic that drives additional usage-based costs. However, the Commission notes that the correlation between volume and peak traffic is based on forecast traffic patterns. These traffic patterns can change over time due to factors such as new Internet applications and changes in pricing plans. The Commission considers that if changes in traffic patterns occur, the relationship between volume and peak traffic that a network provider has developed for determining usage-based costs would change, with the result that network providers might be overcompensated or undercompensated by the independent service providers.

¹⁰⁸ See Internet service pages of each carrier. Prices are standalone Internet service, non-promotional pricing. Online: <http://www.bell.ca/Bell_Internet/Internet_access>, <<http://www.rogers.com/consumer/internet>>, <<http://www.shaw.ca/internet/compare-plans/>>, <<http://www.telus.com/en/bc/internet/>>, <<http://www.videotron.com/residential/internet/residential-internet>>.

152. More specifically, consider average real-world usage of the applications described in the download speed section above.
153. Canadians aged 18+ watch 28.4 hours per week of television, according to the Television Bureau of Canada.¹⁰⁹ Assuming all 28.4 hours per week are watched via an over-the-top video service at medium quality, monthly usage would reach at least 165 gigabytes (“GB”) of data, exceeding 9 of the 12 low-tier packages’ data allowances described above.¹¹⁰
154. Consider a user watching a 30 minute news program and 1 hour of primetime television via IPTV each weekday, 4 hours of high quality video from an over-the-top video service each weekend, and engaging in average web usage.¹¹¹ This modest scenario would give rise to consumption of at least 139 GB of data per month, exceeding 7 of the 12 low-tier packages’ data allowances cited above.¹¹² Total data usage of a household can easily reach much higher levels.
155. In its latest *Communications Monitoring Report*, the Commission states that average monthly downstream usage in 2013 was 44.8 GB.¹¹³ It is unclear how the prevalence of data caps in the market affected consumers’ usage then,¹¹⁴ but by comparing data usage reported in previous iterations of the CMR (2012, 2013 and 2014), consumers’ usage of data has been increasing at a rate of nearly 60% per year.¹¹⁵ This growth rate is consistent with what some Canadian ISPs state is occurring on their networks.¹¹⁶

¹⁰⁹ Television Bureau of Canada, “TV Basics 2014-2015” (3 June 2015), online:

<http://www.tvb.ca/page_files/pdf/InfoCentre/TVBasics2014-2015.pdf>.

¹¹⁰ (3.3 Mbps) / (8 bits/byte) / (1024 GB/MB) * (3600 s/hr) * (28.4 hr/week) * (4 weeks/month) = 164.7

¹¹¹ CIRA, “2014 CIRA Factbook” (Accessed 15 June 2015), online: <<http://cira.ca/factbook/2014/the-canadian-internet.html>>. The average Canadian views 3,731 pages per month. At an average of 2 MB per page (see <<http://httparchive.org/interesting.php#bytesperpage>> as discussed

¹¹² download speed section above), 3,731 pages browsed results in a monthly usage of 7.3 GB. IPTV: 7 Mbps for 30 hours per month = 92.3 GB, OTT: 5.6 Mbps for 16 hours per month = 39.4 GB, Web Usage: 7.3 GB (*ibid*); Total = 138.9 GB. Note that while most IPTV implementations do not consume data on the user’s Internet service, 7 Mbps is used as a proxy for television of similar quality to that of BDU service.

¹¹³ 2014 CMR at 201.

¹¹⁴ Unlimited Internet packages were only re-introduced by major ISPs in 2013: CBC News, “Unlimited internet offers return to Bell, Rogers” (20 February 2013), online:

<<http://www.cbc.ca/news/technology/unlimited-internet-offers-return-to-bell-rogers-1.1387141>>.

¹¹⁵ Downstream usage in 2011, 2012 and 2013 was 17.9, 28.4 and 44.8 GB respectively, a growth of 59% and 58%: see CRTC, “Communications Monitoring Report 2013” (September 2013), online: <<http://www.crtc.gc.ca/eng/publications/reports/PolicyMonitoring/2013/cm2013.pdf>> (“**2013 CMR**”); 2014 CMR.

¹¹⁶ Christine Dobby, “Internet fibre race down to the wire for telecoms as broadband demand rises” (1 July 2015), online: <<http://www.theglobeandmail.com/report-on-business/internet-fibre-race-down-to-the-wire-for-telecoms-as-broadband-demand-rises/article25220382/>>.

156. Should this growth continue at 60% per year, as some ISPs state they expect it will,¹¹⁷ by 2020 the *average* user will consume approximately 1200 GB of data per year. Should this growth rate continue at even 40% per year, by 2020 the average user will consume at least 470 GB per month.
157. With some ISPs claiming data usage growth is exceeding their expectations,¹¹⁸ and experts claiming data growth will continue to compound into the future,¹¹⁹ data caps must be addressed in the basic service objective so that they do not act as a significant constraint on Canadians' ability to participate in the digital economy.
158. The AAC submits that the Commission should ensure that the basic service is subject to a data cap that is sufficiently large that consumers are not deterred from using the applications they find are most appropriate to fulfill their needs today and, more importantly, in the near future.

Other service characteristics

159. Internet services are marketed to Canadians primarily on the basis of download speeds, upload speeds and data allowance (or in some cases, the lack of a data limit). These are likely to be perceived as the most important characteristics of such services today.
160. Canadians expect that in a "world-class" communications system, their Internet connection will be reliable. Other service characteristics such as, for example, downtime,¹²⁰ congestion,¹²¹ high latency and jitter,¹²² packet loss,¹²³ and the like are different aspects of the general quality of *reliability*.¹²⁴

¹¹⁷ Dobby.

¹¹⁸ TELUS, "Internet overage charges" (Accessed 15 June 2015), online: <<http://www.telus.com/en/bc/get-help/account-and-billing/understand-your-bill/ffh/internet-overage-charges/support.do>>; Perry Hoffman, "" (25 February 2015), online: <<https://cartt.ca/article/shaw-fires-back-claims-unreasonable-wholesale-broadband-rate-hikes>>.

¹¹⁹ Cisco, "The Zettabyte Era – Trends and Analysis" (May 2015), online: <http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/VNI_Hyperconnectivity_WP.html>.

¹²⁰ Downtime refers to the amount of time a user's Internet connection is unavailable, generally, due to a problem within the ISP's control, e.g., a service outage.

¹²¹ Congestion here refers to a point of the ISP's network being overloaded, i.e. the applications of users connected to a particular node require more download or upload speed than the node is capable of delivering. Congestion can occur at the local level (e.g., within the user's neighborhood or local service area) or at some other point within the ISP's internal network.

¹²² Latency refers to the length of time it takes for individual packets of data to reach their destination. Whether a user's latency is "high" depends on the application's requirements for interactivity. Latency is largely dependent on where a user is sending their data, however the user's connection technology and the ISP's network determines the minimum latency of a

161. Without sufficient reliability, consumers will become increasingly frustrated that the rates they pay do not translate into quality service. For example, service outages causing downtime should not be a routine part of the consumer experience, when carriers claim they can provide 99.999% availability.¹²⁵ The AAC further notes that the delivery of high quality services accessible to Canadians in both urban and rural areas in all regions of Canada is one of the objectives of Canada's telecommunications policy.¹²⁶
162. Congestion causing significant degradation in actual download or upload speeds, especially during peak hours, is becoming more common in some areas, yet users are blamed for their increasing usage and told to wait for network upgrades in the future, rendering advertised speeds meaningless.¹²⁷ The AAC questions how ISPs can claim to have "world-class" communications networks when users cannot reach the advertised speeds of a 5 Mbps plan.¹²⁸ This also does not even satisfy the Commission's aspirational 5 Mbps target set in TRP 2011-291.

connection. Jitter or 'packet delay variation', a characteristic related to latency, refers to when individual data packets in a flow of many data packets arrive at the destination at different times (i.e. out of their intended order). ISPs have some control over jitter through their interconnection with other networks.

123 Packet loss here refers to some node of the ISP's network discarding a data packet a user's application has sent. Typically this occurs when the node is congested, or when there are equipment-related problems.

124 See also Northern Communications Information Systems Working Group, *Northern Connectivity: Ensuring Affordable Communications* (January 2014), online: <http://northernconnectivity.ca/> (the "**NCIS-WG Northern Connectivity Report**"), at Appendix 1 Glossary. The NCIS-WG Northern Connectivity Report defines "reliability" as "a measure of the ability of the backbone network to provide constant and consistent service." For the purposes of the AAC's submission, the AAC adopts that definition but in the context of household connectivity.

125 Cisco, "North American Carrier Achieves 99.999% Network Availability" (2009), online: <http://www.cisco.com/web/services/it-case-studies/bell-canada-cisco-services-case-study.html>.

126 *Telecommunications Act*, section 7(b).

127 For example, TELUS has chosen to throttle users in particular British Columbia communities instead of upgrading their network capabilities to match user demand: see TELUS, "TELUS Internet Traffic Management Policy" (Accessed 15 June 2015), online: <http://www.telus.com/en/bc/get-help/service-updates-changes/telus-internet-traffic-management-policy/support.do>. See also comments by consumers to Xplornet blog post, online: <http://www.xplornet.com/blog/xplornet-blog/2014/2013-network-improvements/>; consumer posts to Shaw's customer help boards, online: <https://community.shaw.ca/thread/12904>.

128 See individual intervention 27:

"In our community, it unheard of that anyone gets their download speed up to 3 Mbs, even though we pay for 5. I average, on a good day, roughly 2.2 to 2.6, with an up load speed range of .6 to .8. ... My technician, from a local computer firm, tells me that his internet was down to .8 to 1.2, and so he switched to Shaw, which was okay for while, until a lot of other customers caught on, and they switched, and now things are back where they were"

163. High latency and jitter can cause significant interactivity problems for real-time applications such as video calling, online gaming or remote work, even to the point of making these applications effectively impossible to use.
164. Packet loss also can significantly degrade real-time applications and download speeds. However users will often not know packet loss is the culprit as it is usually a problem deep within the ISP's network; consumers will simply be frustrated that their Internet connection "doesn't work."
165. Maintaining satisfactory levels of reliability is an integral component of ensuring that the basic service obligation is met.
166. Inadequate performance in relation to these characteristics, however, can be difficult – or impossible – for the average consumer to identify. Unless consumers are informed of their service provider's performance in relation to such characteristics, it is unlikely that market forces alone can ensure that service providers meet reliability standards.
167. The Commission could set quality of service ("QoS") standards, require service providers to monitor and report on these types of issues to ensure that Internet access services which are the subject of a service obligation are of high quality and, in particular, are sufficiently reliable that Canadians can access the services and make effective use of the applications they rely upon. The failure by a service provider to meet such standards would then give rise to consequences. This is particularly important if basic service obligations are to be subject to rate caps or supported with service obligations or a subsidy mechanism. At this juncture the AAC has proposed that the phrase "high quality" be added to the revised BSO in order to signify the QoS standards. The specific articulation of those standards could be addressed in a subsequent proceeding.

Q1(c). Identify and explain the barriers that limit or prevent Canadians from meaningfully participating in the digital economy (e.g. availability, quality, price, digital literacy, and concerns related to privacy and security). Identify which segments of the Canadian population are experiencing such barriers.

Brief answer: While some Canadians simply choose not to consume certain telecommunications services at home, and digital literacy is a barrier for some,

See also individual interventions 9 and 13.

affordability is the major barrier limiting and preventing Canadians who want to consume necessary telecommunications services, including wireless and Internet service. A consumer survey commissioned by the AAC found 30% of consumers say they do not subscribe to home Internet because it was too expensive, despite 67% of Canadians rating the level of importance of broadband Internet as very high or absolutely essential. PIAC's Affordability Report found low-income consumers are extremely reluctant to cancel their communications services, with some stating they would forego other monthly expenses such as food, clothing or healthcare instead. Price statistics gathered by the Wall Report show that since 2008, the two most affordable baskets of services have increased in cost by an average annual rate of 5.4% and 2.8%, when average annual inflation over this period was only 1.4%. Canada is also falling behind its international peers, with Canada's rank among OECD countries for the cost of fixed broadband as a percentage of income falling from 11th to 15th to 19th in 2012, 2013 and 2014, according to reports by the International Telecommunication Union.

Accordingly, the AAC proposes a new funding mechanism – the Affordability Funding Mechanism – to support affordable access to telecommunications services by low-income households. The AAC presents two alternatives of the subsidy: an average or “baseline” subsidy, and a “best in class” or “ambitious” subsidy, based on comparisons to other jurisdictions. The “baseline” Affordability Funding Mechanism would provide a monthly subsidy of \$11 available to about 1.34 million eligible households, for an annual capped cost of \$70 million, and the “ambitious” version would provide a \$22 subsidy to 2.61 million households and an annual capped cost of \$410 million.

The Affordability Funding Mechanism would be funded by modifying the National Contribution to include retail Internet revenues and retail paging revenues, and retuning the contribution rate to the historical average.

168. For the purposes of this question the AAC focuses on wireless service and home Internet service, two important telecommunications services that are not within the current BSO.
169. According to the Environics survey, 7% of households do not subscribe to home Internet service. 11% of households do not subscribe to wireless (cell phone) service.¹²⁹

Reasons for not subscribing to wireless service

¹²⁹ Environics survey, Q3 and Q4.

170. Of the 11% of households that do not subscribe to wireless service, most indicated they did not subscribe at home due to a personal choice.

- 72% indicated they “Choose not to have a cell phone at home / don’t need it / Not interested in it”
- 3% indicated “Cell phone is loss of freedom / don’t wish to be available 24/7”
- 2% indicated they “Already have one provided by employer”
- 2% indicated “Landline works fine for me”
- 1% indicated they “No time / have other things to occupy self with”

171. 21% of those households that do not subscribe to wireless service indicated that the reason is expense.

172. Some indicated barriers relating to accessibility (3%), lack of understanding how to use a cell phone (2%), privacy and security concerns (3%), and poor service coverage (2%).

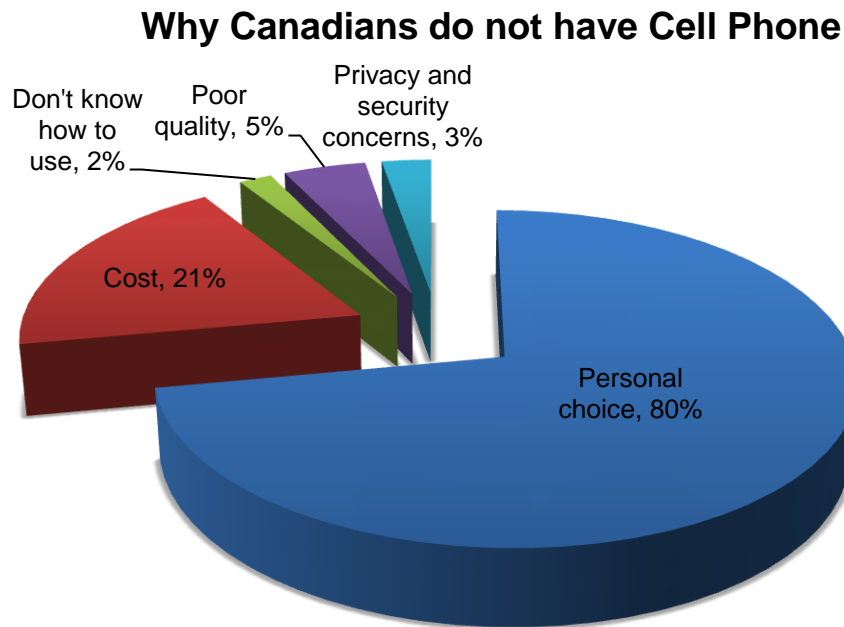


Figure 4. Main reasons why Canadians do not have wireless service¹³⁰

¹³⁰ Environics Survey.

173. As the figure reveals, next to personal choice, cost is the major reason why Canadians do not subscribe to wireless service.

Reasons for not subscribing to Internet service

174. Of the 7% of households that do not subscribe to home Internet service, many indicated they did not subscribe at home due to personal choice.

- 37% indicated they “choose not to have a computer / Just not interested”
- 7% indicated they “Use Internet at work / other place – don’t use it at home”
- 2% indicated they have “no time / have other things to occupy self with”

175. Some indicated there was no service or that it was of a poor quality.

- 2% indicated there was “No Internet service available where I live”
- 2% indicated “Only dial-up / no high speed Internet”
- 1% indicated “Poor quality of Internet service where I live”

176. Some respondents indicated digital literacy was a factor.

- 12% indicated they “Don’t know how to use a computer or browse the Internet”
- 6% indicated they are “Too old to use / learn how to use it”

177. 3% indicated they did not have home Internet service due to “Privacy and security concerns.”

178. Almost one-third (30%) of respondent households that do not subscribe to home Internet service indicated that the reason was “Too expensive / cost.” This percentage grew to 38% for consumers in smaller communities (population under 5,000, and between 5,000 and 100,000). This result comes despite 67% of Canadians rating the level of importance of having broadband as very high.¹³¹

179. 5% indicated there were “other” reasons, and 5% did not indicate any reason.

¹³¹ On a scale of 1 to 10, where 1 signified “not important at all” and 10 signified “absolutely essential,” 67% of respondents rated home Internet access as 8, 9 or 10. 80% of respondents rated home Internet access at 6, 7, 8, 9, or 10.

180. By classifying the above reasons in categories such as “**Personal choice**,”¹³² “**Poor quality**,”¹³³ and “**Don’t know how to use**,”¹³⁴ the survey results for home Internet and cell phone can be summarized as follows:

Why Canadians do not have Home Internet

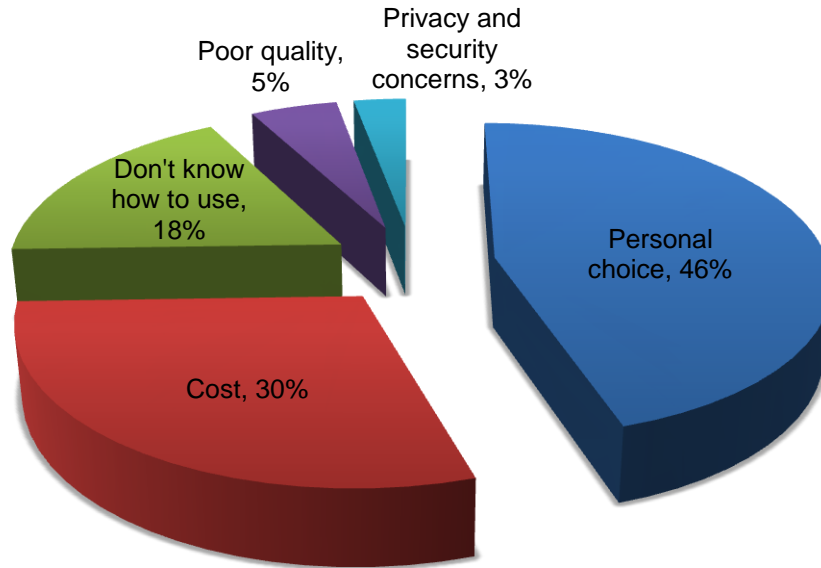


Figure 5. Main reasons why Canadians do not have internet service¹³⁵

181. In the AAC’s view, these results indicate that while some Canadians simply choose not to consume certain telecommunications services at home, and digital literacy is a barrier for some, affordability is the major barrier limiting and preventing Canadians from being able to consume necessary telecommunications services, including Internet service.
182. Of the foregoing results, what stands out is that other than personal choice not to subscribe to home Internet service and wireless service (37% and 72%, respectively), affordability is the next major reason (30% and 21%, respectively).
183. Indeed, the relationship between income and telecommunications service adoption is evident.

¹³² **Personal choice** includes “Not interested,” “Use at other place,” and “No time”
¹³³ **Poor quality** includes “No service available” and “Poor quality of service”
¹³⁴ **Don’t know how to use** includes “Don’t know how to use” and “Too old to learn”
¹³⁵ Environics Survey.

184. When broken down by level of income, households with annual incomes below \$30,000 tended to have much lower penetration of cell phone and home Internet subscriptions than those with annual incomes at or above \$30,000.

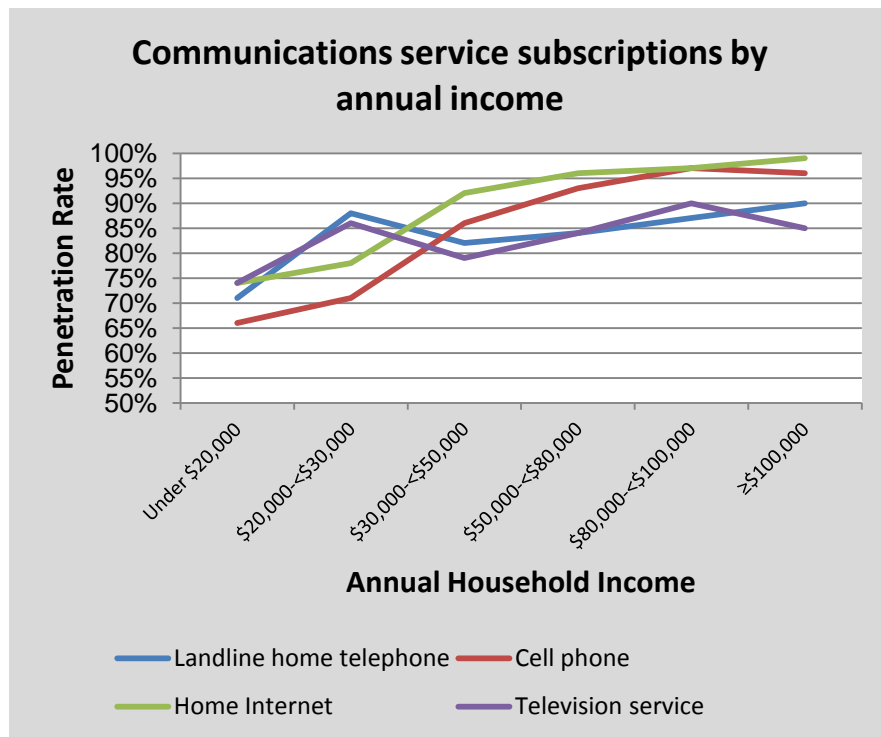


Figure 6. Communications service subscriptions by annual income¹³⁶

Affordability

185. The cost of telecommunications services can present a significant barrier for Canadians, especially those low-income Canadians who are least able to manage the lack of access to these important services. Even if higher quality Internet services are available to a household, their high cost could render them unaffordable, effectively preventing meaningful participation in the digital economy.
186. According to data from Statistics Canada, presented in the following table, there appears to be a strong negative correlation between household income and consumption of telecommunications services.

Household Penetration Rates for 2012

¹³⁶ Environics Survey.

	Wireline	Mobile Wireless	Wireline and/or Mobile Wireless	Wireline only	Mobile Wireless only	Internet at Home
Current StatsCan Publications						
All Households	83.5%	81.4%	99.2%	17.8%	15.7%	
Second 20%	80.3%	75.1%	99.5%	24.4%	19.2%	
Bottom 20%	74.6%	61.7%	97.4%	35.7%	22.8%	
All Households						82.5%
Second 25%						80.1%
Bottom 25%						58.0%
Bottom 10%	68.6%	63.4%	96.5%	33.1%	27.9%	50.3%

Table 9. Household penetration of various telecommunications services according to income¹³⁷

187. In the Environics survey, for example, 30% of respondents who indicated they do not subscribe to home Internet service stated they did not subscribe because it was too expensive.¹³⁸
188. However the cost of a service alone is not sufficient to indicate that it is affordable; it must be evaluated in an individual's context. PIAC's recently released Affordability Report, attached as Appendix "C" to this intervention, developed a framework for defining affordability of communications services and found that any definition of affordability must include a subjective element, as affordability is related to control.¹³⁹ Consumers must be able to control their monthly expenses in order to fulfill their needs; should the cost of a particular service rise such that it crowds out other important services, even if the increase is not beyond a particular threshold, the service cannot be considered affordable for that consumer.
189. PIAC's Affordability Report found that communications services were critical for low-income Canadians.¹⁴⁰ For many low-income Canadians, communications services are a key method by which they participate in society generally, let alone the digital economy.
190. PIAC's Affordability Report also found that some consumers were extremely reluctant to cancel their communications services in the face of rising costs, and some would reduce basic expenses such as food, clothing, health care or other personal expenses in order to keep their communications services.¹⁴¹ Low-income

¹³⁷ Statistics Canada public data and custom research.
¹³⁸ Environics Survey, Q5B.
¹³⁹ Appendix "C", PIAC's Affordability Report at 84.
¹⁴⁰ Appendix "C", PIAC's Affordability Report at 61-81.
¹⁴¹ Appendix "C", PIAC's Affordability Report at 70.

Canadians with children were particularly reluctant to give up home broadband Internet service due to the necessity of broadband access for their children's education. These findings strongly indicate that there might be widespread price inelasticity in relation to wireless and broadband service.

191. In the Affordability Report, PIAC concluded a qualitative assessment of the affordability of a communications service must examine:

- the cost of each individual communications service, as well as the group of communications services as a whole;
- the total cost of ownership, including the cost of credit, rather than merely the monthly service cost;
- a service offering which at minimum – to the extent that technology allows – enables a low-income individual to fulfill the four core functions of communications services: (i) voice communication; (ii) readily available contact with emergency and helpline services; (iii) access to news and entertainment; and (iv) ability to find information;
- for mobile phone and home Internet service especially, costs of heavy levels of usage; and
- costs which low-income Canadians have said they would like to or feel comfortable paying.¹⁴²

192. The AAC described above how consumers' household Internet usage habits *today* can require a download speed upwards of 15 or 26 Mbps, increasing further with the number of Internet users per household. In the recently released *2015 Wall Report*,¹⁴³ this corresponds to the level 3 price basket, of 16 to 40 Mbps with 100 GB data usage.¹⁴⁴ The report found the average price among major Canadian cities was \$67.81, ranging from a low of \$62.88 in Regina to \$92.95 in Halifax.¹⁴⁵

193. Using data for household income and expenses of low-income Canadians from PIAC's Affordability Report,¹⁴⁶ these prices represent a significant increase in the cost of services they are currently able to afford:

¹⁴² Appendix "C", PIAC's Affordability Report at 88.

¹⁴³ Wall Communications Inc., "Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions 2015 Edition" (30 March 2015), online: <<http://www.crtc.gc.ca/eng/publications/reports/wall2015/rp1506wall.pdf>> ("**2015 Wall Report**")

¹⁴⁴ Note that the AAC believe 100 GB usage is far too small for multitasking users, or larger households.

¹⁴⁵ 2015 Wall Report at 37.

¹⁴⁶ Aggregated data was provided by Credit Canada Debt Solutions, a national non-profit credit counselling agency. See online: <<https://creditcanada.com>>. See Appendix "C", PIAC's Affordability Report at 3, 70-79.

Household Size	Average Monthly Income	Current Home Internet Expenses		Level 3 Basket Home Internet Expenses		
		Monthly Cost	% of Monthly Income	Average Monthly Cost	% of Monthly Income	% Increase
1	\$1,315.68	\$48.11	3.66%	\$67.81	5.15%	41%
2	\$1,691.43	\$48.09	2.84%		4.01%	41%
3	\$2,068.79	\$55.37	2.68%		3.28%	22%
4	\$2,405.52	\$57.69	2.40%		2.82%	18%

Table 10. Increase in monthly Internet access cost required by low-income Canadians for “level 3” basket

194. For a household size of 1 or 2, the level 3 basket service alone would already exceed PIAC’s recommended guideline that to be affordable, *all* communications services should total up to 4% to 6% of a household’s monthly income.¹⁴⁷ In light of the high proportion of household income that this basket of services represents, it is no wonder that low-income Canadians are forced on to lower-quality services. Lower income Canadians can make use of higher quality Internet service just as any other Canadian, yet they are at the greatest risk of being left behind as more and more social, economic and cultural activities are conducted online.
195. However low-income Canadians may not find relief on their monthly budgets in lower-quality service packages. The *2015 Wall Report* also shows the cost of the two most affordable service baskets have both steadily increased since the report began collecting data in 2008. Since 2008, the cost of a basket 1 and 2 service has increased at an average annual rate of 5.4% and 2.8% per year respectively, when inflation during this time was only 1.4%.¹⁴⁸ Since 2012, when basket definitions were partially modified, the cost of a basket 1 and 2 service has increased at an average annual rate of 6.5% and 1.4% per year respectively, when inflation during this time was only 1.1%.¹⁴⁹
196. Several international comparisons of broadband pricing also point to affordability issues in Canada.
197. PIAC’s Affordability Report found that the average annual total cost of ownership for fixed broadband as a percentage of personal disposable income was approximately

¹⁴⁷ Appendix “C”, PIAC’s Affordability Report at 84.

¹⁴⁸ 2015 Wall Report at 63; Statistics Canada, “Consumer Price Index, historical summary (1995 to 2014)” (23 January 2015), online: <<http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/econ46a-eng.htm>>; Statistics Canada, “Consumer Price Index” (19 June 2015), online: <<http://www5.statcan.gc.ca/cansim/a26?id=3260020>> (“CPI”).

¹⁴⁹ 2015 Wall Report at 63; CPI.

2.45%.¹⁵⁰ With a fixed broadband penetration of 77%, this places Canada below several other developed countries in terms of fixed broadband penetration at the same total cost of ownership; that is, at this level of broadband penetration Canadians have a larger total cost of ownership than peer countries (see Figure 7):

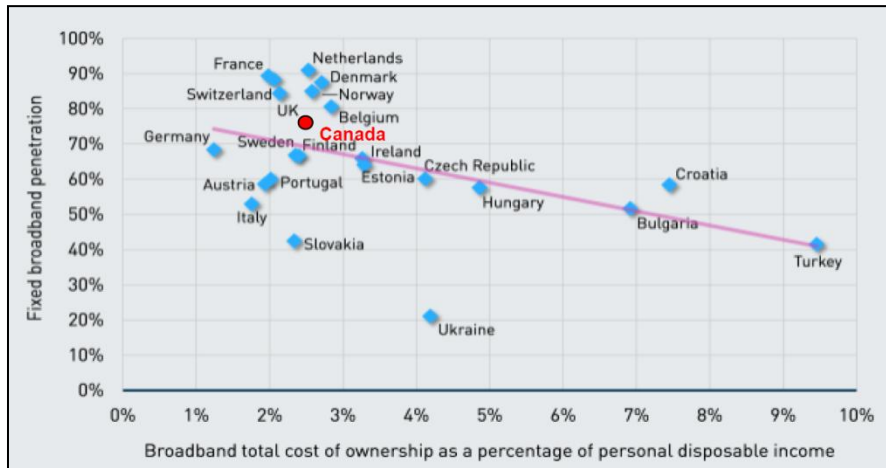


Figure 7. Affordability vs. penetration of fixed broadband¹⁵¹

198. The International Telecommunication Union’s annual *Measuring the Information Society* report compares the cost of the most readily available entry-level fixed broadband Internet access package among 166 developed and developing countries.¹⁵² In the ITU’s latest report, while Canada appears to do moderately well among all countries, ranking 30th of 166, among the subset of developed countries who are members of the Organisation for Economic Co-operation and Development (“OECD”), Canada ranks only 19th of 34.¹⁵³ Moreover, affordability has *worsened* in recent years, with Canada falling from 14th to 23rd to 30th out of all countries, and 11th to 15th to 19th out of OECD countries, in 2012, 2013 and 2014 respectively.¹⁵⁴

¹⁵⁰ Appendix “C”, PIAC’s Affordability Report at 93.

¹⁵¹ Appendix “C”, PIAC’s Affordability Report at 94.

¹⁵² International Telecommunication Union, “Measuring the Information Society 2014” (24 November 2014), online: <http://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2014/MIS2014_without_Annex_4.pdf> (“ITU 2014”)

¹⁵³ ITU 2014 at 124. The report ranks affordability based on the cost of entry-level packages as a percentage of gross national income per capita. Canada is similarly middle-of-the-pack when measuring fixed broadband prices as a percentage of household disposable income: at 144.

¹⁵⁴ International Telecommunication Union, “Measuring the Information Society 2012” (2012), online: <http://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2012/MIS2012_without_Annex_4.pdf> at 88; International Telecommunication Union, “Measuring the Information Society 2013” (2013), online: <http://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2013/MIS2013_without_Annex_4.pdf> at 82; ITU 2014 at 124.

199. The *2015 Wall Report*¹⁵⁵ paints a similar picture. Internationally, comparing against similarly developed countries, Canada continues to provide no better than “middle-of-the-pack” performance. Moreover, for the most affordable basket of services, Canada’s prices have risen. At the same time, these entry-level packages which provide low levels of performance were discontinued by Canada’s peer countries years ago in favour of higher performing entry-level packages.¹⁵⁶ Canadians are facing increasing costs for increasingly obsolete broadband speeds. In the second most affordable basket, Canada is ranked directly in the middle, once again a mediocre performance, and has stagnated compared to some of its peers:

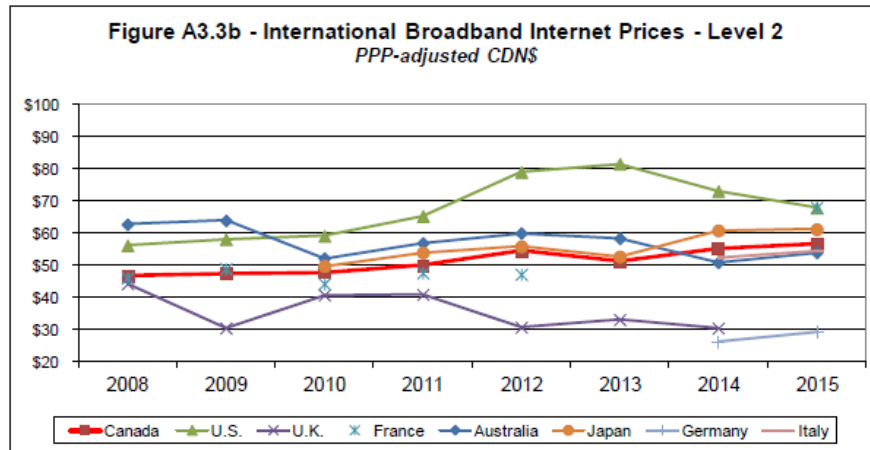


Figure 8. *2015 Wall Report* international comparison of level 2 basket¹⁵⁷

200. One would expect that in a communications system that touts itself as “world class,”¹⁵⁸ entry-level packages would become more affordable over time as ISPs become more efficient at delivering basic services. As well, one would expect ISPs to reduce prices in order to entice the millions of Canadians who have access to Internet service, but do not subscribe to higher-quality services, or any service at all.¹⁵⁹

¹⁵⁵ 2015 Wall Report.

¹⁵⁶ 2015 Wall Report at 74.

¹⁵⁷ 2015 Wall Report at 74.

¹⁵⁸ See e.g., the Chairman’s message in the Communications Monitoring Report; comments of Shaw at the hearing for Telecom Notice of Consultation CRTC 2013-551, Transcript Volume 5 (28 November 2014), online: <<http://www.crtc.gc.ca/eng/transcripts/2014/tt1128.htm>> at para 5896; comments of Rogers at the hearing for Telecom Notice of Consultation CRTC 2013-551, Transcript Volume 7 (2 December 2014), online: <<http://www.crtc.gc.ca/eng/transcripts/2014/tt1202.htm>> at para 8742.

¹⁵⁹ The Communications Monitoring Report shows that in 2013 there was a 97% residential broadband availability rate, yet only an 80% penetration rate. With an 80% subscription rate

201. These indicators suggest that market forces have not been sufficient to bring affordable broadband to all Canadians. Significant improvements may be needed if the Canadian telecommunications system is to be truly considered “world-class” and if Canada is to be seen as a world leader in digital economy. The AAC notes that the *Telecommunications Act* is clear that the Commission has as a core objective, “to render reliable and affordable telecommunications services of high quality accessible to Canadians in both urban and rural areas in all regions of Canada.”¹⁶⁰
202. Accordingly, the AAC proposes that the Commission, in pursuance of its mandate under the *Telecommunications Act*, implement a funding mechanism to support access by low-income Canadians to telecommunications services. The proposed Affordability Funding Mechanism is described in response to [Consultation Question 3\(c\)](#) below.

Q1(d). Identify and explain any enablers that allow Canadians to meaningfully participate in the digital economy (e.g. connected devices and applications).

Brief answer: *While the Commission has focused on devices and applications – “technology enablers” – the AAC submits that there are many types of “enablers” which would empower users to participate meaningfully in the digital economy. The AAC attempts to simplify the multifaceted aspect of this consultation question by focusing on two aspects: “technology enablers” and “service access enablers.” Technology enablers include growing consumer demand for smartphone and data-intensive applications. “Service access enablers” facilitate access to service and digital literacy, including free Internet service in public spaces such as libraries and schools, and affordable low-cost service for low-income users. In what follows the AAC describes those two types of enablers.*

203. While the Commission has focused on devices and applications – “technology enablers” – the AAC submits that there are many types of “enablers” which would empower users to participate meaningfully in the digital economy. The AAC attempts

corresponding to 11,251,000 residential Internet subscribers, there are therefore approximately 2.7 million ‘potential’ residential subscribers yet to be brought online. While these households may choose to not subscribe for a variety of reasons, cost is undoubtedly one important factor. Further, only 67% subscribe to broadband with speeds of 5 Mbps or higher, meaning there are approximately 4.5 million subscribers or potential subscribers who may desire higher quality services, but may be limited by cost. See 2014 CMR at 171, 176.

¹⁶⁰

Section 7(b).

to simplify the multifaceted aspect of this consultation question by focusing on two aspects: “technology enablers” and “service access enablers.”

Technology enablers

204. Technology enablers which would allow Canadians to meaningfully participate in the digital economy can be derived from forecasts on growing *consumer need and demand* for specific devices, services and applications.
205. Several reports and regulatory decisions have identified growing consumer demand for bandwidth-hungry applications, as usage patterns evolve and platforms reconfigure themselves to both accommodate and shape those patterns.
206. The *Ericsson Mobility Report* forecasts, for instance, that global smartphone subscriptions will more than double by 2020, and that the number of smartphone subscriptions will exceed the number of basic phone subscriptions by 2016.¹⁶¹ Furthermore, 55% of all mobile data traffic will be taken by mobile video, and 15% by social networking.¹⁶² The proportion of video traffic also correlates with the availability of high-speed networks, with the highest proportion on 4G dominated networks.¹⁶³
207. Therefore, smartphone devices and mobile video applications will continue to be important technology enablers, in line with increasing user demand.
208. Other reports predict that generally “smart,” WiFi-enabled equipment and devices will play important roles in network traffic in the next few years. A 2014 iGR study predicted that almost 98% of broadband data use in American households would be on WiFi devices by 2018.¹⁶⁴ Cisco forecasts that by 2018:
 - 50% of all networked devices will be mobile-connected;
 - machine-to-machine (M2M) devices will account for 35% of all networked devices;
 - smartphones will account for 19% of all networked devices; and

¹⁶¹ Ericsson, *Ericsson Mobility Report on the Pulse of the Networked Society* (February 2015), online: Ericsson <<http://www.ericsson.com/res/docs/2015/ericsson-mobility-report-feb-2015-interim.pdf>> at 5 (“**Ericsson Mobility Report**”)

¹⁶² Ericsson Mobility Report at 7.

¹⁶³ Ericsson Mobility Report at 9.

¹⁶⁴ iGR, “New iGR Study Forecasts That Almost 98 Percent of Broadband Data Use in U.S. Households Will Be on WiFi Devices by 2018” (18 June 2014), online: Market Wired <<http://www.marketwired.com/press-release/new-igr-study-forecasts-that-almost-98-percent-broadband-data-use-us-households-will-1921697.htm>>.

- connected TVs will account for 13% all networked devices.¹⁶⁵

209. Moreover, Cisco predicts that consumer Internet video traffic will increase 3.6 times from 2013 to 2018, making up 78% of all consumer Internet traffic, and that Internet-Video-to-TV traffic will grow 4.1 times between 2013 and 2018.¹⁶⁶

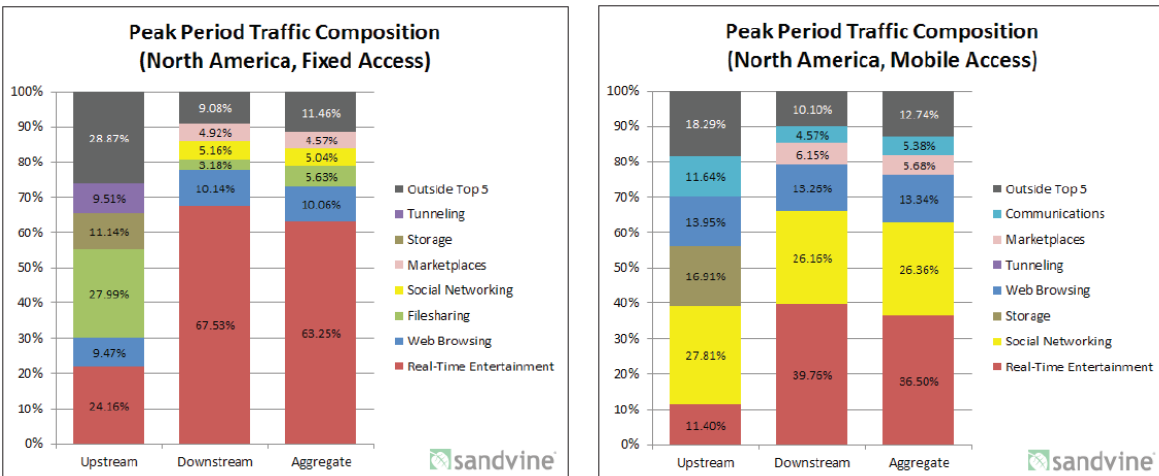


Figure 9. Peak period traffic composition¹⁶⁷

210. Therefore, there will continue to be high demand for devices which allow consumers to access and use broadband heavily.

211. The FCC in the U.S. has also discussed specific broadband uses and applications which will grow more important for American households. The latest *Broadband Progress Report*, for instance, found that in addition to high-quality video services, telemedicine and distance learning requiring real-time video conferencing were “surging in popularity,” and in rural areas in particular.¹⁶⁸

212. A 2014 Communications Chambers report for the Centre for International Economics and the Vertigan Panel in Australia found that “browsing or interacting with web pages” would likely remain “the most important internet activity by time spent” – approximately

¹⁶⁵ Cisco, “VNI Forecast Highlights,” online: Cisco <http://www.cisco.com/web/solutions/sp/vni/vni_forecast_highlights/index.html> (accessed 20 May 2015) (“VNI Forecast”).

¹⁶⁶ VNI Forecast.

¹⁶⁷ Sandvine Report, Figures 1 and 2.

¹⁶⁸ Federal Communications Commission, *2015 Broadband Progress Report and Notice of Inquiry on Immediate Action to Accelerate Deployment* (4 February 2015), FCC 15-10 at paras 30-32.

2,615 minutes per month, or 1.5 hours per day.¹⁶⁹ Yet, the bandwidth required for web surfing is a “complex question” because demand is “spiky,” depending on when a user is reading a web page and when he or she accesses a new web page. As a result, the report finds that “an individual using the web will require more capacity than the traffic consumed might suggest.”¹⁷⁰

Service access enablers

213. The AAC also submits that improving access to telecom services – and broadband in particular – in publicly accessible facilities or important institutions such as schools also enables citizens to participate meaningfully in the digital economy.
214. The National Telecommunications and Information Administration (“**NTIA**”) found that while 75% of American households used the Internet at home in 2012, 20% used the Internet at school, 11% at the public library, and 10% at cafes.¹⁷¹

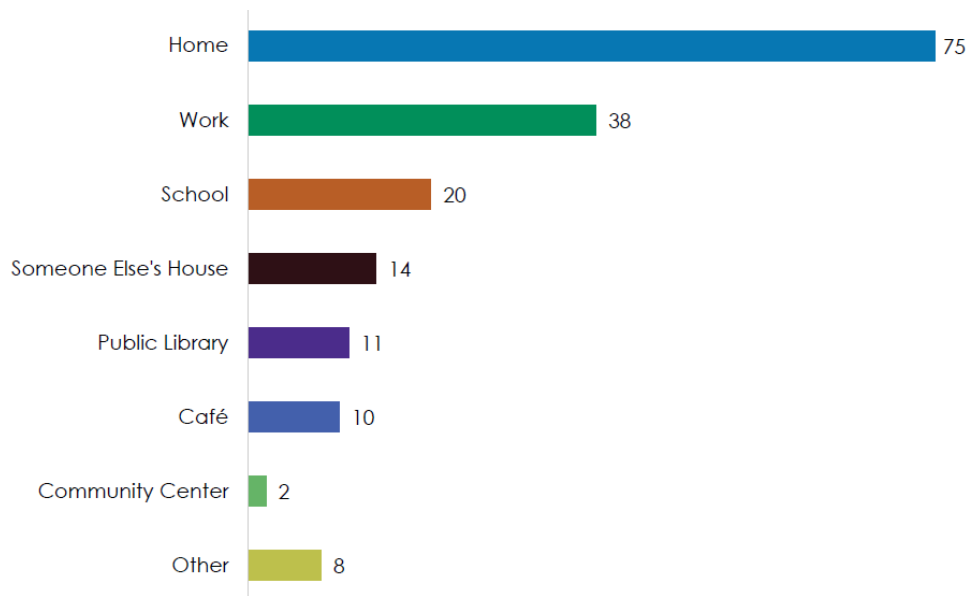


Figure 10. Locations of Internet use, % of American households (2012)¹⁷²

¹⁶⁹ Robert Kenny and Tom Broughton, *Domestic bandwidth requirements in Australia: A forecast for the period 2013-2023* (26 May 2014), online: <http://www.communications.gov.au/__data/assets/pdf_file/0013/243040/Forecasting-Australian-Per-Household-Bandwidth-Demand-Commun.pdf> at 44-45.

¹⁷⁰ Kenny & Broughton at 45.

¹⁷¹ NTIA, *Exploring the Digital Nation: Embracing the Mobile Internet* (October 2014), online: NTIA <http://www.ntia.doc.gov/files/ntia/publications/exploring_the_digital_nation_embracing_the_mobile_internet_10162014.pdf>, Figure 14 (“**NTIA Digital Nation 2014**”).

215. The NTIA also found that libraries in particular were important locations for using the Internet across all income and educational brackets,¹⁷³ and concluded that “while progress continues in home broadband adoption, disparities among groups and areas persist, and libraries and other public access points provide alternative venues for Internet use.”¹⁷⁴ A 2010 Social Science Research Council report also highlighted the importance of libraries and other “third spaces” in allowing low-income communities to access the Internet. The authors wrote:

In low-income communities, the tension between low rates of home broadband adoption and growing demand for Internet use falls mostly on “third spaces” that provide Internet access away from home or work. Libraries almost always play a central role in these wider ecologies of broadband access, but community centers, employment offices, and other social service organizations also fill important niches. In addition to providing access, many third spaces also play broader support roles in their communities, from skills development for new users to facilitating access to Internet-mediated social services, employment markets, and educational opportunities.¹⁷⁵

216. The FCC in the U.S. was authorized by the *Telecommunications Act of 1996* to implement the *E-rate program*, providing discounted telecommunications services for eligible schools and libraries under the Universal Service Fund.¹⁷⁶ The discount is primarily determined by the location of the school (urban or rural) as well as the percentage of students eligible for the National School Lunch Program.¹⁷⁷ The telecom service provider is traditionally chosen by individual E-rate schools through a competitive bidding process.¹⁷⁸
217. The FCC has also created a similar program for rural health care providers under the *Rural Health Care Program*, including the Healthcare Connect Fund,¹⁷⁹ after finding that the Pilot Program was able to fund 50 health care provider broadband networks and 3,822 individual health care provider sites.¹⁸⁰

¹⁷² NTIA Digital Nation 2014, Figure 14.

¹⁷³ NTIA Digital Nation 2014 at vii.

¹⁷⁴ NTIA Digital Nation 2014 at 3.

¹⁷⁵ Dharma Dailey et al., *Broadband Adoption in Low-Income Communities* (March 2010), online: Social Science Research Council < <http://www.ssrc.org/publications/view/1EB76F62-C720-DF11-9D32-001CC477EC70/>> at 38.

¹⁷⁶ Federal Communications Commission, *In the Matter of Modernizing the E-rate Program for Schools and Libraries: Report and Order and Further Notice of Proposed Rulemaking* (23 July 2014), FCC 14-99 at paras 10-11.

¹⁷⁷ See United States Department of Agriculture, Food and Nutrition Service, “National School Lunch Program (NSLP)”, online: USDA <<http://www.fns.usda.gov/nslp/national-school-lunch-program-nslp>> (“**NLSP**”)

¹⁷⁸ NLSP at para. 12.

¹⁷⁹ See Federal Communications Commission, *In the Matter of Rural Health Care Support Mechanism: Report and Order* (21 December 2012), FCC 12-150 (“**Rural Health**”).

¹⁸⁰ Rural Health at para. 2.

218. In Canada, there does not appear to be any national programs in place to promote telecom access for important public services and institutions, and limited provincial programs.¹⁸¹ There are some non-profit associations such as CANARIE act as intermediaries between telecom service providers and Canadian institutions such as hospitals, universities and research institutes, as well as a small number of grassroots community organizations which attempt to provide more affordable Internet access to their members.¹⁸²
219. The AAC has also found that targeted programs for residential users can be used to support participation in the digital economy. The *Connect2Compete* program in the U.S., for instance, gives eligible households with children in the National School Lunch Program a discounted rate of \$9.95 per month for broadband Internet service at home.¹⁸³
220. In Canada, Rogers' *Connected for Success* program similarly provides 10 Mbps download speed fixed broadband service for students in Toronto Community Housing for \$9.99 per month, as well as a refurbished desktop computer for \$150.¹⁸⁴
221. The AAC therefore believes that "enablers" which allow Canadians to meaningfully participate in the digital economy include both technology enablers and service access enablers. As discussed in response to [Consultation Question 1\(c\)](#) above however, the

¹⁸¹ Funds such as the Community Improvement Fund include broadband and connectivity as an eligible category. The "Central Alberta Satellite Solution," which waives installation distance charges for eligible Xplornet satellite customers in rural Alberta, online: <http://alberta.ca/release.cfm?xID=3353649D89D7B-D28F-736A-4A282D1343298034>; Also, in Alberta, the SuperNet connects public institutions across the province.

¹⁸² See e.g., "National Capital FreeNet", online: <https://www.ncf.ca/>. According to the National Capital FreeNet website, the group's "Members-helping-members Assistance Fund provides NCF dial-up Internet access and services to members who would not otherwise be able to have Internet at home." (See "NCF President's 2006 Message", online: <http://www.ncf.ca/ncf/agm/2006/reports/president.htm>); Toronto Free-Net, online: <http://www.torfree.net>; Vancouver Community Network, online: <http://www2.vcn.bc.ca>; and Calgary Community Network Association, online: <http://www.calcna.ab.ca>. The latter are non-profit organizations seeking to provide Internet access to the public at more affordable rates than offered by for-profit ISPs.

¹⁸³ See Everyone On, "About Us: Connect2Compete", online: Everyoneon.org <http://everyoneon.org/about/c2c/> (accessed 21 May 2015); Josh Gottheimer and Jordan Usdan, "Low-Cost Broadband and Computers for Students and Families" (10 November 2011), online: FCC <https://www.fcc.gov/blog/low-cost-broadband-and-computers-students-and-families>; Rogers Youth Fund, "Connected for Success," online: Rogers Youth Fund http://www.rogersyouthfund.com/Rogers_connected_for_success.html (accessed 21 May 2015).

AAC considers affordability to be the most important barrier to participation in the digital economy, and the most germane to the Commission's jurisdiction.

Q1(e). As Canada's digital economy continues to grow and evolve during the next 5 to 10 years, which telecommunications services are Canadians expected to need to participate meaningfully? Specify how your responses to parts a) through d) above would change based on your answer.

Brief answer: While households today can readily require download and upload speeds exceeding 26.2/10 Mbps, in the coming years speed and data consumption requirements will only increase. Canadians are purchasing more and more mobile devices such as smartphones and tablets, while the majority of data consumed with these devices is at home on the household Wi-Fi connection – so-called “Wi-Fi offloading.” Cisco predicts more data will be “offloaded” to household connections than will be consumed by mobile networks by 2016. Consumer routers with Wi-Fi speeds of 1 Gbps already exist in the market, and 10 Gbps-capable consumer routers will be commercialized by 2018. 4K Ultra HD content delivery services exist and are growing, and analysts say broadband speeds will be the bottleneck for their adoption, not device purchases. Targets for the future should reflect that demand for these services will grow rapidly and consumers should be given the capability to decide if these applications meet their needs, rather than being discouraged or restricted.

222. Predicting how Canada's digital economy will grow and evolve during the next 5 to 10 years and assessing which telecommunications services Canadians will need to participate meaningfully is a task fraught with risk.
223. Predicting the future needs of Canadians would require foresight into developments such as the arrival on the marketplace of novel applications and technology. The AAC also notes, however, that in Telecom Regulatory Policy 2011-291 (“**TRP 2011-291**”)¹⁸⁵ when it last defined the basic service obligation, the Commission provided the following general assessment:

[...] [T]he ubiquity and speed of broadband Internet access at reasonable rates is becoming more important for Canadians in the achievement of a number of social, economic, and cultural objectives. Canadians will change their patterns of viewing and interacting with digital media as they increasingly consume and produce directly through the Internet. Their requirements for broadband speeds will grow, just as their requirements for the processing capacity of their

¹⁸⁵

2011 BSO.

computers have grown. What was an acceptable speed in one year will be regarded as slow a few years later. The Commission expects that Internet service providers will keep pace with these requirements. The Commission considers that the freedom to use communications media at reasonable rates will be a primary concern for all Canadians in the years ahead.¹⁸⁶

224. The AAC submits that the Commission's assessment likely remains accurate today as it considers the future of Canadians' usage of broadband.

225. The AAC also agrees with the Commission's assessment in TRP 2011-291 that as it looks to the future and to Canadians' future service requirements it should continue to consider that Canadians

[...] should have access to a broadband Internet access service that allows several users in one household to use the World Wide Web (alpha-numeric text, images, and small video files), voice over Internet Protocol services, and other online services (such as email and banking) over a single connection at the same time. With this type of access, users will be able to actively participate in online discussions, take advantage of many government services, and carry out research, to name just a few possible applications.

The Commission also considers that a broadband Internet access service should allow a single user to stream higher-quality audio and video and to participate in video conferencing at reasonable quality using online services. This capability will enable users to engage in such activities as participating in distance learning and online consultations with professionals (basic e-health).¹⁸⁷

226. It is already clear that trends demonstrate Canadians will likely require higher quality telecommunications services and consume greater amounts of data in the future.

227. One trend is the adoption of more mobile devices consuming more data, such as smartphones and tablets. The Commission's 2014 CMR shows a steady increase adoption rates:

¹⁸⁶ 2011 BSO at para. 71.
¹⁸⁷ 2011 BSO at paras. 74-75.

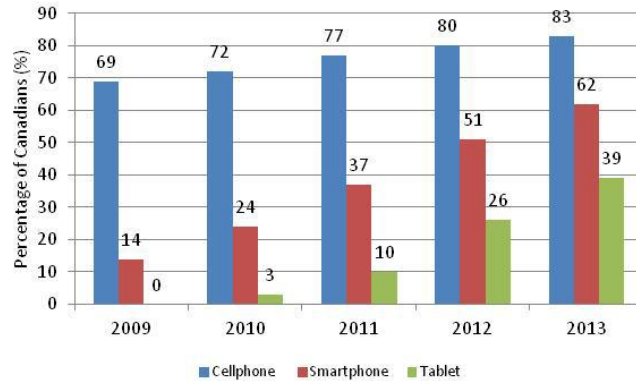


Figure 11. Mobile device penetration¹⁸⁸

228. The increase in mobile device adoption is important for wireline communications services due to “Wi-Fi offloading” where consumers use the Wi-Fi connections in their homes (and in many other locations) instead of the mobile data network, to reduce their mobile network data consumption. This need arises due to the low data allowances on mobile data plans and high cost of overage charges relative to wireline Internet service.
229. Cisco’s Visual Networking Index Forecast initiative estimates that “offloaded” data consumption via mobile devices will exceed mobile network usage by 2016.¹⁸⁹ Specifically, the “amount of traffic offloaded from smartphones will be 54 percent by 2019, and the amount of traffic offloaded from tablets will be 70 percent.”¹⁹⁰
230. This growth in data consumption will be matched by ever-higher Wi-Fi connection speeds available within the home. The next generation of Wi-Fi, promising speeds upwards of 10 Gbps, has already been proven in a laboratory setting in 2014,¹⁹¹ and is currently on the path towards standardization and commercialization for 2018.¹⁹²
231. Several applications and behavioural changes are also to drive the adoption of ever-faster telecommunications services.

¹⁸⁸ 2014 CMR at 217.

¹⁸⁹ Cisco, “Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2014–2019” (3 February 2015), online: <http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-520862.pdf> at 3 (“**Cisco Visual Networking**”). The paper contemplates the use of mobile carrier-provided Wi-Fi in high-traffic areas as well, which currently has minimal deployment in Canada.

¹⁹⁰ Cisco Visual Networking at 22.

¹⁹¹ Huawei, “Huawei Successfully Tests Next Generation 10Gbps Wi-Fi” (29 May 2014), online: <http://www.huawei.com/ilink/en/about-huawei/newsroom/press-release/HW_341651> (“**Huawei Test**”).

¹⁹² Huawei Test. The new standard, 802.11ax is being actively developed by the Institute of Electrical and Electronics Engineers, see online: <http://www.ieee802.org/11/Reports/tgax_update.htm>.

232. The coming wave of the Internet of Things, where everyday objects and new data-collecting sensors are be connected to the Internet, will require consumers to have more reliable and faster Internet service than before. Canadian Internet service providers are already entering these markets, as exemplified by announcements from service providers such as TELUS,¹⁹³ Rogers,¹⁹⁴ and Primus.¹⁹⁵ Some analysts predict that connected-home devices, for example, will grow significantly faster than smartphones or tablets have, reaching 1.8 billion units shipped per year by 2019.¹⁹⁶ Other connected devices will help improve health care, and provide more information to consumers about their lifestyle choices.¹⁹⁷
233. Increasing demand for higher video quality can also be expected to drive the adoption of faster Internet services. While 4K Ultra High Definition video has yet to reach critical mass, 4K TV sales projections are estimating significant growth in the coming years.¹⁹⁸
234. However as one analyst has stated, one significant problem facing 4K adoption may not be the prevalence of capable devices, but bandwidth.¹⁹⁹ Netflix currently offers 4K UHD content. However, streaming it requires a download speed of at least 15 Mbps, which ideally should be 50 Mbps according to Netflix's CEO.²⁰⁰ Streaming movies at 60 frames per second (instead of the typical 24 or 29) will also nearly double bandwidth requirements, even for 1080p HD content. As such applications enter the mainstream, if Canadians are to keep pace, significant improvements in available speeds, data allowances and associated pricing will need to occur.
235. Greater Internet service performance requirements are clearly on the horizon. Sony launched a 4K service in 2013 named "Video Unlimited 4K," with the average 2 hour

¹⁹³ TELUS, "Key business technology trends to watch for in 2015" (18 December 2014), online: <http://about.telus.com/community/english/news_centre/news_releases/blog/2014/12/18/key-business-technology-trends-to-watch-for-in-2015>.

¹⁹⁴ News 1130, "Rogers invests \$4 million into the 'Internet of Things'" (21 November 2014), online: <<http://www.news1130.com/2014/11/21/rogers-invests-4-million-into-the-internet-of-things/>>.

¹⁹⁵ Gary Hilson, "Ryerson, Primus team up to fan Canada's IoT flame" (4 June 2015), online: <<http://www.itworldcanada.com/article/ryerson-primus-team-up-to-fan-canadas-iot-flame/375192>>.

¹⁹⁶ Tony Danova, "THE CONNECTED-HOME REPORT: Forecasts and growth trends for one of the top 'Internet of Things' markets" (16 March 2015), online: <<http://www.businessinsider.com/connected-home-forecasts-and-growth-2014-9>>.

¹⁹⁷ Saidat Giwa-Osagie, "The Internet of You: Major Trends Shaping Connected Health" (14 August 2014), online: <http://www.huffingtonpost.com/fueled/the-internet-of-you-major_b_5677980.html>.

¹⁹⁸ Consumer Electronics Association, "The Future is Clear – 4K Ultra High-Definition Continues to Build Positive Momentum" (5 January 2015), online: <<https://www.ce.org/News/News-Releases/Press-Releases/2014/The-Future-is-Clear-%E2%80%93-4K-Ultra-High-Definition-Con.aspx>>.

¹⁹⁹ Dan Rayburn, "The Adoption Of 4K Streaming Will Be Stalled By Bandwidth, Not Hardware & Devices" (14 January 2015), online: <<http://blog.streamingmedia.com/2015/01/4k-streaming-bandwidth-problem.html>>.

²⁰⁰ Karl Bode, "'House Of Cards' In 4K Will Eat Broadband Caps Like Popcorn Shrimp" (21 February 2014), online: <<https://www.techdirt.com/articles/20140218/11532626269/house-cards-4k-will-eat-broadband-caps-like-popcorn-shrimp.shtml>>.

movie requiring approximately 40 GB of hard drive space.²⁰¹ Two or three movies per month alone would break through many Internet packages' data caps, and to download a movie within 8 hours would require a sustained download speed of at least 11.2 Mbps. Newer video compression algorithms will not likely be able to compensate for the increased video size while maintaining the quality level expected of 4K.²⁰²

236. As consumers make use of more connected devices and more mobile devices, and as applications that require greater bandwidth become more attractive and enter the mainstream, consumers will become accustomed to using more applications simultaneously than ever before. Significantly more households will become “multitasking households” and will expect all these applications to function without degradation in quality. Several applications requiring 10 Mbps each can be reasonably expected to run simultaneously, far exceeding service capacities considered “basic” today.
237. However, these future growth possibilities do not change the Affordable Access Coalition’s position. Canadians in all demographic groups, in all of Canada’s regions, rural or urban, should be able to meet their needs today, and as those needs change over time, consistent with the mandate Parliament has issued to the Commission. The AAC reiterates that the Commission’s mandate calls for it to facilitate the development of a telecommunications system which safeguards, enriches and strengthens the social and economic fabric of Canada and its regions,²⁰³ to promote the availability of telecommunications services that are reliable, affordable and accessible to Canadians, both urban and rural, in all regions of Canada,²⁰⁴ to enhance the efficiency and competitiveness of the marketplace,²⁰⁵ and to encourage innovation in telecommunications,²⁰⁶ for the benefit of Canadians.
238. The Commission should create targets that provide Canadian carriers incentives to meet the needs of consumers now and in the future as these consumers define their needs, and not allow ISPs to restrict consumers’ participation in the digital economy with policies such as restrictive data allowances. The Commission should also, as discussed below, ensure that Internet access is affordable for all Canadians,

²⁰¹ Sony, “What is the Video Unlimited 4K service and how is it different from Video Unlimited?” (25 July 2014), online: <https://us.en.kb.sony.com/app/answers/detail/a_id/43651/~what-is-the-video-unlimited-4k-service-and-how-is-it-different-from-video>; Caleb Denison, “Sony feeds starving 4K early adopters with over 70 titles of 4K movies and TV shows” (4 September 2013), online: <<http://www.digitaltrends.com/home-theater/sony-launches-4k-video-unlimited-download-service-with-70-titles/>>.

²⁰² Dan Rayburn, “The Adoption Of 4K Streaming Will Be Stalled By Bandwidth, Not Hardware & Devices” (14 January 2015), online: <<http://blog.streamingmedia.com/2015/01/4k-streaming-bandwidth-problem.html>>.

²⁰³ Section 7(a).

²⁰⁴ Section 7(b).

²⁰⁵ Section 7(c).

²⁰⁶ Section 7(g).

including those Canadians with low-incomes and regardless of the location, rural or urban, in which Canadians live and work.

Q2. The Commission's current target speeds for broadband Internet access service are a minimum of 5 Mbps download and 1 Mbps upload, based on uses that consumers should reasonably expect to make of the Internet. Are these target speeds sufficient to meet the minimum needs of Canadians today? If not, what should the new targets be and what time frame would be reasonable to achieve these new targets?

Brief answer: The current target speeds are dated and inadequate. "Basic" broadband today is at minimum 5 Mbps download speed (based on likely outdated 2013 information), and is more likely to be 10 Mbps download speed. While households of three people can easily require at least 26 Mbps. Considering the fact that some telecommunications service providers are providing 1 Gbps speeds, 5 Mbps is likely too low and too slow a target for all Canadians.

239. While it is difficult to state what a "typical" Canadian is, or what a typical Canadian household looks like, other "needs analyses" have concluded that anywhere from 9 to 20 Mbps should be the *minimum* standard.
240. Ofcom, the UK communications regulator, for example, has demonstrated how a household might need 10 Mbps as the "standard" level of broadband, and how the UK Government's target of 2 Mbps set in 2009 was out of date.

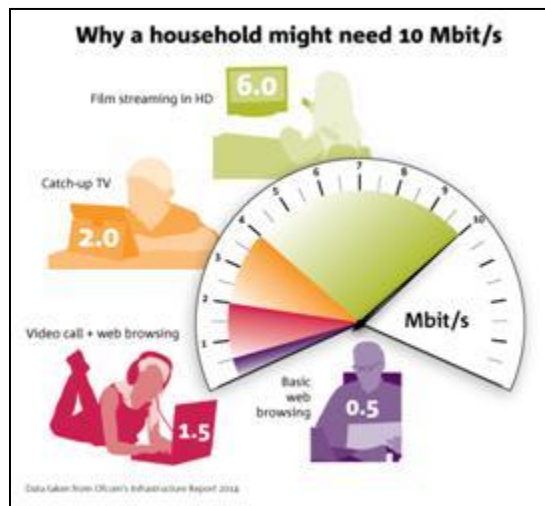


Figure 12. Ofcom's typical household: At least 10 Mbps required²⁰⁷

241. In a report commissioned by the Northern Communications Information Systems Working Group (“**NCIS-WG**”), Nordicity, a consultancy, identified 9 / 1.5 as the minimum recommended average target for the North, which should be achieved by 2019 “in order to meet projected consumer, business and government needs, while recognizing the constraints posed by the backbone infrastructure.”²⁰⁸
242. In a report commissioned by the Federation of Canadian Municipalities, the authors concluded that “[t]he actual needs of these communities are the same as other, larger population centres.”²⁰⁹
243. In the AAC’s own research, a standard *today* per household ranges from **14.7 Mbps** for a one-person household with a multitasking user, to **26.2 Mbps** for a tech-savvy household consisting of three multi-tasking users.
244. The AAC expands on the current household needs in response to [Consultation Question 1\(a\)-\(c\)](#) above.
245. Like the FCC said about its 2010 definition of 4/1, the Commission’s current aspirational target (5/1) is likely now “dated and inadequate.”²¹⁰
246. The AAC believes that a more likely broadband speed requirement *today* is 10 Mbps download, and that by 2020 that number will be 25 Mbps. Accordingly, the AAC recommends that the Commission should set a goal of all Canadian households

²⁰⁷ Ofcom, “Ofcom outlines challenges for UK’s communication networks” (8 December 2014), online: <<http://consumers.ofcom.org.uk/news/infrastructure-report-2014/>>.

See also Ofcom, “Infrastructure Report 2014 - Ofcom’s second full analysis of the UK’s communications infrastructure” (8 December 2014), online: <<http://stakeholders.ofcom.org.uk/binaries/research/infrastructure/2014/infrastructure-14.pdf>> at 2 and 19:

There is emerging evidence that a typical household requires a download speed of around 10Mbit/s. Below this level, demand is likely to be constrained.” [...]“Below that speed, overall broadband performance is generally impaired. Indeed, use may be constrained for broadband below this threshold, because some applications will not work properly, if at all.

²⁰⁸ NCIS-WG Northern Connectivity Report at 18.

²⁰⁹ “Broadband Access in Rural Canada: The role of connectivity in building vibrant communities” (2014) at s. 3.3.

²¹⁰ FCC press release, “FCC finds U.S. broadband deployment not keeping pace” (29 January 2015), online: <<https://www.fcc.gov/document/fcc-finds-us-broadband-deployment-not-keeping-pace>>.

being able to access 25 Mbps broadband home Internet service by 2020 (the “**25 Mbps by 2020**” goal), subject to annual updates to the definition of “basic” broadband. The AAC describes what the legal definition of “basic” is in response to [Consultation Question 3\(b\)](#) below.

The Commission's role regarding access to basic telecom services (Q3 – Q7)

Q3. Which services should be considered by the Commission as basic telecommunications services necessary for Canadians to be able to meaningfully participate in the digital economy? Explain why.

Brief answer: Participation in the digital economy is no longer just about taking advantage of e-business or e-commerce opportunities. Today, participation in the digital economy is essential to civic involvement and to everyday life. This means that Canadians need more from their telecommunications services than ever before. In order to enable Canadians to meaningfully participate in this evolved, more intense, and more interactive digital economy, broadband service at a speed of at least **5 Mbps** today (based on likely outdated 2013 information) and more likely to be 10 Mbps, must be recognized by the Commission as a “basic telecommunications service”. This service must be accessible and affordable to both urban and rural Canadians. The service level must evolve as technology evolves and more and more Canadians are able to access higher speeds. The AAC expects that “basic” broadband will be **25 Mbps by 2020**. The BSO should be upgraded to include recognition that all Canadians should have access to basic broadband, as defined by the Commission, updated on a yearly basis. The BSO should continue to include access to voice services.

247. The Commission should consider both voice and broadband services as basic telecommunications services necessary for Canadians to be able to meaningfully participate in the digital economy. “Voice” service could be provided by either wireline or wireless service.

248. As the Affordable Access Coalition explained above in response to Consultation [Question 1\(a\) and \(b\)](#), in about 10 years the term “digital economy” has moved from describing an avenue of business to enabling the everyday lives of Canadians.

249. As described in the AAC’s response to [Consultation Question 1\(b\)](#) above, Canadians increasingly require higher-quality telecommunications services to fulfill their needs in the modern digital economy. Broadband Internet is now a critical service that the Commission must include as a “basic telecommunications service.” In response to [Consultation Question 3\(b\)](#) below, the AAC describes how the legal test for determining what is a “basic” telecommunications service, results in a finding, using 2013 data that is likely out of date, that “basic” broadband is at least 5 Mbps

download speeds, but more likely to be 10 Mbps today, and expected to be 25 Mbps by 2020.

250. Few would take issue with the need of Canadians to access wireline telephony services. In a similar fashion, a network originally established to enable wireline service is now viewed by a large majority of Canadians as being essential, and worthy of funding support.

251. In terms of performance measures, these are addressed extensively in response to [Consultation Question 1\(b\)](#) above.

What are considered affordable rates for broadband services?

252. In January 2015, PIAC reported on its investigation on the development of a framework for defining affordability of communications services in the digital age. In this study, PIAC concluded that each communication service (broadcasting, wireline, wireless and Internet) was critical for different groups of consumers.²¹¹ Many who subscribed to home Internet service were extremely reluctant to cancel the service, coming to rely upon it to conduct day-to-day activities, with families with schoolchildren facing pressure to have home Internet access.²¹²

253. PIAC concluded that affordability is both a qualitative and quantitative measurement. In quantitative terms, PIAC suggested communications services are affordable where, as a guideline, they make up about 4% to 6% of a household's income.²¹³ Since affordability is related to the ability of an individual or a household to control their expenditure in order to fulfill their needs, PIAC contends a qualitative measurement must be taken into consideration.²¹⁴ PIAC concluded a qualitative assessment of the affordability of a communications service must examine:

- Cost of each individual communications service, as well as the group of communications services as a whole;
- Total cost of ownership, including the cost of credit, rather than merely the monthly service cost;
- A service offering which at minimum – to the extent that technology allows – enables a low-income individual to fulfill the four core functions of communications services: (i) voice communication; (ii) readily available

²¹¹ Appendix "C", PIAC's Affordability Report at iii.

²¹² Appendix "C", PIAC's Affordability Report at iii.

²¹³ Appendix "C", PIAC's Affordability Report at 84.

²¹⁴ Appendix "C", PIAC's Affordability Report at 84.

contact with emergency and helpline services; (iii) access to news and entertainment; and (iv) ability to find information;

- For mobile phone and home Internet service especially, costs of heavy levels of usage; and
- Costs which low-income Canadians have said they would like to or feel comfortable paying.²¹⁵

254. PIAC also consulted with low-income Canadians by collaborating with ACORN Canada, a national advocacy organization of low and moderate income families. The groups found the maximum amount low-income Canadians would pay for home Internet service was between \$40 and \$50 per month, and they would prefer to pay \$15 to \$30 per month.²¹⁶

Q3(a). Explain whether the underlying technology (e.g. cable, digital subscriber line, fibre, fixed wireless, mobile wireless, and satellite technology) should be a factor in defining whether a telecommunications service should be considered a basic service.

Brief Answer: *The underlying technology should not be a factor in defining whether a telecommunications service should be considered a basic service. The reality is that most Canadians today face limited options when seeking telecommunications services. Therefore, the focus should be on fostering consumer choice and functionality of high quality service.*

255. The AAC suggests there is an interdependent relationship between the four basic services under the purview of the Commission. For instance, in order for many Canadians to obtain broadband service at home, they must first be able to procure wireline or cable television service, using the underlying networks as a conduit. However, once Canadians obtain broadband service at a sufficient speed, they can theoretically obtain the other three services using that platform. One can argue that as the deployment of broadband continues to evolve, it has the ability to steadily encroach on the positioning and market share enjoyed by wireline, broadcasting and wireless services. This is evidenced by the growing popularity applications such as Voice over Internet Protocol and Over the Top technology.

256. As for wireless service, initially, from a relationship perspective, wireless service overlapped with wireline service. However, the introduction of smartphone technology and the capacity to access broadband services has altered the

²¹⁵ Appendix "C", PIAC's Affordability Report at 88.

²¹⁶ Appendix "C", PIAC's Affordability Report at 87.

relationship between wireless service and broadcasting, wireline and broadband in Canada. Now wireless service in Canada can harness the other three communications services offered to Canadians from the palm of their collective hands. However, the enhanced position of wireless service in relation to broadcasting and wireline service is directly dependent upon the use of broadband data.

257. As a result, the AAC contends the interdependent relationship occurring between wireline, broadcasting, wireless and broadband services can be displayed as follows:

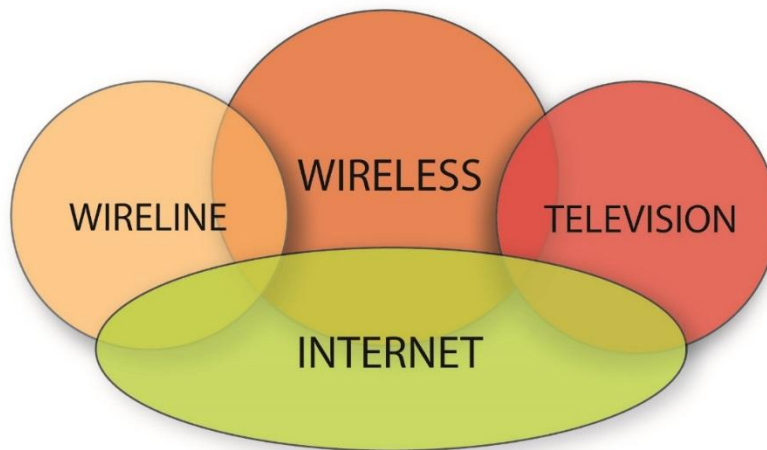


Figure 13. The interdependent relationship of communication services in Canada

258. Therefore, the AAC requests that the Commission to consider access to broadband as a basic telecommunications service necessary for Canadians to be able to meaningfully participate in the digital economy. Access to the Internet at a sufficient speed is increasingly becoming the tie that binds the other communications services depicted above.
259. Ideally, the underlying technology should not be a factor in defining whether a telecommunications service should be considered a “basic telecommunications service”. Canadians should be allowed to choose the service or services they prefer, from a range of competitive service providers, based on what is available and the price of those services. Additionally, and in keeping with the *Telecommunications Act* policy objective of ensuring all Canadians have access to “high quality” telecommunications services, there must be a defined quality standard.²¹⁷

²¹⁷ *Telecommunications Act*, section 7(b).

260. The definition of basic telecommunications services should therefore in principle be technology neutral and deliver a prescribed level of functionality and quality and, ideally, consumer choice.
261. In light of this, and as discussed in detail in response to [Consultation Question 3\(b\)](#) below, the AAC presents a formulation of the BSO that requires a “network connection” capable of delivering required functionalities.
262. To ensure that the services included in the BSO are high quality, the AAC that the phrase “high quality” be explicitly included in the next formulation of the BSO.

Q3(b). Identify, with supporting rationale, the terms, conditions, and service characteristics under which basic telecommunications services should be provided. Should any obligations be placed on the provider(s) of these services? If so, what obligations and on which service provider(s)?

Brief answer: *The Affordable Access Coalition defines “basic telecommunications services” by reference to the Original BSO and the 2011 BSO, and by reference to what telecommunications services are in common usage at a given point in time, using the “50-80” rule. The BSO represents the goal of universal service of “basic” telecommunications services. It is independent of the technology used to provide service, and may change over time as service expectations evolve. Today the BSO must include high quality home broadband Internet service with a reasonable monthly data allotment for any such Internet connection before additional charges are levied. All Canadian carriers should bear an obligation to serve, that is, an obligation to provide service to all who request it along the carriers service lines; without undue discrimination; at “just and reasonable” rates and with due care.*

149. This question provides an important opportunity to clearly discuss the core legal and policy questions in this hearing, namely *universal service* in the age of broadband. This is important to address to ensure that the Commission proceeds on appropriate jurisdictional footing.
150. In the Notice of Consultation the Commission has split the discussion of the core legal questions in this proceeding, namely, the “basic service objective” and the “obligation to serve” amongst three consultations questions: [Consultation Question 3\(b\)](#), [Consultation Question 5](#) and [Consultation Question 8](#).
151. The AAC’s submissions on these matters therefore cross-reference to all three consultation questions.

Universal Service and the Definition of Basic Telecommunications Services

152. Consultation Question 3(b) asks about the service characteristics of “basic telecommunications services”. Such a discussion is fruitless, if not impossible, without a definition of “basic telecommunications services”.
153. The AAC believes that “basic telecommunications services” should be defined as follows:

“Basic telecommunications services” are those telecommunications services (as defined by the Telecommunications Act) that permit Canadians to access emergency services, government services and other essential public services and to communicate with each other, with businesses and with others in Canada and throughout the world via any commonly used form or protocol”. “Commonly used” means used by more than 50% of the households in Canada and by 80% of households using that particular telecommunications service.

Figure 14. The AAC’s definition of “basic telecommunications services”

154. To explain this definition, the AAC unpacks the assumptions behind it and the assumptions behind Consultation Question 3(b).
155. “Basic telecommunications services” is *not* defined in the *Telecommunications Act*. The only two references to “basic telecommunications services” (plural) are in section 2’s definition of “telecommunications service provider” which is defined as: “a person who provides basic telecommunications services, including by exempt transmission apparatus”, and in subsection 46.5(1) of the *Telecommunications Act*.

Contribution to fund

46.5 (1) The Commission may require any telecommunications service provider to contribute, subject to any conditions that the Commission may set, to a fund to support continuing access by Canadians to ***basic telecommunications services***. [Emphasis added.]

156. There is one further reference to “basic telecommunications service” in section 33 of the *Act*, which permits the Commission to treat the earnings of an “integral” affiliate

as earnings of a Canadian carrier where necessary to set or approve just and reasonable rates.

157. This is thin gruel from which to build a definition of the term “basic telecommunications services.”
158. The AAC submits, therefore, that it is appropriate to seek the definition in the decisions of the Commission, of Canadian courts and, where appropriate, to draw inspiration from foreign legal regimes, especially comparable legal systems such as those in the United States, Australia, and the European Union.
159. The AAC notes that the Commission has discussed “basic telecommunications services” in several decisions. These can largely be grouped into two camps: those that differentiate between “basic” and “enhanced” services²¹⁸ for the purposes of, first, the introduction of competition in the “enhanced” market, and then in relation to contributions to the contribution regime²¹⁹ and those that differentiate between telecommunications service and broadcasting or broadcasting distribution on the other.²²⁰ Neither of these two paths provides much insight on the definition of basic telecommunications services when applied in the discussion of essential or universal service asked in Consultation Question 3(b).
160. However, the CRTC has equated “basic telecommunications service” with “universal social value” on at least one occasion. In Decision CRTC 2001-475 the Commission accepted that N11 dialling was a social service and described “basic telecommunications services” as part of a larger social goal:

The Commission agrees with CSCN that, where possible, the use of N11 in Canada should be consistent with its use throughout the NANP. The Commission also agrees with CSCN that the code should serve as an adjunct-to-basic

²¹⁸ See the discussion of “basic telecommunications service” in Telecom Decision CRTC 84-18: *Enhanced Services* (see Section II: Definitions of Basic and Enhanced Services) – where the CRTC accepted a slightly modified version of the FCC’s definitions of “basic” and “enhanced” services, largely to the end of allowing competition in the “enhanced” services area prior to the introduction of long distance and local competition in the 1990s and early 2000s, online: <<http://www.crtc.gc.ca/eng/archive/1984/dt84-18.htm#ii>> and also Telecom Decision CRTC 85-17: *Identification of Enhanced Services* – where the CRTC revisited the issue, online: <<http://www.crtc.gc.ca/eng/archive/1985/DT85-17.htm>>.

²¹⁹ For example, see Telecom Decision CRTC 2002-57, *Canadian Satellite Communications Inc. - Contribution Regime* (September 13, 2002). Note the earlier decision from the Federal Court on the issue of the CRTC not requiring resellers to file tariffs: see *TWUC v. CRTC* (1991), 43 F.T.R. 226, [1991] F.C.J. No. 218.

²²⁰ For example, see Telecom Decision CRTC 98-24, *Telesat Canada forbearance from the regulation of RF channel services* (December 17, 1998).

telecommunications service in providing a service of a universal social value, as opposed to providing a commercial advantage to certain industry segments.²²¹

161. The “universal social value” referred to above is, the AAC submits, a reference to the long-implicit goal of “universal service” in Canadian telecommunications law.
162. Also, as noted in an article by Michael Ryan, the CRTC has thus far, despite lacking a clear statutory definition nor a clear direction to pursue universal service in the *Telecommunications Act*, arguably pursued a “universal access policy” based on the policy objective in subs. 7(b) and through its rate-setting jurisdiction.²²²
163. This policy was not, however, fully captured by the basic service objective (“**BSO**”) that was outlined by the Commission in Telecom Decision 99-16 (the “**Original BSO**”).²²³ As Ryan points out, the BSO was used to justify service improvement plans but only for ILECs in high-cost service areas. Further, the Commission has since formally “removed” the BSO in forborne exchanges (see Telecom Regulatory Policy CRTC 2011-291, at para. 49).
164. The BSO therefore has, to some extent, diverted attention from a reasoned policy debate on universal service in Canada.²²⁴
165. In this state of little law and less policy, therefore, the AAC submit that it is appropriate to look abroad for both legal principles and policy rationales for the definition of basic telecommunications services and the renewed articulation of universal service policy.
166. First, the statement of universal service principles from the United States provides a clear framework. The principles of universal service are detailed in the U.S. Code 47 USC §254(b) [added by the *Telecommunications Act of 1996*] and include:

(1) **QUALITY AND RATES.**--Quality services should be available at just, reasonable, and affordable rates.

(2) **ACCESS TO ADVANCED SERVICES.**--Access to advanced telecommunications and information services should be provided in all regions of the Nation.

²²¹ Decision CRTC 2001-475, *Allocation of three-digit dialing for public information and referral services* (August 9, 2001) (9 August 2001) at para. 39.

²²² Michael Ryan, “Telecommunications Carriers and the ‘Duty to Serve’” (2012) 57:3 McGill LJ 519-551.

²²³ Appendix “C”, PIAC’s Affordability Report at 33. Notable by its absence is an affordability requirement.

²²⁴ Appendix “C”, PIAC’s Affordability Report at 33-34.

(3) ACCESS IN RURAL AND HIGH COST AREAS.--Consumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services, including interexchange services and advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas.

(4) EQUITABLE AND NONDISCRIMINATORY CONTRIBUTIONS.—All providers of telecommunications services should make an equitable and nondiscriminatory contribution to the preservation and advancement of universal service.

(5) SPECIFIC AND PREDICTABLE SUPPORT MECHANISMS.—There should be specific, predictable and sufficient Federal and State mechanisms to preserve and advance universal service.

(6) ACCESS TO ADVANCED TELECOMMUNICATIONS SERVICES FOR SCHOOLS, HEALTH CARE, AND LIBRARIES.--Elementary and secondary schools and classrooms, health care providers, and libraries should have access to advanced telecommunications services as described in subsection (h).

(7) ADDITIONAL PRINCIPLES.--Such other principles as the Joint Board and the Commission determine are necessary and appropriate for the protection of the public interest, convenience, and necessity and are consistent with this Act.

167. Consultation Question 3(b) asks for “the terms, conditions, and service characteristics under which basic telecommunications services should be provided.”

168. The AAC largely draw their answer from §254(b) of the U.S. universal service obligation. The basic telecommunications services characteristics should be:

1. Universality – all Canadians should benefit from the following service characteristics:
2. Accessibility – have access to high quality telecommunications;
3. Affordability – be able to afford basic telecommunications; and
4. Equity – no matter where they reside in Canada should be able to subscribe to and fully use a comparable level of basic telecommunications.

169. Based on the foregoing, the AAC next considers the definition of what is the subject of the above section, namely: What legally are “basic telecommunications services”, or as stated in Consultation Question 3(b), and What are the “terms and conditions”?

170. The AAC notes that again, the U.S. regime supplies an answer by detailing “the services that are supported by Federal universal service support mechanisms” are found in §254(c)(1):

(1) In general

Universal service is an evolving level of telecommunications services that the Commission shall establish periodically under this section, taking into account advances in telecommunications and information technologies and services. The Joint Board in recommending, and the Commission in establishing, the definition of the services that are supported by Federal universal service support mechanisms shall consider the extent to which such telecommunications services—

- (A) are essential to education, public health, or public safety;
- (B) have, through the operation of market choices by customers, been subscribed to by a substantial majority of residential customers;
- (C) are being deployed in public telecommunications networks by telecommunications carriers; and
- (D) are consistent with the public interest, convenience, and necessity.

171. From this list, the AAC note that, apart from social and public interest considerations (which are considerable, but variable and not determinative according to the view of the decision-maker) that the factors (b) and (c) are capable of verification and quantification.²²⁵

172. In particular, “supported services” under the U.S. universal service obligation are: first, actually deployed in the market; and second, presently subscribed to by a “substantial majority of residential customers”.

173. These are legal tests that can and the AAC argues should be imported into the Commission’s consideration of what might constitute “basic telecommunications services”.

174. The AAC note in addition that the European Union Universal Service Directive also specifies, in article 15, as specified in Annex 5, that any update of the universal service obligations of member states consider:

- are specific services available to and used by a majority of consumers and does the lack of availability or non-use by a minority of consumers result in social exclusion, and

²²⁵

See also Report and Order, In re Federal-State Joint Bd. on Universal Serv., C.C. No. 96-45, F.C.C. 97-157 ¶ 61 (F.C.C. May 8, 1997) where it was noted that each factor “must be considered, but not each necessarily met, before a service may be included within the general definition of universal service, should it be in the public interest.” The paragraph also noted that “[w]e interpret the statutory language, particularly the word ‘consider,’ as providing flexibility for the Commission to establish a definition of services to be supported, after it considers the criteria enumerated in section 254(c)(1)(A-D).”

- does the availability and use of specific services convey a general net benefit to all consumers such that public intervention is warranted in circumstances where the specific services are not provided to the public under normal commercial circumstances?²²⁶

175. Therefore, as in the U.S., part of the legal test for determining which services form part of the universal service obligation, which AAC equates with the required definition of “basic telecommunications services” in Canada is whether a “majority of consumers” uses a service. Europe also requires a social detriment (“social exclusion”) if the minority are not using the service and a “general net benefit to all consumers”.²²⁷

176. However, in both the European and U.S. formulation of this question, there is a hidden ambiguity. Does the “majority” or “substantial majority” subscribed to, or using a service mean a majority of households in the country or does it mean a majority of the consumers that use any, or some telecommunications service (or even one type of service within a particular service)? In particular, while there is a broad range of possible mandated broadband speeds, how should one define the required “majority” of customers accessing at a particular speed or higher for the purpose of enshrining that speed as a universal service obligation?

177. The European Commission has recognized this ambiguity and provided some guidance to member countries in a recent document.²²⁸ This guidance suggests that the “majority” (for the purpose of “functional internet access” (see article 4.2 of the EU USD) must be satisfied by:

- a) 50% of all households at national level; and

²²⁶ See the DIRECTIVE 2002/22/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (“**EU Universal Service Directive**”), updated by DIRECTIVE 2009/136/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 November 2009, amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services, Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector and Regulation (EC) No 2006/2004 on cooperation between national authorities responsible for the enforcement of consumer protection laws.

²²⁷ EU Universal Service Directive.

²²⁸ COM(2011) 795 final COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS on Universal service in e-communications: report on the outcome of the public consultation and the third periodic review of the scope in accordance with Article 15 of Directive 2002/22/EC, online: <<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0795&from=EN>> (“**Commission Communication**”).

b) 80% of households with a broadband connection.²²⁹

178. The result is that at least 50% of the population will be subscribed to high-speed or broadband Internet (that is, not dial-up) and the “vast majority” (80% or higher) of these broadband subscribers will be at that speed or higher. This can be referred to as the 50-80 rule. The 50-80 rule elegantly solves the vexing issue of how to define which broadband speed represents “basic” or average broadband with an objective, measurable yardstick.

179. At this point, the AAC go back in time to note that when the Commission first established a BSO (the “**Original BSO**”), in Telecom Decision CRTC 99-16, the Commission prefaced the introduction of the BSO with these words (at para. 23):

The Commission considers that the level of service now available to the vast majority of Canadians should be extended to as many Canadians as feasible in all regions of the country. Accordingly, the Commission is hereby establishing the following basic service objective for local exchange carriers. [Emphasis added.]

180. The Commission followed this pronouncement with the admonition that the BSO would change as services advanced: “The basic service objective is independent of the technology used to provide service, and may change over time as service expectations evolve.”²³⁰

181. The AAC submit that the real legal and policy basis for the Commission’s imposition of the BSO, as well as the nature of that BSO being adaptable to include new services and higher grades of service, means that the 50-80 rule would be an ideal encapsulation of the Commission’s rationale for universal service, and that that basic telecommunications service would include broadband at the speed adopted by Canadians according to that measure.

182. It appears from the latest CMR (2014) from the Commission that on the basis of the 50-80 rule, 79% of Canadian households have “high speed” Internet connections (that is, not dial-up) and that of these, almost 90% have telecommunications service that presently includes broadband Internet at 5 Mbps download,²³¹ as of March 2013. (See tables below from 2014 CMR as annotated by AAC).

²²⁹ Commission Communication at 10: “The Commission believes that, at this stage, Member States could be asked to consider including broadband connections in USO where the data rate in question is used at national level (i) by at least half of all households and (ii) by at least 80 % of all households with a broadband connection” [footnote omitted].

²³⁰ Telecom Decision 99-16 at para. 24.

²³¹ Note that data regarding number of subscribers with a specific upload speed is not available in the CMR. The closest table (Table 5.3.8) lists only “weighted average” upload speed with

Table 5.3.0 Retail Internet market sector and broadband availability at a glance

	2012	2013	Annual growth (%)
Revenues (\$ billions)	7.2	7.7	7.3
Internet access and transport			
Residential	5.4	5.9	10.6
Business	1.2	1.2	3.4
Other	0.6	0.5	-13.0
Residential subscribers (millions)	11.0	11.3	2.3
Residential high-speed access revenues per subscriber per month	\$41.80	\$44.87	
Internet access revenue market share			
Top five major ISPs (including affiliates)	76%	75%	-
Cable-based carriers	52%	51%	-
Incumbent TSPs (excluding out-of-territory)	37%	37%	-
Residential penetration: All speeds	79%	80%	-
High-speed (256 kbps and higher)	78%	79%	-
Broadband (1.5 Mbps and higher)	75%	77%	-
Broadband (5 Mbps and higher)	62%	67%	-

= 79% of households with highspeed internet:

Figure 15. Residential penetration for high-speed and “broadband”²³²

Table 5.3.10 Residential Internet service one-month subscriber distribution (%) by downstream speed

Downstream speed	2009	2010	2011	2012	2013
Lite and wideband up to 256 Kbps	1.1	0.3	0.4	0.3	0.3
Wideband 300 to 1400 Kbps	12.2	5.8	4.3	2.9 #	2.7
Broadband					
1.5 to 4 Mbps	24.5	24.2	24.6	18.2 #	7.3
5 to 9 Mbps	42.6	45.3	45.6	41.3 #	32.8
10 to 15 Mbps	19.0	22.4	15.6	10.1 #	25.6
16 Mbps and higher	0.6	2.0	9.5	27.2 #	31.4
16 to 49 Mbps	-	1.8	9.2	23.5 #	26.3
50 Mbps and higher	-	0.2	0.3	3.6 #	5.0
Total sample	8,516.8	8,983.1	9,440.3	9,761.1 #	9,970.1

= 89.8% with ≥5 Mbps

Source: CRTC data collection

This data set shows the percentage distribution of residential subscribers who access the Internet at various speeds. The # symbol denotes a change in the data from what was published in the previous *Communications Monitoring Report* (refer to Appendix 1 for details).

Figure 16. Distribution of Internet service subscribers by speed²³³

183. The AAC notes that while these tables from the 2014 CMR are already almost two years out of date, it is likely that when the 2015 CMR is released in the coming months, the data will reinforce the “basic-ness” of home broadband Internet access service.

232

corresponding download speed but no figures as to the number of subscribers who achieve these upload speeds.

233

2014 CMR.
2014 CMR.

184. The Commission should therefore declare immediately that “basic telecommunications service” includes broadband at at least 5 Mbps download or at whatever speed the updated figures for 2014 and 2015 show. As the 50-80 rule is a moving target, the CRTC should annually update this definition in relation to broadband speed.
185. In defining “basic telecommunications service” the Commission should also consider whether it is appropriate for there to be a separation of standards between rural and urban-dwelling Canadians, and northern and southern Canadians.
186. There is evidence that this distinction has already been made by the Government of Canada, as well as the Commission. By setting a universal goal of 5 Mbps download speeds (or even in some cases 3 Mbps for rural Canadians²³⁴) on multiple occasions, both Industry Canada and the CRTC have seemed to have accepted the existence of a separation of standards between rural and urban-dwelling Canadians. According to the 2014 CMR, urban-dwelling Canadians appear to be able to obtain Internet service speeds far in excess of 5 Mbps. This runs counter to the evidence that the needs of Canadians living outside of urban areas is the same, if not even greater than the needs of Canadians living in urban areas. For example, in a report commissioned by the Federation of Canadian Municipalities, the authors concluded that “The actual needs of these communities are the same as other, larger population centres”.²³⁵ Another report for the NCIS-WG concluded that needs in northern Canada are even greater than in southern Canada.²³⁶ On the other hand, in TRP 2011-771, the Commission appears to have demanded some equity between northern and southern Canadians in terms of choice, quality, and reliability.²³⁷ The AAC believes that TNC 2015-134 should continue that pursuit of equity.

²³⁴ See “About Connecting Canadians”, online:
<<http://www.ic.gc.ca/eic/site/028.nsf/eng/50009.html>>:

Connecting Canadians' objective is to increase high-speed Internet to target speeds of 5 megabits per second (Mbps) for most rural and remote areas and 3 to 5 Mbps in areas covered by the northern component of the program.

See also Industry Canada press release, “Improved High-Speed Internet Coming to Nunavut” (8 July 2015).

²³⁵ “Broadband Access in Rural Canada: The role of connectivity in building vibrant communities” (2014) at s. 3.3.

²³⁶ See e.g., NCIS-WG Northern Connectivity Report at 143: “The minimum connectivity levels recommended in this report are significantly higher than those currently available to users in most communities and CRTC’s aspirational target of 5 Mbps.”

²³⁷ TRP 2011-771 at para 40:

On the basis of these findings, the Commission directed the company to file a plan which would “address how Northwestel intends to update its infrastructure in a timely manner to

Basic Service Objective and Obligation to Serve

187. The remainder of Consultation Question 3(b) continues: “Should any obligations be placed on the provider(s) of these services? If so, what obligations and on which service provider(s)?”
188. In accordance with the AAC’s answer to [Consultation Question 8](#), the AAC provides here an outline of the BSO and “obligation to serve” (“**OTS**”) in the era of broadband Internet and telephone service. These are the two obligations that the Commission must require of all telecommunications service providers and must articulate more fully to achieve its purpose of universal service in Canada.
189. The AAC assumes, however, that the Commission will continue to treat any telecommunications service as just that otherwise under the *Telecommunications Act*, that is, it will for example require that there be no unjust discrimination (subs. 27(2)) or that the “net neutrality” rules from Telecom Regulatory Policy CRTC 2009-657, *Review of the Internet traffic management practices of Internet service providers* (21 October 2009) be respected, as will the privacy of Canadians in keeping with the *Telecommunications Act*’s policy objective of “the protection of the privacy of persons”.²³⁸

Basic Service Objective

190. Turning now to the content of the BSO, as noted above the AAC believes that the voice aspects of the Original BSO should be continued, but augmented with the new reality that telecommunications service is also broadband.
191. One change that the Commission must make explicit in regard to voice service, is to clarify that the functionality of the BSO for voice can be satisfied by either wireline (public switched telephone network or VoIP) or wireless service, provided it is of high quality and supports the other voice functionality aspects of the BSO. The AAC notes that since 2011, the FCC has mandated a “platform neutral” approach to the universal service goal for voice service.²³⁹ Canada should follow suit, as there is now

ensure that northern customers receive telecommunications services, both regulated and forborne, comparable to those available to Southern Canada in terms of choice, quality, and reliability.

²³⁸

Telecommunications Act, s. 7(i).

²³⁹

47 C.F.R. § 54.401; In the Matter of Connect America Fund, A National Broadband Plan for Our Future, Establishing Just and Reasonable Rates for Local Exchange Carriers, High-Cost Universal Service Support, Developing an Unified Intercarrier Compensation Regime, Federal-State Joint Board on Universal Service, Lifeline and Link-Up, Universal Service Reform—Mobility

no functional difference that requires the maintenance of only wireline voice service as satisfying the BSO.

192. The voice telephony definition that eligible telecommunications service providers must meet to access U.S. “Lifeline” subsidy now includes the following technology-neutral elements:

- Voice grade access to the public switched telephone network or its functional equivalent;
- Minutes of use for local service provided at no additional charge to end users;
- Access to emergency services, such as 911 and enhanced 911 service;
- Toll limitation at no charge to qualifying low-income consumers, unless there is no distinction made between toll and non-toll calls.²⁴⁰

193. The U.S. is now in the actual regulatory process of making broadband part of its Lifeline, Link Up, Connect America Fund and general universal service support regimes.²⁴¹ However, it seems evident that the FCC is likely to add “basic” broadband access (as defined in the process issuing from FCC 15-71) to their equivalent of the BSO, noted above in relation to voice service.

194. Therefore, the AAC, given the above and the steps taken in the U.S. and the ongoing renewal of the Universal Service Directive in the EU, submit that the new Canadian BSO therefore should have the following elements. It should be a “high quality telecommunications network connection” that provides the functional equivalent of:

- Voice grade individual line local telephone service with touch-tone dialling, provided by a digital switch;
- Enhanced calling features, including access to emergency services, Voice Message Relay service, and privacy protection features;
- Access to operator and directory assistance services;
- Access to the long distance network;
- Capability to connect via broadband transmission to the Internet;
- A reasonable monthly data allotment for any such Internet connection before additional charges are levied.

Fund, Transformation Order & Further Notice of Proposed Rulemaking ¶¶ 77–78, F.C.C. 11-161 (18 November 2011).

²⁴⁰ See 47 C.F.R. §§ 54.101, 54.401(a)(2).

²⁴¹ See *In the Matter of Lifeline and Link Up Reform and Modernization; Telecommunications Carriers Eligible for Universal Service Support; and Connect America Fund: Second Further Notice of Proposed Rulemaking, Order on Reconsideration, Second Report and Order, and Memorandum Opinion and Order*, FCC 15-71 – WC Dockets No. 11-42; 09-197; and 10-90, online: <https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-71A1.pdf>.

195. The AAC believes that on-demand access to directory listing should be maintained for those Canadians, particularly seniors, who may wish or may need to use print directories.
196. The “reasonable monthly data allotment” is a requirement as data caps in Canada are endemic and can practically limit the utility of a connection (by making it economically untenable for the average user using the average amount of data for typical types of uses – see the response to [Consultation Question 1](#) above). The AAC suggest that each year the CRTC declare the reasonable data cap floor at twice the average data usage of all broadband users the year previously, as Internet household data use recently has increased at an approximate rate of 60% per year.²⁴² So, for 2014, the reasonable data cap would have been 100 GBs, as the 2013 average data use was approximately 50 GBs. In 2015, therefore, the reasonable data cap before additional charges would be 200 GBs.²⁴³
197. The “high quality” referred to above, in relation to “network connection” generally but broadband specifically, could be finally determined by the Commission in follow-up proceedings, or determined in this proceeding. The AAC have referred, in response to [Consultation Question 1](#), that factors such as jitter, latency, downtime and other matters can render service unsuitable for many typical applications.²⁴⁴
198. For comparison, the table below compares the proposed BSO against the Original BSO and the 2011 BSO.

Original BSO The first BSO, as set out in Telecom Decision 99-16 (19 October 1999). Specifically:	2011 BSO The second BSO, as set out in Telecom Regulatory Policy CRTC 2011-291 (3 May 2011). Specifically:	The AAC’s Proposed BSO The BSO which the AAC recommends should result from this consultation. Specifically:
	<input type="checkbox"/> Regulated exchanges	<input type="checkbox"/> All service areas;;

²⁴² See 2014 CMR, Table 5.3.0.

²⁴³ The AAC notes here that the U.S. has required, in the context of the Connect America Fund, only that caps in rural areas be “reasonably comparable” to caps in urban areas: see *In the Matter of Connect America Fund - A National Broadband Plan for Our Future - Establishing Just and Reasonable Rates for Local Exchange Carriers - High-Cost Universal Service Support - Developing an Unified Intercarrier Compensation Regime - Federal-State Joint Board on Universal Service Lifeline and Link-Up Universal Service Reform – Mobility Fund*, FCC 11-161, WC Docket No. 10-90; GN Docket No. 09-51; WC Docket No. 07-135; WC Docket No. 05-337; CC Docket No. 01-92; CC Docket No. 96-45; WC Docket No. 03-109; WT Docket No. 10-208, at para. 98: “Although at this time we decline to adopt specific minimum capacity requirements for CAF recipients, we emphasize that any usage limits imposed by an ETC on its USF-supported broadband offering must be reasonably comparable to usage limits for comparable broadband offerings in urban areas.”

²⁴⁴ The U.S. has defined, thus far, speed, capacity and only latency from this list as quality of service indicators for broadband service. See FCC 11-161, at para. 96, which specifies 100 milliseconds or less of latency as the acceptable quality threshold.

		technology neutral delivery (wireline, wireless, VoIP) <input type="checkbox"/> "high quality network connection" with functional equivalents of:
<input type="checkbox"/> Individual line local service with touch-tone dialing provided by a digital switch;	<input type="checkbox"/> individual line local Touch-Tone service;	<input type="checkbox"/> Individual line local touch-tone service, provided by a digital switch;
<input type="checkbox"/> Access to the long distance network;	<input type="checkbox"/> access to the long distance network	<input type="checkbox"/> Access to the long distance network
<input type="checkbox"/> Access to operator and directory assistance services;	<input type="checkbox"/> operator/directory assistance services;	<input type="checkbox"/> Access to operator and directory assistance services;
<input type="checkbox"/> Enhanced calling features, including access to emergency services, Voice Message Relay service, and privacy protection features;	<input type="checkbox"/> enhanced calling features, including access to emergency services, voice message relay service, and privacy protection features;	<input type="checkbox"/> Enhanced calling features, including access to emergency services, Voice Message Relay service, and privacy protection features;
<input type="checkbox"/> A copy of a current local telephone directory.	<input type="checkbox"/> a copy of the current local telephone directory, on request, only in regulated exchanges.	<input type="checkbox"/> Same
<input type="checkbox"/> capability to connect via low speed data transmission to the Internet at local rates	<input type="checkbox"/> access to low-speed Internet at local rates;	<input type="checkbox"/> capability to connect via high speed data transmission ("broadband", currently 10 Mbps, expected to be 25 Mbps by 2020) to the Internet
	<input type="checkbox"/> <i>aspirational</i> target speeds for broadband Internet access service: 5 Mbps download and 1 Mbps upload, by 2015	<input type="checkbox"/> "basic broadband" speed to be defined by CRTC annually.
		<input type="checkbox"/> A reasonable monthly data allotment for any such Internet connection before additional charges are levied.

Figure 17. Comparison of Original BSO, 2011 BSO and the AAC's Proposed BSO

149. The revision of the BSO in the fashion proposed above would entail several changes, including new responsibilities for all telecommunications service providers ("**TSPs**") and new responsibilities and activities for the Commission. The AAC describes the most important of these changed responsibilities and suggests how the Commission might seek to manage compliance with the new BSO.
150. First, as noted briefly above, the BSO would apply, once again, in all forborne and price-regulated (voice) areas, as it now would have the additional aspect of broadband service. This is because the addition of broadband is new and it cannot be said with certainty at this time that there are areas of Canada where there should necessarily be "broadband forbearance" at least given the speed, capacity and quality parameters described in the BSO proposed above.
151. Second, the BSO would now require broadband access for all network connections. Therefore, for voice-only telecommunications service providers, that is, those voice-

only telecommunications service providers would be required to offer broadband service, and provide such service at the speed and quality the Commission sets in the revised BSO. Those carriers that were not able to offer such service (either themselves or with ISP partners) should then, the AAC submits, be required to report on this fact to the Commission and, unless the Commission were to use a different regulatory tool, file service improvement plans with the Commission to eventually provide broadband at the basic telecommunications service level.

152. Third, all TSPs who were only ISPs would be required to offer a voice-equivalent service as defined by the BSO. This could be satisfied by voice-over-internet-protocol (“**VoIP**”), however.
153. Fourth, all Canadian carriers would, given the AAC’s response to the question of the scope of the obligation to serve, immediately below, be required to offer service to existing customers, or along existing lines (wireline), or within present service zones (wireless) at the broadband speed decreed by the Commission each year to be “basic broadband” under the BSO. Canadian carriers who did not meet the BSO basic broadband definition would face the risk of regulatory action by the Commission. As the AAC details below, this regulatory action could be from a wide range of enforcement powers now available to the Commission. Where their service required upgrades and these TSPs could demonstrate basic broadband would be above-cost, it is very likely that they could access or seek to access (along with competitors) the proposed access subsidy. However, in areas which these TSPs could not justify basic broadband as above-cost, the upgrade to BSO basic broadband could be encouraged by Commission action.
154. The AAC contends that the Commission would have a large role and wide authority under the proposed BSO. First, the Commission would have access to its now large spectrum of regulatory tools to monitor and enforce compliance by the TSPs with the BSO. The Commission would monitor compliance with the BSO by requiring all TSPs to report on their status under the BSO and would make these reports public, ideally mapping the areas that were not yet compliant with the BSO, on a TSP-by-TSP basis. If there were compliance issues with any particular TSP, the Commission could move on to more prescriptive tools, such as undertakings, service improvement plans and administrative monetary penalties (“**AMPs**”). Should a TSP not be compliant after these regulatory tools were implemented, the Commission would ultimately have the authority to either order works under section 42 of the *Telecommunications Act* or declare that the TSP was no longer providing “telecommunications service” thereby stripping the TSP of its status as a TSP under the Act and the attendant franchises and privileges enjoyed by that (former) TSP: for example, interconnection; and for Canadian carriers, expropriation and entry onto public land.

155. The jurisdiction for the imposition of the BSO as revised above should be squarely placed by the Commission on the *Telecommunications Act*, section 24 (conditions of service) and subsection 27(2) (unjust discrimination); underpinned by references to the telecommunications policy objectives, notably subsections 7(a), 7(b), 7(h) and 7(i).
156. The AAC notes that the BSO does not require any connection to the obligation to serve at all, even though that obligation continues for some TSPs only, namely Canadian carriers, as detailed below and where there is overlap, there may be additional considerations only for these Canadian carriers.

Obligation to Serve

157. The AAC notes that in its proposal for broadband subsidies, there will be little need for the Commission to use any obligation to serve (“**OTS**”) in order to achieve broadband rollout, as the subsidy proposals, described in response to [Consultation Question 13](#) below, are designed to incentivize telecommunications service providers to serve such areas.
199. Nonetheless, in the AAC’s view, there should be, and indeed there legally is, an OTS upon all Canadian carriers within their self-described “serving areas”; however, this does not equate to traditional ILEC “serving territories.” Legally, the AAC contends, this OTS exists only along existing supply lines (for wireline) or within existing service territory where transmission facilities are adequate (for wireless), any “Canadian carrier”²⁴⁵ as defined by the *Telecommunications Act*.²⁴⁶ The OTS therefore requires any Canadian carrier to offer service to any prospective customer, for “basic telecommunications services” (for the definition of which, see above) where its plant (or wireless coverage) actually reaches.²⁴⁷
158. This is a change in conceptualization for the Commission, although, in fact, it appears that the Commission has never totally clarified the supposed scope of the obligation to serve. Given this lack of attention to such a fundamental legal principle, it is appropriate to examine the principle from fundamentals.

²⁴⁵ *Telecommunications Act*, s. 2(1), “common carrier”.

²⁴⁶ With the caveat that under s. 6 of the Bell Canada Act, S.C. 1987, c. 19, Bell must provide service upon request “in a municipality or other territory within which a general telephone service is provided by the Company” provided its lines are not more than 62 metres (200 feet) away.

²⁴⁷ Note that the Canadian carrier may be required to extend plant to provide service in order to remedy an instance of unjust discrimination under subs. 27(2). See Ryan, *Canadian Telecommunications Law and Regulation*, §304 at p. 3-16.5 – 3-16.6, and footnote 39.

159. Regarding the content and legal basis of the OTS, one source is the requirement on common carriers (from tort law under the common law): to provide service to all who request it; without undue discrimination; at “just and reasonable” rates; and with due care.

160. First, the AAC submits that the definition in section 2 of the *Telecommunications Act* of “Canadian carrier” is very deliberately chosen by Parliament to import these common carrier legal obligations into the *Telecommunications Act*. The definition of “Canadian carrier” under the *Telecommunications Act* reads:

“Canadian carrier” means a telecommunications common carrier that is subject to the legislative authority of Parliament; [Emphasis added.]

161. Parliament can be presumed not to introduce wording into a statute without giving it legal effect.²⁴⁸

162. Second, “Canadian carriers” are, by the common law and as recognized in the *Telecommunications Act*, also public utilities, as their private assets are being deployed in the pursuit of a business affected with a public interest, namely telecommunications service.

163. In the decision containing the 2011 BSO - Telecom Regulatory Policy 2011-291 - the Commission clearly rejected the premise advanced by the incumbent local exchange carriers (“ILECs”), based on an opinion by Michael Ryan, that the OTS relies on a “monopoly or practical monopoly”:

Certain parties submitted that an obligation to serve can only be lawfully imposed where there is a monopoly. Because there is no monopoly, these parties argued that the Commission does not have the legal authority to impose an obligation to serve in forborne exchanges. **The Commission notes its disagreement with this argument. In the Commission’s view, it is unduly narrow, is inconsistent with the broad statutory powers granted to the Commission, and fails to recognize the broad policy objectives to which the Commission must have regard.**²⁴⁹ [Emphasis added.]

164. In other words, the OTS survives the transition to truly effective competition.²⁵⁰ According to the legal opinion filed by PIAC *et al.* in that proceeding,²⁵¹ the OTS is

²⁴⁸ The court should avoid adopting an interpretation that renders any portion of a statute meaningless or redundant: *Great Lakes Power Ltd. v. Municipal Property Assessment Corp.*, [2012] O.J. No. 2870, 2012 ONSC 2390 at paras. 53-54 (Ont. S.C.J.), *aff’d* [2013] O.J. No. 4440, 2013 ONSC 4776 (Ont. Div. Ct.).

²⁴⁹ TRP 2011-291, at para. 46, footnote 33.

²⁵⁰ We note that Ryan, *Canadian Telecommunications Law and Regulation*, §304, continues to argue the “practical monopoly” point even after its blunt rejection by the CRTC.

instead grounded in the common law and the (partly codified in sections 43 and 46 of the *Telecommunications Act*) right of franchise granted to telecommunications providers to physically impose their plant on public and private property (expropriating private land and, on public land, placing poles, stringing wires, digging up streets to lay cable or conduits, installing wireless towers and base stations, etc.).

165. Further, while the Commission has forborne from rate-setting for retail Internet access service and has, in most areas, forborne from rate-setting in retail telephony, whether wireless or, more recently, wireline service.
166. The Commission has jealously and carefully guarded its jurisdiction under subsection 27(2) to prevent unjust discrimination, which is a statutory codification of the common law rule noted above against unjust discrimination. Canadian carriers have, however, recently purportedly replaced, in forborne retail primary exchange service exchanges, for example, the limitation of liability that their terms of service previously afforded them from the common law requirements of due care with contractual limitations.
167. However, what is central for this proceeding is the first requirement of common carriers, and the main requirement of public utilities, namely, to serve all who ask for service (along existing supply lines). This is the key element of the “obligation to serve” in this proceeding.
168. Note, however, that this element of the OTS does not require the Canadian carrier to extend service generally to unserved areas.²⁵² Nonetheless, due to confusion in this area of law, the AAC recommends that the Commission make this element of the OTS (service to all within serving territory, but only along existing supply lines – or for wireless, within the existing reception zone) explicit for all Canadian carriers, not just ILECs or small ILECs.
169. The effect of this explicit recognition of the common law (and *Telecommunications Act*-based) OTS is to spread the burden of universal service. The sharing of the burden helps avoid possible refusal to deal with customers or *de facto* partitioning or “redlining” of neighbourhoods or cities – which would, if happening, destroy the supposed benefits of competition and the social objective of universal service.

²⁵¹ See Legal Opinion of Barbara A. Cherry, J.D., Ph.D. In CRTC Telecom Notice 2010-43 – Obligation to Serve – filed as answer to PIAC(TELUS)20May10-3 TNC 2010-43 (Attachment). Online: http://www.crtc.gc.ca/public/partvii/2010/8663/c12_201000653/1418694.zip

²⁵² See Comments of the Consumer Groups, Telecom Public Notice CRTC 2010-43, *Obligation to serve and other matters* (Formerly Proceeding to review access to basic telecommunication services and other matters) April 26, 2010, at para. 81 and *Metcalfe Telephones Ltd. v. McKenna*, [1964] S.C.R. 202.

170. The AAC is aware of the effect of this change on rural and remote areas. At present, an argument can be made that the incumbent local exchange carrier has an OTS for telephone service within its “operating territory” which by convention, terms of service, or in some cases legislation, defines the area notionally “served” by the incumbent as coexistent with, for example, provincial boundaries. The Commission has in the past made orders of service improvement plans under this conception to communities that are unserved or underserved right to the edge (often northern) of a province.
171. The trouble with this approach is that post-forbearance, and with the addition of broadband to the BSO, the ILEC concept loses almost all of its relevance as an organizing principle and probably as a legal concept as well. There is no incumbency in broadband - these services are not geographically constrained and there are no barriers to the service being operated by Canadian carriers (such as well-established CLEC or ISP cable companies).
172. In fact, the AAC expects this proceeding to establish that various Canadian carriers have in fact more extensive plant or wireless coverage – for voice or broadband – than the titular “incumbent”. In this case, those Canadian carriers are better placed to provide access from their facilities under an OTS.
173. However, it is therefore possible, if this approach is taken, that wide swaths of territory will not be covered by the plant or coverage of any Canadian carrier. There will therefore be “orphaned” areas with no “carrier of last resort” – that is, no Canadian carrier with an OTS. The AAC proposes to fill in these gaps with its proposed access subsidy, referred to as the Broadband Deployment Funding Mechanism, as described in response to [Consultation Question 13](#) below. Under the AAC’s proposal, the third party administrator will map and propose auctions for these areas, likely with the lack of any carrier with an OTS in the area as a prime factor in deciding which areas are auctioned first. The winning bidder would be required, under the AAC proposal, to assume an OTS once it had won the auction. Once facilities were built, under the legal definition described in this part, the Canadian carrier would have a continuing OTS, firstly to the area to be built according to the auction rules and secondly, permanently where facilities then existed.
174. This expression of the OTS, with all Canadian carriers²⁵³ bearing an OTS along existing supply lines, is appropriate, timely, and even overdue. The CRTC, for

²⁵³ Note that this obligation to serve does not fall upon simple telecommunications service providers (TSPs) who are not also Canadian carriers. This is because the Commission must rely upon “existing lines of supply” and Canadian carriers are, by virtue of the definition of

example, as far back as the 1990s, recognized the equality of competitive local exchange carriers (“**CLECs**”) and ILECs:

In this Decision, the Commission has adopted the principle that CLECs are not simply customers of ILECs but are carriers equal in stature to the ILECs in the local exchange market. In accordance with this principle, the framework for local exchange competition must allow for the transition from the single ILEC's network to a network of fully interoperable networks permitting subscribers of any local exchange carrier (LEC), i.e., ILEC or CLEC, to complete calls with at least the same ease and efficiency as at present. Only with this degree of interoperability can there be the true local exchange competition necessary to fulfil the promise of local price and service innovation.²⁵⁴

175. In Telecom Decision CRTC 79-11, *CNCP Telecommunications: Interconnection with Bell Canada*, the Commission stated that both Bell (an ILEC) and CNCP (a competitor) both had an

obligation to serve anyone seeking service in their entire operating areas irrespective of location at prices that are, in regard to local telephone service, similar for similar sized local populations, and in regard to long distance telephone and telegraph service at prices that are related to distance between points and not to particular routes.²⁵⁵

176. The Commission therefore considered that the OTS could apply to a Canadian carrier that was not an ILEC.

200. Note also that in Telecom Policy CRTC 2011-291 the CRTC decreed that mobile wireless voice services are a substitute for wireline service for standalone PES customers, while also retaining the OTS for the incumbent local exchange provider.²⁵⁶ Wireless service from an ILEC is easily replaceable by wireless service from another wireless LEC, therefore, the only reason for differentiating was simply to grandfather the price cap for these incumbent customers, not to suggest that there was any practical difference between the services of the ILEC and LEC, at least in relation to wireless.

177. Equality of Canadian carriers, and equality of wireless and wireline service, therefore, suggests that the OTS can and should be satisfied by any Canadian carrier along its actual service lines. Such a decree avoids uncontested or under-contested (under-built) areas which are theoretically served (such as low income

“telecommunications common carriers”, the only entities who own or operate a transmission facility to provide telecommunications services to the public for compensation.

²⁵⁴ Telecom Decision CRTC 97-8, *Local competition* (1 May 1997) at para. 7.

²⁵⁵ Telecom Decision CRTC 79-11, *CNCP Telecommunications: Interconnection with Bell Canada* (17 May 1979) at 353.

²⁵⁶ Telecom Regulatory Policy CRTC 2011-291 at paras. 48-49.

neighbourhoods in major cities) but may be ignored by all carriers. The consequence of such a decree would be to empower any individual unable to obtain service from a carrier operating with service lines in their area to then to bring a complaint to the CRTC with the expectation that the CRTC could then issue an order to that carrier to provide service to that customer.

178. Further, as developed elsewhere in the AAC's intervention, the two new funding mechanisms to support the provision of telecommunications service – the proposed Affordability Funding Mechanism and the proposed Broadband Deployment Funding Mechanism (described in response to [Consultation Question 13](#) below) – would support the economical delivery and purchasing of service to underserved and unnerved households, which carriers might otherwise wish to avoid – for example; if lack of service was relating to perceived “quality of customers” within the carrier's service area.
179. Regarding jurisdiction to impose this OTS in a forborne environment, the content of the OTS would most likely be encapsulated in Commission conditions on service under section 24 of the *Telecommunications Act* and the unjust discrimination provision (subsection 27(2)), with reference to the policy objectives in subsections 7(a), 7(b), 7(g) and 7(i). In relation to rate regulated primary exchange service (“PES”), such as in high-cost serving areas (“HCSAs”) not forborne, and for standalone PES in forborne (voice) exchanges, additional content relating to the OTS would be found in the relevant tariffs (promulgated under the Commission's rate-setting and tariffing jurisdiction under section 25 and subsection 27(1)).

Q3(c). What should be the prices for basic telecommunications services and how should these prices be determined? Provide rationale to support your answer.

Brief answer: Cost consistently surfaces as a critical factor which determines a citizen's willingness to subscribe to a telecom service (several studies cited). On one hand, the AAC has proposed creating a fund for low-income Canadian users. If the Commission also chooses to focus on the price of basic telecom services, then the AAC proposes that the Commission consider the following elements:

- a) *Consumer control:* Consumers' views on what they should or would like to pay for basic service;
- b) *Consumer need:* The maximum amount which consumers are able to pay for a service. This factor is only one aspect of affordability and better reflects consumer views on the importance of a service;

- c) *Consumer willingness to pay: Research on ranges in prices which consumers are willing to pay for a specific service;*
d) *“Inexperienced users” or non-adopters are typically willing to pay less than experienced users to subscribe to a telecom service; and*
e) *The service provider’s costs for providing a service.*

263. The AAC first notes that it is not advocating, at this time, for price regulation of basic telecommunications services. Voice services (both wireless and wireline) presently are either wholly forborne (wireless, Internet) or forborne in vast areas (wireline). The Commission consistently has found or been directed by the government of the day to deem that competition is sufficient to protect the interests of users of telecommunications services. There is, at present, insufficient evidence to show that competition has not, for the majority of subscribers, been effective at delivering the equivalent of just and reasonable rates in forborne areas and for forborne services. For price regulated areas, the AAC does not suggest lifting price regulation in the absence of evidence of competition sufficient to protect the interests of users.
264. The AAC also contends that there is a large number of Canadians for whom basic telecommunications services pricing constitutes a barrier to use and enjoyment. Indeed, the evidence cited in response to Consultation Question 1(c) above, is that expense is the number one reason, after personal choice, for not subscribing to service.
265. Although studies have identified several barriers to using and subscribing to telecommunications services – and broadband in particular – cost consistently surfaces as a critical factor which determines a citizen’s willingness to subscribe to a telecom service.
266. The Pew Research Center’s most recent broadband survey found that in 2013, 70% of American adults had a high-speed broadband connection at home, but there were clear demographic differences based on education, age and household income.²⁵⁷ Notably, while 88% of Americans with a household income of \$75,000 or greater had a high-speed broadband connection, only 54% of those with a household income less than \$30,000 did.²⁵⁸
267. Similarly, the NTIA reported that 28% of American households did not use broadband at home in 2012.²⁵⁹ Of these, 29% said the main reason for non-use of Internet at home

²⁵⁷ Kathryn Zickuhr and Aaron Smith, *Home Broadband 2013* (2013), online: Pew Internet <http://www.pewinternet.org/files/old-media//Files/Reports/2013/PIP_Broadband%202013_082613.pdf> at 2 (“**Home Broadband**”)

²⁵⁸ Home Broadband at 3.

²⁵⁹ NTIA Digital Nation 2014 at 25.

was that it was too expensive.²⁶⁰ Moreover, the NTIA found that the percentage of households citing cost as the main reason had been growing steadily since 2003.²⁶¹ Also, expense was the most common reason (43% of respondents) cited by households who had actually chosen to cease using Internet at home in 2012.²⁶²

268. A recent survey conducted by Octavian Carare *et al.*, funded by the NTIA, focused on “broadband non-adopters” in order to determine specific reasons for non-adoption, as well as the non-adopters’ willingness to pay to have broadband at home.²⁶³ Carare *et al.*’s study found that while 62.7% of non-adopting households primarily faced non-price barriers to adoption, 37.3% were willing to adopt broadband at a reasonable price.²⁶⁴ That is more than one-third of non-adopters who primarily faced cost barriers subscribing to broadband at home.

269. The Environics survey shows that there is a substantial 20-percentage point gap in cell phone and home Internet penetration rates in particular between respondents with annual family incomes below \$30,000 and those with incomes above \$30,000.

Service	Under \$20,000	\$20,000-\$30,000	\$30,000-\$50,000	\$50,000-\$80,000	\$80,000-\$100,000	Over \$100,000
Landline home telephone	71%	88%	82%	84%	87%	90%
Cell phone	66%	71%	86%	93%	97%	96%
Home Internet (wireline and wireless)	74%	78%	92%	96%	97%	99%
Television service	74%	86%	79%	84%	90%	85%

Table 11. Communication service penetration rates by annual family income²⁶⁵

270. Moreover, of the respondents who did not have a home Internet (wireline or wireless) subscription, **30%** – almost one-third – said that the main reason was that it was too expensive.

271. PIAC’s Affordability Report found that low-income Canadians were stretching their household budgets in order to retain their communications services, in some cases

²⁶⁰ NTIA Digital Nation 2014 at 26.

²⁶¹ NTIA Digital Nation 2014 at 30.

²⁶² NTIA Digital Nation 2014 at 30

²⁶³ See Octavian Carare *et al.*, *The Willingness to Pay for Broadband of Non-adopters in the U.S.: Estimates from a Multi-State Survey* (18 November 2014), online: SSRN <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2375867>.

²⁶⁴ Carare *et al.* at 10.

²⁶⁵ Environics survey.

reducing other basic expenses such as food, clothing and health expenses instead.²⁶⁶ Communications expenditures typically made up the low-income household's fourth largest expense, before clothing, medical and childcare expenses.²⁶⁷

272. Yet, the AAC's Environics survey shows that:

- **96%** of Canadians agreed basic home telephone service needs to be affordable for low-income Canadians; and
- **89%** of Canadians agreed broadband home Internet needs to be affordable for low-income Canadians.

273. Therefore, the AAC's view is that the Commission must implement affordability measures in this proceeding. The proportion of households which state that cost is their primary barrier to using broadband at home tends to decrease as the level of household income increases. As Carare *et al.* write, "this indicates that subscription discounts targeted at low-income households might have a significant impact on increasing adoption among low-income households."²⁶⁸

274. The Commission could address the affordability and cost of communications services in several ways.

275. On one hand, the AAC has proposed creating a fund for low-income Canadian households, the Affordability Funding Mechanism, which is further elaborated upon in the Sepulveda Report and later in this intervention. This type of initiative mirrors the *Lifeline* program in the U.S.A. and would promote *choice* for low-income consumers.

276. If the Commission also chooses to focus on the price of basic telecom services, then the AAC grants that taking into account service provider costs would be reasonable.

277. However, the AAC submits that the Commission must also consider low-income Canadians – their need for expense and service control, need for choice of service to the extent possible, and their willingness to pay for basic telecommunications services.

278. PIAC's report on affordability, for instance, found that the concept of affordability is tied to the idea of control – that is, "the ability of an individual or a household to control their expenditures in order to fulfill their needs."²⁶⁹ As a result, the cost of a service should take into account both what consumers can pay and what they would like to pay for a service. The following table highlights PIAC's findings from its focus groups:

²⁶⁶ Appendix "C", PIAC's Affordability Report at 70.
²⁶⁷ Appendix "C", PIAC's Affordability Report, Table 8.
²⁶⁸ Carare *et al.* at 11.
²⁶⁹ Appendix "C", PIAC's Affordability Report at 84.

Per month	Home Phone	Mobile Phone	Home Internet	TV Service	Communications Services Total
Maximum amount low-income consumers would pay	\$15-\$30	\$40-60	\$40-50	\$30-\$40	\$70-200
Amount low-income consumers wish to pay	\$10-\$30	\$15-\$40	\$15-30	\$15-30	\$30-90

Table 12. Monthly amount low-income Canadians would pay for communications services²⁷⁰

279. Several studies in the U.S. have also determined consumer willingness to pay for telecom services – and broadband in particular.
280. Gregory Rosston *et al.*, in a 2010 report for the Federal Communications Commission, found that the average American household would be willing to pay about \$20 per month for more reliable service, \$45 for an improvement in speed from slow to fast, and \$48 for an improvement in speed from slow to very fast.²⁷¹ The authors concluded that the average household would be willing to pay around \$59 per month for “less reliable Internet service with fast speed (‘Basic’).”²⁷² However, the study also found that “inexperienced users”²⁷³ were only willing to pay around \$16 to \$27 per month for an improvement from slow to fast speed.²⁷⁴
281. Carare *et al.* estimate based on a multi-state survey that broadband prices would need to drop on average 15% in order to increase broadband subscribership by 10%.²⁷⁵ If the AAC were to apply this measure to the latest Wall Communications report on telecom prices in Canada,²⁷⁶ a 15% drop in price for a Level 1 broadband service basket would bring the average price down to about \$40.80 per month. However, this indicator must also be balanced against other consumer factors, such as a family’s measure of control over its household budget.

²⁷⁰ Appendix “C”, PIAC’s Affordability Report, Table 12.

²⁷¹ Gregory Rosston, Scott J. Savage & Donald M. Waldman, *Household Demand for Broadband Internet Service* (2010), online: Stanford University <http://siepr.stanford.edu/system/files/shared/Final_Rosston_Savage_Waldman_02_04_10__1_.pdf> at 36.

²⁷² Rosston, Savage & Waldman. This was calculated on a base valuation for less reliable, slow speed service with no other special activities (such as dial-up service) of \$14 per month.

²⁷³ Determined based on the number of years online and exposure to faster Internet connections.

²⁷⁴ Rosston, Savage & Waldman at 34.

²⁷⁵ Carare *et al.* at 4.

²⁷⁶ The average monthly price for a Level 1 broadband Internet service basket in 2015 was \$48. See 2015 Wall Report, Figure 6.

282. Ultimately, the AAC believes one of the goals of this proceeding is to improve the affordability of telecom services and promote telecom adoption – especially broadband – by removing barriers to access. In order to do so, the Commission must address the cost of these services for low-income Canadians.
283. The AAC submits that an assessment of appropriate retail prices for basic telecommunications services should consider the following points:
- (a) Control: Canadians' views on what they should or would like to pay for basic service;
 - (b) Need: The maximum amount which Canadians are able to pay for a service. This factor is only one aspect of affordability and better reflects consumer views on the importance of a service;
 - (c) Willingness to pay: Research on ranges in prices which Canadians are willing to pay for a specific service;
 - (d) "Inexperienced users" or non-adopters are typically willing to pay less than experienced users to subscribe to a telecom service; and
 - (e) The service provider's costs for providing a service.
284. The AAC trusts therefore that the Commission will consider the above factors and bear the needs and concerns of low-income Canadians in mind in relation to the affordability of basic telecommunications services when it considers the proposed Affordability Funding Mechanism, which is explained below.

The AAC's Proposed Affordability Funding Mechanism

285. Accordingly, the AAC proposes a new funding mechanism – the Affordability Funding Mechanism – to support affordable access to telecommunications services by low-income households. The Affordability Funding Mechanism is described here briefly; see the expert report of Edgardo Suplveda attached as Appendix "B" for the full proposal.
286. The AAC presents two alternatives of the Affordability Funding Mechanism: an average or "baseline" subsidy, and a "best in class" or "ambitious" subsidy, based on comparisons to other jurisdictions.
287. The "baseline" subsidy is so-named since it averages the funding level for low-income subsidy programs in the USA, France and Spain. The "ambitious" subsidy is so-named since it matches the best-available low-income subsidy program, the combined USA federal Lifeline program and California state Lifeline program.

288. The “baseline” Affordability Funding Mechanism would provide a monthly subsidy of **\$11** available to approximately **1.34 million households**, for an annual capped cost of \$70 million, and the “ambitious” version would provide a **\$22** subsidy to approximately **2.61 million households** for an annual capped cost of \$410 million.
289. Eligibility under the “baseline” subsidy would be based on a household’s eligibility for provincially-administered social assistance programs or federally-administered income assistance for households living on-reserve.
290. Eligibility under the “ambitious” subsidy would be based on a low-income threshold, the “after tax low income measure” as defined by Statistics Canada.
291. Under the Affordability Funding Mechanism, a beneficiary would be eligible for one discount per household, which could be applied against any telecommunications service (fixed wireline telephony, mobile wireless telephony, or broadband Internet access) from any available service provider. The expectation is that, other than in locations in which broadband service is already subject to regulation, consumers should have the opportunity to advantage of market forces by identifying and selecting services which best meet their needs.
292. Under the modified contribution regime, the “baseline” subsidy’s cost of \$70 million would represent 0.14% of Canadian telecommunications service revenues, whereas the “ambitious” subsidy’s cost of \$410 million would represent 0.82% of Canadian telecommunications service revenues.
293. As the Sepulveda Report shows, Canada has lagged far behind its international peers in providing funding assistance for low-income citizens. The “baseline” Affordability Funding Mechanism would bring Canada in line with other similar jurisdictions, while the “ambitious” Affordability Funding Mechanism would bring Canada on equal footing with the current world-best subsidy program.
294. The AAC believes that given the evidence that affordability is the most significant reason Canadians do not subscribe to Internet services and wireless services, after reasons relating to personal choice, the Commission should adopt the “ambitious” Affordability Funding Mechanism rather than the “baseline” one. Doing so would be consistent with the mandate entrusted to the Commission under the *Telecommunications Act*, including the policy objective of ensuring all Canadians have access to high quality telecommunications services.

Q4. Can market forces and government funding be relied on to ensure that all Canadians have access to basic telecommunications services? What are the roles of the private sector and the various levels of government (federal, provincial, territorial, and municipal) in ensuring that investment in telecommunications infrastructure results in the availability of modern telecommunications services to all Canadians?

Brief answer: *Market forces and government funding should not be relied on to ensure that all Canadians have access to basic telecommunications services. First, market forces and government funding do not appear to have delivered the 5/1 target, which raises questions about the ability of market forces and targeted government funding to achieve, quickly, the **5 Mbps** standard that is “basic” (based on 2013 information), the 10 Mbps standard which is more likely to be required today, nor affordable access to **25 Mbps which the AAC expects to be the “basic” speed by 2020**. Furthermore, growth rates in availability (distinct from penetration) appear to have hit a plateau in a number of service ranges. Also, the limited, current targeted government funding, of which the largest program is the federal government’s Connecting Canadians initiative, is set at a target speed which may be too low, and out of date.*

295. Market forces and government funding do not appear to have delivered the 5/1 target, which the AAC believes is the “basic” level of broadband, using 2013 data, according to the legal test articulated in response to [Consultation Question 3\(b\)](#) above.

296. This can be seen in the 2014 CMR.

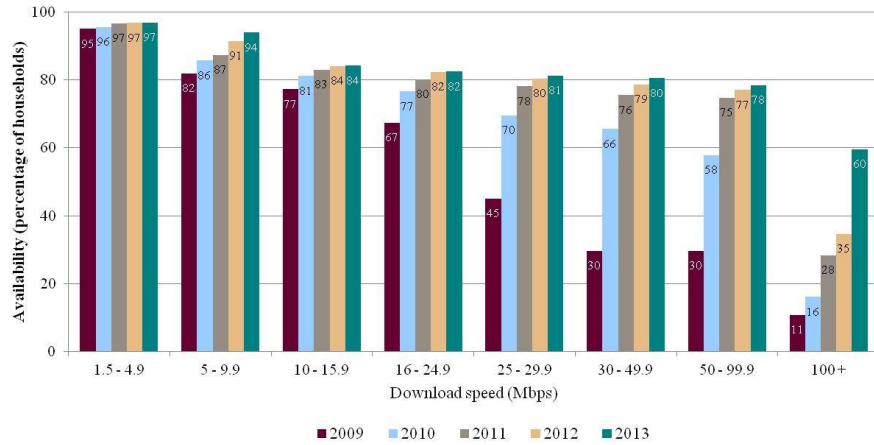


Figure 18. Broadband availability by speed (percentage of households)²⁷⁷

297. The table above shows a generally increasing trend through time in terms of availability, and a consistent inverse relationship between availability and speeds, with the higher service levels being less available.

298. The 2014 CMR indicated the following availabilities:

- “Almost all Canadian households have access to basic (i.e., 1.5 Mbps) broadband Internet service.”
- 97% of Canadian households have access to 1.5 – 4.9;
- 94% of Canadian households have access to 5 – 9.9;
- 84% of Canadian households have access to 10 – 15.9;
- 82% of Canadian households have access to 16 – 24.9;
- 81% of Canadian households have access to 25 – 29.9;
- 80% of Canadian households have access to 30 – 49.9;
- 78% of Canadian households have access to 50 – 99.9; and
- 66% of Canadian households have access to 100 and above.

299. Furthermore, growth rates in availability (distinct from penetration) appear to have hit a plateau in a number of service ranges.

- The number of Canadian households with access to 1.5 – 4.9 Mbps has levelled off at 97% for three years;
- The number of Canadian households with access to 10 – 15.9 Mbps has levelled off at 84% for three years;

²⁷⁷

2014 CMR.

- The number of Canadian households with access to 16 – 24.9 Mbps has levelled off at 82% for two years;
 - The growth rate for higher speed availability also appears to be stalling.
300. The data show that not all Canadians have access to the 5 Mbps target speeds, let alone higher speeds which are likely to be required by the legal test for “basic telecommunications services” articulated above. This raises questions about the ability of market forces and targeted government funding to achieve, quickly, that standard, let alone the 10 Mbps speeds which are more likely today, let alone the 20 Mbps which the AAC believes will be “basic” by 2020.
301. The AAC expects that more up to date information about broadband access will emerge throughout the course of this proceeding, in the two rounds of requests for information and in the next installment of the CMR.
302. Nevertheless, it is apparent from the current evidence and the interventions of many individuals and other organizations that basic broadband availability (in addition to affordability) is an ongoing problem in Canada, and therefore the AAC proposes a second funding mechanism to support resolving that issue: the Broadband Deployment Funding Mechanism, as described in response to [Consultation Question 13](#) below.

The unsuitability of relying on market forces to solve a market failure

303. In the AAC’s view, relying on market forces alone or in conjunction with targeted government funding is inappropriate and insufficient. While more evidence is expected to come to light in the course of this proceeding, the AAC’s evidence to date indicates that high numbers of Canadians remain unable to access “basic” broadband services (as the AAC defines that term, see response to [Consultation Question 3\(b\)](#)) and that this is an ongoing problem.
304. Furthermore, the Commission has not been instructed to blindly rely on market forces at all costs.
305. The phrase “market forces” is only found in one instance in the *Telecommunications Act*. One of the nine Canadian telecommunications policy objectives is “to foster increased reliance on market forces for the provision of telecommunications services and to ensure that regulation, where required, is efficient and effective.”²⁷⁸

²⁷⁸ *Telecommunications Act*, s. 7(f).

306. The Policy Direction also instructs the Commission to “rely on market forces to the maximum extent feasible as the means of achieving the telecommunications policy objectives.”²⁷⁹ [Emphasis added.]
307. Thus, market forces are a means to the ends of the *Telecommunications Act*, and reliance on market forces is secondary to those ends. As noted in the Introduction above, the Canadian telecommunications policy objectives contain several clear references to ensuring that *all* Canadians are well-served, and only one reference to the role of market forces.
308. The objectives include facilitating the development of a telecommunications system that “serves to safeguard, enrich and strengthen the social and economic fabric of Canada and its regions”; the rendering of “reliable and affordable telecommunications services of high quality accessible to Canadians in both urban and rural areas in all regions of Canada”; and “responding to the economic and social requirements of users of telecommunications services.”²⁸⁰
309. To sacrifice these objectives for the lone objective of promoting reliance on market forces, especially where there is much evidence that not all Canadians are being well served, would be totally inappropriate.

The insufficiency of targeted government funding

310. In the AAC’s view, relying on targeted government funding is insufficient and inappropriate for the purpose of providing all Canadians the level of basic telecommunications services contemplated in the policy objectives of the *Act*. While targeted funding may assist with these goals in certain areas, at certain times and in particular ways, it has several shortcomings compared with sustained programs and subsidies devised by the committed sector regulator, the CRTC.

²⁷⁹ *Order Issuing a Direction to the CRTC on Implementing the Canadian Telecommunications Policy Objectives*, SOR/2006-355 (the “**Policy Direction**”).

In exercising its powers and performing its duties under the [Telecommunications Act](#), the Canadian Radio-television and Telecommunications Commission (the “Commission”) shall implement the Canadian telecommunications policy objectives set out in section 7 of that Act, in accordance with the following:

S. 1(a) “the Commission should (i) rely on market forces to the maximum extent feasible as the means of achieving the telecommunications policy objectives, and (ii) when relying on regulation, use measures that are efficient and proportionate to their purpose and that interfere with the operation of competitive market forces to the minimum extent necessary to meet the policy objectives;

²⁸⁰ *Telecommunications Act*, s. 7(a), (b), (h) and (i).

311. The AAC's survey of recent and current federal and provincial government broadband funding programs (attached as Appendix "D") indicates that while much money has been spent to date for broadband projects (or broadband as a component of broader infrastructure programs) that most of the government funding programs have expired, and that there is only approximately \$389 million in funding currently earmarked exclusively for broadband.
312. The AAC believes that these amounts may be insufficient to overcome the cost barriers or potential lack of interest in deploying to low density and/or high-cost areas.
313. The AAC also believes that while targeted government funding can play a role, relying on it is not a prudent or sustainable approach to funding the basic telecommunications service needs of Canadians on an ongoing basis, especially where the funding is issued on a one-time basis, or subject to change as governing parties change, or pegged to target speeds which quickly become out of date.
314. Something more stable and predictable is therefore needed.
315. Institutionally, the AAC believes that the Commission would not be fulfilling its mandate under the *Telecommunications Act* by relying on unpredictable, unstable, and insufficient government funding.
316. Hence, the AAC believe that the Broadband Deployment Funding Mechanism proposed in the Sepulveda Report, which will generate ongoing funding support into the future, is the best way forward. The model is stable, predictable, *apolitical* and within the hands of the CRTC whose role is to ensure the development of the Canadian telecommunications system in the best interests of Canadians. Furthermore, the model can be complementary to the operation of market forces and targeted government funding.

Q5. What should be the Commission's role in ensuring the availability of basic telecommunications services to all Canadians? What action, if any, should the Commission take where Canadians do not have access to telecommunications services that are considered to be basic services?

Brief answer: *The CRTC must ensure universal access to basic telecommunications services via availability and affordability subsidies where required both now and in the future. Where Canadian carriers are not offering broadband or the broadband offers are not up to speeds for basic*

telecommunications service, the CRTC should impose upon them service improvement plans.

317. The CRTC has the leading role in ensuring the availability of basic telecommunications services to all Canadians. As the sector regulator, it possesses all of the authority and scope necessary to complete the task of universal service.
318. To achieve universal service, the Commission should ensure, through subsidy mechanisms where required, such as those proposed by the AAC in its expert evidence, as well as information gathering and monitoring, that all Canadians receive basic telecommunications services now and in future years as conditions change, whether the barrier to that access is due to a lack of availability of service as it is in an area that is “above cost” or marginal, or due to the affordability of that service.
319. Where Canadian carriers do not (a) offer broadband connectivity at all, or, (b) offer inadequate broadband speeds (below the level set by the Commission as “basic telecommunications service”) in below cost (potentially profitable) areas, it would be appropriate for the Commission to have access to the spectrum of regulatory tools outlined above in the answer to [Consultation Question 3\(b\)](#) above, including to create service improvement plans for these carriers. Those service improvement plans should ensure the introduction of broadband service by, at the absolute latest, 2020, and should ensure upgrades to speeds where service already exists by 2020 or such earlier date as the Commission directs.

Q6. In Telecom Regulatory Policy [2011-291](#), the Commission stated that it would closely monitor developments in the industry regarding the achievement of its broadband Internet target speeds to determine whether regulatory intervention may be needed. What action, if any, should the Commission take in cases where its target speeds will not be achieved by the end of 2015?

Brief answer: *Based on likely outdated information from 2013, the requirement for “basic” Internet access speeds today is in fact and in law at least the 5 Mbps target set in the 2011 BSO, although it is likely to be closer to 10 Mbps as updated information comes to light. The Commission therefore is well-justified in now enforcing the previously non-binding standard where the 5 Mbps target will not be reached by the end of 2015. The Commission should prioritize these communities for the deployment subsidy proposed in the Sepulveda Report.*

320. In TRP 2011-291²⁸¹ the Commission stated that it “considers that the deployment of broadband Internet access services should continue to rely on market forces and targeted government funding, and that regulatory intervention by the Commission” was “not appropriate at this time.” As a result, the Commission did not require broadband Internet access to be provided as part of any basic service objective.²⁸²
321. Unfortunately the Commission did not specify any consequences for not reaching the aspirational targets in TRP 2011-291.
322. In light of the AAC’s recommendation that the speeds Canadians require today are at a minimum 5 Mbps (based on out of date 2013 information) and more likely to be 10 Mbps, double the 2015 standard set by the Commission in 2011, it is now entirely appropriate to put all TSPs on notice that the Commission will commence regulatory steps to immediately achieve this target for all Canadians..
323. The Commission therefore is well-justified in now enforcing the previously non-binding standard where the 5/1 target speeds will not be reached by the end of 2015. The Commission should prioritize these communities for the Broadband Deployment Funding Mechanism proposed in the Sepulveda Report, and as discussed in response to [Consultation Question 13](#) below.
324. The AAC therefore proposes that the Commission immediately begin mapping the locations which will not achieve the 5/1 standard by 2015 and put TSPs on notice even during this proceeding that the Commission will look to find methods even prior to issuance of the decision in this proceeding to bring these areas up to the 5/1 standard. To support that goal the AAC is proposing, in response to Consultation Question 13 below, that the Commission implement a Broadband Deployment Funding Mechanism and an Affordability Funding Mechanism.

²⁸¹ TRP 2011-291 at para. 83.

²⁸² TRP 2011-291 at para. 84.

Q7. In Telecom Regulatory Policy [2013-711](#), the Commission stated its intention to establish a mechanism, as required, in Northwestel's operating territory to support the provision of modern telecommunications services. Such a mechanism would fund capital infrastructure investment in transport facilities (e.g. fibre, microwave, and satellite), as well as the cost of maintaining and enhancing these facilities. The Commission considered that this mechanism should complement, and not replace, other investments from the private sector and governments, including public-private partnerships.

Q7(a). Explain, with supporting rationale, whether there is a need for the Commission to establish such a mechanism in Northwestel's operating territory. As well, explain whether there is a need for such a mechanism in other regions of Canada.

Q7(b). What impact would the establishment of such a mechanism have on private sector investment and government programs to fund the provision of modern telecommunications services?

Brief answer: The record in a number of recent proceedings conducted by the Commission indicates that efforts to bridge the broadband Internet service availability gap between communities in many parts of Northwestel's serving territory and the rest of Canada have not been successful. Notably, the Commission found in 2011 that Northwestel had focused more on the return for its shareholders than providing high quality, reliable services for their customers. Northwestel's modernization plan is also currently in jeopardy, with its recent Part 1 application stating they have halted expansion plans to 45 underserved communities in the North. Improvements to the cost of satellite transport facilities are also highly dependent on the outcome of Telecom Notice of Consultation CRTC 2015-133, and therefore it is premature to know the impact of satellite transport costs going forward. The AAC's proposed Broadband Deployment Funding Mechanism would use an open auction format, thereby maximizing reliance on market forces, and be available to any service provider who would bring modern, high quality, reliable telecommunications to those communities who do not currently have access to them.

325. In this proceeding the AAC has put forward proposals which would address improving the affordability of essential telecommunications services for low-income Canadians, and improving the availability of broadband Internet service at speeds Canadians require.

326. With respect to the second objective referenced above, as discussed in their response to [Consultation Question 13](#) below, the AAC is of the view that a new

mechanism is needed to reduce the broadband Internet access services gap in Canada. That gap is not only present in Northwestel's operating territory but in other regions of Canada.²⁸³ (See the AAC's response to [Consultation Question 1\(c\)](#).) As a result, the new funding mechanism to support the deployment of modern telecommunications services should be available in all regions of Canada. To bridge the gap the AAC proposes that the Commission establish a subsidy mechanism to promote the deployment of network facilities by facilities-based service providers which would complement, and not replace, other investments from the private and public sectors.

Northwestel

327. The record in a number of recent proceedings conducted by the Commission indicates that efforts to bridge the gap in broadband Internet access speeds and data allowances between communities in many parts of Northwestel's serving territory and the rest of Canada have not been successful.
328. Northwestel's commitment and its ability to deliver modern services to its customers comparable to those generally available to other Canadians have been issues for the company for several years.
329. In Telecom Notice of Consultation CRTC 2011-302²⁸⁴ ("**TNC 2011-302**"), the Commission initiated a proceeding to consider the character of the regulatory framework it should apply to Northwestel, as the term of the company's initial price caps regulatory framework for the company's regulated services, established in Telecom Decision CRTC 2007-5, was coming to an end.²⁸⁵ At the conclusion of this proceeding, the Commission issued its findings in Telecom Regulatory Policy CRTC 2011-771 ("**TRP 2011-771**").²⁸⁶
330. In TRP 2011-771, the Commission found that a significant number of communities in Northwestel's serving territory expressed concern regarding the quality and the reliability of the company's services²⁸⁷ and the extent to which the company's

²⁸³ See e.g., individual interventions 13, 17, 21, 26, 29, 50, 69, 77, 80, 92, 94, 99, 140, 162, 167, 196.

²⁸⁴ *Review of price cap regulatory framework for Northwestel Inc. and related matters* (4 October 2011), Telecom Notice of Consultation, online: <<http://www.crtc.gc.ca/eng/archive/2011/2011-302.htm>>.

²⁸⁵ The term of the first price caps framework was extended in *Northwestel Inc. – Application for an extension of the current price cap regulatory framework* (13 May 2010), Telecom Decision 2010-274, online: <<http://www.crtc.gc.ca/eng/archive/2010/2010-274.htm>>.

²⁸⁶ *Northwestel Inc. – Review of regulatory framework* (14 December 2011), Telecom Regulatory Policy CRTC 2011-771, online: <<http://www.crtc.gc.ca/eng/archive/2011/2011-771.htm>>.

²⁸⁷ TRP 2011-771 at para. 26.

shareholders²⁸⁸ had benefited under the price caps regime, to the apparent detriment of the company's customers. More specifically, the Commission noted:

Since 2007, Northwestel has received over \$20 million in annual subsidy for the provision of service in remote communities and its annual income from operations has nearly doubled to \$69.3 million in 2010. Despite this, Northwestel has failed to make the necessary investments in its network as evidenced by the company's aging infrastructure and the unavailability of services in many remote communities comparable to those provided in the rest of Canada.²⁸⁹

331. The Commission further found that the regulatory framework it had established in Decision 2005-7 had not met the policy objectives set out in paragraphs 7(b), (g), (h), and (i) of the *Telecommunications Act*.²⁹⁰
332. On the basis of these findings, the Commission directed the company to file a plan which would "address how Northwestel intends to update its infrastructure in a timely manner to ensure that northern customers receive telecommunications services, both regulated and forborne, comparable to those available to Southern Canada in terms of choice, quality, and reliability."²⁹¹ The Commission undertook to conduct a broader review of the company's regulatory framework.
333. The Commission ultimately reviewed Northwestel's modernization plan in the proceeding initiated by Telecom Notice of Consultation 2012-669²⁹² ("**TNC 2012-669**"). The Commission's review of the company's modernization plan included lengthy and detailed public hearings conducted in Northwestel's serving territory, thus providing the company's customers an opportunity to participate in the Commission's process. In addition, the Commission received a large number of interventions from individuals and businesses located in the North.
334. In Telecom Regulatory Policy 2013-771 ("**TRP 2013-771**"),²⁹³ the Commission approved a modernization plan for Northwestel which included improvements in the broadband services provided by the company in a large number of smaller communities.

²⁸⁸ The company is in fact a wholly owned subsidiary of BCE.

²⁸⁹ TRP 2011-771 at para. 27.

²⁹⁰ TRP 2011-771 at para. 28.

²⁹¹ TRP 2011-771 at para. 40.

²⁹² *Review of Northwestel Inc.'s Regulatory Framework, Modernization Plan, and related matters* (6 December 2012), Telecom Notice of Consultation CRTC 2012-669, online: <<http://crtc.gc.ca/eng/archive/2012/2012-669.htm>>.

²⁹³ *Northwestel Inc. – Regulatory Framework, Modernization Plan, and related matters* (18 December 2013), Telecom Regulatory Policy CRTC 2013-711, online: <<http://www.crtc.gc.ca/eng/archive/2013/2013-711.htm>>.

335. At this time, however, the plan the Commission approved in TRP 2013-771 appears to be in jeopardy. In an application it recently filed,²⁹⁴ Northwestel is threatening to interrupt the deployment of updated Internet services to 45 currently underserved communities in which, by the company's own admission, modernization is most needed. In this application, the company contends that in the absence of regulatory concessions in order to ensure that its broadband Internet network investments are justified in accordance with its own investment criteria, the company is suspending modernization. It appears, in fact, that the company has already interrupted the modernization program the Commission approved for these communities.
336. In TRP 2013-771, the Commission approved a revised regulatory regime for the company as well as commitments from the company to modernize its network. The company is benefiting from the regulatory regime but is not delivering on its modernization commitments. Northwestel has already enjoyed generous returns for its shareholders for nearly a decade. In the AAC's view, the development of a subsidy program for Northwestel in such circumstances presents a significant challenge.

Improvements to satellite transport infrastructure

337. As the Commission conducted its review of Northwestel's modernization plan in the TNC 2012-669 proceeding, it became evident that a significant contributing factor to the service inadequacies faced by consumers (and businesses) in Canada's North were attributable to inadequacies in the transport network utilized by the company. In satellite-served communities, these inadequacies appear to apply to all competitors serving retail customers. Numerous intervenors, in their written comments as well as in presentations in the course of the public hearings, expressed concerns regarding the availability and cost of satellite service between locations in the North, and in particular in the Eastern Arctic. In TRP 2013-711, the Commission noted that "[g]enerally, intervenors acknowledged that transport infrastructure, and in particular satellite transport and the associated cost of provisioning services over satellite, is a concern in the North."²⁹⁵
338. In a partial response to such concerns, the Commission issued Telecom Notice of Consultation 2014-44²⁹⁶ in which it designated an inquiry officer to investigate and report on the marketplace in Canada for satellite services used by

²⁹⁴ Posted on the Commission's website on 5 June 2015, file number 8662-N1-201505629.

²⁹⁵ TRP 2013-711 at para 25.

²⁹⁶ *Appointment of an Inquiry Officer to review matters related to transport services provided by satellite* (6 February 2014), Telecom Notice of Consultation CRTC 2014-44, online: <<http://www.crtc.gc.ca/eng/archive/2014/2014-44.htm>>.

telecommunications service providers in Canada. The Commission noted in TNC 2014-44:

In the recent proceeding on Northwestel [...] regulatory framework and Modernization Plan (the Northwestel proceeding), some parties brought to the Commission's attention issues related to satellite transport services used by telecommunications service providers (TSPs) for the provision of telecommunications services. Several parties submitted that one of the impediments to affordable Internet services in communities that are dependent on satellite transport facilities is the cost of satellite transport. It was also brought to the Commission's attention that it is technically possible for TSPs to offer broadband services in the North that are similar to the broadband services available in other parts of Canada, but that the cost to consumers would be prohibitive.

339. In her report, the Inquiry Officer reported that today, "Internet speeds in satellite-dependent communities are well below those available in communities served by terrestrial facilities, and are, in most cases, below the Commission's target speeds of 5 megabits per second (Mbps) download and 1 Mbps upload."²⁹⁷
340. In Telecom Notice of Consultation CRTC 2015-133²⁹⁸ the Commission undertook a review of Telesat's rates for certain satellite services which service providers use to provide services in satellite dependent communities in the North.
341. The AAC expects that the outcome of the TNC 2015-133 proceeding is likely to have a significant impact on the costs for firms such as Northwestel and potential competitors associated with providing improved Internet services to consumers and businesses in satellite dependent communities.
342. Based on the evidence and arguments submitted to the Commission in the TNC 2012-669 proceeding and referenced by the Commission in TNC 2014-44 (reproduced above) it appears likely that if satellite dependent communities are to see improved broadband speeds, making these speeds available to consumers and businesses will give rise to significant increases in the demand for wholesale satellite services resulting, potentially, in greater satellite service costs for retail broadband service providers.
343. Whether and to what extent access to greater satellite service capacity will result in higher costs for broadband service providers is unlikely to be known until after the

²⁹⁷ CRTC, "Satellite Inquiry Report" (October 2014), online:
<<http://www.crtc.gc.ca/eng/publications/reports/rp150409/rp150409.htm>>.

²⁹⁸ *Review of Telesat Canada's price ceiling for C-band fixed satellite services* (9 April 2015), Telecom Notice of Consultation CRTC 2015-133, online:
<<http://crtc.gc.ca/eng/archive/2015/2015-133.htm>>.

conclusion of the TNC 2015-133 proceeding and any follow-up rate setting processes the Commission may decide to conduct. Until the Commission issues determinations in the TNC 2015-133 proceeding and such follow-up proceedings (if any), wholesale satellite service rates (or caps for such rates) will not be known. The AAC notes in this respect that current applicable price caps set in the late 1990s²⁹⁹ for satellite services appear to be considerably above market rates for these services.

Impacts on consumers and businesses

344. Northwestel's terrestrial broadband service tariffs are currently subject to Commission approval.³⁰⁰ Its satellite-based retail broadband service rates, however, are not subject to Commission approval. In TRP 2013-771, the Commission chose not to extend retail Internet service tariff approval to satellite-served communities:

With regard to Northwestel's satellite retail Internet services, the Commission finds that, based on the record of this proceeding, the circumstances that justified its original forbearance determinations have not changed sufficiently to warrant a reversal of forbearance. In this regard, the Commission notes that the presence of a competitor in the satellite retail Internet services market indicates that customers have an alternative to Northwestel. The Commission also notes that Northwestel does not control the facilities that competitors require to provide satellite retail Internet services. Therefore, the Commission considers that Northwestel does not have market power in the satellite retail Internet services market and determines that these services will continue to be forborne from regulation.³⁰¹

345. As a result, under these rules, the company enjoys considerable flexibility in setting retail Internet access service rates in satellite-served communities.
346. The AAC acknowledges that in a number of satellite dependent communities, Northwestel is not the only Internet access services provider. Competition, however, does not appear to have resulted in rates for consumers which are comparable with rates available to other Canadians, even for relatively lower speed broadband services. Table 13, below, provides a comparison between retail rates offered to Canadians in relatively large satellite-served communities in the North and rates offered by the ILECs or independent ISPs for lower speed broadband services in selected communities (not satellite-served) elsewhere in Canada. It is evident that

²⁹⁹ *Telesat Canada – Transitional Regulatory Framework and Forbearance for Fixed Satellite Services* (25 May 1999), Telecom Decision CRTC 99-6, online: <<http://www.crtc.gc.ca/eng/archive/1999/dt99-6.htm>>.

³⁰⁰ The requirement was re-established in TRP 2013-771 at para 223.

³⁰¹ TRP 2013-711 at para 214.

consumers in satellite served communities face considerably higher rates (for lower speeds) than other Canadian consumers.

Region	Company	Download Speed (Mbps)	Monthly Data Cap (GB)	Monthly Price	Data Overage Charges
Nunavut (Iqaluit)	Northwestel	1.5	20	\$99.95	\$17.50/GB
		2.5	15	\$129.95	\$17.50/GB
	Qiniq	1.5	10	\$80.00	\$17.50/GB
		2	15	\$129.95	\$16.50/GB
British Columbia	TELUS	15	150	\$63.00	\$5 for first 50 GB
	Teksavvy	6	300	\$29.99	\$0.25/GB
Ontario	Bell	15	50	\$55.95	\$3/GB
	Teksavvy	6	150	\$29.99	\$0.25/GB

Table 13. Entry-level packages in the north compared to southern provinces³⁰²

347. It is the AAC's view that if the Commission's objective of making retail broadband services available in the North comparable in terms of performance and pricing to services offered in the rest of Canada is to be achieved, additional funding may be required. The AAC has proposed a subsidy regime to provide retail Internet service providers such funding.
348. In order to maximize reliance on market forces, the AAC is proposing a mechanism which would make the availability of such funding subject to competitive forces. The AAC's proposal is described in detail in its response to [Consultation Question 13](#).
349. The mechanism which the AAC is proposing has been designed in a manner which would promote private sector investment and government programs to fund the provision of modern telecommunications services by making the subsidy available in a given location to the service provider which can provide service subject to specified performance commitments on a "minimum subsidy" basis at the outcome of a competitive bidding process. Proceeding in this manner would ensure that service providers have a strong incentive to seek private investment and/or such government funding as may be available. Service providers who can attract private investment and/or government funding would be rewarded by being able to put forward competitive bids which minimize the subsidy needed to serve a given location. This in turn would minimize contribution requirements.

³⁰² See ISPs' respective websites, online: <<http://www.nwtel.ca/personal/internet/packages/>>; <<https://www.qiniq.com/broadband-pricing-plans>>; <<http://www.telus.com/en/bc/internet/>>; <http://www.bell.ca/Bell_Internet/Products/Fibe-Internet-15-FTTN>; <<https://teksavvy.com/en/residential/internet/dsl>>.

Locations outside Northwestel serving territory

350. In this proceeding the AAC is proposing the establishment of Broadband Deployment Funding Mechanism to support the deployment of broadband services to all Canadians so that they may fully participate in the digital economy.
351. The AAC acknowledges that determining which, if any, locations outside Northwestel's serving territory should be eligible for inclusion in such a mechanism presents a challenge. The AAC does not have access to service providers' service development and deployment plans and are therefore unable to assess in which communities a plan designed to promote modern broadband deployment would be needed today.
352. In its latest CMR (2014), the Commission noted that, "In 2013, as part of the social and economic objectives of the *Telecommunications Act*, approximately 10% of residential telephone lines were in high-cost serving areas and were subsidized by TSPs, or groups of related TSPs."³⁰³ The current subsidy was established to maintain basic local residential service HCSAs at affordable rates in locations in which the cost of providing such service was deemed by the Commission to exceed rates. It was not established to promote the availability of broadband services.

³⁰³ 2014 CMR at 150.

[Regulatory measures for basic telecommunications services \(Q8 – Q13\)](#)

Q8. What changes, if any, should be made to the obligation to serve and the basic service objective?

Brief answer: The BSO should be continued for voice but should now include broadband with a reasonable data allowance. The obligation to serve should be formally stated to be applicable to all Canadian carriers in their service territories along lines of supply (wireline) or within present range of transmission (wireless).

353. The AAC has addressed this Consultation Question in the context of a broader treatment of the BSO in response to [Consultation Question 3\(b\)](#) and [Consultation Question 5](#) above.
354. In sum, the next BSO should continue to include voice and also be upgraded to include “basic” broadband, as defined in relation to the 50-80 rule (when 50% of the population access the Internet via broadband and of those 80% at the specified speed) with a reasonable data allowance.
355. The obligation to serve should be formally stated to be applicable to all Canadian carriers in their service territories along lines of supply (wireline) or within present range of transmission (wireless).

Q9. Should broadband Internet service be defined as a basic telecommunications service? What other services, if any, should be defined as basic telecommunications services?

Brief answer: *There is no question that broadband Internet service should be defined as a “basic” telecommunications service, and that the BSO be upgraded to include access to broadband. Ongoing access to voice (wireless, wireline or VoIP) should also continue to be part of the definition of basic telecommunications services.*

356. As the AAC explained in response to [Consultation Question 1\(b\)](#) above, broadband Internet has become a critical service to fulfill Canadians’ social, economic and cultural needs today. The Commission and individual Commissioners have previously stated their recognition of this fact, as has the Government of Canada in

the Digital Canada 150 strategy. The importance of Internet access and the applications it makes available in modern society today necessitates that broadband Internet service be defined as a basic telecommunications service.

357. As well, the Commission should continue to include telephony service in the definition of basic telecommunications services. Voice communication continues to be a critical tool for Canadians, and one Canadians continue to support, as evidenced in the Environics survey results. Voice telecommunications should now be defined in a technology-neutral manner, meaning it can be satisfied by wireless, wireline or VoIP technologies, provided it meets the quality standards defined in the renewed BSO.

Q10. What changes, if any, should be made to the existing local service subsidy regime? What resulting changes, if any, would be required to the existing regulatory frameworks (e.g. price cap regimes)?

Brief answer: No changes are recommended to the local service subsidy regime. Canadians believe home phone service is important, and that low-income Canadians should have affordable access to it.

358. The AAC is not advocating for any changes to the local service subsidy (“LSR”) regime.
359. As the Sepulveda Report shows, the LSR’s size has been steadily declining, and it may be that competition and productivity gains and technological advancements will result in the LSR becoming redundant. Until that time, however, the LSR should not be altered or prematurely terminated.
360. As the Environics Report shows, most Canadians consider that ongoing access to home telephone remains important and most Canadians believe low-income Canadians should have affordable access to home telephone service (either wireline or cellular).
361. The Environics survey results show that most Canadians (79%) consider home telephone service (either wireless or landline) to be essential,³⁰⁴ and even more Canadians (92%) believe that all Canadians should have access to either wireless or landline telephone service no matter where they live.³⁰⁵ An even higher number of

³⁰⁴ Environics survey, Q5A.

³⁰⁵ Environics survey, Q8A.

Canadians (96%) believe that basic home telephone service needs to be affordable for low-income Canadians.³⁰⁶

Q11. What changes, if any, should be made to the contribution collection mechanism? Your response should address, with supporting rationale, which TSPs should be required to contribute to the NCF, which revenues should be contribution-eligible and which revenues, if any, should be excluded from the calculation of contribution-eligible revenues.

Brief answer: *The NCF should be used to fund two new mechanisms to support the provisioning of affordable access by all Canadians to “basic” telecommunications services: the Affordability Funding Mechanism and the Broadband Deployment Funding Mechanism.*

362. The AAC proposes that to support resolution of ongoing telecommunications affordability and broadband availability issues, that the existing NCF be modified to support two new funding mechanisms to address those issues.
363. The AAC described in more detail the funding mechanism to support affordability for low-income Canadians – the Affordability Funding Mechanism - in response to [Consultation Question 1\(c\)](#), above. The Affordability Funding Mechanism will help low-income households access the telecommunications services of their choosing. In principle, all telecommunications services from all telecommunications service providers should be eligible for the Affordability Funding Mechanism, to enhance consumer choice.
364. The AAC describes in more detail the funding mechanism to support broadband deployment – the Broadband Deployment Funding Mechanism – in response to [Consultation Question 13](#), below. The Broadband Deployment Funding Mechanism will allocate a fixed, stable, and capped amount of annual funding to be allocated to projects put out to tender to provide for the uneconomic portion of providing “basic” broadband service. In principle, and subject to the AAC’s concerns expressed about Northwestel (see [Consultation Question 7](#) above), all telecommunications service providers should be eligible for funding support from the Broadband Deployment Funding Mechanism.

³⁰⁶ Environics survey, Q8C.

365. Each of the two new funding mechanisms are presented in full in the Sepulveda Report attached as [Appendix “B”](#).
366. The AAC recommends that the Affordability Funding Mechanism and the Broadband Deployment Funding Mechanism be funded as described in the Sepulveda Report, which shows how including certain revenues (retail Internet and paging) which to date have been excluded, and returning to historic contribution levels, can yield considerable annual funding amounts to support access and affordability.
367. These revenues currently excluded from contribution are as follows.

	2011	2012	2013	2014
Contribution payments received	147.0	133.0	115.2	106.0
Inter-carrier payments	2,978.9	2,800.6	2,773.6	2,640.6
Retail Internet service revenues	8,916.2	10,162.7	11,735.5	14,174.4
Retail paging service revenues	1,987.4	2,275.2	2,325.0	2,297.5
Terminal equipment revenues	3,159.4	3,457.8	3,410.3	3,539.3
Non-contribution eligible revenues from bundles	1,516.3	1,568.8	1,613.4	1,360.2
Contribution-eligible revenues on package discounts	0.3	1.0	1.3	1.3

Table 14. Excluded Contribution 2011-14 (\$ millions)³⁰⁷

368. The Sepulveda Report demonstrates how including retail Internet service revenues and retail paging service revenues, both of which have been growing, in contribution eligible revenues, expands the revenue base from which to fund universal service.
369. To continue to exclude these revenues, particularly retail Internet services revenues, in the face of the growth of the underlying services, cannot be justified.
370. As the Sepulveda Report shows, while overall telecommunications revenues have been rising, the actual amounts contributed to universal service (wireline) have been decreasing, and the ratio of contribution to contribution eligible revenues has declined from an average of 62% over the 2001-2014 period to a low of 49% in 2014.

³⁰⁷

Letter from Commission staff dated 2 July 2015 with data from Data Collection System.

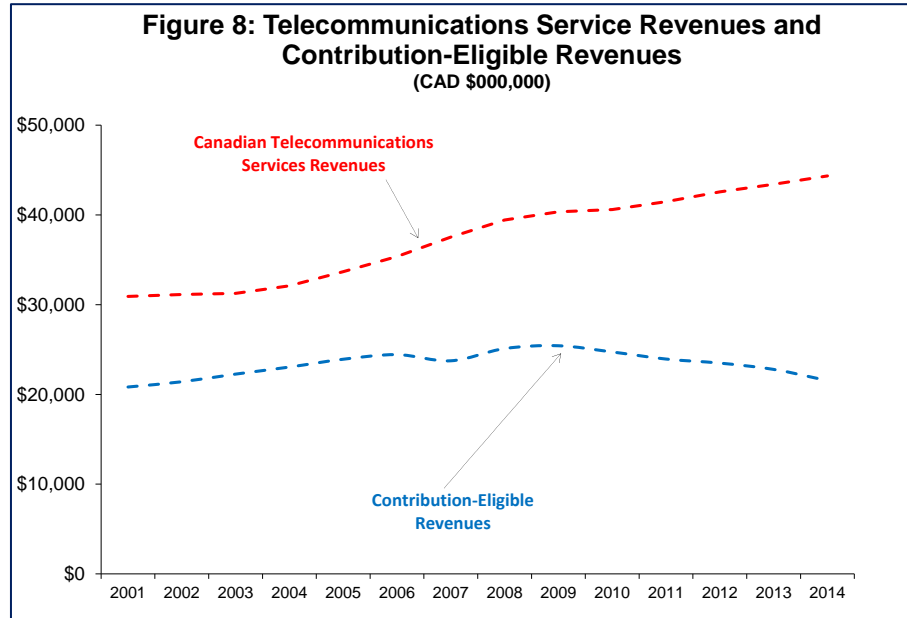


Figure 19. Excerpt from Sepulveda Report

371. In other words, as revenues have grown, contributions have been decreasing. A recommitment to universal service and a readjustment of the NCF is required.

372. Also relevant to the issue of how much the industry should contribute to funding universal service, the AAC notes that annual investment in plant and equipment for wireline and wireless services has actually decreased 5.1% from 2012 to 2013, while telecommunication services revenue increased 2%.³⁰⁸ This revenue increase was driven largely by a 20% spike in wireless data revenue between 2012 and 2013.³⁰⁹ Wireless data revenue has been a boon for Canadian wireless service providers, fueling an average rate of revenue growth of 26% between 2009 and 2013.³¹⁰ In fact, in 2013 Canadian wireless data and roaming revenue alone outpaced investments in plant and equipment in the wireless network by a factor of 3.78 to 1.³¹¹ When all wireless revenues are included, that factor jumps to 8.77 to 1.³¹² Moreover the 2014 CMR also pointed out the price of a basket of Internet services increased 3.7% from 2012 to 2013 while the Consumer Price Index increased only 0.9%.³¹³ As a result, an argument can be presented the resources are available to Canada’s communication

³⁰⁸ 2014 CMR at 24, 141.
³⁰⁹ 2014 CMR at 209.
³¹⁰ 2014 CMR at 209.
³¹¹ 2014 CMR at 141, 209.
³¹² 2014 CMR at 141, 209.
³¹³ 2014 CMR at 17.

service providers should they wish to invest the resources necessary to close the performance gap between urban and rural-dwelling Canadians.

373. The AAC believes that to support the goals of universal service and affordability, the revenues from retail Internet service and retail paging services should be included as contribution eligible revenue on which contribution can then be used to fund the proposed Affordability Funding Mechanism and the Broadband Deployment Funding Mechanism.
374. In terms of who should contribute to the NCF, the current threshold of \$10 million in telecommunications revenues is an appropriate starting point for determining which parties should contribute to the NCF.³¹⁴
375. Requiring telecommunications service providers to contribute to the fund would be consistent with Canadians' expectations.

³¹⁴ CRTC, "Changes to the Contribution Regime", Decision CRTC 2000-745 (30 November 2000), online: <<http://www.crtc.gc.ca/eng/archive/2000/dt2000-745.htm>> (which established the current contribution regime. See paras 88, 99); CRTC, "Industry Consensus Reports submitted by the Contribution Collection Mechanism (CCM) Implementation Working Groups", Order CRTC 2001-220 (15 March 2001), online: < <http://www.crtc.gc.ca/eng/archive/2001/o2001-220.htm>> (which defines Canadian Telecommunications Service Revenues (CTSR) and operating revenues etc. See attachment A); CRTC, "Canadian Telecommunications Contribution Consortium Inc. - Revised Procedures for the Operation of the National Contribution Fund, effective 1 May 2014", Telecom Decision CRTC 2014-180 (16 April 2014), online: < <http://www.crtc.gc.ca/eng/archive/2014/2014-180.htm>> (which describes the operating procedure for the NCF. Appendix 1 has the calculations for how it goes from CTSRs to contribution-eligible revenues); CRTC, "Final 2014 revenue-percent charge and related matters", Telecom Decision 2014-627 (5 December 2014), online: < <http://www.crtc.gc.ca/eng/archive/2014/2014-627.htm>> (NCF rate determination and such; 2015 interim rate is 0.56%).

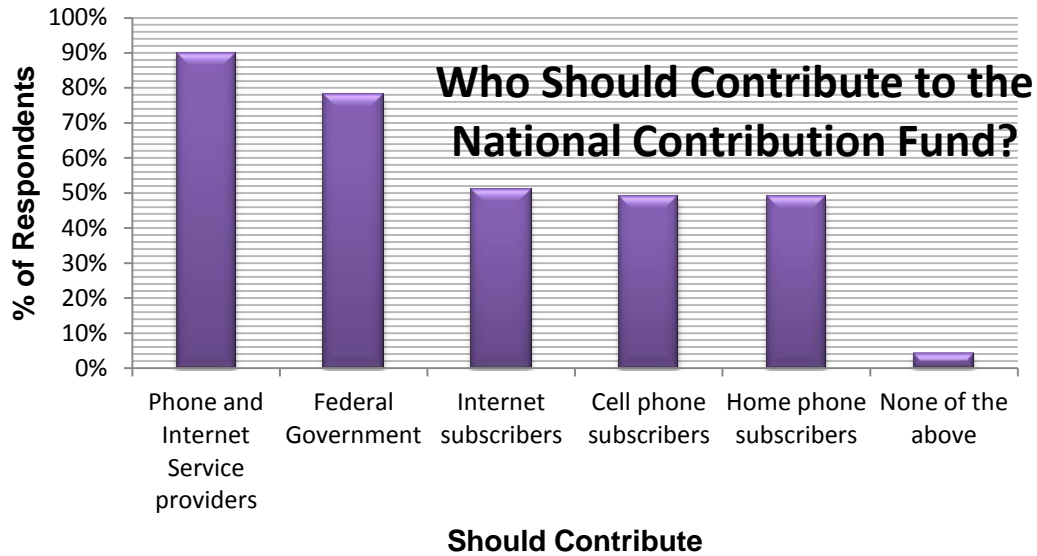


Figure 20. Survey respondents' views on who should contribute to the NCF³¹⁵

376. The Environics survey responses indicate that 90% of respondents believe that phone and Internet service providers should contribute to the National Contribution Fund. The majority also believed that the federal government should contribute to the fund. About 1 in 2 Canadians believed that telecommunications subscribers should contribute to the fund.

377. These results are consistent with the AAC's proposals below for both an Affordability Funding Mechanism and a Broadband Deployment Funding Mechanism in that telecommunications service providers are the payors (and ultimately end users bear some of that expense). Indeed, the majority of respondents to the Environics survey indicated a willingness to pay some surcharge on their monthly telecommunications bills in order to ensure access and affordability of telephone and broadband home Internet service at home. The mean and median monthly amounts survey respondents were willing to pay are set out below.

All respondents	Mean	Median
Canadians have access to telephone service no matter where they live in Canada	\$3.10	\$1.00
Low-income Canadians can afford basic home phone service	\$2.74	\$1.00
Canadians have access to broadband home Internet service no matter where they live in Canada	\$2.55	\$0.50

³¹⁵ Environics survey.

Low-income Canadians can afford broadband home Internet service	\$2.32	\$0.50
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Figure 21. How much are Canadians willing to pay to support other Canadians' telecom access?³¹⁶

378. The AAC does not believe that it is necessary for the Federal Government to pay into the NCF given that the Federal Government is already, to a certain extent, contributing funds to broadband deployment through various funding programs.

Q12. Should some or all services that are considered to be basic telecommunications services be subsidized? Explain, with supporting details, which services should be subsidized and under what circumstances.

Brief answer: *In principle, from an affordability perspective, low-income households should be able to apply funding support from the Affordability Funding Mechanism towards any basic telecommunications services from any telecommunications service provider. Again, all telecommunications service providers should be eligible for funding support so long as they pay into the NCF, or pay cost-plus wholesale rates for access to NCF-supported broadband services.*

379. The AAC has described the proposed Affordability Funding Mechanism in response to [Consultation Question 3\(c\)](#) above, and describes the proposed Broadband Deployment Funding Mechanism in response to [Consultation Question 13](#) below.

Q13. If there is a need to establish a new funding mechanism to support the provision of modern telecommunications services, describe how this mechanism would operate. Your response should address the mechanism described in Telecom Regulatory Policy 2013-711 for transport services and/or any other mechanism necessary to support modern telecommunications services across Canada. Your response should also address, but not necessarily be limited to, the following questions.

Brief answer: *There is a strong need for new funding mechanisms to support the provision of modern telecommunications services, namely, broadband Internet access. The Affordable Access Coalition's evidence has highlighted both a problem with telecommunications affordability and a problem with broadband availability at required speeds. Funding support for affordability can be achieved through the new Affordability Funding Mechanism described earlier. Funding support for broadband*

³¹⁶ Environics survey.

availability can be achieved through the new Broadband Deployment Funding Mechanism presented below.

The subsidy would be made available as the outcome of a competitive bidding process in which the subsidy is made available to the service provider which can deliver basic broadband service, as defined in the modified BSO (i.e., high quality service at a defined level of speed) at the lowest subsidy cost in areas identified by the Commission or a third-party administrator.

In principle all types of infrastructure would be eligible for funding, and all telecommunications service providers, and all regions of Canada, would be eligible for funding support from the Broadband Deployment Funding Mechanism.

The Broadband Deployment Funding Mechanism would be funded through an expansion of the contribution eligible revenue base to include retail Internet revenues and retail paging revenues, and by returning the contribution rate to historic levels. The annual cost of the Broadband Deployment Funding Mechanism would be capped at \$220 million per year.

380. Leaving aside the issue of affordability, which the AAC has addressed in the context of [Consultation Questions 1\(c\)](#) and [3\(c\)](#), there is, as the AAC has argued, a strong need for a funding mechanism to support the deployment of broadband Internet service to all Canadians because the evidence indicates that there are many Canadians who want broadband access but the required speeds are not available where they live.
381. The AAC believes that once the principle is established that broadband service is a “basic telecommunications service” to which all Canadians should have access to, the funding support to address broadband availability should be a relatively straightforward matter. Thus, the AAC and the Sepulveda Report are focussed on the supply side of the issue – that is, funding the necessary programs.
382. The Commission has authority under section 46.5 of the *Telecommunications Act* to remedy this.

Contribution to fund

46.5 (1) The Commission may require any telecommunications service provider to contribute, subject to any conditions that the Commission may set, to a fund to support continuing access by Canadians to basic telecommunications services.

Designation of administrator

(2) The Commission must designate a person to administer the fund.

Regulation of administration and rates

(3) The Commission may regulate

(a) the manner in which the administrator administers the fund; and

(b) the rates, whether by requiring pre-approval of the rates or otherwise, charged by the administrator for administering the fund.

383. Moreover, monitoring the effect of its actions under section 46.5 can be measured objectively.
384. In the subsections which follow in response to this Consultation Question's sub-questions, the AAC proposes, in reference to the Sepulveda Report, a new funding support mechanisms to support broadband availability: a Broadband Deployment Funding Mechanism.
385. The AAC's comments in respects of TRP 2013-711 are addressed in response to [Consultation Question 7\(a\)](#) and [Consultation Question 7\(b\)](#), above.

Q13(a). What types of infrastructure and/or services should be funded?

386. For the Broadband Deployment Funding Mechanism, the funding should be available to all types of infrastructure, in keeping with the technologically neutral approach required by the Policy Direction, so long as the technology used to deliver broadband delivers the speed and quality of service required by the BSO as defined by the Commission. In the AAC's view the speed should be updated annually, and the quality standard, in keeping with the telecommunications policy objectives as well as the standards expected of wireline telephone service, be of "high quality". Therefore to the extent that any given infrastructure or service cannot deliver the required speeds and high quality, it should not be eligible for funding.

Q13(b). In which regions of Canada should funding be provided?

387. The Affordable Access Coalition believes that affordable broadband access is an issue throughout Canada.
388. Although the AAC expects more evidence will come to light in the course of this proceeding, the evidence from successive CMRs, from the individual interventions submitted to date, and from the Environics survey, indicates that access to necessary speeds, at affordable rates, is a problem that transcends specific regions of Canada.

389. The experience in the North indicates that the costs of provisioning telecommunications services may be far greater for northern communities, leading to what the Northern Communications Information Systems Working Group has called a “communications infrastructure deficit” which may cost anywhere from \$623 million – \$2.178 billion to fund (using a target speed of 9 Mbps download and 1.5 Mbps upload.)³¹⁷
390. A recent press release from the Ontario Federation of Agriculture (“OFA”), for example, illustrates this point. According to the OFA, citing their recent survey of more than 1,000 members, there is a pressing need for accessible and affordable broadband access in rural Ontario.³¹⁸
391. The engagement campaign by OpenMedia.ca also appears to have struck a nerve with many Canadians, with at least 25,000 taking the time to express their support for the view that affordable access to telecommunications services (especially Internet service) is an ongoing problem.³¹⁹
392. The AAC also expects a range of other stakeholder groups will be filing similar evidence.

³¹⁷ See e.g., NCIS-WG Northern Connectivity Report at 20.

³¹⁸ Ontario Federation of Agriculture, Press release: “OFA members weigh in on rural internet issues (2015)”, online: <<http://www.ofa.on.ca/media/news/ofa-members-weigh-in-on-rural-internet-issues>>. According to the OFA:

- two out of three Ontario farmers surveyed have unreliable internet connection
- Survey results will also support OFA’s work on the need for affordable broadband internet connection across rural Ontario.
- 94% of respondents believed access to the internet is important to their farm operations
- More than 50% of respondents believed better internet access would boost their bottom line by opening opportunities for domestic and international markets, and keeping pace with new innovations, technology and overall competitiveness.
- more than half of the survey respondents believe there aren’t enough internet service providers available in their area.

³¹⁹ OpenMedia.ca, tweet (6 July 2015 at 1:41pm), online: Twitter <https://twitter.com/OpenMedia_ca/status/618157877803388928>.



393. Thus, the Affordable Access Coalition believes that the Commission should not, at least at this stage, prescribe any specific regions that ought to be prioritized for funding support. To do so would be inconsistent with telecommunications policy objective 7(b), which is “to render reliable and affordable telecommunications services of high quality accessible to Canadians in both urban and rural areas in all regions of Canada.” [Emphasis added.]
394. Upon completion of the record of this proceeding, and a decision on what the BSO should include, then the Commission will be able to identify which Canadian households are unable to receive the BSO, identify the potential costs associated with provisioning the BSO, and then allocating funds from the proposed Broadband Deployment Funding Mechanism to projects put out to tender (as described in response to [Consultation Question 13\(c\) through \(f\)](#) below.

Q13(c). Which service providers should be eligible to receive funding, and how should eligibility for funding be determined (e.g. only one service provider per area, all service providers that meet certain conditions, wireless service providers, or service providers that win a competitive bidding process)?

Q13(d). How should the amount of funding be determined (e.g. based on costs to provide service or a competitive bidding process)?

Q13(e). What is the appropriate mechanism for distributing funding? For example, should this funding be (i) paid to the service provider based on revenues and costs, or (ii) awarded based on a competitive bidding process?

Q13(f). Should any infrastructure that is funded be available on a wholesale basis and, if so, under what terms and conditions?

395. The AAC addresses Consultation Questions 13(c) through (f) collectively.
396. The AAC supports the use of a “minimum subsidy” competitive bidding process, as proposed in the Sepulveda Report, modeled on minimum-subsidy auction-based universal service-related programs in other jurisdictions, including as adopted and implemented by the FCC in the USA.
397. As detailed in the Sepulveda Report, the amount of funding for projects funded by the Broadband Deployment Funding Mechanism should be determined through a “minimum subsidy” competitive bidding mechanism, *i.e.*, a reverse auction.

398. The administration of the Broadband Deployment Funding Mechanism would be undertaken by the Commission or a third party administrator appointed by the Commission (“**3PA**”).
399. The administration of the Broadband Deployment Funding Mechanism would be project-oriented, meaning that after a market assessment of broadband needs in areas currently not receiving the “basic” level of broadband, as defined by the Commission in the BSO, the 3PA would then identify eligible projects or receive suggestions for projects from external parties.
400. The subsidy would be made available as the outcome of a competitive bidding process in which the subsidy is made available to the service provider which can deliver a defined level of service functionality and quality based on the lowest subsidy requirement. In that regard the AAC believes that winners should be held to the “high quality” of service demanded by the modified BSO as proposed by the AAC.
401. In situations where provisioning the BSO to certain households is uneconomic, then to the extent that there is any shortfall between the costs of provisioning the BSO to all households, and the capped annual funding amount necessary, then the Commission will be in the position where it will have to establish a mechanism for prioritizing which communities receive funding support first. Possible ways to prioritize access to the scarce funding could include: (i) population served; (ii) lowest cost of service; and (iii) special community needs.
402. The Sepulveda Report notes a number of advantages to using a “minimum subsidy” competitive bidding process, including the possibility that the mechanism elicit competition for the provision of the universal service objective, and could elicit innovative proposals as service providers (all of whom are eligible, in principle) compete for the subsidy. Using a “minimum subsidy” competitive bidding process will also incent bidders to reveal their true cost, rather than having the administrator have to pre-determine the compensation, which can result in efficiency gains.
403. Subject to the AAC’s concerns expressed about Northwestel (see [Consultation Question 7](#) above), the AAC believes that, in principle, all service providers should be eligible to receive funding from the Broadband Deployment Funding Mechanism.³²⁰ Allowing all telecommunications service providers to receive funding support from the Broadband Deployment Funding Mechanism would also be in keeping with the competitively neutral approach required by the Policy Direction.

³²⁰ See Sepulveda Report, section 3.4.

404. The AAC also believes that wholesale access should be a condition of funding, so long as that wholesale access allows the successful project proponent to earn a reasonable rate of return on their investment. Allowing wholesale access should be allowed to facilitate competition for the end user, and also as another line of revenue for the successful project proponent.

Q13(g). Should the Commission set a maximum retail rate for any telecommunications service that is subsidized?

405. Under the Commission's current subsidy mechanism for basic telephone service, access to the subsidy is subject to a cap on the retail rate for the service.
406. The purpose of the subsidy would be to make broadband service affordable, not to impose service choices on consumers. In these circumstances, the AAC does not expect that it would be practical, or indeed consistent with the objective of providing consumers who are eligible for the subsidy flexibility in defining services which best meet their needs, to set a maximum on the retail rates applicable to the services they select.
407. With respect to the Broadband Deployment Funding Mechanism, the subsidy would be made available as the outcome of a the "minimum subsidy" competitive bidding process, in which the subsidy is made available to the service provider which deploys a defined level of service functionality and quality based on the lowest subsidy requirement. This mechanism is not intended to become a substitute for rate regulation nor is it intended to undermine the development of competition.
408. The AAC expects that for an initial term the bidding process winner would undertake to provide a specified service functionality at a rate which would not exceed the predetermined maximum for a specified interval. The AAC expects, however, once the winning bidder offers service, it will retain the ability to price other broadband service offerings based on market forces.

Q13(h). Should this mechanism replace the existing residential local wireline service subsidy? If so, explain how the existing subsidy should be eliminated, including details on any transition period. In addition, explain whether the small ILECs and/or Northwestel should be subject to any special considerations or modifications for this transition period.

409. The AAC is not currently advocating for any changes to the current residential local wireline service subsidy.

410. The Environics survey results indicate that most Canadians support ongoing, affordable access to residential telephone service, and the AAC believes that residential telephone service continues to play a vital communications role for many households.
411. Thus, the two funding mechanisms the AAC has proposed – the Affordability Funding Mechanism and the Broadband Deployment Funding Mechanism – are supplemental to the current subsidy regime.

3. THE NEED FOR ONGOING MONITORING

412. The AAC recommends that the Commission should put in place robust monitoring processes and additional reporting requirements on ISPs in relation to the basic service obligation, so that the Commission can accurately monitor service providers' progress towards meeting the basic service obligation.
413. This information should also be made publicly available so that interested parties can also hold service providers accountable. This information could be published in a new section of the annual CMR, for example.
414. Should service providers fail to meet their obligations in any given year, the Commission should take *immediate* action, rather than waiting for a single review of all service providers in a proceeding such as TNC 2015-134. While period, broad reviews of the entire Canadian communications system at regular intervals remains important, the record of this proceeding has already shown the critical importance of Internet access to Canadians. Canadians should not have to wait several years for their voices to be heard and for action to be taken.
415. The AAC therefore proposes monitoring three key aspects of the basic service obligation: availability, affordability and quality standards.
416. In preparing this submission, the AAC has found it challenging to find detailed, public information on the availability of broadband Internet in communities across Canada. The annual CMRs contain only a few tables and figures, which do not provide enough detail to understand the full scope of availability issues.³²¹ Industry Canada has likewise not provided enough detailed publicly available information.³²²
417. The Commission should therefore make available on a regular basis, more data on broadband availability including updated maps or lists of communities which do not meet the basic service objective, as well as other detailed availability and penetration statistics. The broadband speed categories should also be sufficiently narrow to be able to identify subscription trends, as the AAC discussed in response to [Consultation Question 3\(b\)](#), above, is necessary to determine what "basic" telecommunications service is today.

³²¹ CRTC, "Communications Monitoring Report 2014" (October 2014), online: <<http://www.crtc.gc.ca/eng/publications/reports/PolicyMonitoring/2014/cmr.pdf>> at 171, 193-197.

³²² Industry Canada's broadband map developed as part of the Connecting Canadians program is not currently available, see online: <<http://www.ic.gc.ca/eic/site/028.nsf/eng/50010.html>>. Industry Canada states that an updated broadband map will be available later in summer 2015, however, individuals in this proceeding have stated the information is not always accurate, see individual intervention 18.

418. The Commission should also make available more detailed data to be used to assess affordability issues. While the annual *Wall Report* (commissioned by the Commission) provides a useful tool for measuring pricing trends, it only compares the prices of six major urban centres across Canada.³²³ Rural and remote communities often have much higher prices for lower quality service, which can exacerbate affordability issues.³²⁴ The *Communications Monitoring Report* provides other pricing data for rural communities,³²⁵ however there is limited context for these numbers.
419. The Commission should also monitor and make available on a regular basis, more detailed pricing trends, especially in relation to service packages that fulfill the basic service objective, and an inquiry into the consumption habits of low-income Canadians.³²⁶ Should the Commission decide to implement the AAC's Affordability Funding Mechanism proposal, the Commission should gather a variety of statistics on consumer participation rates and the like.
420. Finally, the Commission must monitor quality standards of Internet access that claim to meet the basic service objective.
421. Quality of service measurements are essential to ensure that Canadians are actually receiving the services that ISPs claim they are selling. The Commission recognized the importance of quality of service in TRP 2011-291, when the Commission stated the target 5/1 Mbps speeds were to be the "actual speeds delivered, not merely those advertised."³²⁷ As discussed in response to [Consultation Question 1\(b\)](#), actual delivered speeds is not the only reliability characteristic that Canadians have come to expect from a world-class communications system.
422. The AAC notes the Commission recently launched the Measuring Broadband Canada program in collaboration with broadband measurement firm SamKnows.³²⁸

³²³ Wall Communications Inc., "Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions 2015 Edition" (30 March 2015), online: <<http://www.crtc.gc.ca/eng/publications/reports/wall2015/rp1506wall.pdf>> at 4-5. These urban centres are Halifax, Montreal, Toronto, Winnipeg, Regina and Vancouver.

³²⁴ See e.g., individual intervention 46.

³²⁵ CRTC, "Communications Monitoring Report 2014" (October 2014), online: <<http://www.crtc.gc.ca/eng/publications/reports/PolicyMonitoring/2014/cmr.pdf>> at 182-183.

³²⁶ The definition of "low-income" can be linked to the AAC's Affordability Subsidy proposal, either being those Canadians on provincial or federal social assistance programs, or a low-income measure as defined by Statistics Canada, such as the after tax low income measure. The lowest income quartile or quintile could also serve as a workable definition.

³²⁷ *Obligation to serve and other matters* (Telecom Regulatory Policy CRTC 2011-291) (3 May 2011) at para. 77.

³²⁸ See online: <<https://www.measuringbroadbandcanada.com>>.

The AAC welcomes the data that this program will bring. Numerous individuals to this proceeding have already stated their frustration with quality of service issues such as high latency, unexpected outages, congestion, or actual speeds that rarely, if ever, reach advertised speeds.³²⁹

423. Should the data from the Measuring Broadband Canada program prove reliable, the Commission should run this program regularly, especially where there is a concern a service provider is not meeting quality of service standards, and make all the data publicly available as is the case with the equivalent program run by the FCC.³³⁰

4. CONCLUSION

424. In this intervention, the Affordable Access Coalition has presented its preliminary research on the existence of ongoing broadband availability issues and ongoing telecommunications affordability issues.
425. Regarding broadband availability, there should be no question that broadband should be recognized as an essential service which all Canadians should have access to, as well as an essential driver of Canadian economic productivity. The AAC has presented evidence that not all Canadians are able to access a “basic” level of broadband, and that the “basic” speeds required by Canadians are likely to continue to move well beyond the 5 Mbps target set in 2011.
426. To help support the provisioning of basic broadband service to all Canadians, the AAC has proposed a Broadband Deployment Funding Mechanism which the Commission should adopt. The Broadband Deployment Funding Mechanism would help service providers cover the uneconomic portion of their costs for deploying broadband to unserved and underserved Canadians.
427. Regarding telecommunications affordability, the AAC has presented evidence that affordability is a major barrier for low-income Canadians. Lower-income Canadians have less access to essential telecommunications services, and, other than personal choice, affordability is the next major reason why Canadians do not subscribe to home Internet service and wireless service.

³²⁹ See e.g. individual interventions 1, 3, 5, 8, 9, 12, 13, 17, 18, 20, 21, 25, 27, 28, 29, 30, 31, 33, 36, 39, 42, 47, 49, 51, 54, 55, 62, 69, 72, 74, 75, 76, 77, 79, 80, 82, 83, 86, 90, 101, 103, 104, 105, 111, 112, 113, 114, 121, 123, 125, 126, 127, 131, 133, 138, 139, 140, 143, 146, 147, 154, 157, 159, 160, 162, 163, 165, 166, 167, 168, 169, 171, 174, 175, 177, 182, 183, 184, 185, 186, 190, 193, 195, 196, 197, 199, 200, 201, 203, 205, 206.

³³⁰ FCC, “Open Methodology” (2015), online: <<https://www.fcc.gov/page/measuring-broadband-america-open-methodology>>.

428. To help reduce this barrier the AAC has proposed an Affordability Funding Mechanism which the Commission should adopt. The Affordability Funding Mechanism would help low-income Canadians access essential telecommunications services of their choosing, with a monthly subsidy amount. Both funding mechanisms would be capped annually, predictable, and stable, and they would be complementary to the operation of market forces and targeted government funding.
429. The Environics survey results demonstrate that Canadians are receptive to these ideas.
430. As the AAC discussed in the [Introduction](#), the CRTC's *raison d'être* is to serve the best interests of *all* Canadians, and the Commission is required to exercise and perform its duties under the *Telecommunications Act* with a view to implementing the telecommunications policy objectives.
431. It is the AAC's submission that the Commission now has before it not just an important opportunity to ensure all Canadians have access to broadband Internet service and affordable telecommunications service, but a *duty* to do so under the mandate entrusted to in the *Telecommunications Act*.
432. To ensure that the Commission keeps up with the rapid pace of change, and to ensure Canadians are well-served by their telecommunications system, the AAC recommends that the Commission implement mechanisms to monitor the decisions which flow from TNC 2015-134. These measures include performing yearly progress checks on availability and affordability of basic telecommunications service, and taking immediate action to correct course.
433. The AAC looks forward to continuing to participate in this proceeding.

END OF DOCUMENT

Appendices:

- Appendix "A": Summary of results from Environics survey;
- Appendix "B": Sepulveda Report;
- Appendix "C": PIAC Affordability Report;
- Appendix "D": Summary of government funding for broadband access; and
- Appendix "E": Detailed results from the Environics survey.