

BROADCASTING AND TELECOMMUNICATIONS LEGISLATIVE REVIEW

APPENDIX 3

TO

**SUBMISSION OF CANADIAN NETWORK OPERATORS CONSORTIUM INC. TO
THE BROADCASTING AND TELECOMMUNICATIONS LEGISLATIVE REVIEW
PANEL**

11 JANUARY 2019

IN THE MATTER OF

BELL CANADA PETITION TO THE GOVERNOR IN COUNCIL TO VARY

**TELECOM REGULATORY POLICY CRTC 2015-326, *REVIEW OF
WHOLESALE WIRELINE SERVICES AND ASSOCIATED POLICIES***

SUBMISSION OF CANADIAN NETWORK OPERATORS CONSORTIUM INC.

21 DECEMBER 2015

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EXECUTIVE SUMMARY

ES1. By way of a Petition, Bell Canada (“Bell”) requests that the Governor in Council reverse the ruling of the Canadian Radio-television and Telecommunications Commission (“CRTC” or “Commission”) in Telecom Regulatory Policy CRTC 2015-326¹ (“TRP 2015-326” or “Decision”) to mandate wholesale access to Fibre to the Home (“FTTH”) facilities – a decision that is intended to ensure viable competition in Canada’s next-generation broadband markets. In doing so, Bell seeks to secure its place in a next-generation broadband duopoly, and in certain areas of the country, monopoly.

ES2. The Petition should be rejected in its entirety. Denying the Petition will give effect to the CRTC’s objective of sustainable and vibrant competition that will drive the economy, incent investment in telecommunications infrastructure, push incumbents and competitors to innovate, discipline prices for broadband services and set Canada apart as a world leader in next-generation broadband market performance.

BELL’S CONFLICTING STATEMENTS AND MISCHARACTERIZATIONS OF FACT

ES3. Representations in the Petition are in direct conflict with public statements made by Bell and its parent corporation, BCE Inc. (“BCE”). Throughout the Petition, Bell also mischaracterizes key facts that actually undermine its case. The credibility issues that arise from these conflicting statements and factual problems speak to the merits of Bell’s arguments and consist of further evidence that the Petition is motivated exclusively by Bell’s self-interested drive to maximize profits at the expense of consumer interests, the national economy and the social fabric of Canada.

ES4. Despite BCE’s assurances to the investment community that the Decision will have no material financial, operational or competitive consequences, the Petition is now associating the CRTC’s rulings with massive investment losses in the billions of dollars.

¹ *Review of wholesale wireline services and associated policies*, Telecom Regulatory Policy CRTC 2015-326, 22 July 2015.

ES5. BCE's assessment of the impact of the Decision in its 2015 Second Quarter Shareholder Report is particularly incompatible with the core premise of the Petition:

“Although it is not possible at this time to assess the financial impact of Telecom Decision 2015-326, it could have a negative effect on our business and financial performance as it is progressively implemented over the next few years. However, the nature of such effect, if any, will only be ascertainable once the CRTC has completed its costing models and set the wholesale access rates to be charged by the incumbent telephone companies and cable carriers.” (Emphasis added)

ES6. BCE's 2015 Second Quarter Shareholder Report then goes on to describe the impact of regulation on the wireline sector as follows:

“No material financial, operational or competitive consequences of changes in regulations affecting our wireline business.”

ES7. It is also noteworthy that Bell stands alone in its opposition to the Decision. No other incumbent telephone company or cable carrier has elected to pursue any of the three appeal options that are available. To the contrary, other incumbents and cable carriers have made public statements conveying a positive outlook on the impact of the current regulatory framework.

ES8. Contrary to Bell's characterization of mandated access regulation as an ancient form of regulation that is somehow wholly incompatible with FTTH networks, the decision to mandate these networks is a continuation of a longstanding and principled regulatory framework.

ES9. Bell's claim that the Decision contradicts previous CRTC decisions is incorrect. TRP 2015-326 is entirely consistent with regulatory precedents, the Canadian telecommunications policy objectives and the *Telecommunications Act*.

ES10. Bell's claim that there are no incumbency advantages to investing in FTTH access facilities is absurd. The CRTC has identified no less than six different kinds of incumbency advantages that incumbents like Bell enjoy and competitors, like the member companies of CNOC, do not. These advantages stemming from decades of incumbency in the provision of wireline services include:

1. established brands and customer bases;

2. existing network infrastructure including support structures;
3. national fibre backbone networks;
4. pre-existing municipal access agreements;
5. various economies of scale; and
6. greater access to capital markets

ES11. The Petition also renders an inaccurate portrayal of the business case for FTTH deployment as being fragile and challenging. In reality, this business case is very simple and easy. Bell must invest heavily in FTTH networks in order to respond to consumer demand and the next-generation services of the cable carriers given that cable carrier network footprints overlap 90 percent of Bell's. Mandated access to FTTH will not affect Bell's FTTH investments adversely.

THE PETITION IS A THREAT TO THE TELECOMMUNICATIONS POLICY OBJECTIVES AND THE POLICY DIRECTION

ES12. The Petition focuses narrowly on one policy objective at the expense of all of the others: investment in telecommunications infrastructure. This approach threatens a balanced policy which harmoniously advances competition, innovation and investment in telecommunications infrastructure.

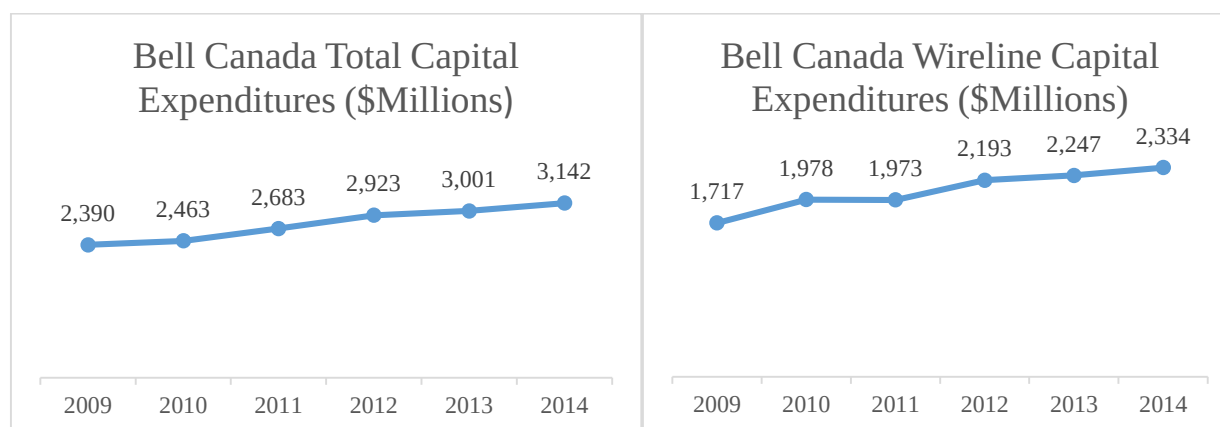
ES13. The CRTC decision to mandate FTTH access is the result of an intense and lengthy proceeding with submissions and expert reports tendered by a broad range of stakeholders. The CRTC explicitly acknowledges this information in its determinations. The decision to mandate FTTH access is therefore firmly evidence-based and warrants a high-level of deference from the Governor in Council.

ES14. Bell argues that the CRTC "favours resale over investment" but really, the Decision ensures that both incumbent carriers and competitors will invest heavily in telecommunications infrastructure.

ES15. Incumbent carriers will invest in FTTH networks in order to respond to consumer demand and to keep up with the next-generation broadband alternatives of the cable carriers. In addition,

mandated access to FTTH networks will generate wholesale revenues which serve to bolster available capital which can be invested in more FTTH deployments.

ES16. Bell's own history of capital expenditures in response to new mandated wholesale access regulation is proof that there is no negative correlation between such regulation and investment levels. As can be seen below, Bell's capital expenditures continued to grow overall after the CRTC's decision to mandate access to Fibre-to-the-node ("FTTN") in 2010.



ES17. Competitors will invest in transport facilities because the Decision has incented increased competition in the markets for transport services which must be used in conjunction with tariffed wholesale FTTH services.

ES18. The CRTC has applied well-established economic principles to conclusively determine that not mandating FTTH access will result in a **substantial lessening or prevention of competition** in retail Internet services markets. Under that scenario, consumers would suffer from higher prices and less choice. Only Bell and other incumbents will profit from this outcome.

ES19. Competition stemming from wholesale access services is an essential complement to facilities-based competition which translates into valuable social and economic benefits. The CRTC has affirmed the importance of this form of competition time and time again. More importantly, consumers value competitors and their services.

ES20. Not mandating FTTH access prevents the many valuable innovations that competitors would introduce directly into markets for next-generation broadband services. These innovations are key to pushing the adoption of next-generation technologies.

BELL’S CLAIM THAT THE DECISION WILL PRIMARILY DELAY OR PREVENT FTTH DEPLOYMENTS IN SMALL RURAL COMMUNITIES AMOUNTS TO UNJUSTIFIED FEAR-MONGERING

ES21. Beyond broad sweeping arguments that “the Decision favours resale over investment”, the Petition claims more specifically that the decision to mandate FTTH access will have a more pronounced impact in small towns and rural communities in terms of delayed or prevented FTTH deployments.

ES22. CNOC does not agree that mandated FTTH access will delay or prevent Bell FTTH deployments in small areas. Bell has already stated publically that there is no business case to deploy broadband to certain areas of the country. Bell will not bring FTTH to these places regardless of whether access to FTTH is mandated or not. Bell has also affirmed that FTTH deployment to small areas is not an investment priority.

ES23. Interestingly, in the areas that Bell claims will be negatively affected by mandated FTTH access, only 10 percent of homes, at most, could be subject to such delays since 90 percent of Bell’s operating territory overlaps those of cable carriers with whom Bell must continue to compete.

ES24. Despite all of the incentives that incumbent carriers have to aggressively invest in FTTH facilities, Bell proposes to scrap the competition and all of the resulting benefits that are enabled by mandated FTTH access in order to accelerate the deployment of broadband to no more than 10 percent of homes in a very small number of towns and communities. Of course, no additional investment in would actually occur in many of these small areas in any event, but even if it did – this trade-off would be unconscionable.

ES25. The CRTC has an ongoing proceeding (“TNC 2015-134”) that is intended to ensure that Canadians in underserved areas have access to basic telecommunications services that are

necessary to participate in the digital economy. That is the appropriate forum for Bell's concerns about small rural communities – not a Petition to the Governor in Council seeking to overturn the Decision.

ES26. In addition to the framework and policies that will emanate from the TNC 2015-134 proceeding which may result in the payment of a subsidy by both Bell and its competitors, including CNOC members, government funding would be the most efficient and appropriate mechanism to fill gaps in broadband infrastructure in Canada's rural and remote areas.

ES27. Bell claims that there was a direct relationship between the CRTC's decision to mandate access to FTTN facilities and Bell's deployment of FTTN to 400,000 fewer homes than it originally anticipated. However, Bell has stated on the record of the proceeding leading to the Decision that this deployment shortfall is not necessarily fully attributable to FTTN regulation. In fact, Bell Aliant commenced its FTTH build in Fredericton and Saint John in June of 2009, before the CRTC mandated FTTN access. Bell Aliant focused on FTTH deployment after 2009 instead of FTTN as the cost of moving straight to FTTH was only three percent more than going FTTN and FTTH was perceived to be a better long-term investment than FTTN. This is yet another inconsistency in between Bell's evidence referenced in the Petition and statements made elsewhere, including the proceeding leading to the Decision.

BELL'S ECONOMIC EVIDENCE IS WITHOUT BASIS IN FACT OR THEORY

ES28. The expert reports appended to the Petition in some cases contain evidence which does not actually challenge the Decision, and in other cases, is fraught with analytical shortcomings and are contradicted by more credible evidence and expert opinion.

Wholesale access enhances job creation and other long-term economic benefits of next-generation networks

ES29. With support of three of its expert reports², Bell attempts to leverage the present period of economic uncertainty in Canada for its own gain by fear-mongering about job losses. The Governor in Council should not be misled by these sensationalized claims.

ES30. The job loss projections and related economic impacts cited in the report of Dr. Singer entitled “Policy Brief: The Economic Impact of the CRTC’s Decision to Unbundle Fibre-to-the-Premises Networks” (“Singer Policy Brief”) linking FTTP deployment and employment³ and the Singer report describing the economic impact of Bell’s FTTH deployment in Toronto⁴ are problematic and refuted by the AG report on the following grounds:

1. In the wake of the Decision, Bell will continue to invest aggressively and job creation will follow.
2. Importantly, the long-term economic benefits and job creation associated with FTTH comes from the ongoing use of the network – not its one-time creation. Construction and engineering jobs created by the deployment of FTTH are transient.
3. Competition enabled by mandated FTTH access will maximize the economic benefits stemming from the use of the network. The innovations and affordable services of competitors will enable Canadians to fully participate in the digital economy. These opportunities will be denied if the Petition is successful.

ES31. Bell’s criticism of competitors who do not reduce retail rates in response to wholesale rate reductions is unfair and inappropriate. Competitors do reduce retail rates and / or re-invest cost

² Hal Singer, “Economic Impact of FTTH Deployment in Toronto, Attachment 1 to the Petition (“Bell Attachment 1”), Hal Singer, “Policy Brief: The Economic Impact of the CRTC’s Decision to Unbundle Fibre-to-the-Premises Networks”, Attachment 2 to the Petition (the “Singer Policy Brief”) and Hal Singer, Kevin Caves and Anna Koyfman, “The Empirical Link Between Fibre-to-the-Premises Deployment and Employment: A Case Study in Canada”, Attachment 3 to the Petition (“Bell Attachment 3”).

³ Bell Attachment 1.

⁴ Bell Attachment 3.

savings from wholesale rate reductions in order to generate new innovations. This is what competition is all about.

Issues with the Singer Policy Brief

ES32. The Singer Policy Brief claims that Bell decided to transition to FTTH in order to escape mandated access of its FTTN facilities. This link fails to account for at least five other reasons why Bell would deploy FTTH, including:

1. Comparable deployment costs despite FTTH being a superior technology;
2. Lower operating costs associated with FTTH infrastructure;
3. The significantly improved quality and bandwidth capabilities of FTTH and customer demand for these characteristics;
4. The mature state and related costs of Bell's FTTN deployment; and
5. The competitive threat from cable companies using DOCSIS 3.x technology.

ES33. The Singer Policy Brief also applies a similar analysis in the United States context and concludes that Federal Communications Commission ("FCC") unbundling rules negatively impacted investment in DSL. Yet again, this analysis fails to account for many other factors explaining the differences in investment intensity including, notably, the fact that United States ("US") telephone companies were not subject to high levels of competitive pressure from cable companies in the late 1990s.

International Comparative Evidence

ES34. The Petition relies heavily on international comparative evidence that refers to the US and the European Union ("EU").

ES35. Caution should be exercised when reviewing the implications of regulatory frameworks or lack thereof in foreign jurisdictions. Each individual national regulator makes evidence-based decisions tailored to the unique context of its own jurisdiction.

US Comparative Evidence

ES36. Bell argues that there is a correlation between the FCC's decision not to mandate FTTH access and substantial investment in facilities. But this link is not substantiated and does not account for confounding variables.

ES37. Despite not having to share FTTH networks on a regulated basis, incumbent carriers in the US have not achieved high-levels of FTTH deployment or end-user adoption of FTTH services.

ES38. Bell suggests that the Governor in Council should follow the US example when the US happens to have the highest prices for broadband services – by far – of all G7 countries plus Australia.

ES39. Google's successful FTTH deployment does not justify the absence of mandated access. Google is one of the world's largest companies with a market capitalization of over \$500 billion USD as of mid-December 2015. Despite this, the scale of Google's fibre undertaking is very small and presently there are no additional plans for expansion beyond upcoming builds. Canadian competitors cannot possibly be expected to replicate Google's fibre project on any scale.

EU Comparative Evidence

ES40. The Governor in Council should be especially cautious of international comparative evidence with the EU given that the EU consist of 28 different member states each with distinct economic, social, cultural, political, legal and regulatory environments.

ES41. Unlike the situation in Canada, cable networks are very sparsely deployed in the EU. Thus, incumbent carriers in EU nations are not subjected to the same level of competitive pressure that their Canadian counter-parts face from well-established cable carriers. This may account for the relatively slower pace of investment in EU next-generation networks.

ES42. The report by Andrea Renda entitled “Regulating Broadband: Lessons from the European Union, and Implications for Canada”⁵ (the “Renda Report”) submitted by Bell is irreparably flawed. The Report misstates the regulations that are actually in force in the EU and presents a highly misleading picture of the regulatory situation in that jurisdiction.

ES43. Bell claims that European Commission (“EC”) Commissioners are now of the opinion that mandated access to networks will result in disincentives to invest. In reality, Bell’s source for this claim is the blog of a single EC Commissioner. Moreover, the quotation is taken out of context and does not support Bell’s interpretation. The EC has yet to come forward with legislative proposals for the review of the EU regulatory framework.

ES44. Despite Bell’s criticisms about the EU, many EU countries are in fact broadband leaders. Leading data clearly demonstrates that regulation in the EU is not stifling broadband adoption and performance. EU countries are also leaders when it comes to pricing of higher speed services.

CANADA’S BROADBAND PERFORMANCE

ES45. The Petition relies on a report prepared by Jeffrey A. Eisenach entitled “Broadband Market Performance in Canada: Implications for Policy”⁶ which claims that based on Canada’s broadband performance, there is a case for scaling back “open access regulation”⁷. The data simply does not uphold that conclusion. To the contrary, current data depicting the state of broadband in Canada today strongly supports the CRTC’s decision to mandate access to FTTH facilities.

ES46. **High investment, High revenues per access path:** Broadband investment in Canada is extremely high and generates some of the highest revenues per access path among all OECD countries. This situation has developed around longstanding mandated access regulation of fixed broadband access paths.

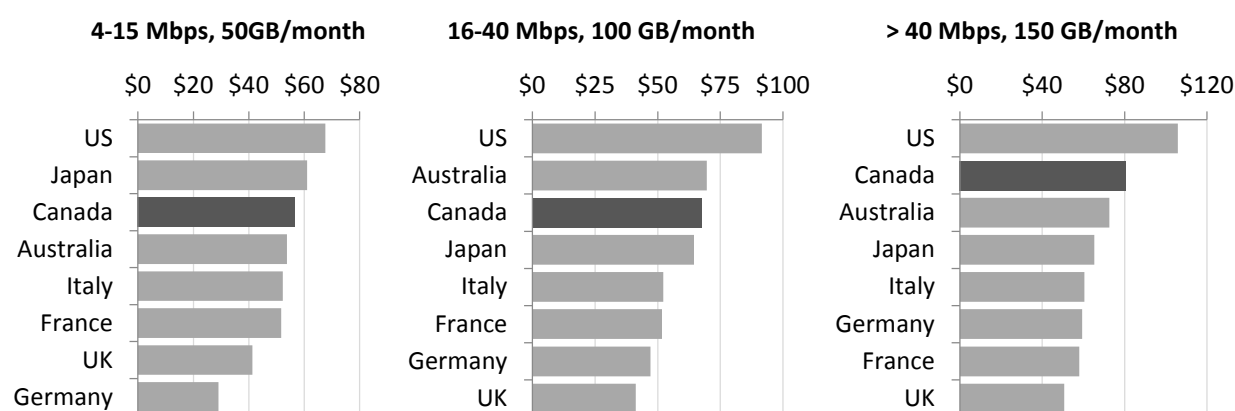
⁵ Andrea Renda, “Regulating Broadband: Lessons from the European Union, and Implications for Canada”, Attachment 5 to the Petition, (the “Renda Report”).

⁶ Jeffrey A. Eisenach, “Broadband Market Performance in Canada: Implications for Policy”, Attachment 4 to the Petition, (“Bell Attachment 4”).

⁷ Bell Attachment 4, at para 44.

ES47. **Low FTTH penetration, low end-user adoption rates:** Although the annual growth rate of fibre subscriptions in Canada was 52.2% in 2014⁸, as of December 2014, fibre connections only accounted for 4.7% of fixed broadband connections in the country.

ES48. **Very high prices:** The prices for broadband services in Canada are higher than most G7 countries plus Australia. Canadian prices are especially and disproportionately high for higher speed services like the next-generation speeds available over FTTH facilities. This is made very clear in the 2015 Wall Report’s purchasing power parity (“PPP”)–adjusted international broadband price comparison:



ES49. Based on the current state of broadband prices, the need for mandated FTTH access could not be more obvious. This form of regulation will inject competition where it is needed the most - in the emerging markets for next-generation broadband services. It is only through this wholesale access-based competition that Canada can hope to improve its international ranking when it comes to broadband pricing.

MANDATED FTTH ACCESS IS NOT EXPROPRIATION

ES50. Contrary to Bell’s claims, mandated FTTH access is not “expropriation” or “handing over” the network. Wholesale rates are based on the long established Phase II costing methodology plus a markup. These rates fully account for every cost input and reflect investment risk to the extent that such a risk exists.

⁸ AG Report, at para 32.

ES51. Bell has attempted to use the “expropriation” argument with respect to CRTC regulation of Bell networks since the early 1990s in the context of interexchange competition. Canada’s Federal Court of Appeal has outright rejected this argument.

ES52. The Petition’s suggestion that no wholesale rate could compensate FTTH investment is incorrect, misleading and, in any event, premature. Phase II costing ensures that wholesale rates are compensatory and provide a reasonable rate of return on investment.

ES53. Despite the Petition’s claim that “It is impossible for the CRTC to set a wholesale rate that adequately compensates those who invest in fibre-to-the-home networks for their investments”, Bell has represented to its own shareholders that the Decision may not have any negative business and financial impacts once final wholesale rates are set.

ES54. In further conflict with the Petition, Bell has stated on the public record of the proceeding leading to the Decision that if mandated FTTH access is ordered, rates should be based on Phase II costing. The Commission is about to embark on the process of setting access rates for FTTH based on this methodology.

CONCLUSION

ES55. For all the reasons summarized above, the Governor in Council should reject the Petition. In doing so, the government will ensure a future for Canadian broadband based on sustainable and vibrant competition that will drive the economy, incent investment in telecommunications infrastructure, push incumbents and competitors to innovate, discipline prices and set Canada apart as a world leader in next-generation broadband market performance.

1.0 INTRODUCTION

1.1 Background

1. By way of this submission, Canadian Network Operators Consortium Inc. (“CNOC”) is responding to the Petition by Bell Canada (“Bell”) requesting that the Governor in Council vary Telecom Regulatory Policy CRTC 2015-326⁹ (“TRP 2015-326” or the “Decision”) to exclude Fibre-to-the-home (“FTTH”)¹⁰ and DOCSIS 3.1 cable networks from the wholesale regulatory framework (the “Petition”).

2. CNOC opposes the Petition and requests that the Governor in Council reject it in its entirety.

3. CNOC is an association comprised of 34 competitive Internet and telecommunications services providers that own or operate wireline and/or wireless networks in many regions of Canada. CNOC’s mission is to increase the level of competitive choice and innovation in the delivery of communications services to Canadians.

4. CNOC was an active participant in the fifteen month long Canadian Radio-television and Telecommunications Commission (“CRTC”) proceeding leading to the Decision. Throughout this proceeding, CNOC’s core message was simple and unwavering: wholesale regulation of incumbent telephone company and cable carrier networks, including “next-generation” FTTH and DOCSIS 3.1 networks, is necessary to ensure that Canadians can realize the valuable benefits of competition when it comes to their broadband services. In the end, the CRTC agreed with this position and decided to extend mandated wholesale access to the next-generation incumbent and cable carrier networks.¹¹ In doing so, the CRTC declared that these regulatory measures were implemented with a view to: increasing choice, driving competition, promoting further investment in high-quality telecommunications, promoting more innovative service offerings and ensuring

⁹ *Review of wholesale wireline services and associated policies*, Telecom Regulatory Policy CRTC 2015-326, 22 July 2015.

¹⁰ CNOC must clarify that the Decision mandates access to Fibre-to-the-premises (“FTTP”) which contemplates broader residential and business applications as opposed to the solely residential applications presumed for FTTH. CNOC refers to FTTH throughout this submission to stay consistent with the terminology of the Petition, but any reference to FTTH should be interpreted in the broader meaning ascribed to FTTP.

¹¹ TRP 2015-326, at para 143.

reasonable prices for consumers.¹² The fact that Bell is now seeking to overturn such pivotal determinations concerning the future of Canadian broadband is deeply disturbing.

1.2 A tale of two visions

5. Ultimately, the Petition and CNOC's submission can be distilled into two unique and radically contradictory visions of the future of broadband services in Canada.

6. On one hand, Bell is asking the Governor in Council to endorse a next-generation broadband duopoly shared by incumbent telephone companies and cable carriers. Worse yet, conditions would be monopolistic in areas with only one next-generation network. Bell's vision of the broadband future excludes competition from other competitors and the social and economic benefits that flow from it.

7. Bell advocates for a radical departure from a longstanding regulatory framework that enables competition with a view to holistically furthering telecommunications policy objectives set out in the *Telecommunications Act*¹³ (the "Act"). This longstanding regulatory framework has been responsible for the introduction of competition in the long distance market in the early 1990s¹⁴, the introduction of competition in the local telephone service market in the late 1990s¹⁵, the facilitation of competition in the broadband market in the early 2000s¹⁶ and the introduction of competition in the higher-speed broadband market in the early 2010s¹⁷. Given that competition in the telecommunications market was introduced and facilitated during successive Liberal

¹² TRP 2015-326, at the third paragraph of decision summary.

¹³ S. 7 of the *Telecommunications Act*, S.C. 1993, c. 38.

¹⁴ *Competition in the provision of public long distance voice telephone services and related resale and sharing issues*, Telecom Decision CRTC 92-12, 12 June 1992. ("TD 92-12"), available online at <http://www.crtc.gc.ca/eng/archive/1992/dt92-12.htm>.

¹⁵ *Local competition*, Telecom Decision CRTC 97-8, 1 May 1997, available online at <http://www.crtc.gc.ca/eng/archive/1997/dt97-8.htm>.

¹⁶ *Regulatory safeguards with respect to incumbent affiliates, bundling by Bell Canada and related matters*, Telecom Decision CRTC 2002-76, 12 December 2002, available online at <http://www.crtc.gc.ca/eng/archive/2002/dt2002-76.htm>; see also *Regulation under the Telecommunications Act of Cable Carriers' access services*, Telecom Decision CRTC 99-8, 6 July 1999, available online at <http://www.crtc.gc.ca/eng/archive/1999/DT99-8.HTM>.

¹⁷ *Wholesale high-speed access services proceeding*, Telecom Regulatory Policy CRTC 2010-632, 30 August 2010. ("TRP 2010-632"), available online at <http://www.crtc.gc.ca/eng/archive/2010/2010-632.htm>.

governments, it is ironic that Bell is now asking that for this framework to be abandoned under the pretense that the Petition is somehow aligned with the views of the new Liberal Government.

8. In an attempt to justify its proposal, Bell has focused narrowly on one policy objective at the expense of all the others: investment in telecommunications infrastructure. However, Bell's submissions on investments are hyperbolic and misleading. The reality is that Bell's FTTH rollout will not be affected by the Decision. The necessity of competing with the cable carriers requires Bell to invest broadly and in a timely manner in FTTH rollout as it did in Fibre-to-the-node ("FTTN") networks before that. Bell is engaging in fear-mongering to maximize profits at the expense of consumers. This distorted perspective of telecommunications priorities constitutes a significant threat of harm to competition, competitors and most importantly – consumers.

9. On the other hand, CNOC shares the Commission's vision of sustainable competition. As recognized in the Decision, infrastructure development is undoubtedly an important policy objective. Fortunately, achieving this objective does not need to occur at the expense of competition or innovation. As aforementioned, incumbent telephone companies and cable carriers will continue to invest because they have no choice. Likewise, smaller competitors will also invest because the Decision gives them very strong incentives to do so. This high pressure competitive environment results in material social and economic benefits. Indeed, competitors have contributed to lower prices, greater choice and increased innovation and will continue do so if the Decision is upheld. Bell has failed to demonstrate why Canadians should be denied these benefits so that Bell can realize its self-interested and narrow view of Canada's broadband future.

1.3 The structure of the submission and related reports

10. In support of this submission, CNOC refers to a body of evidence that includes an expert report prepared by Analysis Group (the "AG Report") and appended as "Attachment 1" to this submission. The AG Report addresses all of the economic evidence underpinning the Petition. CNOC is also providing a reply to Bell's comparative evidence with the European Union (the "EU Report") and that reply is appended as "Attachment 2" to this submission. Finally, CNOC has included, as "Attachment 3", a number of CNOC member case studies demonstrating the kinds of

innovations that competitors who rely in part on mandated wholesale access have introduced over the years.

11. The balance of this submission is organized as follows:

12. Part 2.0 outlines conflicting statements and mischaracterizations of fact made by Bell which undermine the credibility and merits of the Petition.

13. Part 3.0 demonstrates why Bell's proposed variance of the Decision would undermine the telecommunications policy objectives of the *Act* as well as the Policy Direction¹⁸.

14. Part 4.0 addresses Bell's claim that the Decision will primarily delay or prevent FTTH deployments in small rural communities.

15. Part 5.0 addresses Bell's characterization of the broader economic impacts associated with the CRTC's decision to mandate FTTH access.

16. Part 6.0 demonstrates why regulated wholesale access is key to improving Canada's broadband performance on a national and international level.

17. Part 7.0 counters Bell's claim that regulation of FTTH access facilities constitutes "expropriation".

18. Part 8.0 sets out CNOC's conclusions.

¹⁸ *Order Issuing a Direction to the CRTC on Implementing the Canadian Telecommunications Policy Objectives*, P.C. 2006-1534, 14 December 2006, SOR/2006-355, Canada Gazette Part II, Vol. 140, No. 26, 27 December 2006 ("Policy Direction").

2.0 BELL’S CONFLICTING STATEMENTS AND MISCHARACTERIZATIONS OF FACT

Summary of Key Points:

- Despite public statements that the Decision will have no material financial, operational or competitive consequences, the Petition is now associating the CRTC’s rulings with massive investment losses in the billions of dollars.
- The CRTC’s decision to mandate access to FTTH networks was the inevitable continuation of a longstanding regulatory framework that is based on sound economic principles.
- The Decision does not contradict any previous CRTC decisions. To the contrary, TRP 2015-326 is entirely consistent with regulatory precedents, the Canadian telecommunications policy objectives and the *Act*.
- Bell’s claim that there are no incumbency advantages to investing in FTTH is absurd. The CRTC has identified no less than six different kinds of incumbency advantages that incumbents like Bell enjoy and competitors, like the member companies of CNOC, do not.
- The Petition renders an inaccurate portrayal of the business case for FTTH deployment as fragile and challenging. In reality, this business case is very simple and easy. Bell must invest heavily in FTTH networks in order to respond to consumer demand and the next-generation services of the cable carriers. Mandated access to FTTH will not affect these investments.

19. Certain statements in the Petition are in direct conflict with public statements made by, its parent company, BCE Inc. (“BCE”) after the Decision was released. The Petition also mischaracterizes key facts that actually undermine Bell’s case. Bell’s inconsistent positions and distortion of material facts raises alarming questions of credibility. In CNOC’s view, these credibility issues speak to the merits of Bell’s arguments and consist of further evidence that the Petition is motivated exclusively by Bell’s self-interested drive to maximize profits at the expense of consumer interests, the national economy and the social fabric of Canada.

2.1 The Petition contradicts Bell statements to the investment community

20. In this section, CNOC has outlined two sets of excerpts. The first set is a list of quotes taken directly from the Petition. In these quotes, Bell suggests that the Decision will result in major adverse consequences throughout its wireline operations. CNOC then lists a second set of excerpts sourced directly from BCE quarterly shareholder reports, investor conference call transcripts and stakeholder materials, all published in the months after the Decision was released. In these quotes,

BCE makes several representations to the investment community that the Decision would have no material impact on its wireline operations.

21. As will be evident, the contrast between these two sets of excerpts is striking and the resulting credibility implications are just as glaring.

Bell to the Governor in Council: The Decision will have major consequences for Bell's wireline operations

22. The core theme of the Petition is that the Decision will result in massive reductions in Bell FTTH investments. Bell explains the purported negative correlation between the Decision and Bell's FTTH investments as follows:

“There should be no doubt that going forward, as a result of the CRTC's decision, each fibre-to-the-home investment opportunity will be reviewed and the pace and scale of our investment will unequivocally be affected. Where a project's projected return on investment is uncertain, capital will not be allocated to it. The CRTC's decision means that investment will be stopped or delayed for years in areas where the return on investment can no longer be justified. This is simply the commercial consequence of the CRTC's decision to mandate network unbundling in order to foster resale competition.”^{19,20}

23. Bell then goes on to quantify the “commercial consequence” of the Decision as follows:

“...the investment that would be lost as a result of the CRTC's decision is likely between \$72 million (equal to six percent of \$1.2 billion) and \$384 million (equal to 32 percent of \$1.2 billion), each year or between \$360 million and \$1.9 billion over Bell's five-year investment horizon.”²¹

“The significant impact of the CRTC's decision will be borne particularly by smaller towns and rural areas, where fibre-to-the-home deployment will be delayed or not take place at all.”²²

¹⁹ Note: Bell is fond of the terms “resale” and “resellers” which connotes that competitors only repackage and resell the exact same services that the incumbents provision at wholesale. The terms and their meanings are misleading. Competitors employ the wholesale services provided by incumbents, such as Bell, with many other inputs of their own and of other third parties in order to deliver innovative value-added services, terms and pricing which render their service offerings unique and valued by Canadian consumers.

²⁰ The Petition, at para E22.

²¹ The Petition, at para 25.

²² The Petition, at para E23.

24. In addition to the perceived impact on investments, Bell characterizes the Decision as an unjustified expropriation of its assets:

“This Petition seeks to reverse the CRTC's decision, which effectively expropriates new fibre-to-the-home networks for the benefit of other companies (Reseller Internet Service Providers (ISPs)) that are not investing in infrastructure.”²³

“The CRTC's decision unfairly changes the rules, handing over to other companies (Reseller ISPs) the most expensive parts of the fibre-to-the-home infrastructure in which we and others are investing billions of dollars relying on the existing framework.”²⁴

25. Based on all of the above, one would reasonably conclude that Bell's position is that the Decision constitutes a severe and immediate threat to Bell's current and future FTTH builds. After all, Bell claims that the Decision will: (1) adversely affect its return on investments; (2) result in FTTH investment losses between \$360 million and \$1.9 billion over the next 5 years; and (3) expropriate or force Bell to “hand-over” some of its most valuable assets to competitors.

26. Notably, such profound consequences of a regulatory decision would necessarily have to be disclosed to shareholders. However, as demonstrated in the paragraphs that follow, Bell has conveyed a very different assessment of the Decision and its impacts to the investment community.

Bell to Investors: The Decision will have no material impact on Bell's wireline operations

27. First, consider that in BCE's first quarterly Shareholder Report following the release of the Decision (BCE's 2015 Second Quarter Shareholder Report), a single paragraph of just six sentences, embedded within the fifty-five page report, was dedicated to the impact of the Decision on BCE's wireline operations.²⁵ In that paragraph, BCE stated the following:

²³ The Petition, at para E7.

²⁴ The Petition, at para 6.

²⁵ BCE 2015 Second Quarter Shareholder Report, at p. 32, available online at <<http://www.bce.ca/investors/financial-reporting/2015-Q2/2015-q2-shareholder-report.pdf>>.

“Although it is not possible at this time to assess the financial impact of Telecom Decision 2015-326, it could have a negative effect on our business and financial performance as it is progressively implemented over the next few years. However, the nature of such effect, if any, will only be ascertainable once the CRTC has completed its costing models and set the wholesale access rates to be charged by the incumbent telephone companies and cable carriers.”²⁶ (Emphasis added)

28. It bears noting that the CRTC has not even begun the proceedings to establish costing models and wholesale access rates for FTTH. Nevertheless, the Petition has seemingly ascertained the ultimate perceived effects of the Decision in great detail.

29. The “Management Discussion and Analysis” set out in BCE’s 2015 Second Quarter Shareholder Report is based on a list of assumptions made by BCE. These assumptions explicitly contemplate the consequences of any changes in regulations affecting segments of BCE’s business. With respect to BCE’s wireline business, the following assumption was declared:

“No material financial, operational or competitive consequences of changes in regulations affecting our wireline business.”²⁷

30. In addition to the above statements which directly address the effects of regulation, BCE also made several general statements in the wake of the Decision which convey a positive outlook for BCE’s wireline business. For example:

“Wireline cash flow generation providing ample support for ongoing fibre build
– YTD’15 Adjusted EBITDA-Capex of \$1,684M, up 3.6% y/y”²⁸

“No fundamental changes in overall outlook as we enter Q4”²⁹

“Competitively well positioned across all services and in all markets”³⁰

²⁶ *Ibid.*

²⁷ BCE 2015 Second Quarter Shareholder Report, at p. 21.

²⁸ BCE 2015 Third Quarter Conference Call Presentation, November 5, 2015, at slide 14, available online at < <http://www.bce.ca/investors/financial-reporting/2015-Q3/2015-q3-presentation.pdf>>.

²⁹ *Id.*, at slide 18.

³⁰ *Ibid.*

“5th consecutive quarter of positive Wireline EBITDA growth with increase in industry-leading margin to 41.1%”³¹

31. Based on the sum total of the above-listed excerpts, Bell’s message to the investment community is clear: the Decision will have a negligible effect on Bell’s FTTH business case and its wireline operations more generally. And yet, as illustrated in the previous subsection, this message fundamentally contradicts the core premise of the Petition.

Conclusion: Bell’s conflicting signals to the Governor in Council and the investment community

32. Bell cannot have it both ways. In other words, Bell cannot reassure investors that it is “business as usual” following the Decision while simultaneously urging the Governor in Council to reverse the Decision due to its catastrophic consequences for Bell and its FTTH deployments.

33. In CNOC’s view, the representations that Bell has made to investors are reflective of a much more reasoned and realistic assessment of the outcome of the Decision. It is the Petition’s departure from this outlook that is most concerning – yet perhaps not all that surprising. That is because other than credibility, Bell has very little to lose by bringing forth the Petition. Following the recent election, the Petition is an attractive no-risk opportunity to squeeze out the broadband competition that is enabled by the Decision, to Bell’s benefit.

34. For these reasons, CNOC submits that the conflicting signals that Bell is conveying to the Governor in Council and the investment community raise serious credibility concerns which the Governor in Council should factor when assessing the merits of the Petition.

Bell stands alone its opposition to the Decision

35. It is also notable that Bell stands alone in its opposition to the Decision, being the only incumbent that has chosen to challenge the Decision through the filing of a Petition to the Governor in Council. In contrast, no other incumbent telephone company or cable carrier chose to challenge the Decision on mandated FTTH access through any of the avenues available to them, including

³¹ *Id.*, at slide 4.

an application to the Commission, an application for leave to appeal to the Federal Court of Appeal or a Petition to the Governor in Council.

36. Bell's claims of the significant and substantial harm posed by mandated access to FTTH facilities is also not shared by other incumbent telephone and cable carriers. This is evident by a simple comparison on the claims included in the Petition to the following statements made by other parties following the Decision:

Darren Entwistle, President and CEO of TELUS Communications Company ("TELUS"):

"I look at the regulatory window of opportunity and I think it's attractive. Over the last 15 years, that hasn't always been the case. But, I think smart companies leverage windows of opportunity. And, I think we have that on the regulatory front. We've seen a buttressing of infrastructure-based competition in recent decisions. I think that's a good thing."³²

"In terms of wholesale wireline, there is an area where I think we've got a terrific window of opportunity as it relates to our fibre build in Western Canada. We've got great technology. We've got a great TV product. We've got a favorable regulatory environment. We've got a strong competitive juxtaposition versus our competitive peer in this particular industry right now and we've got pretty sexy economies of scope to leverage."³³

Guy Lawrence, President and CEO of Rogers Communications Inc. ("Rogers"):

"[The CRTC decision] appears to create a more level playing field between cableco and telco providers of high-speed Internet offerings in that it won't exempt telco fiber to the home from wholesale requirements. Assuming the CRTC gets the cost models right, we see little risk that the overall regime will hinder continued network investment by incumbent providers. Over time it also seems that the decision will require resellers to invest more in

³² TELUS 2015 Second Quarter Investor Conference Call, 7 August 2015, available online at < <http://about.telus.com/servlet/JiveServlet/downloadBody/5798-102-1-6437/TELUS%20Q2%202015%20conference%20call%20transcript.pdf>>.

³³ TELUS 2015 Third Quarter Investor Conference Call, 5 November 2015, available online at < <http://about.telus.com/servlet/JiveServlet/previewBody/5919-102-1-6511/TELUS%20Q3%202015%20conference%20call%20transcript.pdf>>.

infrastructure which is a fairer sharing of the required costs as more consistent with a facilities-based competition model.”³⁴

37. Accordingly, it is clear that Bell’s view of the Decision and the purported resulting harm is simply not shared by other incumbent telephone companies and cable carriers that are now or will be similarly subject to the obligations to provide mandated access to FTTH and DOCSIS 3.1 facilities.³⁵ Like Bell’s conflicting statements and signals to the Governor in Council and the investment community, this raises serious credibility concerns which the Commission should take into account when assessing the merits of the Petition.

2.2 The Decision is a continuation of a longstanding and principled regulatory framework

38. The Petition has gone to great lengths to characterize mandated access regulation as an ancient form of regulation that is somehow wholly incompatible with FTTH networks.³⁶ On this premise, Bell repeatedly states that the Decision was “surprising”³⁷ or worse, contrary to CRTC precedents³⁸. These characterizations are unfounded and very misleading.

39. By way of background, the CRTC applies its essential services test to determine whether a wholesale service should be subject to mandated access.³⁹ This test draws from the same well-established economic principles that support the Competition Bureau’s Merger Enforcement Guidelines (“MEGs”)⁴⁰. For example, the Commission⁴¹ and the Competition Bureau⁴² both engage in market analysis which begins with the determination of relevant product and geographic

³⁴ Rogers Communications Inc. 2015 Second Quarter Earnings Call, 23 July 2015, available online at < <http://netstorage-ion.rogers.com/downloads/IR/pdf/transcripts/Rogers-2015-Q2-Transcript.pdf>>.

³⁵ As determined in paras 148-154 of TRP 2015-326, the CRTC’s rulings on disaggregated wholesale high-speed access services will be subject to a multi-stage implementation plan. First, the framework will apply to Bell and the major cable carriers in Ontario and Quebec where the demand for these services is the strongest. Thereafter, the framework will be introduced in other parts of the Country.

³⁶ The Petition, at para 5.

³⁷ The Petition, at paras E3, E7, 5.

³⁸ The Petition, at para E3, E7, 3, 5.

³⁹ TRP 2015-326, at para 15.

⁴⁰ Competition Bureau, Merger Enforcement Guidelines, 2011, (“MEGs”) available online at < [http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/vwapj/cb-meg-2011-e.pdf/\\$FILE/cb-meg-2011-e.pdf](http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/vwapj/cb-meg-2011-e.pdf/$FILE/cb-meg-2011-e.pdf)>.

⁴¹ TRP 2015-326, at paras 34 and 115.

⁴² See Part 4.0 of the MEGs.

market definitions. Both the CRTC's essential services test⁴³ and the MEGs⁴⁴ also share the common goal of assessing the presence and impact of market power.

40. The CRTC also reviews the essential services test periodically, including most recently in TRP 2015-326.⁴⁵ Notably, the Decision added a new component to the essential services test that is particularly relevant to the matters at hand given Bell's principal claim that the Decision to mandate access to FTTH must be reversed to protect investments. More specifically, the CRTC stated the following:

"...the Commission will apply the following policy considerations to inform, support, or reverse a decision to mandate the provision of a wholesale service:

- *Public good* - there is a need to mandate the service for reasons of social or consumer welfare, public safety, or public convenience.
- *Interconnection* - the service would promote the efficient deployment of networks and facilitate network interconnection arrangements.
- ***Innovation and investment - mandating or not mandating the facility or wholesale service could affect the level of innovation/investment in advanced or emerging networks or services for incumbents, competitors, or both, or impact the associated level of adoption of advanced or emerging services by users of telecommunications services.***⁴⁶ (Emphasis added)

41. Thus, not only is the CRTC's regulatory framework based on foundational economic principles, it has also been thoroughly reviewed and updated to ensure that it takes into account innovation and infrastructure investment as part of the very decision that Bell is appealing. Despite all of this, Bell somehow claims that the Decision inappropriately extends stagnant "legacy" regulatory rules developed more than 30 years ago to FTTH networks. This argument is devoid of any substance and should be rejected.

⁴³ TRP 2015-326, at para 15.

⁴⁴ See Part 2.0 of the MEGs.

⁴⁵ TRP 2015-326, at paras 24-53.

⁴⁶ TRP 2015-326, at para 51.

42. Bell's mischaracterizations of the facts go much further. On several occasions, the Petition repeats a claim that the Decision "unfairly changes the rules" and contradicts multiple CRTC decisions to "refuse to implement mandated reseller access to [FTTH] networks..."⁴⁷ Bell broadly refers to the CRTC's decisions in 2008 and 2011 but does not bother to specify these decisions or provide pinpoint references to support its claims.

43. Presumably, the 2008 decision that Bell has referenced is Telecom Decision CRTC 2008-17⁴⁸ ("TRP 2008-17"), which followed the last comprehensive wholesale regulatory review prior to the Decision. The CRTC did not expressly "refuse to mandate FTTH" at any point in this decision. In fact, that lengthy decision did not make a single reference to FTTH.⁴⁹ That is because in 2008, FTTH technology was in its infancy. Indeed, the 2011 CRTC Communications Monitoring Report stated that in 2010, two years after TRP 2008-17 was issued, fibre connections accounted for 1% of the share of fixed broadband subscriptions, by technology.⁵⁰ Consequently, there was no demand for wholesale access to FTTH facilities in 2008 and therefore no reason to regulate such access.

44. Contrary to Bell's claims⁵¹, the CRTC never closed the door on future regulation of wholesale access to FTTH. The CRTC has made itself very clear that it will periodically assess the regulatory status of new and emerging technologies as appropriate. This position is explicit in Telecom Regulatory Policy CRTC 2010-632⁵² ("TRP 2010-632"), wherein the CRTC stated:

"The Commission considers that as new technologies are deployed to deliver even higher speed broadband services to retail customers, there will likely be a demand for wholesale access to these services. The Commission notes that its existing essential services framework will allow it to assess any future services on a case-by-case basis, consistent with the requirements of the Act, the Policy Direction, and the principles set out in the Order in Council."⁵³

⁴⁷ TRP 2015-326, at paras E7, 3, 5 and 6.

⁴⁸ *Revised regulatory framework for wholesale services and definition of essential service*, Telecom Decision CRTC 2008-17, 3 March 2008, available online at < <http://www.crtc.gc.ca/eng/archive/2008/dt2008-17.htm> >.

⁴⁹ Note: the fibre-based access and transport services that were assessed in TRP 2008-17 were specialized services with business applications. These services are not comparable to FTTH.

⁵⁰ See Figure 6.1.6 of 2011 CRTC Communications Monitoring Report, available online at < <http://www.crtc.gc.ca/eng/publications/reports/policymonitoring/2011/cmr2011.pdf> >.

⁵¹ TRP 2015-326, at paras E7, 3, 5 and 6.

⁵² TRP 2010-632, 30 August 2010.

⁵³ *Id.*, at para 122.

45. In principle, there is nothing novel or unprecedented about the CRTC's decision to mandate regulated access to FTTH facilities. This is simply an extension of the CRTC's "speed-matching" rules which have become entrenched as a major feature of the regulatory framework. These rules, which are set out in TRP 2010-632, referenced above, require incumbent telephone companies and cable carriers to offer equivalent wholesale services for each of their own retail services. In other words, if a given incumbent offers a 25 Mbps download / 5 Mbps upload service to retail subscribers, it must also offer a 25 Mbps download / 5 Mbps upload service to wholesale customers. The CRTC correctly found that without "speed matching" requirements, competition in retail Internet service markets would be unduly impaired.⁵⁴

46. The Decision extends "speed matching" requirements to FTTH facilities to ensure that competition is not unduly impaired for next-generation service speeds that are only attainable via these next-generation networks. This outcome is logical and completely consistent with CRTC rules and precedents.

47. Based on all of the above, CNOC submits to the Governor in Council that the decision to mandate wholesale access to FTTH facilities is fully justified, principled and consistent with regulatory precedence as well as the *Act*. All of Bell's claims to the contrary are incorrect and overtly misleading.

2.3 The major incumbency advantages of Bell

48. The Petition insists that FTTH networks are different than other regulated networks and should be excluded from regulation on that basis.⁵⁵ More specifically, Bell claims that FTTH networks are different because "there is no traditional "incumbency" advantage when building fibre-to-the-home networks."⁵⁶ This could not be further from the truth. Bell submitted this very argument in the proceeding leading up to the Decision.⁵⁷ The CRTC rejected this claim outright,

⁵⁴ TRP 2010-632, at para 55.

⁵⁵ The Petition, at para 47.

⁵⁶ *Ibid.*

⁵⁷ See for example, Bell second intervention dated 31 January 2014 in the proceeding leading to TRP 2015-326, at para 63.

citing a non-exhaustive list of **six** different kinds of incumbency advantages that Bell holds over competitors:

“... the incumbent carriers’ ability to deploy [FTTP access facilities] is largely based on their decades of incumbency in the provision of wireline services, with all the associated advantages, including established brands and customer bases, existing network infrastructure including support structures, national fibre backbone networks, pre-existing municipal access agreements, various economies of scale, and greater access to capital markets.”⁵⁸

49. All of these advantages, individually and collectively, account for the reasons why incumbent telephone companies like Bell are able to deploy FTTH networks while competitors cannot do the same. Bell’s persistent denial of this fact is without merit or substance.

50. Indeed, Bell itself admitted during the proceeding leading to the Decision that its FTTH services share Bell’s existing network infrastructure.⁵⁹ That infrastructure includes 891 central office points of presence,⁶⁰ telephone poles, transport and backhaul facilities, edge, core and distribution network switching equipment, routers, facilities and other equipment.⁶¹ It is therefore astounding that Bell now asserts that there is no incumbency advantage associated with its FTTH investment.

51. Bell also briefly suggests that FTTH is different from other regulated networks because FTTH networks are built using private resources without relying on public subsidies.⁶² This is a bizarre argument given that cable carrier networks, which have been subject to regulation since the early 2000s, were fully built using private resources.

⁵⁸ TRP 2015-326, at para 134.

⁵⁹ Response to request for information Bell Canada(Primus)28Mar14-10 TNC 2013-551 on the record of the proceeding leading to TRP 2015-326.

⁶⁰ Bell’s response to request for information Bell Canada(CRTC)6Nov15-1 Follow-up to TRP 2015-326 in the implementation proceeding following up from TRP 2015-326.

⁶¹ These other types of assets were more generally described by Bell as core and aggregation network facilities, equipment and components, including switches (edge and core), routers (distribution, edge and core), IP voice switches as well as transport fibre and equipment in response to request for information Bell Canada(Primus)28Mar14-10 TNC 2013-551, *supra*, note 60.

⁶² The Petition, at para 49.

52. Overall, the regulation of FTTH networks is no different than the regulation of cable, DSL and / or FTTN networks. The functions performed by these various types of networks are fundamentally the same. The economics underpinning the regulation of these networks is fundamentally the same. The laws, rules and precedents justifying and requiring regulation of these networks – again, the same. The parallels are undeniable. And yet, the Petition is requesting that the Governor in Council sever all of these parallels so that Bell can profit at the expense of competition and consumers. Canadians deserve better.

2.4 Bell must invest heavily in FTTH networks with or without mandated access

53. The Petition claims that mandated access regulation will undermine a business case for FTTH investment that is already extremely fragile.⁶³ In reality, the business case for FTTH investment is really quite simple irrespective of whether those investments are subject to mandated access. The CRTC stated that there were **several** reasons “...why the negative impact on investment is not likely to happen to any significant degree...”⁶⁴ Chief among these reasons, is the need to respond to consumer demand and the next-generation service speeds of the cable carriers. The CRTC succinctly summarized this point as follows:

“...the Commission expects that the incumbent carriers will generally continue to invest in FTTP access facilities in order to provide enhanced retail Internet access services in response to consumer demand, as well as to compete effectively and efficiently with the Cablecos.”⁶⁵

54. Indeed, Bell’s corporate executives have publically emphasized the need to invest aggressively to respond to consumer demand and cable alternatives. For example, with respect to Bell’s Gigabit Fibe service, a very high-speed service provisioned exclusively over Bell’s FTTH network, BCE President and CEO George Cope stated the following:

“...It is very clear to us as we look out over the next five, 10 years the market is going to demand these type of speeds and so we have to start it now so that as broad a footprint as we possibly have when we complete it as those demands grow. So it is

⁶³ The Petition, at para 17.

⁶⁴ TRP 2015-326, at para 141.

⁶⁵ *Ibid.*

not a matter of market share, frankly it is a matter of table stakes from our perspective. That will be the business for broadband.”⁶⁶

“...there is no doubt in our minds it is the place we need to go and will provide a return to shareholders. Anybody who is invested with me for the last 25 years knows that is the focus of the Executive Team at BCE...”⁶⁷

55. In terms of the business case for FTTH, Mr. Cope had the following to say:

“In terms of what we expect and what do we see from Bell Aliant, we see lower churn and better market share. In every single market we have fibre versus where we have fibre to the node. **So that makes the investment for us quite frankly quite easy.**”⁶⁸(Emphasis added)

56. The above excerpts constitute yet another example of Bell representing different versions of the same story to different audiences. On one hand, Bell is telling the Governor in Council that the business case for investing in FTTH is “always challenging”⁶⁹. On the other hand, Bell is telling the investment community that the business case is “...frankly quite easy”⁷⁰. More importantly however, Mr. Cope’s comments affirm the CRTC’s finding that the Decision will have no material impact on Bell’s investments because at the end of the day, consumer demand and cable alternatives to FTTH are constant and powerful incentives to invest now and into the future. Mandated access to FTTH does not remove these incentives and therefore will not affect investment levels.

⁶⁶ BCE 2015 Second Quarter Conference Call, November 5, 2015, at p.13, available online at <<http://www.bce.ca/investors/financial-reporting/2015-Q2/2015-q2-transcript.pdf>>.

⁶⁷ *Ibid.*

⁶⁸ *Ibid.*

⁶⁹ *Ibid.*

⁷⁰ *Ibid.*

57. In fact, Bell has made numerous public statements that recite the incentives it has to continue investing in FTTP^{71,72,73,74} for reasons that include:

- The “future proof” nature of the technology;
- The competitive advantage provided by the ability to provide speeds up to 10Gbps;
- The decrease in customer turnover experienced;
- The increase in average revenue per end-user experienced;
- Decreased operational costs; and
- Decreased maintenance costs.

58. It also bears noting that the CRTC also emphasized the fact that the Decision would not undermine FTTH investments because mandating access to those facilities “...would be predicated on wholesale rates that are compensatory and provide a reasonable rate of return, resulting in profit on the associated investment.”⁷⁵ CNOC returns to this important dimension of the decision in part 7.0 of this submission, which addresses Bell’s claim that mandated access to FTTH networks constitutes a form of “expropriation”.

⁷¹ In the presentation discussing the launch of FTTH in Quebec City and announcing FTTH would be deployed in any new subdivisions being built and areas served by aerial plant, FTTH deployment is described as a “future proof technology” that enables it to stay ahead of customer’s demand for increased speeds, provides fundamental cost improvements and significantly reduces operating costs. See BCE, Investor Conference 2013, at pages 104 and 112, available at: http://www.bce.ca/investors/Q4-2012/2013BCEInvestorConference_FinalConsolidated2.pdf, and BCE, Investor Conference 2013 Q4’12 Results and 2013 Guidance, at page 23, available at: <http://www.bce.ca/assets/investors/Q4-2012/BCEQ4ResultsAnnualTRANSCRIPT.pdf>.

⁷² In the BCE Q4 2014 Results Conference Call, George Cope, President and CEO of BCE, states that FTTH deployment is “absolutely the way to go” due to the experience of less customer turnover, increased average revenue per end-user, and increased usage in areas where FTTH has been deployed. See BCE, Q4 2014 Results Conference Call, at page 17, available at: http://www.bce.ca/investors/Q4_2014/Q4_2014_Transcript.pdf.

⁷³ In the BCE Q2 2015 Results Conference Call, George Cope, President and CEO of BCE, states that FTTH deployment lowers the number of truck rolls required, increases customer experience and will ultimately result in lower operating costs. See BCE, Q2 2015 Results Conference Call, at page 16, available at: <http://www.bce.ca/investors/financial-reporting/2015-Q2/2015-q2-transcript.pdf>.

⁷⁴ In the BCE Q3 2015 Results Conference Call, George Cope, President and CEO of BCE, states that FTTH deployment provides a competitive advantage as speeds of up to 10Gbps can be offered without any network upgrades, results in 40% less truck rolls than FTTN served areas, results in a 50% reduction in preventative maintenance and results in less customer turnover relative to any other services. See BCE, Q3 2015 Results Conference Call, at page 9, available at: <http://www.bce.ca/investors/financial-reporting/2015-Q3/2015-q3-transcript.pdf>.

⁷⁵ TRP 2015-326, at para 141.

3.0 THE PETITION IS A THREAT TO THE TELECOMMUNICATIONS POLICY OBJECTIVES AND THE POLICY DIRECTION

Summary of Key Points:

- The Petition threatens a balanced policy which harmoniously promotes investment, competition and innovation.
- The decision to mandate FTTH access is the result of an intense and lengthy proceeding with submissions and expert reports tendered by a broad range of stakeholders. The CRTC explicitly acknowledges this information in its determinations. The decision to mandate FTTH access is therefore firmly evidence-based and warrants a high-level of deference from the Governor in Council.
- Bell argues that the CRTC “favours resale over investment” but really, the Decision ensures that both incumbent carriers and competitors will invest heavily in telecommunications infrastructure.
- Incumbent carriers will invest in FTTH networks because of consumer demand, cable carrier alternatives and wholesale revenues which serve to bolster available capital.
- Bell’s own history of capital expenditures in response to new mandated wholesale access regulation is proof that there is no negative correlation between such regulation and investment levels. Bell’s capital expenditures continued to grow overall after the CRTC mandated access to FTTN in 2010.
- Competitors will invest in transport facilities because the Decision has incited increased competition in the markets for transport services which must be used in conjunction with tariffed wholesale FTTH services.
- Not mandating FTTH access will result in a **substantial lessening or prevention of competition** in retail Internet services markets. Consumers will suffer from higher prices and less choice. Bell and other incumbents will profit.
- Competition stemming from wholesale access services is an essential complement to facilities-based competition which translates into valuable social and economic benefits. The CRTC has affirmed the importance of this form of competition time and time again. More importantly, consumers value competitors and their services.

- | |
|--|
| <ul style="list-style-type: none">▪ Not mandating FTTH prevents the many valuable innovations that competitors would introduce into markets for next-generation broadband services. These innovations are key to pushing the adoption of next-generation technologies. |
|--|

59. The Petition focuses almost exclusively on the impact of the Decision in terms of infrastructure investments. CNOC fully agrees that investment is an important dimension of both the telecommunications policy objectives of the *Act* and the Policy Direction. However, and fortunately, the CRTC's mandate is much broader than merely promoting investment. To be sure, as CNOC demonstrates throughout this submission, the Decision goes to great lengths to ensure high levels of investment in telecommunications facilities. Yet, in addition to investment, the CRTC seeks to achieve sustainable competition which translates into tangible social and economic benefits for Canadians in terms of innovation and choice when it comes to service providers, service offerings and price.⁷⁶ The Decision strikes a fulsome yet delicate balance between all of these considerations – a balance that would undoubtedly be compromised if the Governor in Council decides to give effect to the requests contained in the Petition.

60. Before addressing the suppressive effect that the Petition will have on the achievement of telecommunications policy objectives, it is important to direct the Governor in Council's attention to the evidenced-based nature of the CRTC's decision to mandate FTTH access.

61. As already discussed, the proceeding leading to the Decision lasted fifteen months. The procedural schedule over that time period was intense and divided into several different stages. Participants filed first and second interventions, replies, final arguments and undertakings. Many of these filings were appended with multiple expert reports. While all of this was going on, the Commission coordinated several rounds of requests for information between itself and all of the interested parties. Parties scrutinized every response to a request for information and filed subsequent requests for disclosure of confidential information and additional information. The oral hearing for the proceeding lasted nine days and the official transcript tallied over 11,500 paragraphs of dialogue. The record for this proceeding was massive. Even the portion of the record relating solely to FTTH was extremely voluminous, as reflected by the 18 paragraphs of the

⁷⁶ See for example the telecommunications policy objectives set out in subs. 7(a)(c)(g) and (h) of the *Act*.

Decision dedicated to summarizing the submissions of all parties on the question of whether wholesale access to FTTH facilities should be mandated.⁷⁷ By way of that summary and the considerations set out in the CRTC's determinations⁷⁸, there is no question that the decision to mandate FTTH access is definitively evidence-based. For this reason, the CRTC's rulings warrant a high level of deference from the Governor in Council.

3.1 The Decision will ensure telecommunications infrastructure investments

62. The Petition repeatedly characterizes TRP 2015-326 as a decision to “favour resale over investment” as if these things are mutually exclusive.⁷⁹ The idea that investment either does not occur or is substantially lessened in the presence of mandated access regulation is a tired refrain that incumbent carriers raise every time regulated access has been sought to incumbent networks to facilitate competition in retail markets, from long distance and local telephony to Internet access. The argument was raised and rejected in the most recent “speed matching” decision⁸⁰, and before that, in the TD 2008-17 proceeding. Nonetheless, Bell relies on this myth as the foundation for the Petition.

63. To set the record straight, the Decision ensures that both incumbent carriers and competitors will invest heavily in telecommunications infrastructure.

64. First, incumbent carriers will invest aggressively in FTTH networks for the reasons summarized in the preceding section 2.4: (a) to respond to consumer demand and keep up with the service speeds of the cable carriers; and (b) because compensatory wholesale rates stemming from the Decision⁸¹ will allow them to generate a return on their investments. Wholesale revenues generated as a result of (b) can then be utilized to fund further FTTH deployments.

65. Bell's own history of capital expenditures in response to new mandated wholesale access regulation is proof that there is no negative correlation between such regulation and investment

⁷⁷ TRP 2015-326, at paras 96-113.

⁷⁸ TRP 2015-326, at paras 114-160.

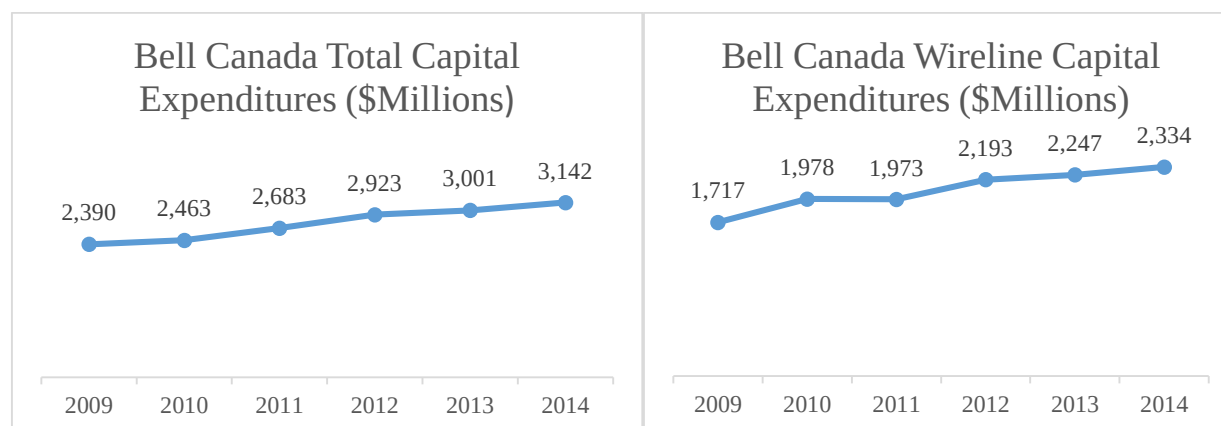
⁷⁹ The Petition, at paras E3, E4, E7 and 24.

⁸⁰ TRP 2010-632 is also referred to as the “speed matching” decision.

⁸¹ That is to say, the Decision and all follow-up proceedings to establish wholesale tariffs.

levels. As can be seen below, Bell’s capital expenditures continued to grow overall after the CRTC’s decision to mandate access to Fibre-to-the-node (“FTTN”) in 2010:

Figure 1: Bell’s total capital expenditures and total wireline capital expenditures (2009-2014)



66. Second, the Decision also provides competitors with an attractive incentive to invest that would otherwise not exist.⁸² This incentive stems from the Commission’s determination that access to FTTH facilities will be available exclusively via the new “disaggregated model” for wholesale high-speed access (“HSA”) services that replaces the previous “aggregated model” for wholesale HSA services. The main difference between the two models is that under the disaggregated model, competitors must provide their own transport⁸³ solutions, whereas under the aggregated model, transport was included as part of the incumbent wholesale tariff. Under the new model, competitors will have two options for providing transport. They can invest and deploy their own transport facility or they can lease transport from another provider. Competitors will inevitably have business cases to support the deployment of either or both of these options. As a result, the Decision will catalyze a new competitive market for transport services that will drive investment in transport facilities.

⁸² The Governor in Council should be aware that on October 20, 2015, Bell has also filed a Part 1 Application with the CRTC to review and vary aspects of the “disaggregated model” established in the Decision. The changes requested by Bell would, if implemented, completely foreclose the competitive market for alternative transport services that was created by the Decision. CNOC has filed an answer to Bell’s review and vary Application which firmly opposes all of Bell’s proposed changes.

⁸³ Transport is one of the two main pieces of a network, the other being the access piece. The transport piece transmits large amount of traffic to and from the provider’s backbone network. The access piece is the “last mile” component of the network which connects each individual end-user.

67. The Petition, if successful, would collapse the competitive market for transport services because access to next-generation networks is essential for driving competitor investments in transport facilities.

68. For all of the above reasons, the Decision will ensure very high levels of telecommunications infrastructure investment for a long time to come. Yet, the Petition actually threatens to erode the proportion of those investments that is contributed by smaller competitors, who had very few, if any, realistic options to invest in facilities prior to the Decision. Ultimately however, the greatest threat posed by the Petition is to competition and innovation, which are discussed in the subsequent sections.

3.2 The Petition will undermine competition in retail broadband markets

69. As previously noted, the CRTC applies well established economic principles as part of its essential service test to determine whether or not to mandate a wholesale service. In applying these principles, the CRTC made its two most important factual findings:

- 1) Incumbent carriers have upstream market power⁸⁴ in the provision of wholesale broadband services, including those over FTTH facilities⁸⁵; and
- 2) There would be a “...**substantial lessening or prevention of competition** in the downstream retail Internet services market, **in all incumbent carrier serving regions...**”⁸⁶ by denying access to wholesale broadband services, including those over FTTH facilities. (Emphasis added)

70. The CRTC also made it clear that not mandating FTTH access would have a progressively worse impact on competition over time. More specifically, the CRTC stated:

“As a result, the competitive impact of not mandating the provision of wholesale HSA services over FTTP access facilities would be relatively small in the short term. As FTTP deployment increases, however, the potential impact on competition will

⁸⁴ The OECD defines Market Power as follows: Market power refers to the ability of a firm (or group of firms) to raise and maintain price above the level that would prevail under competition is referred to as market or monopoly power. The exercise of market power leads to reduced output and loss of economic welfare.

⁸⁵ TRP 2015-326, at para 124.

⁸⁶ TRP 2015-326, at para 130.

increase as more and more consumers desiring higher-speed Internet services would have fewer competitor alternatives to choose from.”⁸⁷

71. The Decision could not be any clearer: what the Petition is asking the government to do will have profoundly negative effects on competition for broadband services.

72. If the Petition is successful, several markets will have very little choice when it comes to providers of next-generation services. In particularly dense urban markets, consumers may have one of either two choices: an incumbent telephone company or a cable carrier. Outside of these cases, consumers may find themselves in markets where there is only one choice of providers offering next-generation services. In the absence of competition in all of these areas, incumbent carriers will have no reason to lower prices or innovate to develop competitive advantages. In such conditions, it is the consumer that ultimately suffers.

73. Another important benefit of competition via wholesale regulation is that it ensures efficient use of access facilities. As ruled by the CRTC, FTTH access facilities are not practically or feasibly duplicable on any scale.⁸⁸ Thus, from an economic welfare perspective it is desirable to maximize the use of these facilities rather than stranding them with excess capacity. The Petition does not seek to further economic efficiency. Rather, Bell advocates for wasteful duplication of infrastructure as an unattainable prerequisite for competing in markets for next-generation broadband.

74. On its face, the intent of the Petition would be to reduce competition. Bell’s sole reassurance is that only facilities-based competition⁸⁹ can benefit consumers.⁹⁰ But this is really no reassurance at all. The CRTC has recognized the benefits of competition stemming from wholesale access competition time and time again.⁹¹ More importantly, consumers have

⁸⁷ TRP 2015-326, at para 128.

⁸⁸ TRP 2015-326, at para 136.

⁸⁹ Note: CNOC members provide features of “facilities-based competition”. Many CNOC members own and operate their own “transmission facilities” as defined in subs. 2(1) of the *Act*. Transmission facilities include the transport facilities that are necessary to obtain mandated wholesale FTTH services in the first place.

⁹⁰ The Petition, at paras 52-54.

⁹¹ The competition benefits of “resale”, as it was then referred to, were recognized back in the early 1990s in the interexchange competition context, see: *Resale and sharing of private line services*, Telecom Decision CRTC 90-

recognized and benefited from the value that competitors bring to the market. The emergence of hundreds of competitors over the last three decades speaks for itself. The upcoming section explains why this success is largely attributable to the unique innovations of smaller competitors – innovations that the Petition threatens to stifle.

3.3 The Petition will reduce innovation

75. Smaller competitors often tend to innovate the most. That is because this class of competitors lacks the scale to compete exclusively on price. Accordingly, there is a particularly strong incentive for the smallest competitors to differentiate themselves through innovative services and service features in lieu of price competition.

76. In the proceeding leading to TRP 2015-326, CNOC submitted a long list of examples of the service innovations attributable to smaller providers. These innovations generally fall within the broad categories of customer service, technical solutions and novel service offerings and features.⁹² It also bears noting that many smaller competitors strive to fill voids left by the incumbent carriers in terms of serving rural and / or ethnic minority communities in their native languages.⁹³ To illustrate specific examples of these innovations, CNOC has included as “Attachment 3” to this submission, five case studies that were submitted as part of CNOC’s second intervention in the proceeding leading to TRP 2015-326.⁹⁴ These case studies describe in great detail the innovations of five different CNOC members which reflect the scope and magnitude of the innovations that competitors bring to the markets for broadband services.

77. In addition to the direct forms of innovation described above, competitors also indirectly contribute to innovation by expanding and accelerating the adoption of FTTH and DOCSIS 3.1 technology. This is because competitors provide greater choice of services over FTTH and DOCSIS 3.1 based facilities, which naturally increases penetration levels for these next-generation networks. In turn, higher FTTH / DOCSIS 3.1 penetration levels will encourage application

3, 1 March 1990. (“TD 90-3”) at II.A.2. Available online at <<http://www.crtc.gc.ca/eng/archive/1990/DT90-3.HTM>>; More recently, the benefits were reaffirmed in TD 2008-17, TD 2010-632 and again in TRP 2015-326.

⁹² See Attachment 3 and Section 4.0 of CNOC’s second intervention dated 27 June 2014 in TNC 2013-551.

⁹³ *Ibid.*

⁹⁴ See also Section 4.0 of CNOC’s second intervention dated 27 June 2014 in TNC 2013-551.

developers (e.g., developers of over-the-top 4k audiovisual services) to create and improve consumer applications that rely on higher speeds and capabilities.

78. In addition, competitors have an important role to play in attaining a critical mass of FTTH consumers that is necessary to push the technology further into areas where it does not yet exist.

79. The Petition is asking the government to deny competitors access to next-generation broadband facilities which the CRTC deemed essential for competition. If this request is granted, the innovative drive that competitors are eager to pursue will be extinguished. Innovation should not be left to the leisure of incumbents in the absence of competition. Why leave innovation to chance when the Decision has made it a certainty? Canadians deserve the high-level of valuable innovation which stems from mandated access to FTTH and DOCSIS 3.1. We ask that the Governor in Council ensure that Canadians can continue to expect this outcome.

4.0 BELL'S CLAIM THAT THE DECISION WILL PRIMARILY DELAY OR PREVENT FTTH DEPLOYMENTS IN SMALL RURAL COMMUNITIES AMOUNTS TO UNJUSTIFIED FEAR-MONGERING

Summary of Key Points:

- CNOC does not agree that mandated FTTH access will delay or prevent Bell FTTH deployments in small areas. Bell has already stated publically that there is no business case to deploy broadband to certain areas of the country. Bell will not bring FTTH to these places regardless of whether access to FTTH is mandated or not. Bell has also affirmed that FTTH deployment to small areas is not an investment priority.
- In the areas that Bell claims will be negatively affected by mandated FTTH access, only 10 percent of homes, at most, could be subject to such delays since 90 percent of Bell's operating territory overlaps those of cable carriers with whom Bell must continue to compete.
- Bell proposes to scrap the competition and all of the resulting benefits that are enabled by mandated FTTH access in order to accelerate broadband deployment to 10 percent of homes in a very small number of towns and communities. Of course, no additional investment would actually occur in many of these small areas, but even if it did – this trade-off would be unconscionable.
- The CRTC has an ongoing proceeding (TNC 2015-134) that is intended to ensure that Canadians in underserved areas have access to basic telecommunications services that are necessary to participate in the digital economy. That is the appropriate forum for Bell's

concerns about small rural communities – not a Petition to the Governor in Council seeking to overturn the Decision.

- In addition to the framework and policies that will emanate from the TNC 2015-134 proceeding which may result in the payment of a subsidy by Bell and its competitors, including CNOC members, government funding would be the most efficient and appropriate mechanism to fill gaps in broadband infrastructure in Canada’s rural and remote areas.
- Bell claims that there was a direct relationship between the CRTC’s decision to mandate access to FTTN facilities and Bell’s deployment of FTTN to 400,000 fewer homes than it anticipated. However, Bell has stated on the record of the proceeding leading to the Decision that this deployment shortfall is not necessarily fully attributable to FTTN regulation. In fact, Bell Aliant commenced its FTTH build in Fredericton and Saint John in June of 2009, before the CRTC mandated FTTN access. Bell Aliant focused on FTTH deployment after 2009 instead of FTTN as the cost of moving straight to FTTH was only three percent more than going FTTN and FTTH was perceived to be a better long-term investment than FTTN.

80. Up to this point of the submission, CNOC has shown how the Decision will ensure substantial investments in broadband infrastructure from both incumbent carriers and competitors. Aside from broad sweeping comments like “the Decision favours resale over investment”, the Petition attempts to argue more specifically that the Decision will have a pronounced impact on FTTH investments in smaller towns and rural areas. For instance, Bell declares that “If the CRTC’s decision stands, competition will be less durable and effective and Canadians outside the largest urban centres will increasingly be left behind as fibre-to-the-home infrastructure projects in their communities are delayed or simply not undertaken.”⁹⁵ On this basis, Bell concludes that the Decision will increase the digital divide between rural and urban communities.⁹⁶ There are several problems with this position.

81. First, CNOC does not agree that the CRTC’s decision to mandate FTTH access will delay or prevent deployments in any areas. Bell has already publically stated that there are certain rural and remote areas in Canada where there is simply no business case to deploy broadband infrastructure.⁹⁷ Bell will not deploy FTTH to such areas regardless of whether the Petition is or

⁹⁵ The Petition, at para 38.

⁹⁶ The Petition, at para 7.

⁹⁷ Bell intervention dated 14 July 2015 in *Review of basic telecommunications services*, Telecom Notice of Consultation CRTC 2015-134, 9 April 2015, (“TNC 2015-134”), at para 6, available online at <http://www.crtc.gc.ca/eng/archive/2015/2015-134.htm>.

is not successful. Furthermore, small towns and rural areas will not be an investment priority because the incentives for incumbent investment that are discussed above in Section 3.1 are not as pronounced in these parts of the country. In fact, Bell admitted at the oral hearing of the proceeding leading to the Decision that smaller communities are not at the top of its list of investment priorities.⁹⁸ The excerpt below from the testimony of Mirko Bibic (Executive Vice President and Chief Legal and Regulatory Officer) is particularly revealing. CRTC Commissioner Molnar and Mr. Bibic are referring to the 20 percent of homes passed in Ontario and Quebec in Bell's operating territory that are only served with legacy technology (what they refer to as the "20 percent")⁹⁹:

3628 COMMISSIONER MOLNAR: And you're competing at 5 to 7 megabits?

3629 [MR. BIBIC]: Well, we don't walk away, we have to, but we're not competing by upgrading the networks to FTTN or FTTP because there's a number of equations there. One is -- well, primarily the cost.

3630 So where are you going to start first; are you going to start first with building FTTN in Toronto or building FTTN in the smaller communities represented by that 20 per cent?

3631 And so, you go down the list and there's the hurdle, right, and there's a whole bunch of other factors. In the meantime, you're kind of there, you know, blocking and tackling and trying your best.¹⁰⁰

82. It is also notable that Bell specified that, of the 20 percent of homes passed exclusively with legacy facilities, 90 percent or more of those homes had the option of a cable alternative.¹⁰¹ Accordingly, in the small areas where Bell claims that FTTH deployment will be affected, only 10 percent of homes, at most, would be affected by delayed broadband access from either an incumbent telephone company or cable carrier. To reiterate, it is CNOC's position that these consumers will not be affected by delayed FTTH deployments. However, as discussed in the next paragraph, even if Bell's claims were true, the consequences of reversing mandated FTTH access would be unconscionable.

⁹⁸ Transcript of oral hearing for the proceeding leading to TRP 2015-326 ("Transcript"), Volume 3, at paras 3618 to 3631, <http://www.crtc.gc.ca/eng/transcripts/2014/tt1126.htm>.

⁹⁹ Transcript, Volume 3, at paras 3618 to 3631, <http://www.crtc.gc.ca/eng/transcripts/2014/tt1126.htm>.

¹⁰⁰ Transcript, Volume 3, at paras 3628 to 3631, <http://www.crtc.gc.ca/eng/transcripts/2014/tt1126.htm>.

¹⁰¹ Transcript, Volume 3, at paras 3618 to 3627, <http://www.crtc.gc.ca/eng/transcripts/2014/tt1126.htm>.

83. Second, assume for the sake of argument that despite all the incentives that incumbent carriers have to aggressively invest in FTTH facilities on a broad scale, the Decision does in fact result in delayed FTTH deployments in a few rural areas. Could the Governor in Council justify scrapping mandated FTTH / DOCSIS 3.1 access and all of the resulting societal and economic benefits discussed in Part 3.0 – simply to accelerate broadband deployment to 10 percent of homes in a very small number of fringe areas by a few months or years? CNOC submits that this trade-off is unfathomable. Even if these areas receive FTTH earlier in the absence of mandated FTTH access (and that is not a certainty by any means), those communities might not ever experience the benefits of competition that FTTH facilities have the potential of fostering. In CNOC’s view, if the choice for a small town or rural community is between early access to FTTH technology in monopolistic conditions or delayed access to the technology in a competitive environment, the latter option is the only reasonable and principled choice for the future.

84. Third, the objective of TRP 2015-326 is not to maximize the FTTH footprint at all costs. Incenting network investment is just one objective of the Decision that must be balanced with all the other objectives of the Decision which are focused on developing an efficient and effective wholesale service framework to serve the needs of Canadians.¹⁰² The CRTC has another ongoing proceeding, initiated by Telecom Notice of Consultation CRTC 2015-134 (“TNC 2015-134”) that is intended to ensure that Canadians in underserved or unserved small towns and rural communities have access to the basic telecommunications services that are necessary for participating in the digital economy. The TNC 2015-134 proceeding is the appropriate forum for examining which services should be made available to rural and remote communities as a matter of policy and how such service expansions could be funded, which may well result in the payment of a subsidy by the industry itself, including Bell and CNOC members, in the form of contribution payments to fund such service expansions. The Petition inappropriately uses this ongoing policy debate as a wedge for overturning mandated FTTH access, which the Decision found to be essential for all of Canada.

85. Finally, government funding has an important role to fill gaps in infrastructure deployment. Even Bell recognizes that government should have the primary role in funding broadband

¹⁰² TRP 2015-326, at para 14.

deployment in remote areas.¹⁰³ Given the important social policy objectives of this infrastructure, it makes much more economic sense to use public funds to fill infrastructure gaps rather than eliminate the competition enabled by mandated FTTH access to allow for the chance that Bell might be more poised to address a minority of these gaps via its own private funding.

86. For all of the above reasons, the Petition’s claim that mandated FTTH access will delay or prevent FTTH deployments in small towns and rural communities is fraught with issues. These grounds do not justify overturning one of the most important rulings of the Decision. Combined, the Decision, the TNC 2015-134 proceeding and government funding will ensure that the digital divide is addressed in the most efficient manner possible.

87. Before moving on to the Part of this submission dealing with Bell’s perceived economic impact of mandated FTTH access, CNOC wishes to briefly address another claim in the Petition about delayed or prevented deployments. More specifically, the Petition claims that the CRTC’s decision to mandate FTTN facilities resulted in 400,000 fewer FTTN deployments than Bell previously planned for. To quote the Petition directly: “**As a direct consequence of that decision**, Bell deployed FTTN technology to 400,000 fewer homes than it had planned to before the CRTC made its decision.”¹⁰⁴ (Emphasis added).

88. While Bell claims that there is a direct relationship between regulation and FTTN deployment in the Petition, Bell’s claims at the oral hearing leading up to TRP 2015-326 were not nearly as certain. Consider the following excerpt:

“So if you look at where we thought we would be when we were looking at this in 2010 by 2012, and you compare it to where we actually ended up in 2012, we are close to 400,000 homes behind where we thought we would be now. Now, I’m not going to lay that entirely at the feet of the Commission’s ruling, but clearly we didn’t go as fast as we thought we would be going.”¹⁰⁵ (Emphasis added).

¹⁰³ Bell intervention dated 14 July 2015 in TNC 2015-134, at p. 22, “Recommendation 4.1”.

¹⁰⁴ The Petition, at para 22.

¹⁰⁵ Transcript, Volume 3, at para 3198, <http://www.crtc.gc.ca/eng/transcripts/2014/tt1126.htm>.

89. Bell also confirmed in its final written argument that the 400,000 home shortfall might not be fully attributable to the CRTC's ruling.¹⁰⁶

90. In fact, Bell Aliant commenced its FTTH build in Fredericton and Saint John in June of 2009, before the CRTC mandated FTTN access. Bell Aliant focused on FTTH deployment after 2009 instead of FTTN as the cost of moving straight to FTTH was only three percent more than going FTTN and FTTH was perceived to be a better long-term investment than FTTN.¹⁰⁷

91. More specifically, the FTTH build was preferable because low population density, a predominantly aerial footprint (80-85%), and long loop lengths accounted for the fact that the costs of deploying FTTH, the superior and future-proof technology, were similar to deploying FTTN.¹⁰⁸ Nine months into its FTTH build and *before* the CRTC mandated FTTN access, Bell Aliant indicated that all internal targets were met or exceeded, and announced an *accelerated* FTTH network build-out.¹⁰⁹ At the end of 2014, subscriber penetration tracked ahead of Verizon's penetration curve in the US, television and triple play attach rates of 90-95% were higher than expected, subscribers consistently migrated to higher tiers, subscriber churn was lower, and demand consistently outstripped Bell Aliant's installation capacity.¹¹⁰

¹⁰⁶ Bell Canada final comments dated 19 December 2014 in the proceeding leading to TRP 2015-326, at para. 45.

¹⁰⁷ Transcript, Volume 3, at paras 3665 to 3674, 3897 to 3905, <http://www.crtc.gc.ca/eng/transcripts/2014/tt1126.htm>.

¹⁰⁸ "In these particular markets [Fredericton, Saint John], the combination of virtually 100 percent aerial infrastructure and lower population density make the cost of fibre to the home and fibre to the node very comparable. These factors and the support of the New Brunswick government made this the right time and the right place for us to launch FTTH to entire communities. The response from customers and businesses to our announcements in these areas has been tremendous." (Bell Aliant, Q2 2009 Results Conference Call, Transcript, p.2, http://www.bell.aliant.ca/english/ir/pdf/2009_Q2_transcript.pdf).

¹⁰⁹ "The capabilities of FTTH and our largely aerial infrastructure make it the ideal architecture to address the growing bandwidth needs of our customers. With our competitive environment increasing in size and intensity and the early success we've had in our Fredericton and Saint John markets, we believe that now is the time to accelerate our FTTH investment. FTTH will help us grow revenue, retain and gain customers, provide more and better services and reduce future costs. Most importantly, it can meet the technology demands of the future, giving us a clear, competitive advantage; that's why we call it future-proof." (p.2) "[W]e are meeting or exceeding every target that we've put in place for fibre to the home on both the sales side, the mix side, how much television we're selling, as well as costs. (p.7) (Bell Aliant, Q1 2010 Results Conference Call, Transcript, http://www.bell.aliant.ca/english/ir/pdf/2010_Q1_transcript.pdf.)

¹¹⁰ Supra note **Error! Bookmark not defined.**, p. 15.

92. It is peculiar that these qualifications are nowhere to be found in the Petition. CNOC submits that the Governor in Council should factor these discrepancies in its assessment of the merits of the Petition.

5.0 BELL'S ECONOMIC EVIDENCE IS WITHOUT BASIS IN FACT OR THEORY

Summary of Key Points:

- Bell's expert reports demonstrating the alleged negative impacts of mandated FTTH access are fraught with analytical shortcomings and are contradicted by more credible evidence and expert opinion.

Wholesale access enhances job creation and other long-term economic benefits of next-generation networks

- With support of three of its expert reports¹¹¹, Bell attempts to leverage the present period of economic uncertainty in Canada for its own gain by fear-mongering about job losses.
- The job loss projections and related economic impacts cited in the Singer Policy Brief¹¹², the Singer et al. report linking FTTP deployment and employment¹¹³ and the Singer report describing the economic impact of Bell's FTTH deployment in Toronto¹¹⁴ are problematic and refuted by the AG report based on the following grounds:
 - In the wake of the Decision, Bell will continue to invest aggressively and job creation will follow.
 - The long-term economic benefits and job creation associated with FTTH comes from the ongoing use of the network – not its one-time creation. Construction and engineering jobs created by the deployment of FTTH are transient.
 - Competition enabled by mandated FTTH access will maximize the economic benefits stemming from the use of the network.
 - The innovations and affordable services of competitors enable Canadians to fully participate in the digital economy. These opportunities will be denied if the Petition is successful.
- Bell's criticism of competitors who do not reduce retail rates in response to wholesale rate reductions is unfair and inappropriate. Competitors do reduce retail rates and / or re-invest

¹¹¹ More specifically, Bell Attachment 1, the Singer Policy Brief and Bell Attachment 3.

¹¹² Bell Attachment 2.

¹¹³ Bell Attachment 1.

¹¹⁴ Bell Attachment 3.

cost savings from wholesale rate reductions in order to generate new innovations. This is what competition is all about.

Issues with the Singer Policy Brief

- The Singer Policy Brief claims that Bell decided to transition to FTTH in order to escape mandated access of its FTTN facilities. This link fails to account for at least five other reasons why Bell would deploy FTTH, including:
 1. Comparable deployment costs despite FTTH being a superior technology;
 2. Lower operating costs associated with FTTH infrastructure;
 3. The significantly improved quality and bandwidth capabilities of FTTH and customer demand for these characteristics;
 4. The mature state and related costs of Bell's FTTN deployment; and,
 5. The competitive threat from cable companies using DOCSIS 3.x technology.
- The Singer Policy Brief also applies a similar analysis in the United States context and concludes that FCC unbundling rules negatively impacted investment in DSL. Yet again, this analysis fails to account for many other factors explaining the differences in investment intensity including, notably, the fact that US telephone companies were not subject to high levels of competitive pressure from cable companies in the late 1990s.

International Comparative Evidence

- Caution should be exercised when reviewing the implications of regulatory frameworks or lack thereof in foreign jurisdictions. Each individual national regulator makes evidence-based decisions tailored to the unique context of its own jurisdiction.

US Comparative Evidence

- Bell argues that there is a correlation between the FCC's decision not to mandate FTTH access and substantial investment in facilities. But this link is not substantiated and does not account for confounding variables.
- Despite not having to share FTTH networks on a regulated basis, incumbent carriers in the United States have not achieved high-levels of FTTH deployment or end-user adoption of FTTH services.
- Bell suggests that the Governor in Council should follow the US example when the US happens to have the highest prices for broadband services – by far – of all G7 countries plus Australia.
- Google's successful FTTH deployment does not justify the absence of mandated access. Google is one of the world's largest companies with a market capitalization of over \$500

billion USD as of mid-December 2015. Despite this, the scale of Google's fibre undertaking is very small and presently there are no additional plans for expansion beyond upcoming builds. Canadian competitors cannot possibly be expected to replicate Google's fibre project on any scale.

EU Comparative Evidence

- The Governor in Council should be especially cautious of international comparative evidence with the EU given that the EU consist of 28 different member states each with distinct economic, social, cultural, political, legal and regulatory environments.
- Unlike the situation in Canada, cable networks are very sparsely deployed in the EU. Thus, incumbent carriers in EU nations are not subjected to the same level of competitive pressure that their Canadian counter-parts face from well-established cable carriers. This may account for the relatively slower pace of investment in EU next-generation networks.
- The Renda Report submitted by Bell is irreparably flawed. The Report misstates the regulations that are actually in force in the EU and presents a highly misleading picture of the regulatory situation in that jurisdiction.
- Bell claims that EC Commissioners are now of the opinion that mandated access to networks will result in disincentives to invest. In reality, Bell's source for this claim is the blog of a single EC Commissioner. Moreover, the quotation is taken out of context and does not support Bell's interpretation.
- Despite Bell's criticisms about the EU, many EU countries are in fact broadband leaders. Leading data clearly demonstrates that regulation in the EU is not stifling broadband adoption and performance.
- EU countries are also leaders when it comes to pricing of higher speed services.

93. In this part of the submission, CNOC addresses all of Bell's arguments and expert reports suggesting that mandated FTTH access will have adverse economic consequences for Canada. As will be demonstrated, the evidence in the Petition and the underlying expert reports suffers from notable shortcomings and is consistently contradicted by more credible evidence and expert opinion which leads to a definitive conclusion: mandated FTTH access will have an overwhelmingly positive impact on the Canadian economy.

94. The arguments contained in Bell's expert reports and in the Petition have already been considered by the CRTC.¹¹⁵ Nonetheless, CNOC has attached to this Response its own reports, the AG Report and the EU Report, to address this evidence directly. The EU Report focuses on Bell's claims regarding the situation in the European Union ("EU"). The AG Report constitutes expert evidence that addresses the four economic reports attached to the Petition by Bell.

95. The AG Report makes the following conclusions, indicated in Table 1 from the AG Report below, regarding the four economic reports attached to the Petition by Bell:

¹¹⁵ In this regard, see the submissions of the incumbents and the attached expert reports in TNC CRTC 2013-551, the proceeding leading to TRP 2015-326. See also, for example, the report prepared by Analysis Group for CNOC's Second Intervention to TNC CRTC 2013-551, "Economic Review of the Provision of Wholesale Telecommunications Services and Associated Policies in Canada", 27 June 2014.

Table 1: Summary of Conclusions

Evidence/Source Materials	Conclusions of this Report
<i>Broadband Market Performance in Canada: Implications for Policy</i> (Bell Canada Petition, Attachment 4)	• capital expenditures comparatively high • broadband widely available and subscription level relatively high • shift to faster connection speeds is slow; deployment and adoption of FTTH networks comparatively low but growing rapidly • consumers pay higher broadband prices and connection speeds are slower compared to leading broadband countries
TRP CRTC 2015-326	• policy is based on sound economic principles of the essential facility test • encourages facilities-based competition where feasible • fosters competition through mandated wholesale access where substantial lessening of retail competition would occur otherwise • transitioning to disaggregated HSA services exposes transport element of network to market forces, and encourages negotiated agreements and competitor investment in middle-mile facilities
<i>Economic Impact of FTTH Deployment in Toronto</i> (Bell Canada Petition, Attachment 1) <i>The Empirical Link Between Fibre-to-the-Premises Deployment and Employment: A Case Study in Canada</i> (Bell Canada Petition, Attachment 3)	• billion dollar capital investment have substantial employment and output effects • widespread adoption of next-generation connectivity fosters economic development and growth • reports do not address twin objective of wholesale framework: provide favorable conditions for investment and competitive retail markets and choice for consumers
<i>Policy Brief: The Economic Impact of the CRTC's Decision to Unbundle Fibre-to-the-Premises Networks</i> (Bell Canada Petition, Attachment 2)	• key assumption of empirical framework is inherently problematic in this context • application to FTTN and FTTH investment of Bell Aliant gives implausible results that contradict economic reasoning and business realities. • does not provide credible estimate of effect of CRTC policy on investment
Investments and Market Developments	• large NGA investments following CRTC policy • public statements and financial analyses are consistent with CRTC finding that incumbents will continue to invest

96. Overall, when Bell’s arguments about the economics of TRP 2015-326 are held up to scrutiny, it quickly becomes apparent that they are without any basis in fact or theory. CNOC urges the Governor in Council not to be misled by Bell’s fear-mongering and to put its trust in TRP 2015-326, which was a decision made by Canada’s expert body for telecommunications regulation, the CRTC, with the benefit of a comprehensive evidentiary record and input from all stakeholders.

5.1 Wholesale access enhances job creation and other long-term economic benefits from next-generation networks

97. With the support of the Singer Policy Brief, the Singer et al. report linking FTTP deployment and employment¹¹⁶ and the Singer report describing the economic impact of Bell’s FTTH deployment in Toronto¹¹⁷, Bell makes claims throughout the Petition to the effect that if TRP 2015-326 is allowed to stand, it will result in between 2,880 to 15,360 job losses in Ontario and Quebec and a \$225 million to \$1.2 billion reduction in GDP.¹¹⁸ These claims are groundless and are a transparent attempt by Bell to leverage the present period of economic uncertainty in Canada for its own gain.

98. Understandably, the Government of Canada might be alarmed by claims from a major company that a regulatory decision will result in reduced investment and job losses, but CNOC urges the Governor in Council not to give into Bell’s fear-mongering. For all of the reasons noted thus far in the submission, as well as those noted by the AG report, Bell will continue to invest in FTTH, and the jobs that are predicted to stem from this investment will continue to be created.

99. The projected job losses cited in the Petition are based on forward looking estimates that rely on multipliers applied to investment figures.¹¹⁹ Interestingly, the “direct effects” (i.e. jobs generated from activities like installing fibre) which contribute to the total multiplier do not seem to account for jobs that have already been created by FTTH deployments in Ontario and Quebec that are either already completed or underway, like Bell’s FTTH roll-out in Toronto.

¹¹⁶ Bell Attachment 3.

¹¹⁷ Bell Attachment 1.

¹¹⁸ The Petition, at para 28.

¹¹⁹ Singer Policy Brief, at Part IV.

100. Notwithstanding, CNOC does not dispute that an important number of jobs will be created directly and indirectly by FTTH deployment. As competitive ISPs, CNOC members understand the positive economic benefits that can come when Canada's middle-class and Canadian businesses are empowered by the Internet. However, CNOC does dispute the claim that TRP 2015-326 will result in job losses due to constraints on investment.

101. It is important to note that the economic stimulation and jobs created by the construction of next-generation networks, while very real, are transient. At some point, construction of any given network will end and the construction and engineering jobs associated with that deployment will vanish. The long-term economic benefits of next-generation networks come from their ongoing use, not from their one-time construction (which is obviously a pre-requisite to them being used). It is the Canadian youth with an interest in programming that comes up with the next big innovation in the era of the digital economy that will really create the long-term economic benefits of FTTH. In this regard, competitors have a key role to play in getting Canadians to adopt the higher speeds and possibilities enabled by these networks.

102. As was explained by CNOC in Section 3.3 above, competitive ISPs have developed numerous innovations designed to appeal to the needs of Canadian consumers that may not be served properly by the incumbent providers.¹²⁰ These innovations generally fall within the broad categories of customer service, technical solutions, novel service offerings and features and the provisioning of quality telecommunications services in underserved rural and minority communities.¹²¹ Through these innovations, competitive ISPs introduce a diverse range of choice when it comes to a consumer's options for services providers and service offerings. In turn, high levels of choice ensure that Canadian consumers are able to find the services that they want and need to enable their full participation in the digital economy.

¹²⁰ Second Intervention of CNOC dated 27 June 2014 in the proceeding leading to TRP 2015-326, at paras 48, and, generally, at paras 47-62 and attached case studies.

¹²¹ *Id.*, at para 48.

103. If the Petition succeeds, competitive ISPs will be prevented from ever entering the markets for next-generation services. No longer will there be a provider that caters to every possible need. Instead, Canada will return to the duopoly of old where Canadians must accept to buy from either the incumbent telephone company or the cable carrier. Some areas of the country will not even have the choice of two next-generation providers. In these areas, the sole next-generation provider would enjoy an unfettered monopoly. Returning to duopolistic or monopolistic conditions will make it more difficult for Canadians to satisfy needs that are not a business priority for the incumbent carriers. Thus, Canada will be deprived of the full potential of next-generation networks in terms of both social and economic benefits.

104. Competitive ISPs also make it easier for Canadians to use the power of the Internet by offering, often, more affordable rates than the incumbent providers. This is affirmed by the 2015 edition of the “Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions” report prepared by Wall Communications Inc. (the “Wall Report”)¹²². In this year’s Wall Report, the annual examination of the cost of telecommunications services in Canada and abroad included two competitors in its study: TekSavvy Solutions Inc. (“TekSavvy”) and Primus Telecommunications Canada Inc.¹²³ The Wall Report found that across all service levels, the services offered by these competitors were on average 21% to 30% less expensive than the equivalent services offered by the incumbents.¹²⁴ Accordingly, broadband affordability is yet another way that wholesale access will enable Canadians to take advantage of the economic possibilities of FTTH, by allowing more Canadians to get connected at rates that make next-generation services attainable for the middle class and those working hard to join it.

105. The innovations described above, as well as the Wall Report constitute a complete response to the Petition’s criticism of competitors on the basis that they allegedly did not reduce retail rates or invest in their own network facilities following a reduction in wholesale rates.¹²⁵ As the Wall Report indicates, certain competitors already have amongst the lowest retail rates in the country.

¹²² Wall Communications Inc. “Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions”, March 30, 2015 (the “Wall Report”).

¹²³ Wall Report, at p. 38.

¹²⁴ *Ibid.*

¹²⁵ The Petition, at para 56.

In addition, when wholesale rates were reduced, many competitors chose to invest the savings into the innovations which give them a competitive advantage. The decision to lower retail rates, which some competitors do, or invest in their businesses in response to changing wholesale rates is a very business-specific decision that each competitor will assess differently. It is certainly not up to Bell to dictate how competitors should respond to changing business circumstances.

106. The inappropriateness of Bell criticizing the legitimate business choices of competitors also applies to its claim that TekSavvy, a CNOC member, misled the CRTC with regard to its intentions to invest in FTTH during the proceeding leading to TRP 2010-632. Business decisions must adapt to changes in circumstances. TekSavvy has chosen to innovate and deliver quality Internet services to end-users in other ways. In fact, TekSavvy's numerous innovations to deliver value to end-users served as a standalone case study that CNOC presented to the CRTC in the proceeding leading to TRP 2015-326.¹²⁶ Incidentally, TRP 2015-326 will require competitors to invest in their own transport facilities if they wish to take full advantage of the disaggregated framework for FTTH established by the decision.¹²⁷

107. Overall, far from adversely affecting the long term economic impacts of next-generation networks, mandated FTTH access will allow more Canadians to get connected and participate in the digital economy of the twenty-first century. On these grounds, the economic impacts that are described in the Singer Policy Brief, the Singer et al. report linking FTTP deployment and employment¹²⁸ and the Singer report describing the economic impact of Bell's FTTH deployment in Toronto¹²⁹ are misleading.

5.2 Issues with the Singer Policy Brief

108. Aside from the Petition's incorrect claim that TRP 2015-326 will correspond with job losses and other negative economic outcomes, Bell's assessment of the economic impacts of wholesale regulation are based on assumptions that simply do not hold up to scrutiny. Analysis

¹²⁶ Second Intervention of CNOC dated 27 June 2014 in the proceeding leading to TRP 2015-326, at p 32.

¹²⁷ Competitors may also be able to lease transport facilities in some cases, although this matter is still being reviewed in the proceedings ongoing right now at the CRTC to determine the configuration of mandated wholesale access to FTTP. However, in order to fully realize the cost-savings available from the disaggregated model, competitors will need to have their own transport facilities.

¹²⁸ Bell Attachment 3.

¹²⁹ Bell Attachment 1.

Group extensively deals with the errors of reasoning in the expert reports submitted as attachments to the Petition. Some of Analysis Group's key findings are discussed below.

109. Analysis Group demonstrates that the report by Dr. Singer entitled "Policy Brief: The Economic Impact of the CRTC's Decision to Unbundle Fibre-to-the-Premises Networks" ("Singer Policy Brief"), from which Bell draws most of the support for its claims about the negative economic impacts of TRP 2015-326, is based on flawed assumptions and cannot be viewed as credible. CNOC will not repeat all of Analysis Group's criticisms of the Singer Policy Brief here, but will deal with the central argument of the Singer Policy Brief: the impact TRP 2010-632 on Bell's investment in FTTN facilities.

110. In TRP 2010-632, the CRTC determined that Bell, and the other incumbent telephone companies, would need to provide competitors with wholesale access to their FTTN facilities. Using an economic concept known as Difference-in-Difference, the Singer Policy Brief argues that this decision was responsible for Bell shifting its investment from FTTN facilities, which it was required to provide competitors with wholesale access to, to FTTH facilities, which it was not required to provide competitors with wholesale access.¹³⁰ The Singer Policy Brief goes on to make the claim that were it not for TRP 2010-632, Bell Aliant's FTTN investment in 2013 would have been \$254.5 million, more than 40 times higher than what it actually was, or 93% of its actual investment in FTTH in that year.¹³¹ On this premise, the Singer Policy Brief concludes that mandated access hurts investment.

111. The Singer Policy Brief conducts a similar analysis using the Difference-in-Difference methodology to the situation in the United States, where DSL was subject to FCC unbundling requirements and cable was not.¹³² The conclusion that Dr. Singer reaches is that the FCC unbundling rules negatively impacted investment in DSL.¹³³

112. As Analysis Group explains, Difference-in-Difference methodology

¹³⁰ Singer Policy Brief, at pp. 8-9.

¹³¹ AG Report, at para 70.

¹³² Singer Policy Brief, at pp. 11-13.

¹³³ *Ibid.*

[...] compares the difference in outcomes (before-after) within the market of interest against the difference in outcomes in a benchmark market, i.e. a counterfactual state of the world which is characterized by the absence of the policy intervention. The key identifying assumption – often referred to by economists as the *common trends* assumption – assumes that but-for the policy intervention, the two markets would have developed identically. The difference-in-differences methodology controls for changes in common factors affecting both markets, but fails to account for time-varying factors that have a different impact on the two markets unless such factors are explicitly included in the analysis.

[...]

The common trends assumption in this natural experiment described in the Policy Brief supposes that in the absence of the CRTC's policy to mandate access FTTN facilities, FTTN and FTTH investment by Bell would have grown at the same rate. [Emphasis added. Footnotes omitted.]¹³⁴

113. To be frank, this assumption is absurd. As Analysis Group points out, the Singer Policy Brief ignores the many reasons that Bell publically identified for shifting its investment from FTTN to FTTH, including: (1) comparable deployment costs despite FTTH being a superior technology; (2) lower operating costs associated with FTTH infrastructure; (3) the significantly improved quality and bandwidth capabilities of FTTH and customer demand for these characteristics; (4) the mature state and related costs of Bell's FTTN deployment; and, (5) the competitive threat from cable companies using DOCSIS 3.x technology.¹³⁵ These are all much more plausible reasons for why Bell shifted its investment from FTTN to FTTH instead of the impact of mandated access; especially as Bell's investment in FTTN continued to grow for a period of time after the release of TRP 2010-632, further calling into question the credibility of the Singer Policy Brief analysis.¹³⁶

114. Similar analytical issues confound the Singer Policy Brief's use of the United States example, discussed more fully below in Section 5.3. The Singer Policy Brief fails to account for the many other factors explaining the differences in investment intensity between

¹³⁴ AG Report, at paras 63-67.

¹³⁵ AG Report, at para 67.

¹³⁶ AG Report, at para 65.

telecommunications companies and cable companies in the United States, namely the fact that telecommunications companies may not have felt much competitive pressure from cable companies in the late 1990s.

115. Overall, the theoretical underpinning of the Singer Policy Brief's, and thus Bell's argument that mandated wholesale access reduces investment in networks does not bear scrutiny, not only for the reasons identified by Analysis Group, but also for all of the reasons identified throughout this submission.

5.3 Issues with Bell's comparative evidence with the United States

116. In the Petition, Bell makes several references to telecommunications regulation in the United States in an attempt to bolster its arguments that requiring the incumbent carriers to provide competitors with wholesale access to their FTTH networks will negatively impact investment.¹³⁷ Bell's theory is that the removal of regulations requiring incumbents to provide access to FTTH networks in the United States has led to significant investment in these networks by American telecommunications companies.¹³⁸

117. Bell also places great stock in the example of Google Fiber. Bell's arguments regarding Google Fiber are two-fold. Firstly, Bell argues that, if the United States had mandated access to FTTH networks, Google Fiber never would have invested in fibre networks in the first place.¹³⁹ Secondly, Bell argues that Google Fiber is indicative of the fact that there are no incumbents when it comes to FTTH networks and that everyone is starting from the same playing field.¹⁴⁰

118. At the outset, CNOC urges the Governor in Council to be very cautious about using international comparisons when it comes to the impacts of telecommunications regulations. There are many factors that impact the roll-out of next-generation networks, and their subsequent adoption by end-users, in any given country, including economic, social, cultural, political, geographic, legal and regulatory, and other factors. This makes comparisons between different

¹³⁷ See, for example, the Petition, at paras 39, 42-44, 46, 48, and 63.

¹³⁸ The Petition, at paras 42-44, 46.

¹³⁹ *Id.*, at para 39.

¹⁴⁰ *Id.*, at para 48.

jurisdictions very difficult and of questionable relevance. It is equally important to recognize that expert bodies, such as the Federal Communications Commission (“FCC”) in the United States, and the CRTC in Canada, make evidence-based decisions that are proper for the unique circumstances of their own country in light of prevailing legal and policy norms. TRP 2015-326 is such an evidence-based decision that is tailored to the unique context, including the *Act*, Canadian telecommunications policy objectives¹⁴¹ and Policy Direction.

119. As such, TRP 2015-326 should not be lightly overturned based on improper comparisons with jurisdictions with telecommunications sectors that operate in very different contexts. Nonetheless, as Bell has made claims regarding the impact of FCC regulations on investment in the United States, CNOC shall respond with a few observations highlighting the state of broadband in the United States.

The link between FCC regulations and investment is unsubstantiated

120. Bell argues that the decision of the FCC not to mandate access to FTTH led to a substantial increase in investment by facilities-based providers around 2003.¹⁴² This argument suffers from a common logical reasoning error. Bell’s position is essentially that because the regulations were changed at the same time that investment in FTTH began to increase, the former caused the latter.

121. However, without greater information about the various factors that influence investment in the United States it is impossible to make this claim. Other equally plausible factors for the increase in investment in FTTH include a need by the incumbent carriers to compete with the increasingly faster speeds offered by cable companies as well as consumer demand for speeds beyond what could be provided on traditional copper networks.

122. Interestingly, the staff at the FCC who drafted the FCC’s National Broadband Plan¹⁴³ called for the FCC to re-examine the issue of competitor access to fibre facilities (a

¹⁴¹ *Act* at s 7.

¹⁴² The Petition, at paras 43-44 and Figure 5.

¹⁴³ Federal Communications Commission, *Connecting America: The National Broadband Plan*, 17 March 2010. (“National Broadband Plan”). See Appendix E of the National Broadband Plan for a list of the contributors to the plan. As an aside, CNOC disputes the characterization of Blair Levin as the “chief author” of the National

recommendation that the Commissioners of the FCC have not yet acted upon), apparently without any concern that such access would lead to an implosion of investment incentives.¹⁴⁴ With this in mind, CNOC is highly skeptical of the cause and effect relationship that Bell is attempting to draw between FCC regulations regarding access to FTTH and investment.

123. Bell further relies on arguments from SBC Communications Inc. (“SBC Communications”) in 2001 and, more recently, Google Fiber, for its argument that mandated access to FTTH would have hampered investment in the United States.¹⁴⁵ The case of Google Fiber will be dealt with in greater detail further below, but the quotation from SBC Communication’s 2001 Quarterly Report to Shareholders does not support Bell’s argument. In fact, all it indicates is that regulatory uncertainty was an issue for SBC Communications Inc., not mandated access *per se*.¹⁴⁶

124. Consequently, Bell has failed to substantiate the linkage it draws between the FCC deciding not to mandate access to FTTH (a decision which, as noted above, FCC staff have called on Commissioners to review in the National Broadband Plan), and increases in investment in FTTH networks.

FTTH deployment and uptake in the United States has not been particularly impressive

125. In any event, despite not having to share their FTTH networks with competitors, incumbent carriers in the United States cannot boast of particularly impressive levels of FTTH deployment or uptake by end-users.

126. For example, as Analysis Group indicated in its report attached to CNOC’s second intervention in the proceeding leading to TRP 2015-326, Verizon, which is by far the largest FTTH

Broadband Plan in paragraph 39 of the Petition. Mr. Levin was head of the group that oversaw its creation, but could not properly be said to have been its author, as Appendix E demonstrates.

¹⁴⁴ *Id.*, at pp. 47-48.

¹⁴⁵ The Petition, at paras 39, 42.

¹⁴⁶ *Id.*, at para 42.

provider in the United States¹⁴⁷, has effectively stopped building-out its FTTH network.¹⁴⁸ Given that the network is still only available to a very small proportion of the population of the United States, and Verizon does not need to worry about mandated access at the moment, this would seem to indicate that mandated access is not the only, or even a major, factor that can determine the scope of FTTH deployment.¹⁴⁹

127. In addition, to the extent that advanced networks are being deployed in the United States, American end-users have not shown any great enthusiasm for adopting the higher speeds that they enable. In fact, Akamai's quarterly State of the Internet Report found that, while for the third quarter of 2015 the United States led countries in the Americas (North and South America) in terms of the percentage of connections above 15 Mbps at 24% of total connections, Canada was a close second at 21% and that year-over-year, Canada had a significantly faster growth rate in the number of connections above 15 Mbps at 52% to the United States' 29%.¹⁵⁰

128. In fact, the State of the Internet Report found that while the United States had an extremely slight edge in terms of overall average connection speeds in the third quarter of 2015 (12.6 Mbps to Canada's 11.9 Mbps), Canada's year-over-year growth in terms of average connection speeds was 16% compared to the United States' growth of 9.4%.¹⁵¹

129. Incidentally, Akamai specifically noted, with regard to Canada, "new measures requiring broadband incumbents to offer wholesale access to their infrastructure in an effort to foster increased competition among broadband providers" as a development that it expects "to be reflected in continuing improvements in broadband adoption across all speed tiers."¹⁵²

¹⁴⁷ Broadband Now, "Fiber Broadband Providers in the USA", available online at <http://broadbandnow.com/Fiber-Providers>.

¹⁴⁸ Analysis Group, Attachment A to CNOC's Second Intervention dated 27 June 2014 in the proceeding leading to TRP 2015-326, entitled "Economic Review of the Provision of Wholesale Telecommunications Services and Associated Policies in Canada", at footnote 81.

¹⁴⁹ Broadband Now, "Fiber Broadband Providers in the USA", <http://broadbandnow.com/Fiber-Providers>.

¹⁵⁰ Akamai, "2015 Q3 State of the Internet Report", 16 December 2015, available online at <https://www.stateoftheinternet.com/resources-connectivity-2015-q3-state-of-the-internet-report.html> ("Q3 2015 State of the Internet Report"), at pp. 27.

¹⁵¹ *Id.*, at p. 26.

¹⁵² *Id.*, at p. 28.

130. All of this further emphasizes the point that there is no clear correlation between the FCC's refusal to mandate access to FTTH networks and a successful broadband policy.

Americans pay more for Internet than almost anyone else

131. One of the potential reasons for the slow rate of adoption of higher-speeds by American consumers, a rate that appears to be falling behind Canada according to the State of the Internet Report, is the extremely high cost of Internet access for American consumers.

132. The Wall Report found that for broadband, the United States was by far the most expensive country when examining the G7 plus Australia.¹⁵³ The Wall Report examined four different "baskets" of Internet services, with Level 1 being the most basic tier, and Level 4 being the most advanced tier (meaning the highest speeds and data caps).¹⁵⁴ The comparison between Canada and the United States of the average monthly cost for a consumer to purchase each basket (all amounts in Canadian dollars) is illustrative:

- Level 1: 3.0 Mbps download with 10 GB of data usage per month.
 - o Canada \$48 per month, the United States \$55 per month.
- Level 2: 4.0 to 15 Mbps download with 50 GB of data usage per month.
 - o Canada \$57 per month, the United States \$68 per month.
- Level 3: 16 to 40 Mbps download with 100 GB of data usage per month.
 - o Canada \$68 per month, the United States \$92 per month.
- Level 4: Over 40 Mbps download with 150 GB of data usage per month.
 - o Canada \$81 per month, the United States \$106 per month.¹⁵⁵

133. CNOC finds it troubling that Bell would ask the Governor in Council to adopt the regulatory scheme of a country that has the highest Internet prices in the G7 and Australia at a time when the global economy is increasingly shifting to the digital era. Make no mistake, in the twenty-first century, access to broadband Internet will undoubtedly be necessary for an individual's

¹⁵³ Wall Report, at pp. 42.

¹⁵⁴ *Id.*, at p. 35.

¹⁵⁵ *Id.*, at pp. 35, 42.

participation in the digital economy. Eliminating competition by rejecting mandated access to FTTH and DOCSIS 3.1, will give incumbent telephone companies and cable carriers the ability to maintain prices above competitive levels. Such an outcome would prevent Canadians from accessing next-generation broadband services and realizing the benefits that these technologies can provide.

The case of Google Fiber

134. As noted above, Bell makes substantial use of the case of Google Fiber to argue that if the United States had mandated access to FTTH networks, Google Fiber never would have invested in fiber networks¹⁵⁶ and that Google Fiber is indicative of the fact that there are no incumbents when it comes to FTTH networks and that everyone is starting from the same point¹⁵⁷.

135. Interestingly, Bell's source for the first claim is not from Google itself, but from an article written by Blair Levin.¹⁵⁸ Even more interesting is that Bell omits a key paragraph from Mr. Levin's article between the first and second paragraphs that it cites in the Petition. The omitted paragraphs read as follows:

This is not to suggest that open access cannot work in some places; indeed I have worked with some communities that have chosen that path. But Google Fiber would not have expanded under those rules.¹⁵⁹ [Emphasis added]

136. In essence, Mr. Levin is saying that in the presence of regulation, Google specifically would not have been a player that would expand under those rules. This is highly speculative. Moreover, even if that were for some reason true, that is not to say that another carrier could not flourish under "open access" regulation of fibre networks.

¹⁵⁶ The Petition, at para 39.

¹⁵⁷ *Id.*, at para 48.

¹⁵⁸ Blair Levin, "What have we learned from Google Fiber?", *CNET*, 31 July 2015, <http://www.cnet.com/news/what-have-we-learned-from-google-fiber/>.

¹⁵⁹ *Ibid.*

137. Ironically, the article notes that Google Fiber itself is seeking “improved pole access”, which is a form of wholesale access. After all, pole access is merely wholesale access to essential infrastructure that has been built by others.¹⁶⁰

138. In any event, for all of the reasons stated in this response to the Petition, CNOC is skeptical of claims by companies that they will not invest in FTTH if there is mandated access. We must be evermore skeptical of these claims when they are made even before the regulator has developed a costing model to determine rates of return.

139. When discussing Google Fiber, it is also important to recognize the very small scale of this undertaking at the present time. Furthermore, it is not at all clear if Google will continue to pursue this venture. Currently, Google Fiber is only available in select areas of Atlanta, Austin, Charlotte, Kansas City, Nashville, Provo, Raleigh-Durham, Salt Lake City, and San Antonio.¹⁶¹ With regard to expansion plans Google Fiber’s response is unenthusiastic: “For now, we’re focused on serving customers and designing and building networks in the cities we’ve already announced.”¹⁶²

140. Therefore, as an example of the new players that will allegedly rush to build FTTH networks if there is no mandated access, Google Fiber is a dubious example.

141. With regard to the second point, CNOC directs the Governor in Council to Section 2.3 of this submission for proof that there are major incumbency advantages when building FTTH networks. As submitted by CNOC, it is absurd for Bell to assert that all providers start from the same position when it comes to building out next-generation access facilities.

142. In addition, the ability of Google Fiber to overcome some of these incumbency advantages (although as noted above Google Fiber still has issues with pole access) and engage in a very limited Fiber build is also reflective of the fact that Google is one of the world’s largest companies with a market capitalization of over \$500 billion USD as of mid-December 2015.¹⁶³ It is simply

¹⁶⁰ *Ibid.*

¹⁶¹ Google Fiber, <https://fiber.google.com>.

¹⁶² Google Fiber, “Frequently asked questions for all cities, Expansion Plans”, <https://fiber.google.com/support/>.

¹⁶³ Google Finance, “NASDAQ: GOOGL”, 14 December 2015, <<https://www.google.ca/finance?hl=en&gl=ca>>.

unrealistic to expect Canadian ISPs, or almost any Canadian company for that matter, to be able to match Google's resources.

Conclusion: Bell's US Evidence

143. Overall, Bell's use of the example of the United States as a reason why the Governor in Council should overturn the Commission's evidence-based decision is fundamentally flawed for all of the reasons noted above. Not only should the Governor in Council be especially cautious about international comparisons, the United States is not even a particularly favourable international comparison. The United States is currently a jurisdiction with unimpressive investment in FTTH facilities and sky-high Internet prices that puts the fastest speeds out of reach of its struggling middle-class.

144. The Governor in Council should not be misled by this ill-informed comparison.

5.4 Issues with Bell's comparative evidence with the European Union

145. Along with referencing what it believes to be the sterling example of a minimalist approach to regulation in the United States, Bell points to the European Union ("EU") as an example of what Canada must avoid when it comes to telecommunications regulation. In particular, Bell argues that mandated wholesale access in the EU has led to lacklustre investment in next-generation networks.¹⁶⁴

146. At the outset, CNOC urges the Governor in Council, as with the case of the United States described above, to be extremely wary of using international comparisons as a basis for determining telecommunications policy. This warning takes on even greater importance when dealing with the EU. It is very difficult to extract any firm conclusions from an EU-wide based analysis as the European Union currently consists of 28 different member states.¹⁶⁵ All of these states have very different economic, social, cultural, political, geographic, legal, and regulatory environments and have joined the EU with very different telecommunications systems.

¹⁶⁴ The Petition, at paras 38, 40, and 45-46.

¹⁶⁵ European Union, "About the EU", http://europa.eu/about-eu/countries/member-countries/index_en.htm.

147. In addition, while the European Commission (“EC”) can make regulations applicable to the whole of the EU, there are also national regulators, such as OfCom in the United Kingdom, that are responsible for interpreting and applying EC regulations to their national contexts, meaning that regulatory outcomes can be quite divergent depending on the EU country being examined. This multi-national situation further complicates the use of the EU as an example for or against any given regulatory policy.

148. Even if one were to accept the premise that international comparisons can be useful in some situations for telecommunications regulation, the EU is likely not the most appropriate region of the world to examine when looking for lessons for Canadian telecommunications regulation. As Analysis Group highlighted in its report attached to CNOC’s second intervention in the proceeding leading to TRP 2015-326, cable networks are very sparsely deployed in the EU.¹⁶⁶ The relative lack of cable in the EU is a fact of the utmost importance. What this means is that, to the extent that there would be any proven concerns about the slow pace of investment in next-generation networks such as FTTH in any given EU country, it may be explained by the fact that the incumbent carriers in that country do not feel any competitive pressures from the speeds offered by cable and thus less urgency to invest.

149. Without the presence of competing cable companies, some EU-based incumbents may choose not to take on an aggressive pace of investment in FTTH networks regardless of whether there is mandated access to competitors or not. The lack of ubiquitous cable coverage in many parts of the EU is a further reason why this example put forward in the Petition is of dubious value for Canada.

150. Nonetheless, as Bell has chosen to make various claims about the impact of mandated access in the EU, CNOC shall respond with some observations about the state of broadband in the EU.

¹⁶⁶ Analysis Group, Attachment A to CNOC’s Second Intervention dated 27 June 2014 in the proceeding leading to TRP 2015-326, entitled “Economic Review of the Provision of Wholesale Telecommunications Services and Associated Policies in Canada”, at pp. 33-34 and footnote 61.

The Renda Report's and Bell's portrayal of the regulatory situation in the EU is deeply flawed

151. Firstly, it must be noted that the report by Andrea Renda entitled “Regulating Broadband: Lessons from the European Union, and Implications for Canada” (the “Renda Report”), which deals with the regulatory regime in the European Union, is irreparably flawed. CNOC has submitted the EU Report which highlights the many issues with the Renda Report. CNOC will not examine them in detail here, but some of the key issues with the Renda Report are:

- Inaccurately portraying Europe as being in a broadband crisis when in fact Europe is a world leader on key broadband metrics.¹⁶⁷
- Serious material errors regarding the currently applicable EU regulatory framework, with regard to the concept of ‘essential facility’, the concept of Significant Market Power, and the substance of the EU framework and its implementing measures, notably the EU Directives and the 2010 and 2013 EC Recommendations.¹⁶⁸
- Claiming, without any factual basis, that if the EU framework was to be used in Canada that Canadian ILECs would not be subject to mandated wholesale access due to the wide-spread presence of cable companies.¹⁶⁹
- Inappropriate forward-looking statements about the possible future evolution of the EU framework, which cannot and should not be relied upon.¹⁷⁰

152. Overall, The Renda Report, and by extension Bell’s references to it in the Petition, completely misstate the regulations that are actually in force in the EU and presents a highly misleading picture of the regulatory situation in that jurisdiction.

153. In addition, Bell makes a reference to the regulatory situation in the EU that is not found in the Renda Report at paragraph 40 of the Petition in which it claims that European Commission (“EC”) Commissioners are now of the opinion that mandated access to networks will result in disincentives to invest. However, Bell’s source for this is not any official pronouncement from

¹⁶⁷ EU Report, at para 2.

¹⁶⁸ *Id.*, at para 3.

¹⁶⁹ *Id.*, at para 4.

¹⁷⁰ *Id.*, at para 5.

the European Commission, in fact, it is a blog post by a single EC Commissioner, Günther H. Oettinger.¹⁷¹

154. Moreover, aside from the fact that Mr. Oettinger's blog post is in no way an authoritative statement of the official view of the European Commission, the entire quotation, read in context, does not support the interpretation that Bell attempts to place on it:

“The EU's telecoms rulebook is often criticised for not doing enough to support the transition towards Next Generation Access (NGA) networks. The principle that competition drives investment is not under question, but the sheer size of the investment required for digital age forces us to reflect.

In areas where competition is already driving infrastructure investment, we should focus our regulation on real bottlenecks; simplifying, and making it more consistent across countries. We must make investments in the highest capacity networks rewarding and consider how regulation could increase incentives for incumbents and more recent competitors. We should reward those who take risks and build future-proof digital networks by letting them use that comparative advantage in competition with others. Public authorities also need more tools to encourage operators to roll out networks in areas where GDP, population density, digital literacy make investment less attractive.”¹⁷²

155. In summary, Mr. Oettinger is saying that those who build next-generation networks must be rewarded for their efforts and they must be allowed to use those networks to compete. This is an uncontroversial statement. CNOC agrees with the proposition that Bell should be able to use its FTTH network to compete with the cable companies, as well as other ISPs, and that it should be rewarded for building the network. In fact, one of the purposes of the costing exercises being conducted by the CRTC at this very moment is to ensure that Bell and other incumbent carriers are provided appropriate wholesale access rates that reward them for their investments in FTTH networks.

¹⁷¹ See footnote 49 of the Petition, Günther H. Oettinger, “Future proof telecom rules for a Digital Single Market”, 11 September 2015, https://ec.europa.eu/commission/2014-2019/oettinger/blog/futureproof-telecom-rules-digital-single-market_en.

¹⁷² *Ibid.*

156. Overall, Bell has not presented an accurate picture of the regulatory scheme in the EU and thus its arguments with relation to the EU should not be given much weight.

EU countries are broadband leaders

157. In any event, despite Bell's claims about the dire state of the Internet in the EU, the data shows that many of the EU countries that are subject to this supposedly oppressive regulatory regime that stifles investment are actually broadband leaders. In fact, Akamai's quarterly "State of the Internet Report" for the third quarter of 2015 found that EU countries were very well represented in terms of its list of the top 10 countries with the highest average connection speeds.¹⁷³

158. Sweden, a member of the EU, was ranked 2nd globally for highest average connection speeds with an average connection speed of 17.4 Mbps and a 23% increase in average connection speed year-over-year.¹⁷⁴ Other EU members in the top 10 globally included The Netherlands, Latvia, Finland, and the Czech Republic.¹⁷⁵ Aside from having amongst the highest average connection speeds in the world, all of the EU countries noted above also showed year-over-year increases in average connection speeds with Finland leading the pack with an impressive 26% increase in the average connection speed in that country.¹⁷⁶ Clearly, the regulatory framework in the EU is not stifling broadband adoption and performance in member countries.

159. EU countries were also very well represented in the State of the Internet Report when looking at the top 10 countries with the greatest percentage of average connection speeds above 25 Mbps. Globally, only 5.2% of unique IP addresses connected to Akamai are at average connection speeds above 25 Mbps in the second quarter of 2015.¹⁷⁷ Sweden was once again ranked 2nd overall, with 19% of its connections at an average speed above 25 Mbps. Latvia was 4th with 14%, Finland was 8th with 12%, The Netherlands was 9th with 12%, and Czech Republic was 10th with 11%.¹⁷⁸ The EU countries also all showed impressive year-over-year growth with Czech

¹⁷³ Q3 State of the Internet Report, at p. 12.

¹⁷⁴ *Ibid.*

¹⁷⁵ *Ibid.*

¹⁷⁶ *Ibid.*

¹⁷⁷ *Id.*, at p. 15.

¹⁷⁸ *Ibid.*

Republic posting a remarkable 54% growth rate in the number of connections above 25 Mbps.¹⁷⁹ All of this is to say that the argument that somehow the EU has “fallen behind” because of its regulatory scheme is unsubstantiated.

160. On another important measurement of broadband performance, the cost to consumers, the EU is also a leader compared to Canada and the United States. The 2015 Wall Report for Industry Canada and the CRTC, described above in the section on the United States, found that the EU countries examined, the United Kingdom, France, Germany, and Italy, had significantly more affordable Internet rates than Canada and the United States at almost every tier examined.¹⁸⁰ This was particularly true at the highest tier examined by the 2015 Wall Report, download speeds over 40 Mbps, where the average monthly cost to consumers in the four EU countries examined ranged from \$51.00 to \$60.00 CDN.¹⁸¹ In contrast, to obtain the same service in Canada would cost approximately \$81.00 a month and in the United States it would cost an astronomical \$106.00 per month.¹⁸²

161. Interestingly, the 2015 Wall Report found that unlike Canada and the United States, Internet service providers in the four EU countries surveyed did not even bother offering speeds at the lowest tier, below 3 Mbps download speeds.¹⁸³ Providers in the United Kingdom did not offer any speeds below the third tier, out of four, examined by the 2015 Wall Report with packages starting at the 16-40 Mbps download speed range.¹⁸⁴ This is further evidence that consumers in the EU are transitioning to increasingly faster speeds and are not being held back by the regulatory regime.

162. The noticeably lower costs to consumers in the EU is significant. Affordable rates for Internet access means that it is easier, compared to their American counterparts that pay amongst the highest rates in the world for Internet access, for the middle-class in the EU to participate in the digital economy of the twenty-first century.

¹⁷⁹ *Ibid.*

¹⁸⁰ Wall Report, at p. 42.

¹⁸¹ *Ibid.*

¹⁸² *Ibid.*

¹⁸³ *Ibid.*

¹⁸⁴ *Ibid.*

163. Consequently, far from the EU being mired in the dire situation depicted by Bell as a result of its regulatory regime, the data outlined above, which examines a number of EU countries from across the continent, shows a healthy digital economy that is transitioning to higher speeds at affordable rates.

Conclusion: Bell's EU evidence

164. Bell's attempt to use the EU as an example of the pitfalls of mandated wholesale access is not convincing. Aside from the fact that the comparison is of questionable value in the first place, not only does Bell completely misunderstand the regulatory scheme that actually exists in the EU, but it also portrays the EU as being in a broadband crisis when, in fact, consumers are being very well-served.

6.0 CANADA'S BROADBAND PERFORMANCE

Summary of Key Points:

- The Petition relies on a report prepared by Jeffrey A. Eisenach entitled "Broadband Market Performance in Canada: Implications for Policy"¹⁸⁵ which claims that based on Canada's broadband performance, there is a case for scaling back "open access regulation"¹⁸⁶. The data simply does not uphold that conclusion. To the contrary, current data depicting the state of broadband in Canada today strongly supports the CRTC's decision to mandate access to FTTH facilities.
- Broadband investment in Canada is extremely high and generates some of the highest revenues per access path among all OECD countries. This situation has developed around longstanding mandated access regulation of fixed broadband access paths.
- Although the annual growth rate of fibre subscriptions in Canada was 52.2% in 2014¹⁸⁷, as of December 2014, fibre connections only accounted for 4.7% of fixed broadband connections in the country.
- The prices for broadband services in Canada are higher than most G7 countries plus Australia. Canadian prices are especially and disproportionately high for higher speed services like the next-generation speeds available over FTTH facilities.

¹⁸⁵ Bell Attachment 4.

¹⁸⁶ Bell Attachment 4, at para 44.

¹⁸⁷ AG Report, at para 32.

- Mandated FTTH will inject competition where it is needed the most: in the emerging markets for next-generation broadband services.

165. While the previous sections 5.3 and 5.4 referenced aspects of the broadband situation in Canada for the purpose of addressing United States and EU comparative evidence in the Petition, this Part of CNOC’s submission focuses entirely on the present state of Canadian broadband, where Canada’s broadband strengths lie and where we need to improve.

166. The Petition relies on a report prepared by Jeffrey A. Eisenach entitled “Broadband Market Performance in Canada: Implications for Policy”¹⁸⁸ to argue that the state of Canadian broadband warrants deregulation of FTTH facilities.¹⁸⁹ Yet, as will be made clear throughout this Part of CNOC’s submission, the need for mandated access to FTTH facilities is supported by the most recent statistics depicting the state of broadband in Canada today. International comparisons demonstrate that Canada ranks highly in terms of broadband investment and penetration but ranks poorly when it comes to broadband prices and the adoption of faster speeds. This data supports CNOC’s position and the Decision’s finding¹⁹⁰ that: (1) incumbent carriers have strong incentives to invest in FTTH deployments regardless of whether or not those facilities are subject to mandated access regulation; and (2) mandated wholesale access to FTTH facilities is required to stimulate competition in downstream retail markets which in turn, will discipline prices for FTTH based broadband services and increases the adoption of this next-generation technology.

Investment in broadband networks and revenue per access path

167. As highlighted in the Petition¹⁹¹ and in Figure 2 below, Canada ranks near the top of OECD countries in terms of public telecommunications investment per access path (which includes analogue lines, Integrated Services for Digital Network or “ISDN” lines, DSL, cable, fibre and mobile access paths). According to Bell, this “world leadership position”¹⁹² is attributable to the willingness of Canadian facilities-based providers, like Bell, to invest.¹⁹³ CNOC agrees. This high

¹⁸⁸ Bell Attachment 4.

¹⁸⁹ See for example, the Petition, at paras 35 and 36.

¹⁹⁰ TRP 2015-326, at para 141.

¹⁹¹ The Petition, at p. 31, Figure 1.

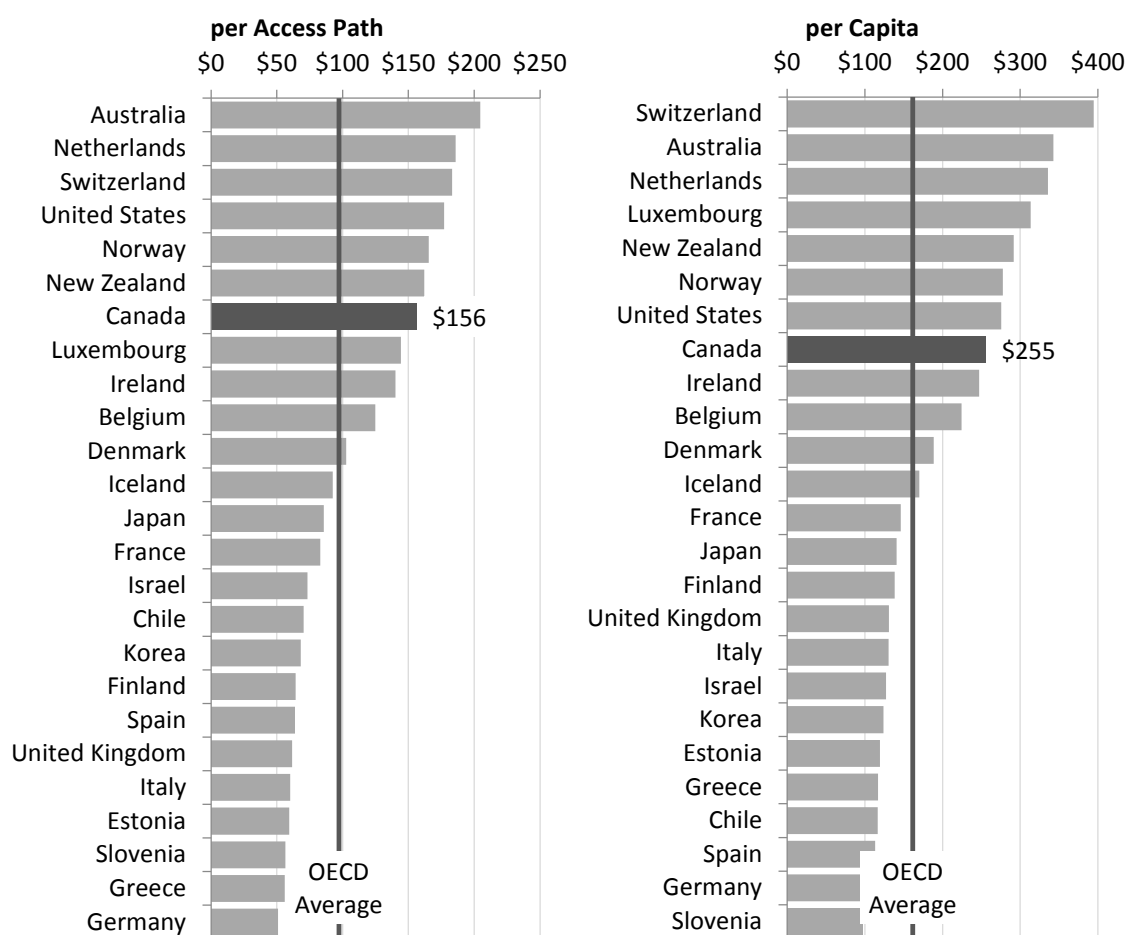
¹⁹² *Id.*, at para 35.

¹⁹³ *Ibid.*

international ranking reveals that large incumbent carriers, like Bell, are acting rationally on powerful incentives to invest in access paths.

168. It is important to recognize that cable and DSL, which account for the vast majority of the fixed broadband access paths factored into Figure 2 below, are two platforms that have been subject to longstanding mandated access regulation. Notwithstanding, Canada still boasts an international “world leadership position” in terms of investment per access path. That is because mandated access regulation simply does not translate in investment reductions, as claimed in the Petition.

Figure 2: Public Telecommunications Investment, Top 25 OECD Countries, 2013 (US Dollars)

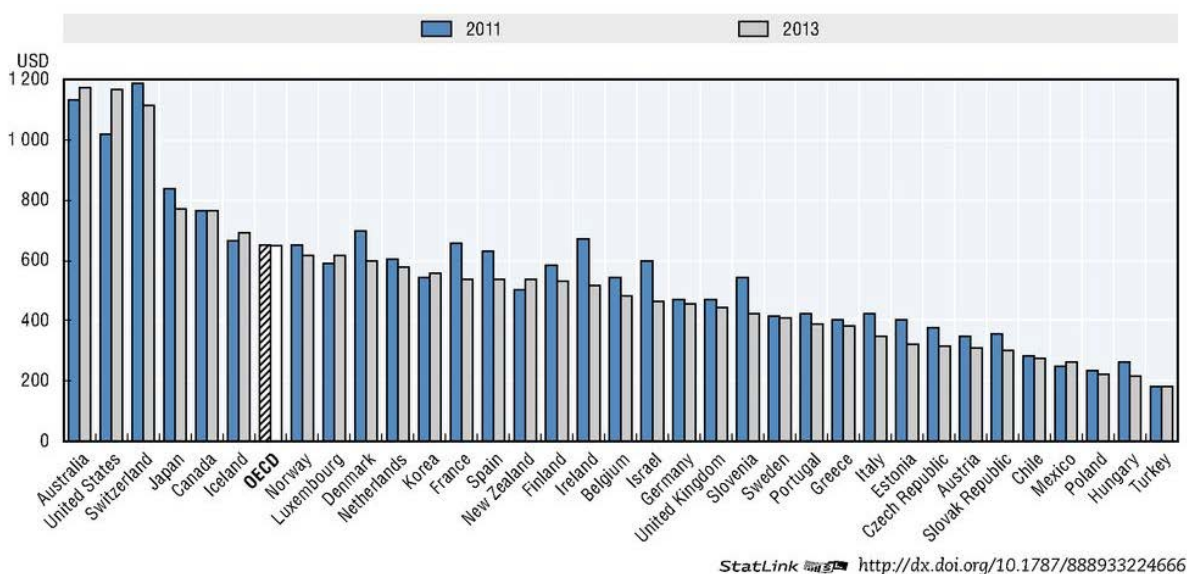


Note: Access paths include wired lines and mobile subscribers.

Source: OECD Communications Outlook 2015, Table 2.30 and 2.31.

169. There is also compelling evidence that Canada's high investment level per access path is paying dividends. As demonstrated in Figure 2, Canada's telecommunications revenue per access path is among the highest of all OECD countries. This constitutes additional proof that the market rewards investment.

Figure 3: Telecommunications revenue per access path, 2011 and 2013¹⁹⁴



Broadband Availability and Penetration

170. As the Petition demonstrates, Canadian fixed broadband penetration levels from 2003 to 2014 have consistently surpassed those of the United States and the OECD average.¹⁹⁵ Indeed, Canadian households have access to broadband at a wide range of speed tiers with the exception of service speeds in excess of 100 Mbps.¹⁹⁶

171. Although the annual growth rate of fibre subscriptions in Canada was 52.2% in 2014¹⁹⁷, as of December 2014, fibre connections only accounted for 4.7% of fixed broadband connections in

¹⁹⁴ Figure 2.32, of OECD Digital Economy Outlook 2015, available online at http://www.keepeek.com/Digital-Asset-Management/oecd/science-and-technology/oecd-digital-economy-outlook-2015_9789264232440-en#page116.

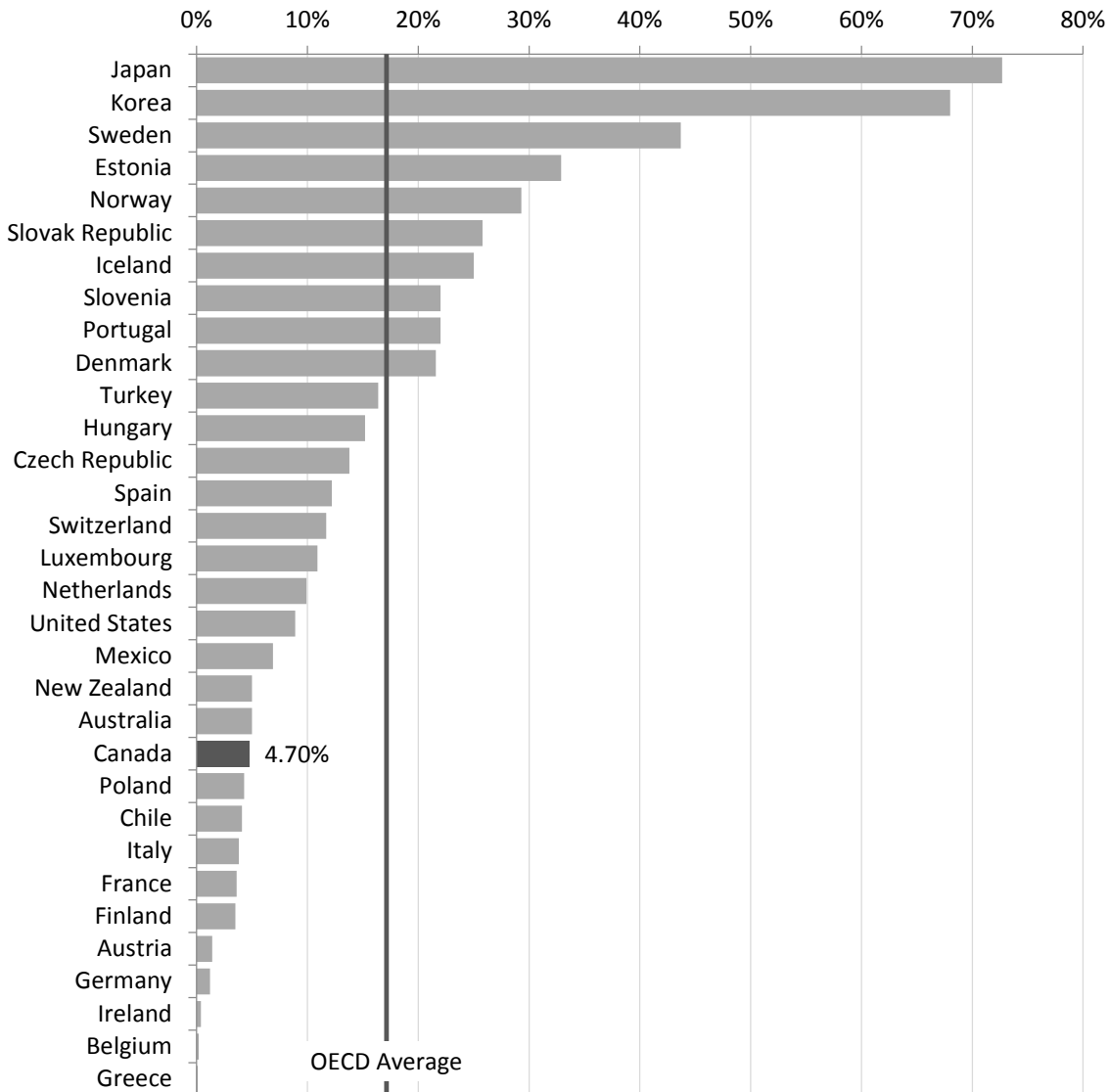
¹⁹⁵ Petition, at p. 31, Figure 2.

¹⁹⁶ AG Report, at para 30 and Figure A-1: Broadband Availability by Speed, 2014 (Percentage of Households).

¹⁹⁷ AG Report, at para 32.

the country.¹⁹⁸ On the international stage, Canada's percentage of fibre connections lags behind the United States (8.9%) and the OECD average (17.1%), as demonstrated below in Figure 4.

Figure 4: Percentage of Fibre Connections, OECD Countries, December 2014¹⁹⁹



Note: Fibre connections include fibre-to-the-home (FTTH) and fibre-to-the-building (FTTB), but exclude fibre-to-the-node (FTTN) connections.

Source: OECD Broadband Portal, <http://www.oecd.org/sti/broadband/oecdbroadbandportal.htm>.

¹⁹⁸ AG Report, at para 32.

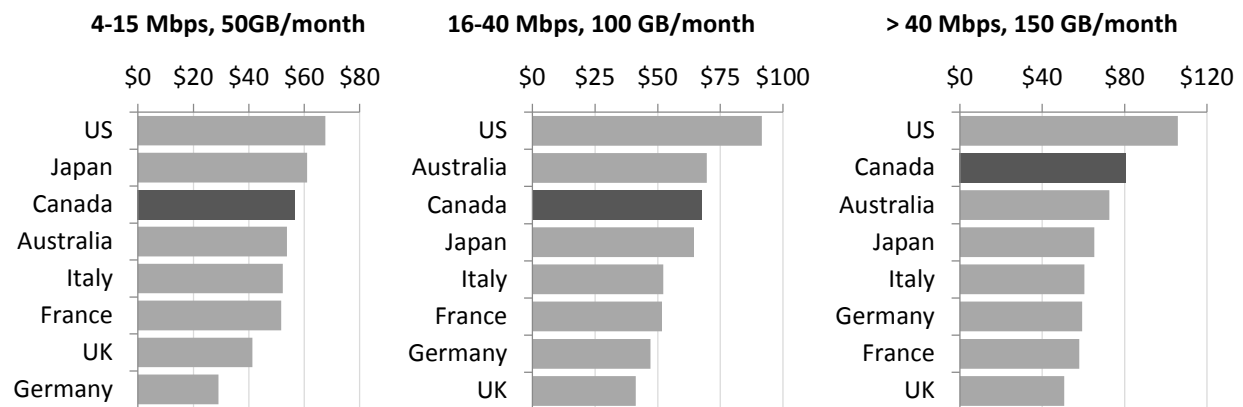
¹⁹⁹ AG Report, Figure 3 citing OECD Broadband Portal.

Broadband pricing

172. Canadian broadband services are consistently more expensive relative to the OECD average – this is especially the case for services in higher speed tiers.²⁰⁰ Broadband service pricing in Canada is most clearly depicted in the Wall Report. As aforementioned, the Wall Report categorizes broadband Internet services into four baskets.²⁰¹ The descriptions of these baskets are set out in detail in Section 5.4.

173. Based on the above listed speed baskets, the Wall Report sets out the PPP-adjusted international price comparison included below in Figure 4.

Figure 5: Wireline Broadband Prices for Selected Countries, 2015, CDN\$ PPP²⁰²



174. Moreover and as previously explained in Section 5.3 above, the Wall Report also demonstrates that some of the relatively larger competitive ISPs consistently offer substantially lower broadband Internet service rates across all speed tiers. This data is set out below in Table 1.

²⁰⁰ AG Report, at para 35.

²⁰¹ Wall Report, at p.35.

²⁰² AG Report, at Figure 5 citing 2015 Wall Report.

Table 2: 2015 Canadian Broadband Internet Service Rates - Incumbents vs. Reseller ISPs

Baskets	Incumbents	Reseller ISPs	Percentage Differential
Level 1	\$46.58	\$36.95	-21%
Level 2	\$59.32	\$43.10	-27%
Level 3	\$68.34	\$47.63	-30%
Level 4	\$88.55	\$67.62	-24%

Unweighted averages.

Resellers include Primus and Teksavvy. Note that service features such as service speeds and, where applicable, data caps vary between incumbents and resellers.

Wall Communications Inc. 2015

Conclusion: The current state of broadband in Canada demands mandated FTTH access

175. Based on the leading industry data outlined in this section, the current state of Canadian broadband will benefit tremendously from mandated FTTH access. Broadband investment in Canada is extremely high and generates some of the highest revenues per access path among all OECD countries. This situation has developed notwithstanding longstanding mandated regulation of the incumbent and cable carrier wireline networks which account for nearly all of the fixed broadband access paths in Canada. However, not all is well with the status of Canadian broadband. The consumer adoption of fibre connections lags behind the United States and other OECD countries. Moreover, the prices for broadband services in Canada are higher than most comparable countries. In fact, the prices in Canada are disproportionately high for higher speed services like the speeds which FTTH facilities are meant to provide. All of this data supports the conclusion that more competition is necessary in broadband markets for next-generation service speeds. And, as determined by the CRTC, mandated access to FTTH is the surest means of injecting competition in the precise areas of the Canadian broadband landscape which need it the most.

176. On these grounds, CNOC submits that Bell's expert report on Canadian broadband performance comes to an unsubstantiated and dangerous conclusion.²⁰³ Contrary to Dr. Eisenach's conclusion, the case for scaling back "open access regulation" is not clear.²⁰⁴ Quite the opposite, the case for mandated access regulation for wholesale broadband services, including those

²⁰³ Bell Attachment 4, at p. 44.

²⁰⁴ *Ibid.*

provisioned over FTTH facilities, is strong and fully justified by current national and international broadband data.

177. For all of these reasons, the Governor in Council should reject the Petition in its entirety.

7.0 MANDATED FTTH ACCESS IS NOT EXPROPRIATION

Summary of Key Points:

- Contrary to Bell’s claims, mandated FTTH access is not “expropriation” or “handing over” the network.
- Bell has attempted to use the “expropriation” argument with respect to CRTC regulation of Bell networks since the early 1990s in the context of interexchange competition. The Federal Court of Appeal has outright rejected this argument.
- Wholesale rates are based on Phase II costing methodology plus a markup. These rates fully account for every cost input and reflect investment risk to the extent that such a risk exists.
- The Petition’s suggestion that no wholesale rate could compensate FTTH investment is incorrect, misleading and, in any event, premature.
- Phase II costing ensures that wholesale rates are compensatory and provide a reasonable rate of return on investment. The Commission is about to embark on the process of setting access rates for FTTH based on this methodology.
- In conflict with the Petition, Bell has represented to its own shareholders that the Decision may not have **any** negative business and financial impacts once final wholesale rates are set.
- In further conflict with the Petition, Bell has stated on the public record of the proceeding leading to the Decision that if mandated FTTH access is ordered, rates should be based on Phase II costing.

178. The Petition repeatedly characterizes mandated access of FTTH facilities as “expropriation of massive private investments”²⁰⁵ or a decision that “...hands over to Reseller ISPs the most expensive parts of the new fibre-to-the-home networks”²⁰⁶. This characterization is factually incorrect and misleading. Bell has attempted to make similar claims about CRTC regulation in the

²⁰⁵ The Petition, at paras E7, E18, 49

²⁰⁶ The Petition, at paras E16 and 6.

past. For example, in 1993, Bell brought an appeal²⁰⁷ to the Federal Court of Appeal with respect to Telecom Decision CRTC 92-12²⁰⁸ (“TD 92-12”) in which the CRTC ordered Bell and other telephone companies to interconnect their telecommunications networks with interexchange carriers, without requiring full compensation, to facilitate competition in Canadian markets for long distance services.²⁰⁹ Bell appealed on the basis that TD 92-12 constituted expropriation.²¹⁰ The Federal Court of Appeal rejected this argument, affirming that:

“It is fundamentally erroneous to characterize as an “expropriation” an order of a regulatory tribunal requiring the construction of facilities by a regulated company...”²¹¹

179. In the present case, wholesale rates that compensate Bell for the costs of deploying FTTH, including the associated risk, will be set by the CRTC as further discussed below, and so Bell will not be providing its competitors mandated wholesale FTTH access for free. Given that a CRTC order issued to Bell to build interconnection facilities at its own cost to facilitate interexchange competition was not viewed as expropriation in law, mandated FTTH access involving regulated rates that compensate Bell fully can certainly not be characterized as expropriation.

180. Competitors who will purchase wholesale FTTH services pursuant to a tariff are not “taking” anything from the incumbent carrier. Mandated access tariffs are based on Phase II costing methodology. This costing methodology assesses forward looking incremental costs over a ten-year study period. All costs that the incumbent carrier assumes from providing the wholesale service to competitors are accounted for. As summarized by the CRTC, the cost study inputs include “... demand forecasts; resource unit costs; and corporate cost factors and parameters, financial parameters, and other inputs. The overall cost results are expressed on a present worth or per demand unit basis and are referred to as the service level costs.”²¹² On top of these cost inputs,

²⁰⁷ *Bell Canada v. Unitel Communications Inc.*, [1993] 1 FCR 669, 1992 CanLII 2422 (FCA), available online at <<http://canlii.ca/t/4nqf>>. (“*Bell Canada v. Unitel*”)

²⁰⁸ *Competition in the provision of public long distance voice telephone services and related resale and sharing issues*, Telecom Decision 92-12, 12 June 1992.

²⁰⁹ *Bell Canada v. Unitel*, at “FACTUAL BACKGROUND” Section.

²¹⁰ *Bell Canada v. Unitel*, at 2nd paragraph of “POSITION OF PARTIES” Section.

²¹¹ *Bell Canada v. Unitel*, at the ~21st paragraph of the “ANALYSIS” Section.

²¹² *Confidentiality of information used to establish wholesale service rates*, Telecom Regulatory Policy CRTC 2012-592, 26 October 2012 (“TRP 2012-592”), at para 23, available online at <http://www.crtc.gc.ca/eng/archive/2012/2012-592.htm>.

the CRTC then applies a markup that provides a contribution to the incumbent carrier's fixed and common costs.²¹³ To the extent that the CRTC agrees that investment risk is associated with the underlying network facility (i.e. FTTN, FTTH, etc.), that risk can be factored into either the cost of capital or the markup for the wholesale service.²¹⁴

181. The whole purpose of cost-based rates is not only to compensate incumbent carriers fully but also to provide them with a reasonable rate of return, resulting in profit on the underlying network investment.²¹⁵ Everything is accounted for. Competitors are not “takers”. They are customers who pay the full price for their services which, in turn, generates substantial revenue streams for the incumbent carriers.

182. One of the most puzzling statements in the Petition is the claim that no wholesale rate could ever compensate Bell for its FTTH investments.²¹⁶ To quote the Petition directly, “It is impossible for the CRTC to set a wholesale rate that adequately compensates those who invest in fibre-to-the-home networks for their investments; at whatever rate the CRTC sets, mandated access will necessarily reduce and slow fibre-to-the-home deployment.”²¹⁷ CNOC is baffled by this claim for the three reasons set out below.

183. First, as explained at the outset of this section, rates based on Phase II costing methodology are by their very nature compensatory.

184. Second, the Petition's claim is in direct contradiction with Bell's reassurances to investors. As a reminder, Bell's quarterly shareholder report following the Decision stated the following:

²¹³ Fixed and common costs are costs that do not vary with the offering of a service. These costs are not incremental to providing wholesale services and hence are not recovered in incremental wholesale cost studies. Markup should not be confused with profit margin, given that a number of costs such as corporate overheads and past network investments may be excluded from the incremental costing analysis but would be included in the profit margin analysis. (This definition is taken from TRP 2012-592, at footnote 3).

²¹⁴ For example, in TRP 2010-632 (at paras 45-46), the Commission decided to increase the markup on Bell wholesale FTTN rates to reflect a higher investment risk associated with these facilities.

²¹⁵ TRP 2015-326, at para 141.

²¹⁶ The Petition, at para 20.

²¹⁷ *Ibid.*

“Although it is not possible at this time to assess the financial impact of Telecom Decision 2015-326, it could have a negative effect on our business and financial performance as it is progressively implemented over the next few years. However, the nature of such effect, if any, will only be ascertainable once the CRTC has completed its costing models and set the wholesale access rates to be charged by the incumbent telephone companies and cable carriers.”²¹⁸ (Emphasis added)

185. Here is Bell telling its shareholders that the Decision may not have any negative business and financial impacts once final wholesale rates are set. Despite this public position, Bell is now trying to persuade the Governor in Council that no wholesale rate could ever be compensatory. Both claims are fundamentally contradictory.

186. Third, Bell has contemplated the application of wholesale rates to FTTH services on the public record of the proceeding leading to TRP 2015-326. To illustrate, CNOC has reproduced excerpts from the transcript of Bell’s presentation and question and answer period at the oral hearing for the proceeding. Of course, Bell upheld a consistent position in opposition to mandated FTTH access throughout the proceeding. However, when Commissioner Menzies of the CRTC asked Bell how it would view wholesale rates FTTH and particularly, how investment risk should be factored into those rates, Michelle Bourque (Vice President, Product and Marketing for Bell Wholesale) and Mirko Bibic (Executive Vice President and Chief Legal and Regulatory Officer) endorsed Phase II costing explicitly. The exchange between Commissioner (and Vice-Chair) Menzies and Bell witnesses is as follows:

3158 COMMISSIONER MENZIES: Okay. Given the high risk that you point to, and so I can get a record on this in essence, if fibre-to-the-premise was mandated service, what would be an appropriate markup or would there be other ways to compensate for the risk factor? Fibre-to-the-node, I think is 40 percent. It includes 10 percent risk, for example, right now. Would fibre-to-the-prem look different in that?

...

3164 [MS. BOURQUE]: If the Commission insists on a tariff rate, then we need to find a balance between recouping the infrastructure costs associated with deploying that last loop with a balance with an access rate and installation services that align to support the deployment of the service.

²¹⁸ BCE 2015 Second Quarter Shareholder Report, at p. 32.

3165 [MS. BOURQUE]: Lastly, we need the ability -- well, second-last, we need the ability for a long-term commitment. Many of the ISPs, and there are obviously a lot of -- as Mirko indicated, there is a lot of customers that move between ISPs. And in-between the cablecos and ILECs on the retail space and in order to recoup some of the costs associated with that last mile deployment, we need to be able to have the ISPs sign up to long-term commitments as well as an effective markup that would allow us to support that.

...

3172 MR. BIBIC: Okay. So our position -- just to clarify, **our position on the mandated structure is that the rates should be cost-based Phase II** with the continued ability to negotiate off-tariff deals.

3173 [MR. BIBIC]: So today with GAS we have a Commission-set tariff and we also have the ability to do off-tariff deals with our ISP customers and **we would ask for Phase II costing methodology for FTTP as well with the suggestions or the modifications that Michelle mentioned**, plus the continued ability to do off-tariff deals.²¹⁹ (Emphasis added)

187. To summarize, when asked how a wholesale rate for FTTH should be set, Bell endorsed Phase II costing with a markup and went on to precisely list the different types of costs that would have to be factored as well as other terms and conditions that should apply. This is not the type of response that one would expect from a party who is now claiming that no wholesale rate could ever be compensatory. This testimony is proof that even Bell recognizes that Phase II costing is up to the task of setting compensatory rates for wholesale FTTH services. The Commission is about to embark on the process of setting access rates for FTTH based on this methodology.

188. In conclusion, mandated FTTH access is not expropriation. To the contrary, this form of regulation provides incumbent carriers like Bell with consistent revenue streams that are compensatory and provide for a return on investment. On this basis, there is no credibility to Bell's claim that no wholesale rate could ever compensate for FTTH investment. In fact, this position is a marked departure from previous representations that Bell made to shareholders and the CRTC. For all of these reasons, CNOC urges the Governor in Council to disregard Bell's submissions as to the appropriateness of mandated regulation and effectiveness of wholesale rates based on Phase II costing.

²¹⁹ Transcript, Volume 3, at paras 3158-3173, <http://www.crtc.gc.ca/eng/transcripts/2014/tt1126.htm>.

8.0 CONCLUSION

189. The Decision is the result of an expert administrative body applying one of its enabling statutes, the *Act*, and the Policy Direction after a fifteen month long proceeding. The record of the proceeding was massive and included considerable expert evidence on either side of the debate as to whether FTTH facilities should be subject to mandated access. The CRTC did not come to its mandated FTTH ruling lightly. In the end, the CRTC affirmed that this policy is crucial to attaining sustainable competition which affords Canadians the greatest economic and social benefits in terms of telecommunications infrastructure investment and choice of distinct service providers, innovative services and attractive pricing. The CRTC got it right.

190. As a result of the Petition, the Governor in Council has the discretion to give effect to one of two distinct visions for the future of Canadian broadband.

191. If the Governor in Council approves the requests in the Petition, Bell's vision of the broadband future will prevail. Canada will abandon a longstanding regulatory framework that has proven itself time and time again as a model that enables competition. Depending on the area, a stagnant monopoly or duopoly for next-generation broadband services will dominate and complacently reap the profits of a market devoid of vibrant competition. Competitors will fail, innovation levels will plummet and consumers will continue to face some of the highest prices for high-tier service speeds in the world.

192. By this point, it is obvious that Bell's vision of the broadband future is muddled by self-contradictions, conflicting testimony and mischaracterizations of fact. The prospect of embarking on a path to Canada's broadband future that is premised on such flawed submissions is deeply and profoundly disturbing.

193. If the Governor in Council denies the Petition and affirms the Decision, the CRTC's and CNOC's vision of the broadband future will prevail. Sustainable and vibrant competition will drive the economy, incent investment in telecommunications infrastructure, push incumbents and

competitors to innovate, discipline prices and set Canada apart as a world leader in next-generation broadband market performance.

194. The choice is clear. The Governor in Council should reject the Petition in its entirety.

ATTACHMENT 1

**ECONOMIC REVIEW OF BELL CANADA'S PETITION
TO THE GOVERNOR IN COUNCIL TO VARY
TELECOM REGULATORY POLICY CRTC 2015-326, *REVIEW OF
WHOLESALE WIRELINE SERVICES AND ASSOCIATED POLICIES***

MARKUS VON WARTBURG, PH.D.

ANALYSIS GROUP

21 DECEMBER 2015

**Economic Review of Bell Canada's Petition to the Governor
in Council to Vary TRP CRTC 2015-326, *Review of Wholesale
Wireline Services and Associated Policies***

Markus von Wartburg, Ph.D.
Analysis Group

December 21, 2015

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I. Introduction

1. On October 20, 2015, Bell Canada filed a petition to the Governor in Council (“GIC” or “Cabinet”) pursuant to Section 12 of the *Telecommunications Act* requesting that the GIC vary Telecom Regulatory Policy CRTC 2015-326, *Review of wholesale wireline services and associated policies*¹ (“TRP CRTC 2015-326”). Specifically, Bell Canada requests that the GIC vary the Canadian Radio-television and Telecommunications Commission’s (“CRTC” or “Commission”) decision so that it “does not implement legacy wholesale regulation for fibre-to-the-home or next generation DOCSIS 3.1 cable networks. The decision would continue to apply to legacy broadband technology, such as digital subscriber line, fibre-to-the-node, and cable broadband based on DOCSIS 3.0 providing speeds up to 100 Mbps, where it exists today.”²
2. I was asked by counsel for Canadian Network Operators Consortium (“CNOC”) to provide an economic review of TRP CRTC 2015-326 as it relates to fibre-to-the-home (“FTTH”) networks, and review and comment, as needed, on the economic reports filed as part of Bell Canada’s petition to vary TRP CRTC 2015-326.³
3. I am a Senior Economist at Analysis Group, Inc. in Montreal, an economic, strategic and financial consulting firm. I have co-authored a report titled *Economic Review of the Provision of Wholesale Telecommunications Services and Associated Policies in Canada*,⁴ which was filed as part of CNOC’s intervention in the CRTC Proceeding 2013-551, *Review of wholesale services and*

¹ CRTC, *Telecom Regulatory Policy CRTC 2015-326, Review of wholesale wireline services and associated policies*, July 22, 2015, <http://www.crtc.gc.ca/eng/archive/2015/2015-326.htm> (“TRP CRTC 2015-326”)

² Petition of Bell Canada to the Governor in Council to Vary Telecom Regulatory Policy CRTC 2015-326, *Review of wholesale wireline services and associated policies*, 20 October 2015 (“Bell Canada’s Petition”, “Bell Canada Petition”, or “Petition”), at ¶64.

³ Bell Canada’s petition was accompanied by five attachments: Attachment 1: Hal Singer, Economic Impact of FTTH Deployment in Toronto; Attachment 2: Hal Singer, *Policy Brief: The Economic Impact of the CRTC’s Decision to Unbundle Fibre-to-the-Premises Networks*; Attachment 3: Hal Singer, Kevin Caves and Anna Koyfman, *The Empirical Link Between Fibre-to-the-Premises Deployment and Employment: A Case Study in Canada*; Attachment 4: Jeffrey A. Eisenach, *Broadband Market Performance in Canada: Implications for Policy*; Attachment 5: Andrea Renda, *Regulating Broadband: Lessons From the European Union, and Implications for Canada*.

⁴ Second Intervention of Canadian Network Operators Consortium Inc., Attachment A: Analysis Group, *Economic Review of the Provision of Wholesale Telecommunications Services and Associated Policies in Canada*, June 24, 2014, Review of wholesale services and associated policies, *Telecom Notice of Consultation CRTC 2013-551*.

associated policies ("TNC 2013-551").⁵ I have a Ph.D. in Economics from the Vancouver School of Economics at the University of British Columbia, and specialize in industrial organization, antitrust and competition economics, and applied microeconomics. My curriculum vitae is attached as Appendix B.

4. The report is organized as follows: Section II provides an executive summary, Section III describes the wholesale wireline proceedings and the CRTC's decision to mandate fibre-to-the-home access from an economic perspective, Section IV discusses Bell Canada's Petition and examines economic analyses provided in support. Section V concludes the report, additional figures and tables are contained in Appendix A.

II. Executive Summary

5. In July 2015, following a year-long, multi-phase wholesale wireline proceeding, the CRTC released TRP 2015-326 determining the regulatory status of various wholesale services: Wholesale high-speed access ("HSA") services will continue to be mandated, but the provision of aggregated HSA services will no longer be mandated and will be phased out in conjunction with the phased implementation of a disaggregated HSA service.⁶ The Commission determined that fibre-access facilities are included in the requirement to provide disaggregated wholesale high-speed services.⁷ Unbundled local loops will no longer be mandated and will be phased out,⁸ and Ethernet and high-speed competitor digital network services will remain forborne and not mandated.⁹ Furthermore, the disaggregated wholesale high-speed access service will be implemented in phases, starting in Ontario and Quebec,¹⁰ and the existing Phase II Costing approach will continue to be used for rate setting.¹¹
6. Bell Canada filed the Petition on October 20, 2015, asking the Governor in Council to vary TRP CRTC 2015-326 so that it does not mandate access to FTTH facilities or next-generation DOCSIS

⁵ *Review of wholesale services and associated policies*, Telecom Notice of Consultation CRTC 2013-551, 15 October 2013 ("TNC 2013-551"), as amended by *Review of wholesale services and associated policies*, Telecom Notice of Consultation CRTC 2013-551-1, 8 November 2013 ("TNC 2015-551-1") (CRTC File No. 8663-C12-201313601). See <http://crtc.gc.ca/eng/archive/2013/2013-551.htm> and <http://crtc.gc.ca/eng/archive/2013/2013-551-1.htm>.

⁶ TRP CRTC 2015-326, *supra*, note 1, ¶151-155.

⁷ TRP CRTC 2015-326, *supra*, note 1, ¶143.

⁸ TRP CRTC 2015-326, *supra*, note 1, ¶190.

⁹ TRP CRTC 2015-326, *supra*, note 1, ¶212-214.

¹⁰ TRP CRTC 2015-326, *supra*, note 1, ¶152.

¹¹ TRP CRTC 2015-326, *supra*, note 1, ¶235.

3.1 cable networks, primarily based on the argument that mandated access to FTTH facilities reduces incentives to invest.¹² Under Bell Canada's request, mandated wholesale access would continue to apply to digital subscriber line ("DSL"), fibre-to-the-node ("FTTN"), and cable broadband technology based on DOCSIS 3.0 providing speeds up to 100 Mbps, where it currently exists.¹³

7. An overview of the state of broadband markets in Canada reveals that capital investment to maintain, improve and expand broadband infrastructure is high, both in absolute terms and in comparison to other countries.¹⁴ Although wireline broadband services are widely available to Canadian households and subscription levels are comparatively high, the shift to faster speed tiers is relatively slow, and the deployment and adoption of next generation FTTH infrastructure falls short in international comparisons.¹⁵ Moreover, Canadian consumers generally pay higher prices for broadband access and average Internet connection speeds are slower than in leading broadband countries.¹⁶
8. In reaching its decision, the CRTC applied the essential facility test¹⁷ and determined that i) wholesale services provided over FTTH facilities constitute an input required by competitors to compete in the retail broadband market, ii) denying access to FTTH facilities would substantially lessen or prevent competition in the retail broadband market and iii) it is not practical or feasible for competitors to duplicate the access component of FTTH facilities. The Commission then considered the potential disincentive to invest and determined that any negative impact on investment is unlikely to occur to any significant degree, particularly in urban areas.¹⁸ Incumbents are expected to continue to invest in fibre access facilities to respond to consumer demand and effectively compete with cable companies.¹⁹
9. The CRTC policy established in TRP CRTC 2015-326 is based on sound economic principles which form the foundation of the essential facility test. It is technologically neutral and encourages facilities-based competition where feasible (e.g., transport component), and fosters competition

¹² Petition at section 2.2.

¹³ Petition, ¶18.

¹⁴ See section III.B.1 of this report.

¹⁵ See section III.B.2 of this report.

¹⁶ See section III.B.3 of this report.

¹⁷ TRP CRTC 2015-326, *supra*, note 1, ¶114-136.

¹⁸ TRP CRTC 2015-326, *supra*, note 1, ¶141.

¹⁹ TRP CRTC 2015-326, *supra*, note 1, ¶141.

through mandated wholesale access where pure facilities-based competition is insufficient or incapable of inducing vigorous retail competition and providing consumers with choice among innovative service offerings at reasonable prices (e.g., access component).

10. By removing the provision of aggregated wholesale HSA services in conjunction with the introduction of mandated disaggregated HSA services, in phases, the Commission exposes additional network elements to market forces without lessening or threatening effective retail competition. It thereby encourages negotiated agreements on data transport and investment in middle-mile facilities by competitors, and removes price regulation and contentious costing disputes from the transport segment of the network.
11. The narrow focus in Bell Canada's Petition on investment to the detriment of other telecommunication policy objectives is misplaced. Reliance on market forces is insufficient and would result in a substantial lessening of competition. Mandated disaggregated wholesale HSA service is a regulatory measure to enhance telecommunication policy objectives, namely the efficiency and competitiveness of downstream retail broadband markets.
12. The key assumption of the empirical framework in Bell Canada's Petition, based on which the estimate of the hypothesized impact on fibre-to-the-home investment is derived, is inherently problematic in the context of the telecommunications industry.²⁰ As illustrated by the application to Bell Aliant's investment in FTTN and FTTH technologies, its results are implausible and contradict economic reasoning and business realities.²¹ The analysis is misleading and does not provide a credible estimate of the investment effect of the CRTC's policy to mandate the provision of disaggregated wholesale high-speed access services, including FTTH facilities.²²
13. Announcements of sizable next generation broadband infrastructure investments following the release of TRP CRTC 2015-326, public statements and investor reports from incumbent broadband providers, as well as comprehensive financial analyses of FTTH networks in Canada are entirely consistent with the CRTC's assessment that incumbent carriers will continue to invest in FTTH infrastructure to respond to consumer demand and to compete with cable carriers, particularly in urban areas.²³

²⁰ See section IV.B of this report.

²¹ See section IV.B of this report.

²² See section IV.B of this report.

²³ See section IV.C of this report.

14. Table 1 summarizes the conclusions of this report regarding TRP CRTC 2015-326, the economic evidence submitted in support of Bell Canada's petition, and recent public statements, financial analyses, and market developments.

Table 1: Summary of Conclusions

Evidence / Source Materials	Conclusions of this Report
<i>Broadband Market Performance in Canada: Implications for Policy</i> (Bell Canada Petition, Attachment 4)	• capital expenditures comparatively high • broadband widely available and subscription level relatively high • shift to faster connection speeds is slow; deployment and adoption of FTTH networks comparatively low but growing rapidly • consumers pay higher broadband prices and connection speeds are slower compared to leading broadband countries
TRP CRTC 2015-326	• policy is based on sound economic principles of the essential facility test • encourages facilities-based competition where feasible • fosters competition through mandated wholesale access where substantial lessening of retail competition would occur otherwise • transitioning to disaggregated HSA services exposes transport element of network to market forces, and encourages negotiated agreements and competitor investment in middle-mile facilities
<i>Economic Impact of FTTH Deployment in Toronto</i> (Bell Canada Petition, Attachment 1) <i>The Empirical Link Between Fibre-to-the-Premises Deployment and Employment: A Case Study in Canada</i> (Bell Canada Petition, Attachment 3)	• billion dollar capital investment have substantial employment and output effects • widespread adoption of next-generation connectivity fosters economic development and growth • reports do not address twin objective of wholesale framework: provide favorable conditions for investment and competitive retail markets and choice for consumers
<i>Policy Brief: The Economic Impact of the CRTC's Decision to Unbundle Fibre-to-the-Premises Networks</i> (Bell Canada Petition, Attachment 2)	• key assumption of empirical framework is inherently problematic in this context • application to FTTN and FTTH investment of Bell Aliant gives implausible results that contradict economic reasoning and business realities. • does not provide credible estimate of effect of CRTC policy on investment
Investments and Market Developments	• large NGA investments following CRTC policy • public statements and financial analyses are consistent with CRTC finding that incumbents will continue to invest

III. Review of Wholesale Wireline Services and Associated Policies

III.A The Wholesale Wireline Proceedings (TNC 2013-551)

15. In October 2013, the CRTC initiated a review of the regulatory status of the wholesale services framework and pricing, and the appropriateness of mandating wholesale services (“TNC 2013-551”).²⁴ The Commission examined whether the regulatory wholesale framework provides sufficient incentives for innovation and network investment, and whether it fosters vigorous downstream competition to the benefit of the Canadian consumer.
16. The multi-phase wholesale wireline proceeding extended over a year, allowed for multiple rounds of interventions, requests for information, and replies, and culminated in a two-week hearing at the end of November 2014.²⁵ Over the course of the proceedings, many submissions and expert reports on various aspects of the wholesale wireline regime were filed by incumbent telecommunications and cable companies, smaller independent internet service providers, the Competition Bureau, municipalities and school districts, and various associations and consumers groups, among others.²⁶
17. The wholesale services regime is framed by objectives of Canadian telecommunications policy. The Telecommunications Act has as its statutory objectives, among others:²⁷
- “(b) to render reliable and affordable telecommunications services of high quality accessible to Canadians in both urban and rural areas in all regions of Canada;”
 - “(c) to enhance the efficiency and competitiveness [...] of Canadian telecommunications;”
 - “(f) to foster increased reliance on market forces [...] and to ensure that regulation, where required, is efficient and effective;”
 - “(g) [...] to encourage innovation in the provision of telecommunications services;”
 - “(h) to respond to the economic and social requirements of users of telecommunications services.”

²⁴ TNC 2013-551, *supra*, note 5. In 2008, the CRTC had determined in Telecom Decision CRTC 2008-17 that it would review mandated wholesale services six years from the date of the decision (CRTC, Telecom Decision CRTC 2008-17, *Revised regulatory framework for wholesale services and definition of essential service*, March 3, 2008, <http://www.crtc.gc.ca/eng/archive/2008/dt2008-17.htm>).

²⁵ The documents filed and timeline for the associated proceeding are evident upon a review of the file of this proceeding (8663-C12-201313601) at <https://services.crtc.gc.ca/pub/instances-proceedings/Default-Default.aspx?lang=eng&YA=2013&S=C&PA=t&PT=nc&PST=a#2013-551>.

²⁶ *Ibid.*

²⁷ *Telecommunications Act*, S.C. 1993, c.38, S.7.

18. Furthermore, the Policy Direction on implementing the objectives set out in the Telecommunications Act instructs the CRTC to, among others:²⁸

“(a)(i) rely on market forces to the maximum extent feasible as the means of achieving the telecommunications policy objectives;”

“(a)(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;”

“(b)(ii) [...] neither deter economically efficient competitive entry into the market nor promote economically inefficient entry;”

“(b)(iv) [...] 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.”

19. The underlying purpose of the wholesale services framework is “to facilitate competition in retail markets to provide Canadians with increased choice.”²⁹ Incumbent local exchange carriers (“ILECs”) and cable companies often have market power over essential facilities in the upstream market. At present, incumbent providers are mandated to provide wholesale telecommunication services to competitors who can thereby extend their networks where it is not feasible or practical for them to build their own facilities and compete in the downstream retail markets. The motivation for wholesale regulation is not simply to restrain market power by large incumbents, but also to induce competitive entry into retail markets. A well-functioning regulatory wholesale services framework is integral to vigorous downstream competition leading to lower prices for telecommunication services, higher service quality, increased innovation, and expanded choice to the benefit of Canadian consumers and businesses.

20. Regulatory efforts in the telecommunications industry are similarly geared towards achieving the twin goals of introducing competition into quasi-monopolistic markets while providing favorable conditions for sufficient capital investments to sustain and innovate telecommunications network infrastructure. The regulatory environment influences the level and form of competition, which is considered a key driver of broadband adoption. There is an ongoing debate on what network elements are inherently amenable to competition, and under what conditions and to what extent they should be regulated to foster competition and broadband adoption.

²⁸ *Order Issuing a Direction to the CRTC on Implementing the Canadian Telecommunications Policy Objectives*, P.C. 2006-1534, December 14, 2006, <http://laws.justice.gc.ca/PDF/SOR-2006-355.pdf>.

²⁹ TNC 2013-551, *supra*, note 5, at headnote.

21. Competition in broadband markets can be facility-based by means of separate network facilities, alternative technology platforms, or on the same network facility through wholesale access provisions for competitors at varying levels of the network infrastructure. The regulatory wholesale services framework in Canada promotes facilities-based competition wherever possible because it is considered an ideal setting for retail competition to develop. In the presence of essential (or bottleneck) facilities however, pure facilities-based competition may be difficult to achieve as it implies full duplication of access networks, which is not practical or feasible, and economically inefficient.³⁰ Mandated wholesale access for competitors to selected network elements can overcome the difficulties of facilities-based competition in achieving vigorous retail competition in the presence of essential facilities (bottlenecks).
22. Our report *Economic Review of the Provision of Wholesale Telecommunications Services and Associated Policies in Canada*, which was filed as part of CNOC's intervention in the CRTC wholesale wireline proceeding, provided a wide-ranging review and discussion of the economic literature on investment, innovation, and competition in telecommunications.³¹ An extensive and growing body of empirical studies has developed, and the debate on whether, and to what extent, access infrastructure should be subjected to ex-ante access regulation is ongoing.
23. The broad review contained in the report filed in the CRTC proceedings centers on published academic reviews of the literature, coupled with an extensive discussion of more recent empirical studies. It includes not only the effect of regulation on investment – an input measure commonly highlighted by incumbents – but also the effect of regulation on outcome measures such as broadband availability, adoption, price, and service quality (speed), measures which determine consumer welfare and are indicative of the functioning of telecommunications markets. The review found that no clear consensus view on the relationship between regulation and industrial policy has emerged yet; a particularly desirable market structure is far from established.

³⁰ Most generally, an essential facility is a “unique input to the production process that cannot be cheaply duplicated.” (Laffont, J.J. and J. Tirole (2000), *Competition in Telecommunications*, (Cambridge, Massachusetts: MIT Press), p. 282).

³¹ *Supra*, note 4.

III.B The State of Broadband

24. The wholesale regulatory regime for broadband should be based on a thorough analysis of telecommunications markets in Canada. This section presents an updated summary of the state of innovation and competition in broadband markets in Canada.³²

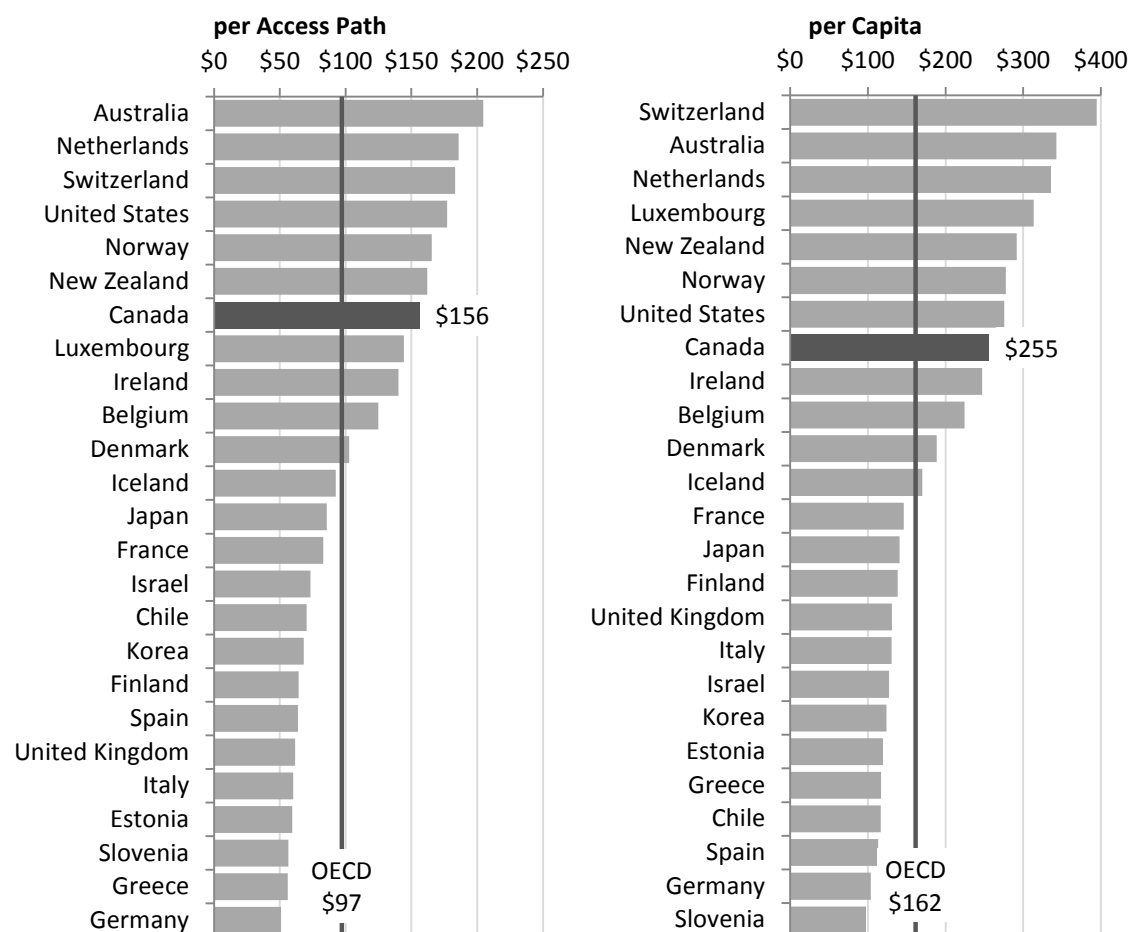
III.B.1 Investment in Broadband Networks

25. The provision of fixed broadband access requires billion-dollar capital investments in backbone and last-mile infrastructure. Creating favorable conditions for capital investments is a key element to sustain infrastructure and innovation. Canadian companies have made significant investments in upgrading cable infrastructure and in bringing fibre to the home or closer to end users.

26. Canada ranks favorably among OECD countries in terms of public telecommunications investment per access path (including wired lines and mobile subscribers) and per capita in 2013.

³² A more detailed assessment of the Canadian broadband market is contained in our report *Economic Review of the Provision of Wholesale Telecommunications Services and Associated Policies in Canada* filed in the CRTC wholesale wireline proceedings (*Supra*, note 4).

Figure 1: Public Telecommunications Investment, OECD Countries, 2013 (US Dollars)



Note: Access paths include wired lines and mobile subscribers.

Source: OECD Communications Outlook 2015, Table 2.30 and 2.31.

27. Capital investment in telecommunications infrastructure in Canada is high, among the highest internationally.

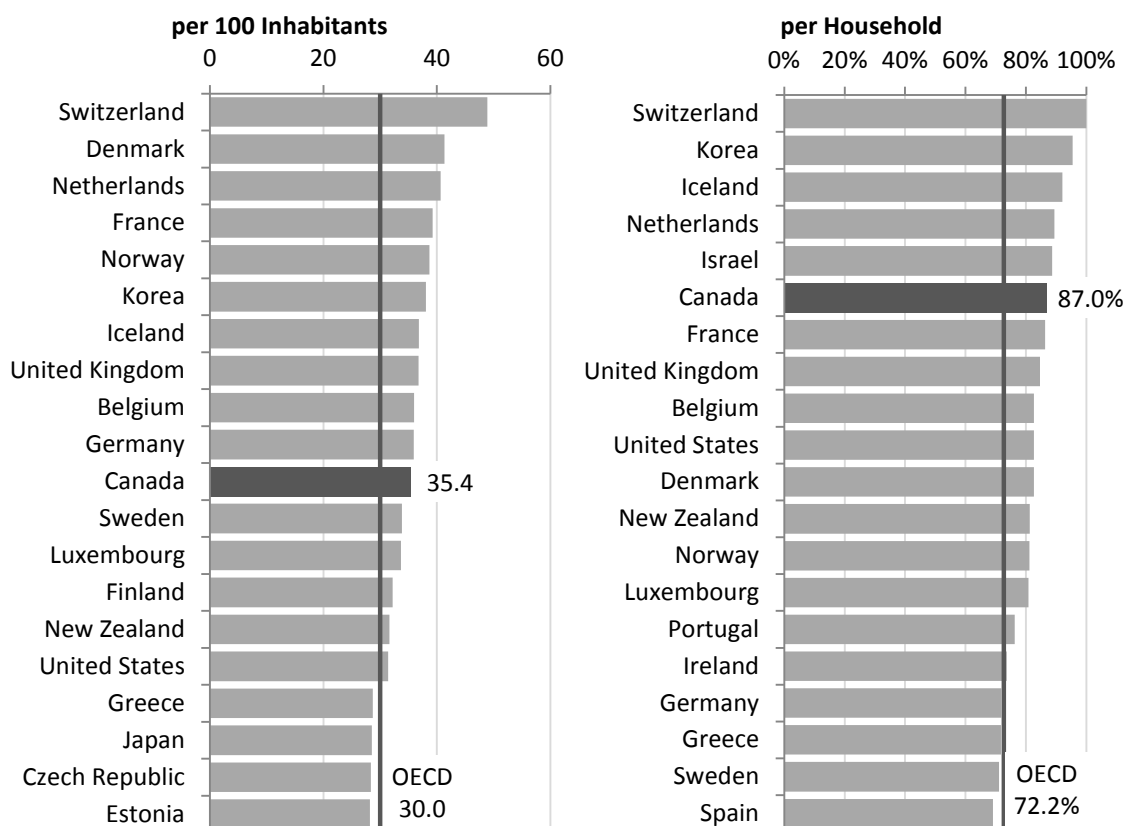
III.B.2 Broadband Availability and Penetration

28. According to the latest CRTC Communications Monitoring Report, 82% of Canadian households in 2014 subscribed to broadband services, and 77% of households subscribed to broadband service at download speeds of at least 5 Mbps. Such download speeds of 5 Mbps are available to 96% of households, and the vast majority can access these speeds using either landline or fixed-wireless facilities.³³

³³ CRTC, *Communications Monitoring Report*, October 2015, Table 5.3.10, <http://www.crtc.gc.ca/eng/publications/reports/PolicyMonitoring/2015/cmr.pdf>, p. 2, 187.

29. While Canada's rank has fallen over the years, it still ranks above average among OECD countries as shown in Figure 2:

Figure 2: Fixed (Wired) Broadband Subscriptions, Top 20 OECD Countries, December 2014³⁴



Note: Fixed broadband connections at download speeds greater than 256 kbit/s.

Source: OECD Broadband Portal, <http://www.oecd.org/sti/broadband/oecd-broadband-portal.htm>.

30. Broadband at various speed tiers is widely available to households in Canada. The availability of connection speeds higher than 100 Mbps has increased from 35% of households in 2012 to 71% of households in 2014 (Appendix Figure A-1). Although the share of Canadian Internet subscriptions with lower speeds has been steadily declining over the last few years as end users switch to higher speed tiers (Appendix Figure A-2), the shift towards next-generation broadband speed tiers in Canada has been slow and Canada lags leading OECD countries in the share of broadband connections with speeds in excess of 15 Mbps (Appendix Figure A-3).

³⁴ Normalizing the number of broadband subscribers by the population provides an idea of relative penetration of subscriber lines. The average household size in Canada is larger than most European countries. However, because business connections are included, expressing the number of subscriptions in terms of households could be misleading as it consistently overestimates broadband penetration.

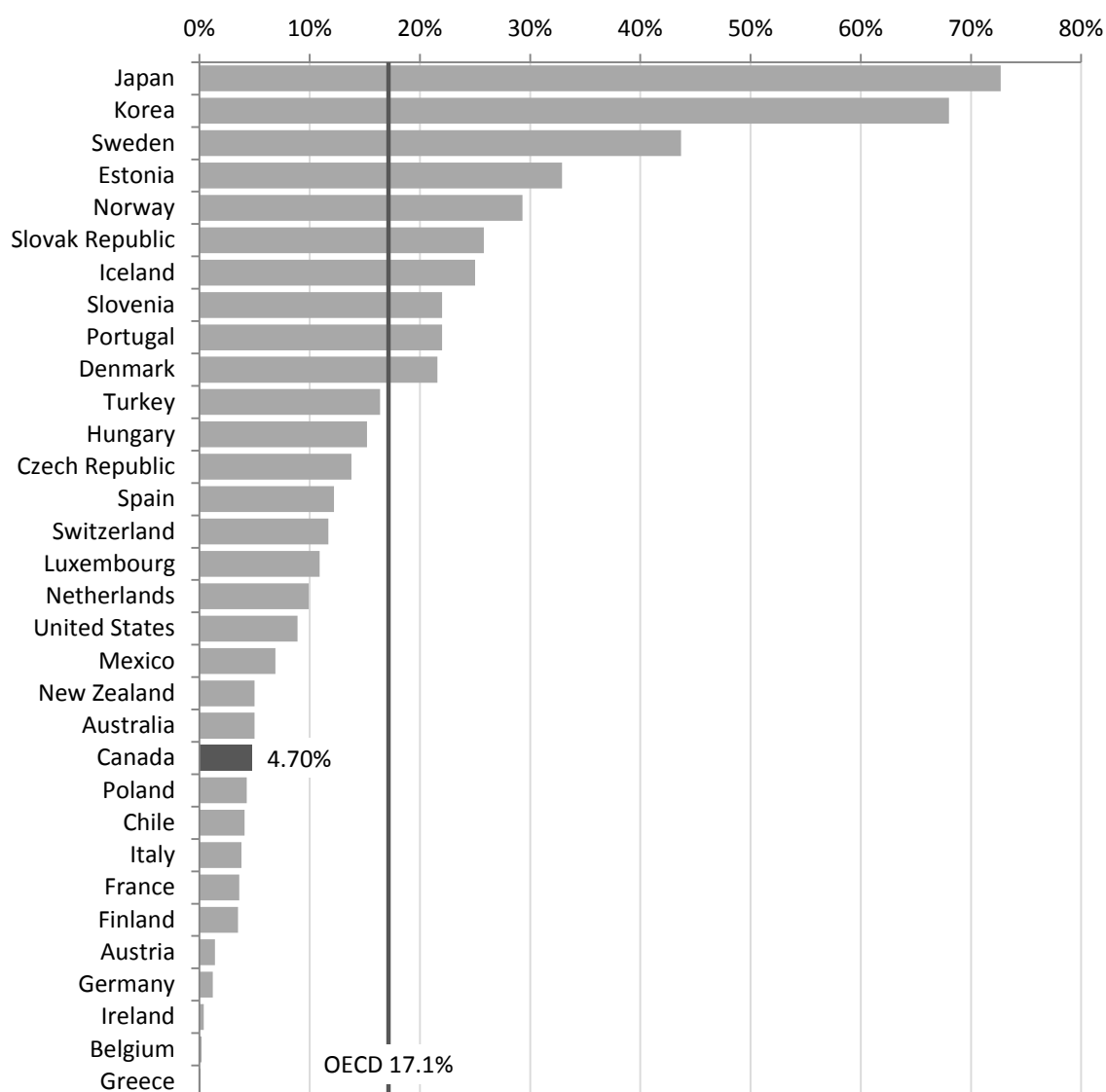
31. FTTH is a next generation technology, a purely fibre-optic delivery system from the servicing office to the end user, with significant advantages in terms of capacity, reliability, (symmetric) speed, and the provision of new services to the customer. It requires large investments but is considered “future-proof”: in the longer term, FTTH connections can achieve vastly higher capacity and speeds relative to DSL, FTTN, and cable connections.³⁵
32. The deployment of next generation FTTH infrastructure in Canada lags behind: As of December 2014, only 4.7% of fixed broadband connections were purely fibre, compared to 8.9% in the United States, and well below the OECD average of 17.1% of fibre broadband connections (see Figure 3). However, the annual growth of fibre subscriptions in Canada in 2014 was 52.2%, substantially exceeding the growth in the United States (15.5%) and among OECD countries (13.1%).³⁶ This finding is consistent with the accelerated level of FTTH investment reported by Bell Canada, which grew by \$660 million from 2009 to 2013, an overall increase of 617% and equivalent to a compound annual growth rate (CAGR) of 64% (See Figure 7).³⁷

³⁵ Pure fibre-optic infrastructure can deliver consistent, very high speeds, is highly scalable and exhibits low signal loss. It is the likely end-state for wired connections to the home since it is straightforward to change equipment connected to the endpoints of an optical fibre to take advantage of technological advances (Review of Wholesale Mobile Wireless Services, *Telecom Notice of Consultation CRTC 2014-76*, Intervention of Canadian Network Operators Consortium Inc., Appendix A: “Wireless Substitutability” Report by Nordicity, May 9, 2014, pp. 18-20, <https://services.crtc.gc.ca/Pub/ListeInterventionList/Documents.aspx?ID=215481&en=2014-76&dt=i&lang=e&S=C&PA=t&PT=nc&PST=a>).

³⁶ Note that the growth of fibre connections begins from a lower level in Canada. Growth of fibre connections in the United States has slowed down, incumbent telecommunications provider Verizon for example has effectively stopped building out next-generation fibre networks (Wall Street Journal, “Verizon to End Rollout of FIOS”, March 30, 2010, <http://online.wsj.com/news/articles/SB10001424052702303410404575151773432729614>).

³⁷ This includes FTTH investment by Bell Aliant (See Bell Canada’s Petition, Attachment 2: Hal Singer, *Policy Brief: The Economic Impact of the CRTC’s Decision to Unbundle Fibre-to-the-Premises*, p. 8).

Figure 3: Percentage of Fibre Connections, OECD Countries, December 2014



Note: Fibre connections include fibre-to-the-home (FTTH) and fibre-to-the-building (FTTB), but exclude fibre-to-the-node (FTTN) connections.

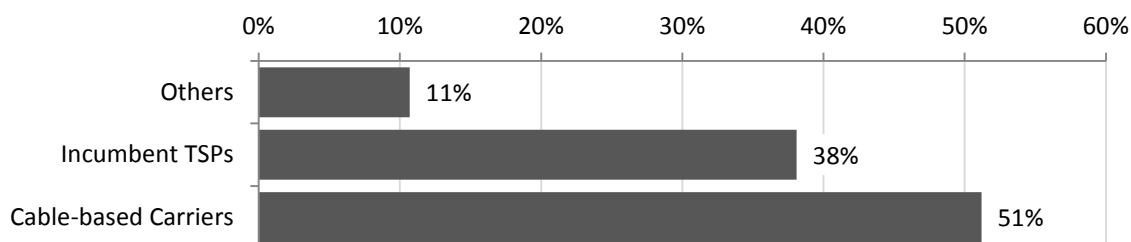
Source: OECD Broadband Portal, <http://www.oecd.org/sti/broadband/oecdbroadbandportal.htm>.

III.B.3 Competition, Pricing, and Performance of Fixed Broadband Networks

33. Besides broadband availability and penetration, choice, price and quality (speed) are important indicators of the existence of a competitive marketplace and the experience of Canadian broadband consumers.
34. Canada has one of the highest cable broadband penetration rates among OECD countries. Incumbent telecommunications companies broadly face facilities-based competition, typically from a (single) cable provider using alternative last-mile infrastructure. Although Canadians consumers and businesses are served by hundreds of Internet service providers (“ISPs”), the

large majority of broadband subscribers primarily choose broadband access from regional duopolies consisting of an incumbent telecommunications and cable provider.

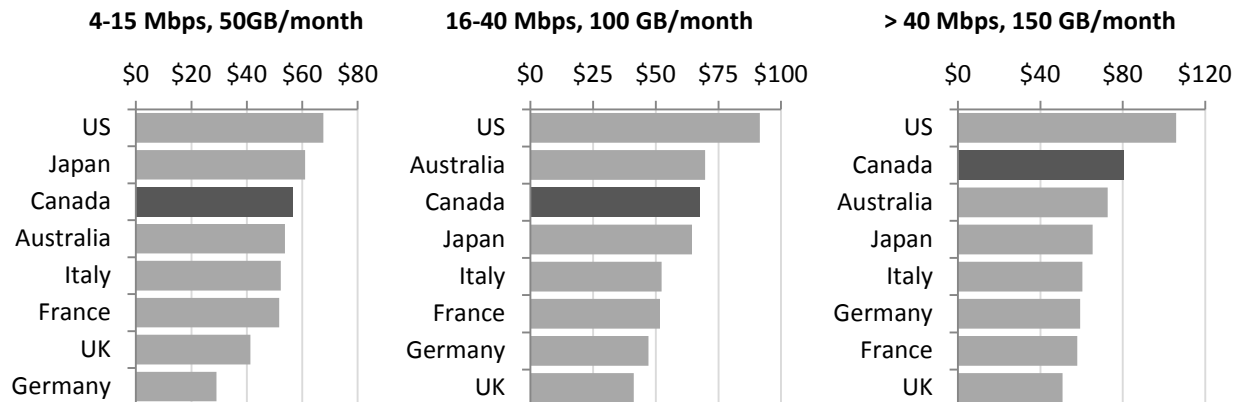
Figure 4: Residential Internet Subscriber Shares by Type of ISP, 2014



Source: CRTC Communications Monitoring Report 2015, Table 5.3.4.

35. Limited consumer choice and dominant regional duopoly players affect broadband pricing of incumbent providers. The most recent annual telecommunication price comparisons study by Wall Communications, conducted for the CRTC and Industry Canada, found that broadband access in Canada is typically more expensive than in the comparison countries surveyed, with the exception of the United States. As Figure 5 demonstrates, higher prices in Canada are particularly prevalent for higher-tier broadband services.

Figure 5: Wireline Broadband Prices for Selected Countries, 2015, CDN\$ PPP



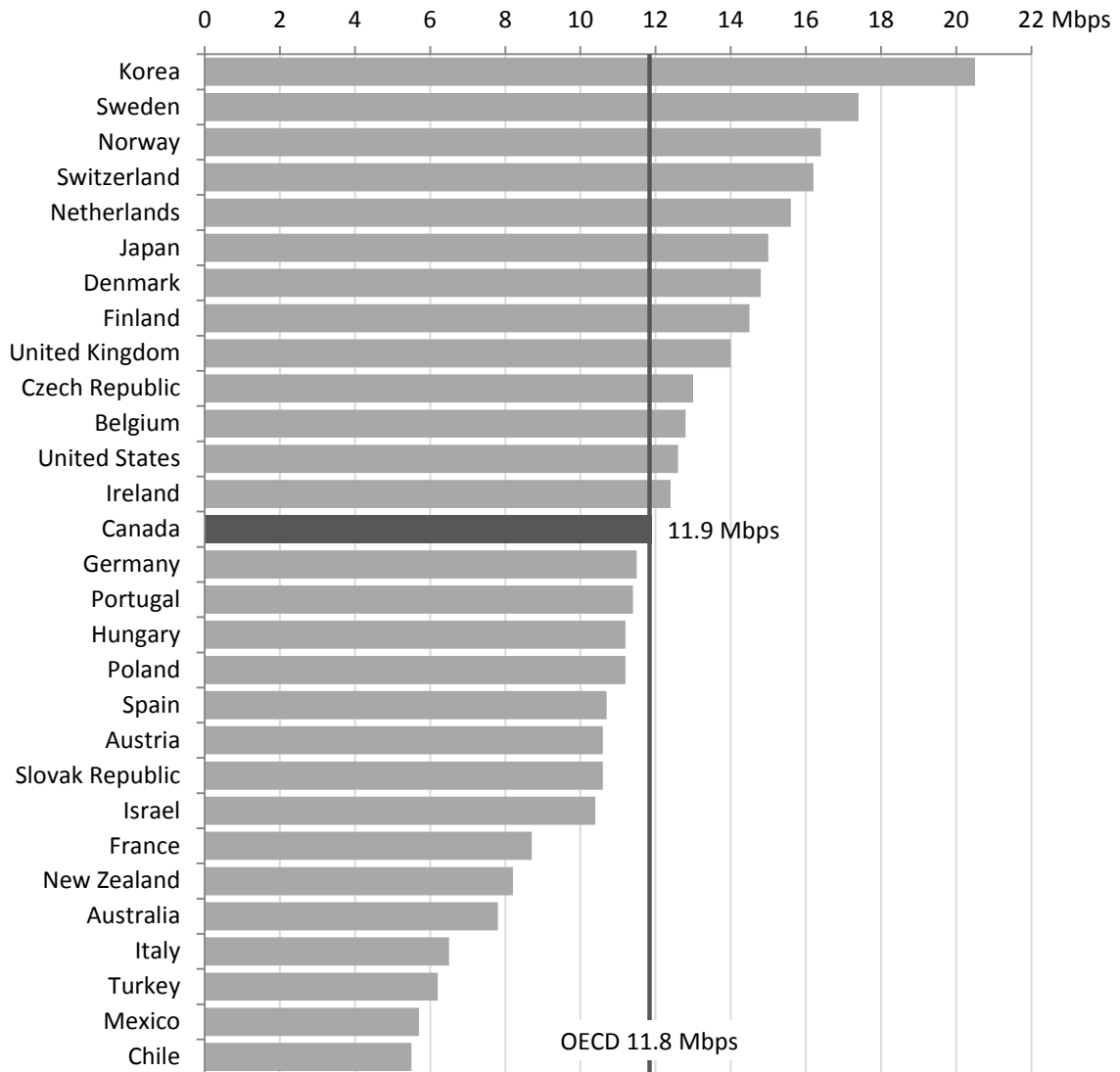
Note: Pricing for the lowest service basket (4-15 Mbps, 50 GB/month) is adjusted if service basket with higher download speed and data usage (16-40 Mbps, 100 GB/month) has lower prices (e.g. France, Italy).

Source: Wall Communications (2015), Price Comparisons of Wireline, Wireless, and Internet services in Canada and with Foreign Jurisdictions, 2015 Update, March 30, 2015, <http://www.crtc.gc.ca/eng/publications/reports/wall2015/rp150618.htm>.

36. Broadband pricing should be assessed in conjunction with broadband quality. Comparing Canada's broadband quality in terms of speed of service to other countries reveals that average broadband speed ranks barely above the OECD average, and well behind leading Asian and

European countries as shown in Figure 6. Alternative download speed methodologies show a similar ranking for Canada (Appendix Figure A-4).

Figure 6: Akamai Average Download Speeds, OECD Countries, Q3 2015



Note: Average speed is based on requests made to Akamai's HTTP/S platform over the 3rd quarter of 2015 and includes both business and residential connections. Data for Iceland, Luxembourg and Greece are not reported by Akamai.

Source: Akamai, State of the Internet Report Q3 2015, <https://www.stateoftheinternet.com/resources-connectivity-2015-q3-state-of-the-internet-report.html>.

37. In summary, this overview of the state of broadband markets in Canada reveals that capital investment to maintain, improve and expand broadband infrastructure is high, both in absolute terms and in comparison to other countries. Although wireline broadband services are widely available to Canadian households and subscription levels are comparatively high, the shift to

faster speed tiers is relatively slow, and the deployment and adoption of next generation FTTH infrastructure falls short in international comparisons. Moreover, Canadian consumers generally pay higher prices for broadband access and average Internet connection speeds are slower than in leading broadband countries.

III.C TRP CRTC 2015-326

38. Following the public proceeding, the CRTC released its wholesale wireline regulatory policy TRP CRTC 2015-326 in July 2015. Regarding the regulatory status of various wholesale services, the Commission determined that

- wholesale high-speed access services will continue to be mandated,³⁸
- the provision of aggregated services will no longer be mandated and will be phased out in conjunction with the (phased) implementation of a disaggregated service,³⁹
- fibre-access facilities are included in the requirement to provide disaggregated wholesale high-speed services,⁴⁰
- unbundled local loops will no longer be mandated and will be phased out,⁴¹ and
- Ethernet and high-speed competitor digital network services will remain forborne and not mandated.⁴²

39. Furthermore, the disaggregated wholesale high-speed access service will be implemented in phases, starting in Ontario and Quebec, to account for demand and minimize regulatory intervention.⁴³ Regarding rate setting for mandated wholesale services, the Commission will continue to use the existing company-specific, forward-looking, incremental costing approach (Phase II Costing), with a markup contribution to the incumbent carrier's fixed and common costs.⁴⁴

³⁸ TRP CRTC 2015-326, *supra*, note 1, ¶151-155.

³⁹ TRP CRTC 2015-326, *supra*, note 1, ¶151-155.

⁴⁰ TRP CRTC 2015-326, *supra*, note 1, ¶143.

⁴¹ TRP CRTC 2015-326, *supra*, note 1, ¶190.

⁴² TRP CRTC 2015-326, *supra*, note 1, ¶212-214.

⁴³ TRP CRTC 2015-326, *supra*, note 1, ¶148-152.

⁴⁴ TRP CRTC 2015-326, *supra*, note 1, ¶233-237. Any additional markups for wholesale services (including risk premiums) will be determined on a case-by-case basis.

40. To determine which network components are essential for competition at the retail level, the CRTC applied the essential facility test outlined in Telecom Decision CRTC 2008-17.⁴⁵ To be essential, a facility, function, or service has to satisfy all of the following conditions:
- a) The facility is required as an input by competitors to provide telecommunications services in a relevant downstream market;
 - b) The facility is controlled by a firm that possesses upstream market power such that denying access to the facility would likely result in a substantial lessening or prevention of competition in the relevant downstream market; and
 - c) It is not practical or feasible for competitors to duplicate the functionality of the facility.
41. Aside from the essential facility test, the CRTC may use public good, interconnection, and innovation and investment as policy considerations in deciding whether to mandate the provision of a wholesale service.⁴⁶ The analysis of policy considerations will include an assessment of the implications of such outcomes for the specific services under consideration.⁴⁷
42. The Commission found that i) wholesale services provided over FTTH facilities constitute an input required by competitors to compete in the retail broadband market, ii) denying access to FTTH facilities would substantially lessen or prevent competition in the retail broadband market and iii) it is not practical or feasible for competitors to duplicate the access component of FTTH facilities, but the transport component can be practically and feasibly duplicated. Thus, all three conditions of the essential facility test are satisfied for the access component of FTTH facilities.⁴⁸
43. Given that the essential facility test supports mandating the access component of FTTH facilities, the CRTC in its analysis of policy consideration regarding investment and innovation examined the potential disincentive to invest when access to FTTH facilities is mandated.⁴⁹ The Commission deemed any negative impact on investment unlikely to occur to any significant

⁴⁵ CRTC, *Revised Regulatory Framework for Wholesale Services and Definition of Essential Service*, Telecom Decision CRTC 2008-17, March 3, 2008, ¶36-37, <http://www.crtc.gc.ca/eng/archive/2008/dt2008-17.htm>.

⁴⁶ TRP CRTC 2015-326, *supra*, note 1, ¶49-52. Policy consideration may inform, support, or reverse a decision to mandate a wholesale service based on the essential facility test.

⁴⁷ TRP CRTC 2015-326, *supra*, note 1, ¶137.

⁴⁸ TRP CRTC 2015-326, *supra*, note 1, ¶118-136. The access component represents the connection from the customer to the central office/head-end, the transport component consists of the incumbent's network that carries end-customer traffic between the central offices/head-ends and a point of interconnection with a competitor. The transport component has previously found to be duplicable based on a high incidence of competitor self-supply or alternative supply of fibre-based transport facilities (Telecom Decision CRTC 2008-17), but mandated aggregated wholesale HSA service has impeded potential investment in transport facilities by competitors.

⁴⁹ TRP CRTC 2015-326, *supra*, note 1, ¶141.

degree, particularly in urban areas.⁵⁰ It expects incumbents to continue to invest in fibre access facilities to respond to consumer demand and effectively compete with cable companies.⁵¹ Furthermore, rates for disaggregated wholesale HSA services over fibre access facilities would be compensatory and provide a reasonable rate of return.⁵²

44. The discontinuation of mandated aggregated wholesale HSA services in conjunction with the mandated disaggregated wholesale HSA services lessens independent ISPs' dependence on regulated wholesale services and provides them with increased control over cost and service offerings which could encourage middle-mile investment in transport facilities.⁵³ Disaggregated service will be implemented in phases, starting with Ontario and Quebec based on existing demand for wholesale HSA services. FTTH access facilities and download speeds in excess of 100 Mbps will not be mandated over aggregated wholesale HSA service.⁵⁴
45. The CRTC policy established in TRP CRTC 2015-326 is based on sound economic principles which form the foundation of the essential facility test. It is technologically neutral and encourages facilities-based competition where feasible (e.g., transport component), and fosters competition through mandated wholesale access where pure facilities-based competition is insufficient or incapable of inducing vigorous retail competition and providing consumers with choice among innovative service offerings at reasonable prices (e.g., access component).
46. It is unrealistic to expect that non-incumbent providers will duplicate last-mile access facilities on a broad scale outside of smaller and densely populated areas and multi-dwelling units due to limited market size, costs, and lack of economies of scope.^{55,56}

⁵⁰ TRP CRTC 2015-326, *supra*, note 1, ¶141.

⁵¹ TRP CRTC 2015-326, *supra*, note 1, ¶141.

⁵² TRP CRTC 2015-326, *supra*, note 1, ¶141.

⁵³ TRP CRTC 2015-326, *supra*, note 1, ¶139-141. Independent ISPs incur high costs transporting large amounts of data over incumbents' facilities under aggregated HSA service, costs that are expected to rise further with anticipated increases in data consumption in the future.

⁵⁴ TRP CRTC 2015-326, *supra*, note 1, ¶152-154.

⁵⁵ This holds in particular if the expectation extends to multiple non-incumbents providers. Generally, only firms with prior access investments in networks such as incumbent telecommunications and cable companies, or in ducts such as municipal utilities, have successfully invested in last-mile access facilities on a large scale.

47. By removing the provision of aggregated wholesale HSA service in conjunction with the introduction of mandated disaggregated service, in phases, the Commission exposes additional network elements to market forces without lessening or threatening effective retail competition. It thereby encourages negotiated agreements on data transport and investment in middle-mile facilities by competitors, and provides a path to the removal of price regulation and contentious costing disputes from the transport segment of the network.⁵⁷

IV. Bell Canada's Petition to Cabinet

IV.A Bell Canada's Request

48. Bell Canada filed its Petition on October 20, 2015, asking the Governor in Council to vary TRP CRTC 2015-326 so that it does not mandate access to fibre-to-the-home (FTTH) facilities or next-generation DOCSIS 3.1 cable networks. Under Bell Canada's request, mandated wholesale access would continue to apply to DSL, FTTN, and cable broadband technology based on DOCSIS 3.0 providing speeds up to 100 Mbps, where it currently exists.
49. Arguments advanced by Bell Canada against mandating access to FTTH facilities rely for the most part on reduced incentives to invest in FTTH networks.⁵⁸ This narrow focus on investment to the detriment of other policy objective outlined in the *Telecommunications Act* and the Policy

⁵⁶ A production process is characterized by economies of scope if joint production is less costly than producing the products individually." (Church, J.R. and R. Ware, *Industrial Organization: A Strategic Approach*, (San Francisco: McGraw-Hill-Irwin), 2000, p. 782). Mobile data consumption grows rapidly and FTTH networks can be used for Wi-Fi offloading, mobile backhaul, and the integration of small-cell networks. "[W]e've got pretty sexy economies of scope to leverage. It's no longer just about fibre for TV and HSIA, but it's fibre to backhaul, the small cell topology that we're building within our neighborhoods. And it's fibre to backhaul things like home health monitoring," (Darren Entwistle (CEO), *TELUS Q3 2015 Investor Conference Call*, November 5, 2015, Transcript p. 9; <http://about.telus.com/servlet/JiveServlet/downloadBody/5798-102-1-6437/TELUS%20Q2%202015%20conference%20call%20transcript.pdf>) "95% of our [wireless] network traffic now is being back-hauled on fibre. That is core to providing the speed we are providing on the wireless network. [...] One of the hidden strategic values for Bell Mobility is having the wireline business as part of that cost structure we take to market." (George Cope, President and CEO of Bell Canada, *Scotia 16th Annual Telecom & Cable Conference*, November 12, 2015, Webcast, <http://www.bce.ca/investors/investorevents/all/show/Scotia-16th-annual-Telecom---Cable-Conference>).

⁵⁷ Competitors rely almost entirely on incumbent's network under aggregated wholesale HSA service and are dependent on appropriate regulatory rules, accurate wholesale rates, and an efficient and timely rate setting process.

⁵⁸ Petition at section 2.2.

Direction is unwarranted from an economist perspective.⁵⁹ Moreover, the CRTC is instructed to consider all objectives, and balance them appropriately, in the event a conflict or trade-off between policy objectives arises.⁶⁰ The Commission determined – based on economic principles embodied in the essential facility test – that reliance on market forces is insufficient and would result in a substantial lessening of competition, and established mandated disaggregated wholesale HSA service as a regulatory measure to enhance the efficiency and competitiveness of downstream retail broadband markets.⁶¹

50. Furthermore, Bell Canada’s Petition challenges a specific part – mandated wholesale access to FTTH facilities and DOCSIS 3.1 cable networks – of the comprehensive regulatory wholesale framework outlined in TRP CRTC 2015-326. Granting the Petition would have reverberations and change economic incentives within the wholesale access framework. It is therefore essential to assess the economic consequences of TRP CRTC 2015-326, including incentives to invest in infrastructure, in its entirety.

51. For example, TRP CRTC 2015-326 does not provide for mandated access to FTTH facilities and download speeds in excess of 100 Mbps over aggregated wholesale HSA service in order to encourage migration to a disaggregated wholesale HSA service and provide an incentive for competitors to invest in middle-mile infrastructure (transport segment). The discontinuation of aggregated wholesale HSA service provides a path towards eventual forbearance from wholesale rate regulation of the transport component. In the absence of mandated access to FTTH facilities however, there exists little incentive for wholesale competitors to invest in middle-mile transport facilities to gain increased control over cost and service offerings; they would likely continue to rely almost entirely on incumbents’ networks. Moreover, continued wholesale rate regulation of the transport segment – a network element the Commission

⁵⁹ From an economist’s perspective, investment is an input, and like any factor of production is not something to be maximized. Investment is not an end in itself, but rather a means to the end of a competitive telecommunications market providing high-quality services at competitive prices. An overemphasis on investment can lead to welfare-reducing and inefficient network duplication, or lead to stranding as evidenced in the telecommunications industry downfall in 2000.

⁶⁰ The inherent possibility of competing objectives is well acknowledged: “The Bureau recognizes the complex and multi-dimensional character of the problems and objectives that the telecommunications regulatory framework must attempt to resolve and achieve. These objectives often compete with one another and it is almost always difficult, and sometimes impossible, for the regulator to reconcile or balance them.” (*Telecommunications Policy Review Panel, Comments of the Commissioner of Competition, August 15, 2005, ¶138, [http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/vwapj/bureaucomments-tpr-2005.08.15.pdf/\\$file/bureaucomments-tpr-2005.08.15.pdf](http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/vwapj/bureaucomments-tpr-2005.08.15.pdf/$file/bureaucomments-tpr-2005.08.15.pdf)*)

⁶¹ *Supra*, note 27, S.7(c).

determined could be exposed to market forces without lessening retail competition – would continue to lead to contentious costing disputes.⁶²

52. Next-generation connectivity offered by FTTH and DOCSIS 3.1 networks are the future of broadband and hold the promise to enhance productivity, stimulate new digital technologies, and foster economic development and growth. Current demand for broadband speeds greater than 50 Mbps is limited,⁶³ but expected to grow substantially as consumers and businesses adopt recent advances in technology and future applications for which high-end broadband speed is an important factor.
53. Telecommunication and cable companies are well-aware of the demand for higher broadband speeds in the near future. Guy Lawrence, President and CEO of Rogers, recently stated that “the majority of our new customers are now asking for speeds of 100 megabytes [sic], so it is clear the need for speed is now becoming the norm.”⁶⁴ Looking further ahead, George Cope, President and CEO of Bell Canada, stated regarding Gigabit speeds that “[i]t is very clear to us as we look out over the next five, 10 years the market is going to demand these type of speeds and so we have to start it now so that as broad a footprint as we have when we complete it as those demands grow.”⁶⁵
54. Exempting FTTH facilities and next-generation DOCSIS 3.1 cable networks from mandated access will eliminate wholesale competitors from an important and rapidly growing customer segment in the near future. Reduced choice and the substantial lessening of competition will lead to higher broadband prices and lower adoption of next-generation connectivity deemed to be critical for productivity enhancements and economic growth in the digital economy.

IV.B Hypothesized Impact of Mandated FTTH Access

55. In support of its Petition, Bell Canada provided an economic impact study by Hal Singer measuring the economic impact in terms of employment (jobs) and economic activity (output)

⁶² These disputes over regulatory rules and rate setting in the transport segment would likely continue until consumer demand has predominantly shifted to broadband speeds over 100 Mbps, i.e., when wholesale competitors have lost any ability to constrain the market power of incumbent carriers in retail broadband markets.

⁶³ A majority of residential customers in 2014 subscribed to broadband service with advertised download speeds of 15 Mbps or less (CRTC, *Communications Monitoring Report*, October 2015, Table 5.3.10, <http://www.crtc.gc.ca/eng/publications/reports/PolicyMonitoring/2015/cmr.pdf>).

⁶⁴ *Q3 2015 Rogers Communications Inc. Earnings Call*, October 22, 2015, Edited Transcript p. 3, <http://netstorage-ion.rogers.com/downloads/IR/pdf/transcripts/Rogers-2015-Q3-Transcript.pdf>.

⁶⁵ *BCE Q2 2015 Results Conference Call*, August 6, 2015, Transcript p. 13, <http://www.bce.ca/investors/financial-reporting/2015-Q2/2015-q2-transcript.pdf>.

of Bell Canada's planned FTTH deployment in the City of Toronto.^{66,67} This large infrastructure project announced in June 2015 will bring FTTH service to 1.1 million homes and businesses and involves an investment of over \$1 billion over the next two years.⁶⁸ Bell Canada additionally provided a report by Hal Singer, Kevin Caves, and Anna Koyfman which measures the association of FTTH deployment and employment.⁶⁹

56. These reports emphasize two main characteristics of next-generation telecommunication networks: First, the build-out of fibre-to-the-home, or upgrade to DOCSIS 3.1 networks will necessitate billion-dollar capital investments over the coming years. Economic activity associated with the construction of these networks alone is likely to have a substantial employment and output effect on local economies. Second, the widespread adoption of next-generation connectivity by Canadian consumers and businesses has the potential to enhance productivity, allow for innovative business models, strengthen telecommunications infrastructure, stimulate new digital technologies, reshape the nature of work, and foster economic and social growth.
57. From a regulatory perspective, the relevant question is how the wholesale framework can provide favorable conditions for sufficient capital investments to enhance the telecommunications network infrastructure, while also providing Canadian consumers and businesses with competitive retail markets and choice among innovative broadband offerings at affordable prices. Balancing the twin objectives ensures that Canadian consumers and business can take full advantage of new digital opportunities.
58. The construction and build-out of next-generation broadband networks in urban areas, such as Bell Canada's billion-dollar FTTH investment in Toronto, are expected to continue following the CRTC decision to mandate fibre-to-the-home access. This is acknowledged by Bell Canada in its

⁶⁶ Bell Canada Petition, Attachment 1: Hal Singer, *Economic Impact of FTTH Deployment in Toronto*.

⁶⁷ Economic impact studies are based on the input-output methodology, and are commonly used tools for measuring the economic effects generated directly or indirectly due to a change in economic activity, in this case the construction of Bell Canada's FTTH network in Toronto. These studies examine backward inter-industry linkages within an economy to determine which industries supply the required intermediate production inputs, and may also include spillover effects on other industries in the region.

⁶⁸ BCE, "Bell Gigabit Fibe bringing the fastest Internet to Toronto residents with a billion-dollar+ network investment, creation of 2,400 direct jobs," June 25, 2015, <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>.

⁶⁹ Bell Canada Petition, Attachment 3: Hal Singer, Kevin Caves and Anna Koyfman, *The Empirical Link Between Fibre-to-the-Premises Deployment and Employment: A Case Study in Canada*.

Petition,⁷⁰ and further manifested by billion-dollar investments in next-generation broadband networks by Telus (Vancouver) and Rogers (entire footprint across Ontario and Atlantic) announced subsequent to the release of TRP CRTC 2015-326.⁷¹

59. Possible marginal investments affected, if any, are likely rural and much smaller in size. Broadband investments in rural areas and in smaller communities are challenging primarily for reasons other than mandated wholesale access. Private sector incentives to invest in broadband networks tend to be low in rural regions, due to a combination of factors such as low population density and challenging terrains.⁷² Provincial and federal governments have implemented a variety of programs (e.g. subsidies, direct investment) to address situations in which markets failed to provide adequate broadband service in rural regions.⁷³

60. Excluding FTTH facilities from mandated access is no panacea to ignite next-generation infrastructure investment in rural area. Despite the absence of mandated FTTH access in the United States, incumbent telecommunications provider Verizon has effectively stopped building out next-generation fibre networks, limiting its FiOS (FTTH) network to densely populated areas

⁷⁰ “Certain large committed investments, typically in the largest urban areas like the investment we have already announced in the City of Toronto, will eventually proceed.” (Bell Canada Petition, ¶23).

⁷¹ “TELUS investing \$1 billion to make Vancouver the world’s next gigabit-enabled city,” October 2, 2015; https://about.telus.com/community/english/news_centre/news_releases/blog/2015/10/02/telus-investing-1-billion-to-make-vancouver-the-world-s-next. “Rogers announces gigabit internet and world’s largest commitment to live sports broadcasting in 4K with HDR,” October 5, 2015; <http://rogers.mediaroom.com/2015-10-05-Rogers-announces-gigabit-internet-and-worlds-largest-commitment-to-live-sports-broadcasting-in-4K-with-HDR>.

⁷² See for example Alcatel-Lucent (2011): *Rural Broadband Financial Modeling*, http://www3.alcatel-lucent.com/belllabs/advisory-services/documents/Rural_Broadband_Financial_Modeling_EN_Market_Analysis.pdf, or Nayan, N., R. Zhao, N. Zhelev, W. Knospe, W., and C. Mas Machuca (2012): “Techno-economic Analysis for Rural Broadband Access Networks,” *AICT 2012: The Eighth Advanced International Conference on Telecommunications*, https://www.thinkmind.org/download.php?articleid=aict_2012_6_10_10039.

⁷³ Rajabiun, R. and C. Middleton (2013): “Rural Broadband Development in Canada’s Provinces: An Overview of Policy Approaches,” *Journal of Rural and Community Development*, 8(2), p 7-22. Canada is not the only country to initiate policies to address rural market failures. In 2009, the United States implemented the Broadband Technology Opportunities Program to accelerate the deployment of advanced broadband networks in unserved and underserved regions of the country and reduce disparities between rural and urban broadband service. The program awarded grants with terms and regulations designed to deepen competition in broadband access markets beyond incumbent service providers (LaRose, R., J.M. Bauer, K. DeMaagd, H.E. Chew, W. Ma, and Y. Jung (2014), “Public Broadband Investment Priorities in the United States: An Analysis of the Broadband Technology Opportunities Program,” *Government Information Quarterly*, 31(1), p.53-64).

in the Northeast and Mid-Atlantic, areas with high spending power.⁷⁴ Following deregulatory decision in 2003 and 2005, many other incumbent telecommunications providers did not invest in FTTH networks until more recently on a limited scale when faced with competition from Google Fiber and municipal networks.^{75,76}

61. The CRTC is currently conducting a proceeding to review basic telecommunications services to examine, among other things, i) its role in ensuring the availability of basic telecommunications services in rural and remote regions, ii) whether a mechanism is required for rural and remote areas to support the provision of modern telecommunications services by funding capital infrastructure investment in transport facilities, including maintenance and enhancement of these facilities.⁷⁷ Rather than excluding FTTH networks from mandated access, thereby substantially lessening retail competition and denying consumers and businesses the benefit of competitive choice among innovative service offerings at affordable prices in urban areas, it is preferable to address challenges in rural broadband deployment with a targeted remedy as considered in the CRTC review of basic telecommunications.
62. In support of its petition to Cabinet, Bell Canada also provided a Policy Brief by Hal Singer ("Policy Brief"), which estimated that the mandate to unbundle fibre-to-the-home access facilities in TRP CRTC 2015-326 will lead to a likely short-run decline in Bell Canada's FTTH investment of 6 to 32 percent (or \$72 to \$384 million) per year in Ontario and Québec, triggering between 2,880 to 15,360 lost jobs, and between \$225 million and \$1.2 billion in reduced economic output per year.⁷⁸

⁷⁴ Wall Street Journal, "Verizon to End Rollout of FiOS", March 30, 2010, <http://online.wsj.com/news/articles/SB10001424052702303410404575151773432729614>; The Buffalo News, "Verizon Still Can't Justify Expanding its FiOS Service", April 21, 2014, <http://www.buffalonews.com/business/verizon-still-cant-justify-expanding-its-fios-service-20140421>). Verizon CEO Fran Shammo stated: "I have been pretty consistent with this in the fact that we will spend more CapEx in the Wireless side and we will continue to curtail CapEx on the Wireline side. Some of that is because we are getting to the end of our committed build around FiOS, penetration is getting higher," Jon Brodtkin, "Verizon nears 'the end' of FiOS builds," January 23, 2015, <http://arstechnica.com/business/2015/01/verizon-nears-the-end-of-fios-builds/>

⁷⁵ CNET, Marguerite Reardon, "Google's fiber effect: Fuel for a broadband explosion," April 30, 2014, <http://www.cnet.com/news/googles-fiber-effect-fuel-for-a-broadband-explosion/>.

⁷⁶ Broadband prices in the United States though are substantially higher compared to Canada or Europe (see Figure 5).

⁷⁷ CRTC, *Telecom Notice of Consultation CRTC 2015-134*, Review of basic telecommunications services, April 9, 2015, ¶133-34, <http://www.crtc.gc.ca/eng/archive/2015/2015-134.htm>.

⁷⁸ Bell Canada Petition, Attachment 2: Hal Singer, *Policy Brief: The Economic Impact of the CRTC's Decision to Unbundle Fibre-to-the-Premises*.

63. The empirical estimates presented in the Policy Brief are based on the difference-in-differences methodology frequently used by economists. This methodology compares the difference in outcomes (before-after) within the market of interest against the difference in outcomes in a benchmark market, i.e. a counterfactual state of the world which is characterized by the absence of the policy intervention.⁷⁹ The key identifying assumption – often referred to by economists as the *common trends* assumption⁸⁰ – assumes that but-for the policy intervention, the two markets would have developed identically. The difference-in-differences methodology controls for changes in common factors affecting both markets, but fails to account for time-varying factors that have a different impact on the two markets unless such factors are explicitly included in the analysis.⁸¹
64. To better understand the underlying methodology used to develop estimates of investment effects, it is revealing to focus on the natural experiment in Canada discussed in the Policy Brief since it is recent and most closely related to the policy of mandated FTTH access. In August 2010, the CRTC determined in Telecom Regulatory Policy CRTC 2010-632, *Wholesale high-speed access services proceeding* (“TRP CRTC 2010-632”) that ILECs and cable carriers are required to provide wholesale high-speed access services to competitors at speeds that match all speed options offered to their own retail customers.⁸² The facilities subject to this wholesale obligation include fibre-to-the-node and DOCSIS 3.0 facilities, fibre-to-the-home facilities were exempted from the mandated access services obligation.⁸³ The Policy Brief employs this distinct treatment of mandated access to aggregated wholesale HSA services using FTTN versus FTTH facilities since 2010 to obtain an estimate of the reduced FTTN investment associated with TRP CRTC 2010-632.

⁷⁹ The methodology can readily be expanded to include additional covariates and allow for regressors other than indicator variables in a regression framework, i.e. Regression-DD (See Angrist, J.D. and J.-F. Pischke, *Mostly Harmless Econometrics: An Empiricist’s Companion* (Princeton: Princeton University Press), 2009).

⁸⁰ See Angrist, J.D. and J.-F. Pischke, *Mostly Harmless Econometrics: An Empiricist’s Companion* (Princeton: Princeton University Press), 2009; Angrist, J.D. and J.-F. Pischke, *Mastering ‘Metrics: The Path from Cause to Effect*, (Princeton: Princeton University Press), 2014.

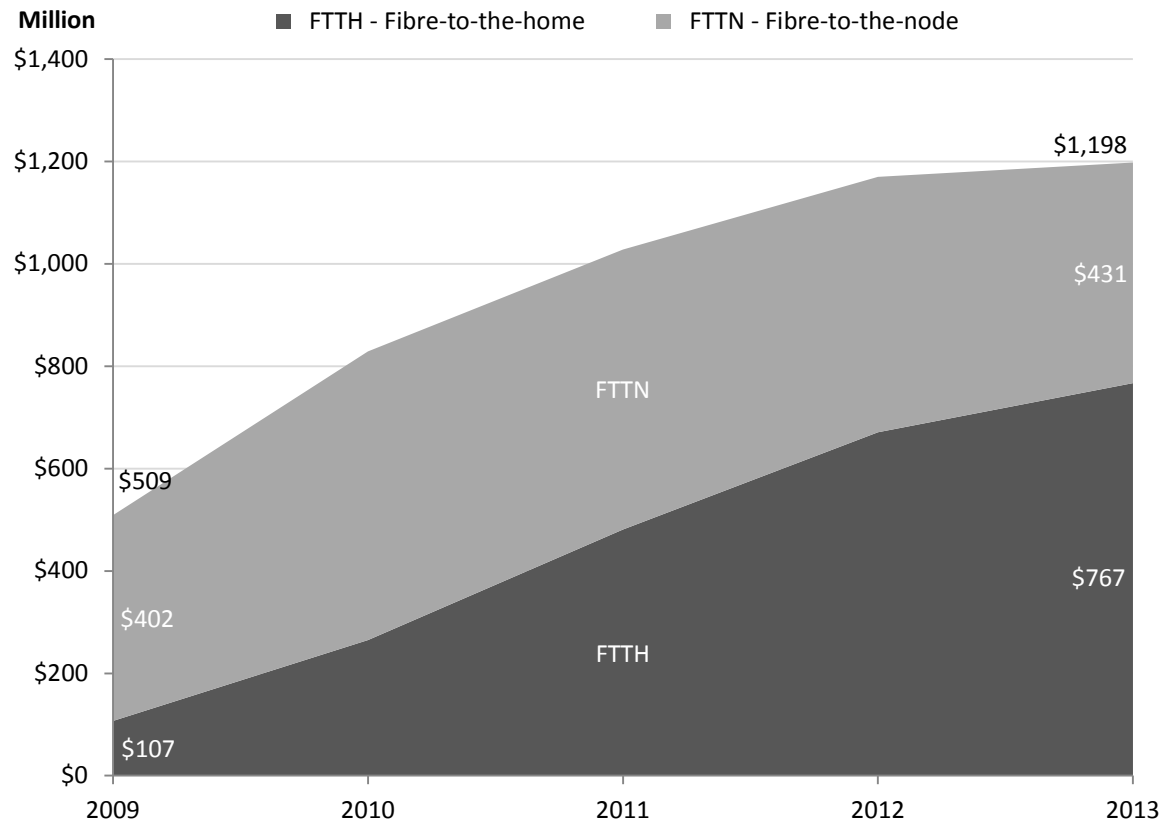
⁸¹ The entire effect is attributed to the policy intervention. Any omitted time-varying factor that has a differential impact on the two markets will bias the difference-in-differences estimate. Biases are a matter of degree, but may be so huge that estimates are completely wrong, including of opposite sign. The common trends assumption could be difficult to verify and might quite commonly be violated in policy evaluation. Additional data on the time period before or after the policy intervention could be used to test the common trends assumption.

⁸² CRTC, *Telecom Regulatory Policy CRTC 2010-632*, Wholesale high-speed access services proceeding, August 30, 2010, <http://www.crtc.gc.ca/eng/archive/2010/2010-632.htm>.

⁸³ *Supra*, note 82, ¶121.

65. For the analysis of this natural experiment, Bell Canada provided annual investment data related to its fibre network deployment by technology for Bell Canada and Bell Aliant (collectively “Bell”) from 2009 through 2013.⁸⁴ Figure 7 shows that total annual fibre investment by Bell Canada and Bell Aliant grew from 509 million in 2009 to 1,198 million in 2013, an increase of over 135% and equivalent to a compound annual growth rate (CAGR) of 24%. Annual investment over this period increased for both fibre technologies: Annual FTTH investment grew by 660 million, an increase of 617% (CAGR: 64%), annual FTTN investment grew by 29 million, an increase of 7% (CAGR: 2%) over this period. Bell’s investment in fibre infrastructure has increased significantly since 2009, and continued to grow following mandated access to FTTN facilities in 2010.

Figure 7: Annual Investment by Technology (Bell Canada and Bell Aliant), 2009 - 2013



Source: Bell Canada, *Policy Brief: The Economic Impact of the CRTC's Decision to Unbundle Fibre-to-the-Premises Networks* (by Hal Singer).

⁸⁴ Bell Aliant provides telecommunication services in Atlantic Canada and various communities in Northern Ontario and rural Quebec. Bell Canada had been its largest shareholder and took full ownership of Bell Aliant in late 2014. The use of the term Bell Canada in this section refers exclusively to the remainder of Bell’s footprint not served by Bell Aliant.

66. In stark contrast, the Policy Brief estimates that the CRTC's policy to mandate access to FTTN facilities in 2010 is associated with a decrease of FTTN investment of \$248.5 million for Bell Aliant, and a decrease of FTTN investment of \$381.3 for Bell Canada.⁸⁵

67. The common trends assumption in this natural experiment described in the Policy Brief supposes that in the absence of the CRTC's policy to mandate access FTTN facilities, FTTN and FTTH investment by Bell Aliant and Bell Canada would have grown at the same rate.⁸⁶ This key identifying assumption is inappropriate in this context and omits important factors relevant to investment decisions and fibre deployment. There exist a multitude of reasons why investment in two different fibre technologies is not expected to grow at same rate, thereby violating the common trends assumption. Many of these reasons have been stated publicly by Bell Canada:

- i. Deployment Cost: The relative cost of deploying FTTN versus FTTH infrastructure and how it changes over time has a significant impact on relative investment growth. While the cost of deploying FTTH for Bell Canada in 2007 was eight to ten times as large as FTTN per home,⁸⁷ the cost differential now is 33%-186%,⁸⁸ in part of Bell Aliant's footprint the cost of deploying FTTH and FTTN is comparable.⁸⁹ Opportunities for increased aerial deployment are associated with substantially lower cost of FTTH deployment as aerial FTTH can be up to 80% less expensive to deploy compared to buried FTTH.^{90,91}

⁸⁵ Policy Brief, p. 9.

⁸⁶ "In the absence of disparate treatment, one would expect investment in the two fibre-based access technologies to grow at the same rate; even if one technology were more popular than the other, the difference should manifest in the levels of investment as opposed to the growth." (*Supra*, note 78, p.7).

⁸⁷ Michael Sabia, chief executive of BCE stated in regards to delivering IPTV over FTTH that "Today we don't see it. [...] When we look at it on a per-home basis, it is eight to ten times on a cost basis what FTTN is ... it's not an option we would be thinking about." (Greg O'Brien, *CARTT "Commentary: Is fibre-to-the-node good enough?"* February 22, 2007, <https://cartt.ca/article/commentary-fibre-node-good-enough>).

⁸⁸ Bell Canada Petition, p. 27.

⁸⁹ "In these particular markets [Fredericton, Saint John], the combination of virtually 100 percent aerial infrastructure and lower population density make the cost of fibre to the home and fibre to the node very comparable." (Bell Aliant, *Q2 2009 Results Conference Call*, Transcript, p.2, http://www.bell.aliant.ca/english/ir/pdf/2009_Q2_transcript.pdf).

⁹⁰ Estimated cost of aerial FTTH deployment are approximately \$400-\$700/premise while buried FTTH deployment is estimated to cost \$1,500-\$2,000/premise; cost per load is estimated at \$900-\$100. (RBC Capital Markets, "Fibre-to-the-home: Playing the long game," *RBC Telecom Scenario Report*, August 19, 2015, p.11, 17, <http://profile.rbcwealthmanagement.com/pictures/account-barnaby.ross/rbc%20telecom%20scenario%20report%20-%20rbc%20cm%20-%2008%2019%202015.pdf>).

- ii. Operating Cost: FTTH infrastructure is associated with lower operating costs through a reduction of customer calls and truck rolls which represent the majority of variable cost for an operator, and lower network maintenance due to lower cost of copper grooming.⁹² For Bell Canada, this has resulted in 40% fewer truck rolls and a 50% reduction in preventative maintenance in FTTH areas compared to FTTN areas.⁹³ Moreover, early experience gained with FTTH deployment leads to increased efficiencies in a phased roll-out.
- iii. Demand and Quality: Consumers prefer FTTH broadband service and are willing to pay for better quality. Bell stated that customer churn is lower (improved customer satisfaction), and broadband usage and average revenue per user (“ARPU”) is higher in areas served by FTTH technology.⁹⁴ As household demand for data and speed increases, FTTH’s quality advantages become increasingly dominant.
- iv. Status of network deployment: Investment in fibre technology can enlarge the footprint covered by FTTx⁹⁵, or it can extend fibre to the home in areas that already have FTTN infrastructure, i.e. overlaying FTTN footprint with FTTH technology. The stage of fibre expansion will affect relative investment growth and a natural shift in investment towards FTTH is expected.⁹⁶ Bell Canada builds exclusively FTTH since at least April 2015.⁹⁷

⁹¹ The ability of deploying 70% aerial using Toronto Hydro poles rather than 50-50 is expected to save Bell Canada more than 200 million of capital and allows for faster build-out of its FTTH infrastructure in Toronto (BCE, Q2 2015 Results Conference Call, August 6, Transcript p.8, <http://www.bce.ca/investors/financial-reporting/2015-Q3/2015-q3-presentation.pdf>).

⁹² Average annual maintenance cost savings for FTTH are estimated to be up to \$100/home (*Supra*, note 90, p. 12).

⁹³ BCE Q3 2015 Results Conference Call, November 5, Transcript p.9, <http://www.bce.ca/investors/financial-reporting/2015-Q3/2015-q3-presentation.pdf>.

⁹⁴ “[I]n the markets where we have fibre right to the home, churn is better, the ARPU is even better, the usage is higher” (BCE Q4 2014 Results Conference Call, February 5, 2015, Transcript p.17, <http://www.bce.ca/investors/financial-reporting/2015-Q3/2015-q3-presentation.pdf>).

⁹⁵ Fibre-to-the-x (FTTx) is a generic term used for different fibre deployment configurations and includes FTTH and FTTN.

⁹⁶ “[T]he footprint expansion is continuing, but the pace of the footprint expansion is clearly less given how far we are and also given now we are taking some of our capital for fibre-to-the-home and overlaying some of our FTTN footprint.” *Supra*, note 93, p.18.

⁹⁷ “[W]e do not do any neighborhoods now that are not Fibre to the home. If it is—if we are building, it is Fibre directly to the home.” (BCE Q1 2015 Results Conference Call, April 30, Transcript p.16, <http://www.bce.ca/investors/financial-reporting/2015-q1-transcript.pdf>).

- v. Competitive environment: The competitive threat from cable companies using DOCSIS 3.x technology capable of delivering Internet speeds not achievable with FTTN is often a key determinant of the timing and type of fibre technology deployed by telecommunications providers. Surging household data demand and the risk of market share losses to cable companies are likely to increase the deployment of FTTH networks capable of Gigabit speeds, particularly in relation to FTTN.⁹⁸

68. All these economic factors have been identified as important drivers of FTTH investments and explain a gradual shift in investment towards FTTH. Without accounting for these relevant economic factors, estimates from the difference-in-differences methodology are misleading and biased.⁹⁹ Yet, the analysis in the Policy Brief does not provide any evidence in support of the common trends assumption, and furthermore ignores all these primary reasons for the shift in investment from FTTN to FTTH and wrongly attributes it to mandated FTTN access.¹⁰⁰ As shown in Figure 7, the combined total fibre investment of Bell Canada and Bell Aliant over this period was substantial, and continued to grow following mandated FTTN access, including its investment in FTTN network infrastructure.

69. To illustrate the critical deficiencies and implausible implications of the common trends assumption in the context of FTTH and FTTN investment, consider for example the estimated decrease in FTTN investment for Bell Aliant. Figure 8 displays actual FTTH and actual FTTN investment by Bell Aliant, as well as the implied FTTN investment in the absence of wholesale obligation on FTTN facilities as estimated by the Policy Brief.

70. The difference-in-difference methodology with the common trends assumption used in the Policy Brief predicts that Bell Aliant's FTTN investment in 2013 would have been \$248.5 million higher in the absence of wholesale obligation on FTTN facilities,¹⁰¹ over 40 times larger than its actual FTTN investment and equivalent to 93% of its actual FTTH investment in that year.

⁹⁸ Cable companies are able to provide speeds up to 250 Mbps over 95% of their footprint, with the rollout of DOCSIS 3.1 to further boost Internet speeds on cable networks. This compares to 50 Mbps for the typical FTTN network, 100 Mbps in some areas (*Supra*, note 90, p. 13).

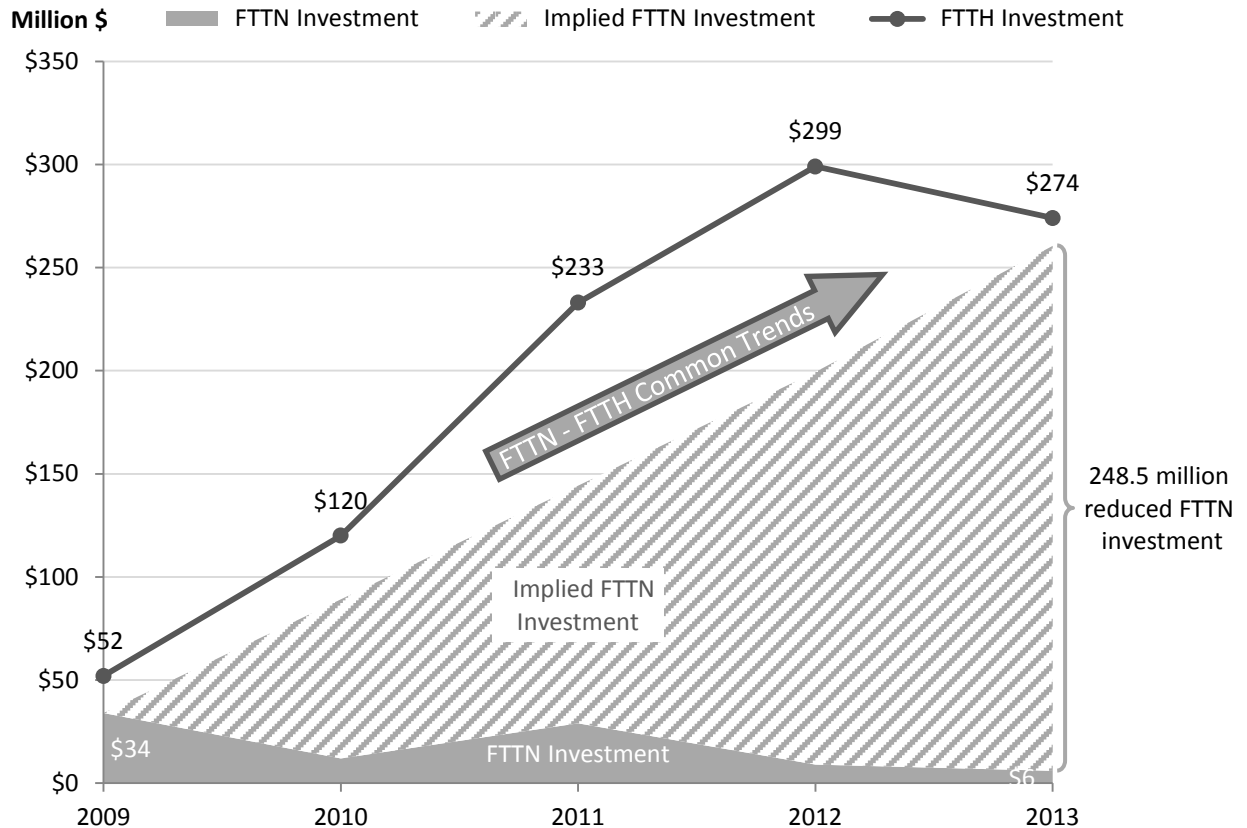
⁹⁹ "An econometrician using such a difference-in-differences model must be prepared to discuss the relevance of any benchmark markets or products, whether such a model controls for all appropriate factors that may confound the comparison, whether the pre-period is relevant and representative, and so forth." (ABA Section of Antitrust Law, *Econometrics*, 2nd Edition, 2014, p.74).

¹⁰⁰ While the Policy Brief acknowledges that there are other factors that affect the relative benefits of FTTH and FTTN investment, the analysis makes no attempt to control for any of these factors commonly identified to affect the deployment of fibre technologies (Policy Brief, p.9).

¹⁰¹ Policy Brief, p.9.

Besides, Bell Aliant would have invested over 500 million from 2009 to 2013 building a technologically inferior FTTN network in its service area.

Figure 8: Bell Aliant's FTTN and FTTH Investment Assuming Common Trend, 2009-2013



Source: Bell Canada, *Policy Brief: The Economic Impact of the CRTC's Decision to Unbundle Fibre-to-the-Premises Networks* (by Hal Singer), pp. 9-10.

71. This estimate is nonsensical, implausible, and entirely unrelated to the CRTC's policy to mandate access to FTTN facilities in 2010. In June 2009, *before* the CRTC mandated FTTN access, Bell Aliant commenced its FTTH build in Fredericton and Saint John. Bell Aliant continued to focus on FTTH deployment after 2009 instead of FTTN as the cost of moving straight to FTTH was only three percent (3%) more than moving to FTTN and FTTH was perceived to be a better long-term investment than FTTN.¹⁰²

72. More specifically, the FTTH build was preferable because low population density, a predominantly aerial footprint (80-85%), and long loop lengths accounted for the fact that the costs of deploying FTTH, the superior and future-proof technology, were similar to deploying

¹⁰² Examination of Bell witnesses at the hearing initiated by TNC 2013-551, *supra*, note 5, on November 26, 2014. See volume 3 of the transcript of the hearing at lines 3665 through 3674 and 3897 through 3905, <http://www.crtc.gc.ca/eng/transcripts/2014/tt1126.htm>.

FTTN.¹⁰³ Nine month into its FTTH build and *before* the CRTC mandated FTTN access, Bell Aliant indicated that all internal targets were met or exceeded, and announced an *accelerated* FTTH network build-out.¹⁰⁴ At the end of 2014, subscriber penetration tracked ahead of Verizon's penetration curve in the US, television and triple play attach rates of 90-95% were higher than expected, subscriber consistently migrated to higher tiers, subscriber churn was lower, and demand consistently outstripped Bell Aliant's installation capacity.¹⁰⁵

73. Given this business environment, an assumption that the growth of FTTN investment would have been similar to FTTH investment growth in the absence of mandated FTTN access – either for Bell Aliant or its corporate parent Bell Canada – is untenable, and leads to misleading estimates and erroneous policy implications.

74. The Policy Brief describes a second natural experiment in the United States where the Federal Communication Commission ("FCC"), following the Telecommunications Act of 1996,¹⁰⁶ required telecommunications companies to share network elements with competing carriers, a requirement not imposed on cable providers.¹⁰⁷ Following extensive litigation, the FCC in 2003 declared DSL an "information service" with fewer regulatory restrictions, and in 2005 entirely abolished mandated unbundled network elements ("UNEs") and placed all wireline broadband service providers under the same regulatory regime.

¹⁰³ "In these particular markets [Fredericton, Saint John], the combination of virtually 100 percent aerial infrastructure and lower population density make the cost of fibre to the home and fibre to the node very comparable. These factors and the support of the New Brunswick government made this the right time and the right place for us to launch FTTH to entire communities. The response from customers and businesses to our announcements in these areas has been tremendous." (Bell Aliant, *Q2 2009 Results Conference Call*, Transcript, p.2, http://www.bell.aliant.ca/english/ir/pdf/2009_Q2_transcript.pdf).

¹⁰⁴ "The capabilities of FTTH and our largely aerial infrastructure make it the ideal architecture to address the growing bandwidth needs of our customers. With our competitive environment increasing in size and intensity and the early success we've had in our Fredericton and Saint John markets, we believe that now is the time to accelerate our FTTH investment. FTTH will help us grow revenue, retain and gain customers, provide more and better services and reduce future costs. Most importantly, it can meet the technology demands of the future, giving us a clear, competitive advantage; that's why we call it future-proof." (p.2) "[W]e are meeting or exceeding every target that we've put in place for fibre to the home on both the sales side, the mix side, how much television we're selling, as well as costs. (p.7) (Bell Aliant, *Q1 2010 Results Conference Call*, Transcript, http://www.bell.aliant.ca/english/ir/pdf/2010_Q1_transcript.pdf).

¹⁰⁵ *Supra*, note 90, p. 15.

¹⁰⁶ Pub. L. No. 104-104 (US).

¹⁰⁷ While cable broadband was treated as "information services" with less regulatory restrictions, DSL services provided by telecommunications companies were regulated as "telecommunications services". This asymmetric treatment made little sense as cable providers gained a dominant share in the broadband market.

75. The difference-in-differences methodology, comparing the growth rate of capital expenditures of telecommunications companies to that of cable companies, suffers from the same underlying analytical deficiency in the common trends assumption. This assumption is inappropriate in the context of comparing investment in two dissimilar technologies as it does not control for factors likely to affect investment growth such as the state of network roll-out, changes in operating or deployment cost, the competitive environment, or differences in the technology upgrade path.¹⁰⁸ Assuming that the investment growth of two technologies with fundamentally different technological characteristics, demand, and cost conditions would be equal is inherently problematic, more so in the telecommunications industry which is characterized by rapid technological innovation.¹⁰⁹
76. Aside from the two natural experiments, the Policy Brief lists a few selective studies that do not reflect the breadth of empirical findings published in the academic literature, nor do the studied regulatory policies resemble regulatory measures implemented in TRP CRTC 2015-326. In contrast, a recent comprehensive survey of the academic literature concluded: “While there is a sizeable empirical literature on the relationship between bottleneck access regulation and telecommunications infrastructure investment, there exist enough data problems and enough heterogeneity in the results to prevent clear-cut conclusions.”¹¹⁰ Inferences from a few selective studies – based either on a comparison of wireline to wireless investment in the United States, or on European cross-country comparisons of an index of regulatory intensity in the late 1990s and early 2000s – provide little guidance in assessing the potential policy implications of TRP CRTC 2015-326.

¹⁰⁸ For example, the analysis does not account for the overinvestment and unsustainable capital expenditures of telecommunications companies in the run-up to the telecom crash in 2000 (See for example E.A. Couper, J.P. Hejkal, and A.L. Wolman (2003): “Boom and Bust in Telecommunications”, *Economic Quarterly*, Federal Reserve Bank of Richmond, 89(4), pp. 1-24). Excessive capital expenditures in the telecommunications sector in the late 1990s coupled with a prolonged recovery period following the bust implies that the pre-period is not representative of telecommunications investment and an estimate based on difference-in-differences biased and misleading.

¹⁰⁹ The assumption of equal investment growth implies that investment in a new, superior technology can never overtake and outgrow investment in an older, inferior technology as costs of the superior technology decrease or technological limits of the inferior technology become insufficient to satisfy consumer demand.

¹¹⁰ Vogelsang, I. (2013): “The Endgame of Telecommunications Policy? A Survey,” *Review of Economics*, 64(3), pp. 193-269, at 215. For a comprehensive overview of the literature, see also Cambini, C. and Y. Jiang (2009): “Broadband Investment and Regulation: A Literature Review,” *Telecommunications Policy*, 33, pp. 559–574; or Bourreau, M., C. Cambini, and P. Doğan (2013): Access Regulation and the Transition from Copper to Fiber Networks in Telecoms, *EUI Working Paper*, RSCAS 2013/52, July, Robert Schuman Centre for Advanced Studies, Florence School of Regulation, http://cadmus.eui.eu/bitstream/handle/1814/27597/RSCAS_2013_52.pdf?sequence=1.

77. The key identifying assumption of the empirical framework used in the Policy Brief is untenable, unsound from both an economic and business perspective, and the derived estimate of the hypothesized impact on FTTH investment is deeply misleading.¹¹¹ Neither the natural experiments nor the few selective studies discussed in the Policy Brief provide credible estimates of the investment effect of the CRTC's policy to mandate the provision of disaggregated wholesale high-speed access services (including FTTH), particularly given TRP CRTC 2015-326 is technology neutral and implemented in conjunction with the removal of wholesale rate regulation for the transport component of HSA services.

IV.C Investments in Next-Generation Broadband Networks

78. Following the release of TRP CRTC 2015-326 on July 22, 2015, incumbent broadband providers have issued public statements and reports to their shareholders and investors commenting on the CRTC decision and its impact on their investment plans and capital expenditures associated with fibre-to-the-home or next generation cable networks (DOCSIS 3.1).

79. Bell has stated that its billion-dollar FTTH investments in urban areas will proceed,¹¹² and that its "overall capital intensity in 2016 will again be in the range of 16% to 17%, as we continue our fiber build out throughout Ontario, Quebec, and Atlantic Canada."¹¹³ Telus also continues to invest and expand its fibre-to-the-home network.¹¹⁴ In June 2015, Telus announced a \$1 billion investment in Edmonton to connect 90 percent of homes and businesses in the city directly to its fibre optic network over the next six years.¹¹⁵ Subsequent to the release of TRP CRTC 2015-

¹¹¹ Any subsequent conversion of investment effects into employment and output effects is of little meaning if it is based on an implausible estimate of the policy's effect on investment.

¹¹² *Supra*, note 70.

¹¹³ *BCE Q3 2015 Results Conference Call*, November 5, Transcript p.7, <http://www.bce.ca/investors/financial-reporting/2015-Q3/2015-q3-transcript.pdf>. "Although it is not possible at this time to assess the financial impact of Telecom Decision 2015-326, it could have a negative effect on our business and financial performance as it is progressively implemented over the next few years. However, the nature of such effect, if any, will only be ascertainable once the CRTC has completed its costing models and set the wholesale access rates to be charged by the incumbent telephone companies and cable carriers." (*BCE 2015 Second Quarter Shareholder Report*, August 5, 2015, p.32, <http://www.bce.ca/investors/financial-reporting/2015-Q2/2015-q2-shareholder-report.pdf>).

¹¹⁴ As of September 2015, Telus's gigabit-capable fibre-optic network covered approximately 0.64 million homes and businesses (*TELUS Quarterly Report*, Q2 2015, p. 18; <http://about.telus.com/community/english/investor-relations/financial-documents/quarterly-reports-archive>).

¹¹⁵ "New TELUS fibre optic network will help spur the next wave of social and economic opportunity for Edmonton," June 19, 2015; <http://about.telus.com/community/english/news-centre/news-releases/blog/2015/06/19/test>.

326, Telus announced in October 2015 a \$1 billion investment to connect more than 400,000 homes and businesses in Vancouver directly to its fibre network over the coming five years.¹¹⁶

80. Regarding TRP CRTC 2015-326, Telus stated in its Q2 2015 Quarterly Report that it “anticipates no material adverse impact from the CRTC’s decision in the short term. Given the phased implementation of certain aspects of the decision (including the introduction of a disaggregated wholesale high-speed Internet access service for competitors), it is too early to determine what impact this decision will have on TELUS in the longer term.”¹¹⁷

81. On the investor conference call on August 7, 2015, then Executive Chair and now President and CEO Darren Entwistle remarked on Telus’s fibre deployment: “I look at the regulatory window of opportunity and I think it’s attractive. Over the last 15 years, that hasn’t always been the case. But, I think smart companies leverage windows of opportunity. And, I think we have that on the regulatory front. We’ve seen a buttressing of infrastructure-based competition in recent decisions. I think that’s a good thing.”¹¹⁸ On November 5, 2015, Darren Entwistle further stated: “In terms of wholesale wireline, there is an area where I think we’ve got a terrific window of opportunity as it relates to our fibre build in Western Canada. We’ve got great technology. We’ve got a great TV product. We’ve got a favorable regulatory environment. We’ve got a strong competitive juxtaposition versus our competitive peer in this particular industry right now and we’ve got pretty sexy economies of scope to leverage.”¹¹⁹

82. Following the release of TRP 2015-326, Rogers announced in October 2015 that it will start to roll-out next generation internet speeds in downtown Toronto and the GTA, with gigabit internet available to over four million homes in its entire footprint across Ontario and Atlantic Canada by the end of 2016.¹²⁰

83. During the company’s second quarter earnings call on July 23, 2015, Guy Lawrence, President and CEO of Rogers, stated that the CRTC decision “appears to create a more level playing field

¹¹⁶ “TELUS investing \$1 billion to make Vancouver the world’s next gigabit-enabled city,” October 2, 2015; https://about.telus.com/community/english/news_centre/news_releases/blog/2015/10/02/telus-investing-1-billion-to-make-vancouver-the-world-s-next.

¹¹⁷ *Supra*, note 114, p. 43.

¹¹⁸ *TELUS Q2 2015 Investor Conference Call*, August 7, 2015, Transcript p. 11; <http://about.telus.com/servlet/JiveServlet/downloadBody/5798-102-1-6437/TELUS%20Q2%202015%20conference%20call%20transcript.pdf>.

¹¹⁹ *TELUS Q3 2015 Investor Conference Call*, November 5, 2015, Transcript p. 9; <http://about.telus.com/servlet/JiveServlet/downloadBody/5798-102-1-6437/TELUS%20Q2%202015%20conference%20call%20transcript.pdf>.

¹²⁰ “Rogers announces gigabit internet and world’s largest commitment to live sports broadcasting in 4K with HDR,” October 5, 2015; <http://rogers.mediaroom.com/2015-10-05-Rogers-announces-gigabit-internet-and-worlds-largest-commitment-to-live-sports-broadcasting-in-4K-with-HDR>.

between cableco and telco providers of high-speed Internet offerings in that it won't exempt telco fiber to the home from wholesale requirements. Assuming the CRTC gets the cost models right, we see little risk that the overall regime will hinder continued network investment by incumbent providers. Over time it also seems that the decision will require resellers to invest more in infrastructure which is a fairer sharing of the required costs as more consistent with a facilities-based competition model.”¹²¹

84. The sentiment that incumbent providers will continue to invest and deploy fibre-to-the-home following mandated access is shared by financial analysts. For example, the RBC Telecom Scenario Report *Fibre-to-the-home: Playing the long game* – a comprehensive 30-page report on FTTH networks in Canada issued on August 19, 2015 – states with respect to TRP CRTC 2015-326: “While mandated access to FTTH could act as a disincentive for FTTH deployment, we expect the incumbents to largely proceed with current FTTH plans as the impact of this decision should be manageable for three reasons: (i) the use of Phase II costing, which should prevent an “unfair” tariff regime from being implemented; (ii) the requirement under the disaggregated wholesale HSA services model for competitors to invest in interconnection (which requires scale and is consistent with facilities-based competition); and (iii) the ability for incumbents to more aggressively push the quadplay as well as other services in the bundle should Internet re-sellers gain greater traction over time.”¹²²
85. Announcements of sizable next generation broadband infrastructure investments, public statements and investor reports from incumbent broadband providers, as well as a comprehensive review of FTTH networks in Canada by financial analysts subsequent to the release of TRP CRTC 2015-326 are consistent with the CRTC’s expectation that incumbent carriers will continue to invest in FTTH to respond to consumer demand and to compete with cable carriers, particularly in urban areas.¹²³

V. Conclusion

86. The CRTC policy established in TRP CRTC 2015-326 is based on sound economic principles embodied in the essential facility test. The policy is technologically neutral, encourages facilities-based competition where feasible, and fosters competition through mandated wholesale access where pure facilities-based competition is insufficient or incapable of inducing

¹²¹ Q2 2015 Rogers Communications Inc. Earnings Call, July 23, 2015, Edited Transcript p. 4, <http://netstorage-ion.rogers.com/downloads/IR/pdf/transcripts/Rogers-2015-Q2-Transcript.pdf>.

¹²² *Supra*, note 90, p. 14.

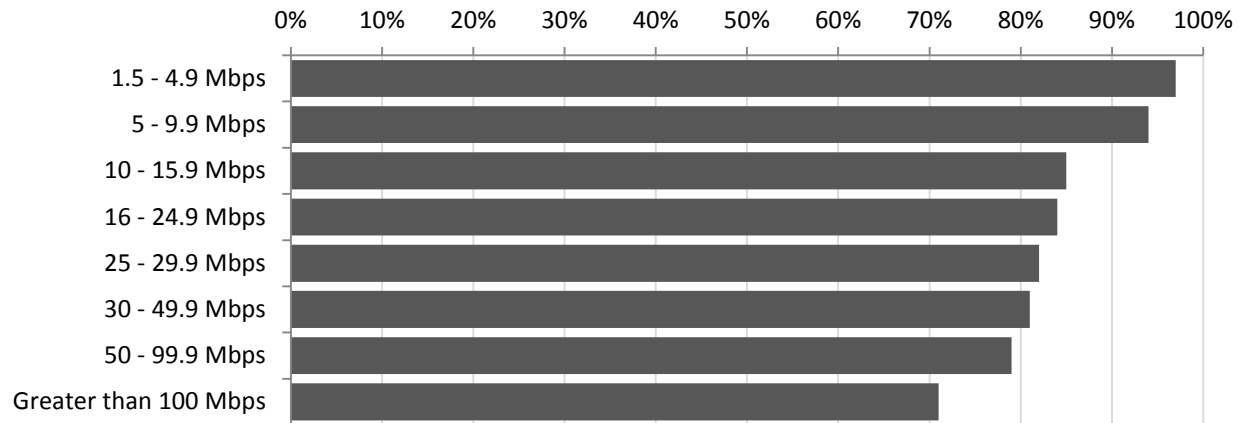
¹²³ *Supra*, note 1, ¶141.

vigorous retail competition and providing consumers with choice. With the transition to mandated disaggregated wholesale HSA service, the Commission exposes additional network elements to market forces, and encourages investment in middle-mile facilities by competitors.

87. Next-generation connectivity offered by FTTH and DOCSIS 3.1 networks are the future of broadband and hold the promise to enhance productivity and foster economic development and growth. Exempting FTTH facilities and next-generation DOCSIS 3.1 cable networks from mandated access will eliminate wholesale competitors from an important and rapidly growing customer segment in the near future, reduce choice, and substantially lessen retail broadband competition, which would likely lead to higher prices and lower adoption of next-generation connectivity.
88. The Commission examined the potential disincentive to invest when access to FTTH facilities is mandated. It deemed any negative impact on investment unlikely to occur to any significant degree and expects incumbents to continue to invest in fibre access facilities. Bell Canada's Petition does not provide credible estimates of the investment effect of the CRTC's policy. Furthermore, recent announcements of next generation broadband investments, public statements by incumbent broadband providers, and a comprehensive financial analysis of FTTH networks in Canada support the CRTC's expectation: Incumbent carriers will continue to invest in FTTH infrastructure to respond to consumer demand and to compete with cable carriers, particularly in urban areas.

Appendix A Additional Figures and Tables

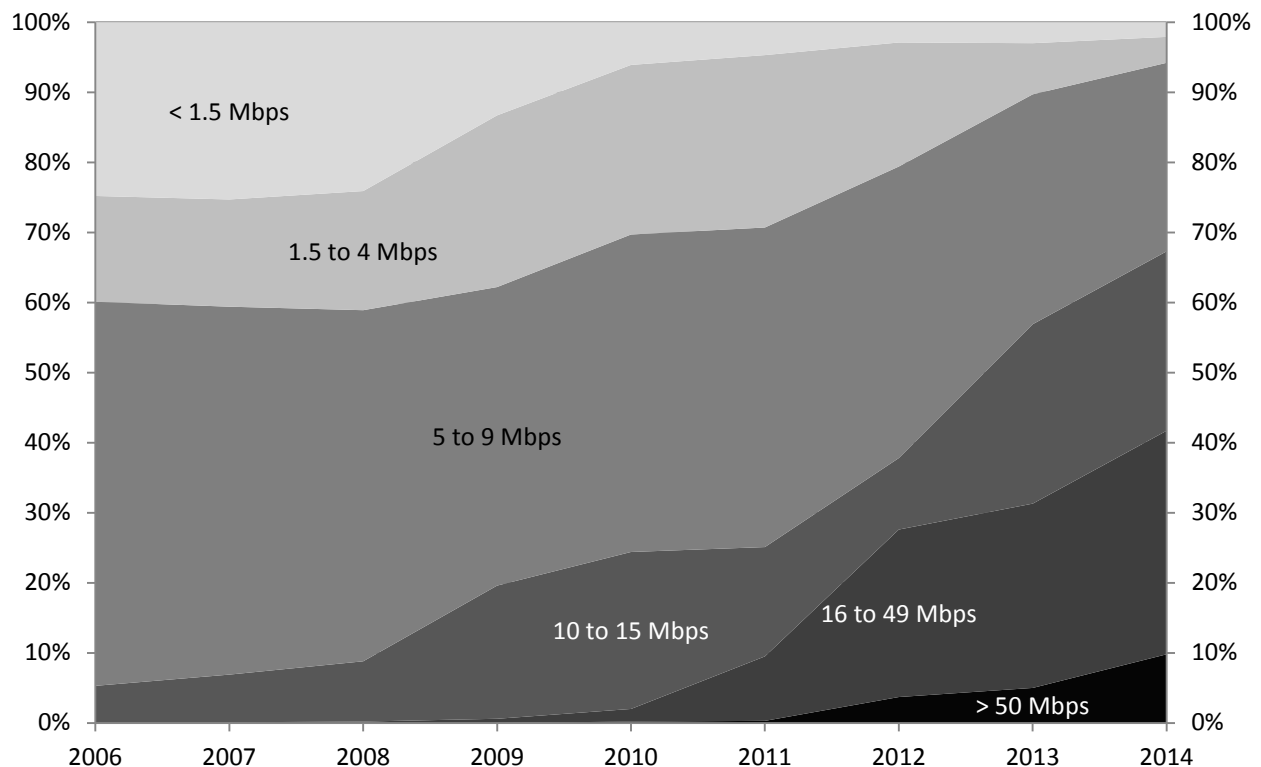
Figure A-1: Broadband Availability by Speed, 2014 (Percentage of Households)



Note: Excludes satellite and mobile technologies.

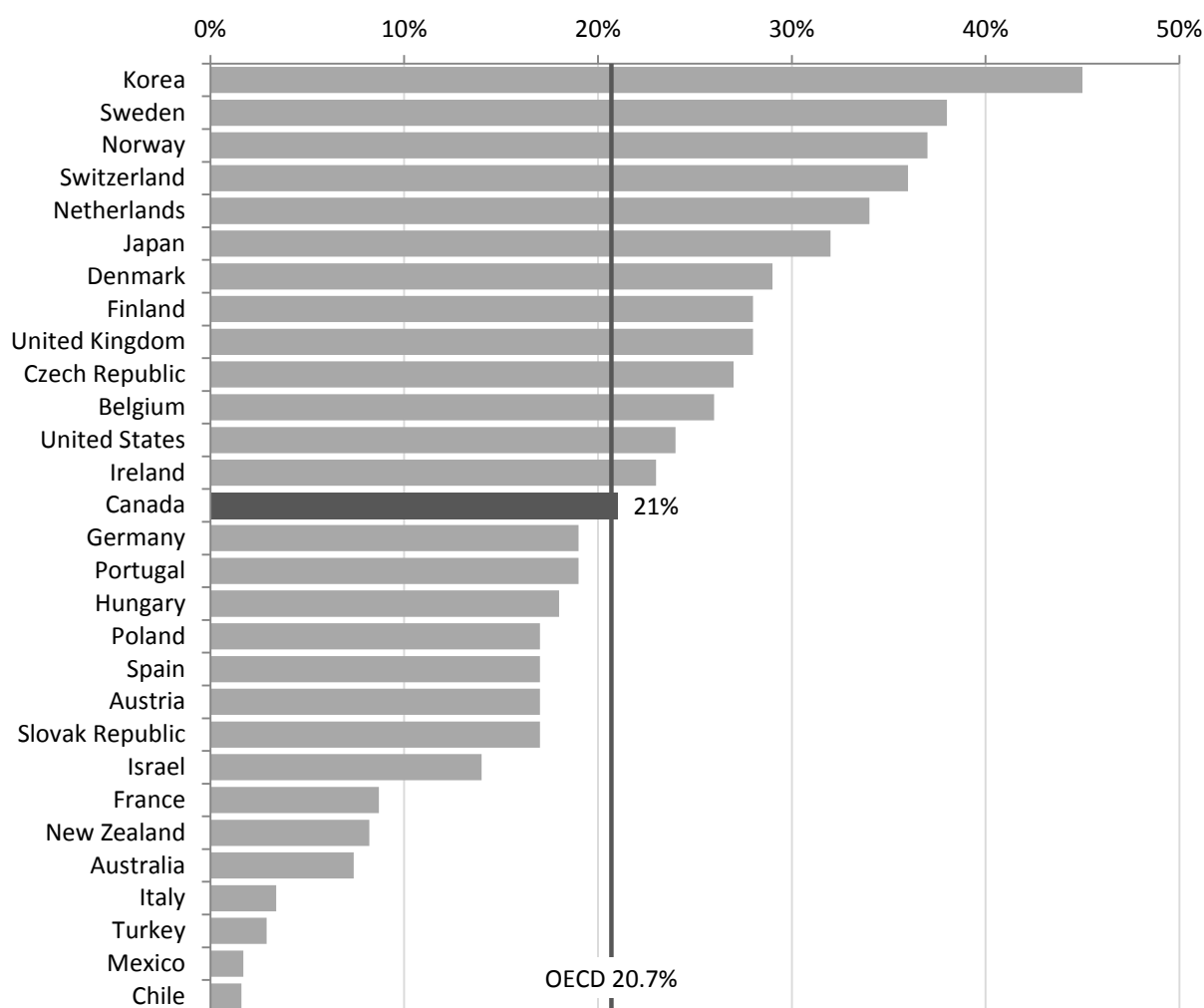
Source: CRTC Communications Monitoring Report 2015, Figure 5.3.16.

Figure A-2: Residential Internet Subscription, by Speed Tier (2006-2014)



Source: CRTC, Communications Monitoring Reports 2011-2015.

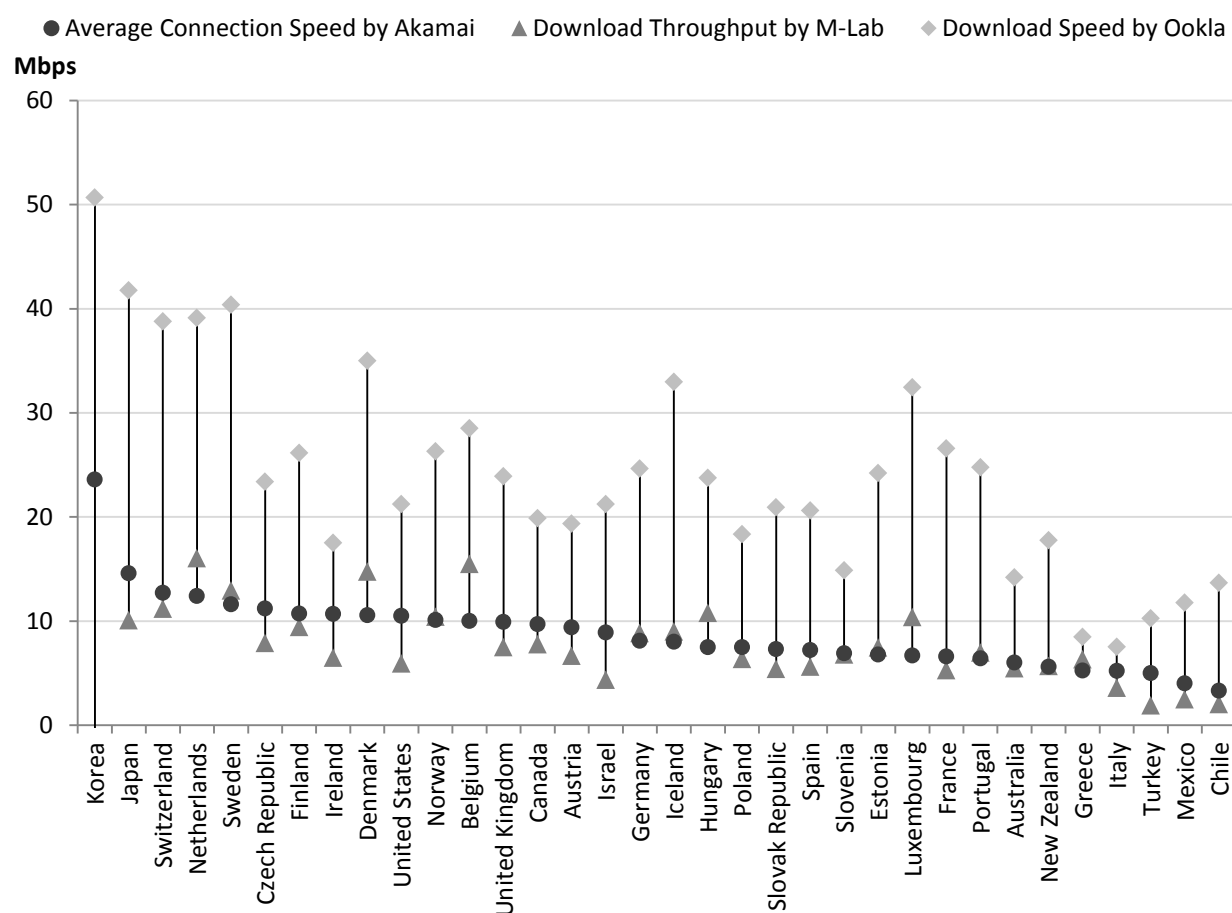
Figure A-3: Percentage of Broadband Connections Above 15 Mbps, OECD Countries, 2015



Note: Includes connections to Akamai at speeds greater than 15 Mbps. No data available for Estonia, Greece, Iceland, Luxembourg, and Slovenia.

Source: Akamai, State of the Internet Report Q3 2015, <https://www.stateoftheinternet.com/resources-connectivity-2015-q3-state-of-the-internet-report.html>.

Figure A-4: Actual Fixed Broadband Download Speeds, Akamai, M-Lab, and Ookla, Q1 2014



Source: OECD Digital Economy Outlook 2015, Figure 2.30, <http://www.oecd.org/internet/oecd-digital-economy-outlook-2015-9789264232440-en.htm>

Appendix B Curriculum Vitae of Dr. Markus von Wartburg

MARKUS VON WARTBURG, Ph.D.

Senior Economist, Analysis Group

Phone: +1 (514) 394-4489

1000 de la Gauchetière Ouest, bureau 1200

E-mail: mvonwartburg@analysisgroup.com

Montréal, QC, H3B 4W5, Canada

Dr. von Wartburg specializes in the application of econometric methods and microeconomic theory to complex problems in antitrust, finance, commercial litigation, intellectual property and pharmacoeconomics. His primary expertise is in the theory of industrial organization, antitrust and competition economics, and applied microeconomic theory. He assisted testifying experts in engagements as diverse as the assessment of class certification claims in technology and financial services industries, the quantification of the economic impact of price-fixing conspiracies, the competitive assessment of horizontal and vertical mergers, the estimation of damages from breach of contract, and the analysis of clinical trial data in patent infringement cases. Dr. von Wartburg has served as an economic expert on investment and competition in the telecommunications industry. Prior to joining Analysis Group, Dr. von Wartburg lectured on strategy and game theory at the University of British Columbia.

CITIZENSHIP

Dual Swiss and Canadian citizenship

LANGUAGES

German (Native), English (Fluent), French (Elementary).

EDUCATION

Ph.D. Economics, Vancouver School of Economics, University of British Columbia, Vancouver, Canada.

Specialization: Industrial Organization

M.A. Economics, University of Toronto, Toronto, Canada.

B.A. Economics, Simon Fraser University, Burnaby, Canada.

PROFESSIONAL EXPERIENCE

- 2008 - present Analysis Group, Montreal, Canada
Senior Economist (2013 – present)
Economist (2008 – 2012)
- 2006 - 2007 University of British Columbia, Vancouver, Canada
Sessional Lecturer (Department of Economics)

SELECTED CASEWORK AND CONSULTING EXPERIENCE

Antitrust

- Assisted affiliate expert Prof. Edward A. Snyder on behalf of a group of TFT-LCD panel manufacturers accused of operating a global price-fixing cartel in preparation of reports assessing class certification claims and quantifying economic damages of indirect purchasers of TFT-LCD panels.
- Supported a testifying expert in quantitatively assessing the likelihood and the economic impact of alleged price-fixing conspiracies in a multidistrict class action matter in the chemical industry.
- Assisted a testifying expert on behalf of the U.S. Department of Justice in assessing market power and substitutability in the payment card industry.

Mergers and Acquisitions

- Supported Prof. Roger Ware on behalf of a media and communications company through Canadian Radio-Television and Telecommunications Commission (CRTC) hearings concerning the potential for anti-competitive behavior by vertically integrated firms in the broadcasting/distribution market.
- Assisted an affiliate expert on behalf of an agricultural commodities manufacturer in the dialogue with competition authorities with the identification of relevant antitrust issues, product and geographic market delineation, and spatial competition analyses arising from an acquisition in the agricultural sector.
- Provided consulting support to counsel in analyzing the incentives and the potential effects of input foreclosure associated with a vertical merger of industrial equipment manufacturers under review by competition authorities.
- Assisted an internal expert on behalf of the Competition Bureau in assessing the competitive effects of a large merger in the newspaper industry in Canada.

Telecommunications

- Supported Prof. Roger Ware on behalf of a media and communications company through Canadian Radio-Television and Telecommunications Commission (CRTC) hearings concerning the

potential for anti-competitive behavior by vertically integrated firms in the broadcasting/distribution market.

- Assisted Dr. Marc Van Audenrode on behalf of Ontario Energy Board staff in evaluating the level of competition and Toronto Hydro's market power in the provision of pole access for wireless telecommunication attachments in the City of Toronto.
- Supported Prof. Roger Ware on behalf of a cable company in regulatory hearings determining wireline pole attachment rates in different provinces.
- Filed an expert report on investment and competition in the wholesale telecommunications services market and testified before the Canadian Radio-Television and Telecommunications Commission (CRTC) in the hearing on the review of wholesale services and associated policies.

Patents and Intellectual Property

- Assisted an expert with meta and post-hoc analyses of clinical trial data through expert reports, depositions and trial testimony in connection with a patent infringement arising from an ANDA filing by generic drug manufacturers seeking approval to market a generic version of the brand-name drug.
- Supported a testifying expert on behalf of a technology company in assessing the value of specific mobile phone features and evaluating damages originating from patent infringement claims employing a demand estimation model based on eBay auctions.
- Conducted a multi-stage forward and backward patent citation analysis to assess the value and technological impact of a donated patent portfolio within its technical field in the context of IP technology transfers at universities.

Securities and Finance

- Implemented financial simulations to analyze the economics of 401(k) retirement plans and their fee structure in an arbitration matter regarding a breach of contract in the sale of a retirement plan business.
- Assisted an expert witness in evaluating management fees and economies of scale on behalf of a mutual fund company against allegations it charged excessive management fees in violation of Section 36(b) of the Investment Company Act of 1940.
- Supported different testifying experts on behalf of a large US bank in a series of securities lending actions concerning allegations that the defendant had potential conflicts of interest, and that its investment managers did not follow cash collateral investment guidelines during the 2008 financial crisis.
- Developed financial market simulations of implied market risk during the 2008 financial crisis to estimate fair price valuation of collateral securities in a bankruptcy case.

Health Outcomes Research and Pharmacoeconomics

- Implemented discrete-event simulations and Markov simulation models to assess the cost-effectiveness of pharmacotherapies.

- Prepared budget impact analyses, pharmacoeconomic analyses, and net impact analyses for submission to public health authorities in support of formulary listing of prescription medications.
- Employed innovative statistical methods on behalf of a non-profit organization to analyze efficacy data from double-blind placebo controlled clinical trials for rare diseases.

Strategy

- Implemented detailed economic impact studies based on the input-output methodology on behalf of two of the largest US technology companies to assess their economic contribution and employment impact on the US economy (including specific states) and European economies.

PROFESSIONAL AFFILIATIONS

Canadian Economic Association (Member)

American Economic Association (Member)

Canadian Bar Association (Affiliate, Competition Law Section)

American Bar Association (Associate, Antitrust Law)

ATTACHMENT 2

REPLY OF CANADIAN NETWORK OPERATORS CONSORTIUM INC.

TO ATTACHMENT 5

TO

**BELL CANADA PETITION TO THE GOVERNOR IN COUNCIL TO VARY
TELECOM REGULATORY POLICY CRTC 2015-326, *REVIEW OF
WHOLESALE WIRELINE SERVICES AND ASSOCIATED POLICIES***

21 DECEMBER 2015

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EXECUTIVE SUMMARY

1. These reply comments of Canadian Network Operators Consortium Inc. (“**CNOC**”) address Attachment 5 to the Petition of Bell Canada (“**Bell**”) to vary Telecom Regulatory Policy CRTC 2015-326¹ (“**TRP 2015-326**”), which is a paper authored by Dr. Andrea Renda, entitled: “Regulating Broadband: Lessons From the European Union, and Implications for Canada”² (“**Renda paper**”).

2. The Renda paper presents the broadband market situation of the European Union (“**EU**”) in an inaccurate manner by claiming that the EU is in the midst of a broadband crisis through lack of investment. In fact, many EU countries are world leaders on key broadband metrics.

3. The Renda paper also contains serious material errors regarding the currently applicable EU regulatory framework for electronic communications (“**EU framework**”), notably with regard to: (i) the concept of ‘essential facility’, (ii) the method used for market analysis, including the concept of Significant Market Power, and (iii) the substance of the EU framework and its implementing measures, notably the EU Framework Directive,³ the 2010 European Commission (“**EC**”) Recommendation,⁴ and the 2013 EC Recommendation.⁵

4. The Renda paper’s assertion regarding the possible application of the EU framework to the Canadian situation, in which the Renda paper suggests that, given the presence of cable companies, under the EU framework Canadian ILECs would not be subject to mandated wholesale access, is also highly questionable. This is especially so given the example of The Netherlands, which has

¹ *Review of wholesale wireline services and associated policies*, Telecom Regulatory Policy CRTC 2015-326, 22 July 2015 (“**TRP 2015-326**”).

² Andrea Renda, “Regulating Broadband: Lessons From the European Union, and Implications for Canada”, Attachment 5 to Bell Canada’s Petition to Vary TRP 2015-326 (“**Renda Paper**”).

³ “Regulatory framework for electronic communications in the European Union: Situation in December 2009”, <https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/Copy%20of%20Regulatory%20Framework%20for%20Electronic%20Communications%202013%20NO%20CROPS.pdf> (“**EU Framework Directive 2002/21/EC**”).

⁴ 2010/572/EU: Commission Recommendation of 20 September 2010 on regulated access to Next Generation Access Networks (NGA) (Text with EEA relevance), <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32010H0572> (“**2010 EC Recommendation**”).

⁵ 2013/466/EU: Commission Recommendation of 11 September 2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment, <http://eur-lex.europa.eu/legal-content/GA/TXT/?uri=celex:32013H0466>, (“**2013 EC Recommendation**”).

near ubiquitous cable company and ILEC coverage, but where the ILEC is subject to mandated wholesale access provisions for its copper and fibre networks.

5. The Renda paper also makes inappropriate, speculative forward-looking statements about the possible future evolution of the EU framework, which cannot and should not be relied upon.

6. This document is organized as follows: Section 1.0 discusses the facts of the market situation in the EU, in connection with regulation. Section 2.0 addresses serious material factual errors in the Renda paper regarding the current legal basis of the EU framework. Section 3.0 addresses the Renda paper's assertion regarding the possible application of the EU framework to the Canadian context. Section 4.0 challenges inappropriately selective citations in the Renda paper on the ongoing review of the EU framework. In Section 5.0 a brief conclusion is provided

1.0 THE BROADBAND MARKET SITUATION IN THE EU AND THE IMPACT OF REGULATION

7. The Renda paper alleges that Europe “lags behind the US, Canada, Japan and South Korea in terms of investment, speed, and penetration of fast and ultra-fast broadband” and attributes these alleged weaknesses to EU regulation.⁶ The Renda paper further argues that “[t]oday, Europe still performs rather poorly in terms of ultrafast broadband networks” and that “[o]verall, the situation is close to disastrous.”⁷

8. However, these dramatic statements do not hold up to an examination of the facts. The EU is a broadband leader on many key metrics.

9. For example, the EU has high broadband availability: 100% basic broadband, 68% next generation access (up from 62% in 2013), including fibre-to-the-premises (“**FTTP**”) availability up from 11% to 19% from 2011 to 2014. This is demonstrated by the connectivity section of the EC’s 2015 Digital Agenda Scoreboard.⁸

⁶ Renda paper, *supra* note 2, at pg 2.

⁷ *Id.* at pg 3.

⁸ European Commission, “2015 Digital Agenda Scoreboard”, http://ec.europa.eu/newsroom/dae/document.cfm?action=display&doc_id=9929.

10. In addition, looking at the EU as a whole when making comparisons with Canada can be misleading, because many EU countries have a GDP⁹ which is far lower than that of Canada and purchasing power varies greatly as well.¹⁰ In fact, according to data from the Organisation for Economic Co-Operation and Development (“OECD”) Canada’s GDP per capita in 2014 was \$44,057.00 USD whereas the GDP for the EU was only \$36,237.00 USD.¹¹ Similarly, the existence of factors such as lower GDP and purchasing power is one of the many reasons why, when it comes to international comparisons on the impact of regulation on broadband investment, one must be particularly cautious.

11. However, for the sake of argument, one could make a specific comparison with the EU nation of Sweden, which has a low population density and a high GDP, and which performs strongly on all relevant broadband metrics. Sweden has 74% of homes passed with fibre-to-the-building/home (“FTTB/H”), 40% FTTB/H take-up (more than there is take-up for xDSL connections) while also having widespread cable networks. 61% of the Swedish population has access to speeds greater than 100 Mbps downstream. Furthermore, Sweden applies the EU regulatory framework, mandates cost-oriented copper and fibre unbundling on an *ex ante* basis, mandates dark fibre backhaul (50km) as an ancillary remedy, and is in the process of implementing Equivalence of Input for fibre unbundling. Sweden also has a high level of investment in fixed and mobile networks and is a world leader on all relevant broadband metrics. For further details, refer to pages 301-312 of the EC’s Connectivity Report 2015 which discusses Sweden.¹²

12. In addition, data from the OECD indicates that Swedish retail prices are generally lower than Canadian retail prices for the equivalent product. The OECD indicates that as of 2014 monthly subscriptions to broadband services in Sweden range from \$32.30 to \$102.50 USD whereas in Canada the range is from \$36.97 to \$173.70 USD.¹³ The OECD data also indicates that when

⁹ Organisation for Economic Co-Operation and Development (“OECD”), “Domestic Product”, <https://data.oecd.org/gdp/gross-domestic-product-gdp.htm>.

¹⁰ OECD, “Purchasing Power Parities for GDP and related indicators”, <http://stats.oecd.org/Index.aspx?DataSetCode=PPPGBP>

¹¹ OECD, “Domestic Product”, *supra*, note 9.

¹² European Commission, “Commission Staff Working Document: Implementation of the EU regulatory framework for electronic communication -2015” at pgs 301-312, http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=9990.

¹³ OECD, “OECD Broadband Portal—4.1 Fixed Broadband subscription prices ranges,” <http://dx.doi.org/10.1787/888933224706>.

examining different packages and speed tiers, and the OECD examined 18 different ‘baskets’ of broadband usage, Sweden consistently ranks ahead of Canada in terms of retail prices.¹⁴ For example, using USD and purchasing power parity, the OECD calculated that as of September 2014 Shaw’s Broadband 100 package with a 100 Mbps download speed and 400 GB of monthly data cost \$79.31 USD per month whereas the equivalent package in Sweden only cost \$36.50 per month.¹⁵ This pattern of Swedish retail prices being lower was repeated throughout all the different packages and speed tiers examined.¹⁶

13. On another key metric, fixed broadband penetration, European countries are the world leaders both in fixed broadband penetration and actual Internet usage.¹⁷ Currently, all of the countries in the top 10 for fixed broadband penetration are European except for Korea.¹⁸ Canada ranks 14th, Japan ranks 23rd, and the United States (“US”) only ranks 24th.¹⁹ Indeed, all of the countries in the top 20 for fixed broadband penetration are European, except for Korea, Canada and Hong Kong.²⁰ All of the countries in the top 10 for actual Internet usage are also European, Canada ranks 16th.²¹

14. Specifically with regard to speeds, the quarterly Akamai State of the Internet Report Q3 2015²² shows that Canada’s global rank is 21st with an average speed of 11.9 Mbps downstream and the US, is 16th with 12.6 Mbps downstream. 11 European countries currently outperform Canada on this metric, and 10 outperform the US.²³ Many other European countries, including

¹⁴ OECD, “OECD Broadband Portal—4.0 Prices,” <http://www.oecd.org/sti/broadband/oecdbroadbandportal.htm>.

¹⁵ OECD, “OECD Broadband Portal—4.19 Fixed broadband basket high 5: 400 GB / month. 102.400 Mb/s and above (Sept 2014),” http://www.oecd.org/sti/ieconomy/deo2015data/2.87.%20FBB_High5.xls.

¹⁶ OECD, “OECD Broadband Portal—4.0 Prices,” <http://www.oecd.org/sti/broadband/oecdbroadbandportal.htm>.

¹⁷ The Broadband Commission, “The State of Broadband 2014: broadband for all” Pages 96 (penetration) and 102 (usage) of: <http://www.broadbandcommission.org/Documents/reports/bb-annualreport2014.pdf>.

¹⁸ *Id.* at pg 96.

¹⁹ *Ibid.*

²⁰ *Ibid.*

²¹ *Id.* at pg 102.

²² Akamai, “2015 Q3 State of the Internet Report”, 16 December 2015, <https://www.stateoftheinternet.com/resources-connectivity-2015-q3-state-of-the-internet-report.html> (“Q3 2015 State of the Internet Report”) at pg 26.

²³ *Id.* at pg 38.

some outside the EU²⁴, appear in the top 30, with speeds very near those in Canada.²⁵ For example, Spain ranks 30th with a speed of 10.4 Mbps downstream.

15. On another key metric of broadband performance, retail prices, a study published by the EC, which includes open data spreadsheets²⁶, enables comparisons between offers in the EU and in Canada, for stand-alone and bundled broadband services, at all speed points²⁷. Canada does not fare well in these comparisons.²⁸

16. Overall, there is no evidence to support the Renda paper's claim that "[r]eliance on access regulation has had an even more negative impact on investment in new, high-speed broadband networks."²⁹

17. AnalysysMason's report entitled "What Rules for Europe's Digital Highways"³⁰ dated 22 September 2015, addresses the EU model's performance, including on a comparative basis (USA, Japan, New Zealand, Singapore). It also addresses the policy discussion in which some (seemingly including Renda) suggest that there would be an opposition between fibre-to-the-node ("**FTTN**") and FTTP investment and ex-ante wholesale access regulation. The report comprehensively dismisses any such opposition. In addition, contrary to Renda's suggestion, Japan does mandate fibre unbundling; in fact it was the first country to do so as long ago as 2001.³¹

²⁴ *Ibid.* In this regard note that Norway, which ranks 3rd overall with an average download speed of 16.4 Mbps, is subject to the EU framework despite not being a member of the EU on account of its membership in the European Economic Area.

²⁵ *Ibid.*

²⁶ http://ec.europa.eu/newsroom/dae/document.cfm?action=display&doc_id=11184.

²⁷ European Commission, "Study on retail broadband access prices (as of February 2015)", 22 October 2015, <https://ec.europa.eu/digital-agenda/en/news/study-retail-broadband-access-prices-february-2015>.

²⁸ *Ibid.*

²⁹ Renda paper, *supra* note 2, at pg 2.

³⁰ <http://www.ectaportal.com/en/POLICY-PUBLICATIONS/Reports/Reports-Studies/What-rules-for-Europe-s-digital-highways/>.

³¹ OECD (2013), "Broadband Networks and Open Access", *OECD Digital Economy Papers*, No. 218, OECD Publishing. <http://dx.doi.org/10.1787/5k49qgz7crmr-en>, at pg 13.

18. In summary:

(1) Contrary to the Renda paper's assertions that the EU is in the midst of a broadband crisis, many EU countries are world leaders, ahead of Canada, on key broadband metrics; many other EU countries are broadly on par with Canada, or are near Canada, on several of these same metrics; and

(2) Some of the EU countries with the most long-standing and most developed ex-ante wholesale access regulation (e.g. The Netherlands and Sweden, which are discussed in these reply comments) are among the best performers.

2.0 SERIOUS MATERIAL ERRORS REGARDING THE CURRENT EU FRAMEWORK

2.1 Alleged jurisdictional reliance on the concept of 'essential facility'

19. The Renda paper starts from the premise that "both jurisdictions rely on the concept of 'essential facility'", and draws conclusions from this.³² With regard to the EU, this is factually incorrect. The concept of 'essential facility' is neither the basis of the EU framework, nor is the concept used to formulate policy, legislation, or regulation in any relevant EU instrument addressing telecommunications.

20. As a matter of fact, the concept of 'essential facility' was considered as a potential legal underpinning in the run-up to local loop unbundling Regulation (EC) No 2887/2000³³ and was specifically not retained in the final text of the Regulation. This is attributable to the judgment of the European Court of Justice in *Oscar Bronner v. Mediaprint*³⁴, and the Opinion of the Advocate General which preceded it,³⁵ which set a very high legal burden of proof for the concept of 'essential facility'.

³² Renda paper, *supra* note 2, at pg 2.

³³ Regulation (EC) No 2887/2000 of the European Parliament and of the Council of 18 December 2000 on unbundled access to the local loop, <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000R2887>.

³⁴ Court of Justice of the European Union, "Judgment of the Court (Sixth Chamber)" 26 November 1998, <http://curia.europa.eu/juris/liste.jsf?language=en&num=C-7/97?>.

³⁵ Court of Justice of the European Union, "Opinion of Mr Jacobs – Case C-7/97" 28 May 1998, <http://curia.europa.eu/juris/showPdf.jsf?jsessionid=9ea7d2dc30dd7f1bb9a6444c40bea25fc29836df13a9.e34KaxiLc3qMb40Rch0SaxuSahf0?text=&docid=43901&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=364066>.

21. The only reference to ‘essential facilities’ that exists in the EU framework furthermore contradicts the Renda paper, as is evidenced by points 81 and 82 of the EC’s Guidelines 2002/C 165/03 on the concept of Significant Market Power³⁶:

81. As regards the relevance of the notion of ‘essential facilities’ for the purposes of applying the new definition of SMP, there is for the moment no jurisprudence in relation to the electronic communications sector.

However, this notion, which is mainly relevant with regard to the existence of an abuse of a dominant position under Article 82 of the EC Treaty, is less relevant with regard to the ex-ante assessment of SMP within the meaning of Article 14 of the framework Directive. In particular, the doctrine of ‘essential facilities’ is complementary to existing general obligations imposed on dominant undertaking, such as the obligation not to discriminate among customers and has been applied in cases under Article 82 in exceptional circumstances, such as where the refusal to supply or to grant access to third parties would limit or prevent the emergence of new markets, or new products, contrary to Article 82(b) of the Treaty. It has thus primarily been associated with access issues or cases involving a refusal to supply or to deal under Article 82 of the Treaty, without the presence of any discriminatory treatment. Under existing case-law, a product or service cannot be considered ‘necessary’ or ‘essential’ unless there is no real or potential substitute.

Whilst it is true that an undertaking which is in possession of an ‘essential facility’ is by definition in a dominant position on any market for that facility, the contrary is not always true. The fact that a given facility is not ‘essential’ or ‘indispensable’ for an economic activity on some distinct market, within the meaning of the existing case-law (86) does not mean that the owner of this facility might not be in a dominant position. For instance, a network operator can be in a dominant position despite the existence of alternative competing networks if the size or importance of its network affords him the possibility to behave independently from other network operators (87). In other words, what matters is to establish whether a given facility affords its owner significant market power in the market without thus being necessary to further establish that the said facility can also be considered ‘essential’ or ‘indispensable’ within the meaning of existing case-law.

82. It follows from the foregoing that the doctrine of the ‘essential facilities’ is less relevant for the purposes of applying ex ante Article 14 of the framework Directive than applying ex-post Article 82 of the EC Treaty.

³⁶ European Commission, “Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services”, in Official Journal of the European Communities C 165/6, 11.7.2002, [http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52002XC0711\(02\)&from=EN](http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52002XC0711(02)&from=EN) (“EC Guidelines 2002/C 165/03”).

22. It is also worth noting that in all judicial appeals of its competition law decisions regarding abuse of dominant position in telecommunications, the EC has systematically repudiated the concept of ‘essential facility’ as an underpinning to its decisions. Furthermore, the Court of Justice of the European Union has clearly set a test which is less stringent than an ‘essential facility’ test in its judgment in the competition law (margin-squeeze) case *Konkurrensverket v TeliaSonera*.³⁷

23. In summary:

(1) The EU regulatory framework for telecommunications does not rely on an ‘essential facility’ test for *ex ante* economic regulation; it relies on a Significant Market Power test, which is explicitly a different test; and

(2) The EU behavioral antitrust decisions do not rely on an ‘essential facility’ test, but on an abuse of dominant position test, which is explicitly different as well.

2.2 Characterization of the concept of Significant Market Power in the EU framework

24. The Renda paper suggests that the concept of Significant Market Power (“SMP”) in the EU framework would be equivalent to the concept of ‘essential facility’, and draws various conclusions from this alleged equivalence.³⁸ This is a factually incorrect statement as to how SMP is determined in the EU, given that the EU framework is not based on the concept of ‘essential facility’ and explicitly rejects the latter as a basis for regulatory decisions, as explained above.

25. The Renda paper then goes on to state that the concept of SMP in the EU framework would require a market share of 40% or greater, and refers in this context to the market share of Canadian ILECs.³⁹ While market share is one of the criteria used to establish SMP, and is evidently an important criterion, it is just one amongst a broad set of criteria, which all need to be considered when conducting the SMP analysis. Furthermore, the Renda paper ignores the fact that the EU framework covers both single SMP and joint SMP, which is equivalent to individual dominance and collective dominance.

³⁷ Court of Justice of the European Union, “Judgment of the Court (First Chamber) of 17 February 2011”, <http://curia.europa.eu/juris/liste.jsf?language=en&num=C-52/09>.

³⁸ Renda paper, *supra* note 2, at pg 2.

³⁹ *Ibid.*

26. Article 14 of the EU Framework Directive⁴⁰ introduces the SMP concept, as follows:

An undertaking shall be deemed to have significant market power if, either individually or jointly with others, it enjoys a position equivalent to dominance, that is to say a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers. In particular, national regulatory authorities shall, when assessing whether two or more undertakings are in a joint dominant position in a market, act in accordance with Community law and take into the utmost account the guidelines on market analysis and the assessment of significant market power published by the Commission pursuant to Article 15. Criteria to be used in making such an assessment are set out in Annex II. [Emphasis added]

27. The European Commission's Guidelines 2002/C 165/03 on the concept of Significant Market Power further define the corresponding applicable criteria⁴¹:

78. It is important to stress that the existence of a dominant position cannot be established on the sole basis of large market shares. As mentioned above, the existence of high market shares simply means that the operator concerned might be in a dominant position. Therefore, NRAs should undertake a thorough and overall analysis of the economic characteristics of the relevant market before coming to a conclusion as to the existence of significant market power.

In that regard, the following criteria can also be used to measure the power of an undertaking to behave to an appreciable extent independently of its competitors, customers and consumers. These criteria include amongst others:

- overall size of the undertaking,
- control of infrastructure not easily duplicated,
- technological advantages or superiority,
- absence of or low countervailing buying power,
- easy or privileged access to capital markets/financial resources,
- product/services diversification (e.g. bundled products or services),
- economies of scale,
- economies of scope,
- vertical integration,

⁴⁰ EU Framework Directive, at pg 41.

⁴¹ EC Guidelines 2002/C 165/03, *supra* note 26.

- a highly developed distribution and sales network,
- absence of potential competition,
- barriers to expansion.

79. A dominant position can derive from a combination of the above criteria, which taken separately may not necessarily be determinative.

28. In summary:

- (1) The concept of SMP in the EU framework for telecommunications involves much more than just the 40% market threshold; and
- (2) The Renda paper omits to mention the concept of joint SMP which is enshrined in the EU framework.

2.3 Alleged European Commission ‘announcement’ in 2003

29. The Renda paper states that: “[...] when the European Commission announced, in 2003, that they [new high speed broadband networks] would be regulated exactly like legacy networks. [...].”⁴² No such 2003 ‘announcement’ exists.

30. If the alleged ‘announcement’ refers to the entry into force of the 2002 revisions to the EU framework⁴³ in mid-2003 which confirmed the EU’s model enabling *ex ante* economic regulation, it must be noted that the EU framework does not declare up front that *ex ante* economic regulation will apply, and is technology-neutral. What the EU framework does is to require an objective assessment. In fact, the EU framework is binary in prohibiting *ex ante* economic regulation when it is not justified on account of no SMP being found, and requiring *ex ante* economic regulation when SMP is found. Article 16 of the EU Framework Directive makes this very clear⁴⁴:

3. Where a national regulatory authority concludes that the market is effectively competitive, it shall not impose or maintain any of the specific regulatory obligations referred to in paragraph 2 of this Article. In cases where sector specific regulatory obligations already exist, it shall withdraw such obligations placed on undertakings

⁴² Renda paper, *supra* note 2, at pg 2.

⁴³ EU Framework Directive, *supra* note 3.

⁴⁴ *Id.* at Article 16.

in that relevant market. An appropriate period of notice shall be given to parties affected by such a withdrawal of obligations.

4. Where a national regulatory authority determines that a relevant market is not effectively competitive, it shall identify undertakings which individually or jointly have a significant market power on that market in accordance with Article 14 and the national regulatory authority shall on such undertakings impose appropriate specific regulatory obligations referred to in paragraph 2 of this Article or maintain or amend such obligations where they already exist.

31. The EU framework only requires national regulatory authorities to conduct an objective assessment, i.e.: (i) to define markets susceptible to *ex ante* regulation (national regulatory authorities can also decide not to define particular markets as susceptible to *ex ante* regulation, in which case no *ex ante* regulation can be applied); (ii) proceed to SMP assessment for the markets they defined (they can find that there is no SMP, in which case no *ex ante* regulation can be applied), and (iii) even where SMP is found, they must decide on the appropriate set of regulatory obligations (e.g., they can choose not to impose stringent obligations on the SMP operator(s) for certain markets).

32. In summary:

(1) The EU framework sets out a process of examination of market conditions, on a technology neutral basis – i.e., it requires that the process of examination is applied to legacy networks and to other networks equally, including FTTN and FTTP, but does not prejudge the outcome; and

(2) Therefore, it does not, as the Renda paper incorrectly indicates, require, with regard to new networks, that: “they would be regulated exactly like legacy networks” - the legally established method of analysis is the same, but there is no predetermination made with regard to the outcome of the analysis.

2.4 Risk premium and alleged removal of direct regulation of wholesale prices where one alternative infrastructure of comparable reach is in place

33. The Renda paper states that: “[a]lready in 2009, the European Commission proposed to include in wholesale access charges a “premium” (normally 10-15%) that would reflect the higher risk associated with investment in fibre networks”.⁴⁵

⁴⁵ Renda paper, *supra* note 2, at pg 3.

34. No citation is provided to support this claim; and the reference is actually to a proposal, not to any instrument adopted on a final basis.

35. The EU regulatory instrument in which reference is made to a risk premium is the 20 September 2010 EC Recommendation.⁴⁶

36. The risk premium is specifically only recommended for FTTP (access to the fibre terminating segment access and access to fibre at the Metropolitan Point of Presence⁴⁷ (“**MPoP**”)), and no mention is made of a specific percentage - and certainly not 10-15%.

37. The Renda paper also states that: “[i]n 2013, the European Commission has thus proposed removing direct regulation of prices for wholesale access to NGNs where one alternative infrastructure of comparable reach is in place.”⁴⁸

38. The EU regulatory instrument in which reference is made to the non-application of cost-orientation to wholesale access charges for next generation access is the 2013 EC Recommendation.⁴⁹

39. No criterion of presence of an alternative infrastructure of comparable reach is contained in this EC Recommendation. Furthermore, the Renda paper omits to mention that the 2013 EC Recommendation contains strong preconditions, including Equivalence of Input, a technical replicability test, and an economic replicability test for the non-application of cost-orientation, and recommends the re-introduction of cost-orientation if the preconditions are not fulfilled.

⁴⁶ 2010 EC Recommendation, *supra*, note 3.

⁴⁷ Paragraph 11 of the 2010 EC Recommendation provides: “The ‘Metropolitan Point of Presence’ (MPoP) means the point of inter-connection between the access and core networks of an NGA operator. It is equivalent to the Main Distribution Frame (MDF) in the case of the copper access network. All NGA subscribers' connections in a given area (usually a town or part of a town) are centralised to the MPoP on an Optical Distribution Frame (ODF). From the ODF, NGA loops are connected to the core network equipment of the NGA operator or of other operators, possibly via intermediate backhaul links where equipment is not co-located in the MPoP.”

⁴⁸ Renda paper, *supra* note 2, at pg 3.

⁴⁹ 2013 EC Recommendation, *supra*, note 5.

40. In summary:

(1) The Renda paper makes references which are not supported by the facts, as follows:

(i) It refers to a 2009 draft without referencing it, rather than to the actual 2010 EC Recommendation,

(ii) By citing a percentage range which is not included in the adopted text; and

(iii) By suggesting a criterion of presence of alternative infrastructure in the 2013 EC Recommendation, which is simply not a criterion in that recommendation (and never was in any drafts of which CNOC is aware); and

(2) The Renda paper twists and omits key facts, notably by failing to mention the preconditions attached to the recommended non-imposition of cost-orientation.

3.0 APPLICATION OF THE EU FRAMEWORK TO THE CANADIAN CONTEXT

41. The Renda paper makes the bold claim that “[l]ooking at the Canadian market, where cable companies most often hold a very significant share of the market, this means that under EU regulation, ILECs in Canada would not be subject to mandatory network sharing”.⁵⁰

42. This claim should not be given any weight given that the Renda paper misapprehends key aspects of the EU framework, including the analysis that national regulatory authorities in the EU would undertake to make such a determination.

43. In any event, the EU itself has instances where national regulatory authorities have mandated access to ILEC networks (including FTTP) despite having near ubiquitous cable company and ILEC coverage in order to create more than two options for consumers. The Netherlands is a perfect example of one such instance. Following a very recent regulatory decision upholding mandated wholesale access to the ILEC’s copper and fibre networks, the accompanying press release from the Dutch telecommunications regulator, Autoriteit Consument & Markt (“ACM”), states:

⁵⁰ Renda paper, *supra* note 2, at pg 2.

Healthy competition requires more than two providers

The Netherlands has two major networks that consumers can use for their broadband, television and telephony needs: the cable network of Ziggo and the copper and fiber-optic networks of KPN. In ACM's opinion, having just two providers on these markets cannot be considered healthy competition. That is why ACM stimulates other companies to give consumers competitive offers. Thanks to ACM's regulation of the market, these competitors are able to use KPN's networks.⁵¹ [Emphasis added; KPN is the ILEC].

44. Consequently, the Renda paper oversimplifies the analysis that is conducted by national regulatory authorities in the EU when deciding to mandate wholesale access. As the recent decision of ACM demonstrates,⁵² the analysis is much more in depth than simply forgoing mandated wholesale access if there are two national facilities-based providers.

45. In summary:

- (1) The Renda paper's assertion that under the EU framework, Canadian ILECs would not be subject to mandated wholesale access due to the presence of cable companies is speculative - the *status quo* in The Netherlands demonstrates that this is not necessarily the case; and
- (2) A full market analysis would have to be carried out (using all elements required by the EU framework) prior to reaching robust conclusions about the result of the application of the EU framework in Canada.

4.0 UNDULY SELECTIVE CITATIONS ON THE 2016-2018 REVIEW OF THE EU FRAMEWORK

46. In the course of commenting on the state of the EU framework, the Renda paper cites the EC Staff Working Document⁵³, but not the actual European Commission Communication on the Digital Single Market, dated 6 May 2015.⁵⁴ This is unduly selective. In addition, the citations from the EC Staff Working Document itself are also unduly selective.

⁵¹ Autoriteit Consument & Markt, "KPN must grant competitors access to its copper and fiber networks", 17 December 2015 <https://www.acm.nl/en/publications/publication/15093/KPN-must-grant-competitors-access-to-its-copper-and-fiber-networks/>.

⁵² <https://www.acm.nl/nl/download/publicatie/?id=15087>.

⁵³ Renda paper, *supra* note 2, at pg 3.

⁵⁴ European Commission, "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions A Digital Single Market Strategy for Europe" <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52015DC0192>.

47. The entirety of the documents published by the EC on 6 May 2015 need to be examined to enable a full understanding of these very preliminary indications of possible future policy direction, and in particular the entirety of Section 3.1 of the EC Communication and the entirety of Section 4.1 of the Staff Working Document⁵⁵. Such an examination reveals the following portions of the EC Communication and the Staff Working Document which are omitted in the Renda paper, and which emphasise the success of the EU framework, and discuss the role of incumbents (ILECs), cable networks and alternative operators:

European Commission Communication

Successive adaptations of the EU's telecoms rules combined with the application of EU competition rules, have been instrumental in ensuring that markets operate more competitively, bringing lower prices and better quality of service to consumers and businesses. Effective competition is a key driver for investment in telecoms networks.

There is a need for simpler and more proportionate regulation in those areas where infrastructure competition has emerged at regional or national scale. The deployment of very high capacity networks needs to be encouraged while maintaining effective competition and adequate returns relative to risks.

Staff Working Document

Competition is a key driver for investment in telecoms. The migration from copper-based to high-capacity fibre-based networks has however been slow. Former incumbents appear often to lack incentives to overbuild their own largely depreciated copper network assets; they react to competition from cable operators by upgrading incrementally existing access networks. Alternative operators, however, may not always have the financial capacity to deploy new networks on a large scale (although they have been behind major network upgrades¹³³)

Footnote 133: European Commission, Trends in European broadband markets, presentation for the Digital Agenda Scoreboard, 2014 – alternative operators have proportionately more NGA connections than incumbents; today, incumbents only own 25% of NGA fixed broadband connections although they have, on average, 42% of all fixed broadband connections in the EU.

48. Renda omitted the explicit recognition by the EC that competition is a key driver for investment as well as the comments about alternative operators.

⁵⁵ Commission Staff Working Document, “A Digital Market Strategy for Europe – Analysis and Evidence”, 6 May 2015, <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52015SC0100&from=EN>.

49. It is also necessary to emphasize that the 6 May 2015 EC Communication and accompanying Staff Working Document represent the first preparatory steps in a complex EU institutional process, which precedes legislative proposals, and in this case public consultation. A public consultation on the specific subject matter of the regulation of telecommunications networks and services was conducted between 11 September 2015 and 7 December 2015 and was very wide-ranging, containing 218 questions.

50. A legislative proposal from the EC is expected in mid-2016. The inter-institutional legislative adoption process (involving the EU Member States and the European Parliament) is expected to last into 2018. The outcome of this process is extremely unpredictable. Note that in this regard the 11 September 2013 EC legislative proposal ended up only having two elements, out of the dozens proposed, actually adopted: net neutrality and international mobile roaming.⁵⁶

51. Therefore, to the extent that the Renda paper makes any predictions about the development of the EU framework, these should be dismissed as being premature.

52. In summary:

(1) When commenting on the EU framework, the Renda paper contains unduly selective citations, and draws unduly wide-ranging inferences from one document (which has no legal standing), which is not even the main document published by the EC on 6 May 2015; and

(2) In addition, the Renda paper's statements regarding the future development of the EU framework are premature given the unpredictable nature of the EU legislative process.

5.0 CONCLUSION

53. In these reply comments, CNOC has demonstrated that the Renda paper is fatally flawed, in terms of:

⁵⁶ Regulation (EU) 2015/2120 of the European Parliament and of the Council, 25 November 2015, <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2015.310.01.0001.01.ENG&toc=OJ:L:2015:310:TOC>.

- a) What it presents as market facts, i.e., it presents the EU broadband market situation as “close to disastrous”, whereas in fact a large number of European countries are broadband leaders across several metrics.
- b) What it presents as legislative/regulatory facts, i.e., it contains serious material errors on the presentation of the currently applicable EU framework. In particular, it inaccurately states that the concept of an ‘essential facility’ is part of the EU framework and over-simplifies the SMP analysis that is part of the EU framework.
- c) Claiming, without any factual basis, that if the EU framework was to be used in Canada that Canadian ILECs would not be subject to mandated wholesale access due to the wide-spread presence of cable companies. This is highly speculative and ignores the case of The Netherlands in which copper and fiber unbundling obligations on the ILEC were reconfirmed in December 2015, in the presence of near-ubiquitous cable competition.
- d) Selectively quoting from EC documents related to the ongoing review of the EU framework and making unsubstantiated predictions about the outcome of that review.

54. Overall, the credibility of the Renda paper is highly suspect given its numerous factual errors and baseless assumptions.

55. CNOC urges the Governor-in-Council to refrain from drawing conclusions from the Renda paper, including from its selective citations, references, and its omission or mischaracterisation of the facts. The Renda paper contains unsubstantiated policy conclusions that should not be relied upon.

ATTACHMENT 3

**INNOVATION CASE STUDIES OF MEMBERS OF
CANADIAN OPERATORS NETWORK INC.**

FROM

**SECOND INTERVENTION OF CANADIAN OPERATORS NETWORK INC.
DATED 27 JUNE 2014**

IN

***REVIEW OF WHOLESALE SERVICES AND ASSOCIATED POLICIES, TELECOM
NOTICE OF CONSULTATION CRTC 2013-551, 15 OCTOBER 2013, AS AMENDED BY
REVIEW OF WHOLESALE SERVICES AND ASSOCIATED POLICIES, TELECOM
NOTICE OF CONSULTATION CRTC 2013-551-1, 24 NOVEMBER 2013***

21 DECEMBER 2015

4.4 A Focus on Underserved Rural and Minority Communities

59. At least 5 CNOC members provide dedicated services to ethnic minority communities in their serving areas. This includes providing customer service in the native language of the community. In fact, one CNOC member provides 24 x 7 customer support in 7 languages: English, Mandarin, Cantonese, Hindi, Punjabi, Urdu and Vietnamese. This level of community focused support simply cannot be replicated by large incumbent carriers.

60. Many CNOC members also strive to bring quality telecommunications services to rural areas where access is not otherwise available. Often, this is achieved by deploying reliable fixed wireless services given that area density and geography is not amenable to a practical or cost effective wireline service deployment. CNOC members continue to push the speed and coverage boundaries of these technologies – to the benefit of a segment of consumers that have long been deprived of the benefits of modern connectivity.

4.5 Case Studies

61. CNOC wishes to highlight certain case studies included in this section that consist of select member responses to CNOC(Bell Canada)28Mar14-4⁴⁷ and CNOC(CRTC)28Mar14-4⁴⁸. As noted at the outset of this Part, these case studies further demonstrate the full range of innovations and the associated consumer benefits that some members have come to realize in virtually all aspects of their operations. It is important to underline that these case studies come directly from CNOC members. Accordingly, this evidence respects the voice of the participating companies on issues that are fundamental to their corporate identities.

62. CNOC also wishes to refer to the information that its member Primus has already put on the record in its capacity as a separate party to the proceeding⁴⁹. Paragraphs 23-43 of Primus' first

⁴⁷ CNOC(Bell Canada)28Mar14-4 asked CNOC members to list the non-price retail service innovations that they have introduced within the last 24 months.

⁴⁸ CNOC(CRTC)28Mar14-4 asked CNOC members to describe how they add value to the telecommunications markets that they serve, including the broadband Internet services market, and how they are able to differentiate their competitive service offerings given the existing mandated wholesale services framework.

⁴⁹ Primus submission dated 31 January 2014 in *Review of wholesale services and associated policies*, Telecom Notice of Consultation CRTC 2013-551, 15 October 2013, as amended by *Review of wholesale services and associated policies*, Telecom Notice of Consultation 2013-551-1, 24 November 2013.

round intervention provide a thorough overview of the company's business including its evolution as a hybrid competitor and its strong record of investments and innovations. In CNOC's view, this information also constitutes a very compelling account of the type of innovations and contributions that create real value for the industry and consumers.

4.5.1 Comwave Networks Inc. Case Study

CNOC(Bell Canada)28Mar14-4

- Mobile App for Blackberry to control a hosted office extension, make and receive calls on smartphone as if in office.
- Mobile App for Iphone to control a hosted office extension, make and receive calls on smartphone as if in office.
- Mobile App for Android to control a hosted office extension, make and receive calls on smartphone as if in office.
- Internet Explorer control toolbar for controlling office phone, making & receiving calls, reviewing call logs.
- Outlook control toolbar for controlling office phone, making & receiving calls, reviewing call logs and integrating with contacts.
- Softphone/Ephone application for making Voip calls from Blackberry
- Softphone/Ephone application for making Voip calls from Iphone
- Softphone/Ephone application for making Voip calls from Android
- Softphone/Ephone application for making Voip calls from Ipad
- Softphone/Ephone application for making Voip calls from windows PC
- Softphone/Ephone application for making Voip calls from Android Tablet
- Softphone/Ephone application for making Voip calls from Blackberry tablet
- Business customer portal displaying map of customers network and status of all locations around the world integrating numerous underlying carriers and providing ticketing & updates.
- Access design incorporating both cable and telco access lines for diversity and redundancy with real time monitoring and auto failover
- Hosted PBX service offerings for business customers
- P. Zero touch auto provisioning system for PPPoE DSL customers

CNOC(CRTC)28Mar14-4

- Provide attractive service bundle combinations with enhanced features and capabilities.
- Provide certainty with respect to usage charges
- Manage implementation of business networks across ILECs, cablecos and others in North America.
- Provide businesses with managed networks for security, performance and troubleshooting across all ILEC and independent territories in North America and beyond
- Provide unique diversity and redundancy options for business networks combining both cable and telco access facilities
- Provide real time network and CPE status monitoring of business locations.
- Provide business customers with proprietary network
- View, providing status and automated trouble ticketing across all locations

4.5.2 Execulink Telecom Inc. Case Study

CNOC(Bell Canada)28Mar14-4

Account Management

- Remote management of the customer modem so that if they lose their configuration Execulink can restore it.
- Remote management of services by customer through single sign on for all service categories
- Configuration Management, monitoring and access controls for customers wishing for Managed Services from Execulink

Billing

- Time of Day Usage Based Billing
- Ability to temporarily change the Pre-Authorized Payment Date to any day of the month to be more flexible to customers
- Visibility of detailed information through our Member Services area so customers can manage their usage and review charges when it's convenient for them

Speeds

- Introduce bonding of DSL services to increase both upload and download speeds
- Implemented DOCSIS 3 in Cable Plant.
- Introduction of Ethernet over copper to provide superior performance to people over copper facilities

Quality

- Enable QoS features for PPPoE customers
- Implemented TR-069 to gather DSL 'health' information in troubleshooting changes in line conditions.
- Implemented h.264 transcoding to reduce bandwidth of IPTV content to be viable on more constrained broadband connections
- Implemented DDoS detection and mitigation
In-house designed Linux based load balancer in front of distributed systems such as DNS and mail servers

New Products

- Introduction of IPTV
- Launched cellular service
- IPTV over Fiber
- IPTV over VDSL
- MPLS based services to provide L2 services over L3 links
- Introduction of Hosted ACD
- Voice over fixed wireless

CNOC(CRTC)28Mar14-4

Execulink takes great pride in taking care and being there for our customers. As a result, our customers are continually praising us about our exemplary service, spreading the word to their friends and family who are looking for a company who will ensure they have a great experience. This level of service is often cited as the number one reason our customers come to us and stay with us.

Tailoring our solutions to the needs of our customers is one way we go above and beyond to service their needs. When working with our business clients, we create custom solutions specific to their business. We often create new product offerings to suit their company's needs; for example, our Multilink (MLPPP) product offering grew from the need to supply our clients with faster speeds via the DSL platform. We are deploying Fibre to the Home and Business to rural communities in South-western Ontario giving those customers levels of service their urban counterparts would envy. We are continually working on product development to provide customers with a better telecommunications experience in their home and offices.

4.5.3 Iristel Inc. Case Study

CNOC(Bell Canada)28Mar14-4

- **SMS to E-MAIL and E-MAIL to SMS Product**
Enhancement to the Wholesale Targeted SMS Product, which allows text messages received by end users with Iristel DIDs to be directed also to e-mail. In addition, E-mails sent to end users with this feature enabled, will be replicated as text message.
- **CNAM services**
Enhanced Caller ID feature, which allows called parties in the USA to visualize the Calling Name of the Iristel caller. This expands this basic functionality in Iristel services to areas which did not previously accommodate it.
- **iNUM**
iNum stands for International Number. They are numbers from a dedicated numbering plan which are not restricted by cost or availability by their geographical origin, or use.
- **Call Treatment**
This service allows customers to create powerful rules to manage how incoming calls are handled. Call Treatments can be used to help you manage calls in the following ways:

Forward Calls to another number, any telephone in the world, to Fax Reception, or a SIP URI address

Use Simultaneous ringing or Call Hunting to forward calls to up to 3 numbers either simultaneously or by hunting

Force Anonymous calls to voicemail or an error message

Force calls from a specific person to voicemail or an error message
- The partnership of Iristel Inc. and Ice Wireless resulted in significant enhancements to the mobile services provided in the Northern Territories
- Upgrade to 3G Network
- Free Data access to existing customers
- Free MMS services

CNOC(CRTC)28Mar14-4

Iristel is Canada's largest and fastest growing carrier providing innovative communication services that are changing how consumers and businesses communicate. We offer our OTT, Voice Service Provider and Carrier customers a full suite of domestic and international Local Voice, Wholesale Voice, 911, SMS and Platform services that are supported by Iristel's unified VoIP and GSM networks. Iristel operates Canada's largest facilities-based local voice network extending Coast-to-Coast-to-Coast as well as Ice Wireless, a GSM carrier with operations in Canada's Far North.

Iristel has its own numbering plan and it runs on a native, redundant network infrastructure that enables us to provide real Canadian coverage without having to resort to leasing third party resources. Iristel's unique coverage spans across every province in Canada, including the Northern Territories Iristel's wholesale platform offers a complete portfolio of reliable services, empowered by high-end development tools such as our powerful, API compliant portal – EspressoDID – SOAP-based and REST APIs, enriched with a full-scale customer experience, through our 24/7 website, Customer Care and Technical Teams liaising experienced Key Account Managers.

4.5.4 ArbuTel Services Inc. dba Skyway West Business Internet Services Case Study

CNOC(Bell Canada)28Mar14-4

- Internet bonding: Increase the speed capabilities of our bonding equipment to keep up with faster adsl and cable services. Continue to improve acceleration, traffic prioritization, management tools and ability to bonded different technologies and providers.
- Internet Failover: Develop capability and back end systems to allow sharing same IP among different services. Automate provisioning and integrate with business processes.
- Private networking: Emulate carrier MPLS network using CPE's. For example, using CPE's to provide class of service over point-to-point EVC's . Extend across diverse carriers. Extend private network to include third party co-location facilities.

CNOC(CRTC)28Mar14-4

- We change residential quality adsl and cable services into enterprise services.
- Our staff are Wide Area Network experts
- We purchase adsl, cable, EoC (Ethernet over Copper) and fibre services that let us run our own IP addresses across them. Using our IPs allows us to combine services and providers to provide our single and multi-site customers the solution that best meets their needs given service availability, quality and cost.
- We monitor our services every six minutes to identify and begin resolving problems before customers call. Customers are automatically alerted of outages.
- Our systems collect health measurements such as packet loss, jitter, signal to noise ratios, usage graphs and other metrics measuring the health and suitability of any service for a specific customer. Customers can access much of this and set their own level for alerts
- Internet bonding: We bond any internet service with any other. Bonding increase the customer's total up/down speed and provides "no loss failover" if one service fails. Meaning their VoIP calls, VPNs etc are not interrupted when a service fails. Bonding is used to increase upload speed where only 1 Mbps up adsl is available and cable isn't available/suitable. It is also used to increase download speed when cable isn't available/suitable and fibre or fixed wireless is too expensive. For example bonding four 25/5 adsl is much less expensive 100/20 alternatives.
- Internet Failover: We failover between any two technologies and use policy routing to make the best use of both technologies. For example, adsl is best for applications like VoIP that are sensitive to packet loss, latency, jitter and require packets to arrive in the correct order. Cable is best for bursty data like email, web and file transfers. We run the same IP's over both links so the customer receives inbound as well as outbound failover. Inbound failover is critical to customers hosting servers.
- Private networking: We provide private IP addresses to customers to protect them from denial of service attacks that otherwise would congest and make unusable their internet service. Connecting to multiple carriers, using multiple technologies, and managing IP addresses across all services allows us to fully meet the needs of customer requiring private networks between sites.
- MPLS Networks: We use routers to emulate carrier MPLS and other advanced network features like Class of Service over different carriers.

4.5.5 TekSavvy Solutions Inc. Case Study

CNOC(Bell Canada)28Mar14-4

The non-price¹ innovations we introduce into our retail service delivery are directed towards empowering consumers. In the last 24 months, these innovations have been directed towards four areas. We have sought to ensure that consumers who choose TekSavvy:

- know what they are getting,
- know what they are doing,
- can act freely, and
- are fully supported

Retail service innovations we have introduced in each of these areas include the following.

Consumers Should Know What They Are Getting

1. Over the last 24 months we have introduced new Internet speed and capacity plans based on non-limited-term, unbundled arrangements. Consumers know exactly what they are getting into without having to undertake the cognitive labour of wading through big-print numbers with small-print caveats. We ensure the presence of that option in the marketplace.
2. Based on survey research we commissioned, we rolled out a plan selection tool to assist consumers with assessing what plan best suits their requirements. Consumers should not be required to have advanced knowledge of bandwidth transfer speeds and volumes, so we empower them to make informed choices based on their own needs.

Consumers Should Know What They Are Doing

3. We have created a bandwidth monitoring platform based on an open Application Programming Interface (API). This provides for our customers not only to access their usage statistics freely, but also to use or program third-party application that, with user authentication, report these statistics in the way most convenient for the consumer.
4. In response to customer requests, we have developed information-rich tools for outage reporting to end-users. These tools ensure that they are updated every 24-hour period, even where there is no new information to report.

Consumers Should Act Freely

5. We have optimized access-segment bandwidth limitations in order to maximize consumers' freedom to use the network. These "Zap the Cap" policies constrain bandwidth management to situations in which there is contention for network resources, by providing:
 - a) unlimited uploading;
 - b) unlimited off-peak downloading (2-8 am); and
 - c) a trade-off letting users trade speed limits for unlimited on-peak downloading.
6. We have continued to work with equipment vendors to source modems and wireless access points that best meet the needs of consumers, rather than default to what is already used in the marketplace.
7. By keeping the plans that we have rolled out over the last 24 months on a no-contract basis, we have reduced consumers' switching costs to choosing between competitors in the marketplace. Our customers are free to leave whenever they like.

Consumers Deserve Our Full Support

8. We have invested significantly in highly-trained support teams located in Canada, and empowered both to take calls and to return calls to customers, in order to provide consumers with technology-savvy, personalized support and advice that they don't have to sit on hold to receive.
9. We have built out our social-media-based support in a way that has allowed us to respond to many of our customer needs on sites like Facebook, Twitter, and the Web-based e-mail forum, DSL Reports, with extremely fast response time.
10. We reacted strongly to the receipt of a personal information request in respect of our users from a potential copyright troll, and helped clarify the law as it applies to Internet access providers' stewardship of the personal information of users against which third parties have copyright claims.

CNOC(CRTC)28Mar14-4

TekSavvy Solutions Inc. (“TekSavvy”) has added value to the telecommunications markets we serve by empowering consumers. As a smaller company, we can work closely with our customer base, meet their needs rapidly, and work intensively to enable and delight them.

That is how we differentiate ourselves. At bottom, those consumers to whom we appeal appreciate that we listen to what they are saying, act on it, and do so with a constant concern for doing the right thing. As outlined in our response to CNOC(Bell Canada)28Mar14-4, our consumers know what they are getting, know what they are doing, act freely, and have our full support:

- Our service offerings have no strings attached and very little fine print to read. Consumers know what they are getting into. The price they are offered does not have an asterisk. They can leave any time they like—we try to keep customers by doing more for them, not by locking them up.
- Our bandwidth monitoring platform is based on an open Application Programming Interface (API) in order to enable an ecosystem of usage measurement for those instances in which we are forced to move towards limited bandwidth-based charges. We have developed responsive outage reporting tools. Our customers know what they are doing online and how it fits into their plan—we do not want their Internet usage to be constrained by constant concern.
- We have optimized the modems we provide to our users, which we source, and worked carefully to narrow bandwidth use limitations to maximize consumers’ freedom to use the network. These “Zap the Cap” policies constrain bandwidth management to situations in which there is genuine contention for network resources: we offer unlimited uploading and off-peak downloading, and a trade-off letting users swap speed limits for unlimited on-peak downloading, too.
- On privacy support, we have sought to defend our users’ privacy, underlining the importance of weighing any third-party subscriber information requests against privacy rights. On technological support, we have invested in highly-trained support teams located in Canada, and empowered them to take and return calls and go out on the Internet to make sure consumers have friendly, technology-savvy support and advice on all platforms and social media forums. We support our customers strongly.

CNOC(CRTC)28Mar14-4 [CONTINUED]

We believe that by competing in a different way and holding our competitors' feet to the fire, we have offered and put pressure on all market participants to offer lower wholesale and retail prices, greater choice in telecom services, and product features and service delivery alternatives that consumers want.

All of this has added value to telecommunications markets in a few key ways, including enhancing competition at every level; reaching more, and different, consumers; fostering more innovation; and incenting infrastructure investment:

1. We have enhanced competition in a few ways. With respect to connectivity, we have enhanced the state of competition for consumer Internet and voice services, and for wholesale telecommunications services markets in which we participate. We have lowered barriers to entry, such as through our support for and participation in cooperative Internet exchanges in Toronto and, now, Montreal

We have enhanced labour market competition by employing and training Canadians in southwestern Ontario in a range of technology and sales activities that they then build in, either with us or as alumni of whom we remain proud. And we have enhanced pro-competitive communications services governance by participating actively in Canadian policy debates on network neutrality, usage-based billing, privacy, and other areas; and in Internet governance fora like ICANN and IANA, which has particularly strong representation from the Canadian independent telecommunications sector.

2. We reach specific consumer niches. Two in particular stand out.

One are the more technology-savvy users seeking an ISP that will engage with them directly on technical and other issues of concern, and configure their service offering to respond to it. We do that. Large incumbents are simply not set up to do so. As we scale, ensuring that we continue to maintain and extend a "tech-savvy" culture is one of our key challenges—because it matters to our customers.

The other niche is those who seeking a closer connection with their ISP for other reasons, like more interactive tech support. This is often those who are less experienced at using the Internet. With TekSavvy, they are able to reach support technicians who care and are engaged—and who can call back. Our goal is to be the ones who take the load off the tech-savvy child or grandchild that a customer might reflexively look to to help configure things or fix them, but who sometimes isn't a position to do so.

CNOC(CRTC)28Mar14-4 [CONTINUED]

3. We have helped foster innovation. If the CRTC is now engaged in a major review of its television policy, for instance, our user base is at the heart of that process, with an extremely high proportion of cord-cutters, combined with an extremely high proportion of our network traffic devoted to video consumption. We have fought to win for our users the kind of unmetered usage and open, neutral network connectivity that incents permissionless innovation, and have worked hard to ensure that that model of Internet delivery is available in Canada, in part through the Zap the Cap! innovations described above.
4. We reduce, and hope to continue to reduce, infrastructure deployment risk by acting as a supplementary driver for use of access networks that might otherwise go unused. When an Internet user is frustrated with an ILEC or a cable incumbent, they have the option of switching to TekSavvy—and the incumbent continues to earn revenue from that access line, rather than see it lie fallow. In our view, that adds value to all market participants, including incumbents for whom we represent a major and, we hope, valued customer.