



**MEI**

Ideas for a  
More Prosperous  
Society



**RESEARCH  
PAPERS**

**MAY 2016**

# **THE STATE OF COMPETITION IN CANADA'S TELECOMMUNICATIONS INDUSTRY – 2016**

By Martin Masse and Paul Beaudry



**MEI**

Ideas for a  
More Prosperous  
Society

910 Peel Street, Suite 600  
Montreal (Quebec)  
H3C 2H8 Canada

Phone: 514-273-0969  
Fax: 514-273-2581  
Website: [www.iedm.org](http://www.iedm.org)

The Montreal Economic Institute is an independent, non-partisan, not-for-profit research and educational organization. Through its publications, media appearances and conferences, the MEI stimulates debate on public policies in Quebec and across Canada by proposing wealth-creating reforms based on market mechanisms. It does not accept any government funding.

The opinions expressed in this study do not necessarily represent those of the Montreal Economic Institute or of the members of its board of directors. The publication of this study in no way implies that the Montreal Economic Institute or the members of its board of directors are in favour of or oppose the passage of any bill.

The MEI's members and donors support its overall research program. Among its members and donors are companies active in the telecommunications sector, whose financial contribution corresponds to around 4.5% of the MEI's total budget. These companies had no input into the process of preparing the final text of this *Research Paper*, nor any control over its public dissemination.

Reproduction is authorized for non-commercial educational purposes provided the source is mentioned.

©2016 Montreal Economic Institute  
ISBN 978-2-922687-65-1

Legal deposit: 2<sup>nd</sup> quarter 2016  
Bibliothèque et Archives nationales du Québec  
Library and Archives Canada  
Printed in Canada

**Martin Masse  
Paul Beaudry**

# **The State of Competition in Canada's Telecommunications Industry – 2016**

Montreal Economic Institute

•  
May 2016



**MEI**

Ideas for a  
More Prosperous  
Society



**TABLE OF CONTENTS**

HIGHLIGHTS.....5

INTRODUCTION.....7

CHAPTER 1 - HOW DOES CANADA MEASURE UP?.....9

CHAPTER 2 - WINDS OF CHANGE IN CANADA’S WIRELESS  
SECTOR.....21

CHAPTER 3 - SHOULD BROADBAND INTERNET BE REGULATED  
AND SUBSIDIZED AS AN ESSENTIAL SERVICE? .....27

CHAPTER 4 - FACILITIES-BASED COMPETITION AS A SPUR  
TO INNOVATION .....35

CONCLUSION - THE EXPENSIVE PROMOTION OF ARTIFICIAL  
COMPETITION .....41

ABOUT THE AUTHORS .....45



## HIGHLIGHTS

The 2015 edition of this report pointed out that Canadians continue to be among the biggest consumers of telecommunications services in the world, and argued that the government and the CRTC should stop emulating the failed policies of Europe and revive Canada's historically less interventionist wireless regulation, which has served consumers well. Here are some highlights from this year's edition.

### Chapter 1: How Does Canada Measure Up?

- Penetration and usage rates for newer wireless technologies like tablets, smartphones and LTE connections in Canada are among the highest for industrialized countries.
- In terms of the quality of services, Canadians benefit from some of the most advanced and efficient wireless and broadband Internet services in the world.
- Once again this year, the prices Canadians pay for wireless services remain generally higher than in Europe but lower than in the United States or Japan.

### Chapter 2: WINDs of Change in Canada's Wireless Sector

- The highlight of 2015 was indisputably the proposed acquisition of WIND Mobile by Shaw Communications for \$1.6 billion in December of 2015, providing a well-established fourth player in Ontario, British Columbia, and Alberta.
- As Canada now has a solidly established fourth player from coast to coast, some have claimed the Shaw/WIND transaction is a vindication of the federal government's interventionist spectrum policies. But insofar as this constitutes a victory, it has come at a high cost.
- The government's exclusionary auction rules, such as spectrum set-asides or caps, as well as mandatory roaming and tower sharing rules, have prevented efficient competition and hindered investment in the state-of-the-art wireless networks and services that consumers are demanding.
- The biggest beneficiaries of the federal government's interventionist rules during the past years have been the shareholders of WIND and Public Mobile, who arbitrated their government-subsid-



ized spectrum acquisition to secure a windfall, and Videotron, which might do the same when it decides to divest itself of the spectrum licenses it holds outside of Quebec.

- By insisting on the benefits of a fourth wireless player, the previous federal government went against a worldwide trend of consolidation in the wireless sector and embraced a static view of competition, whereas a more dynamic concept of competition shows that competitive discipline and rivalry are not necessarily conditional on the presence of a multitude of players in the market.
- Considering that hundreds of millions of dollars will be needed to upgrade WIND's network to LTE, it is to be expected that WIND's prices will rise as a result of these significant investments and increasingly come to resemble those of the three large national players going forward.
- As an example of the efficiency of markets, roaming rates have been declining—not primarily because of the Wireless Code, as the CRTC claims, but because consumers asked for it and carriers saw an opportunity to solve a major irritant and to attract new customers.

### Chapter 3: Should Broadband Internet Be Regulated and Subsidized as an Essential Service?

- Critics who note that access to high-speed Internet is limited in some regions of Canada, or among less advantaged socioeconomic groups, invariably conclude that government intervention will be necessary

to close the gap, but what they consider a market failure is actually just the normal course of technology adoption.

- Every technology goes through a series of phases when it is adopted by one group after another, from innovators and early adopters to laggards, finally reaching a saturation level when essentially 100% of the population is using it.
- The major difference today is that new information technologies reach a critical mass and become widely accessible to all not in a matter of decades, but in a matter of years.
- According to the CRTC, 96% of Canadian households could access a download speed of 5 Mbps in 2014, with which an Internet user can do almost everything he or she wants on the Internet, including watching relatively high quality videos—and 77% of households do subscribe to such a service, up from 71% just one year earlier.
- In 2014, 93% of Canadians were also covered by the LTE wireless network, a 4G technology offering speeds higher than 5 Mbps. Given that more and more Canadians now access the Internet using a smartphone or a tablet rather than a personal computer, this is another indication of the availability of high-speed Internet.
- Broadband services with download speeds exceeding 100 Mbps were already available to 71% of Canadian households in 2014, and various providers have already started to deploy “gigabit” service (1,000 Mbps) in several areas of the country.
- The telecommunications industry is investing billions of dollars every year to develop these new technologies and deploy the necessary infrastructure—not because of any comprehensive national strategy devised by bureaucrats in Ottawa, but because of competitive pressure.

## Chapter 4: Facilities-Based Competition as a Spur to Innovation

- Facilities-based competition between providers of the same or similar services, each using its own network, should be a key pillar of intelligent telecommunications policy because innovation thrives in environments characterized by facilities-based rivalry.
- Despite the intense rivalry that exists between telcos and cable companies, the CRTC has maintained a 1990s-era wholesale access regime over the years, which forces telephone companies and cable companies to provide small Internet service providers (ISPs) with access to their networks at regulated rates.
- Last July, the CRTC expanded its mandatory wholesale regime by requiring telcos to allow small ISPs to access their highest-speed fibre broadband services, also known as fibre-to-the-premises (FTTP) facilities, but there is no convincing case for mandating access to these networks, as incumbents do not have any inherent competitive advantage in deploying them.
- Technology research firm Gartner Inc. predicts that 6.4 billion connected things will be in use worldwide in 2016, up 30% from 2015, and that this number will reach 20.8 billion by 2020. Technology giant Cisco puts this figure even higher, at 50 billion.
- This Internet of Things will bring about significant benefits for individuals and businesses alike, but it will also have a considerable impact on demand for bandwidth: According to Cisco, global mobile data traffic grew by a staggering 74% in 2015 alone, and will see an eightfold increase by 2020.
- In order to satisfy consumers' insatiable appetite for bandwidth, network operators will need to invest billions of dollars in new infrastructure in the coming years.
- Although the European regulator has now recognized the negative impact of two decades of network sharing regulations and an obsession with price competition, which has led to a decline in mobile revenues and underinvestment in network infrastructure, the CRTC appears to have ignored this lesson in its recent FTTP decision.



## INTRODUCTION

For each of the past two years, *The State of Competition in Canada's Telecommunications Industry* has assessed how Canada measured up with other jurisdictions regarding the quality and pricing of its telecommunications services. The report has also evaluated how competition was faring in key areas of the Canadian telecommunications market, and provided a critical assessment of Canada's legislative and regulatory framework for this industry.

One of the primary motivations for the publication of the first two editions of this report was that many Canadians are, in our opinion, under the mistaken impression that Canada's telecommunications industry compares poorly with that of other jurisdictions.

The report has attempted to dispel the notion that Canadians pay uncompetitive prices for low quality services. It has also argued that the federal government's and the CRTC's interventions in the wireless and wireline sectors aiming to increase the number of players through indirect subsidies and mandated access were not likely to have the intended effects and might jeopardize investments and innovation. Instead of these interventions, the report has argued that the government should liberalize its policies on spectrum transfer and the mandatory sharing of broadband networks, and recognize the role of innovation in assessing the level of competition that exists in a dynamic market.

**"The report has attempted to dispel the notion that Canadians pay uncompetitive prices for low quality services."**

This third edition continues to explore these themes. Chapter 1 provides updated statistics regarding the performance of the Canadian telecommunications industry compared with other jurisdictions.

Chapter 2 describes the current state of Canada's wireless market, with a focus on the acquisition of WIND Mobile by Shaw Communications in December of 2015, as well as a discussion of how and why roaming rates have been declining.

Chapter 3 looks at the widespread access to broadband Internet that already exists in Canada, obviating the need for the CRTC to impose a plan on the industry to promote such access as an essential service.

Finally, Chapter 4 argues that facilities-based competition should be a key pillar of intelligent telecommunications policy, especially given that the burgeoning Internet of Things will have a considerable impact on demand for bandwidth in the coming years.



## CHAPTER 1

### How Does Canada Measure Up?

The criticism most often heard regarding the telecommunications industry in Canada, and especially wireless services, is that Canadians pay a lot more than people in other countries for lower quality services. It is this criticism that was used to justify the previous federal government's numerous interventions over the past few years aimed at promoting more competition in the wireless sector. But does this criticism stand up under scrutiny?

It is difficult to form a perfectly clear and objective picture of the situation, not only because circumstances (like geography and types of regulation) vary from one country to the next, but also because of the use of different research methodologies. The available data, however, do not support such a conclusion.

The charts that follow come from the main organizations that publish international rankings related to various aspects of the telecommunications industry.

**"Canadians actually benefit from some of the most advanced and efficient wireless and broadband Internet services in the world."**

As in the two previous editions of this report, the picture that emerges from these data is first of all that Canadians are among the biggest consumers of telecommunications services in the world. This does not constitute a proof, but it is certainly an indication that they enjoy competitive, quality services.

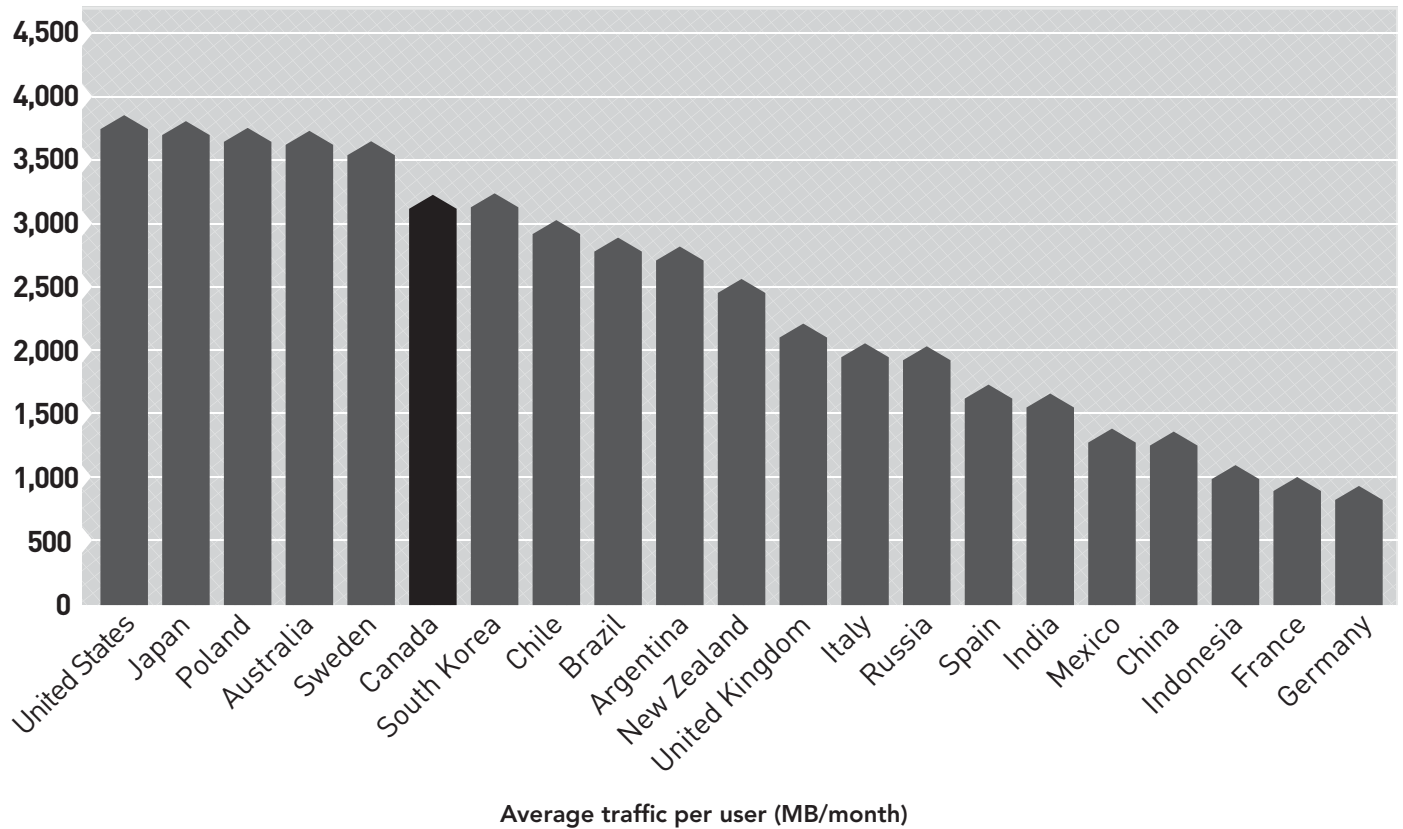
Another indication is that the penetration rates of the latest wireless technologies are also among the highest for industrialized countries. The proportion of mobile users connected to the fastest, LTE network more than doubled since last year's report.

In terms of the quality of services, the data indicate that Canadians actually benefit from some of the most advanced and efficient wireless and broadband Internet services in the world.

As for the prices Canadians pay for wireless services, they remain generally higher than in Europe, but lower than in the United States or Japan. As we have explained in previous editions, these low prices are not necessarily a positive sign for the European telecommunications industry, however, which has experienced falling capital expenditures and a lagging deployment of new technologies in recent years.

Figure 1-1

**Tablet usage**

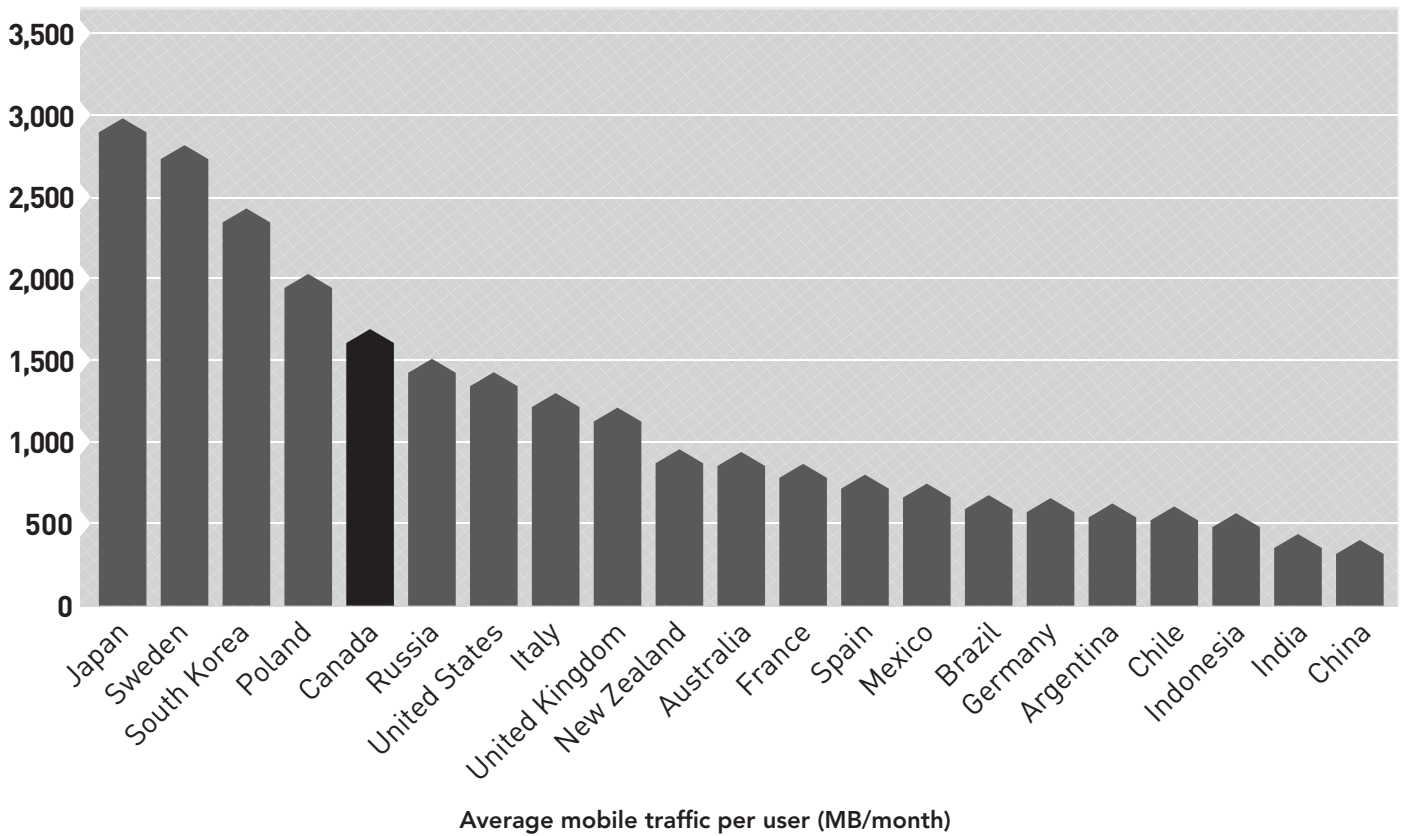


Source: Cisco, VNI Mobile Forecast Highlights 2015 – 2020, 2015.

In regard to tablet usage, Canadians use on average 3,231 megabytes per month. Canada is ranked 6<sup>th</sup> among the countries where data was available.

Figure 1-2

**Smartphone usage**

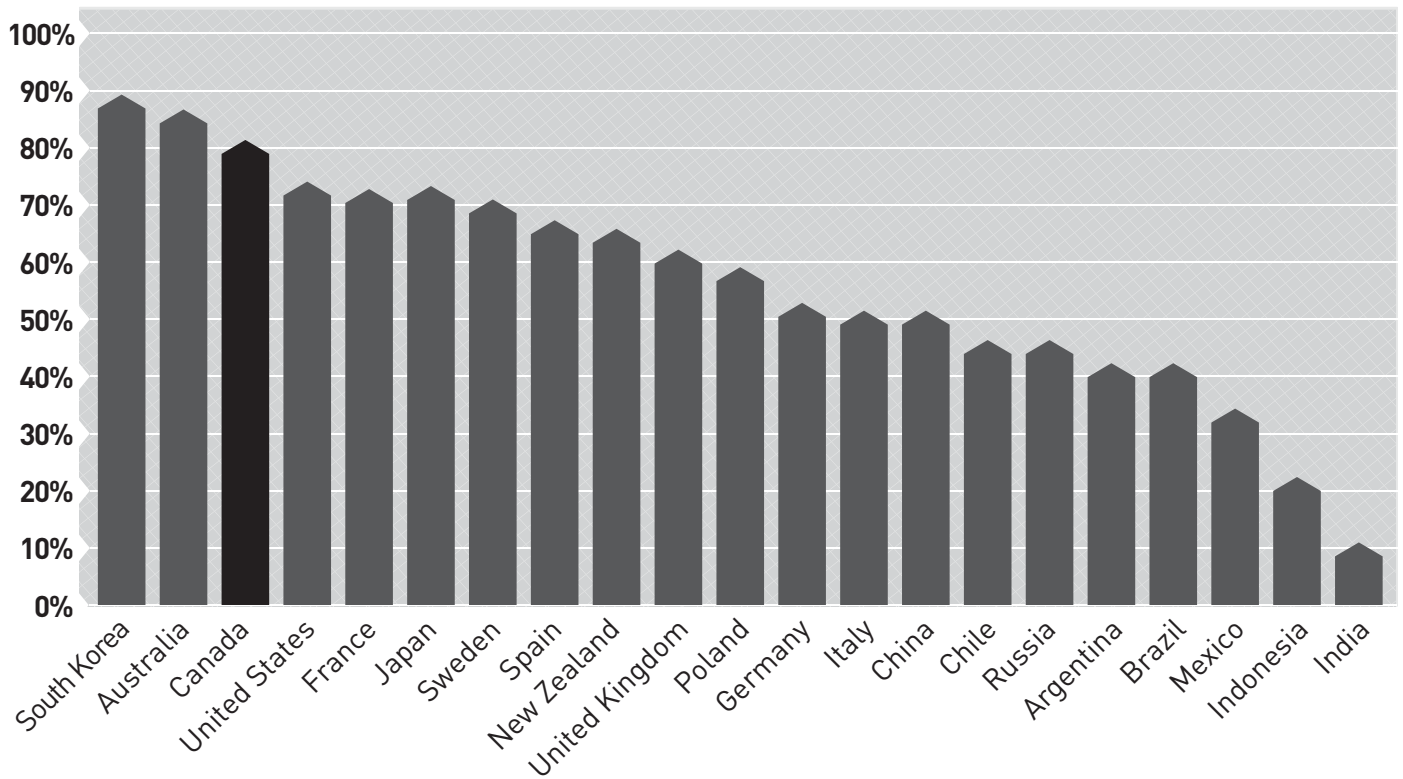


Source: Cisco, VNI Mobile Forecast Highlights 2015 – 2020, 2015.

In terms of smartphone usage, Canadians use on average a little more than 1,600 megabytes per month. Such a level of consumption means Canada ranks 5<sup>th</sup> among Cisco's sampled countries.

Figure 1-3

### Smartphone market penetration



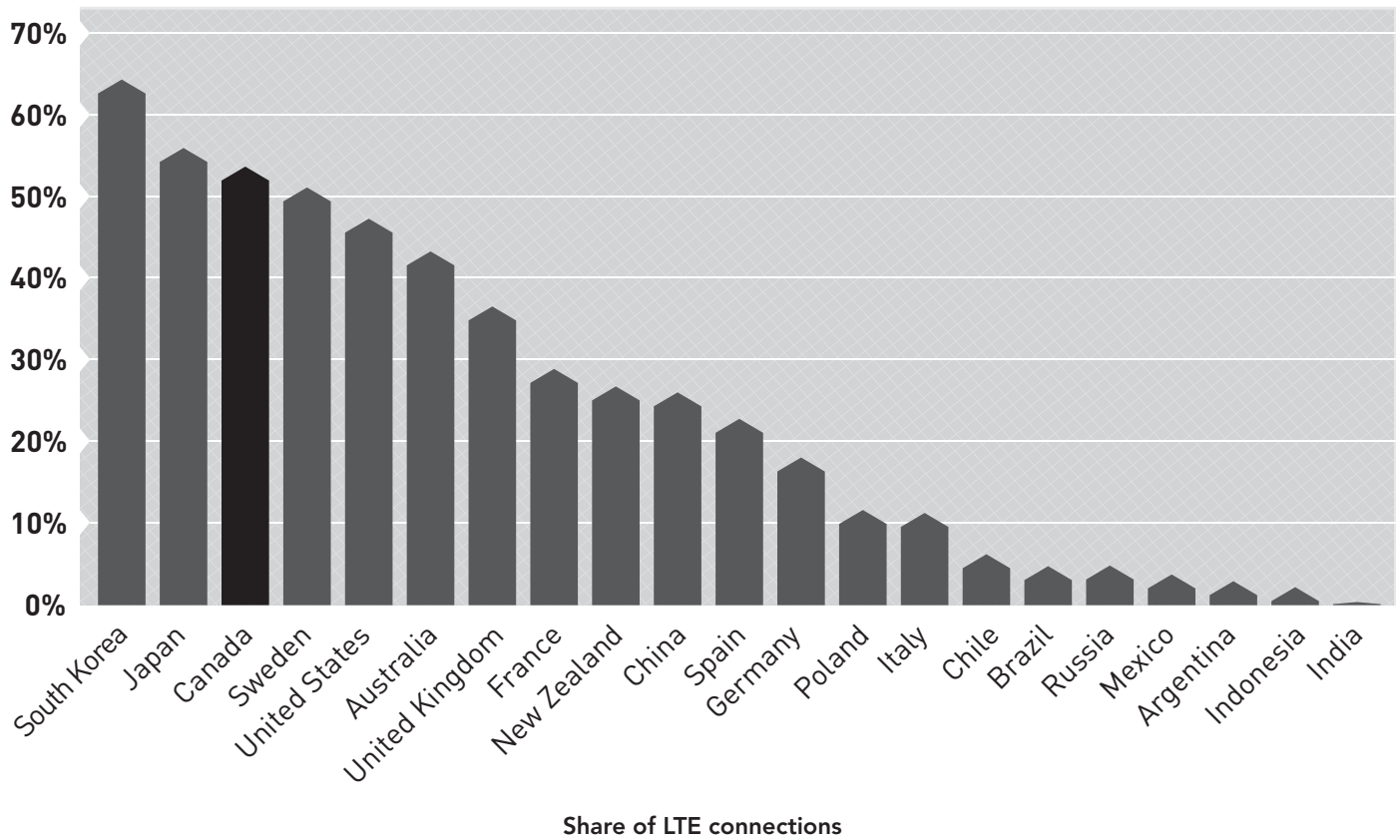
Smartphone market penetration by percent of mobile subscribers

Source: Cisco, VNI Mobile Forecast Highlights 2015 – 2020, 2015.

In terms of smartphone market penetration, Canada ranks 3<sup>rd</sup>, with a total of 81% of its mobile subscribers using smartphones.

Figure 1-4

**LTE connections as a ratio of total connections**

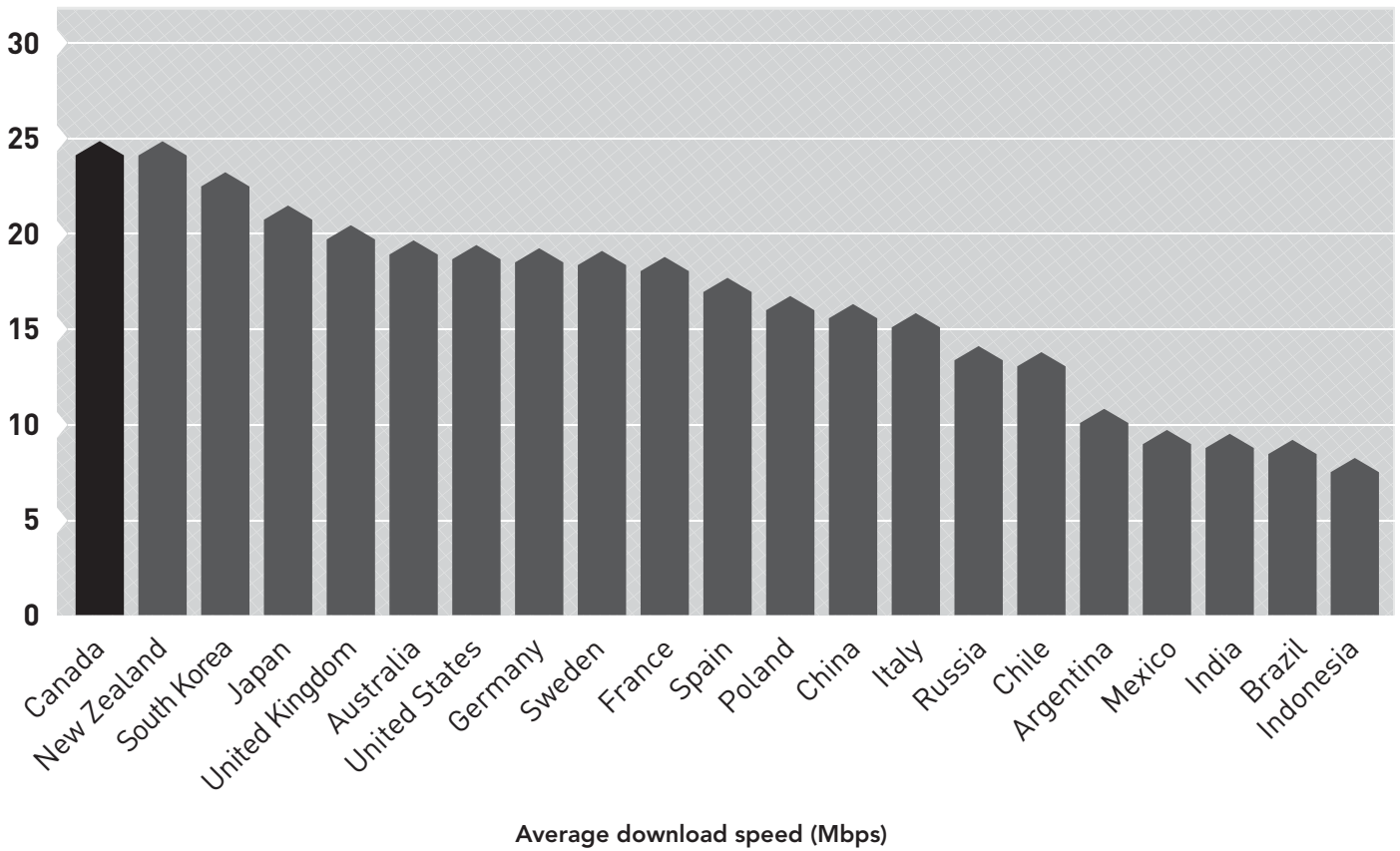


Source: Cisco, VNI Mobile Forecast Highlights 2015 – 2020, 2015.

Canada ranks 3<sup>rd</sup> among the 21 selected countries in terms of the proportion of mobile users connected to the fastest network, with 54% of total connections being LTE (Long Term Evolution, or 4G) connections.

Figure 1-5

**LTE download speed – Cisco**



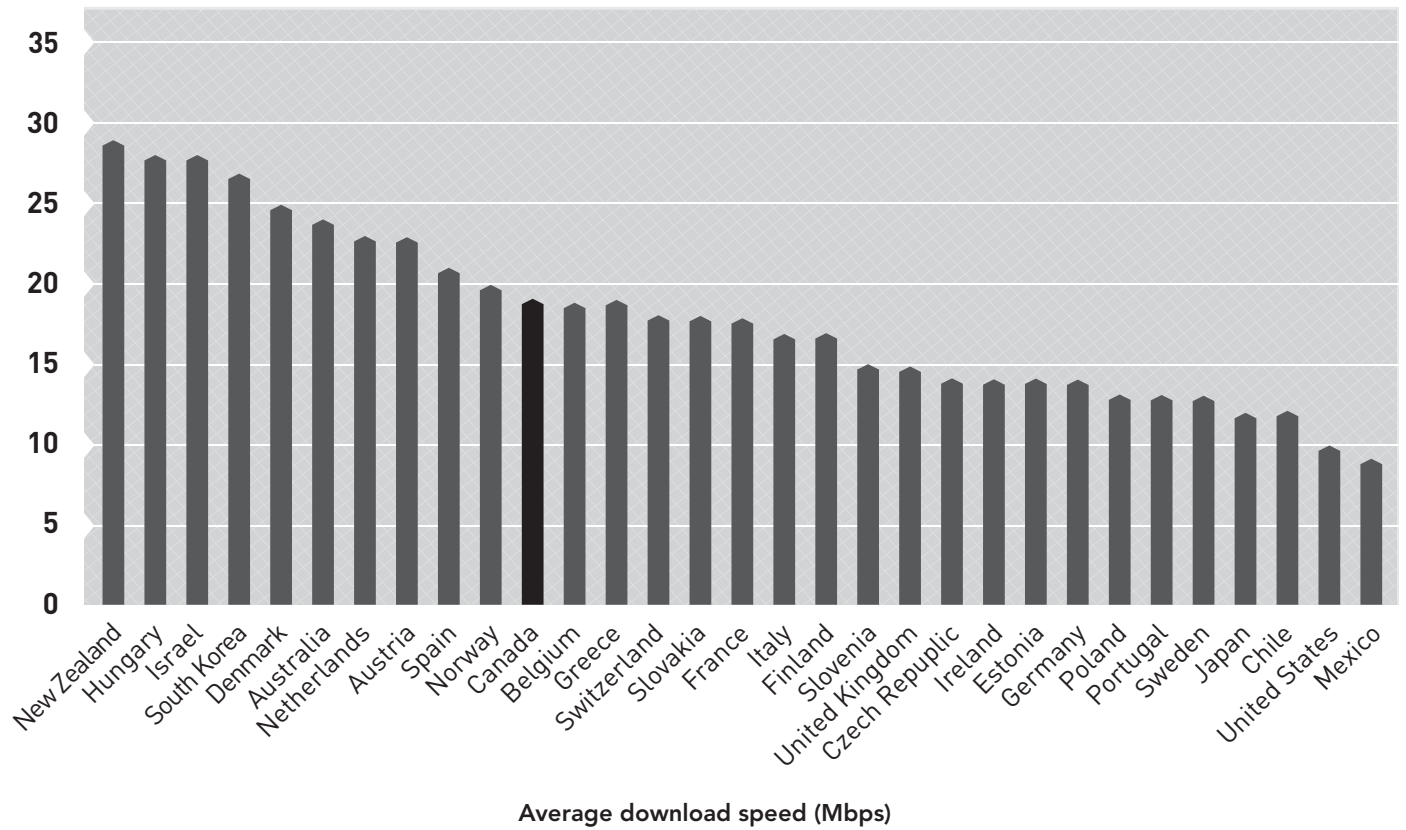
Source: Cisco, VNI Mobile Forecast Highlights 2015 – 2020, 2015.

According to the data compiled by Cisco, in terms of average download speed on LTE wireless networks, Canada ranks 1<sup>st</sup> among the 21 countries included in the sample.



Figure 1-6

LTE download speed, OECD countries – OpenSignal

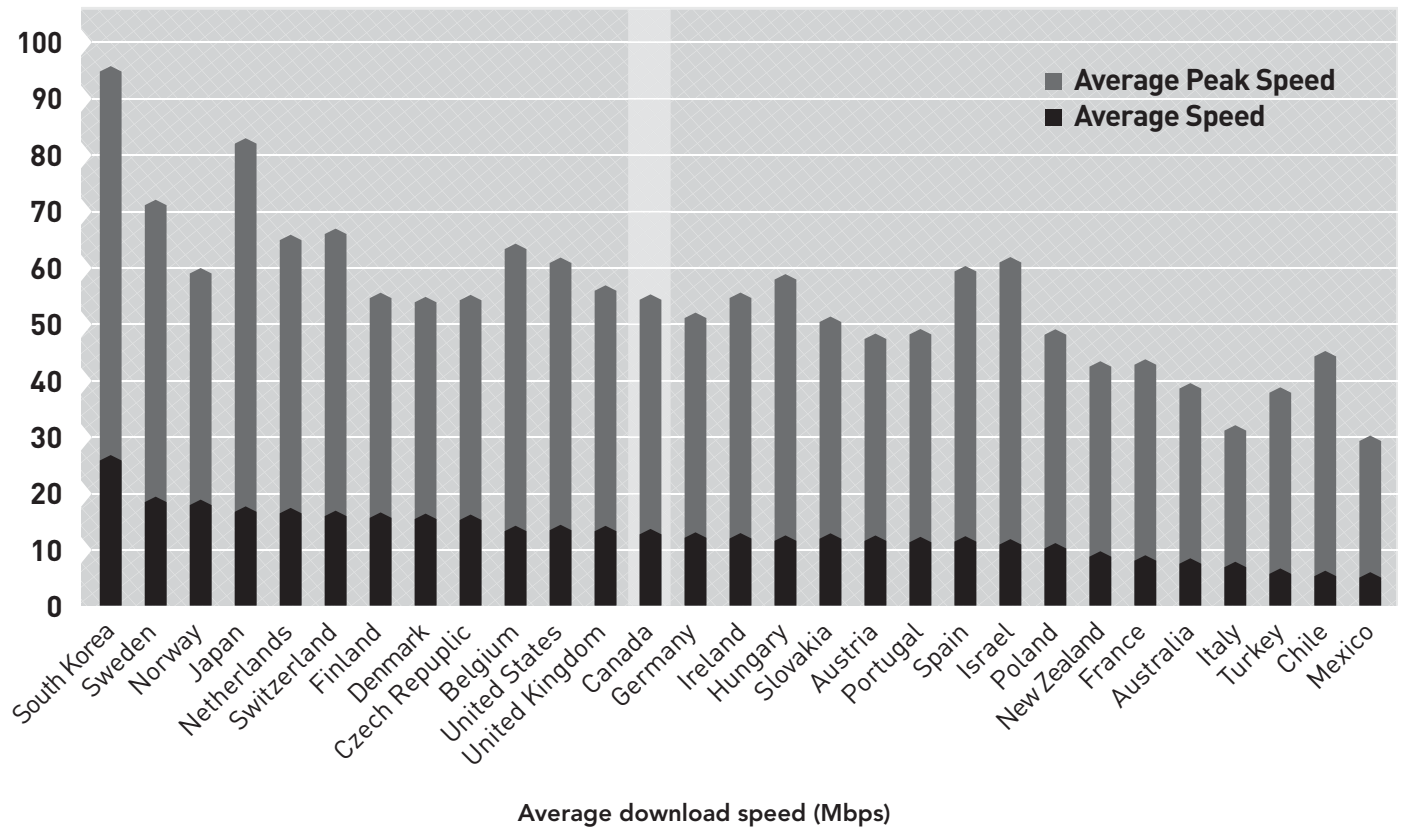


Source: OpenSignal, The state of LTE, February 2016.

According to the data compiled by OpenSignal, Canada ranks 11<sup>th</sup> among 31 OECD countries in terms of average download speed on LTE wireless networks.

Figure 1-7

**Broadband download speed**

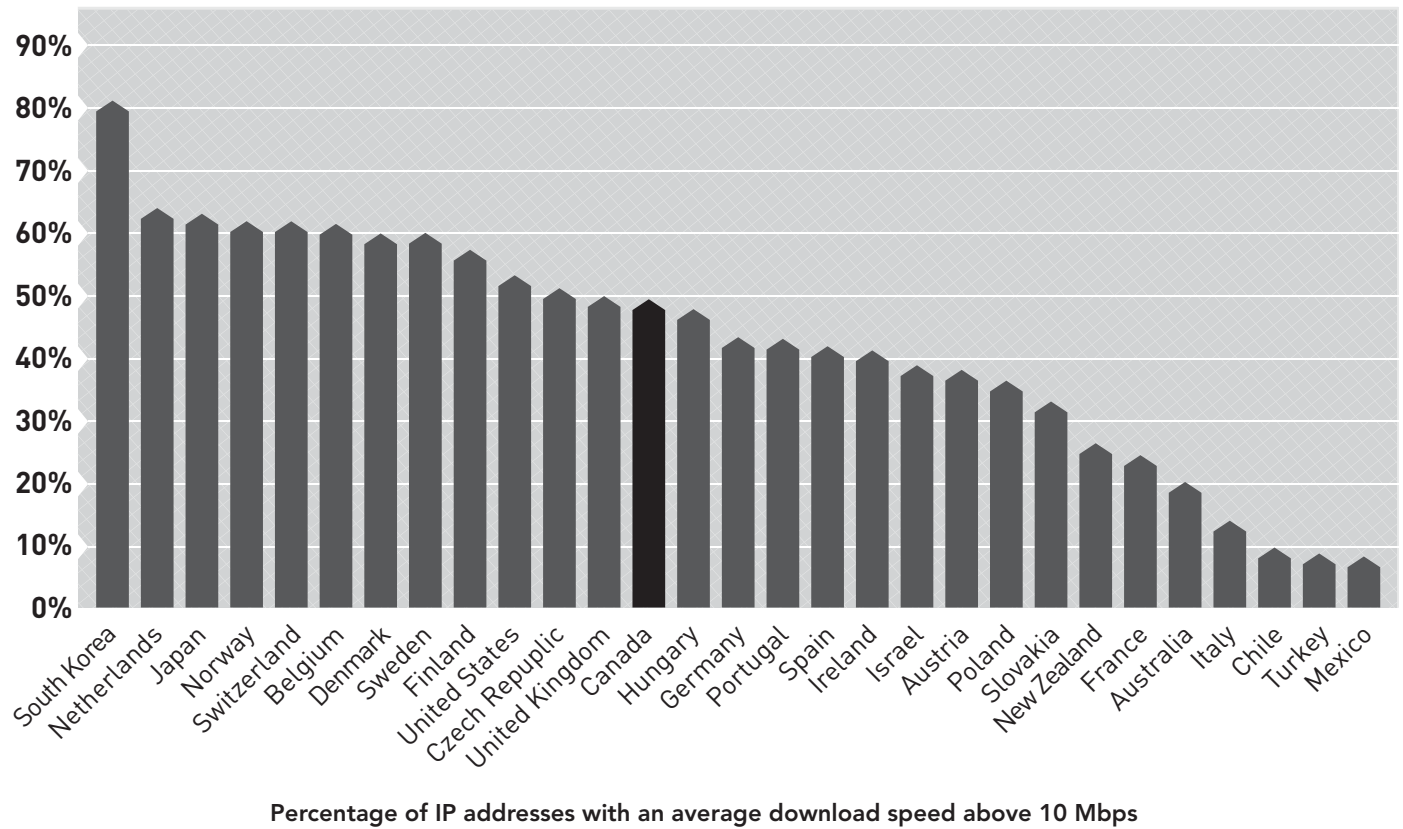


Source: Akamai, Akamai's state of the internet: Q4 2015 report, Vol. 8, No. 4, March 2016, p. 55.

In terms of average broadband download speed (that is, download speed for Internet users with a wireline or cable connection), the Akamai report for the fourth quarter of 2015 ranks Canada 13<sup>th</sup> among the 29 OECD countries for which data were available. As for average peak speed, Canada is in 14<sup>th</sup> place.

Figure 1-8

Share of broadband connections above 10 Mbps

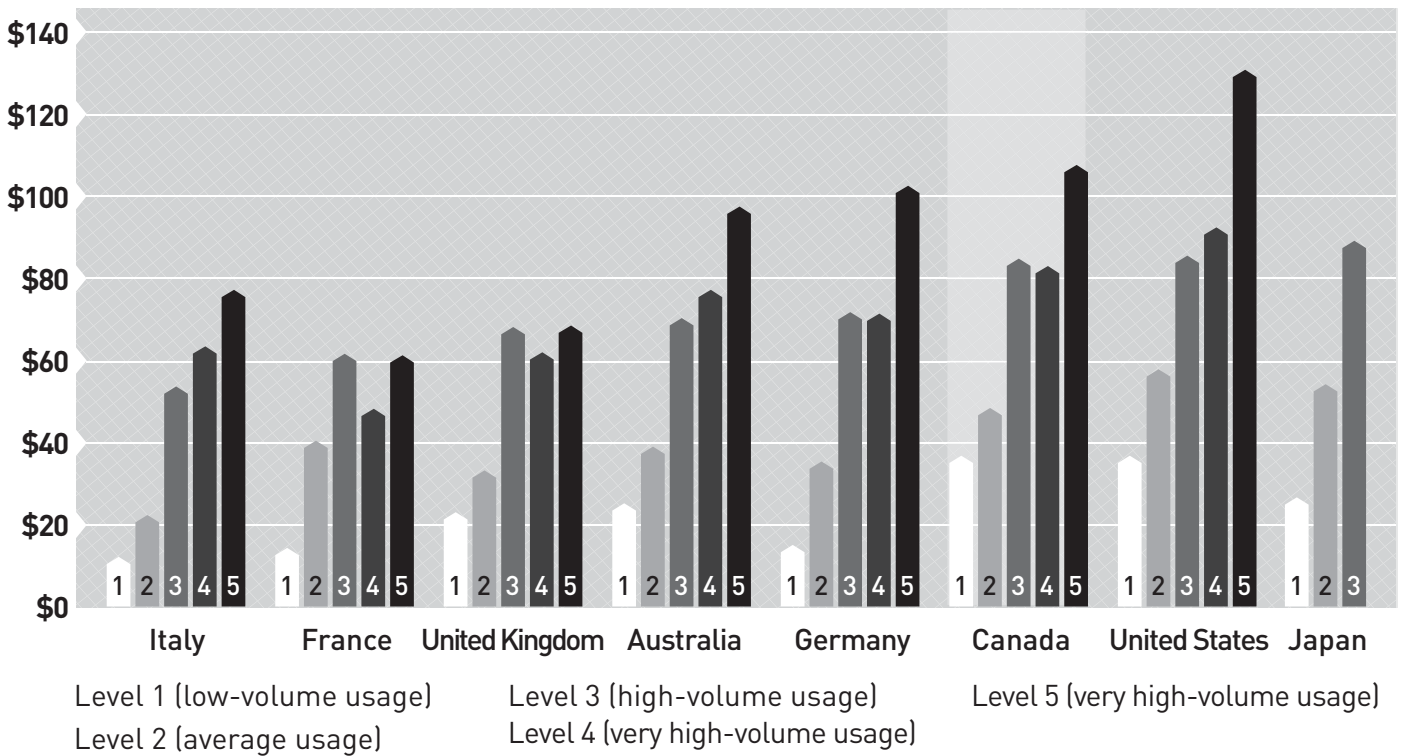


Source: Akamai, Akamai's state of the internet: Q4 2015 report, Vol. 8, No. 4, March 2016, p. 55.

For the fourth quarter of 2015, Akamai estimates that nearly 50% of IP addresses in Canada had an average broadband download speed above 10 Mbps. With this percentage, Canada ranks 13<sup>th</sup> among the 29 OECD countries for which such data were available.

Figure 1-9

**International mobile wireless prices**



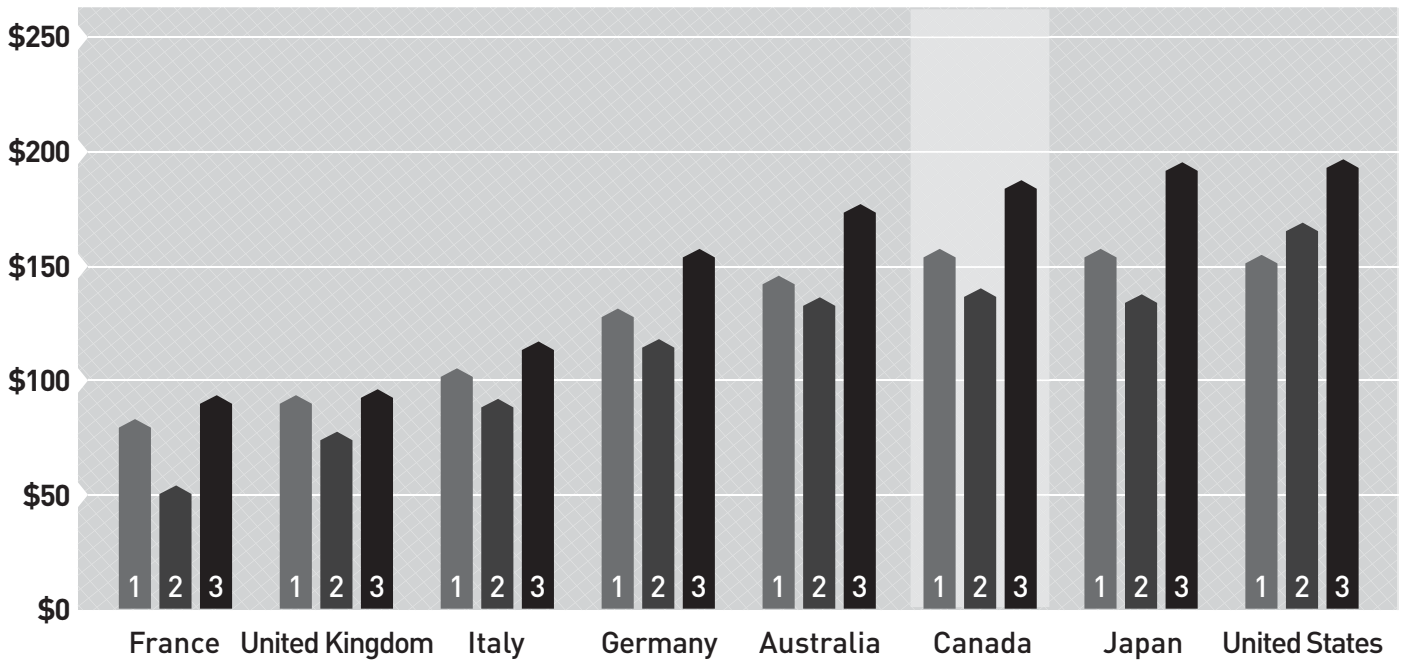
Source: Wall Communications, *Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions: 2015 Update*, Prepared for the CRTC and Industry Canada, Table A3.2, March 30, 2015. The indicated values are expressed in Canadian dollars, adjusted for purchasing power parity.

Wall Communications has assembled different baskets of mobile wireless services in order to compare Canadian monthly rates with those of seven other countries. These baskets were built on a usage basis, ranging from low to very high-volume usage.

In terms of prices, Canada ranks 8<sup>th</sup> for low-volume usage, and 6<sup>th</sup> for each of the remaining levels.

Figure 1-10

**International prices for bundled services**



Bundle 1: Wireline, broadband Internet and mobile wireless services

Bundle 2: Wireline, broadband Internet and basic digital TV services

Bundle 3: Wireline, broadband Internet, mobile wireless services and digital TV services

**Source:** Wall Communications, *Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions: 2015 Update*, Prepared for the CRTC and Industry Canada, Table A3.5, March 30, 2015.

Wall Communications has assembled different bundles of services in order to compare Canadian monthly rates with those of other countries. Canada ranks 6<sup>th</sup> out of 8 countries for the bundle that includes all four services, ahead of Japan and the United States.



## CHAPTER 2

### WINDs of Change in Canada's Wireless Sector

The year 2015 was an eventful one for Canada's wireless sector. The highlight was indisputably the acquisition of WIND Mobile by Shaw Communications. WIND was one of the three mobile telephony start-ups that emerged after the 2008 AWS spectrum auction, and the only one that had been relatively successful. When Shaw announced its acquisition of WIND for \$1.6 billion in December of 2015, WIND had 940,000 subscribers across Ontario, British Columbia, and Alberta.<sup>1</sup>

WIND's ascension as a potentially viable fourth player in these provinces had not been seamless. It had acquired AWS spectrum in 2008, but had been forced to remain on the sidelines during the 2014 700 MHz auction because its European financial backer, VimpelCom, had written off its investment in the company. In September 2014, however, the tides changed when VimpelCom sold its majority stake in the company to a consortium made up of WIND's founder, Tony Lacavera, and West Face Capital, a Canadian private equity firm.<sup>2</sup>

"With Shaw's acquisition of WIND, Canada now has a solidly established fourth player from coast to coast."

WIND's new owners were able to secure the critical funding the company needed to acquire additional spectrum in the March 2015 AWS-3 auction. It almost tripled its spectrum holdings by securing licenses that had been set aside for new entrants in Ontario, British Columbia, and Alberta at the low reserve price of \$56.4 million.<sup>3</sup>

Shaw had previously contemplated entering the wireless market. In 2008, it acquired AWS spectrum, but subsequently decided not to launch a service, eventually selling its licenses to Rogers in the summer of 2015. As part of that transaction (and to conform with the federal government's stated policy of not allowing any spectrum transaction that would result in increased spectrum concentration), Rogers then handed over to WIND, at no cost, most of the licenses it had acquired from Shaw.<sup>4</sup> However, later in the year, Shaw did an about-face and decided it wanted to enter the wireless market after all. By acquiring spectrum-rich WIND, Shaw also acquired the very spectrum licenses it had owned before the Rogers transaction.

Now that WIND is owned by a major telecommunications carrier with significant resources, its short-term financial future is undoubtedly sound. WIND has secured the necessary financing to build an LTE network, which it intends to deploy in its operating territory by 2017. Shaw's recent sale of its media division to Corus underscores the company's focus on connectivity over content for the coming years.

#### The Shaw/WIND Transaction: A Victory for the Federal Government?

With Shaw's acquisition of WIND, Canada now has a solidly established fourth player from coast to coast<sup>5</sup> (see Figure 2-1). Some have claimed the Shaw/WIND transaction is a vindication of the federal government's interventionist spectrum policies.<sup>6</sup>

Indeed, as we have discussed in past editions of this *Research Paper*,<sup>7</sup> since 2008, Ottawa has intervened repeatedly in the wireless market in the hope of fostering the emergence of a fourth national wireless player, or at the very least, the emergence of a new provider in each of Canada's regional markets.

1. Shaw Communications Inc., "Shaw Communications Inc. to acquire WIND Mobile Corp.," Press release, December 16, 2015.

2. Pete Evans, "Tony Lacavera and West Face buy Wind Mobile from VimpelCom," *CBC News*, September 16, 2014.

3. The government had decided to set aside 60% of the available AWS-3 spectrum (30 out of 50 MHz) for new entrants. Wind was able to secure all of the set-aside spectrum because no one else bid for it. Mobilicity, which would have competed against Wind for those licenses, had to bow out of the auction at the last minute due to a lack of financing. Videotron did not acquire any licenses in these markets (except for Eastern Ontario) because auction rules only allowed new entrants that had started to deploy a network in these areas to bid on the set-aside spectrum.

4. Of the 18 AWS spectrum licenses it acquired, Rogers only kept two, which covered Alberta and British Columbia. The others were transferred to Wind for \$1 apiece. In doing so, Rogers was exercising an option it had pursuant to a broader transaction with Shaw in 2013. It had been unable to exercise the option until then due to the federal government's unwillingness to approve the spectrum transfer. See Christine Dobby, "Rogers-Mobilicity deal shakes up spectrum landscape, rewards Wind," *The Globe and Mail*, June 24, 2015.

5. A few days before the publication of this *Research Paper*, BCE announced the acquisition of MTS, which could reduce the number of providers from four to three in Manitoba if this transaction obtains the approval of the regulatory authorities.

6. "Yes, four wireless carriers are better than three," *The Globe and Mail*, December 17, 2015.

7. See Chapter 2 in Martin Masse and Paul Beaudry, *The State of Competition in Canada's Telecommunications Industry*, 2014 and 2015 editions.



Figure 2-1

### Established providers by province or region



**Note:** A few days before the publication of this *Research Paper*, BCE announced the acquisition of MTS, which could reduce the number of providers from four to three in Manitoba if this transaction obtains the approval of the regulatory authorities.

Claims of a policy victory, however, should be viewed with skepticism. If the presence of a fourth wireless competitor in every Canadian province constitutes a victory for the federal government, it came at a high cost.

Prior to the 2008 AWS spectrum auction, Carleton University economist Donald McFetridge warned:

There are good reasons to believe that a fourth carrier induced by access to required inputs on concessionary terms to enter the market would not likely increase competition substantially. Indeed, it could well make competition less intense, hurting rather than benefiting consumers. There is an adverse selection issue here. Firms lining up for subsidies are typically not the best competitors or potential competitors in the market.<sup>8</sup>

This accurately describes what happened. The spectrum set-aside in the 2008 AWS auction led to the emergence of three pure-play new entrants (WIND, Mobilicity, and

Public Mobile), and to some regional players acquiring subsidized spectrum licenses in their home markets (Vidéotron in Quebec, Eastlink in Atlantic Canada, and Shaw in Western Canada). These regional players did not require a subsidy to enter the wireless market. They already offered cable, Internet, and wireline services, and had an incentive to bundle wireless services with their legacy offerings.

**“If the presence of a fourth wireless competitor in every Canadian province constitutes a victory for the federal government, it came at a high cost.”**

The new entrants, however, did not have a strong business case. Although WIND ended up faring relatively well, the two other new entrants, Public Mobile and Mobilicity, did not. Public Mobile was acquired by TELUS for nearly five times the purchase price of its spectrum licenses, essentially arbitraging its government-subsidized spectrum acquisition to secure a windfall. As

8. Donald G. McFetridge, *Competition in the Canadian Mobile Wireless Telecommunications Industry*, Department of Economics, Carleton University, May 24, 2007, p. 30.



for Mobilicity, which had been under creditor protection since the government rejected its acquisition by TELUS in 2013, it was acquired by Rogers in July 2015.

Videotron, a Quebec-based provider offering cable, Internet, wireless, and wireline services in its home territory, had been thought of as a potential national player starting in 2014, after its acquisition of 700 MHz licenses in Ontario, Alberta, and British Columbia. In 2015, Videotron acquired more licenses in the same provinces in the second spectrum auction held that year, this time for 2500 MHz frequencies,<sup>9</sup> once again fuelling speculation that it was mulling over the development of a national wireless network. However, it announced in September that it would not develop a national wireless network “from scratch.” At the time, its vice president stated that it was considering partnering with another player such as WIND, or selling off the 700 MHz and 2500 MHz airwaves it had purchased in those provinces.<sup>10</sup>

“Government interventions aimed at propping up new competitors have allowed those competitors to arbitrage their government-subsidized spectrum to secure windfalls, and have led to lost revenues for the government at the expense of taxpayers.”

Although Videotron has been able to acquire cheap spectrum outside of its home territory thanks to favourable auction rules, the economics of expansion into other regions of Canada have never been convincing. Videotron does not sell television, Internet, and home phone service outside of Quebec, and would therefore not be able to bundle its cell phone service with any other products. This would make it harder for it to effectively compete against solidly established companies.

As noted in past editions of this *Research Paper*, exclusionary auction rules, such as spectrum set-asides or caps, as well as mandatory roaming and tower sharing rules, have prevented efficient competition and hin-

dered investment in the state-of-the-art wireless networks and services that consumers are demanding. If anything, government interventions aimed at propping up new competitors have allowed those competitors to arbitrage their government-subsidized spectrum to secure windfalls, and have led to lost revenues for the government at the expense of taxpayers. Such measures essentially constitute public subsidies that are either wasted on established regional players that would have had the means to bid for the full value of the spectrum, or lost to new entrants that consistently fail.

The biggest beneficiaries of the federal government's interventionist rules during the past years have been the shareholders of WIND and Public Mobile, who arbitrated their government-subsidized spectrum acquisition to secure a windfall, and Videotron, which might do the same when it decides to divest itself of the spectrum licenses it holds outside of Quebec. In the case of Shaw's acquisition of WIND, the \$1.6-billion price tag was almost six times what the consortium paid in September 2014 when it bought the company from VimpelCom.<sup>11</sup>

In the end, the federal government's fourth-player policy will have benefitted the shareholders of these companies a lot more than they will have benefitted Canadian consumers. It will also have delayed the use—or the more efficient use—of spectrum frequencies that were wasted on failed companies or that were simply unused by the spectrum license holders. As of today, Videotron's out-of-province spectrum licenses remain unused, and will likely only be used once Videotron sells them to another carrier. Inefficient usage of spectrum has been one of the unintended consequences of a policy that was flawed from the start.

## Is Having Four Wireless Players a Competitive Nirvana?

By insisting on the benefits that a fourth wireless player could bring to the wireless market, the federal government embraced a static view of competition, which focuses solely on the number of players in the industry at a given time. This view, however, minimizes other competitive pressures that can exist in dynamic markets such as the telecommunications market.

A more dynamic concept of competition shows that competitive discipline and rivalry are not necessarily conditional on the presence of a multitude of players in the market; they can also be generated by the anticipation

9. The 2500 MHz frequency can be used to provide mobile phone and data services, as well as high-speed Internet in rural communities. The auction framework, released in January 2014, imposed a spectrum aggregation limit (or cap) of 40 MHz in each service area of the 2500 MHz band, except in Northern Canada, where there is no such limit. The government had stated that the use of caps would apply equally to each provider this time (unlike the caps used in the 700 MHz auction which only applied to large providers) and would ensure that at least four carriers will be able to use the 2500 MHz frequency band.

10. “Vidéotron won't build national wireless network 'from scratch',” *CBC News*, September 17, 2015.

11. Pete Evans, *op. cit.*, footnote 2.

Table 2-1

### Number of national wireless providers in developed countries

Australia	3	Japan	3
Austria	3	Netherlands	3
Belgium	3	New Zealand	3
Canada	3 (4)*	Norway	3
Denmark	4	Portugal	3
Finland	3	Spain	4
France	4	Sweden	4
Germany	3	Switzerland	3
Greece	3	United Kingdom	4 ► 3?
Ireland	3	United States	4*
Italy	4 ► 3?		

**Source:** Glen Campbell, *Global Wireless Matrix 4Q13 - 2014: The Year Ahead*, Bank of America Merrill Lynch, January 8, 2014, p. 2. Modified by the authors to take into account the latest developments.

\*Both Canada and the U.S. also have a number of regional networks, Canada having a fourth in every region of the country as shown in Figure 2-1. The United Kingdom and Italy will potentially follow the trend of reducing to three carriers, as both countries’ antitrust regulators are currently reviewing transactions that would reduce the number of wireless players in each country from four to three. In France, another attempted merger, which would have reduced the number of wireless providers from four to three, was abandoned in April 2016.

of new services in the future.<sup>12</sup> Such a dynamic vision emphasizes that competition should be viewed as a process rather than a fixed state of affairs. Less importance should be placed on market allocation and the number of players in a given market, and more on innovation and potential competition.<sup>13</sup>

**“Inefficient usage of spectrum has been one of the unintended consequences of a policy that was flawed from the start.”**

From an empirical perspective, it is noteworthy that the previous federal government’s objective of having four national wireless players went against a worldwide trend of consolidation in the wireless sector. In recent years, the number of national wireless players has gone from five or four to three in Australia, Austria, Japan, Germany,

and Ireland. The United Kingdom and Italy will potentially follow that trend, as both countries’ antitrust regulators are currently reviewing transactions that would reduce the number of wireless players in each country from four to three.<sup>14</sup> As shown in Table 2-1, a majority of developed countries have only three national wireless providers.

Now that Canada has a fourth player from coast to coast, what is to be expected? Are significant price reductions around the corner? This is unlikely. When asked about pricing in the midst of the WIND acquisition, Shaw CEO Brad Shaw stated that pricing would be “somewhat discounted, but probably closer to the incumbents as we go forward.”<sup>15</sup> This statement is not particularly surprising. As *Financial Post* journalist Christina Pellegrini recently explained, “[T]he technology Wind operates today is outdated and is known to

12. Neil Quigley, “Dynamic Competition in Telecommunications,” Commentary No. 194, C.D. Howe Institute, 2004.

13. J. Gregory Sidak and David J. Teece, “Dynamic Competition in Antitrust Law,” *Journal of Competition Law & Economics*, Vol. 5, No. 4, 2009, p. 619.

14. See Daniel Thomas, “Hutchison makes new concessions on O2-Three merger,” *Financial Times*, February 14, 2016; Foo Yun Chee, “Italian regulator wants to handle Hutchison, Vimpelcom deal,” Reuters, February 26, 2016.

15. Christine Dobby, “Shaw to buy Wind Mobile for \$1.6-billion,” *The Globe and Mail*, December 16, 2015.

result in dropped calls, poor service inside buildings and spotty service outside them, too. As a result, Wind charges customers less per month than the incumbents.”<sup>16</sup>

Considering that hundreds of millions of dollars will be needed to upgrade WIND's network to LTE, it is to be expected that WIND's prices will rise as a result of these significant investments and increasingly come to resemble those of the three large national players going forward.

That being said, regardless of what one may think of the federal government's wireless policies since 2008, Canada now has well-established fourth players across the country. The new federal government should seize this opportunity to remove the proverbial training wheels on new entrants and revert back to the traditional, pre-2008 practice of holding open (i.e., non-preferential) spectrum auctions.

“The previous federal government's objective of having four national wireless players went against a worldwide trend of consolidation in the wireless sector.”

Canadian wireless carriers will need to make significant investments in the coming years to stay ahead of the technological curve. Returning to a regime of light-handed regulation would help create an environment conducive to innovation and investment. Canada's new wireless entrants are no longer small, poorly-capitalized companies that need to be protected by the CRTC and Industry Canada. Rather, they are large, well-capitalized regional players that can compete with the incumbents on equal footing in a regulatory environment that should rely on market forces to the maximum extent feasible.

## Markets Aren't Perfect... But They Work! The Case of International Roaming

One of the recurring themes of this report is that relying on markets unencumbered by heavy-handed regulations is the best way to ensure that Canadians get world-class telecommunication services. To be clear, however, believing in the superiority of market-based solutions does not imply that free markets are “perfect” and always de-

liver what consumers want. Rather, it means that over time, they will tend to do so in a sustainable manner thanks to competitive forces, not government regulation.

International roaming fees are a case in point. Over the past several years, one of the chief criticisms levelled at Canadian wireless carriers has focused on international roaming fees. Some consumers have had to learn about high roaming fees the hard way: by unexpectedly being hit with exorbitant phone bills after travelling abroad.

Lately, however, this situation has evolved substantially. Carriers have started offering more attractive plans to their customers, allowing them to use their phones internationally without being afraid of racking up huge phone bills.

For instance, in late 2014, Rogers introduced a mobile roaming plan called “Roam Like Home” that allows its top-tier subscribers to pay a daily fee of either \$5 (in the U.S.) or \$10 (elsewhere) to use their phones as they do at home in over 100 destinations.<sup>17</sup> Rogers credits the introduction of its new roaming plan for the substantial reduction of roaming-related complaints from its customers to the Commissioner for Complaints for Telecommunications Services.<sup>18</sup>

This trend has since become generalized. In July 2015, TELUS launched a similar package called “Easy Roam” for U.S. travel that costs \$7 a day for access to the voice minutes, text messages and data allotment included in a customer's existing rate plan. The company claims to have reduced its pay-per-use rates by up to 80% since 2011.

Bell has taken a somewhat different approach by offering its customers passes and bundles based on destination, length of time away and use, which range from an additional charge of \$20 to \$95 for 30 days.<sup>19</sup>

SaskTel, Saskatchewan's incumbent carrier, also recently announced it would reduce its U.S. and international roaming rates. Under the new rates, data and voice in the United States will cost 7¢ per MB and 7¢ per minute respectively. For other countries, rates for wireless data usage now range between \$1 and \$15 per MB depending

16. Christina Pellegrini, “Shaw Communications Inc to acquire Wind Mobile Corp in \$1.6-billion deal,” *Financial Post*, December 16, 2015.

17. Rogers Website, Shop, Wireless, Travel.

18. According to the company, complaints “are on track to decrease by 90% this year, from the 2012-13 results.” Rogers, “Rogers reduces complaints by 65 per cent in CCTS mid-year report,” Press release, March 30, 2016.

19. Christina Pellegrini, “Rogers Communications Inc wins fans, sales with aggressive roaming push,” *Financial Post*, October 13, 2015.

on which zone one is roaming in.<sup>20</sup> SaskTel also launched more attractively-priced roaming plans for heavier usage.

Barbara Motzney, the CTRC's Chief Consumer Officer, noted that complaints about roaming charges went down 27% from 2013 to 2014.<sup>21</sup> She credits the CRTC's Wireless Code for helping consumers be more informed about their phone plans. The Wireless Code, among other things, required carriers to notify customers when they are roaming and what the associated costs are. It also imposed caps on roaming charges and data overage charges to avoid unpleasant surprises.

The CRTC should be commended for sensitizing consumers to the importance of understanding the terms and conditions of their contracts and imposing on carriers the duty to communicate with their customers in a clear and easy-to-understand manner. The significant reduction of international roaming rates, however, is not primarily attributable to the Wireless Code.

**“The new federal government should seize this opportunity to remove the proverbial training wheels on new entrants and revert back to the traditional practice of holding open spectrum auctions.”**

Roaming rates have been declining for a simple reason: because consumers asked for it and carriers saw an opportunity to solve a major irritant and to attract new customers. As soon as one company started to offer more attractive roaming plans to its customers, others had no choice but to follow suit, or else they would lose market share. Market mechanisms, and competition in particular, rather than regulatory fiat, are primarily responsible for these positive developments.

---

20. “SaskTel cuts international roaming rates,” *CARTT.ca*, November 25, 2015.

21. Henry Stancu, “Roaming fees, travel: How to avoid phone bill shock after your trip,” *Toronto Star*, March 12, 2015.

## CHAPTER 3

### Should Broadband Internet Be Regulated and Subsidized as an Essential Service?

In April 2016, the Canadian Radio-television and Telecommunications Commission held hearings to review its definition of “basic telecommunications services.”<sup>22</sup> The main issue being debated was whether or not broadband Internet services should be included in this definition and considered an essential service for all Canadians. If the answer is yes, what should be the minimum download speed available to everyone, and the target speeds to be attained in the future? And what should the CRTC and the federal government do, in terms of regulation and funding, to ensure that all Canadians have access to these speeds?

Underlying this debate is the perpetual question that we have addressed in every edition of this *Research Paper*: Is the telecom industry sufficiently competitive, innovative, and dynamic to ensure that the necessary investments will be made, and services will eventually be developed, to offer high-speed services to all Canadians at reasonable prices? Or is the fact that not all Canadians have access to the exact same level of service another instance of “market failure” that has to be righted by government intervention?

#### How Technologies Are Adopted

This debate has a familiar ring to it. Almost every new revolution in telecommunications over the past quarter century has brought the same anguished commentaries about how Canada was falling behind other advanced countries in terms of deployment, or how certain segments of the population were being left behind in terms of access.

This was the case when dial-up Internet connections started becoming common in the 1990s. It was again the case when cellphones, and later smartphones and tablets, became mass products. It was the case when 2G, 3G, and 4G wireless technologies were successively deployed. And today, worries focus on access to high-speed Internet, rightly considered a prerequisite for full participation in the country's economic, social, and cultural life.

It is however an obvious fact of social and economic development that new technologies are not suddenly adopted universally in every socioeconomic group as soon as they become available. Moreover, in a vast and geographically disparate country like Canada, there is little likelihood that any new physical infrastructure will be deployed in all populated areas simultaneously.

One of the classic studies of the phenomenon of technology diffusion was conducted by sociologist and communication scholar Everett Rogers, who popularized his theory in his 1962 book *Diffusion of Innovations*. He showed that every technology goes through a series of phases when it is adopted by one group after another, from innovators and early adopters to laggards, finally reaching a saturation level when essentially 100% of the population is using it (see Figure 3-1).

“Every technology goes through a series of phases when it is adopted by one group after another, from innovators and early adopters to laggards, finally reaching a saturation level when essentially 100% of the population is using it.”

Every technology since the late 19<sup>th</sup> century has gone through the same process of adoption, after first having been an expensive gadget for rich, urban, tech-savvy consumers. The major difference today is that new information technologies reach a critical mass and become widely accessible to all not in a matter of decades, but in a matter of years. For example, while it took almost half a century before a quarter of the American population was using electricity after it had been made commercially available in 1873, and more than three decades for telephones and radio, it took only 13 years and 7 years for mobile phones and the Internet to reach the same proportion of the population (see Figure 3-2).

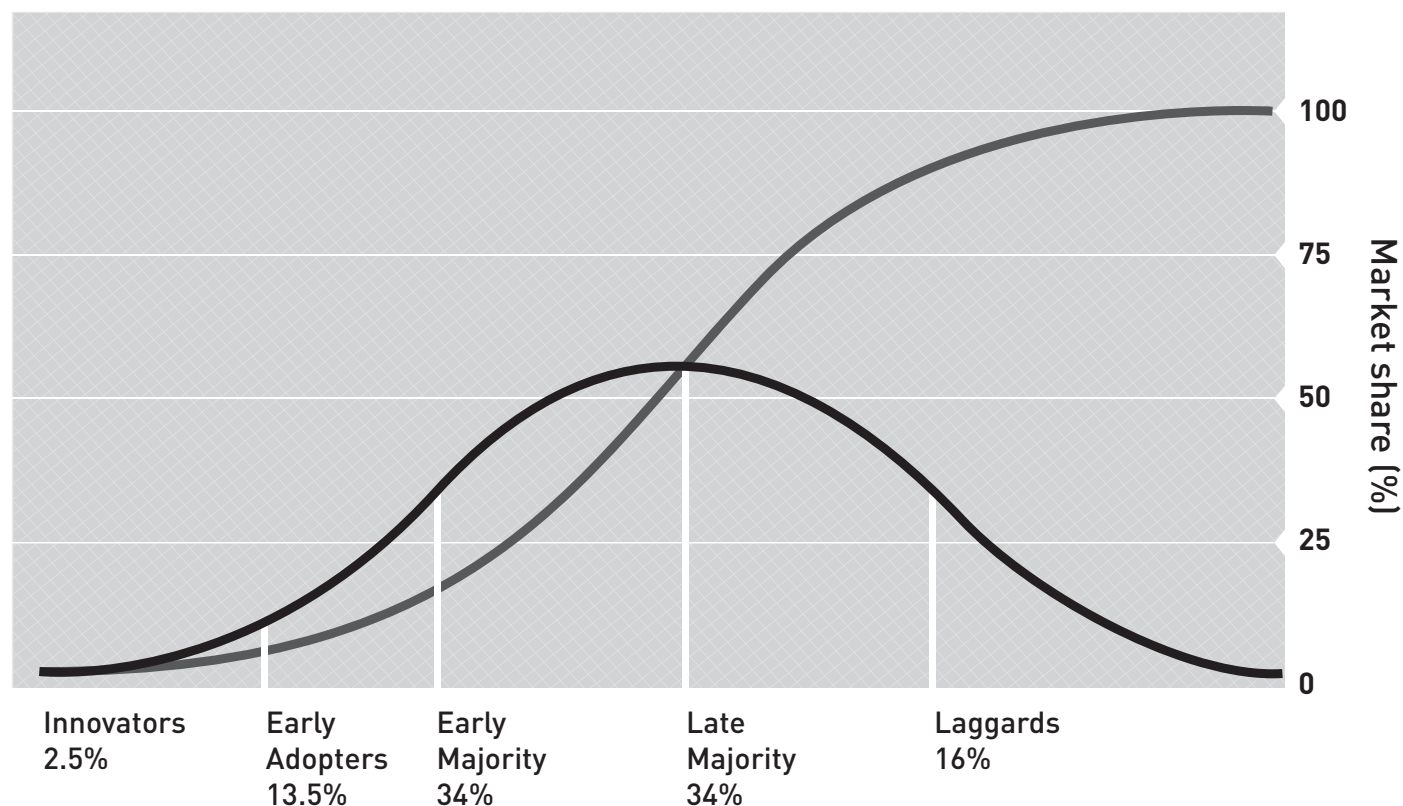
This adds some perspective to the debate over broadband Internet becoming a basic service guaranteed to all. Critics who note that access to high-speed Internet is limited in some regions of Canada, or among less advantaged socioeconomic groups, invariably conclude

22. CRTC, Telecom Notice of Consultation 2015-134, April 9, 2015.



Figure 3-1

### The diffusion of innovations



**Note:** With successive groups of consumers adopting the new technology (shown in black), its market share (grey) will eventually reach the saturation level.  
**Source:** This is a combination of Figures 7-1 and 7-2 in Everett M. Rogers, *Diffusion of Innovations*, Third Edition, The Free Press, 1983, pp. 242-247.

that government intervention will be necessary to close the gap.<sup>23</sup> But what they consider a market failure is actually just the normal course of technology adoption.

### Broadband Availability in Canada

Is Canada a laggard when it comes to the quality of its Internet infrastructure, as some critics have been claiming for years? That is certainly not what international comparisons show.

In terms of average broadband download speed, a survey carried out by the firm Akamai ranked Canada 13<sup>th</sup> among the 29 OECD countries for which data were available in late 2015, and 14<sup>th</sup> for average peak speed.

Akamai also estimated that nearly 50% of IP addresses had an average broadband download speed above 10 Mbps, placing Canada 13<sup>th</sup> according to this metric as well.<sup>24</sup> In other words, Canada has one of the best-performing Internet infrastructures when compared to the most developed countries in the world.

**“The major difference today is that new information technologies reach a critical mass and become widely accessible to all not in a matter of decades, but in a matter of years.”**

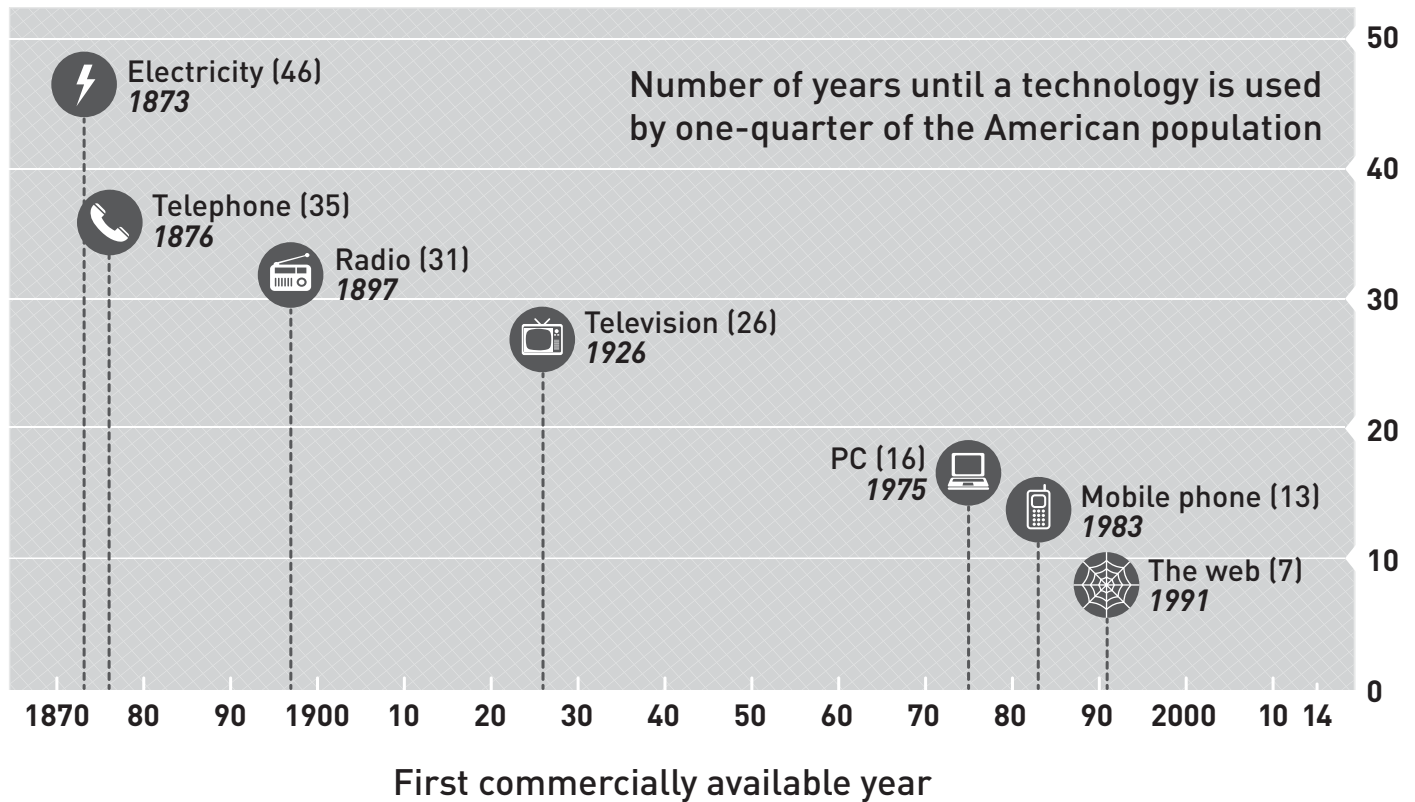
Although the CRTC considers download speeds upwards of 1.5 Mbps to be broadband, it established a target of 5 Mbps in 2011 as a more appropriate norm that all Canadians should have access to. With a service offering

23. An editorial in *La Presse* is typical of this perspective: “In many places, often very close to cities, individuals and businesses do not have access to Internet service that is worthy of the name, due to a lack of provider interest. By all accounts, the logic of the market is not enough. Telecommunication is a federal responsibility. Ottawa must no longer ask if, but rather how it can finance the upgrading of service in all regions where this is possible.” Ariane Krol, “L’Internet, c’est pas du luxe,” *La Presse*, April 10, 2016.

24. See Figures 1-7 and 1-8 in Chapter 1 of this paper.

Figure 3-2

### Technology adoption is speeding up



Source: Singularity.com, in K.N.C., G.S. and P.K, "Happy birthday world wide web," *The Economist*, March 12, 2014.

speeds of 5 Mbps, an Internet user can do almost everything he or she wants on the Internet, including watching relatively high quality videos. Faster speeds may be necessary for some specialized applications or entertainment such as watching very high-resolution movies or gaming, but they are certainly not a prerequisite for full participation in Canada's economic, social, and cultural life.

What is the availability of these broadband services? According to the CRTC, 96% of Canadian households could access a download speed of 5 Mbps in 2014. Of these, the vast majority (94%) can access it using land-line facilities (DSL, fibre, and cable modem) or fixed-wireless facilities. Another 1.5% can get access via satellite facilities.<sup>25</sup>

In terms of geographical distribution, residential broadband Internet with speeds of at least 5 Mbps is accessible to 100% of Canadians living in large and medium-sized population centres, and 99% of those living in small (be-

tween 1,000 and 29,999 residents) population centres. Only some rural areas still lack universal broadband access, with 75% of households being covered, along with an additional 11% if wireless mobile services are included (see Figure 3-3).

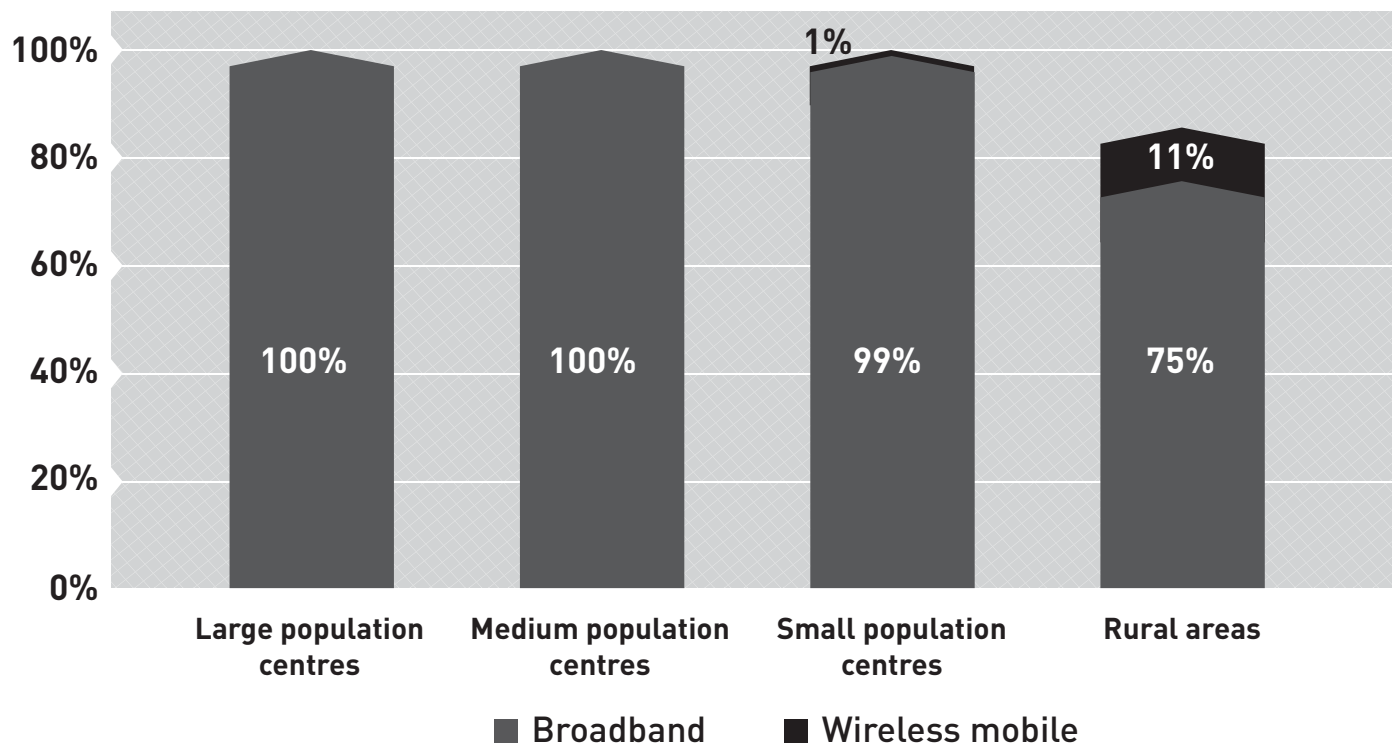
**"Critics who note that access to high-speed Internet is limited in some regions of Canada, or among less advantaged socioeconomic groups, invariably conclude that government intervention will be necessary to close the gap."**

Given this availability, it is no surprise that the proportion of households subscribing to a 5 Mbps download or higher broadband Internet service has been fast increasing in recent years, reaching 77% in 2014, up from 71% just one year earlier (see Figure 3-4). That proportion was undoubtedly higher in 2015, and will keep on climbing this year.

25. CRTC, *Communications Monitoring Report 2015*, October 2015, p. 187.

Figure 3-3

**Availability of 5 Mbps download or higher broadband, urban and rural areas, % of households, 2014**



Source: CRTC, *Communications Monitoring Report 2015*, October 2015, Figure 5.3.17, p. 211.

It should also be added that in 2014, 93% of Canadians were covered by an LTE wireless network, a 4G technology offering speeds higher than 5 Mbps.<sup>26</sup> Of course, prices and amounts of data available in wireless plans are not comparable to those of a subscription to a residential Internet service. But given that more and more Canadians now access the Internet using a smartphone or a tablet rather than a personal computer, this is another indication of the availability of high-speed Internet. There likely is a segment of the Canadian population that does without a residential Internet subscription but that still has its needs fulfilled by accessing the Internet through a mobile connection.

Since there are a number of Canadians who are just not interested in having an Internet connection, or a broadband Internet connection, the diffusion of broadband technology in Canada is likely close to its saturation rate. We are in the last stage in the diffusion cycle of this technology.

Furthermore, new or more advanced ways of providing broadband services are currently being deployed that are making this debate irrelevant. The 5 Mbps target set by the CRTC, or even the 10 Mbps target suggested by some groups, are already outdated.

**“According to the CRTC, 96% of Canadian households could access a download speed of 5 Mbps in 2014.”**

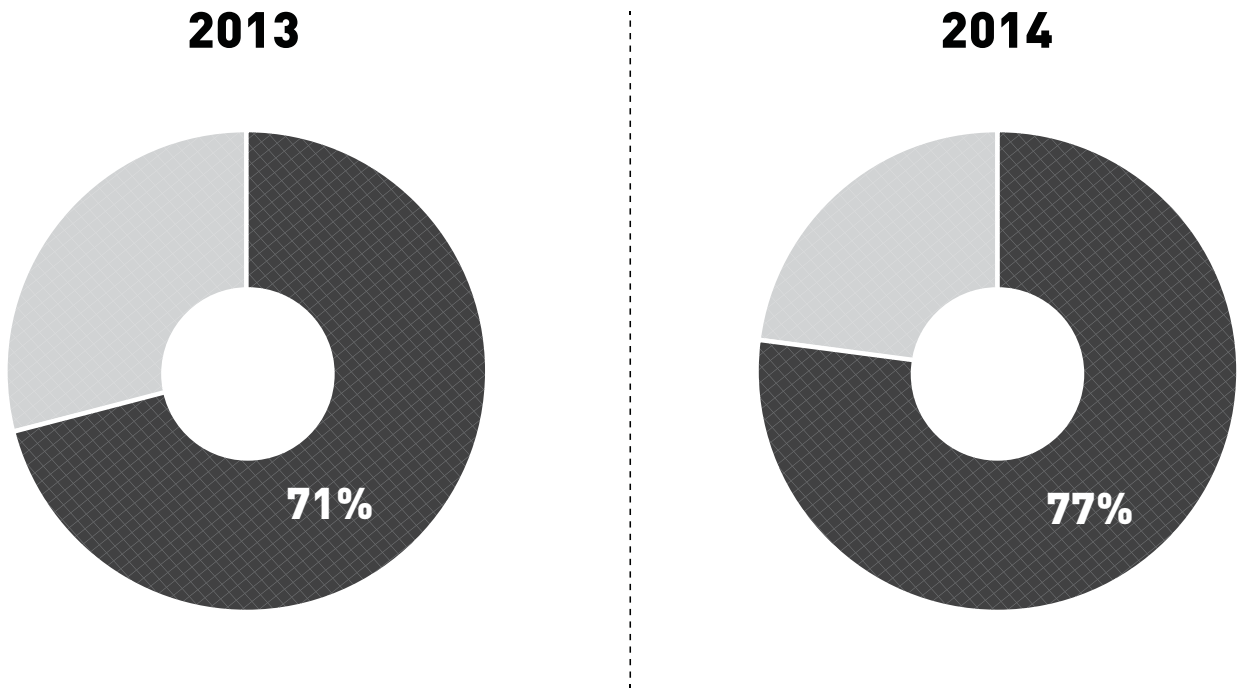
For example, broadband services with download speeds exceeding 100 Mbps have been deployed in most urban centres and were already available to 71% of Canadian households in 2014 (see Figure 3-5). At the current rate of increase, these services will become near universal before the end of the decade.

26. CRTC, *op. cit.*, footnote 25, Table 5.3.11, p. 206.



Figure 3-4

**Percentage of households subscribed to 5 Mbps download or higher broadband, 2013-2014**



Source: CRTC, *Communications Monitoring Report 2015*, October 2015, Figure 5.3.17, p. 195.

Moreover, various providers have already started to deploy “gigabit” service (that is, 1 Gbps or 1,000 Mbps) in several areas of the country.<sup>27</sup> Although there are currently very few Internet uses for ordinary consumers that require such speeds, they will likely become the new standard in a few years, given how fast the entire Internet sector is developing. Telecommunications firms are not making these investments in order to comply with the CRTC’s “aspirational targets,” but because they want to be well positioned vis-à-vis their competitors when consumers start demanding such speeds in the future.

“Telecommunications firms are not making these investments in order to comply with the CRTC’s ‘aspirational targets,’ but because they want to be well positioned vis-à-vis their competitors when consumers start demanding such speeds in the future.”

27. See David Friend, “High speed, high price: Canadian telecom companies offer ‘gigabit’ Internet,” *The Canadian Press*, October 5, 2015; Zach Dubinsky, “Why super-fast internet may come from a company you’ve never heard of,” *CBC News*, August 12, 2015.

Even isolated communities in rural and northern areas of Canada, where it is not economical to deploy wireline or wireless services, will soon have access to broadband Internet at much higher speeds than 5 Mbps. Xplornet Communications, a New Brunswick-based provider, has signed an agreement to buy capacity on two new satellites to be launched in 2016 and will be offering Internet download speeds of up to 25 Mbps everywhere in the country by 2017.<sup>28</sup>

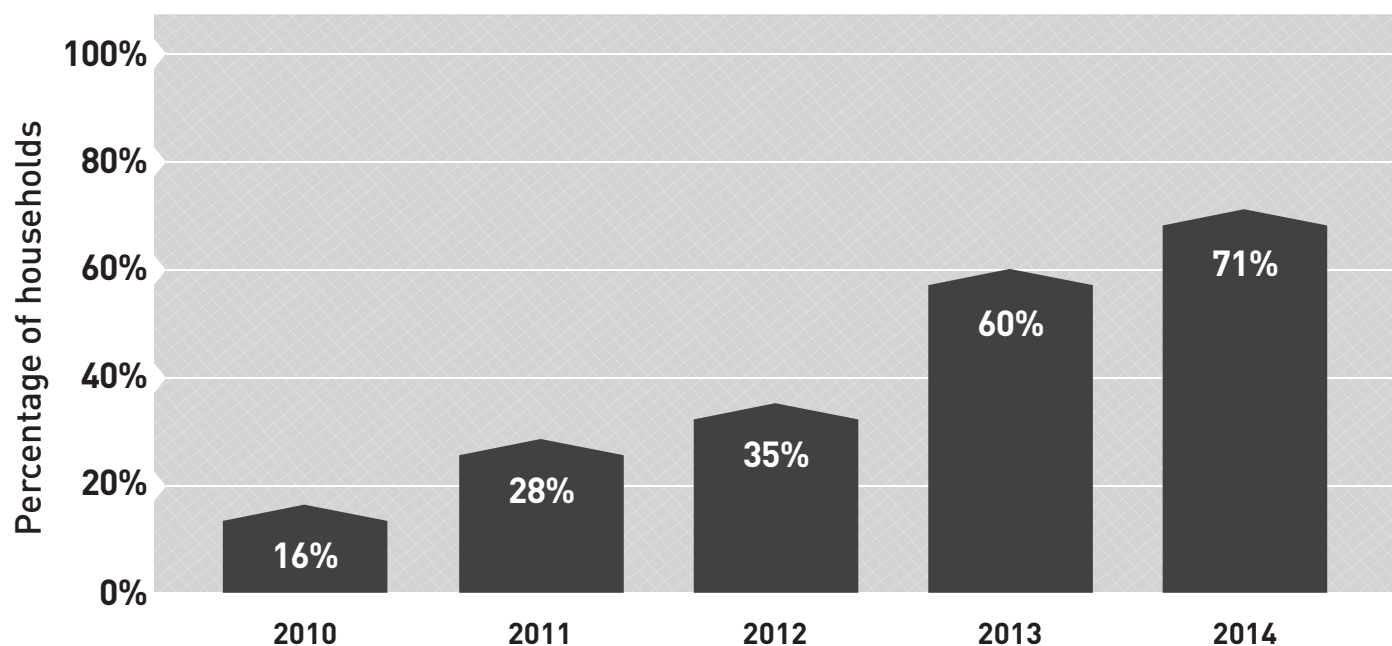
**Additional Government Meddling in the Broadband Market is Not Necessary**

There already exist various public-private partnerships and subsidy programs at all levels of government aimed at accelerating the deployment of broadband service in targeted, underserved rural and remote areas. At the federal level, the Connecting Canadians program announced by the previous government in 2014 is set to devote \$305 million to connecting 280,000 Canadian

28. -, “Xplornet pledges fast internet for rural, remote areas,” *CBC News*, July 28, 2014.

Figure 3-5

### Availability of 100+ Mbps broadband services, % of households, 2010-2014



Source: CRTC, *Communications Monitoring Report 2015*, October 2015, Figure 5.3.16, p. 209.

households by 2017.<sup>29</sup> The new Liberal government has committed an additional \$500 million over the next five years to the same goal of connecting underserved areas.<sup>30</sup>

Despite all these developments and initiatives, several groups argued during the recent CRTC hearings on basic services that market forces and targeted government funding were insufficient to meet the needs of Canadians.<sup>31</sup> They called on the CRTC to impose new regulation on the sector, and to tax telecom company revenues to fund more broadband infrastructure rollout and a subsidy program for low-income users.<sup>32</sup>

“There is no need to create new funding mechanisms or to impose more layers of distortionary regulation in order to duplicate what market players are already doing in an efficient manner.”

In an impromptu commentary in the middle of the hearings, CRTC Chairman Jean-Pierre Blais seemed to lose sight of the extremely dynamic and positive big picture, focusing only on the relatively minor remaining access problems. He depicted a situation where the lack of a “more robust Canadian broadband strategy” meant “citizens being disenfranchised from democratic debates,” regions unable “to ensure social progress, as well as economic prosperity and growth,” and Canada being “competitively disadvantaged as other countries move ahead.”<sup>33</sup> This alarming portrait is quite simply disconnected from the reality.

29. Government of Canada, “Harper Government launches program to bring high-speed Internet to an additional 280,000 Canadian households,” News release, July 22, 2014.  
 30. Martine Turenne, “Le fédéral débloque 500 millions \$ pour un meilleur accès Internet en région,” *Le Journal de Montréal*, March 29, 2016.  
 31. Geoffrey White of the Public Interest Advocacy Centre declared that: “Leaving universal broadband to market forces and targeted government funding has failed to deliver [5 Mbps download/1 Mbps upload] to all Canadians, let alone the higher speeds needed today. Continuing that approach will fail to live up to the telecommunications policy objectives of enriching and strengthening the social and economic fabric of Canada and its regions, and rendering ‘reliable telecommunications services of high quality accessible to Canadians in both urban and rural areas in all regions of Canada.’” Perry Hoffman, “BSO Hearing Day 4: Individual Canadians bring broadband affordability challenge into focus for commissioners,” *CARTT.ca*, April 15, 2016.  
 32. See also Charelle Evelyn, “Advocacy groups ask CRTC for subsidies, to ‘champion’ Internet access,” *The Wire Report*, April 14, 2016.

33. -, “BSO Hearing Day 6: Blais gets personal: No broadband strategy makes it tough on Commission, Canadians,” *CARTT.ca*, April 18, 2016.

All Canadians will soon be able to connect to the Internet at very high speeds. The telecommunications industry is investing billions of dollars every year to develop these new technologies and deploy the necessary infrastructure. And this is not because of any comprehensive national strategy devised by civil servants in Ottawa; it is because of competitive pressure. Companies are simply adapting to consumer demand and are trying to attract more customers by offering better and faster broadband services at affordable prices.

In this context, for the CRTC to declare that broadband is an essential service and to set new speed targets is simply irrelevant. There is no need to create new funding mechanisms or to impose more layers of distortionary regulation in order to duplicate what market players are already doing in an efficient manner.



## CHAPTER 4

### Facilities-Based Competition as a Spur to Innovation

In the two previous editions of this *Research Paper*, we have argued that Canadian consumers would be better served by a market-based telecommunications policy as opposed to a policy characterized by government meddling, an asymmetrical regulatory environment, and foreign ownership restrictions. More specifically, we have made the case that policies forcing the former monopolies to share their networks with their competitors at regulated rates are counter-productive and are likely to lead to underinvestment in network infrastructure.

Our underlying contention is that facilities-based competition—a market structure in which entrants compete by building their own infrastructure—should be a key pillar of intelligent telecommunications policy. But why is facilities-based competition so important? In short, because innovation thrives in environments characterized by facilities-based rivalry. In this chapter, we argue that the CRTC should adopt a policy that recognizes the importance of facilities-based competition, particularly in Canada's broadband market, where private investment is critical to digital adoption and technological innovation.

#### Facilities-Based Competition vs. Service-Based Competition

Facilities-based competition is competition between providers of the same or similar services, each using its own network. Concretely, this entails the existence of several wireline (fibre and/or cable) networks, or the existence of several wireless networks, operating concurrently in a given geographic area.

The opposite of facilities-based competition is service-based competition. This is a market structure characterized by many competitors using the same network to offer services that are only differentiated to some extent by price, branding, and marketing strategies. Such a market structure generally predominates when a single vertically integrated telecommunications carrier owns the infrastructure, and providing regulated access to such infrastructure is seen as necessary to ensure that consumers have access to more than one service provider.

Service-based competition was prevalent in the early 1990s in the telephony market, when governments deregulated the telecommunications industry and allowed new competitors to compete with the former regional monopolies,<sup>34</sup> starting with the provision of long distance telephony. As a result of this deregulation, the former monopolies were required to lease their facilities to these new competitors at regulated rates.

The regulatory terminology for such policies is “mandatory wholesale access,” and they are not unique to Canada. They have been used as a telecommunications regulatory policy tool across the industrialized world and have been widely considered necessary in allowing for a transition from monopoly to competition.

“The CRTC should adopt a policy that recognizes the importance of facilities-based competition, particularly in Canada's broadband market, where private investment is critical to digital adoption and technological innovation.”

Service-based competition can also exist—or coexist with facilities-based competition—when regulation favours the existence of resellers of Internet services, or virtual providers of wireless services. These small players have little or no infrastructure of their own but resell services offered by existing networks, of which there may be one or several (see Figure 4-1).

Part of the rationale for such policies favouring service-based competition is that network infrastructure is too costly to replicate, at least initially when the market has just been opened to competition. Some analysts also claim that multiple networks are inefficient and a waste of capital.<sup>35</sup>

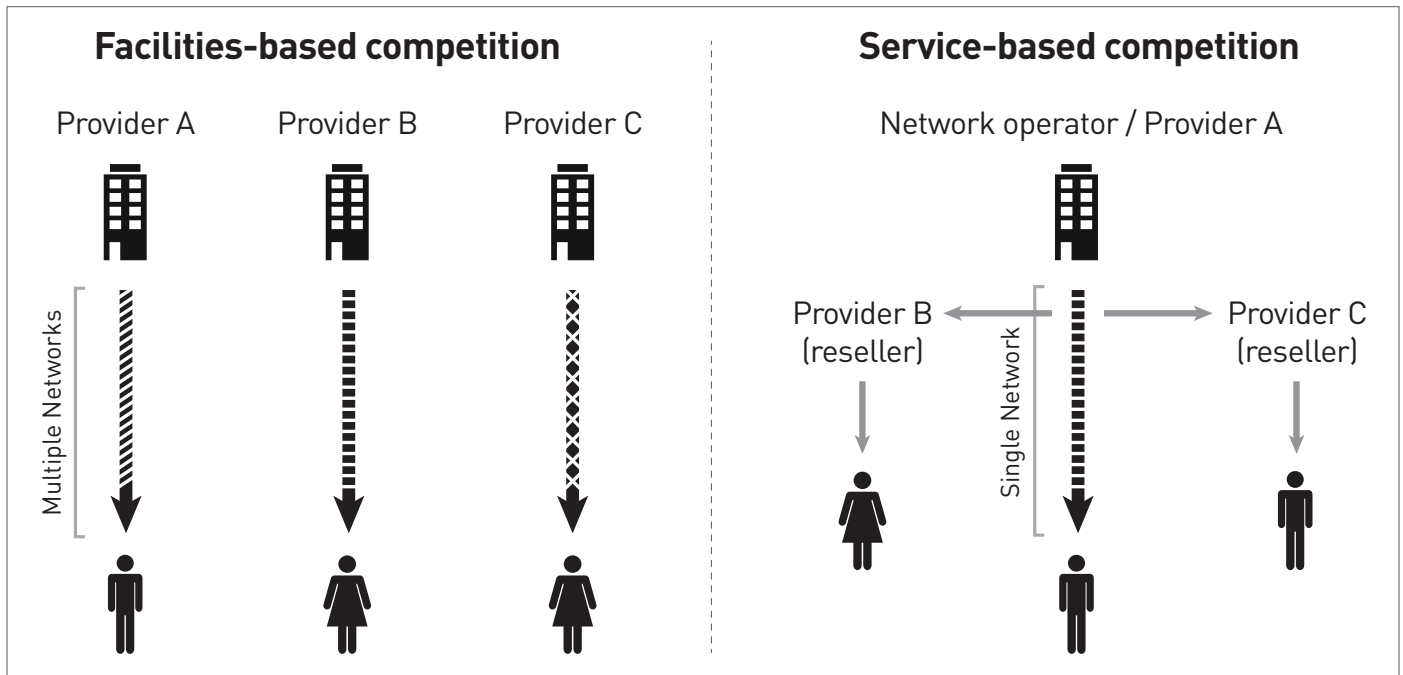
Certain jurisdictions that require vertically integrated telecommunications carriers to share their infrastructure with competitors on a wholesale basis have imposed some form of “functional separation” between their network and retail divisions in order to prevent them from favouring their own retail operations at the expense of

34. In Canada, the former regional monopolies were Bell in Ontario and Quebec, Telus in British Columbia and Alberta, SaskTel in Saskatchewan, MTS in Manitoba, and Aliant in the Atlantic region.

35. Gary Kim, “Structural Separation or Facilities-Based Competition?” *IP Carrier*, October 9, 2015.

Figure 4-1

**Facilities-based competition vs. service-based competition**



**Note:** In countries like Canada with hybrid models, there is facilities-based competition because of the existence of several providers (each with its own infrastructure), but there is also a mandatory network access regime for resellers of broadband services.

their competitors' retail operations.<sup>36</sup> The functional separation model has typically been adopted in jurisdictions where consumers do not have a choice between competing providers that each have their own infrastructure.

**"Is facilities-based competition between the telcos and cable companies sufficient, or must it be supplemented with additional service-based competitors that rely on regulated access to those facilities?"**

Functional separation, however, is not without its shortcomings. In a 2009 study of five countries, economists Robert Crandall, Jeffrey Eisenach, and Robert Litan found that functional separation in the telecommunications sector "risks creating substantial problems for innovation and investment, especially when major new

infrastructure investments are involved."<sup>37</sup> Furthermore, they found that functional separation had not had any positive effects on the growth of broadband penetration, nor on network investment or fibre deployment. In fact, they found that the growth of broadband penetration in those countries had slowed, and that infrastructure investments had been deterred.<sup>38</sup> As one of us noted in a previous study, functional separation is a cure that is often worse than the disease.<sup>39</sup>

Functional separation is an extreme remedy, and has never been seriously considered in Canada due to the presence of competing providers, each with its own infrastructure. Indeed, cable companies have been offering a facilities-based alternative to incumbent telecommunications providers since the early 2000s.<sup>40</sup> Yet the question remains as to whether or not, in addition to the existing competition between incumbent carriers and cable companies, there is a need for additional

36. Robert W. Crandall, Jeffrey A. Eisenach, and Robert E. Litan, "Vertical Separation of Telecommunications Networks: Evidence from Five Countries," *Federal Communications Law Journal*, Vol. 62, No. 3, June 2010, p. 495.

37. *Ibid.*, p. 509.

38. *Ibid.*, pp. 518-522.

39. Martin Masse, "Telecommunications: functional separation, a cure worse than the disease," *Economic Note*, Institut économique Molinari, Paris, June 2008.

40. Cable companies upgraded their networks in the early 2000s, which allowed them to offer not only television, but also telephony and Internet services to their customers.

competitors at the retail level. In other words, is facilities-based competition between the telcos and cable companies sufficient, or must it be supplemented with additional service-based competitors that rely on regulated access to those facilities?

The CRTC's position is that this additional competition is indeed necessary. Despite the intense rivalry that exists between telcos and cable companies, the CRTC has maintained a 1990s-era wholesale access regime over the years, which forces telephone companies and cable companies to provide small Internet service providers (ISPs) with access to their networks at regulated rates. This regime is not as draconian as a functional separation regime, but its objective is the same: to increase competition for Internet services at the retail level. Although a mandated wholesale access regime provides Canadians with a greater selection of broadband providers, the additional competition that it creates is artificial: Small ISPs are essentially regulatory creatures that operate without making any significant infrastructure investments of their own.

**“By allowing small ISPs to use existing networks at below-market prices, the CRTC has dampened the incentives of telcos and cable companies to make significant infrastructure investments.”**

The differences in terms of investment levels are staggering. According to the CRTC's latest *Communications Monitoring Report*, resellers (including independent ISPs) have only averaged approximately \$80 million per year in capital investment from 2010 to 2014, whereas the facilities-based carriers (telcos, wireless providers, and cable companies) have invested on average \$10.2 billion per year in network infrastructure, or about 130 times more<sup>41</sup> (see Figure 4-2).

By allowing small ISPs to use existing networks at below-market prices, the CRTC has not only dampened the incentives of telcos and cable companies to make significant infrastructure investments, particularly in rural and remote areas; it has also reduced these small ISPs' in-

centives to invest in their own competing networks.<sup>42</sup> Furthermore, unlike facilities-based operators, small ISPs do not have to bear the costs of obsolescence or of improving existing networks.<sup>43</sup>

Last July, the CRTC reiterated its support for a mandatory wholesale regime by not only maintaining the existing regulations, but also expanding them.<sup>44</sup> It mandated that telcos allow small ISPs to access their highest-speed fibre broadband services, also known as fibre-to-the-premises (FTTP) facilities.<sup>45</sup> These new facilities, which have been rolled out by telcos in recent years, are replacing copper technology with optical fibre that runs directly to the homes and businesses of customers. The higher bandwidth of FTTP networks facilitates the transmission of video, voice, and Internet services.

The CRTC's decision was particularly surprising, as FTTP facilities are still in the process of being built, and a decision to mandate the sharing of these facilities could significantly reduce the amount of capital invested in their deployment.

FTTP facilities, unlike older networks, do not rely on telcos' legacy copper networks, which were built during the years when they were monopolies benefiting from guaranteed rate-of-return regulation. Although there may have been a case for mandating access to the telcos' monopoly networks in order to correct the errors of the past, there is no convincing case for mandating access to new fibre networks, as incumbents do not have any inherent competitive advantage in deploying them vis-à-vis other market participants.

The CRTC's FTTP decision raises the question: At a time when demand for bandwidth grows by the day, and when everything is connected to the Internet, is the CRTC right to prioritize retail competition over investment in ultra-fast broadband networks?

41. CRTC, *Communications Monitoring Report 2015*, Table 5.0.4: Telecommunications investments made in plant and equipment, by type of provider of telecommunications service, October 2015, p. 155. The report does not provide precise numbers for resellers because many are too small to be required to provide investment data. The table simply records them as \$0.0 billion, although the subtotal numbers imply that they contributed about \$0.1 billion, or \$100 million, annually from 2010 to 2013, and less than \$50 million in 2014.

42. For a discussion of how service-based competition can deter facilities-based competition, see Bourreau and Dogan, "Service-based vs. facility-based competition in local access networks," *Information Economics and Policy*, Vol. 16, No. 2, June 2004, pp. 287-306.

43. See Martin Masse and Paul Beaudry, "Chapter 3 – Mandatory Sharing of Broadband Networks: Fostering or Hindering Innovation?" in *The State of Competition in Canada's Telecommunications Industry – 2015*, Research Paper, MEI, May 2015.

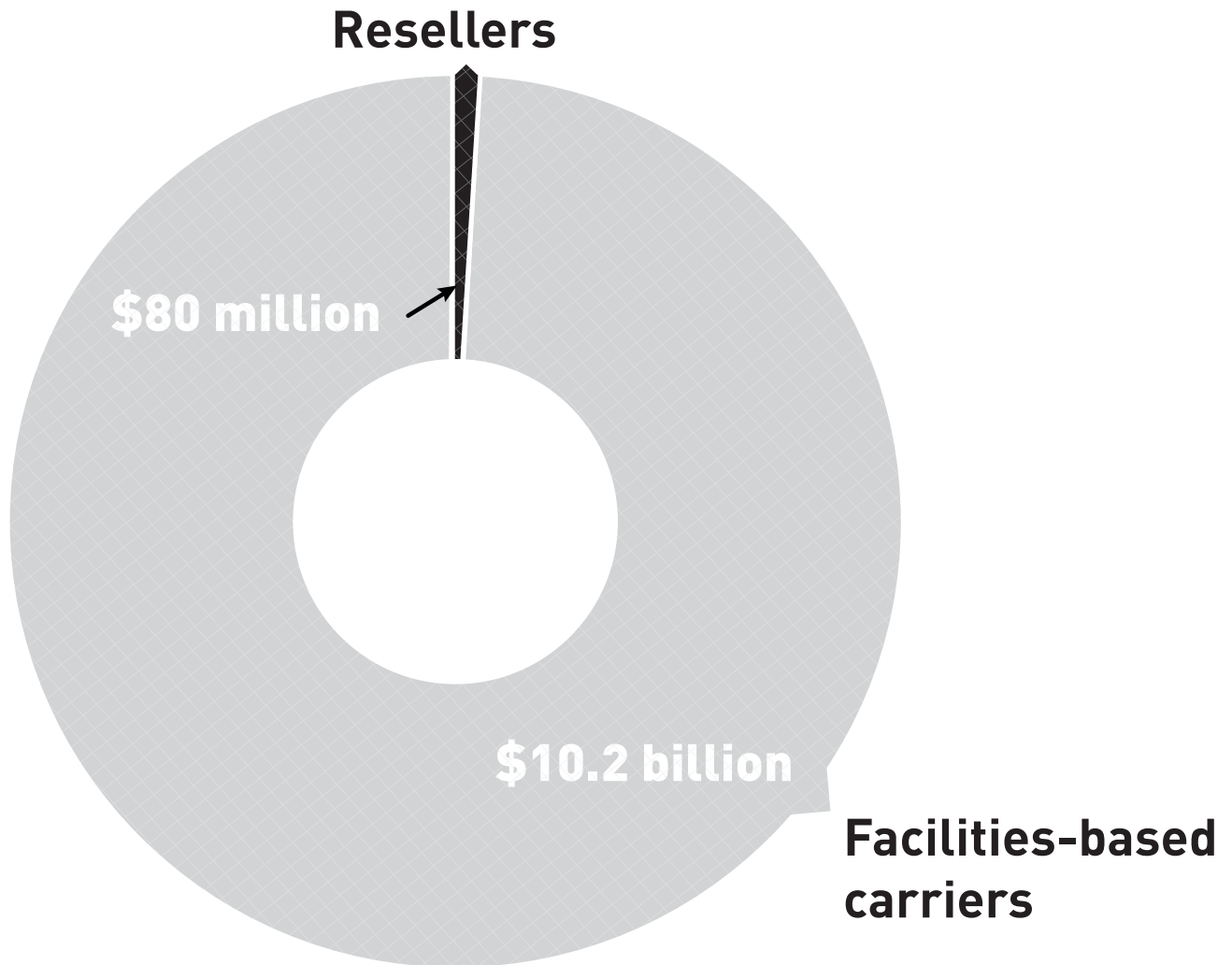
44. CRTC, *Telecom Regulatory Policy CRTC 2015-326: Review of wholesale wireline services and associated policies*, July 22, 2015.

45. Rules mandating the sharing of next generation cable networks were already in place.



Figure 4-2

**Telecommunications investments made in plant and equipment, annual average, 2010-2014**



Source: See footnote 41.

**From the Internet of Things to the Internet of Everything**

A lot has been said and written about the “Internet of Things,” the trendy buzzword used to describe machine-to-machine connectivity (M2M). Simply put, this term refers to the wide variety of physical objects—from cell phones, watches, and pacemakers to refrigerators, washing machines, and power plants—that are connected to the Internet, thus allowing them to collect and exchange data.

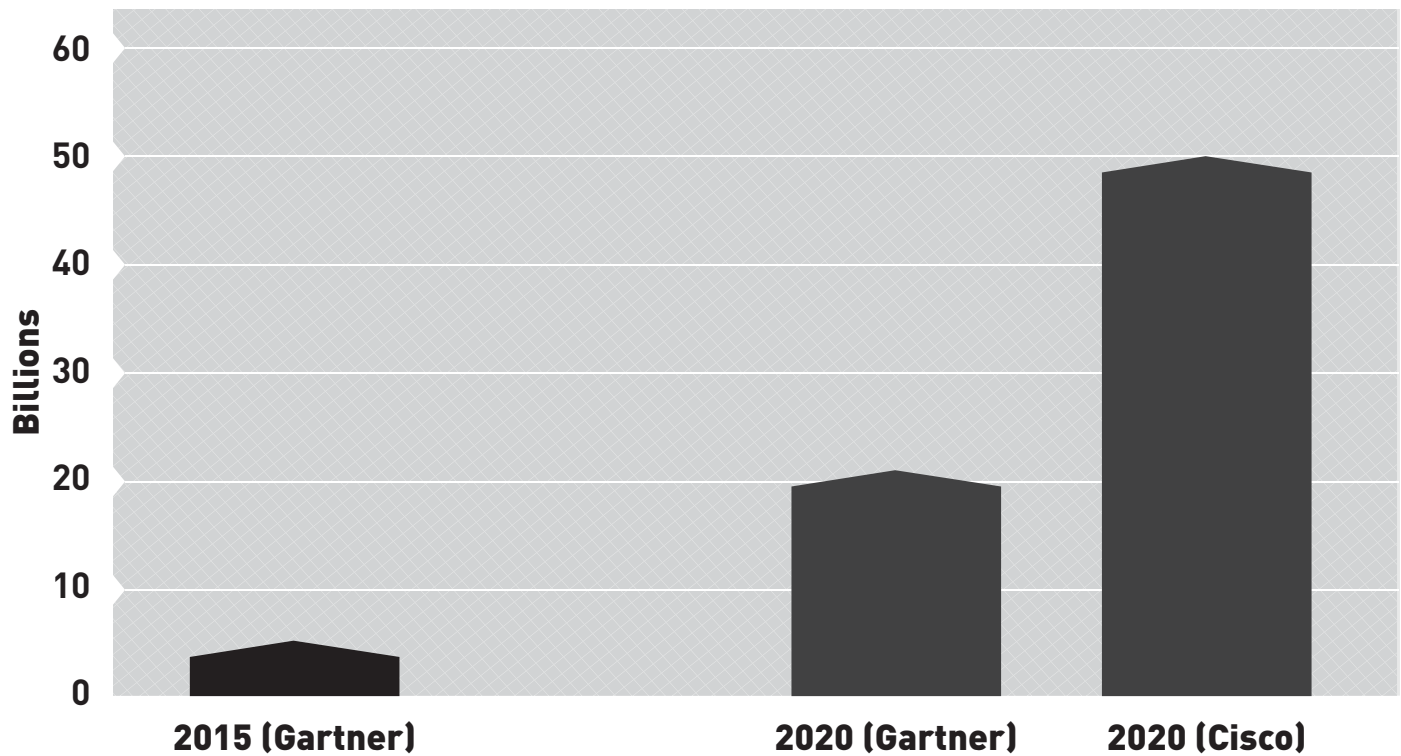
Gartner Inc., a technology research firm, predicts that 6.4 billion connected things will be in use worldwide in 2016, up 30% from 2015. It further estimates that this

“There is no convincing case for mandating access to new fibre networks, as incumbents do not have any inherent competitive advantage in deploying them vis-à-vis other market participants.”



Figure 4-3

**Number of devices connected to the Internet, 2015 and 2020 (forecast)**



**Sources:** Gartner, "Gartner Says 6.4 Billion Connected 'Things' Will Be in Use in 2016, Up 30 Percent From 2015," Press release, November 10, 2015; Cisco, Internet of Things (IoT), What Is the IoT?

number will reach 20.8 billion by 2020.<sup>46</sup> This is a conservative estimate—technology giant Cisco puts the figure at 50 billion.<sup>47</sup> Mobile Future, a U.S. industry association, estimates that in the future, 99% of everything we make will connect to the Internet.<sup>48</sup>

The Internet of Things will bring about significant benefits for individuals and businesses alike. However, it will also have a considerable impact on network infrastructure. Indeed, the increasing demand for bandwidth, combined with the growing number of devices connected to the Internet, implies an immense data throughput on broadband networks. A Cisco white paper indicates that global mobile data traffic grew by a staggering 74% in 2015 alone, and predicts an eightfold increase by 2020.<sup>49</sup>

The Internet of Things has been able to flourish thanks to a variety of factors, including the proliferation of broadband Internet, a reduction in the cost of connecting devices to the Internet and of technology in general, and the creation of an increasing number of devices with Wi-Fi capabilities.

**"Mobile Future, a U.S. industry association, estimates that in the future, 99% of everything we make will connect to the Internet."**

This new reality has policy implications. In order to satisfy consumers' insatiable appetite for bandwidth, network operators will need to invest billions of dollars in new infrastructure in the coming years. As the Internet of Things grows, mobile network operators will be required to support more data than ever before.

46. Gartner, "Gartner Says 6.4 Billion Connected 'Things' Will Be in Use in 2016, Up 30 Percent From 2015," Press release, November 10, 2015.

47. Cisco, Internet of Things (IoT), What Is the IoT?

48. Mobile Future, Let's Talk Connected Devices Infographic, October 11, 2013.

49. Cisco, *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2015–2020*, February 3, 2016, pp. 4-5.

## The Need for an Innovation-Driven Competition Policy

Canada's new federal government has put innovation at the top of its policy agenda. It has even renamed Industry Canada—the department responsible for developing telecommunications policy and legislation—"Innovation, Science and Economic Development Canada." Although symbolic, this name change sends a signal to telecommunications policy makers: A regulatory framework that prioritizes innovation-driven competition is the order of the day.

The telecommunications sector feeds on innovation. It is unrecognizable from what it was two decades ago, thanks to innovation-driven technology. Traditional copper-wire technology has been replaced, to a large extent, by wireless and Internet telephony. Telecommunications devices have evolved from simple wireline to complex wireless devices that can convey voice, text, and data anywhere in the world. Consider some of the devices or services that are no longer an absolute necessity thanks to the existence of smartphones: home phones, cameras, calculators, faxes, radios, and televisions, to name just a few.

But what does embracing innovation entail, from a policy perspective? To embrace innovation, the federal government and the CRTC should promote true facilities-based competition instead of service-based competition. In a facilities-based market structure, competitors do not compete based solely on their product offerings and pricing, but are also constantly looking for ways to improve their networks and distinguish them from their competitors' networks. This is crucially important, especially at a time when the quality of broadband networks has a direct impact on the competitiveness of Canada's economy.

Interventionist policies aimed at helping smaller players gain market share can have harmful effects on innovation and weaken incentives to invest in and deploy new infrastructure. One only has to look at Europe, where two decades of network sharing regulations and an obsession with price competition has led to a decline in mobile revenues and underinvestment in network infrastructure. Although the European regulator has now recognized the negative impact of these regulations on the

health of Europe's broadband infrastructure,<sup>50</sup> the CRTC appears to have ignored this lesson in its recent FTTP decision.<sup>51</sup>

Considering the massive costs involved in deploying next-generation fibre networks, it is inevitable that telcos and cable companies—not independent ISPs—will bear the brunt of the cost of developing these networks. Hence, it is crucial to have a regulatory environment that will provide them with sufficient incentives to deploy ultra high-speed networks in both urban and rural areas. As demand for bandwidth grows by the day, what Canadians need is more broadband investment to ensure that the country does not fall behind other jurisdictions, not more broadband resellers.

**"To embrace innovation, the federal government and the CRTC should promote true facilities-based competition instead of service-based competition."**

Facilities-based competition has served Canadians well, allowing them to benefit from world-class telecommunications services. Canadians are some of the biggest users of telecommunications services in the world: 99% of Canadians have access to high-speed Internet,<sup>52</sup> 96% of Canadians can subscribe to download speeds of 5 Mbps,<sup>53</sup> and two-thirds of Canadians now have smartphones.<sup>54</sup> A telecommunications policy that places facilities-based competition at the centre of Canada's innovation policy will guarantee that Canadians continue to benefit from one of the most advanced broadband networks in the world, and maintain their competitive advantage on the world stage.

50. Andrea Renda, "How the CRTC is endangering better broadband for Canadians," *Financial Post*, February 23, 2016.

51. In October of last year, Bell Canada announced that it would appeal the CRTC's decision on mandatory access to FTTP; see Bell Canada, *Petition to the Governor in Council to Vary Telecom Regulatory Policy CRTC 2015-326: Review of wholesale wireline services and associated policies*, October 20, 2015. In light of this petition, the federal government should consider modifying the CRTC's decision, and seize the opportunity to remind the regulator that infrastructure deployment is key to Canada's long-term economic prosperity and should be encouraged, rather than deterred. It should also remind the regulator of the 2006 Policy Direction, which required that mandated wholesale access regimes be reviewed "with a view to increasing incentives for innovation and investment in and construction of competing telecommunications network facilities." See Government of Canada, *Order Issuing a Direction to the CRTC on Implementing the Canadian Telecommunications Policy Objectives*, Direction 1, (c), (ii), December 14, 2006.

52. CRTC, *op. cit.*, footnote 41, p. 202.

53. *Ibid.*, p. 187.

54. *Ibid.*, p. 231.

## CONCLUSION

### The Expensive Promotion of Artificial Competition

Year after year, Canadians continue to enjoy one of the most advanced telecommunications networks on the planet. While wireless prices tend to be higher than in Europe, they are also lower than in the United States and Japan. This partly explains why Canadians are among the biggest consumers of telecommunications services in the world.

With the acquisition of WIND Mobile by Shaw Communications in December 2015, Canada now has a fourth wireless player in each province. Although some may see this state of affairs as a vindication of the previous federal government's numerous interventions in the wireless market over the last decade, it must not be forgotten that these interventions came at a high cost.

**"The government and the CRTC should not repeat the mistakes of recent years by intervening in the broadband sector as they have in the wireless sector."**

The government's spectrum auction set-asides and caps, as well as its mandatory roaming and tower sharing rules, have prevented efficient competition and hindered investment in the state-of-the-art wireless networks and services that consumers are demanding. The biggest beneficiaries of such policies have been new entrants, many of which arbitrated their government-subsidized spectrum to secure a windfall. As for consumers, it is unlikely that they will benefit much from the federal government's policies in the long term, considering that WIND's prices are expected to rise as a result of the significant investments that will be needed to upgrade its network to LTE.

At any rate, now that Canada has well-established fourth wireless players across the country, the new federal government should seize this opportunity to remove the proverbial training wheels on new entrants and revert back to the traditional, pre-2008 practice of holding open (i.e., non-preferential) spectrum auctions. As the current federal government embraces a policy agenda focused on innovation, now is the time to return to a re-

gime of light-handed regulation, which will help create an environment conducive to innovation and investment in the technologies of tomorrow.

Above all, the government and the CRTC should not repeat the mistakes of recent years by intervening in the broadband sector as they have in the wireless sector. Almost all of Canada's population already has access to download speeds of 5 Mbps, with more than three quarters of households subscribing to such broadband services. Any CRTC attempt to declare broadband an "essential service" and to regulate and subsidize it would be a solution in search of a problem, as broadband is well on its way to becoming ubiquitous simply through the normal course of technology adoption. Canada already has dynamic and competitive markets in telecommunications, and there is no need for costly and counterproductive policies that merely promote artificial competition.







# ABOUT THE AUTHORS



## **MARTIN MASSE**

Martin Masse is the Senior Writer and Editor at the Montreal Economic Institute, a post he has held since 2011. Previously, he had been the MEI's Director of Research and Publications from 2000 to 2007. He also served as political advisor to Canadian Industry Minister Maxime Bernier, in particular on issues relating to the Canadian telecom industry. Martin Masse is a graduate of McGill University in Political Science and East Asian Studies. He is the author of a book on Quebec politics and of numerous articles appearing in various publications over the past two decades on economic, political and philosophical issues.



## **PAUL BEAUDRY**

Paul Beaudry is the Director of Development at the University of Calgary's School of Public Policy and a research associate at the Montreal Economic Institute. Prior to joining the School of Public Policy, he practised competition law for five years in the Ottawa office of Stikeman Elliott LLP. Paul is a former senior policy adviser to the federal Minister of Industry. As such, he contributed to two landmark government decisions that modernized the telecommunications regulatory framework and accelerated the deregulation of local telephony. Mr. Beaudry holds a law degree from the University of Montreal.





Montreal Economic Institute

910 Peel Street, Suite 600, Montreal QC H3C 2H8  
T 514.273.0969 F 514.273.2581 [iedm.org](http://iedm.org)

ISBN 978-2-922687-65-1