



Canadian Radio-television and
Telecommunications Commission

Conseil de la radiodiffusion et des
télécommunications canadiennes

Navigating Convergence II:

Charting Canadian Communications Change and Regulatory Implications
2011



www.crtc.gc.ca

Canada 

Table of contents

Table of acronyms.....3

Executive summary.....5

1. Introduction.....7

2. Networks..... 10

 2.1 Network evolution.....10

 2.1.1 Broadband networks.....10

 2.1.2 Growth of wireless.....13

 2.1.3 Wireless substitution.....18

 2.2 Traffic growth.....21

 2.2.1 Spectrum.....26

 2.3 Competition.....26

 2.4 Availability of broadband Internet.....29

 2.5 Regulatory considerations.....31

3. Canadian reflection..... 34

 3.1 Technology evolution.....35

 3.2 Consumption.....36

 3.2.1 TV broadcasting.....36

 3.2.2 Internet usage.....38

 3.2.3 Internet video/OTT TV.....38

 3.2.4 TV anytime, anywhere.....43

 3.2.5 PVR and VOD.....43

 3.2.6 Internet radio.....46

 3.3 Advertising and subscriptions.....47

 3.3.1 TV advertising.....48

 3.3.2 Internet advertising.....49

 3.3.3 Internet and mobile television advertising.....51

 3.3.4 BDUs.....53

 3.4 Evolution of program rights.....56

 3.5 Growing multimedia production.....57

 3.6 Regulatory considerations.....58

4. Consumer choices and voices..... 63

 4.1 Service complexity and informed choices.....63

 4.2 Service pricing.....64

 4.3 Digital locks/wireless and content ecosystems.....66

 4.4 Contracts.....67

 4.5 Cloud computing services.....68

 4.6 Accessibility in the digital environment.....70

 4.7 Regulatory considerations.....70

5. Conclusions..... 73

List of figures

Figure 1 Percentage of Canadian household Internet subscriptions by speed 2005-2010.... 11

Figure 2 Projected average global residential download speed (Mbps) 2009-2014 12

Figure 3 Projected average mobile network connection speed (Kbps) 2009-2015..... 12

Figure 4 Projected mobile phone subscribers and penetration in Canada 2008-2014 13

Figure 5 Canadian telecommunications revenues by market sector 2005-2010..... 14

Figure 6 Projected smartphone penetration 2009- 2014 15

Figure 7 Cellphone activities of Canadian cellphone owners 18+ 16

Figure 8 Projected mobile Internet subscriptions in Canada 2006-2015..... 17

Figure 9 Canadian wireless revenues and annual revenue growth 2005-2010 18

Figure 10 Wireless-only households..... 19

Figure 11 Reasons for having a landline telephone (global) 20

Figure 12 Canadian consumer Internet traffic projection (PB) by application 22

Figure 13 Normalized aggregate North American Internet traffic profile by the top 5 applications (peak period, fixed access) 23

Figure 14 Canadian Internet traffic projection (PB) 2009-2014 25

Figure 15 Select Canadian communications companies' revenue composition 2009 28

Figure 16 Broadband subscription penetration for Canadians 18+ by community size, fall 2010 30

Figure 17 Broadband subscription penetration for Canadians 18+ by household income, fall 2010 30

Figure 18 Weekly per capita hours of TV viewing, English Canada, all persons 2+, 1998-1999 to 2009-2010 36

Figure 19 TV viewing platform usage, Canadians 18+, 2008 - 2010..... 37

Figure 20 Percentage of Canadians 18+ watching videos online, 2005 - 2010 39

Figure 21 Internet video versus Internet TV viewing growth, Canadians 18+, 2007-2010.... 41

Figure 22 Internet TV viewing demographics, Canadians 18+, 2010..... 41

Figure 23 Total hours spent by Canadians watching TV programming – Total Canadians versus Internet TV Viewers by linguistic profile 42

Figure 25 Forecast VOD and PPV revenues (US\$ millions) 44

Figure 24 PVR Penetration, 2004-2010..... 44

Figure 26 Percentage of Canadians 18+ who have watched VOD in the past month, 2005 - 2010 45

Figure 27 TV advertising revenue projection, 2006-2015 (\$US millions) 49

Figure 28 Advertising revenue forecast, 2009-2014 (\$US millions) 50

Figure 29 Canadian Internet advertising revenue projection 2005-2014 (US\$ millions) 51

Figure 30 Projected TV advertising revenues including Internet and mobile, 2006-2015 52

Figure 31 TV service reception by type, Canadians 18+, spring 2011 54

Figure 32 Price indices – telephone price index (TPI), BDU (cable and satellite), including pay television, Internet access, and CPI..... 65

List of tables

Table 1 Subscription TV households forecast (millions), 2009-2014 54

Table of acronyms

2G	2nd generation mobile telecommunications
3G	3rd generation mobile telecommunications
AAS	average active sessions
ADSL	asymmetric digital subscriber line
AMP	administrative monetary penalty
BBM	Bureau of Broadcasting Measurements
BDU	broadcasting distribution undertaking
CAGR	compound annual growth rate
CBC	Canadian Broadcasting Corporation
CCTS	Commissioner for Complaints for Telecommunications Services
CDC	Centers for Disease Control
CDMA	code division multiple access
CFTPA	Canadian Film and TV Production Association
CMPA	Canadian Media Production Association
CMF	Canadian Media Fund
CPI	consumer price index
CPM	cost per thousand impressions
CRTC	Canadian Radio-television and Telecommunications Commission
CTF	Canadian Television Fund
DOCSIS	data-over-cable service interface specification
DSL	digital subscriber line
DTH	direct-to-home
DTV	digital television
DVD	digital video disc
EB	exabyte
FTTB	fibre-to-the-building
FTTH	fibre-to-the-home
FTTx	fibre-to-the-building/curb/home/node/premises
GB	gigabyte
GPS	Global Positioning System
GSM	Global System for Mobile Communications
HD	high definition
HSPA	high-speed packet access
HSPA+	evolved high-speed packet access
IAB	Internet Advertising Bureau
IDC	International Data Corporation
IPF	Independent Production Fund
IP	Internet protocol
IPTV	Internet protocol television

ISP	Internet service provider
Kbps	kilobit per second
LTE	(wireless) Long Term Evolution
Mbps	megabit per second
MB	megabyte
MHz	megahertz
MP3	MPEG-1 or MPEG-2 Audio Layer III
MTM	Media Technology Monitor
OECD	Organisation for Economic Co-operation and Development
OTA	over-the-air
OTT	over-the-top
P2P	peer-to-peer
PB	petabyte
PC	personal computer
PPV	pay-per-view
PVR	personal video recorder
SRC	Société Radio-Canada
TB	terabyte
TDMA	time division multiple access
TPI	telephone price index
TSP	telecommunications service provider
TV	television
TVB	Television Bureau of Canada
US	United States
VDSL	very high speed DSL
VOD	video-on-demand
VoIP	voice over Internet protocol
WSP	wireless service provider
xDSL	all types of digital subscriber line

Executive summary

Telecommunications and broadcasting are rapidly converging into a single world of communications that offers innovative services to consumers, delivers these services in new ways and disrupts current business models. Consumers expect to access the services or content they want at anytime, anywhere, using whichever device they choose.

In this new digital world, regulators will be faced with challenges, particularly as they pertain to maintaining the currency and flexibility of existing laws. In order to understand where regulations may become ineffective or result in unintended consequences, it is critical to examine the trends that drive convergence, alter business models, and change consumer behaviours—particularly those related to media consumption—and any other issues that concern consumers. The Canadian Radio-television and Telecommunications Commission has heard from a variety of stakeholders about the opportunities and challenges arising from these changes.

In February 2010, the Commission released *Navigating Convergence: Charting Canadian Communications Change and Regulatory Implications*, an analysis of many of the trends, opportunities and challenges that faced the industry at that time. Since the document was published, many of the trends it identified have not only continued, but also accelerated. This year's report describes an environment characterized by greater-than-anticipated consumption of content from Internet sources, further consolidation within the communications industry, substitutability of services, a proliferation of communications devices, and network traffic growth for both fixed and wireless networks. In such a rapidly evolving landscape, regulators and stakeholders must ask themselves what action should be taken, when and by whom.

A key component of the Commission's ongoing research and dialogue with stakeholders, *Navigating Convergence II: Charting Canadian Communications Change and Regulatory Implications*, continues the analysis of the key trends identified in the 2010 report, and identifies new challenges and opportunities inherent in the current regulatory framework. It focuses on the evolution of wired and wireless networks, media-consumption trends and consumer-related issues.

As the digital economy becomes more sophisticated, policy, legislation and regulation must adapt. Areas that can be further deregulated—or in which new approaches may be required—are critically important to address. These areas include:

- ensuring fair and non-discriminatory access to networks
- increasing spectrum resources to meet Canadian demands
- creating new regulatory approaches to support innovation, access to affordable services and the creation and promotion of high-quality Canadian content, and
- addressing consumer concerns.

The changes occurring in the communications landscape are evolving and the long-term implications are uncertain. It is premature to suggest that any specific approaches can or should be employed to address the specific challenges described in this report. Additionally, new approaches to achieving policy objectives may fall outside of the scope of the current legislative framework.

It is an opportune time for reflection and discussion on how the benefits of an innovative digital economy may be fully realized.

1. Introduction

A number of technological advancements underpin the social and economic changes leading to convergence: the digitization of communications, information and audio-visual content; growth in broadband speeds, capacity and penetration; and the development of new network infrastructure such as fibre-based networks and mobile broadband. Convergence is transforming the communications landscape and blurring the boundaries between previously distinct spheres.

These changes challenge the present regulatory framework for broadcasting and telecommunications. A sector-specific regulatory approach in an increasingly converged business environment, for example, may reduce regulatory effectiveness and render approaches for achieving policy objectives ineffective.

In recent years, several countries have launched national digital strategies to establish goals and priorities. Notable among these are France Numérique 2012, Digital Britain, Australia's Digital Economy, the US National Broadband Plan, and the European Commission's Digital Agenda for Europe. In 2010, Canada initiated a public consultation to develop its own digital economy strategy.

These strategies consider the major challenges of information- and communications-technology adoption, fragmented content markets, network investment, digital literacy, piracy, cybercrime, privacy, network and device interoperability, and socio-economic and geographic barriers to services. New approaches are being developed to ensure the public interest is served, particularly as traditional policy tools become less effective and less enforceable.

Australia and the United Kingdom (UK), in particular, are reviewing their legislative and regulatory frameworks for digital communications. The Australian government acknowledged that long-standing approaches to communications are no longer sufficiently responsive to convergence. It is seeking to establish an appropriate policy framework for a converged environment that takes into consideration competitive communications and media markets, Australian and foreign content, reflection of community standards, transparency, choice and access for consumers, as well as spectrum allocation processes.

The UK is undertaking a similar review to assess the appropriateness of its current regulatory framework. The review seeks to determine how to approach deregulation and maximize the communications industry's contribution to economic growth. While new legislation is expected to emerge from this review, the UK government has signaled its willingness to take action sooner where legislation is not required.

Since *Navigating Convergence: Charting Canadian Communications Change and Regulatory Implications* was published in February 2010, the Canadian

communications industry has changed significantly. Two major transactions—Shaw Communications’ acquisition of Canwest Global Communications and BCE’s acquisition of CTVglobemedia—in particular have created large, vertically integrated companies that effectively combine programming, distribution and Internet services.

In addition, compelling Internet-based broadcasting services are now available to Canadians. Consumers will increasingly take advantage of new capabilities and platforms to access content and services, making it even more critical to understand the dynamics of convergence.

This document, *Navigating Convergence II: Charting Canadian Communications Change and Regulatory Implications*, identifies significant trends in network developments and content consumption that could disrupt traditional regulatory approaches to achieving policy objectives. Further, it examines developments in technology and business models that raise important considerations for consumers.

In March 2011, a broad range of stakeholders in the communications sector explored the challenges arising from the converged communications environment at the CRTC Forum.¹ The opinions expressed by stakeholders at this forum, during Commission proceedings and at other venues such industry conferences, have helped shape this report’s perspective on the potential regulatory implications of the trends.²

The report is divided into three main sections:

- The first section examines the evolution of networks, including both fixed and mobile.
- The second section considers the impact of convergence on consumer behaviours and the associated challenges with the creation of Canadian content.

¹ A description of the CRTC Forum, including agenda, opening remarks, background documents, and attendees, is available at <http://www.crtc.gc.ca/eng/pol/pdr-epr4.htm>. Participants in the CRTC Forum included representatives from: public interest and consumer groups; small, large, public and private independent and vertically integrated broadcasters; small and large Internet service providers; new media broadcasting undertakings; broadcasting distribution undertakings; telephone and wireless companies; creator groups; government; academia; foreign regulators; financial institutions; and others. It is worthwhile to note that forum participants made several contributions with respect to improving the Commission’s effectiveness in dealing with forward-looking considerations. They noted that the Commission would benefit from a more strategic approach to the many and varied policy proceedings it undertakes. Further, participants noted that the Commission would benefit from further qualitative and quantitative research to understand the dynamics at play in the communications industry.

² These perspectives have been aggregated to prevent attribution to any particular participant or group of participants.

- The final section outlines challenges and opportunities faced by consumers in this rapidly changing and increasingly complex world of convergence.

2. Networks

2.1 Network evolution

Communications networks have undergone dramatic transformations in recent years. Where each previously had its own single purpose, today they perform many functions using similar technologies.

In the telecommunications sector, there has been an evolution from public circuit-switched telephone networks to fibre-based transport and Internet Protocol (IP) networks. On the broadcasting side, what were once purely broadcasting distribution networks have evolved to incorporate IP architectures that are capable of delivering a wide array of services, including video, voice and Internet.

These transformations have arisen as a result of the shift toward sophisticated infrastructure that enables the efficient use and sharing of the resources that are needed to deliver high-quality consumer experiences. The incorporation of greater intelligence within the networks has also given rise to the emergence of services that make use of cloud computing platforms.³

New and sometimes complementary networks that use both wireless and satellite technologies have also been built. These new networks have been deployed to deliver voice, video and Internet services to Canadians in communities where there were fewer options for upgrading the existing terrestrial networks.

Today, Canadian consumers and businesses use these more powerful networks to access increasingly robust and innovative services. The competitive impetus to use the Internet to provide services, coupled with consumer demand, has led to an expectation that these networks will offer increasingly higher transmission speeds. For network operators, this involves bringing fibre-optic cables closer to customers, deploying greater-capacity satellites and adopting the latest wireless network standards.

2.1.1 *Broadband networks*

In major Canadian centres, telecommunications service providers (TSPs) are deploying fibre-to-the-home (FTTH) in many new urban and suburban housing

³ Cloud computing is generally considered to be on-demand, distributed computing. It involves the provision of Web-based services that enable individuals and businesses to use software and hardware managed by third parties. The cloud computing model provides access to information and computer resources from anywhere a broadband network connection is available. It provides a shared pool of resources, including data storage space, networks, computer processing power and specialized applications.

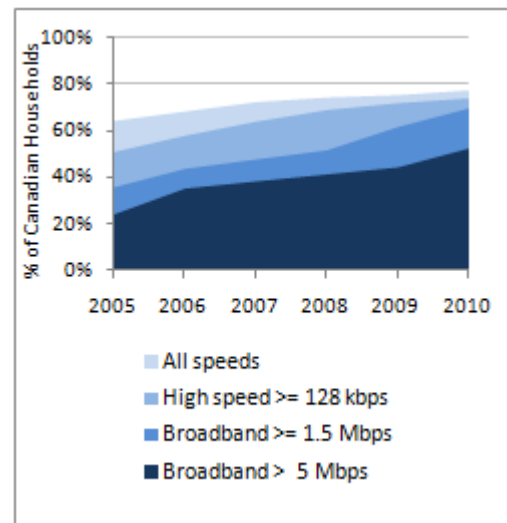
developments, while fibre-to-the-building (FTTB) is being deployed to multi-dwelling units. Even in those urban communities that are served by aerial infrastructure, TSPs are starting to upgrade to FTTH. In many urban areas where they have not deployed FTTH, they are upgrading to asymmetric digital subscriber line 2+ (ADSL2+), very high-speed digital subscriber line (VDSL), and VDSL2 to provide faster access speeds.⁴

Similarly, cable companies are upgrading to data-over-cable service interface specification (DOCSIS 3.0) in their networks to improve access speeds⁵ and have tested FTTH in new housing developments. At least two of the major cable companies in Canada have deployed DOCSIS 3.0 across their entire service area.

To ensure that all Canadians, particularly those in rural and remote areas, benefit from a greater level of broadband Internet connectivity, the Commission established target speeds of 5 megabits per second (Mbps) downstream and 1 Mbps upstream by 2015.⁶ While many Canadians in urban areas already have access to broadband services at or above these target speeds, they are not currently available in some rural and remote areas.

FTTx deployment and subscription are in their early stages in Canada. In 2010, 56 percent of broadband subscriptions were for cable modems, 43 percent were for digital subscriber line (DSL), and fewer than 1 percent were for FTTx.⁷ Fifty-two percent of Canadian households subscribed

Figure 1 Percentage of Canadian household Internet subscriptions by speed 2005-2010



Sources: Communications Monitoring Reports and Telecom Monitoring Reports 2006 - 2011

⁴ ADSL2+ can provide download speeds of up to 24 Mbps, while basic VDSL can provide up to 52 Mbps, and VDSL2 can provide up to 100 Mbps. The farther away the dwelling is from the fibre-fed node, the slower the speed for xDSL service.

⁵ DOCSIS 3.0 can provide download speeds in excess of 100 Mbps. Actual download speeds are dependent on a company's specific installation and provisioning.

⁶ *Obligation to serve and other matters*, Telecom Regulatory Policy CRTC 2011-291, 3 May 2011, as amended by Telecom Regulatory Policy CRTC 2011-291-1, 12 May 2011.

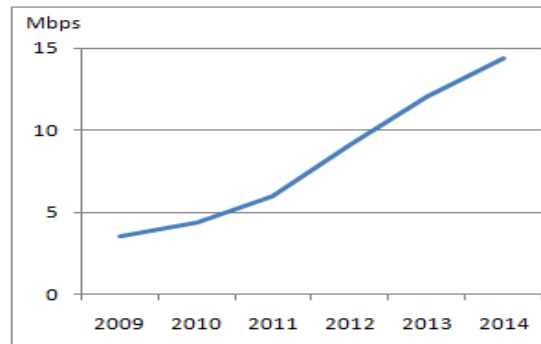
⁷ The market share for FTTx across all Organisation for Economic Co-operation and Development (OECD) countries was 12% in 2010 according to the OECD Broadband Portal http://www.oecd.org/document/54/0,3746,en_2649_33703_38690102_1_1_1_1,00.html

to broadband Internet access services of 5 Mbps or higher, up from 44 percent in 2009,⁸ as shown in Figure 1. With the rollout of DOCSIS 3.0, FTTx, and other technologies that deliver higher-speed services, this trend is expected to continue and the number of Canadians subscribing to services of greater than 5 Mbps will grow.

Globally, the deployment of new broadband technologies has increased transmission speeds over the past decade. According to data from Cisco Systems Inc. (Cisco), the global average for residential Internet connection download speed was 35 times faster in 2010 (4.4Mbps)⁹ than in 2000 (127 kilobits per second). Cisco predicts that the average connection speed will reach 6 Mbps in 2011 and grow to 14.4 Mbps by 2014 (see Figure 2).¹⁰ In 2010, the average measured internet connection speed in Canada was 4.7 Mbps.¹¹ From 2010 to 2014, the rate of growth in Canadian residential Internet speeds should be similar to the global rate.

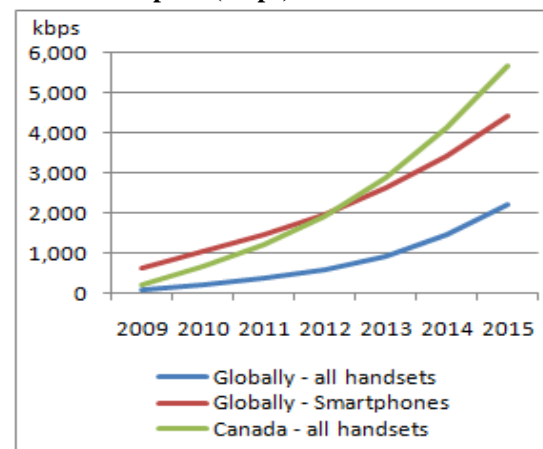
Similarly, successive improvements in wireless data transfer speeds have made truly mobile Internet access available almost everywhere. In the future, access to the Internet through wireless networks will rival wired access for the delivery of all but the most bandwidth-intensive applications. Cisco notes that, globally, mobile network connection speeds doubled in 2010, rising from an average downstream speed of 101 kilobits per second (kbps) in 2009 to 215 kbps in 2010. Connection speeds for smartphones

Figure 2 Projected average global residential download speed (Mbps) 2009-2014



Source: Hyperconnectivity and the Approaching Zettabyte Era, June 2, 2010, Cisco

Figure 3 Projected average mobile network connection speed (Kbps) 2009-2015



Source: Cisco, *Visual Networking Index Global Mobile Data Traffic Forecast Update 2010-2015*, 1 February 2011

⁸ See the Commission's *Communications Monitoring Report 2011*.

⁹ According to Akamai's *State of the Internet Report* for the third quarter of 2010, the average connection speed in Canada in that quarter was 5.0 Mbps.

¹⁰ http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/VNI_Hyperconnectivity_WP.html, *Hyperconnectivity and the Approaching Zettabyte Era*, 2 June 2010.

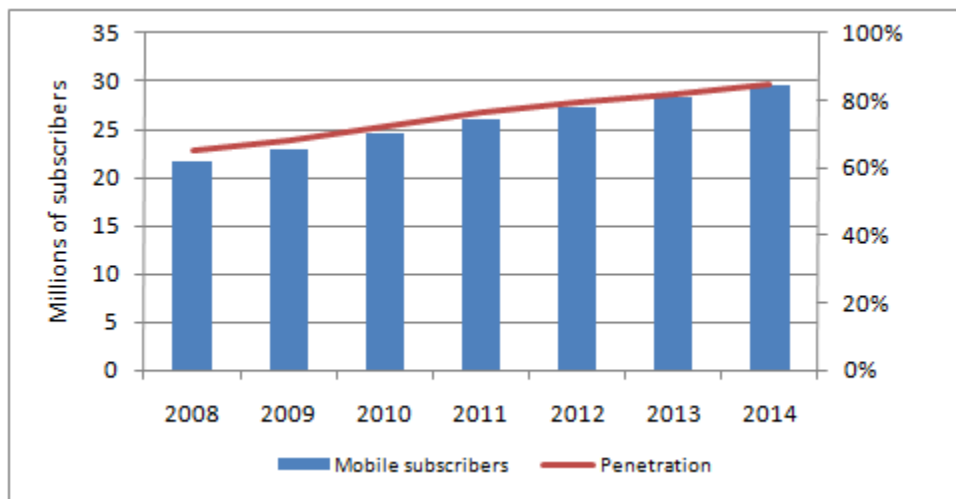
¹¹ <http://www.cbc.ca/news/canada/windsor/story/2011/06/24/technology-internet-mobile-oecd.html>

grew to 1,040 kbps in 2010 from 625 kbps in 2009. In Canada, Cisco predicts that the average mobile network connection speed will grow from 216 kbps in 2009 to 5,690 kbps in 2015 (see Figure 3).¹²

2.1.2 Growth of wireless

Since the introduction of digital wireless voice telephony in the 1990s, the role of wireless communications has grown enormously.¹³ By December 2010, there were 25.8 million Canadian wireless subscribers¹⁴ and half of all phone connections in Canada were wireless.¹⁵ In 2010, Statistics Canada found the household penetration rate of cellphones to be 78 percent.¹⁶ eMarketer projects that by December 2014, the number of Canadian wireless subscribers will increase to 29.5 million—a penetration rate of 84.7 percent (see Figure 4).¹⁷

Figure 4 Projected mobile phone subscribers and penetration in Canada 2008-2014



Source: www.eMarketer.com, May 2010

¹² Cisco, *Visual Networking Index Global Mobile Data Traffic Forecast Update 2010-2015*, 1 February 2011.

¹³ Second generation (2G) wireless networks were the first digital wireless networks and include time division multiple access (TDMA)-based networks such as Global System for Mobile Communications (GSM) and code division multiple access (CDMA)-based networks. CDMA services were rolled out in Canada starting in the early 1990s.

¹⁴ This includes dedicated mobile broadband subscriptions, which total 900,000 subscriptions. See the *Communications Monitoring Report 2011*.

¹⁵ See the *Communications Monitoring Report 2011*.

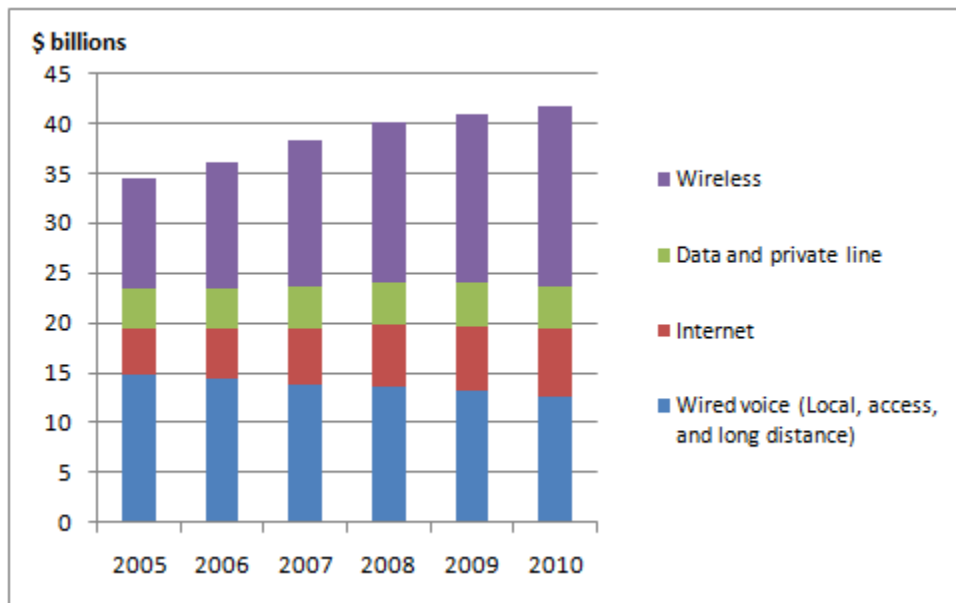
¹⁶ Statistics Canada Residential Telephone Service Survey, Dec 2010 <http://www.statcan.gc.ca/daily-quotidien/110405/dq110405a-eng.htm>

¹⁷ <http://www.emarketer.tv/Article.aspx?R=1007747>, *Canadian Mobile Subscriptions to Climb 20% by 2014*, 10 June 2010.

Between 2006 and 2010, the wireless sector had the largest compound annual growth rate (CAGR) as its revenues increased by 9.1 percent, from \$12.7 billion to \$18 billion. In 2010, wireless revenues made up 43.2 percent of the total telecommunications revenues in Canada, up from 35.2 percent in 2006. Revenue from wireless services is now the largest component of TSP revenues (see Figure 5).¹⁸

By comparison, Internet revenues grew by 7.9 percent over the same period, while revenues associated with voice services¹⁹ have been declining, dropping from \$14.4 billion to \$12.6 billion (a CAGR of -1.3%). Based on the projections for wireless and Internet services, the wireline voice share of telecommunications revenues will continue to decline. International Data Corporation (IDC) forecasts that in 2014, wireless will represent half of all Canadian telecommunications spending, or \$23.7 billion. IDC noted that “deployment of next-generation wireless broadband networks, the integration of business wireline and wireless data and competition from new entrants will propel the wireless sector to further heights.”²⁰

Figure 5 Canadian telecommunications revenues by market sector 2005-2010



Source: *Communications Monitoring Report 2011*

In addition, consumer adoption of smartphones and tablet computers has been swift. According to Media Technology Monitor (MTM), 27 percent of Anglophones and 14

¹⁸ Wireline local and access revenues made up 23% of the revenues, wireline long distance made up 10%, Internet made up 16% and data and private line services made up 10%.

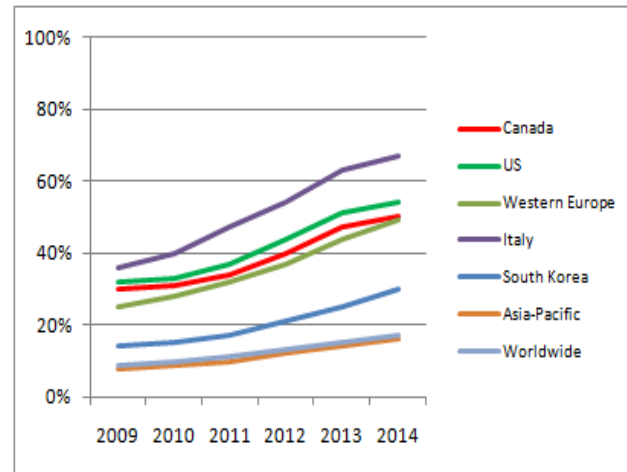
¹⁹ These services are local, access and long distance.

²⁰ <http://www.marketresearch.com/product/display.asp?productid=2877147>, *Canadian Wireless Services 2010-2014 Forecast and Analysis: Wireless Wars 7*, 3 November 2010.

percent of Francophones in Canada own smartphones, up from 6 percent and 4 percent, respectively, in 2007.²¹ eMarketer²² forecasts that by 2014, smartphones will account for 50 percent of all mobile handsets in Canada—up from 31 percent in 2009 (see Figure 6). MTM²³ also found that 5 percent of Canadians had bought tablets by spring 2011 and estimates that this figure will double by spring 2012.

Voice services and e-mail are only two of the thousands of applications that are available on modern handsets. These devices’ ability to deliver rich audio and audiovisual programming and information to consumers is a major contributor to their popularity, as shown in Figure 7.

Figure 6 Projected smartphone penetration 2009-2014



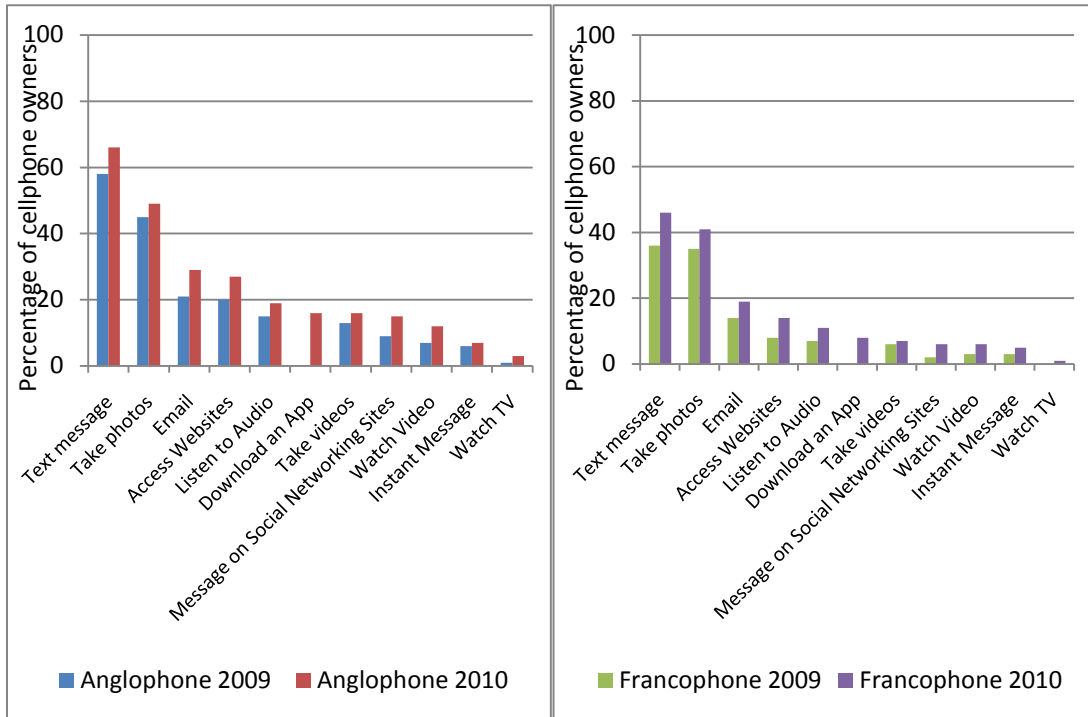
Source: eMarketer, June 2010
<http://www.emarketer.com/Article.aspx?R=1007747>

²¹ MTM, *Media Technology Adoption – English-language Market; Adoption des technologies médias* 12 April 2011.

²² eMarketer based their forecast on data from Cisco’s *Virtual Networking Index: Global Mobile Data Traffic Forecast Update 2009–2014* with Informa Telecoms & Media, In-Stat and Gartner

²³ MTM, *The Rise of Table Computers – Canadian Market*, 17 May 2011.

Figure 7 Cellphone activities of Canadian cellphone owners 18+



Sources: MTM Personal Audio 2010, Personal Audio 2009; Technologies audio personnelles 2010; Technologies audio personnelles, 2009

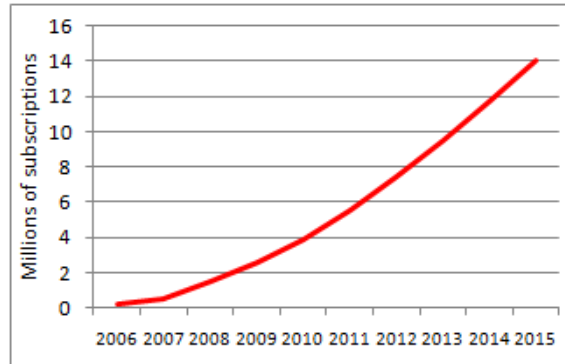
The introduction of smartphones and tablets, combined with network upgrades to third-generation (3G) technologies,²⁴ has driven consumer demand for mobile Internet access. According to a study by Quorus Consulting Group (Quorus), as of spring 2011, 37 percent of Canadian mobile phone users subscribed to data plans and 29 percent accessed the Internet with their mobile phones. Most of this activity was driven by smartphone users, 81 percent of whom subscribed to data plans and 73 percent of whom accessed the Internet. Quorus also found that 46 percent of people in cellphone-only households subscribed to mobile data plans.²⁵

²⁴ For example, evolved high-speed packet access (HSPA+).

²⁵ http://www.cwta.ca/CWTASite/english/facts_figures_downloads/Consumer2011.pdf, 2011 *Cellphone Consumers Attitudes Study*, 29 April 2011.

In the coming years, more Canadians than ever before will access the Internet from mobile devices. PricewaterhouseCoopers projects that mobile Internet subscriptions in Canada will experience a 29.5-percent CAGR²⁶ from 2011 to 2015, increasing from 3.84 million at the end of 2010 to 14 million subscriptions (see Figure 8).²⁷ Over this same period, mobile Internet access revenues are projected to experience a similar growth rate—27.3 percent—compared to the 8.8-percent growth rate for wireless Internet access. By 2015, PricewaterhouseCoopers predicts that mobile Internet access will make up 27 percent of total Internet access revenues in Canada.

Figure 8 Projected mobile Internet subscriptions in Canada 2006-2015



Source: PricewaterhouseCoopers, *Global Entertainment and Media Outlook 2011-2015*, June 2011

The growth in smartphone penetration and use of non-voice services are driving wireless data traffic growth. Based on measurements taken from live networks around the world, Ericsson estimates that mobile data traffic surpassed mobile voice traffic during December 2009.

In Canada, voice services continue to account for the majority of wireless revenues, but wireless data and other revenues are growing at a faster pace (see Figure 9).²⁸ Wireless basic voice and long distance made up 64.5 percent of revenues in 2010, down from 79 percent in 2006. Between 2009 and 2010, wireless voice revenues dropped by 4.5 percent. The CAGR for wireless voice services between 2006 and 2010 was 3.7 percent while wireless data and other revenues had a CAGR of 27.3 percent. Wireless data and other revenues accounted for 28.4 percent of total wireless revenues in 2010, up from 15.4 percent in 2006, and will likely represent an increasing share of revenues.²⁹ According to IDC, “wireless is the powerhouse of (Canadian telecommunications) revenue growth” throughout the 2009 to 2014 period,

²⁶ PricewaterhouseCoopers calculates CAGR from 2011 to 2015 using the value at the end of 2010 (i.e., the value at the start of 2011) and the value at the end of 2015.

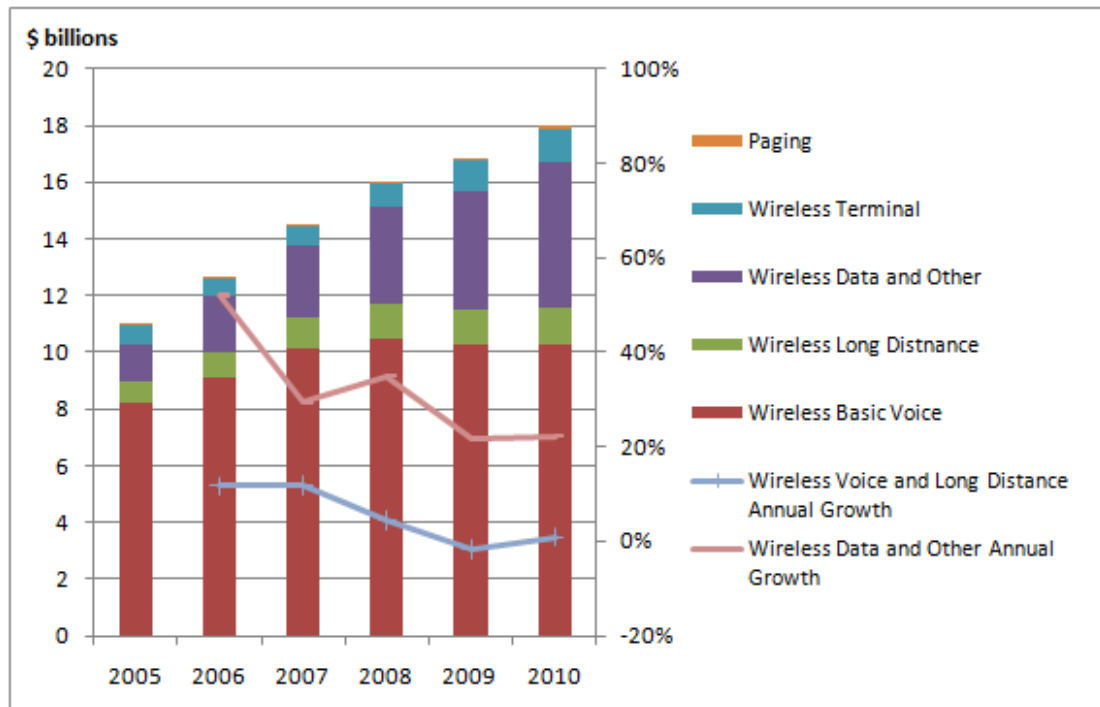
²⁷ PricewaterhouseCoopers, *Global Entertainment and Media Outlook 2011-2015*, June 2011.

²⁸ In 2010, data and roaming data revenue made up 83.2% of this category, while voice roaming and other made up the remaining 16.8%.

²⁹ See the *Communications Monitoring Report 2011*.

and “consumer wireless data spending is expected to grow more than four times quicker than wireless voice through the forecast period.”³⁰

Figure 9 Canadian wireless revenues and annual revenue growth 2005-2010



Source: *Communications Monitoring Report 2011*

2.1.3 Wireless substitution

Over the past decade, Canadian consumers have begun substituting their home phones for wireless phones, a practice known as “cord-cutting.”³¹ In its December 2010 Residential Telephone Service Survey, Statistics Canada found that 13 percent of Canadian households were wireless-only, up from 8 percent in 2008. The 18-34 year-old demographic was most likely to own only wireless phones. Half of these household were wireless-only (up from 34 percent in 2008) and renters made up 68 percent of all wireless-only households.³²

Because Canada’s cord-cutting trend lags that of the United States (US) by two to three years, American data may indicate future trends in Canada. A study by Nielsen

³⁰ <http://www.idc.com/getdoc.jsp?pid=23571113&containerId=CA5CT10>, *Canadian Consumer Voice, Internet, TV, and Wireless Services 2010-2014 Forecast*, June 2010.

³¹ <http://giganomicsconsulting.squarespace.com/observations-old/2010/9/20/wireless-substitution-more-than-just-voice.html>, *Wireless Substitution – More than Just Voice*, 20 September 2010.

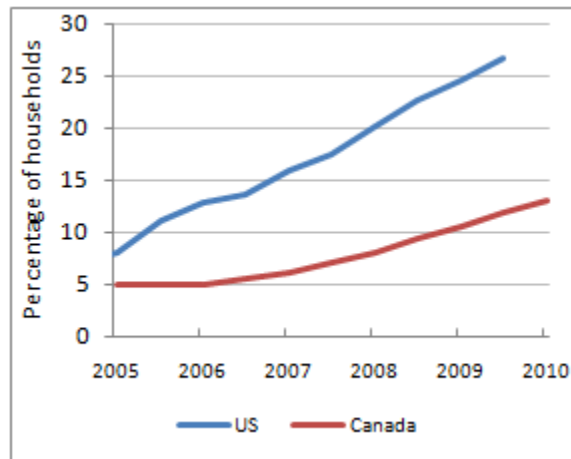
³² <http://www.statcan.gc.ca/daily-quotidien/110405/dq110405a-eng.htm>, *Residential Telephone Service Survey*, December 2010.

showed that smaller households in the US—those with only one or two residents—are more likely to cancel their wired-phone plans than larger households. This same study showed that 10 percent of all surveyed landline users had experimented with cord-cutting at one point but chose to restore landline services.³³

Similarly, a US-based study by the Centers for Disease Control (CDC) reported that 69.4 percent of households that comprised unrelated adults with no children relied only on wireless phones. The study also showed that more than one-third of adults who lived alone also relied only on wireless phones, 47.1 percent of wireless-only households were renters and 15.5 percent were owners. The remainder were households with other arrangements. The CDC study found that in the first half of 2010, 26.6 percent of American households had only wireless telephone service, almost double the number from the same period in 2007. It also found that 15.9 percent of Americans with landline phones received all or almost all of their calls on their wireless phones.³⁴

According to IDC,³⁵ factors that will motivate wireless substitution in Canada include the cost of maintaining both wireline and wireless phone services, improvements in pricing plans, and the increasing ease and availability of peer-to-peer (P2P) voice services that remove the need for long-distance plans. IDC also notes the increasing popularity of using applications on smartphones to make long-distance calls.³⁶ A 2010 study by the Convergence Consulting Group suggests

Figure 10 Wireless-only households



Sources: CDC National Health Interview Study; Statistics Canada Residential Telephone Service Study

³³ <http://www.marketingcharts.com/interactive/more-than-20-million-us-phone-users-cut-land-lines-number-growing-6141/>, *More than 20 Million US Phone Users Cut Land Lines, Number Growing*, 24 September 2008. This study showed that while wireless-only consumers use their mobiles phones 45% more than non-cord-cutters (on average), they save an average of C\$33 per month in a household of one subscriber, but for each additional wireless resident in the household, the savings decreased by C\$6.69 per resident.

³⁴ <http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201012.htm>, *Wireless Substitution: Early Release of Estimates From the National Health Interview Survey, January – June 2010*, 21 December 2010.

³⁵ <http://www.idc.com/getdoc.jsp?pid=23571113&containerId=prCA22364510>, *Canadian Consumers Cut the Cord on Residential and Internet Services*, According to IDC Canada, 1 June 2010.

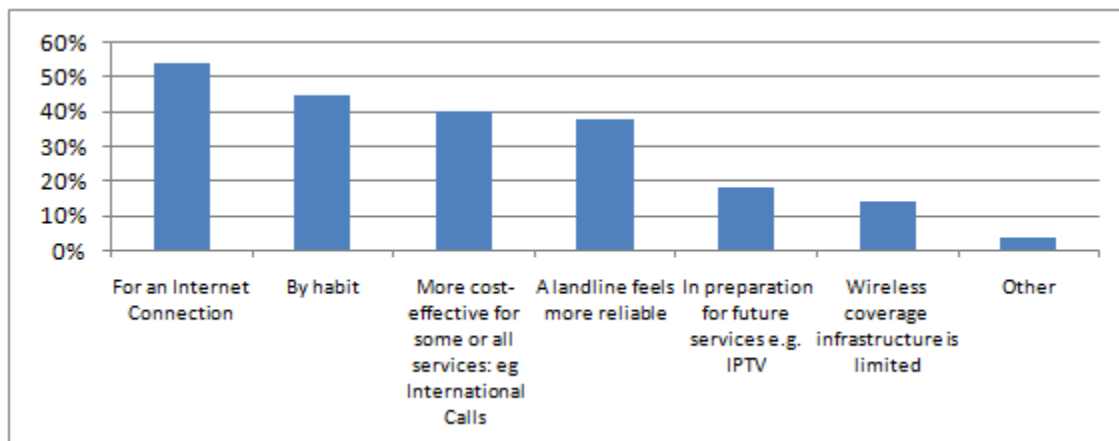
³⁶ <http://www.idc.com/getdoc.jsp?pid=23571113&containerId=prCA22364510>, *Canadian Consumers Cut the Cord on Residential and Internet Services*, According to IDC Canada, 1 June 2010.

that 28 percent of Canadian households will be wireless-only by the end of 2014.³⁷ Figure 10 shows the growth in Canadian wireless-only households from 2005 to 2010. Some of these households are expected to supplement their wireless phone use with Internet-based services on their personal computers or smartphones to reduce long-distance and roaming costs.³⁸

As mobile network performance improves, wireless substitution may extend to high-speed Internet services. In June 2010, IDC found that only 6 percent of Canadians would seriously consider switching to wireless Internet access. However, IDC noted that, "as mobile handsets and services become entrenched in the Canadian population, the interest in shifting more activities from wireline to wireless rises. Voice services were the natural first step in wireless substitution. With the widespread rollout of HSPA and HSPA+ wireless networks in Canada, cutting the cord now becomes more practical for Internet access too."³⁹

KPMG's *Consumers and Convergence IV* study in 2010 found that Internet access was the main reason why consumers maintained a landline, and not the service's reliability (see Figure 11). Given the penetration of broadband Internet in Canada and the decline of dial-up Internet, a telephone subscription is not required for Internet access for the majority of Canadians. However, it is possible that bundles of home phone and Internet services might limit wireline cancellation in the near term.

Figure 11 Reasons for having a landline telephone (global)



Source: KPMG, *Consumers and Convergence IV*, July 2010

³⁷ <http://giganomicsconsulting.squarespace.com/observations-old/>, Canada mobile data roaming fees – another sad story?, 9 June 2011

³⁸ Lemay-Yates Associates, *The Wireless-Only Future of Phone Service in Canada*, 5 October 2010.

³⁹ <http://www.idc.com/getdoc.jsp?containerId=CA1CT10>, *Cutting the Cord: Canadian Consumer Intentions to Switch to Wireless for Phone and Internet Services*, April 2010.

2.2 Traffic growth

Higher broadband speeds have led to increased use of high-bandwidth content and applications. In 2000, the average consumer would have spent three minutes to download a 3-megabyte (MB) MP3 audio file and three days to download a 4-gigabyte (GB) DVD-quality movie.⁴⁰ With the improvements in download speeds, by 2010 these times were reduced to five seconds for the audio file and two hours for the movie.⁴¹

Cisco found that from 2009 to 2010, the amount of traffic generated by the average broadband connection grew by 31 percent—from 11.4 to 14.9 GB per month.⁴² Based on data from the *Communications Monitoring Report 2011*, the average amount of data downloaded and uploaded per Canadian residential subscriber per month grew from 15.4 GB in 2009 to 18.5 GB in 2010, a growth of 20.1 percent. Internet traffic is predicted to continue growing rapidly as consumers access more content and services. Cisco projects that in Canada, IP traffic will quadruple between 2009 and 2014, going from 325.4 petabytes (PB) per month to 1,283.5 PB per month.⁴³

Figure 12 provides a projection of Canadian consumer Internet traffic from 2009 to 2014 by application type. Bandwidth-intensive applications, such as video, are projected to have the highest growth. Internet video to television (TV)⁴⁴ will have an estimated CAGR⁴⁵ of 144 percent, video calling, a CAGR of 60 percent, and Internet video,⁴⁶ a CAGR of 48 percent. By 2014, these three services will account for 64 percent of Canadian consumer Internet traffic. Contributing to this bandwidth usage will be growth in consumer consumption of high-definition (HD) video and other advanced applications. Cisco predicts that HD video traffic will increase by a factor of 23 between 2009 and 2014 and will comprise 46 percent of consumer Internet video traffic by 2014.⁴⁷

⁴⁰ Based on the global average access speed at the time of 127 kbps. Cisco, *Visual Networking Forecast 2009-2014*, 10 June 2010.

⁴¹ Based on the global average access speed of 4.4 Mbps (see figure 2).

⁴² Cisco, *Visual Networking Index: Usage Study*, 25 October 2010. In the same study, Cisco found that peak hour traffic grew 41% globally between 2009 and 2010, an even faster pace than average traffic; the ratio of peak hour traffic to average hour traffic increased from 1.59 to 1.72.

⁴³ Based on data from Cisco's Visual Networking Index widget in March 2011, http://www.ciscovni.com/vni_forecast/index.htm

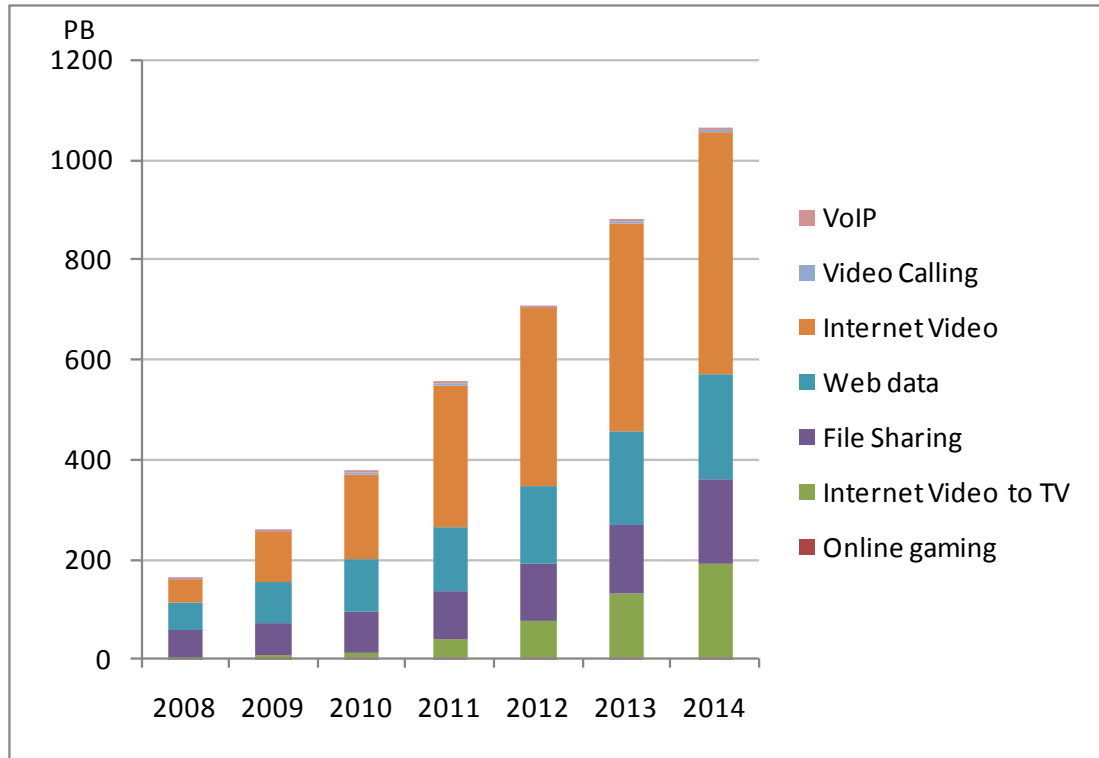
⁴⁴ Cisco defines "Internet video to TV" as video delivered to TV screens by way of Internet-enabled set top boxes or media gateways.

⁴⁵ Cisco calculated the CAGR between 2009 and 2014 using the values at the end of 2009 and at the end of 2014.

⁴⁶ Cisco defines "Internet video" as video downloaded or streamed to a computer, excluding peer-to-peer downloads and excluding "Internet video to TV".

⁴⁷ Cisco, *Hyperconnectivity and the Approaching Zettabyte Era*, 2 June 2010.

Figure 12 Canadian consumer Internet traffic projection (PB) by application



Source: Lemay-Yates Associates, *The Performance of Canada's Consumer Broadband Networks in 2010*, 13 July 2010⁴⁸

Cisco found that globally, video traffic has overtaken P2P traffic as the largest traffic category among single users.⁴⁹ By the end of 2010, online video traffic was projected to make up 26 percent of Internet traffic, compared to 25 percent for P2P traffic.⁵⁰ Similarly, Sandvine reported that real-time entertainment⁵¹ is the largest contributor to data consumption in North America. During peak hours, Sandvine found that real-time entertainment made up 49.2 percent of traffic in the spring of 2011, up from 29.5 percent in 2009 (see Figure 13).⁵²

⁴⁸Lemay-Yates cites the Cisco Visual Networking Index: Forecast and Methodology 2009-2014 and the Cisco Visual Networking Index Forecast Widget http://ciscovni.com/vni_forecast/index.htm

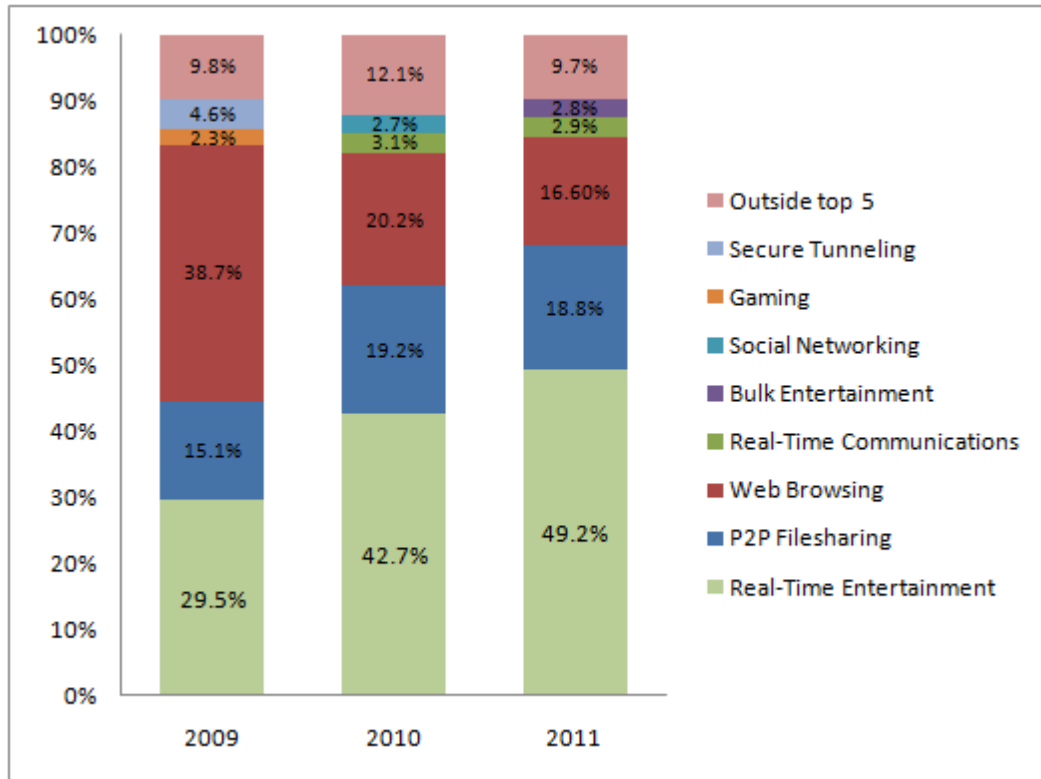
⁴⁹Cisco, *Cisco Visual Networking Index: Usage Study*, 25 October 2010.

⁵⁰Online video traffic includes streaming video, flash and Internet TV.

⁵¹Sandvine defines “real-time entertainment” as on-demand entertainment that is consumed (viewed or heard) as it arrives.

⁵²<http://www.sandvine.com/downloads/documents/2010%20Global%20Internet%20Phenomena%20Report.pdf> Sandvine, *Spring 2011 Global Internet Phenomena Report*, 17 May 2011.

Figure 13 Normalized aggregate North American Internet traffic profile by the top 5 applications (peak period, fixed access)



Source: Sandvine, *Spring 2011 Global Internet Phenomena Report*, 17 May 2011

As with wired networks, improvements in mobile networks' speeds have facilitated the introduction of new services and increased usage, resulting in the consumption of more bandwidth. Studies by Ericsson showed that, globally, mobile data traffic grew 280 percent during each of the last two years.⁵³ The same studies predicted that mobile data traffic will double annually over the next five years.⁵⁴ Cisco projected that video traffic will account for 52.8 percent of all mobile traffic by the end of 2011, exceeding 50 percent for the first time.⁵⁵ This growth is attributed in part to the shift towards unicast from broadcast video, which results in one data stream per user rather than one stream per multiple users.

⁵³ A similar study by Cisco found that global mobile traffic grew by a factor of 2.6 in 2010, nearly tripling for the third year in a row. *Visual Networking Index Global Mobile Data Traffic Forecast Update 2010-2015*, 1 February 2011.

⁵⁴ <http://hugin.info/1061/R/1396928/353017.pdf>, *Mobile data traffic surpasses voice*, 23 March 2010. This finding is based on Ericsson measurements from live networks covering all regions of the world.

⁵⁵ Cisco, *Visual Networking Index Global Mobile Data Traffic Forecast Update 2010-2015*, 1 February 2011.

Although some traffic growth can be attributed to the migration to mobile networks, many uniquely mobile applications, such as location-based services, are also contributing to the growth. Globally, Cisco expects that mobile machine-to-machine traffic⁵⁶ will contribute significantly to the growth in wireless traffic, from 7.4 PB in 2010 to 296 PB in 2015—a CAGR of 109 percent.

Smartphones, tables and laptops are key drivers of mobile traffic growth. In 2010, smartphones represented 13 percent of all handsets in use around the world, but generated more than 78 percent of total traffic. IDC estimates that shipments of smartphones, tablets and other application-enabled devices will overtake PC shipments by June 2012.⁵⁷

Additionally, Cisco found that in 2010:

- a basic cellphone generated 3.3 MB per month of mobile data traffic
- a smartphone generated 79 MB per month⁵⁸
- a tablet generated 405 MB per month—five times more traffic than the average smartphone, and
- laptops on mobile networks generated 1.7 GB per month—22 times more traffic than the average smartphone.

Between 2010 and 2015, Cisco predicts that:

- global mobile traffic will grow at a CAGR of 92 percent, reaching 6.3 exabytes (EB) per month by 2015;
- two-thirds of the world's mobile data traffic will be video by 2015; and
- the average smartphone will generate 1.3 GB of traffic per month in 2015 (a CAGR of 116 percent).⁵⁹

Although mobile traffic is expected to rise significantly, the majority of communications traffic will continue to be on the wired Internet (see Figure 14).

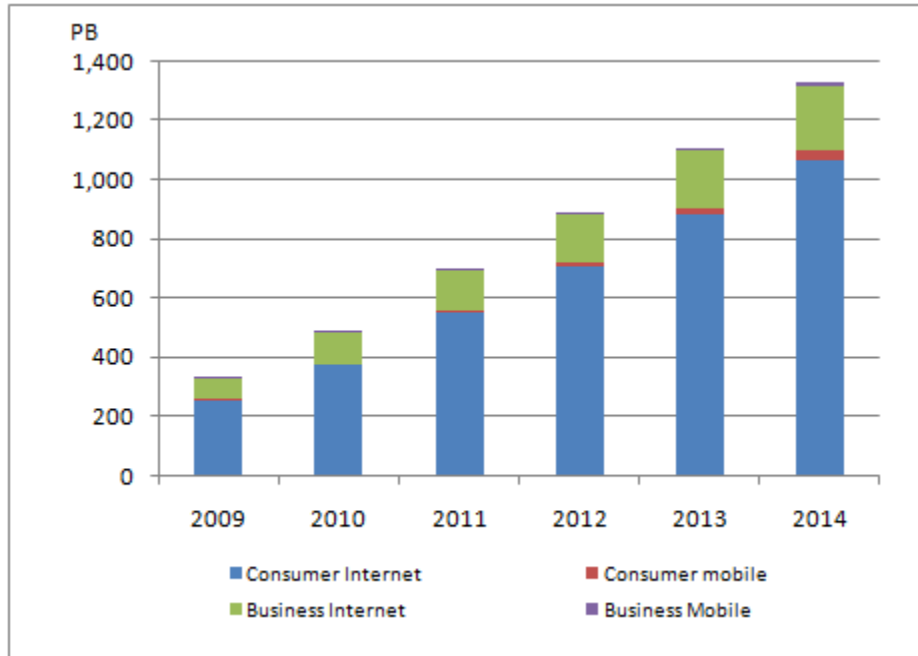
⁵⁶ Examples of mobile machine-to-machine traffic uses are smart meters, surveillance, inventory management, fleet management, home appliances, vehicles, and vending machines.

⁵⁷ http://www.computerworld.com/s/article/9199918/In_historic_shift_smartphones_tablets_to_overtake PCs, *In historic shift, smartphones, tablets to take over PCs*, 6 December 2010.

⁵⁸ In 2009, the average volume of traffic per smartphone was 35 MB per month.

⁵⁹ Cisco, *Visual Networking Index Global Mobile Data Traffic Forecast Update 2010-2015*, 1 February 2011.

Figure 14 Canadian Internet traffic projection (PB) 2009-2014



Source: Cisco Visual Networking Index Forecast Widget as of March 2011

Internet traffic studies published by network equipment vendors have found that usage rates are disproportionate: a small set of users accounts for the highest consumption of bandwidth. According to Sandvine’s *Fall 2010 Global Internet Phenomena Report*,⁶⁰ 1 percent of the heaviest upstream users in North America account for 40 percent of the upstream traffic and 20 percent of users account for more than 75 percent of the downstream traffic. Similarly, Cisco⁶¹ found that 1 percent of broadband connections are responsible for more than 20 percent of total Internet traffic and the top 10 percent of connections are responsible for more than 60 percent of broadband Internet traffic globally.

Similar to usage patterns found for wired broadband access, Cisco⁶² found that the top 1 percent of mobile data subscribers generated 20 percent of mobile data traffic in 2010, down from 30 percent the year before. The top 10 percent of mobile data subscribers generated 60 percent of mobile data traffic.

⁶⁰ <http://www.sandvine.com/downloads/documents/2010%20Global%20Internet%20Phenomena%20Report.pdf> Sandvine, *Spring 2011 Global Internet Phenomena Report*, 17 May 2011.

⁶¹ Cisco, *Cisco Visual Networking Index: Usage Study*, 25 October 2010.

⁶² Cisco, *Visual Networking Index Global Mobile Data Traffic Forecast Update 2010-2015*, 1 February 2011.

2.2.1 Spectrum

The growing use of mobile devices to access bandwidth-intensive services has prompted regulators worldwide to pay particular attention to future broadband wireless spectrum requirements. Some stakeholders have suggested that there is a potential for a spectrum crunch and have called for new spectrum for mobile services.

From a technical standpoint, a lack of sufficient bandwidth would be felt when wireless links are no longer adequate to provide the services being offered at a particular time. Subscribers would likely experience poor service, poor quality and a lack of reliability. Before a network's performance suffered from excessive use, it is likely that traffic-management practices would be implemented to address potential network shortcomings and demand. Wireless data services could increase in price as a result, with operators imposing data caps with lower limits.

Consumer use of mobile devices at home or work can be technologically inefficient. Cisco's estimates that most mobile Internet device use does not occur while the consumer is on the move: 40 percent of time spent using mobile Internet is at home, 35 percent is on the move, 25 percent is at the office.⁶³ Technologies—such as Wi-Fi and dual-mode handsets—are increasingly available to offload traffic onto fixed networks and mitigate the impact of mobile devices on traffic. Globally, 31 percent of smartphone and tablet traffic was offloaded in 2010, amounting to 14.3 PB of traffic per month. Without this offload, there would have been 51 PB of wireless traffic per month in 2010. In Canada, 21 percent of smartphone and tablet traffic was offloaded to the fixed network in 2010. This figure is expected to grow to 34 percent in 2015, according to Cisco's Visual Networking Index study.

To meet the demands of consumers, carriers will need to invest in their networks to reduce cell sizes, add cells, use any additional spectrum and adopt more efficient technical solutions. To prevent or mitigate spectrum shortage, it is imperative to take stock of the current spectrum inventory and make projections on future spectrum demands.⁶⁴

2.3 Competition

Since the early 1990s, part of the Commission's regulatory approach has been to encourage a competitive marketplace through deregulation and increased reliance on

⁶³ Cisco, *Visual Networking Index Global Mobile Data Traffic Forecast Update 2010-2015*, 1 February 2011.

⁶⁴ Industry Canada released a spectrum inventory study in June 2010. <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10023.html>

market forces.⁶⁵ The Commission has decided not to regulate a large number of retail telecommunications services.⁶⁶ Where there is insufficient competition to discipline the market, the Commission continues to impose price regulation for some services. These markets are often smaller rural or remote communities that are less attractive to new competitors.

The lack of facilities and the high costs to build out networks are significant barriers to entry for new competitors in the Canadian market. The Commission has a long-standing policy of encouraging wholesale access to incumbent TSPs' facilities to support sustainable competition for telecommunications services in Canada. Incumbent TSPs must give competitors access to essential and other mandated wholesale services under terms and conditions approved by the Commission.

It has been possible to deregulate services because Canada has two nationwide facilities-based wired networks provided by cable and telephone companies. As a result of convergence, these previously discrete networks now compete with each other. They are also complemented by wireless networks and satellite services. Where these competitors serve customers outside their wireline footprints—with wireless technologies, for example—competition is increased.

Previously, Internet access services were the domain of the telephone companies. Today, however, cable networks' abilities to provide higher data rates than DSL without significant updates to their existing infrastructures⁶⁷ has helped these networks capture 56.7 percent of residential Internet services revenues as of 2010 and has been a factor driving the deployment of fibre-optic networks. Providing a competitive alternative, cable companies have captured 26.4 percent of the residential local and access telephone services revenues and 31.4 percent of the residential and local access lines since rolling out the service in 2005.

To date, telephone companies have not had the same scale of success in penetrating the broadcasting distribution industry. Internet Protocol television (IPTV) currently has a market share of 3 percent of subscribers.⁶⁸ It should be noted, however, that the

⁶⁵ As an example, see *Order Issuing a Direction to the CRTC on Implementing the Canadian Telecommunications Policy Objectives*, Order in Council P.C. 2006-1534, 14 December 2006 (the Policy Direction). The Policy Direction obligates the Commission to rely on market forces to the maximum extent feasible.

⁶⁶ These include local exchange, mobile, Internet services, long distance and international, various data and private line, and satellite services, as well as services provided by non-dominant carriers.

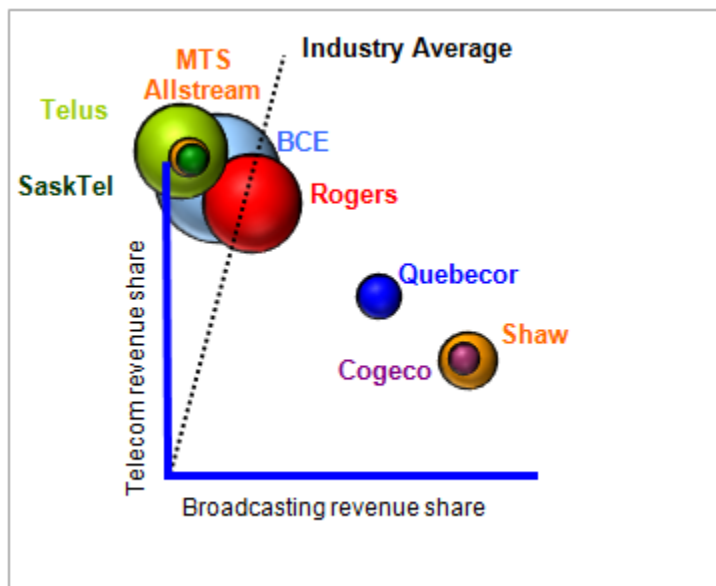
⁶⁷ While their infrastructure may provide a theoretical speed advantage over those of cable companies, cable Internet speeds depend on how many people living in the same area are concurrently connected. This is not an issue for DSL.

⁶⁸ See the *Communications Monitoring Report 2010*.

two Canadian satellite television providers have taken 25 percent of the market. Major infrastructure upgrades are required to offer IPTV to consumers, explaining its small penetration rate. Over the last five to ten years, telephone companies have implemented the necessary upgrades (such as FTTx), increasing the number of homes capable of accessing IPTV.

*The Globe and Mail*⁶⁹ estimates that as of March 2011, there were nearly five million IPTV-capable homes in Canada. That figure will likely increase to more than seven million by the end of 2012. With the increasing number of IPTV-capable homes, traditional telecommunications players are expected to claim a larger share of the TV distribution market in the near future. Figure 15 shows the composition of the largest Canadian communications companies' revenues.

Figure 15 Select Canadian communications companies' revenue composition 2009



Note Bubbles represent estimated total telecommunications and broadcasting revenues in 2010. Source: Company websites and other public annual reports

Although telephone companies have not taken a substantial share of the broadcasting distribution market to date, they have the major share of the total communications revenues (which includes broadcasting, wireless, home telephone and Internet services). At the end of 2010, the incumbent telephone companies had 51 percent of

⁶⁹ <http://www.theglobeandmail.com/news/technology/gadgets-and-gear/hugh-thompson/what-is-iptv-heres-your-primer/article1926380/page2/> What is IPTV? Here's your primer, 2 March 2011.

the revenues, whereas the cable companies had 33 percent.⁷⁰ This reflects the fact that, in the Canadian communications industry, 73 percent of revenues come from telecommunications. In 2010, both the incumbent TSPs and the BDUs derived the majority of their revenues from telecommunications services.⁷¹

A variety of companies also offer wireless and satellite alternatives. While the three large national wireless service providers (WSPs) are also among the major providers of other communications services in Canada, there are a number of smaller, regional, facilities-based WSPs and a number of resellers. In 2010, a number of new entrants commenced operations.

According to the *Communications Monitoring Report 2011*, approximately 20 percent of Canada's geographic area and 99 percent of Canadians have wireless coverage. The advanced wireless network that supports handsets, such as smartphones and wireless broadband access, is available to 97 percent of Canadians.

In addition, satellite providers play an important role in bringing voice, Internet and broadcasting distribution services—as well as competition—to remote and less densely populated areas.

2.4 Availability of broadband Internet

Canada is among the international leaders in broadband availability. The *Communications Monitoring Report 2011* demonstrated that 98 percent of Canadian households in 2010 had access to broadband⁷² using landline or mobile networks. Satellites extend this reach to virtually all households, although they are limited by capacity constraints.

Despite having almost total access to broadband coverage, not all Canadians enjoy the opportunities created by the new networks equally. In some regions, there are fewer competitors than in the largest urban areas. In addition, satellite broadband access may be more costly to consumers. Market forces have not been sufficient to extend affordable broadband access into all rural and remote parts of Canada. The broadband service penetration rate lags in smaller communities as compared to larger urban areas, as shown in Figure 16.⁷³ Enterprises of all sizes may have few options to purchase telecommunications services in some regions.

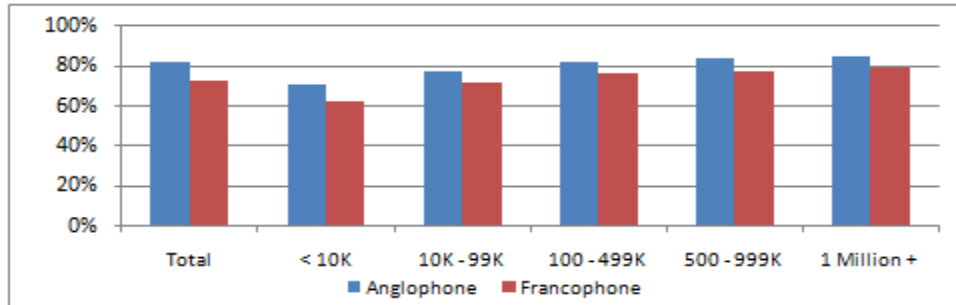
⁷⁰ See the *Communications Monitoring Report 2011*. The remaining 16% of the revenue belonged to the broadcasters not owned by telephone companies or BDUs: other facilities-based TSPs who are not the incumbents, phone service resellers, etc.

⁷¹ See the *Communications Monitoring Report 2011*.

⁷² The Commission defines broadband as Internet access as being at least 1.5 Mbps.

⁷³ The Commission has taken decisions to encourage investment in broadband infrastructure in underserved areas. For example, in *Disposition of funds in the deferral accounts*, Telecom Decision

Figure 16 Broadband subscription penetration for Canadians 18+ by community size, fall 2010

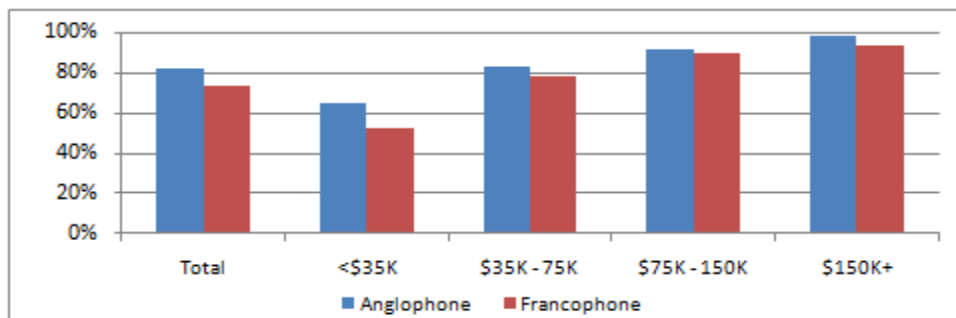


Source: MTM Online Demographic Profiling Tool

In addition to a digital divide between urban and rural and large and small communities, there is also a socio-economic divide. The gap between low-income and high-income households in terms of subscription rates for broadband services is more than 40 percent, as shown in Figure 17.

The Commission’s role in addressing this gap has been limited to ensuring that there is sufficient competition to discipline the market. Additional strategies to promote broadband access for lower-income Canadians could be addressed in a national digital strategy.⁷⁴

Figure 17 Broadband subscription penetration for Canadians 18+ by household income, fall 2010



Source: MTM Online Demographic Profiling Tool

2006-9, 16 February 2006, the Commission determined that initiatives to expand broadband services to rural and remote communities were appropriate uses of funds in the deferral accounts. This resulted in telecommunications providers investing \$300 million to provide broadband access to rural subscribers in British Columbia, Alberta, Manitoba, Ontario and Quebec. The Government of Canada has invested in and implemented programs to extend broadband to unserved and underserved areas, such as Broadband Canada: Connecting Rural Canadians, the National Satellite Initiative, and Broadband for Rural and Northern Development. There have also been various provincial, territorial and municipal initiatives.

⁷⁴ Industry Canada provides a Community Access Program to give Canadians affordable access to the Internet in places such as schools, community centers and libraries. It provides access to those people who might not have computers or Internet access in their homes or workplaces. The program plays a role in bridging the digital divide.

2.5 Regulatory considerations

Canada's communications networks play an important role in economic growth, cultural and community development, education and training, healthcare delivery, public safety, and other national objectives. As a result, network quality, security and reliability are critical.

Unlike many other jurisdictions, Canada is characterized by a diversity of facilities-based communications providers that compete with each other in most markets to serve consumers and small, medium and large enterprises. Using a variety of technologies, these companies provide a wide variety of communications services.

Encouraging competition has been the long-standing approach in Canada to promote affordable pricing, encourage the development of innovative services and protect consumers.

Most Canadian consumers and businesses have a choice of facilities-based providers and are able to purchase services that meet their needs. In some areas, however, Canadians may have a limited choice of network providers and little likelihood of greater competition in the near term.

Different perspectives exist regarding the effectiveness of the facilities-based regulation regime. Public-interest groups and some smaller service providers consider that a wholesale regime, which ensures smaller companies can access essential services, continues to be required. Some have advanced that even more aggressive strategies, such as structural separation of service provision and network operation, should be considered.

The Canadian market differs significantly from those jurisdictions where structural separation has been pursued. Structural separation has been implemented as a means to introduce competition in monopoly markets in countries with a single, sometimes state-owned, facilities-based provider that spans the entire country. In Canada, as in the US, there are two widely available wired infrastructures (cable and telephony) that are provided by a number of incumbent regional players. In both countries, wireless has the potential to become a viable third option for consumers of telephone and Internet services.

Increased availability of broadband Internet services has largely been driven by consumer demand for such services and market forces acting to satisfy that demand. Targeted funding from federal, provincial/territorial and municipal governments has been used to increase availability of these services in underserved regions. This approach has enabled service providers to choose technologies and prioritize rollout in a manner that best responds to consumer demand.

An evaluation of the success of facilities-based competition will become more challenging in coming years as the underlying technologies of wireless and wired networks evolve. Wholesale requirements are generally applied to cable (e.g., DOCSISx.x) and copper-based networks (e.g., DSL). The introduction of next-generation networks will raise questions about the necessity of mandating access to wholesale services.

Facilities-based providers consider that overly interventionist regulation runs counter to the requirement for network investment. They have expressed that consumer and business demand for innovative services will drive the need for significant investment in network capacity. These parties have indicated that competition without mandated wholesale services is sufficient to afford consumers and enterprises its benefits. There is, however, no consensus as to whether the existing market structure will be able to maintain competition as networks evolve.

A broad cross-section of stakeholders has frequently stated that the growing data consumption using mobile devices will require investment in network infrastructure. Further, there may be a requirement for more spectrum to be made available for wireless broadband and for approaches that encourage the efficient use of spectrum.

In the US, the Federal Communications Commission is pursuing a voluntary auction of broadcasting spectrum to mitigate potential spectrum scarcity resulting from growing demands for wireless broadband. In Canada, the government will soon auction spectrum in the 700 MHz band vacated by broadcasters as part of the digital TV transition and spectrum in the 2500 MHz band. As noted previously, Industry Canada has released a spectrum inventory⁷⁵ and has indicated that a demand study will be released in the near term. Stakeholders have called for clear spectrum plans and the consideration of other approaches to allocate spectrum for broadband Internet access.

The multiple uses of spectrum—including for broadcasting, voice telephony, public safety, and fixed and mobile wireless broadband—enables a vibrant and competitive digital economy. The cultural content that flows through this spectrum serves equally important social goals. Some stakeholders have argued that spectrum is a scarce commodity that will be subject to competing demands and must be managed carefully in the public interest.

The criteria by which the public interest in spectrum is determined bear consideration. For example, while community groups and some broadcasters have expressed the need to maintain spectrum in the hands of small broadcasters to ensure a balance of

⁷⁵ <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10023.html>

private, public and community voices, further consideration of cultural versus other benefits is required.

In addition, stakeholders have outlined additional measures that may mitigate a potential spectrum crunch, including encouraging the use of wired networks and optimizing network infrastructure. Understanding future spectrum requirements, its management, and best practices for ensuring its use in the public interest, will be an important focus of discussion for policy-makers, regulators and stakeholder groups.

A further regulatory consideration is the degree to which the industry has become highly consolidated. How a relatively small number of providers will ensure open access to networks on fair and reasonable terms has been questioned by public-interest advocates. Although the Commission has adopted an Internet traffic-management practices framework to ensure non-discriminatory treatment of Internet traffic on both wired and wireless networks, the evolution of services that provide better than best-effort routing bears monitoring.

Traditional definitions of markets and products may need to be revisited given the convergence of services such as over-the-top (OTT) television,⁷⁶ voice and video communication services using IP, and other IP services onto mobile and fixed Internet platforms. Approaches such as tariffs and regulation depend conceptually on understanding the degree to which there is competition in markets. Monitoring the migration of consumers to new communications services, and the degree to which those services can be substitutes for services within the regulated system, will require vigilance.

⁷⁶ Over-the-top is a general term for content service that is provided independent of a network operator. It's often referred to as "over-the-top" because these services ride on top of service already subscribed to by the consumers such as internet access or broadband wireless.

3. Canadian reflection

The *Broadcasting Act* requires that the Canadian broadcasting system maintains and enhances national identity and cultural sovereignty. It should provide local, regional and national programming; contribute to and make use of content created by Canadians; and reflect the linguistic duality and multicultural and multiracial nature of Canadian society and the special place of Aboriginal peoples within society.

Historically, these objectives have been achieved through a regulatory bargain where, for the privilege of holding a broadcasting licence that limits the number of competitors entering the market, broadcasters⁷⁷ have had to meet required levels of Canadian content and other obligations. In particular, public broadcasters have had to meet higher obligations in exchange for public funding. Private broadcasters, on the other hand, have been able purchase the rights to popular, highly rated US programming and sell advertising around those programs. They must, however, invest a proportion of those revenues into Canadian content. This regulatory bargain has been achieved, in part, by the ability to manage access to non-Canadian content.

Until recently, consumers had few options for popular, high-quality entertainment and news programming. These sources were mainly limited to the traditional, regulated system: they could subscribe to the services of a broadcasting distributor (satellite, cable or IPTV) or watch over-the-air signals.⁷⁸

Until recently, broadband Internet speeds were too slow to enable the streaming of audiovisual content of adequate quality, which prevented OTT providers from challenging satellite and cable's dominance of the TV-distribution market. An increasing amount of content is now available over the Internet, much of which originates from outside Canada. The digital world makes it essentially impossible to manage access to non-Canadian content. Consumers have proven eager to discover new sources of content and services—whether these are offered by domestic or international providers. Consumption of digital media is growing rapidly—a trend that is likely to accelerate. The key to understanding the potential impact of digital media lies in media-consumption patterns.

Companies are seeking ways to meet consumer demands for instant access to content and to seize new opportunities in this dynamic environment. They are also seeking sustainable business models, particularly on the Internet where, historically,

⁷⁷ Unless otherwise specified in this document, the term “broadcasters” encompasses conventional broadcasters and specialty services.

⁷⁸ Consumers also had non-broadcasting options such as buying or renting DVDs, going to the movies, etc.

consumers have expected content to be made available at minimal or no cost. They are experimenting with users' willingness to pay for online content and are working to strike a balance between free or ad-supported access to content and subscriptions or transactional revenues. Indications that consumers are willing to pay for some premium content or convenience have led many online companies to offer basic services at no cost, and charge a premium for special features.

New media content and platforms present new opportunities for communications companies and content producers. Canadian vertically integrated providers are in a unique position to distribute content on multiple platforms to a global audience. Canadian talent and independent broadcasters can also exploit the Internet's global reach to find new audiences.

To better understand the challenges in fulfilling the cultural policy objectives of the *Broadcasting Act* in a digital environment, the following section explores consumer behaviours as well as the business models adopted by broadcasters and broadcasting distributors.

3.1 Technology evolution

Devices such as tablet computers and smartphones are becoming increasingly powerful and can be used to access content from virtually anywhere. Certain models are even able to output HD video to large displays, such as televisions.⁷⁹ Video game consoles, once used exclusively for playing games, now enable users to access a range of content over the Internet. In some cases, a gaming console can even be used as a secondary set-top box for a BDU service. In turn, an increasing number of BDU set-top boxes can connect to the Internet, which enables users to access additional content online or from other sources. Finally, TVs are evolving from being only display panels to providing access to the Internet. As such, consumers can incorporate applications and access the Internet on their TVs in the same way that they would on their computers.

The migration of data into the cloud⁸⁰ is being leveraged by many providers, including large BDUs, to provide online video portals. Cloud computing enables the distribution of new media content to TVs, PCs and in-home mobile devices, as well as over mobile wireless platforms to smartphones and portable entertainment devices.

These technological changes are transformative and are often cited as the reason for changes in certain consumer consumption trends.

⁷⁹ Personal computers including laptops and netbooks also have this capability.

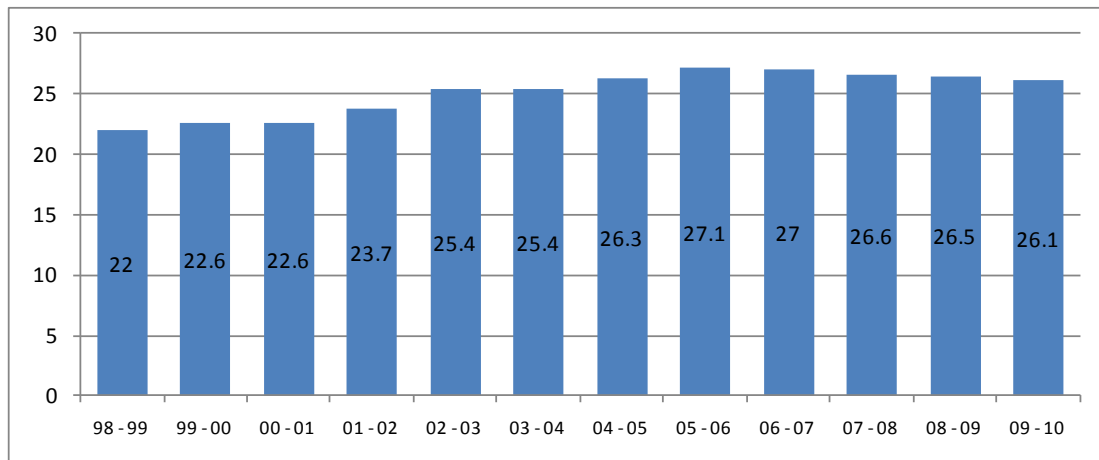
⁸⁰ The cloud is a generic term used to refer to data stored on networks located outside of a customer's premises.

3.2 Consumption

3.2.1 TV broadcasting

Although the consumption of Internet video, including professionally produced content, is growing,⁸¹ these platforms continue to be largely complementary to the traditional broadcasting system. The availability of programming from other sources, such as the Internet, has not had a significant impact on the number of hours Canadians spend watching TV. The average number of hours of TV viewing in English Canada has declined in each year since the 2005-2006 broadcast year. Overall, the number of weekly per-capita hours of TV viewed has fallen 3.7 percent between 2005-2006 and 2009-2010 (see Figure 18). However, the average number of hours of TV viewing remains higher than it was before the major influx of specialty channels in the 2000s.

Figure 18 Weekly per capita hours of TV viewing, English Canada, all persons 2+, 1998-1999 to 2009-2010



Source: CBC Research (using Nielsen Media Research 98 - 04, BBM Nielsen 04 - 07, BBM Canada 07 +). Note that a change in methodology is in part responsible for some of the increase in viewing between 03-04 and 04-05

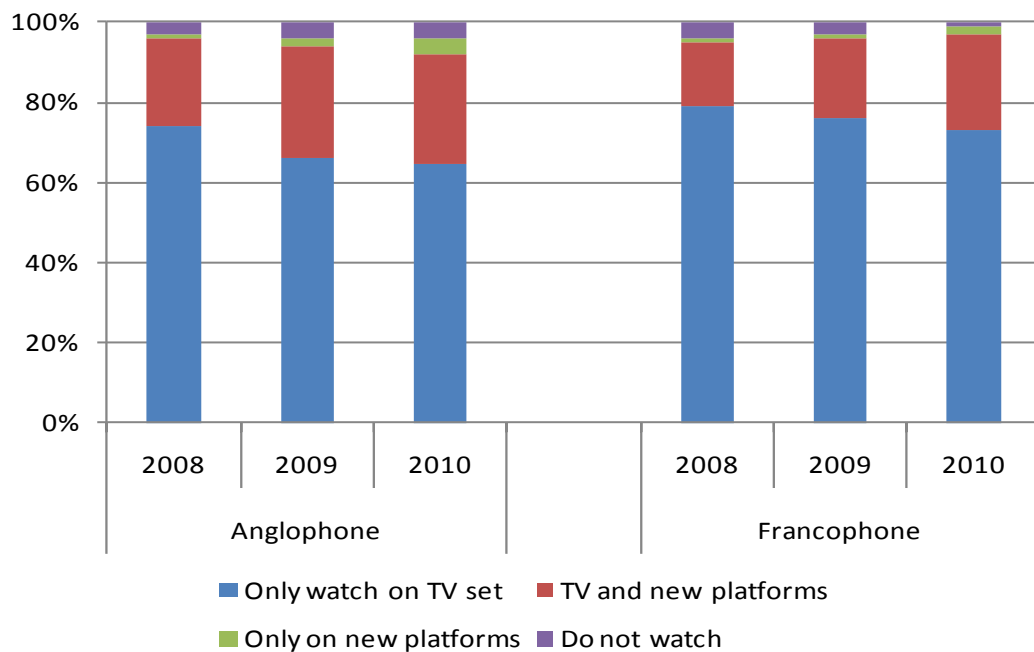
In 2009, MTM reported that Canadians mostly watched live TV rather than pre-recorded programs. For Anglophones and Francophones, live TV constituted 84 percent and 91 percent of TV viewing, respectively.⁸² While it is almost certain that these percentages have decreased in 2010, it is reasonable to assume that consumers continue to prefer watching programs at their scheduled times.

⁸¹ See 3.2.3 Internet Video/OTT TV.

⁸² MTM, *Personal TV: Anytime, Anywhere 2010; Télévision personnelle : Télévision en tout lieu et en tout temps en temps 2010*, 18 April 2010.

A study commissioned in 2010 by the Television Bureau of Canada (TVB)⁸³ showed that despite the availability of different screens, Canadians predominantly choose to watch programs through TV sets. The overwhelming majority (77 percent) said that a computer or mobile device could not replace a TV set. Consumers tend to supplement regular TV viewing with online content. According to MTM, most people continue to rely on their traditional TV sets, although the percentage of Canadians watching programs through TV sets has declined from 74 percent in 2008 to 65 percent in 2010 for Anglophones and from 79 percent in 2008 to 73 percent in 2010 for Francophones. Consumers who use Internet TV do not appear to be abandoning their TV sets. In 2010, only 4 percent of Anglophones and 2 percent of Francophones watched TV exclusively through new platforms⁸⁴ (see Figure 19).⁸⁵

Figure 19 TV viewing platform usage, Canadians 18+, 2008 - 2010



Source: MTM Personal TV: Anytime, Anywhere 2010; MTM Télévision personnelle : Télévision en tout lieu et en tout temps en temps 2010

⁸³ http://www.tvb.ca/page_files/pdf/Media%20Releases/TVB%20TV-Internet%20Press%20Release-Final.pdf, *Television and Online – A Peaceful Alliance*, 30 September 2010.

⁸⁴ New platforms include Internet and mobile devices such as cell phones, tablets, video MP3 players, and hand-held gaming devices.

⁸⁵ MTM, *Personal TV: Anytime, Anywhere 2010*; *Télévision personnelle : Télévision en tout lieu et en tout temps en temps 2010*, 18 April 2010. The MTM cautioned that self-reported data substantially under-estimate TV usage, while online video and mobile video are over-reported.

3.2.2 Internet usage

According to Comscore,⁸⁶ Canadians spend more time online⁸⁷ than people in any other nation. Canadians spend on average 43.5 hours per month online, nearly twice the worldwide average of 23.1 hours. Since 2009, the percentage of Canadians aged 55 years and older that use the Internet has increased by 12 percent making it the fastest growing demographic.

Research suggests that while time spent online has increased, TV viewing trends have not been significantly affected. The TVB⁸⁸ found that the amount of time spent on the Internet has had little impact on the number of hours spent watching TV. Light Internet users aged 12 years and older spent 23.3 hours per week watching TV, while both medium and heavy Internet users spent 22.8 hours. It should be noted that consumers who do not use the Internet reported watching between 12 and 14 percent more television (26 hours per week).

The TVB study⁸⁹ showed that consumers are not necessarily substituting time online for TV viewing. According to the TVB study, 40 to 50 percent of those surveyed below the age of 55 used the Internet while watching TV, and a majority reported paying attention to both.⁹⁰ In some cases, consumers watch TV while interacting with other viewers via social media websites or blogs. Many TV programmers are taking advantage of this trend by creating online environments where viewers can interact both during a broadcast and after a program has aired. The TVB study also indicated that more than half of the people surveyed went online after having been intrigued by something they saw in a TV commercial. Some—12.4 percent—even made online purchases.

3.2.3 Internet video/OTT TV

Consumer adoption of video via the Internet is increasing. All age groups are consuming video online,⁹¹ and 53 percent of Internet video viewers are over the age

⁸⁶ http://www.infomedia.gc.ca/crtc/articles/unrestricted/2011/03/crt201132314403802_68.htm, *Canada Digital Year in Review 2010*, 8 March 2011.

⁸⁷ In some studies, time spent online includes time spent online in the workplace.

⁸⁸ http://www.tvb.ca/page_files/pdf/Media%20Releases/TVB%20TV-Internet%20Press%20Release-Final.pdf, *Television and Online – A Peaceful Alliance*, 30 September 2010.

⁸⁹ <http://www.tvb.ca/pages/viewingpreferences.htm>, *Television Viewing Preferences & Online Synergy*, date.

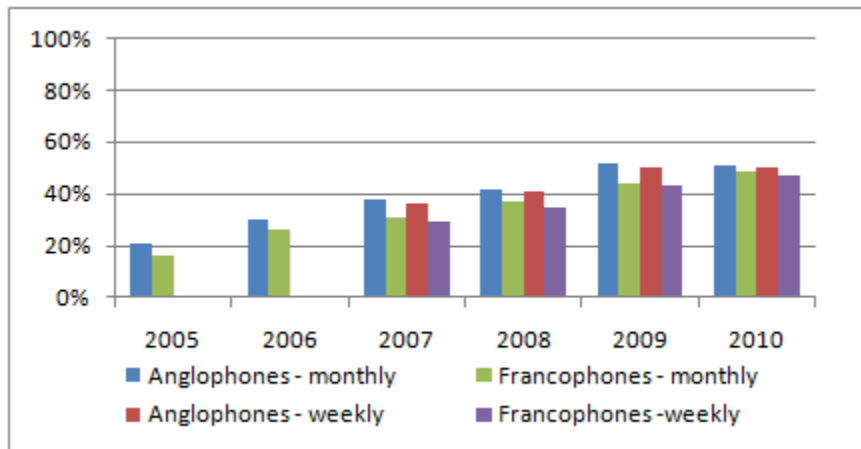
⁹⁰ http://www.tvb.ca/page_files/pdf/Media%20Releases/TVB%20TV-Internet%20Press%20Release-Final.pdf, *Television and Online – A Peaceful Alliance*, 30 September 2010.

⁹¹ Online video includes user generated content, content developed for the Internet, as well as repurposed television content.

of 35.⁹² According to Comscore, Canada is the global leader in terms of Internet video viewing by its citizens. Comscore indicated that while minutes spent online rose by 10 percent between August 2008 and August 2009, the total minutes spent streaming video each month increased by 156 percent.⁹³ More recent figures show that the number of minutes streaming video continues to grow faster than minutes online, with a year over year growth of 16 percent versus the 5 percent year over year growth in minutes online.⁹⁴

MTM⁹⁵ also found that the percentage of Canadians watching Internet video is growing. In 2010, 50 percent of Anglophones and 47 percent of Francophones reported watching videos⁹⁶ on the Internet weekly (see Figure 20). This growth can be attributed to the increasing amount of available content, the convenience of on-demand viewing, the growth in broadband adoption and the increasing ease of use (particularly for Internet TV⁹⁷).

Figure 20 Percentage of Canadians 18+ watching videos online,⁹⁸ 2005 - 2010



Source: MTM Online trending tool <http://www.mtm-otm.ca>

⁹² <http://en.titaninteractif.com/index.php/2010/11/iab-canada-mixx-2010-key-learning/>, IAB Canada's MIXX 2010 – Key Learning, fall 2010.

⁹³ http://www.environicsanalytics.ca/user_conference/2009/2009EAUC_comScore.pdf, Comscore, *State of the Nation: Canada Edition*, August 2010.

⁹⁴ http://www.cftpa.ca/primetime/2011/PDFs/comScore_Presentation_Prime_Time_2011.pdf Comscore, *What is Digital Doing Now?*, 18 February 2011

⁹⁵ MTM, *Internet Users: Media, Social Networking and Beyond, 2010; Internautes : médias, réseautage social et plus 2010*, 15 June 2011.

⁹⁶ Video includes amateur video clips and TV programs.

⁹⁷ Internet TV is not the same as IPTV. IPTV is a subscription service offered by BDUs and which uses a private, managed IP network whereas Internet TV is television programming delivered over the public Internet.

⁹⁸ Includes TV programs, newscasts and amateur videos.

High-quality TV programming over the Internet is in the early stages of consumer adoption. Industry watchers have cited ease of use and content as key factors in driving mass-market adoption of Internet TV.⁹⁹ Consumers want easy-to-use interfaces with search capabilities and the ability to navigate seamlessly among services. They also want devices that are easy to install, provision and use. Content must be attractive to the consumer and must be delivered with an acceptable level of quality of service. Moreover, the service must provide a reasonable selection of aggregated content.

Since the introduction of OTT delivery, devices that streamline user experience have improved significantly. Internet-ready TVs¹⁰⁰ and set-top boxes that merge traditional TV with Internet TV are becoming increasingly available in the marketplace, easier to install and use, and as such, more accessible to less-technically savvy consumers. Just as the devices have improved, there have been dramatic increases in online content offerings. While watching amateur video clips¹⁰¹ remained more popular than watching TV on the Internet in 2010 according to MTM,¹⁰² professionally produced programming is gaining popularity.

MTM also found that while the percentage of Canadians watching Internet TV¹⁰³ has increased since 2007, this activity has increased minimally between 2009 and 2010, as shown in Figure 21. In 2010, 24 percent of Anglophones and 20 percent of Francophones in a typical week watched some form of TV content online, such as newscasts, sports clips or TV programs. However, among Anglophone Internet TV viewers, the average number of hours watched in a typical week between 2007 and 2010 increased from 2.1 to 2.6 hours. For the total population of Anglophones aged 18 years and older, this represents a weekly increase of only 0.6 hours of Internet TV.

⁹⁹ Sources include: <http://www.rbr.com/tv-cable/27624.html>, *Over-the-top video won't replace pay TV*, 20 September 2010; https://microsite.accenture.com/landing_pages/Media_Entertainment/Documents/Accenture_Insight_Giving_Consumers_an_Over_the_Top_Experience.pdf, *Bringing TV to Life: Giving Consumers an Over-the-Top Experience*, 8 April 2010; <http://www.v-net.tv/NewsDisplay.aspx?id=670&title=three-ways-that-cable-will-overcome-ott>, *Three ways that cable will beat OTT*, 23 February 2011; and http://www.hpintelco.net/pdf/solutions/WP_Joining_the_Over_The_Top_revolution.pdf, *Joining the Over-The-Top revolution*, March 2011.

¹⁰⁰ Internet-ready TVs do not require that a computer be connected to a TV set to access content on the Internet.

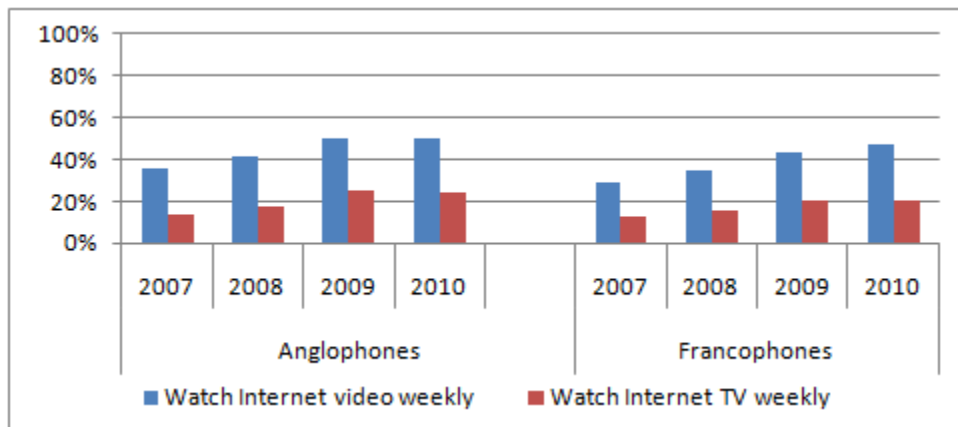
¹⁰¹ Websites that provide amateur content often also provide professional advertising content “disguised” as amateur content, as well as professional music videos.

¹⁰² MTM, *Personal TV: Anytime, Anywhere 2010; Télévision personnelle : Télévision en tout lieu et en tout temps en temps 2010*, 18 April 2011.

¹⁰³ Content that is also available on traditional TV such as full length TV shows, newscasts, or clips from TV shows.

Francophones watched less TV online than Anglophones. Their average number of viewing hours rose slightly from 1.3 hours in 2009 to 1.5 hours in 2010.¹⁰⁴ For all Francophones 18 years of age and older, this represents a usage of only 0.3 hours of Internet TV per typical week. Clips, newscasts and sports highlights are the most popular types of shows viewed online, although catch-up TV is cited as one of the main reasons why consumers watch Internet TV.

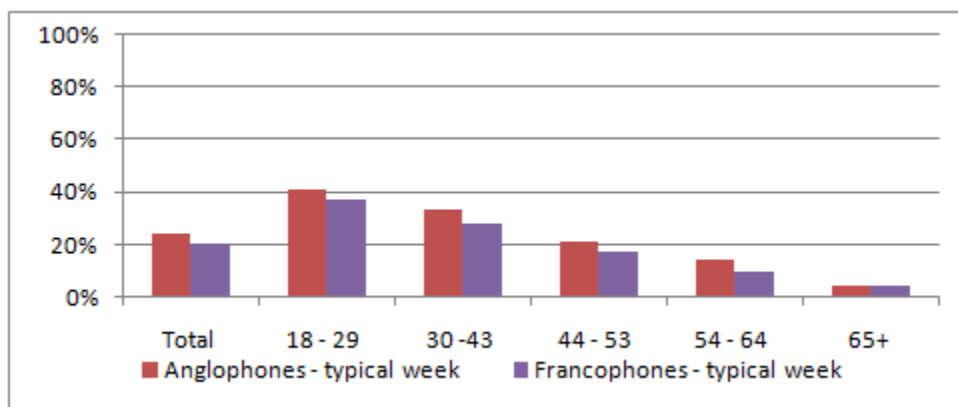
Figure 21 Internet video versus Internet TV viewing growth, Canadians 18+, 2007-2010



Source MTM Personal TV: Anytime, Anywhere 2010; MTM Télévision personnelle : Télévision en tout lieu et en tout temps en temps 2010

From a demographic perspective, people between the ages of 18 and 30 are most likely to be viewers of Internet TV (see Figure 22).¹⁰⁵

Figure 22 Internet TV viewing demographics, Canadians 18+, 2010



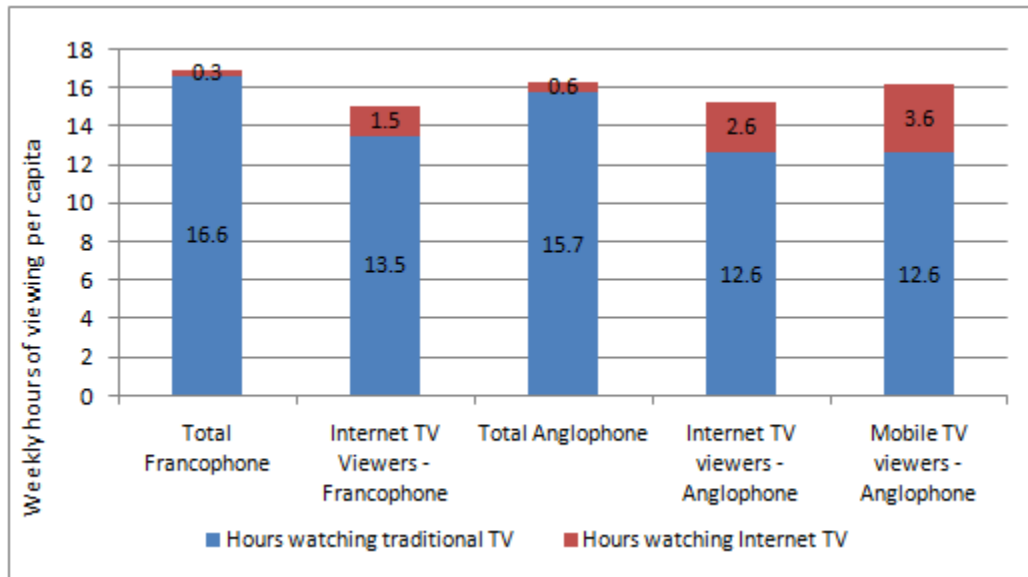
Source: MTM Online demographic tool <http://www.mtm-otm.ca>

¹⁰⁴ MTM, *Personal TV: Anytime, Anywhere 2010; Télévision personnelle : Télévision en tout lieu et en tout temps en temps 2010*, 18 April 2011.

¹⁰⁵ <http://www.mtm-otm.ca>, *MTM Online demographic tool*, Spring 2011.

In its *2010 Report on Personal TV*,¹⁰⁶ MTM concluded that in 2010, Anglophone and Francophone Internet TV viewers watched less traditionally broadcast TV, but that the time spent watching TV online added to the time spent watching programs through a TV set was nearly equal to the average amount of time Canadians spend watching TV (see Figure 23).

Figure 23 Total hours spent by Canadians watching TV programming – Total Canadians versus Internet TV Viewers by linguistic profile¹⁰⁷



Source MTM, *Personal TV: Anytime, Anywhere 2010*; *Télévision personnelle : Télévision en tout lieu et en tout temps en temps 2010*

The impact of foreign OTT providers who have recently entered Canada has yet to be determined. While it is clear that Canadians are adopting these services, the extent to which Canadians are substituting¹⁰⁸ them for the broadcast and OTT services of traditional Canadian players is not yet known.¹⁰⁹

¹⁰⁶ MTM, *Personal TV: Anytime, Anywhere 2010*; *Télévision personnelle : Télévision en tout lieu et en tout temps en temps 2010*, 18 April 2011.

¹⁰⁷ This is self-reported time, which is typically underreported and will be less than metered viewing data.

¹⁰⁸ <http://www.crtc.gc.ca/eng/publications/reports/rp110215.htm>. *Market Definition Issues for Audio and Audio-Visual Distribution Products and Services in a Digital Environment*, Lilla Csorgo and Ian Munro, 15 February 2011.

¹⁰⁹ For example, some of the time spent using these services could be in place of watching DVDs or Blu-Ray discs.

Although Internet TV does not currently represent a substantial amount of TV viewing, the amount is growing. While its long-term impact is still uncertain, the regulated players have expressed concerns. Content providers, broadcasters and broadcasting distributors are experimenting with their own methods of delivering Internet content both in response to the threat posed by OTT services and to reach consumers using new technologies and provide more choice.

3.2.4 TV anytime, anywhere

Conventional broadcasters and large broadcasting distributors are responding to the threat of disintermediation and the increasing consumer demand for “anytime, anywhere” TV programming by offering more OTT content. For example, it is common for Canadian TV broadcasters to offer catch-up TV on their interactive websites. Such a practice enables them to keep their audiences through their complementary services. BDUs are providing “TV everywhere” through Internet-based portals and applications for mobile devices. Analysts and others have noted that services such as “TV everywhere” are critical to defend against the potential for lost or reduced cable subscriptions (practices known as “cord-cutting” or “cord-shaving”).

Statistics on the consumer adoption of OTT services are presently limited. Most of these services have emerged in recent years (and some continue to emerge), while data collection is in its infancy stages. A spring 2011 study by Lemay-Yates Associates found that 59.5 percent¹¹⁰ of Canadians surveyed use the OTT services of Canadian broadcasting distributors.¹¹¹

Most of the TV programming consists of episodes of current series (primarily for catch-up viewing) or ancillary short-form content created for the Internet and related to the series broadcast, such as interviews or behind-the-scenes clips. Some broadcasters, especially public ones, are increasingly making their back catalogues available.

3.2.5 PVR and VOD

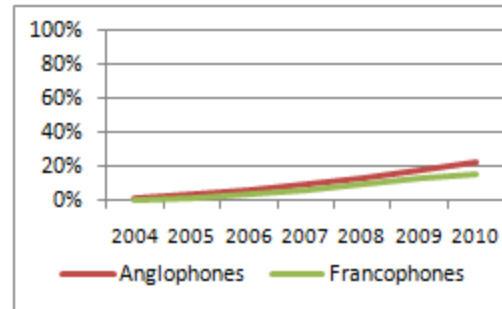
Broadcasting distributors have also expanded their traditional services by offering Personal Video Recorders (PVRs) and cable-based video-on-demand (VOD) services.

¹¹⁰ Note that this percentage does not include the portals of broadcasters affiliated with BDUs such as CTV, Global, City-TV, or TVA.

¹¹¹ Lemay Yates Associates, *Over-The-Top (OTT) Service Trends in Canada*, June 2011.

PVR growth is partially driven by the adoption of HD receivers as consumers often purchase an integrated HD PVR set-top box.¹¹² While PVR use is on the rise, it is possible that in the mid-term, on-demand access to programming will limit its growth. MTM’s research¹¹³ shows that PVR penetration has grown to 23 percent for Anglophones and 16 percent for Francophones (see Figure 25). It has also found that consumers frequently use their PVRs. In a typical week, 84 percent of Anglophone PVR owners watch TV programs recorded on their PVRs. Typically, these users watch an average of 6.9 hours of recorded TV. Usage rates are similar among Francophones. In a typical week, 87 percent of PVR owners watch TV programs recorded on their PVRs for an average of 5.6 hours of recorded TV.

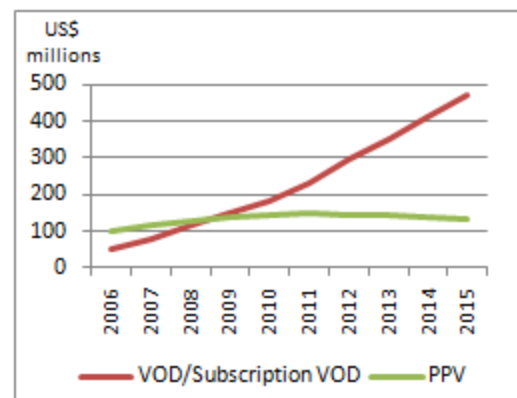
Figure 25 PVR Penetration, 2004-2010



Source: MTM Online Trending Tool

In addition, all major cable companies now offer VOD, and certain specialty channels also have associated VOD channels. In 2009, the number of VOD services licensed by the Commission rose from 25 to 33.¹¹⁴ According to PricewaterhouseCoopers,¹¹⁵ Canada’s VOD revenues are expected to reach US\$232 million in 2011.¹¹⁶ By 2015, the revenues double to US\$469 million with an estimated CAGR of 20.6 percent from 2011 to 2015 (see Figure 26).¹¹⁷

Figure 24 Forecast VOD and PPV revenues (US\$ millions)



Source: PricewaterhouseCoopers, *Global entertainment and media outlook 2011-2015*, June 2011

VOD revenue is being driven, in part, by increases in digital cable and IPTV

¹¹² According to the MTM, 99% of Anglophone PVR owners and 98% of Francophone PVR owners have obtained their HD PVR set-top box from their BDU.

¹¹³ MTM, *Personal TV: Anytime, Anywhere 2010; Télévision personnelle : Télévision en tout lieu et en tout temps en temps 2010*, 18 April 2011.

¹¹⁴ There were no changes to the number of licensed VOD services in 2010.

¹¹⁵ PricewaterhouseCoopers, *Global entertainment and media outlook 2010-2014*, June 2010.

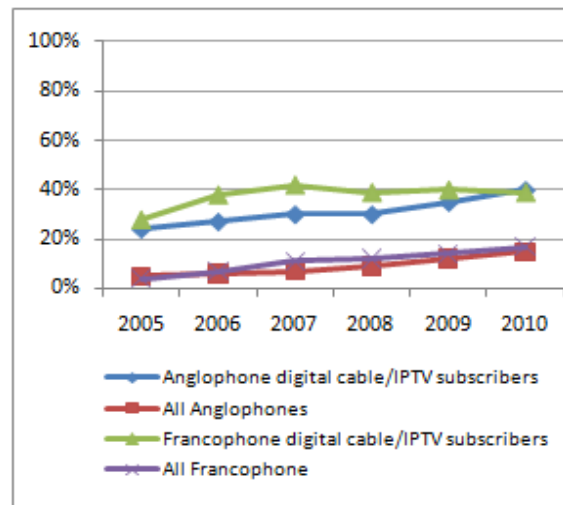
¹¹⁶ All PricewaterhouseCoopers revenue estimates are quoted in US\$ and are based on average 2010 exchange rates for CAN\$ and US\$

¹¹⁷ PricewaterhouseCoopers CAGR calculation used their projection for VOD revenues at the end of 2010, which was US\$184 million.

subscriptions. In Canada, PricewaterhouseCoopers projects that the number of VOD households will expand from 4.8 million in 2010 to 8.8 million in 2015. However, the researchers noted that at present more than 90 percent of VOD views are available at no cost. The provision of free VOD is considered to be a critical service for retaining subscribers. It also works to introduce potential subscribers to the service, potentially creating interest in paid VOD. As economic conditions improve and as digital cable and IPTV penetration increases, PricewaterhouseCoopers expects that VOD revenues will grow.

VOD services that enable catch-up TV present an added benefit to broadcasters and BDUs over PVRs since commercial skipping can be controlled. According to a study by MTM,¹¹⁸ 40 percent of Anglophone and 39 percent of Francophone digital subscribers used VOD services in 2010 (see Figure 26). However, the same study showed that the amount of time spent watching TV on VOD is low. Anglophone and Francophone digital subscribers with access to VOD services watched only 1 and 0.6 hours, respectively, per week of TV programming on VOD services.¹¹⁹

Figure 26 Percentage of Canadians 18+ who have watched VOD in the past month, 2005 - 2010



Source: MTM Personal TV: Anytime, Anywhere 2010; MTM Télévision personnelle : Télévision en tout lieu et en tout temps 2010

While VOD (including Pay VOD) services are experiencing growth, pay-per-view (PPV) services are not. A major disadvantage to PPV is that it does not allow consumers to choose the broadcast times of programs. The number of licensed Canadian PPV services decreased from 13 to 11 in 2009.¹²⁰ PricewaterhouseCoopers predicts that PPV revenues in Canada will begin to decline in 2012, after peaking at US\$148 million in 2011. However, PPV is likely to remain popular for sports or other live events.

¹¹⁸ MTM, *Personal TV: Anytime, Anywhere 2010; Télévision personnelle : Télévision en tout lieu et en tout temps 2010*, 18 April 2011.

¹¹⁹ With regards to the population at large, 15% of Anglophones and 17% of Francophones use VOD services.

¹²⁰ There were no changes in the number of licensed PPV services in 2010.

3.2.6 Internet radio

The impact of Internet radio has thus far been minimal in Canada. Pure-play Internet radio stations¹²¹ constitute a small percentage of overall listenership. Most broadcasters stream their radio stations over the Internet. This enables listeners to receive stations from other regions that are not available over the air.

MTM found that, in 2010, 28 percent of Anglophones and Francophones listened to streamed audio via the Internet, respectively listening to 6.1 and 5.3 hours per week. Of the Canadians who listened to streamed audio, 61 percent of Anglophones and 46 percent of Francophones listened to streamed AM/FM radio stations, with both language groups spending, on average, 4.8 hours a week listening to streamed radio.¹²² In contrast, 84 percent of Anglophones and 89 percent of Francophones listen to 11.9 and 12.7 hours of traditional broadcast respectively in a typical week.¹²³

Copyright fees associated with online audio delivery have been alleged by at least one popular music service to be too high in Canada to allow Internet pure-play radio services to operate in this country.¹²⁴ Copyright does not distinguish between foreign and domestic providers, and some Canadian broadcasters have noted their inability to launch online services that are different from the simulcasts of their terrestrial services. Several online audio services are currently operating in Canada, but unlike some of the services that operate legally in the US via a single, all-encompassing statutory broadcasting licence, these services have typically gained rights to content directly from the major record labels.¹²⁵ Copyright is a significant topic of discussion for the government, the public and broadcasting stakeholders, and its role in facilitating online music services remains to be seen.

In the US, pure-play Internet radio has sustained strong growth. Ando Media's Webcast Metrics¹²⁶ shows that Pandora Corporate reached average active sessions (AAS), defined as average simultaneous listeners, of 492,209 in the November 2010 domestic (Monday to Sunday, 6 a.m. to 12 a.m.) ranking. That figure represented an increase of 163 percent since November 2009. The top five terrestrial broadcaster

¹²¹ Pure-play Internet radio refers to an Internet music streaming service that is not a streamed simulcast of a licensed AM/FM station

¹²² These Canadians may also stream music from pure-play Internet radio.

¹²³ <http://www.mtm-otm.ca>, *MTM Online Data Analysis Tool*, Fall 2010

¹²⁴ <http://business.financialpost.com/2011/02/28/pandora-founder-decries-canadian-barriers-to-entry/>, *Pandora founder decries Canadian barriers to entry*, 28 February 2011.

¹²⁵ <http://business.financialpost.com/2011/02/16/web-radios-future-still-up-in-the-air/>, *Web radio's future still up in the air*, 16 February 2011.

¹²⁶ http://www.andomedia.com/ranker/Ranker_Oct_Nov2010.pdf, *Ando Media Releases October & November Internet Audio Top 20 Rankers*, 28 December 2010.

groups¹²⁷ had AAS of 260,057 in November 2010, approximately 53 percent of Pandora's AAS.

Notwithstanding radio usage in automobiles, an analysis by Bridge Ratings¹²⁸ found that pure-play Internet radio stations are also drawing US audiences away from traditional radio broadcasters on the Internet (i.e., terrestrial radio stations that also stream their broadcasts online). Using Ando Media's Webcast Metrics, Bridge determined that pure-play Internet radio's share of total online listening in the US increased from 35 to 49 percent between November 2009 and June 2010.

At least in the US, and for the time being, online radio listeners are demonstrating a willingness, and possibly a preference, to use services that offer choice and personalization.¹²⁹ These characteristics contrast with the strengths of local, terrestrial broadcasting: context and localism. It remains to be seen whether pure-play Internet radio will continue to gain momentum, an equilibrium will be reached or the strengths of both will result in a hybrid offering.

While the potential for OTT video to have a meaningful impact in the broadcasting system in the context of communications network capacity and retail Internet pricing is uncertain, purely audio services may not confront the same barriers to adoption. Sourcing material entirely from the Internet, an average Canadian might consume just 4 GB per month of data for 17 hours per week of listening to high-quality streams. This would be far below the caps for most fixed-line retail Internet access, and comfortably within the 6 GB cap that is currently the upper end of some 3G wireless offerings.

Should mobile data plans become affordable enough to accommodate the radio listening that Canadians do in their automobiles (approximately one-third), and at the same time pure-play services that offer personalization emerge, it is likely the dynamics of the audio landscape will change considerably, similar to consumption trends in the U.S.

3.3 Advertising and subscriptions

According to the Commission's *Communications Monitoring Report 2011*, BDUs in 2010 contributed \$368 million to Canadian programming and TV broadcasters spent \$2.5 billion on Canadian programming. These contributions are proportionate to the

¹²⁷ These groups are CBS Radio Inc., Clear Channel Radio, Citadel Broadcasting Company, Entercom Communications Corporate, and ESPN Radio Corporate.

¹²⁸ <http://www.bridgeratings.com/>, *The Changing Tide of Internet Radio*, 22 September 2010.

¹²⁹ Bridge Ratings found that 78% of those surveyed said they listen to less terrestrial simulcasts because they can customize with Pure Play Internet radio.

revenues of each undertaking. To develop an understanding of the impact of OTT services on the Canadian broadcasting system, it is useful to analyze advertising and subscription trends and projections.

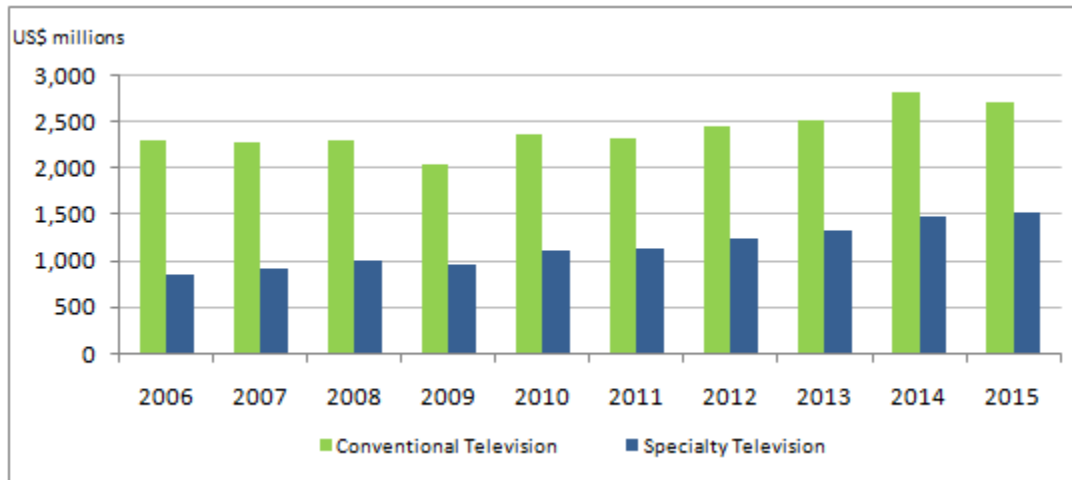
3.3.1 TV advertising

TV is the medium of choice for advertising. Although TV advertising revenues declined during 2008 and 2009, short-term trends that occurred during this period were likely instigated by the global economic crisis. Therefore, these trends should not be used to draw longer-term conclusions about the impact of alternative sources of content on the conventional system.

Post-recession, advertising revenues for conventional TV have increased. According to Commission's *Communications Monitoring Report 2011*, TV advertising rebounded in 2010 for both specialty and conventional broadcasters, recovering from the losses in 2009. For the year ended August 31, 2010, conventional broadcasters, including the Canadian Broadcasting Corporation and Société Radio-Canada, posted a year-over-year growth in advertising revenues of 7.6 percent, while revenues for specialty grew by 1.3 percent.

As seen in Figure 27, PricewaterhouseCoopers forecasts growth in television advertising revenue from 2011 to 2015. It notes that years in which the Olympic Games are broadcast tend to have better advertising revenue growth than non-Olympic Game years. This is particularly evident for conventional broadcasters. Although conventional broadcasters continue to garner the majority of advertising revenues, PricewaterhouseCoopers expects that specialty services will experience higher growth in advertising revenues between 2011 and 2015 (a CAGR of 6.5 percent, as opposed to 2.8 percent for conventional broadcasters). As a result, the specialty services share of TV advertising dollars is predicted to grow from 32.9 percent in 2011 to 36 percent in 2015. Advertising revenues for conventional broadcasters and specialty services are projected to reach US\$2.7 billion and US\$1.5 billion in 2015, respectively.

Figure 27 TV advertising revenue projection, 2006-2015 (\$US millions)



Source: PricewaterhouseCoopers Global entertainment and media outlook 2011-2015, June 2011

3.3.2 Internet advertising

The Internet could threaten broadcasters’ abilities to raise advertising dollars. It fragments the market and could reduce the rates that advertisers are willing to pay for advertising spots. During 2008 and 2009—at a time when conventional broadcasters lost advertising revenue—Internet advertising revenue grew significantly. This trend may be an indicator of Internet advertising’s impact on the conventional broadcasting system.

According to the Internet Advertising Bureau (IAB), online advertising in Canada has increased at double-digit rates in all but one of the past 10 years. Online advertising revenues grew from \$98 million in 2000 to \$1.82 billion in 2009. They are forecast to grow by 15 percent by the end of 2010, rising to \$2.1 billion. French-language online advertising revenues are forecast to increase by 14 percent to \$400 million. Despite the high growth of online revenue, some online services have shifted from being purely ad-supported¹³⁰ to hybrid models where advertising revenues are combined with subscription and/or transaction revenues.

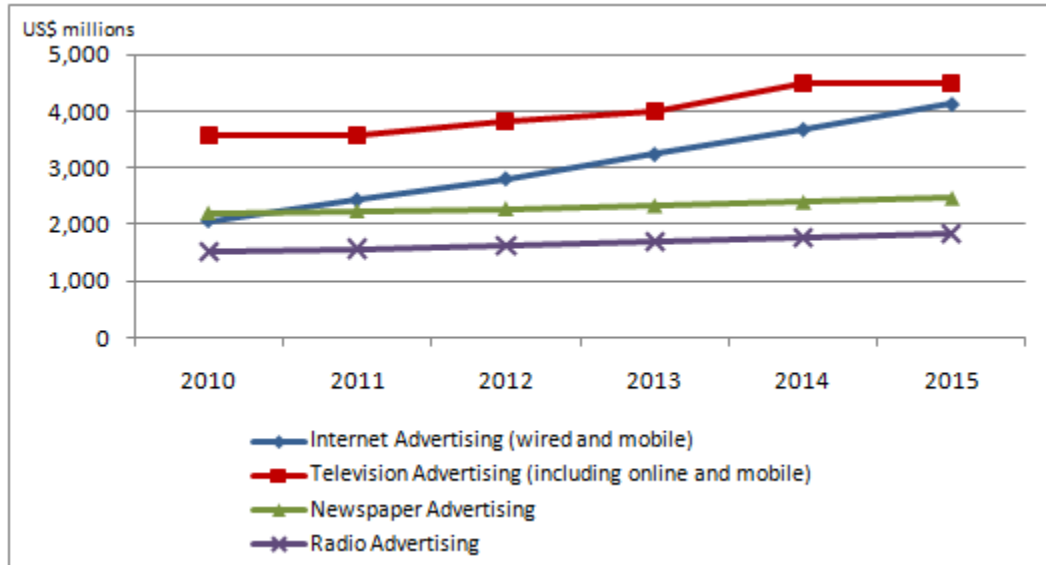
PricewaterhouseCoopers predicts that between 2011 and 2015 Internet and TV advertising will experience the most growth of all advertising and media (Canadian CAGRs of 11.9 percent and 4.7 percent, respectively).¹³¹ It expects radio advertising to also grow over this period (CAGR of 3.9 percent), and adds that online radio

¹³⁰ Hulu is an example of a service that transformed itself. It originally offered purely ad-supported content to now providing some content at no cost as well subscription-based premium content.

¹³¹ With the nascent video game market as the exception.

advertising will account for only a small portion of total radio advertising (see Figure 28).

Figure 28 Advertising revenue forecast, 2009-2014 (\$US millions)

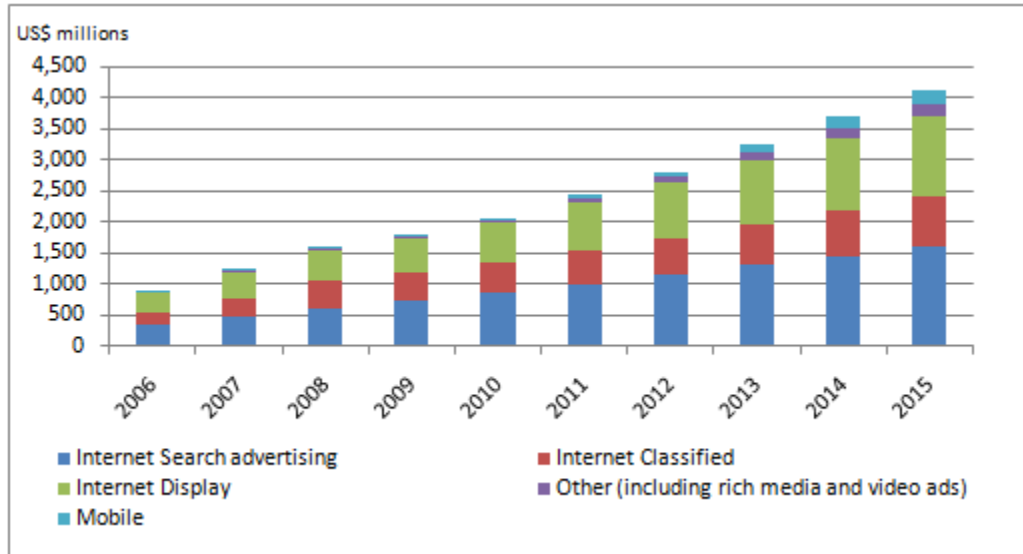


Source: PricewaterhouseCoopers Global entertainment and media outlook 2011-2015, June 2011

During this period, PricewaterhouseCoopers expects that search, classified and display advertising will continue to dominate Internet advertising (see Figure 29). The portion of the Internet advertising segment that includes rich media and video is predicted to experience the largest growth. With a CAGR of 31.2 percent, revenues are expected to rise from US\$51 million in 2010 to US\$198 million in 2015. PricewaterhouseCoopers noted that advertisers are co-ordinating their Internet and TV campaigns because they believe that television ads can be used to drive viewers to websites. In addition, TV websites are popular destinations that generate substantial advertising opportunities.

PricewaterhouseCoopers expects mobile Internet advertising to show significant growth, rising from US\$31 million in 2010 to US\$252 million in 2015 (a CAGR of 52.1 percent). This revenue stream is in the early stages of development, however, and is projected to represent only 6 percent of Internet advertising by 2015.

Figure 29 Canadian Internet advertising revenue projection 2005-2014 (US\$ millions)



Source: PricewaterhouseCoopers Global entertainment and media outlook 2011-2015, June 2011

The near-term challenge for mobile Internet advertising lies in the creation of an advertising model that works for advertisers and appeals to consumers. Gartner predicts that consumers will become less willing to pay for mobile applications, a trend that will increase the importance of advertising as a revenue source. Gartner argued that initial smartphone users tended to be early adopters of new mobile applications who were willing to pay for applications. Once smartphones garner mass-market appeal, however, the average user will be less tech-savvy. According to Gartner, the average user will be less willing to pay for applications. Revenue estimates by Gartner suggest that the market for application-based advertising is substantial and growing. It predicts that mobile applications will generate almost 25 percent of mobile application store revenues by 2013 (or US\$7.4 billion).¹³²

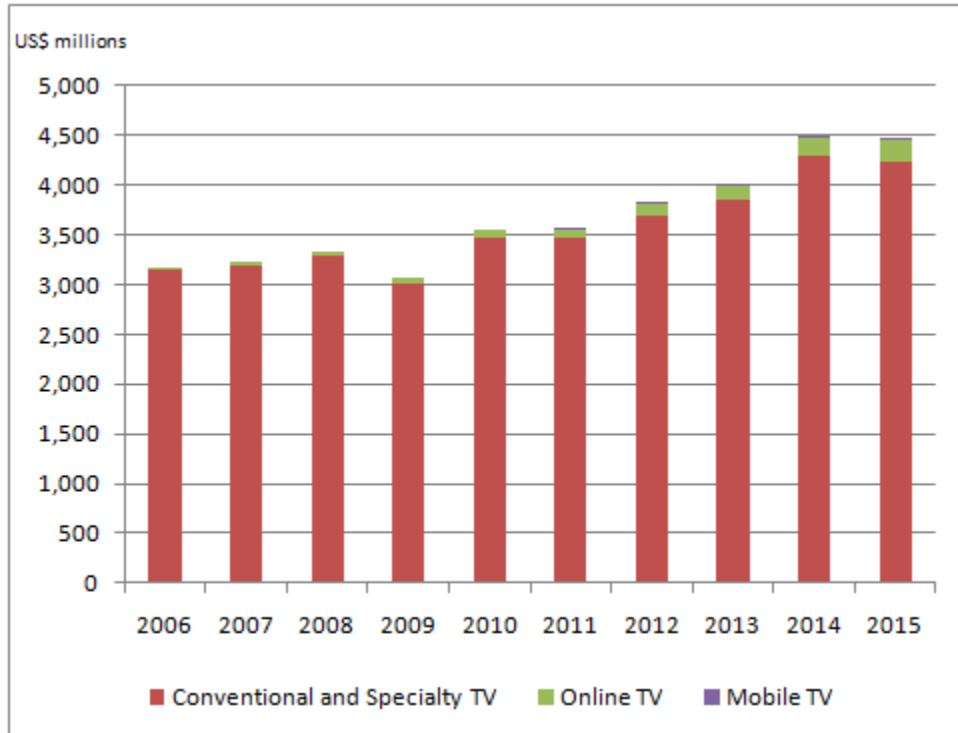
3.3.3 Internet and mobile television advertising

PricewaterhouseCoopers projects that although there will be higher growth for Internet and mobile TV advertising than for conventional and specialty TV advertising during the 2011 to 2015 period, traditional TV advertising will continue to dominate (see Figure 30). Internet TV advertising is projected to increase from US\$92 million in 2011 to US\$212 million in 2015; mobile TV advertising from US\$2 million to US\$29 million; and traditional TV advertising from US\$3,466 million in 2011 to US\$4,242 million in 2015.

¹³² <http://www.gartner.com/it/page.jsp?id=1282413>, *Gartner Says Consumers Will Spend \$6.2 Billion in Mobile Application Stores in 2010*, 18 January 2010.

Despite the high growth, by 2015 online television advertising is forecast to comprise only 4.7 percent of all television advertising revenues and mobile TV only 0.7 percent. PricewaterhouseCoopers does not expect that Internet TV advertising will have a significant impact on traditional TV advertising.

Figure 30 Projected TV advertising revenues including Internet and mobile, 2006-2015



Source: PricewaterhouseCoopers Global entertainment and media outlook 2010-2015, June 2011

The websites of local TV station that provide local news and programming schedules have attracted online advertising for several years. More recently, the availability of TV programming on broadcasters’ websites has contributed to the growth in Internet TV advertising. In some cases, the advertising displayed during the broadcast of a particular program online and on traditional TV may be the same, whereas in other cases, the advertising may be sold separately. Although BDUs’ online TV portals also attract advertising, PricewaterhouseCoopers believes that they currently do not generate meaningful incremental revenue and that the deployment of portals is more of a strategic initiative. PricewaterhouseCoopers expects that most Internet TV advertising will be generated by OTT services provided by traditional broadcasters rather than pure OTT providers.

In addition to online portals, BDUs have launched applications that enable subscribers to access television content using mobile devices. Some broadcasters also have mobile applications. PricewaterhouseCoopers considers mobile TV advertising to be incremental to TV advertising because people are less likely to watch TV at

home on mobile devices when they have big-screen HD TVs. PricewaterhouseCoopers believes that revenue losses to mobile TV advertising will be modest.

As online and mobile advertising fragments the market, advertising rates for traditional broadcast programming may be affected. The emergence of targeted¹³³ and interactive advertising on cable-delivered TV programming,¹³⁴ Internet/mobile platforms, and cross-platform TV/Internet advertising could increase the value of advertising. Online and mobile advertising rates are, on average, currently lower than traditional broadcasting advertising rates.

In the US, Morgan Stanley¹³⁵ found that in 2010, traditional network TV had a cost-per-thousand-impressions (CPM) of \$28; specialty services' ¹³⁶ CPM was \$12; and the Internet's, \$2. PricewaterhouseCoopers¹³⁷ noted that while Internet volume is growing, Internet advertising rates tend to be lower than those of established media due to the large amount of content available on the Internet. Morgan Stanley found that most of the growth in Internet advertising revenues reflects volume increases. The Internet's CPM has remained relatively constant.

3.3.4 BDUs

According to MTM, 89 percent of Canadians in 2011 subscribed to TV services, 7 percent of Canadians received their TV services over the air, and 2 percent did not own TV sets (see Figure 31).

¹³³ For TV, various advertisements are targeted to specific geographic areas or demographic segments via the set-top box. On the Internet, targeting is based on a user's URL. For mobile devices, targeting is effected through their GPS capabilities.

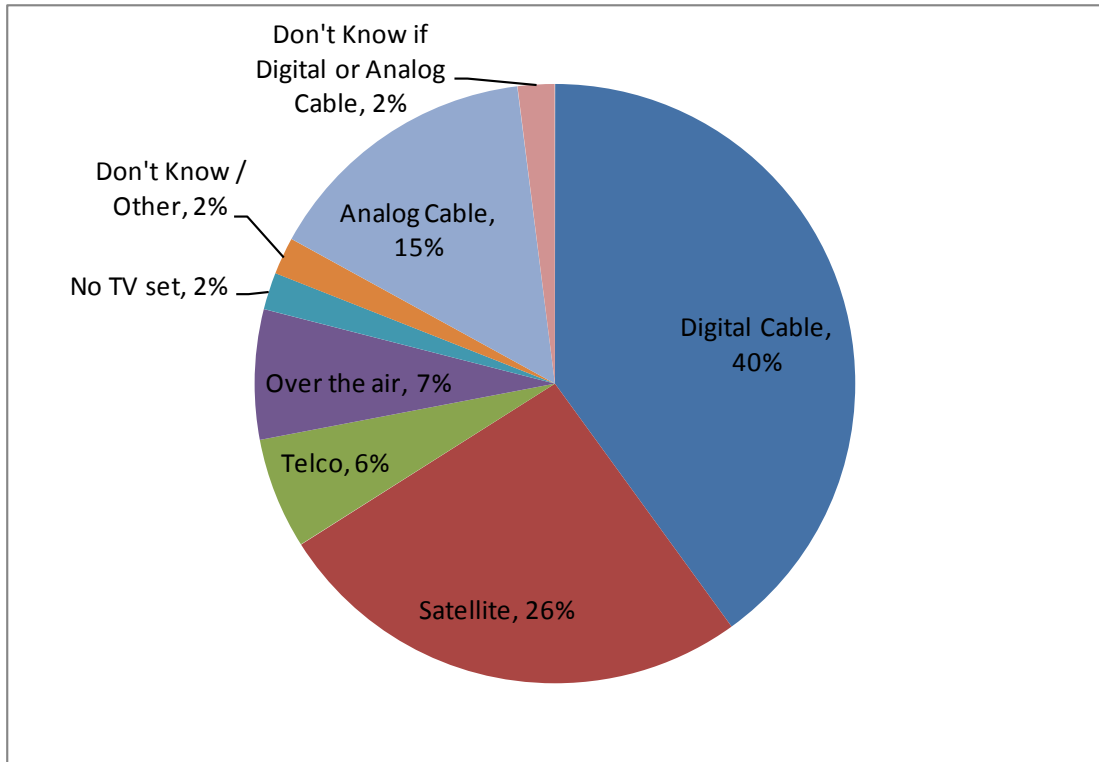
¹³⁴ Advertising revenues would likely be divided between the BDU and the broadcaster for the delivery of interactive or targeted advertising by BDUs.

¹³⁵ <http://www.exchangewire.com/blog/2010/06/15/average-online-cpms-still-lagging-behind-other-media/>, *Average Online CPMs Still Lagging Behind Other Media*, 15 June 2010.

¹³⁶ Referred to as cable TV in the US.

¹³⁷ PricewaterhouseCoopers, *Global entertainment and media outlook 2011-2015*, June 2011.

Figure 31 TV service reception by type, Canadians 18+, spring 2011



Source: MTM Spring 2011 Mini Report: Canada's DTV Transition: Are Canadians Prepared?

PricewaterhouseCoopers projects that BDU subscriptions and revenues will continue to grow between 2011 and 2015, albeit at a slower pace than that of the previous year, given the maturity and penetration of this segment. The availability of content from other sources may also contribute to the slower growth. There is likely to be additional growth in 2011 as a result of the transition to digital TV.

PricewaterhouseCoopers' Canadian forecasts for BDU subscriptions and revenue do not envisage significant cord-cutting or cord-shaving between 2011 and 2015 as a result of OTT video. Table 1 displays the projected growth in subscription TV households.

Table 1 Subscription TV households forecast (millions), 2009-2014

	2010	2011	2012	2013	2014	2015
Cable	8.35	8.4	8.45	8.5	8.5	8.5
Satellite	2.85	2.9	2.92	2.93	2.94	2.95
IPTV	0.3	0.5	0.75	0.9	1.1	1.3
Total licensed BDU subscriptions	11.5	11.8	12.12	12.33	12.54	12.75

Source: PricewaterhouseCoopers, Global Entertainment and Media Outlook 2011-2015, June 2011

PricewaterhouseCoopers predicts growth in the total number of households with TV service subscriptions between 2011 and 2015, with a CAGR over this period of 2.1 percent. It also predicts that satellite and cable subscriptions will plateau, whereas IPTV subscriptions will grow. Revenues are expected to grow at a higher CAGR than subscriptions over this period. PricewaterhouseCoopers projects revenues to grow from US\$8.2 million to US\$10.7 million, with a CAGR of 6.9 percent.¹³⁸ The higher growth would be attributable, in part, to improved economic conditions and predicted increased household spending on premium packages.

PricewaterhouseCoopers advises that subscription TV services face emerging competition from over-the-top streaming services that provide television programming. It adds that, for consumers who are interested in only the smaller set of channels available online, OTT may be an economical alternative. However, BDUs will continue to appeal to households that want wide options or whose preferred programming and channels are not available on OTT services. PricewaterhouseCoopers estimates that by 2015, OTT streaming will generate US\$105 million.¹³⁹

PricewaterhouseCoopers projects growth in subscriptions to mobile TV services in this same timeframe due to the rollout of advanced wireless networks, the resulting availability of mobile TV services, and an improved economic environment. Demand for mobile TV subscription services has been low and it is expected that most mobile TV viewing will continue to be offered free of charge. Providers are experimenting with business models. By 2015, it forecasts a modest 260,000 mobile TV subscriptions—up from 30,000 in 2011. These subscriptions consist of only one quarter of the estimated 1 million Canadian mobile video users that are forecast for 2015.

PricewaterhouseCoopers expects that standard television programming will be offered primarily as a free (or ad-supported) service. Consumers may be willing to pay for access to specialized content, such as live sporting events or movies from pay

¹³⁸ Based on the projected revenue growth for subscription TV in this timeframe, the contributions of BDUs towards the production of Canadian content are not likely to decrease, assuming no changes to their regulated obligations.

¹³⁹ This excludes the electronic purchase and rental of TV shows and movies, using service such as Netflix or iTunes. PricewaterhouseCoopers considers these services to be substitutes for DVD and Blu-Ray disc purchases and rentals. It projects that electronic movie sales and rentals will reach \$US630 million by 2015.

TV channels, but it does not expect that this will be significant in the next few years.
140

3.4 Evolution of program rights

Historically, Canada has been treated as a separate market for program rights.¹⁴¹ These distinct Canadian rights have played, and continue to play, an important role in sustaining the Canadian broadcasting system. The evolution and continued availability of program rights for Canadian broadcasters are important to the health of the Canadian broadcasting system.

Technological evolution has introduced new platforms on which content can be delivered. The number of platforms and delivery options on these platforms increases along with the complexity of the negotiations for program rights.¹⁴² Negotiations typically involve discussions over which platform, when, and how many times a program will be broadcast, as well as the broadcast region and language. When negotiating for rights, parties try to establish the optimal combination of platforms, the level of exclusivity and the timing of each exhibition window.

Rights to programming content provided by OTT providers are generally classified as “digital” rights and are potentially subdivided according to the platform. With the growing amount of professionally produced programming available online, the digital program rights market is becoming more defined and established as business models evolve. The rising popularity of Internet-delivered programming will increase competition among OTT providers—including new online-only entrants and traditional broadcasters that own portals—for quality programming that attracts both subscribers and advertisers.

OTT providers have been experimenting with various business models, including advertising-supported, subscription-based and “rental or pay-per-use” models.¹⁴³ The initial uncertainty surrounding these business models has caused a lag in the evolution of the digital rights market, particularly in the area of the valuation of digital rights, as indicated in a study completed by the Canadian Media Production Association (CMPA).¹⁴⁴

¹⁴⁰ PricewaterhouseCoopers provided the example that in the US, AT&T’s mobile TV service was initially subscription-based, but began inserting advertisements in 2009. Based on PricewaterhouseCoopers’ data, this trend appears to be global.

¹⁴¹ The division of rights into geographic markets has been largely driven by market considerations. Foreign ownership restrictions in Canada have effectively enabled Canadian-owned broadcasters to become the beneficiaries of these market forces.

¹⁴² Program rights include TV broadcasting, VOD, and digital rights.

¹⁴³ Pay-per-use includes both streaming and downloads that expire after a set number of days or hours.

¹⁴⁴ Formerly known as the Canadian Film and Television Production Association (CFTPA).

In its study on the marketplace for digital rights, the CMPA noted that producers consider the digital rights associated with their linear content to be grossly undervalued in the market.¹⁴⁵ This study, however, was completed before the conclusion of a terms-of-trade agreement between Astral Media Inc., Bell Media Inc., Shaw Media Inc., Rogers Broadcasting Ltd., and Corus Entertainment Inc., and the independent Canadian television producers represented by the CMPA. Digital media rights formed a large part of the negotiation, particularly the question of the revenues derived from distribution on new platforms and international sales. While other terms-of-trade agreements are still under negotiation, the conclusion of this agreement may be among the factors that increase the value of digital rights. Other factors include: a growing number of purchasers of digital rights, increased opportunities to exploit digital rights, increased adoption of OTT services by consumers and the Canadian Media Fund's (CMF's) focus on digital content.

The introduction of OTT services is changing the traditional broadcasting market. As catch-up Internet TV continues to grow, exhibition windows are getting shorter. Catch-up programming is being made available within hours or days of original TV broadcasts. This short lag is popular among consumers. Different revenue-maximizing models that adjust the timing of these windows and their duration are changing as consumer media consumption trends evolve.

Most commonly, Canadian broadcasters have purchased Canadian program rights through packages that include both the linear and digital rights spanning the relevant language market at the national level. It is possible that content owners (often US broadcasters that own studios) could grant non-exclusive Canadian digital rights to Canadian broadcasters and non-Canadian content providers, or exercise these rights themselves. Canadian broadcasters understand the value in keeping the linear and digital rights bundled. However, because the online distribution of content is in the early stages of developing its own stand-alone business model, and because consumers are interested in this content, the incremental value for digital rights may rise. This may signal increases in the overall value of the package of rights as there are more windows of exploitation.

3.5 Growing multimedia production

The digital economy provides new opportunities for content producers. According to the CMPA,¹⁴⁶ Canadian content producers are increasingly using alternative

¹⁴⁵ CFTPA, *Towards a Framework for Digital Rights*, June 2010.

¹⁴⁶ Formerly known as the CFTPA

distribution platforms and multi-platform distribution strategies.¹⁴⁷ Multimedia production and the distribution of Canadian TV programs across multiple platforms is increasingly prevalent. The CMF's¹⁴⁸ *Digital Media Pilot Program* was launched in 2008-2009 to fund digital media projects related to previously funded television productions, with a budget of \$2 million. The budget was increased to \$10 million in 2009-2010. During this period, the number of projects supported by the fund rose from 30 to 77.¹⁴⁹ Also, between 2006-2007 and 2009-2010, the number of Internet broadcast rights sought by Canadian distributors of CMF-supported programming increased from 4 to 125.¹⁵⁰

Although only two mobisodes received funding from the *Digital Media Pilot Program* in 2009-2010 under its “experimental” stream,¹⁵¹ the CMF approved funding for three mobile applications and three interactive web series¹⁵² in October 2010 and for four mobile applications in March 2011.¹⁵³ While the number of multimedia projects for mobile devices is still low, this is not the case for video games, the biggest recipients of funding under the aforementioned program.

Since 2010, the Independent Production Fund (IPF) has funded the production of drama series created for all platforms. According to the IPF's annual report,¹⁵⁴ investments in the Canadian TV industry rose to approximately \$1 million in 2010 for Web series productions alone, equivalent to total investments for the 20 previous years (1991-2010). Moreover, the Bell Fund focused on new media and invested just under \$12 million in 2010 into 127 projects, including 83 new media and related television productions, compared to the \$92 million invested in 789 projects over the previous 13 years.

3.6 Regulatory considerations

As mentioned in the 2010 *Navigating Convergence* report, fragmentation continues to challenge the ongoing viability of the Canadian broadcasting industry at its current

¹⁴⁷ Profile 2010 – An Economic Report on the Screen-Based Production Industry in Canada, by the Canadian Media Production Association

¹⁴⁸ The CTF merged with the Canadian New Media Fund in 2010 to become the CMF.

¹⁴⁹ CTF, *Canadian Television Fund 2009-2010 Annual Report*, 22 November 2010.

¹⁵⁰ CMPA, *Profile 2010 – An Economic Report on the Screen-Based Production Industry in Canada by the Canadian Media Production Association*, 14 January 2011.

¹⁵¹ On April 1 2010, the CMF was mandated to champion the creation of successful, innovative Canadian content and software applications for current and emerging digital platforms through the “experimental” and “convergent” streams.

¹⁵² http://www.cmf-fmc.ca/partnerships-partenariats/592.html?page_mode=innovate, *CMF Announces Experimental Stream First Round Results*, 13 October 2010.

¹⁵³ http://www.cmf-fmc.ca/partnerships-partenariats/620.html?page_mode=innovate, *CMF invests \$11.5 million in 36 new interactive projects*, 1 March 2010.

¹⁵⁴ IPF, *2010 Annual Report of the Independent Production Fund*.

levels of expenditure and diversity. Furthermore, stakeholders have raised the spectre of bypassing the Canadian system. Canadian-owned conventional and specialty services depend on the existing rights market divided into territories to purchase popular foreign programming with which they may exclusively serve Canadian audiences. There have been recent isolated incidences of foreign OTT services purchasing rights to serve Canadians. Were this to become a trend, Canadian broadcasters would be further affected by fragmentation—a situation that could be amplified if it led to further cord-cutting or cord-shaving.

In recent months, discussions by stakeholders and citizens on the future of Canadian content in a digital environment, as well as concerns about the impact that greater consumption of digital content will have on communication networks, have become more urgent.

The regulatory treatment of technologies that underlie the emergence of online video bear careful consideration. The evolution of cloud-based services, which include services such as OTT video, depends on the efficient operation of communication networks. As discussed in the “Networks” section, it is important that service providers have the ability to connect to other communications networks to transmit their content to end users. Similarly, the economic Internet traffic-management practices of ISPs may influence the abilities of users to adopt new services and of content providers to create new services. It is critical that the regulatory environment allow for those innovations to take place, while balancing the needs of network operators to manage their networks and experiment with their own innovative new services.

The rate at which online content sources can be substituted for traditional sources is accelerating. The entry of several Internet-based video services into the Canadian marketplace has focused stakeholder attention on the evolution of and regulatory supports for Canadian content in a digital environment.

Some stakeholders have raised concerns as to whether increasing consumption of audiovisual and audio content from unregulated sources may be detrimental to Canadian content creation and exhibition. Service providers have suggested that increased network traffic associated with greater video consumption will require additional investment in infrastructure capacity without compensation from unregulated entities, which are mainly responsible for the increase. Others indicate that these new distribution platforms provide an additional avenue for the delivery of Canadian content. Creators of Canadian content may leverage the Internet to exhibit their works around the globe.

At a high level, many support the continued evolution of the Commission’s regulatory policies in the direction of flexibility and permissiveness. There appears to

be support for the use of *ex post* enforcement tools, which could include the imposition of administrative monetary penalties (AMPs) by the Commission to enable this evolution to continue. Stakeholders appear to increasingly support the notion that restrictive regulation and the imposition of obligations will become less effective means of achieving policy goals. It is difficult to control access to content that bypasses the traditional pathways of the regulated broadcasting system (i.e., over-the-air, cable and satellite). Direct access to content provided by exempt services operating in Canada may impact the traditional domestic broadcasting industry, which warrants consideration of further regulatory flexibility.

There is, however, no blanket support among stakeholders for a reduction in all forms of regulation. Independent broadcasters, creators and public-interest groups, and even, to a degree, service providers, generally agree that “one-size-fits-all-regulation” will become inappropriate. Some stakeholders have expressed that specific elements of the broadcasting system that provide, for example, a diversity of voices, may require the continued protection of *ex ante* regulation in an environment that is increasingly consolidated, global and marked by greater participation by competing exempt entities. Independent broadcasters have generally expressed broad support for *ex ante* regulation.

Entities associated with the broadcasting industry (service providers, creators, distributors and broadcasters) have expressed a desire for a level playing field with respect to content obligations. There does not appear to be a consensus, however, on how this could be accomplished. Creator groups, for instance, have suggested that a level playing field could be established through the extension of traditional obligations to exempt entities, particularly foreign ones. Some distributors, on the other hand, have pointed to the flexibility enjoyed by exempt entities as an advantage and argued for a more permissive regulatory environment for everyone. These distributors argued for reductions in required levels of Canadian spending or contribution to programming funds, as well as eased BDU packaging and VOD content rules.

Requirements to buy and broadcast Canadian programming have served as important sources of support for Canadian content in the private system.¹⁵⁵ Most BDUs are required to contribute 6.5 percent of their gross broadcasting revenues to Canadian programming through the CMF, the Local Programming Improvement Fund, independent production funds or community channels.¹⁵⁶ If BDU revenues are

¹⁵⁵ Expenditure requirements are generally calculated as a percentage of broadcasting revenues.

¹⁵⁶ This obligation applies to Class 1 and Class 2 BDUs, and DTH undertakings. It does not apply to the smaller, Class 3 BDUs.

reduced as a result of competition and audience fragmentation, it may be necessary to find new mechanisms to support Canadian content.

Observers have raised several scenarios in which contributions could be reduced. If Canadians were to reduce the number of discretionary services to which they subscribe or to unsubscribe from BDU services altogether in favour of viewing and acquiring content online from OTT services, unauthorized file-sharing sites, or newly-available HD OTA conventional services, there could be a reduction in revenues, the basis for subsidy contribution.

In addition, in an increasingly on-demand world, the effectiveness of linear exhibition requirements for programmers that drive the purchase of multiple Canadian titles to fill programming slots may be reduced. While expenditures might be kept proportionate to revenues, there could be a reduction in the diversity and number of titles purchased or buyers of new titles to satisfy those exhibition rules. The role of independent producers operating outside of large vertically integrated organizations could be affected. In an on-demand world, consumers actively seek content, thus creating awareness of content through various means can be critical to the success of programming. Canadian network broadcasters promote, to varying degrees, the Canadian content they broadcast. OTT providers, however, particularly those from foreign jurisdictions, may have limited incentive to promote Canadian content.

Finally, consideration may be given to non-regulatory developments that could be effectively leveraged to support the Commission's objectives, such as the rise of social media. For example, the effective use of social media tools could provide low-cost ways to promote domestic content.

The dynamics of the audio and audiovisual marketplaces are different, in part based on fundamentally different copyright frameworks. While the weight of stakeholder preoccupations tends toward discussion of audiovisual markets over audio, the same potential for bypass and disruptive effects of fragmentation exists in both. As the discussion on Internet radio has made clear, there is increasing consumption of programming from Internet sources. This consumption has tended to be from licensed radio services, which currently contribute to Canadian content development funds and adhere to prescribed Canadian content levels. Foreign OTT services have not made significant in-roads in Canada for a variety of reasons.

It will bear monitoring, however, to understand whether this situation will change. A movement by audiences to pure-play Web radio services has the potential to reduce revenues in the licensed system, with generally the same impacts that would occur under the same scenarios in audiovisual markets: lower advertising revenue resulting in fewer funds available for the creation and presentation of Canadian content, and reduced effectiveness of Canadian content rules.

The creation and promotion of Canadian programming, including audio programming, will be best achieved through a holistic approach that involves various government departments and agencies (including the Commission) as well as market forces. Various stakeholders have identified opportunities outside the regulated system to support Canadian content, such as tax credits, which include production tax credits, changes to the *Income Tax Act* to encourage Canadian advertisers to spend advertising dollars in Canada, co-productions and direct subsidies.

With respect to audio programming, suggestions have also been made by stakeholders that the copyright regime might be better optimized to provide domestic licensees the opportunity to develop their own innovative online services. However, audience levels for traditional TV remain high, and migration appears to be occurring mainly from conventional TV stations to specialty services,¹⁵⁷ with little migration evident in the radio sphere or likely in the near-term.

The possibility that the CBC/SRC plays a special role in fostering the development of Canadian content if the aforementioned scenarios occur has been raised. In the view of many, public broadcasters will play an important role in ensuring the availability and diversity of high-quality Canadian programming. There may be a need for regulatory flexibility where reduced revenues threaten ongoing commitments by private broadcasters. However, the degree to which private entities may have their obligations reduced commensurate with potential increased funding to the CBC/SRC is debatable.

¹⁵⁷ See tables 4.3.4 and 4.3.5 of the *Communications Monitoring Report 2011*.

4. Consumer choices and voices

Most Canadians have eagerly adopted digital devices, products and services. They are creating and consuming increasing amounts of programming over faster Internet connections, negotiating competitive bundles of communications services, unlocking their smartphones, using set-top boxes to access the Internet or navigate rich electronic program guides, and using cloud services to store digital content they have created and purchased. They are also informed and influential industry watchers who leverage social media to provide instant, highly public feedback on a wide range of issues.

Other consumers are less plugged into the digital environment. Canadians with low digital literacy skills will be challenged to fully participate in the digital economy and will face impediments to engagement in an increasingly digital society. Canadians with disabilities, older Canadians, new Canadians, and those living in poverty or in rural and remote areas may also face barriers. For a wide range of reasons, consumers may lack the knowledge they need to obtain the services they need. As a group, these consumers bear a disproportionate share of risk if the market fails to meet public-policy goals, or when public policies do not succeed or have unintended consequences.

Converging technologies and an evolving business landscape have made consumer issues more complex. Exploring ways to ensure that regulators and consumers have the necessary information and protections to perform their respective roles has become more important than ever.

4.1 Service complexity and informed choices

Canadians of all ages continue to embrace the digital environment as the goods and services they seek are created in, or migrated to, the online environment. Communications services can be complex, however, and it is likely that many consumers do not understand the characteristics and limitations of these services. Availability of advertised broadband speeds can vary geographically, advertised speeds are generally maximums and delivered on a best-effort basis, and download limits or usage caps are expressed in megabytes or gigabytes rather than in terms of the content and services consumers can access.

Due to such complexity, consumers can be challenged to make informed choices. Plans differ in terms of prices charged, service characteristics, upload and download speeds, data caps, and prices charged for excess data. There is a risk that users may pay too much or buy a service that does not meet their needs. If consumers' use of

bandwidth-intensive services such as video streaming increases, they may be unaware if their usage has exceeded a data cap.¹⁵⁸

Even if consumers purchase appropriate Internet packages, they may be unaware of the actual speeds delivered.¹⁵⁹ Numerous factors affect Internet access speeds. For ISPs, these include network topology, network technology usage, and congestion of certain links in the network between the end user and the content he or she is attempting to access. Factors within the consumer's home, such as the use of networking equipment (wired or wireless) or the number of simultaneous Internet users can affect speeds. Slowdowns are also possible due to weather conditions, website or application design, or even major events that drive huge volumes of Internet traffic.

4.2 Service pricing

A growing number of consumers subscribe to as many as four communications services from a single provider to take advantage of product discounts and simplified customer service. These bundles may provide time-limited offers that encourage the consumer to enter into a longer-term relationship with providers. In 2010, more than 48 percent of subscribers with home telephone service bundled their residential services with at least one other: Internet, wireless or broadcasting distribution.¹⁶⁰ This figure marks an increase from 2008, when only 34 percent of subscribers bundled services.¹⁶¹

Despite the growing popularity of bundles among consumers, costs for some communication services are increasing at a rate that exceeds some other consumer goods and services. Telephone and BDU pricing has been on an upward trajectory in comparison with the overall consumer price index (CPI), as shown in Figure 32.

However, a recent study examining wireline, wireless and Internet prices in Canada shows that advertised prices for wireline services have remained relatively stable between 2008 and 2011. This same study shows that over this time period, the advertised prices for lowest-usage wireless phone subscriptions and broadband subscriptions have also remained relatively stable. The prices for higher-usage

¹⁵⁸ Some ISPs provide tracking tools and warnings to users as they approach data caps.

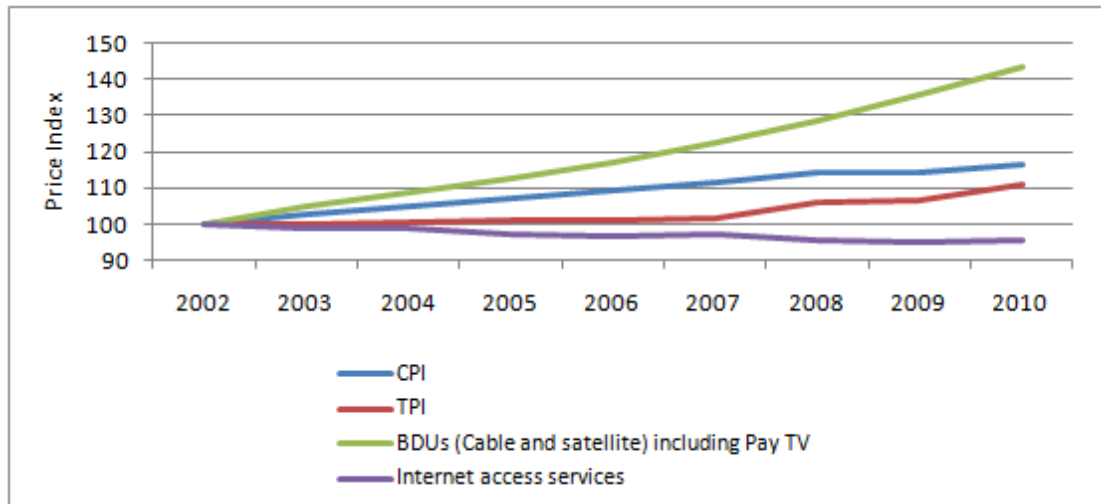
¹⁵⁹ Based on test results from Speedtest.net in June 2011, Canada ranks 29th out of 60 in an index based on user-generated speed tests versus advertised or "promised speeds", meeting this 88.45 percent per cent of the time.

¹⁶⁰ See the *Communications Monitoring Report 2011*.

¹⁶¹ This number does not reflect those consumers without residential landlines. If it is assumed that some of the households without residential landlines bundle other services, then the number of Canadians subscribing to bundled services is higher than 34%.

wireless phone subscriptions have experienced a decrease while the prices for higher-usage broadband services increased modestly between 2009 and 2011.¹⁶²

Figure 32 Price indices – telephone price index (TPI), BDU (cable and satellite), including pay television, Internet access, and CPI¹⁶³



Source: Statistics Canada

The rollout of IPTV services provided by telephone companies will introduce more competition that may put downward pressure on BDU pricing. Growing consumer adoption of OTT services and Internet-enabled televisions may also provide an incentive for converged providers to keep their prices competitive. However, consumers who choose to shave or cut their BDU subscriptions may require higher-speed Internet services or services with higher usage caps if they substitute online sources of content for traditional TV. A converged provider may see one service cannibalized by another, while the consumer’s monthly bill remains similar. Large, integrated players in the communications industry have stated that providing bundled solutions is a means to not only increase the average revenue per household, but also retain their customer base.

¹⁶² <http://www.crtc.gc.ca/eng/publications/reports/rp1106.htm> Wall Communications, *Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions*, June 2011.

¹⁶³ The TPI reflects the price changes experienced by a household for a basket of telephone services. The basket of telephone services reflects a weighted-average of consumer expenditures on basic local service, other local services (such as options and features), and long distance, installation and repair services. However, the TPI does not include wireless or Internet service expenditures. The BDU price index reflects the price changes experienced by a household for a basket of cable television services. The basket includes both “basic” and “extended” cable services. Basic cable service is the minimum service to which all customers must subscribe. Extended service is the most popular package of additional channels. The index does not account for bundling discounts.

4.3 Digital locks/wireless and content ecosystems

Much of the marketplace for digital content is managed by means of a range of tools, including limits on software and hardware interoperability with “digital locks” or digital rights management technologies. These apply to mobile devices and the operating systems and applications they employ.

Devices may sometimes be “locked” to particular networks. In the past, users could not transfer wireless devices to other networks mostly due to differences in technology; however, with the adoption of a standard technology across Canada by most wireless carriers, most notably HSPA, handsets and the terms under which they are offered are changing.

Handsets have evolved with the integration of newer, costly technologies such as cameras, touch screens and Global Positioning System. The fees for handsets are typically subsidized by the WSPs, and make up a major component of the WSPs’ cost to acquire subscribers.¹⁶⁴ As a result, customers are tied to multi-year contracts that include cancellation fees. Where no contract is required, handsets may be locked so they function with that carrier only.

Smartphones have become personalized and portable computers that store applications, software personal information and content, whether created or purchased by users.¹⁶⁵ As these advanced devices become less disposable, consumers may seek to keep them when their contract periods end. In addition, hardware is evolving to a point where upgrades to devices can now be done through software updates, so that hardware iterations become less frequent and devices stay on the market for longer periods of time.

Most Canadian carriers have started to unlock their devices. Carriers may charge a fee for the unlocking service that can be done at the end of a contract, when cancelling a contract or when a customer travels abroad. The market for wireless devices is also evolving. Some consumer device manufacturers sell unlocked handsets directly to consumers.¹⁶⁶

¹⁶⁴ The cost of wireless subscriber acquisition has remained about around \$400 for the past 5 years based on data from Desjardins Securities in 2010 for the incumbent WSPs. Note that not all of the new entrants appear to subsidize handsets to the same extent.

¹⁶⁵ The iPhone made a big splash when it appeared on the market by providing an appealing user interface and application store with significant computing power and memory. More recently, Research in Motion has made advances with its own application marketplace. Google’s Android operating system has been gathering further support and is now considered the fastest growing platform with which to sell applications.

¹⁶⁶ Examples include Dell with its Streak device and Apple with the iPhone.

The purchasing decision around service provider and device is not limited to choices arising from carrier-specific contract terms. Consumers may also face complexities in choosing their smartphone, tablet, or Internet-enabled TV, due to the differences in ecosystems/application stores. If their buying decision is dependent upon the availability of applications or the desire to create applications, then they must weigh the advantages and disadvantages of both closed and open systems.

Generally, a closed system offers the user a more managed experience or more controlled environment that submits new applications to quality assurance checks to prevent inappropriate content or viruses from entering the ecosystem. Advocates of open systems point to faster availability of applications and more variety in open systems because there is no need to wait for approval from the controlling entity. In addition, the proprietary content and devices are not easily transferrable out of a closed ecosystem, thereby locking in the consumer.

4.4 Contracts

Contracts are used to establish terms between consumers and providers of digital devices, products and services. The contract terms, described in end-user agreements, typically establish service rates, the duration of the contract and restrictions around the use of content, applications, services or devices.

In an increasingly complex market for digital goods and services, consumers may be challenged to navigate and fully understand the often lengthy and legalistic contracts into which they enter. With “click-through” contracts, consumers realize they have no easy means of negotiating terms and conditions, so may quickly accept what is offered them without full knowledge or consent. Even when they may have choices in online contracts, consumers may readily accept a “nudge” and agree to default settings, to avoid complex or time-consuming decisions. The structure of such “choice architecture” may not always be in the consumer’s best interest.

Where contracts can be negotiated in person, some consumers may be more skilled in negotiating better terms, while others may unwittingly be sold products and services they do not need. In its 2009-2010 annual report, the Commissioner for Complaints for Telecommunications Services identified contract issues as one of the top three complaints. Thirty-five percent of accepted complaints fell into this category, up from 27 percent the year before.¹⁶⁷

¹⁶⁷ See page 26 of the CCTS’s *Annual Report 2009-2010* at <http://www.ctcs-cprst.ca/wp-content/uploads/2010/01/CCTS-Annual-Report-2009-2010.pdf>.

Canada¹⁶⁸ and other jurisdictions such as the United Kingdom have taken steps to ensure customers are informed about their communications services. Information about the precise nature of the services to which they are subscribing, including traffic-management techniques and their impact on service quality, as well as any other limitations, such as bandwidth caps or available connection speed, may help consumers make informed choices in the future.

4.5 Cloud computing services

Canadian consumers are increasingly adopting a broad range of Web-based services known as “cloud computing.” As consumers become increasingly connected and as the number of connected devices per consumer increases, the mobility of content, information and services becomes essential. As more and more Canadian households have access, and subscribe, to broadband Internet access services, the market for consumer cloud-based services is expected to grow.

In addition, cloud-based services are being increasingly adopted by Canadian enterprises to provide various services including e-mail management, word processing and spreadsheet tools, file management and data storage. Enterprises adopt such cloud-based services to reduce the cost and complexity of information technology services and enable remote access to information.¹⁶⁹

Cloud computing has the potential to enable new business models, spur innovation and to provide new, unique and ubiquitous services to consumers. However, there are concerns around the use of cloud-based services and their potential impact on data portability and consumer privacy, security and identity.¹⁷⁰ Information gaps magnify the challenges facing consumers. While various consumer surveys reveal that the

¹⁶⁸ Contract law is typically a provincial responsibility and some provinces have enacted laws specific to consumer contracts with communications service providers. For example, Manitoba, Quebec and Ontario have all either proposed or enacted regulations to address issues of high cancellation fees, hidden charges, and/or unclear terms for cell phone service contracts.

¹⁶⁹ The availability of cloud-based services offered by Canadian operators to serve the enterprise and small business markets is on the rise. In the summer of 2010, cloud services partnerships between major cloud infrastructure providers and two of Canada’s largest TSPs: Bell Canada and TELUS, were announced. These types of announcements signal a potential rise in the use of such services in the enterprise and small business space.

¹⁷⁰ The Internet itself is not a cloud, but a network of networks, upon which individual cloud infrastructures are built. One cloud instance is unlikely to communicate with any other cloud instance and is thus isolated. This separation may be beneficial in terms of information security, but could create challenges for consumers in terms of data portability and interoperation between different cloud services.

majority of consumers are familiar with the term “cloud computing,” they do not actually understand it and some are not aware that they use it.¹⁷¹

Cloud computing may raise privacy concerns as cloud-based services often store personal information. Users do not necessarily know where their information is being stored, or what path it follows to get there. Numerous jurisdictions can be involved in the flow and storage of data. This may become a concern where different countries have different sets of privacy laws.

Cloud computing may also face security challenges related to both the provision and use of cloud-based services. At the most basic level, the physical warehouse for the servers is, effectively, a highly concentrated and valuable data warehouse. Threats from physical harm, hackers, or data loss or corruption are only a few of the major security concerns that surround cloud computing. Due to the concentration and aggregation of sensitive data, most providers prioritize the security of their facilities and the information contained within. This may, in some instances, actually provide consumers with higher—but not impenetrable—levels of security than other methods of information management.

Internet users leave digital footprints, with or without their knowledge or consent. Bits and pieces of information about an individual can be collected by various parties and, eventually, a mosaic depicting a profile of the person can be created. Such data, aggregated to varying degrees, is highly valuable. Even when consumers are aware of the collection of their information, it may be difficult for them to limit or erase their digital footprints.

In a number of decisions, the Commission has established regulatory measures to safeguard customer information and protect consumer privacy. For example, the Commission directed all ISPs not to use personal information collected for the purposes of traffic management for other purposes, nor to disclose such information.¹⁷² In addition, new enforcement measures are being introduced to address unwanted commercial e-mail (i.e., spam) and malicious software, including applications that collect user information without a user’s prior knowledge.

¹⁷¹ GfK Insights 4u reports that 62% of the 1,000 people surveyed in North America are either not aware of the cloud or are aware but do not understand it.
http://www.gfkinsights4u.com/cloud_computing_has_the_power_to_enhance_consumer_data_consumption_but_obstacles_hinder_greater_short-term_adoption.html

¹⁷² See *Review of the Internet traffic management practices of Internet service providers*, Telecom Regulatory Policy CRTC 2009-657, 21 October 2009.

Whether the current legislative and regulatory frameworks adequately protect consumers using rapidly evolving cloud services is not yet fully understood.

4.6 Accessibility in the digital environment

Approximately 4.4 million Canadians—14.3 percent of the population—have one or more disabilities.¹⁷³ More than 1.7 million Canadians aged 15 or older—6.6 percent of the population—have severe or very severe disabilities. The disability rate increases with age. An estimated 43 percent of Canadians aged 65 and older have a disability. Canada’s national disability rate is expected to rise dramatically over the next 10 to 15 years as the population ages. The needs of persons with disabilities are wide-ranging and can be highly specific.

Digital communication technologies are being rapidly adopted by Canadians, and are growing in importance for Canadians to work and participate in society. Services that are optional for some may be essential to enable persons with disabilities or elderly people to engage and participate in digital society and economy. Providers and creators of advanced services and new content that seek the widest possible adoption will have incentives to enable access and inclusion.

Solutions can often be leveraged within emerging technologies. Open platforms and systems that allow for integration of third-party accessibility applications or porting of legacy accessibility capabilities onto new platforms hold great promise, as does cloud computing. New tools are on the horizon in the way of development of accessibility standards and universal/inclusive design methodologies, as are opportunities for providers to collaborate with partners selected primarily for their strengths in accessibility solutions.

However, a rapidly changing market does not necessarily provide for the evolution of accessibility solutions, nor does it ensure longevity of existing solutions. Given the higher probability and impact of a growing segment of the Canadian population being excluded from participation in the evolution to the digital economy, it becomes important to react in a timely manner when fast-changing markets fail to meet these needs.¹⁷⁴

4.7 Regulatory considerations

The protection of consumers in a multiplatform digital environment is becoming more challenging. Service providers, for instance, may be headquartered in foreign

¹⁷³ Statistics Canada, *Participation and Activity Limitation Survey: Disability In Canada*, 29 January 2010.

¹⁷⁴ For example, France Numérique has a proposal for digital ambassadors to provide assistance to citizens with low digital skills.

jurisdictions, and may, in fact, operate entirely as virtual entities. Products and services have become increasingly complex. New product and service categories strain traditional regulatory definitions. Traditional public-policy approaches are becoming less effective at protecting Canadian consumers.

Complex service bundles, often sold with fixed contracts, are at once consumer benefits and hindrances to choice. In a fast-moving technological environment, three-year contracts may prevent customers from switching among service providers to take advantage of innovative new technologies or more advantageous pricing. These contracts may be confusing and difficult to compare. Where consumers take advantage of new innovations such as cloud computing or new generations of devices, the potential for lock-in to proprietary formats for documents and files may increase.

In the face of these challenges, regulatory approaches are being explored that combine *ex ante* regulation with market forces. For example, industry co-regulation may be a light-handed response to addressing evolving consumer issues. Co-regulation requires regulated entities to develop and codify certain principles-based standards or norms that are generally in line with consumer expectations. Such codes are a more responsive alternative to formal regulation since they can be amended relatively easily.

Stakeholders have raised self-regulation and co-regulation as alternatives to more prescriptive regulation in an environment that they characterize as requiring greater flexibility and choice. For co-regulation approaches to expand, for example, new *ex post* enforcement tools, such as AMPs, would be helpful to encourage compliance and aid in enforcing social protections, such as privacy¹⁷⁵ and security, as well as accessibility. The regulator would not enforce self-regulatory approaches.

Given the international lines over which services and devices now travel, stakeholders have suggested that international collaboration will be increasingly required to ensure that services adhere to necessary levels of consumer protection. Accessibility challenges, particularly, may require trans-national solutions given the global or at least continental scale required to produce devices. It is unlikely, for example, that feature-sets particular to a single or small jurisdiction will always be included in devices offered for sale globally.

¹⁷⁵ The Office of the Privacy Commissioner of Canada has taken an active role in research and addressing privacy complaints related to the Internet, including location-based services, social networking, Internet search engines and cloud computing.

A growing number of Canadians have become savvy users of social media tools to share information, assert viewpoints and interact with companies and policy-makers. Primary-source information such as statutes and regulations, court decisions and private company financial reporting are all widely available for analysis and comment by interested Canadians. Formed into communities around issues, information and analysis can be shared with large groups of stakeholders for immediate dissemination and discussion.

In this environment, tools that enable the research, analysis and dissemination of information will amplify consumer voices and help people make informed choices. As a result, policy-makers may be able to reduce intervention in markets to correct consumer protection and other failures. Policy makers and regulators may increasingly adopt approaches to enhance service transparency and support open data initiatives.

5. Conclusions

Several key trends in the communications environment continue to emerge from the Commission's ongoing research, stakeholder consultations and continued monitoring of the converging communications landscape. This report has examined many of those trends and has explored the associated regulatory implications.

Increases in network speeds and capacities that match more multiplatform services and greater consumption of programming are among the most important of these trends. In the long term, HD video will add to network capacity requirements. Mobile networks will face greater traffic demands arising from consumers' preference for these networks as compared to traditional landline voice and growth in broadband wireless Internet. Consumers expect services to operate seamlessly across networks and devices, and to continue to integrate advanced features.

In a competitive market, network providers continually invest in their networks to meet consumer and enterprise demands for innovative services. Stakeholders differ with regards to the need for and the implications of changes to foreign ownership rules to foster investment and increased competition. Some stakeholders have indicated that with converged entities, it is difficult to introduce changes without jeopardizing the achievement of the *Broadcasting Act's* objectives.

An ongoing point of debate among analysts, consumers and stakeholders is the degree to which regulation is needed to foster sustainable competition. The requirement that competition be facilitated and that, at the same time, network providers' disincentives to invest and innovate be minimized, including in rural and remote areas, is an important regulatory consideration for next-generation networks.

Consumers are increasingly using multiplatform content and services to access audio and audiovisual programming. It is difficult to predict the impact that competition will have on the system as a whole. The growth of IPTV should discipline pricing for cable and satellite TV, to the benefit of consumers.

OTT services may introduce further competitive pressure. It is unclear whether these developments will be incremental or detrimental to the creation and presentation of Canadian content. On the one hand, increased availability of foreign content from OTT sources could decrease the visibility of Canadian content; on the other, new distribution channels could increase the opportunity for the global and domestic exposure of Canadian content. Some stakeholders have indicated that changes are needed to ensure that licensed and exempt providers are on a level playing field. Faced with competition from foreign OTT providers that may disrupt the traditional program rights market, some stakeholders have suggested that compelling Canadian

content will become an increasingly important competitive advantage for domestic broadcasters.

To achieve the objectives related to Canadian reflection outlined in the *Broadcasting Act*, a more holistic approach that transcends Commission-imposed contributions and quotas on the regulated players may need to be considered. If traditional obligation-based contributions to subsidy funds come under significant pressure, some stakeholders have suggested that other forms of multiplatform subsidies and government support, such as tax-based incentives, increased direct subsidies and federal tax credits are likely to grow in importance. Further, many have expressed support for a greater role for public broadcasters in creating distinctively Canadian content in a digital environment.

The issue of diversity is paramount in a marketplace that is increasingly globalized and marked by a handful of large vertically integrated players and numerous smaller niche or regional players. Stakeholders have noted that “one-size-fits-all” regulatory approaches may not be effective to achieve the policy objectives for the communications system.

In an environment where services are delivered from the cloud and to multiple platforms, there is a growing number of consumer challenges including accessibility, privacy and security. Regulatory bodies are adopting approaches to address these challenges, such as enhanced service transparency. The Internet is also enabling consumers to speak with an amplified voice and share their views on communications services using social media tools.

Stakeholders generally consider that a more permissive regulatory environment would allow Canadians the flexibility to create and have access to a greater choice of innovative communications services. Regulations and policies rooted in legislation that is fundamentally *ex ante* may, however, ultimately hinder the achievement of these goals. The current permission-based framework that contemplates *ex post* rules of general application as an exception rather than the rule may limit the Commission’s ability to develop the more permissive approaches sought by stakeholders. This challenge is highlighted by the absence of effective enforcement tools in general use where *ex post* approaches are the norm.

Responsibility for communications policy and its implementation is shared across multiple government entities and even across international boundaries. Some stakeholders have recommended that the government create the position of a digital minister whose responsibilities would include developing a coherent communications policy (e.g., encompassing broadcasting, telecom, spectrum, competition, copyright, innovation, privacy, subsidies, and tax benefits) to enable Canadian consumers and enterprises to fully benefit from the opportunities afforded by the digital economy.

Further efficiencies could be achieved by rationalizing the implementation of the policies across the various departments and agencies.

Stakeholders have raised the issue of an appropriate legislative framework for a digital environment since legislation conceived in a pre-convergence era cannot contemplate the strained definitional and conceptual realities of the digital age. Moreover, regulatory frameworks and mechanisms may be equally challenged.

In summary, the fundamental changes occurring in the communications landscape are a source of both opportunity and challenge for Canadian consumers, creators, businesses and the communications industry. The proliferation of communications tools and devices is allowing Canadians to exercise greater choice in how they consume, create and participate in the global digital media environment.

The trends described in this document are still evolving; there is much that is uncertain about their long-term implications. Stakeholders cited in this document have raised some preliminary issues that they consider would be helpful to examine. Other considerations and ideas should be explored as part of an ongoing conversation between parties.

It is an opportune time for reflection and discussion on how the benefits of an innovative digital economy may be fully realized.